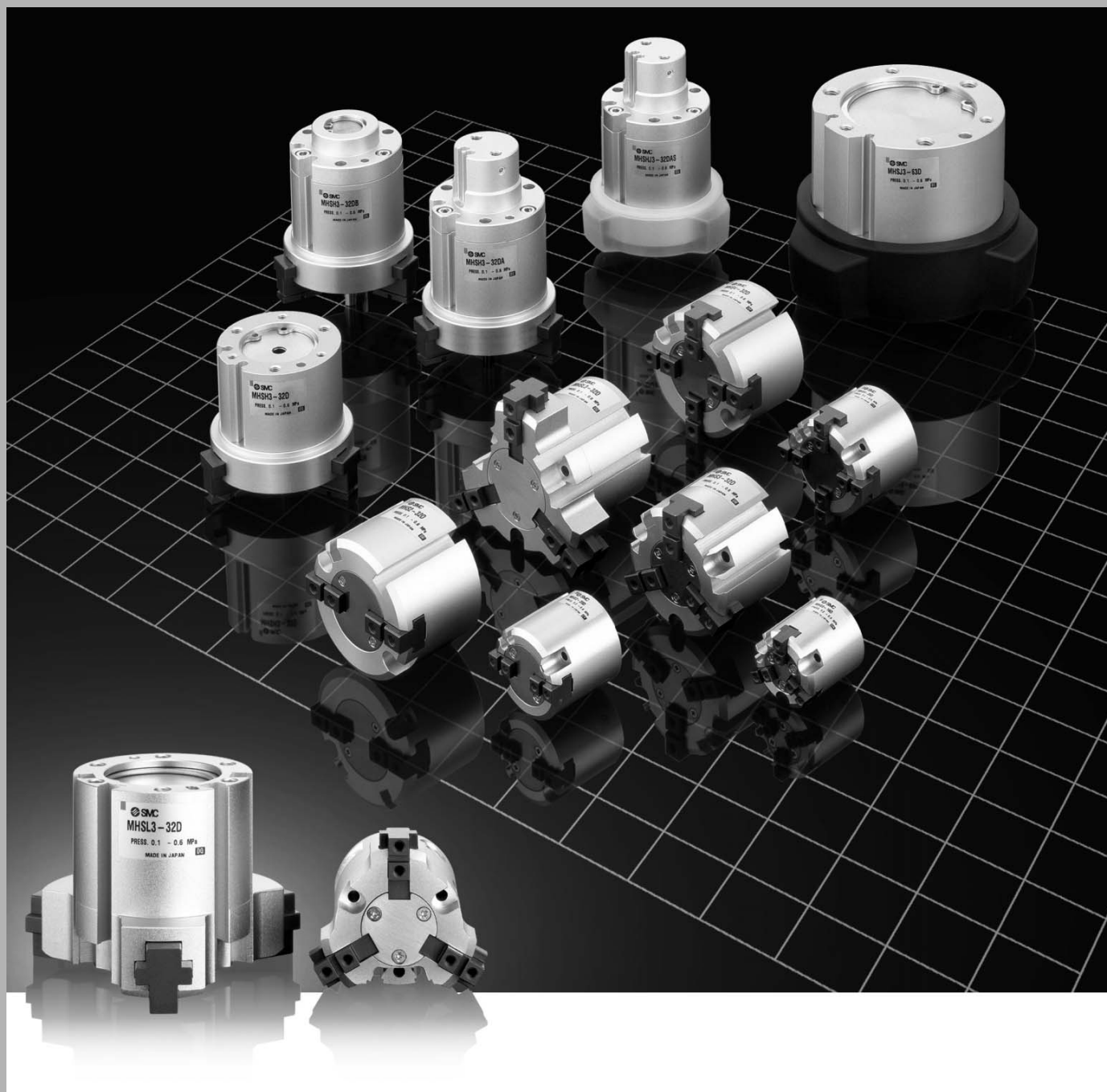


**2 Finger, 3 Finger, 4 Finger  
Parallel Style Air Gripper  
Series *MHS***

**MHZ****MHF**

MHL

MHR

MHK

MHS

MHC

MHT

**MHY**

MHW

**MRHQ**

**Misc.**

**D-**

20-



# Lightweight, compact design with reduced height

## Long stroke (MHSL3) introduced to upgraded series.

**High repeatability:  $\pm 0.01$  mm**

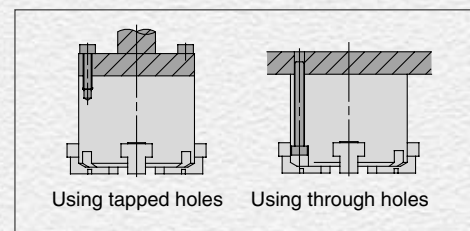
### Auto switch capable

A wide variety of solid state auto switches can be mounted using the body's side mounting grooves. Selections include 2-color indication and water resistant types.

### Easy alignment when mounting

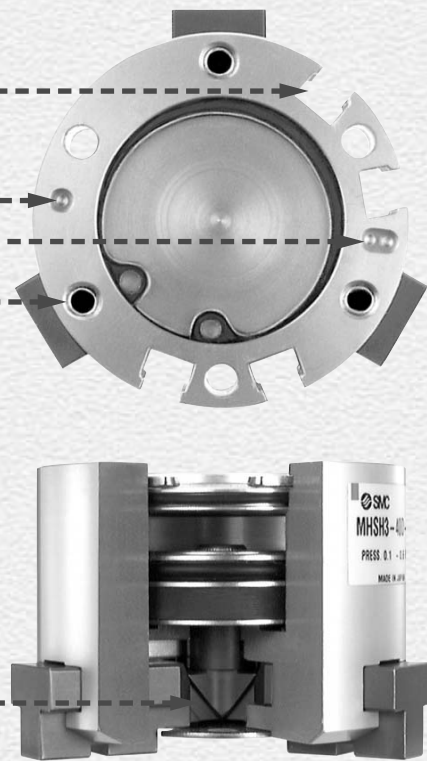
Positioning pin holes are provided on the top of the gripper.

### Can be mounted from two directions



### Employs wedge cam construction

The wedge cam mechanism allows strong gripping force to be obtained from a compact design.

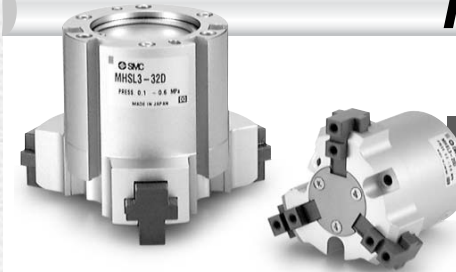


## Series Variations

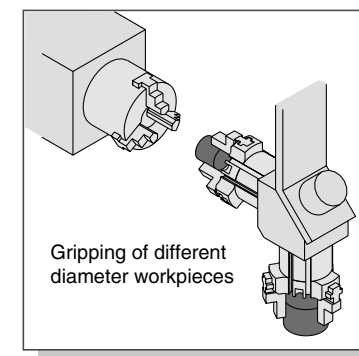
|          |  | Bore size (mm) |    |    |    |    |    |    |    |     |     |  |
|----------|--|----------------|----|----|----|----|----|----|----|-----|-----|--|
|          |  | 16             | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 | 125 |  |
| 2 Finger | Series MHS2                                      |                |    |    |    |    |    |    |    |     |     |  |
|          | Gripping of diverse workpieces                   |                |    |    |    |    |    |    |    |     |     |  |
| 3 Finger | Series MHS3                                      |                |    |    |    |    |    |    |    |     |     |  |
|          | Axial gripping of cylindrical workpieces         |                |    |    |    |    |    |    |    |     |     |  |
|          | Long stroke Series MHSL3                         |                |    |    |    |    |    |    |    |     |     |  |
|          | Accommodates a wide range of workpiece diameters |                |    |    |    |    |    |    |    |     |     |  |
| 4 Finger | Series MHS4                                      |                |    |    |    |    |    |    |    |     |     |  |
|          | Positioning of square workpieces                 |                |    |    |    |    |    |    |    |     |     |  |

Ideal for gripping workpieces of different diameters

## MHSL3 Long Stroke



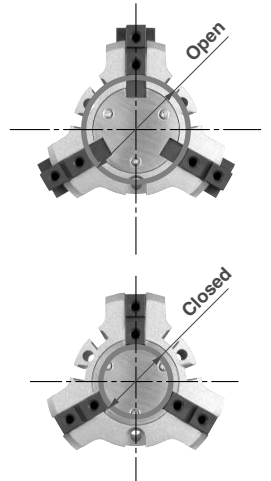
Opening/Closing stroke more than twice the standard (MHS3)



● The mounting pitch is compatible with the standard type.

| Bore size (mm) | Stroke (mm)<br>Dia.: Open - Closed | Height (mm) | Weight (g) |
|----------------|------------------------------------|-------------|------------|
|                | 10 (4)                             |             |            |
| 16             | 12 (6)                             | 43.5        | 80         |
| 20             | 16 (8)                             | 46          | 135        |
| 25             | 20 (8)                             | 49          | 180        |
| 32             | 28 (12)                            | 58          | 370        |
| 40             | 32 (16)                            | 64          | 550        |
| 50             | 40 (20)                            | 77.5        | 930        |
| 63             | 48 (24)                            | 89          | 1,550      |
| 80             | 48 (24)                            | 116         | 2,850      |
| 100            | 64 (32)                            | 135         | 5,500      |
| 125            | 64 (32)                            | 175         | 11,300     |

Standard inside ( )/MHS3 stroke

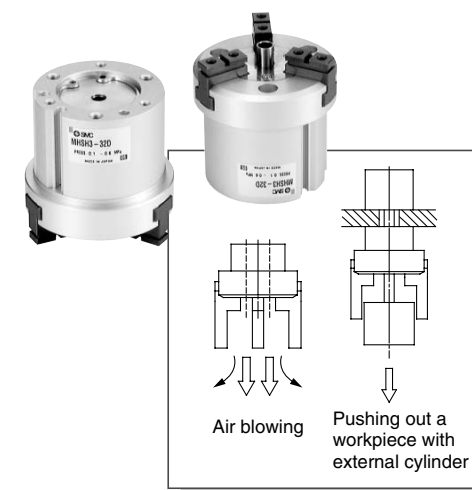


## MHS3 variations

### With dust cover/MHSJ3

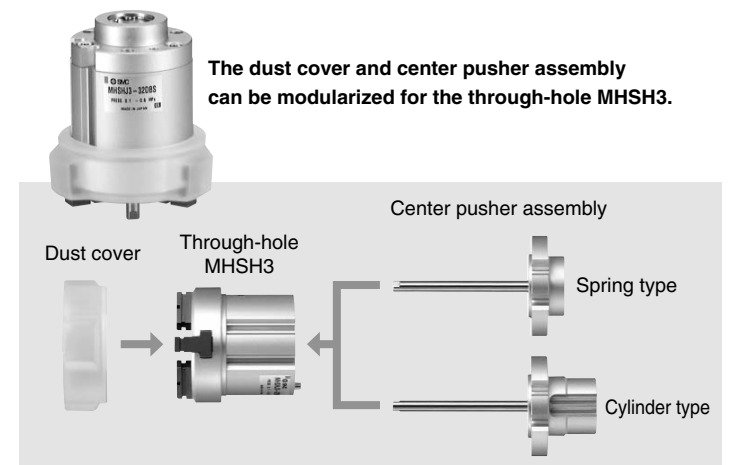


### Through-hole/MHSH3



|        |   | Bore size (mm) |    |    |    |    |    |    |    |  |  |  |
|--------|---|----------------|----|----|----|----|----|----|----|--|--|--|
|        |   | 16             | 20 | 25 | 32 | 40 | 50 | 63 | 80 |  |  |  |
| MHSJ3  | With dust cover                               |                |    |    |    |    |    |    |    |  |  |  |
|        | Through-hole                                  |                |    |    |    |    |    |    |    |  |  |  |
| MHSH3  | With center pusher (Cylinder type)            |                |    |    |    |    |    |    |    |  |  |  |
|        | With center pusher (Spring type)              |                |    |    |    |    |    |    |    |  |  |  |
|        | Through-hole with dust cover                  |                |    |    |    |    |    |    |    |  |  |  |
| MHSHJ3 | With dust cover/Center pusher (Cylinder type) |                |    |    |    |    |    |    |    |  |  |  |
|        | With dust cover/Center pusher (Spring type)   |                |    |    |    |    |    |    |    |  |  |  |

### With dust cover/Center pusher



# Series MHS

## Model Selection

### Model Selection

#### Selection Procedure

**Step 1** Confirmation of gripping force → **Step 2** Confirmation of gripping point

#### Step 1 Confirmation of Gripping Force

Confirmation of conditions → Calculation of required gripping force → Selection of model from gripping force graph

#### Example

Workpiece weight: 0.4 kg

Gripping method: External gripping

Number of fingers: 2

Model selection criteria with respect to workpiece weight

- Although differences will exist depending on the coefficient of friction between attachments and workpieces, select a model which will provide a gripping force as shown in the table below.

Note 1) Refer to the model selection illustration regarding multiples of the workpiece weight.

| Model | Multiples of gripping force by workpiece weight |
|-------|---|
| MHS2  | 10 to 20 times or more                          |
| MHS3  | 7 to 13 times or more                           |
| MHSJ3 |   |
| MHSH3 |   |
| MHSL3 |   |
| MHS4  | 5 to 10 times or more                           |

- If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

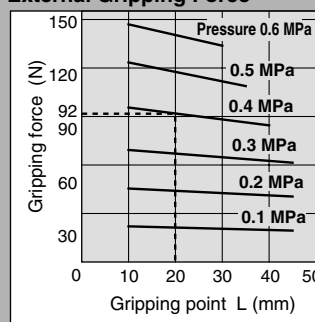
Example) When it is desired to set the gripping force at 20 times or more above the workpiece weight.

Required gripping force  
 $= 0.4 \text{ kg} \times 20 \times 9.8 \text{ m/s}^2 \cong 78.4 \text{ N}$  or more

Gripping point: 20 mm

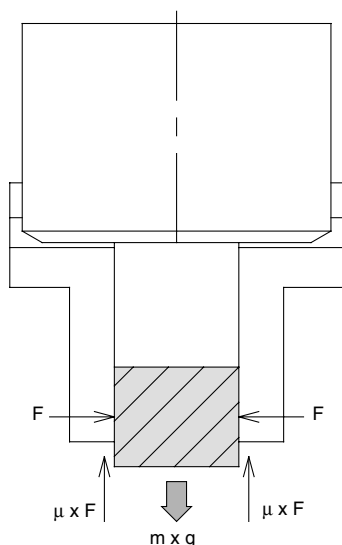
Operating pressure: 0.4 MPa

#### MHS2-32D External Gripping Force



- Selecting the MHS2-32D.  
A gripping force of 92 N is obtained from the intersection point of the gripping point distance  $L = 20 \text{ mm}$  and a pressure of 0.4 MPa.
- The gripping force is 23 times greater than the workpiece weight, and therefore satisfies a gripping force setting value of 20 times or more.

Note) For **Step 2**, refer to the gripping point for the effective gripping force of each model.

**Model Selection Illustration**

When gripping a workpiece as in the figure to the left, and with the following definitions,

**n:** Number of fingers

**F:** Gripping force (N)

**μ:** Coefficient of friction between attachments and workpiece

**m:** workpiece mass (kg)

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

**mg:** workpiece weight (N)

the conditions under which the workpiece will not drop are

$$n \times \mu F > mg$$

and therefore,

$$F > \frac{mg}{n \times \mu}$$

With “a” as the safety margin, F is determined as follows:

$$F = \frac{a \times mg}{n \times \mu}$$

**Multiples of Gripping Force by Workpiece Weight**

**Number of fingers: When n = 2**

- SMC performs calculations allowing for impacts which occur during normal transfer, etc., using a safety margin of a = 4.

| When $\mu = 0.2$  | When $\mu = 0.1$  |
|---|---|
| $F = \frac{mg}{2 \times 0.2} \times 4$ $= 10 \times mg$ | $F = \frac{mg}{2 \times 0.1} \times 4$ $= 20 \times mg$ |
| ↑   | ↑   |
| 10 x workpiece weight                                   | 20 x workpiece weight                                   |

Note) • Even in cases where the coefficient of friction is greater than  $\mu = 0.2$ , for safety reasons, SMC recommends selecting a gripping force which is at least 10 to 20 times the workpiece weight.

- If high acceleration, deceleration or impact forces are encountered during motion, a further margin of safety should be considered.

MHZ

MHF

MHL

MHR

MHK

**MHS**

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

20-



# 2 Finger Parallel Style Air Gripper

## Series MHS2

Size: 16, 20, 25, 32, 40, 50, 63



Refer to page 12-13-25 for solid state switch with pre-wire connector.

### How to Order

#### Bore size

**ø16 to ø25**

**MHS 2 — 20 D — M9N**

**Number of fingers**  
2 | 2 fingers

**Bore size**  
16 | 16 mm  
20 | 20 mm  
25 | 25 mm

**Action**  
D | Double acting

**Number of auto switches**  
Nil | 2 pcs.  
S | 1 pc.

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

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

#### Applicable Auto Switch/Refer to page 12-13-1 for further information on auto switches.

| Type               | Special function                     | Electrical entry | Indicator light | Wiring (Output) | Load voltage |      | Auto switch model |      | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |
|--------------------|--------------------------------------|------------------|-----------------|-----------------|--------------|------|-------------------|------|-----------------------|-------|-------|--------------------------|-----------------|------------|--------------------|
|                    |                                      |                  |                 |                 | DC           | AC   | Electrical entry  |      | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            |                    |
| Solid state switch | —                                    | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V  | M9NV              | M9N  | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V | M9PV              | M9P  | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                      |                  |                 | 2-wire          |              | 12 V | M9BV              | M9B  | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    | Water resistant (2-color indication) |                  |                 | 2-wire          |              | 12 V | —                 | F9BA | —                     | ●     | ○     | ○                        | —               |            | ○                  |

\* Lead wire length symbols: 0.5 m .... Nil (Example) F9B  
3 m .... L (Example) F9BL  
5 m .... Z (Example) F9BZ

Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

#### Bore size

**ø32 to ø63**

**MHS 2 — 50 D — Y59A**

**Number of fingers**  
2 | 2 fingers

**Bore size**  
32 | 32 mm  
40 | 40 mm  
50 | 50 mm  
63 | 63 mm

**Action**  
D | Double acting

**Number of auto switches**  
Nil | 2 pcs.  
S | 1 pc.

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

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

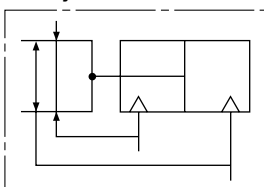
#### Applicable Auto Switch/Refer to page 12-13-1 for further information on auto switches.

| Type               | Special function                     | Electrical entry | Indicator light | Wiring (Output) | Load voltage |           | Auto switch model |      | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |
|--------------------|--------------------------------------|------------------|-----------------|-----------------|--------------|-----------|-------------------|------|-----------------------|-------|-------|--------------------------|-----------------|------------|--------------------|
|                    |                                      |                  |                 |                 | DC           | AC        | Electrical entry  |      | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            |                    |
| Solid state switch | —                                    | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V, 12 V | Y69A              | Y59A | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V      | Y7PV              | Y7P  | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                      |                  |                 | 2-wire          |              | 12 V      | Y69B              | Y59B | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    | Diagnosis (2-color indication)       | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V, 12 V | Y7NWV             | Y7NW | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V      | Y7PWV             | Y7PW | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                      |                  |                 | 2-wire          |              | 12 V      | Y7BWV             | Y7BW | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    | Water resistant (2-color indication) |                  |                 | 2-wire          |              | 12 V      | —                 | Y7BA | —                     | ●     | ○     |                          | —               |            | ○                  |

\* Lead wire length symbols: 0.5 m ... Nil (Example) Y59B  
3 m ... L (Example) Y59BL  
5 m ... Z (Example) Y59BZ

\* Auto switches marked with a "○" symbol are produced upon receipt of order.  
Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

#### JIS Symbol



# 2 Finger Parallel Style Air Gripper Series MHS2

## Model/Specifications



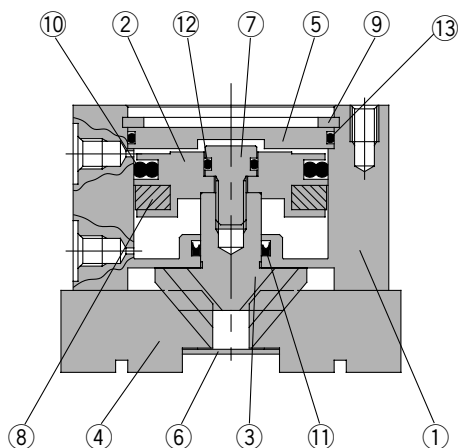
| Model   |               | MHS2-16D      | MHS2-20D | MHS2-25D | MHS2-32D   | MHS2-40D | MHS2-50D | MHS2-63D |
|---|---------------|---------------|----------|----------|------------|----------|----------|----------|
| Bore size (mm)  |               | 16            | 20       | 25       | 32         | 40       | 50       | 63       |
| Fluid   |               | Air           |          |          |            |          |          |          |
| Operating pressure (MPa)                                      |               | 0.2 to 0.6    |          |          | 0.1 to 0.6 |          |          |          |
| Ambient and fluid temperature (°C)                            |               | −10 to 60     |          |          |            |          |          |          |
| Repeatability (mm)  |               | ±0.01         |          |          |            |          |          |          |
| Max. operating frequency (c.p.m.)                             |               | 120           |          |          | 60         |          |          |          |
| Lubrication   |               | Not required  |          |          |            |          |          |          |
| Action  |               | Double acting |          |          |            |          |          |          |
| Effective gripping force (N) at 0.5 MPa <small>(Note)</small> | External grip | 21            | 37       | 63       | 111        | 177      | 280      | 502      |
|   | Internal grip | 23            | 42       | 71       | 123        | 195      | 306      | 537      |
| Opening/Closing stroke (Both sides) (mm)                      |               | 4             | 4        | 6        | 8          | 8        | 12       | 16       |
| Weight (g)  |               | 58            | 96       | 134      | 265        | 345      | 515      | 952      |

Note) Values for ø16 to ø25 are with gripping point L = 20 mm, and for ø32 to ø63 with gripping point L = 30 mm.

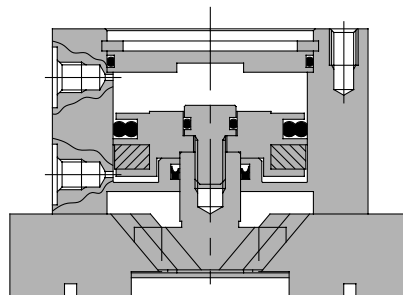
Refer to "Effective Gripping Force" data on pages 12-7-8 through 12-7-9 for the gripping force at each gripping position.

## Construction

Closed condition



Open condition



## Component Parts

| No. | Description | Material        | Note                            |
|-----|-------------|-----------------|---------------------------------|
| ①   | Body        | Aluminum alloy  | Hard anodized                   |
| ②   | Piston      | Aluminum alloy  | Hard anodized                   |
| ③   | Cam         | Carbon steel    | Heat treated, Specially treated |
| ④   | Finger      | Carbon steel    | Heat treated, Specially treated |
| ⑤   | Cap         | Aluminum alloy  | Hard anodized                   |
| ⑥   | End plate   | Stainless steel |                                 |
| ⑦   | Piston bolt | Stainless steel |                                 |

| No. | Description      | Material         | Note          |
|-----|------------------|------------------|---------------|
| ⑧   | Rubber magnet    | Synthetic rubber |               |
| ⑨   | Type C snap ring | Carbon steel     | Nickel plated |
| ⑩   | Piston seal      | NBR              |               |
| ⑪   | Rod seal         | NBR              |               |
| ⑫   | Gasket           | NBR              |               |
| ⑬   | Gasket           | NBR              |               |

## Replacement Parts

| Description     | MHS2-16D  | MHS2-20D  | MHS2-25D  | MHS2-32D  | MHS2-40D  | MHS2-50D | MHS2-63D  | Main parts |
|-----------------|-----------|-----------|-----------|-----------|-----------|----------|-----------|------------|
| Seal kit        | MHS16-PS  | MHS20-PS  | MHS25-PS  | MHS32-PS  | MHS40-PS  | MHS50-PS | MHS63-PS  | ⑩⑪⑫⑬       |
| Finger          | P3316004  | P3346104  | P3316204  | P3316304  | P3316404  | P3316504 | P3316604  | ④          |
| Cam             | P3316023  | P3316123  | P3316223  | P3316323  | P3316423  | P3316523 | P3316623  | ③          |
| Piston assembly | MHS-A1601 | MHS-A2001 | MHS-A2501 | MHS-A3201 | MHS-A4001 | MHS-5001 | MHS-A6301 | ②⑦⑧        |

\* Order 2 pieces of fingers for one unit.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

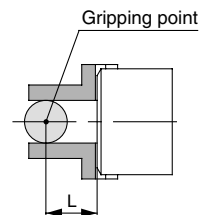
D-

20-

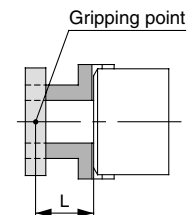
# Series MHS2

## Gripping Point

- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive off set load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.



External grip

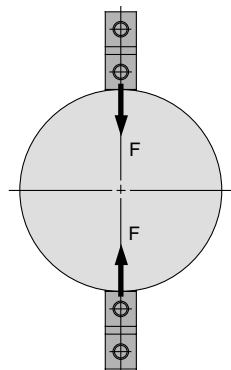


Internal grip

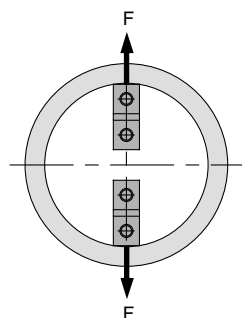
L: Gripping point distance

## Effective Gripping Force

- The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



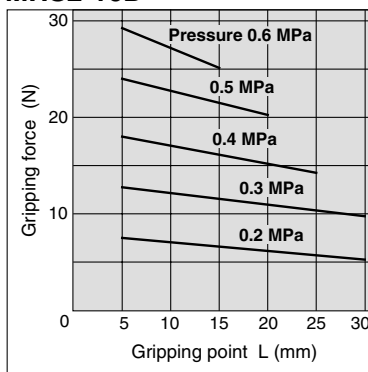
External grip



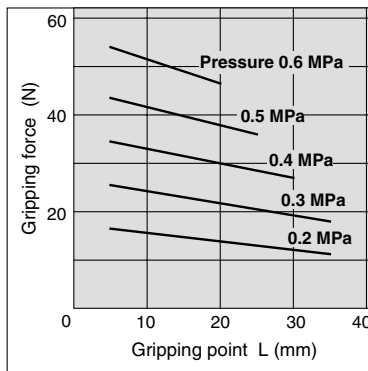
Internal grip

### External Grip

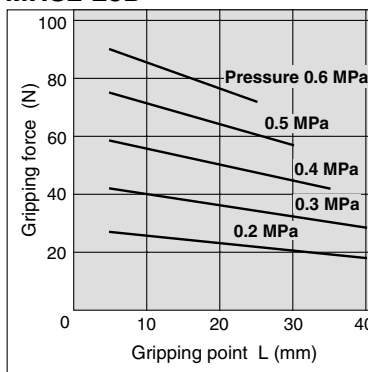
#### MHS2-16D



#### MHS2-20D

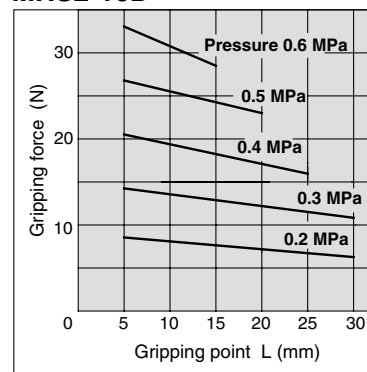


#### MHS2-25D

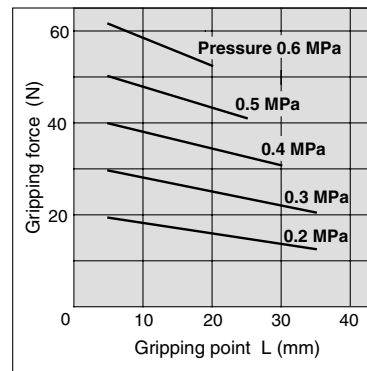


### Internal Grip

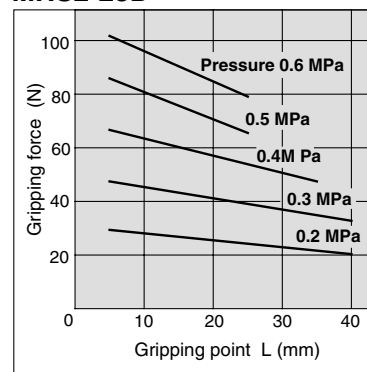
#### MHS2-16D



#### MHS2-20D



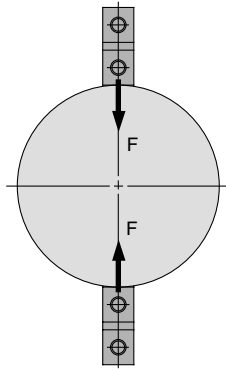
#### MHS2-25D



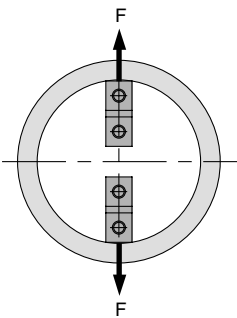
# 2 Finger Parallel Style Air Gripper Series MHS2

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



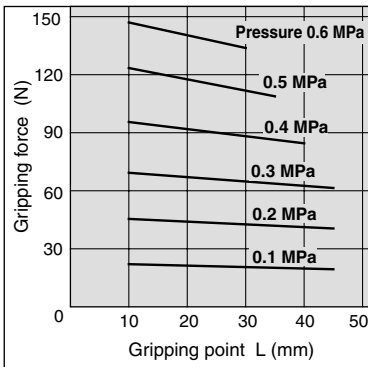
External grip



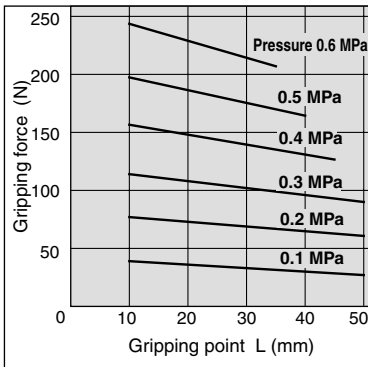
Internal grip

### External Grip

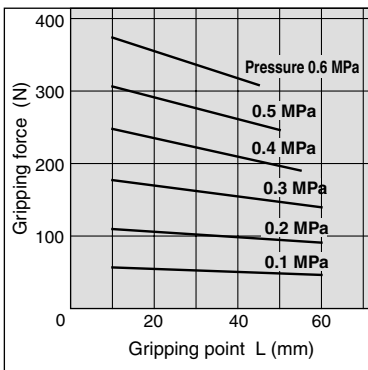
MHS2-32D



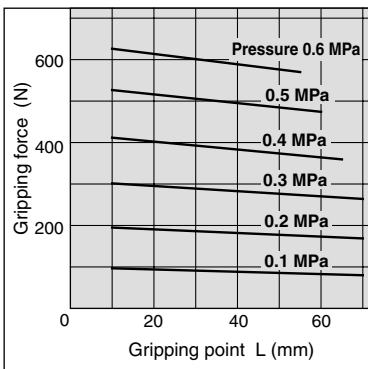
MHS2-40D



MHS2-50D

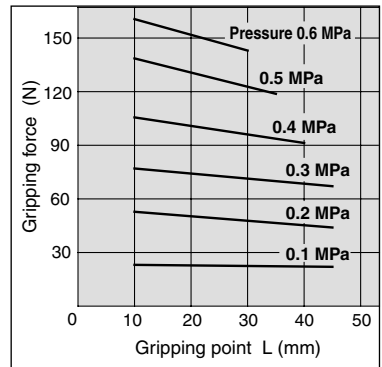


MHS2-63D

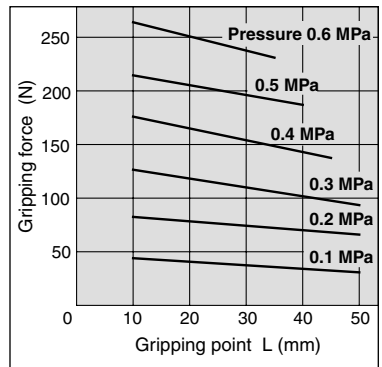


### Internal Grip

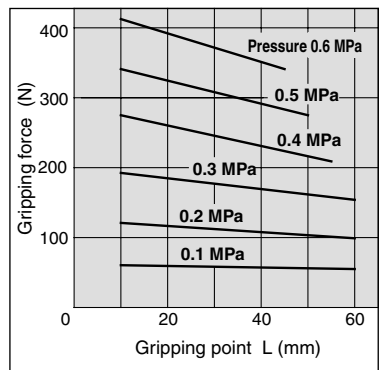
MHS2-32D



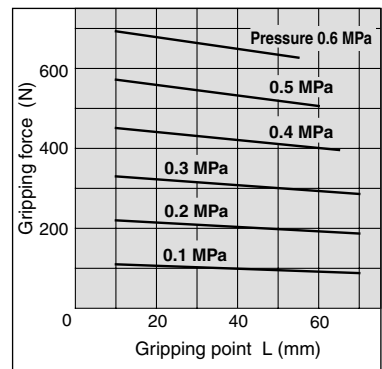
MHS2-40D



MHS2-50D



MHS2-63D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

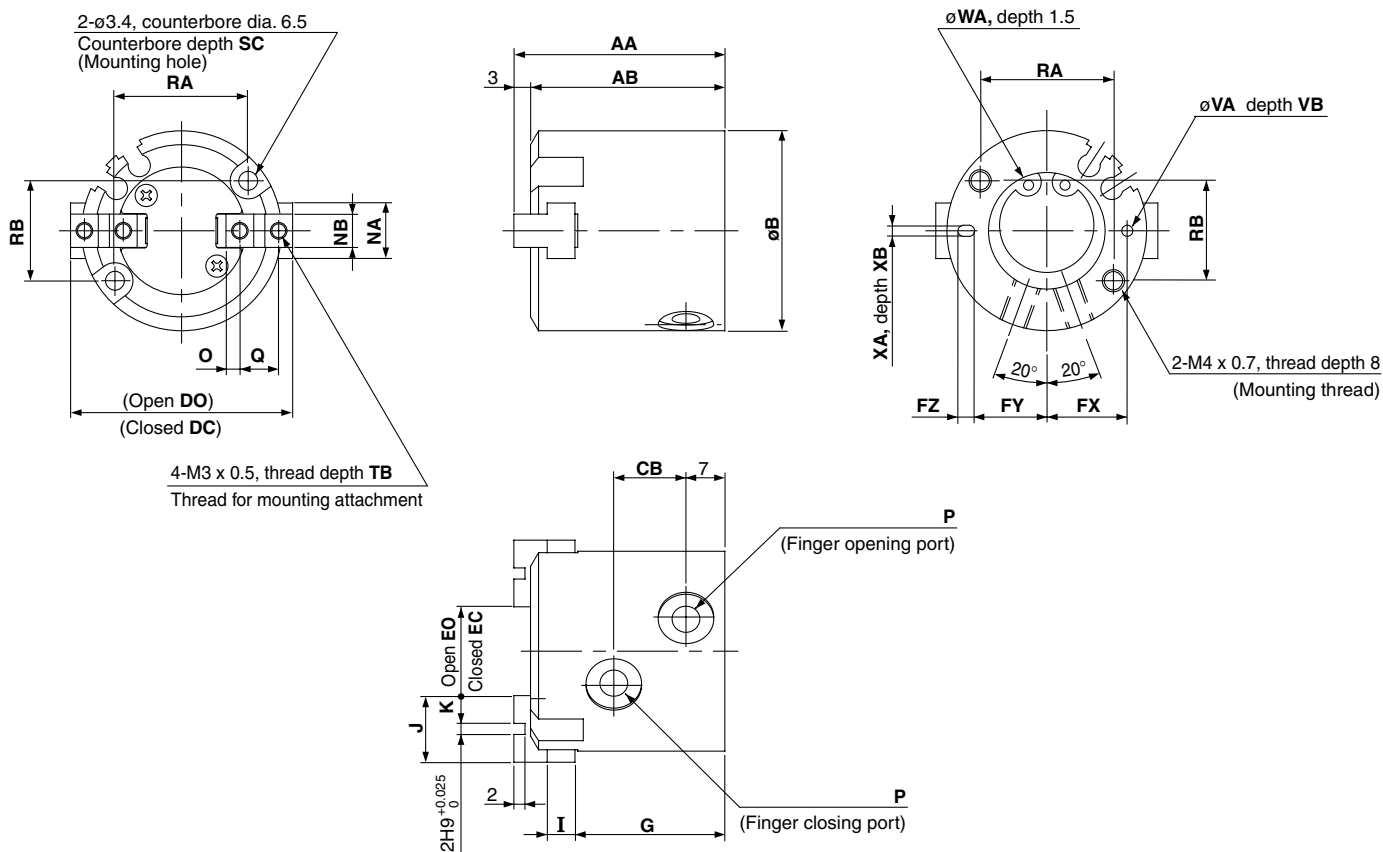
20-



# Series MHS2

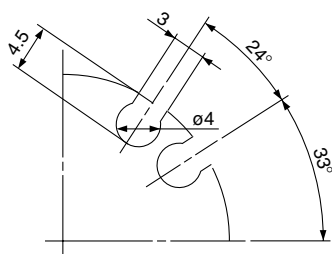
## Dimensions

### MHS2-16D to 25D

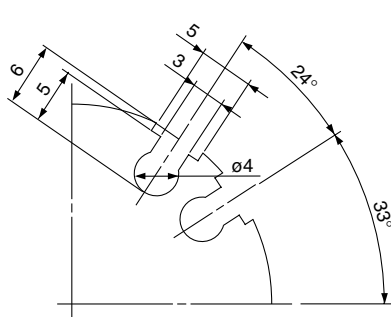


### Auto switch mounting groove dimensions (2 locations)

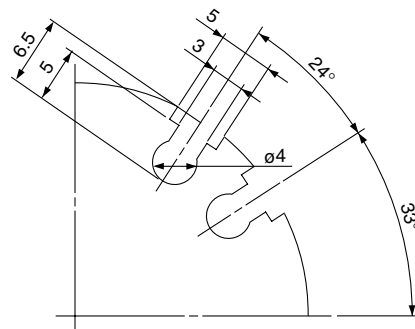
MHS2-16D



MHS2-20D



MHS2-25D



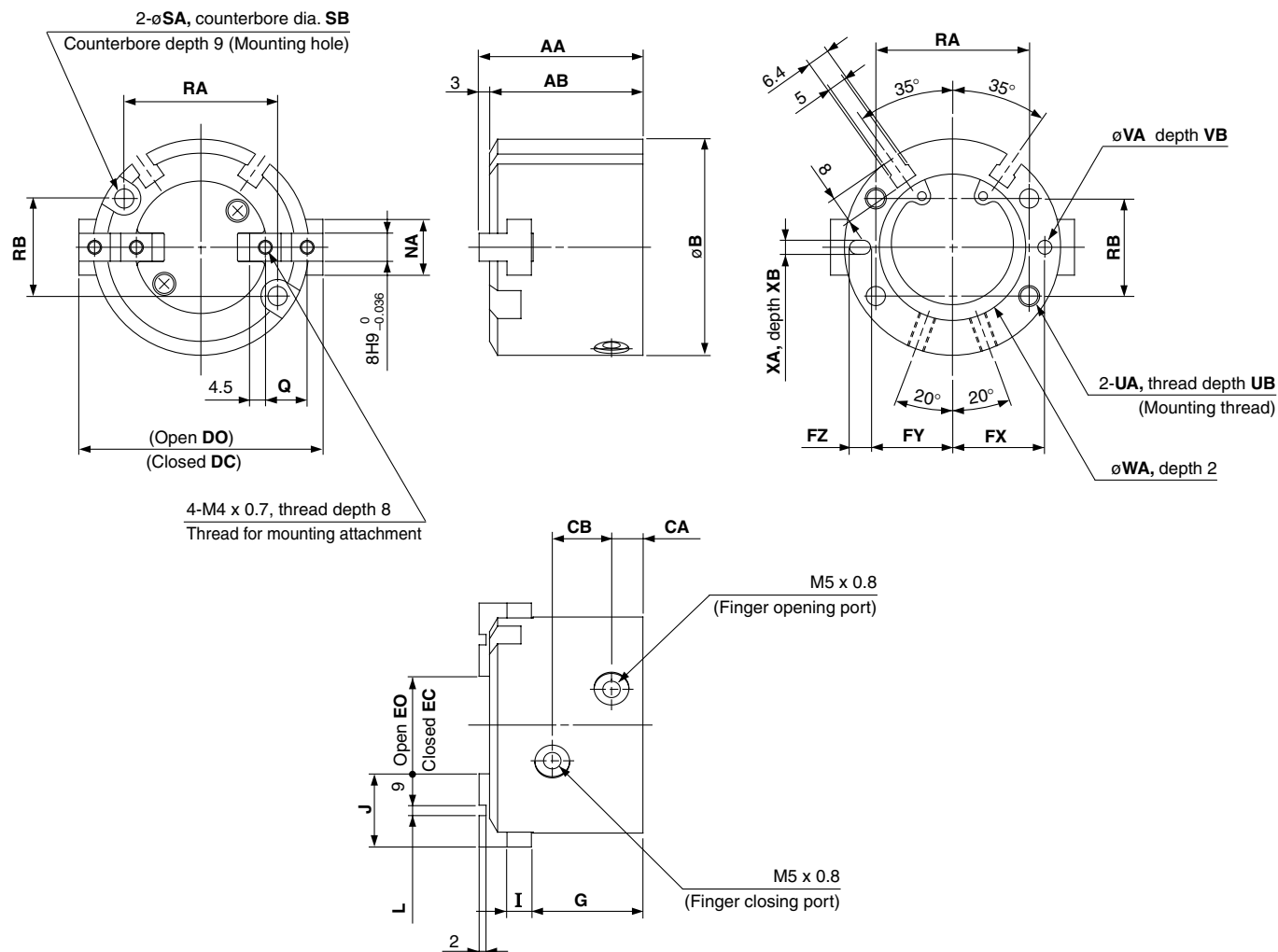
| Model    | AA | AB | B  | CB | DC | DO | EC | EO | FX   | FY   | FZ | G  | I | J  | K | NA | NB                | O   | P        | Q |
|----------|----|----|----|----|----|----|----|----|------|------|----|----|---|----|---|----|-------------------|-----|----------|---|
| MHS2-16D | 35 | 32 | 30 | 11 | 30 | 34 | 10 | 14 | 12.5 | 11   | 3  | 25 | 4 | 10 | 4 | 8  | 5h9 $^{+0.030}_0$ | 2   | M3 x 0.5 | 6 |
| MHS2-20D | 38 | 35 | 36 | 13 | 36 | 40 | 12 | 16 | 14.5 | 13   | 3  | 27 | 5 | 12 | 5 | 10 | 6h9 $^{+0.030}_0$ | 2.5 | M5 x 0.8 | 7 |
| MHS2-25D | 40 | 37 | 42 | 15 | 42 | 48 | 14 | 20 | 17   | 14.5 | 5  | 28 | 5 | 14 | 6 | 12 | 6h9 $^{+0.030}_0$ | 3   | M5 x 0.8 | 8 |

| Model    | RA | RB | SC  | TB | VA                | VB | WA                 | XA                | XB |
|----------|----|----|-----|----|-------------------|----|--------------------|-------------------|----|
| MHS2-16D | 18 | 16 | 8   | 5  | 2H9 $^{+0.025}_0$ | 2  | 17H9 $^{+0.043}_0$ | 2H9 $^{+0.025}_0$ | 2  |
| MHS2-20D | 24 | 18 | 9.5 | 6  | 2H9 $^{+0.025}_0$ | 2  | 21H9 $^{+0.052}_0$ | 2H9 $^{+0.025}_0$ | 2  |
| MHS2-25D | 26 | 22 | 10  | 6  | 3H9 $^{+0.025}_0$ | 3  | 26H9 $^{+0.052}_0$ | 3H9 $^{+0.025}_0$ | 3  |

# 2 Finger Parallel Style Air Gripper Series MHS2

## MHS2-32D, 40D



(mm)

| Model    | AA | AB | B  | CA | CB | DC | DO | EC | EO | FX   | FY   | FZ | G    | I | J  | L                                  | NA | Q  | RA | RB | SA  |
|----------|----|----|----|----|----|----|----|----|----|------|------|----|------|---|----|------------------------------------|----|----|----|----|-----|
| MHS2-32D | 44 | 41 | 56 | 8  | 16 | 56 | 64 | 16 | 24 | 23   | 20.5 | 5  | 30.5 | 6 | 20 | 2H9 <sup>+0.025</sup> <sub>0</sub> | 14 | 11 | 38 | 25 | 4.5 |
| MHS2-40D | 47 | 44 | 62 | 9  | 17 | 62 | 70 | 20 | 28 | 26.5 | 23.5 | 6  | 32   | 7 | 21 | 3H9 <sup>+0.025</sup> <sub>0</sub> | 16 | 12 | 44 | 28 | 5.5 |

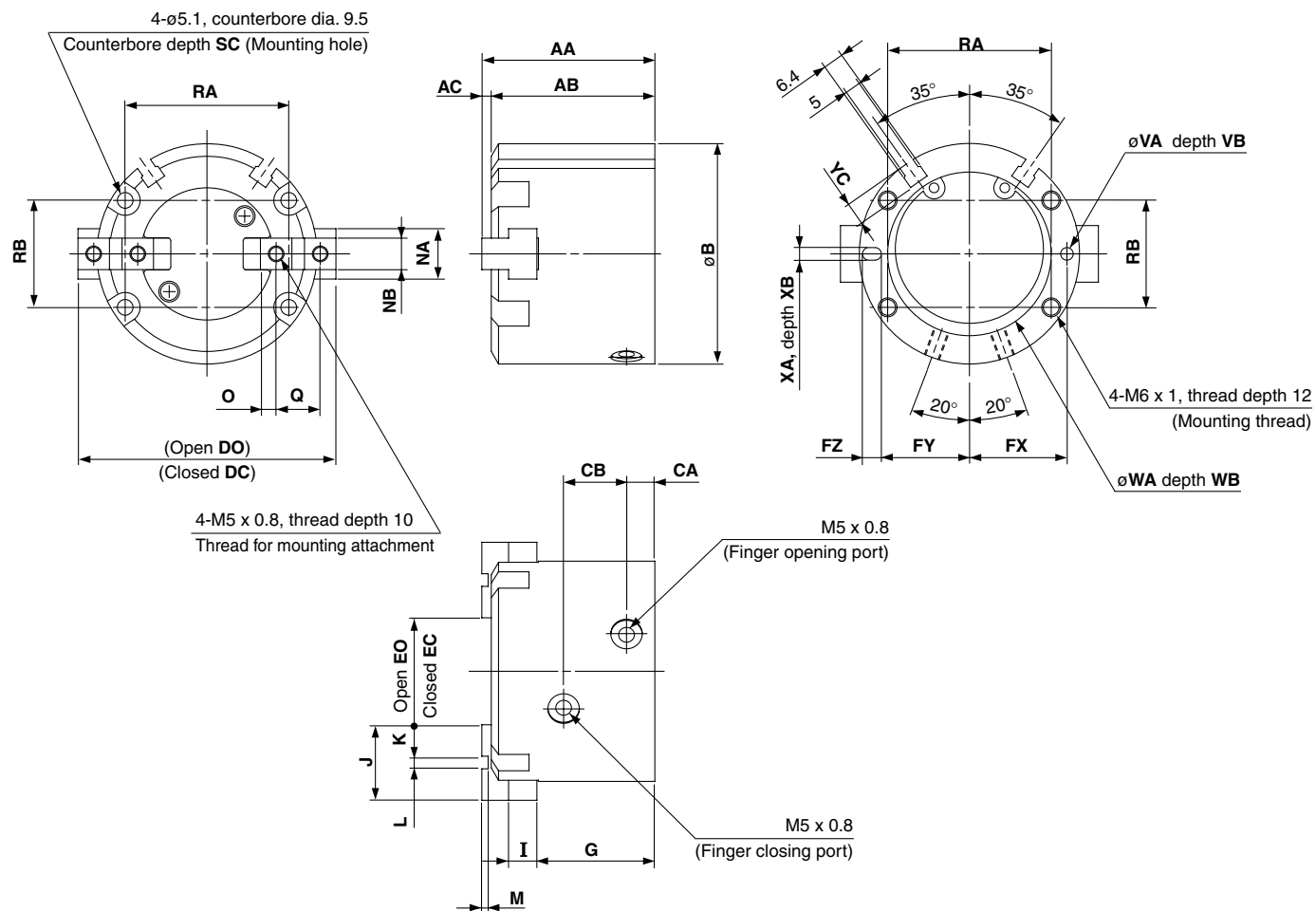
  

| Model    | SB  | UA       | UB | VA                                 | VB | WA                                  | XA                                 | XB |
|----------|-----|----------|----|------------------------------------|----|-------------------------------------|------------------------------------|----|
| MHS2-32D | 8   | M5 x 0.8 | 10 | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  | 34H9 <sup>+0.062</sup> <sub>0</sub> | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  |
| MHS2-40D | 9.5 | M6 x 1   | 12 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 42H9 <sup>+0.062</sup> <sub>0</sub> | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  |

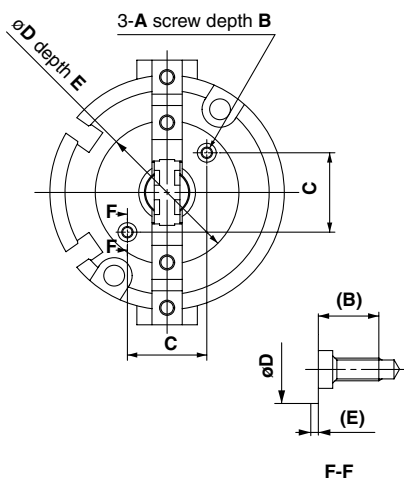
# Series MHS2

## Dimensions

### MHS2-50D, 63D



### Series MHS2 Detailed dimensions of mounting portion of end plate



| Model    | A        | B   | C  | $\phi D$ | E   |
|----------|----------|-----|----|----------|-----|
| MHS2-16D | M2 x 0.4 | 5.5 | 11 | 21       | 0.5 |
| MHS2-20D |          | 5.4 | 13 | 24       | 0.6 |
| MHS2-25D |          |     | 15 | 27       |     |
| MHS2-32D |          | 5.2 | 18 | 32       | 0.8 |
| MHS2-40D | M3 x 0.5 | 9   | 21 | 38       | 1   |
| MHS2-50D |          |     | 24 | 42       |     |
| MHS2-63D |          |     | 32 | 54       |     |

|          |     |    |    |    |    |                                    |    |                                     |     |                                    |    |      |    |      |    |    |    |                                    |   |    | (mm)                                |  |
|----------|-----|----|----|----|----|------------------------------------|----|-------------------------------------|-----|------------------------------------|----|------|----|------|----|----|----|------------------------------------|---|----|-------------------------------------|--|
| Model    | AA  | AB | AC | B  | CA | CB                                 | DC | DO                                  | EC  | EO                                 | FX | FY   | FZ | G    | I  | J  | K  | L                                  | M | NA | NB                                  |  |
| MHS2-50D | 55  | 52 | 3  | 70 | 9  | 20                                 | 70 | 82                                  | 22  | 34                                 | 31 | 28   | 6  | 37.5 | 9  | 24 | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 2 | 18 | 10H9 <sup>0</sup> <sub>-0.036</sub> |  |
| MHS2-63D | 66  | 62 | 4  | 86 | 12 | 22                                 | 86 | 102                                 | 30  | 46                                 | 38 | 34.5 | 7  | 44   | 11 | 28 | 11 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 3 | 24 | 12h9 <sup>0</sup> <sub>-0.043</sub> |  |
| Model    | O   | Q  | RA | RB | SC | VA                                 | VB | WA                                  | WB  | XA                                 | XB | YC   |    |      |    |    |    |                                    |   |    |                                     |  |
| MHS2-50D | 5   | 14 | 52 | 34 | 12 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 52H9 <sup>+0.074</sup> <sub>0</sub> | 2   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 7    |    |      |    |    |    |                                    |   |    |                                     |  |
| MHS2-63D | 5.5 | 17 | 66 | 38 | 14 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 65H9 <sup>+0.074</sup> <sub>0</sub> | 2.5 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 7.5  |    |      |    |    |    |                                    |   |    |                                     |  |

# 3 Finger Parallel Style Air Gripper

## Series MHS3

Size: 16, 20, 25, 32, 40, 50, 63, 80, 100, 125

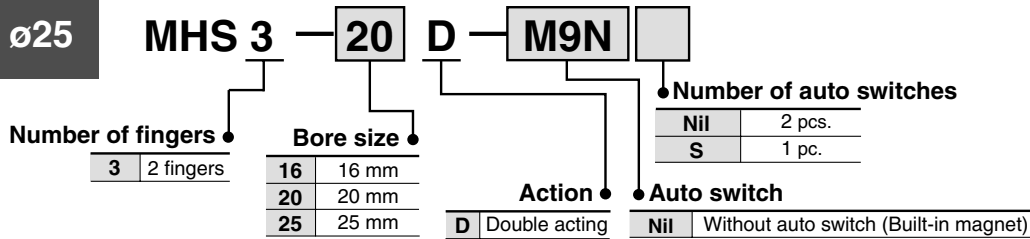


Refer to page 12-13-25 for solid state switch with pre-wire connector.

### How to Order

#### Bore size

ø16 to ø25



**Applicable Auto Switch**/Refer to page 12-13-1 for further information on auto switches.

| Type               | Special function | Electrical entry | Indicator light | Wiring (Output)                      | Load voltage |      | Auto switch model |      | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |
|--------------------|------------------|------------------|-----------------|--------------------------------------|--------------|------|-------------------|------|-----------------------|-------|-------|--------------------------|-----------------|------------|--------------------|
|                    |                  |                  |                 |                                      | DC           | AC   | Electrical entry  |      | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            |                    |
| Solid state switch | —                | Grommet          | Yes             | 3-wire (NPN)                         | 24 V         | 5 V  | M9NV              | M9N  | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                  |                  |                 | 3-wire (PNP)                         |              | 12 V | M9PV              | M9P  | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                  |                  |                 | 2-wire                               |              | 12 V | M9BV              | M9B  | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                  |                  |                 | Water resistant (2-color indication) |              | —    | —                 | F9BA | —                     | ●     | ○     |                          |                 |            | ○                  |

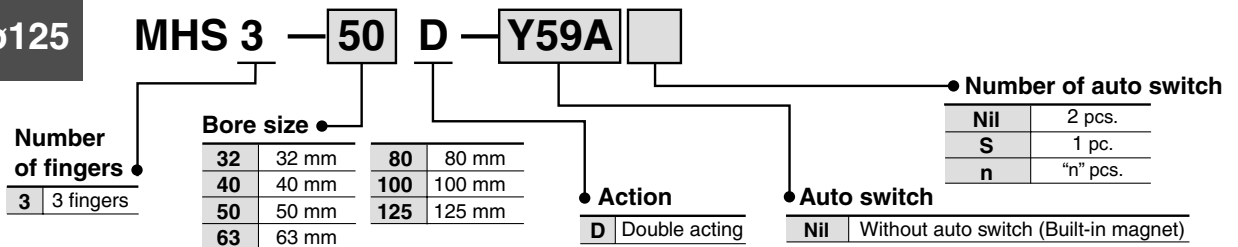
\* Lead wire length symbols: 0.5 m ... Nil (Example) M9B  
3 m ... L (Example) M9BL  
5 m ... Z (Example) M9BZ

Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

#### Bore size

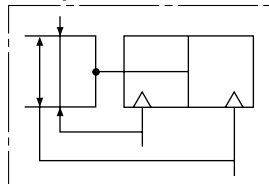
ø32 to ø125



**Applicable Auto Switch**/Refer to page 12-13-1 for further information on auto switches.

| Type               | Special function               | Electrical entry | Indicator light | Wiring (Output)                      | Load voltage |           | Auto switch model |      | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |
|--------------------|--------------------------------|------------------|-----------------|--------------------------------------|--------------|-----------|-------------------|------|-----------------------|-------|-------|--------------------------|-----------------|------------|--------------------|
|                    |                                |                  |                 |                                      | DC           | AC        | Electrical entry  |      | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            |                    |
| Solid state switch | —                              | Grommet          | Yes             | 3-wire (NPN)                         | 24 V         | 5 V, 12 V | Y69A              | Y59A | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                                |                  |                 | 3-wire (PNP)                         |              | 12 V      | Y7PV              | Y7P  | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                |                  |                 | 2-wire                               |              | 12 V      | Y69B              | Y59B | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                |                  |                 | 3-wire (NPN)                         |              | 5 V, 12 V | Y7NVV             | Y7NW | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    | Diagnosis (2-color indication) | Grommet          | Yes             | 3-wire (PNP)                         |              | 5 V, 12 V | Y7PWV             | Y7PW | ●                     | ●     | ○     |                          | IC circuit      | Relay, PLC | ○                  |
|                    |                                |                  |                 | 2-wire                               |              | 12 V      | Y7BWV             | Y7BW | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                |                  |                 | Water resistant (2-color indication) |              | —         | —                 | Y7BA | —                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                |                  |                 | —                                    |              | —         | —                 | —    | —                     | —     | —     |                          |                 |            | ○                  |

#### JIS Symbol



\* Lead wire length symbols: 0.5 m ... Nil (Example) Y59B  
3 m ... L (Example) Y59BL  
5 m ... Z (Example) Y59BZ

\* Auto switches marked with a "○" symbol are produced upon receipt of order. Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.



# Series MHS3

## Models/Specifications



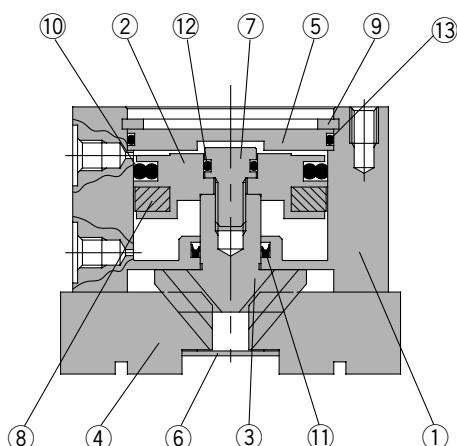
| Model  |               | MHS3-16D      | MHS3-20D | MHS3-25D | MHS3-32D   | MHS3-40D | MHS3-50D | MHS3-63D | MHS3-80D | MHS3-100D | MHS3-125D |
|--|---------------|---------------|----------|----------|------------|----------|----------|----------|----------|-----------|-----------|
| Cylinder bore size (mm)                                |               | 16            | 20       | 25       | 32         | 40       | 50       | 63       | 80       | 100       | 125       |
| Fluid  |               | Air           |          |          |            |          |          |          |          |           |           |
| Operating pressure (MPa)                               |               | 0.2 to 0.6    |          |          | 0.1 to 0.6 |          |          |          |          |           |           |
| Ambient and fluid temperature (°C)                     |               | −10 to 60     |          |          |            |          |          |          |          |           |           |
| Repeatability (mm)                                     |               | ±0.01         |          |          |            |          |          |          |          |           |           |
| Max. operating frequency (c.p.m.)                      |               | 120           |          |          | 60         |          |          |          | 30       |           |           |
| Lubrication  |               | Not required  |          |          |            |          |          |          |          |           |           |
| Action   |               | Double acting |          |          |            |          |          |          |          |           |           |
| Effective gripping force (N) at 0.5 MPa <sup>(1)</sup> | External grip | 14            | 25       | 42       | 74         | 118      | 187      | 335      | 500      | 750       | 1,270     |
|  | Internal grip | 16            | 28       | 47       | 82         | 130      | 204      | 359      | 525      | 780       | 1,320     |
| Opening/Closing stroke (mm) (dia.)                     |               | 4             | 4        | 6        | 8          | 8        | 12       | 16       | 20       | 24        | 32        |
| Weight (g)   |               | 60            | 100      | 140      | 237        | 351      | 541      | 992      | 1,850    | 3,340     | 6,460     |

Note 1) Values for  $\phi 16$  to  $\phi 25$  are with gripping point L = 20 mm, for  $\phi 32$  to  $\phi 63$  with gripping point L = 30 mm, and for  $\phi 80$  to  $\phi 125$  with gripping point L = 50 mm. Refer to "Effective Gripping Force" data on pages 12-7-15 through 12-7-17 for the gripping force at each gripping position.

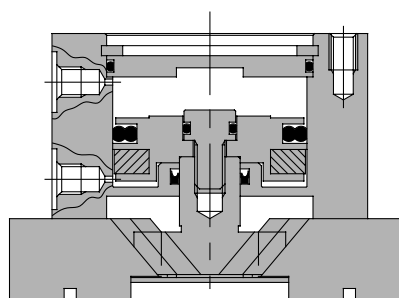
Note 2) Open and closed diameter values apply for external gripping of workpieces.

## Construction

Closed condition



Open condition



## Component Parts

| No. | Description | Material        | Note                            |
|-----|-------------|-----------------|---------------------------------|
| ①   | Body        | Aluminum alloy  | Hard anodized                   |
| ②   | Piston      | Aluminum alloy  | Hard anodized                   |
| ③   | Cam         | Carbon steel    | Heat treated, Specially treated |
| ④   | Finger      | Carbon steel    | Heat treated, Specially treated |
| ⑤   | Cap         | Aluminum alloy  | Hard anodized                   |
| ⑥   | End plate   | Stainless steel |                                 |
| ⑦   | Piston bolt | Stainless steel |                                 |

| No. | Description      | Material         | Note          |
|-----|------------------|------------------|---------------|
| ⑧   | Rubber magnet    | Synthetic rubber |               |
| ⑨   | Type C snap ring | Carbon steel     | Nickel plated |
| ⑩   | Piston seal      | NBR              |               |
| ⑪   | Rod seal         | NBR              |               |
| ⑫   | Gasket           | NBR              |               |
| ⑬   | Gasket           | NBR              |               |

## Replacement Parts

| Description     | MHS3-16D  | MHS3-20D  | MHS3-25D  | MHS3-32D  | MHS3-40D  | Main parts |
|-----------------|-----------|-----------|-----------|-----------|-----------|------------|
| Seal kit        | MHS16-PS  | MHS20-PS  | MHS25-PS  | MHS32-PS  | MHS40-PS  | ⑩⑪⑫⑬       |
| Finger          | P3316004  | P3346104  | P3316204  | P3316304  | P3316404  | ④          |
| Cam             | P3316003  | P3316103  | P3316203  | P3316303  | P3316403  | ③          |
| Piston assembly | MHS-A1601 | MHS-A2001 | MHS-A2501 | MHS-A3201 | MHS-A4001 | ②⑦⑧        |

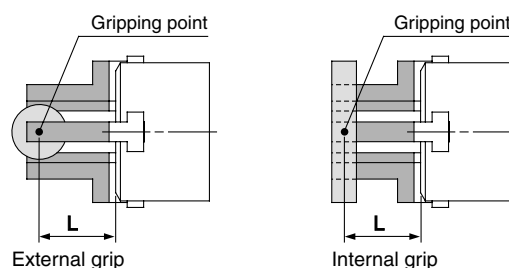
| Description     | MHS3-50D  | MHS3-63D  | MHS3-80D  | MHS3-100D  | MHS3-125D  | Main parts |
|-----------------|-----------|-----------|-----------|------------|------------|------------|
| Seal kit        | MHS50-PS  | MHS63-PS  | MHS80-PS  | MHS100-PS  | MHS125-PS  | ⑩⑪⑫⑬       |
| Finger          | P3316504  | P3316604  | P3316704  | P3316804   | P3316904   | ④          |
| Cam             | P3316503  | P3316603  | P3316703  | P3316803   | P3316903   | ③          |
| Piston assembly | MHS-A5001 | MHS-A6301 | MHS-A8001 | MHS-A10001 | MHS-A12501 | ②⑦⑧        |

\* Order 3 pieces of fingers for one unit.

# 3 Finger Parallel Style Air Gripper Series MHS3

## Gripping Point

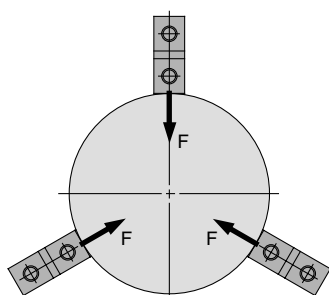
- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.



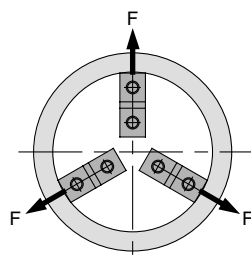
L: Gripping point distance

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



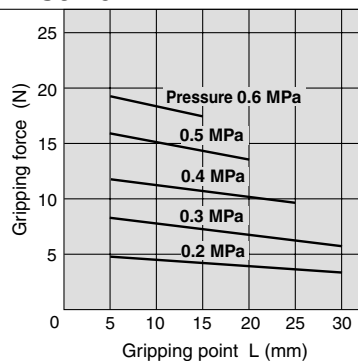
External grip



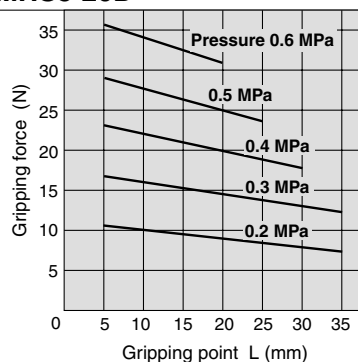
Internal grip

### External Gripping Force

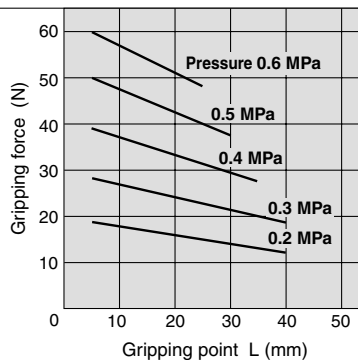
#### MHS3-16D



#### MHS3-20D

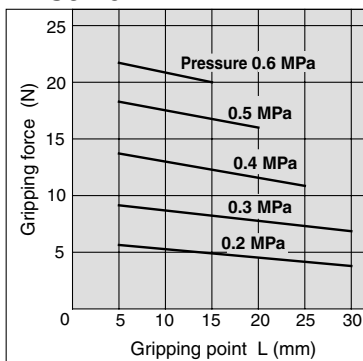


#### MHS3-25D

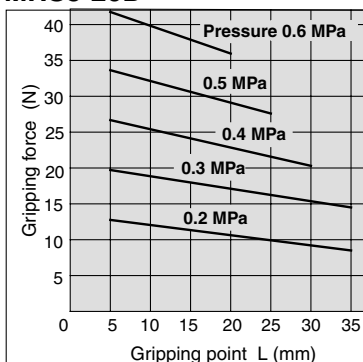


### Internal Gripping Force

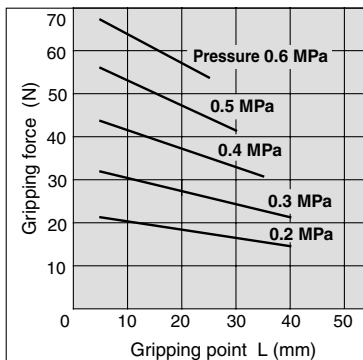
#### MHS3-16D



#### MHS3-20D



#### MHS3-25D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

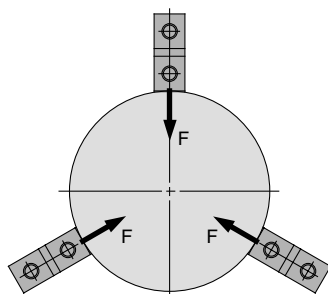
D-

20-

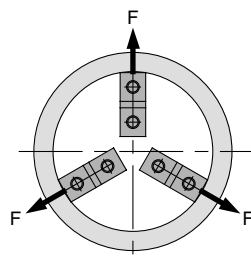
# Series MHS3

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



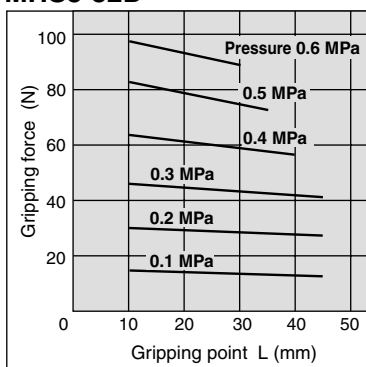
**External grip**



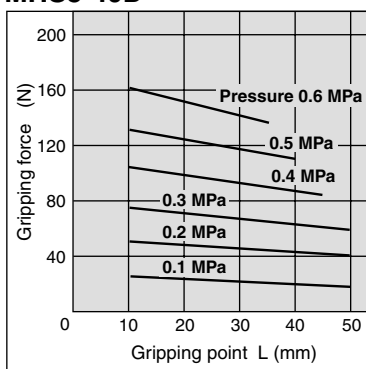
**Internal grip**

## External Gripping Force

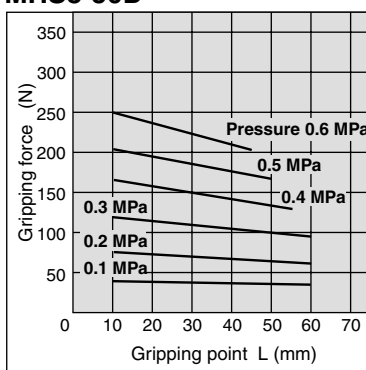
### MHS3-32D



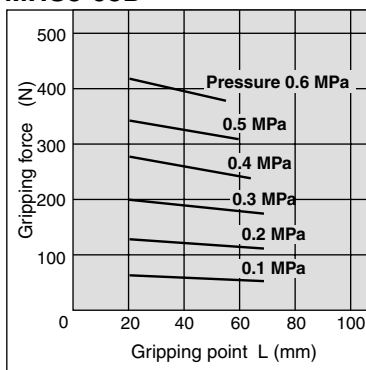
### MHS3-40D



### MHS3-50D

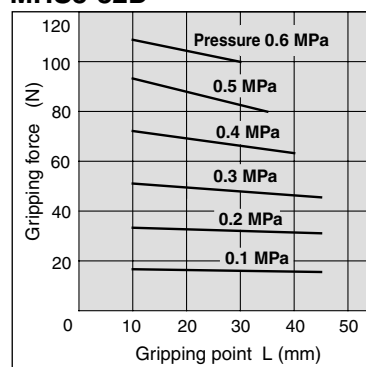


### MHS3-63D

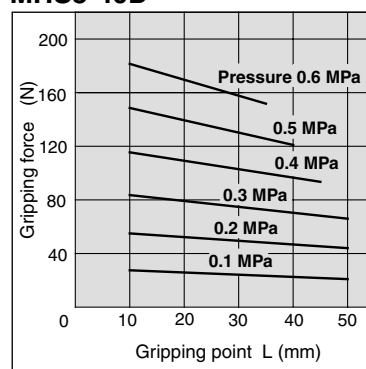


## Internal Gripping Force

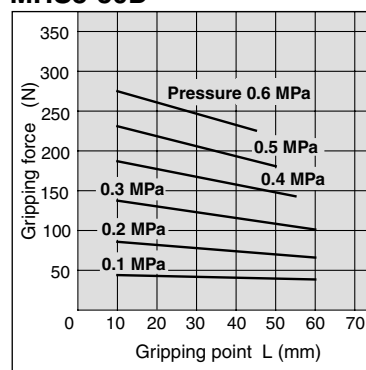
### MHS3-32D



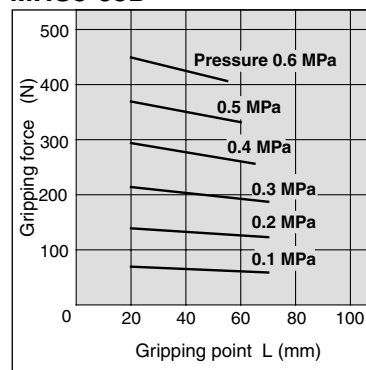
### MHS3-40D



### MHS3-50D



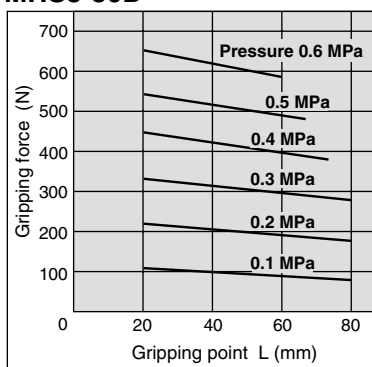
### MHS3-63D



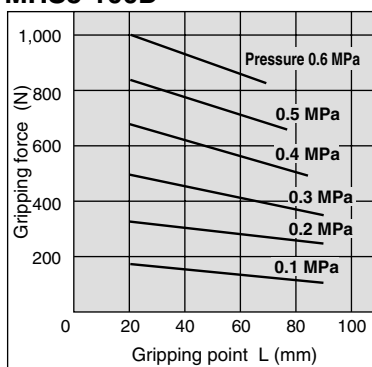
# 3 Finger Parallel Style Air Gripper Series MHS3

## External Gripping Force

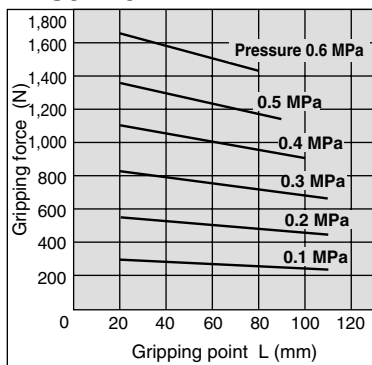
### MHS3-80D



### MHS3-100D

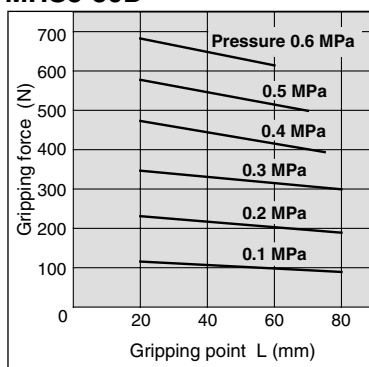


### MHS3-125D

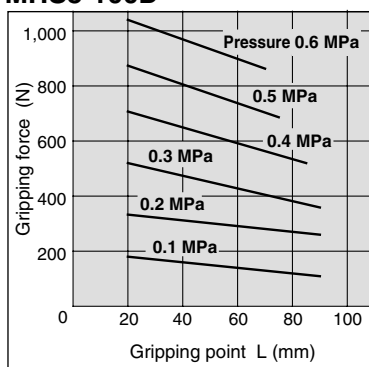


## Internal Gripping Force

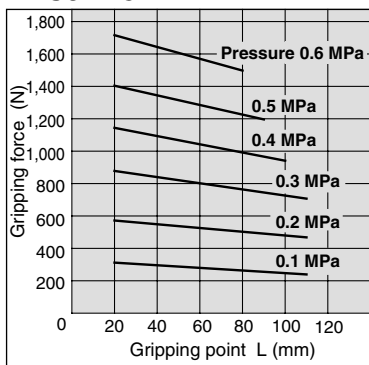
### MHS3-80D



### MHS3-100D



### MHS3-125D



MHZ

MHF

MHL

MHR

MHK

**MHS**

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

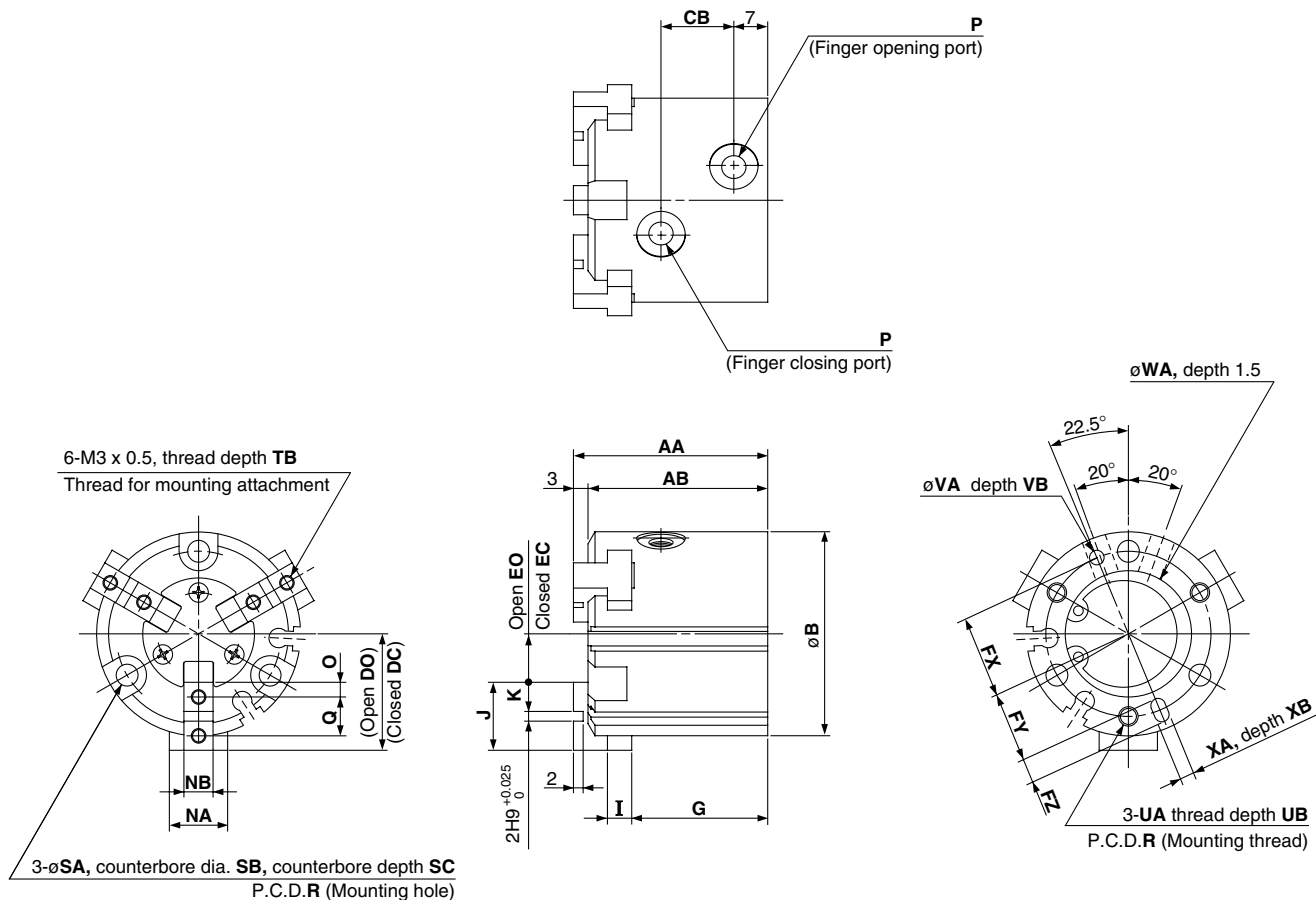
20-



# Series MHS3

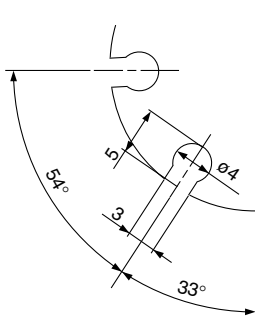
## Dimensions

### MHS3-16D to 25D

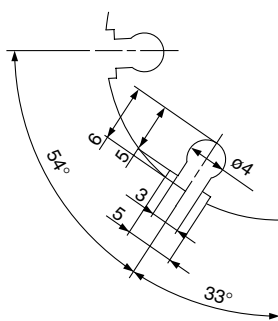


### Auto switch mounting groove dimensions (2 locations)

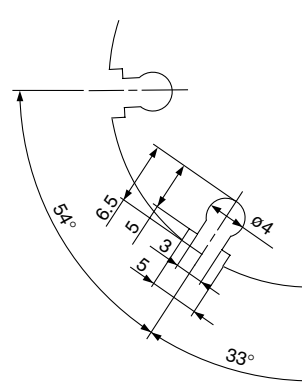
MHS3-16D



MHS3-20D



MHS3-25D

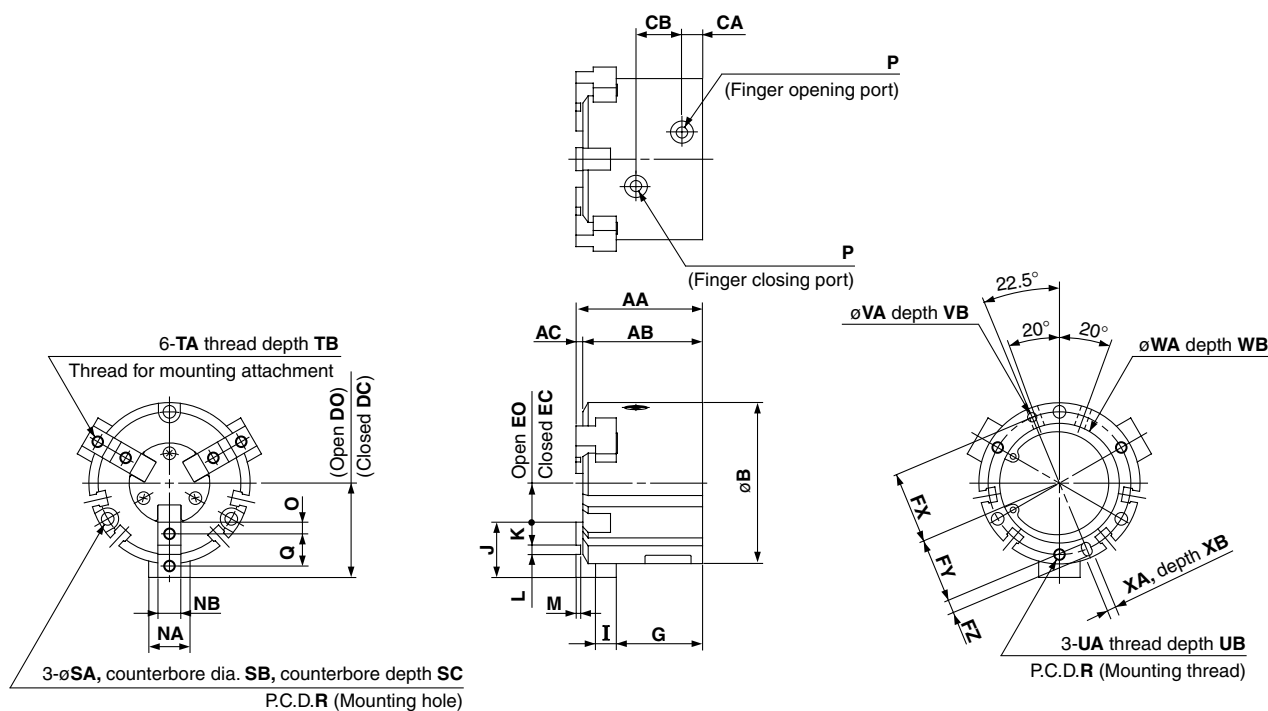


|          |    |    |    |    |    |    |    |    |      |      |    |    |   |    |   |    |                                    |     |          |   | (mm) |
|----------|----|----|----|----|----|----|----|----|------|------|----|----|---|----|---|----|------------------------------------|-----|----------|---|------|
| Model    | AA | AB | B  | CB | DC | DO | EC | EO | FX   | FY   | FZ | G  | I | J  | K | NA | NB                                 | O   | P        | Q | R    |
| MHS3-16D | 35 | 32 | 30 | 11 | 15 | 17 | 5  | 7  | 12.5 | 11   | 3  | 25 | 4 | 10 | 4 | 8  | 5h9 <sup>0</sup> <sub>-0.030</sub> | 2   | M3 x 0.5 | 6 | 25   |
| MHS3-20D | 38 | 35 | 36 | 13 | 18 | 20 | 6  | 8  | 14.5 | 13   | 3  | 27 | 5 | 12 | 5 | 10 | 6h9 <sup>0</sup> <sub>-0.030</sub> | 2.5 | M5 x 0.8 | 7 | 29   |
| MHS3-25D | 40 | 37 | 42 | 15 | 21 | 24 | 7  | 10 | 17   | 14.5 | 5  | 28 | 5 | 14 | 6 | 12 | 6h9 <sup>0</sup> <sub>-0.030</sub> | 3   | M5 x 0.8 | 8 | 34   |

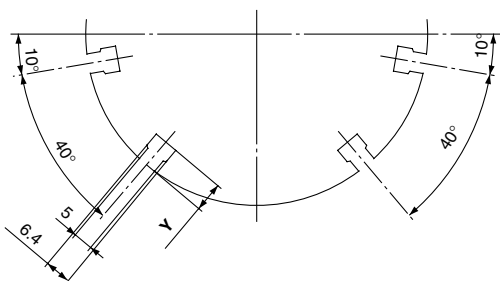
| Model    | SA  | SB  | SC  | TB | UA       | UB  | VA                                 | VB | WA                                  | XA                                 | XB |
|----------|-----|-----|-----|----|----------|-----|------------------------------------|----|-------------------------------------|------------------------------------|----|
| MHS3-16D | 3.4 | 6.5 | 8   | 5  | M3 x 0.5 | 4.5 | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2  | 17H9 <sup>+0.043</sup> <sub>0</sub> | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2  |
| MHS3-20D | 3.4 | 6.5 | 9.5 | 6  | M3 x 0.5 | 6   | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2  | 21H9 <sup>+0.052</sup> <sub>0</sub> | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2  |
| MHS3-25D | 4.5 | 8   | 10  | 6  | M4 x 0.7 | 6   | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  | 26H9 <sup>+0.052</sup> <sub>0</sub> | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  |

# 3 Finger Parallel Style Air Gripper Series MHS3

## MHS3-32D to 80D



## Auto switch mounting groove dimensions (4 locations)

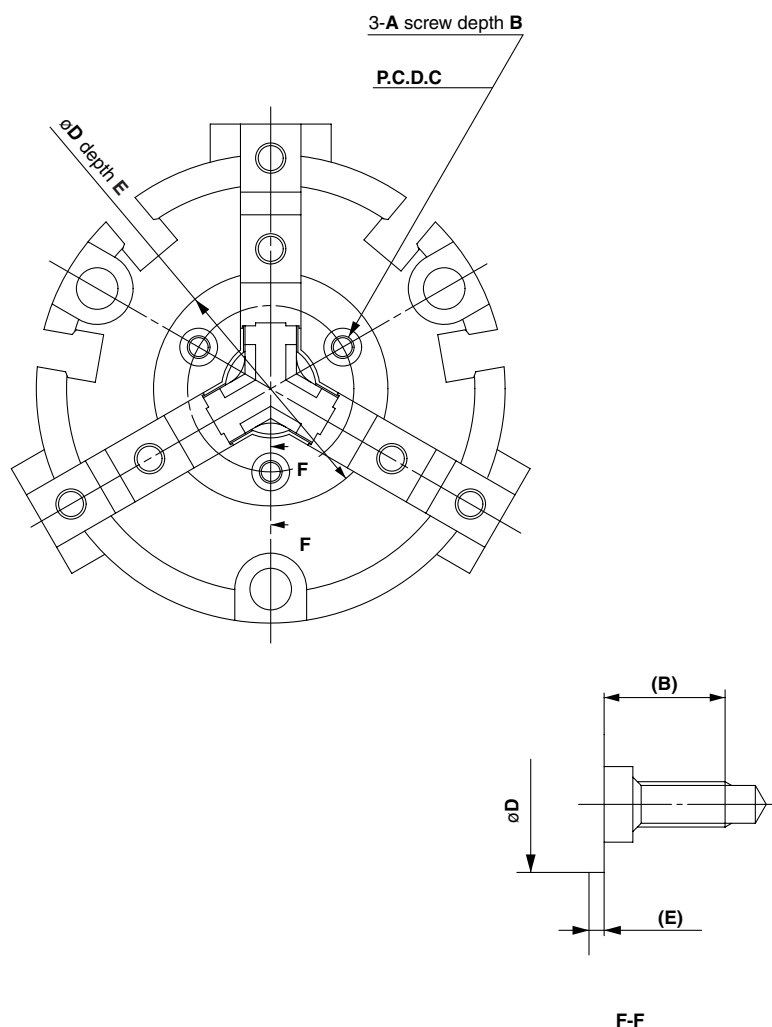


| (mm)     |     |          |    |     |      |     |      |          |      |          |      |                                    |    |                                     |     |                                    |    |                                    |   |    |                                     |
|----------|-----|----------|----|-----|------|-----|------|----------|------|----------|------|------------------------------------|----|-------------------------------------|-----|------------------------------------|----|------------------------------------|---|----|-------------------------------------|
| Model    | AA  | AB       | AC | B   | CA   | CB  | DC   | DO       | EC   | EO       | FX   | FY                                 | FZ | G                                   | I   | J                                  | K  | L                                  | M | NA | NB                                  |
| MHS3-32D | 44  | 41       | 3  | 52  | 8    | 16  | 28   | 32       | 8    | 12       | 22   | 19.5                               | 5  | 30.5                                | 6   | 20                                 | 9  | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 14 | 8h9 <sup>0</sup> <sub>-0.036</sub>  |
| MHS3-40D | 47  | 44       | 3  | 62  | 9    | 17  | 31   | 35       | 10   | 14       | 26.5 | 23.5                               | 6  | 32                                  | 7   | 21                                 | 9  | 3H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 16 | 8h9 <sup>0</sup> <sub>-0.036</sub>  |
| MHS3-50D | 55  | 52       | 3  | 70  | 9    | 20  | 35   | 41       | 11   | 17       | 31   | 28                                 | 6  | 37.5                                | 9   | 24                                 | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 2 | 18 | 10h9 <sup>0</sup> <sub>-0.036</sub> |
| MHS3-63D | 66  | 62       | 4  | 86  | 12   | 22  | 43   | 51       | 15   | 23       | 38   | 34.5                               | 7  | 44                                  | 11  | 28                                 | 11 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 3 | 24 | 12h9 <sup>0</sup> <sub>-0.043</sub> |
| MHS3-80D | 82  | 77       | 5  | 106 | 13.5 | 27  | 53.5 | 63.5     | 21.5 | 31.5     | 47.5 | 43.5                               | 8  | 56                                  | 12  | 32                                 | 12 | 8H9 <sup>+0.036</sup> <sub>0</sub> | 4 | 28 | 14h9 <sup>0</sup> <sub>-0.043</sub> |
| Model    | O   | P        | Q  | R   | SA   | SB  | SC   | TA       | TB   | UA       | UB   | VA                                 | VB | WA                                  | WB  | XA                                 | XB | Y                                  |   |    |                                     |
| MHS3-32D | 4.5 | M5 x 0.8 | 11 | 44  | 4.5  | 8   | 9    | M4 x 0.7 | 8    | M4 x 0.7 | 6    | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  | 34H9 <sup>+0.062</sup> <sub>0</sub> | 2   | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  | 6                                  |   |    |                                     |
| MHS3-40D | 4.5 | M5 x 0.8 | 12 | 53  | 5.5  | 9.5 | 9    | M4 x 0.7 | 8    | M5 x 0.8 | 7.5  | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 42H9 <sup>+0.062</sup> <sub>0</sub> | 2   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 8                                  |   |    |                                     |
| MHS3-50D | 5   | M5 x 0.8 | 14 | 62  | 5.5  | 9.5 | 12   | M5 x 0.8 | 10   | M5 x 0.8 | 10   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 52H9 <sup>+0.074</sup> <sub>0</sub> | 2   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 7                                  |   |    |                                     |
| MHS3-63D | 5.5 | M5 x 0.8 | 17 | 76  | 6.6  | 11  | 14   | M5 x 0.8 | 10   | M6 x 1   | 9    | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 65H9 <sup>+0.074</sup> <sub>0</sub> | 2.5 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 7.5                                |   |    |                                     |
| MHS3-80D | 6   | Rc 1/8   | 20 | 95  | 6.6  | 11  | 19   | M6 x 1   | 12   | M6 x 1   | 12   | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 82H9 <sup>+0.087</sup> <sub>0</sub> | 3   | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 8                                  |   |    |                                     |



# 3 Finger Parallel Style Air Gripper **Series MHS3**

## Series MHS3 Detailed Dimensions of Mounting Portion of End Plate



|            |
|------------|
| MHZ        |
| MHF        |
| MHL        |
| MHR        |
| MHK        |
| <b>MHS</b> |
| MHC        |
| MHT        |
| MHY        |
| MHW        |
| MRHQ       |
| Misc.      |
| D-         |
| 20-        |

| (mm)      |          |     |      |                                     |     |
|-----------|----------|-----|------|-------------------------------------|-----|
| Model     | A        | B   | C    | øD                                  | E   |
| MHS3-16D  | M2 x 0.4 | 5.5 | 12.5 | 18H8 <sup>+0.027</sup> <sub>0</sub> | 0.5 |
| MHS3-20D  |          | 5.4 | 15   | 21H8 <sup>+0.033</sup> <sub>0</sub> | 0.6 |
| MHS3-25D  |          |     | 17   | 23H8 <sup>+0.033</sup> <sub>0</sub> |     |
| MHS3-32D  |          | 5.2 | 21   | 27H8 <sup>+0.033</sup> <sub>0</sub> | 0.8 |
| MHS3-40D  | M3 x 0.5 | 8   | 22   | 31H8 <sup>+0.039</sup> <sub>0</sub> | 1   |
| MHS3-50D  |          |     | 26   | 35H8 <sup>+0.039</sup> <sub>0</sub> |     |
| MHS3-63D  |          |     | 33   | 42H8 <sup>+0.039</sup> <sub>0</sub> |     |
| MHS3-80D  | M4 x 0.7 | 9.5 | 40   | 52H8 <sup>+0.046</sup> <sub>0</sub> | 1.5 |
| MHS3-100D |          |     | 54   | 70H8 <sup>+0.046</sup> <sub>0</sub> |     |
| MHS3-125D |          |     | 62   | 82H8 <sup>+0.054</sup> <sub>0</sub> |     |





# Parallel Style Air Gripper With Dust Cover

## Series *MHSJ3*

Size: 16, 20, 25, 32, 40, 50, 63, 80

### How to Order

With dust cover

**MHSJ 3 — 32 D** **M9N**

**Number of fingers**  
3 3 fingers

**Bore size**

|    |       |    |       |
|----|-------|----|-------|
| 16 | 16 mm | 40 | 40 mm |
| 20 | 20 mm | 50 | 50 mm |
| 25 | 25 mm | 63 | 63 mm |
| 32 | 32 mm | 80 | 80 mm |

**Action**  
D Double acting

**Dust cover type**

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

**Number of auto switches**

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

**Auto switch**

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

**Applicable Auto Switch**/Refer to page 12-13-1 for further information on auto switches

| Type               | Special function                           | Electrical entry | Indicator light | Wiring (Output) | Load voltage |       | Auto switch model |         | Lead wire length (m)* |      |      | Flexible lead wire (-61) | Applicable load | Applicable model |            | Pre-wire connector |   |
|--------------------|--|------------------|-----------------|-----------------|--------------|-------|-------------------|---------|-----------------------|------|------|--------------------------|-----------------|------------------|------------|--------------------|---|
|                    |  |                  |                 |                 | DC           | AC    | Electrical entry  |         | 0.5 (Nil)             | 3(L) | 5(Z) |                          |                 | ø16              | ø20 to ø80 |                    |   |
|                    |  |                  |                 |                 |              |       | Perpendicular     | In-line |                       |      |      |                          |                 |                  |            |                    |   |
| Solid state switch | —  | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V   | —                 | M9NV    | M9N                   | ●    | ●    | ○                        | Standard        | Relay, PLC       | ●          | ●                  | ○ |
|                    |  |                  |                 | 12 V            |              | M9PV  |                   | M9P     | ●                     | ●    | ○    | ●                        |                 |                  | ●          | ○                  |   |
|                    |  |                  |                 | 3-wire (PNP)    |              | M9BV  |                   | M9B     | ●                     | ●    | ○    | ●                        |                 |                  | ●          | ○                  |   |
|                    | Diagnostic indication (2-color indication) |                  |                 | 3-wire (NPN)    | 5 V          | F9NWV | F9NW              | ●       | ●                     | ○    | ○    | ●                        | ●               |                  | ○          |                    |   |
|                    | 3-wire (PNP)                               |                  |                 | 12 V            | F9PWV        | F9PW  | ●                 | ●       | ○                     | ○    | ●    | ●                        | ○               |                  |            |                    |   |
|                    | 2-wire                                     |                  |                 | F9BWV           | F9BW         | ●     | ●                 | ○       | ○                     | ●    | ●    | ○                        |                 |                  |            |                    |   |
|                    |  |                  |                 | —               | F9BA         | —     | ●                 | ○       | ○                     | ●    | ●    | ○                        |                 |                  |            |                    |   |
|                    |  |                  |                 |                 |              |       |                   |         |                       |      |      |                          |                 |                  |            |                    |   |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9BV  
3 m ..... L (Example) M9NL  
5 m ..... Z (Example) Y59AZ

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

Note) Take note of hysteresis with 2-color indication type switches. Refer to page 12-7-62 for detailed auto switch specifications.



Refer to page 12-13-25 for solid state switch with pre-wire connector.

### Model/Specifications



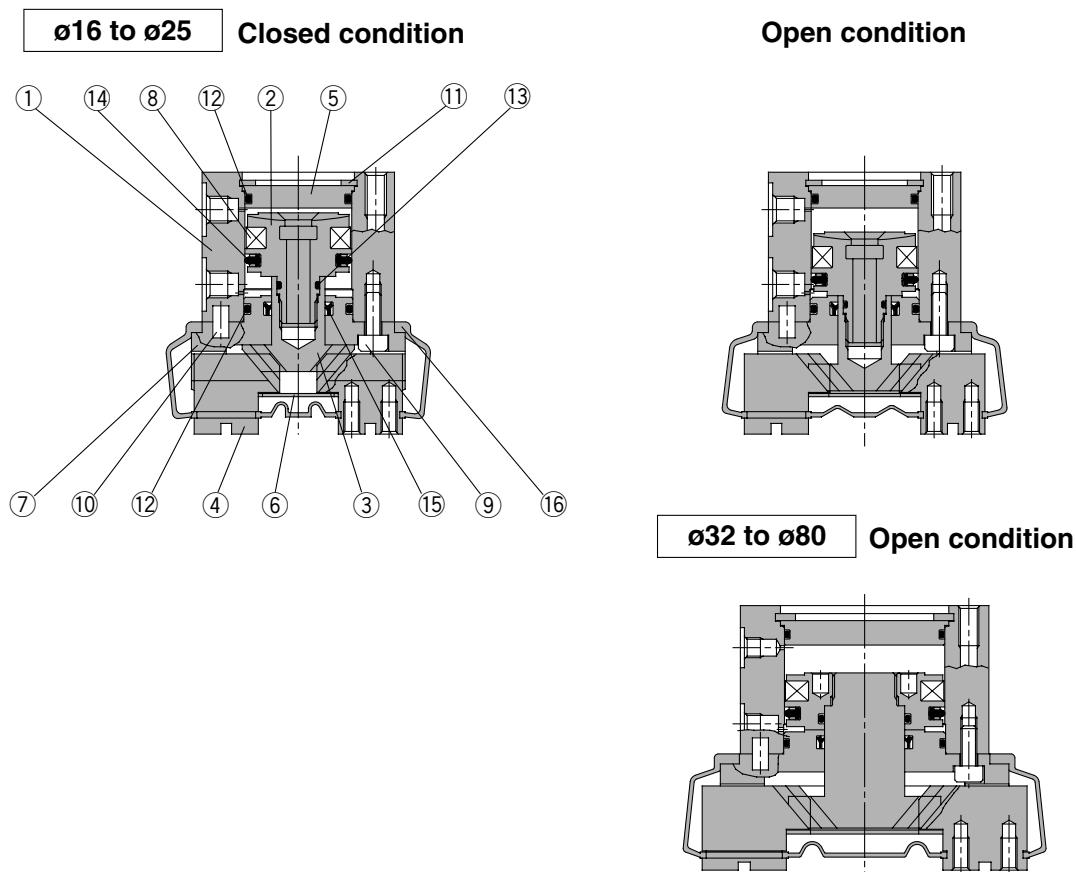
| Model  |               | MHSJ3-16D     | MHSJ3-20D | MHSJ3-25D | MHSJ3-32D  | MHSJ3-40D | MHSJ3-50D | MHSJ3-63D | MHSJ3-80D |    |
|--|---------------|---------------|-----------|-----------|------------|-----------|-----------|-----------|-----------|----|
| Bore size (mm)   |               | 16            | 20        | 25        | 32         | 40        | 50        | 63        | 80        |    |
| Fluid  |               | Air           |           |           |            |           |           |           |           |    |
| Operating pressure (MPa)                               |               | 0.2 to 0.6    |           |           | 0.1 to 0.6 |           |           |           |           |    |
| Ambient and fluid temperature (°C)                     |               | −10 to 60     |           |           |            |           |           |           |           |    |
| Repeatability (mm)                                     |               | ±0.01         |           |           |            |           |           |           |           |    |
| Max. operating frequency (c.p.m.)                      |               | 120           |           |           | 60         |           |           |           |           | 30 |
| Lubrication  |               | Not required  |           |           |            |           |           |           |           |    |
| Action   |               | Double acting |           |           |            |           |           |           |           |    |
| Effective gripping force (N) at 0.5 MPa <sup>(1)</sup> | External grip | 9             | 21        | 36        | 62         | 97        | 155       | 280       | 400       |    |
|  | Internal grip | 16            | 28        | 47        | 82         | 130       | 204       | 359       | 525       |    |
| Opening/Closing stroke (mm) (dia.)                     |               | 4             | 4         | 6         | 8          | 8         | 12        | 16        | 20        |    |
| Weight (g)   |               | 95            | 150       | 230       | 440        | 620       | 1,050     | 1,800     | 3,200     |    |

Note 1) Values for ø16 to ø25 are with gripping point L = 20 mm, and for ø32 to ø63 with gripping point L = 30 mm, and ø80 is L = 50 mm. Refer to "Effective Gripping Force" data on pages 12-7-25 through 12-7-27 for the gripping force at each gripping position.

Note 2) Open and closed diameter values apply for external gripping of workpieces.

# Series MHSJ3

## Construction



## Component Parts

| No. | Description   | Material                    | Note                            |
|-----|---------------|-----------------------------|---------------------------------|
| ①   | Body          | Aluminum alloy              | Hard anodized                   |
| ②   | Piston        | ø16 to ø25: Stainless steel | Hard anodized                   |
|     |               | ø32 to ø80: Aluminum alloy  |                                 |
| ③   | Cam (J)       | Carbon steel                | Heat treated, Specially treated |
| ④   | Finger        | Carbon steel                | Heat treated, Specially treated |
| ⑤   | Cap (J)       | Aluminum alloy              | Hard anodized                   |
| ⑥   | End plate (J) | Stainless steel             |                                 |
| ⑦   | Guide         | Aluminum alloy              | Hard anodized                   |

| No. | Description              | Material         | Note          |
|-----|--------------------------|------------------|---------------|
| ⑧   | Rubber magnet            | Synthetic rubber |               |
| ⑨   | Hexagon socket head bolt | Carbon steel     | Nickel plated |
| ⑩   | Parallel pin             | Stainless steel  |               |
| ⑪   | Type C snap ring         | Carbon steel     | Nickel plated |
| ⑫   | Gasket                   | NBR              |               |
| ⑬   | Gasket                   | NBR              |               |
| ⑭   | Piston seal              | NBR              |               |
| ⑮   | Rod seal                 | NBR              |               |

## Replacement Parts

| Description     |          |     | MHSJ3-16D  | MHSJ3-20D  | MHSJ3-25D  | MHSJ3-32D  | Main parts |
|-----------------|----------|-----|------------|------------|------------|------------|------------|
| Seal kit        |          |     | MHSJ16-PS  | MHSJ20-PS  | MHSJ25-PS  | MHSJ32-PS  | ⑫⑬⑭⑮       |
| Dust cover      | Material | CR  | MHSJ3-J16  | MHSJ3-J20  | MHSJ3-J25  | MHSJ3-J32  | ⑮          |
|                 |          | FKM | MHSJ3-J16F | MHSJ3-J20F | MHSJ3-J25F | MHSJ3-J32F |            |
|                 |          | Si  | MHSJ3-J16S | MHSJ3-J20S | MHSJ3-J25S | MHSJ3-J32S |            |
| Finger          |          |     | P3316054   | P3346154   | P3316254   | P3316354   | ④          |
| Cam (J)         |          |     | P3316093   | P3316193   | P3316293   | P3316393   | ③          |
| Piston assembly |          |     | MHS-A1602  | MHS-A2002  | MHS-A2502  | MHS-A3201  | ②⑧         |

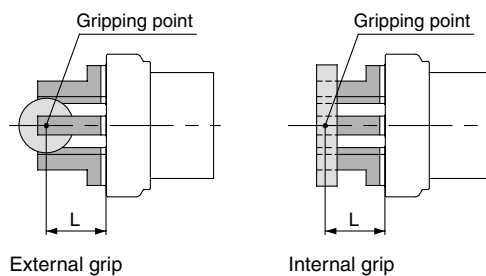
| Description     |          |     | MHSJ3-40D  | MHSJ3-50D  | MHSJ3-63D  | MHSJ3-80D  | Main parts |
|-----------------|----------|-----|------------|------------|------------|------------|------------|
| Seal kit        |          |     | MHSJ40-PS  | MHSJ50-PS  | MHSJ63-PS  | MHSJ80-PS  | ⑫⑬⑭⑮       |
| Dust cover      | Material | CR  | MHSJ3-J40  | MHSJ3-J50  | MHSJ3-J63  | MHSJ3-J80  | ⑯          |
|                 |          | FKM | MHSJ3-J40F | MHSJ3-J50F | MHSJ3-J63F | MHSJ3-J80F |            |
|                 |          | Si  | MHSJ3-J40S | MHSJ3-J50S | MHSJ3-J63S | MHSJ3-J80S |            |
| Finger          |          |     | P3316454   | P3316554   | P3316654   | P3316754   | ④          |
| Cam (J)         |          |     | P3316493   | P3316593   | P3316693   | P3316793   | ③          |
| Piston assembly |          |     | MHS-A4002  | MHS-A5002  | MHS-A6302  | MHS-A8002  | ②⑧         |

\* Order 3 pieces of fingers for one unit.

# 3 Finger Parallel Style Air Gripper With Dust Cover Series MHSJ3

## Gripping Point

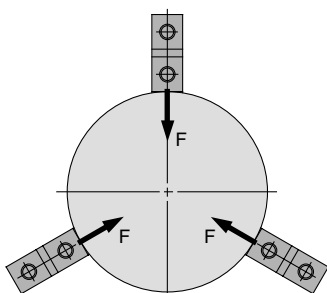
- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.



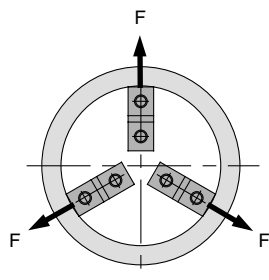
L: Gripping point distance

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



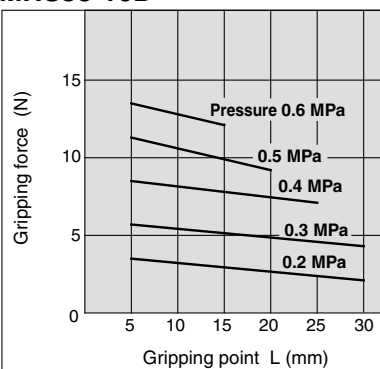
External grip



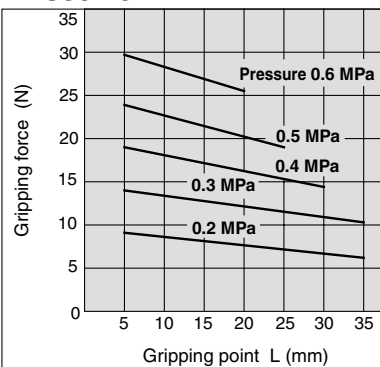
Internal grip

### External Gripping Force

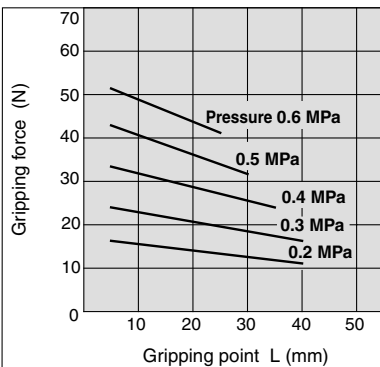
#### MHSJ3-16D



#### MHSJ3-20D

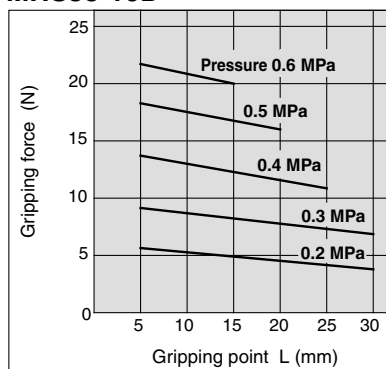


#### MHSJ3-25D

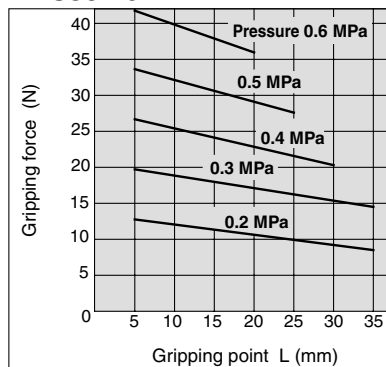


### Internal Gripping Force

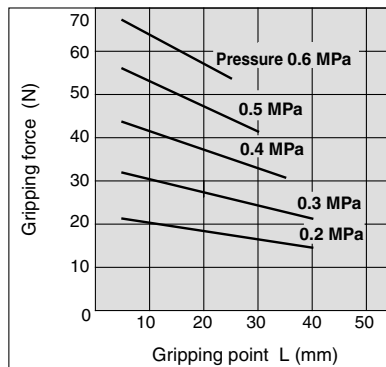
#### MHSJ3-16D



#### MHSJ3-20D



#### MHSJ3-25D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

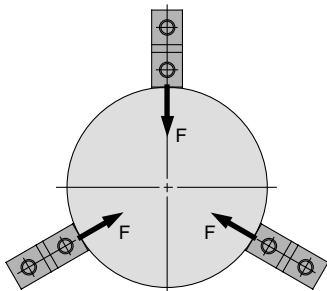
20-



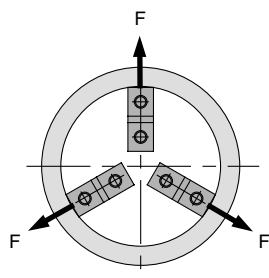
# Series MHSJ3

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



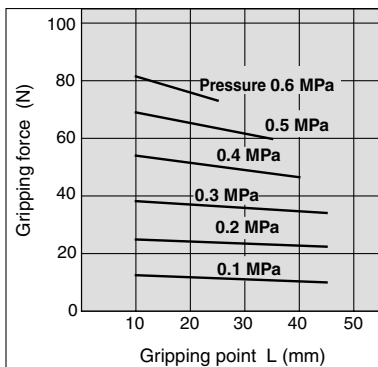
**External grip**



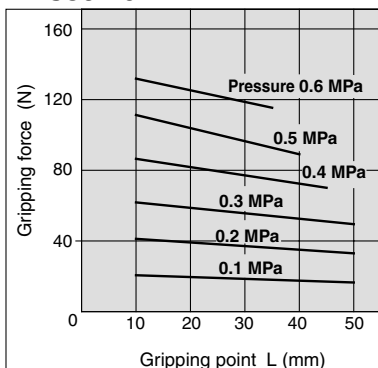
**Internal grip**

## External Gripping Force

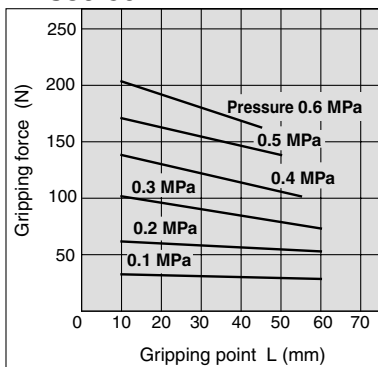
### MHSJ3-32D



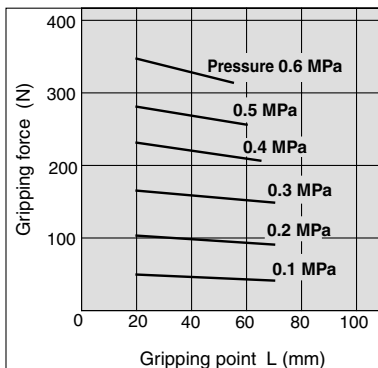
### MHSJ3-40D



### MHSJ3-50D

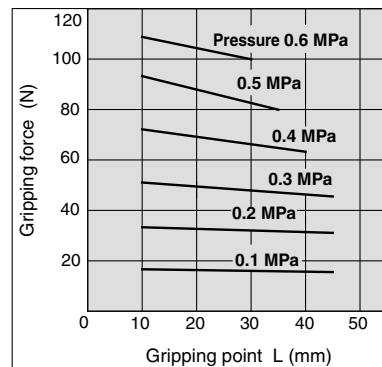


### MHSJ3-63D

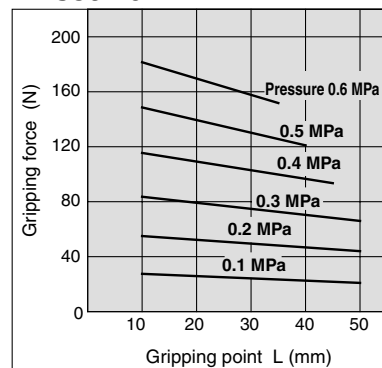


## Internal Gripping Force

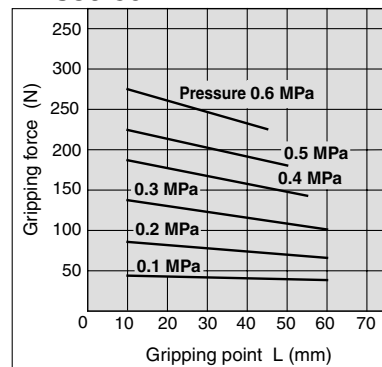
### MHSJ3-32D



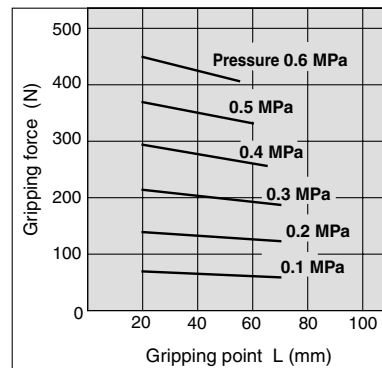
### MHSJ3-40D



### MHSJ3-50D



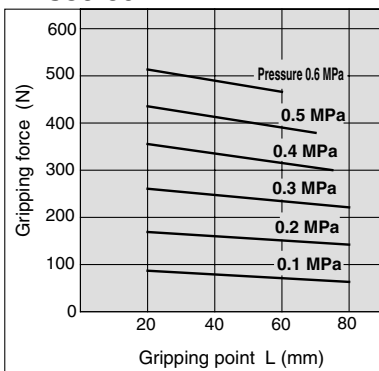
### MHSJ3-63D



# 3 Finger Parallel Style Air Gripper With Dust Cover **Series MHSJ3**

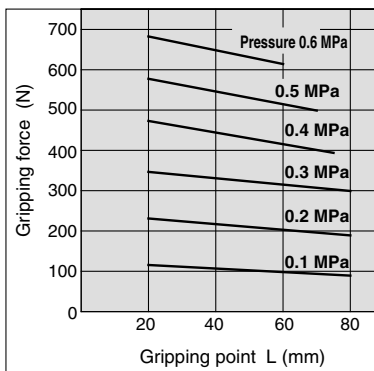
## External Gripping Force

### MHSJ3-80D



## Internal Gripping Force

### MHSJ3-80D



MHZ

MHF

MHL

MHR

MHK

**MHS**

MHC

MHT

MHY

MHW

MRHQ

Misc.

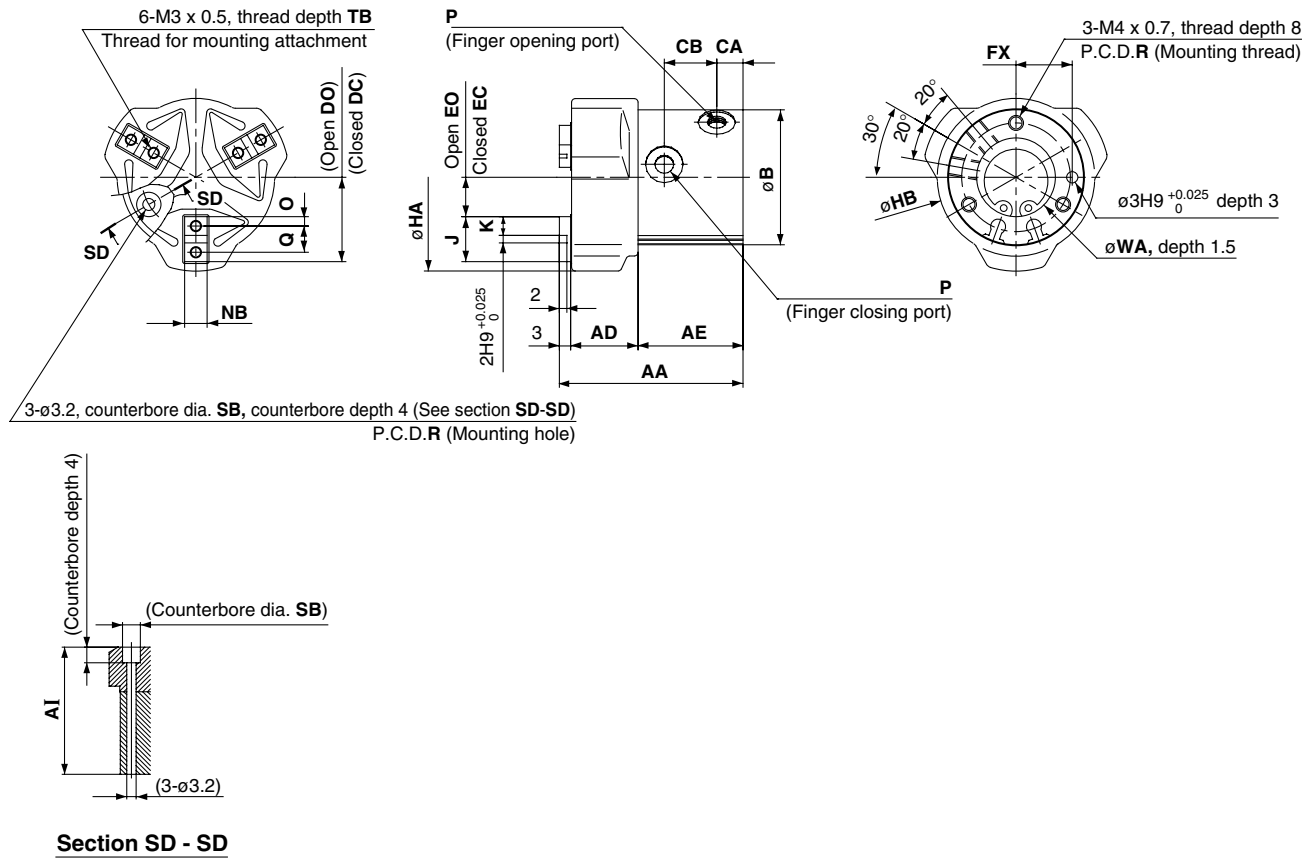
D-

20-

# Series MHSJ3

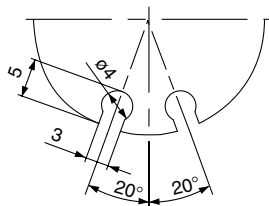
## Dimensions

### MHSJ3-16D to 25D

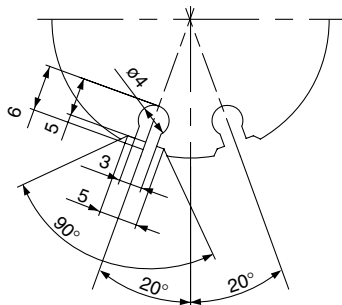


### Auto switch mounting groove dimensions (2 locations)

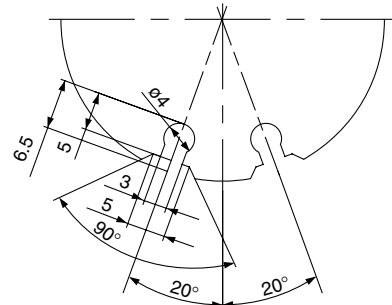
MHSJ3-16D



MHSJ3-20D



MHSJ3-25D



(mm)

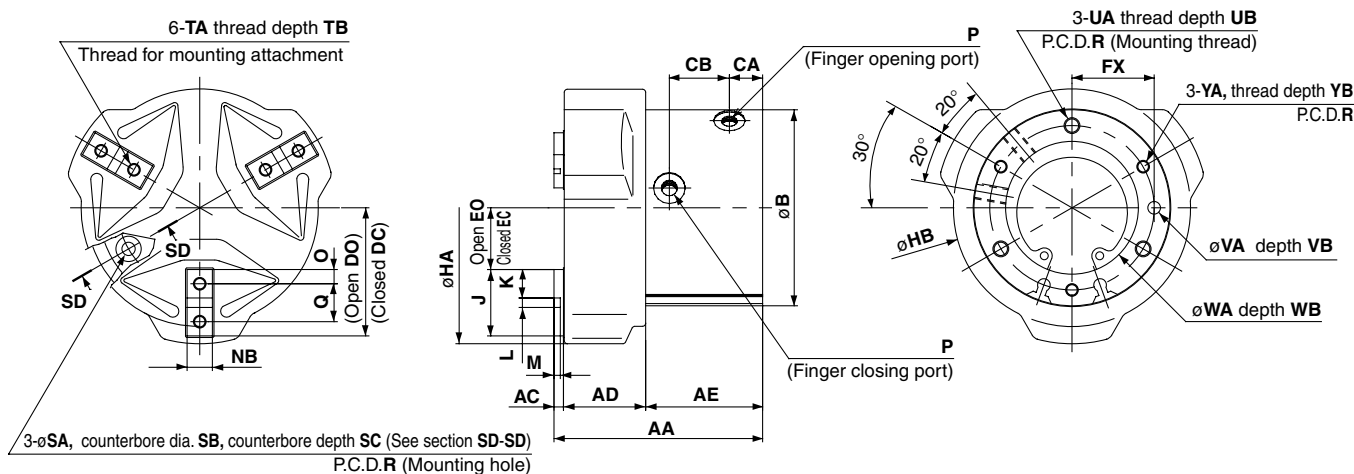
| Model     | AA | AD | AE | AI | B  | CA  | CB   | DC   | DO   | EC  | EO   | FX | HA | HB | J  | K | NB               | O   | P        | Q |
|-----------|----|----|----|----|----|-----|------|------|------|-----|------|----|----|----|----|---|------------------|-----|----------|---|
| MHSJ3-16D | 46 | 16 | 27 | 39 | 30 | 7   | 14   | 17.5 | 19.5 | 7.5 | 9.5  | 12 | 44 | 36 | 10 | 4 | $5h9^{+0.030}_0$ | 2   | M3 x 0.5 | 6 |
| MHSJ3-20D | 49 | 18 | 28 | 42 | 36 | 7   | 14   | 20   | 22   | 8   | 10   | 15 | 50 | 42 | 12 | 5 | $6h9^{+0.030}_0$ | 2.5 | M5 x 0.8 | 7 |
| MHSJ3-25D | 55 | 20 | 32 | 47 | 42 | 7.5 | 17.5 | 23.5 | 26.5 | 9.5 | 12.5 | 18 | 59 | 50 | 14 | 6 | $6h9^{+0.030}_0$ | 3   | M5 x 0.8 | 8 |

| Model     | R  | SB  | TB | WA                |
|-----------|----|-----|----|-------------------|
| MHSJ3-16D | 24 | 6   | 5  | $17H9^{+0.043}_0$ |
| MHSJ3-20D | 29 | 6.5 | 6  | $21H9^{+0.052}_0$ |
| MHSJ3-25D | 34 | 6.5 | 6  | $26H9^{+0.052}_0$ |

# 3 Finger Parallel Style Air Gripper With Dust Cover Series MHSJ3

## MHSJ3-32D to 80D

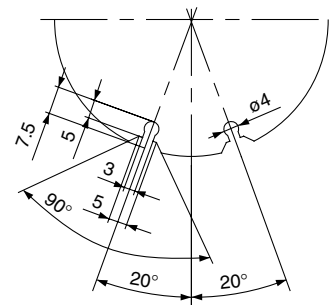
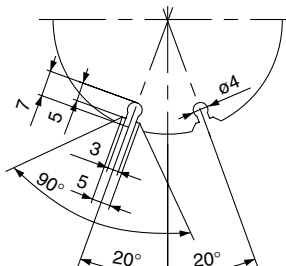
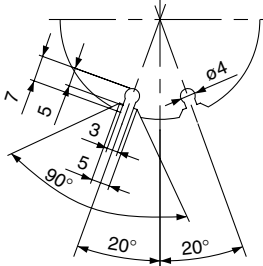
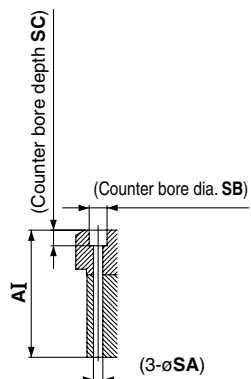


## Auto switch mounting groove dimensions (2 locations)

MHSJ3-32D

MHSJ3-40D

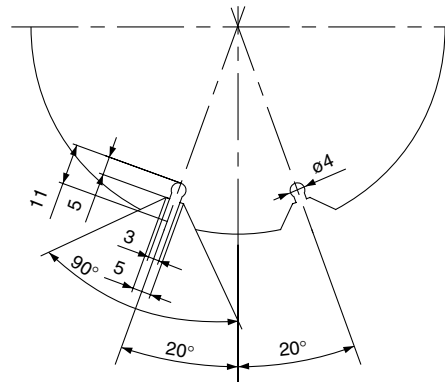
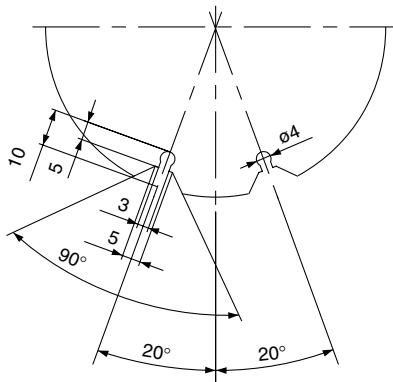
MHSJ3-50D



Section SD - SD

MHSJ3-63D

MHSJ3-80D



| (mm)      |     |          |    |    |     |     |      |          |      |           |      |                                    |    |                                     |     |          |    |                                    |   |                                     |
|-----------|-----|----------|----|----|-----|-----|------|----------|------|-----------|------|------------------------------------|----|-------------------------------------|-----|----------|----|------------------------------------|---|-------------------------------------|
| Model     | AA  | AC       | AD | AE | AI  | B   | CA   | CB       | DC   | DO        | EC   | EO                                 | FX | HA                                  | HB  | J        | K  | L                                  | M | NB                                  |
| MHSJ3-32D | 63  | 3        | 24 | 36 | 54  | 54  | 9.5  | 19       | 31.5 | 35.5      | 11.5 | 15.5                               | 22 | 76                                  | 65  | 20       | 9  | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 8h9 <sup>0</sup> <sub>-0.036</sub>  |
| MHSJ3-40D | 66  | 3        | 26 | 37 | 57  | 62  | 10.5 | 19       | 36   | 40        | 15   | 19                                 | 26 | 86                                  | 75  | 21       | 9  | 3H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 8h9 <sup>0</sup> <sub>-0.036</sub>  |
| MHSJ3-50D | 80  | 3        | 31 | 46 | 70  | 74  | 11.5 | 26.5     | 42   | 48        | 18   | 24                                 | 32 | 103                                 | 88  | 24       | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 2 | 10h9 <sup>0</sup> <sub>-0.036</sub> |
| MHSJ3-63D | 91  | 4        | 37 | 50 | 79  | 92  | 13   | 28       | 51   | 59        | 23   | 31                                 | 40 | 125                                 | 106 | 28       | 11 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 3 | 12h9 <sup>0</sup> <sub>-0.043</sub> |
| MHSJ3-80D | 108 | 5        | 46 | 57 | 93  | 112 | 14   | 31       | 63   | 73        | 31   | 41                                 | 50 | 158                                 | 130 | 32       | 12 | 8H9 <sup>+0.036</sup> <sub>0</sub> | 4 | 14h9 <sup>0</sup> <sub>-0.043</sub> |
| Model     | O   | P        | Q  | R  | SA  | SB  | SC   | TA       | TB   | UA        | UB   | VA                                 | VB | WA                                  | WB  | YA       | YB |                                    |   |                                     |
| MHSJ3-32D | 4.5 | M5 x 0.8 | 11 | 44 | 4.2 | 8   | 7    | M4 x 0.7 | 8    | M5 x 0.8  | 10   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 34H9 <sup>+0.062</sup> <sub>0</sub> | 2   | M4 x 0.7 | 8  |                                    |   |                                     |
| MHSJ3-40D | 4.5 | M5 x 0.8 | 12 | 52 | 4.2 | 8   | 7    | M4 x 0.7 | 8    | M5 x 0.8  | 10   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 42H9 <sup>+0.062</sup> <sub>0</sub> | 2   | M4 x 0.7 | 8  |                                    |   |                                     |
| MHSJ3-50D | 5   | M5 x 0.8 | 14 | 63 | 5.1 | 9.5 | 8    | M5 x 0.8 | 10   | M6 x 1    | 12   | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 52H9 <sup>+0.074</sup> <sub>0</sub> | 2   | M5 x 0.8 | 10 |                                    |   |                                     |
| MHSJ3-63D | 5.5 | M5 x 0.8 | 17 | 78 | 6.6 | 11  | 8    | M5 x 0.8 | 10   | M8 x 1.25 | 16   | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 65H9 <sup>+0.074</sup> <sub>0</sub> | 2.5 | M6 x 1   | 12 |                                    |   |                                     |
| MHSJ3-80D | 6   | Rc 1/8   | 20 | 98 | 6.6 | 11  | 8    | M6 x 1   | 12   | M8 x 1.25 | 16   | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 82H9 <sup>+0.087</sup> <sub>0</sub> | 3   | M6 x 1   | 12 |                                    |   |                                     |

# 3 Finger Parallel Style Air Gripper Through-hole Type

## Series MSH3

Size: 16, 20, 25, 32, 40, 50, 63, 80



Refer to page 12-13-25 for solid state switch with pre-wire connector.

### How to Order

**MSH3** **3** **32** **D** **M9N**

**Through-hole**  
**Dust cover**

|     |                 |
|-----|-----------------|
| Nil | None            |
| J   | With dust cover |

Note) ø16, ø20 and ø25 are not available with dust cover.

**Number of fingers**  
**3** 3 fingers

**Bore size**

|    |       |    |       |
|----|-------|----|-------|
| 16 | 16 mm | 40 | 40 mm |
| 20 | 20 mm | 50 | 50 mm |
| 25 | 25 mm | 63 | 63 mm |
| 32 | 32 mm | 80 | 80 mm |

**Dust cover type (with dust cover only)**

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

**Action**  
**D** Double acting

**Center pusher**

|     |                       |
|-----|-----------------------|
| Nil | Without center pusher |
| A   | Cylinder type         |
| B   | Spring type           |

**Number of auto switches**

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

Note) Symbol entry examples when mounting auto switches on air gripper with cylinder type center pusher

1. Air gripper unit ..... 1 pc.  
Center pusher unit ..... 1 pc. } Total of 2 pcs. → Nil  
MSH3-32DA-F9N

2. Air gripper unit ..... 2 pcs.  
Center pusher unit ..... 2 pcs. } Total of 4 pcs. → Enter "4"  
MSH3-32DA-F9N4

**Auto switch**

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

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

### Applicable Auto Switch

Note) ø16, ø20 and ø25 are not available with center pusher.

| Type               | Special function                     | Electrical entry | Indicator light | Wiring (Output) | Load voltage |             | Auto switch model |         | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Applicable model |            | Pre-wire connector |   |
|--------------------|--------------------------------------|------------------|-----------------|-----------------|--------------|-------------|-------------------|---------|-----------------------|-------|-------|--------------------------|-----------------|------------|------------------|------------|--------------------|---|
|                    |                                      |                  |                 |                 | DC           | AC          | Perpendicular     | In-line | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            | ø16              | ø20 to ø80 |                    |   |
| Solid state switch | —                                    | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V<br>12 V | —                 | M9NV    | M9N                   | ●     | ●     | ○                        | Standard        | IC circuit | Relay, PLC       | ●          | ●                  | ○ |
|                    |                                      |                  |                 | 3-wire (PNP)    |              |             |                   | M9PV    | M9P                   | ●     | ●     | ○                        |                 |            |                  | ●          | ●                  | ○ |
|                    |                                      |                  |                 | 2-wire          |              |             |                   | M9BV    | M9B                   | ●     | ●     | ○                        |                 |            |                  | ●          | ●                  | ○ |
|                    | 3-wire (NPN)                         |                  |                 | 24 V            | 5 V<br>12 V  | F9NVW       |                   | F9NW    | ●                     | ●     | ○     | ○                        | IC circuit      | ●          |                  | ●          | ○                  |   |
|                    | 3-wire (PNP)                         |                  |                 |                 |              | F9PWV       |                   | F9PW    | ●                     | ●     | ○     | ○                        |                 | ●          |                  | ●          | ○                  |   |
|                    | 2-wire                               |                  |                 |                 |              | 5 V         |                   | F9BWV   | F9BW                  |       | ●     | ○                        |                 | ○          |                  | ●          | ●                  | ○ |
|                    | Diagnostic (2-color indication)      | Grommet          | Yes             | 2-wire          | 5 V          | —           | —                 | F9BA    |                       |       |       | —                        | ●               | ●          |                  | ○          |                    |   |
|                    | Water resistant (2-color indication) |                  |                 |                 |              |             |                   |         |                       |       |       |                          |                 |            |                  |            |                    |   |
|                    |                                      |                  |                 |                 |              |             |                   |         |                       |       |       |                          |                 |            |                  |            |                    |   |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9N  
3 m ..... L (Example) M9NL  
5 m ..... Z (Example) Y59AZ

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

Note 1) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

Note 2) Refer to page 12-13-1 for further information on auto switches.

### Center pusher assembly

**MSH3** **3** **A** **50** **A** **M9N**

**Through-hole**  
**Center pusher assembly**

**Number of fingers**  
**3** 3 fingers

**Bore size**

|    |       |    |       |
|----|-------|----|-------|
| 32 | 32 mm | 63 | 63 mm |
| 40 | 40 mm | 80 | 80 mm |
| 50 | 50 mm |    |       |

**Center pusher**

|   |               |
|---|---------------|
| A | Cylinder type |
| B | Spring type   |

**Number of auto switches**

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

**Auto switch (Cylinder type only)**

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

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

### Applicable Auto Switch

| Type               | Special function                | Electrical entry | Indicator light | Wiring (Output) | Load voltage  |         | Auto switch model |      | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Applicable model |            | Pre-wire connector |   |   |
|--------------------|---------------------------------|------------------|-----------------|-----------------|---------------|---------|-------------------|------|-----------------------|-------|-------|--------------------------|-----------------|------------|------------------|------------|--------------------|---|---|
|                    |                                 |                  |                 |                 |               |         | Electrical entry  |      | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            | ø16              | ø20 to ø80 |                    |   |   |
|                    |                                 |                  |                 |                 | Perpendicular | In-line |                   |      |                       |       |       |                          |                 |            |                  |            |                    |   |   |
| Solid state switch | —                               | Grommet          | Yes             | 3-wire (NPN)    | 24 V          | 5 V     | —                 | M9NV | M9N                   | ●     | ●     | ○                        | Standard        | IC circuit | Relay, PLC       | ●          | ●                  | ○ |   |
|                    |                                 |                  |                 | 3-wire (PNP)    |               |         |                   | 12 V | M9PV                  | M9P   | ●     | ●                        |                 |            |                  | ○          | ●                  | ● | ○ |
|                    |                                 |                  |                 | 2-wire          |               |         |                   | 12 V | M9BV                  | M9B   | ●     | ●                        |                 |            |                  | ○          | ●                  | ● | ○ |
|                    | 3-wire (NPN)                    |                  |                 | 5 V             | F9NVW         | F9NW    |                   | ●    | ●                     | ○     | ○     | IC circuit               | ●               | ●          |                  | ○          |                    |   |   |
|                    | 3-wire (PNP)                    |                  |                 |                 | F9PVW         | F9PW    |                   | ●    | ●                     | ○     | ○     |                          | ●               | ●          |                  | ○          |                    |   |   |
|                    | 2-wire                          |                  |                 |                 | 5 V           | F9BVW   |                   | F9BW | ●                     | ●     | ○     |                          | ○               | ●          |                  | ●          | ○                  |   |   |
|                    | Diagnostic (2-color indication) | Grommet          | Yes             | 2-wire          | 5 V           | —       | —                 | F9BA | —                     | ●     | ○     | ○                        | —               | ●          |                  | ●          | ○                  |   |   |
|                    |                                 |                  |                 |                 |               |         |                   |      |                       |       |       |                          |                 |            |                  |            |                    |   |   |
|                    |                                 |                  |                 |                 |               |         |                   |      |                       |       |       |                          |                 |            |                  |            |                    |   |   |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9N  
3 m ..... L (Example) M9NL  
5 m ..... Z (Example) Y59AZ

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

Note 1) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

Note 2) Refer to page 12-13-1 for further information on auto switches.

# 3 Finger Parallel Style Air Gripper Through-hole Type Series **MHSH3**

## Model/Specifications

### Without center pusher



### Center pusher/Cylinder type



### Center pusher/Spring type



## Air Gripper Specifications

| Model   |               | MHSH3-16D                            | MHSH3-20D                            | MHSH3-25D                            | MHSH3-32D                            | MHSH3-40D                             | MHSH3-50D                             | MHSH3-63D                             | MHSH3-80D                             |    |
|---|---------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|----|
| Cylinder bore size (mm)                                 |               | 16                                   | 20                                   | 25                                   | 32                                   | 40                                    | 50                                    | 63                                    | 80                                    |    |
| Fluid   |               | Air                                  |                                      |                                      |                                      |                                       |                                       |                                       |                                       |    |
| Operating pressure (MPa)                                |               | 0.2 to 0.6                           |                                      |                                      | 0.1 to 0.6                           |                                       |                                       |                                       |                                       |    |
| Ambient and fluid temperature (°C)                      |               | −10 to 60                            |                                      |                                      |                                      |                                       |                                       |                                       |                                       |    |
| Repeatability (mm)                                      |               | ±0.01                                |                                      |                                      |                                      |                                       |                                       |                                       |                                       |    |
| Max. operating frequency (c.p.m.)                       |               | 120                                  |                                      |                                      | 60                                   |                                       |                                       |                                       |                                       | 30 |
| Lubrication   |               | Not required                         |                                      |                                      |                                      |                                       |                                       |                                       |                                       |    |
| Action  |               | Double acting                        |                                      |                                      |                                      |                                       |                                       |                                       |                                       |    |
| Effective gripping force N <sup>(1)</sup><br>at 0.5 MPa | External hold | 9                                    | 21                                   | 36                                   | 62                                   | 97                                    | 155                                   | 280                                   | 400                                   |    |
|   | Internal hold | 15                                   | 26                                   | 45                                   | 77                                   | 118                                   | 187                                   | 329                                   | 490                                   |    |
| Through hole diameter (mm)                              |               | ø3H10 <sup>+0.040</sup> <sub>0</sub> | ø3H10 <sup>+0.040</sup> <sub>0</sub> | ø4H10 <sup>+0.048</sup> <sub>0</sub> | ø6H10 <sup>+0.048</sup> <sub>0</sub> | ø10H10 <sup>+0.058</sup> <sub>0</sub> | ø12H10 <sup>+0.070</sup> <sub>0</sub> | ø16H10 <sup>+0.070</sup> <sub>0</sub> | ø20H10 <sup>+0.084</sup> <sub>0</sub> |    |
| Opening/Closing stroke (dia.) (mm)                      |               | 4                                    | 4                                    | 6                                    | 8                                    | 8                                     | 12                                    | 16                                    | 20                                    |    |
| Weight (g)  |               | 90                                   | 140                                  | 220                                  | 410                                  | 570                                   | 970                                   | 1.650                                 | 2.920                                 |    |

Note 1) Values for ø16 to ø25 are with gripping point L = 20 mm, for ø32 to ø63 with gripping point L = 30 mm, and for ø80 with gripping point L = 50 mm.  
Refer to "Effective Gripping Force" data on pages 12-7-34 through 12-7-36 for the gripping force at each gripping position.

## Center Pusher (Cylinder type) Specifications

| Model                                       |           | MHSH3-32DA    | MHSH3-40DA | MHSH3-50DA | MHSH3-63DA | MHSH3-80DA |
|---|-----------|---------------|------------|------------|------------|------------|
| Pusher cylinder bore size (mm)              |           | 12            | 20         | 25         | 32         | 40         |
| Fluid                                       |           | Air           |            |            |            |            |
| Operating pressure (MPa)                    |           | 0.2 to 0.6    | 0.1 to 0.6 |            |            |            |
| Ambient and fluid temperature (°C)          |           | −10 to 60     |            |            |            |            |
| Pusher maximum operating frequency (c.p.m.) |           | 60            |            |            |            | 30         |
| Lubrication                                 |           | Not required  |            |            |            |            |
| Action                                      |           | Double acting |            |            |            |            |
| Pusher stroke (mm)                          |           | 5             | 5          | 10         | 10         | 15         |
| Pusher thrust (N)<br>at 0.5 MPa             | Extention | 45            | 130        | 204        | 335        | 524        |
| Weight (g)                                  |           | 530           | 770        | 1,330      | 2,300      | 4,000      |

## Center Pusher (Spring type) Specifications

| Model                   | MHSH3-32DB | MHSH3-40DB | MHSH3-50DB | MHSH3-63DB | MHSH3-80DB |
|-------------------------|------------|------------|------------|------------|------------|
| Pusher stroke (mm)      | 5          | 5          | 10         | 10         | 15         |
| Pusher spring force (N) | 6 to 10    | 11 to 15   | 20 to 25   | 29 to 34   | 49 to 59   |
| Weight (g)              | 500        | 740        | 1,290      | 2,250      | 4,000      |

## Weight

|  | ø32 | ø40 | ø50   | ø63   | ø80   |
|--|-----|-----|-------|-------|-------|
| Through-hole with dust cover<br><b>MHSHJ3-□D</b>                   | 430 | 600 | 1,020 | 1,710 | 3,040 |
| Center pusher (cylinder type) with dust cover<br><b>MHSHJ3-□DA</b> | 550 | 800 | 1,380 | 2,360 | 4,120 |
| Center pusher (spring type) with dust cover<br><b>MHSHJ3-□DB</b>   | 520 | 770 | 1,340 | 2,310 | 4,120 |

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

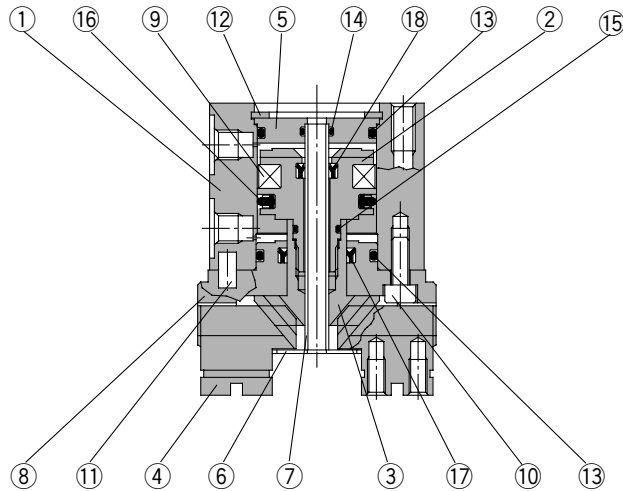
D-

20-

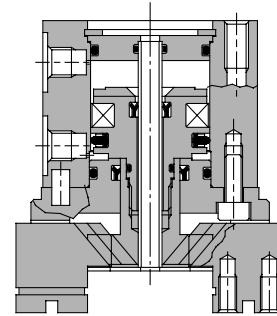
# Series MSHH3

## Construction

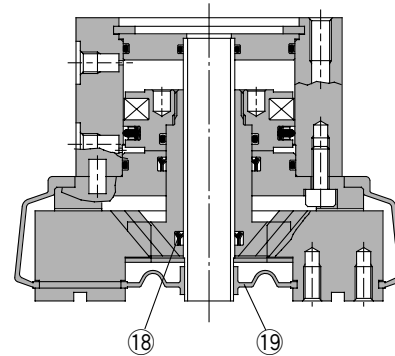
ø16 to ø25 Closed condition



Open condition



ø32 to ø80 Open condition



### Component Parts

| No. | Description              | Material  | Note                            |
|-----|--------------------------|---|---------------------------------|
| ①   | Body                     | Aluminum alloy  | Hard anodized                   |
| ②   | Piston                   | ø16 to ø25: Stainless steel<br>ø32 to ø80: Aluminum alloy | Hard anodized                   |
| ③   | Cam (A)                  | Carbon steel  | Heat treated, Specially treated |
| ④   | Finger                   | Carbon steel  | Heat treated, Specially treated |
| ⑤   | Cap (A)                  | Aluminum alloy  | Hard anodized                   |
| ⑥   | End plate (A)            | Stainless steel   |                                 |
| ⑦   | Tubing                   | Stainless steel   |                                 |
| ⑧   | Guide                    | Aluminum alloy  | Hard anodized                   |
| ⑨   | Rubber magnet            | Synthetic rubber  |                                 |
| ⑩   | Hexagon socket head bolt | Carbon steel  | Nickel plated                   |
| ⑪   | Parallel pin             | Stainless steel   |                                 |
| ⑫   | Type C snap ring         | Carbon steel  | Nickel plated                   |

| No. | Description | Material | Note |
|-----|-------------|----------|------|
| ⑬   | Gasket      | NBR      |      |
| ⑭   | Gasket      | NBR      |      |
| ⑮   | Gasket      | NBR      |      |
| ⑯   | Piston seal | NBR      |      |
| ⑰   | Rod seal    | NBR      |      |
| ⑱   | Rod seal    | NBR      |      |

### Replacement Parts

| Description     |          |     | MHSH3-16D | MHSH3-20D | MHSH3-25D | MHSH3-32D   | Main parts |
|-----------------|----------|-----|-----------|-----------|-----------|-------------|------------|
|                 |          |     |           |           |           | MHSHJ3-32D  |            |
| Seal kit        |          |     | MHSH16-PS | MHSH20-PS | MHSH25-PS | MHSH32-PS   | ⑬⑭⑮⑯⑰⑱     |
| Dust cover      | Material | CR  | —         | —         | —         | MHSHJ3-J32  | ⑰          |
|                 |          | FKM |           |           |           | MHSHJ3-J32F |            |
|                 |          | Si  |           |           |           | MHSHJ3-J32S |            |
| Finger          |          |     | P3316054  | P3346154  | P3316254  | P3316354    | ④          |
| Cam (A)         |          |     | P3316053  | P3316153  | P3316253  | P3316353    | ③          |
| Piston assembly |          |     | MHS-A1603 | MHS-A2003 | MHS-A2503 | MHS-A3203   | ②⑨         |

| Description     |          |     | MHSH3-40D   | MHSH3-50D   | MHSH3-63D   | MHSH3-80D   | Main parts |
|-----------------|----------|-----|-------------|-------------|-------------|-------------|------------|
|                 |          |     | MHSHJ3-40D  | MHSHJ3-50D  | MHSHJ3-63D  | MHSHJ3-80D  |            |
| Seal kit        |          |     | MHSH40-PS   | MHSH50-PS   | MHSH63-PS   | MHSH80-PS   | ⑬⑭⑮⑯⑰⑱     |
| Dust cover      | Material | CR  | MHSHJ3-J40  | MHSHJ3-J50  | MHSHJ3-J63  | MHSHJ3-J80  | ⑰          |
|                 |          | FKM | MHSHJ3-J40F | MHSHJ3-J50F | MHSHJ3-J63F | MHSHJ3-J80F |            |
|                 |          | Si  | MHSHJ3-J40S | MHSHJ3-J50S | MHSHJ3-J63S | MHSHJ3-J80S |            |
| Finger          |          |     | P3316454    | P3316554    | P3316654    | P3316754    | ④          |
| Cam (A)         |          |     | P3316453    | P3316553    | P3316653    | P3316753    | ③          |
| Piston assembly |          |     | MHS-A4003   | MHS-A5003   | MHS-A6303   | MHS-A8003   | ②⑨         |

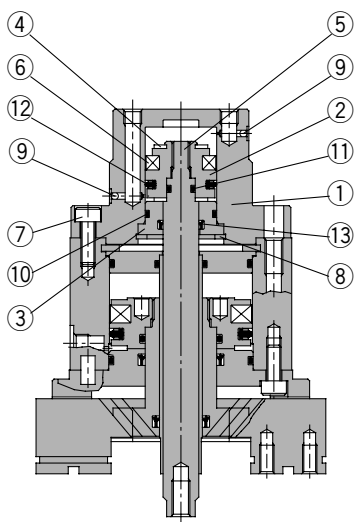
\* Order 3 pieces of fingers for one unit.



# 3 Finger Parallel Style Air Gripper Through-hole Type **Series MSHH3**

## Construction

### Center pusher/Cylinder type



#### Component Parts

| No. | Description              | Material         | Note          |
|-----|--------------------------|------------------|---------------|
| ①   | Push holder (P)          | Aluminum alloy   | Hard anodized |
| ②   | Piston (P)               | Aluminum alloy   | Hard anodized |
| ③   | Rod holder               | Aluminum alloy   | Hard anodized |
| ④   | Bumper                   | Urethane rubber  |               |
| ⑤   | Push rod (P)             | Stainless steel  | Hard chromed  |
| ⑥   | Rubber magnet            | Synthetic rubber |               |
| ⑦   | Hexagon socket head bolt | Carbon steel     | Nickel plated |
| ⑧   | Type C snap ring         | Carbon steel     | Nickel plated |
| ⑨   | Steel balls              | Stainless steel  |               |
| ⑩   | Gasket                   | NBR              |               |
| ⑪   | Gasket                   | NBR              |               |
| ⑫   | Piston seal              | NBR              |               |
| ⑬   | Rod seal                 | NBR              |               |

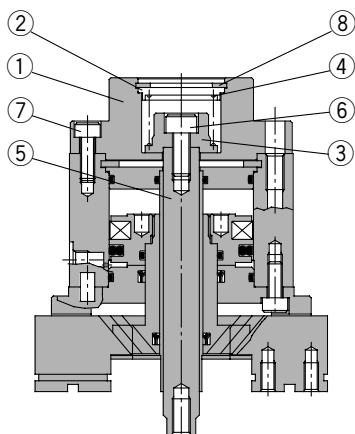
### Replacement Parts: Seal Kit (Center pusher/Cylinder type)

| Part no.   |            |            |            |            | Description                         |
|------------|------------|------------|------------|------------|-------------------------------------|
| MHSH3-A32A | MHSH3-A40A | MHSH3-A50A | MHSH3-A63A | MHSH3-A80A |                                     |
| MHSH32A-PS | MHSH40A-PS | MHSH50A-PS | MHSH63A-PS | MHSH80A-PS | A set of the above nos. ⑩, ⑪, ⑫ & ⑬ |

\* Seal kits are sets consisting of items ⑩, ⑪, ⑫ and ⑬, can be ordered using the kit number for each cylinder bore size.

## Construction

### Center pusher/Spring type



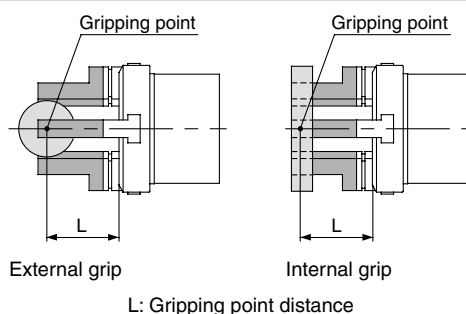
#### Component Parts

| No. | Description              | Material        | Note          |
|-----|--------------------------|-----------------|---------------|
| ①   | Push holder (S)          | Aluminum alloy  | Hard anodized |
| ②   | Cap (S)                  | Stainless steel |               |
| ③   | Spring holder            | Stainless steel |               |
| ④   | Spring                   | Stainless steel |               |
| ⑤   | Push rod (S)             | Stainless steel | Hard chromed  |
| ⑥   | Hexagon socket head bolt | Carbon steel    | Nickel plated |
| ⑦   | Hexagon socket head bolt | Carbon steel    | Nickel plated |
| ⑧   | Type C snap ring         | Carbon steel    | Nickel plated |

# Series MSHH3

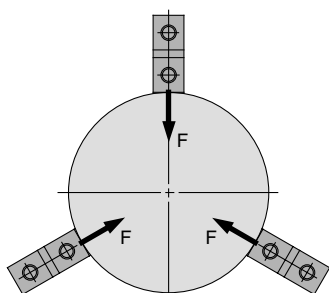
## Gripping Point

- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.

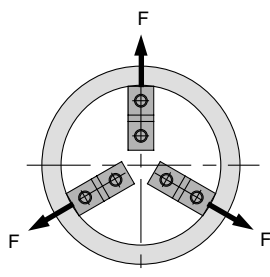


## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



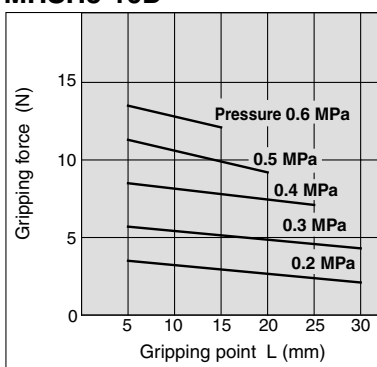
External grip



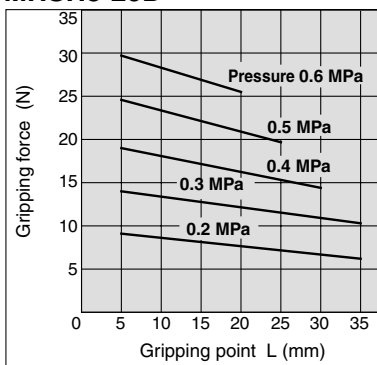
Internal grip

### External Gripping Force

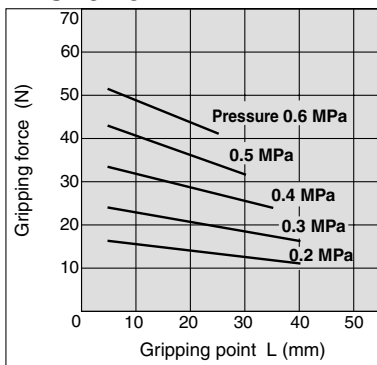
#### MSHH3-16D



#### MSHH3-20D

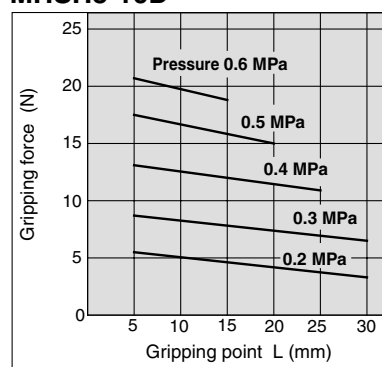


#### MSHH3-25D

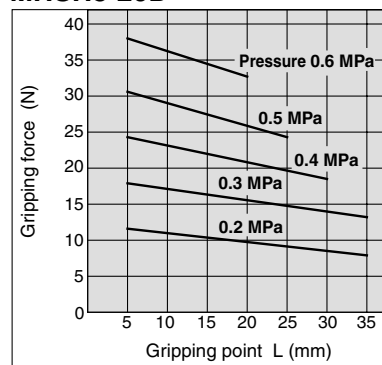


### Internal Gripping Force

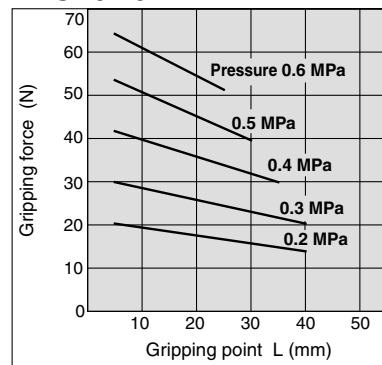
#### MSHH3-16D



#### MSHH3-20D



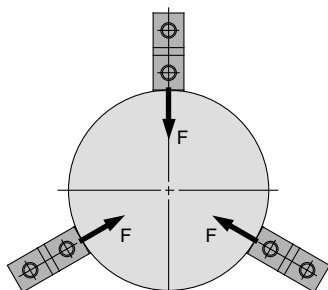
#### MSHH3-25D



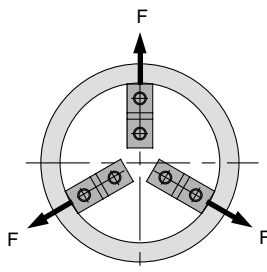
# 3 Finger Parallel Style Air Gripper Through-hole Type Series **MHSH3**

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



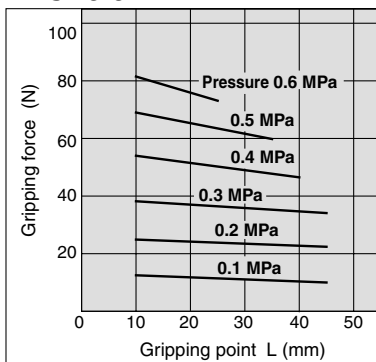
External grip



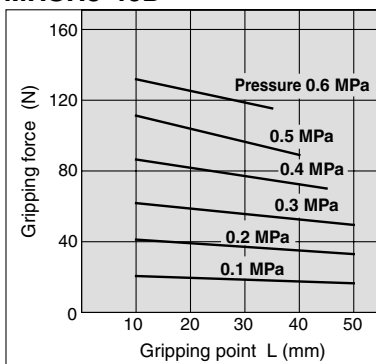
Internal grip

## External Gripping Force

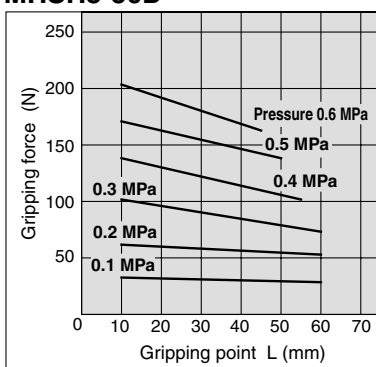
### MHSH3-32D



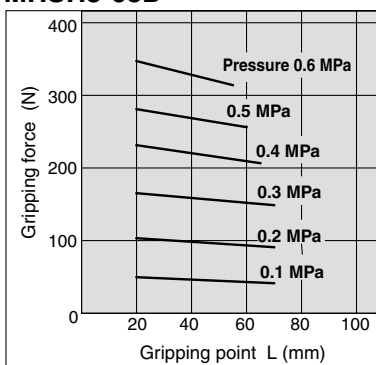
### MHSH3-40D



### MHSH3-50D

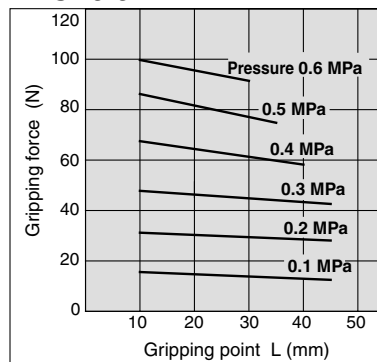


### MHSH3-63D

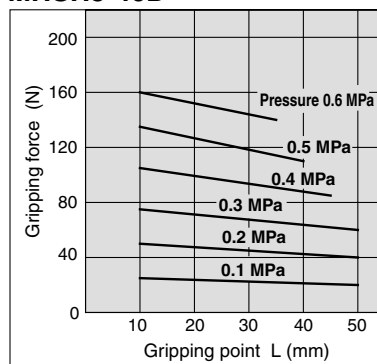


## Internal Gripping Force

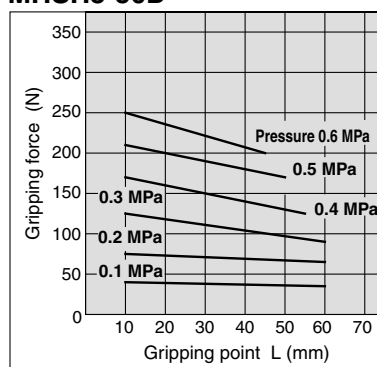
### MHSH3-32D



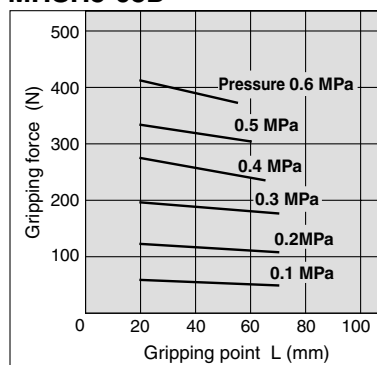
### MHSH3-40D



### MHSH3-50D



### MHSH3-63D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

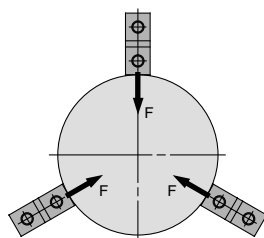
D-

20-

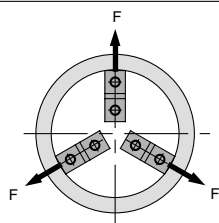
# Series MSHH3

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



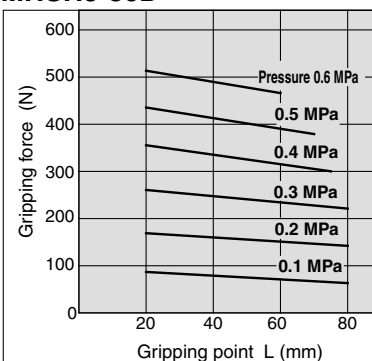
**External grip**



**Internal grip**

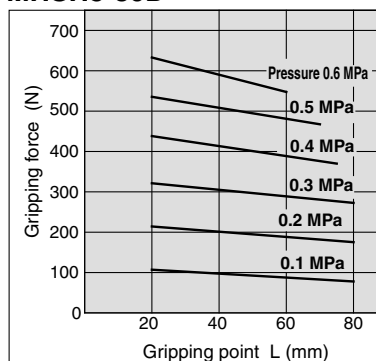
## External Gripping Force

### MSHH3-80D

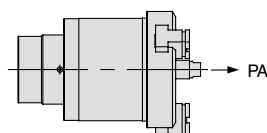


## Internal Gripping Force

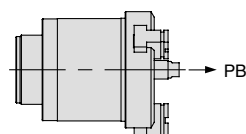
### MSHH3-80D



## Effective Thrust of Center Pusher



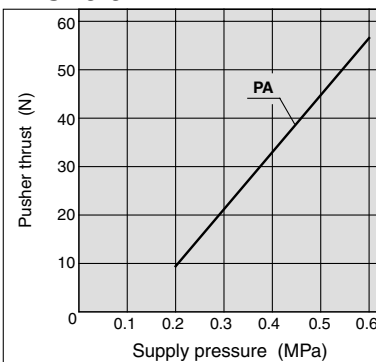
PA: Pusher thrust



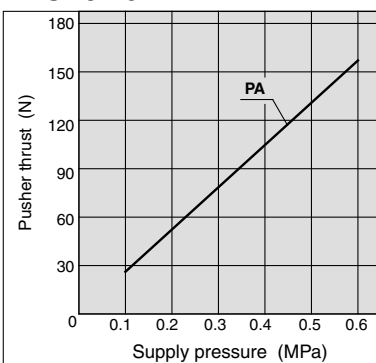
PB: Spring force

## Cylinder Type Note)

### MSHH3-32DA

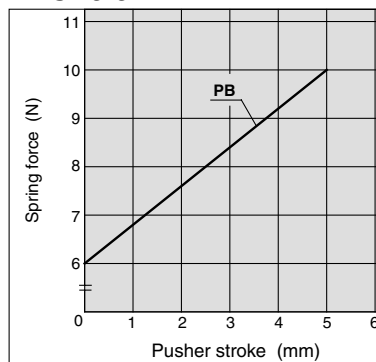


### MSHH3-40DA

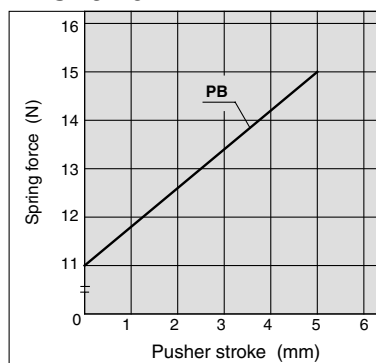


## Spring Type

### MSHH3-32DB



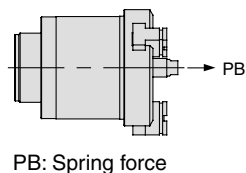
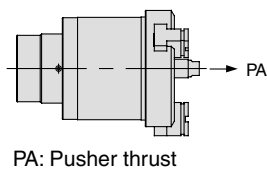
### MSHH3-40DB



Note) The thrust of the cylinder type is on extension of the push rod.

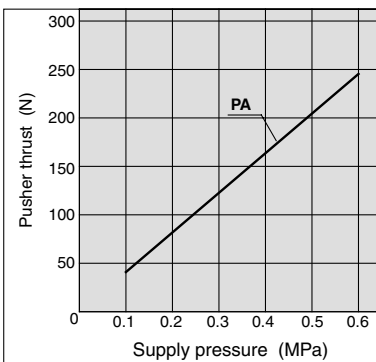
# 3 Finger Parallel Style Air Gripper Through-hole Type **Series MSHH3**

## Effective Thrust of Center Pusher

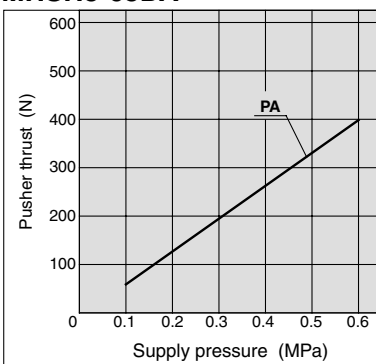


### Cylinder Type Note)

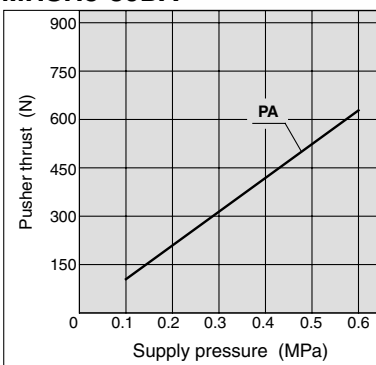
#### MSHH3-50DA



#### MSHH3-63DA

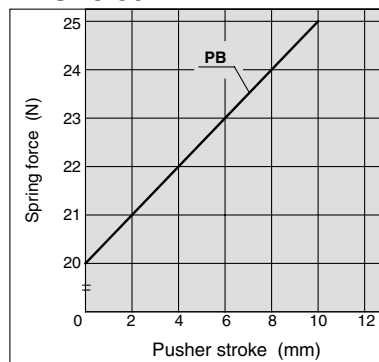


#### MSHH3-80DA

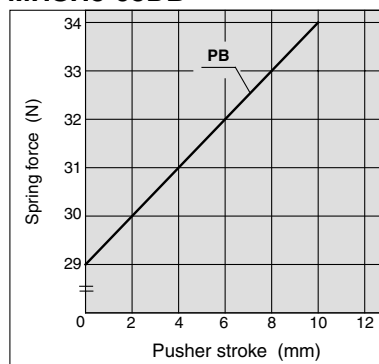


### Spring Type

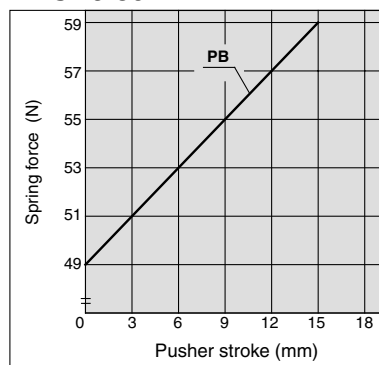
#### MSHH3-50DB



#### MSHH3-63DB



#### MSHH3-80DB



Note) The thrust of the cylinder type is on extension of the push rod.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

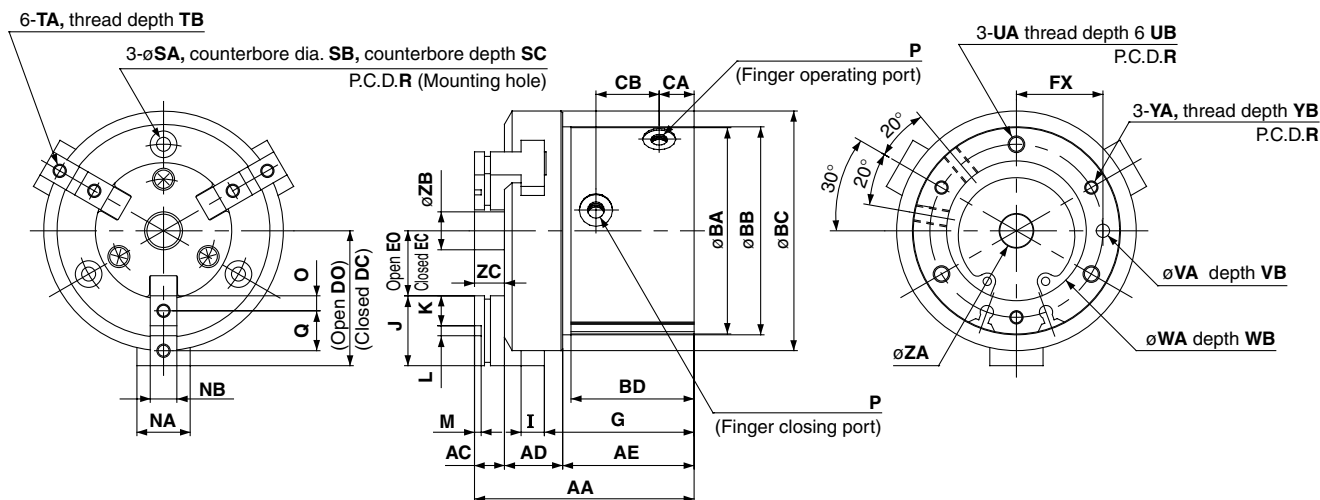
Misc.

D-

20-

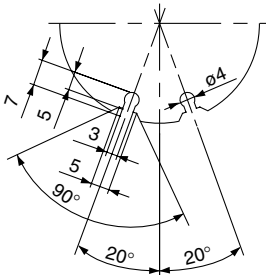


## MHSH3-32D to 80D

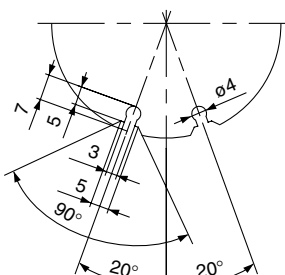


### Auto switch mounting groove dimensions (2 locations)

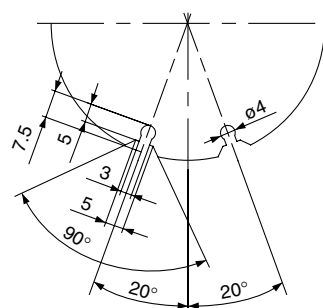
# MHSH3-32D



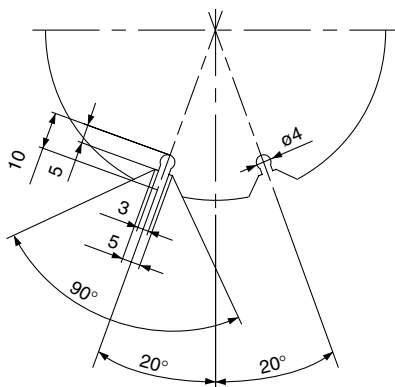
## MHSH3-40D



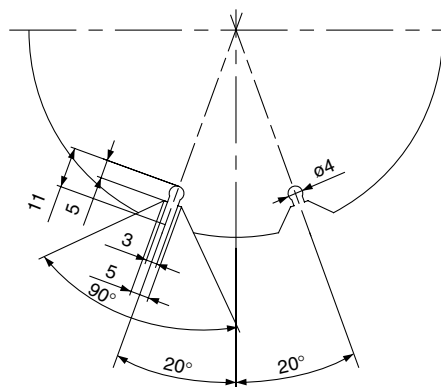
## MHSH3-50D



# MHSH3-63D



## MHSH3-80D



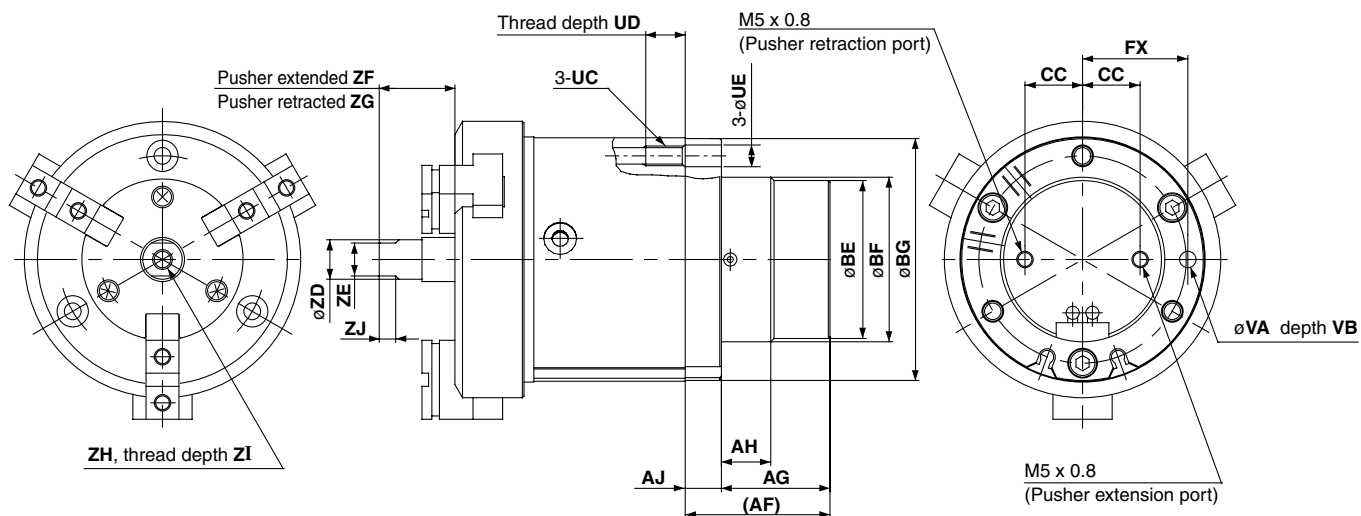
| (mm)      |          |    |      |      |     |       |          |    |           |      |                                    |      |                                     |      |          |      |                                      |      |    |                                    |   |    |                                     |     |
|-----------|----------|----|------|------|-----|-------|----------|----|-----------|------|------------------------------------|------|-------------------------------------|------|----------|------|--------------------------------------|------|----|------------------------------------|---|----|-------------------------------------|-----|
| Model     | AA       | AC | AD   | AE   | BA  | BB    | BC       | BD | CA        | CB   | DC                                 | DO   | EC                                  | EO   | FX       | G    | I                                    | J    | K  | L                                  | M | NA | NB                                  | O   |
| MHSH3-32D | 63       | 9  | 15.5 | 38.5 | 54  | 54.5  | 62       | 36 | 9.5       | 19   | 31.5                               | 35.5 | 11.5                                | 15.5 | 22       | 43.5 | 6                                    | 20   | 9  | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 14 | 8H9 <sup>0</sup> <sub>-0.036</sub>  | 4.5 |
| MHSH3-40D | 66       | 9  | 17.5 | 39.5 | 62  | 62.5  | 72       | 37 | 10.5      | 19   | 36                                 | 40   | 15                                  | 19   | 26       | 45   | 7                                    | 21   | 9  | 3H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 16 | 8H9 <sup>0</sup> <sub>-0.036</sub>  | 4.5 |
| MHSH3-50D | 80       | 10 | 21   | 49   | 74  | 74.5  | 84       | 46 | 11.5      | 26.5 | 42                                 | 48   | 18                                  | 24   | 32       | 55.5 | 9                                    | 24   | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 2 | 18 | 10H9 <sup>0</sup> <sub>-0.036</sub> | 5   |
| MHSH3-63D | 91       | 12 | 26   | 53   | 92  | 92.5  | 102      | 50 | 13        | 28   | 51                                 | 59   | 23                                  | 31   | 40       | 61   | 11                                   | 28   | 11 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 3 | 24 | 12H9 <sup>0</sup> <sub>-0.043</sub> | 5.5 |
| MHSH3-80D | 108      | 15 | 31.5 | 61.5 | 112 | 112.5 | 125      | 57 | 14        | 31   | 63                                 | 73   | 31                                  | 41   | 50       | 72   | 12                                   | 32   | 12 | 8H9 <sup>+0.036</sup> <sub>0</sub> | 4 | 28 | 14H9 <sup>0</sup> <sub>-0.043</sub> | 6   |
| Model     | P        | Q  | R    | SA   | SB  | SC    | TA       | TB | UA        | UB   | VA                                 | VB   | WA                                  | WB   | YA       | YB   | ZA                                   | ZB   | ZC |                                    |   |    |                                     |     |
| MHSH3-32D | M5 x 0.8 | 11 | 44   | 4.2  | 8   | 7     | M4 x 0.7 | 8  | M5 x 0.8  | 10   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4    | 34H9 <sup>+0.062</sup> <sub>0</sub> | 2    | M4 x 0.7 | 8    | 6H10 <sup>+0.048</sup> <sub>0</sub>  | 7.4  | 9  |                                    |   |    |                                     |     |
| MHSH3-40D | M5 x 0.8 | 12 | 52   | 4.2  | 8   | 7     | M4 x 0.7 | 8  | M5 x 0.8  | 10   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4    | 42H9 <sup>+0.062</sup> <sub>0</sub> | 2    | M4 x 0.7 | 8    | 10H10 <sup>+0.058</sup> <sub>0</sub> | 11.4 | 9  |                                    |   |    |                                     |     |
| MHSH3-50D | M5 x 0.8 | 14 | 63   | 5.1  | 9.5 | 8     | M5 x 0.8 | 10 | M6 x 1    | 12   | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5    | 52H9 <sup>+0.074</sup> <sub>0</sub> | 2    | M5 x 0.8 | 10   | 12H10 <sup>+0.070</sup> <sub>0</sub> | 13.4 | 10 |                                    |   |    |                                     |     |
| MHSH3-63D | M5 x 0.8 | 17 | 78   | 6.6  | 11  | 8     | M5 x 0.8 | 10 | M8 x 1.25 | 16   | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6    | 65H9 <sup>+0.074</sup> <sub>0</sub> | 2.5  | M6 x 1   | 12   | 16H10 <sup>+0.070</sup> <sub>0</sub> | 17.4 | 12 |                                    |   |    |                                     |     |
| MHSH3-80D | Rc 1/8   | 20 | 98   | 6.6  | 11  | 8     | M6 x 1   | 12 | M8 x 1.25 | 16   | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6    | 82H9 <sup>+0.087</sup> <sub>0</sub> | 3    | M6 x 1   | 12   | 20H10 <sup>+0.084</sup> <sub>0</sub> | 21.4 | 15 |                                    |   |    |                                     |     |



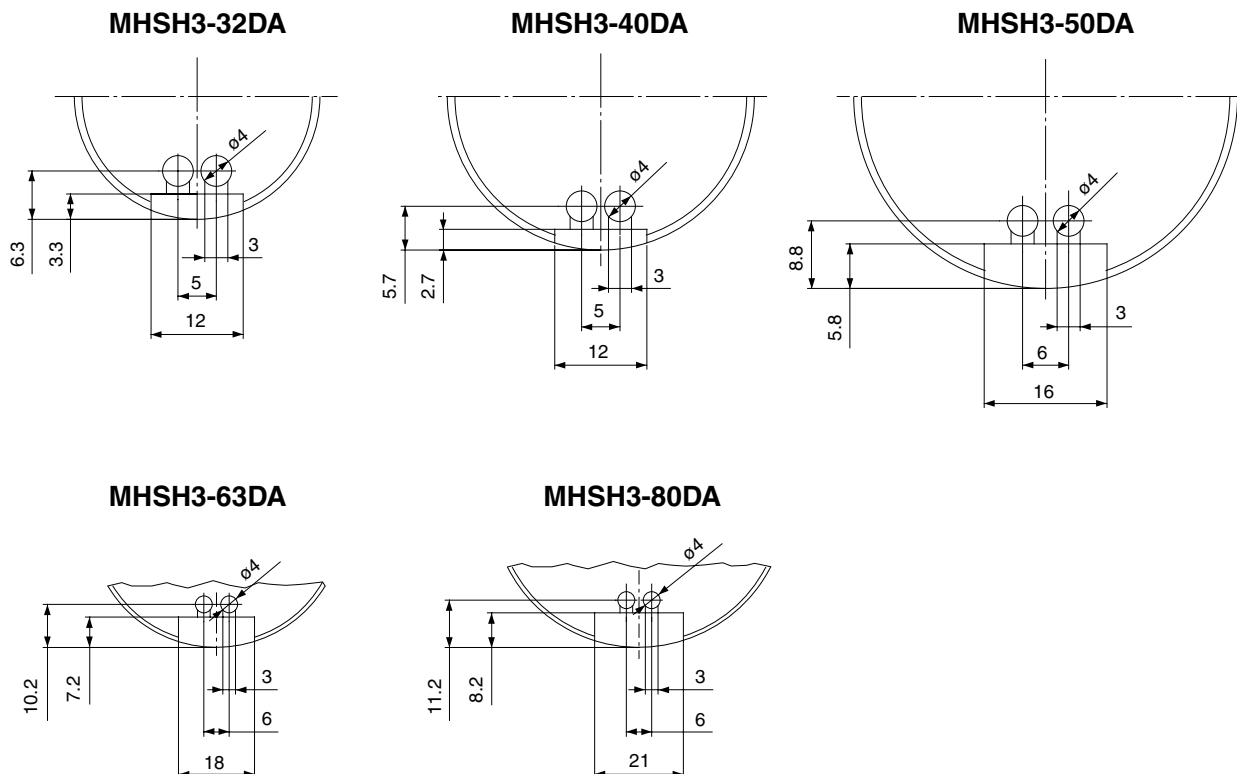
# Series MSH3

## Dimensions: Center Pusher/Cylinder Type

### MHSH3-32DA to 80DA



### Center pusher auto switch mounting groove dimensions (2 locations)



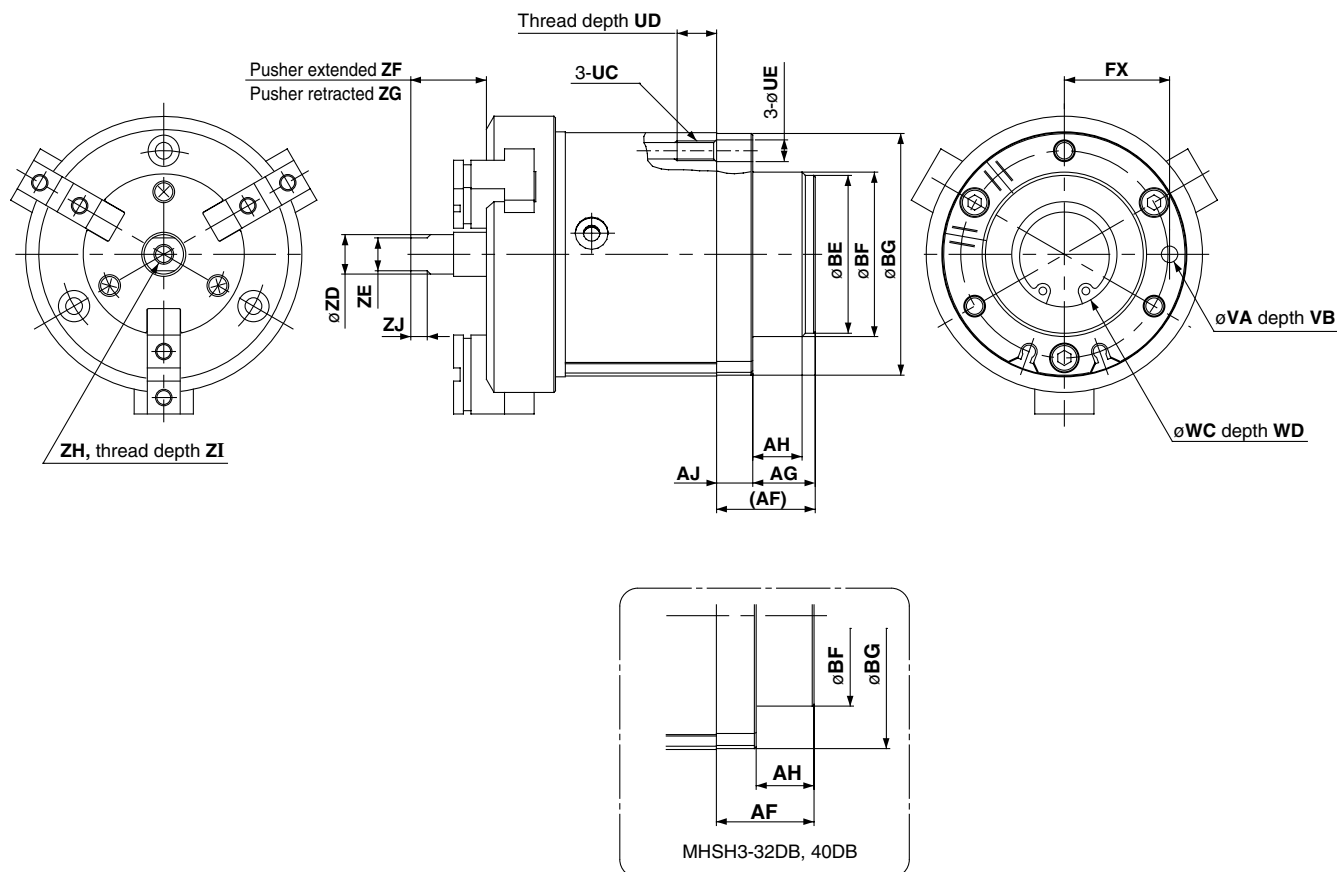
Note) For dimensions, refer to the MHSH3-32 to 80D dimensions on page 12-7-39.

| Model      | AF | AG | AH | AJ | BE | BF             | BG    | CC   | FX | UC        | UD | UE  | VA                 | VB | ZD | ZE | ZF | ZG | ZH        | ZI | ZJ  |
|------------|----|----|----|----|----|----------------|-------|------|----|-----------|----|-----|--------------------|----|----|----|----|----|-----------|----|-----|
| MHSH3-32DA | 35 | 26 | 9  | 9  | 30 | 32h9<br>-0.062 | 53.5  | 9.5  | 22 | M5 x 0.8  | 10 | 5.5 | 4H9<br>+0.030<br>0 | 4  | 6  | 5  | 20 | 15 | M3 x 0.5  | 6  | 3.5 |
| MHSH3-40DA | 36 | 27 | 12 | 9  | 38 | 40h9<br>-0.062 | 61.5  | 13.5 | 26 | M5 x 0.8  | 10 | 5.5 | 4H9<br>+0.030<br>0 | 4  | 10 | 8  | 21 | 16 | M5 x 0.8  | 10 | 4.5 |
| MHSH3-50DA | 44 | 33 | 15 | 11 | 48 | 50h9<br>-0.062 | 73.5  | 17.5 | 32 | M6 x 1    | 12 | 6.6 | 5H9<br>+0.030<br>0 | 5  | 12 | 10 | 28 | 18 | M6 x 1    | 12 | 5   |
| MHSH3-63DA | 48 | 35 | 18 | 13 | 58 | 60h9<br>-0.074 | 91.5  | 20   | 40 | M8 x 1.25 | 16 | 8.6 | 6H9<br>+0.030<br>0 | 6  | 16 | 14 | 32 | 22 | M8 x 1.25 | 16 | 7   |
| MHSH3-80DA | 58 | 45 | 20 | 13 | 68 | 70h9<br>-0.074 | 111.5 | 25   | 50 | M8 x 1.25 | 16 | 8.6 | 6H9<br>+0.030<br>0 | 6  | 20 | 17 | 41 | 26 | M10 x 1.5 | 20 | 8   |

# 3 Finger Parallel Style Air Gripper Through-hole Type **Series MSHH3**

## Dimensions: Center Pusher/Spring Type

### MSHH3-32DB to 80DB



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

20-

Note) For dimensions, refer to the MSHH3-32 to 80D dimensions on page 12-7-39.

(mm)

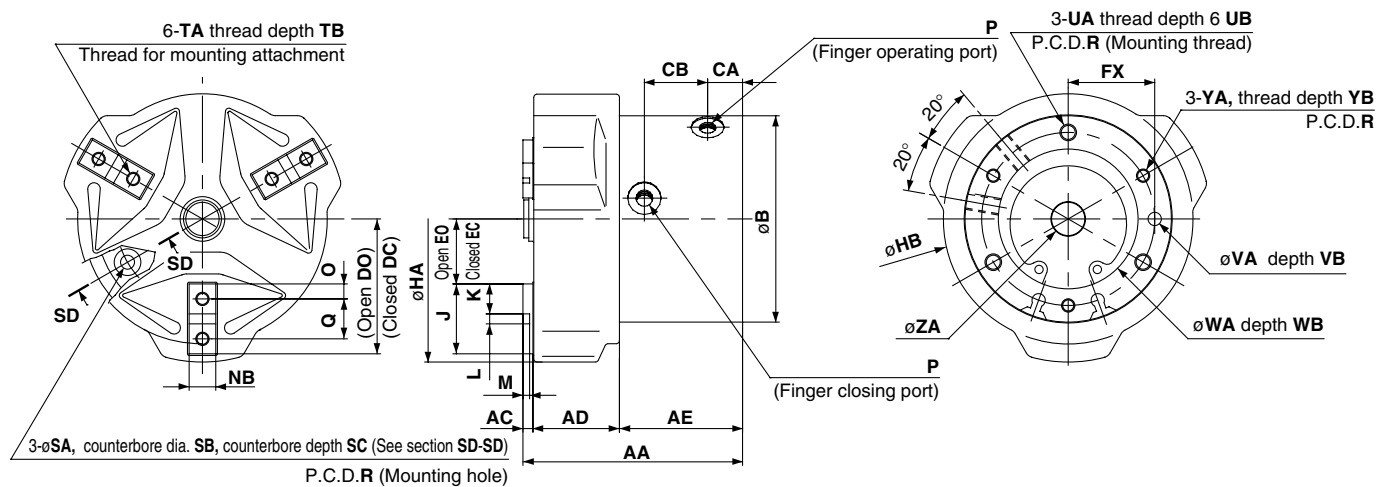
| Model             | AF | AG | AH | AJ | BE | BF                                  | BG    | FX | UC        | UD | UE  | VA                                 | VB | WC                              | WD  | ZD | ZE | ZF | ZG |
|-------------------|----|----|----|----|----|-------------------------------------|-------|----|-----------|----|-----|------------------------------------|----|---------------------------------|-----|----|----|----|----|
| <b>MSHH3-32DB</b> | 18 | —  | 9  | 9  | —  | 32h9 <sup>0</sup> <sub>-0.062</sub> | 53.5  | 22 | M5 x 0.8  | 10 | 5.5 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 20 <sup>+0.1</sup> <sub>0</sub> | 1.5 | 6  | 5  | 20 | 15 |
| <b>MSHH3-40DB</b> | 21 | —  | 12 | 9  | —  | 40h9 <sup>0</sup> <sub>-0.062</sub> | 61.5  | 26 | M5 x 0.8  | 10 | 5.5 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 24 <sup>+0.1</sup> <sub>0</sub> | 1.5 | 10 | 8  | 21 | 16 |
| <b>MSHH3-50DB</b> | 30 | 19 | 15 | 11 | 48 | 50h9 <sup>0</sup> <sub>-0.062</sub> | 73.5  | 32 | M6 x 1    | 12 | 6.6 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 32 <sup>+0.1</sup> <sub>0</sub> | 1.5 | 12 | 10 | 28 | 18 |
| <b>MSHH3-63DB</b> | 35 | 22 | 18 | 13 | 58 | 60h9 <sup>0</sup> <sub>-0.074</sub> | 91.5  | 40 | M8 x 1.25 | 16 | 8.6 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 42 <sup>+0.1</sup> <sub>0</sub> | 2   | 16 | 14 | 32 | 22 |
| <b>MSHH3-80DB</b> | 48 | 35 | 20 | 13 | 68 | 70h9 <sup>0</sup> <sub>-0.074</sub> | 111.5 | 50 | M8 x 1.25 | 16 | 8.6 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 52 <sup>+0.1</sup> <sub>0</sub> | 2   | 20 | 17 | 41 | 26 |

| Model             | ZH        | ZI | ZJ  |
|-------------------|-----------|----|-----|
| <b>MSHH3-32DB</b> | M3 x 0.5  | 6  | 3.5 |
| <b>MSHH3-40DB</b> | M5 x 0.8  | 10 | 4.5 |
| <b>MSHH3-50DB</b> | M6 x 1    | 12 | 5   |
| <b>MSHH3-63DB</b> | M8 x 1.25 | 16 | 7   |
| <b>MSHH3-80DB</b> | M10 x 1.5 | 20 | 8   |

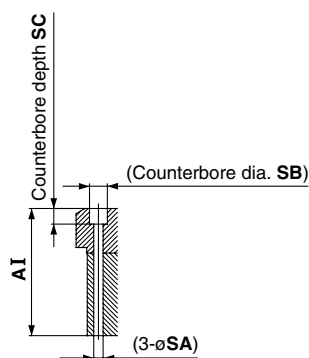
## Series MSH3

### Dimensions: Through-hole with Dust Cover

## MHSHJ3-32D to 80D

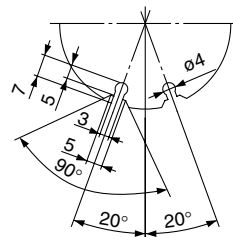


### Auto switch mounting groove dimensions (2 locations)

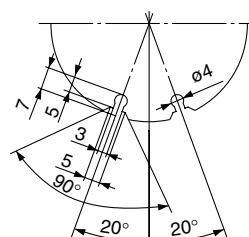


## Section SD - SD

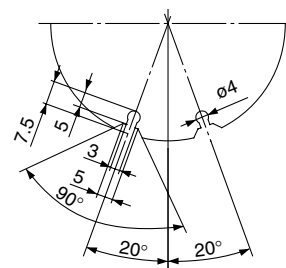
## MHSHJ3-32D



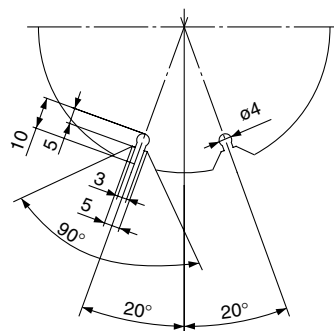
# MHSHJ3-40D



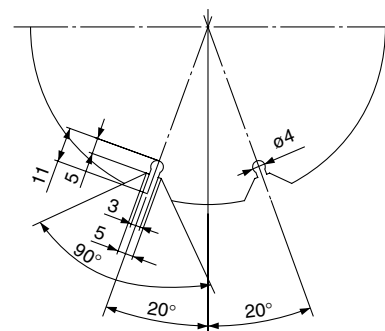
# MHSHJ3-50D



# MHSHJ3-63D



# MHSHJ3-80D



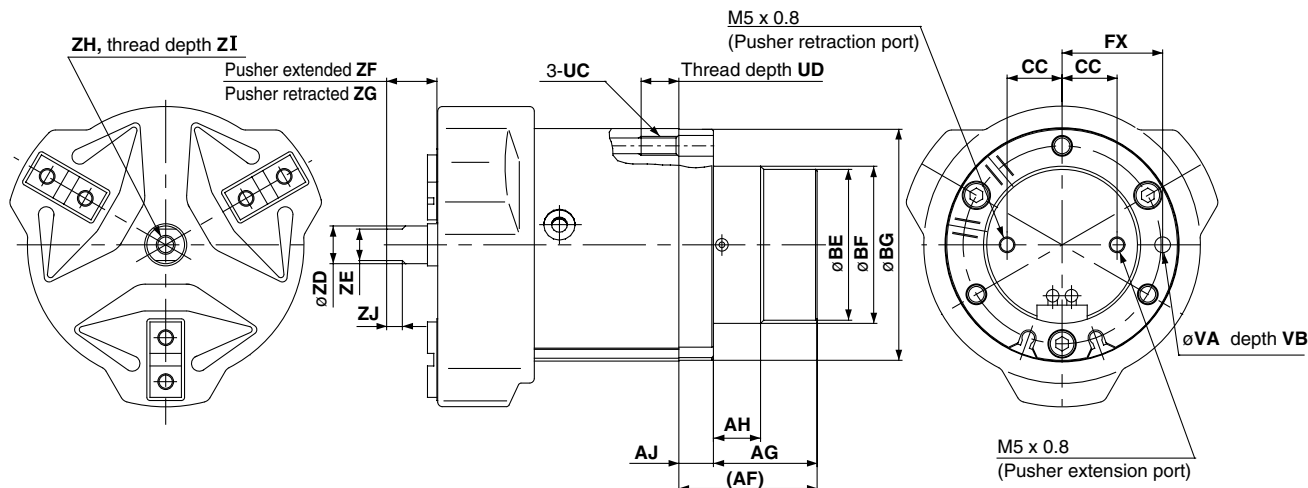
| Model      | AA  | AC | AD | AE | AI | B   | CA   | CB   | DC   | DO   | EC   | EO   | FX | HA  | HB  | J  | K  | L                                  | M | NB                                  |
|------------|-----|----|----|----|----|-----|------|------|------|------|------|------|----|-----|-----|----|----|------------------------------------|---|-------------------------------------|
| MHSHJ3-32D | 63  | 3  | 24 | 36 | 54 | 54  | 9.5  | 19   | 31.5 | 35.5 | 11.5 | 15.5 | 22 | 76  | 65  | 20 | 9  | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 8H9 <sup>0</sup> <sub>-0.036</sub>  |
| MHSHJ3-40D | 66  | 3  | 26 | 37 | 57 | 62  | 10.5 | 19   | 36   | 40   | 15   | 19   | 26 | 86  | 75  | 21 | 9  | 3H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 8H9 <sup>0</sup> <sub>-0.036</sub>  |
| MHSHJ3-50D | 80  | 3  | 31 | 46 | 70 | 74  | 11.5 | 26.5 | 42   | 48   | 28   | 24   | 32 | 103 | 88  | 24 | 10 | 4H9 <sup>0</sup> <sub>0</sub>      | 2 | 10H9 <sup>0</sup> <sub>-0.036</sub> |
| MHSHJ3-63D | 91  | 4  | 37 | 50 | 79 | 92  | 13   | 28   | 51   | 59   | 23   | 31   | 40 | 125 | 106 | 28 | 11 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 3 | 12H9 <sup>0</sup> <sub>-0.043</sub> |
| MHSHJ3-80D | 108 | 5  | 46 | 57 | 93 | 112 | 14   | 31   | 63   | 73   | 31   | 41   | 50 | 158 | 130 | 32 | 12 | 8H9 <sup>+0.036</sup> <sub>0</sub> | 4 | 14H9 <sup>0</sup> <sub>-0.043</sub> |

| Model      | O   | P        | Q  | R  | SA  | SB  | SC | TA       | TB | UA        | UB | VA                                 | VB | WA                                  | WB  | YA       | YB | ZA                                   |
|------------|-----|----------|----|----|-----|-----|----|----------|----|-----------|----|------------------------------------|----|-------------------------------------|-----|----------|----|--------------------------------------|
| MHSHJ3-32D | 4.5 | M5 x 0.8 | 11 | 44 | 4.2 | 8   | 7  | M4 x 0.7 | 8  | M5 x 0.8  | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 34H9 <sup>+0.062</sup> <sub>0</sub> | 2   | M4 x 0.7 | 8  | 6H10 <sup>+0.048</sup> <sub>0</sub>  |
| MHSHJ3-40D | 4.5 | M5 x 0.8 | 12 | 52 | 4.2 | 8   | 7  | M4 x 0.7 | 8  | M5 x 0.8  | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 42H9 <sup>+0.062</sup> <sub>0</sub> | 2   | M4 x 0.7 | 8  | 10H10 <sup>+0.058</sup> <sub>0</sub> |
| MHSHJ3-50D | 5   | M5 x 0.8 | 14 | 63 | 5.1 | 9.5 | 8  | M5 x 0.8 | 10 | M6 x 1    | 12 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 52H9 <sup>+0.074</sup> <sub>0</sub> | 2   | M5 x 0.8 | 10 | 12H10 <sup>+0.070</sup> <sub>0</sub> |
| MHSHJ3-63D | 5.5 | M5 x 0.8 | 17 | 78 | 6.6 | 11  | 8  | M5 x 0.8 | 10 | M8 x 1.25 | 16 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 65H9 <sup>+0.074</sup> <sub>0</sub> | 2.5 | M6 x 1   | 12 | 16H10 <sup>+0.070</sup> <sub>0</sub> |
| MHSHJ3-80D | 6   | Rc 1/8   | 20 | 98 | 6.6 | 11  | 8  | M6 x 1   | 12 | M8 x 1.25 | 16 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 82H9 <sup>+0.087</sup> <sub>0</sub> | 3   | M6 x 1   | 12 | 20H10 <sup>+0.084</sup> <sub>0</sub> |

# 3 Finger Parallel Style Air Gripper Through-hole Type **Series MSHH3**

## Dimensions: Center Pusher with Dust Cover/Cylinder Type

MHSHJ3-32DA to 80DA



Note) For dimensions, refer to the MHSHJ3-32 to 80D dimensions on page 12-7-42.  
For auto switch mounting groove, refer to MHSH3-32 to 80DA on page 12-7-40.

| Model       | AF | AG | AH | AJ | BE | BF             | BG    | CC   | FX | UC        | UD | VA                 | VB | ZD | ZE | ZF | ZG | ZH        | ZI | ZJ  |
|-------------|----|----|----|----|----|----------------|-------|------|----|-----------|----|--------------------|----|----|----|----|----|-----------|----|-----|
| MHSHJ3-32DA | 35 | 26 | 9  | 9  | 30 | 32h9<br>-0.062 | 53.5  | 9.5  | 22 | M5 x 0.8  | 10 | 4H9<br>+0.030<br>0 | 4  | 6  | 5  | 14 | 9  | M3 x 0.5  | 6  | 3.5 |
| MHSHJ3-40DA | 36 | 27 | 12 | 9  | 38 | 40h9<br>-0.062 | 61.5  | 13.5 | 26 | M5 x 0.8  | 10 | 4H9<br>+0.030<br>0 | 4  | 10 | 8  | 15 | 10 | M5 x 0.8  | 10 | 4.5 |
| MHSHJ3-50DA | 44 | 33 | 15 | 11 | 48 | 50h9<br>-0.062 | 73.5  | 17.5 | 32 | M6 x 1    | 12 | 5H9<br>+0.030<br>0 | 5  | 12 | 10 | 21 | 11 | M6 x 1    | 12 | 5   |
| MHSHJ3-63DA | 48 | 35 | 18 | 13 | 58 | 60h9<br>-0.074 | 91.5  | 20   | 40 | M8 x 1.25 | 16 | 6H9<br>+0.030<br>0 | 6  | 16 | 14 | 24 | 14 | M8 x 1.25 | 16 | 7   |
| MHSHJ3-80DA | 58 | 45 | 20 | 13 | 68 | 70h9<br>-0.074 | 111.5 | 25   | 50 | M8 x 1.25 | 16 | 6H9<br>+0.030<br>0 | 6  | 20 | 17 | 31 | 16 | M10 x 1.5 | 20 | 8   |

(mm)

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

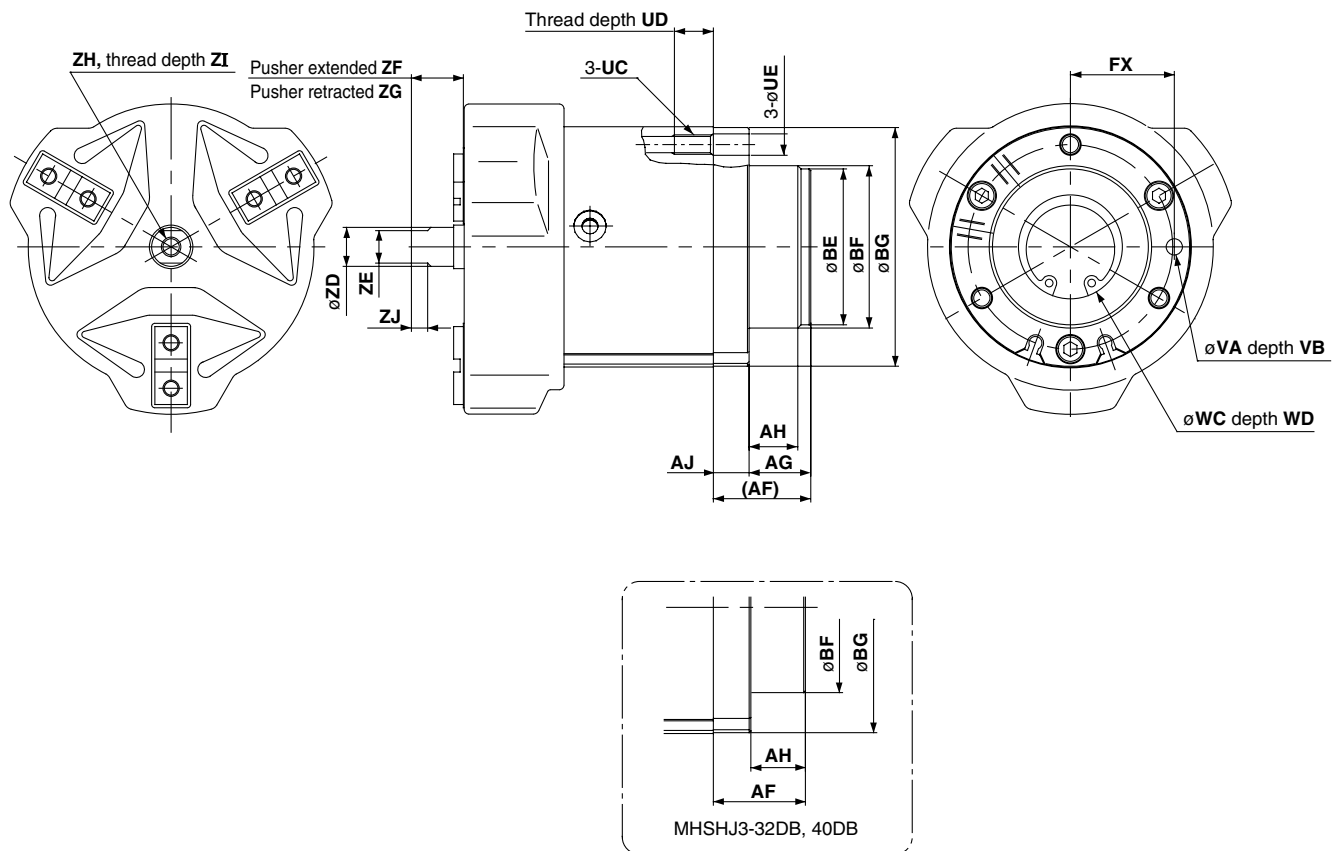
D-

20-

# Series MSHH3

## Dimensions: Center Pusher with Dust Cover/Spring Type

### MHSHJ3-32DB to 80DB



Note) For dimensions, refer to the MHSHJ3-32 to 80D external dimensions on page 12-7-42.

(mm)

| Model       | AF | AG | AH | AJ | BE | BF             | BG    | FX | UC        | UD | UE  | VA                 | VB | WC              | WD  | ZD | ZE | ZF |
|-------------|----|----|----|----|----|----------------|-------|----|-----------|----|-----|--------------------|----|-----------------|-----|----|----|----|
| MHSHJ3-32DB | 18 | —  | 9  | 9  | —  | 32h9<br>-0.062 | 53.5  | 22 | M5 x 0.8  | 10 | 5.5 | 4H9<br>+0.030<br>0 | 4  | 20<br>+0.1<br>0 | 1.5 | 6  | 5  | 14 |
| MHSHJ3-40DB | 21 | —  | 12 | 9  | —  | 40h9<br>-0.062 | 61.5  | 26 | M5 x 0.8  | 10 | 5.5 | 4H9<br>+0.030<br>0 | 4  | 24<br>+0.1<br>0 | 1.5 | 10 | 8  | 15 |
| MHSHJ3-50DB | 30 | 19 | 15 | 11 | 48 | 50h9<br>-0.062 | 73.5  | 32 | M6 x 1    | 12 | 6.6 | 5H9<br>+0.030<br>0 | 5  | 32<br>+0.1<br>0 | 1.5 | 12 | 10 | 21 |
| MHSHJ3-63DB | 35 | 22 | 18 | 13 | 58 | 60h9<br>-0.074 | 91.5  | 40 | M8 x 1.25 | 16 | 8.6 | 6H9<br>+0.030<br>0 | 6  | 42<br>+0.1<br>0 | 2   | 16 | 14 | 24 |
| MHSHJ3-80DB | 48 | 35 | 20 | 13 | 68 | 70h9<br>-0.074 | 111.5 | 50 | M8 x 1.25 | 16 | 8.6 | 6H9<br>+0.030<br>0 | 6  | 52<br>+0.1<br>0 | 2   | 20 | 17 | 31 |

| Model       | ZG | ZH        | ZI | ZJ  |
|-------------|----|-----------|----|-----|
| MHSHJ3-32DB | 9  | M3 x 0.5  | 6  | 3.5 |
| MHSHJ3-40DB | 10 | M5 x 0.8  | 10 | 4.5 |
| MHSHJ3-50DB | 11 | M6 x 1    | 12 | 5   |
| MHSHJ3-63DB | 14 | M8 x 1.25 | 16 | 7   |
| MHSHJ3-80DB | 16 | M10 x 1.5 | 20 | 8   |

# 3 Finger Parallel Style Air Gripper Long Stroke Type Series **MHSL3**

Size: 16, 20, 25, 32, 40, 50, 63, 80, 100, 125



Refer to page 12-13-25 for solid state switch with pre-wire connector.

## How to Order

### Bore size

**ø16 to ø25 MHSL 3 — 20 D — M9N**

**Number of fingers**  
3 3 fingers

**Bore size**  
16 16 mm  
20 20 mm  
25 25 mm

**Action**  
D Double acting

**Auto switch**  
Nil Without auto switch (Built-in magnet)  
S 1 pc.  
Nil 2 pcs.

**Number of auto switches**

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

### Applicable Auto Switch/Refer to page 12-13-1 for further information on auto switches

| Type               | Special function                     | Electrical entry | Indicator light | Wiring (Output) | Load voltage |      | Auto switch model |         | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |
|--------------------|--------------------------------------|------------------|-----------------|-----------------|--------------|------|-------------------|---------|-----------------------|-------|-------|--------------------------|-----------------|------------|--------------------|
|                    |                                      |                  |                 |                 | DC           | AC   | Perpendicular     | In-line | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            |                    |
| Solid state switch | —                                    | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V  | M9NV              | M9N     | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V | M9PV              | M9P     | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                      |                  |                 | 2-wire          |              | 12 V | M9BV              | M9B     | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    | Water resistant (2-color indication) |                  |                 | 2-wire          |              | 12 V | —                 | F9BA    | —                     | ●     | ○     | ○                        | —               |            | ○                  |

\* Lead wire length symbols: 0.5 m ... Nil (Example) M9B  
3 m ... L (Example) M9BL  
5 m ... Z (Example) M9BZ

Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

### Bore size

**ø32 to ø125 MHSL 3 — 50 D — Y59A**

**Number of fingers**  
3 3 fingers

**Bore size**  
32 32 mm  
40 40 mm  
50 50 mm  
63 63 mm  
80 80 mm  
100 100 mm  
125 125 mm

**Action**  
D Double acting

**Auto switch**  
Nil Without auto switch (Built-in magnet)  
S 1 pc.  
n "n" pcs.

**Number of auto switches**

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

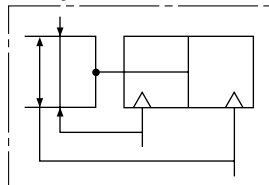
### Applicable Auto Switch/Refer to page 12-13-1 for further information on auto switches

| Type               | Special function                     | Electrical entry | Indicator light | Wiring (Output) | Load voltage |           | Auto switch model |         | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |
|--------------------|--------------------------------------|------------------|-----------------|-----------------|--------------|-----------|-------------------|---------|-----------------------|-------|-------|--------------------------|-----------------|------------|--------------------|
|                    |                                      |                  |                 |                 | DC           | AC        | Perpendicular     | In-line | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            |                    |
| Solid state switch | —                                    | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V, 12 V | Y69A              | Y59A    | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V      | Y7PV              | Y7P     | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    |                                      |                  |                 | 2-wire          |              | 12 V      | Y69B              | Y59B    | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    | Diagnosis (2-color indication)       | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V, 12 V | Y7NWV             | Y7NW    | ●                     | ●     | ○     | Standard                 | IC circuit      | Relay, PLC | ○                  |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V      | Y7PWV             | Y7PW    | ●                     | ●     | ○     |                          |                 |            | ○                  |
|                    | Water resistant (2-color indication) |                  |                 | 2-wire          |              | 12 V      | Y7BWV             | Y7BW    | ●                     | ●     | ○     | —                        | —               |            | ○                  |

\* Lead wire length symbols: 0.5 m ... Nil (Example) Y59B  
3 m ... L (Example) Y59BL  
5 m ... Z (Example) Y59BZ

\* Auto switches marked with a "○" symbol are produced upon receipt of order.  
Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

### JIS Symbol



# Series MHSL3

## Model/Specifications



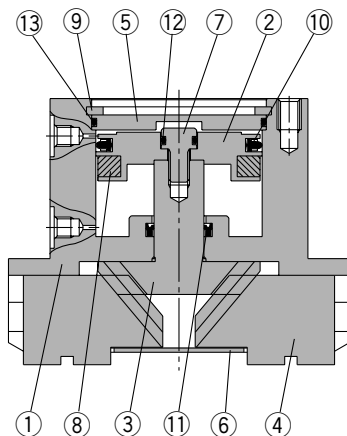
| Model  |               | MHSL3-16D     | MHSL3-20D | MHSL3-25D | MHSL3-32D | MHSL3-40D  | MHSL3-50D | MHSL3-63D | MHSL3-80D | MHSL3-100D | MHSL3-125D |
|--|---------------|---------------|-----------|-----------|-----------|------------|-----------|-----------|-----------|------------|------------|
| Bore size (mm)   |               | 16            | 20        | 25        | 32        | 40         | 50        | 63        | 80        | 100        | 125        |
| Fluid  |               | Air           |           |           |           |            |           |           |           |            |            |
| Operating pressure (MPa)                               |               | 0.2 to 0.6    |           |           |           | 0.1 to 0.6 |           |           |           |            |            |
| Ambient and fluid temperature (°C)                     |               | -10 to 60     |           |           |           |            |           |           |           |            |            |
| Repeatability (mm)                                     |               | ±0.01         |           |           |           |            |           |           |           |            |            |
| Max. operating frequency (c.p.m.)                      |               | 120           |           |           |           | 60         |           |           |           | 30         |            |
| Lubrication  |               | Not required  |           |           |           |            |           |           |           |            |            |
| Action   |               | Double acting |           |           |           |            |           |           |           |            |            |
| Effective gripping force (N) at 0.5 MPa <sup>(1)</sup> | External grip | 14            | 25        | 42        | 74        | 118        | 187       | 335       | 500       | 750        | 1,270      |
|  | Internal grip | 16            | 28        | 47        | 82        | 130        | 204       | 359       | 525       | 780        | 1,320      |
| Opening/Closing stroke (mm) (dia.)                     |               | 10            | 10        | 12        | 16        | 20         | 28        | 32        | 40        | 48         | 64         |
| Weight (g)   |               | 80            | 135       | 180       | 370       | 550        | 930       | 1,550     | 2,850     | 5,500      | 11,300     |

Note 1) Values for ø16 to ø25 are with gripping point L = 20 mm, for ø32 to ø63 with gripping point L = 30 mm, and for ø80 to ø125 with gripping point L = 50 mm. Refer to "Effective Gripping Force" data on pages 12-7-47 through 12-7-49 for the gripping force at each gripping position.

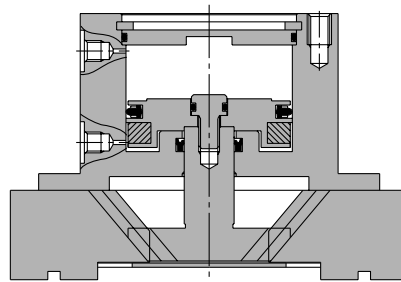
Note 2) Open and closed diameter values apply for external gripping of workpieces.

## Construction

Closed condition



Open condition



## Component Parts

| No. | Description | Material        | Note                            |
|-----|-------------|-----------------|---------------------------------|
| ①   | Body        | Aluminum alloy  | Hard anodized                   |
| ②   | Piston      | Aluminum alloy  | Hard anodized                   |
| ③   | Cam         | Carbon steel    | Heat treated, Specially treated |
| ④   | Finger      | Carbon steel    | Heat treated, Specially treated |
| ⑤   | Cap         | Aluminum alloy  | Hard anodized                   |
| ⑥   | End plate   | Stainless steel |                                 |
| ⑦   | Piston bolt | Stainless steel |                                 |

| No. | Description      | Material         | Note          |
|-----|------------------|------------------|---------------|
| ⑧   | Rubber magnet    | Synthetic rubber |               |
| ⑨   | Type C snap ring | Carbon steel     | Nickel plated |
| ⑩   | Piston seal      | NBR              |               |
| ⑪   | Rod seal         | NBR              |               |
| ⑫   | Gasket           | NBR              |               |
| ⑬   | Gasket           | NBR              |               |

## Replacement Parts

| Description     | MHSL3-16D | MHSL3-20D | MHSL3-25D | MHSL3-32D | MHSL3-40D | Main parts |
|-----------------|-----------|-----------|-----------|-----------|-----------|------------|
| Seal kit        | MHSL16-PS | MHSL20-PS | MHSL25-PS | MHSL32-PS | MHSL40-PS | ⑩⑪⑫⑬       |
| Finger          | P3316034  | P3346134  | P3316234  | P3316334  | P3316434  | ④          |
| Cam             | P3316033  | P3316133  | P3316233  | P3316333  | P3316433  | ③          |
| Piston assembly | MHS-A1601 | MHS-A2001 | MHS-A2501 | MHS-A3201 | MHS-A4001 | ②⑦⑧        |

| Description     | MHSL3-50D | MHSL3-63D | MHSL3-80D | MHSL3-100D | MHSL3-125D | Main parts |
|-----------------|-----------|-----------|-----------|------------|------------|------------|
| Seal kit        | MHSL50-PS | MHSL63-PS | MHSL80-PS | MHS100-PS  | MHSL125-PS | ⑩⑪⑫⑬       |
| Finger          | P3316534  | P3316634  | P3316734  | P3316834   | P3316934   | ④          |
| Cam             | P3316533  | P3316633  | P3316733  | P3316833   | P3316933   | ③          |
| Piston assembly | MHS-A5001 | MHS-A6301 | MHS-A8001 | MHS-A10001 | MHS-A12501 | ②⑦⑧        |

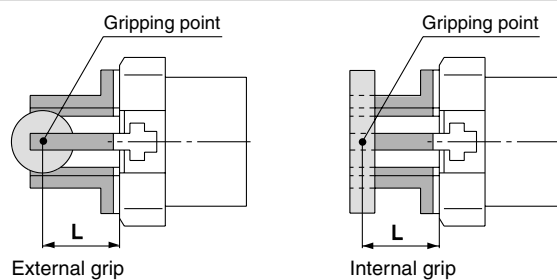
\* Order 3 pieces of fingers for one unit.



# 3 Finger Parallel Style Air Gripper Long Stroke Type **Series MHSL3**

## Gripping Point

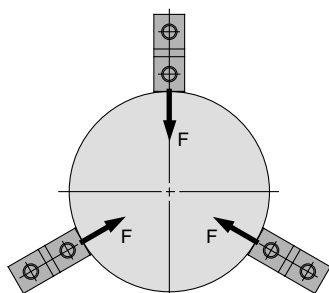
- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.



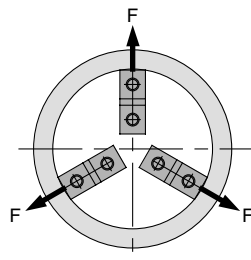
L: Gripping point distance

## Effective Gripping Force

- Indication of effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



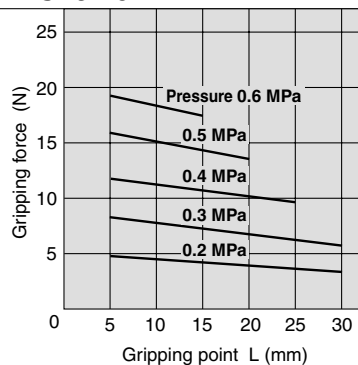
External grip



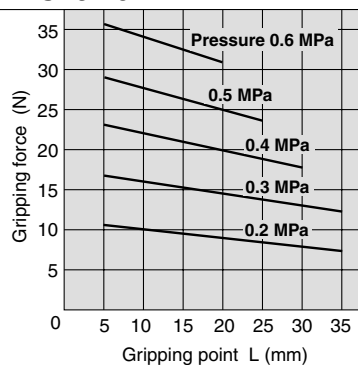
Internal grip

### External Gripping Force

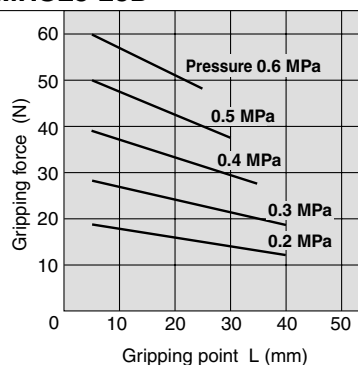
#### MHSL3-16D



#### MHSL3-20D

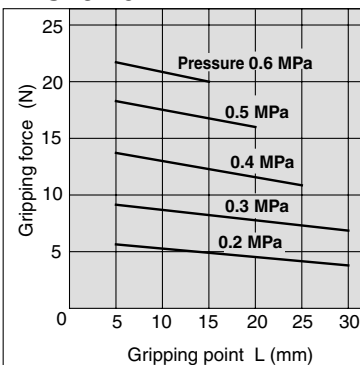


#### MHSL3-25D

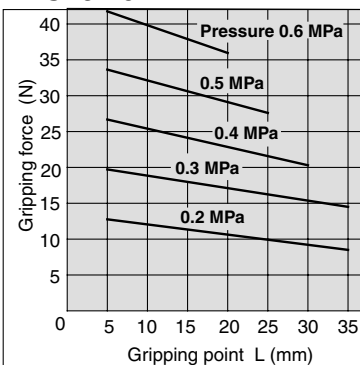


### Internal Gripping Force

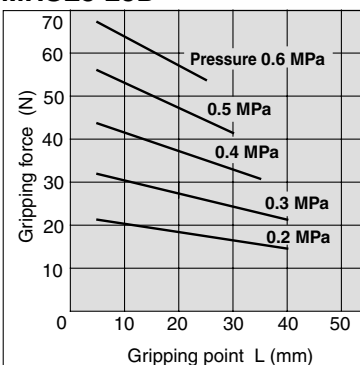
#### MHSL3-16D



#### MHSL3-20D



#### MHSL3-25D

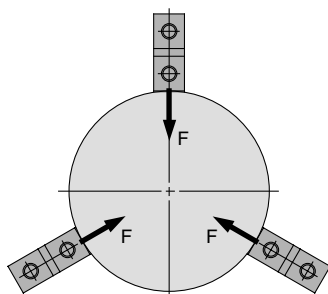


# Series MHSL3

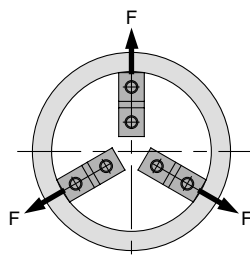
## Effective Gripping Force

### • Indication of effective gripping force

The effective gripping force shown in the graphs to the right is expressed as  $F$ , which is the thrust of one finger when all 3 of the fingers and attachments are in full contact with the workpiece as shown in the figure below.



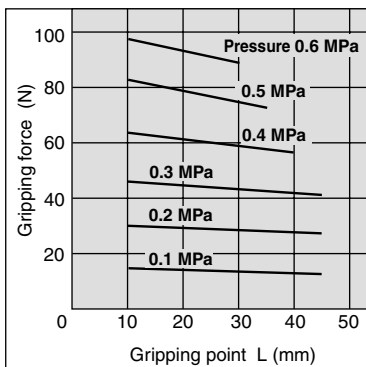
**External grip**



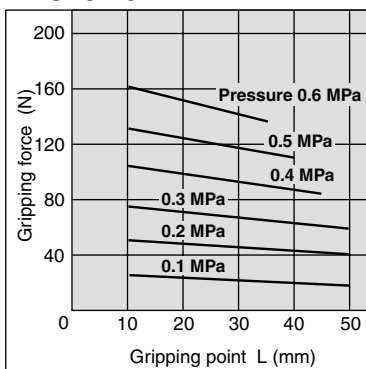
**Internal grip**

## External Gripping Force

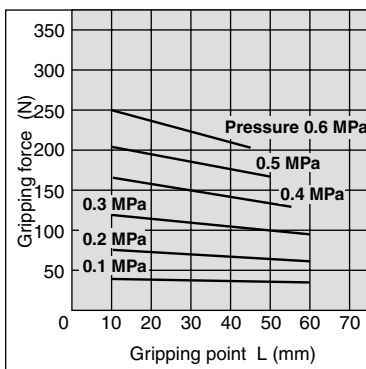
### MHSL3-32D



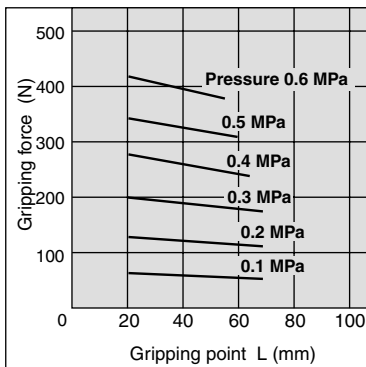
### MHSL3-40D



### MHSL3-50D

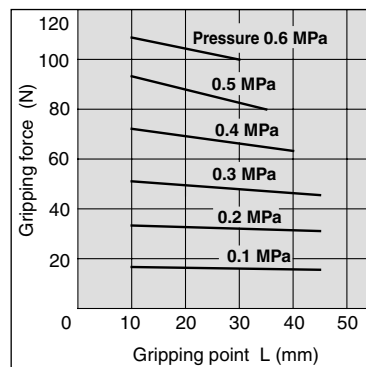


### MHSL3-63D

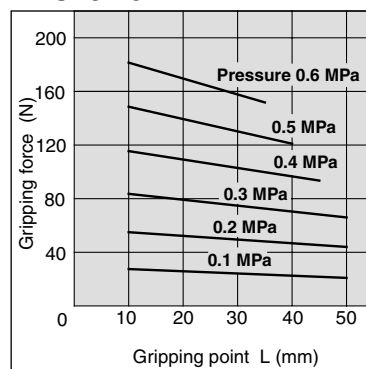


## Internal Gripping Force

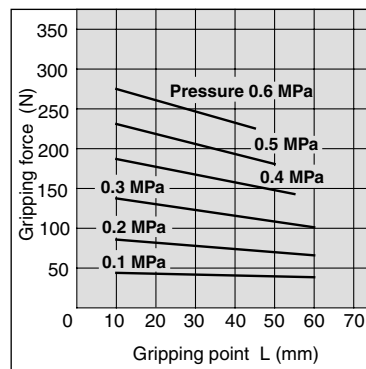
### MHSL3-32D



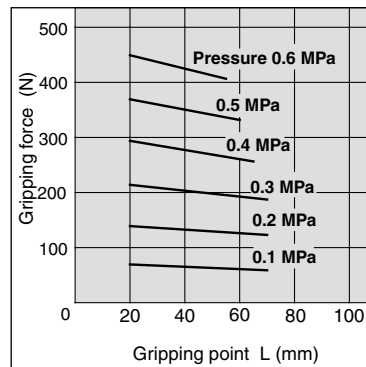
### MHSL3-40D



### MHSL3-50D



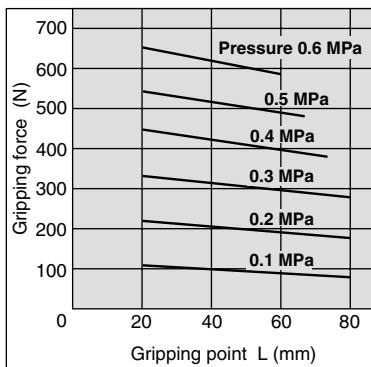
### MHSL3-63D



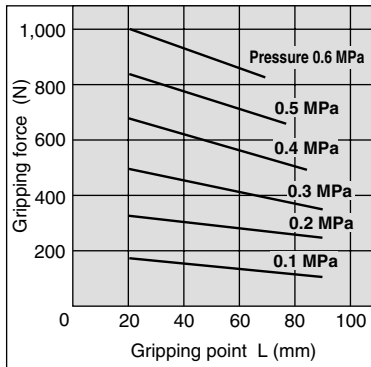
# 3 Finger Parallel Style Air Gripper Long Stroke Type **Series MHSL3**

## External Gripping Force

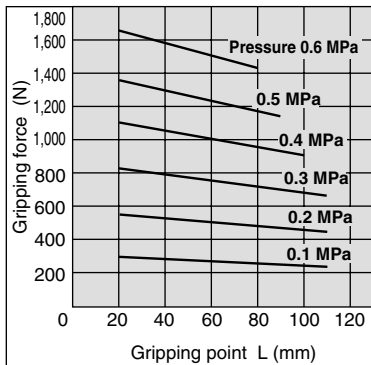
### MHSL3-80D



### MHSL3-100D

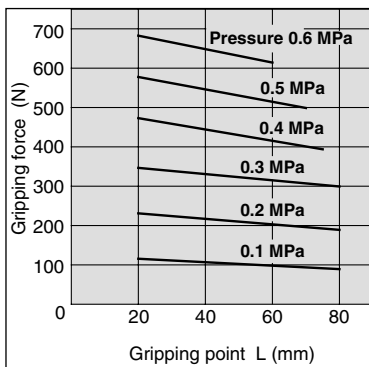


### MHSL3-125D

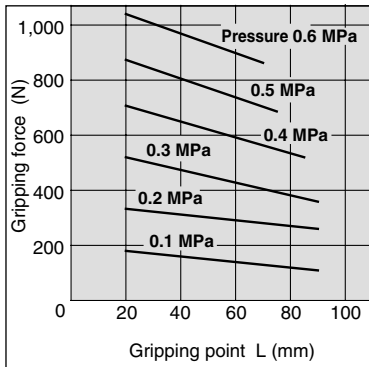


## Internal Gripping Force

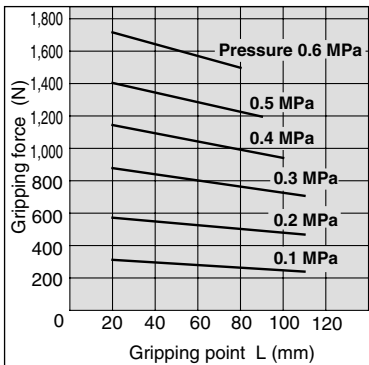
### MHSL3-80D



### MHSL3-100D



### MHSL3-125D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

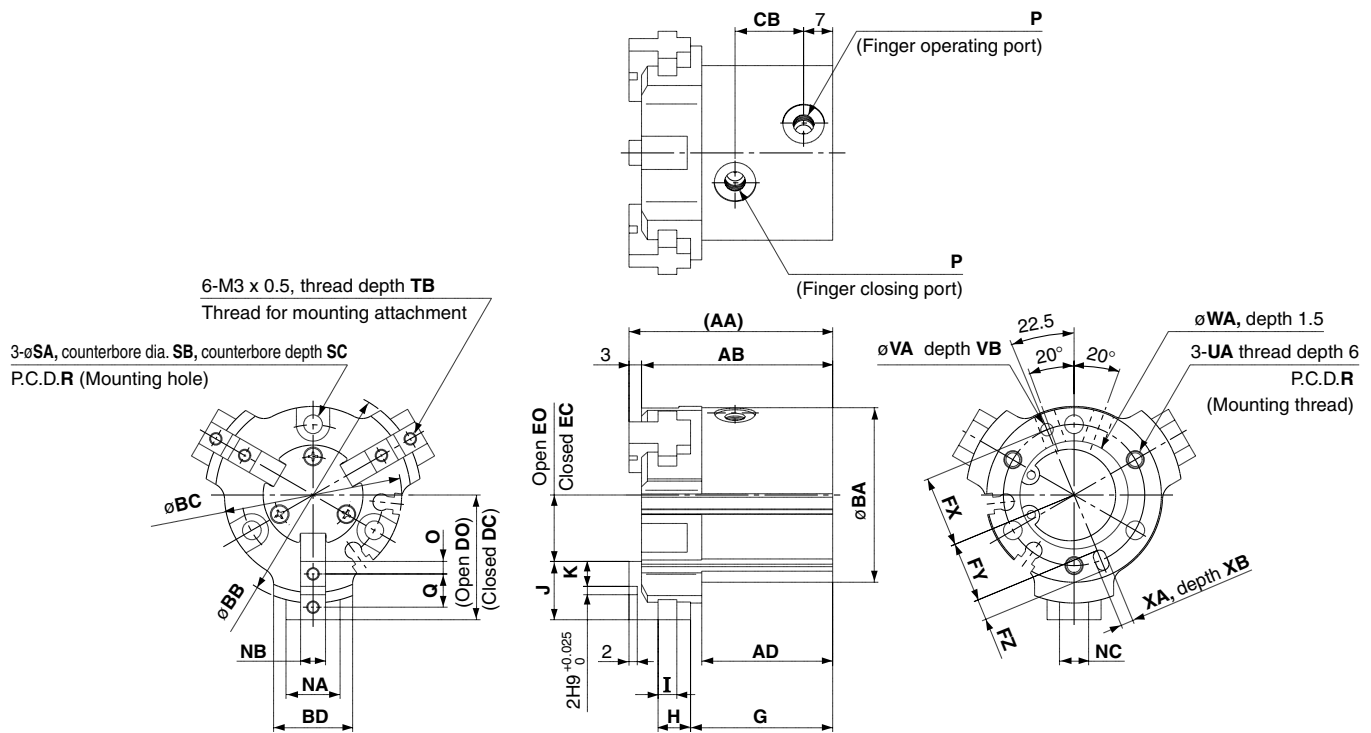
D-

20-

# Series MHSL3

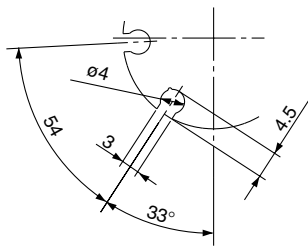
## Dimensions

### MHSL3-16D to 25D

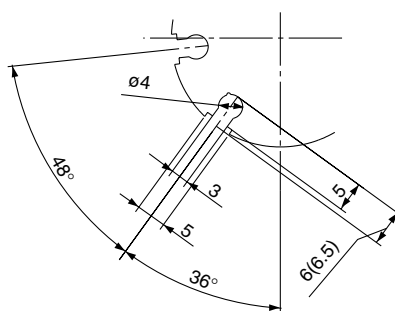


### Auto switch mounting groove dimensions (2 locations)

#### MHSL3-16D



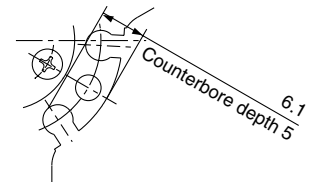
#### MHSL3-20D, 25D



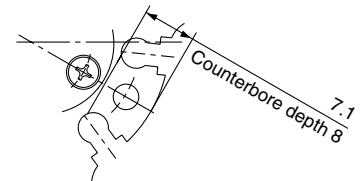
Dimensions inside ( ) are for  $\phi$ 25

### Mounting hole counterbore dimensions

#### MHSL3-16D



#### MHSL3-20D



Note) The counter bore configuration differs only for the mounting hole section between the auto switch mounting grooves. ( $\phi$ 16,  $\phi$ 20 only)

| Model     | AA   | AB   | AD   | BA | BB | BC   | BD | CB   | DO   | DC   | EO   | EC  | FX   | FY   | FZ | G    | H   | I   | J  | K | NA | NB                |
|-----------|------|------|------|----|----|------|----|------|------|------|------|-----|------|------|----|------|-----|-----|----|---|----|-------------------|
| MHSL3-16D | 43.5 | 40.5 | 28   | 30 | 40 | 30.6 | 12 | 14   | 23.5 | 18.5 | 13.5 | 8.5 | 12.5 | 11   | 3  | 30.5 | 7   | 4   | 10 | 4 | 8  | 5h9 $^{+0.030}_0$ |
| MHSL3-20D | 46   | 43   | 29   | 36 | 45 | 36.6 | 16 | 14   | 26   | 21   | 14   | 9   | 14.5 | 13   | 3  | 32   | 8   | 4   | 12 | 5 | 11 | 6h9 $^{+0.030}_0$ |
| MHSL3-25D | 49   | 46   | 31.5 | 42 | 52 | 42.6 | 19 | 16.5 | 30   | 24   | 16   | 10  | 17   | 14.5 | 5  | 34.2 | 7.8 | 4.5 | 14 | 6 | 13 | 6h9 $^{+0.030}_0$ |

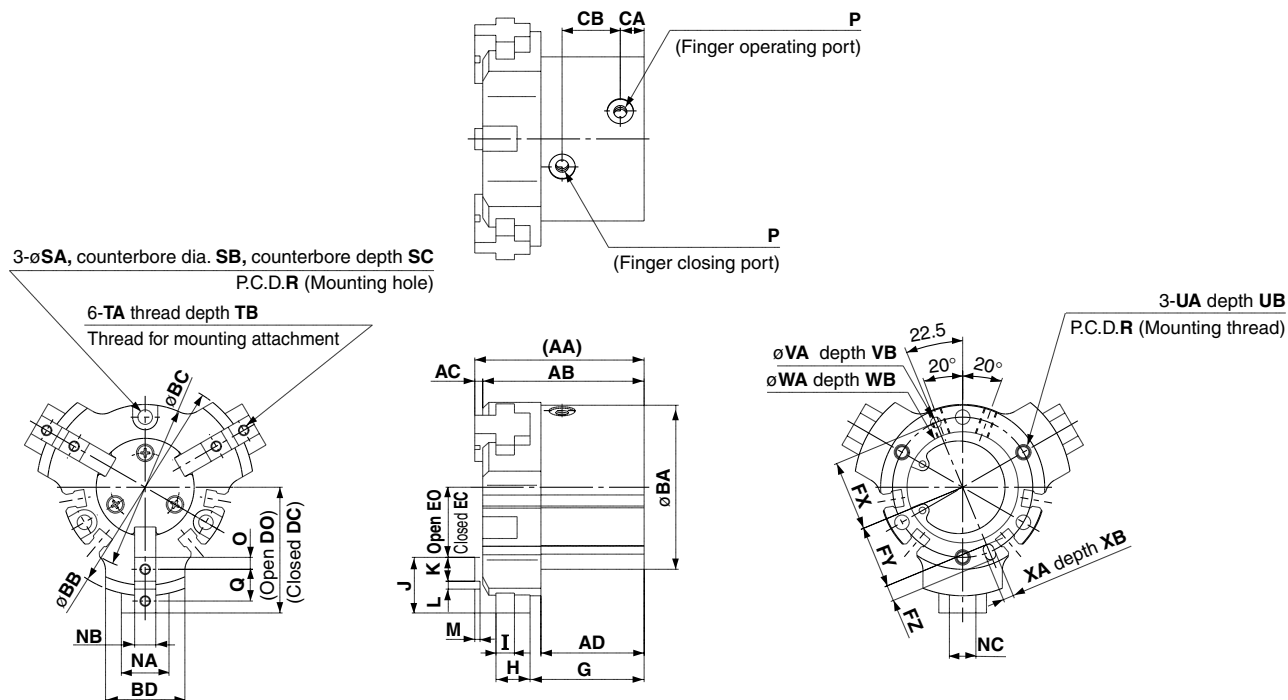
  

| Model     | NC | O   | P        | Q | R  | SA  | SB  | SC | TB | UA       | VA                | VB | WA                 | XA                | XB |
|-----------|----|-----|----------|---|----|-----|-----|----|----|----------|-------------------|----|--------------------|-------------------|----|
| MHSL3-16D | 5  | 2   | M3 x 0.5 | 6 | 25 | 3.4 | 6.5 | 5  | 5  | M3 x 0.5 | 2H9 $^{+0.025}_0$ | 2  | 17H9 $^{+0.043}_0$ | 2H9 $^{+0.025}_0$ | 2  |
| MHSL3-20D | 7  | 2.5 | M5 x 0.8 | 7 | 29 | 3.4 | 6.5 | 8  | 6  | M3 x 0.5 | 2H9 $^{+0.025}_0$ | 2  | 21H9 $^{+0.052}_0$ | 2H9 $^{+0.025}_0$ | 2  |
| MHSL3-25D | 7  | 3   | M5 x 0.8 | 8 | 34 | 4.5 | 8   | 8  | 6  | M4 x 0.7 | 3H9 $^{+0.025}_0$ | 3  | 26H9 $^{+0.052}_0$ | 3H9 $^{+0.025}_0$ | 3  |

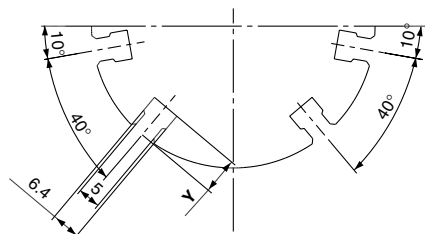
(mm)

# 3 Finger Parallel Style Air Gripper Long Stroke Type **Series MHSL3**

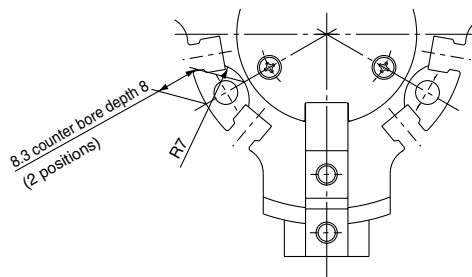
## MHSL3-32D to 80D



### Auto switch mounting groove dimensions (4 locations)



### Mounting hole counterbore dimensions MHSL3-32D



Note) The counter bore configuration differs only for the mounting hole section between the auto switch mounting grooves. (ø32 only)

(mm)

| Model     | AA   | AB   | AC | AD   | BA  | BB  | BC    | BD | CA | CB   | DO   | DC   | EO   | EC   | FX   | FY   | FZ | G    | H    | I  | J  | K  |
|-----------|------|------|----|------|-----|-----|-------|----|----|------|------|------|------|------|------|------|----|------|------|----|----|----|
| MHSL3-32D | 58   | 55   | 3  | 35.5 | 52  | 72  | 52.6  | 24 | 8  | 20   | 42   | 34   | 22   | 14   | 22   | 19.5 | 5  | 39.6 | 10.4 | 5  | 20 | 9  |
| MHSL3-40D | 64   | 61   | 3  | 38.5 | 62  | 82  | 62.6  | 30 | 9  | 22   | 47.5 | 37.5 | 26.5 | 16.5 | 26.5 | 23.5 | 6  | 42.5 | 13.5 | 7  | 21 | 9  |
| MHSL3-50D | 77.5 | 74.5 | 3  | 46.5 | 70  | 104 | 70.6  | 32 | 9  | 29   | 60   | 46   | 36   | 22   | 31   | 28   | 6  | 51.3 | 17.7 | 8  | 24 | 10 |
| MHSL3-63D | 89   | 85   | 4  | 51   | 86  | 120 | 86.6  | 40 | 12 | 30.5 | 70   | 54   | 42   | 26   | 38   | 34.5 | 7  | 58.5 | 19.5 | 10 | 28 | 11 |
| MHSL3-80D | 116  | 111  | 5  | 70   | 106 | 140 | 106.6 | 50 | 14 | 37.5 | 80.5 | 60.5 | 48.5 | 28.5 | 47.5 | 43.5 | 8  | 78.5 | 23.5 | 11 | 32 | 12 |

| Model     | L                                  | M | NA | NB                                  | NC | O   | P        | Q  | R  | SA  | SB  | SC  | TA       | TB | UA       | UB | VA                                 | VB |
|-----------|------------------------------------|---|----|-------------------------------------|----|-----|----------|----|----|-----|-----|-----|----------|----|----------|----|------------------------------------|----|
| MHSL3-32D | 2H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 16 | 8H9 <sup>0</sup> <sub>-0.036</sub>  | 10 | 4.5 | M5 x 0.8 | 11 | 44 | 4.5 | 8   | 8   | M4 x 0.7 | 8  | M4 x 0.7 | 6  | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  |
| MHSL3-40D | 3H9 <sup>+0.025</sup> <sub>0</sub> | 2 | 18 | 8H9 <sup>0</sup> <sub>-0.036</sub>  | 10 | 4.5 | M5 x 0.8 | 12 | 53 | 5.5 | 9.5 | 9.5 | M4 x 0.7 | 8  | M5 x 0.8 | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  |
| MHSL3-50D | 4H9 <sup>+0.030</sup> <sub>0</sub> | 2 | 20 | 10H9 <sup>0</sup> <sub>-0.036</sub> | 12 | 5   | M5 x 0.8 | 14 | 62 | 5.5 | 9.5 | 9.5 | M5 x 0.8 | 10 | M5 x 0.8 | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  |
| MHSL3-63D | 6H9 <sup>+0.036</sup> <sub>0</sub> | 3 | 26 | 12H9 <sup>0</sup> <sub>-0.043</sub> | 14 | 5.5 | M5 x 0.8 | 17 | 76 | 6.6 | 11  | 17  | M5 x 0.8 | 10 | M6 x 1   | 12 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  |
| MHSL3-80D | 8H9 <sup>+0.036</sup> <sub>0</sub> | 4 | 30 | 14H9 <sup>0</sup> <sub>-0.043</sub> | 16 | 6   | Rc 1/8   | 20 | 95 | 6.6 | 11  | 23  | M6 x 1   | 12 | M6 x 1   | 12 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  |

| Model     | WA                                  | WB  | XA                                 | XB | Y   |
|-----------|-------------------------------------|-----|------------------------------------|----|-----|
| MHSL3-32D | 34H9 <sup>+0.062</sup> <sub>0</sub> | 2   | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  | 6   |
| MHSL3-40D | 42H9 <sup>+0.062</sup> <sub>0</sub> | 2   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 8   |
| MHSL3-50D | 52H9 <sup>+0.074</sup> <sub>0</sub> | 2   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 7   |
| MHSL3-63D | 65H9 <sup>+0.074</sup> <sub>0</sub> | 2.5 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 7.5 |
| MHSL3-80D | 82H9 <sup>+0.087</sup> <sub>0</sub> | 3   | 6H9 <sup>+0.030</sup> <sub>0</sub> | 6  | 9   |

# Series MHSL3

## Dimensions

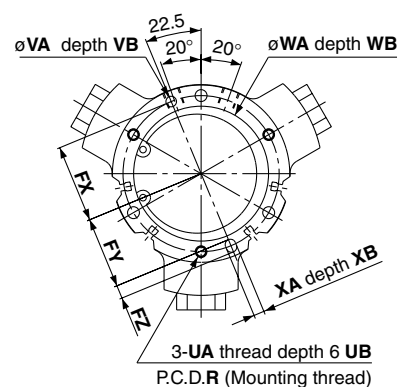
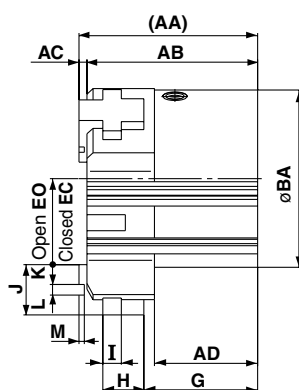
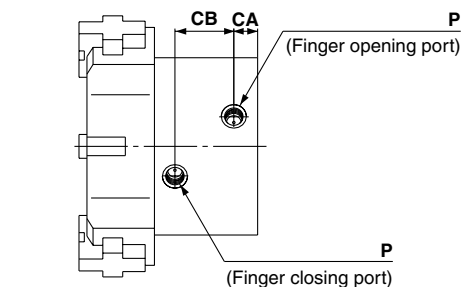
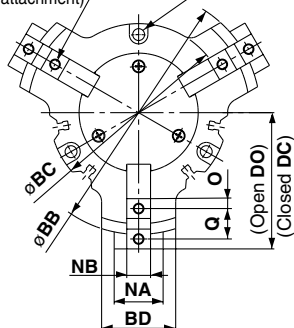
### MHSL3-100D, 125D

3- $\phi$ SA, counterbore dia. SB, counterbore depth SC

P.C.D.R (Mounting hole)

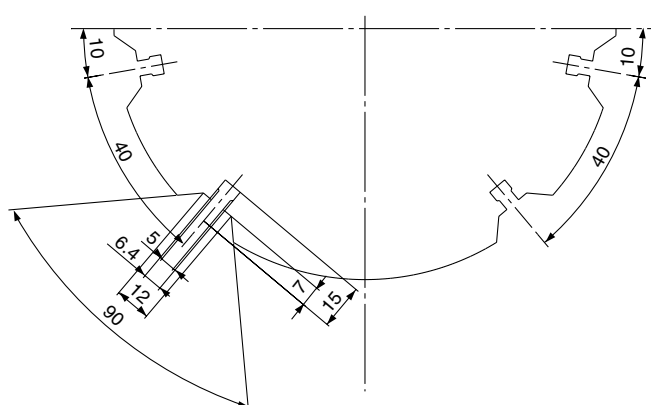
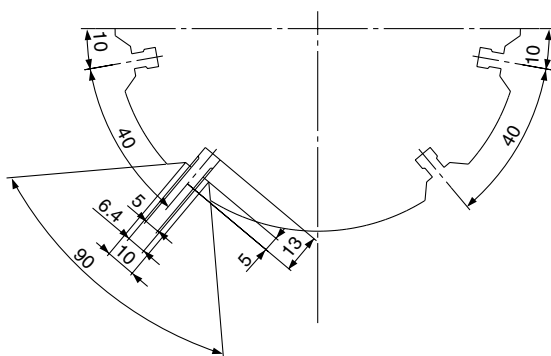
6-TA thread depth TB

(Thread for mounting attachment)



### MHSL3-100D

### MHSL3-125D



(mm)

| Model      | AA  | AB  | AC | AD  | BA  | BB  | BC    | BD | CA | CB   | DO  | DC  | EO | EC | FX | FY | FZ | G   | H  | I  | J  | K  |
|------------|-----|-----|----|-----|-----|-----|-------|----|----|------|-----|-----|----|----|----|----|----|-----|----|----|----|----|
| MHSL3-100D | 135 | 129 | 6  | 78  | 134 | 184 | 134.6 | 56 | 18 | 44.5 | 103 | 79  | 65 | 41 | 59 | 54 | 10 | 86  | 31 | 14 | 38 | 15 |
| MHSL3-125D | 175 | 167 | 8  | 102 | 166 | 234 | 166.6 | 66 | 24 | 54   | 132 | 100 | 80 | 48 | 74 | 68 | 12 | 112 | 43 | 17 | 52 | 21 |

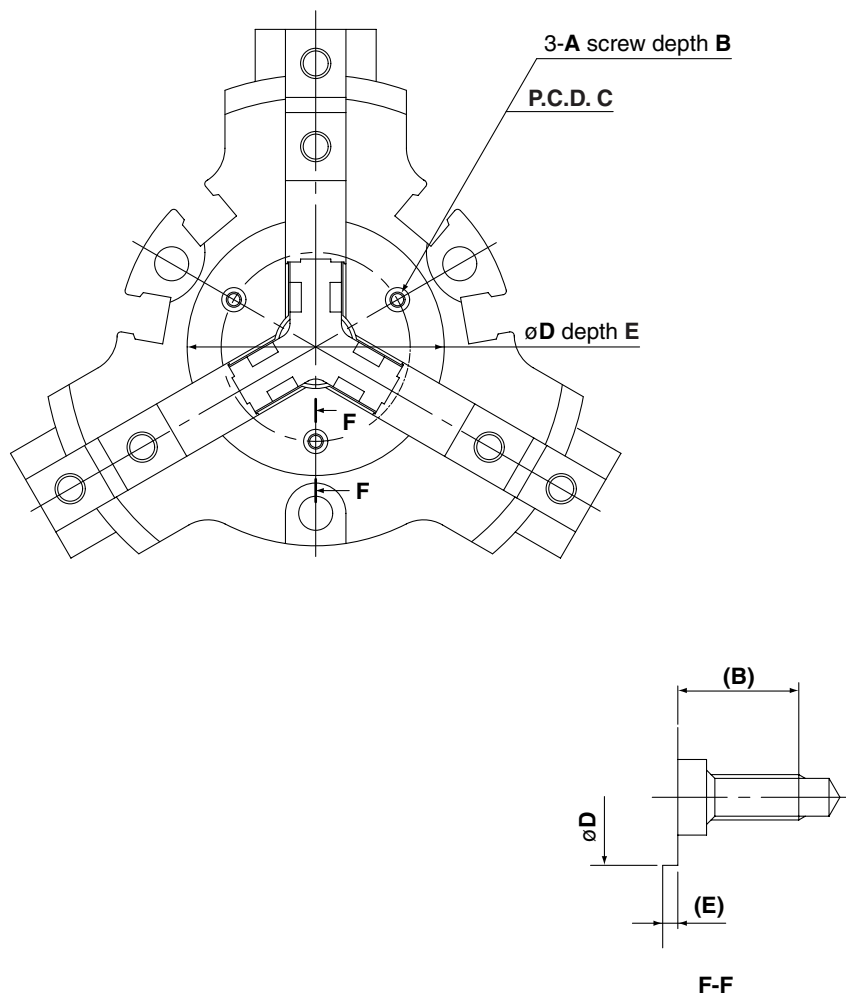
| Model      | L                                   | M | NA | NB                                  | NC | O    | P      | Q  | R   | SA | SB   | SC | TA        | TB | UA        | UB | VA                                  |
|------------|-------------------------------------|---|----|-------------------------------------|----|------|--------|----|-----|----|------|----|-----------|----|-----------|----|-------------------------------------|
| MHSL3-100D | 8H9 <sup>+0.036</sup> <sub>0</sub>  | 4 | 37 | 18h9 <sup>0</sup> <sub>-0.043</sub> | 21 | 7.5  | Rc 1/4 | 23 | 118 | 9  | 14   | 31 | M8 x 1.25 | 16 | M8 x 1.25 | 16 | 8H9 <sup>+0.036</sup> <sub>0</sub>  |
| MHSL3-125D | 10H9 <sup>+0.036</sup> <sub>0</sub> | 6 | 43 | 22h9 <sup>0</sup> <sub>-0.052</sub> | 25 | 10.5 | Rc 3/8 | 31 | 148 | 11 | 17.5 | 32 | M10 x 1.5 | 20 | M10 x 1.5 | 20 | 10H9 <sup>+0.036</sup> <sub>0</sub> |

| Model      | VB | WA                                   | WB | XA                                  | XB |
|------------|----|--------------------------------------|----|-------------------------------------|----|
| MHSL3-100D | 6  | 102H9 <sup>+0.087</sup> <sub>0</sub> | 4  | 8H9 <sup>+0.036</sup> <sub>0</sub>  | 6  |
| MHSL3-125D | 8  | 130H9 <sup>+0.100</sup> <sub>0</sub> | 6  | 10H9 <sup>+0.036</sup> <sub>0</sub> | 8  |

# 3 Finger Parallel Style Air Gripper Long Stroke Type **Series MHSL3**

## Series MHSL3 Detailed Dimensions of Mounting Portion of End Plate



MHZ

MHF

MHL

MHR

MHK

**MHS**

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

20-

| (mm)      |          |     |      |      |     |
|-----------|----------|-----|------|------|-----|
| Model     | A        | B   | C    | øD   | E   |
| MHS3-16D  | M2 x 0.4 | 5.5 | 12.5 | 18   | 0.5 |
| MHS3-20D  |          | 5.4 | 16   | 21.5 | 0.6 |
| MHS3-25D  |          |     | 18.5 | 24   |     |
| MHS3-32D  |          | 5.2 | 25   | 34   | 0.8 |
| MHS3-40D  | M3 x 0.5 | 8   | 27   | 37   | 1   |
| MHS3-50D  |          |     | 35   | 44   |     |
| MHS3-63D  |          |     | 44   | 56   |     |
| MHS3-80D  |          |     | 54   | 70   |     |
| MHS3-100D | M4 x 0.7 | 9.5 | 70   | 90   | 1.5 |
| MHS3-125D |          |     | 80   | 110  |     |





# 4 Finger Parallel Style Air Gripper

## Series MHS4

Size: 16, 20, 25, 32, 40, 50, 63



Refer to page 12-13-25 for solid state switch with pre-wire connector.

### How to Order

#### Bore size

**ø16 to ø25 MHS 4 — 20 D — M9N**

**Number of fingers**  
4 4 fingers

**Bore size**  
16 16 mm  
20 20 mm  
25 25 mm

**Action**  
D Double acting

**Number of auto switches**  
Nil 2 pcs.  
S 1 pc.

**Auto switch**  
Nil Without auto switch (Built-in magnet)

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

#### Applicable Auto Switch/Refer to page 12-13-1 for further information on auto switches

| Type               | Special function                     | Electrical entry | Indicator light | Wiring (Output) | Load voltage |      | Auto switch model |         | Lead wire length (m)* |       |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |   |
|--------------------|--------------------------------------|------------------|-----------------|-----------------|--------------|------|-------------------|---------|-----------------------|-------|-------|--------------------------|-----------------|------------|--------------------|---|
|                    |                                      |                  |                 |                 | DC           | AC   | Electrical entry  |         | 0.5 (Nil)             | 3 (L) | 5 (Z) |                          |                 |            |                    |   |
|                    |                                      |                  |                 |                 |              |      | Perpendicular     | In-line |                       |       |       |                          |                 |            |                    |   |
| Solid state switch | —                                    | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V  | —                 | M9NV    | M9N                   | ●     | ●     | ○                        | Standard        | IC circuit | Relay, PLC         | ○ |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V |                   | M9PV    | M9P                   | ●     | ●     | ○                        |                 |            |                    | ○ |
|                    |                                      |                  |                 | 2-wire          |              | 12 V |                   | M9BV    | M9B                   | ●     | ●     | ○                        |                 |            |                    | ○ |
|                    | Water resistant (2-color indication) |                  |                 | 2-wire          |              | 12 V |                   | —       | F9BA                  | —     | ●     | ○                        | ○               | —          |                    | ○ |

\* Lead wire length symbols: 0.5 m ... Nil (Example) M9B  
3 m ... L (Example) M9BL  
5 m ... Z (Example) M9BZ

Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

#### Bore size

**ø32 to ø63 MHS 4 — 50 D — Y59A**

**Number of fingers**  
4 4 fingers

**Bore size**  
32 32 mm  
40 40 mm  
50 50 mm  
63 63 mm

**Action**  
D Double acting

**Number of auto switches**  
Nil 2 pcs.  
S 1 pc.

**Auto switch**  
Nil Without auto switch (Built-in magnet)

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

#### Applicable Auto Switch/Refer to page 12-13-1 for further information on auto switches

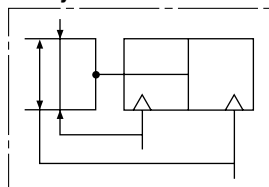
| Type               | Special function                     | Electrical entry | Indicator light | Wiring (Output) | Load voltage |           | Auto switch model |         | Lead wire length (m)* |            |       | Flexible lead wire (-61) | Applicable load |            | Pre-wire connector |   |
|--------------------|--------------------------------------|------------------|-----------------|-----------------|--------------|-----------|-------------------|---------|-----------------------|------------|-------|--------------------------|-----------------|------------|--------------------|---|
|                    |                                      |                  |                 |                 | DC           | AC        | Electrical entry  |         | 0.5 (Nil)             | 3 (L)      | 5 (Z) |                          |                 |            |                    |   |
|                    |                                      |                  |                 |                 |              |           | Perpendicular     | In-line |                       |            |       |                          |                 |            |                    |   |
| Solid state switch | —                                    | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V, 12 V | —                 | Y69A    | Y59A                  | ●          | ●     | ○                        | Standard        | IC circuit | Relay, PLC         | ○ |
|                    |                                      |                  |                 | 3-wire (PNP)    |              | 12 V      |                   | Y7PV    | Y7P                   | ●          | ●     | ○                        |                 |            |                    | ○ |
|                    |                                      |                  |                 | 2-wire          |              | 12 V      |                   | Y69B    | Y59B                  | ●          | ●     | ○                        |                 |            |                    | ○ |
|                    | 3-wire (NPN)                         |                  |                 | 5 V, 12 V       | Y7N WV       | Y7N W     | ●                 | ●       | ○                     | IC circuit | ○     |                          |                 |            |                    |   |
|                    | 3-wire (PNP)                         |                  |                 |                 | Y7P WV       | Y7P W     | ●                 | ●       | ○                     |            | ○     |                          |                 |            |                    |   |
|                    | 2-wire                               |                  |                 |                 | 12 V         | Y7B WV    | Y7B W             | ●       | ●                     |            | ○     | ○                        |                 |            |                    |   |
|                    | Water resistant (2-color indication) | —                | Y7BA            | —               | ●            | ○         | —                 | ○       |                       |            |       |                          |                 |            |                    |   |

\* Lead wire length symbols: 0.5 m ... Nil (Example) Y59B  
3 m ... L (Example) Y59BL  
5 m ... Z (Example) Y59BZ

\* Auto switches marked with a "○" symbol are produced upon receipt of order.

Note) Take note of hysteresis with 2-color indication type switches. Refer to "Auto Switch Hysteresis" on page 12-7-62.

#### JIS Symbol



# Series MHS4

## Model/Specifications

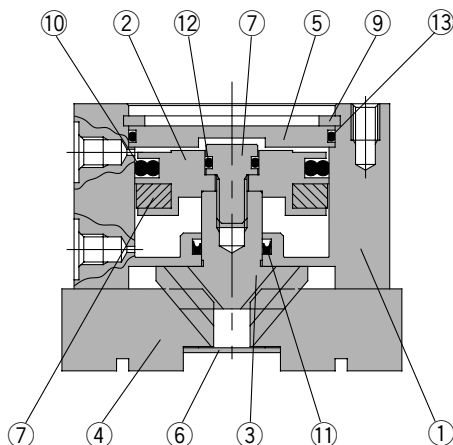


| Model  |               | MHS4-16D      | MHS4-20D | MHS4-25D | MHS4-32D   | MHS4-40D | MHS4-50D | MHS4-63D |
|--|---------------|---------------|----------|----------|------------|----------|----------|----------|
| Bore size (mm)   |               | 16            | 20       | 25       | 32         | 40       | 50       | 63       |
| Fluid  |               | Air           |          |          |            |          |          |          |
| Operating pressure (MPa)                               |               | 0.2 to 0.6    |          |          | 0.1 to 0.6 |          |          |          |
| Ambient and fluid temperature (°C)                     |               | −10 to 60     |          |          |            |          |          |          |
| Repeatability (mm)                                     |               | ±0.01         |          |          |            |          |          |          |
| Max. operating frequency (c.p.m.)                      |               | 120           |          |          | 60         |          |          |          |
| Lubrication  |               | Not required  |          |          |            |          |          |          |
| Action   |               | Double acting |          |          |            |          |          |          |
| Effective gripping force (N) at 0.5 MPa <sup>(1)</sup> | External grip | 10            | 19       | 31       | 55         | 88       | 140      | 251      |
|  | Internal grip | 12            | 21       | 35       | 61         | 97       | 153      | 268      |
| Opening/Closing stroke (mm)                            |               | 4             | 4        | 6        | 8          | 8        | 12       | 16       |
| Weight (g)   |               | 66            | 110      | 154      | 300        | 390      | 590      | 1,095    |

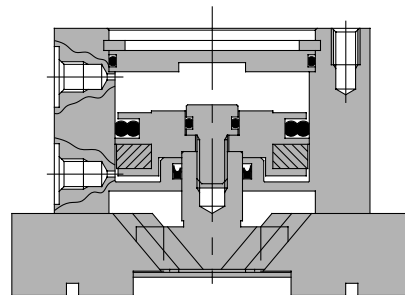
Note) Values for  $\phi 16$  to  $\phi 25$  are with gripping point L = 20 mm, and for  $\phi 32$  to  $\phi 63$  with gripping point L = 30 mm.  
Refer to the "Effective Gripping Force" data for the gripping force at each gripping position.

## Construction

Closed condition



Open condition



## Component Parts

| No. | Description | Material        | Note                            |
|-----|-------------|-----------------|---------------------------------|
| ①   | Body        | Aluminum alloy  | Hard anodized                   |
| ②   | Piston      | Aluminum alloy  | Hard anodized                   |
| ③   | Cam         | Carbon steel    | Heat treated, Specially treated |
| ④   | Finger      | Carbon steel    | Heat treated, Specially treated |
| ⑤   | Cap         | Aluminum alloy  | Hard anodized                   |
| ⑥   | End plate   | Stainless steel |                                 |
| ⑦   | Piston bolt | Stainless steel |                                 |

| No. | Description      | Material         | Note          |
|-----|------------------|------------------|---------------|
| ⑧   | Rubber magnet    | Synthetic rubber |               |
| ⑨   | Type C snap ring | Carbon steel     | Nickel plated |
| ⑩   | Piston seal      | NBR              |               |
| ⑪   | Rod seal         | NBR              |               |
| ⑫   | Gasket           | NBR              |               |
| ⑬   | Gasket           | NBR              |               |

## Replacement Parts

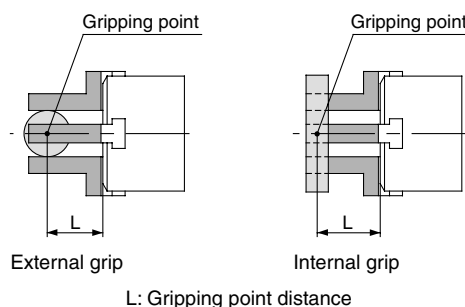
| Description     | MHS4-16D  | MHS4-20D  | MHS4-25D  | MHS4-32D  | MHS4-40D | MHS4-50D | MHS4-63D | Main parts |
|-----------------|-----------|-----------|-----------|-----------|----------|----------|----------|------------|
| Seal kit        | MHS16-PS  | MHS20-PS  | MHS25-PS  | MHS32-PS  | MHS40-PS | MHS50-PS | MHS63-PS | ⑩⑪⑫⑬       |
| Finger          | P3316004  | P3346104  | P3316204  | P3316304  | P3316404 | P3316504 | P3316604 | ④          |
| Cam             | P3316043  | P3316143  | P3316243  | P3316343  | P3316443 | P3316543 | P3316643 | ③          |
| Piston assembly | MHS-A1601 | MHS-A2001 | MHS-A2501 | MHS-A3201 | MHS-4001 | MHS-5001 | MHS-6301 | ②⑦⑧        |

\* Order 4 pieces of fingers for one unit.

# 4 Finger Parallel Style Air Gripper Series MHS4

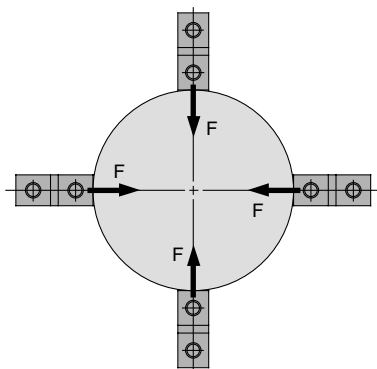
## Gripping Point

- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the fingers, which can have an adverse effect on the service life of the product.

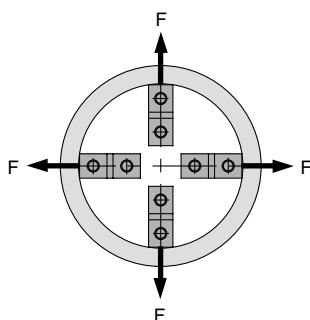


## Effective Gripping Force

- Indication of effective gripping force  
The gripping force shown in the tables represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece. The gripping force of Series MHS4 is the same as Series MHS2 while one pair of opposite fingers is used to grip the workpiece and the other pair of fingers is used for positioning.



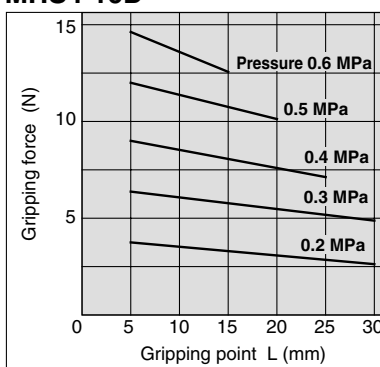
External grip



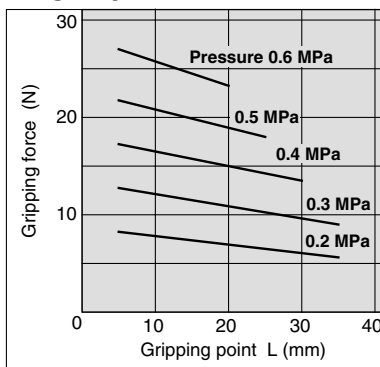
Internal grip

### External Gripping Force

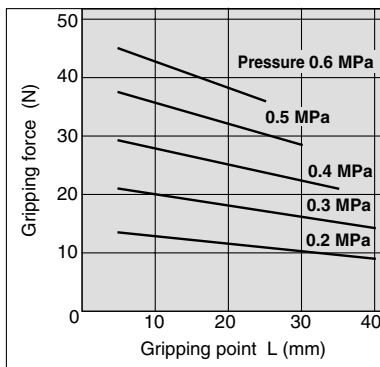
#### MHS4-16D



#### MHS4-20D

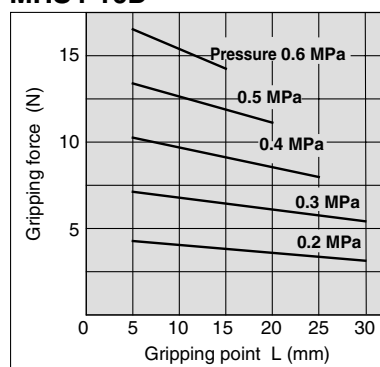


#### MHS4-25D

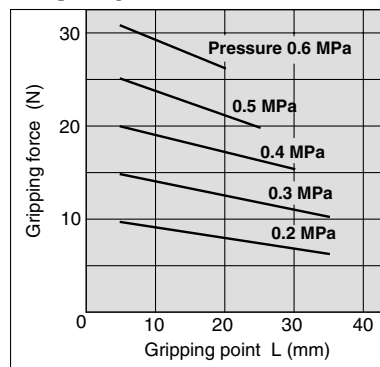


### Internal Gripping Force

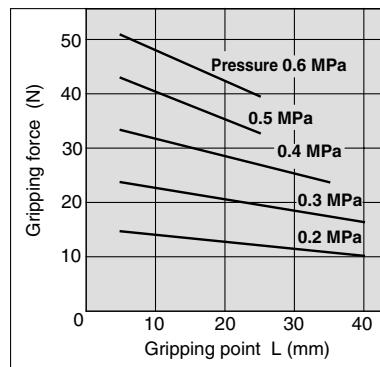
#### MHS4-16D



#### MHS4-20D



#### MHS4-25D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

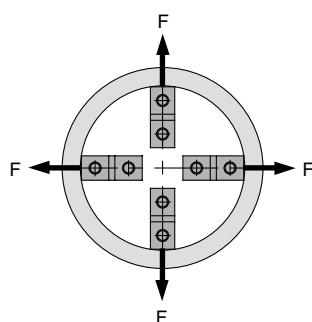
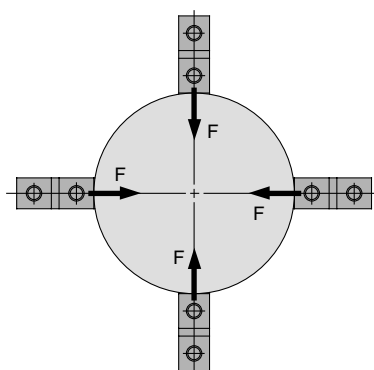
D-

20-

# Series MHS4

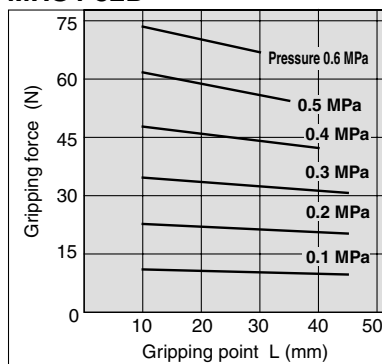
## Effective Gripping Force

- Indication of effective gripping force  
The gripping force shown in the tables represents the gripping force of one finger when all fingers and attachments are in contact with the workpiece. The gripping force of Series MHS4 is the same as Series MHS2 while one pair of opposite fingers is used to grip the workpiece and the other pair of fingers is used for positioning.

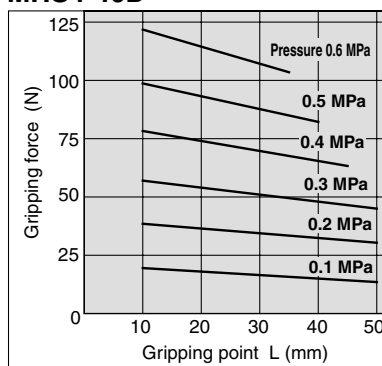


## External Gripping Force

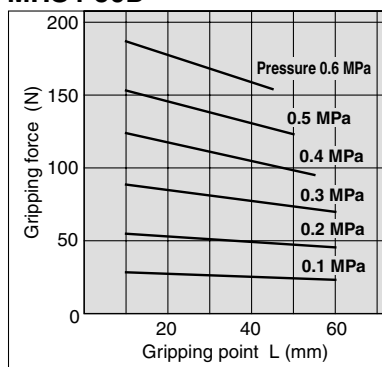
### MHS4-32D



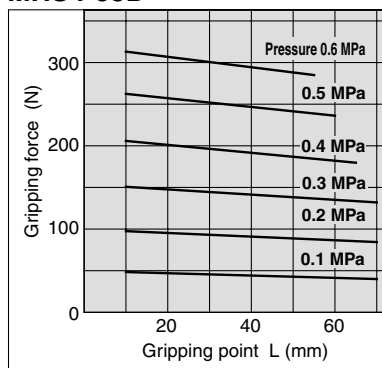
### MHS4-40D



### MHS4-50D

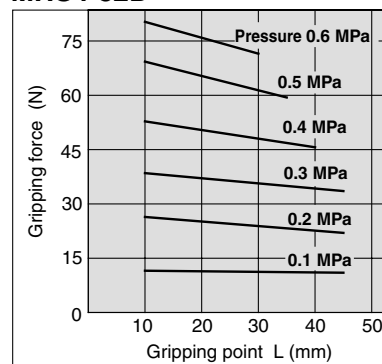


### MHS4-63D

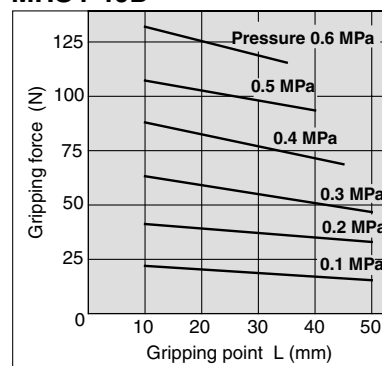


## Internal Gripping Force

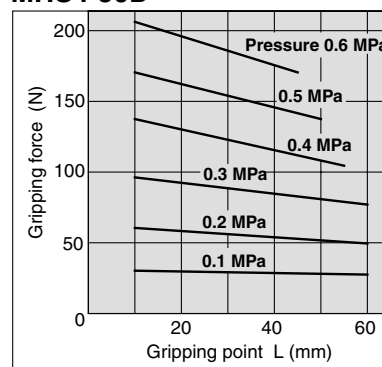
### MHS4-32D



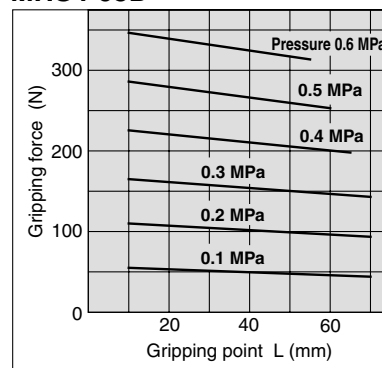
### MHS4-40D



### MHS4-50D



### MHS4-63D



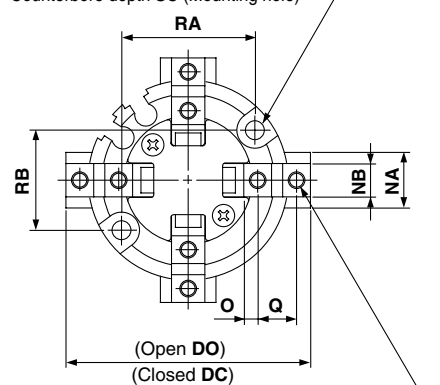
# 4 Finger Parallel Style Air Gripper Series MHS4

## Dimensions

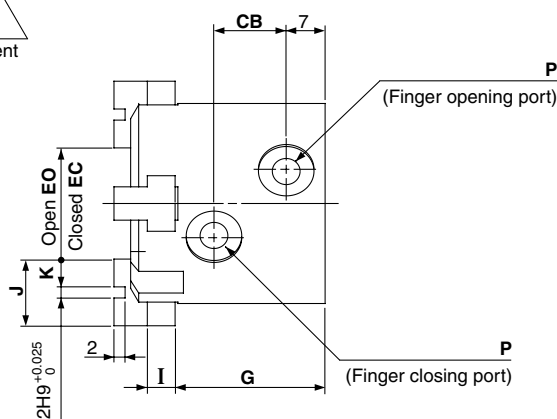
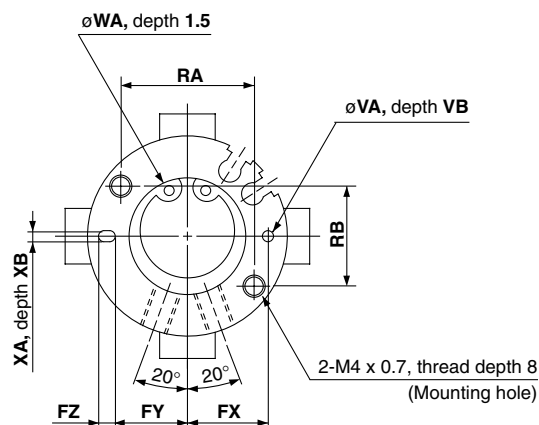
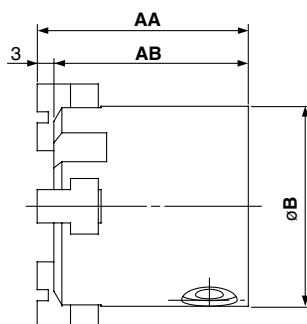
### MHS4-16D to 25D

2- $\phi 3.4$ , counterbore dia. 6.5

Counterbore depth SC (Mounting hole)

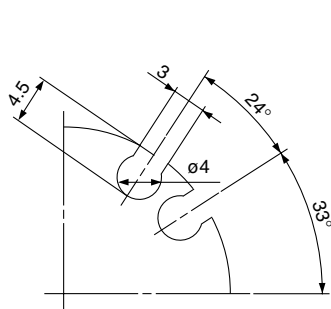


8-M3 x 0.5, thread depth TB  
Thread for mounting attachment

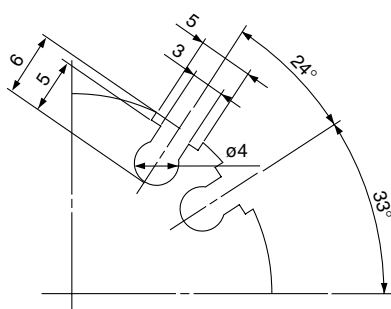


### Auto switch mounting groove dimensions (2 locations)

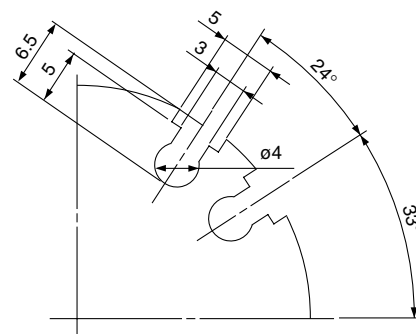
#### MHS4-16D



#### MHS4-20D



#### MHS4-25D



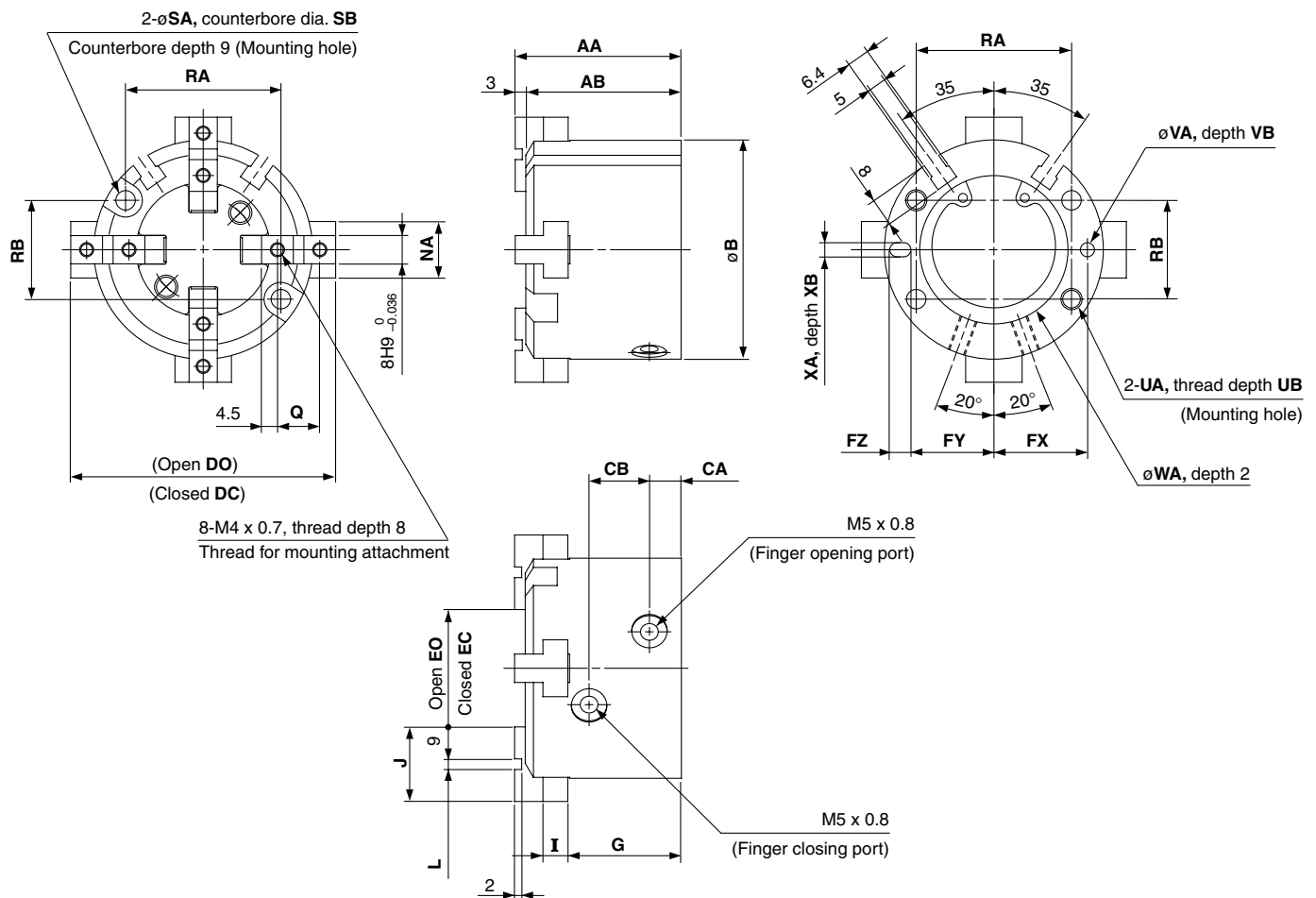
| (mm)     |    |    |    |    |    |    |    |    |      |      |    |    |   |    |   |    |                       |     |          |   |
|----------|----|----|----|----|----|----|----|----|------|------|----|----|---|----|---|----|-----------------------|-----|----------|---|
| Model    | AA | AB | B  | CB | DC | DO | EC | EO | FX   | FY   | FZ | G  | I | J  | K | NA | NB                    | O   | P        | Q |
| MHS4-16D | 35 | 32 | 30 | 11 | 33 | 37 | 13 | 17 | 12.5 | 11   | 3  | 25 | 4 | 10 | 4 | 8  | 5h9 <sub>-0.030</sub> | 2   | M3 x 0.5 | 6 |
| MHS4-20D | 38 | 35 | 36 | 13 | 39 | 43 | 15 | 19 | 14.5 | 13   | 3  | 27 | 5 | 12 | 5 | 10 | 6h9 <sub>-0.030</sub> | 2.5 | M5 x 0.8 | 7 |
| MHS4-25D | 40 | 37 | 42 | 15 | 48 | 54 | 20 | 26 | 17   | 14.5 | 5  | 28 | 5 | 14 | 6 | 12 | 6h9 <sub>-0.030</sub> | 3   | M5 x 0.8 | 8 |

| Model    | RA | RB | SC  | TB | VA                                 | VB | WA                                  | XA                                 | XB |
|----------|----|----|-----|----|------------------------------------|----|-------------------------------------|------------------------------------|----|
| MHS4-16D | 18 | 16 | 8   | 5  | 2H9 <sub>0</sub> <sup>+0.025</sup> | 2  | 17H9 <sub>0</sub> <sup>+0.043</sup> | 2H9 <sub>0</sub> <sup>+0.025</sup> | 2  |
| MHS4-20D | 24 | 18 | 9.5 | 6  | 2H9 <sub>0</sub> <sup>+0.025</sup> | 2  | 21H9 <sub>0</sub> <sup>+0.052</sup> | 2H9 <sub>0</sub> <sup>+0.025</sup> | 2  |
| MHS4-25D | 26 | 22 | 10  | 6  | 3H9 <sub>0</sub> <sup>+0.025</sup> | 3  | 26H9 <sub>0</sub> <sup>+0.052</sup> | 3H9 <sub>0</sub> <sup>+0.025</sup> | 3  |

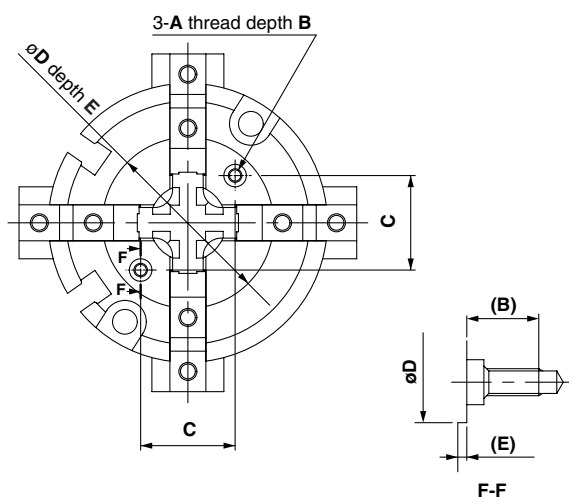
# Series MHS4

## Dimensions

### MHS4-32D/40D



### Series MHS4 Detailed dimensions of mounting portion of end plate



| Model    | A        | B   | C  | $\phi$ D | E   |
|----------|----------|-----|----|----------|-----|
| MHS4-16D | M2 x 0.4 | 5.5 | 11 | 21       | 0.5 |
| MHS4-20D |          | 5.4 | 13 | 24       | 0.6 |
| MHS4-25D |          |     | 15 | 27       |     |
| MHS4-32D |          | 5.2 | 18 | 32       | 0.8 |
| MHS4-40D | M3 x 0.5 | 8   | 21 | 38       | 1   |
| MHS4-50D |          |     | 24 | 42       |     |
| MHS4-63D |          |     | 32 | 54       |     |

(mm)

| Model    | AA | AB | B  | CA | CB | DC | DO | EC | EO | FX   | FY   | FZ | G    | I | J  | L                                  | NA | Q  | RA | RB | SA  |
|----------|----|----|----|----|----|----|----|----|----|------|------|----|------|---|----|------------------------------------|----|----|----|----|-----|
| MHS4-32D | 44 | 41 | 56 | 8  | 16 | 60 | 68 | 20 | 28 | 23   | 20.5 | 5  | 30.5 | 6 | 20 | 2H9 <sup>+0.025</sup> <sub>0</sub> | 14 | 11 | 38 | 25 | 4.5 |
| MHS4-40D | 47 | 44 | 62 | 9  | 17 | 66 | 74 | 24 | 32 | 26.5 | 23.5 | 6  | 32   | 7 | 21 | 3H9 <sup>+0.025</sup> <sub>0</sub> | 16 | 12 | 44 | 28 | 5.5 |

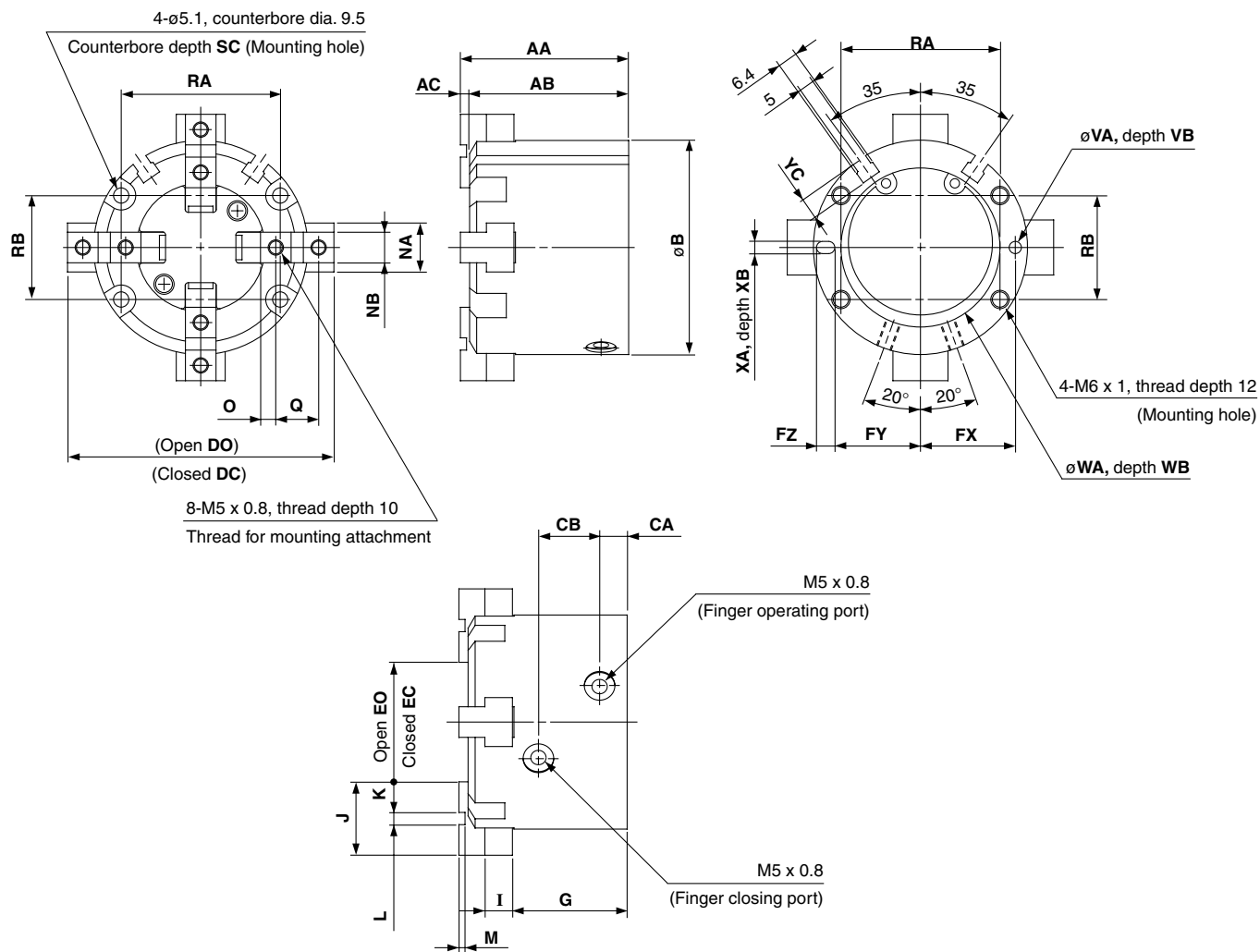
| Model    | SB  | UA       | UB | VA                                 | VB | WA                                  | XA                                 | XB |
|----------|-----|----------|----|------------------------------------|----|-------------------------------------|------------------------------------|----|
| MHS4-32D | 8   | M5 x 0.8 | 10 | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  | 34H9 <sup>+0.062</sup> <sub>0</sub> | 3H9 <sup>+0.025</sup> <sub>0</sub> | 3  |
| MHS4-40D | 9.5 | M6 x 1   | 12 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 42H9 <sup>+0.062</sup> <sub>0</sub> | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  |

(mm)



# 4 Finger Parallel Style Air Gripper Series MHS4

## MHS4-50D/63D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

20-

(mm)

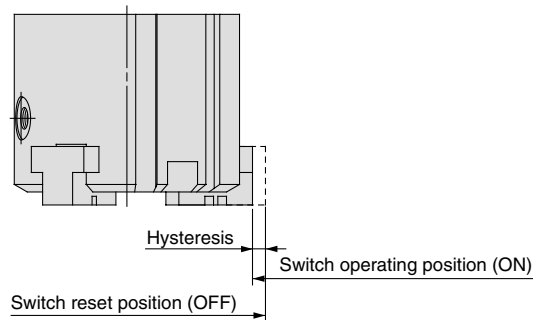
| Model    | AA | AB | AC | B  | CA | CB | DC | DO  | EC | EO | FX | FY   | FZ | G    | I  | J  | K  | L                                  | M | NA | NB                                  |
|----------|----|----|----|----|----|----|----|-----|----|----|----|------|----|------|----|----|----|------------------------------------|---|----|-------------------------------------|
| MHS4-50D | 55 | 52 | 3  | 70 | 9  | 20 | 74 | 86  | 26 | 38 | 31 | 28   | 6  | 37.5 | 9  | 24 | 10 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 2 | 18 | 10h9 <sup>0</sup> <sub>-0.036</sub> |
| MHS4-63D | 66 | 62 | 4  | 86 | 12 | 22 | 91 | 107 | 35 | 51 | 38 | 34.5 | 7  | 44   | 11 | 28 | 11 | 6H9 <sup>+0.030</sup> <sub>0</sub> | 3 | 24 | 12h9 <sup>0</sup> <sub>-0.043</sub> |

| Model    | O   | Q  | RA | RB | SC | VA                                 | VB | WA                                  | WB  | XA                                 | XB | YC  |
|----------|-----|----|----|----|----|------------------------------------|----|-------------------------------------|-----|------------------------------------|----|-----|
| MHS4-50D | 5   | 14 | 52 | 34 | 12 | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 52H9 <sup>+0.074</sup> <sub>0</sub> | 2   | 4H9 <sup>+0.030</sup> <sub>0</sub> | 4  | 7   |
| MHS4-63D | 5.5 | 17 | 66 | 38 | 14 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 65H9 <sup>+0.074</sup> <sub>0</sub> | 2.5 | 5H9 <sup>+0.030</sup> <sub>0</sub> | 5  | 7.5 |

# Series MHS

## Auto Switch Hysteresis

Auto switches have hysteresis similar to micro switches. Use the table below as a guide when adjusting auto switch positions, etc.



### Series MHS□/MHSL

#### ø16 to ø25

| Auto switch model<br>Air gripper model | Hysteresis (Max. value) (mm) |   |   |
|--|------------------------------|---|---|
|  | D-M9□(V)                     | D-F9BAL                                     |   |
|  |                              | Setting of ON position when red light is on | Setting of ON position when green light is on |
| MHS□-16D<br>MHSL3                      | 0.3                          | 0.4   | 1.6   |
| MHS□-20D<br>MHSL3                      | 0.3                          | 0.4   | 1.6   |
| MHS□-25D<br>MHSL3                      | 0.4                          | 0.4   | 1.6   |

#### ø32 to ø125

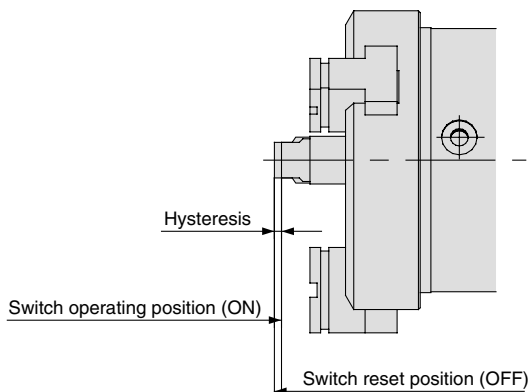
| Auto switch model<br>Air gripper model | Hysteresis (Max. value) (mm) |           |         |
|--|------------------------------|-----------|---------|
|  | D-Y59□<br>D-Y69□<br>D-Y7P(V) | D-Y7□W(V) | D-Y7BAL |
|  |                              |           |         |
| MHS□-32D<br>MHSL3                      | 0.7                          | 1.2       | 0.7     |
| MHS□-40D<br>MHSL3                      | 0.4                          | 0.7       | 0.4     |
| MHS□-50D<br>MHSL3                      | 0.4                          | 0.7       | 0.4     |
| MHS□-63D<br>MHSL3                      | 0.4                          | 0.7       | 0.4     |
| MHS□-80D<br>MHSL3                      | 0.4                          | 0.7       | 0.6     |
| MHS□-100D<br>MHSL3                     | 0.4                          | 0.8       | 0.6     |
| MHS□-125D<br>MHSL3                     | 0.4                          | 0.4       | 0.7     |

### Series MHSJ/MHSH

| Auto switch model<br>Air gripper model | Hysteresis (Max. value) (mm) |   |   |
|--|------------------------------|---|---|
|  | D-M9□(V)                     | D-F9BAL                                     |   |
|  |                              | Setting of ON position when red light is on | Setting of ON position when green light is on |
| MHSJ3-16D<br>MHSH3                     | 0.3                          | 0.3   | 1.3   |
| MHSJ3-20D<br>MHSH3                     | 0.3                          | 0.3   | 1.3   |
| MHSJ3-25D<br>MHSH3                     | 0.4                          | 0.4   | 1.3   |
| MHSJ3-32D<br>MHSH3                     | 0.6                          | 0.4   | 1.5   |
| MHSJ3-40D<br>MHSH3                     | 0.6                          | 0.4   | 1.5   |
| MHSJ3-50D<br>MHSH3                     | 0.6                          | 0.4   | 1.7   |
| MHSJ3-63D<br>MHSH3                     | 0.6                          | 0.4   | 1.7   |
| MHSJ3-80D<br>MHSH3                     | 0.6                          | 0.5   | 1.8   |

## Auto Switch Hysteresis

### Center pusher/Cylinder type

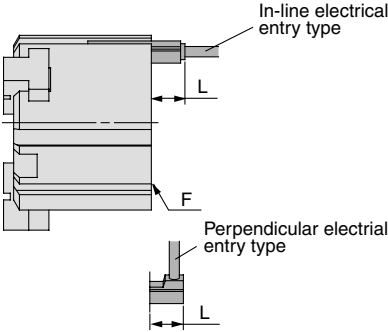
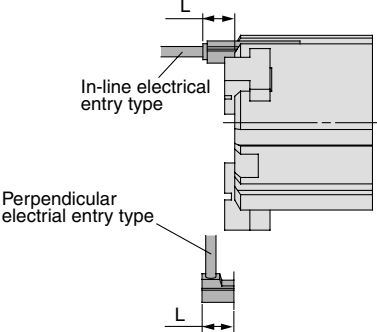


| Auto switch model<br>Air gripper model | Maximum hysteresis (mm) |   |   |
|--|-------------------------|---|---|
|  | D-M9□(V)                | D-F9BAL                                     |   |
|  |                         | Setting of ON position when red light is on | Setting of ON position when green light is on |
| MHSH□3-32DA                            | 0.5                     | 0.3   | 0.8   |
| MHSH□3-40DA                            | 0.5                     | 0.3   | 0.9   |
| MHSH□3-50DA                            | 0.6                     | 0.4   | 1   |
| MHSH□3-63DA                            | 0.8                     | 0.5   | 1   |
| MHSH□3-80DA                            | 1                       | 0.5   | 1.1   |

## Protrusion of Auto Switch from Edge of Body

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

(mm)

| Direction of auto switch mounting on air gripper |                 | Mounting with lead wire on side opposite the fingers                              |  |                           | Mounting with lead wire on same side as the fingers                                |                             |                           |
|--|-----------------|---|--|---------------------------|--|-----------------------------|---------------------------|
|  |                 |  |  |                           |  |                             |                           |
| Air gripper model                                | Finger position | Lead wire type  |  | In-line entry             |  | Perpendicular entry         |                           |
|  |                 | Auto switch model   |  | D-M9□                     | D-F9BAL  | D-M9□V                      | D-M9□                     |
| MHS□-16D   | Open            |   |  | —                         | 8.5  | —                           | 1                         |
|  | Closed          |   |  | 5                         | 14   | 3                           | —                         |
| MHS□-20D   | Open            |   |  | —                         | 7  | —                           | —                         |
|  | Closed          |   |  | 5                         | 13   | 3                           | —                         |
| MHS□-25D   | Open            |   |  | —                         | 5  | —                           | —                         |
|  | Closed          |   |  | 3                         | 12   | 1                           | —                         |
| MHSL3-16D  | Open            |   |  | —                         | 8.5  | —                           | —                         |
|  | Closed          |   |  | 5                         | 14   | 3                           | —                         |
| MHSL3-20D  | Open            |   |  | —                         | 7  | —                           | —                         |
|  | Closed          |   |  | 5                         | 13   | 3                           | —                         |
| MHSL3-25D  | Open            |   |  | —                         | 5  | —                           | —                         |
|  | Closed          |   |  | 3                         | 12   | 1                           | —                         |
| Air gripper model                                | Finger position | Lead wire type  |  | In-line entry             |  | Perpendicular entry         |                           |
|  |                 | Auto switch model   |  | D-Y59□<br>D-Y7P<br>D-Y7□W | D-Y7BAL  | D-Y69□<br>D-Y7PV<br>D-Y7□WV | D-Y59□<br>D-Y7P<br>D-Y7□W |
| MHS□-32D   | Open            |   |  | —                         | —  | —                           | 5                         |
|  | Closed          |   |  | 6                         | 9  | 4                           | —                         |
| MHS□-40D   | Open            |   |  | —                         | —  | —                           | 2.5                       |
|  | Closed          |   |  | 5.5                       | 8  | 4                           | —                         |
| MHS□-50D   | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | 5                         | 7.5  | 3                           | —                         |
| MHS□-63D   | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | 3                         | 5  | 1                           | —                         |
| MHS□-80D   | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | —                         | —  | —                           | —                         |
| MHS□-100D  | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | —                         | —  | —                           | —                         |
| MHS□-125D  | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | —                         | —  | —                           | —                         |
| MHSL3-32D  | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | 6                         | 9  | 4                           | —                         |
| MHSL3-40D  | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | 5.5                       | 8  | 4                           | —                         |
| MHSL3-50D  | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | 5                         | 7.5  | 3                           | —                         |
| MHSL3-63D  | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | 3                         | 5  | 1                           | —                         |
| MHSL3-80D  | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | —                         | —  | —                           | —                         |
| MHSL3-100D                                       | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | —                         | —  | —                           | —                         |
| MHSL3-125D                                       | Open            |   |  | —                         | —  | —                           | —                         |
|  | Closed          |   |  | —                         | —  | —                           | —                         |

Note 1) There is no protrusion for sections of the table with no values entered.

Note 2) When mounted with lead wires on the finger side, be sure that attachments and workpieces, etc., do not touch switch units or lead wires.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

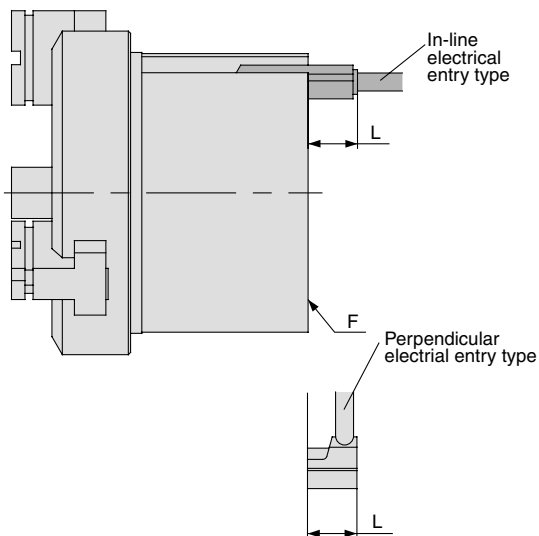
D-

20-

# Series MHS

## Protrusion of Auto Switch from Edge of Body

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



|                   |                 | (mm)              |               |         |                     |
|-------------------|-----------------|-------------------|---------------|---------|---------------------|
| Air gripper model | Finger position | Lead wire type    | In-line entry |         | Perpendicular entry |
|                   |                 | Auto switch model | D-M9□         | D-F9BAL | D-M9□V              |
| MHSJ3<br>MHSJ3    | -16D            | Open              | 2             | 11      | —                   |
|                   |                 | Closed            | 5.5           | 14.5    | 3                   |
| MHSJ3<br>MHSJ3    | -20D            | Open              | 2             | 11      | —                   |
|                   |                 | Closed            | 5             | 14.5    | 3                   |
| MHSJ3<br>MHSJ3    | -25D            | Open              | —             | 10      | —                   |
|                   |                 | Closed            | 5             | 14.5    | 2.5                 |
| MHSJ3<br>MHSJ3    | -32D            | Open              | —             | 8.5     | —                   |
|                   |                 | Closed            | 4.5           | 14      | 1                   |
| MHSJ3<br>MHSJ3    | -40D            | Open              | —             | 7.5     | —                   |
|                   |                 | Closed            | 3             | 13      | 1                   |
| MHSJ3<br>MHSJ3    | -50D            | Open              | —             | 3       | —                   |
|                   |                 | Closed            | 1.5           | 11.5    | —                   |
| MHSJ3<br>MHSJ3    | -63D            | Open              | —             | —       | —                   |
|                   |                 | Closed            | —             | 10      | —                   |
| MHSJ3<br>MHSJ3    | -80D            | Open              | —             | —       | —                   |
|                   |                 | Closed            | —             | 9       | —                   |

Note 1) Indicates the amount of protrusion from the mounting surface F. There is no protrusion from the finger side.

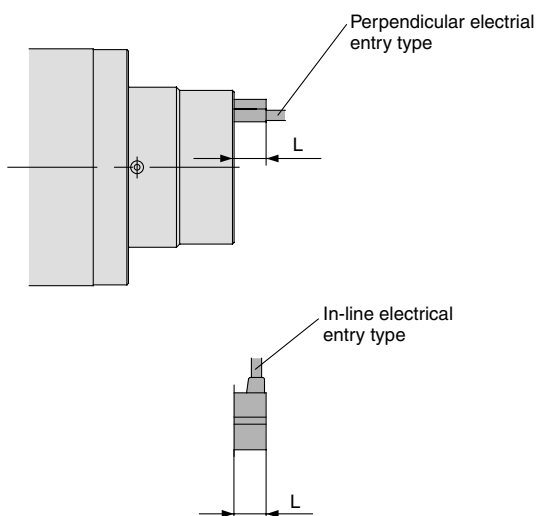
Note 2) There is no protrusion for sections of the table with no values entered.

Note 3) When mounted with lead wires on the finger side, be sure that attachments and workpieces, etc., do not touch switch units or lead wires.

## Protrusion from Edge of Push Holder (P)

The amount of auto switch protrusion from the push holder (P) end surface is shown in the table below.  
Use this as a standard when mounting, etc.

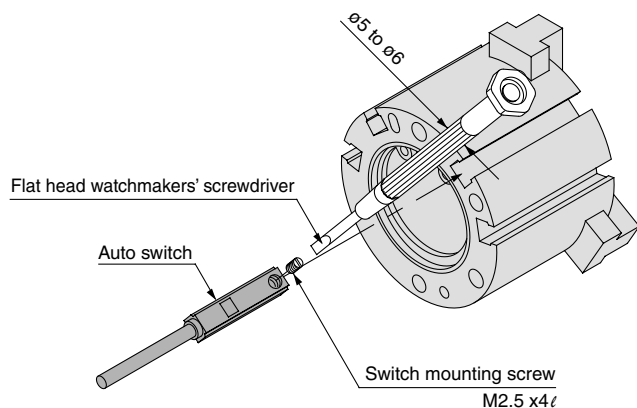
### Center Pusher/Cylinder Type



| (mm)              |                 |                   |               |         |                     |
|-------------------|-----------------|-------------------|---------------|---------|---------------------|
| Air gripper model | Pusher position | Lead wire type    | In-line entry |         | Perpendicular entry |
|                   |                 | Auto switch model | D-M9□         | D-F9BAL | D-M9□V              |
| MHSH□-32DA        | Extended        |                   | 4             | 9       | 1                   |
|                   | Retracted       |                   | 9             | 14      | 6                   |
| MHSH□-40DA        | Extended        |                   | 3             | 8       | 0.5                 |
|                   | Retracted       |                   | 8             | 13      | 5.5                 |
| MHSH□-50DA        | Extended        |                   | —             | 2       | —                   |
|                   | Retracted       |                   | 7.5           | 12      | 5                   |
| MHSH□-63DA        | Extended        |                   | —             | 1.5     | —                   |
|                   | Retracted       |                   | 7             | 11.5    | 4                   |
| MHSH□-80DA        | Extended        |                   | —             | —       | —                   |
|                   | Retracted       |                   | 4             | 9       | 1.5                 |

## Mounting of Auto Switch

To set the auto switch, insert the auto switch into the installation groove of the gripper from the direction indicated in the following drawing. After setting the position, tighten the attached switch mounting set screw with a flat head watchmakers' screwdriver.



Note) Use a watchmakers' screwdriver with a grip diameter of 5 to 6 mm to tighten the auto switch mounting screw. The tightening torque should be about 0.05 to 0.1 N·m. As a rule, it should be turned about 90° beyond the point at which tightening can be felt.

MHZ

MHF

MHL

MHR

MHK

**MHS**

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

20-

## Series MHS

# Made to Order Specifications:

### 1 Oil Resistant Specifications -X5

|        |           |     |                    |      |
|--------|-----------|-----|--------------------|------|
| MHS□   | Bore size | D   | Solid state switch | - X5 |
| MHSJ3  |           | DF  |                    |      |
| MHSH□3 |           | D□F |                    |      |
| MHSL3  |           | D   |                    |      |

Seals are changed to an oil resistant material for use in environments where there is exposure to cutting oil, etc.

#### Specifications

| Type                      |             | Oil resistant type           |                              |
|---------------------------|-------------|------------------------------|------------------------------|
| Bore size (mm)            |             | 16, 20, 25                   | 32, 40, 50, 63, 80, 100, 125 |
| Action                    |             | Double acting                |                              |
| Fluid                     |             | Air                          |                              |
| Material                  |             | Seal, Gasket — Fluoro rubber |                              |
| Applicable<br>auto switch | MHS<br>MHSL | D-F9BAL                      | D-Y7BA                       |
|                           | MHSJ        | D-F9BAL                      |                              |
|                           | MHSH        |                              |                              |

Note 1) Depending on the type of cutting oil, there are cases in which it is not possible to use air grippers and auto switches. After confirming the type of cutting oil, please contact SMC regarding any questions on this matter.

Note 2) Dimensions are the same as the standard type.

### 2 Heat Resistant Specifications -X4

|        |           |     |      |
|--------|-----------|-----|------|
| MHS□   | Bore size | D   | - X4 |
| MHSJ3  |           | D□  |      |
| MHSH□3 |           | D□□ |      |
| MHSL3  |           | D   |      |

Seals and grease are changed to heat resistant materials for use in high temperature ambient conditions up to 100°C.

#### Specifications

| Type           | Heat resistant type                      |
|----------------|--|
| Bore size (mm) | 16, 20, 25, 32, 40, 50, 63, 80, 100, 125 |
| Action         | Double acting                            |
| Fluid          | Air                                      |
| Material       | Seal, Gasket — Fluoro rubber             |

Note 1) Not available with auto switches.

Note 2) Dimensions are the same as the standard type.

Note 3) Select fluoro rubber (F) or silicon rubber (Si) for the dust cover material.