

# Lightweight, compact design with reduced height

Long stroke (MHSL3) introduced to upgraded series.

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

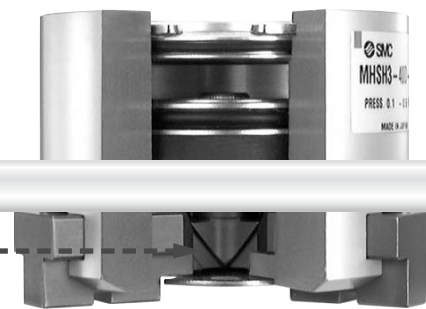
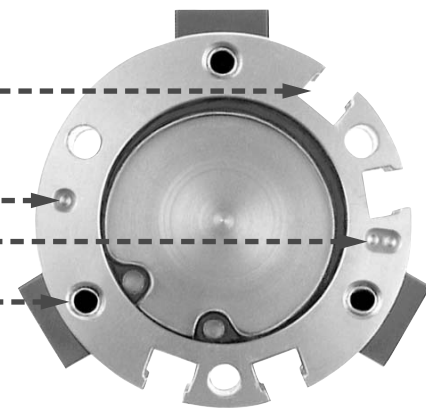
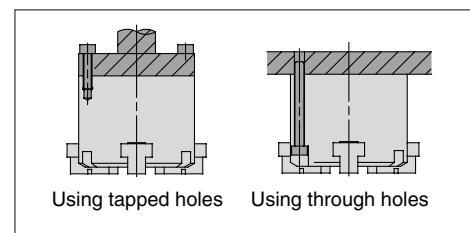
**Auto switch capable**

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**

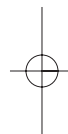
Positioning pin holes are provided on the top of the gripper.

**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	<b>Series MHS2</b> Gripping of diverse workpieces	●	●	●	●	●	●	●	●	●	●
	<b>Series MHS3</b> Axial gripping of cylindrical workpieces	●	●	●	●	●	●	●	●	●	●
3 Finger	<b>Long stroke Series MHSL3</b> Accommodates a wide range of workpiece diameters	●	●	●	●	●	●	●	●	●	●
	<b>Series MHS4</b> Positioning of square workpieces	●	●	●	●	●	●	●	●	●	●

# Series MHS Model Selection

## Model Selection

### Selection Procedure



### Step 1 Confirmation of Gripping Force



#### Example

Workpiece weight: 0.4 kg

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 method: External gripping

Number of fingers: 2

**MHS2-32D**  
External Gripping Force

The graph plots Gripping force (N) on the y-axis (0 to 150) against Gripping point L (mm) on the x-axis (0 to 50). Five lines represent different pressures: 0.1 MPa, 0.2 MPa, 0.3 MPa, 0.4 MPa, and 0.6 MPa. The 0.4 MPa line shows a gripping force of 92 N at a gripping point distance of 20 mm.

Gripping point: 20 mm

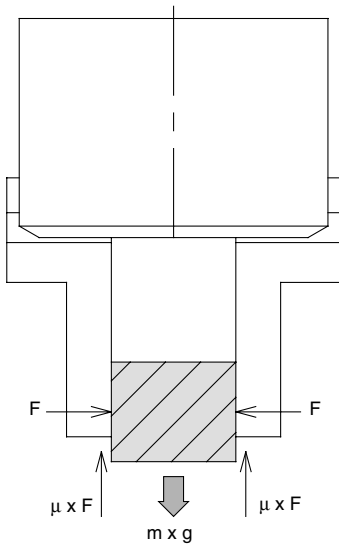
• Selecting the MHS2-32D.  
A gripping force of 92 N is obtained from the intersection point of the gripping point distance  $L = 20 \text{ mm}$  and a pressure of 0.4 MPa.

• The gripping force is 23 times greater than the workpiece weight, and therefore satisfies a gripping force setting value of 20 times or more.

Operating pressure: 0.4 MPa

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 $\mu = 0.1$
$F = \frac{mg}{2 \times 0.2} \times 4$ $= 10 \times mg$	$F = \frac{mg}{2 \times 0.1} \times 4$ $= 20 \times mg$
↑	↑
<b>10 x workpiece weight</b>	<b>20 x workpiece weight</b>

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.

# 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	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)		IC circuit	Relay, PLC	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V	M9NV	M9N	●	●	○	Standard			—
				3-wire (PNP)		12 V	M9PV	M9P	●	●	○		○		
				2-wire		12 V	M9BV	M9B	●	●	○		○		
	Water resistant (2-color indication)	—	—	—	—	—	—	●	○	○	○	○			

\* 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.

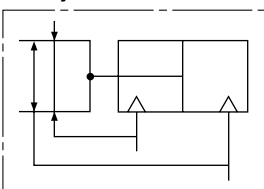
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)*			Flexible lead wire (-61)	Applicable load		Pre-wire connector			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)		IC circuit	Relay, PLC				
Solid state switch	—	Grommet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

\* 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



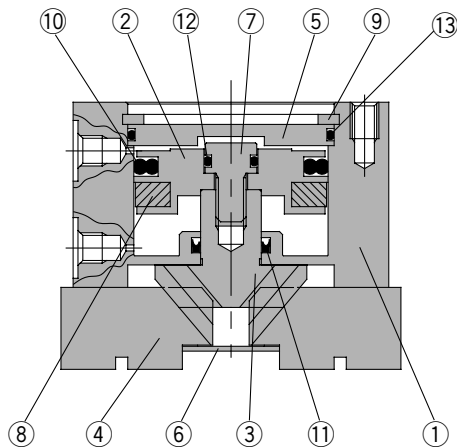
Model		MHS2-16D	MHS2-20D	MHS2-25D	MHS2-32D	MHS2-40D	MHS2-50D	MHS2-63D
Bore size (mm)		16	20	25	32	40	50	63
Fluid		Air						
Operating pressure (MPa)		0.2 to 0.6			0.1 to 0.6			
Ambient and fluid temperature (°C)		-10 to 60						
Repeatability (mm)		±0.01						
Max. operating frequency (c.p.m.)		120			60			
Lubrication		Not required						
Action		Double acting						
Effective gripping force (N) at 0.5 MPa <sup>Note</sup>	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  $\phi 16$  to  $\phi 25$  are with gripping point L = 20 mm, and for  $\phi 32$  to  $\phi 63$  with gripping point L = 30 mm.

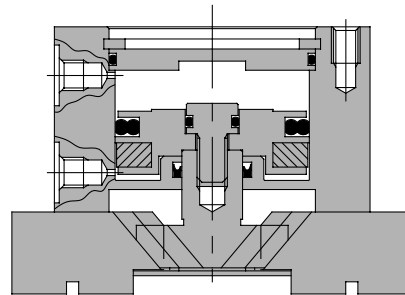
Refer to "Effective Gripping Force" data on pages 12-7-8 through 12-7-9 for the gripping force at each gripping position.

## 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

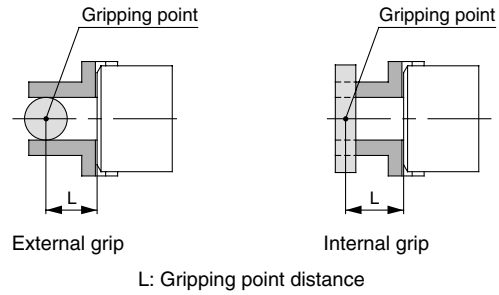
Description	MHS2-16D	MHS2-20D	MHS2-25D	MHS2-32D	MHS2-40D	MHS2-50D	MHS2-63D	Main parts
Seal kit	MHS16-PS	MHS20-PS	MHS25-PS	MHS32-PS	MHS40-PS	MHS50-PS	MHS63-PS	⑩⑪⑫⑬
Finger	P3316004	P3346104	P3316204	P3316304	P3316404	P3316504	P3316604	④
Cam	P3316023	P3316123	P3316223	P3316323	P3316423	P3316523	P3316623	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.

# Series MHS2

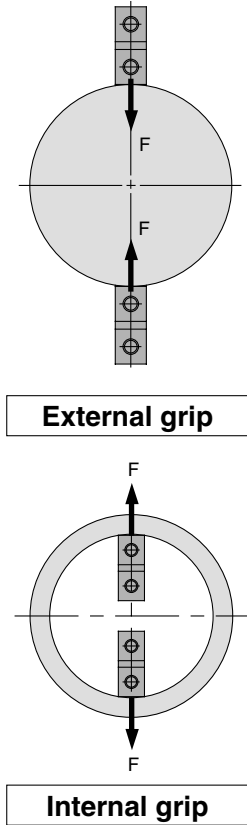
## Gripping Point

- 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.

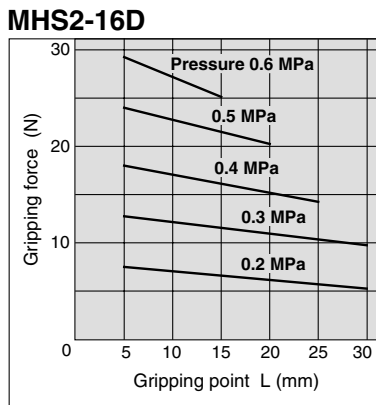


## Effective Gripping Force

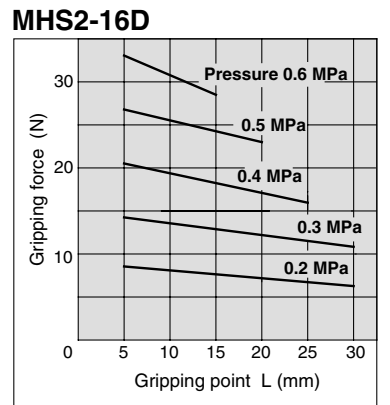
- The effective gripping force shown in the graphs to the right is expressed as F, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



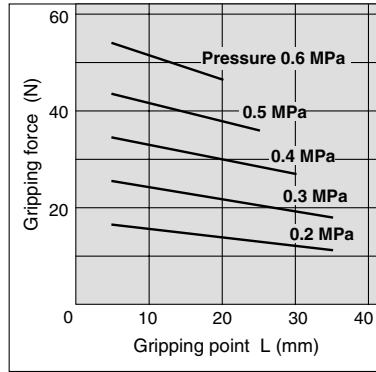
### External Grip



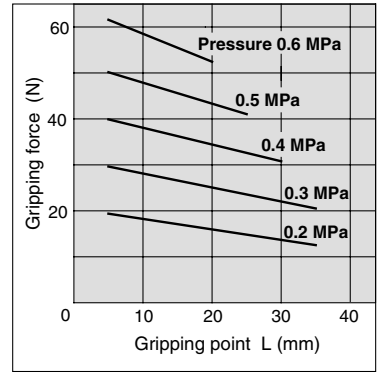
### Internal Grip



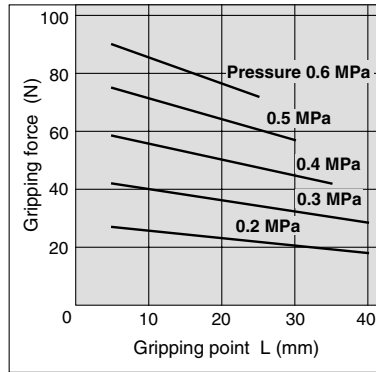
### MHS2-20D



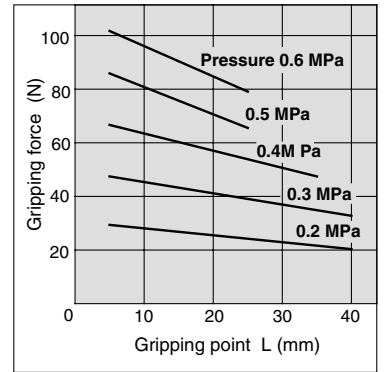
### MHS2-20D



### MHS2-25D

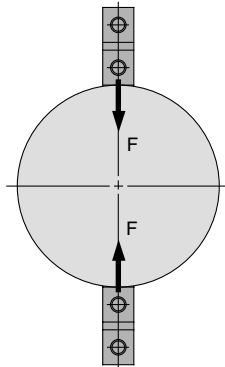


### MHS2-25D

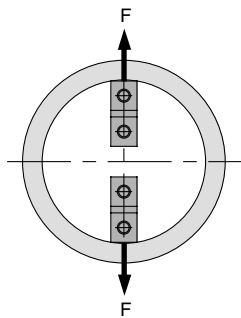


## Effective Gripping Force

- 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.



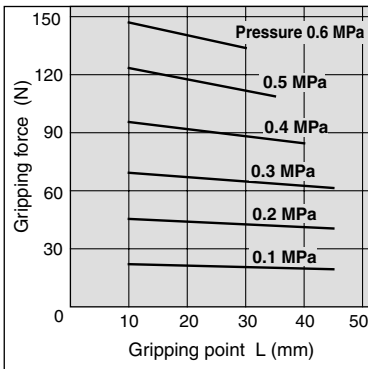
**External grip**



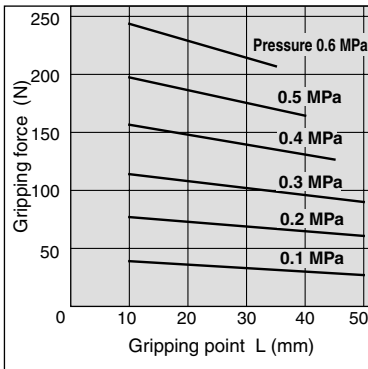
**Internal grip**

### External Grip

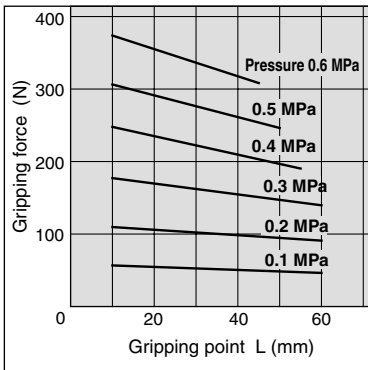
**MHS2-32D**



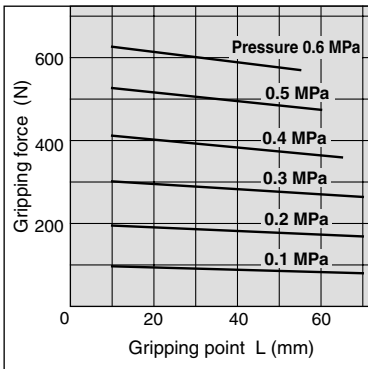
**MHS2-40D**



**MHS2-50D**

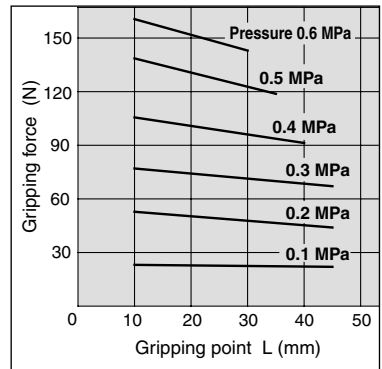


**MHS2-63D**

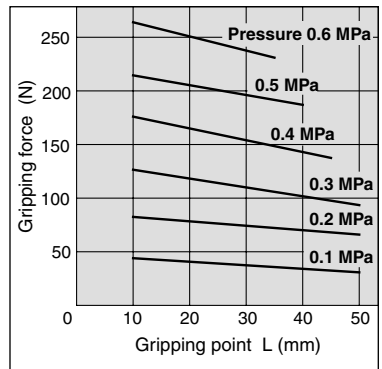


### Internal Grip

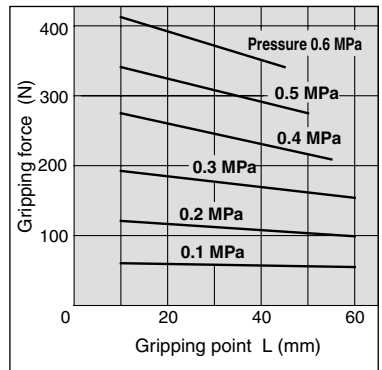
**MHS2-32D**



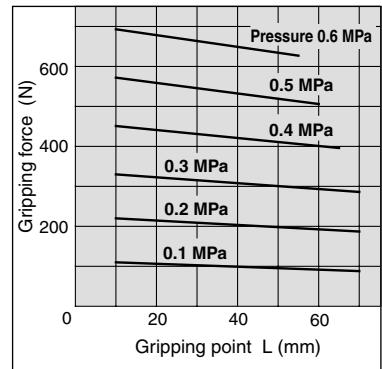
**MHS2-40D**



**MHS2-50D**



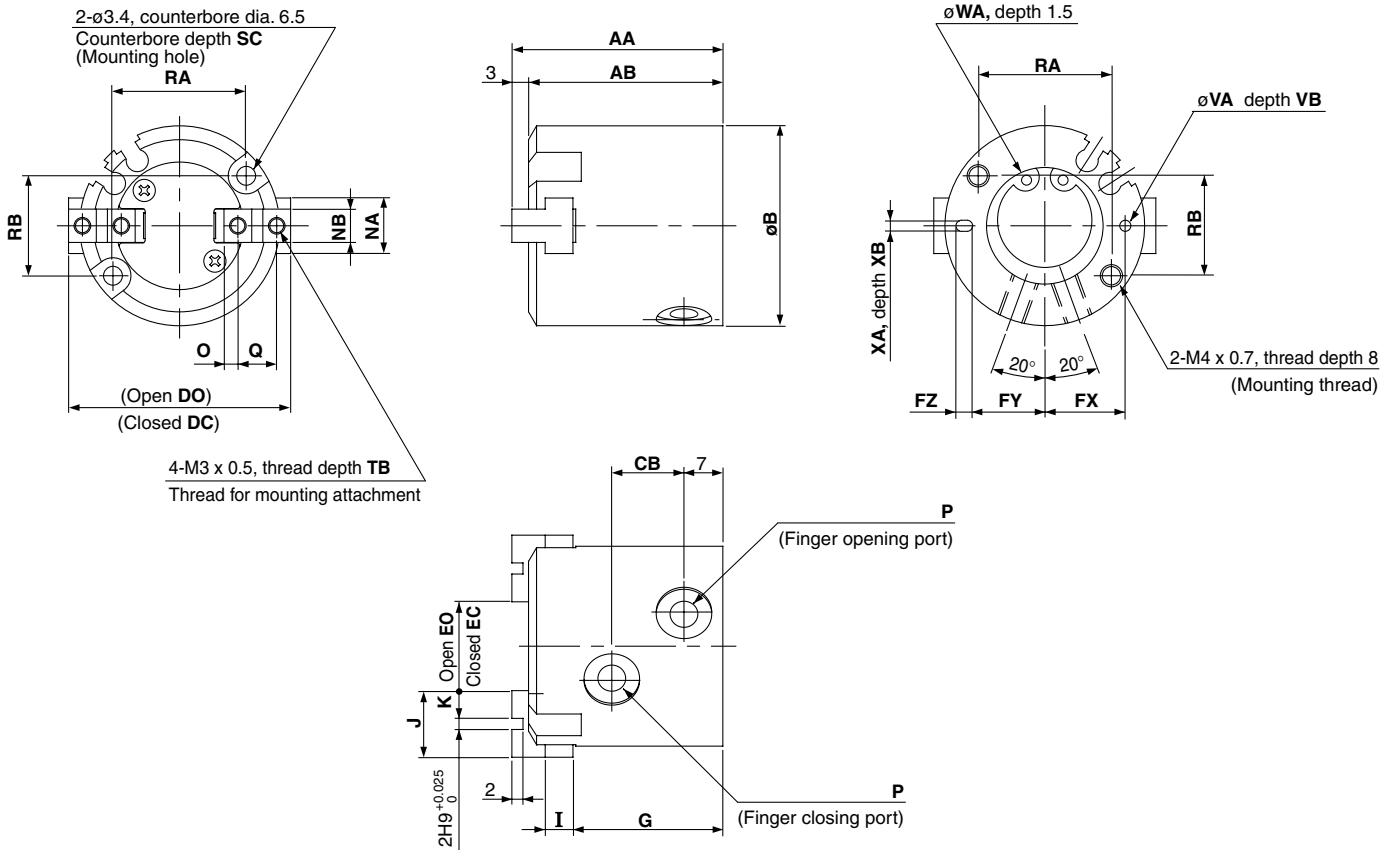
**MHS2-63D**



# Series MHS2

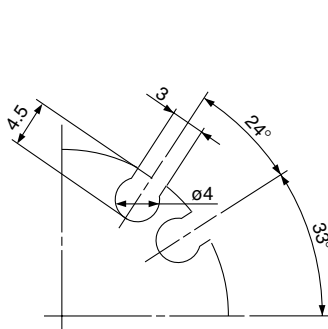
## Dimensions

### MHS2-16D to 25D

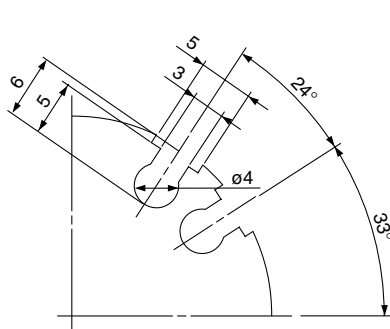


### Auto switch mounting groove dimensions (2 locations)

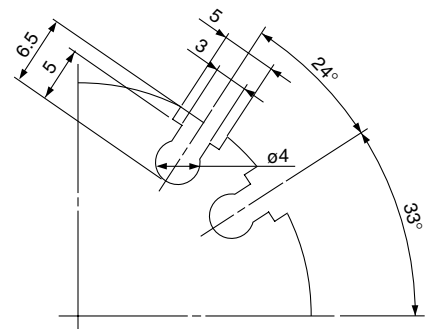
MHS2-16D



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 <sub>0</sub> <sup>0</sup> <sub>-0.030</sub>	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 <sub>0</sub> <sup>0</sup> <sub>-0.030</sub>	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 <sub>0</sub> <sup>0</sup> <sub>-0.030</sub>	3	M5 x 0.8	8

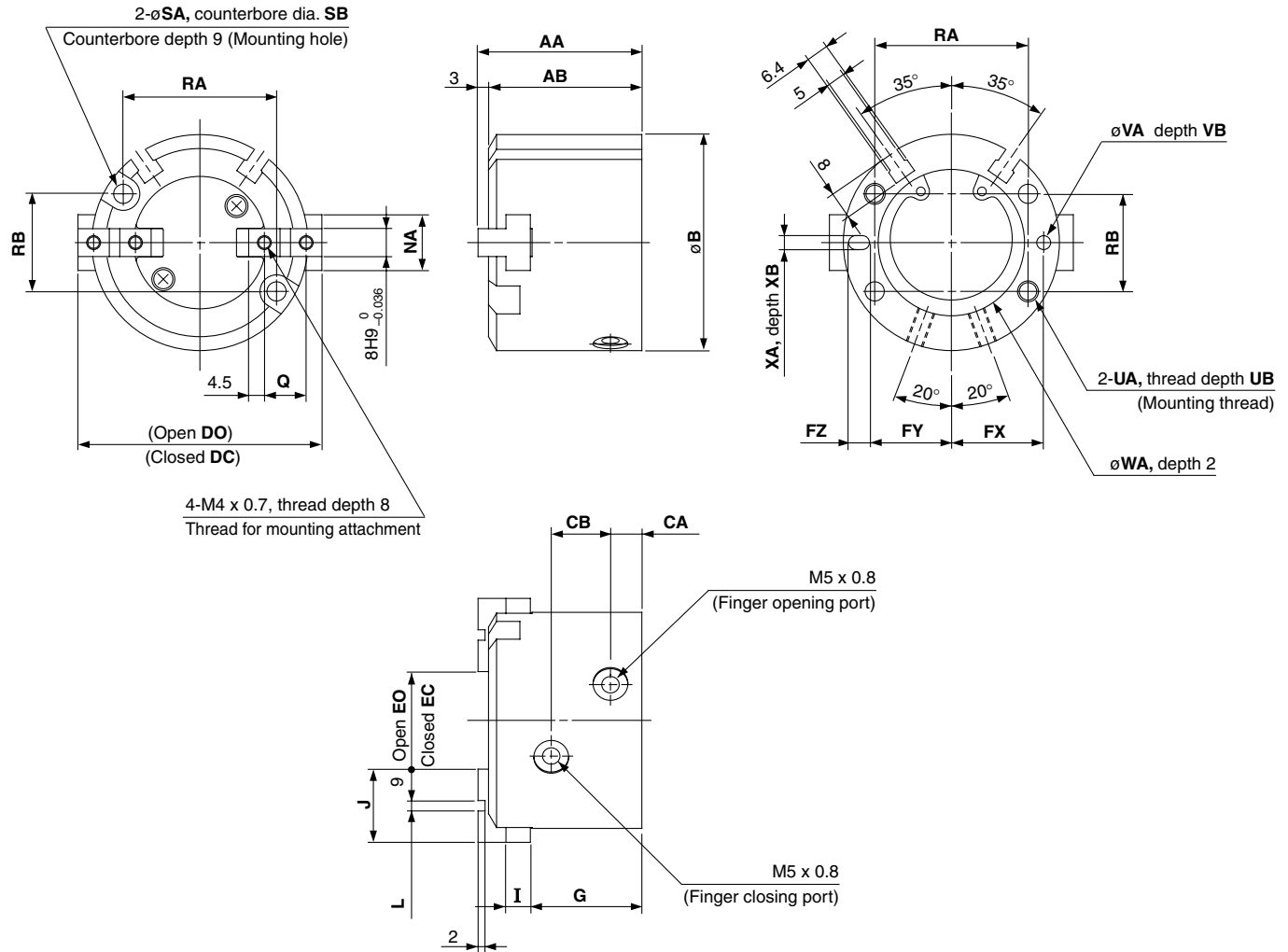
  

Model	RA	RB	SC	TB	VA	VB	WA	XA	XB
MHS2-16D	18	16	8	5	2H9 <sub>0</sub> <sup>+0.025</sup>	2	17H9 <sub>0</sub> <sup>+0.043</sup>	2H9 <sub>0</sub> <sup>+0.025</sup>	2
MHS2-20D	24	18	9.5	6	2H9 <sub>0</sub> <sup>+0.025</sup>	2	21H9 <sub>0</sub> <sup>+0.052</sup>	2H9 <sub>0</sub> <sup>+0.025</sup>	2
MHS2-25D	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



# 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

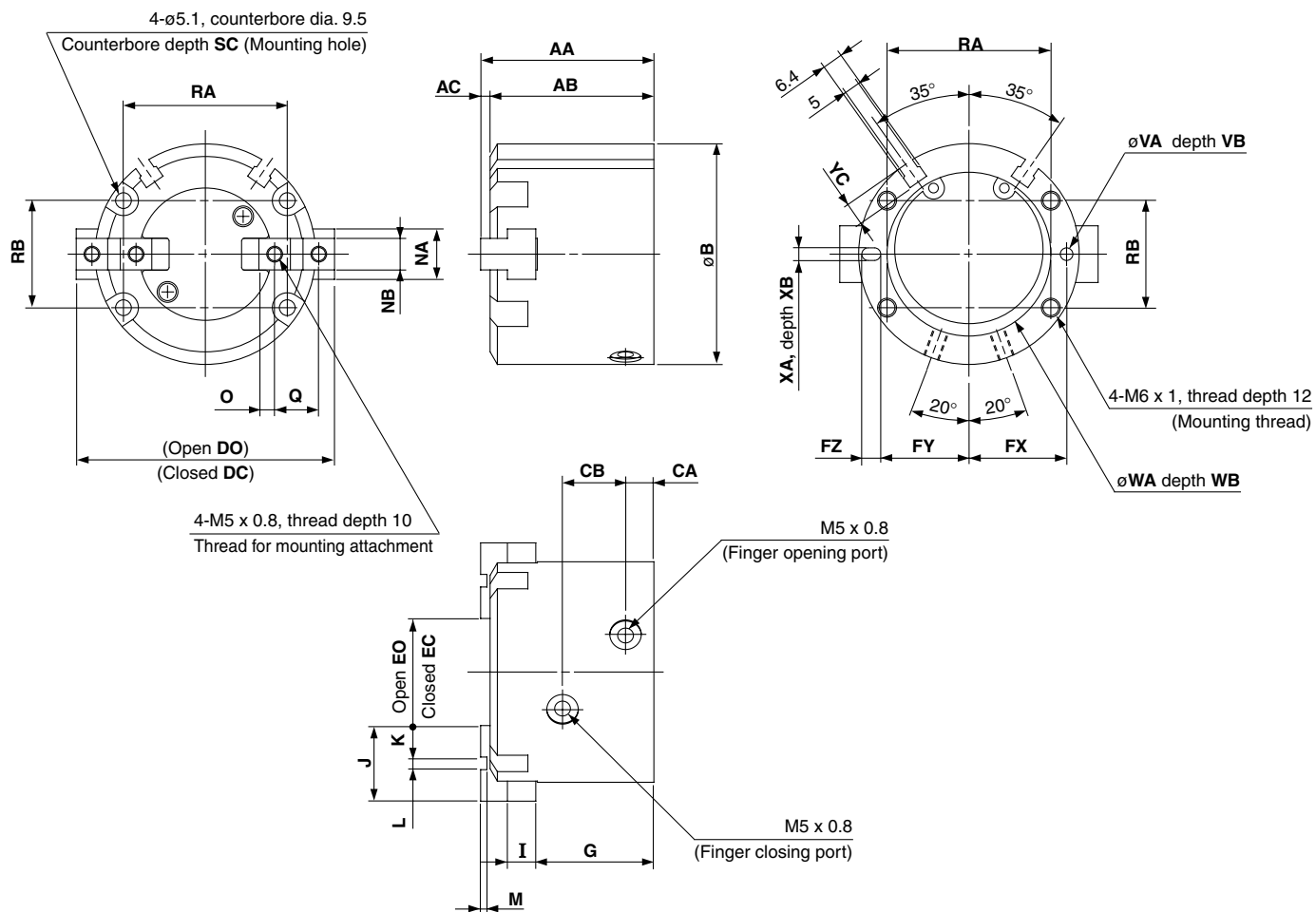
  

Model	SB	UA	UB	VA	VB	WA	XA	XB
MHS2-32D	8	M5 x 0.8	10	3H9 <sup>+0.025</sup> <sub>0</sub>	3	34H9 <sup>+0.062</sup> <sub>0</sub>	3H9 <sup>+0.025</sup> <sub>0</sub>	3
MHS2-40D	9.5	M6 x 1	12	4H9 <sup>+0.030</sup> <sub>0</sub>	4	42H9 <sup>+0.062</sup> <sub>0</sub>	4H9 <sup>+0.030</sup> <sub>0</sub>	4

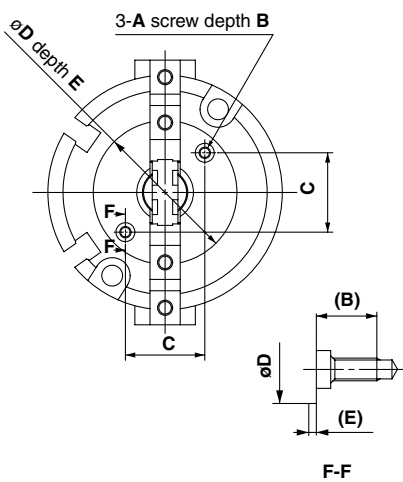
# Series MHS2

## Dimensions

### MHS2-50D, 63D



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



Model	A	B	C	øD	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		21	38	1
MHS2-50D		9	24	42	
MHS2-63D			32	54	

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

**MHS 3 — 20 D — M9N**

**Number of fingers**

3	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	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)		IC circuit	Relay, PLC	
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

**MHS 3 — 50 D — Y59A**

**Number of fingers**

3	3 fingers
---	-----------

**Bore size**

32	32 mm	80	80 mm
40	40 mm	100	100 mm
50	50 mm	125	125 mm
63	63 mm		

**Action**

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

**Number of auto switch**

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

**Auto switch**

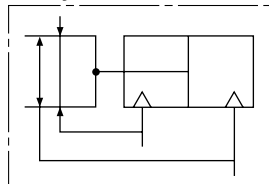
Nil	Without auto switch (Built-in magnet)
-----	---------------------------------------

\* 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	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)		IC circuit	Relay, PLC	
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	Y7N WV	Y7N W	●	●	○	Standard	IC circuit	Relay, PLC	○
				3-wire (PNP)					12 V	Y7P WV	Y7P W				●
				2-wire	12 V	Y7B WV	Y7B W	●	●	○	○				
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



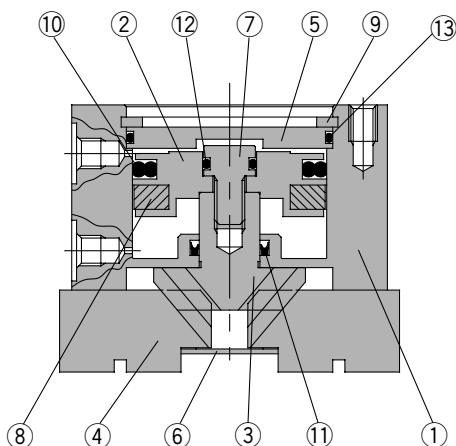
Model	MHS3-16D	MHS3-20D	MHS3-25D	MHS3-32D	MHS3-40D	MHS3-50D	MHS3-63D	MHS3-80D	MHS3-100D	MHS3-125D	
Cylinder bore size (mm)	16	20	25	32	40	50	63	80	100	125	
Fluid	Air										
Operating pressure (MPa)	0.2 to 0.6					0.1 to 0.6					
Ambient and fluid temperature (°C)	-10 to 60										
Repeatability (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.

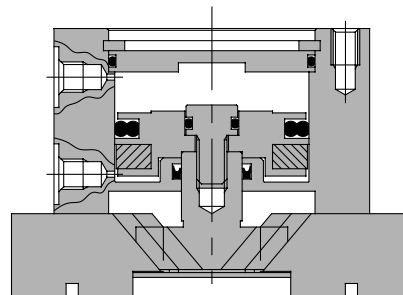
Note 2) Open and closed diameter values apply for external gripping of workpieces.

## 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

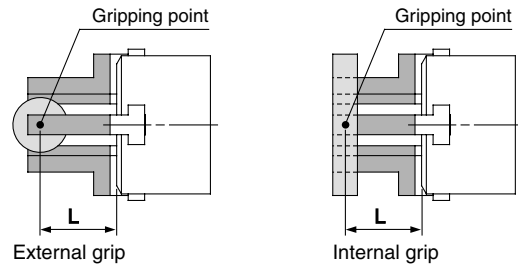
Description	MHS3-16D	MHS3-20D	MHS3-25D	MHS3-32D	MHS3-40D	Main parts
Seal kit	MHS16-PS	MHS20-PS	MHS25-PS	MHS32-PS	MHS40-PS	⑩⑪⑫⑬
Finger	P3316004	P3346104	P3316204	P3316304	P3316404	④
Cam	P3316003	P3316103	P3316203	P3316303	P3316403	③
Piston assembly	MHS-A1601	MHS-A2001	MHS-A2501	MHS-A3201	MHS-A4001	②⑦⑧

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.

## Gripping Point

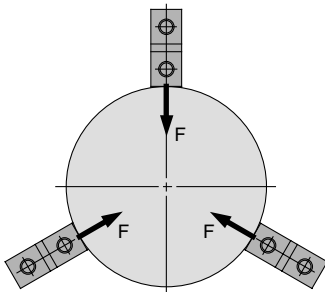
- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the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



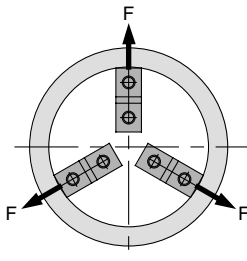
L: Gripping point distance

## 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.



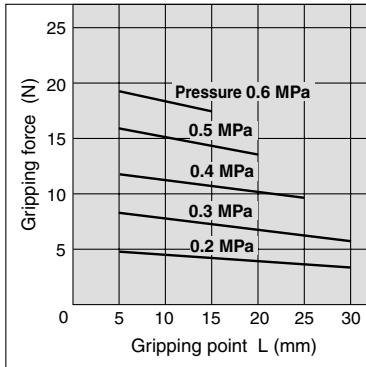
External grip



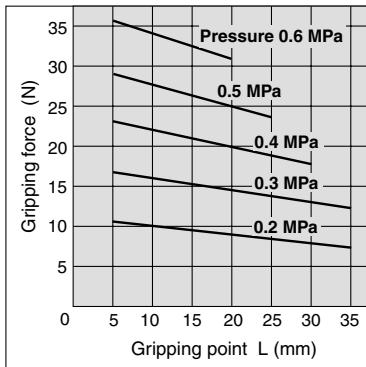
Internal grip

### External Gripping Force

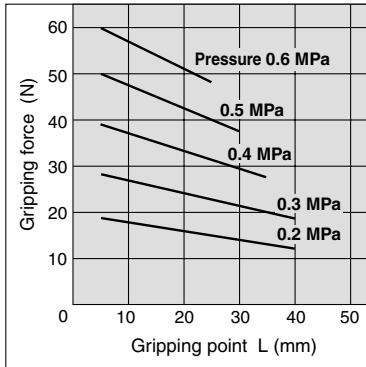
#### MHS3-16D



#### MHS3-20D

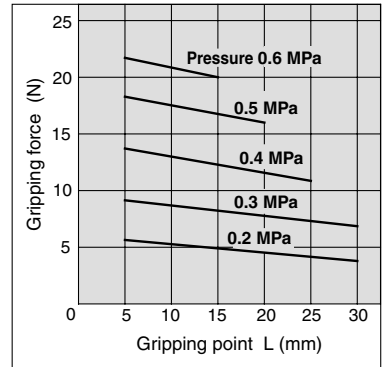


#### MHS3-25D

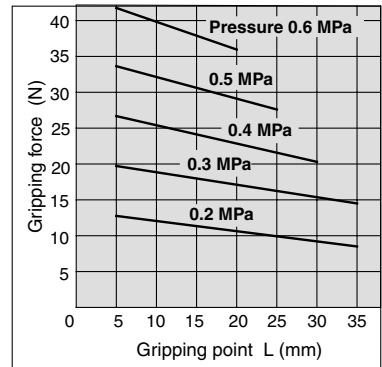


### Internal Gripping Force

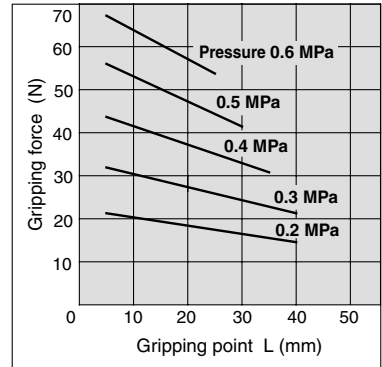
#### MHS3-16D



#### MHS3-20D



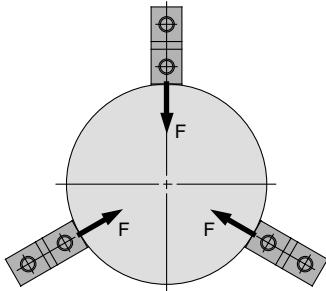
#### MHS3-25D



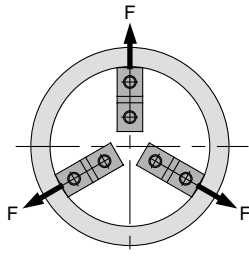
# Series MHS3

## 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.



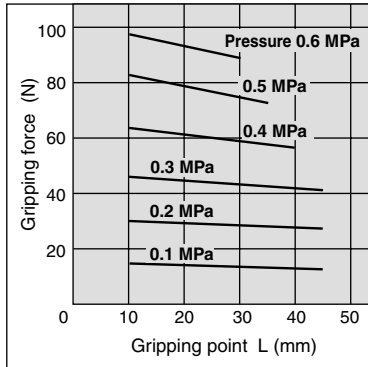
**External grip**



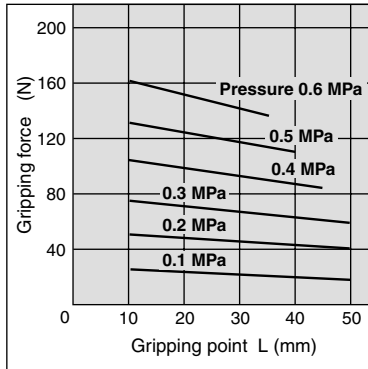
**Internal grip**

## External Gripping Force

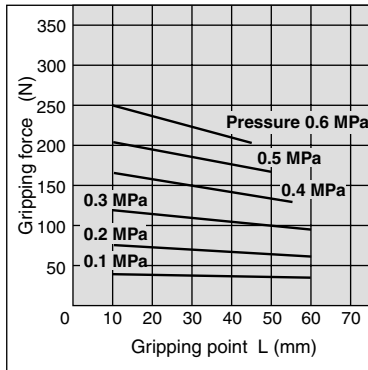
**MHS3-32D**



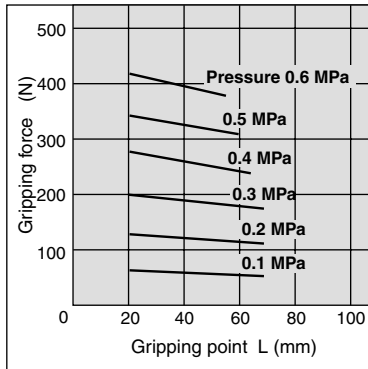
**MHS3-40D**



**MHS3-50D**

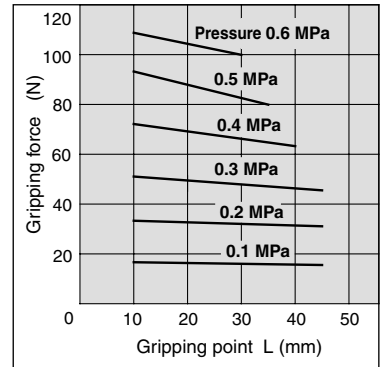


**MHS3-63D**

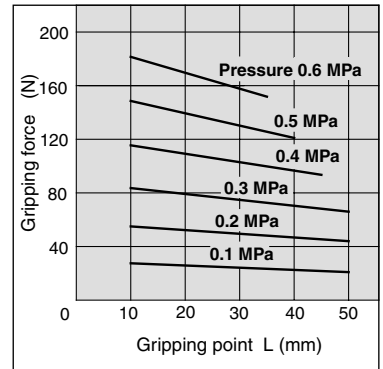


## Internal Gripping Force

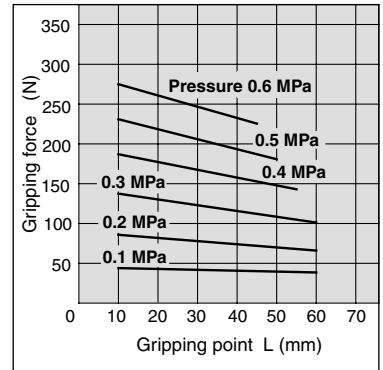
**MHS3-32D**



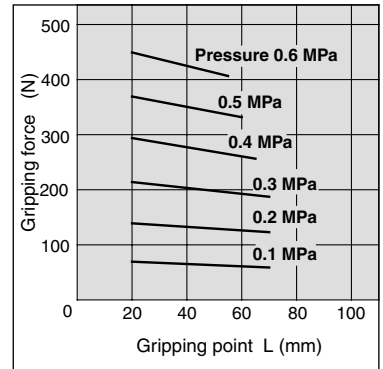
**MHS3-40D**



**MHS3-50D**

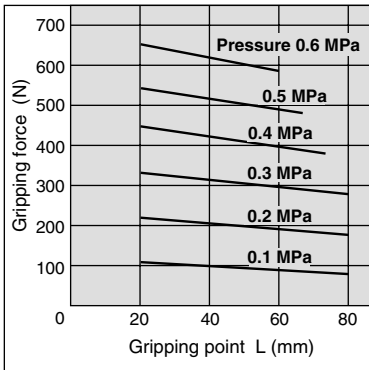


**MHS3-63D**

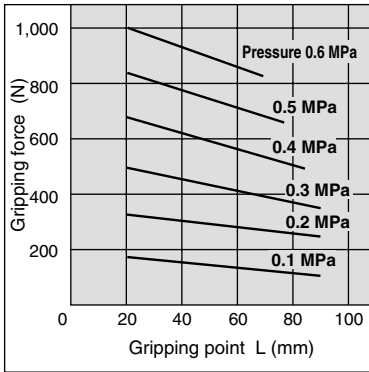


## External Gripping Force

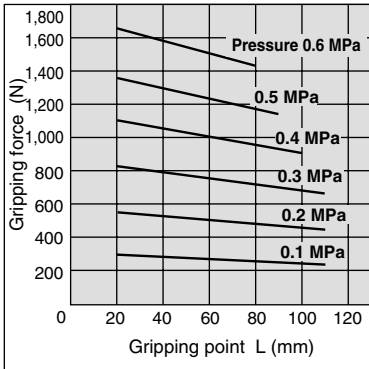
### MHS3-80D



### MHS3-100D

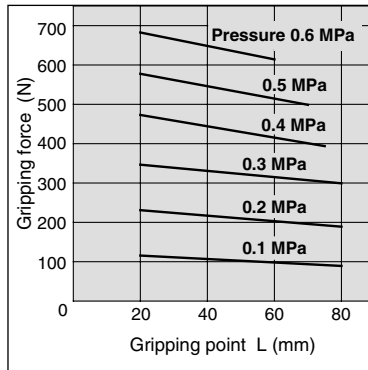


### MHS3-125D

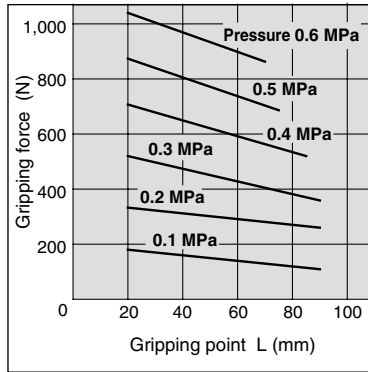


## Internal Gripping Force

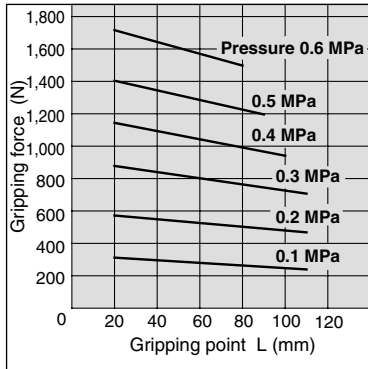
### MHS3-80D



### MHS3-100D



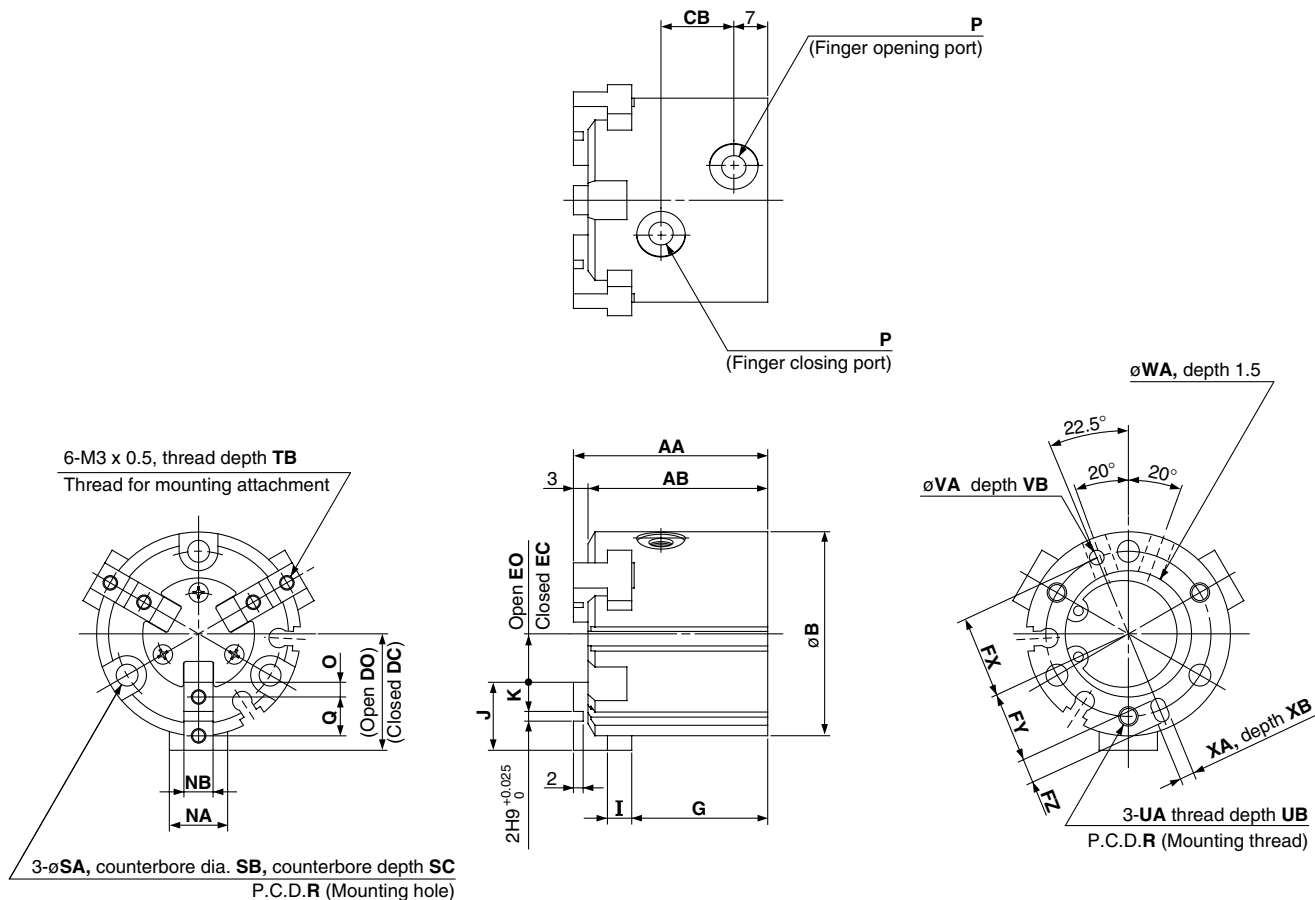
### MHS3-125D



# Series MHS3

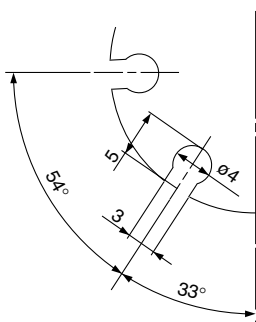
## Dimensions

### MHS3-16D to 25D

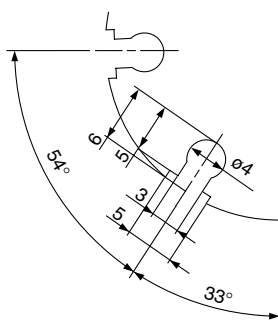


### Auto switch mounting groove dimensions (2 locations)

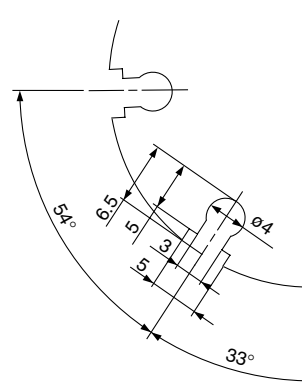
MHS3-16D



MHS3-20D



MHS3-25D



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 <sub>0</sub> <sup>0</sup>	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 <sub>0</sub> <sup>0</sup>	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 <sub>0</sub> <sup>0</sup>	3	M5 x 0.8	8	34

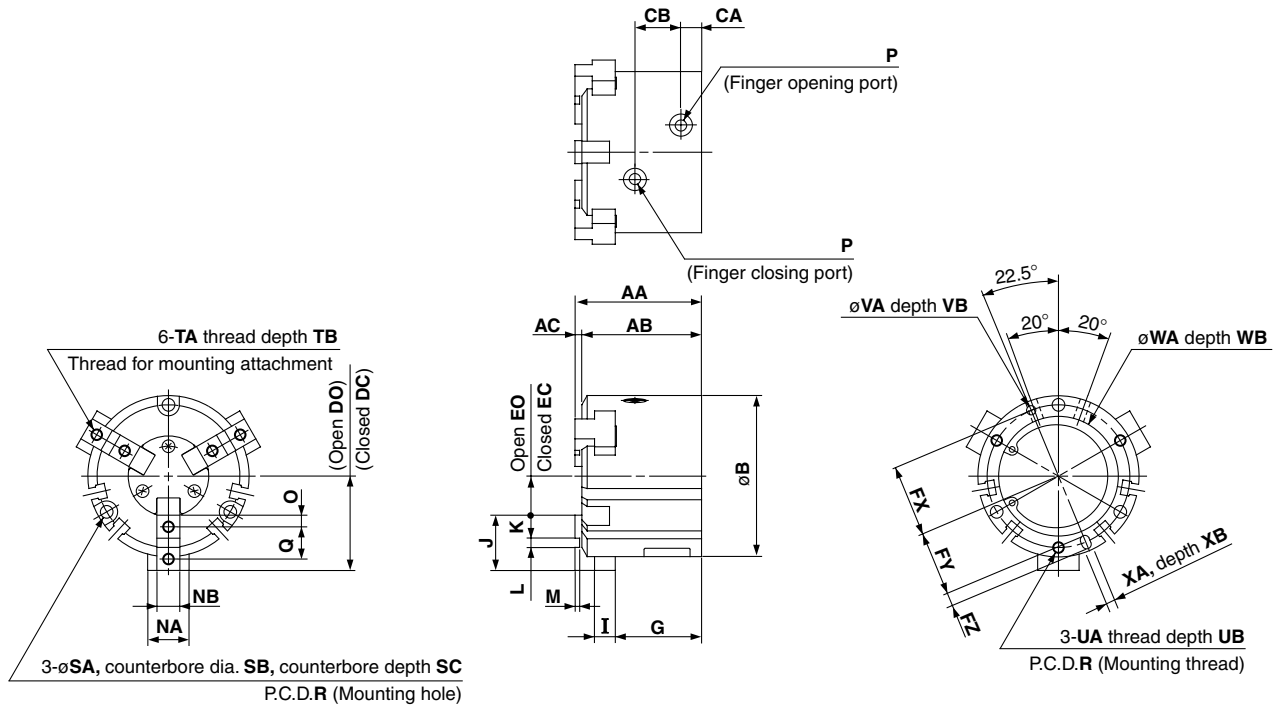
  

Model	SA	SB	SC	TB	UA	UB	VA	VB	WA	XA	XB
MHS3-16D	3.4	6.5	8	5	M3 x 0.5	4.5	2H9 <sub>0</sub> <sup>+0.025</sup>	2	17H9 <sub>0</sub> <sup>-0.043</sup>	2H9 <sub>0</sub> <sup>+0.025</sup>	2
MHS3-20D	3.4	6.5	9.5	6	M3 x 0.5	6	2H9 <sub>0</sub> <sup>+0.025</sup>	2	21H9 <sub>0</sub> <sup>+0.052</sup>	2H9 <sub>0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

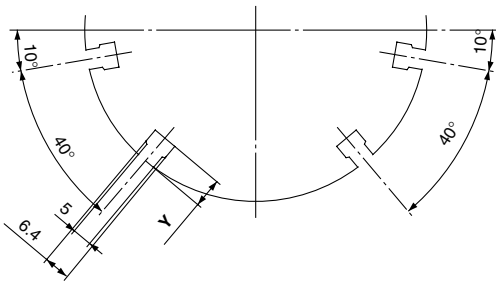


# 3 Finger Parallel Style Air Gripper Series MHS3

## MHS3-32D to 80D



## Auto switch mounting groove dimensions (4 locations)



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>

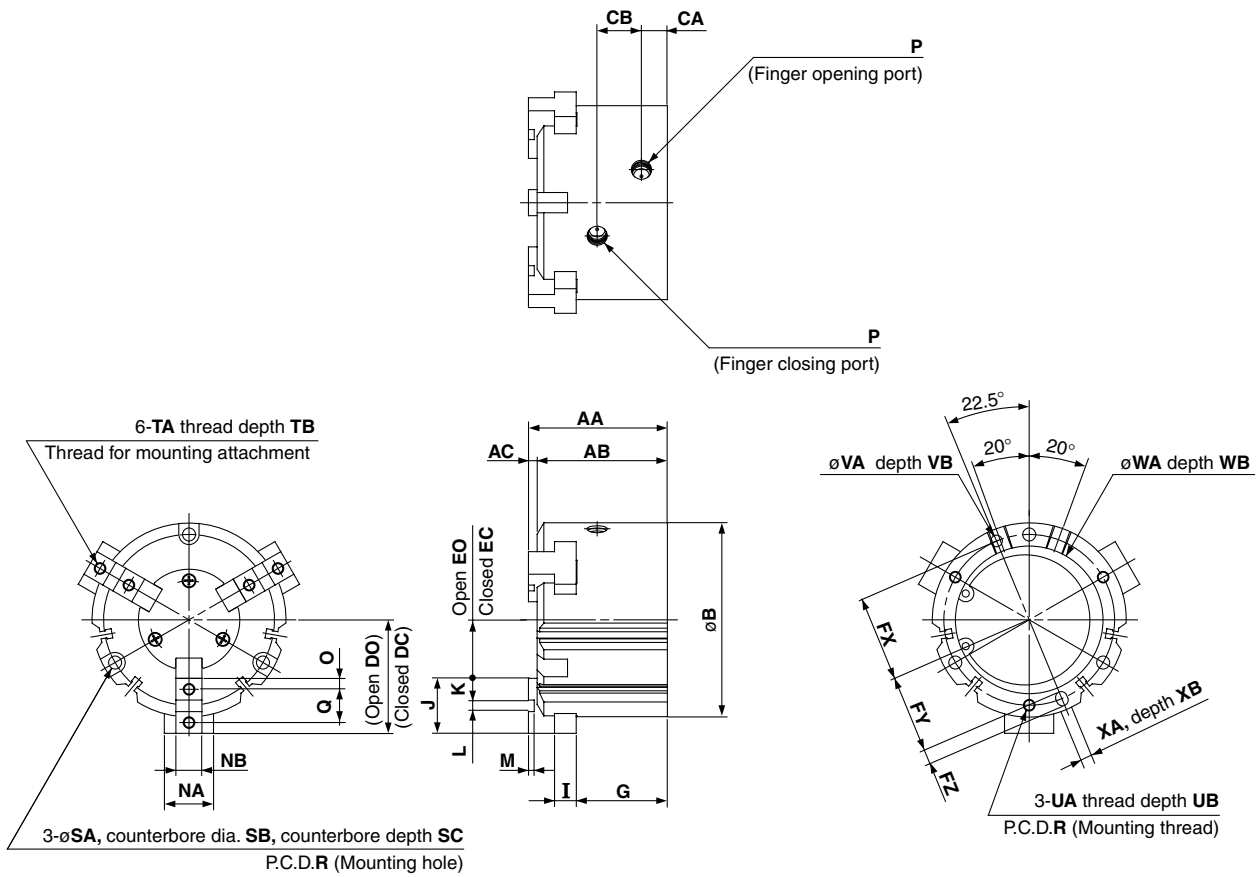
  

Model	O	P	Q	R	SA	SB	SC	TA	TB	UA	UB	VA	VB	WA	WB	XA	XB	Y
MHS3-32D	4.5	M5 x 0.8	11	44	4.5	8	9	M4 x 0.7	8	M4 x 0.7	6	3H9 <sup>+0.025</sup> <sub>0</sub>	3	34H9 <sup>+0.062</sup> <sub>0</sub>	2	3H9 <sup>+0.025</sup> <sub>0</sub>	3	6
MHS3-40D	4.5	M5 x 0.8	12	53	5.5	9.5	9	M4 x 0.7	8	M5 x 0.8	7.5	4H9 <sup>+0.030</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

# Series MHS3

## Dimensions

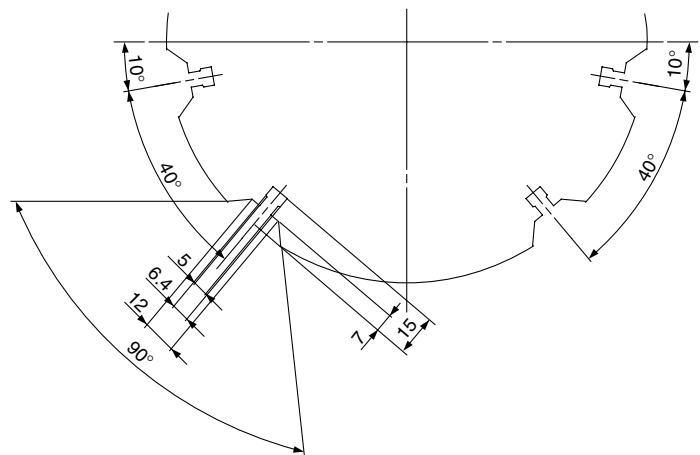
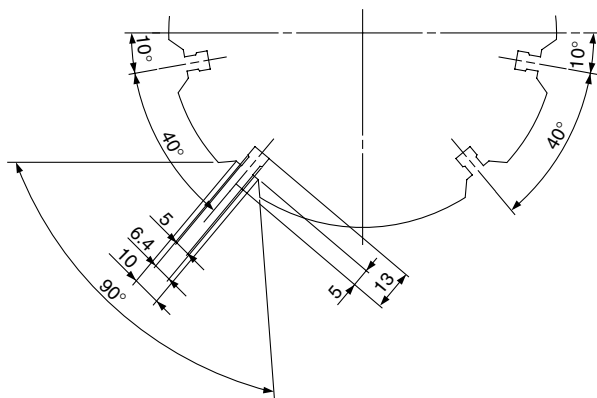
### MHS3-100D, 125D



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

MHS3-100D

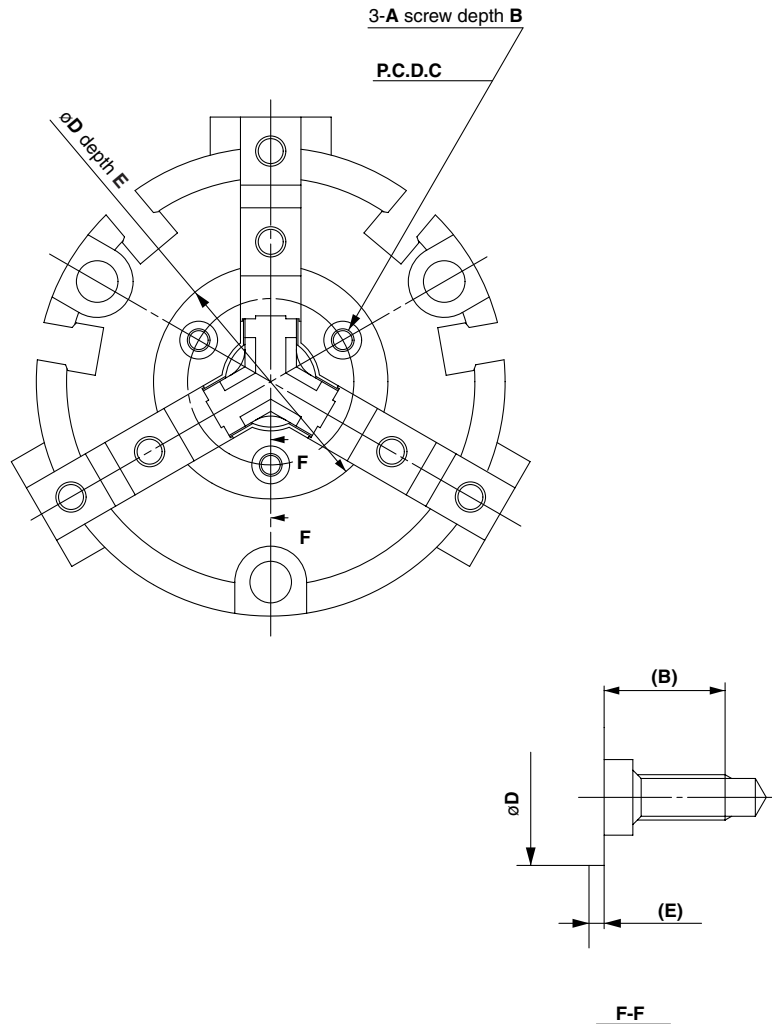
MHS3-125D



Model	AA	AB	AC	B	CA	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	K	L	M	NA	NB
MHS3-100D	96	90	6	134	18	30.6	66	78	28	40	59	54	10	63	15	38	15	8H9 <sup>+0.036</sup> <sub>0</sub>	4	34	18h9 <sub>0</sub> <sup>-0.043</sup>
MHS3-125D	122	114	8	166	23.5	38	82	98	30	46	74	68	12	84	18	52	21	10H9 <sup>+0.036</sup> <sub>0</sub>	6	40	22h9 <sub>0</sub> <sup>-0.052</sup>
Model	O	P	Q	R	SA	SB	SC	TA	TB	UA	UB	VA	VB	WA	WB	XA	XB				
MHS3-100D	7.5	Rc 1/4	23	118	9	14	21	M8 x 1.25	16	M8 x 1.25	16	8H9 <sup>+0.036</sup> <sub>0</sub>	6	102H9 <sup>+0.087</sup> <sub>0</sub>	4	8H9 <sup>+0.036</sup> <sub>0</sub>	6				
MHS3-125D	10.5	Rc 3/8	31	148	11	17.5	34	M10 x 1.5	20	M10 x 1.5	20	10H9 <sup>+0.036</sup> <sub>0</sub>	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 Series MHS3

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



(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>	

# 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)		IC circuit	Relay, PLC	
							Perpendicular	In-line							
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V	M9NV	M9N	●	●	○	Standard	—	—	○
				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 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

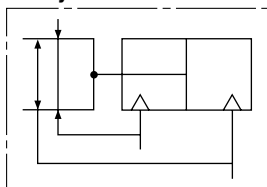
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)*			Flexible lead wire (-61)	Applicable load		Pre-wire connector	
					DC	AC	Electrical entry		0.5 (Nil)	3 (L)	5 (Z)		IC circuit	Relay, PLC		
							Perpendicular	In-line								
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	Y69A	Y59A	●	●	○	Standard	—	—	○	
				3-wire (PNP)			12 V	Y7PV	Y7P	●	●				○	○
				2-wire	12 V	Y69B	Y59B	●	●	○	○					
	Diagnosis (2-color indication)			2-wire	3-wire (NPN)	24 V	5 V, 12 V	Y7NWW	Y7NW	●	●	○	Standard	—	—	○
					3-wire (PNP)			12 V	Y7PWV	Y7PW	●	●				○
					2-wire	12 V	Y7BWV	Y7BW	●	●	○	○				
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

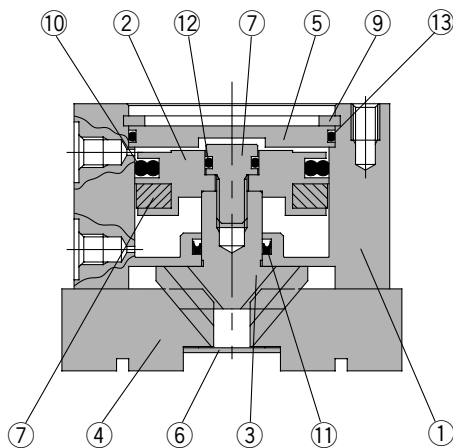


Model	MHS4-16D	MHS4-20D	MHS4-25D	MHS4-32D	MHS4-40D	MHS4-50D	MHS4-63D	
Bore size (mm)	16	20	25	32	40	50	63	
Fluid	Air							
Operating pressure (MPa)	0.2 to 0.6			0.1 to 0.6				
Ambient and fluid temperature (°C)	-10 to 60							
Repeatability (mm)	±0.01							
Max. operating frequency (c.p.m.)	120			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	

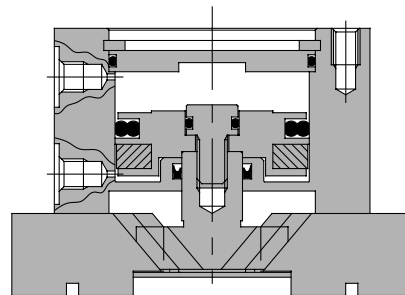
Note) Values for  $\phi 16$  to  $\phi 25$  are with gripping point L = 20 mm, and for  $\phi 32$  to  $\phi 63$  with gripping point L = 30 mm.  
Refer to the "Effective Gripping Force" data for the gripping force at each gripping position.

## 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	

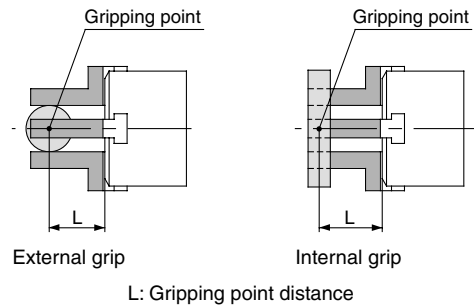
## Replacement Parts

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.

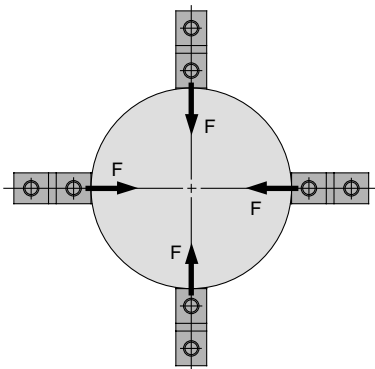
## Gripping Point

- 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.

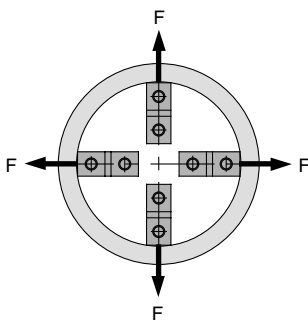


## Effective Gripping Force

- 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.



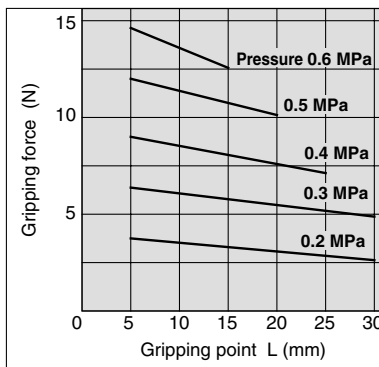
External grip



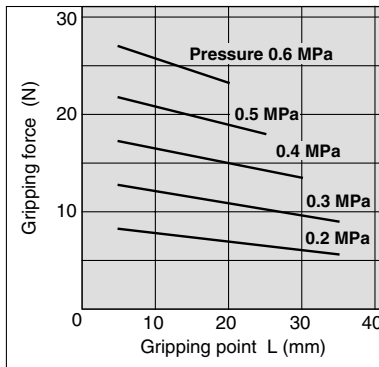
Internal grip

### External Gripping Force

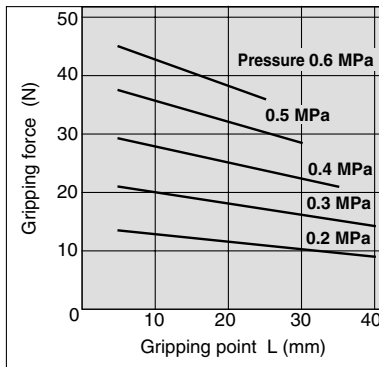
#### MHS4-16D



#### MHS4-20D

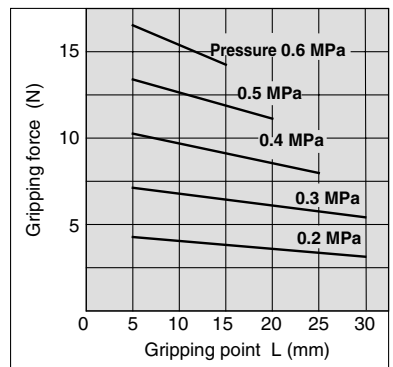


#### MHS4-25D

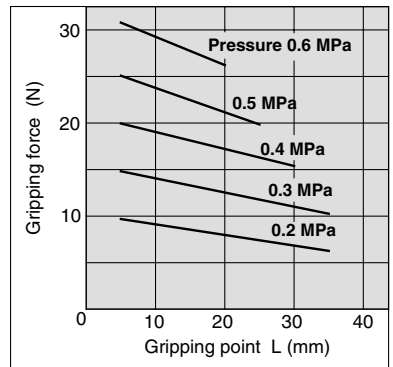


### Internal Gripping Force

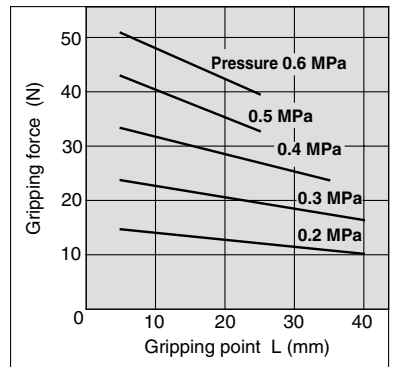
#### MHS4-16D



#### MHS4-20D



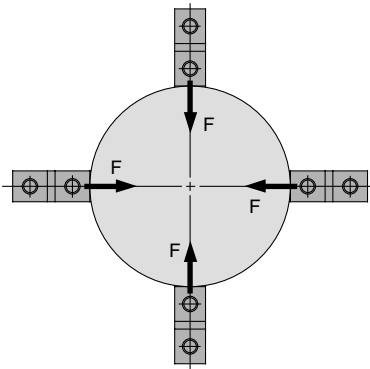
#### MHS4-25D



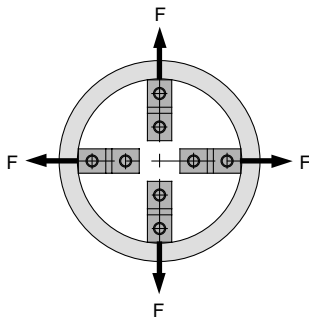
# Series MHS4

## 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.



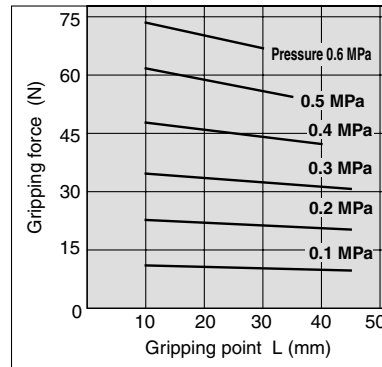
External grip



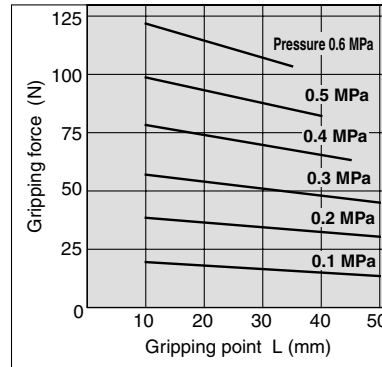
Internal grip

## External Gripping Force

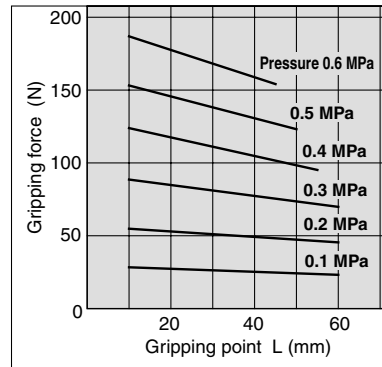
MHS4-32D



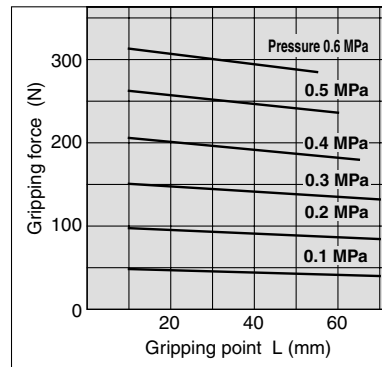
MHS4-40D



MHS4-50D

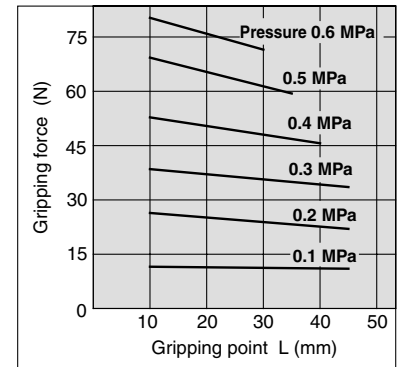


MHS4-63D

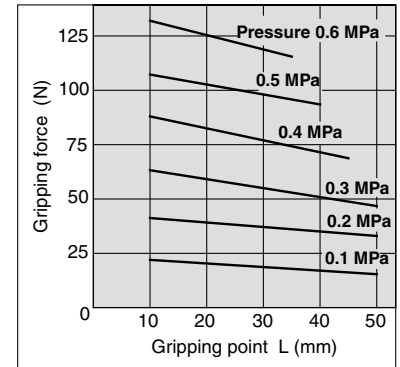


## Internal Gripping Force

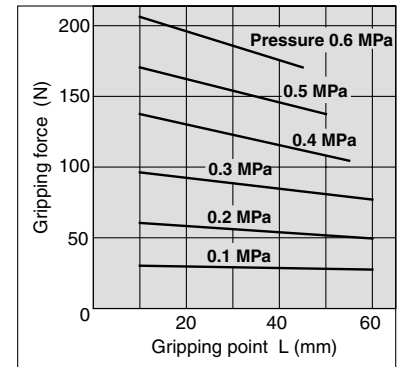
MHS4-32D



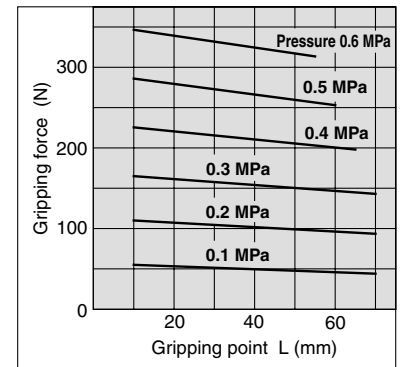
MHS4-40D



MHS4-50D



MHS4-63D

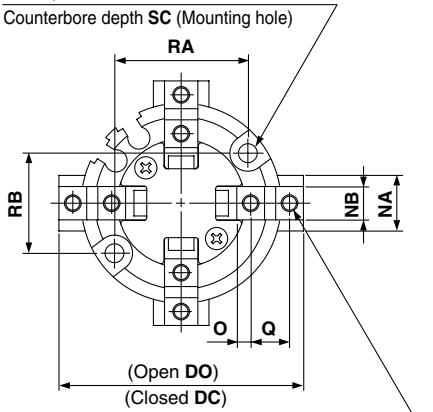


# 4 Finger Parallel Style Air Gripper Series MHS4

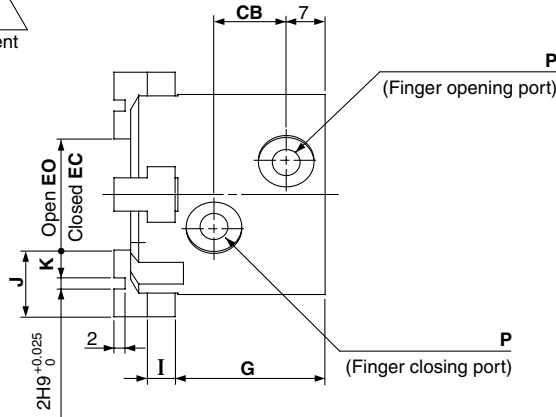
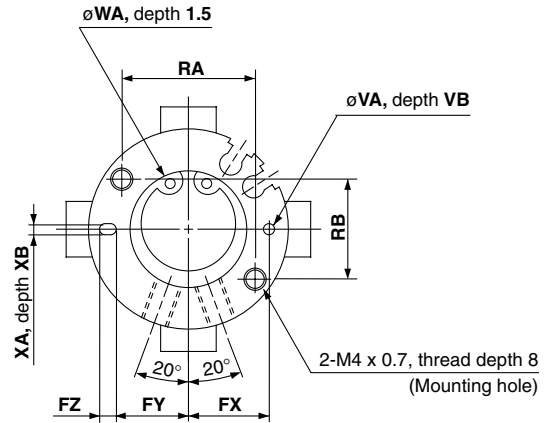
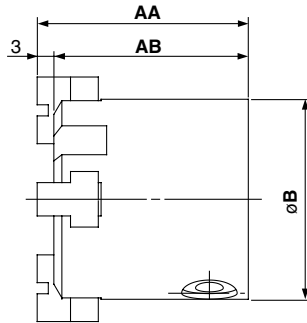
## Dimensions

### MHS4-16D to 25D

2- $\phi$ 3.4, counterbore dia. 6.5  
Counterbore depth SC (Mounting hole)

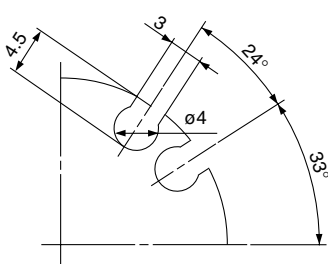


8-M3 x 0.5, thread depth TB  
Thread for mounting attachment

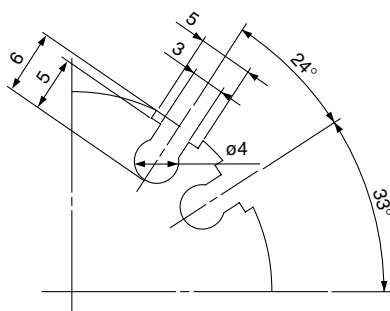


### Auto switch mounting groove dimensions (2 locations)

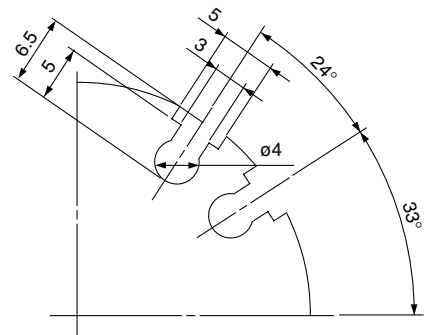
#### MHS4-16D



#### MHS4-20D



#### MHS4-25D



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</sub> <sup>0</sup> <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</sub> <sup>0</sup> <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</sub> <sup>0</sup> <sub>-0.030</sub>	3	M5 x 0.8	8

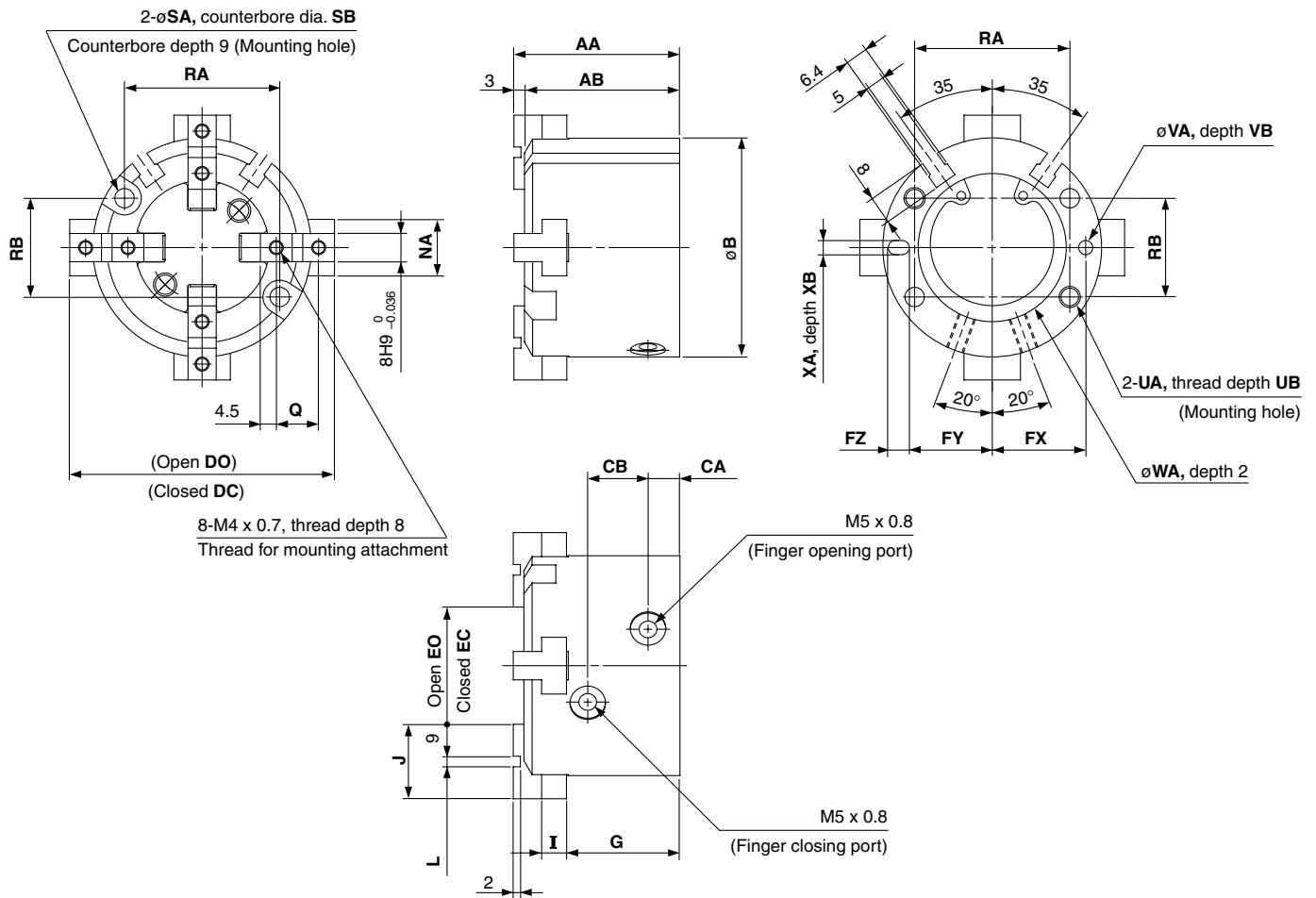
Model	RA	RB	SC	TB	VA	VB	WA	XA	XB
MHS4-16D	18	16	8	5	2H9 <sub>0</sub> <sup>+0.025</sup>	2	17H9 <sub>0</sub> <sup>-0.043</sup>	2H9 <sub>0</sub> <sup>+0.025</sup>	2
MHS4-20D	24	18	9.5	6	2H9 <sub>0</sub> <sup>+0.025</sup>	2	21H9 <sub>0</sub> <sup>+0.052</sup>	2H9 <sub>0</sub> <sup>+0.025</sup>	2
MHS4-25D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



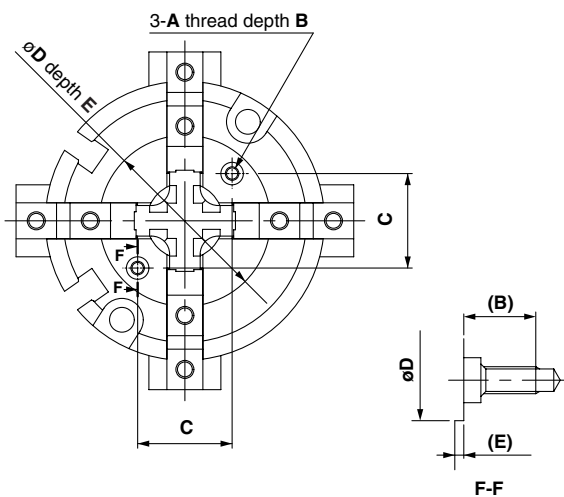
# Series MHS4

## 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	M3 x 0.5	5.2	18	32	0.8
MHS4-40D		8	21	38	1
MHS4-50D			24	42	
MHS4-63D			32	54	

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 $0_{+0.025}$	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 $0_{+0.025}$	16	12	44	28	5.5

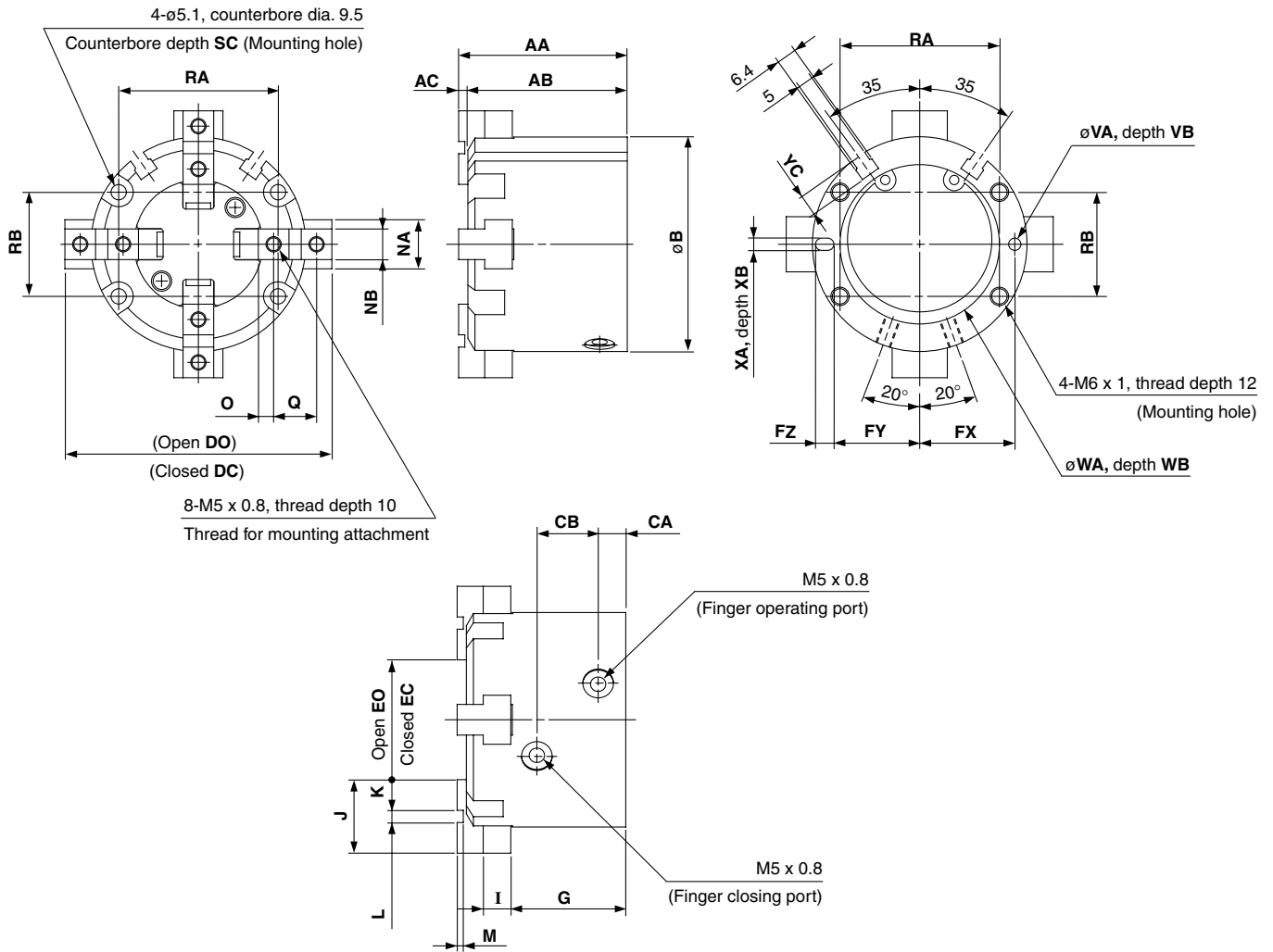
  

Model	SB	UA	UB	VA	VB	WA	XA	XB
MHS4-32D	8	M5 x 0.8	10	3H9 $0_{+0.025}$	3	34H9 $0_{+0.062}$	3H9 $0_{+0.025}$	3
MHS4-40D	9.5	M6 x 1	12	4H9 $0_{+0.030}$	4	42H9 $0_{+0.062}$	4H9 $0_{+0.030}$	4

(mm)

# 4 Finger Parallel Style Air Gripper Series MHS4

## MHS4-50D/63D



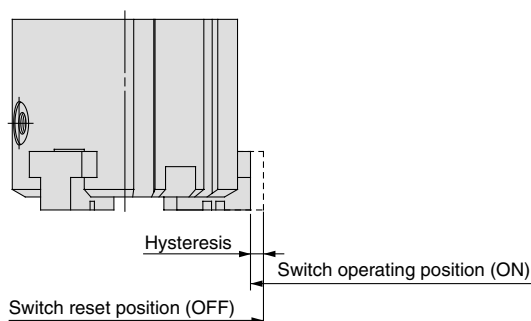
(mm)

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 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 MHSL3	0.3	0.4	1.6
MHS□-20D MHSL3	0.3	0.4	1.6
MHS□-25D MHSL3	0.4	0.4	1.6

#### ø32 to ø125

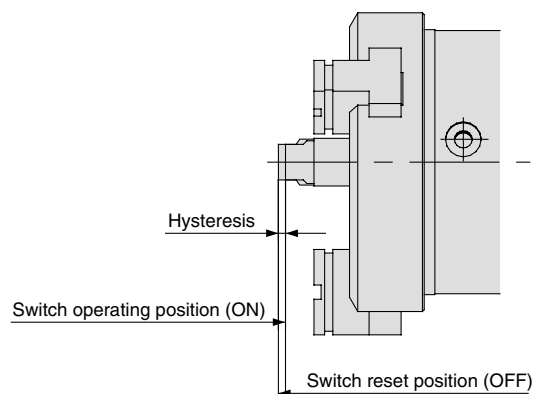
Auto switch model Air gripper model	Hysteresis (Max. value) (mm)		
	D-Y59□ D-Y69□ D-Y7P(V)	D-Y7□W(V)	D-Y7BAL
MHS□-32D MHSL3	0.7	1.2	0.7
MHS□-40D MHSL3	0.4	0.7	0.4
MHS□-50D MHSL3	0.4	0.7	0.4
MHS□-63D MHSL3	0.4	0.7	0.4
MHS□-80D MHSL3	0.4	0.7	0.6
MHS□-100D MHSL3	0.4	0.8	0.6
MHS□-125D MHSL3	0.4	0.4	0.7

### Series MHSJ/MHSH

Auto switch model 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 MHSH3	0.3	0.3	1.3
MHSJ3-20D MHSH3	0.3	0.3	1.3
MHSJ3-25D MHSH3	0.4	0.4	1.3
MHSJ3-32D MHSH3	0.6	0.4	1.5
MHSJ3-40D MHSH3	0.6	0.4	1.5
MHSJ3-50D MHSH3	0.6	0.4	1.7
MHSJ3-63D MHSH3	0.6	0.4	1.7
MHSJ3-80D MHSH3	0.6	0.5	1.8

## Auto Switch Hysteresis

### Center pusher/Cylinder type

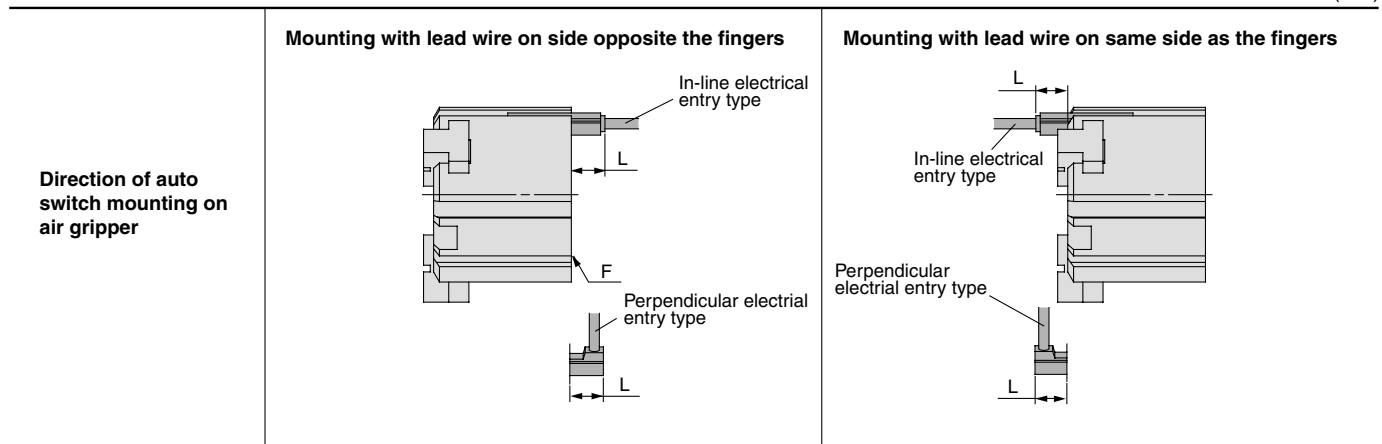


Auto switch model Air gripper model	Maximum hysteresis (mm)		
	D-M9□(V)	D-F9BAL	
		Setting of ON position when red light is on	Setting of ON position when green light is on
MHSH□3-32DA	0.5	0.3	0.8
MHSH□3-40DA	0.5	0.3	0.9
MHSH□3-50DA	0.6	0.4	1
MHSH□3-63DA	0.8	0.5	1
MHSH□3-80DA	1	0.5	1.1

## 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)



Lead wire type Air gripper model / Finger position / Auto switch model		In-line entry		Perpendicular entry	In-line entry		Perpendicular entry
		D-M9□	D-F9BAL	D-M9□V	D-M9□	D-F9BAL	D-M9□V
MHS□-16D	Open	—	8.5	—	1	10	—
	Closed	5	14	3	—	4.5	—
MHS□-20D	Open	—	7	—	—	8	—
	Closed	5	13	3	—	2	—
MHS□-25D	Open	—	5	—	—	8	—
	Closed	3	12	1	—	1	—
MHSL3-16D	Open	—	8.5	—	—	4.5	—
	Closed	5	14	3	—	—	—
MHSL3-20D	Open	—	7	—	—	3	—
	Closed	5	13	3	—	—	—
MHSL3-25D	Open	—	5	—	—	2	—
	Closed	3	12	1	—	—	—

Lead wire type Air gripper model / Finger position / Auto switch model		In-line entry		Perpendicular entry	In-line entry		Perpendicular entry
		D-Y59□ D-Y7P D-Y7□W	D-Y7BAL	D-Y69□ D-Y7PV D-Y7□WV	D-Y59 D-Y7P D-Y7□W	D-Y7BAL	D-Y69 D-Y7PV D-Y7□WV
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	—	—	—	—	—	—

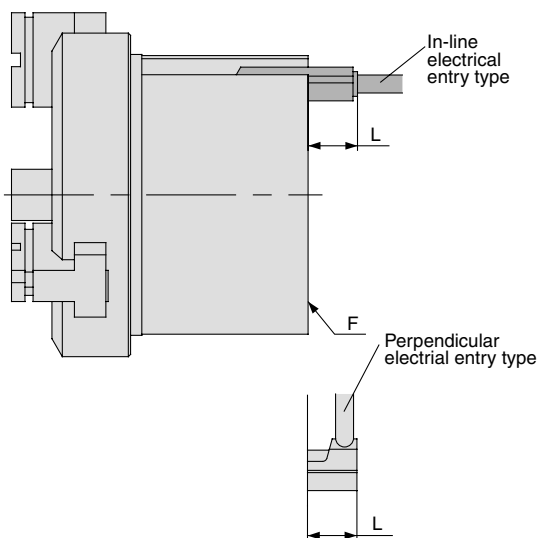
Note 1) There is no protrusion for sections of the table with no values entered.

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.

# 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.



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

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

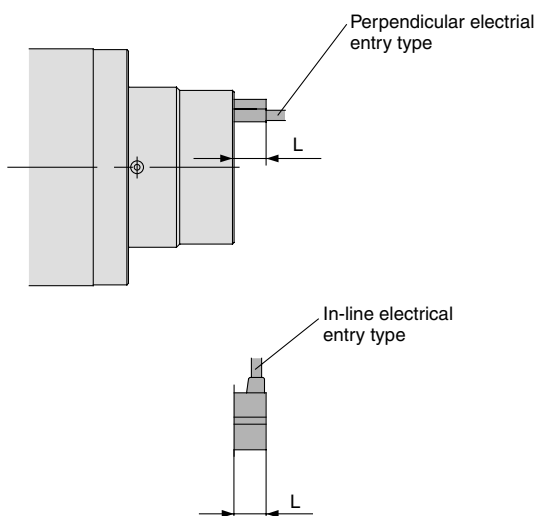
Note 2) There is no protrusion for sections of the table with no values entered.

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.

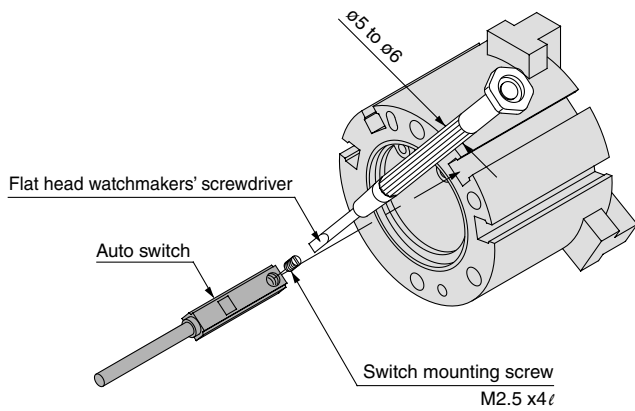
### Center Pusher/Cylinder Type



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