

3 Finger  
Air Gripper  
Parallel Type

# Series MSHH3

ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80

Through Hole

## How to Order

**MSSH**    **3** — **32** **D**       — **F9N**   

Through hole

Dust cover

|     |                    |
|-----|--------------------|
| Nil | Without dust cover |
| J   | With dust cover    |

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

Number of fingers

|   |           |
|---|-----------|
| 3 | 3 fingers |
|---|-----------|

Cylinder bore size

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

Action

|   |               |
|---|---------------|
| D | Double acting |
|---|---------------|

Center pusher

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

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

Number of auto switches

|           |          |
|-----------|----------|
| Nil       | 2 pcs.   |
| S         | 1 pc.    |
| n Note 2) | "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  
MSSH3-32DA-F9N
2. Air gripper unit ..... 2 pcs.  
Center pusher unit ... 2 pcs. } Total of 4 pcs. → Enter "4"  
MSSH3-32DA-F9N4

Dust cover type  
(with dust cover only)

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

Auto switch type

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

### Auto switch specifications

| Type        | Special function | Electrical entry | Indicator light | Wiring (output) | Load voltage |         | Auto switch models         |         | Lead wire length (m)* |       |       | Applicable loads |
|-------------|------------------|------------------|-----------------|-----------------|--------------|---------|----------------------------|---------|-----------------------|-------|-------|------------------|
|             |                  |                  |                 |                 | DC           | AC      | Electrical entry direction |         | 0.5 (Nil)             | 3 (L) | 5 (Z) |                  |
|             |                  |                  |                 |                 |              |         | Perpendicular              | In-line |                       |       |       |                  |
| Solid state | —                | Grommet          | Yes             | 3 wire (NPN)    | 24V          | 5V, 12V | F9NV                       | F9N     | ●                     | ●     | —     | Relay, PLC       |
|             |                  |                  |                 | 3 wire (PNP)    |              |         |                            |         | F9PV                  | F9P   | ●     |                  |
|             |                  |                  |                 | 2 wire          | 12V          | F9BV    | F9B                        | ●       | ●                     | —     |       |                  |
|             |                  |                  |                 |                 |              | —       | F9BA                       | —       | ●                     | ○     | —     |                  |

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

D-F9BA is available only as "L".

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

Note 1) Take note of hysteresis with 2 color indication type switches.

Note 2) Refer to pages 53 through 65 for detailed auto switch specifications.

## Center Pusher Assembly

**MSSH** **3** — **A** **50** **A** — **F9N**   

Through hole

Number of fingers

|   |           |
|---|-----------|
| 3 | 3 fingers |
|---|-----------|

Center pusher assembly

Air gripper cylinder bore size

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

Center pusher

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

Number of auto switches

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

Auto switch type (cylinder type only)

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

### Auto switch specifications

| Type        | Special function | Electrical entry | Indicator light | Wiring (output) | Load voltage |         | Auto switch models         |         | Lead wire length (m)* |       |       | Applicable loads |
|-------------|------------------|------------------|-----------------|-----------------|--------------|---------|----------------------------|---------|-----------------------|-------|-------|------------------|
|             |                  |                  |                 |                 | DC           | AC      | Electrical entry direction |         | 0.5 (Nil)             | 3 (L) | 5 (Z) |                  |
|             |                  |                  |                 |                 |              |         | Perpendicular              | In-line |                       |       |       |                  |
| Solid state | —                | Grommet          | Yes             | 3 wire (NPN)    | 24V          | 5V, 12V | F9NV                       | F9N     | ●                     | ●     | —     | Relay, PLC       |
|             |                  |                  |                 | 3 wire (PNP)    |              |         |                            |         | F9PV                  | F9P   | ●     |                  |
|             |                  |                  |                 | 2 wire          | 12V          | F9BV    | F9B                        | ●       | ●                     | —     |       |                  |
|             |                  |                  |                 |                 |              | —       | F9BA                       | —       | ●                     | ○     | —     |                  |

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

D-F9BA is available only as "L".

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

Note 1) Take note of hysteresis with 2 color indication type switches.

Note 2) Refer to pages 53 through 65 for detailed auto switch specifications.

Note 3) Auto switches for center pusher assembly are available only on the cylinder type.

## Models and 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 (psi)  | 0.2 to 0.6 (29 to 87)                |                                      |                                      |                                      | 0.1 to 0.6 (14 to 87)                 |                                       |                                       |                                       |          |          |
| Ambient and fluid temperature   | -10 to 60°C (14 to 140°F)            |                                      |                                      |                                      |                                       |                                       |                                       |                                       |          |          |
| Repeatability mm  | ±0.01                                |                                      |                                      |                                      |                                       |                                       |                                       |                                       |          |          |
| Maximum operating frequency c.p.m.  | 120                                  |                                      |                                      |                                      | 60                                    |                                       |                                       | 30                                    |          |          |
| Lubrication   | Non-lube                             |                                      |                                      |                                      |                                       |                                       |                                       |                                       |          |          |
| Action  | Double acting                        |                                      |                                      |                                      |                                       |                                       |                                       |                                       |          |          |
| Effective gripping force N (lb <sub>f</sub> ) at pressure of 0.5MPa (72psi) | External gripping force              |                                      | 9 (2.0)                              | 21 (4.7)                             | 36 (8.1)                              | 62 (13.9)                             | 97 (21.8)                             | 155 (35)                              | 280 (63) | 400 (90) |
|   | Internal gripping force              |                                      | 15 (3.4)                             | 26 (5.8)                             | 45 (10.1)                             | 77 (17.3)                             | 118 (26.5)                            | 187 (42)                              | 329 (74) | 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 (oz)   | 90 (3.2)                             | 140 (4.9)                            | 220 (7.8)                            | 410 (14.5)                           | 570 (20.1)                            | 970 (34.2)                            | 1,650 (58.2)                          | 2,920 (103)                           |          |          |

Note 1) Values for ø16 to ø25 are with gripping point L = 20mm, for ø32 to ø63 with gripping point L = 30mm, and for ø80 with gripping point L = 50mm.  
Refer to the "Effective Gripping Force" data on pages 27 through 29 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 (psi)                                     | 0.2 to 0.6 (29 to 87)     |            | 0.1 to 0.6 (14 to 87) |            |             |            |           |
| Ambient and fluid temperature                                    | -10 to 60°C (14 to 140°F) |            |                       |            |             |            |           |
| Pusher maximum operating frequency c.p.m.                        | 60                        |            |                       | 30         |             |            |           |
| Lubrication  | Non-lube                  |            |                       |            |             |            |           |
| Action   | Double acting             |            |                       |            |             |            |           |
| Pusher stroke mm   | 5                         | 5          | 10                    | 10         | 15          |            |           |
| Pusher thrust N (lb <sub>f</sub> ) at pressure of 0.5MPa (72psi) | Extension                 |            | 45 (10.1)             | 130 (29.2) | 204 (45.8)  | 335 (75.3) | 524 (118) |
|  |                           |            |                       |            |             |            |           |
| Weight g (oz)  | 530 (18.7)                | 770 (27.2) | 1,330 (47)            | 2,300 (81) | 4,000 (141) |            |           |

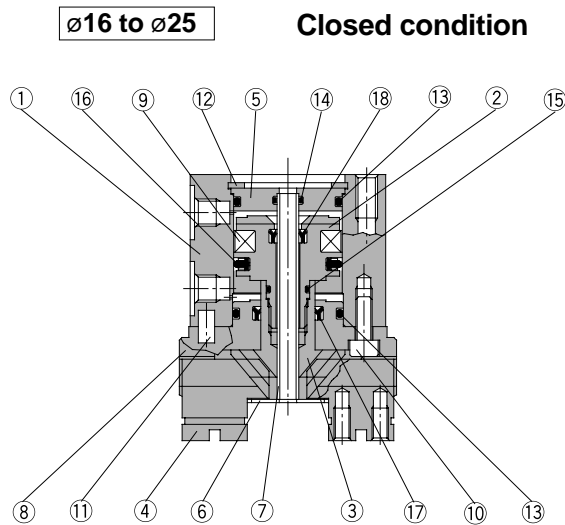
## Center pusher (spring type) specifications

| Model                                    | MHSH3-32DB           | MHSH3-40DB            | MHSH3-50DB            | MHSH3-63DB            | MHSH3-80DB          |
|--|----------------------|-----------------------|-----------------------|-----------------------|---------------------|
| Pusher stroke mm                         | 5                    | 5                     | 10                    | 10                    | 15                  |
| Pusher spring force N (lb <sub>f</sub> ) | 6 to 10 (1.3 to 2.2) | 11 to 15 (2.5 to 3.4) | 20 to 25 (4.5 to 5.6) | 29 to 34 (6.5 to 7.6) | 49 to 59 (11 to 13) |
| Weight g (oz)                            | 500 (17.6)           | 740 (26.1)            | 1,290 (45.5)          | 2,250 (79)            | 4,000 (141)         |

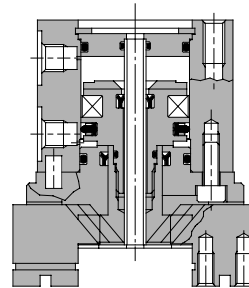
## Weights

|  | g (oz)     |            |            |            |             |
|--|------------|------------|------------|------------|-------------|
|  | ø32        | ø40        | ø50        | ø63        | ø80         |
| Through hole with dust cover MHSHJ3-□D                   | 430 (15.1) | 600 (21.2) | 1,020 (36) | 1,710 (60) | 3,040 (107) |
| Center pusher (cylinder type) with dust cover MHSHJ3-□DA | 550 (19.4) | 800 (28.2) | 1,380 (49) | 2,360 (83) | 4,120 (145) |
| Center pusher (spring type) with dust cover MHSHJ3-□DB   | 520 (18.4) | 770 (27.2) | 1,340 (47) | 2,310 (82) | 4,120 (145) |

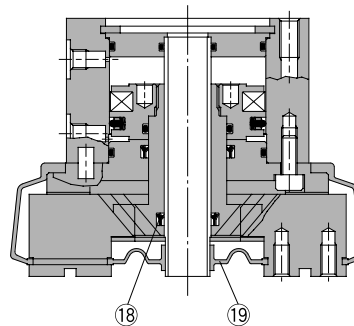
## Construction



**Open condition**



ø32 to ø80 **Open condition**



### Parts list

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

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

### Replacement parts/Seal kits

| MSH3-16D | MSH3-20D | MSH3-25D | Kit number |           |           |           |           | Contents   |
|----------|----------|----------|------------|-----------|-----------|-----------|-----------|--|
|          |          |          | MSH3-32D   | MSH3-40D  | MSH3-50D  | MSH3-63D  | MSH3-80D  |  |
| MSH16-PS | MSH20-PS | MSH25-PS | MSHJ3-32D  | MSHJ3-40D | MSHJ3-50D | MSHJ3-63D | MSHJ3-80D | A set of the above<br>Nos. 13, 14, 15, 16, 17 & 18 |

\* Seal kits are sets consisting of items 13, 14, 15, 16, 17 and 18, which can be ordered using the kit number for each cylinder bore size.

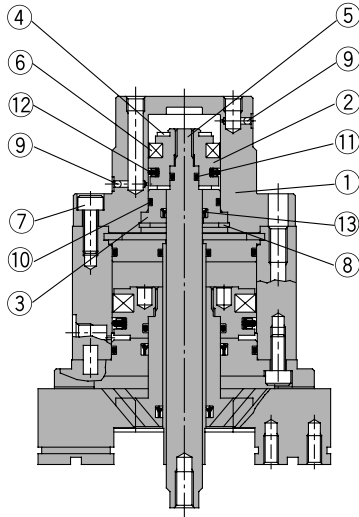
### Replacement parts/Dust cover (A)

| No. | Description           | Material             | Part number |            |            |            |            |
|-----|-----------------------|----------------------|-------------|------------|------------|------------|------------|
|     |                       |                      | MSH3-32D    | MSH3-40D   | MSH3-50D   | MSH3-63D   | MSH3-80D   |
| 19  | <b>Dust cover (A)</b> | CR <sup>Note)</sup>  | MSHJ3-J32   | MSHJ3-J40  | MSHJ3-J50  | MSHJ3-J63  | MSHJ3-J80  |
|     |                       | FKM <sup>Note)</sup> | MSHJ3-J32F  | MSHJ3-J40F | MSHJ3-J50F | MSHJ3-J63F | MSHJ3-J80F |
|     |                       | Si <sup>Note)</sup>  | MSHJ3-J32S  | MSHJ3-J40S | MSHJ3-J50S | MSHJ3-J63S | MSHJ3-J80S |

Note) CR: Chloroprene rubber, FKM: Fluoro rubber, Si: Silicon rubber

**Construction**

**Center pusher/cylinder type**



**Parts list**

| 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 screw | Carbon steel     | Nickel plated |
| 8   | C type snap ring          | Carbon steel     | Nickel plated |
| 9   | Steel ball                | Stainless steel  |               |
| 10  | Gasket                    | NBR              |               |
| 11  | Gasket                    | NBR              |               |
| 12  | Piston seal               | NBR              |               |
| 13  | Rod seal                  | NBR              |               |

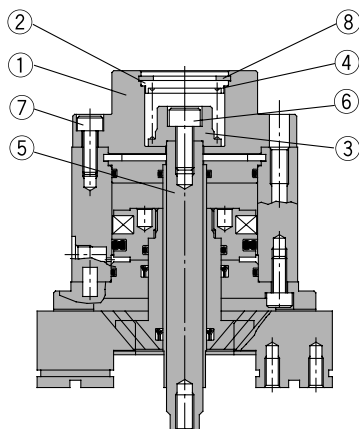
**Replacement parts/Seal kits (center pusher/cylinder type)**

| Kit number |            |            |            |            | Contents                                |
|------------|------------|------------|------------|------------|---|
| 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, which can be ordered using the kit number for each cylinder bore size.

**Construction**

**Center pusher/spring type**

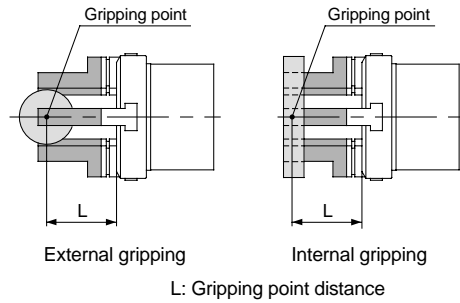


**Parts list**

| 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 screw | Carbon steel    | Nickel plated |
| 7   | Hexagon socket head screw | Carbon steel    | Nickel plated |
| 8   | C type snap ring          | Carbon steel    | Nickel plated |

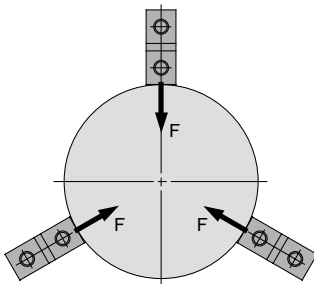
## Gripping Point

- The work piece 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 work piece 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.

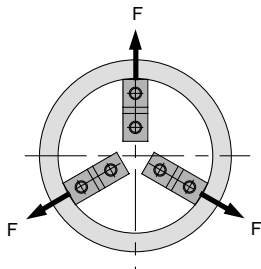


## Effective Gripping Force

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



External gripping

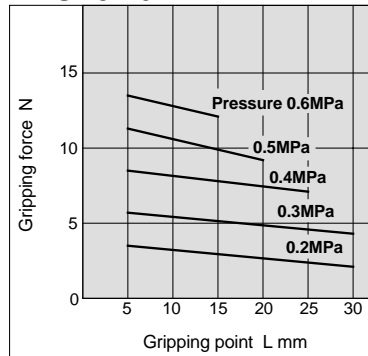


Internal gripping

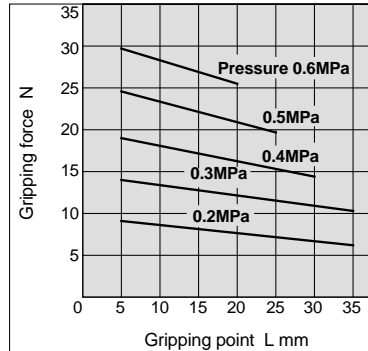
Note: 1N = 0.2248lbf  
 1in = 25.4mm  
 1MPa = 145psi

### External gripping force

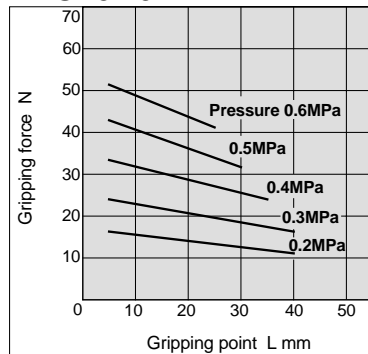
MHSH3-16D



MHSH3-20D

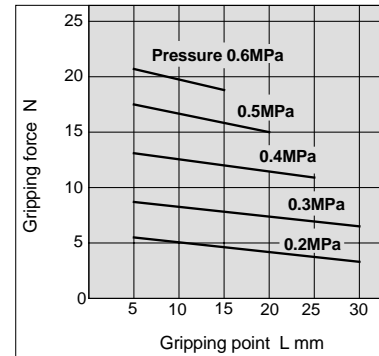


MHSH3-25D

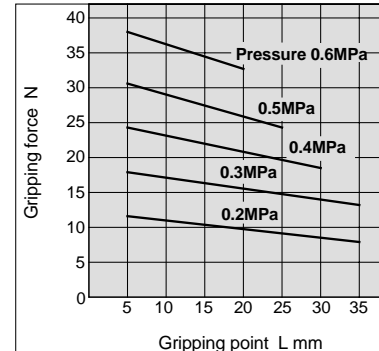


### Internal gripping force

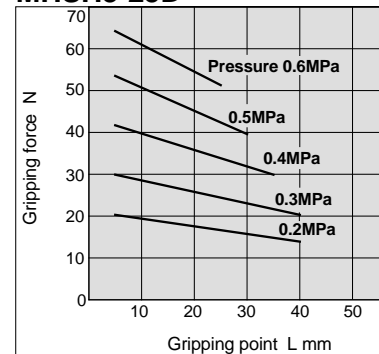
MHSH3-16D



MHSH3-20D

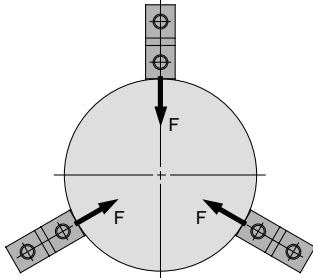


MHSH3-25D

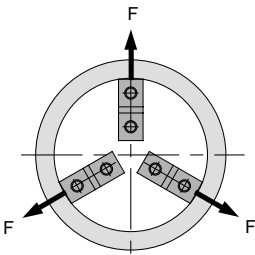


## Effective Gripping Force

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



**External gripping**

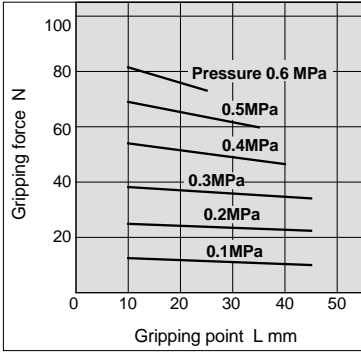


**Internal gripping**

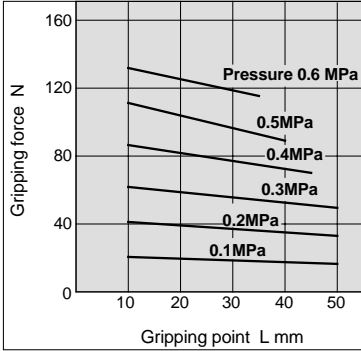
Note: 1N = 0.2248lbf  
 1in = 25.4mm  
 1MPa = 145psi

### External gripping force

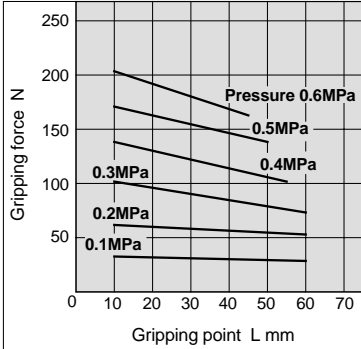
**MSHS3-32D**



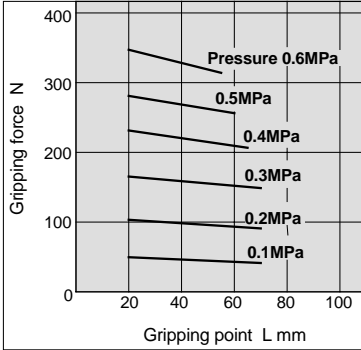
**MSHS3-40D**



**MSHS3-50D**

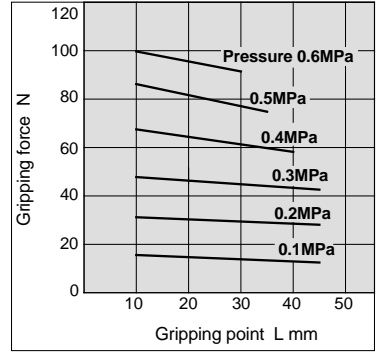


**MSHS3-63D**

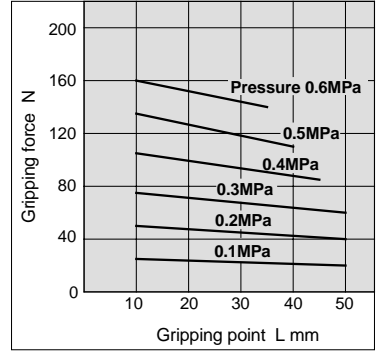


### Internal gripping force

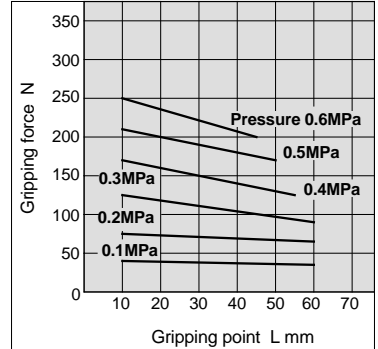
**MSHS3-32D**



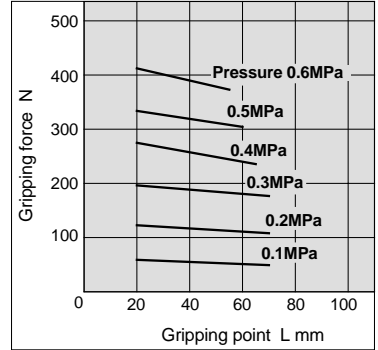
**MSHS3-40D**



**MSHS3-50D**

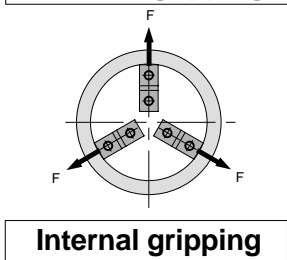
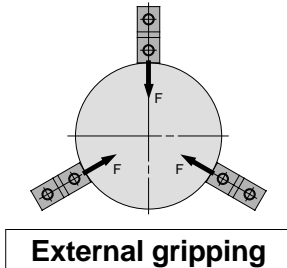


**MSHS3-63D**

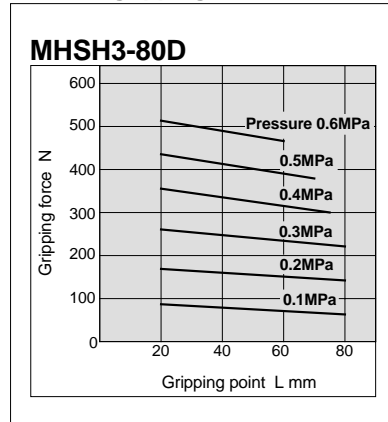


## Effective Gripping Force

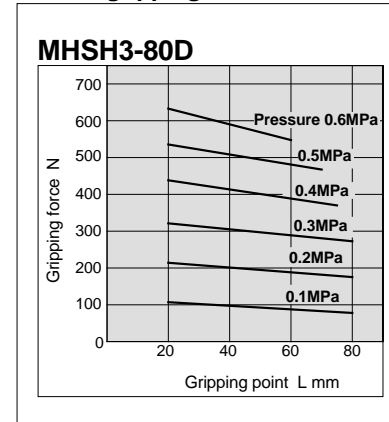
- Expressing the effective gripping force  
The effective gripping force shown in the graphs to the right is expressed as F, which is the impellent force of one finger when all 3 of the fingers and attachments are in full contact with the work piece as shown in the figure below.



### External gripping force



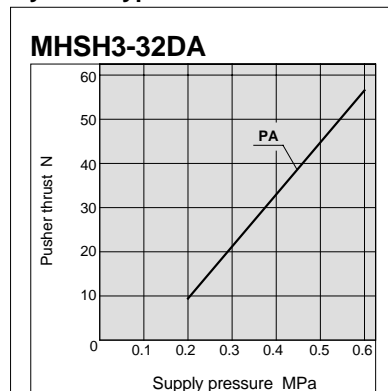
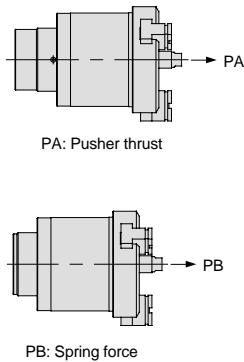
### Internal gripping force



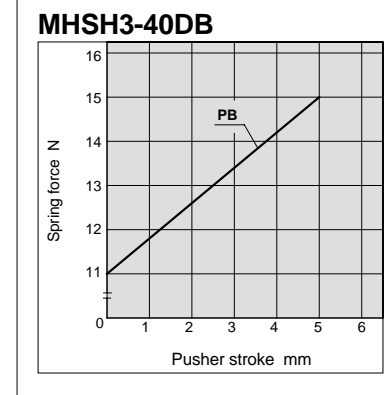
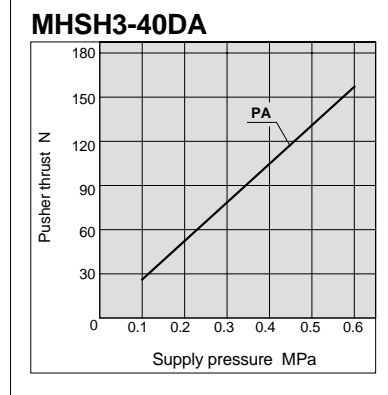
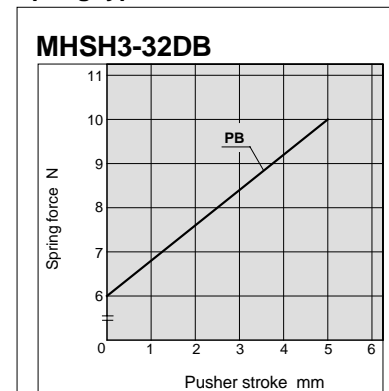
Note: 1N = 0.2248lbf  
1in = 25.4mm  
1MPa = 145psi

## Effective Thrust of Center Pusher

### Cylinder type (Note1)



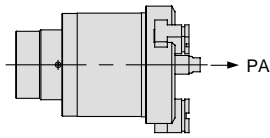
### Spring type



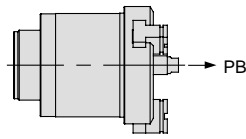
Note: 1N = 0.2248lbf  
1MPa = 145psi  
1in = 25.4mm

Note1) The thrust of the cylinder type is on extension of the push rod.

## Effective Thrust of Center Pusher



PA: Pusher thrust

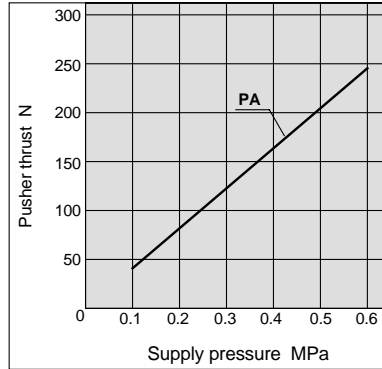


PB: Spring force

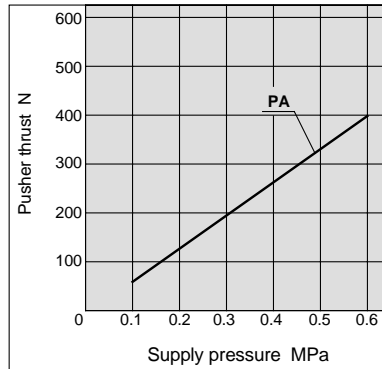
Note: 1N = 0.2248lbf  
 1MPa = 145psi  
 1in = 25.4mm

### Cylinder type <sup>(Note1)</sup>

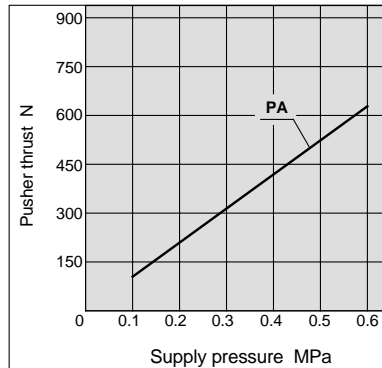
#### MSH3-50DA



#### MSH3-63DA

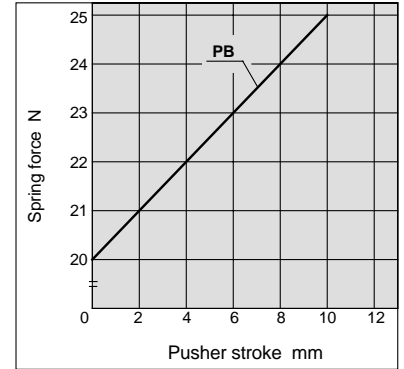


#### MSH3-80DA

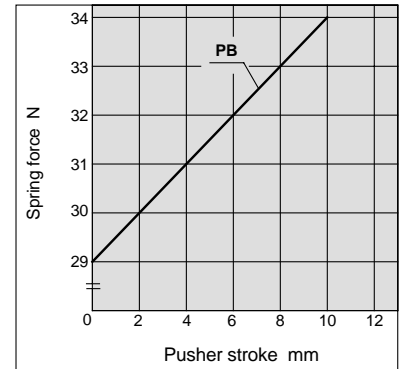


### Spring type

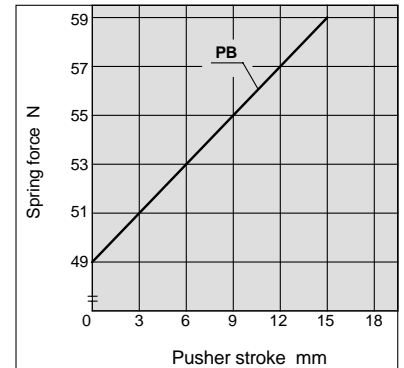
#### MSH3-50DB



#### MSH3-63DB



#### MSH3-80DB



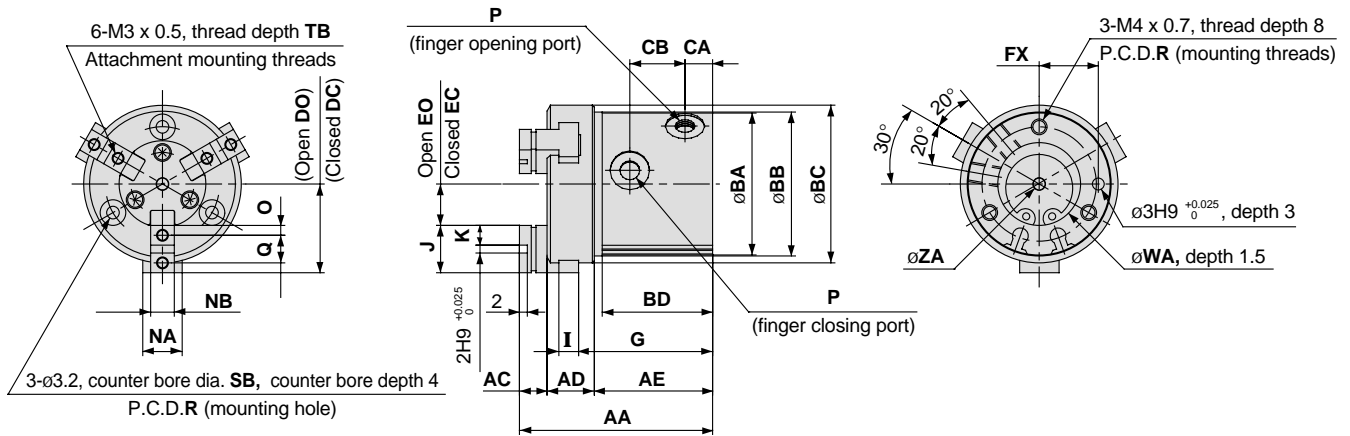
Note1) The thrust of the cylinder type is on extension of the push rod.



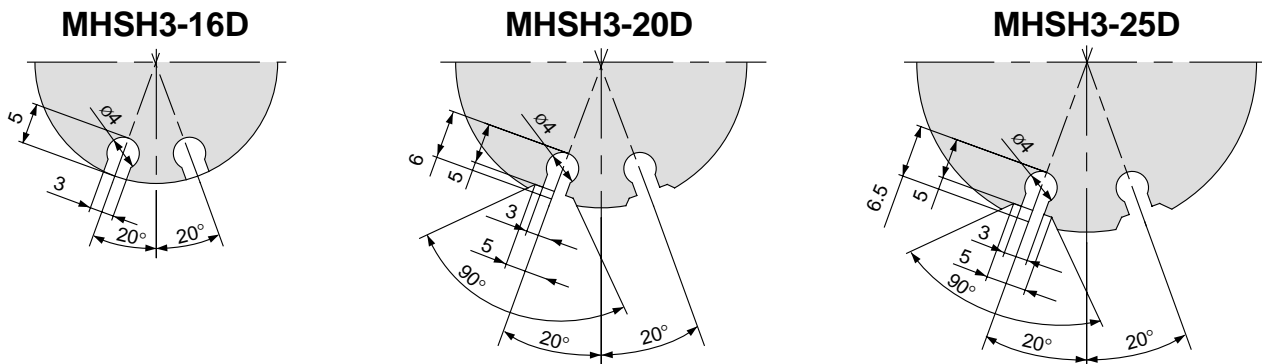
Dimensions (mm)

1in = 25.4mm

MHSH3-16D to 25D



Auto switch mounting groove positions (2 locations)



| Model     | AA | AC | AD   | AE   | BA | BB   | BC | BD | CA  | CB   | DC   | DO   | EC  | EO   | FX | G  | I | J  | K | NA | NB                                 |
|-----------|----|----|------|------|----|------|----|----|-----|------|------|------|-----|------|----|----|---|----|---|----|------------------------------------|
| MHSH3-16D | 46 | 7  | 10.5 | 28.5 | 30 | 30.5 | 34 | 27 | 7   | 14   | 17.5 | 19.5 | 7.5 | 9.5  | 12 | 32 | 4 | 10 | 4 | 8  | 5h9 <sup>0</sup> <sub>-0.030</sub> |
| MHSH3-20D | 49 | 7  | 12   | 30   | 36 | 36.5 | 40 | 28 | 7   | 14   | 20   | 22   | 8   | 10   | 15 | 34 | 5 | 12 | 5 | 10 | 6h9 <sup>0</sup> <sub>-0.030</sub> |
| MHSH3-25D | 55 | 8  | 13   | 34   | 42 | 42.5 | 47 | 32 | 7.5 | 17.5 | 23.5 | 26.5 | 9.5 | 12.5 | 18 | 38 | 5 | 14 | 6 | 12 | 6h9 <sup>0</sup> <sub>-0.030</sub> |

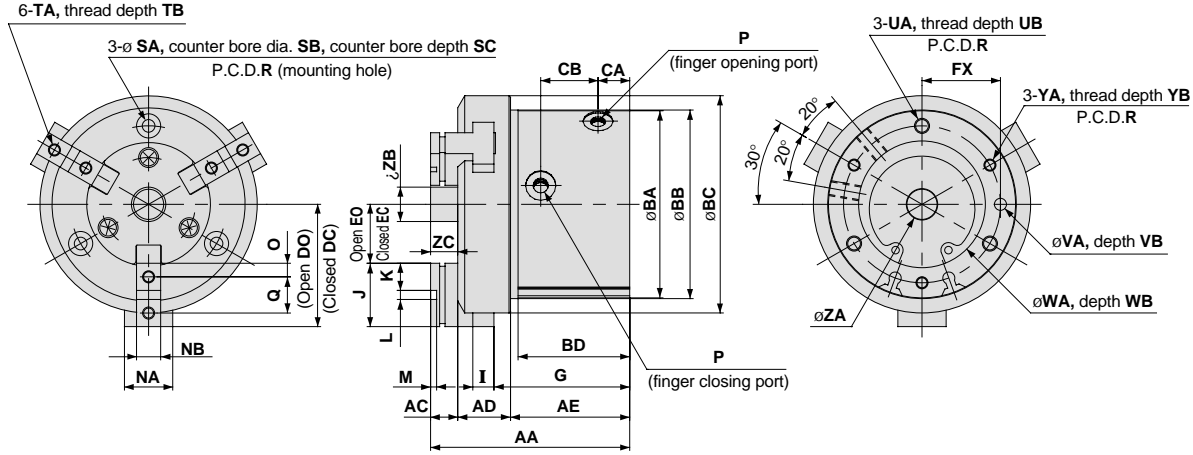
  

| Model     | O   | P        | Q | R  | SB  | TB | WA                                  | ZA                                  |
|-----------|-----|----------|---|----|-----|----|-------------------------------------|-------------------------------------|
| MHSH3-16D | 2   | M3 x 0.5 | 6 | 24 | 6   | 5  | 17H9 <sup>+0.043</sup> <sub>0</sub> | 3H10 <sup>+0.040</sup> <sub>0</sub> |
| MHSH3-20D | 2.5 | M5 x 0.8 | 7 | 29 | 6.5 | 6  | 21H9 <sup>+0.052</sup> <sub>0</sub> | 3H10 <sup>+0.040</sup> <sub>0</sub> |
| MHSH3-25D | 3   | M5 x 0.8 | 8 | 34 | 6.5 | 6  | 26H9 <sup>+0.052</sup> <sub>0</sub> | 4H10 <sup>+0.048</sup> <sub>0</sub> |

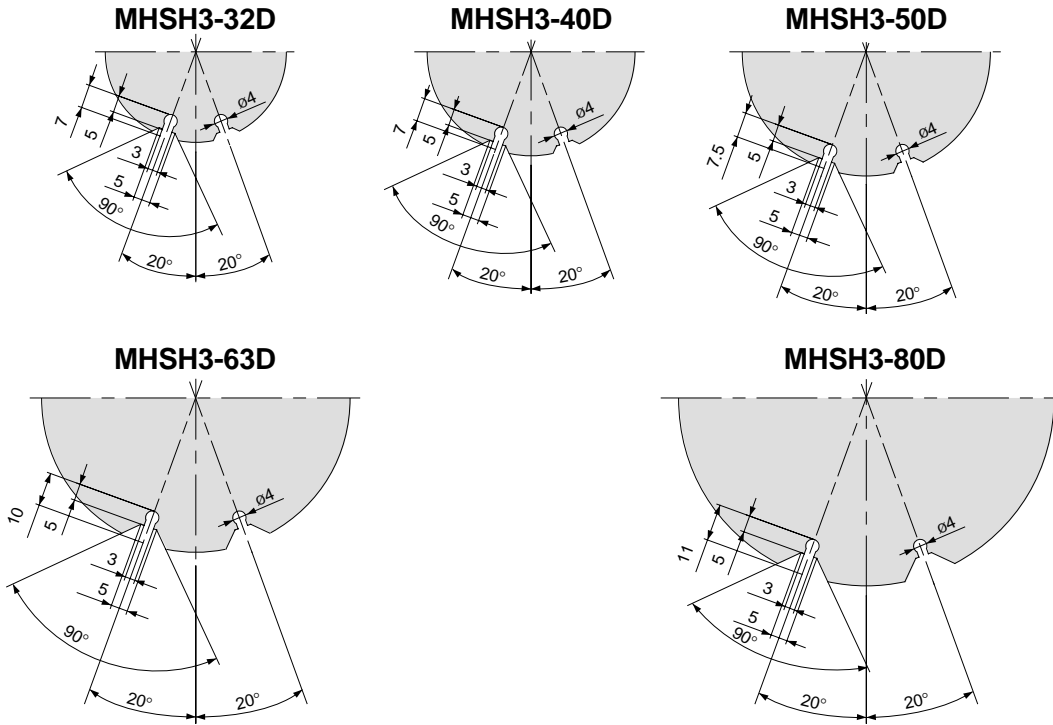
Dimensions (mm)

1 in = 25.4mm

MHSH3-32D to 80D



Auto switch mounting groove positions (2 locations)



| 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</sup> <sub>0</sub> +0.025 | 2 | 14 | 8h9 <sup>0</sup> <sub>0</sub> -0.036  | 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</sup> <sub>0</sub> +0.025 | 2 | 16 | 8h9 <sup>0</sup> <sub>0</sub> -0.036  | 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</sup> <sub>0</sub> +0.030 | 2 | 18 | 10h9 <sup>0</sup> <sub>0</sub> -0.036 | 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</sup> <sub>0</sub> +0.030 | 3 | 24 | 12h9 <sup>0</sup> <sub>0</sub> -0.043 | 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</sup> <sub>0</sub> +0.036 | 4 | 28 | 14h9 <sup>0</sup> <sub>0</sub> -0.043 | 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</sup> <sub>0</sub> +0.030 | 4  | 34H9 <sup>0</sup> <sub>0</sub> +0.062 | 2   | M4 x 0.7 | 8  | 6H10 <sup>0</sup> <sub>0</sub> +0.048  | 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</sup> <sub>0</sub> +0.030 | 4  | 42H9 <sup>0</sup> <sub>0</sub> +0.062 | 2   | M4 x 0.7 | 8  | 10H10 <sup>0</sup> <sub>0</sub> +0.058 | 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</sup> <sub>0</sub> +0.030 | 5  | 52H9 <sup>0</sup> <sub>0</sub> +0.074 | 2   | M5 x 0.8 | 10 | 12H10 <sup>0</sup> <sub>0</sub> +0.070 | 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</sup> <sub>0</sub> +0.030 | 6  | 65H9 <sup>0</sup> <sub>0</sub> +0.074 | 2.5 | M6 x 1   | 12 | 16H10 <sup>0</sup> <sub>0</sub> +0.070 | 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</sup> <sub>0</sub> +0.030 | 6  | 82H9 <sup>0</sup> <sub>0</sub> +0.087 | 3   | M6 x 1   | 12 | 20H10 <sup>0</sup> <sub>0</sub> +0.084 | 21.4 | 15 |

2 finger MHS2

3 finger MHS3

With dust cover MHSJ3

Through hole MSHS3

Long stroke MHSL3

4 finger MHS4

Auto switches

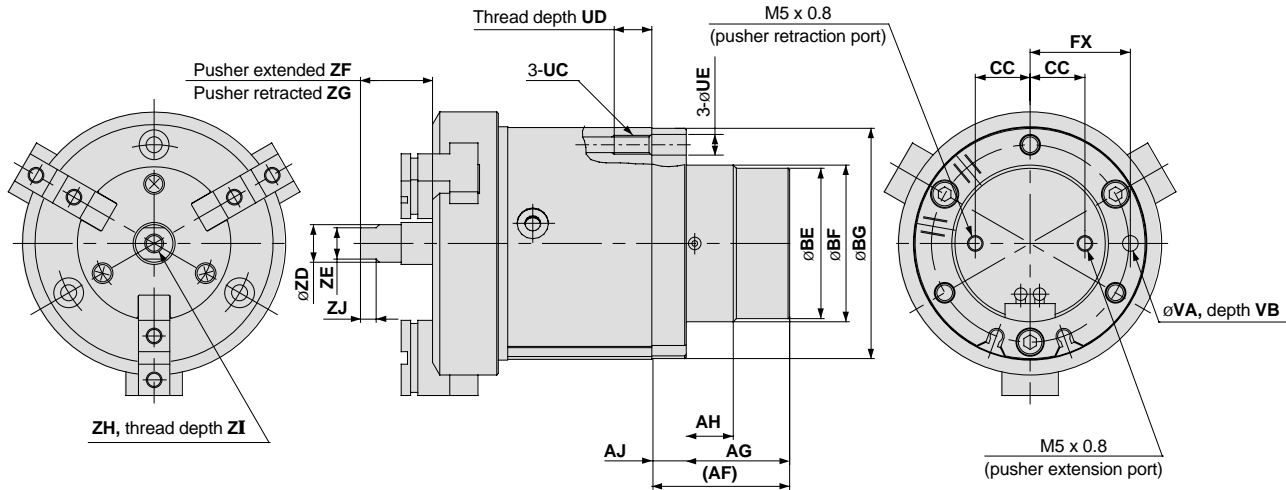
Model selection

Precautions

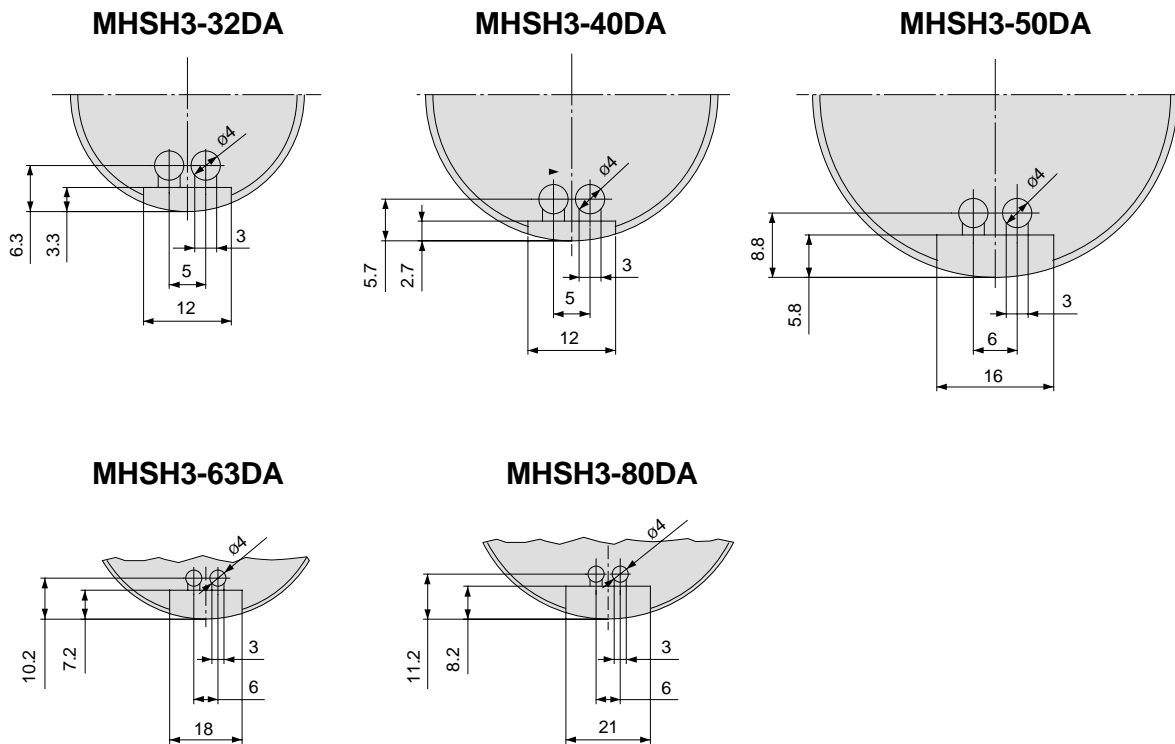
Dimensions (mm): Center Pusher/Cylinder Type

1in = 25.4mm

MSH3-32DA to 80DA



Center pusher auto switch mounting groove positions (2 locations)



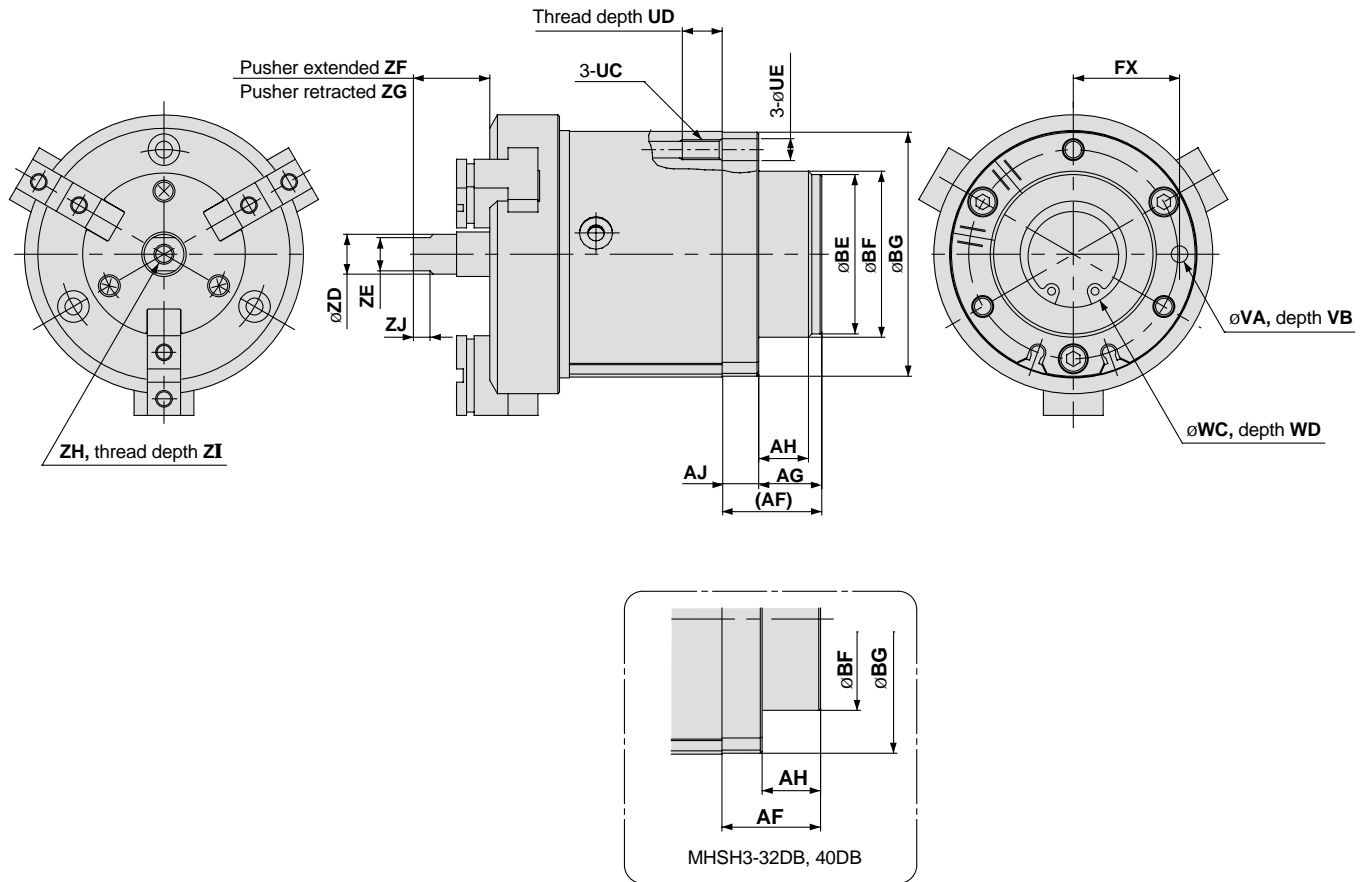
Note) For dimensions, refer to the MSH3-32 to 80D dimensions on page 32.

| Model     | AF | AG | AH | AJ | BE | BF                                  | BG    | CC   | FX | UC        | UD | UE  | VA                                 | VB | ZD | ZE | ZF | ZG | ZH        | ZI | ZJ  |
|-----------|----|----|----|----|----|-------------------------------------|-------|------|----|-----------|----|-----|------------------------------------|----|----|----|----|----|-----------|----|-----|
| MSH3-32DA | 35 | 26 | 9  | 9  | 30 | 32h9 <sub>0</sub> <sup>-0.062</sup> | 53.5  | 9.5  | 22 | M5 x 0.8  | 10 | 5.5 | 4H9 <sub>0</sub> <sup>+0.030</sup> | 4  | 6  | 5  | 20 | 15 | M3 x 0.5  | 6  | 3.5 |
| MSH3-40DA | 36 | 27 | 12 | 9  | 38 | 40h9 <sub>0</sub> <sup>-0.062</sup> | 61.5  | 13.5 | 26 | M5 x 0.8  | 10 | 5.5 | 4H9 <sub>0</sub> <sup>+0.030</sup> | 4  | 10 | 8  | 21 | 16 | M5 x 0.8  | 10 | 4.5 |
| MSH3-50DA | 44 | 33 | 15 | 11 | 48 | 50h9 <sub>0</sub> <sup>-0.062</sup> | 73.5  | 17.5 | 32 | M6 x 1    | 12 | 6.6 | 5H9 <sub>0</sub> <sup>+0.030</sup> | 5  | 12 | 10 | 28 | 18 | M6 x 1    | 12 | 5   |
| MSH3-63DA | 48 | 35 | 18 | 13 | 58 | 60h9 <sub>0</sub> <sup>-0.074</sup> | 91.5  | 20   | 40 | M8 x 1.25 | 16 | 8.6 | 6H9 <sub>0</sub> <sup>+0.030</sup> | 6  | 16 | 14 | 32 | 22 | M8 x 1.25 | 16 | 7   |
| MSH3-80DA | 58 | 45 | 20 | 13 | 68 | 70h9 <sub>0</sub> <sup>-0.074</sup> | 111.5 | 25   | 50 | M8 x 1.25 | 16 | 8.6 | 6H9 <sub>0</sub> <sup>+0.030</sup> | 6  | 20 | 17 | 41 | 26 | M10 x 1.5 | 20 | 8   |

Dimensions (mm): Center Pusher/Spring Type

1in = 25.4mm

MHSH3-32DB to 80DB



Note) For dimensions, refer to the MSHS3-32 to 80D dimensions on page 32.

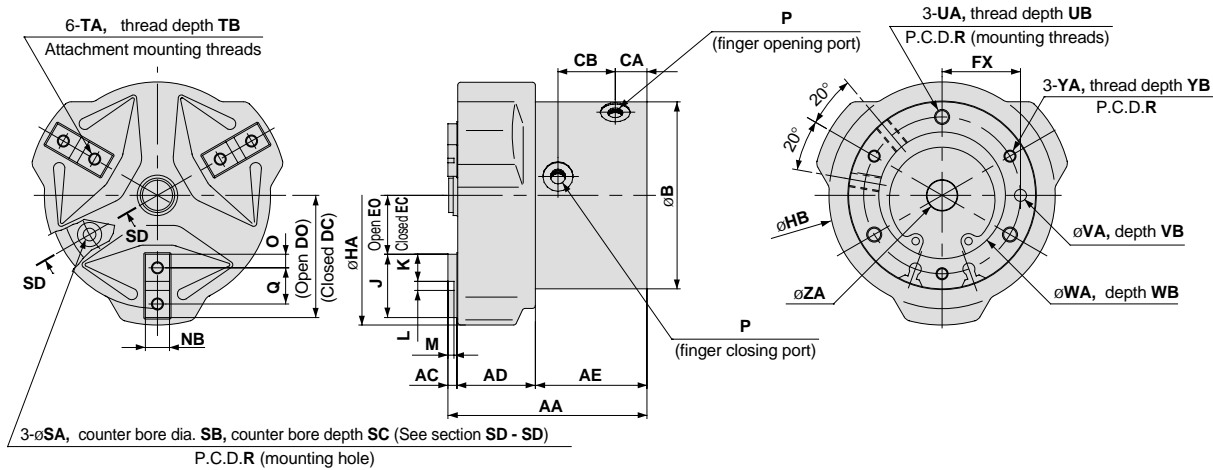
| Model      | AF | AG | AH | AJ | BE | BF                                  | BG    | FX | UC        | UD | UE  | VA                                 | VB | WC                              | WD  | ZD | ZE | ZF | ZG |
|------------|----|----|----|----|----|-------------------------------------|-------|----|-----------|----|-----|------------------------------------|----|---------------------------------|-----|----|----|----|----|
| MHSH3-32DB | 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 |
| MHSH3-40DB | 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 |
| MHSH3-50DB | 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 |
| MHSH3-63DB | 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 |
| MHSH3-80DB | 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  |
|------------|-----------|----|-----|
| MHSH3-32DB | M3 x 0.5  | 6  | 3.5 |
| MHSH3-40DB | M5 x 0.8  | 10 | 4.5 |
| MHSH3-50DB | M6 x 1    | 12 | 5   |
| MHSH3-63DB | M8 x 1.25 | 16 | 7   |
| MHSH3-80DB | M10 x 1.5 | 20 | 8   |

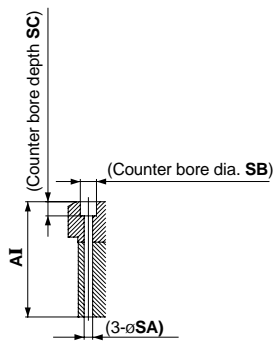
## Dimensions (mm): Through Hole with Dust Cover

1 in = 25.4mm

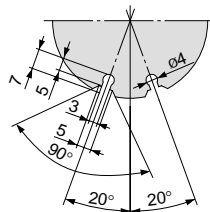
### MHSHJ3-32D to 80D



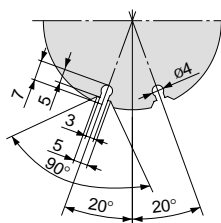
### Auto switch mounting groove positions (2 locations)



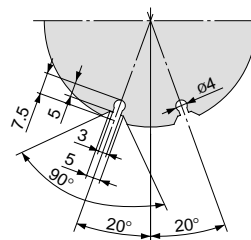
MHSHJ3-32D



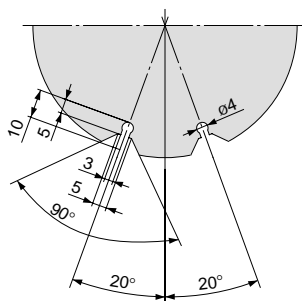
MHSHJ3-40D



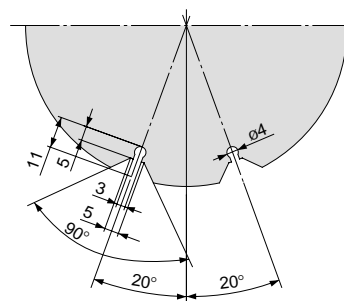
MHSHJ3-50D



MHSHJ3-63D



MHSHJ3-80D



(mm)

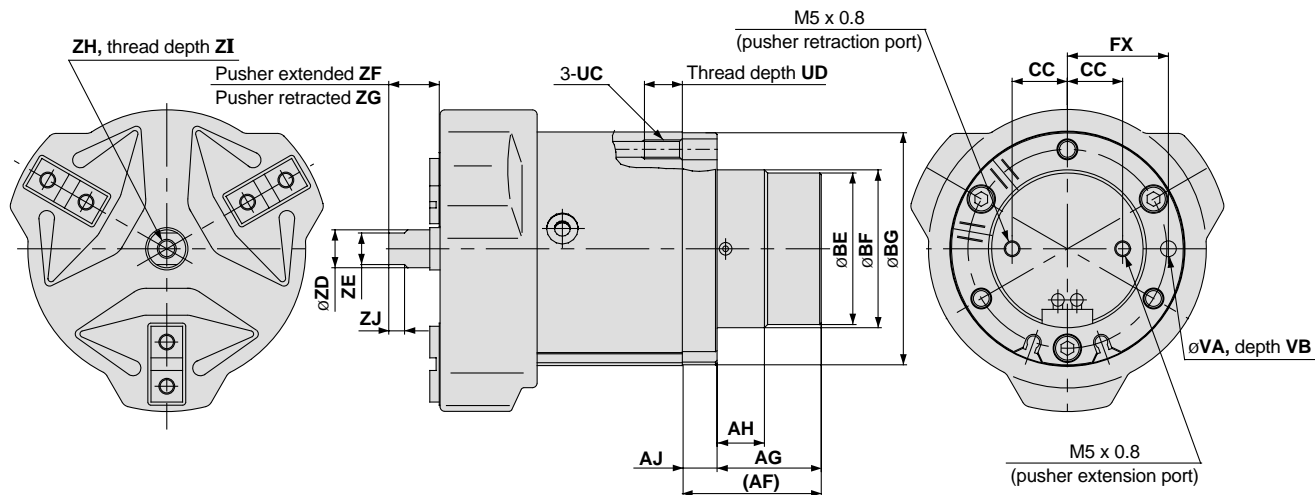
| Model      | AA  | AC | AD | AE | AI | B   | CA   | CB   | DC   | DO   | EC   | EO   | FX | HA  | HB  | J  | K  | L                                  | M | NB                                  |
|------------|-----|----|----|----|----|-----|------|------|------|------|------|------|----|-----|-----|----|----|------------------------------------|---|-------------------------------------|
| 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   | 18   | 24   | 32 | 103 | 88  | 24 | 10 | 4H9 <sup>+0.030</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</sup> <sub>+0.048</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</sup> <sub>+0.058</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</sup> <sub>+0.070</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</sup> <sub>+0.070</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</sup> <sub>+0.084</sub> |

Dimensions (mm): Center Pusher/Cylinder Type with Dust Cover

1in = 25.4mm

MHSHJ3-32DA to 80DA



Note) For dimensions, refer to the MHSHJ3-32 to 80D dimensions on page 35.  
For auto switch mounting groove dimensions for the center pusher, refer to MSHS3-32 to 80DA on page 33.

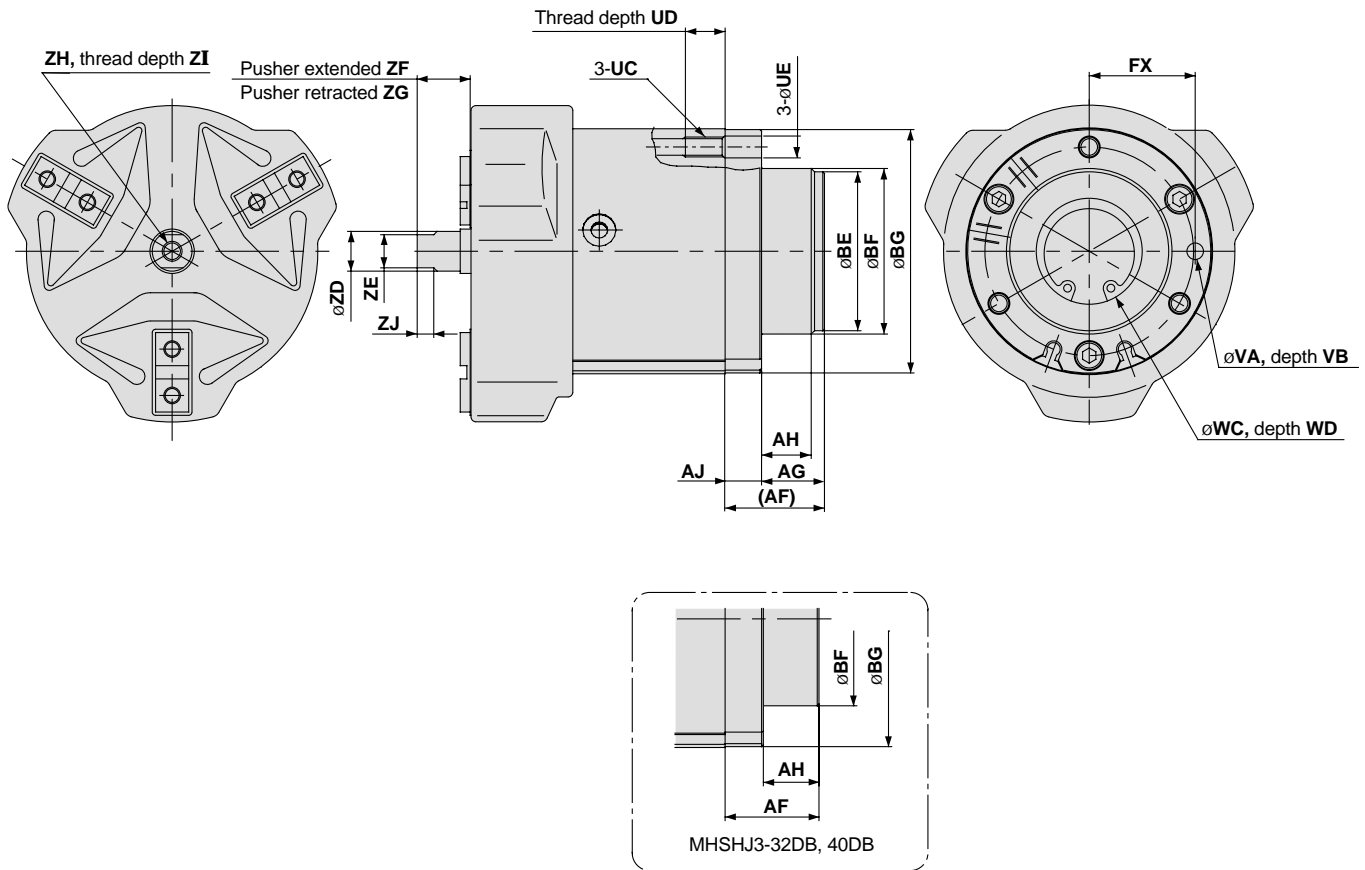
| Model       | AF | AG | AH | AJ | BE | BF                                  | BG    | CC   | FX | UC        | UD | VA                                 | VB | ZD | ZE | ZF | ZG | ZH        | ZI | ZJ  |
|-------------|----|----|----|----|----|-------------------------------------|-------|------|----|-----------|----|------------------------------------|----|----|-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

(mm)

Dimensions (mm): Center Pusher/Spring Type with Dust Cover

1in = 25.4mm

MHSHJ3-32DB to 80DB



Note) For dimensions, refer to the MSHSHJ3-32 to 80D dimensions on page 35.

| 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 <sub>0</sub> <sup>-0.062</sup> | 53.5  | 22 | M5 x 0.8  | 10 | 5.5 | 4H9 <sub>0</sub> <sup>+0.030</sup> | 4  | 20 <sub>0</sub> <sup>+0.1</sup> | 1.5 | 6  | 5  | 14 |
| MHSHJ3-40DB | 21 | —  | 12 | 9  | —  | 40h9 <sub>0</sub> <sup>-0.062</sup> | 61.5  | 26 | M5 x 0.8  | 10 | 5.5 | 4H9 <sub>0</sub> <sup>+0.030</sup> | 4  | 24 <sub>0</sub> <sup>+0.1</sup> | 1.5 | 10 | 8  | 15 |
| MHSHJ3-50DB | 30 | 19 | 15 | 11 | 48 | 50h9 <sub>0</sub> <sup>-0.062</sup> | 73.5  | 32 | M6 x 1    | 12 | 6.6 | 5H9 <sub>0</sub> <sup>+0.030</sup> | 5  | 32 <sub>0</sub> <sup>+0.1</sup> | 1.5 | 12 | 10 | 21 |
| MHSHJ3-63DB | 35 | 22 | 18 | 13 | 58 | 60h9 <sub>0</sub> <sup>-0.074</sup> | 91.5  | 40 | M8 x 1.25 | 16 | 8.6 | 6H9 <sub>0</sub> <sup>+0.030</sup> | 6  | 42 <sub>0</sub> <sup>+0.1</sup> | 2   | 16 | 14 | 24 |
| MHSHJ3-80DB | 48 | 35 | 20 | 13 | 68 | 70h9 <sub>0</sub> <sup>-0.074</sup> | 111.5 | 50 | M8 x 1.25 | 16 | 8.6 | 6H9 <sub>0</sub> <sup>+0.030</sup> | 6  | 52 <sub>0</sub> <sup>+0.1</sup> | 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   |

## Solid-state Auto Switches for Direct Mounting Series D-M9N(V)/D-M9P(V)/D-M9B(V)



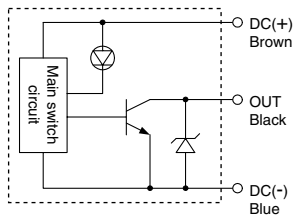
### Grommet

- Reduced load currents for two-wire model (2.5 to 40 mA)
- Compliance with lead-free requirements
- Use of UL-approved lead wires (style 2844)

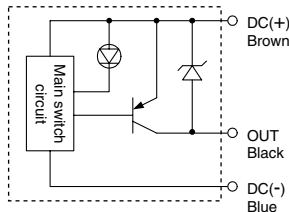


### Internal circuits

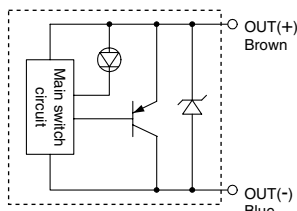
#### D-M9N/M9NV



#### D-M9P/M9PV



#### D-M9B/M9BV



### Auto Switch Specifications

PLC: Programmable Logic Controller

| D-M9□/D-M9□V (with Indicator light) |                                    |               |         |               |                         |               |
|-------------------------------------|------------------------------------|---------------|---------|---------------|-------------------------|---------------|
| Model number                        | D-M9N                              | D-M9NV        | D-M9P   | D-M9PV        | D-M9B                   | D-M9BV        |
| Electrical entry                    | In-line                            | Perpendicular | In-line | Perpendicular | In-line                 | Perpendicular |
| Wiring                              | Three-wire                         |               |         | Two-wire      |                         |               |
| Output                              | NPN                                |               | PNP     |               | —                       |               |
| Applicable load                     | Integrated circuit, relay and PLC  |               |         |               | 24 V DC relay and PLC   |               |
| Power voltage                       | 5, 12, or 24 V DC (4.5 to 28 V DC) |               |         |               | —                       |               |
| Current consumption                 | 10 mA or less                      |               |         |               | —                       |               |
| Load voltage                        | 28 V DC or less                    |               | —       |               | 24 V DC (10 to 28 V DC) |               |
| Load current                        | 40 mA or less                      |               |         |               | 2.5 to 40 mA            |               |
| Internal voltage drop               | 0.8 V or less                      |               |         |               | 4 V or less             |               |
| Leakage current                     | 100 μA max. at 24 V DC             |               |         |               | 0.8 mA or less          |               |
| Indicator light                     | Red LED lights when ON.            |               |         |               |                         |               |

- Lead wire: oil-proof heavy-duty vinyl cable  
2.7 x 3.2 with elliptic cross-section, 0.15 mm<sup>2</sup>, two cores (D-M9B),  
or three cores (D-M9N and D-M9P)

### Solid state switch specifications

|                       |  |
|-----------------------|--|
| Leakage current       | 3-wire: 100 μA or less; 2-wire: 0.8 mA max.              |
| Operating time        | 1 ms or less   |
| Impact resistance     | 1000 m/s <sup>2</sup>                                    |
| Insulation resistance | 50 MΩ or more at 500 V DC (between lead wire and case)   |
| Withstand voltage     | 1000 V AC for 1 min. (between lead wire and case)        |
| Ambient temperature   | -10°C to 60°C  |
| Enclosure             | IEC529 standard IP67, JIS C 0920 watertight construction |

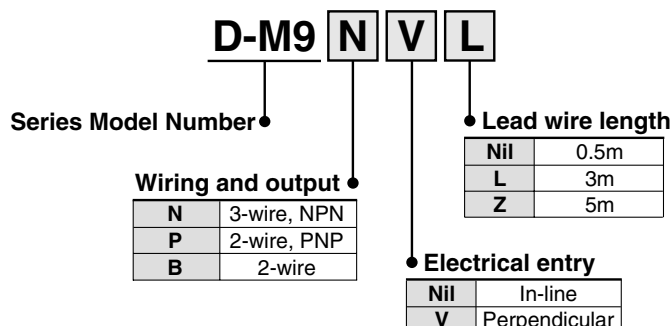
### Weight

Unit: g

| Model                | D-M9N(V) | D-M9P(V) | D-M9B(V) |    |
|----------------------|----------|----------|----------|----|
| Lead wire length (m) | 0.5      | 8        | 8        | 7  |
|                      | 3        | 41       | 41       | 38 |
|                      | 5        | 68       | 68       | 63 |

### How to Order

#### Standard Model Number

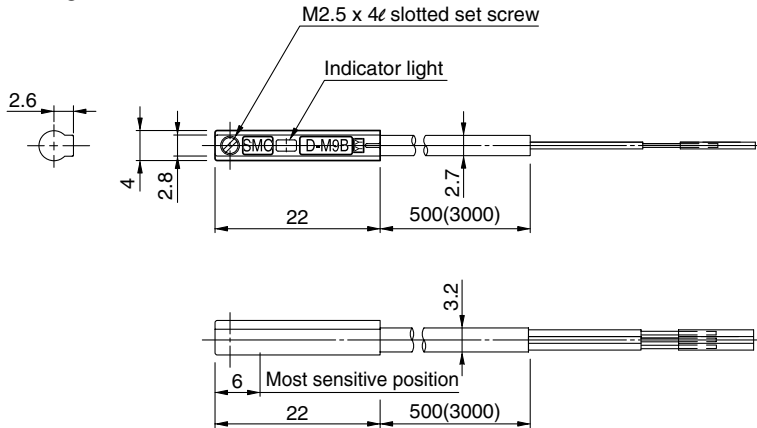




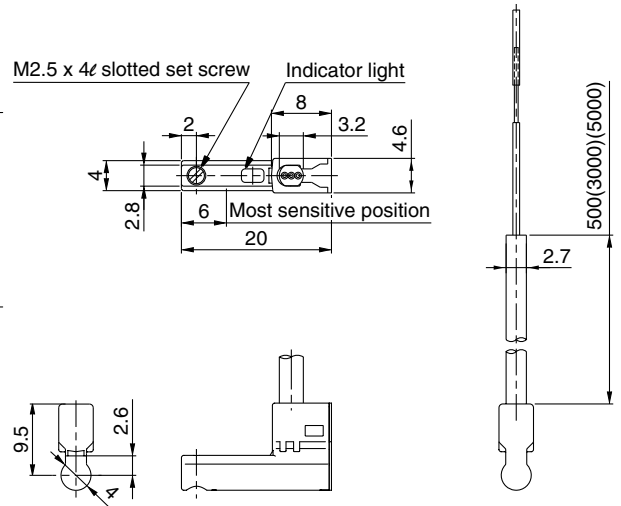
# Series D-M9

## Auto Switch Dimensions

### D-M9□



### D-M9□V



## ⚠ Specific Product Precautions

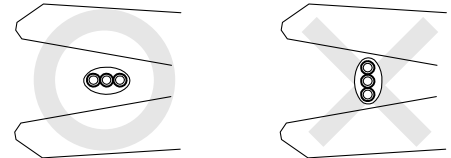
Be sure to read before handling. Contact SMC when the required specification is out of range.

### Handling

## ⚠ Caution

Observe the following precautions when handling the product.

- The D-M9 series of auto switches is not overcurrent-protected. Faulty wiring or short circuit may result in breakage or burning-out of the switch.
- When stripping the cable clad, be careful about the orientation of the cable being stripped. The insulator may be accidentally torn or damaged depending on the orientation, as shown on the right.



- We recommend the following tools

| Manufacturer | Product name  | Product number |
|--------------|---------------|----------------|
| VESSEL       | Wire stripper | No 3000G       |
| Tokyo Ideal  | Strip master  | 45-089         |

\* The stripper for the round shape cords (ø2.0) is for a 2-wire style.

- Please do not attach the switch with any other screws than those already attached to the auto switch body.

## The operation range is shorter than that of the conventional models.

If the auto switch replaces the conventional model, it may not function depending on its application because the operation range is shorter. Refer to the examples below.

- In an application where at the end, the stopping position shifting range is larger than the operation range.**  
For example, pushing a work against something, or pressing a work into a hole, or clamping a work.
- In an application where the auto switch is used to detect an intermediate stopping position. (Detecting time is shortened.)**

Note) Please contact SMC for the operation range details for each actuator.

The switch is damaged instantly when a load is shortened since short circuit protection is not built-in. Pay special attention to avoid reversing the connection of the brown lead of the power supply line and the black output line connection.