

Pneumatic Robotic Hand

Parallel Robotic Hand Gripper

Model WPA



Compact Parallel Robotic Hand with High-Gripping Force Ability to Install Auto Switches for Gripper Detection

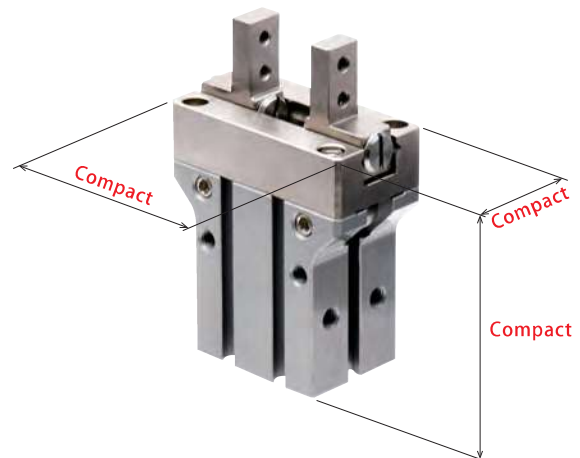
- **Wider Stroke**

Wider opening and closing stroke allows for gripping various sizes of workpieces.



- **Compact Body with High Gripping Force**

It has a compact body with stable and high gripping force. Reduction in size allows for less interference and optimal space utilization.



- **High Accuracy and High Rigidity**

The cross roller guide function allows for high rigidity and high accuracy opening/closing function.
Repeatability: $\pm 0.01\text{mm}$

- **Light Weight**

Reduced size and weight allows for best use of the robotic payload.

- **Long Operational Life**

Solid internal features provide for excellent durability.

- **Auto Switch Capability**

Easy to install and adjust auto switches for gripper detection.

Model No. Indication

WPA 016 0 - A2 S

1 2 3 4

※ Only 1 2 are marked on the product.

Please indicate the specifications of 3 4 if you need switches.

1 Cylinder Inner Diameter

012 : ϕ 12 mm

016 : ϕ 16 mm

020 : ϕ 20 mm

025 : ϕ 25 mm

2 Design No.

0 : Revision Number

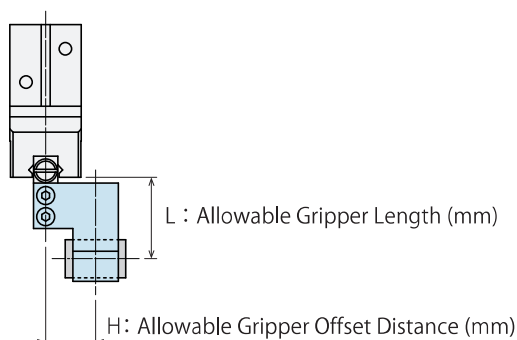
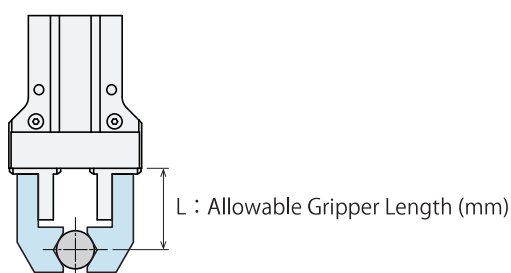
Specifications

Model No.		WPA0120	WPA0160	WPA0200	WPA0250
Cylinder Inner Diameter	mm	12	16	20	25
Gripping Force ^{※1} (Air Pressure : At 0.5MPa)	Closing Side	N	29	63	88
	Opening Side	N	39	73	105
Full Stroke	mm	6	8	12	16
Repeatability ^{※2}	mm	± 0.01			
Stroke Error	mm	Opened State : $-0.5 \sim +1$ / Closed State : $-1 \sim +0.5$			
Allowable Gripper Length L (Air Pressure : at 0.5MPa) ^{※3}	mm	30	40	50	60
Allowable Gripper Offset Distance H (Air Pressure : at 0.5MPa) ^{※3}	mm	12	15	25	35
Maximum Cycle / min.		90			
Maximum Operating Pressure	MPa	0.7			
Minimum Operating Pressure	MPa	0.2			
Withstanding Pressure	MPa	1.05			
Operating Temperature Range	°C	5 ~ 60			
Usable Fluid		Dry Air			
Weight	kg	0.07	0.17	0.32	0.56

Notes : ※1. Gripping force indicates the calculated value based on the gripper length (L).

※2. Repeatability under the same condition (no load).

※3. L : Allowable Gripper Length (mm), H : Allowable Gripper Offset Distance (mm). (Air Pressure : at 0.5MPa)



3 Auto Switch Type

Blank : Without Auto Switch

A2 : 2-Wire Reed Auto Switch (Cable: 1m)

A2L : 2-Wire Reed Auto Switch (Cable: 3m)

A2V : L-Shaped 2-Wire Reed Auto Switch (Cable: 1m)

A2VL : L-Shaped 2-Wire Reed Auto Switch (Cable: 3m)

B2 : 3-Wire Solid State Auto Switch (Cable: 1m)

B2L : 3-Wire Solid State Auto Switch (Cable: 3m)

B3 : L-Shaped 3-Wire Solid State Auto Switch (Cable: 1m)

B3L : L-Shaped 3-Wire Solid State Auto Switch (Cable: 3m)

※ Please refer to P.405 ~ P.414 for details on auto switches.

4 Number of Auto Switches[※]

Blank : 2

S : 1

※ Only when selecting the auto switch option other than 3 **Blank**.

Locating
+
Clamp

Locating

Hand • Clamp

Support

Valve • Coupler

Cautions • Others

Pallet Gripper

WVA

Locating
Pin Clamp

SWP

High-Power
Pull Stud Clamp

WPT

JES

FA Pneumatic
Hole Clamp

WKH

Lifting
Hole Clamp

SWJ

Ball Lock
Cylinder

WKA

Pneumatic
Robotic Hands

WPW-C

WPS-C

WPA

WPH

WPP

WPQ

Auto Switch
Proximity Switch

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High-Power Pneumatic
Link Clamp

WCE

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SWA

Pneumatic
Swing Clamp

WHA

Double Piston
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Swing Clamp

WHD

Pneumatic
Link Clamp

WCA

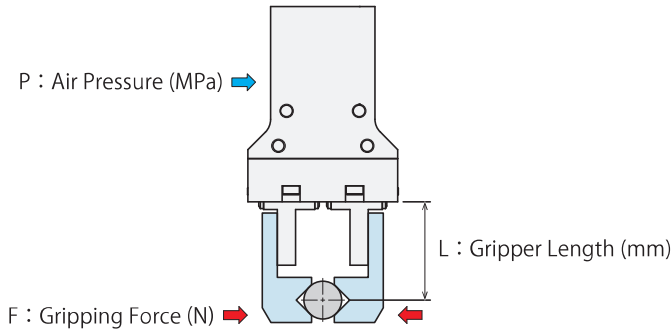
Air Flow
Control Valve

BZW

Manifold
Block

WHZ-MD

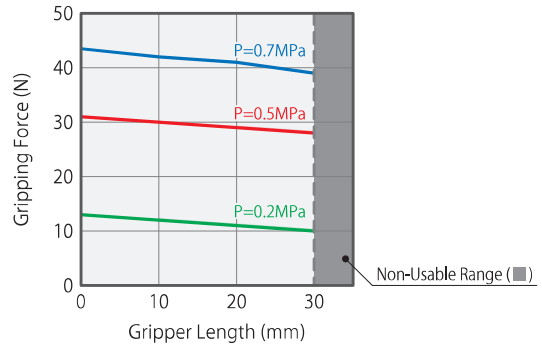
● Gripping Force Performance Curve : Closing Side



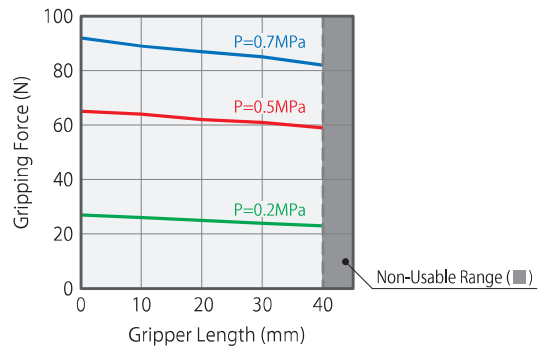
Notes:

1. This chart and graph show the relationship among: F:Gripping Force (N), P: Air Pressure (MPa) and L:Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

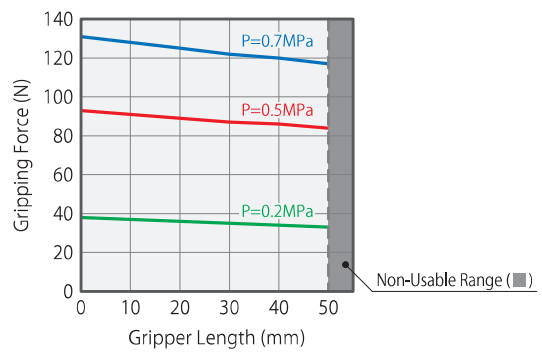
WPA0120				(N)
Air Pressure (MPa)	Gripper Length L (mm)			
	10	20	30	
0.7	42	41	39	
0.5	30	29	28	
0.2	12	11	10	



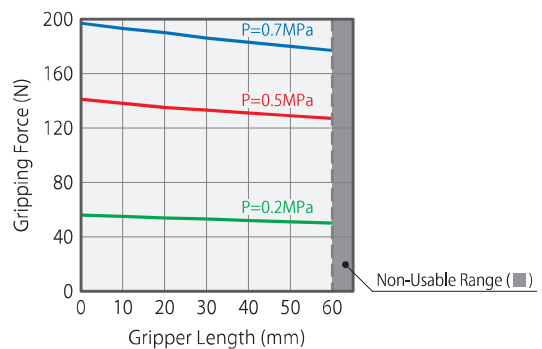
WPA0160					(N)
Air Pressure (MPa)	Gripper Length L (mm)				
	10	20	30	40	
0.7	89	87	85	82	
0.5	64	62	61	59	
0.2	26	25	24	23	



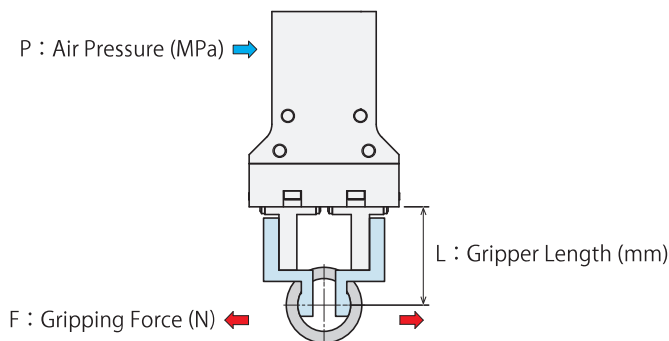
WPA0200						(N)
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	50	
0.7	128	125	122	120	117	
0.5	91	89	87	86	84	
0.2	37	36	35	34	33	



WPA0250							(N)
Air Pressure (MPa)	Gripper Length L (mm)						
	10	20	30	40	50	60	
0.7	193	190	186	183	180	177	
0.5	138	135	133	131	129	127	
0.2	55	54	53	52	51	50	



● Gripping Force Performance Curve : Opening Side



WPA0120 (N)				
Air Pressure (MPa)	Gripper Length L (mm)			
	10	20	30	
0.7	56	54	52	
0.5	40	39	37	
0.2	16	15	14	

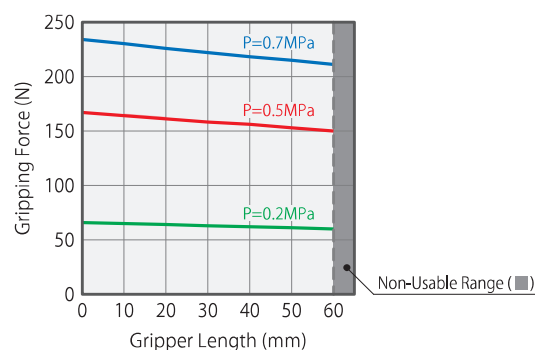
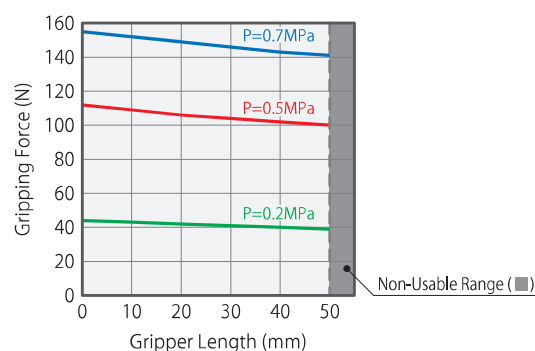
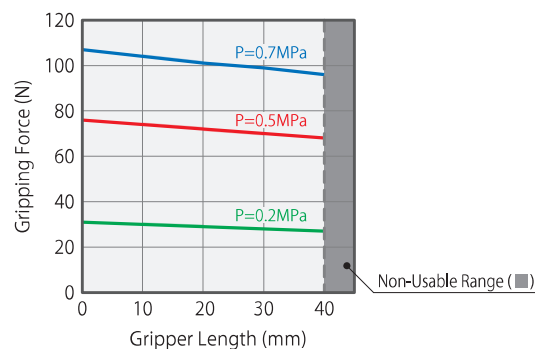
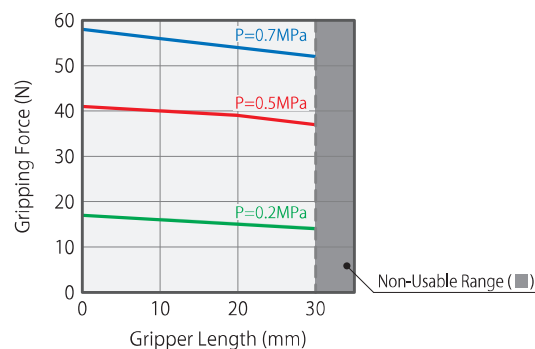
WPA0160 (N)					
Air Pressure (MPa)	Gripper Length L (mm)				
	10	20	30	40	
0.7	104	101	99	96	
0.5	74	72	70	68	
0.2	30	29	28	27	

WPA0200 (N)						
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	50	
0.7	152	149	146	143	141	
0.5	109	106	104	102	100	
0.2	43	42	41	40	39	

WPA0250 (N)							
Air Pressure (MPa)	Gripper Length L (mm)						
	10	20	30	40	50	60	
0.7	230	226	222	218	215	211	
0.5	164	161	158	156	153	150	
0.2	65	64	63	62	61	60	

Notes:

- This chart and graph show the relationship among: F: Gripping Force (N), P: Air Pressure (MPa) and L: Gripper Length (mm).
- Operation in the non-usable range may cause deformation, galling or air leakage.

Locating
+
Clamp

Locating

Hand • Clamp

Support

Valve • Coupler

Cautions • Others

Pallet Gripper

WVA

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WPT

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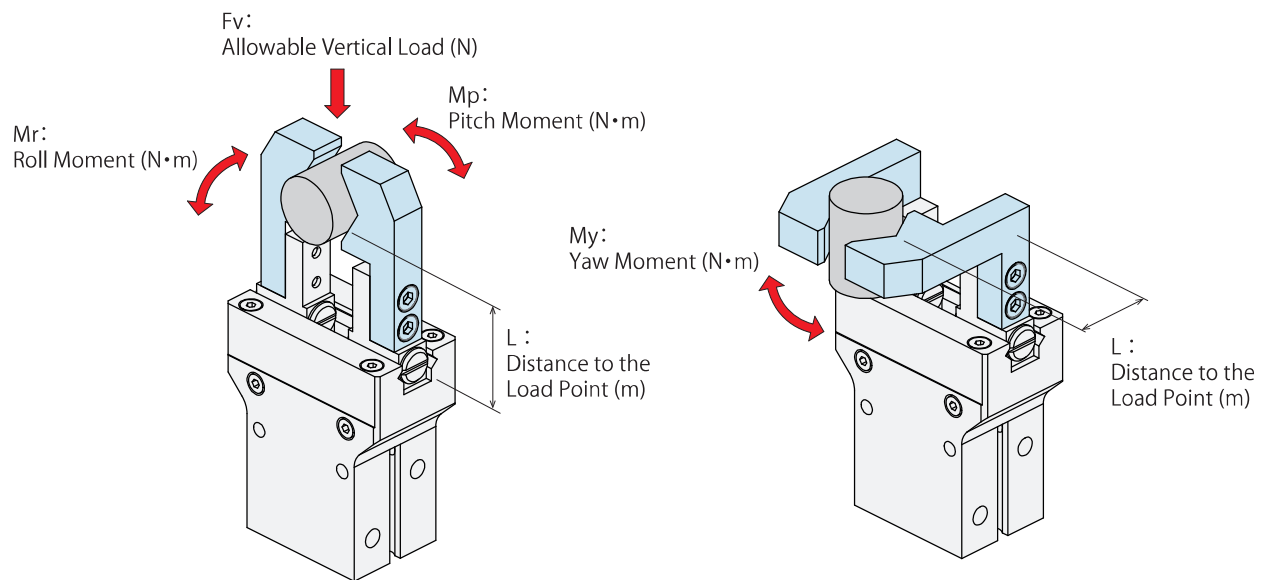
BZW

Manifold
Block

WHZ-MD

● Allowable Load and Allowable Moment

Model No.	Fv : Allowable Vertical Load (N)	Maximum Allowable Moment (N · m)		
		Mp : Pitch Moment	My : Yaw Moment	Mr : Roll Moment
WPA0120	79	0.28	0.28	0.63
WPA0160	141	0.67	0.67	1.77
WPA0200	169	0.84	0.84	2.61
WPA0250	265	1.65	1.65	4.93



Notes :

1. The values on the list are the static values.
2. The arrows show the direction of Fv : Allowable Vertical Load (N), Mp : Pitch Moment (N · m), My : Yaw Moment (N · m) and Mr : Roll Moment (N · m).

● Allowable Load Calculation Formula

$$F : \text{Allowable Load (N)} = \frac{M : \text{Maximum Allowable Moment (N} \cdot \text{m)}}{L : \text{Distance to the Load Point (m)}}$$

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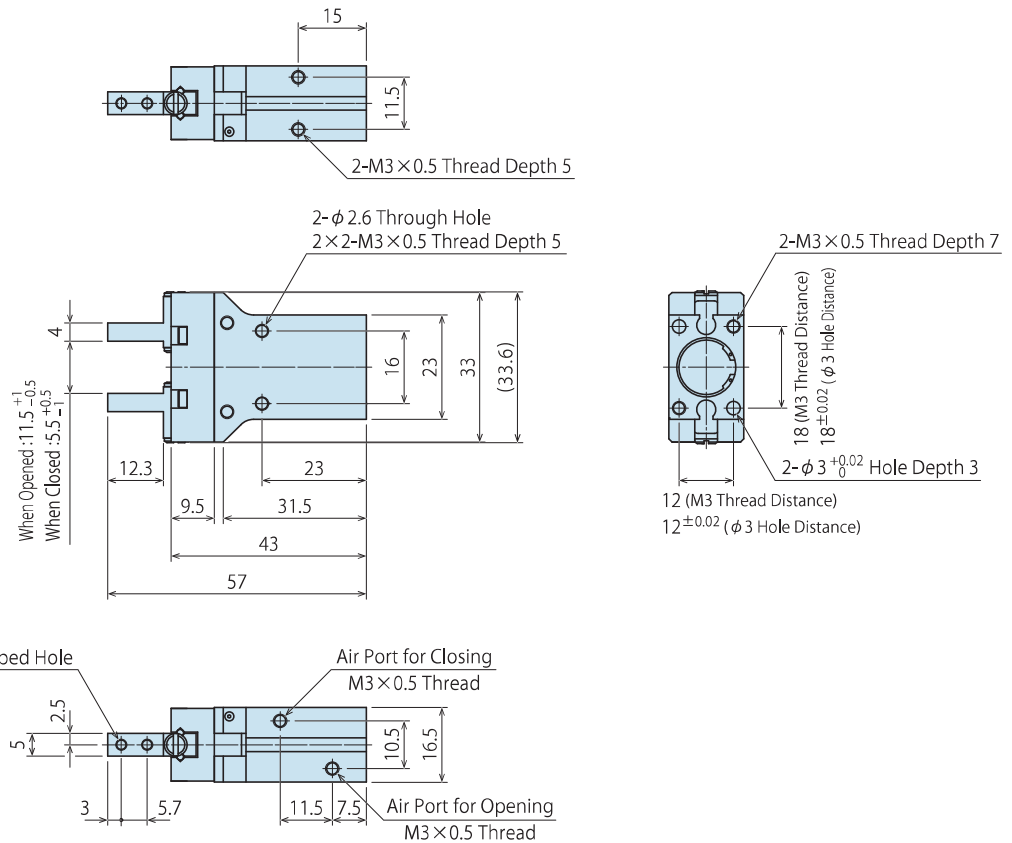
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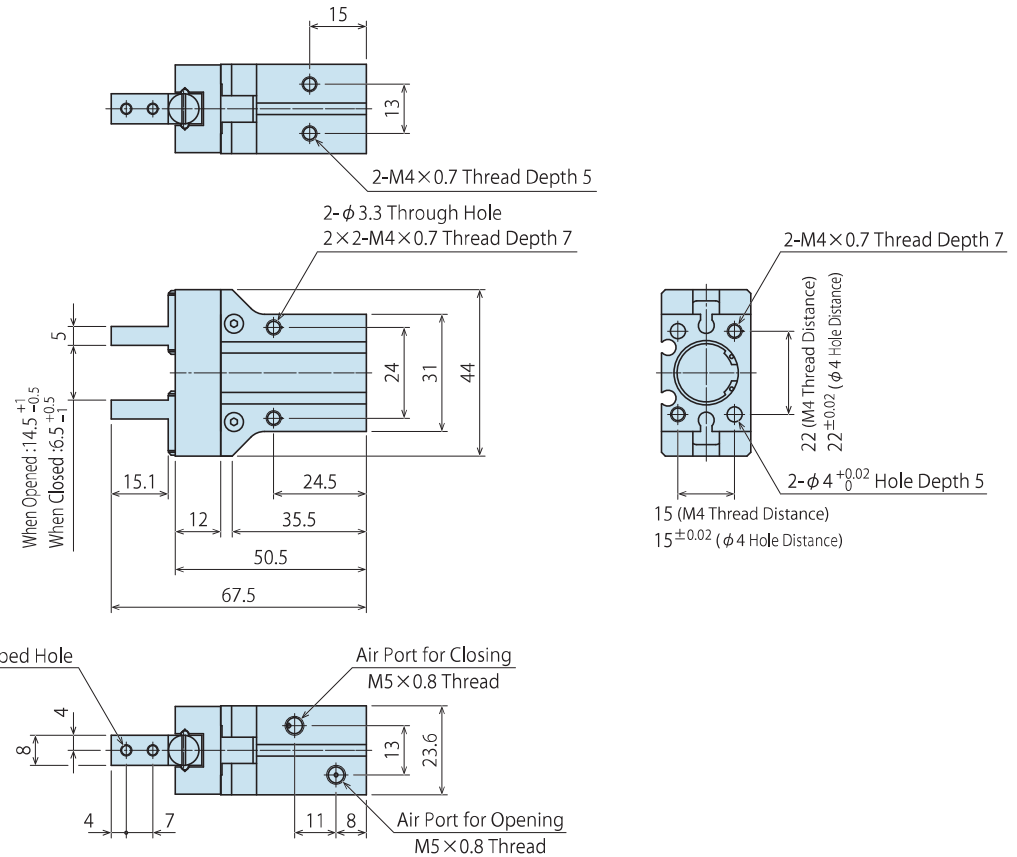
External Dimensions : WPA0120

※ The drawing shows the opened state of WPA0120.



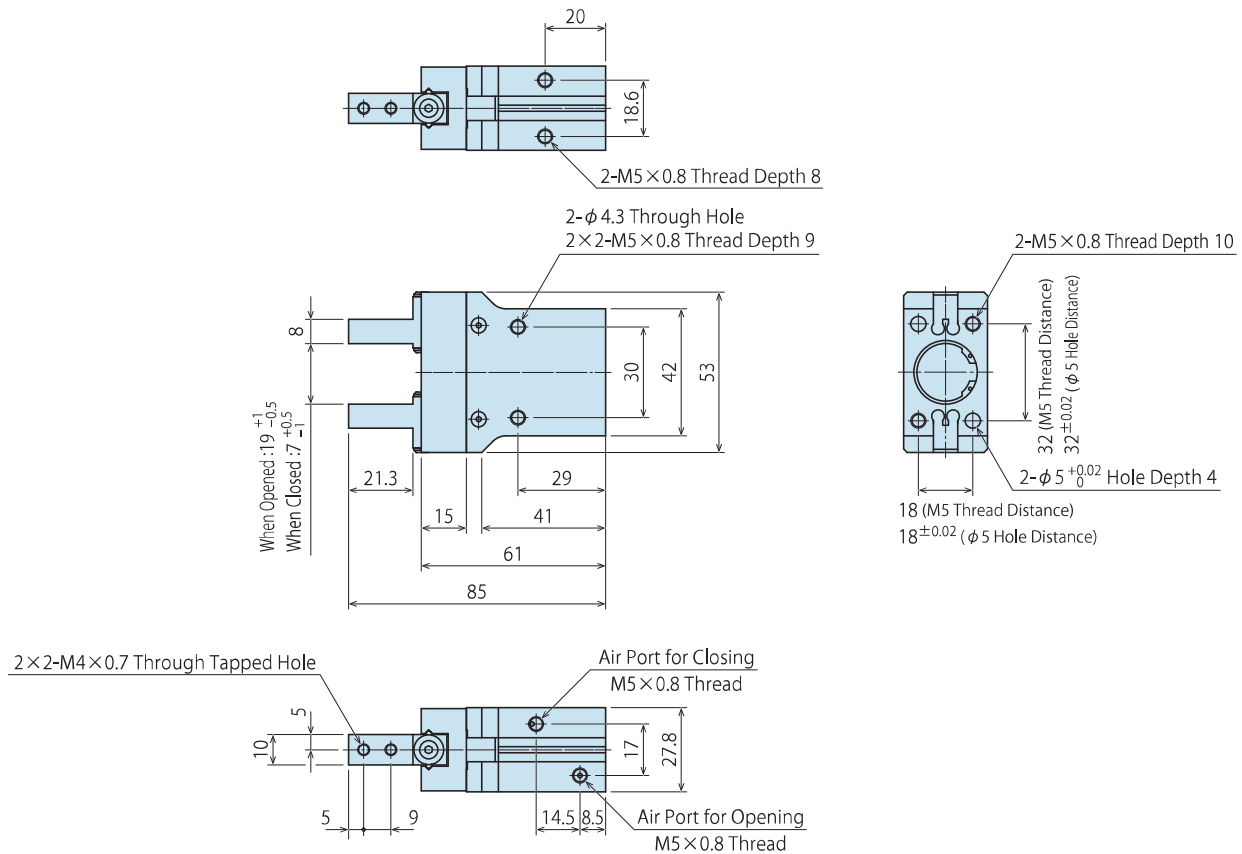
External Dimensions : WPA0160

※ The drawing shows the opened state of WPA0160.



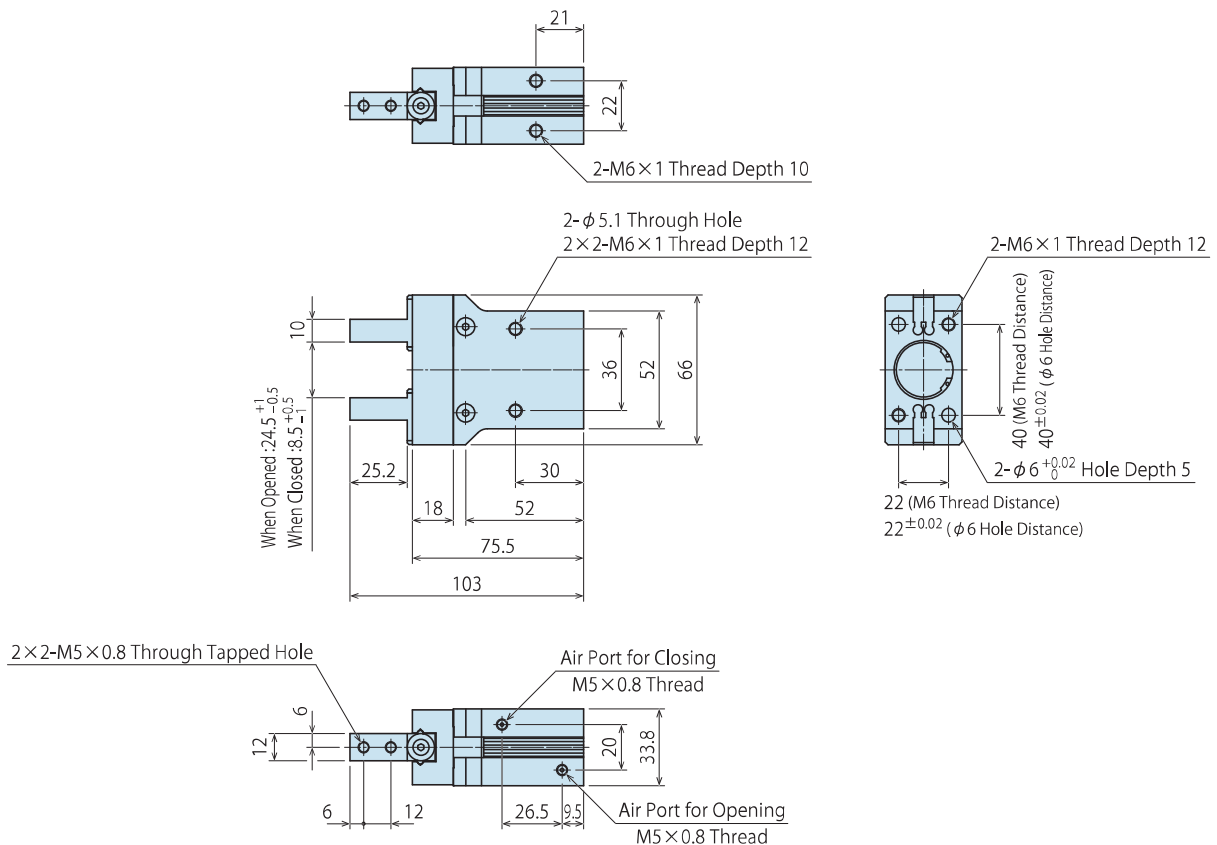
External Dimensions : WPA0200

※ The drawing shows the opened state of WPA0200.



External Dimensions : WPA0250

※ The drawing shows the opened state of WPA0250.

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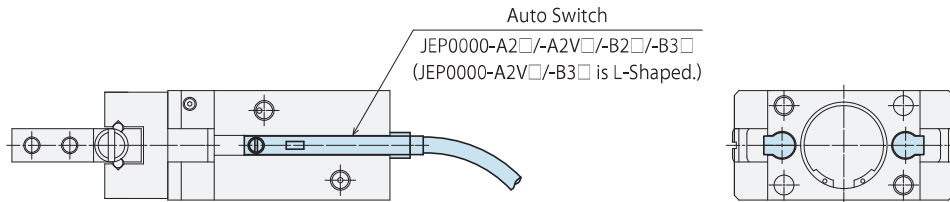
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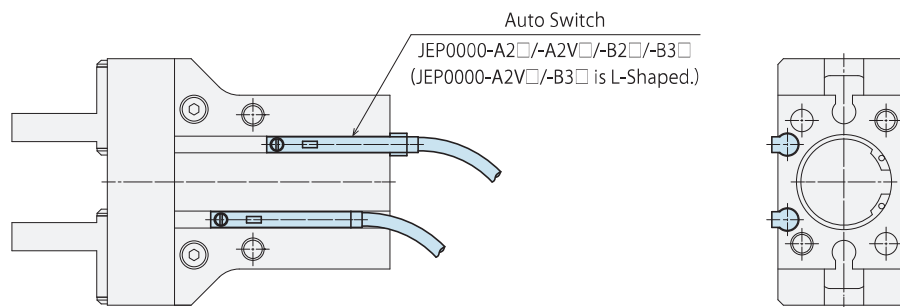
● External Dimensions : Auto Switch Installation Image (Reference)

※ This drawing shows the installation image of Auto Switch JEP0000-A2□ and JEP0000-B2□.
 Installation image of L-Shaped Auto Switch -A2V□ and -B3□ is different from this.
 Adjust installation position depending on the stroke position.

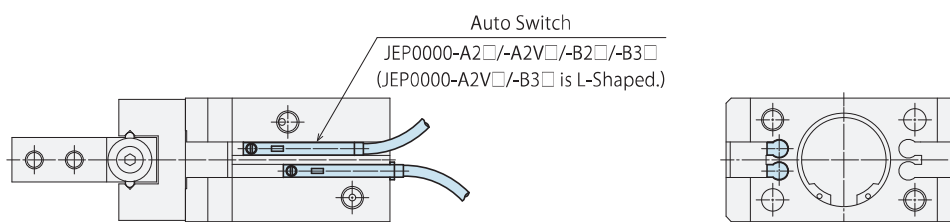
● For WPA0120



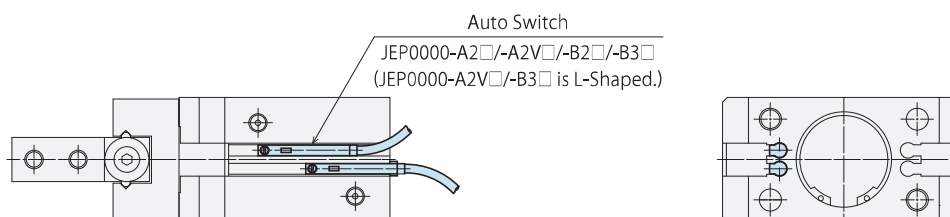
● For WPA0160



● For WPA0200

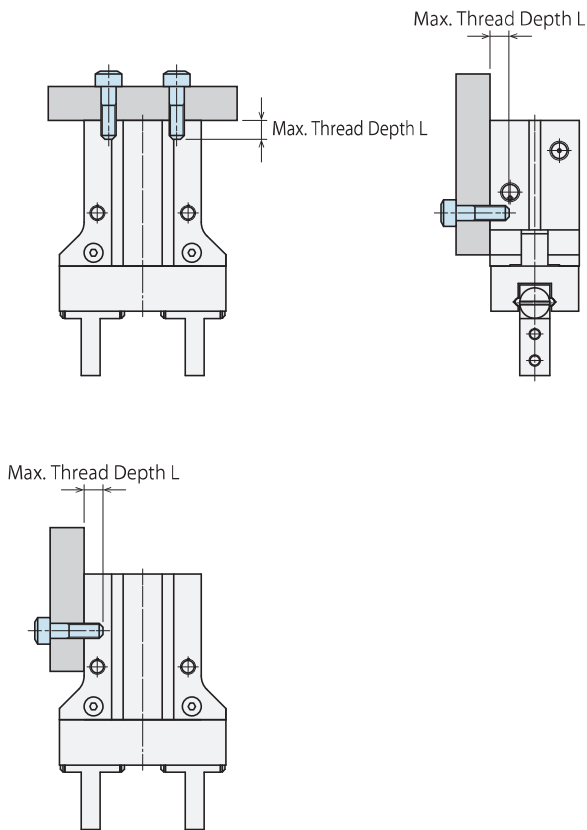


● For WPA0250



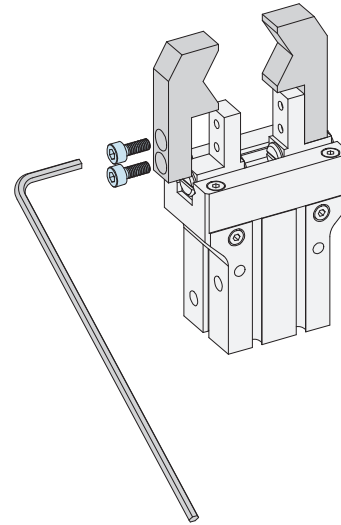
● Installation Method

● Tightening Torque for Cylinder Body



Model No.	Thread Size	Tightening Torque (N · m)	Max. Thread Depth L (mm)
WPA0120	M3×0.5	1.1	5
WPA0160	M4×0.7	2.5	5
WPA0200	M5×0.8	5.0	8
WPA0250	M6×1	7.9	10

● Tightening Torque for Gripper



Model No.	Thread Size	Tightening Torque (N · m)	Max. Thread Depth L (mm)
WPA0120	M2.5×0.45	0.5	4
WPA0160	M3×0.5	1.1	5
WPA0200	M4×0.7	2.5	8
WPA0250	M5×0.8	5.0	10

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