

Parallel Type Air Gripper/3-Finger Type MHS3 Series

ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100, ø125

How to Order

Bore size

ø16 to ø25 **MHS3 - 20D - M9BW** - -

Number of fingers
3 3 fingers

Bore size

16	16 mm
20	20 mm
25	25 mm

Action
D Double acting

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

Nil	2 pcs.
S	1 pc.

Number of auto switches

Made to Order
Refer to page 585 for details.

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

Applicable Auto Switches/Refer to pages 797 to 850 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)*				Pre-wired connector	Applicable load	
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)		Relay, PLC	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9NV	M9N	●	●	●	○	○		
				3-wire (PNP)					●	●	●	○	○		
				2-wire					●	●	●	○	○		
				3-wire (NPN)					●	●	●	○	○		
				3-wire (PNP)					●	●	●	○	○		
				2-wire					●	●	●	○	○		
	Diagnosis (2-color indicator)			M9NWV	M9NW	●	●	●	○	○	IC circuit				
				M9PWV	M9PW	●	●	●	○	○					
				M9B WV	M9B W	●	●	●	○	○					
				M9NAV**	M9NA**	○	○	●	○	○		IC circuit			
				M9PAV**	M9PA**	○	○	●	○	○					
				M9BAV**	M9BA**	○	○	●	○	○					
Water resistant (2-color indicator)	3-wire (NPN)	5 V,	—	M9NAV**	M9NA**	○	○	●	○	○	○	IC circuit	—		
	3-wire (PNP)	12 V													
	2-wire	5 V,													
	3-wire (NPN)	12 V													
	3-wire (PNP)	12 V													
	2-wire	12 V													

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

* Lead wire length symbols: 0.5 m Nil (Example) M9N
1 m M (Example) M9NWM
3 m L (Example) M9NL
5 m Z (Example) M9NZ

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

Note) When using the 2-color indicator type, please make the setting so that the indicator is lit in red to ensure the detection at the proper position of the air gripper.

Bore size

ø32 to ø125 **MHS3 - 50** **D - M9BW** - -

Number of fingers
3 3 fingers

Bore size

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

Action
D Double acting

Port thread type

Symbol	Type	Cylinder bore
Nil	M thread	ø32 to ø63
TN	Rc	ø80 to ø125
TF	G	

Number of auto switch

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

Made to Order
Refer to page 585 for details.

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

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

Applicable Auto Switches/Refer to pages 797 to 850 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)*				Pre-wired connector	Applicable load	
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)		Relay, PLC	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	—	M9NV	M9N	●	●	●	○	○		
				3-wire (PNP)					●	●	●	○	○		
				2-wire					●	●	●	○	○		
				3-wire (NPN)					●	●	●	○	○		
				3-wire (PNP)					●	●	●	○	○		
				2-wire					●	●	●	○	○		
	Diagnosis (2-color indicator)			M9NWV	M9NW	●	●	●	○	○	IC circuit				
				M9PWV	M9PW	●	●	●	○	○					
				M9B WV	M9B W	●	●	●	○	○					
				M9NAV**	M9NA**	○	○	●	○	○		IC circuit			
				M9PAV**	M9PA**	○	○	●	○	○					
				M9BAV**	M9BA**	○	○	●	○	○					
Water resistant (2-color indicator)	3-wire (NPN)	5 V,	—	M9NAV**	M9NA**	○	○	●	○	○	○	IC circuit	—		
	3-wire (PNP)	12 V													
	2-wire	5 V,													
	3-wire (NPN)	12 V													
	3-wire (PNP)	12 V													
	2-wire	12 V													

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWZ

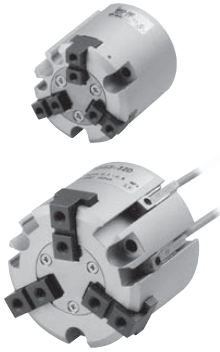
* Auto switches marked with a "○" symbol are produced upon receipt of order.

Note 1) When using the 2-color indicator type, please make the setting so that the indicator is lit in red to ensure the detection at the proper position of the air gripper.

Note 2) When ordering the air gripper with auto switch, auto switch mounting brackets are supplied with the air gripper having a bore size of ø32 to ø125.

Note 3) When ordering the auto switch separately, auto switch mounting brackets (BMG2-012) are required.

Models/Specifications

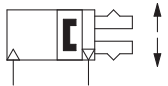


Model		MHS3-16D	MHS3-20D	MHS3-25D	MHS3-32D	MHS3-40D	MHS3-50D	MHS3-63D	MHS3-80D	MHS3-100D	MHS3-125D		
Cylinder bore size (mm)		16	20	25	32	40	50	63	80	100	125		
Fluid		Air											
Operating pressure (MPa)		0.2 to 0.6				0.1 to 0.6							
Ambient and fluid temperature (°C)		-10 to 60											
Repeatability (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 <small>(Note 1)</small>	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		

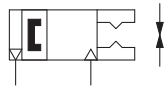
Note 1) Values for $\phi 16$ to $\phi 25$ are with gripping point L = 20 mm, for $\phi 32$ to $\phi 63$ with gripping point L = 30 mm, and for $\phi 80$ to $\phi 125$ with gripping point L = 50 mm. Refer to "Effective Gripping Force" data on pages 587 to 589 for the gripping force at each gripping position.

Symbol

Double acting:
Internal grip



Double acting:
External grip



Made to Order: Individual Specifications
(For details, refer to pages 644 to 654.)

Symbol	Specifications/Description
-X84	Single acting ($\phi 16$ to $\phi 63$)



Made to Order
[Click here for details](#)

Symbol	Specifications/Description
-X4	Heat resistance (100°C)
-X5	Fluororubber seal
-X50	Without magnet
-X53	EPDM seal/Fluorine grease
-X56	Axial ported
-X63	Fluorine grease
-X79	Grease for food processing machines, Fluorine grease
-X79A	Grease for food processing machines

Refer to pages 636 to 643 for the specifications of products with auto switches.

- Auto switch installation examples and mounting positions
- Auto switch hysteresis
- Auto switch mounting
- Protrusion of auto switch from edge of body

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

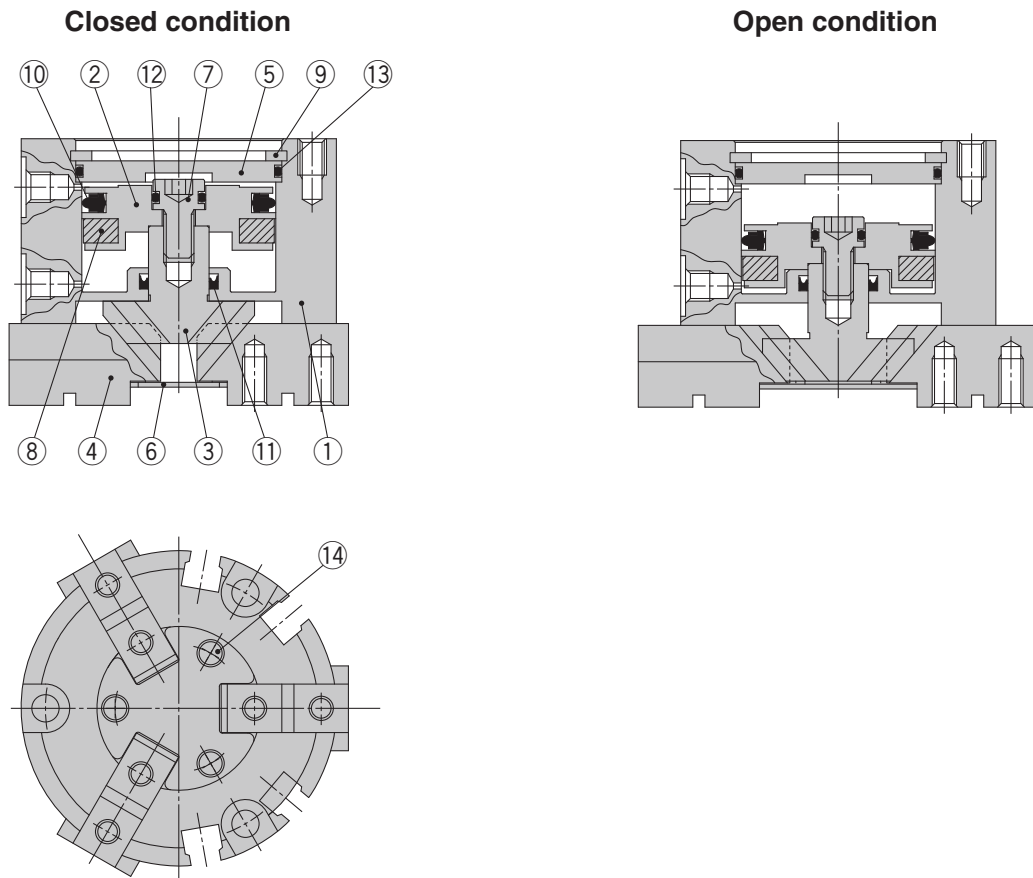
MRHQ

MA

D-□

MHS3 Series

Construction



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	Magnet	—	
9	Type C snap ring	Carbon steel	Phosphate coated
10	Piston seal	NBR	
11	Rod seal	NBR	
12	Gasket	NBR	
13	Gasket	NBR	
14	Cross recessed flat head screw	Carbon steel	Zinc chromated

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	P3316104	P3316204	P3316304	P3316404	④
Cam	P3316003	P3316103	P3316203	P3316303	P3316403	③
Piston assembly	MHS-A1601	MHS-A2001	MHS-A2501	MHS-A3201	MHS-A4001	②⑦⑧
End plate assembly	MHS-A1613-3	MHS-A2013-3	MHS-A2513-3	MHS-A3213-3	MHS-A4013-3	⑥⑭
Cap	MHS-A16014	MHS-A2014	MHS-A2514	MHS-A3214	MHS-A4014	⑤

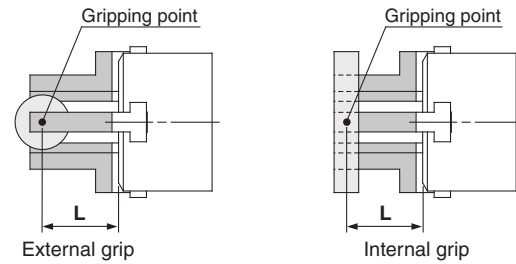
Description	MHS3-50D	MHS3-63D	MHS3-80D	MHS3-100D	MHS3-125D	Main parts
Seal kit	MHS50-PS	MHS63-PS	MHS80-PS	MHS100-PS	MHS125-PS	⑩⑪⑫⑬
Finger	P3316504	P3316604	P3316704	P3316804	P3316904	④
Cam	P3316503	P3316603	P3316703	P3316803	P3316903	③
Piston assembly	MHS-A5001	MHS-A6301	MHS-A8001	MHS-A10001	MHS-A12501	②⑦⑧
End plate assembly	MHS-A5013-3	MHS-A6313-3	MHS-A8013-3	MHS-A10013-3	MHS-A12513-3	⑥⑭
Cap	MHS-A5014	MHS-A6314	MHS-A8014	MHS-A10014	MHS-A12514	⑤

* Order 3 pieces of fingers for one unit.

Replacement part/Grease pack part no.: MH-G01 (30 g)

Gripping Point

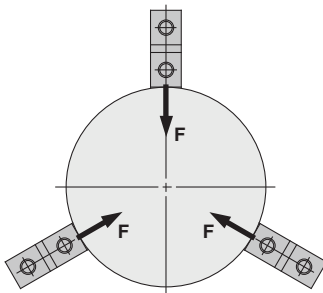
- The workpiece gripping point distance should be within the gripping force ranges given for each pressure in the effective gripping force graphs below.
- If operated with the workpiece gripping point beyond the indicated ranges, an excessive offset load will be applied to the sliding section of the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



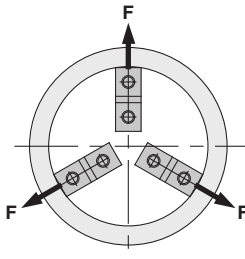
L: Gripping point distance

Effective Gripping Force

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



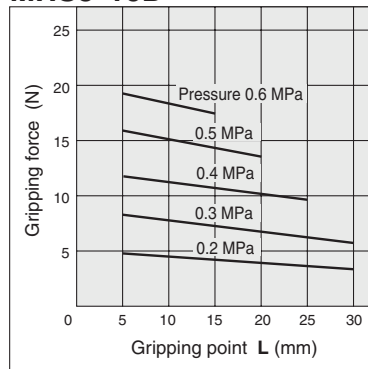
External grip



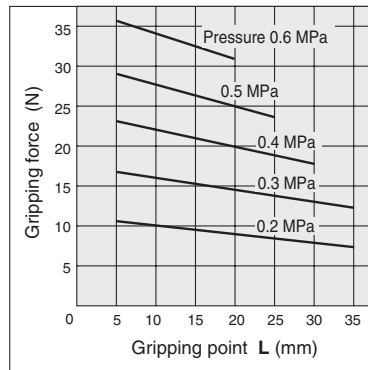
Internal grip

External Gripping Force

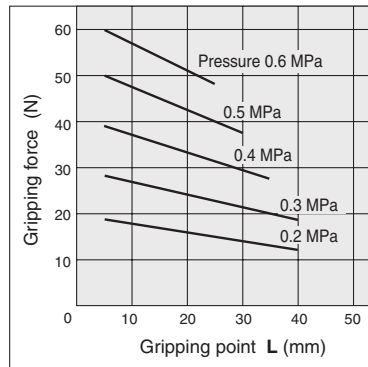
MHS3-16D



MHS3-20D

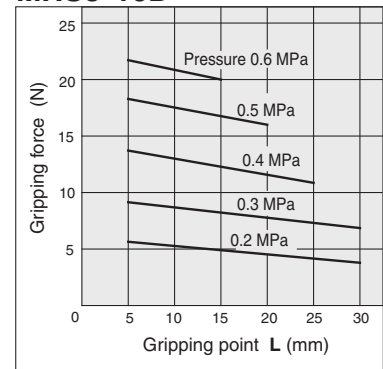


MHS3-25D

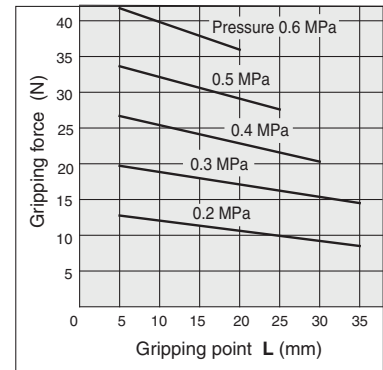


Internal Gripping Force

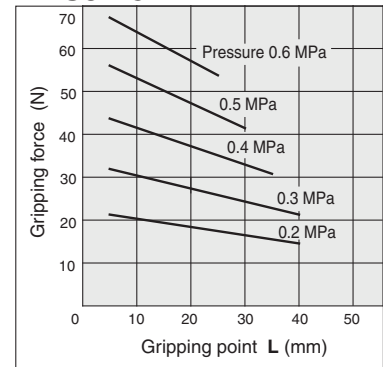
MHS3-16D



MHS3-20D



MHS3-25D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

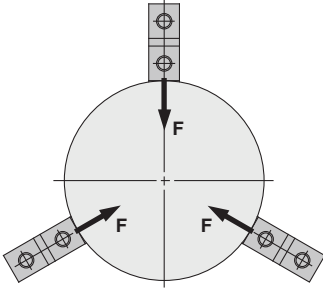
MA

D-□

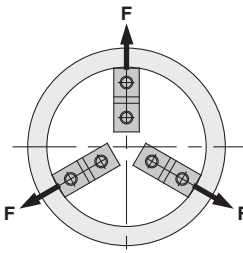
MHS3 Series

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.



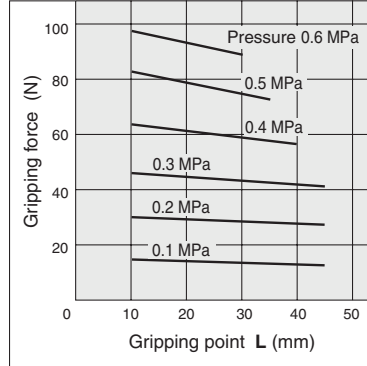
External grip



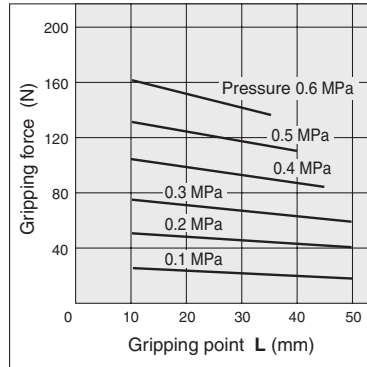
Internal grip

External Gripping Force

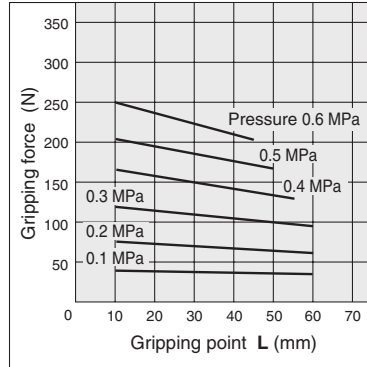
MHS3-32D



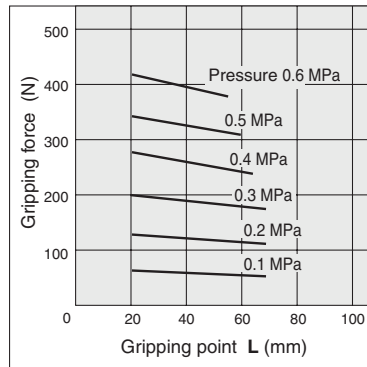
MHS3-40D



MHS3-50D

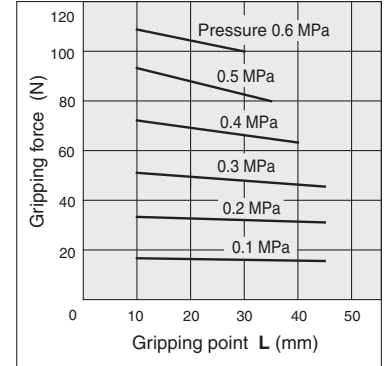


MHS3-63D

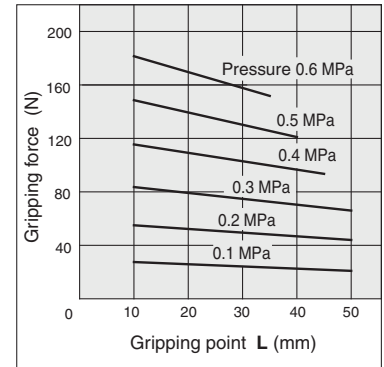


Internal Gripping Force

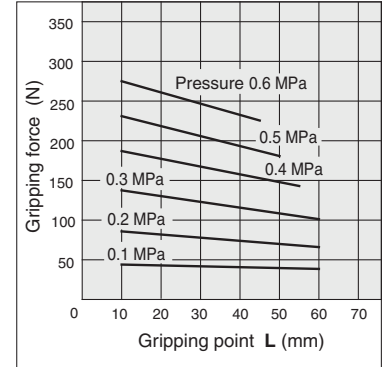
MHS3-32D



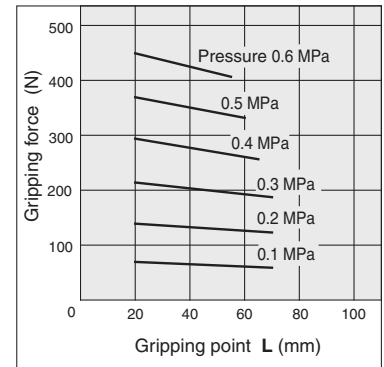
MHS3-40D



MHS3-50D



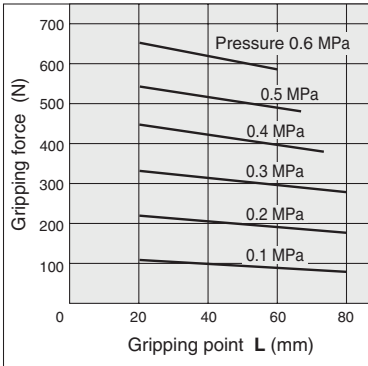
MHS3-63D



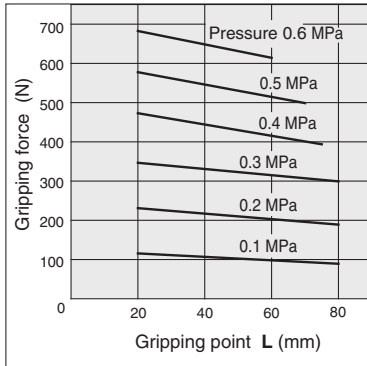
External Gripping Force

Internal Gripping Force

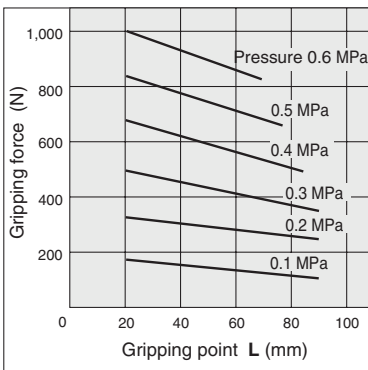
MHS3-80D



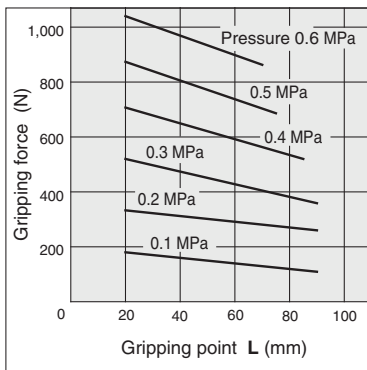
MHS3-80D



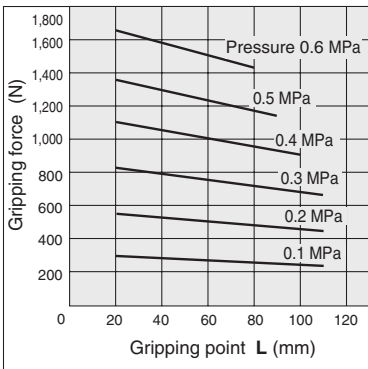
MHS3-100D



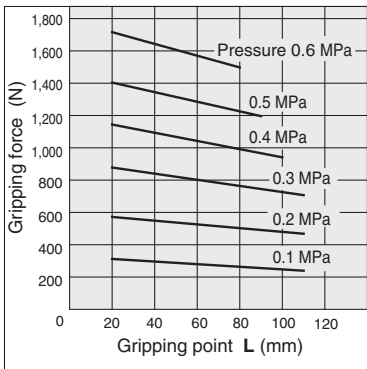
MHS3-100D



MHS3-125D



MHS3-125D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

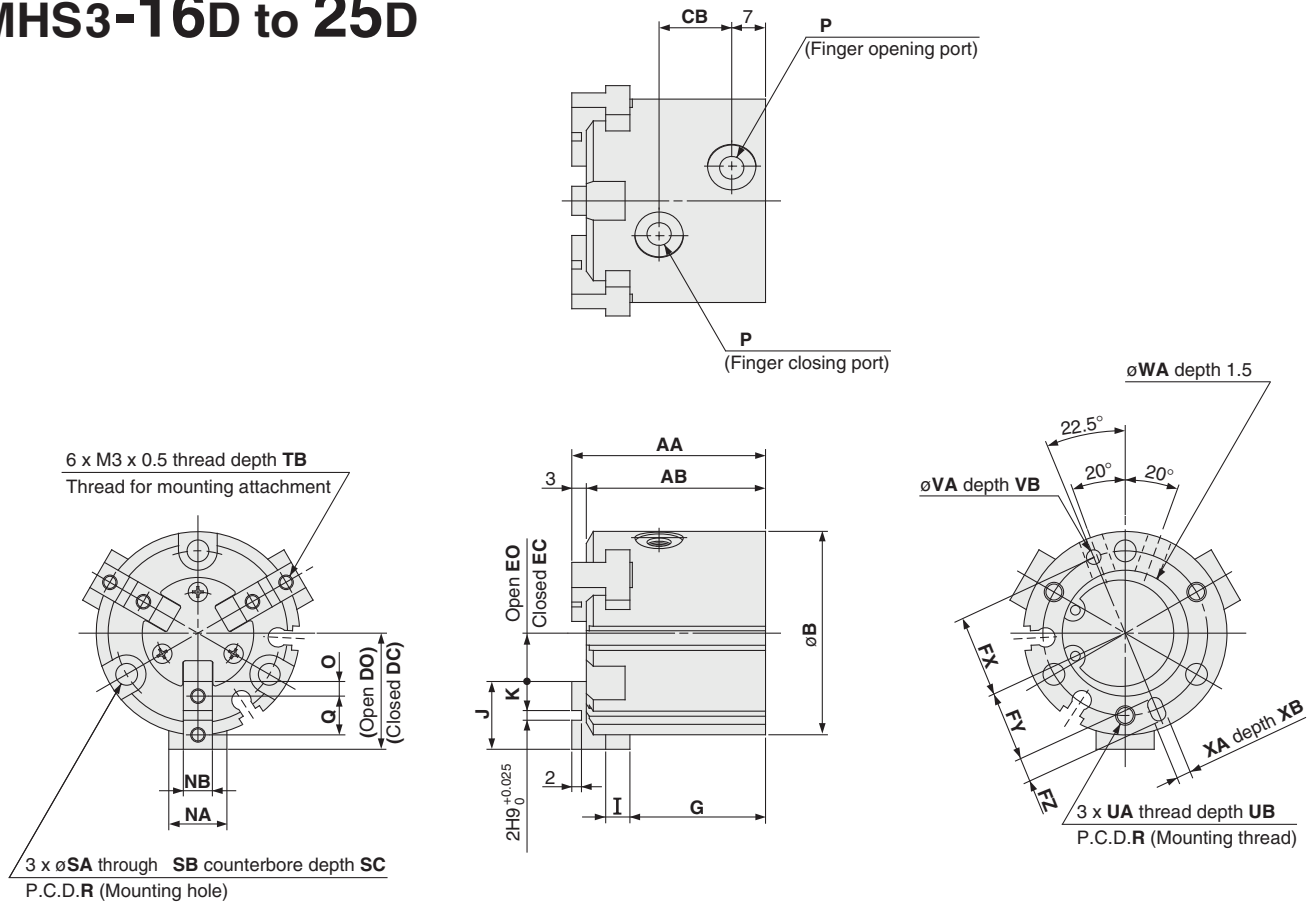
MA

D-□

MHS3 Series

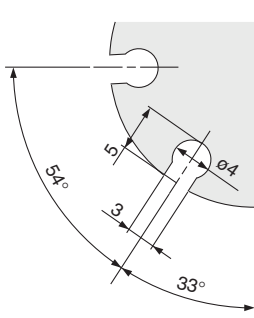
Dimensions

MHS3-16D to 25D

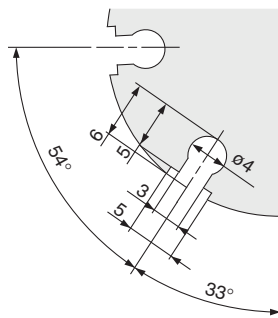


Auto switch mounting groove dimensions (2 locations)

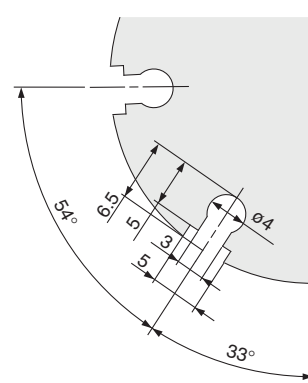
MHS3-16D



MHS3-20D



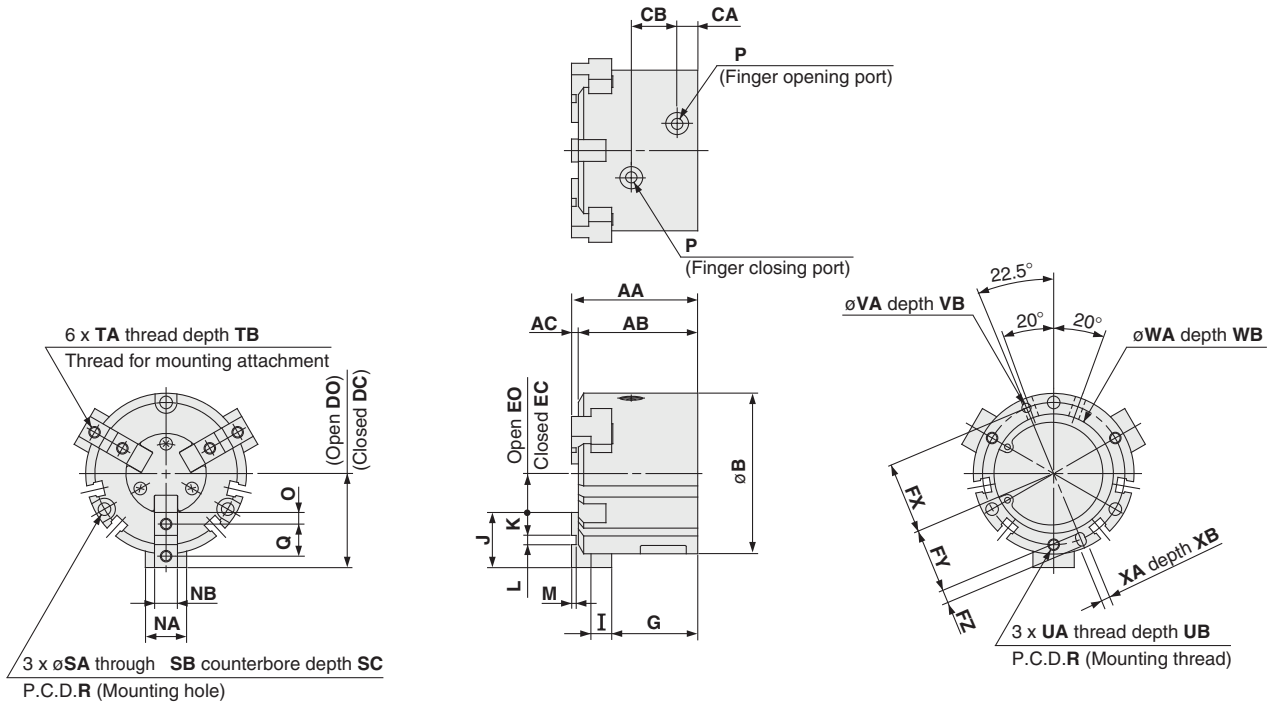
MHS3-25D



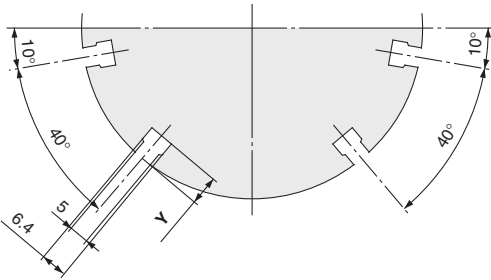
Model	AA	AB	B	CB	DC	DO	EC	EO	FX	FY	FZ	G	I	J	K	NA	NB	O	P	Q	R
MHS3-16D	35	32	30	11	15	17	5	7	12.5	11	3	25	4	10	4	8	5h9 ₀ ⁰ _{-0.030}	2	M3 x 0.5	6	25
MHS3-20D	38	35	36	13	18	20	6	8	14.5	13	3	27	5	12	5	10	6h9 ₀ ⁰ _{-0.030}	2.5	M5 x 0.8	7	29
MHS3-25D	40	37	42	15	21	24	7	10	17	14.5	5	28	5	14	6	12	6h9 ₀ ⁰ _{-0.030}	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 ₀ ^{+0.025}	2	17H9 ₀ ^{-0.043}	2H9 ₀ ^{+0.025}	2
MHS3-20D	3.4	6.5	9.5	6	M3 x 0.5	6	2H9 ₀ ^{+0.025}	2	21H9 ₀ ^{+0.052}	2H9 ₀ ^{+0.025}	2
MHS3-25D	4.5	8	10	6	M4 x 0.7	6	3H9 ₀ ^{+0.025}	3	26H9 ₀ ^{+0.052}	3H9 ₀ ^{+0.025}	3

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 ^{+0.025} ₀	2	14	8h9 ⁰ _{-0.036}
MHS3-40D	47	44	3	62	9	17	31	35	10	14	26.5	23.5	6	32	7	21	9	3H9 ^{+0.025} ₀	2	16	8h9 ⁰ _{-0.036}
MHS3-50D	55	52	3	70	9	20	35	41	11	17	31	28	6	37.5	9	24	10	4H9 ^{+0.030} ₀	2	18	10h9 ⁰ _{-0.036}
MHS3-63D	66	62	4	86	12	22	43	51	15	23	38	34.5	7	44	11	28	11	6H9 ^{+0.030} ₀	3	24	12h9 ⁰ _{-0.043}
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 ^{+0.036} ₀	4	28	14h9 ⁰ _{-0.043}

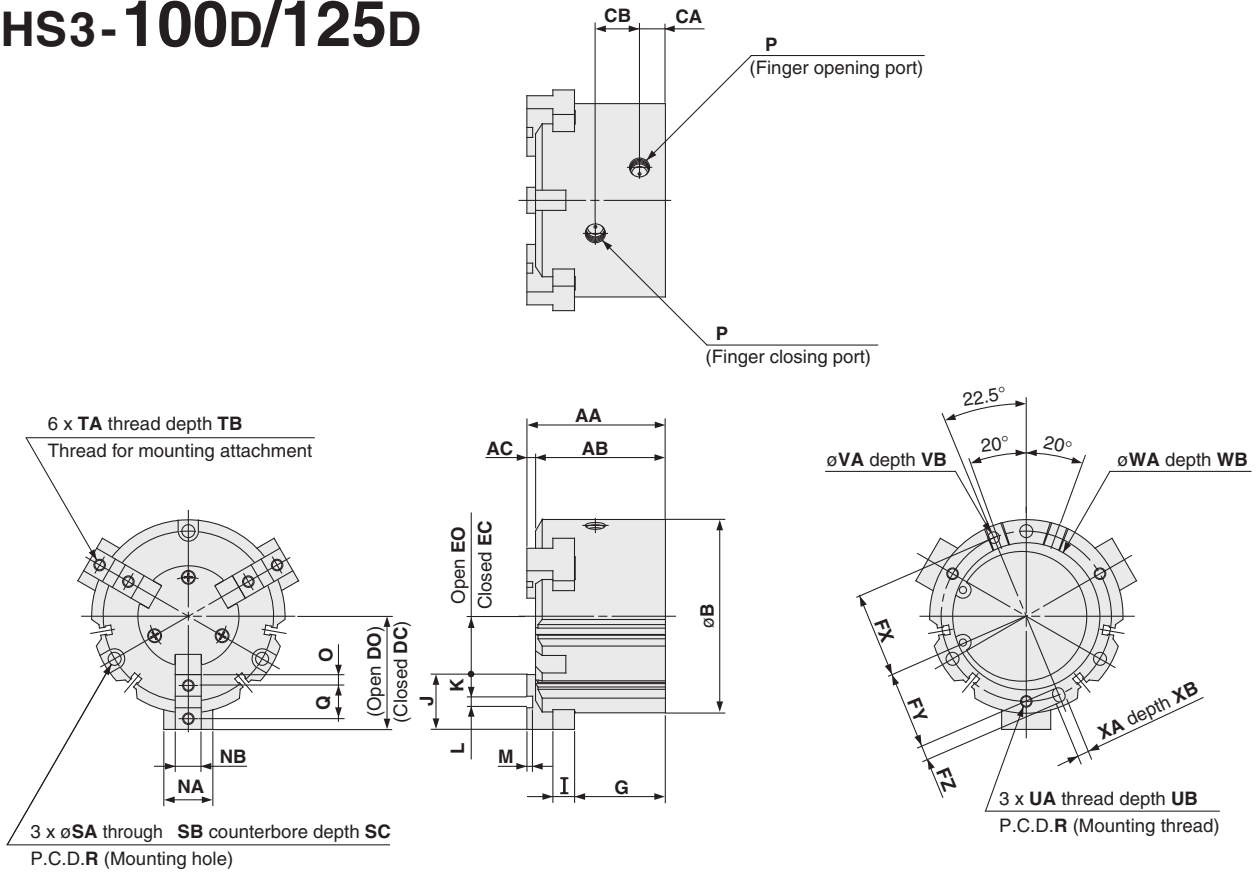
Model	O	P	Q	R	SA	SB	SC	TA	TB	UA	UB	VA	VB	WA	WB	XA	XB	Y
MHS3-32D	4.5	M5 x 0.8	11	44	4.5	8	9	M4 x 0.7	8	M4 x 0.7	6	3H9 ^{+0.025} ₀	3	34H9 ^{+0.062} ₀	2	3H9 ^{+0.025} ₀	3	6
MHS3-40D	4.5	M5 x 0.8	12	53	5.5	9.5	9	M4 x 0.7	8	M5 x 0.8	7.5	4H9 ^{+0.030} ₀	4	42H9 ^{+0.062} ₀	2	4H9 ^{+0.030} ₀	4	8
MHS3-50D	5	M5 x 0.8	14	62	5.5	9.5	12	M5 x 0.8	10	M5 x 0.8	10	4H9 ^{+0.030} ₀	4	52H9 ^{+0.074} ₀	2	4H9 ^{+0.030} ₀	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 ^{+0.030} ₀	5	65H9 ^{+0.074} ₀	2.5	5H9 ^{+0.030} ₀	5	7.5
MHS3-80D	6	RC 1/8 (G 1/8, NPT 1/8)	20	95	6.6	11	19	M6 x 1	12	M6 x 1	12	6H9 ^{+0.030} ₀	6	82H9 ^{+0.087} ₀	3	6H9 ^{+0.030} ₀	6	9

- MHZ
- MHF
- MHL
- MHR
- MHK
- MHS**
- MHC
- MHT
- MHY
- MHW
- X□
- MRHQ
- MA
- D-□

MHS3 Series

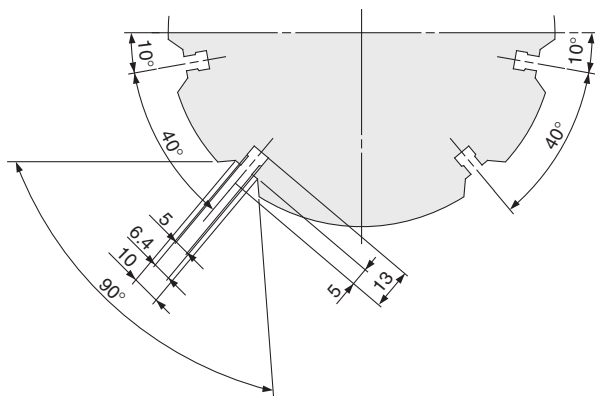
Dimensions

MHS3-100D/125D

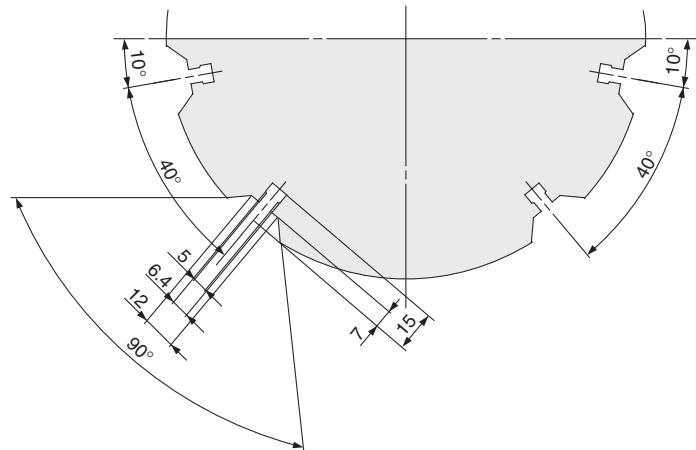


Auto switch mounting groove positions (4 locations)

MHS3-100D

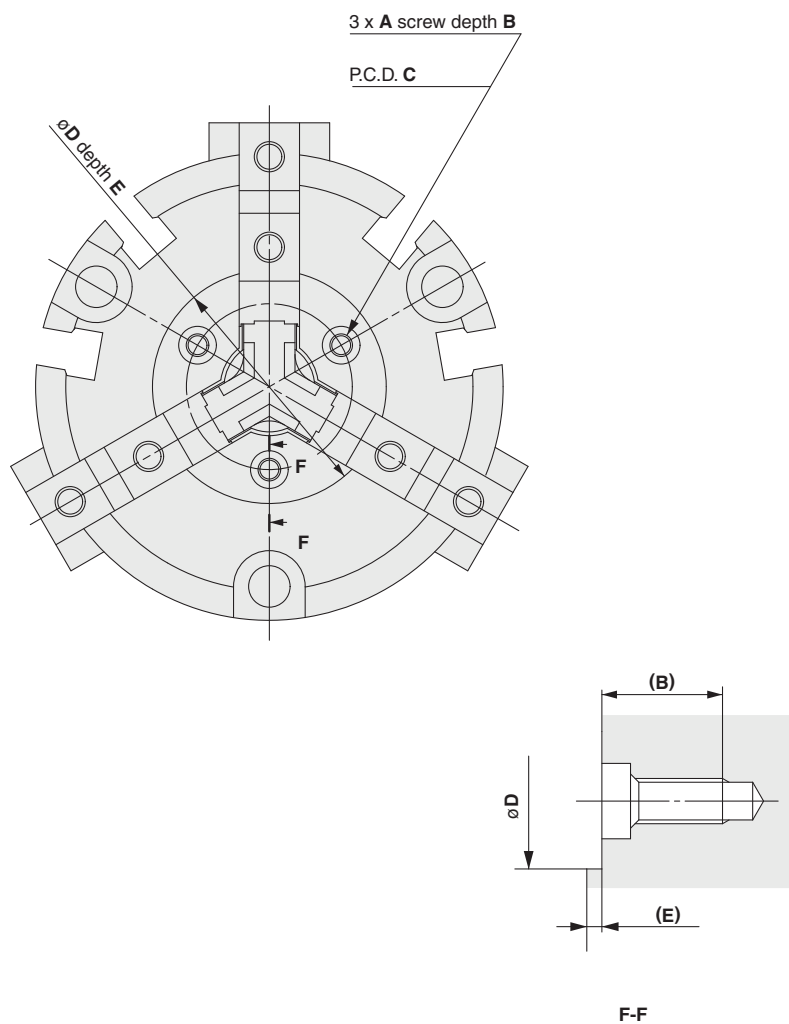


MHS3-125D



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 ^{+0.036} ₀	4	34	18h9 ⁰ _{-0.043}
MHS3-125D	122	114	8	166	23.5	38	82	98	30	46	74	68	12	84	18	52	21	10H9 ^{+0.036} ₀	6	40	22h9 ⁰ _{-0.052}
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 (G 1/4, NPT 1/4)	23	118	9	14	21	M8 x 1.25	16	M8 x 1.25	16	8H9 ^{+0.036} ₀	6	102H9 ^{+0.087} ₀	4	8H9 ^{+0.036} ₀	6				
MHS3-125D	10.5	Rc 3/8 (G 3/8, NPT 3/8)	31	148	11	17.5	34	M10 x 1.5	20	M10 x 1.5	20	10H9 ^{+0.036} ₀	8	130H9 ^{+0.100} ₀	6	10H9 ^{+0.036} ₀	8				

MHS3 Series Detailed Dimensions of Mounting Portion of End Plate



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

- MHZ
- MHF
- MHL
- MHR
- MHK
- MHS**
- MHC
- MHT
- MHY
- MHW
- X□
- MRHQ
- MA
- D-□

MHS Series

Auto Switch Installation Examples and Mounting Positions

Various auto switch applications are possible through different combinations of auto switch quantities and detecting positions.

1) Detection when Gripping Exterior of Workpiece

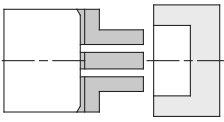
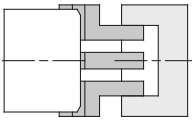
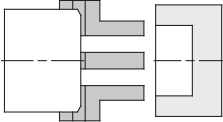
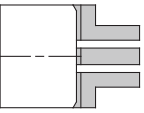
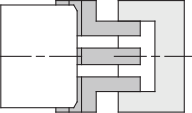
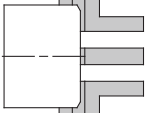
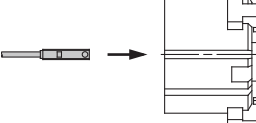
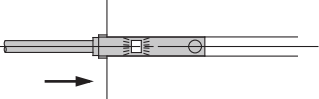
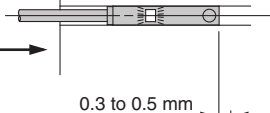
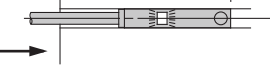
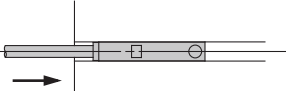
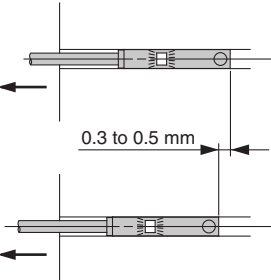
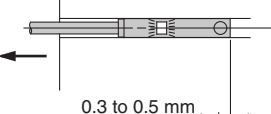
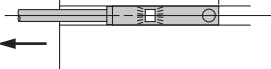
Detection example		1. Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
Position to be detected		Position of fingers fully opened	Position when gripping a workpiece	Position of fingers fully closed
Operation of auto switch		Auto switch turned ON when fingers return. (Light ON)	Auto switch turned ON when gripping a workpiece. (Light ON)	When a workpiece is not held (Abnormal operation): Auto switch to turn ON (Light ON)
Detection combinations	One auto switch * One position, any of ①, ② and ③ can be detected.	●	●	●
	Two auto switches * Two positions of ①, ② and ③ can be detected.	A	●	—
		B	—	●
C	●	—	●	
How to determine auto switch installation position		Step 1) Fully open the fingers.	Step 1) Position fingers for gripping a workpiece.	Step 1) Fully close the fingers.
At no pressure or low pressure, connect the auto switch to a power supply, and follow the directions.		Step 2) Insert the auto switch into the auto switch installation groove in the direction shown in the following drawing.		
Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates.		Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates. Move the switch further 0.3 to 0.5 mm in the direction of the arrow and fasten it.		
Step 4) Slide the auto switch in the direction of the arrow until the indicator light goes out.		Position where light turns ON		
Step 5) Move the auto switch in the opposite direction until the indicator light illuminates. Move the switch further 0.3 to 0.5 mm beyond the position where the indicator light illuminates and fasten it.		0.3 to 0.5 mm		
Position where light turns ON		Position to be secured		
0.3 to 0.5 mm		Position to be secured		

Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.

Note 2) When holding a workpiece close at the end of open/close stroke of fingers, detecting performance of the combinations listed in the above table may be limited, depending on the hysteresis of an auto switch, etc.

Various auto switch applications are possible through different combinations of auto switch quantities and detecting positions.

2) Detection when Gripping Interior of Workpiece

Detection example		1. Confirmation of fingers in reset position	2. Confirmation of workpiece held	3. Confirmation of workpiece released
Position to be detected		Position of fingers fully closed 	Position when gripping a workpiece 	Position of fingers fully opened  →
Operation of auto switch		Auto switch turned ON when fingers return. (Light ON)	Auto switch turned ON when gripping a workpiece. (Light ON)	When a workpiece is not held (Abnormal operation): Auto switch to turn ON (Light ON)
Detection combinations	One auto switch * One position, any of ①, ② and ③ can be detected.	●	●	●
	Two auto switches * Two positions of ①, ② and ③ can be detected.	●	●	—
		—	●	●
	Pattern	●	—	●
How to determine auto switch installation position		Step 1) Fully close the fingers. 	Step 1) Position fingers for gripping a workpiece. 	Step 1) Fully open the fingers. 
At no pressure or low pressure, connect the auto switch to a power supply, and follow the directions.		Step 2) Insert the auto switch into the auto switch installation groove in the direction shown in the following drawing. 		
		Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates. Move the switch further 0.3 to 0.5 mm in the direction of the arrow and fasten it.		Step 3) Slide the auto switch in the direction of the arrow until the indicator light illuminates. 
		Position where light turns ON  0.3 to 0.5 mm Position to be secured 	Step 4) Slide the auto switch further in the direction of the arrow until the indicator light goes out. 	
			Step 5) Move an auto switch in the opposite direction and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates. 	
			Position where light turns ON  0.3 to 0.5 mm Position to be secured 	

Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.

Note 2) When holding a workpiece close at the end of open/close stroke of fingers, detecting performance of the combinations listed in the above table may be limited, depending on the hysteresis of an auto switch, etc.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

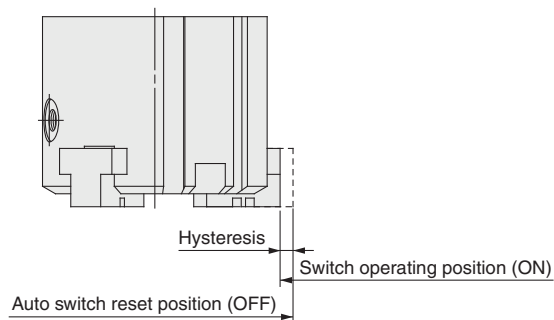
MA

D-□

MHS Series

Auto Switch Hysteresis

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



MHS□/MHSL Series

Air gripper model	Auto switch model	Hysteresis (Max. value)	
		D-M9□(V) D-M9□W(V) D-M9□A(V)	(mm)
MHS□ - 16D MHSL3		0.5	
MHS□ - 20D MHSL3		0.5	
MHS□ - 25D MHSL3		0.5	
MHS□ - 32D MHSL3		0.6	
MHS□ - 40D MHSL3		0.6	
MHS□ - 50D MHSL3		0.6	
MHS□ - 63D MHSL3		0.6	
MHS□ - 80D MHSL3		0.6	
MHS□ -100D MHSL3		0.6	
MHS□ -125D MHSL3		0.6	

MHSJ/MHSH Series

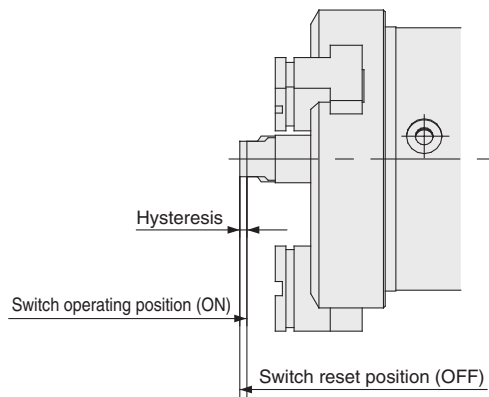
Air gripper model	Auto switch model	Hysteresis (Max. value)	
		D-M9□(V) D-M9□W(V) D-M9□A(V)	(mm)
MHSJ3 -16D MHSH3		0.5	
MHSJ3 -20D MHSH3		0.5	
MHSJ3 -25D MHSH3		0.5	
MHSJ3 -32D MHSH3		0.6	
MHSJ3 -40D MHSH3		0.6	
MHSJ3 -50D MHSH3		0.6	
MHSJ3 -63D MHSH3		0.6	
MHSJ3 -80D MHSH3		0.6	

Air gripper model	Auto switch model	Hysteresis (Max. value)	
		D-Y59□/Y69□/Y7P(V) D-Y7□W(V)/Y7BA	(mm)
MHS□ - 32D MHSL3		0.7	
MHS□ - 40D MHSL3		0.5	
MHS□ - 50D MHSL3		0.5	
MHS□ - 63D MHSL3		0.5	
MHS□ - 80D MHSL3		0.5	
MHS□ -100D MHSL3		0.5	
MHS□ -125D MHSL3		0.5	

Note) The actual mounting position should be adjusted after confirming the auto switch performance.

Auto Switch Hysteresis

Center pusher/Cylinder type



Air gripper model	Auto switch model	Hysteresis (Max. value) (mm)	
		D-M9□(V)	D-M9□W(V) D-M9□A(V)
MHSH□3-32DA		0.3	
MHSH□3-40DA		0.3	
MHSH□3-50DA		0.2	
MHSH□3-63DA		0.4	
MHSH□3-80DA		0.3	

Note) The actual mounting position should be adjusted after confirming the auto switch performance.

- MHZ
- MHF
- MHL
- MHR
- MHK
- MHS**
- MHC
- MHT
- MHY
- MHW
- X□
- MRHQ
- MA
- D-□

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.

The MHSJ3 and MSH3 series are described on another page.

(mm)

Air gripper model	Auto switch model Lead wire type Finger position	Mounting with lead wire on side opposite the fingers				Mounting with lead wire on same side as the fingers			
		In-line entry		Perpendicular entry		In-line entry		Perpendicular entry	
		D-M9□ D-M9□W	D-M9□A	D-M9□V D-M9□WV	D-M9□AV	D-M9□ D-M9□W	D-M9□A	D-M9□V D-M9□WV	D-M9□AV
MHS□-16D	Open	—	1	—	—	1	3	—	1
	Closed	5	7	3	5	—	—	—	—
MHS□-20D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3	5	—	—	—	—
MHS□-25D	Open	—	—	—	—	—	1	—	—
	Closed	3	5	1	3	—	—	—	—
MHSL3-16D	Open	—	1	—	—	—	—	—	—
	Closed	5	7	3	5	—	—	—	—
MHSL3-20D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3	5	—	—	—	—
MHSL3-25D	Open	—	—	—	—	—	—	—	—
	Closed	3	5	1	3	—	—	—	—
MHS□-32D	Open	—	—	—	—	—	—	—	—
	Closed	5.5	7.5	3.5	5.5	—	—	—	—
MHS□-40D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3.5	5	—	—	—	—
MHS□-50D	Open	—	—	—	—	—	—	—	—
	Closed	4.5	6.5	2.5	4.5	—	—	—	—
MHS□-63D	Open	—	—	—	—	—	—	—	—
	Closed	2.5	4.5	0.5	2.5	—	—	—	—
MHS□-80D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHS□-100D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHS□-125D	Open	—	—	—	—	—	—	—	—
	Closed	—	—	—	—	—	—	—	—
MHSL3-32D	Open	—	—	—	—	—	—	—	—
	Closed	5.5	7.5	3.5	5.5	—	—	—	—
MHSL3-40D	Open	—	—	—	—	—	—	—	—
	Closed	5	7	3.5	5	—	—	—	—
MHSL3-50D	Open	—	—	—	—	—	—	—	—
	Closed	4.5	6.5	2.5	4.5	—	—	—	—
MHSL3-63D	Open	—	—	—	—	—	—	—	—
	Closed	2.5	4.5	0.5	2.5	—	—	—	—
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.

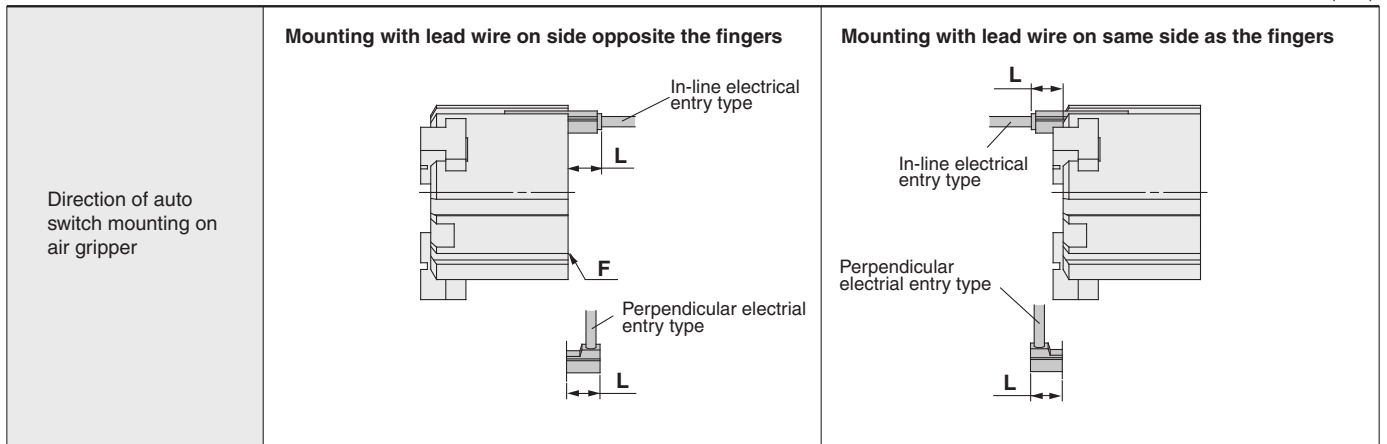
Note 2) When mounted with lead wires on the finger side, be sure that attachments and workpieces, etc., do not touch switch units or lead wires.

Note 3) The actual mounting position should be adjusted after confirming the auto switch performance.

Protrusion of Auto Switch from Edge of Body

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

(mm)



Air gripper model	Auto switch model Lead wire type Finger position	In-line entry		Perpendicular entry	In-line entry		Perpendicular entry
		D-Y59□ D-Y7P D-Y7□W	D-Y7BA	D-Y69□ D-Y7PV D-Y7□WV	D-Y59□ D-Y7P D-Y7□W	D-Y7BA	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.

Note 3) The actual mounting position should be adjusted after confirming the auto switch performance.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

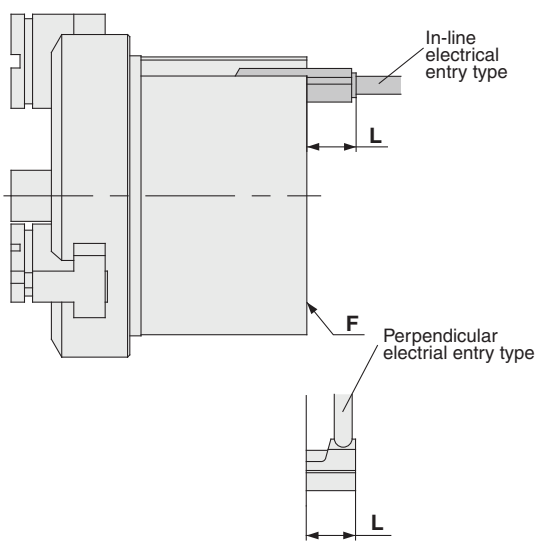
MA

D-□

MHS Series

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 Finger position		Lead wire type		Perpendicular entry	
		In-line entry		Perpendicular entry	
Auto switch model		D-M9□ D-M9□W	D-M9□A	D-M9□V D-M9□WV	D-M9□AV
MHSJ3-16D MHSJ3	Open	2	4	—	2
	Closed	5.5	7.5	3.5	5.5
MHSJ3-20D MHSJ3	Open	2	4	—	2
	Closed	5	7	3	5
MHSJ3-25D MHSJ3	Open	—	3	—	—
	Closed	5	7	3	5
MHSJ3-32D MHSJ3	Open	—	1	—	—
	Closed	4.5	6.5	2.5	4.5
MHSJ3-40D MHSJ3	Open	—	—	—	—
	Closed	3	5	1	3
MHSJ3-50D MHSJ3	Open	—	—	—	—
	Closed	1.5	3.5	—	1.5
MHSJ3-63D MHSJ3	Open	—	—	—	—
	Closed	—	2	—	—
MHSJ3-80D MHSJ3	Open	—	—	—	—
	Closed	—	1	—	—

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.

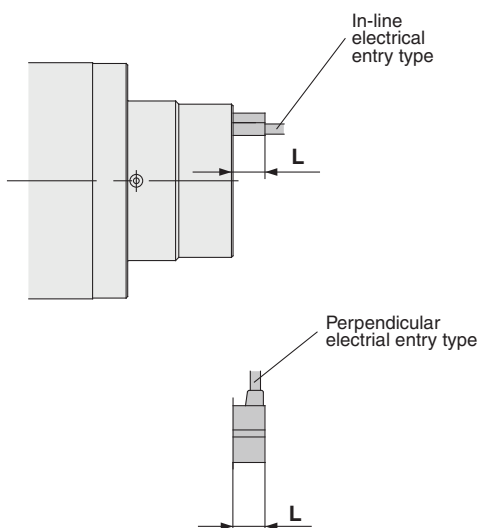
Note 4) The actual mounting position should be adjusted after confirming the auto switch performance.

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 Finger position		Lead wire type		Perpendicular entry	
		In-line entry		Perpendicular entry	
Auto switch model		D-M9□ D-M9□W	D-M9□A	D-M9□V D-M9□WV	D-M9□AV
MHS□-32DA	Extended	4	2	2	4
	Retracted	9	7	7	9
MHS□-40DA	Extended	3	—	1	3
	Retracted	8	6	6	8
MHS□-50DA	Extended	—	—	—	—
	Retracted	7.5	5.5	5.5	7.5
MHS□-63DA	Extended	—	—	—	—
	Retracted	7	5	5	7
MHS□-80DA	Extended	—	—	—	—
	Retracted	4	2	2	4

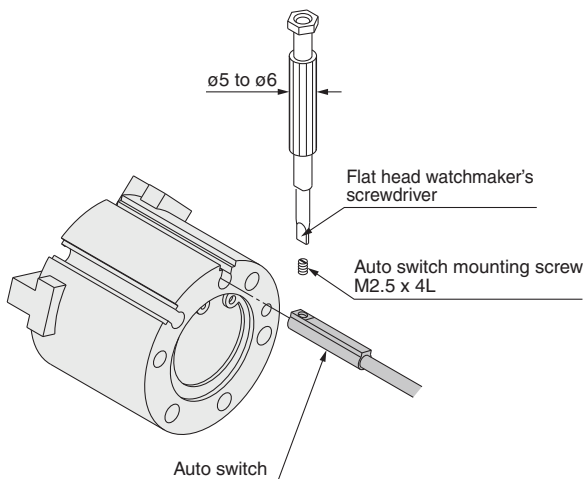
Note) The actual mounting position should be adjusted after confirming the auto switch performance.

Auto Switch Mounting

Applicable models:

MHS2-16, 20, 25
MHS3-16, 20, 25
MHSJ3-16, 20, 25, 32, 40, 50, 63, 80
MHSH3-16, 20, 25, 32, 40, 50, 63, 80
MHSH3-A32, 40, 50, 63, 80
MHSL3-16, 20, 25
MHS4-16, 20, 25

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 auto switch mounting set screw with a flat head watchmaker's screwdriver.

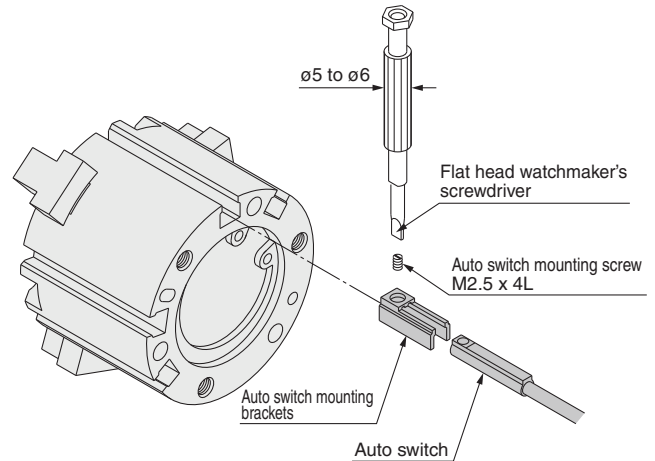


Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the auto switch mounting screw. The tightening torque should be about 0.05 to 0.15 N·m.

Applicable models:

MHS2-32, 40, 50, 63
MHS3-32, 40, 50, 63, 80, 100, 125
MHSL3-32, 40, 50, 63, 80, 100, 125
MHS4-32, 40, 50, 63

- (1) To set the auto switch, insert the auto switch into the installation groove of the cylinder as shown below and set it roughly.
- (2) Insert the auto switch into the auto switch bracket installation groove.
- (3) After confirming the detecting position, tighten the set screws (M2.5) attached to the auto switch and set it.
- (4) Be sure to change the detecting position in the state of (2).



Auto Switch Mounting Bracket Part No.

Auto switch model	Auto switch mounting bracket part no.
D-M9□(V)	BMG2-012
D-M9□W(V)	
D-M9□A(V)	

Note) Use a watchmaker's screwdriver with a grip diameter of 5 to 6 mm to tighten the set screw (M2.5). The tightening torque should be 0.05 to 1 N·m. It should be turned about 90° beyond the point at which tightening can be felt.

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

-X□

MRHQ

MA

D-□