



# Angular Style Air Gripper Toggle Type

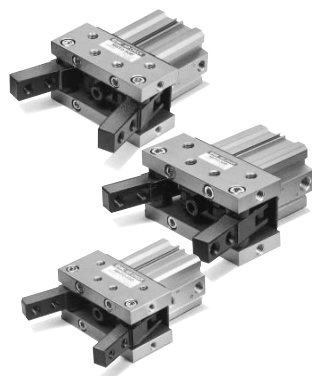
# Series MHT2

Size: 32, 40, 50, 63

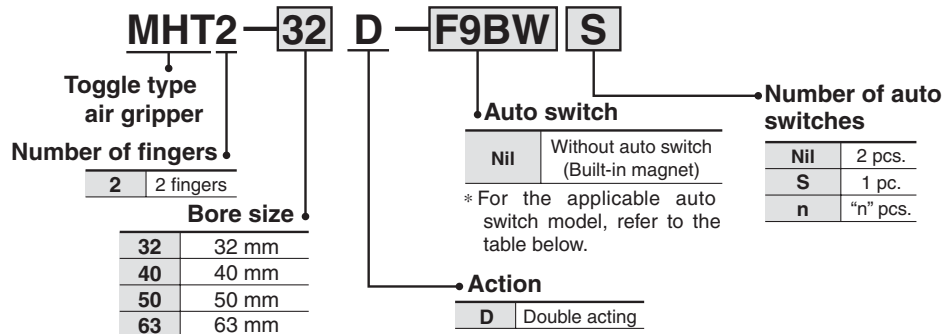
Ideal for gripping heavy workpiece.

The toggle mechanism holds workpiece even when pressure drops.

Auto switch is attachable.



## How to Order



## 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		Rail mounting		Direct mounting		Lead wire length (m)*				Pre-wire connector	Applicable load	
					DC	AC	Perpendicular	In-line	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)	None (N)			
Reed switch	—	Grommet	Yes	3-wire (NPN equi.)	—	5 V	—	A76H	A96V	A96	●	●	—	—	—	IC circuit	
						200 V	A72	A72H	—	—	●	●	—	—			
				24 V	12 V	100 V	A73	A73H	—	—	●	●	●	—	—	Relay, PLC	
							—	—	A93V	A93	●	●	—	—			
Connector	2-wire	—	—	A73C	—	—	—	●	●	●	●	—	—	—			
				—	—	A79W	—	—	—	●	●	—	—				
Solid state switch	—	Grommet	Yes	3-wire (NPN)	—	5 V	12 V	F7NV	F79	M9NV	M9N	●	●	○	○	IC circuit	
								F7PV	F7P	M9PV	M9P	●	●	○	○		
				Connector	2-wire	12 V	F7BV	J79	M9BV	M9B	●	●	○	○	○	—	
							J79C	—	—	—	●	●	●	●	—		—
		Grommet	Yes	3-wire (NPN)	24 V	5 V	12 V	—	F7NWW	F79W	F9NWW	F9NW	—	●	○	○	IC circuit
									—	F7PW	F9PWV	F9PW	●	●	○	○	
				Water resistant (2-color indication)	2-wire	12 V	—	F7BWW	J79W	F9BWW	F9BW	●	●	○	○	—	
							—	F7BA	—	F9BA	—	●	○	○			
		With diagnosis output (2-color indication)	4-wire (NPN)	5 V	12 V	—	F7BAV	—	—	—	●	●	○	○	IC circuit		
						—	F79F	—	—	●	●	○	○				

\* Lead wire length symbols: 0.5 m ..... Nil (Example) F9BW  
 3 m ..... L (Example) F9BWL  
 5 m ..... Z (Example) F9BWZ  
 None ..... N (Example) J79CN

\* "○" marked solid state switches are produced upon receipt of order.  
 • Refer to page 12-9-7 for details, because there are other auto switches available than above models.



Refer to page 12-13-25 for auto switch specifications.

## Switch Mounting Bracket Part No.

Bore size (mm)	Bracket no.	Note	Applicable auto switch
32, 40, 50, 63	BQ-2	<ul style="list-style-type: none"> <li>Switch mounting screw (M3 x 0.5 x 10)</li> <li>Switch spacer</li> <li>Switch mounting nut.</li> </ul>	Reed switch D-A7/A8 D-A73C/A80C D-A7□H/A80H D-A79W Solid state switch D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F7BAL/F78AVL D-F79F

## Model/Specifications

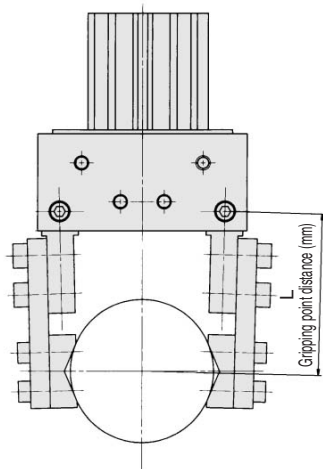
Model	MHT2-32D	MHT2-40D	MHT2-50D	MHT2-63D
Bore size (mm)	32	40	50	63
Action	Double acting			
Fluid	Air			
Operating pressure	0.1 to 0.6 MPa			
Ambient and fluid temperature	5 to 60°C			
Lubrication	Not required			
Finger opening angle (Total)	-3 to 28°	-3 to 27°	-2 to 23°	-2 to 23°
Weight (kg)	0.80	1.09	1.93	2.8
Gripping moment (Note)	12.4	36.0	63.0	106
(Effective value) (N-m)				



(Note) At the pressure of 0.5 MPa

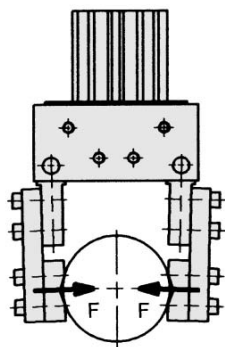
## Effective Gripping Force

- Workpiece gripping point should be within the range indicated in the graph.



### • 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.



## ⚠ Precautions

Be sure to read before handling. Refer to pages 12-15-3 to 12-15-4 for Safety Instructions and Common Precautions on the product mentioned in this catalog, and refer to pages 12-1-4 to 12-1-6 for Precautions on every series.

## ⚠ Warning

### Maintenance

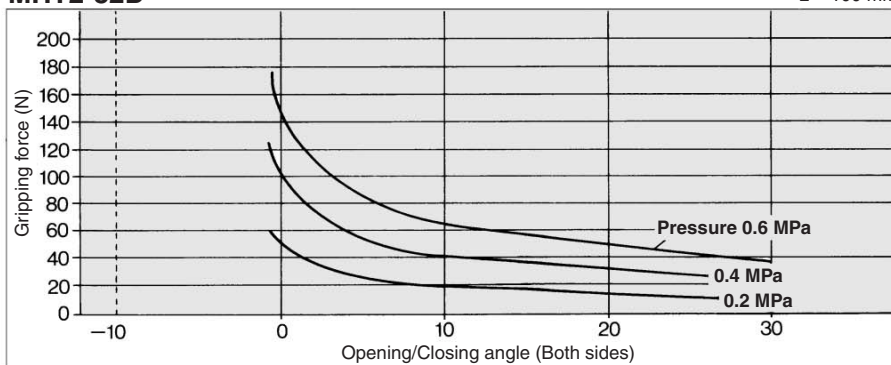
If a workpiece is to be gripped by using the toggle, make sure to periodically check that the workpiece has not shifted during the acceleration of the movement. If the workpiece is not gripped in a stable manner, it could shift or drop and create a dangerous situation.

If the workpiece is not gripped in a stable manner, use shims on the attachment to adjust the gripped.

To verify the gripping condition or to make any adjustments, make sure to do so in an area where the air gripper or the workpiece will not fall.

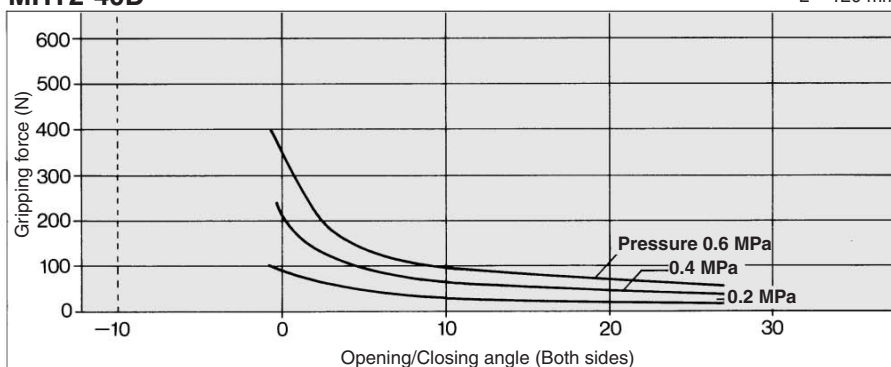
**MHT2-32D**

L = 100 mm



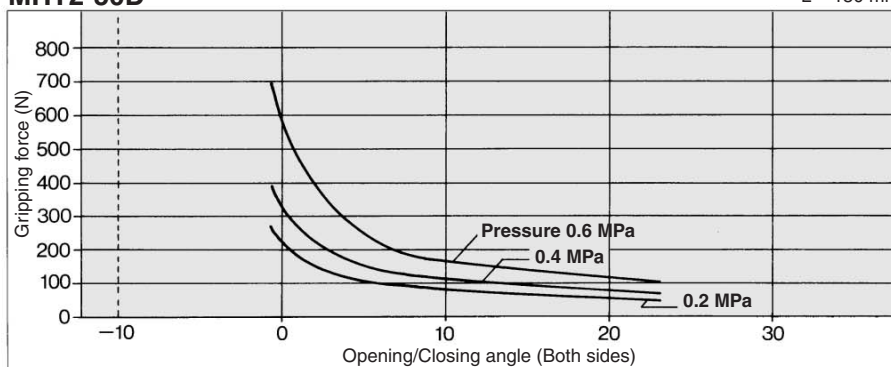
**MHT2-40D**

L = 120 mm



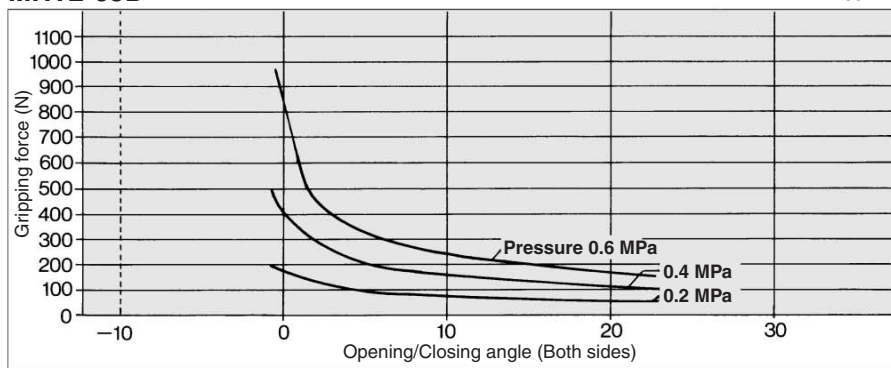
**MHT2-50D**

L = 150 mm



**MHT2-63D**

L = 180 mm



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

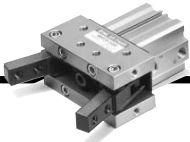
MRHQ

Misc.

D-

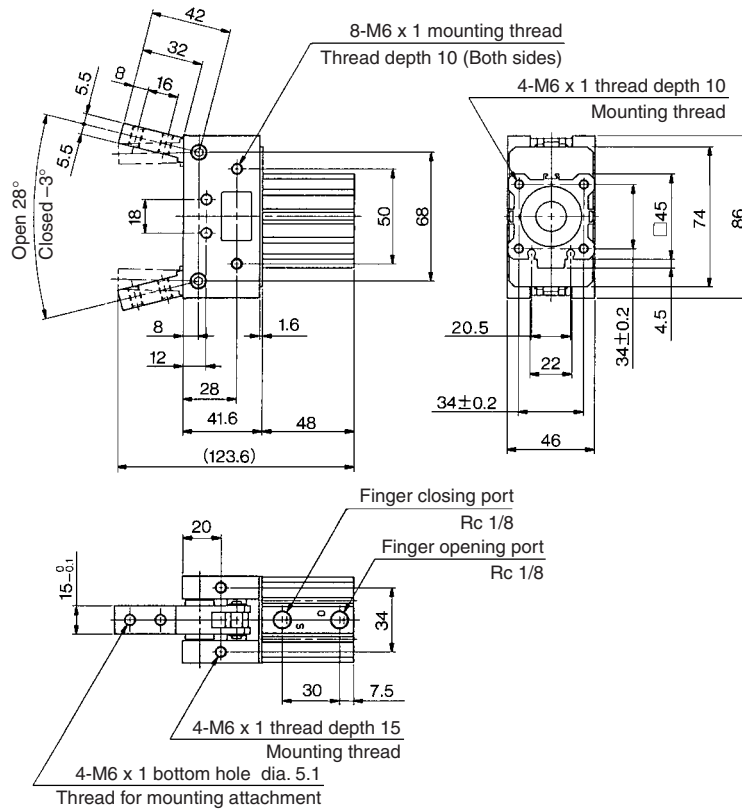
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# Series MHT2

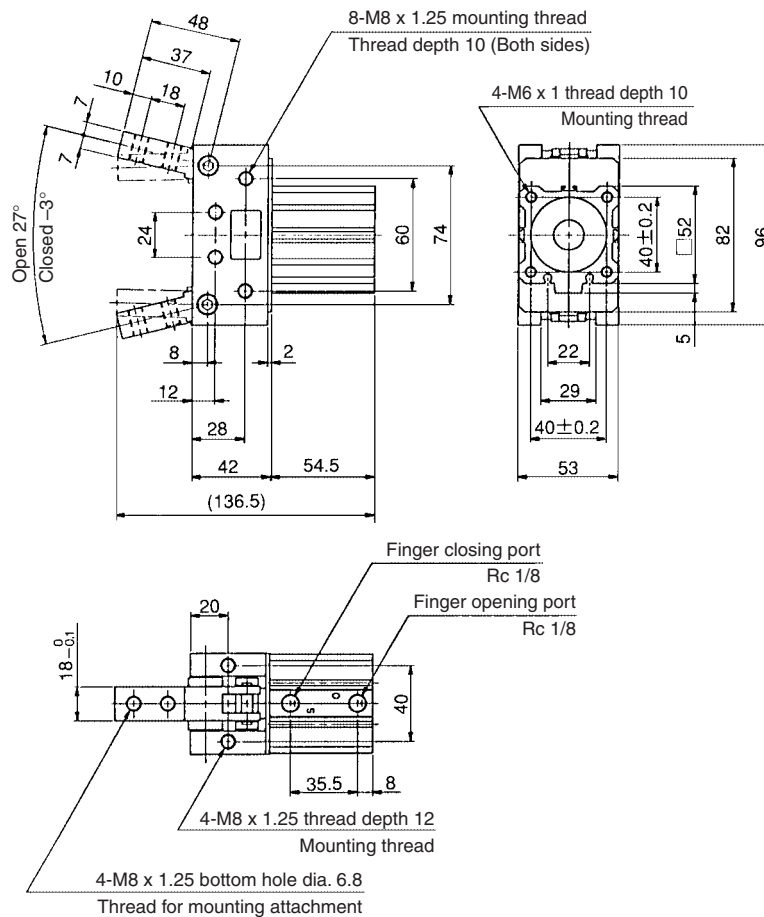


## Dimensions

### MHT2-32D



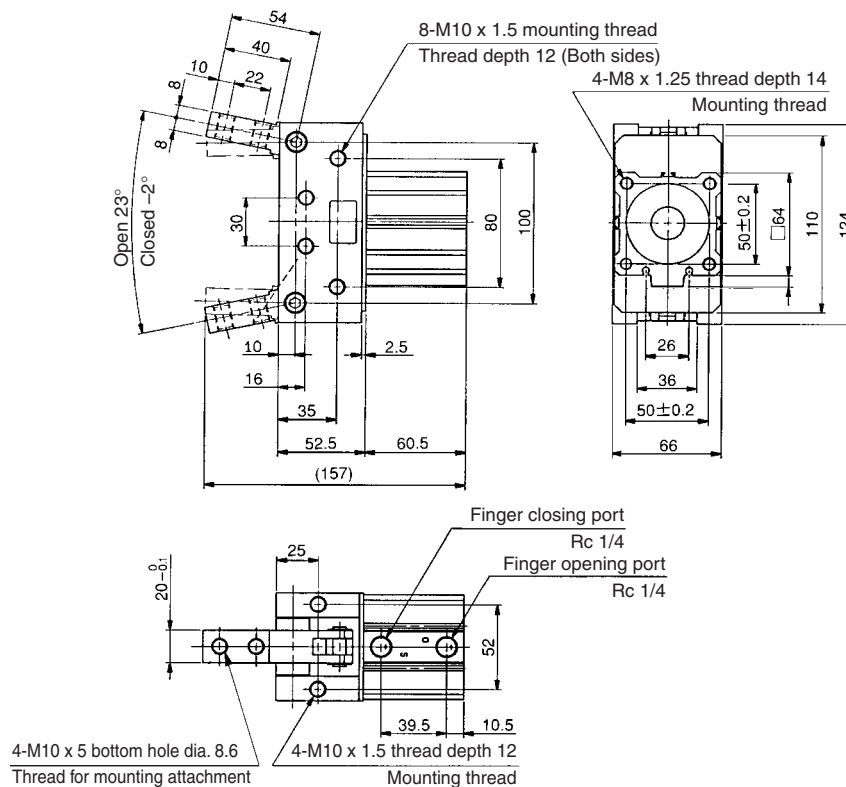
### MHT2-40D



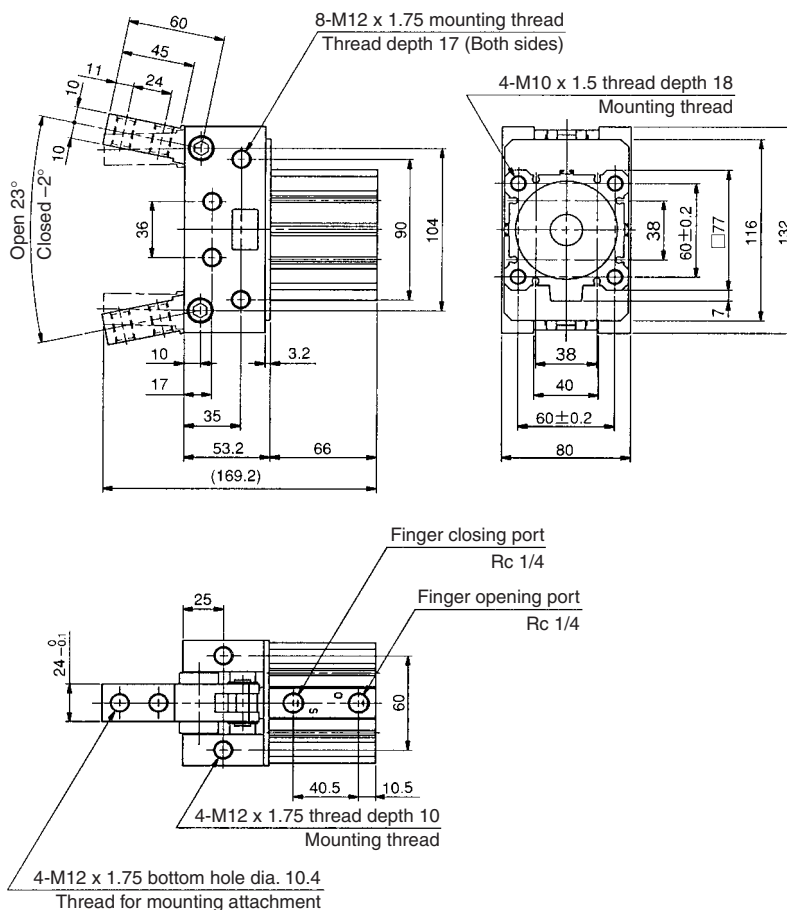
# Angular Style Air Gripper Toggle Type Series MHT2

## Dimensions

### MHT2-50D



### MHT2-63D



MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

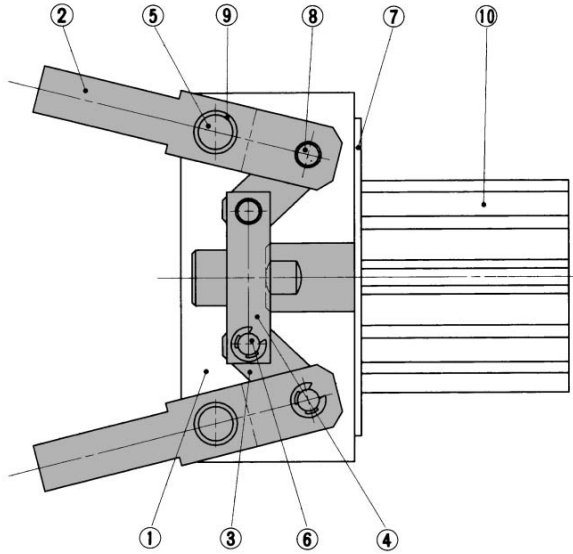
Misc.

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# Series MHT2

## Construction



### Component Parts

No.	Description	Material	Note
①	Side plate	Aluminum alloy	Hard anodized
②	Finger	Carbon steel	Black zinc chromated
③	Lever	Carbon steel	Black zinc chromated
④	Joint	Carbon steel	Black zinc chromated
⑤	Shaft	Stainless steel	
⑥	Joint pin	Stainless steel	
⑦	Cylinder plate	Soft steel	Black zinc chromated
⑧	Lever pin	Stainless steel	
⑨	Bearing		Steel lined oil imfilled acetal resin bearing
⑩	Cylinder		Compact cylinder

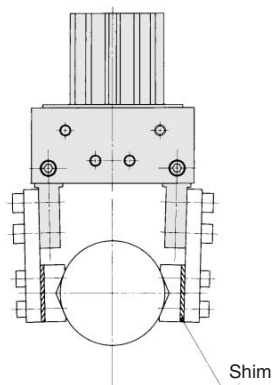
### Replacement Parts

Description	MHT2-32D	MHT2-40D	MHT2-50D	MHT2-63D	Main parts
Finger assembly	MH-TA3201	MH-TA4001	MH-TA5001	MH-TA6301	②⑨
Lever assembly	MH-TA3202	MH-TA4002	MH-TA5002	MH-TA6302	③
Link parts assembly	MH-TA3203	MH-TA4003	MH-TA5003	MH-TA6303	<ø32, ø40> ②③④⑥⑧⑨ <ø50, ø63> ②③④⑧⑨
Compact cylinder	CDQ2A32-15D	CDQ2A40-15D	CDQ2A50-20D	CDQ2A63-20D	⑩

\* For finger assembly, lever assembly, order 2 pieces per one unit.

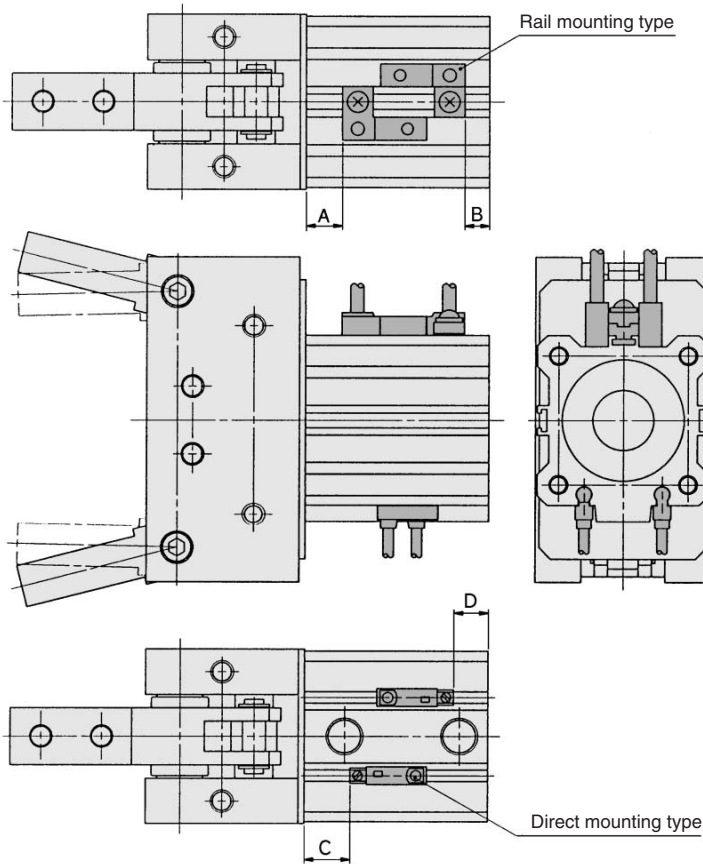
### Attachment Design

Use shims for fine adjustment of the attachment.

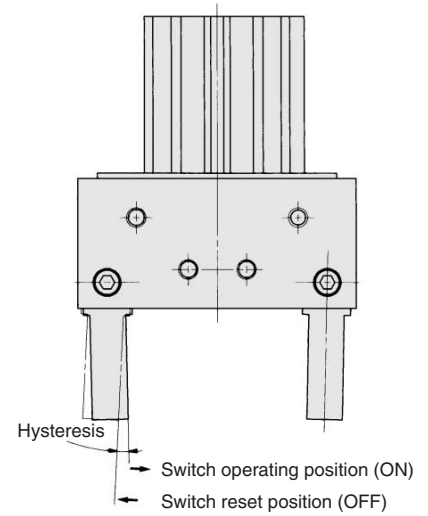


## Mounting of Auto Switch

## Auto Switch Hysteresis



D-A7, D-A8: Rail mounting type  
D-M9□V: Direct mounting type are shown above.



Model	Hysteresis (Max.) angle
<b>MHT2-32D</b>	3
<b>MHT2-40D</b>	3
<b>MHT2-50D</b>	3
<b>MHT2-63D</b>	3

Bore size (mm)	Rail mounting						Direct mounting					
	D-A7□/A80		D-A7□H/A80H D-A73C/A80C D-F7BAL/F7BAVL D-F7□/J79 D-F7□V/J79C D-F7□W/F79F D-F7□WV D-J79W		D-A79W		D-A9□ D-A9□V		D-M9□ D-M9□V D-F9□W D-F9□WV		D-F9BA	
	A	B	A	B	A	B	C	D	C	D	C	D
<b>32</b>	9	6	9.5	6.5	6.5	3.5	8	5	12	9	11	8
<b>40</b>	13	8.5	13.5	9	10.5	6	12	7.5	16	11.5	15	10.5
<b>50</b>	11	11.5	11.5	12	8.5	9	10	10.5	14	14.5	13	13.5
<b>63</b>	13.5	14.5	14	15	11	12	12.5	13.5	16.5	17.5	15.5	16.5

Refer to page 12-13-1 for further information on other auto switches.

Type	Model	Electrical entry (direction)	Features
Reed switch	D-A80	Grommet (Perpendicular)	Without indicator light
	D-A80H	Grommet (In-line)	
	D-A80C	Connector (Perpendicular)	
	D-A90	Grommet (In-line)	
	D-A90V	Grommet (Perpendicular)	

\* For details, refer to Best Pneumatics Vol. 7/8/9/10, because there are other types of normally closed (NC = b contact) solid state switches. (D-F9G/F9H)

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

**MHT**

MHY

MHW

MRHQ

Misc.

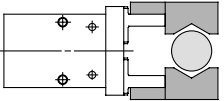
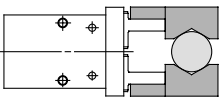
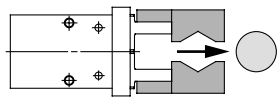
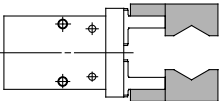
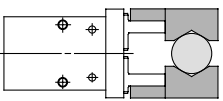
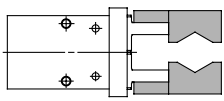
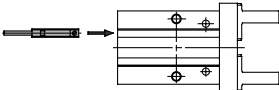
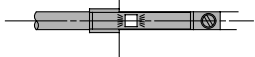
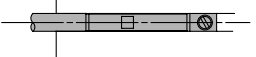
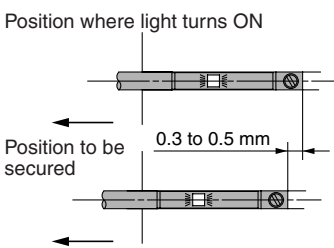
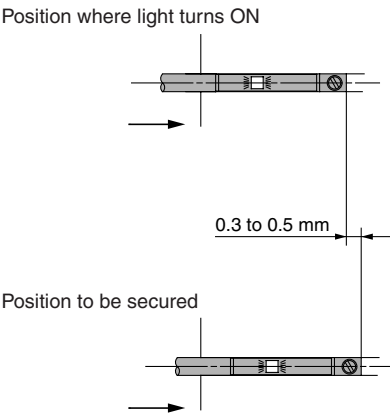
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# Series MHZ2/MHZJ2/MHK2/MHKL2/MHC2/MHT2 Auto Switch Installation Example and Mounting Position

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

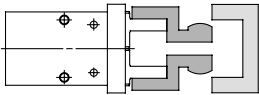
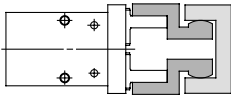
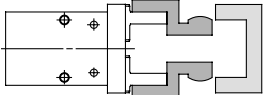
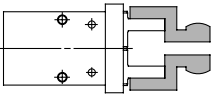
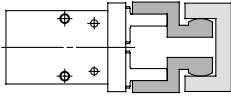
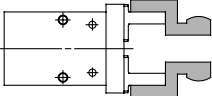
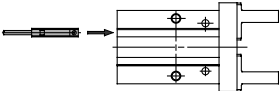
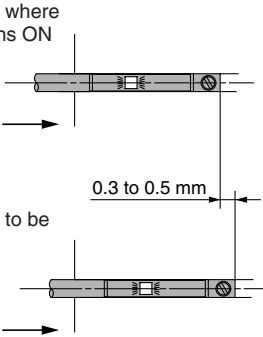
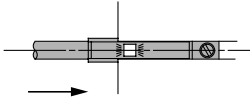
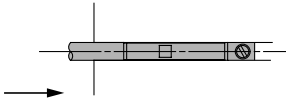
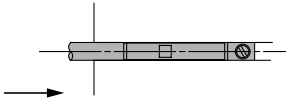

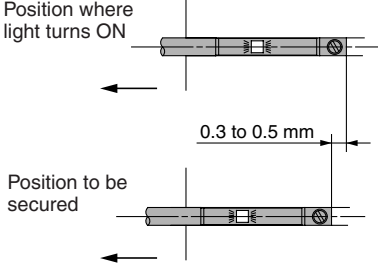


Note 1) It is recommended that gripping of a workpiece be performed close to the center of the finger stroke.

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	
<b>Position to be detected</b>		Position of fingers fully closed 	Position when gripping 	Position of fingers fully opened 	
<b>Operation of auto switch</b>		Switch turned ON when fingers return. (Light ON)	Switch turned ON when gripping a workpiece. (Light ON)	When a workpiece is held (Normal operation): Switch to turn OFF (Light not illuminating) When a workpiece is not held (Abnormal operation): Switch to turn ON (Light illuminating)	
<b>Detection combinations</b>	<b>One auto switch</b>	●			
			●		
	<b>Two auto switches</b>	●————●		●	
		●————●————●		●————●	
<b>How to determine auto switch installation position</b>		<b>Step 1)</b> Fully close the fingers. 	<b>Step 1)</b> Position fingers for gripping a workpiece. 	<b>Step 1)</b> Fully open the fingers. 	
At no pressure or low pressure, connect the switch to a power supply, and follow the directions.		<b>Step 2)</b> Insert the auto switch into the switch installation groove in the direction shown in the following drawing. 			
		<b>Step 3)</b> Move the auto switch in the direction of the arrow and fasten it at a position 0.3 to 0.5 mm beyond the position where the indicator light illuminates. 	<b>Step 3)</b> Slide the auto switch in the direction of the arrow until the indicator light illuminates. 		
		<b>Step 4)</b> Slide the auto switch further in the direction of the arrow until the indicator light goes out. 	<b>Step 4)</b> Slide the auto switch further in the direction of the arrow until the indicator light goes out. 		
		<b>Step 5)</b> Move the auto switch in the opposite direction 0.3 to 0.5 mm in the direction indicated by the arrow from its location when the indicator light comes on again. 	<b>Step 5)</b> Move the auto switch in the opposite direction 0.3 to 0.5 mm in the direction indicated by the arrow from its location when the indicator light comes on again. 		
				<b>Position where light turns ON</b>	<b>Position where light turns ON</b>
		<b>Position to be secured</b>	<b>Position to be secured</b>		
		0.3 to 0.5 mm	0.3 to 0.5 mm		

MHZ

MHF

MHL

MHR

MHK

MHS

MHC

MHT

MHY

MHW

MRHQ

Misc.

D-

20-



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.