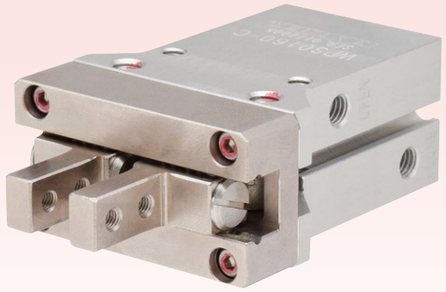
Pneumatic Robotic Hand

High-Power Parallel Robotic Hand Gripper

Closing Side Only

Model **WPS-C**



Built-in Mechanical Lock enables Powerful Gripping Force even with a Compact and Light Body

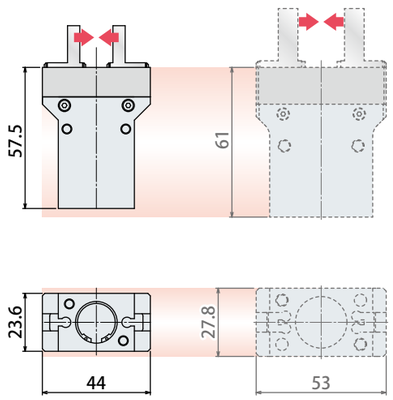
PAT.

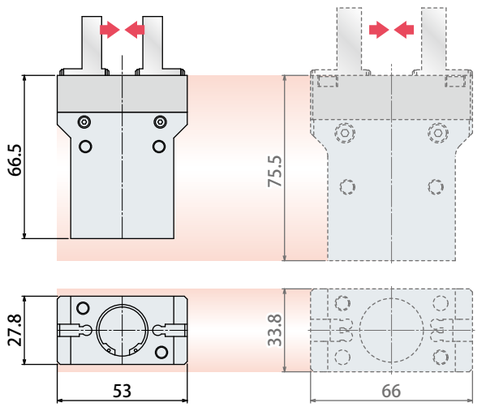
• Powerful Gripping Force

Mechanical lock allows for powerful gripping force with a more compact and lighter body than model WPA.

Note: For WPS, mechanical locking works only when gripping to closing direction.

New Model **WPS0160-C** High-Power Model	Model WPA0200 Standard Model	New Model **WPS0200-C** High-Power Model	Model WPA0250 Standard Model
Mass **220g**	**320g**	**400g**	**560g**
Gripping Force **93.7N**※	**88N**※	**132.7N**※	**133N**※





※ It shows gripping force on the closing side at air pressure 0.5MPa.

• High Accuracy and Rigidity

The linear guide function allows for high rigidity and high accuracy opening/closing function.

Repeatability：±0.01mm

• Auto Switch Capability

Easy to install and adjust auto switches for gripper detection.

Model No. Indication

WPS 016 0 - C - A2 S

1 2 3 4 5

※ Only 1 2 3 are marked on the product.
Please specify 4 5 if you need auto switches.

1 Cylinder Inner Diameter

016 : ϕ16 mm
020 : ϕ20 mm

2 Design No.

0 : Revision Number

3 Gripping Direction

C : Closing Only

4 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)
B3C : L-Shaped 3-Wire Solid State Auto Switch (Cable: 1m)
B3CL : L-Shaped 3-Wire Solid State Auto Switch (Cable: 3m)
B3B : L-Shaped 2-Wire Solid State Auto Switch (Cable: 1m)
B3BL : L-Shaped 2-Wire Solid State Auto Switch (Cable: 3m)

※ Please refer to P.405 ~ P.414 for details of auto switches.
※ When using an auto switch not made by Kosmek, check specifications of each manufacturer.

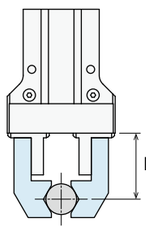
5 Number of Auto Switches ※ Only for 4 Auto Switch

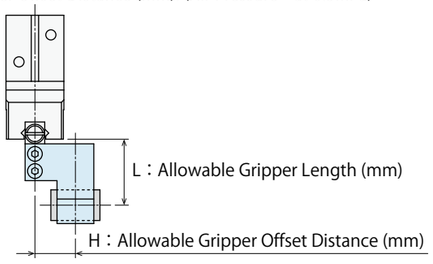
Blank : 2
S : 1

Specifications

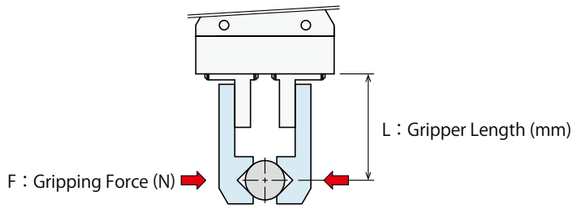
Model No.			WPS0160-C	WPS0200-C
Cylinder Inner Diameter ※1		mm	16	20
Gripping Force ※2 (Air Pressure：At 0.5MPa)	Closing Side	N	93.7	132.7
	Opening Side	N	(10.8)	(17.9)
Full Stroke		mm	6	8
Repeatability ※3		mm	±0.01	
Stroke Error		mm	Opened State：−0.5 ~ +1 / Closed State：−1 ~ +0.5	
Allowable Gripper Length L (Air Pressure：at 0.5MPa) ※4		mm	40	50
Allowable Gripper Offset Distance H (Air Pressure：at 0.5MPa) ※4		mm	15	25
Maximum Cycle / min.			90	
Cylinder Capacity (Clamping w/o Workpiece)	Closing Side	cm^3	1.1	1.9
	Opening Side	cm^3	1.2	2.0
Maximum Operating Pressure		MPa	0.5	
Minimum Operating Pressure		MPa	0.2	
Withstanding Pressure		MPa	0.75	
Operating Temperature Range		℃	5 ~ 60	
Usable Fluid			Dry Air	
Weight		kg	0.22	0.40

Notes：※1. Gripping force and holding force cannot be calculated from the cylinder inner diameter. Please refer to the gripping force curve and holding force curve.
※2. Gripping force indicates the calculated value based on the gripper length (L).
※3. Repeatability under the same condition (no load).
※4. L：Allowable Gripper Length (mm), H：Allowable Gripper Offset Distance (mm). (Air Pressure：at 0.5MPa)





Gripping Force Performance Curve : Closing Side

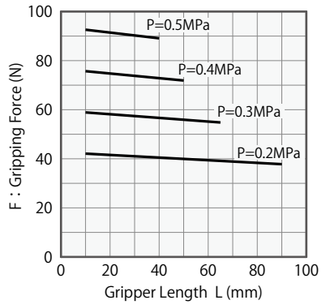


Notes:

1. This table and graph show the relationship among F:Gripping Force (N), L:Gripper Length (mm) and P:Air Pressure (MPa).
2. Operation in the non-usable range may cause deformation, galling or air leakage.
3. WPS is for gripping the closing side only and incapable of gripping the opening side.

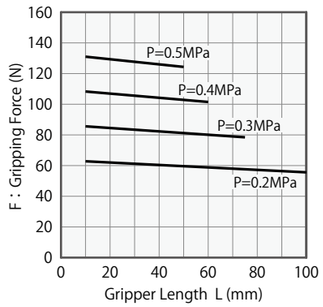
WPS0160-C

Air Pressure (MPa)	Gripping Force (N) Non-Usable Range (■) Gripper Length L (mm)						Max. Gripper Length (L) (mm)
	10	20	30	40	60	80	
0.5	93	91	90	89			40
0.4	76	75	74	73			50
0.3	59	58	57	57	55		65
0.2	42	42	41	41	39	38	90

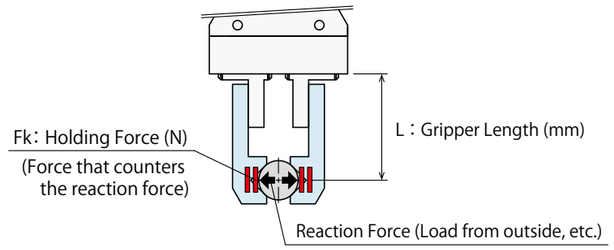


WPS0200-C

Air Pressure (MPa)	Gripping Force (N) Non-Usable Range (■) Gripper Length L (mm)						Max. Gripper Length (L) (mm)
	10	20	40	60	80	100	
0.5	131	129	126				50
0.4	108	107	104	101			60
0.3	86	85	82	80			75
0.2	63	62	60	59	57	56	100



Holding Force Performance Curve : Closing Side



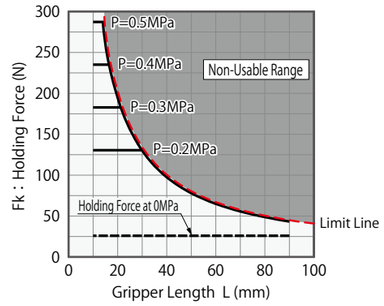
Notes :

1. Holding force is the force that counters the reaction force and different from gripping force. Please keep in mind that it can produce displacement depending on lever rigidity even if the reaction force is lower than holding force. (If slight displacement is also not allowed, please keep the reaction force beyond gripping force from being applied.)
2. This table and graph show the relationship among Fk:Holding Force (N), L:Gripper Length (mm) and P:Air Pressure (MPa).
3. Operation in the non-usable range may cause deformation, galling or air leaks.

※1. Holding force at 0MPa is the holding force when air pressure drops to 0MPa after gripping with more than the minimum operating pressure.

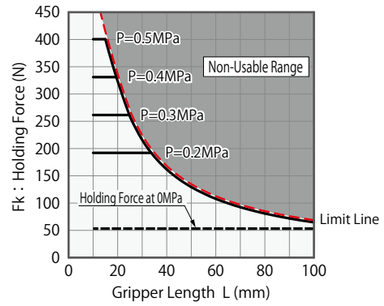
WPS0160-C

Air Pressure (MPa)	Holding Force (N) Non-Usable Range (■) Gripper Length L (mm)					
	10	20	30	40	60	80
0.5	287	195	130	98		
0.4	235	195	130	98		
0.3	183	183	130	98	65	
0.2	131	131	130	98	65	49
At 0MPa ※1	26					



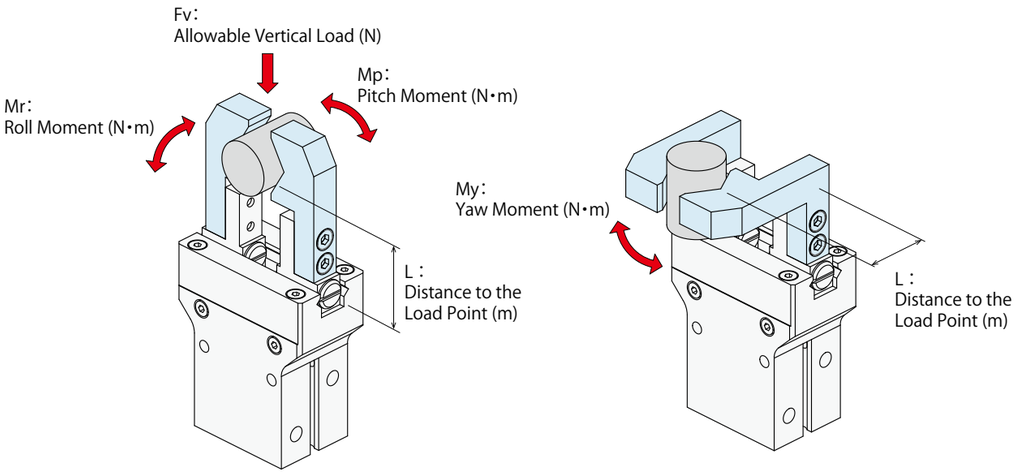
WPS0200-C

Air Pressure (MPa)	Holding Force (N) Non-Usable Range (■) Gripper Length L (mm)					
	10	20	40	60	80	100
0.5	400	325	163			
0.4	331	325	163	108		
0.3	262	262	163	108		
0.2	192	192	163	108	81	65
At 0MPa ※1	53					



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
WPS0160-C	141	0.67	0.67	1.77
WPS0200-C	169	0.84	0.84	2.61



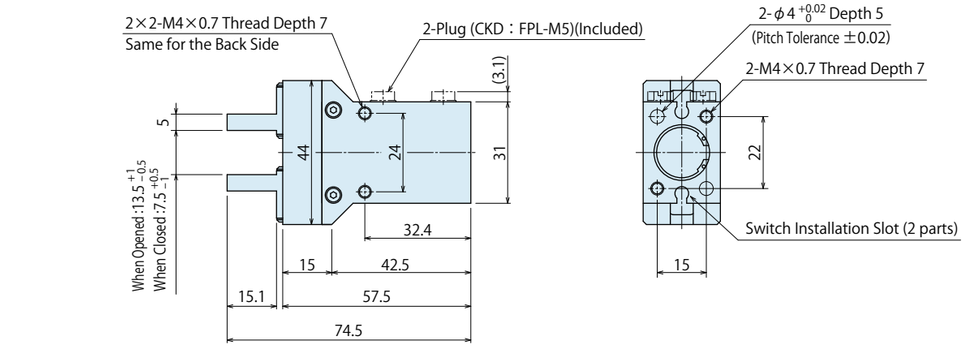
Notes：
1. The values on the list are the static values.
2. The arrows show the direction of Fv：Allowable Vertical Load (N), Mp：Pitch Moment (N・m), My：Yaw Moment (N・m) and Mr：Roll Moment (N・m).

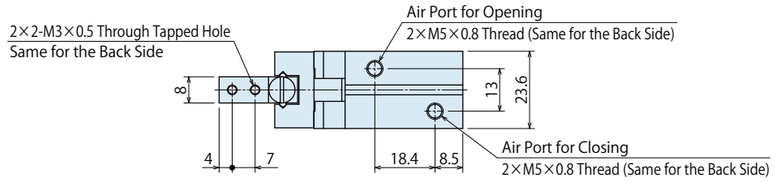
Allowable Load Calculation Formula

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

External Dimensions：WPS0160-C

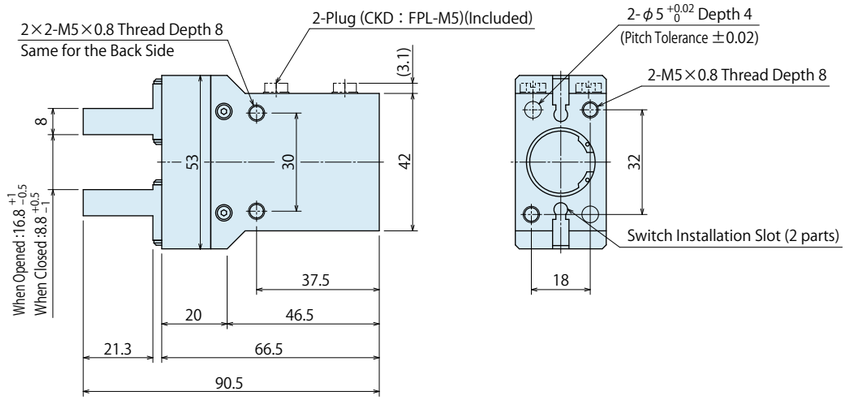
※ The drawing shows the opened state of WPS0160-C.

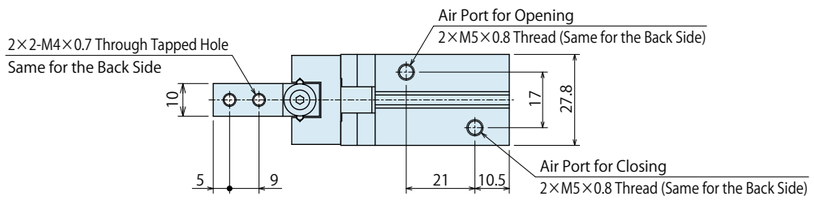




External Dimensions：WPS0200-C

※ The drawing shows the opened state of WPS0200-C.

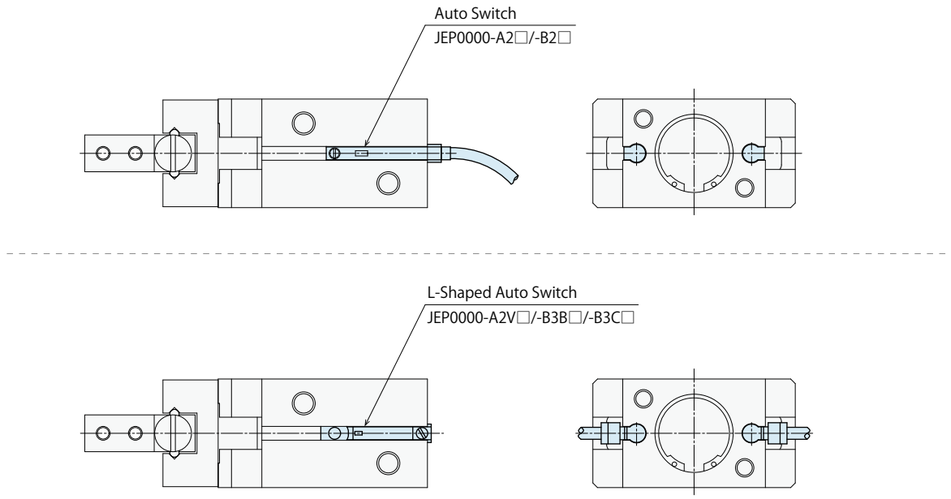




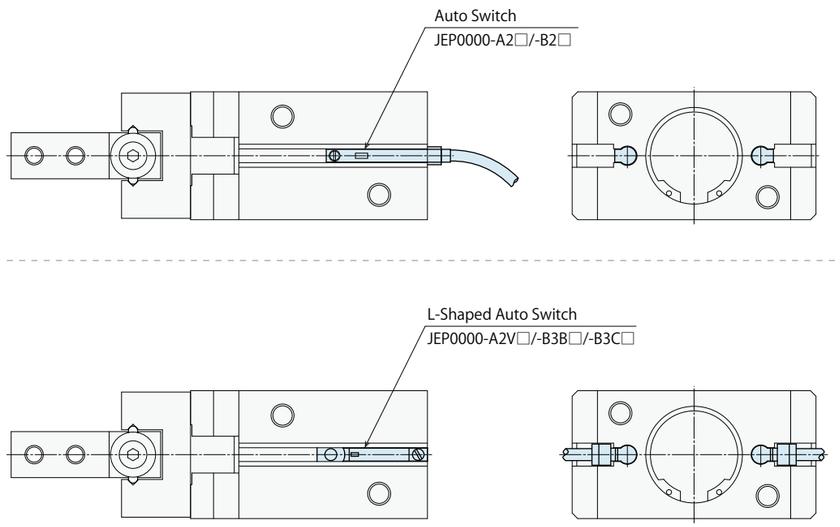
External Dimensions：Auto Switch Installation Image (Reference)

※ This drawing shows the installation image of Auto Switch JEP0000-A2□, JEP0000-A2V□, JEP0000-B2□, JEP0000-B3B□ and JEP0000-B3C□.
Adjust installation position depending on the stroke position.
An auto switch may be stuck out of the robotic hand depending on the installation position and direction.

For WPS0160-C



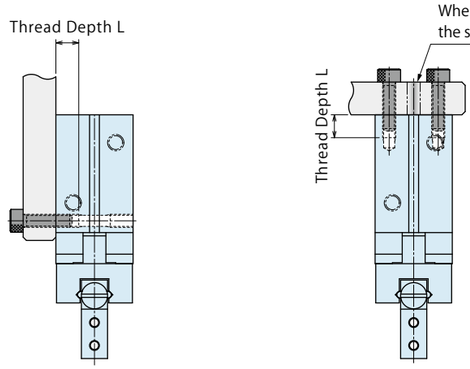
For WPS0200-C



Installation Method

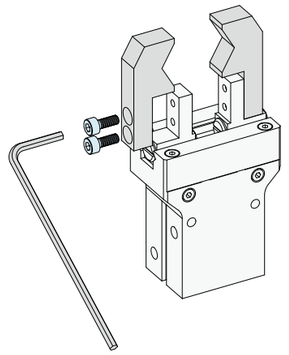
Installation Method and Tightening Torque

【Installation Method 1】 【Installation Method 2】



Model No.	Nominal×Pitch	Tightening Torque (N・m)	Thread Depth L (mm)
WPS0160-C	M4×0.7	2.5	7
WPS0200-C	M5×0.8	5.0	8

Gripper Installation Method and Tightening Torque

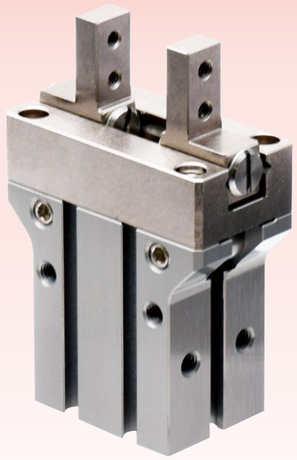


Model No.	Nominal×Pitch	Tightening Torque (N・m)
WPS0160-C	M3×0.5	1.1
WPS0200-C	M4×0.7	2.5

Pneumatic Robotic Hand

Parallel Robotic Hand Gripper

Model **WPA**



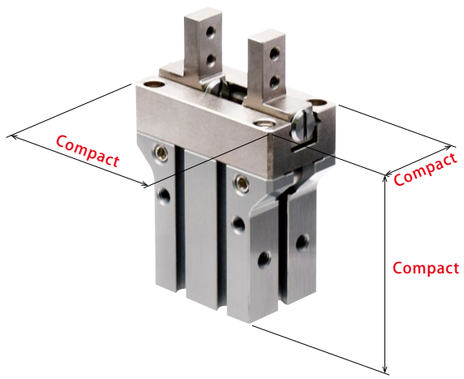
Compact Parallel Robotic Hand with High-Gripping Force Ability to Install Auto Switches for Gripper Detection

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: ±0.01mm

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 : φ12 mm
016 : φ16 mm
020 : φ20 mm
025 : φ25 mm

2 Design No.

0 : Revision Number

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)
B3C : L-Shaped 3-Wire Solid State Auto Switch (Cable: 1m)
B3CL : L-Shaped 3-Wire Solid State Auto Switch (Cable: 3m)
B3B : L-Shaped 2-Wire Solid State Auto Switch (Cable: 1m)
B3BL : L-Shaped 2-Wire Solid State Auto Switch (Cable: 3m)

※ Please refer to P.405 ~ P.414 for details of auto switches.
※ When using an auto switch not made by Kosmek, check specifications of each manufacturer.

4 Number of Auto Switches※

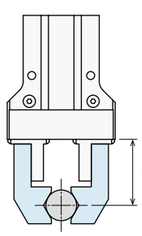
Blank : 2
S : 1

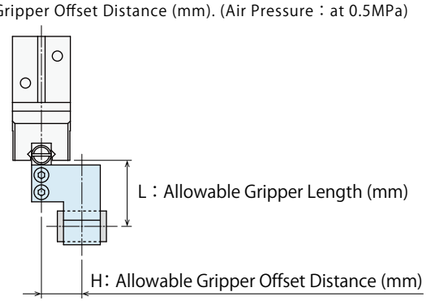
※ Only when selecting the auto switch option other than 3 **Blank**.

Specifications

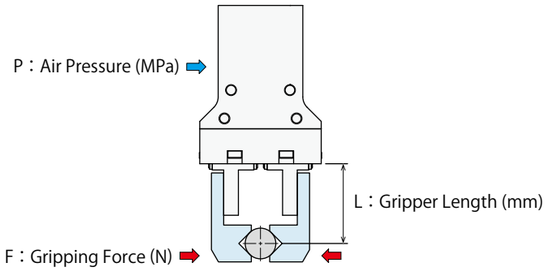
Model No.			WPA0120	WPA0160	WPA0200	WPA0250
Cylinder Inner Diameter		mm	12	16	20	25
Gripping Force ※1	Closing Side	N	29	63	88	133
(Air Pressure：At 0.5MPa)	Opening Side	N	39	73	105	158
Full Stroke		mm	6	8	12	16
Repeatability ※2		mm	±0.01			
Stroke Error		mm	Opened State：-0.5～+1 / Closed State：-1～+0.5			
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			
Cylinder Capacity	Closing Side	cm^3	0.2	0.7	1.3	2.6
(Clamping w/o Workpiece)	Opening Side	cm^3	0.3	0.8	1.6	3.1
Maximum Operating Pressure		MPa	0.7			
Minimum Operating Pressure		MPa	0.2			
Withstanding Pressure		MPa	1.05			
Operating Temperature Range		℃	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)





Gripping Force Performance Curve：Closing Side

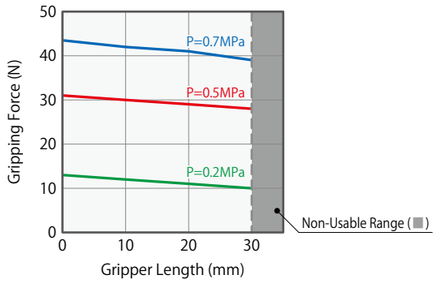


Notes：
1. This chart and graph show the relationship among: F：Gripping Force (N), P：Air Pressure (MPa) and L：Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPA0120

(N)

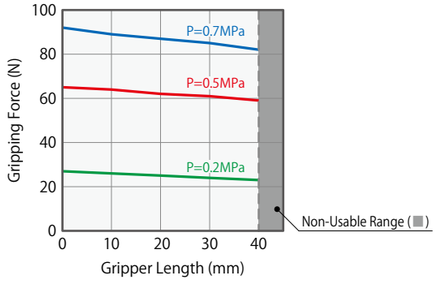
Air Pressure (MPa)	Gripper Length L (mm)		
	10	20	30
0.7	42	41	39
0.5	30	29	28
0.2	12	11	10



WPA0160

(N)

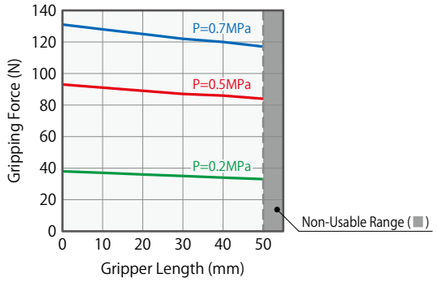
Air Pressure (MPa)	Gripper Length L (mm)			
	10	20	30	40
0.7	89	87	85	82
0.5	64	62	61	59
0.2	26	25	24	23



WPA0200

(N)

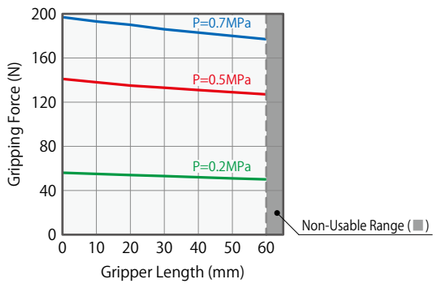
Air Pressure (MPa)	Gripper Length L (mm)				
	10	20	30	40	50
0.7	128	125	122	120	117
0.5	91	89	87	86	84
0.2	37	36	35	34	33



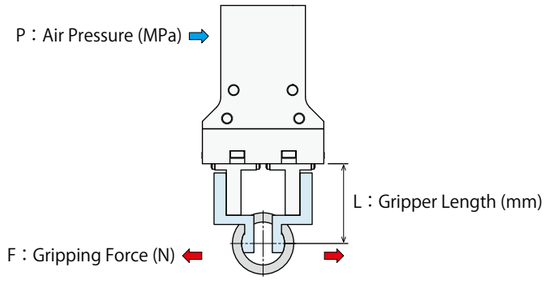
WPA0250

(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

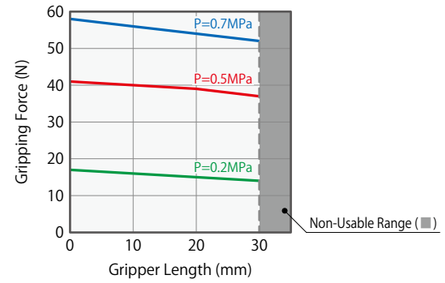


Notes：
1. This chart and graph show the relationship among: F：Gripping Force (N), P：Air Pressure (MPa) and L：Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPA0120

(N)

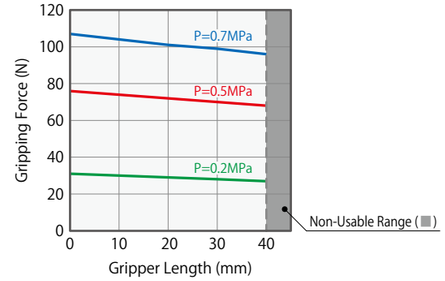
Air Pressure (MPa)	Gripper Length L (mm)		
	10	20	30
0.7	56	54	52
0.5	40	39	37
0.2	16	15	14



WPA0160

(N)

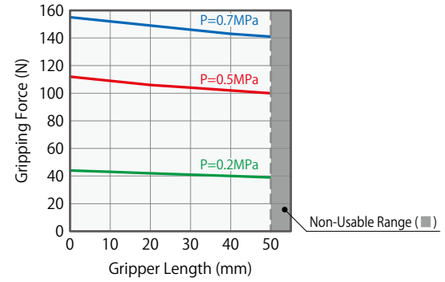
Air Pressure (MPa)	Gripper Length L (mm)			
	10	20	30	40
0.7	104	101	99	96
0.5	74	72	70	68
0.2	30	29	28	27



WPA0200

(N)

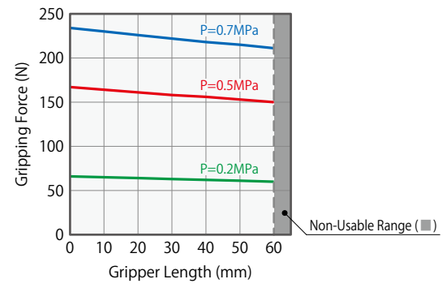
Air Pressure (MPa)	Gripper Length L (mm)				
	10	20	30	40	50
0.7	152	149	146	143	141
0.5	109	106	104	102	100
0.2	43	42	41	40	39



WPA0250

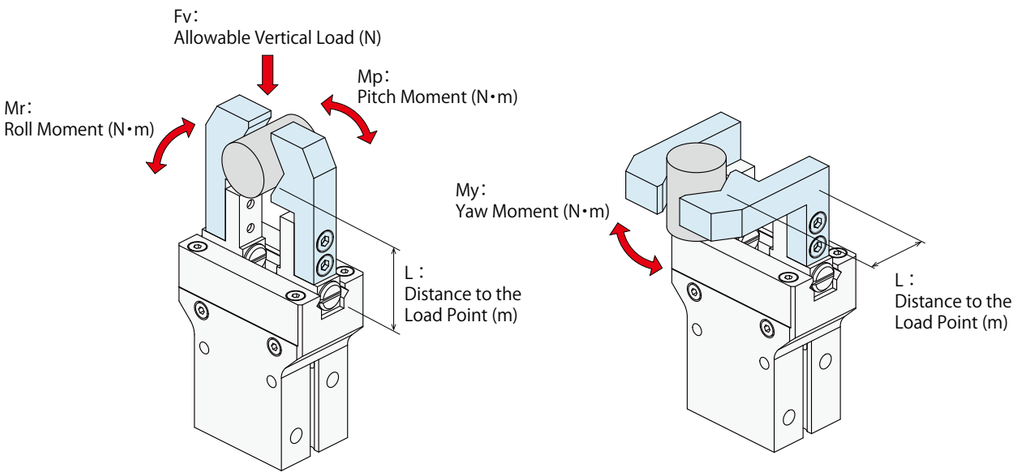
(N)

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



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：

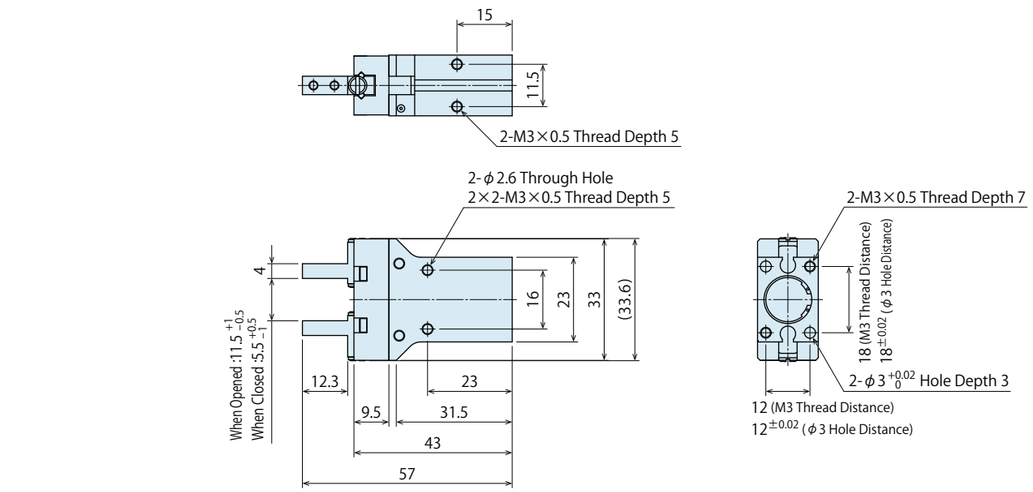
1. The values on the list are the static values.
2. The arrows show the direction of Fv：Allowable Vertical Load (N), Mp：Pitch Moment (N・m), My：Yaw Moment (N・m) and Mr：Roll Moment (N・m).

Allowable Load Calculation Formula

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

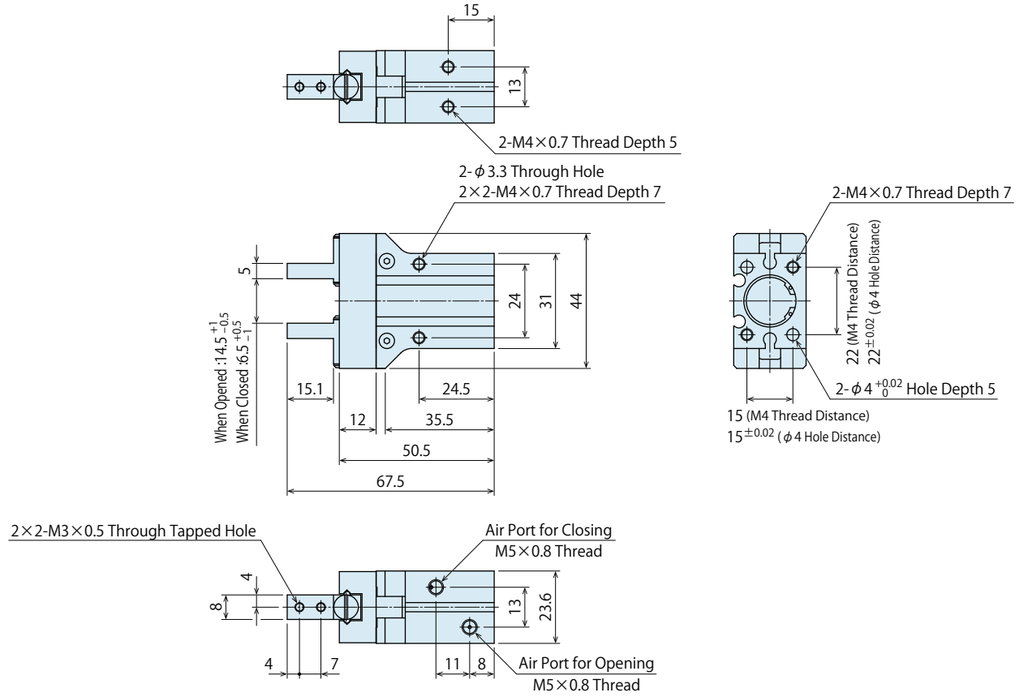
External Dimensions：WPA0120

※ The drawing shows the opened state of WPA0120.



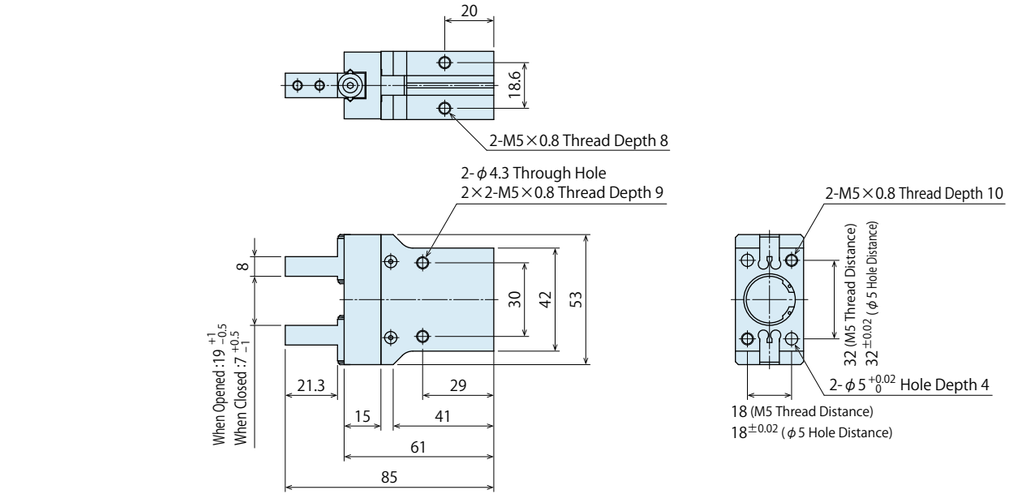
External Dimensions：WPA0160

※ The drawing shows the opened state of WPA0160.



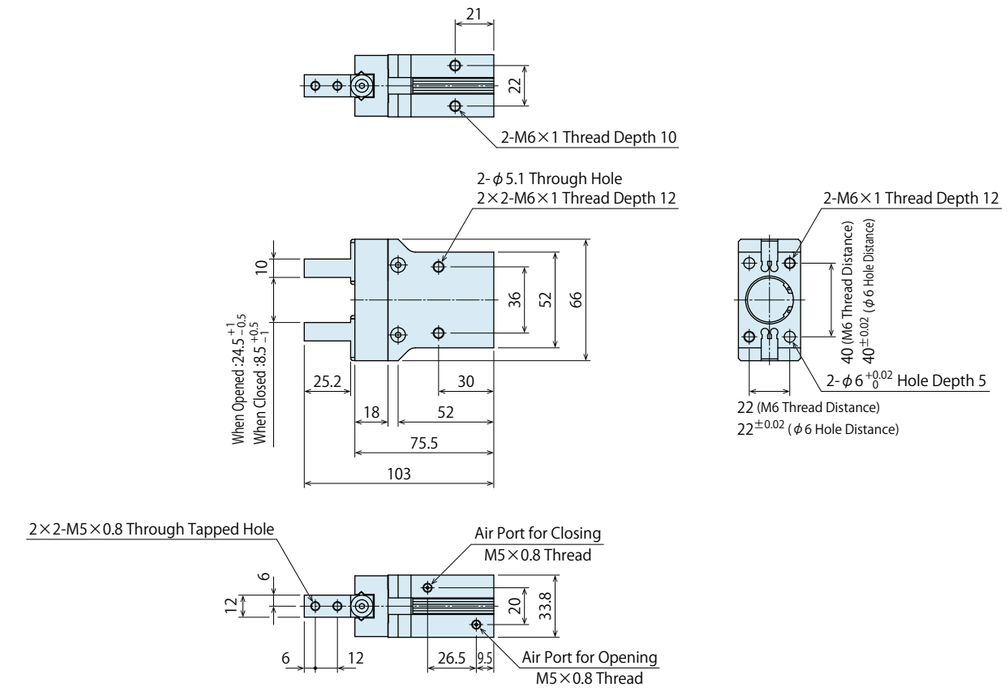
External Dimensions：WPA0200

※ The drawing shows the opened state of WPA0200.



External Dimensions：WPA0250

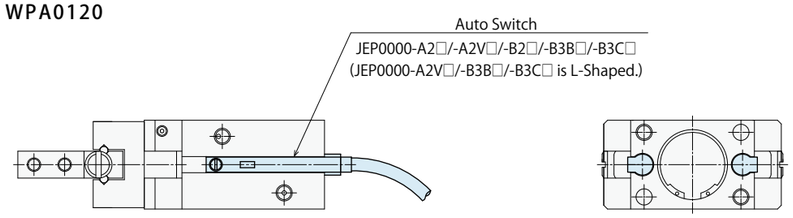
※ The drawing shows the opened state of WPA0250.



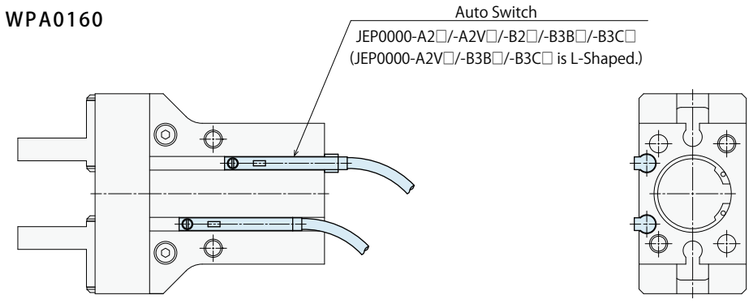
External Dimensions : Auto Switch Installation Image (Reference)

※ This drawing shows the installation image of Auto Switch JEP0000-A2□ and JEP0000-B2□.
Installation image of L-Shaped Auto Switch -A2V□, -B3B□ and -B3C□ is different from this.
Adjust installation position depending on the stroke position.
An auto switch may be stuck out of the robotic hand depending on the installation position and direction.

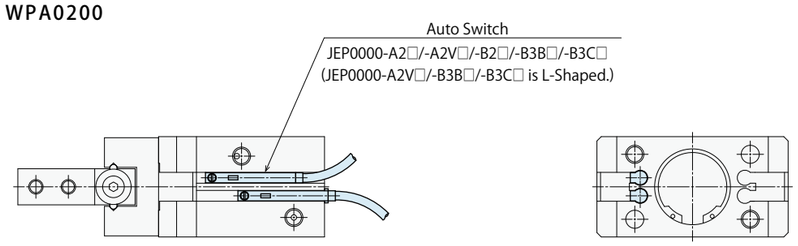
For WPA0120



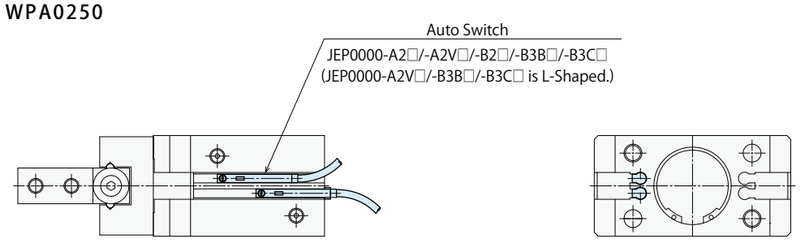
For WPA0160



For WPA0200

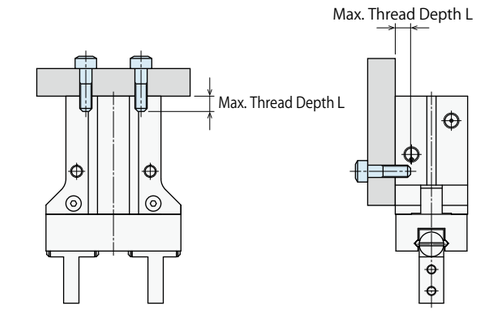


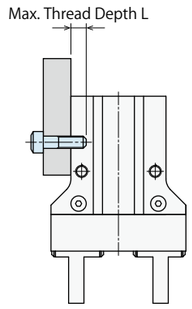
For WPA0250



Installation Method

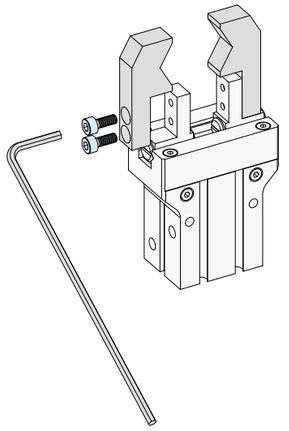
Tightening Torque for Cylinder Body





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

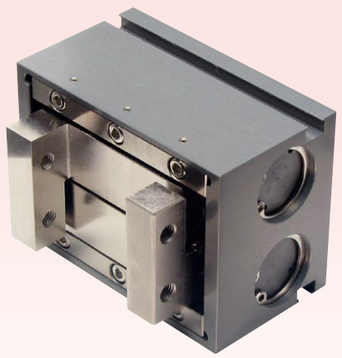


Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPA0120	M2.5×0.45	0.5	4
WPA0160	M3×0.5	1.1	5
WPA0200	M4×0.7	2.5	8
WPA0250	M5×0.8	5.0	10

Pneumatic Robotic Hand

Parallel Robotic Hand Gripper

Model **WPH**



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

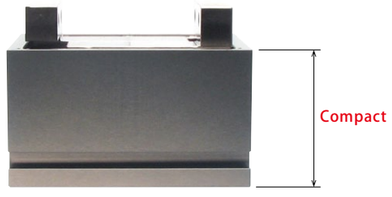
● Wider Stroke

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

Wider Stroke

● Compact Body with High Gripping Force

It is compact and has high gripping force, even with two internal cylinders. Reduction in height allows for less interference and optimal space utalization.



● High Accuracy and High Rigidity

The cross roller guide function allows for high rigidity and high accuracy opening/closing function.
Repeatability: ±0.01mm

● 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

WPH 010 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

010 : ϕ10 mm
016 : ϕ16 mm
020 : ϕ20 mm

2 Design No.

0 : Revision Number

3 Auto Switch Type

Blank : Without Auto Switch
A1 / A2 : 2-Wire Reed Auto Switch (Cable: 1m)
A1L / 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)
B1 / B2 : 3-Wire Solid State Auto Switch (Cable: 1m)
B1L / B2L : 3-Wire Solid State Auto Switch (Cable: 3m)
B3C : L-Shaped 3-Wire Solid State Auto Switch (Cable: 1m)
B3CL : L-Shaped 3-Wire Solid State Auto Switch (Cable: 3m)
B3B : L-Shaped 2-Wire Solid State Auto Switch (Cable: 1m)
B3BL : L-Shaped 2-Wire Solid State Auto Switch (Cable: 3m)

● Application Table

Model No.	A1□	A2□	B1□	B2□	B3C□	B3B□
WPH0100		●		●	●	●
WPH0160		●		●	●	●
WPH0200	●		●			

※ Please refer to P.405 ~ P.414 for details of auto switches.
※ When using an auto switch not made by Kosmek, check specifications of each manufacturer.

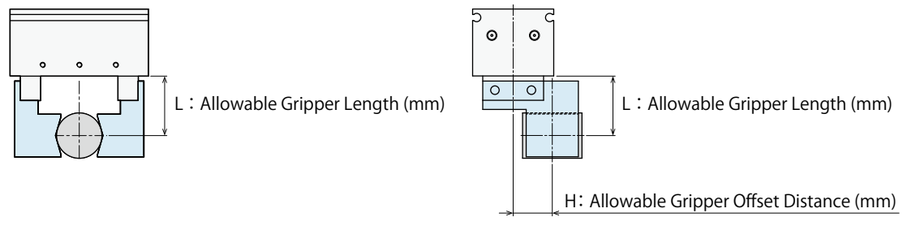
4 Number of Auto Switches※

Blank : 2
S : 1
※ Only when requiring 3 Auto Switch.

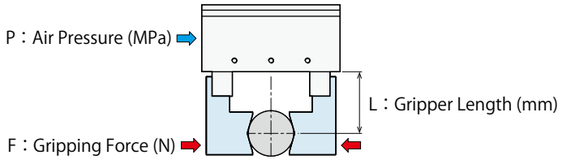
Specifications

Model No.			WPH0100	WPH0160	WPH0200
Cylinder Inner Diameter		mm	10	16	20
Gripping Force ※1 (Air Pressure：At 0.5MPa)	Closing Side	N	33	86	135
Full Stroke		mm	15	20	20
Repeatability ※2		mm	±0.01		
Stroke Error		mm	Opened State：-0.5～+1 / Closed State：-1～+0.5		
Allowable Gripper Length L (Air Pressure：at 0.5MPa) ※3		mm	40	50	60
Allowable Gripper Offset Distance H (Air Pressure：at 0.5MPa) ※3		mm	20	30	40
Maximum Cycle / min.			80		
Cylinder Capacity (Clamping w/o Workpiece)		cm^3	1.2	4.0	6.3
Maximum Operating Pressure		MPa	0.7		
Minimum Operating Pressure		MPa	0.15		
Withstanding Pressure		MPa	1.05		
Operating Temperature Range		℃	5 ~ 60		
Usable Fluid			Dry Air		
Weight		kg	0.14	0.32	0.7

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)



Gripping Force Performance Curve

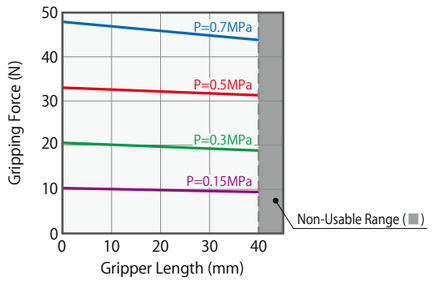


Notes：
1. This chart and graph show the relationship among：F：Gripping Force (N), P：Air Pressure (MPa) and L：Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPH0100

(N)

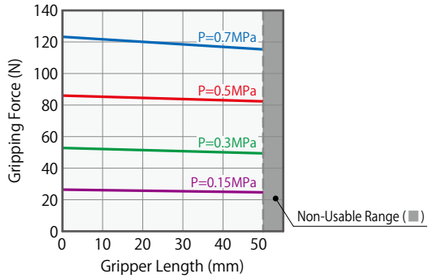
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	15	20	30	40
0.7	48	47	47	46	45	44
0.5	34	34	33	33	32	31
0.3	21	20	20	20	19	19
0.15	10	10	10	10	10	9



WPH0160

(N)

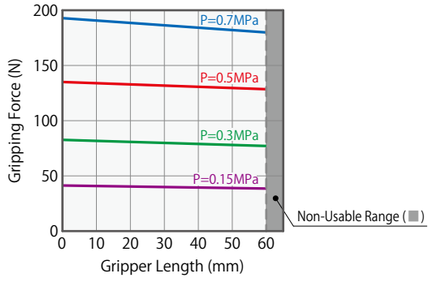
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	20	30	40	50
0.7	123	122	121	119	117	115
0.5	88	87	86	85	84	82
0.3	53	52	52	51	50	49
0.15	26	26	26	25	25	25



WPH0200

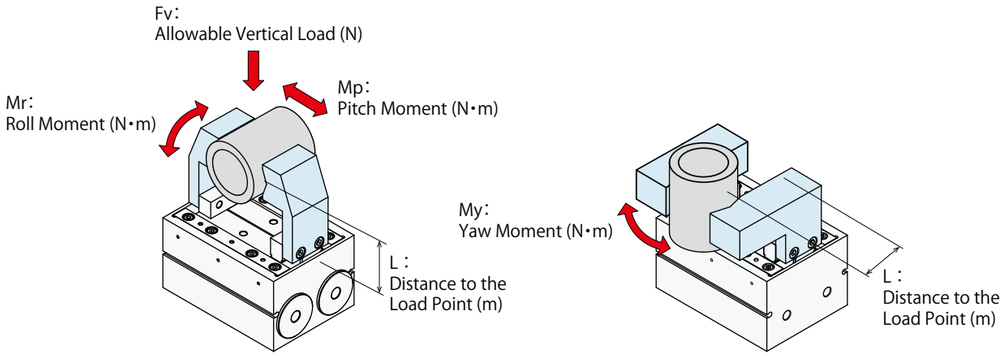
(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	50	60
0.7	192	189	187	185	182	180
0.5	137	135	134	132	130	128
0.3	82	81	80	79	78	77
0.15	41	41	40	40	39	39



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
WPH0100	310	1.0	1.0	2.8
WPH0160	430	2.0	2.0	3.8
WPH0200	810	5.7	5.7	11.4



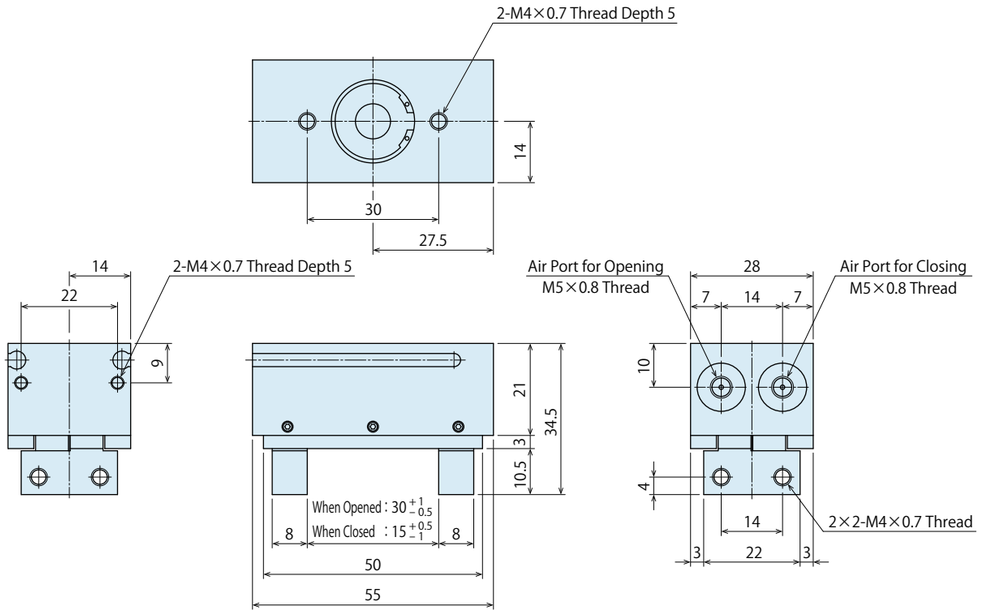
Notes：
1. The values on the list are the static values.
2. The arrows show the direction of Fv：Allowable Vertical Load (N), Mp：Pitch Moment (N・m), My：Yaw Moment (N・m) and Mr：Roll Moment (N・m).

Allowable Load Calculation Formula

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

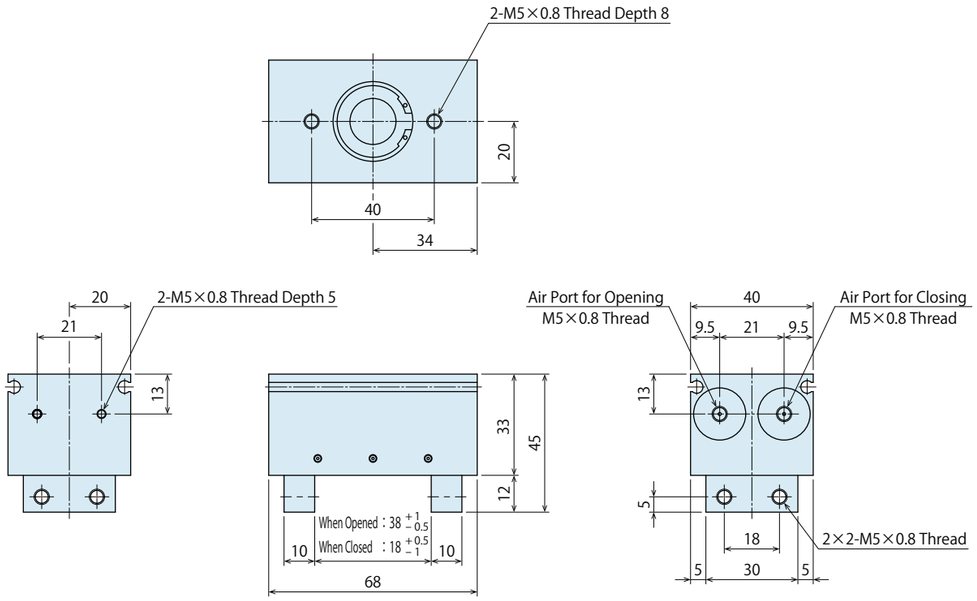
External Dimensions：WPH0100

※ The drawing shows the opened state of WPH0100.



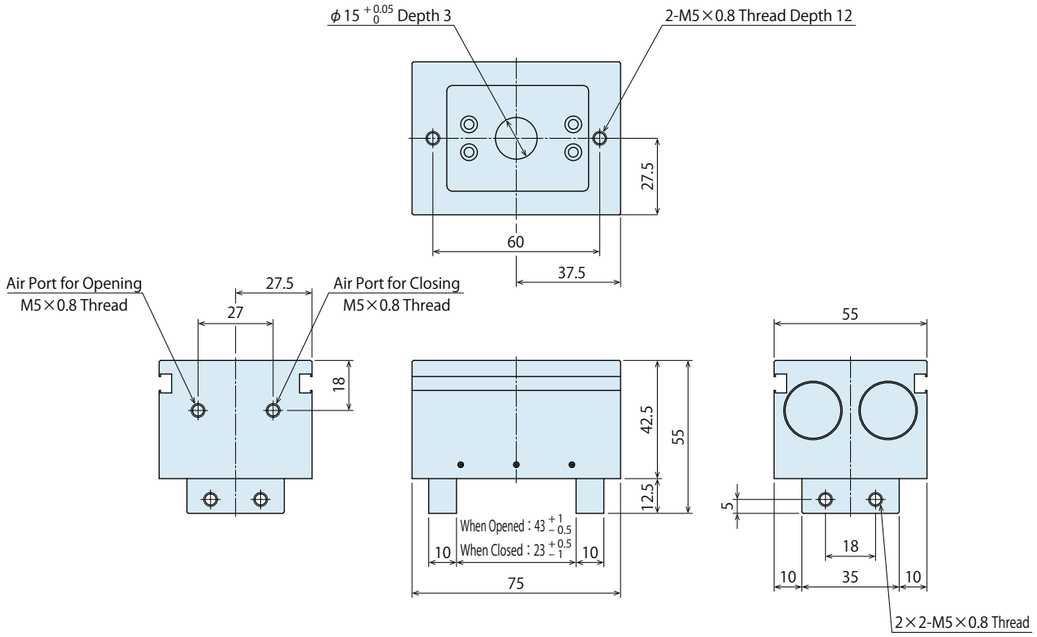
External Dimensions：WPH0160

※ The drawing shows the opened state of WPH0160.



External Dimensions：WPH0200

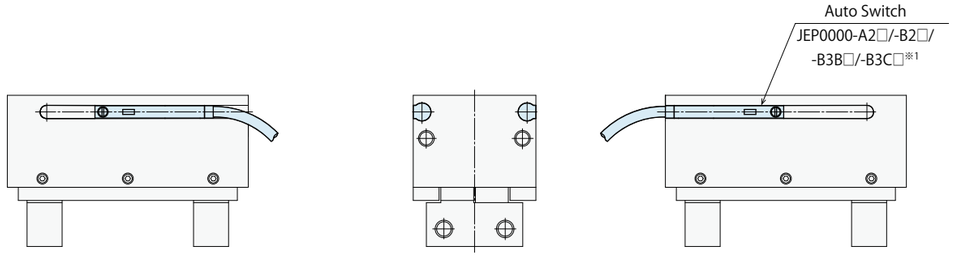
※ The drawing shows the opened state of WPH0200.



External Dimensions : Auto Switch

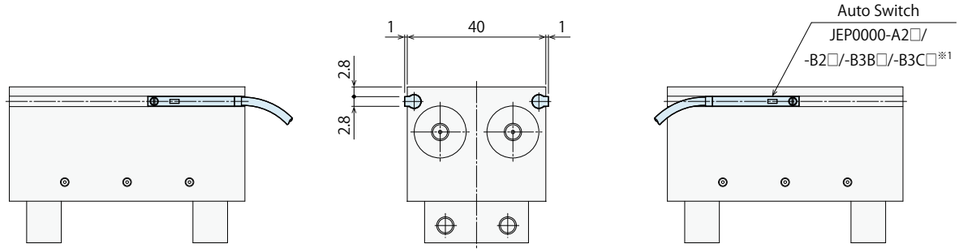
※ This drawing shows the installation image of Auto Switch JEP0000-A1□ / A2□ and JEP0000-B1□ / B2□.
Installation image of L-Shaped Auto Switch -A2V□, -B3B□ and -B3C□ is different from this.
Adjust installation position depending on the stroke position.
An auto switch may be stuck out of the robotic hand depending on the installation position and direction.

For WPH0100



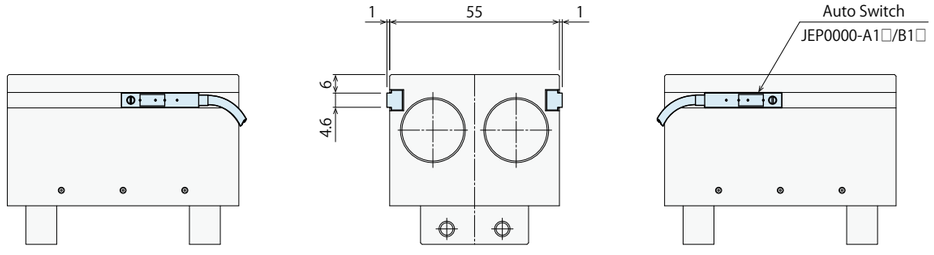
Note :
※1. External dimension of JEP0000-A2V□/-B3B□/-B3C□ is different from this.

For WPH0160



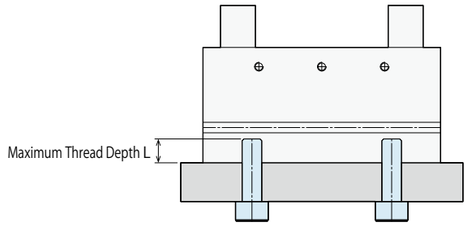
Note :
※1. External dimension of JEP0000-A2V□/-B3B□/-B3C□ is different from this.

For WPH0200



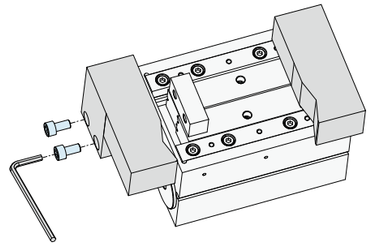
Installation Method

Tightening Torque for Cylinder Body



Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPH0100	M4×0.7	2.5	5
WPH0160	M5×0.8	5.0	8
WPH0200	M5×0.8	5.0	12

Tightening Torque for Gripper



Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPH0100	M4×0.7	2.5	8
WPH0160	M5×0.8	5.0	10
WPH0200	M5×0.8	5.0	10

Pneumatic Robotic Hand

Three-Jaw Chuck

Model **WPP**

High Gripping Force with Wider Stroke
Compact, Light Weight, Powerful, Solid and Durable!!

● Compact and Light Weight

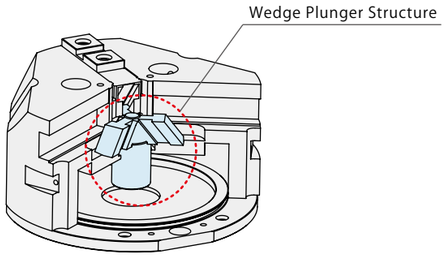
Small footprint by reducing overall height.

● Wider Stroke

Allowable stroke is increased by T-shape slide guide.

● Strong and Stable Gripping Force

High gripping force is generated by wedge plunger structure.
Limiting backlash at the end of stroke enables stable and powerful gripping.



● High Rigidity

The metal guides provide for higher and excellent rigidity.

● Long Operational Life

The body is manufactured with resistance to contaminants, cutting oil and coolant for excellent durability.

● Proximity Switch for Gripping Detection

The Three-Jaw Chuck design allows for easy proximity switch installation.

Model No. Indication

WPP 030 0 - P2 S - C
1 2 3 4 5

※ Only 1 2 are marked on the product. Please indicate the specifications of 3 4 5 if you need switches.
※ A sensor dog is provided to the product including 3 **Blank**：Without Proximity Switch.

1 Cylinder Inner Diameter

030 : ϕ30 mm
040 : ϕ40 mm
050 : ϕ50 mm
060 : ϕ60 mm
080 : ϕ80 mm
100 : ϕ100 mm
125 : ϕ125 mm

2 Design No.

0 : Revision Number

3 Proximity Switch Type

Blank : Without Proximity Switch
P : 3-Wire Proximity Switch for Gripping Detection (Length:32mm)
P2 : 3-Wire Proximity Switch for Gripping Detection (Length:16mm)

※ Please refer to P.405 ~ P.414 for details of proximity switches.
※ When using a proximity switch not made by Kosmek, check specifications of each manufacturer.

4 Number of Proximity Switches※

Blank : 2
S : 1

※ Only when selecting the proximity switch option 3.

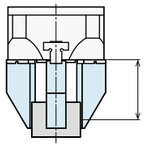
5 Option

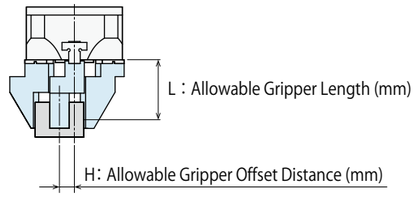
Blank : Without Center Pusher
C : With Center Pusher

Specifications

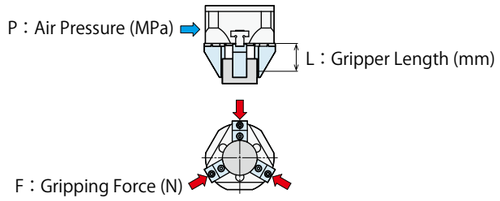
Model No.			WPP0300	WPP0400	WPP0500	WPP0600	WPP0800	WPP1000	WPP1250
Cylinder Inner Diameter		mm	30	40	50	60	80	100	125
Gripping Force ※1	Closing Side	N	187	335	537	799	1451	2304	3619
(Air Pressure：At 0.5MPa)	Opening Side	N	211	375	586	848	1589	2383	3707
Full Stroke		mm	8	12	14	16	20	26	32
Repeatability ※2		mm	±0.01					±0.03	
Stroke Error		mm	Opened State：-0.5～+1 / Closed State：-1～+0.5						
Allowable Gripper Length L (Air Pressure：at 0.5MPa) ※3		mm	40	50	60	80	100	120	140
Allowable Gripper Offset Distance H (Air Pressure：at 0.5MPa) ※3		mm	40	50	60	80	100	120	140
Maximum Cycle / min.			70				40		
Cylinder Capacity	Closing Side	cm^3	3.3	8.6	16.3	26.7	60.3	122.9	239.2
(Clamping w/o Workpiece)	Opening Side	cm^3	3.7	9.4	17.7	28.3	62.8	128.0	245.4
Maximum Operating Pressure		MPa	0.7						
Minimum Operating Pressure		MPa	0.3						
Withstanding Pressure		MPa	1.05						
Operating Temperature Range		℃	5 ~ 60						
Usable Fluid			Dry Air						
Weight		kg	0.2	0.38	0.6	0.75	1.37	2.35	4.5

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)





Gripping Force Performance Curve : Closing Side

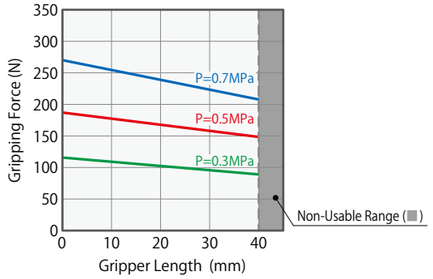


Notes:
1. This chart and graph show the relationship among : F : Gripping Force (N), P : Air Pressure (MPa) and L : Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPP0300

(N)

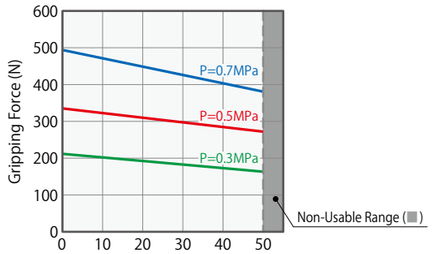
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	15	20	30	40
0.7	279	263	249	235	222	208
0.5	193	188	178	168	158	148
0.3	116	113	107	101	95	89



WPP0400

(N)

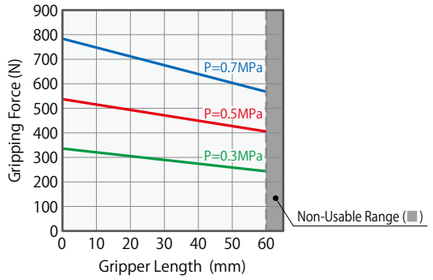
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	20	30	40	50
0.7	494	483	442	422	401	381
0.5	353	345	316	301	287	272
0.3	212	207	190	181	172	163



WPP0500

(N)

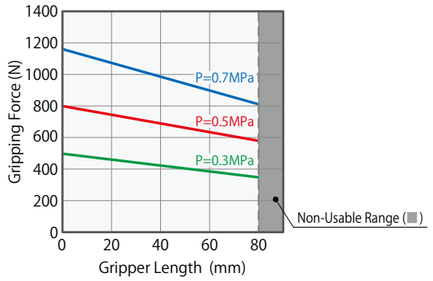
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	50	60
0.7	769	711	682	654	625	567
0.5	549	508	487	467	446	405
0.3	329	305	292	280	268	243



WPP0600

(N)

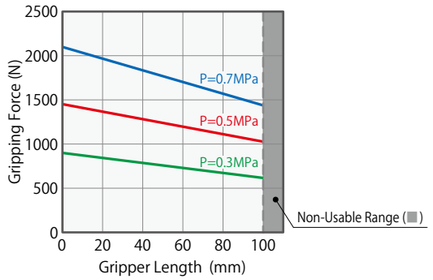
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	60	80
0.7	1142	1068	1031	994	884	810
0.5	815	763	739	710	631	579
0.3	489	458	442	426	379	347



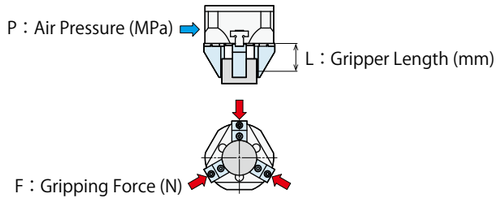
WPP0800

(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	40	60	80	100
0.7	2070	1955	1840	1667	1552	1437
0.5	1478	1396	1314	1191	1109	1027
0.3	889	838	788	714	665	616



Gripping Force Performance Curve : Closing Side

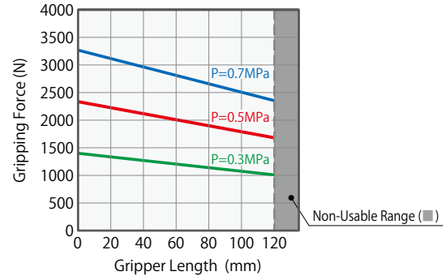


Notes:
1. This chart and graph show the relationship among : F : Gripping Force (N), P : Air Pressure (MPa) and L : Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPP1000

(N)

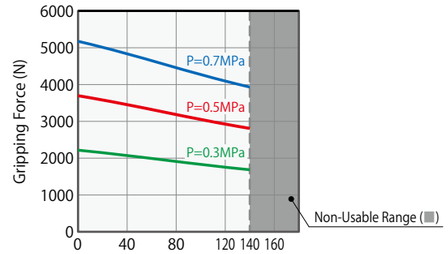
Air Pressure (MPa)	Gripper Length L (mm)					
	20	40	60	80	100	120
0.7	3116	2977	2770	2631	2493	2354
0.5	2226	2127	1978	1879	1780	1681
0.3	1335	1276	1187	1128	1068	1009



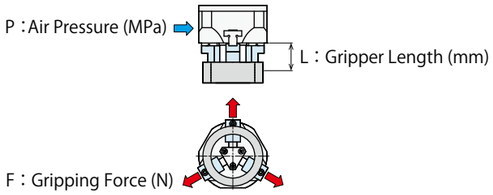
WPP1250

(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	20	40	60	80	120	140
0.7	5020	4852	4601	4434	4099	3932
0.5	3586	3466	3287	3167	2928	2809
0.3	2151	2080	1972	1900	1757	1685



Gripping Force Performance Curve : Opening Side

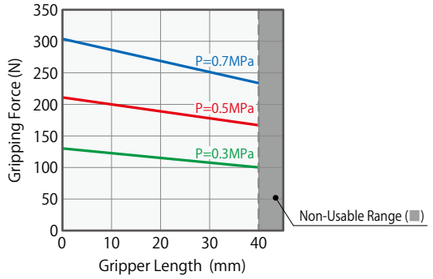


Notes:
1. This chart and graph show the relationship among : F : Gripping Force (N), P : Air Pressure (MPa) and L : Lever Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPP0300

(N)

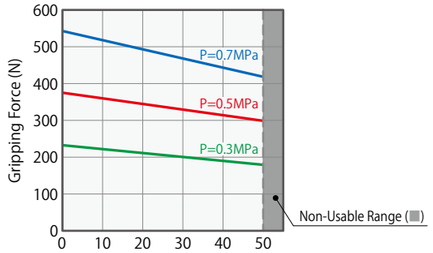
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	15	20	30	40
0.7	304	296	280	265	244	234
0.5	217	211	200	184	178	167
0.3	130	127	120	114	107	100



WPP0400

(N)

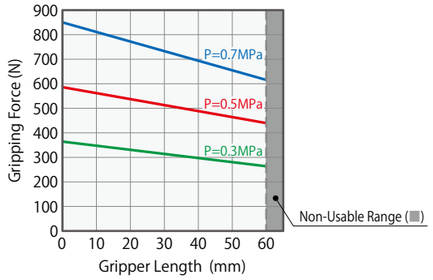
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	20	30	40	50
0.7	543	531	486	463	441	418
0.5	388	379	347	331	315	299
0.3	233	228	208	199	189	179



WPP0500

(N)

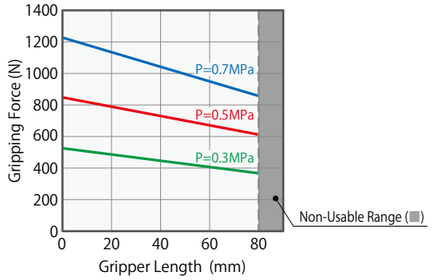
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	50	60
0.7	834	772	740	704	678	616
0.5	596	551	529	507	484	440
0.3	358	331	317	304	291	264



WPP0600

(N)

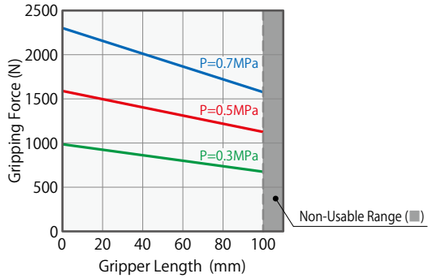
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	60	80
0.7	1207	1129	1090	1052	935	857
0.5	862	807	779	751	668	612
0.3	517	484	467	451	401	367



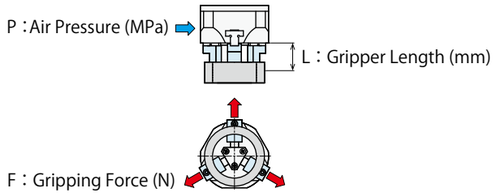
WPP0800

(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	40	60	80	100
0.7	2269	2143	2017	1828	1702	1576
0.5	1621	1531	1441	1306	1216	1126
0.3	973	918	864	783	729	675



Gripping Force Performance Curve : Opening Side

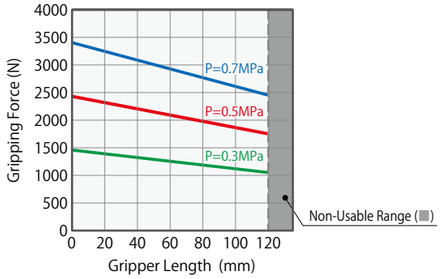


Notes:
1. This chart and graph show the relationship among : F : Gripping Force (N), P : Air Pressure (MPa) and L : Lever Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPP1000

(N)

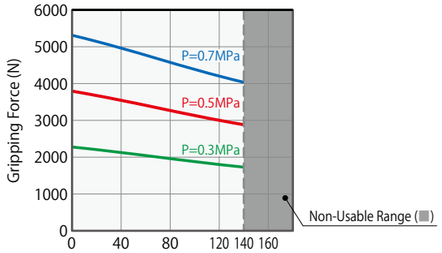
Air Pressure (MPa)	Gripper Length L (mm)					
	20	40	60	80	100	120
0.7	3246	3101	2885	2741	2596	2452
0.5	2318	2215	2061	1958	1855	1752
0.3	1391	1329	1236	1175	1113	1051



WPP1250

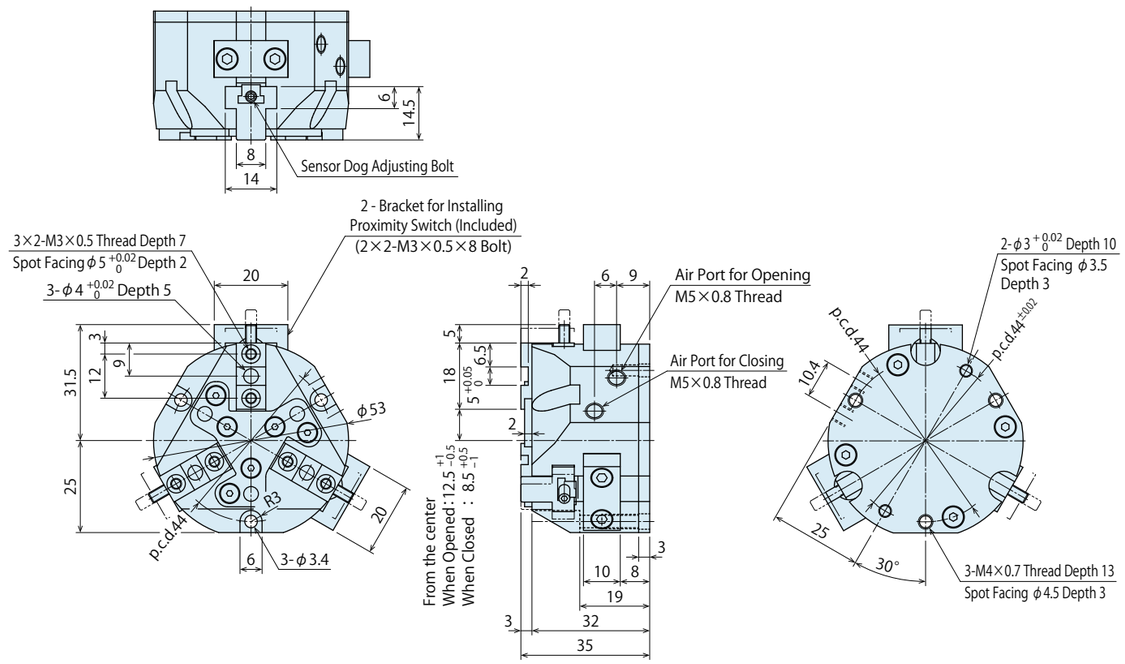
(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	20	40	60	80	120	140
0.7	5152	4980	4722	4551	4207	4035
0.5	3680	3557	3373	3250	3005	2882
0.3	2208	2134	2024	1950	1803	1729



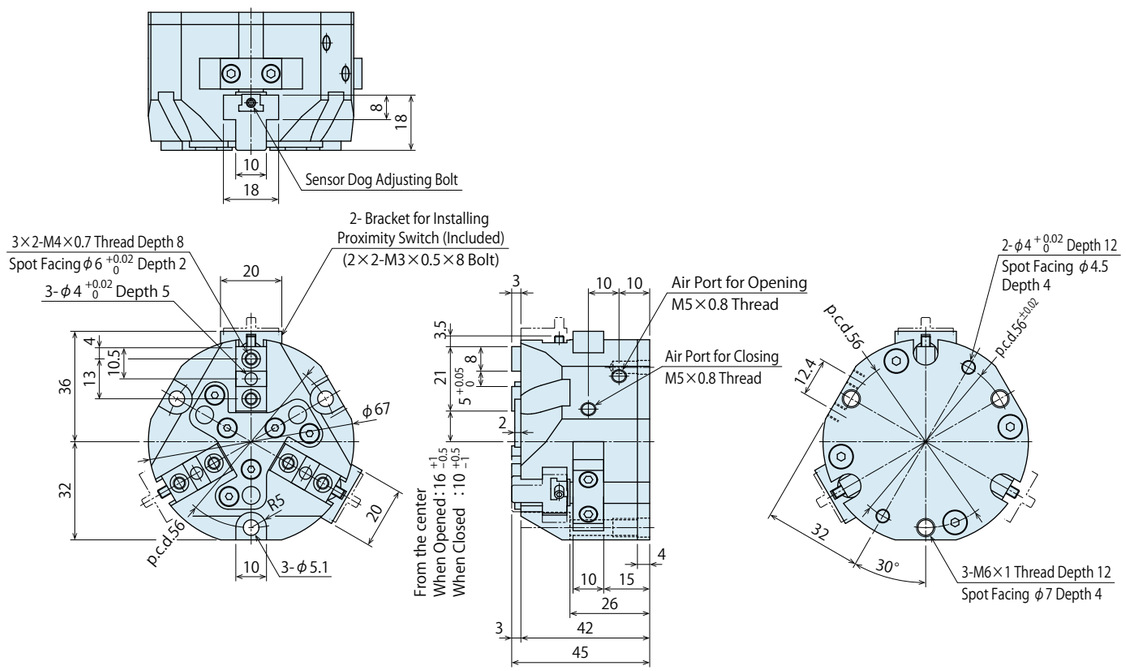
External Dimensions：WPP0300

※ The drawing shows the closed state of WPP0300.



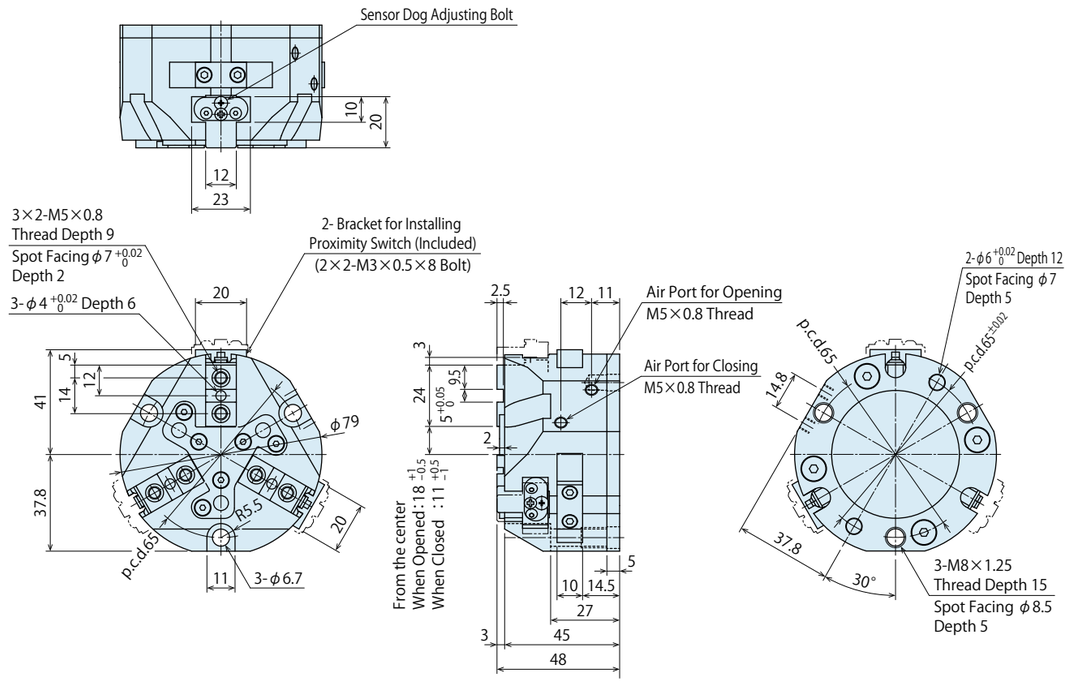
External Dimensions：WPP0400

※ The drawing shows the closed state of WPP0400.



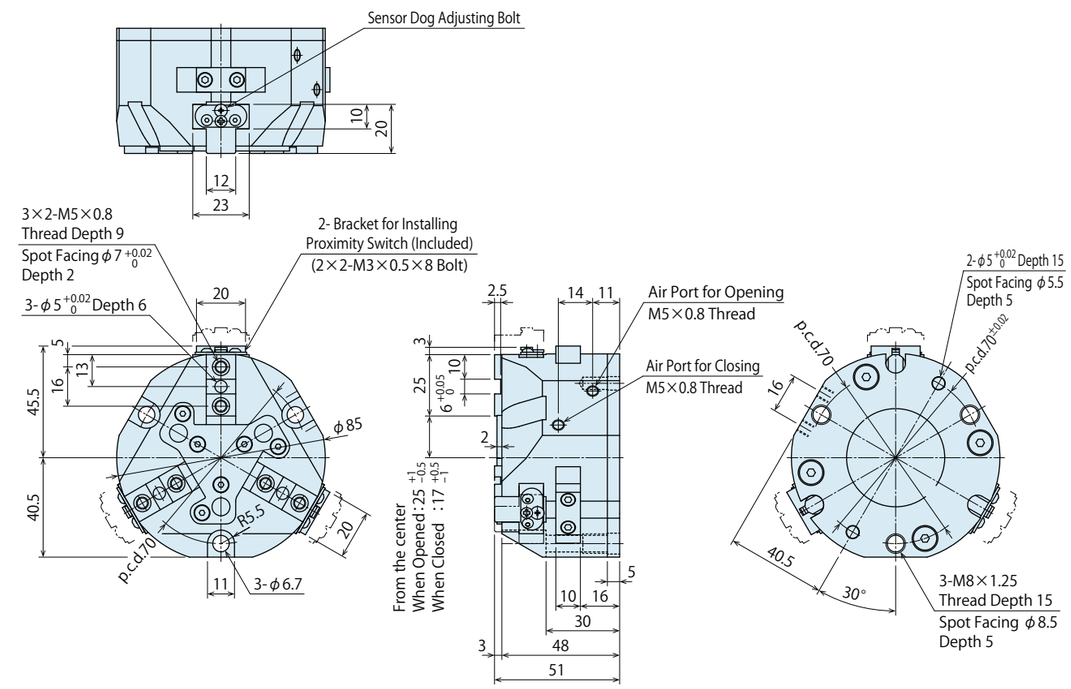
External Dimensions：WPP0500

※ The drawing shows the closed state of WPP0500.



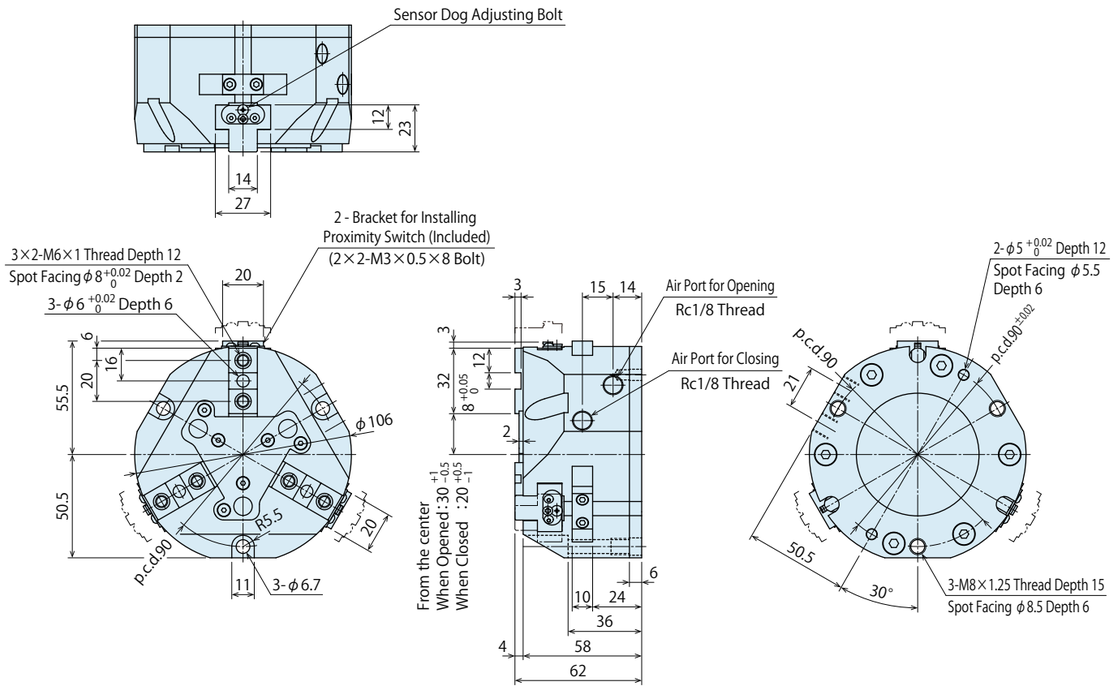
External Dimensions：WPP0600

※ The drawing shows the closed state of WPP0600.



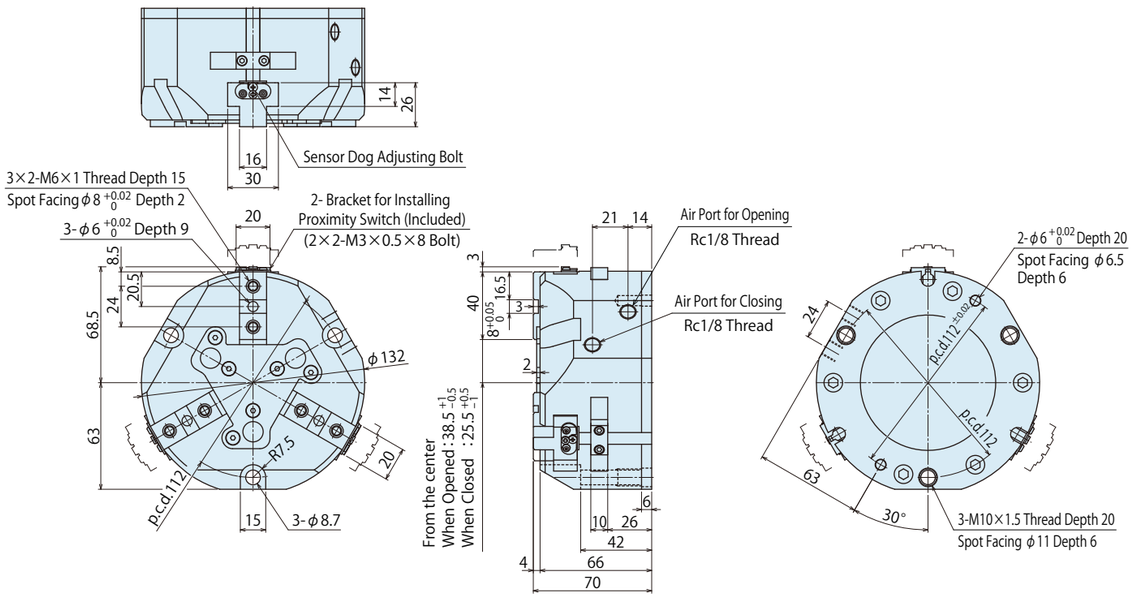
External Dimensions：WPP0800

※ The drawing shows the closed state of WPP0800.



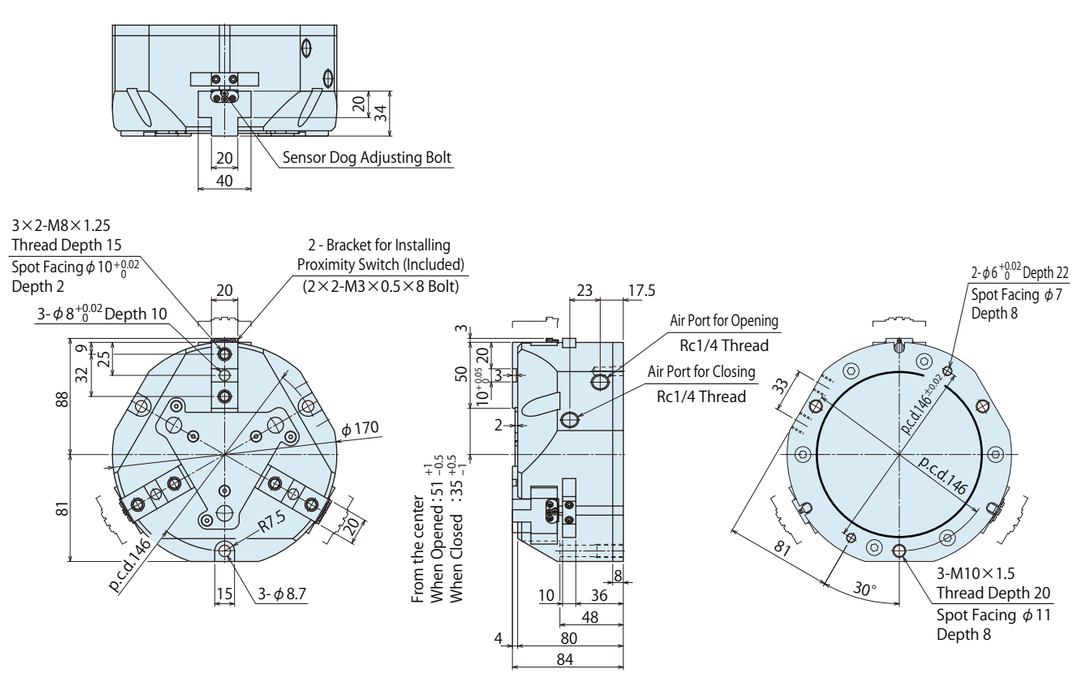
External Dimensions：WPP1000

※ The drawing shows the closed state of WPP1000.



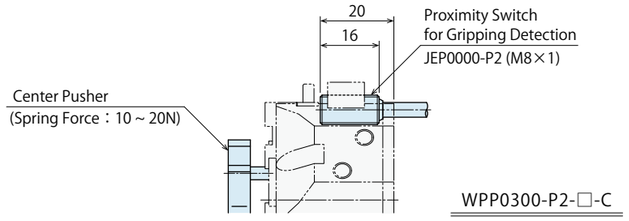
External Dimensions：WPP1250

※ The drawing shows the closed state of WPP1250.

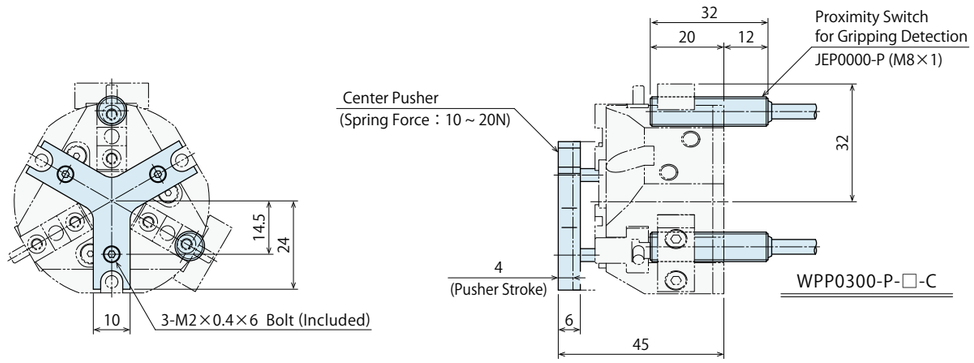


External Dimensions：Proximity Switch for Gripping Detection, Center Pusher

● WPP0300-P / P2-□-C

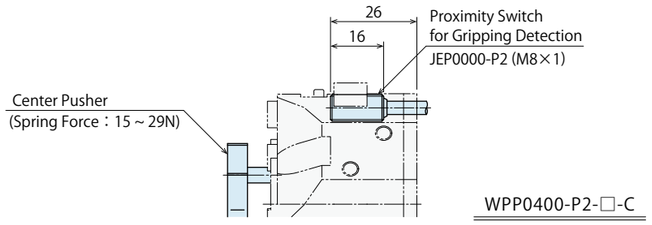


WPP0300-P2-□-C

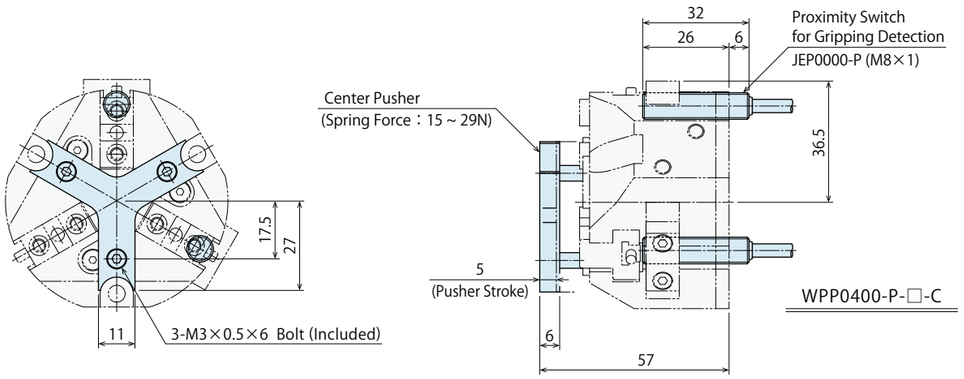


WPP0300-P-□-C

● WPP0400-P / P2-□-C



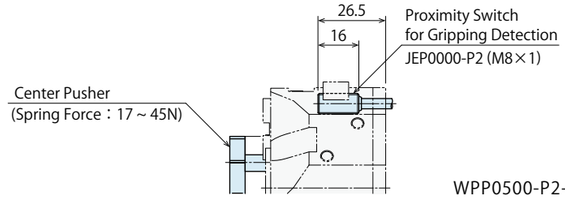
WPP0400-P2-□-C



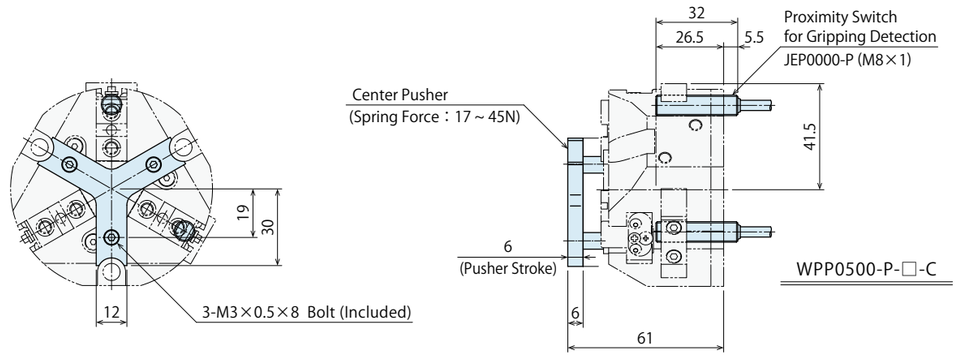
WPP0400-P-□-C

External Dimensions：Proximity Switch for Gripping Detection, Center Pusher

● WPP0500-P / P2-□-C

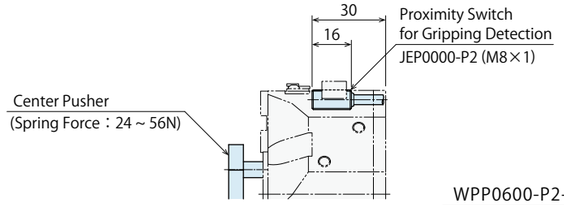


WPP0500-P2-□-C



WPP0500-P-□-C

● WPP0600-P / P2-□-C



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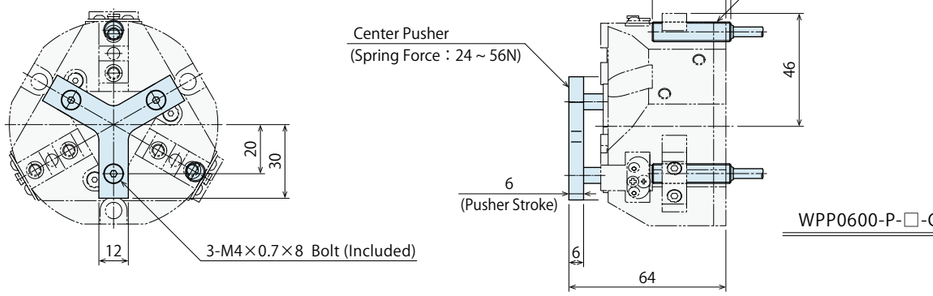
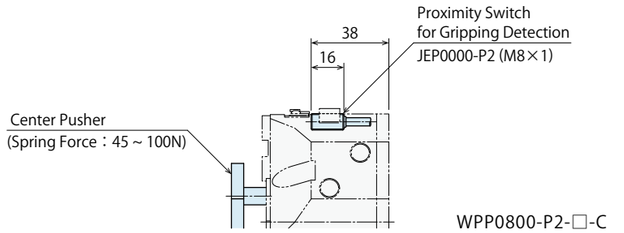


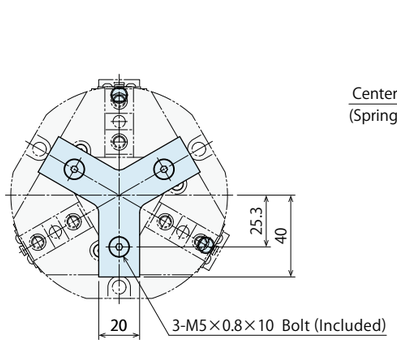
WPP0600-P-□-C

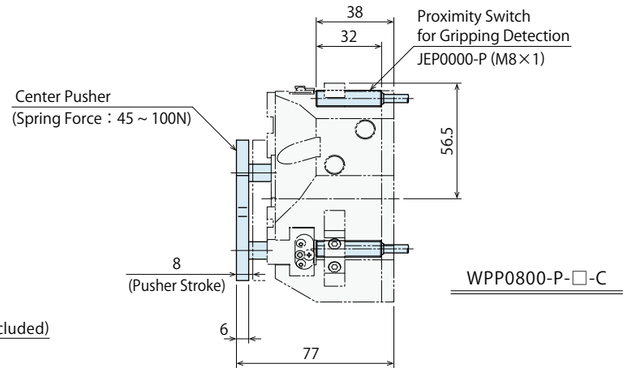
External Dimensions：Proximity Switch for Gripping Detection, Center Pusher

● WPP0800-P / P2-□-C



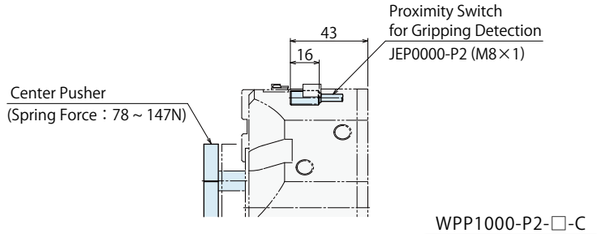
WPP0800-P2-□-C



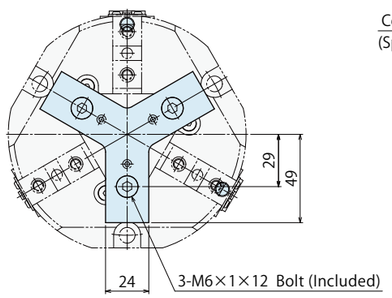


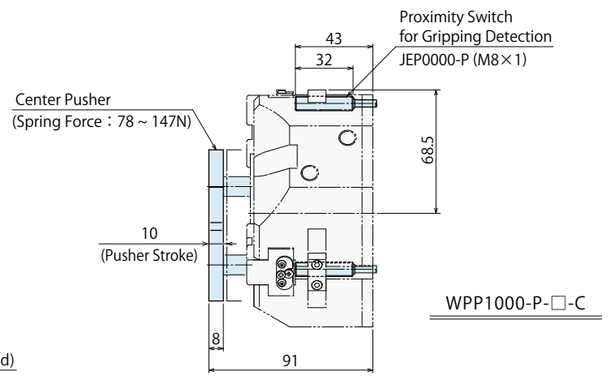
WPP0800-P-□-C

● WPP1000-P / P2-□-C



WPP1000-P2-□-C

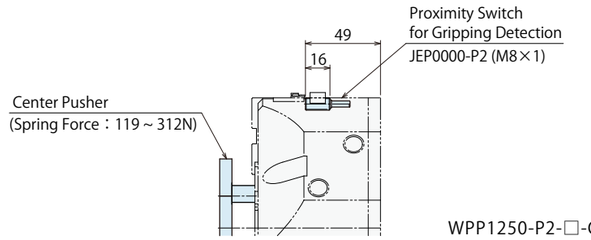




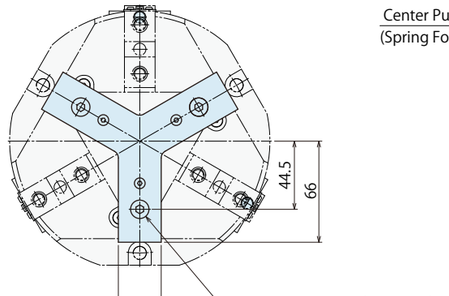
WPP1000-P-□-C

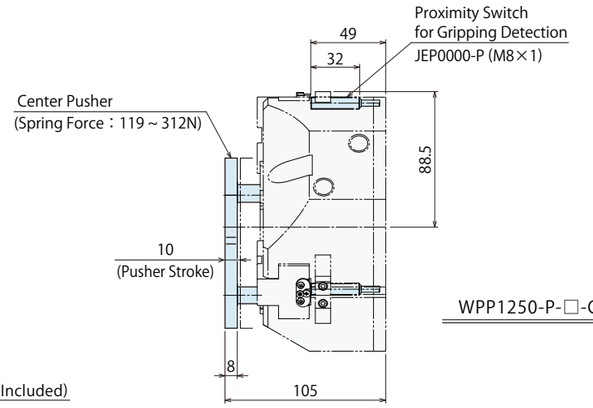
External Dimensions：Proximity Switch for Gripping Detection, Center Pusher

● WPP1250-P / P2-□-C



WPP1250-P2-□-C

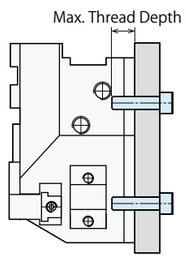




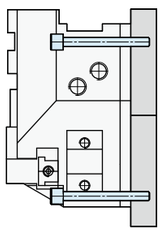
WPP1250-P-□-C

Installation Method

Tightening Torque for Cylinder Body

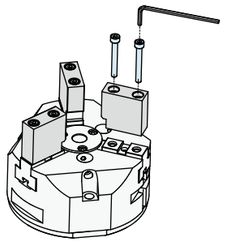


Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPP0300	M4×0.7	2.5	13
WPP0400	M6×1	7.9	12
WPP0500	M8×1.25	15.4	15
WPP0600	M8×1.25	15.4	15
WPP0800	M8×1.25	15.4	15
WPP1000	M10×1.5	23.5	20
WPP1250	M10×1.5	23.5	20



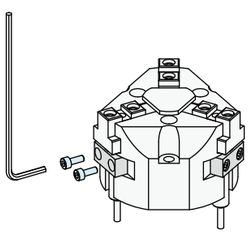
Model No.	Thread Size	Tightening Torque (N・m)
WPP0300	M3×0.5	1.1
WPP0400	M5×0.8	5.0
WPP0500	M6×1	7.9
WPP0600	M6×1	7.9
WPP0800	M6×1	7.9
WPP1000	M8×1.25	15.4
WPP1250	M8×1.25	15.4

Tightening Torque for Gripper



Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPP0300	M3×0.5	1.1	7
WPP0400	M4×0.7	2.5	8
WPP0500	M5×0.8	5.0	9
WPP0600	M5×0.8	5.0	9
WPP0800	M6×1	7.9	12
WPP1000	M6×1	7.9	15
WPP1250	M8×1.25	15.4	15

Tightening Torque for Bracket for Installing Proximity Switch



Model No.	Thread Size	Tightening Torque (N・m)
WPP□□□0	M3×0.5	1.3

Excessive tightening leads to breakage of proximity switch.

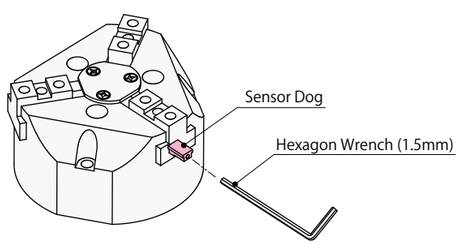
Installation Method

Sensor Dog Adjustment Method

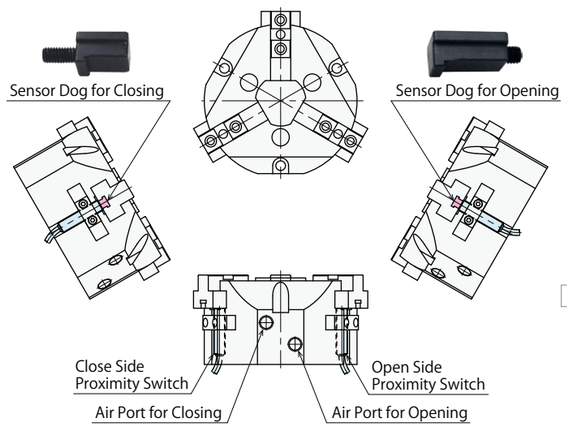
Proximity switch is used for opening/closing detection of robotic hand.
You can change the detection timing of proximity switch by adjusting the position of sensor dog.
There are two adjustment methods for sensor dog depending on shipment time.
Please check on the product and refer to the applicable adjustment method.

Adjustment Method ①

Adjust the sensor dog to the detection position and tighten it with hexagon wrench (1.5mm).

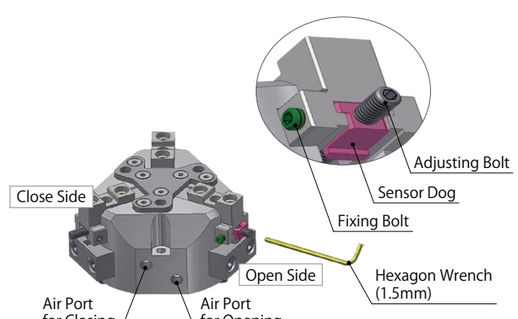


Shapes of sensor dog for opening and closing are different. Please refer to the drawing below and install the sensor dog to the appropriate position. Otherwise, the sensor dog may extremely stick out and/or the proximity switch may not react.

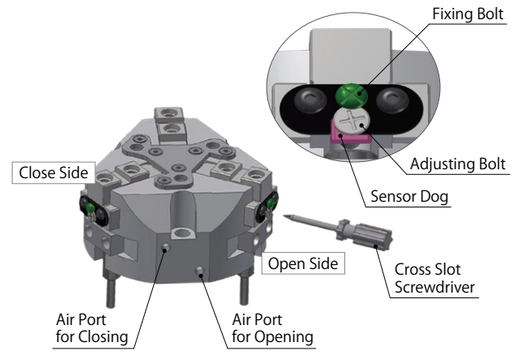


Adjustment Method ②

・For WPP0300/0400
Untighten the fixing bolt with hexagon wrench (1.5mm), adjust the dog position with adjusting bolt, and tighten the fixing bolt again.
Make sure to tighten the fixing bolt before operating the robotic hand.



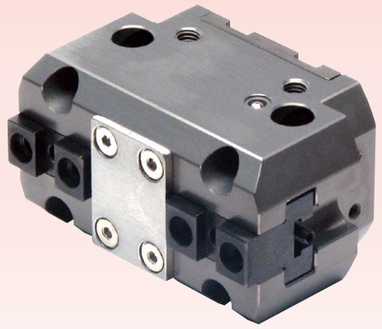
・For WPP0500/0600/0800/1000/1250
Untighten the fixing bolt with cross slot screwdriver, adjust the dog position with adjusting bolt, and tighten the fixing bolt again.
Make sure to tighten the fixing bolt before operating the robotic hand.



Pneumatic Robotic Hand

Two-Jaw Chuck

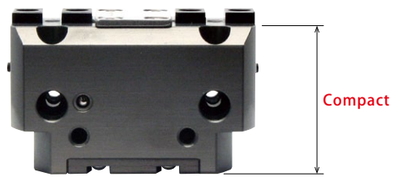
Model **WPQ**



High Gripping Force with Wider Stroke
Compact, Light Weight, Powerful, Solid and Durable!!

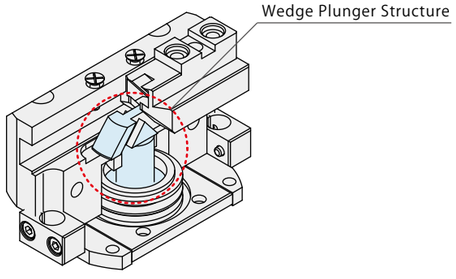
● Compact and Light Weight

Reduced height for smaller footprint.



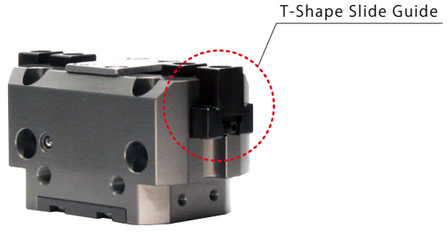
● Strong and Stable Gripping Force

High gripping force is generated by wedge plunger structure.
Limiting backlash at the end of stroke enables stable and powerful gripping.



● Wider Stroke

Allowable stroke is increased by T-shape slide guide.



● High Rigidity

The metal guides provide for higher and excellent rigidity.

● Long Operational Life

The body is designed and manufactured to be resistant to contaminants, cutting oil and coolant for longer durability.

● Proximity Switch Installation for Gripping Detection

The Two-Jaw Chuck design allows for easy proximity switch installation.

Model No. Indication

WPQ 025 0 - P2 S
(1) (2) (3) (4)

※ Only 1 2 are marked on the product. Please indicate the specifications of 3 4 if you need switches.
※ A sensor dog is provided to the product including 3 **Blank**：Without Proximity Switch.

1 Cylinder Inner Diameter

020 ： ϕ20 mm
025 ： ϕ25 mm
030 ： ϕ30 mm
040 ： ϕ40 mm
050 ： ϕ50 mm
060 ： ϕ60 mm
080 ： ϕ80 mm
100 ： ϕ100 mm

2 Design No.

0 ： Revision Number

3 Proximity Switch Type

Blank ： Without Proximity Switch
P ： 3-Wire Proximity Switch for Gripping Detection (Length：32mm)
P2 ： 3-Wire Proximity Switch for Gripping Detection (Length：16mm)
(Only when selecting 1 **020/025**.)

● Application Table

Model No.	WPQ0200	WPQ0250	WPQ0300	WPQ0400	WPQ0500	WPQ0600	WPQ0800	WPQ1000
P	●	●	●	●	●	●	●	●
P2	●	●						

※ Please refer to P.405 ~ P.414 for details of proximity switches.
※ When using a proximity switch not made by Kosmek, check specifications of each manufacturer.

4 Number of Proximity Switches※

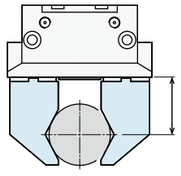
Blank ： 2
S ： 1

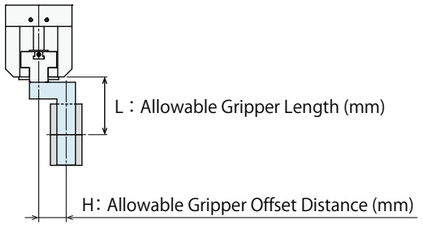
※ Only when selecting the proximity switch option 3.

Specifications

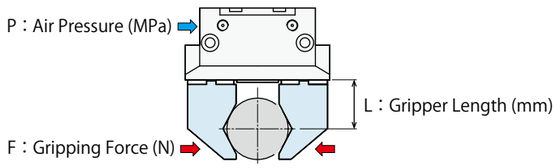
Model No.			WPQ0200	WPQ0250	WPQ0300	WPQ0400	WPQ0500	WPQ0600	WPQ0800	WPQ1000
Cylinder Inner Diameter		mm	20	25	30	40	50	60	80	100
Gripping Force ※1	Closing Side	N	84.3	121	179	322	497	778	1049	1589
(Air Pressure：At 0.5MPa)	Opening Side	N	93.2	147	201	373	592	876	1118	1746
Full Stroke		mm	8	12	16	20	26	32	50	60
Repeatability ※2		mm	±0.01							±0.03
Stroke Error		mm	Opened State：-0.5～+1 / Closed State：-1～+0.5							
Allowable Gripper Length L (Air Pressure：at 0.5MPa) ※3		mm	30	35	40	50	60	80	110	140
Allowable Gripper Offset Distance H (Air Pressure：at 0.5MPa) ※3		mm	30	35	40	50	60	80	110	140
Maximum Cycle / min.			100			60			30	
Cylinder Capacity	Closing Side	cm^3	1.4	3.1	5.9	13.4	26.9	50.3	117.8	214.4
(Clamping w/o Workpiece)	Opening Side	cm^3	1.6	3.7	7.1	16.0	32.0	56.5	125.7	235.6
Maximum Operating Pressure		MPa	0.7							
Minimum Operating Pressure		MPa	0.3							
Withstanding Pressure		MPa	1.05							
Operating Temperature Range		℃	5 ~ 60							
Usable Fluid			Dry Air							
Weight		kg	0.13	0.27	0.43	0.75	1.3	2.4	5.0	9.2

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)





Gripping Force Performance Curve : Closing Side

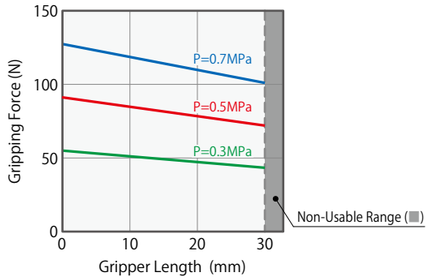


Notes:
1. This chart and graph show the relationship among: F: Gripping Force (N), P: Air Pressure (MPa) and L: Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPQ0200

(N)

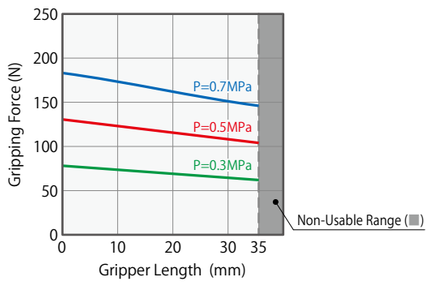
Air Pressure (MPa)	Gripper Length L (mm)				
	5	10	15	20	30
0.7	123	120	114	108	101
0.5	88	86	81	77	72
0.3	53	51	49	46	43



WPQ0250

(N)

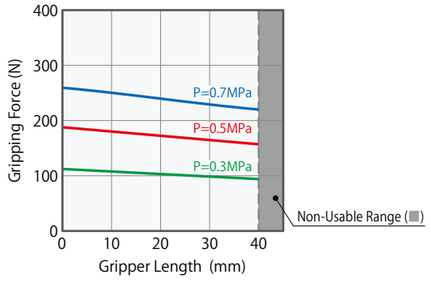
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	15	20	30	35
0.7	178	174	166	158	150	146
0.5	127	124	119	113	107	104
0.3	76	75	71	68	64	62



WPQ0300

(N)

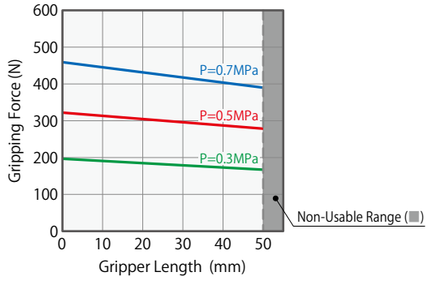
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	15	20	30	40
0.7	257	253	245	236	228	220
0.5	184	181	175	169	163	157
0.3	110	109	105	101	98	94



WPQ0400

(N)

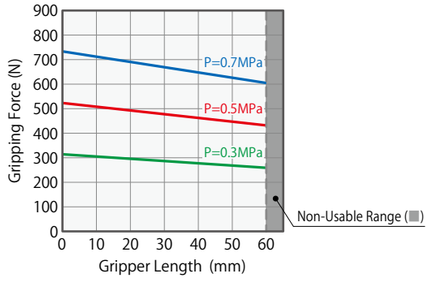
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	20	30	40	50
0.7	459	453	428	415	402	390
0.5	328	323	305	296	287	278
0.3	197	194	183	178	172	167



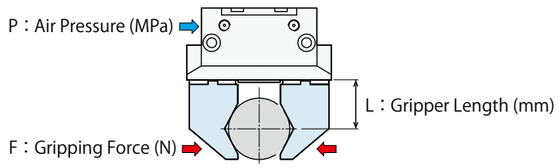
WPQ0500

(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	50	60
0.7	712	681	666	650	635	605
0.5	508	486	476	465	454	432
0.3	305	292	285	279	272	259



Gripping Force Performance Curve : Closing Side

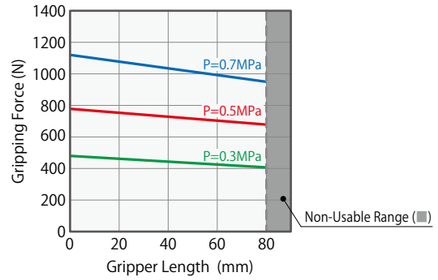


Notes:
1. This chart and graph show the relationship among: F: Gripping Force (N), P: Air Pressure (MPa) and L: Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPQ0600

(N)

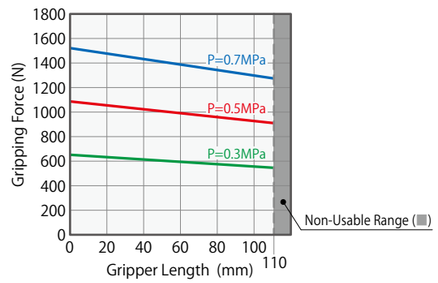
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	60	80
0.7	1111	1075	1057	1039	985	950
0.5	793	768	755	742	704	678
0.3	476	461	453	445	422	407



WPQ0800

(N)

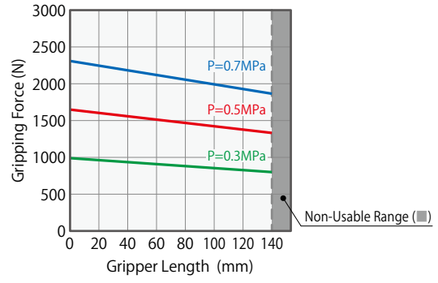
Air Pressure (MPa)	Gripper Length L (mm)					
	20	40	60	80	100	110
0.7	1477	1436	1376	1335	1295	1274
0.5	1055	1026	983	954	925	910
0.3	633	616	590	572	555	546



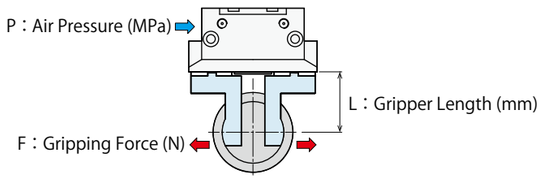
WPQ1000

(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	40	60	80	100	120	140
0.7	2186	2099	2041	1982	1924	1865
0.5	1562	1499	1458	1416	1374	1332
0.3	937	900	875	850	825	800



Gripping Force Performance Curve : Opening Side

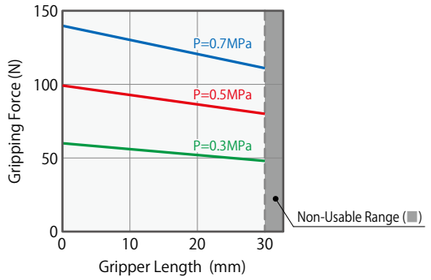


Notes:
1. This chart and graph show the relationship among : F : Gripping Force (N), P : Air Pressure (MPa) and L : Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPQ0200

(N)

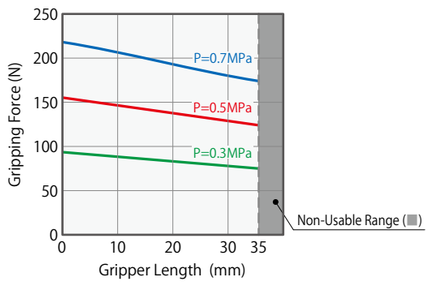
Air Pressure (MPa)	Gripper Length L (mm)				
	5	10	15	20	30
0.7	135	132	125	118	111
0.5	96	94	89	84	80
0.3	58	56	54	51	48



WPQ0250

(N)

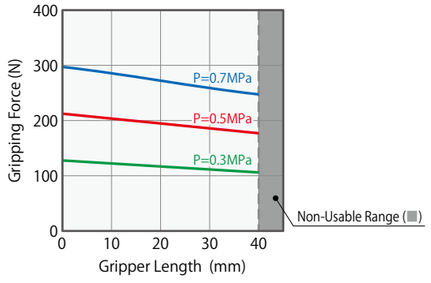
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	15	20	25	35
0.7	212	207	198	188	179	174
0.5	151	148	141	134	128	124
0.3	91	89	85	81	77	75



WPQ0300

(N)

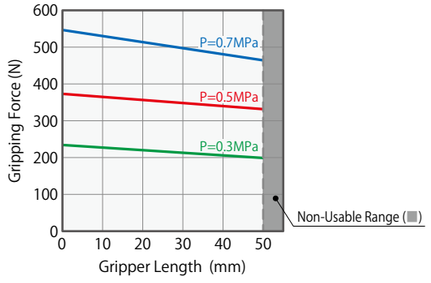
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	15	20	30	40
0.7	291	286	277	267	258	248
0.5	208	205	198	191	184	177
0.3	125	123	119	115	110	106



WPQ0400

(N)

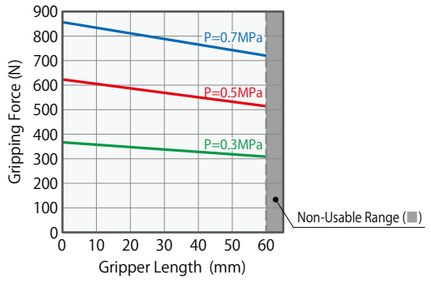
Air Pressure (MPa)	Gripper Length L (mm)					
	5	10	20	30	40	50
0.7	546	539	509	494	479	464
0.5	390	385	364	353	342	331
0.3	234	231	218	212	205	199



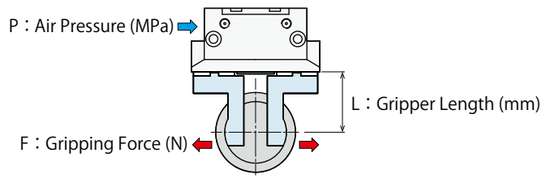
WPQ0500

(N)

Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	50	60
0.7	847	811	793	774	756	720
0.5	605	579	566	553	540	514
0.3	363	347	340	332	324	308



Gripping Force Performance Curve : Opening Side

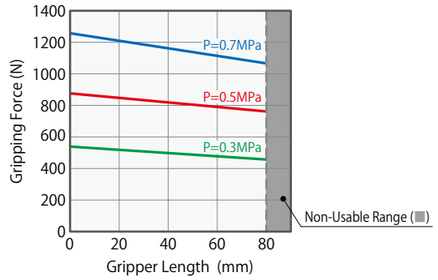


Notes:
1. This chart and graph show the relationship among : F : Gripping Force (N), P : Air Pressure (MPa) and L : Gripper Length (mm).
2. Operation in the non-usable range may cause deformation, galling or air leakage.

WPQ0600

(N)

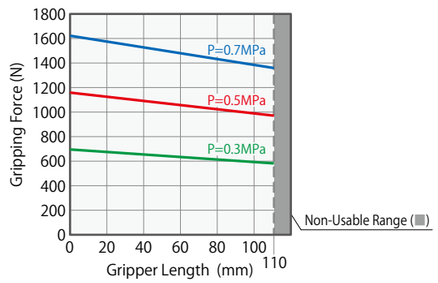
Air Pressure (MPa)	Gripper Length L (mm)					
	10	20	30	40	60	80
0.7	1247	1207	1187	1167	1106	1066
0.5	891	862	848	833	790	761
0.3	534	517	509	500	474	457



WPQ0800

(N)

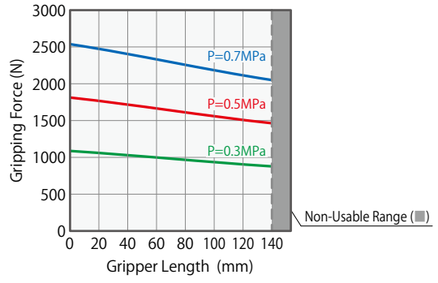
Air Pressure (MPa)	Gripper Length L (mm)					
	20	40	60	80	100	110
0.7	1575	1532	1468	1424	1381	1359
0.5	1125	1094	1048	1017	987	971
0.3	675	657	629	610	592	582



WPQ1000

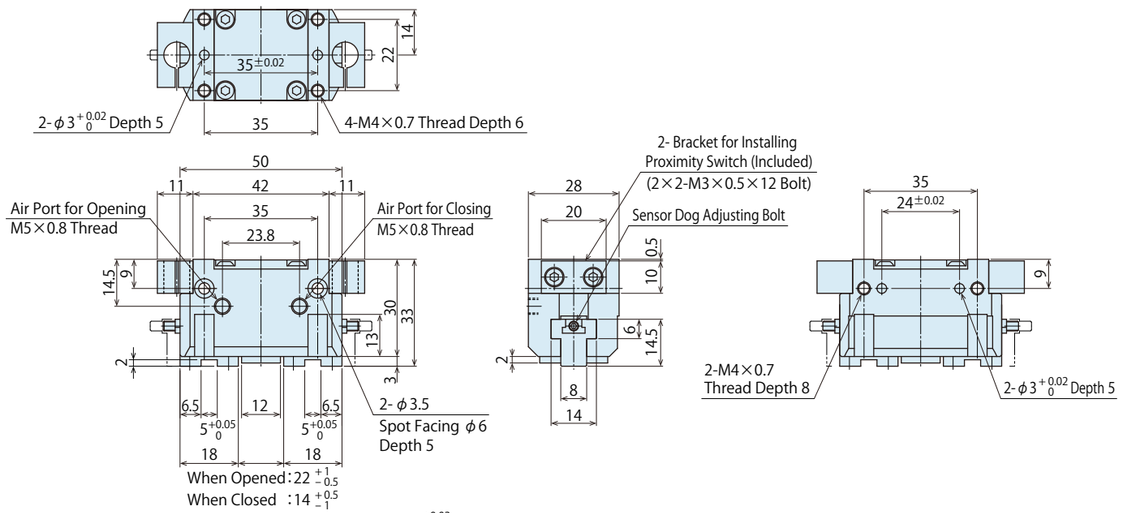
(N)

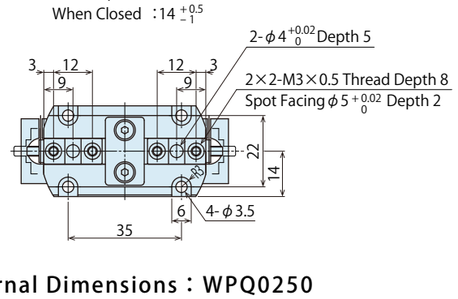
Air Pressure (MPa)	Gripper Length L (mm)					
	40	60	80	100	120	140
0.7	2403	2306	2242	2178	2114	2050
0.5	1716	1647	1602	1556	1510	1464
0.3	1030	988	961	934	906	878



External Dimensions：WPQ0200

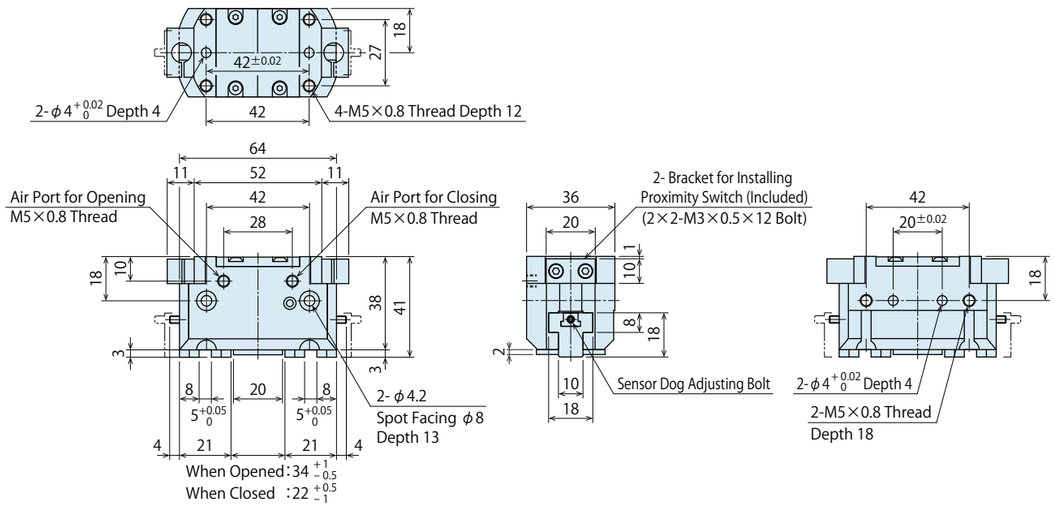
※ The drawing shows the closed state of WPQ0200.

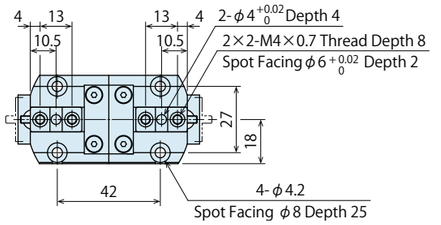




External Dimensions：WPQ0250

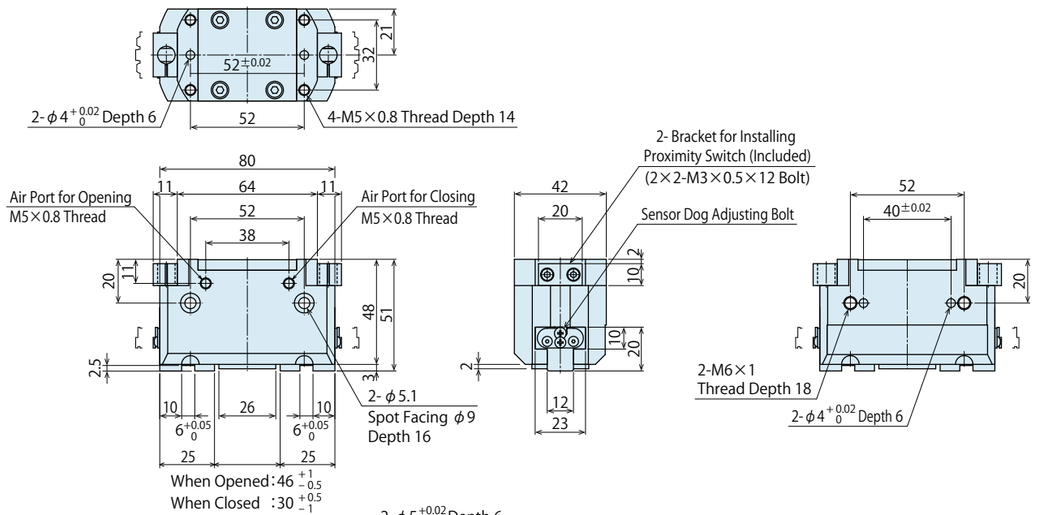
※ The drawing shows the closed state of WPQ0250.

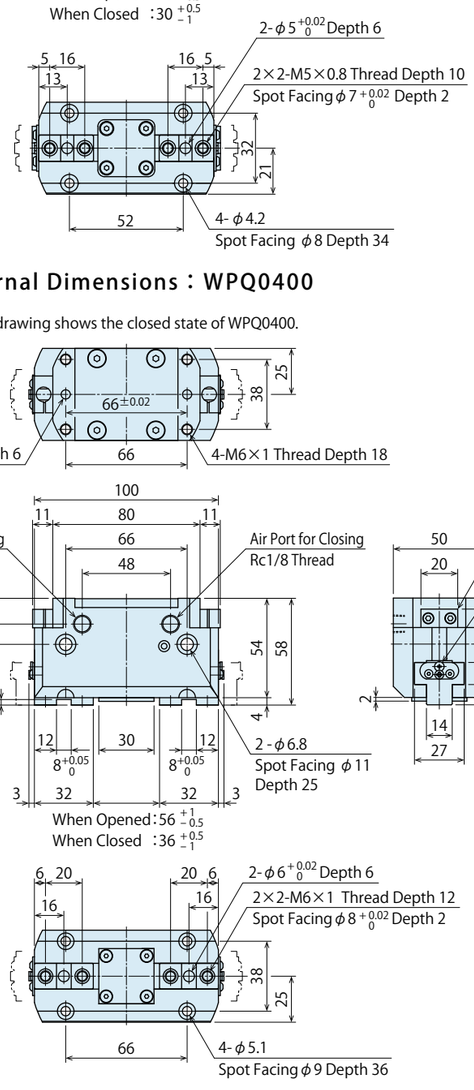




External Dimensions：WPQ0300

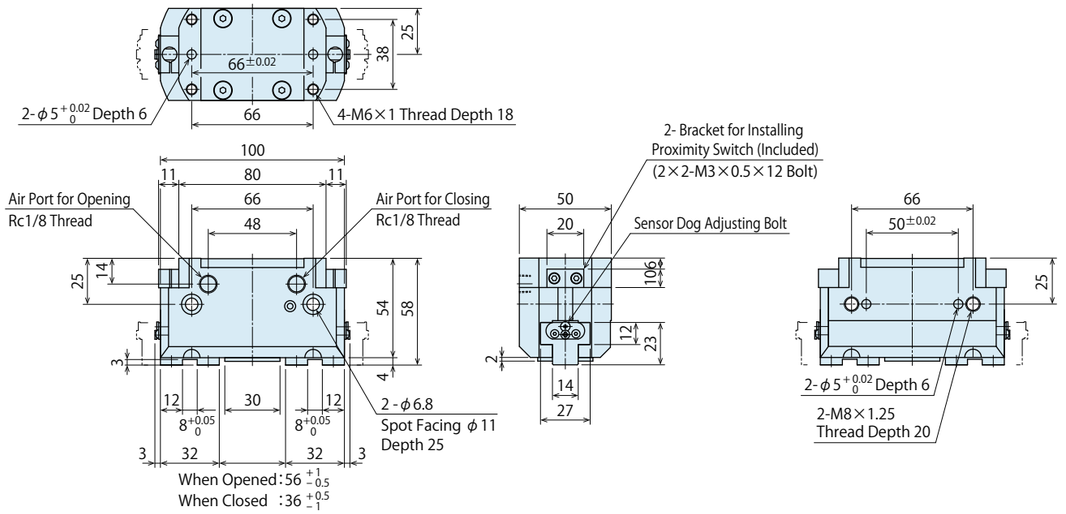
※ The drawing shows the closed state of WPQ0300.





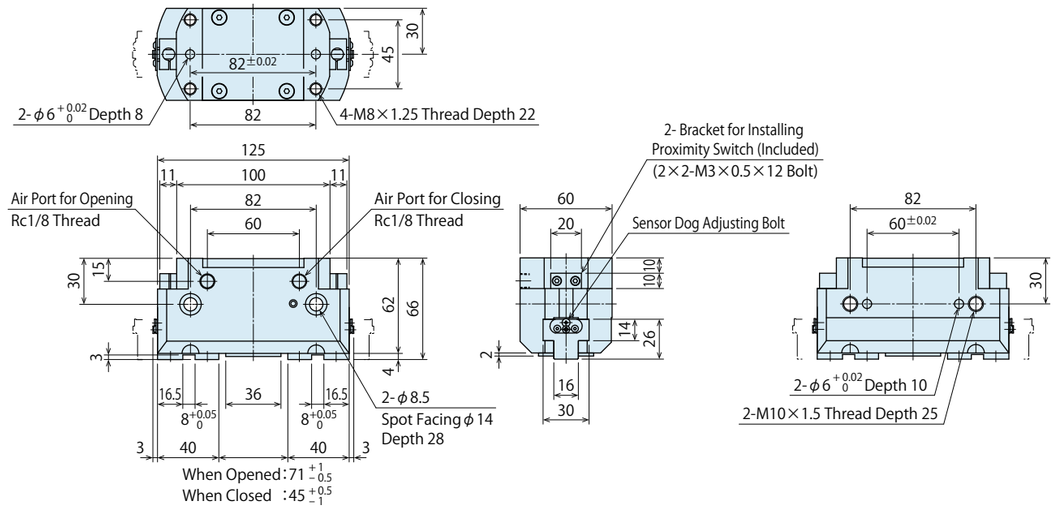
External Dimensions：WPQ0400

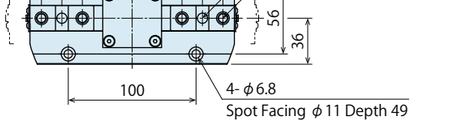
※ The drawing shows the closed state of WPQ0400.



External Dimensions：WPQ0500

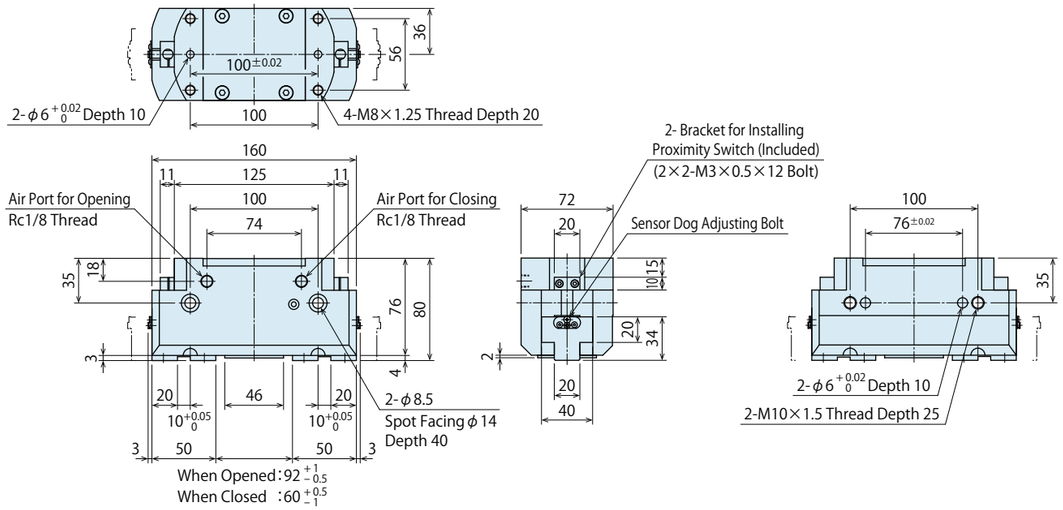
※ The drawing shows the closed state of WPQ0500.





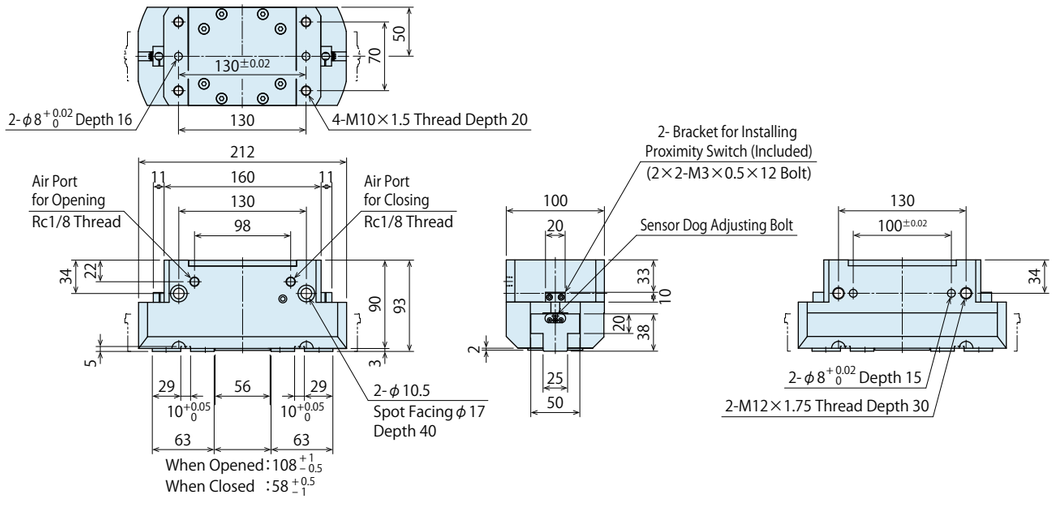
External Dimensions：WPQ0600

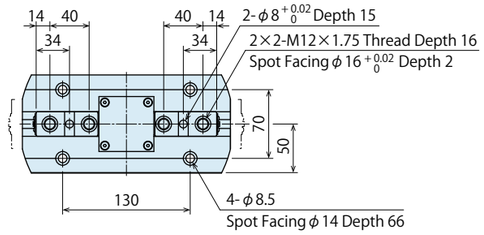
※ The drawing shows the closed state of WPQ0600.



External Dimensions：WPQ0800

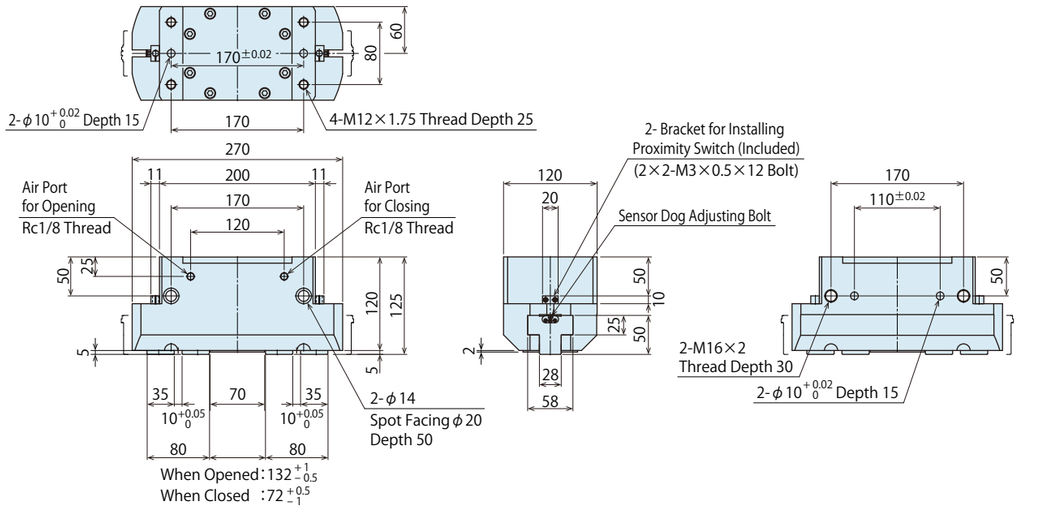
※ The drawing shows the closed state of WPQ0800.

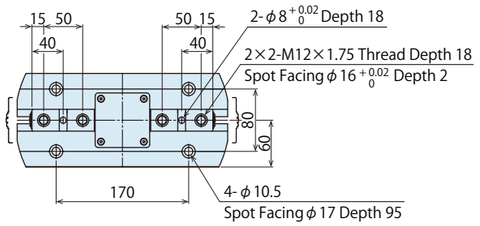




External Dimensions：WPQ1000

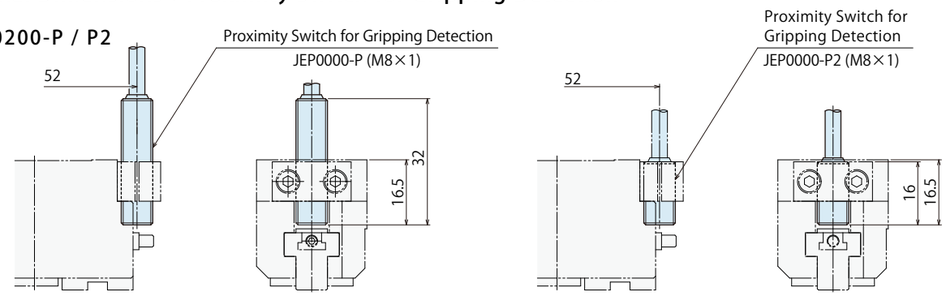
※ The drawing shows the closed state of WPQ1000.



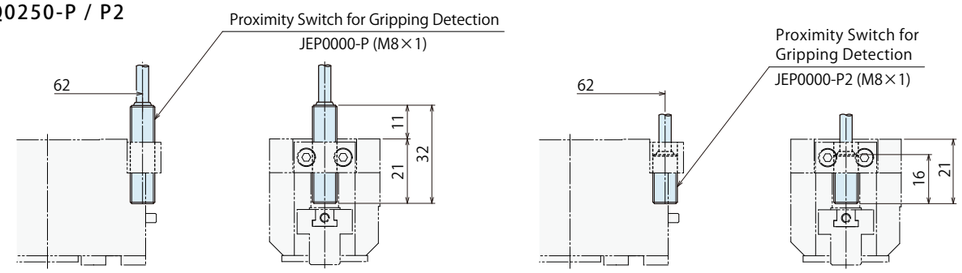


External Dimensions：Proximity Switch for Gripping Detection

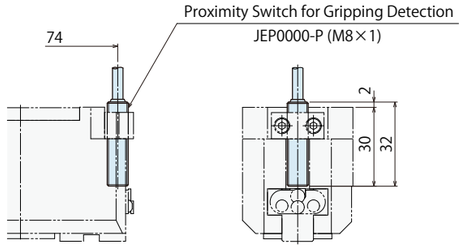
WPQ0200-P / P2



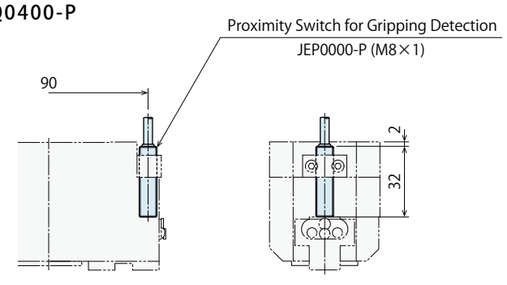
WPQ0250-P / P2



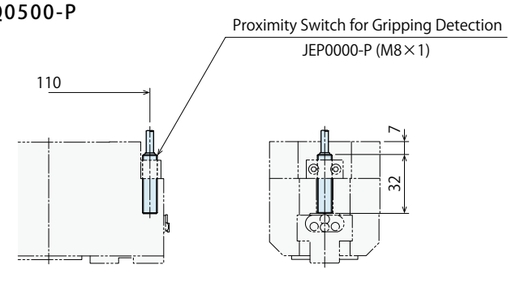
WPQ0300-P



WPQ0400-P



WPQ0500-P

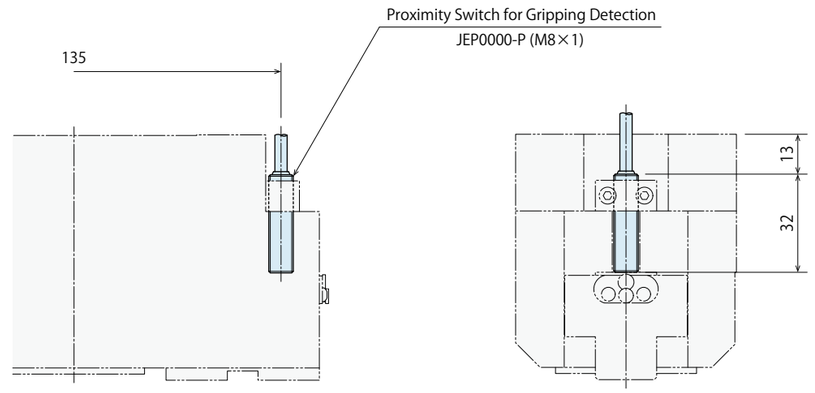


Note：

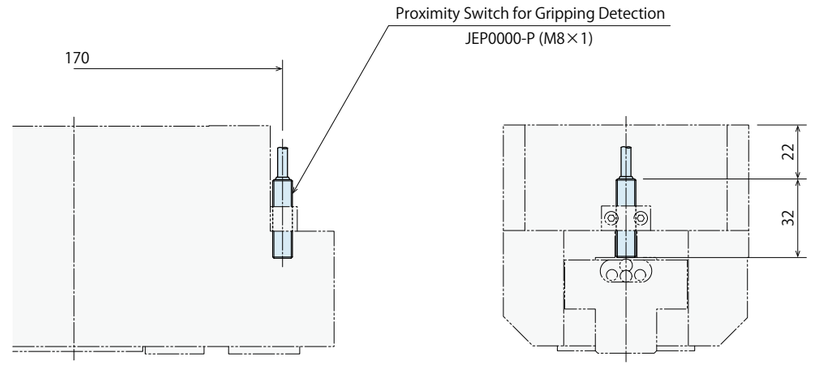
1. Proximity Switch for Gripping Detection Type P2 (Length 16mm) cannot be installed in WPQ0300 or larger sizes.

External Dimensions：Proximity Switch for Gripping Detection

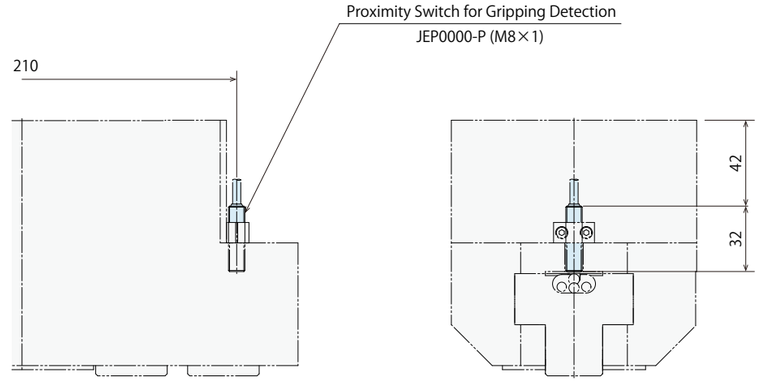
WPQ0600-P



WPQ0800-P



WPQ1000-P

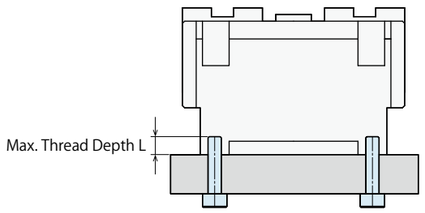


Note：

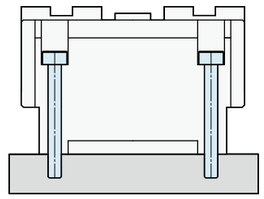
1. Proximity Switch for Gripping Detection Type P2 (Length 16mm) cannot be installed in WPQ0300 or larger sizes.

Installation Method

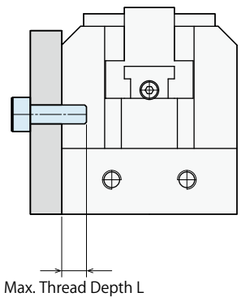
Tightening Torque for Cylinder Body



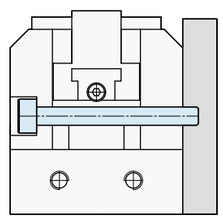
Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPQ0200	M4×0.7	2.5	6
WPQ0250	M5×0.8	5.0	12
WPQ0300	M5×0.8	5.0	14
WPQ0400	M6×1	7.9	18
WPQ0500	M8×1.25	15.4	20
WPQ0600	M8×1.25	15.4	20
WPQ0800	M10×1.5	35.3	20
WPQ1000	M12×1.75	65.7	25



Model No.	Thread Size	Tightening Torque (N・m)
WPQ0200	M3×0.5	1.3
WPQ0250	M4×0.7	2.5
WPQ0300	M4×0.7	2.5
WPQ0400	M5×0.8	5.0
WPQ0500	M6×1	7.9
WPQ0600	M6×1	7.9
WPQ0800	M8×1.25	15.4
WPQ1000	M10×1.5	35.3

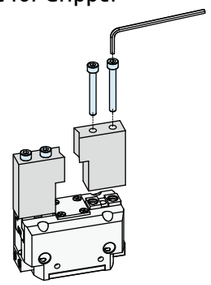


Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPQ0200	M4×0.7	2.5	8
WPQ0250	M5×0.8	5.0	15
WPQ0300	M6×1	7.9	14
WPQ0400	M8×1.25	15.4	14
WPQ0500	M10×1.5	35.3	18
WPQ0600	M10×1.5	35.3	18
WPQ0800	M12×1.75	65.7	25
WPQ1000	M16×2	162	30



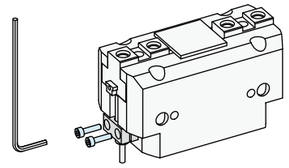
Model No.	Thread Size	Tightening Torque (N・m)
WPQ0200	M3×0.5	1.3
WPQ0250	M4×0.7	2.5
WPQ0300	M5×0.8	5.0
WPQ0400	M6×1	7.9
WPQ0500	M8×1.25	15.4
WPQ0600	M8×1.25	15.4
WPQ0800	M10×1.5	35.3
WPQ1000	M12×1.75	65.7

Tightening Torque for Gripper



Model No.	Thread Size	Tightening Torque (N・m)	Max. Thread Depth L (mm)
WPQ0200	M3×0.5	1.3	8
WPQ0250	M4×0.7	2.5	8
WPQ0300	M5×0.8	5.0	10
WPQ0400	M6×1	7.9	12
WPQ0500	M6×1	7.9	15
WPQ0600	M8×1.25	15.4	15
WPQ0800	M12×1.75	65.7	16
WPQ1000	M12×1.75	65.7	18

Tightening Torque for Bracket for Installing Proximity Switch



Model No.	Thread Size	Tightening Torque (N・m)
WPQ□0	M3×0.5	1.3

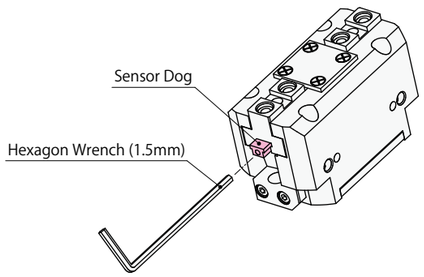
Excessive tightening leads to breakage of proximity switch.

Sensor Dog Adjustment Method

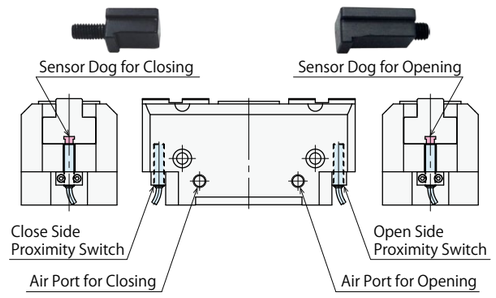
Proximity switch is used for opening/closing detection of robotic hand.
You can change the detection timing of proximity switch by adjusting the position of sensor dog.
There are two adjustment methods for sensor dog depending on shipment time.
Please check on the product and refer to the applicable adjustment method.

Adjustment Method ①

Adjust the sensor dog to the detection position and tighten it with hexagon wrench (1.5mm).



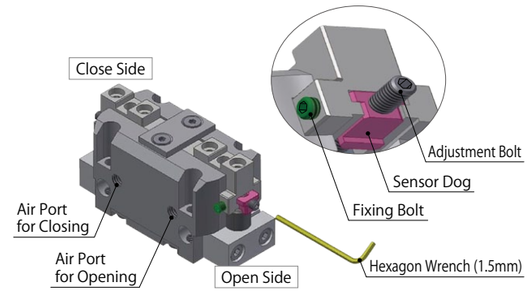
Shapes of sensor dog for opening and closing are different. Please refer to the drawing below and install the sensor dog to the appropriate position. Otherwise, the sensor dog may extremely stick out and/or the proximity switch may not react.



Adjustment Method ②

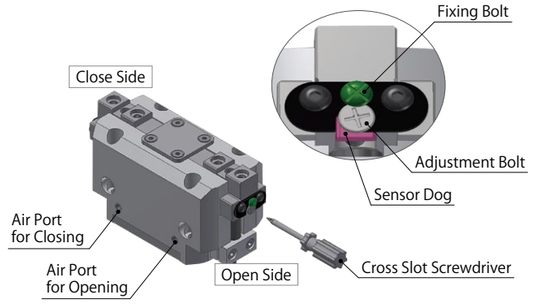
・For WPQ0200/0250

Untighten the fixing bolt with hexagon wrench (1.5mm), adjust the dog position with adjustment bolt, and tighten the fixing bolt again. Make sure to tighten the fixing bolt before operating the robotic hand.



・For WPQ0300/0400/0500/0600/0800/1000

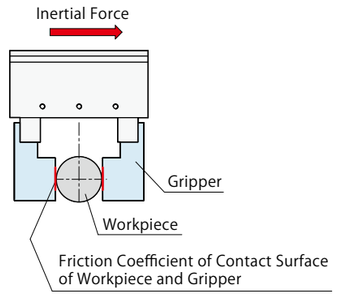
Untighten the fixing bolt with cross slot screwdriver, adjust the dog position with adjustment bolt, and tighten the fixing bolt again. Make sure to tighten the fixing bolt before operating the robotic hand.



Gripper Length/Workpiece Weight Graph

Inertial Force・Friction Coefficient・Safety Factor Selection List

Inertial Force		Friction Coefficient※1	Safety Factor
Low Speed	Stops after 0.1 sec at the speed of 0 ~ 100mm/sec.	Large	5 times
		Small	10 times
Middle Speed	Stops after 0.1 sec at the speed of 100 ~ 300mm/sec.	Large	10 times
		Small	15 times
	Stops after 0.1 sec at the speed of 300 ~ 500mm/sec.	Large	15 times
		Small	20 times
High Speed	Stops after 0.1 sec at the speed of 500 ~ 1000mm/sec.	-	30 times



Note：

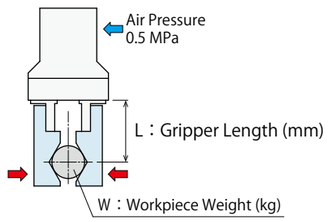
※1. Indicates the friction coefficient of contact surface of workpiece and gripper.
Refer to the condition below.
Friction Coefficient：Small (Approximately μ=0.1) ··· When contact surface is flat.
Friction Coefficient：Large (More than μ=0.15) ··· When contact surface is serration or spike shape.

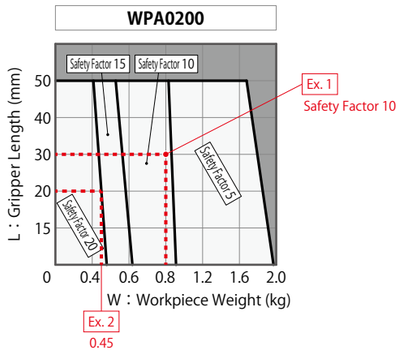
How to Read Gripper Length/Workpiece Weight Graph

The selection method is a reference. It is recommended to consider the actual conditions (environment) when selecting the product.
The graph shows when air pressure is 0.5MPa.

【Ex. 1】
When using WPA0200 (close side) with 0.8kg workpiece and 30mm gripper, the safety factor should be 10 times.
When using it with lower speed which is indicated in Inertial Force・Friction Coefficient・Safety Factor Selection List, the friction coefficient of contact surface can be small. When using it with middle speed (stops after 0.1 sec at the speed of 100~300mm/sec.), contact surface should be serration or spike shape to secure larger friction coefficient.

【Ex. 2】
When using it with middle speed (stops after 0.1 sec at the speed of 300 ~ 500mm/sec.) and when friction coefficient is small due to flat contact surface, the safety factor should be 20 times.
When using WPA0200 with 20 times safety factor and 20mm gripper, the maximum workpiece weight is 0.45kg.



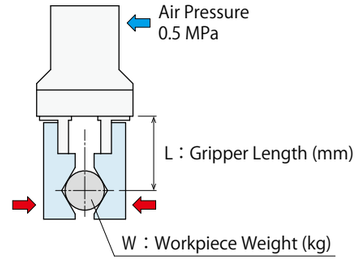


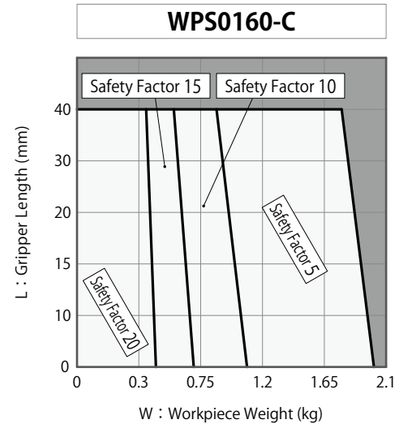
Relationship between Workpiece Weight and Robotic Hand Gripping Force

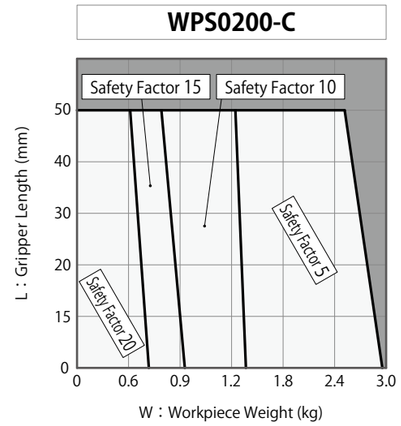
The safety factor of robotic hand gripping force to workpiece weight should be approximately 16 times for each robot manufacturer, but it differs according to the conditions. Refer to the following contents when selecting the product.

① Workpiece Gravity Center and Gripping Position
It is recommended to design the gripper so that it grips the workpiece gravity center with the center of robotic hand.
② Gripper Length
The load applied on the robotic hand body depends on the gripper length. It is recommended to design the gripper so that the workpiece gravity center is as close as possible to the robotic hand.

WPS：Close Side

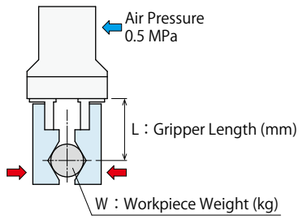


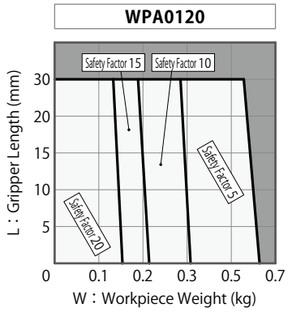


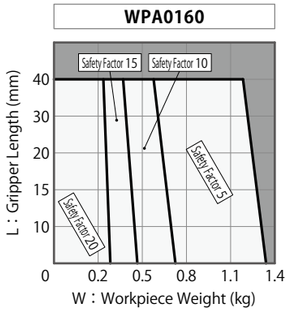


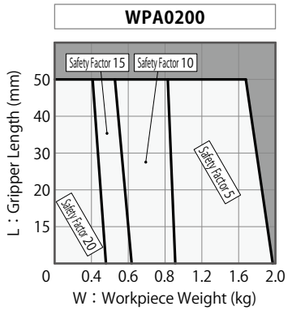
Gripper Length/Workpiece Weight Graph

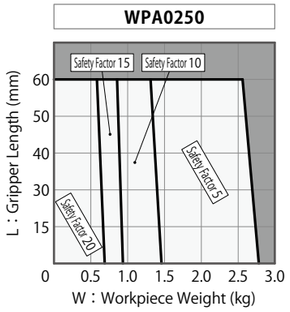
WPA：Close Side



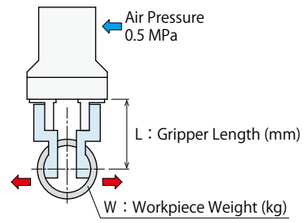


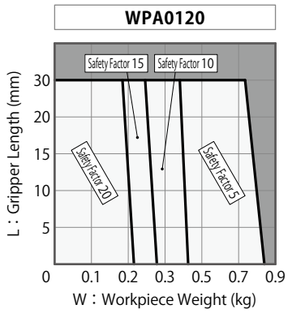


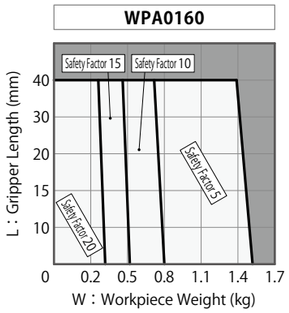


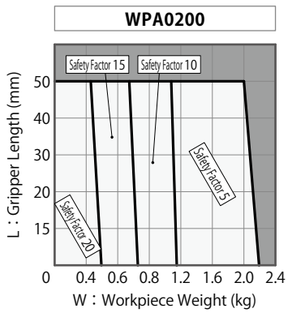


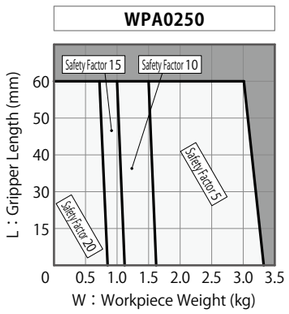
WPA：Open Side



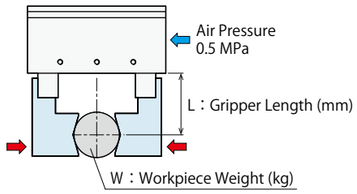


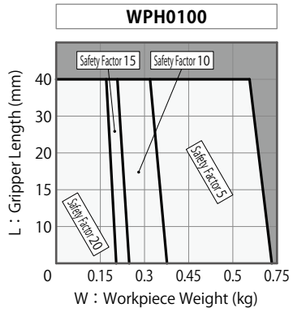


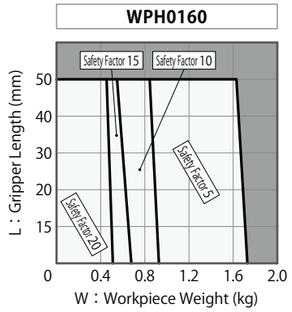


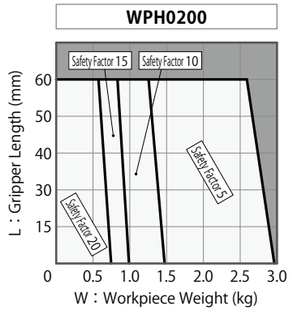


WPH



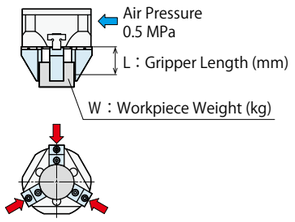


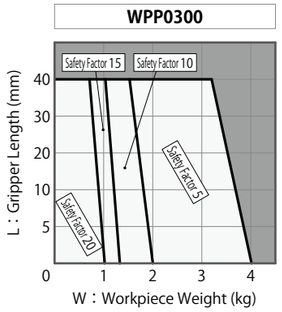


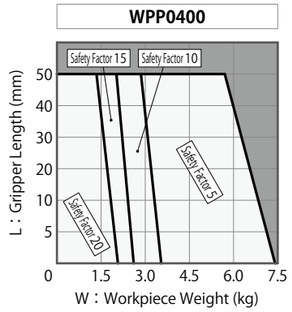


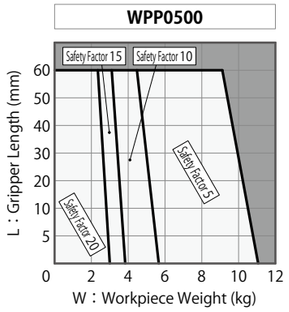
Gripper Length/Workpiece Weight Graph

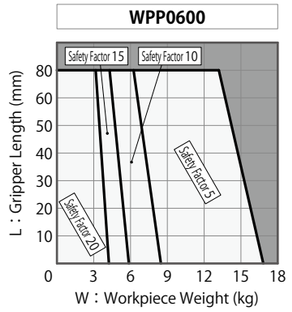
WPP：Closing Side

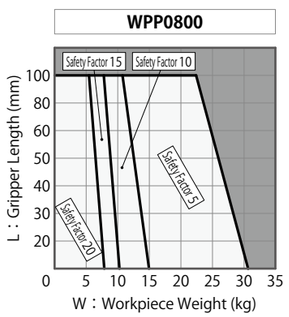


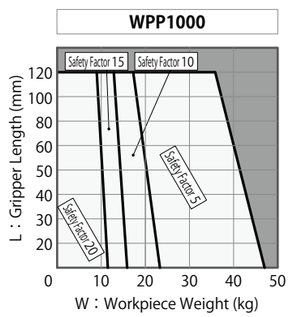


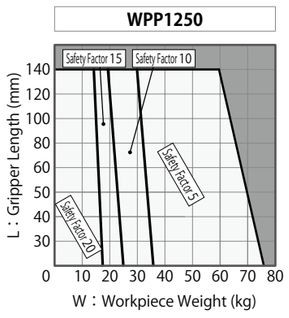




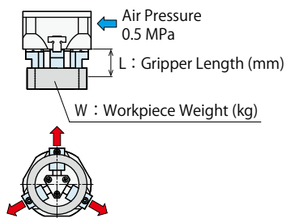


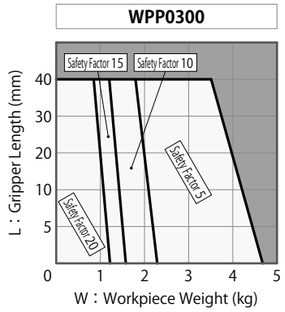


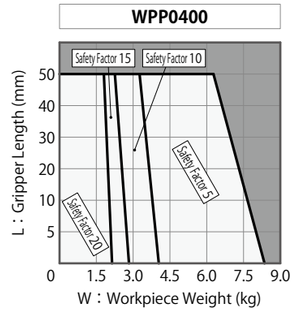


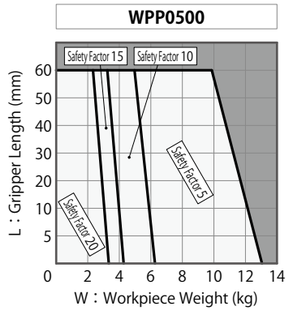


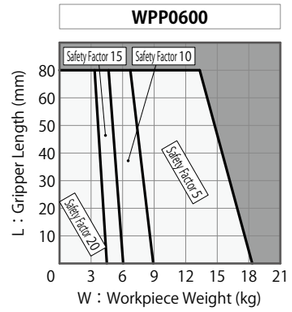
WPP：Opening Side

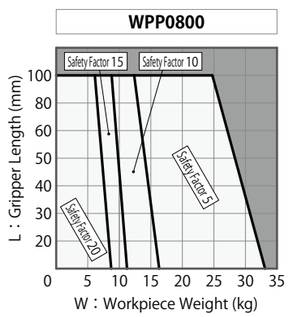


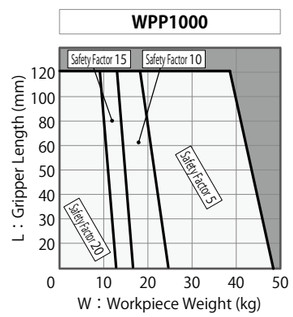


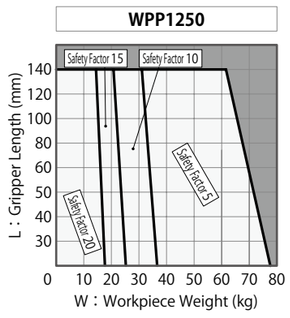






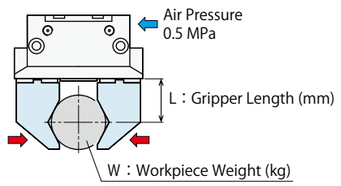


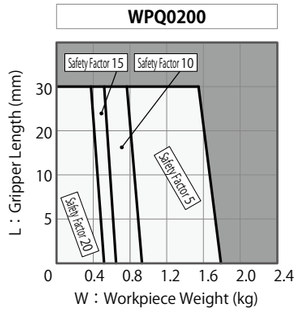


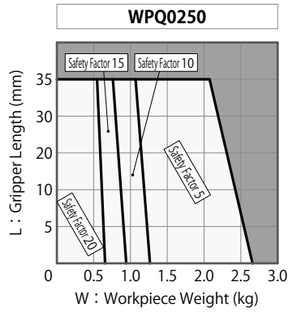


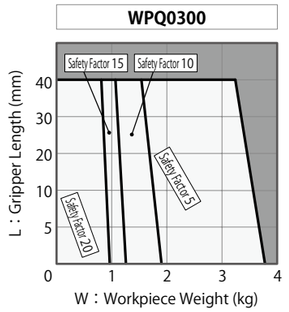
Cautions

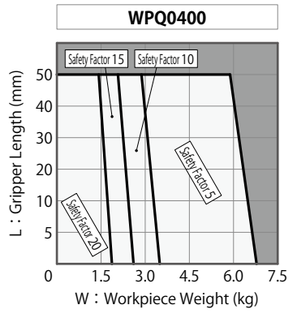
● WPQ：Closing Side

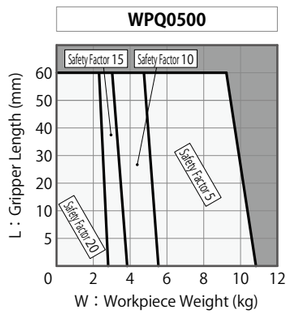


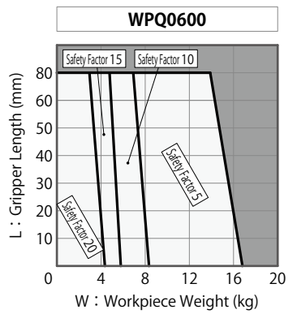


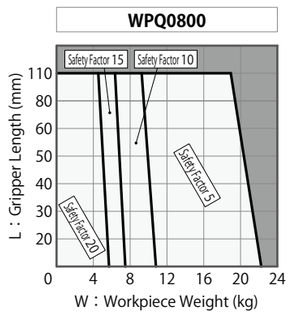


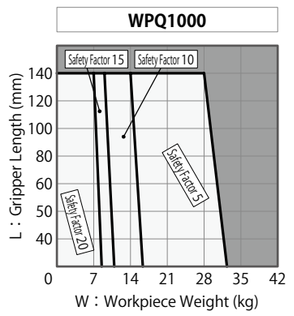




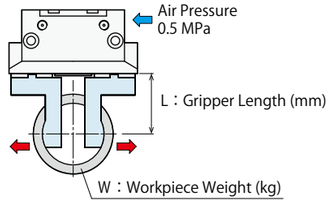


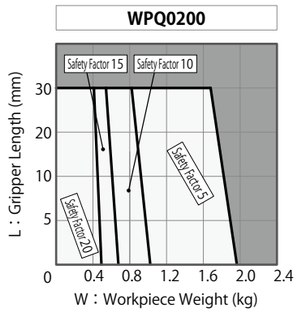


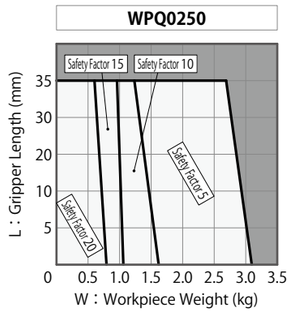


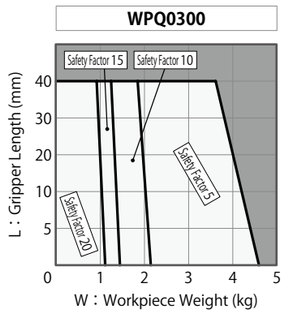


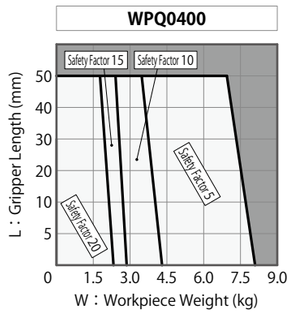
● WPQ：Opening Side

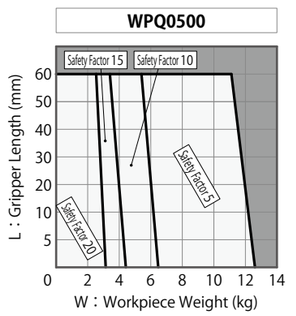


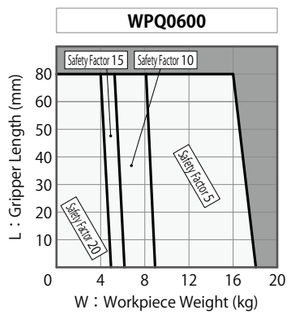


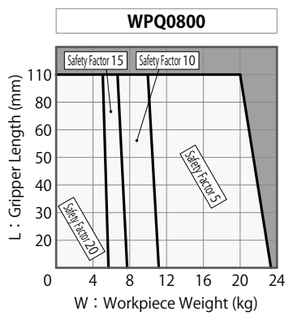


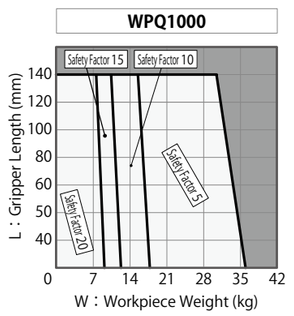








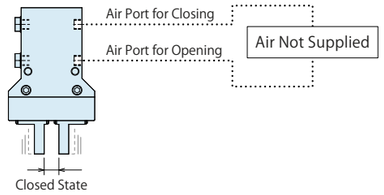




Cautions

Notes for Design

1) Check Specifications
- model WPS：Maximum operating air pressure is 0.5 MPa.
  Minimum operating air pressure is 0.2 MPa.
  model WPA：Maximum operating air pressure is 0.7MPa.
  Minimum operating air pressure is 0.2 MPa.
  model WPH：Maximum operating air pressure is 0.7MPa.
  Minimum operating air pressure is 0.15 MPa.
  model WPP/WPQ：Maximum operating air pressure is 0.7MPa.
  Minimum operating air pressure is 0.3 MPa.
  However, the maximum operating pressure and gripping force may change depending on the gripper length. Please provide appropriate air pressure in order to avoid deformation, seizure or air leakage caused by overload applied to the robotic hand.
- model WPS Only
  When air is not supplied to either air port for closing or air port for opening, the gripper is closed by built-in spring.



2) Notes for Circuit Design
- Please design the air circuit properly and review the circuit design in advance in order to avoid malfunction or breakage of the device.

3) Protective Cover Installation
- If the moving parts of the robot or robotic hand may endanger human life, please install the protection cover.

4) Please supply filtered clean dry air.
- Oil supply with a lubricator etc. is unnecessary.

5) Adjustment of Operating Speed
- If the operating speed of the robotic hand is very fast, it leads to wear-out or malfunction of the parts. Please prepare a speed controller to adjust speed in order not to exceed the appropriate opening and closing time.

6) For Use of Auto Switch
- Select an auto switch depending on the environment.
- An auto switch may be stuck out of the robotic hand depending on the installation position and direction.

Installation Notes

1) Check the Fluid to Use
- Please supply filtered clean dry air. (Install drain removing device.)
- Oil supply with a lubricator etc. is unnecessary.
  Oil supply with a lubricator may cause loss of the initial lubricant. The operation under low pressure and low speed may be unstable. (In case of using secondary lubricant, please supply the lubricant continuously.)

2) Preparation for Piping
- Pipes, piping connectors and fixture circuits should be cleaned and flushed thoroughly. The dust and cutting chips in the circuit may lead to air leakage and malfunction.
- There is no filter provided with this product for prevention of contaminants in the air circuit.

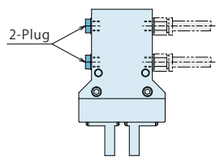
3) Applying Sealing Tape
- Wrap with tape 1 to 2 times following the screwing direction.
- Pieces of the sealing tape can lead to air leakage and malfunction.
- When piping, be careful that contaminant such as sealing tape does not enter the products.

4) Installation of the Robotic Hand and the Gripper
- Please tighten the robotic hand/gripper with the tightening torque listed on each product page.
  WPS：P.346, WPA：P.356, WPH：P.364,
  WPP：P.379, WPQ：P.393

5) Trial Operation Method
- Avoid supplying large air flow right after the installation. The operating time will be very fast and the robotic hand may be seriously damaged. Please install the speed controller near the air source and gradually supply air pressure.

6) Adjustment of Operating Speed
- If the operating speed of the robotic hand is very fast, it leads to wear-out or malfunction of the parts. Please prepare a speed controller to adjust speed in order not to exceed the appropriate opening and closing time.

7) Plug Installation (model WPS Only)
- Air port for closing and air port for opening are on the both sides of the hand. Please choose either side of the air ports to supply air and install the attached plugs on the other side.



Notes on Handling

1) It should be operated by qualified personnel.
- Machines and devices with hydraulic and pneumatic equipment should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
③ After stopping the product, do not remove until the temperature drops.
④ Make sure there is no trouble/issue in the bolts and respective parts before restarting the machine or equipment.

3) Do not touch the robotic hand or the robot while it is operating. Otherwise, your hands may be injured.

4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.
- Built-in spring is very strong and can be dangerous. (model WPS only)

Maintenance and Inspection

1) Please contact us for overhaul and repair.
Built-in spring is very strong and can be dangerous. (model WPS only)

※ Please refer to P.715 for common cautions. ・Maintenance/Inspection ・Warranty

Model No. Indication

JEP 000 0 - A1 L

1 2 3

1 Design No.

0 : Revision Number

2 Switch Type

A1 : 2-Wire Reed Auto Switch
A2 : 2-Wire Reed Auto Switch
A2V : 2-Wire L-Shaped Reed Auto Switch
B1 : 3-Wire Solid State Auto Switch
B2 : 3-Wire Solid State Auto Switch
B3C : 3-Wire L-Shaped Solid State Auto Switch
B3B : 2-Wire L-Shaped Solid State Auto Switch
P : 3-Wire Proximity Switch for Gripping Detection (Length 32mm)
P2 : 3-Wire Proximity Switch for Gripping Detection (Length 16mm)

3 Electric Cable Length ※1

Blank : 1m
L : 3m

Note :
※1. 3 Electric Cable Length is chosen only for A□/B□ Auto Switch of 2 Switch Type.
For P□: Proximity Switch for Gripping Detection, electric cable length is all 2m.

Application Table

Switch Type	2-Wire Reed Auto Switch		3-Wire Solid State Auto Switch			2-Wire Solid State Auto Switch
Model No.	JEP0000-A1□	JEP0000-A2□ JEP0000-A2V□	JEP0000-B1□	JEP0000-B2□	JEP0000-B3C□	JEP0000-B3B□
SWJ2000				●	●	●
SWP050□				●	●	●
SWP100□				●	●	●
WCG□-T				●	●	●
WHC020□		●		●	●	●
WHC032□		●		●	●	●
WHC040□		●		●	●	●
WHG□-T				●	●	●
WKH200□				●	●	●
WKK1000				●	●	●
WKK2000				●	●	●
WPA0120		●		●	●	●
WPA0160		●		●	●	●
WPA0200		●		●	●	●
WPA0250		●		●	●	●
WPB0160		●		●	●	●
WPB0200		●		●	●	●
WPB0250		●		●	●	●
WPE0160		●		●	●	●
WPE0200	●		●			
WPE0300	●		●			
WPE0400	●		●			
WPE0500	●		●			
WPE0800	●		●			
WPF0100	Not Applicable					
WPF0120		●		●	●	●
WPF0160		●		●	●	●
WPF0200	●		●			
WPF0300	●		●			
WPH0100		●		●	●	●
WPH0160		●		●	●	●
WPH0200	●		●			
WPJ0120	Not Applicable					
WPJ0160		●		●	●	●
WPJ0200	●		●			
WPJ0250	●		●			
WPJ0300	●		●			
WPJ0400	●		●			
WPS0160-C		●		●	●	●
WPS0200-C		●		●	●	●
WPW0500-C				●	●	●
WPW0600-C				●	●	●
WVGT□-T				●	●	●

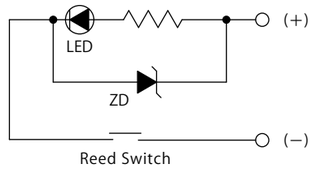
Switch Type	3-Wire Proximity Switch for Gripping Detection	
Model No.	JEP0000-P	JEP0000-P2
WPP0300	●	●
WPP0400	●	●
WPP0500	●	●
WPP0600	●	●
WPP0800	●	●
WPP1000	●	●
WPP1250	●	●
WPQ0200	●	●
WPQ0250	●	●
WPQ0300	●	
WPQ0400	●	
WPQ0500	●	
WPQ0600	●	
WPQ0800	●	
WPQ1000	●	

JEP0000-A□□ (2-Wire Reed Auto Switch)

Specifications

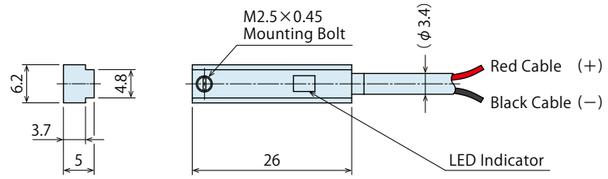
Model No.	JEP0000-A1	JEP0000-A1L	JEP0000-A2	JEP0000-A2L	JEP0000-A2V	JEP0000-A2VL
Name	Reed Auto Switch					
Wiring Type	2-Wire					
Applicable Load	Relay, Programmable Logic Controller (PLC)					
Load Voltage / Load Current	Less than DC24V / 40mA Less than AC100V / 20mA					
Internal Voltage Drop	Less than 3V					
Operating Time	1ms					
Ambient Temperature	−10 ~ 60℃					
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)					
Leakage Current	0					
Shock Resistance	30G					
Protection Circuit	None					
Protection Grade	IP67 (IEC Standard)					
Indicator Light	Red LED illuminates when turned ON					
Electric Cable Length	1m	3m	1m	3m	1m	3m

Electric Circuit Diagram

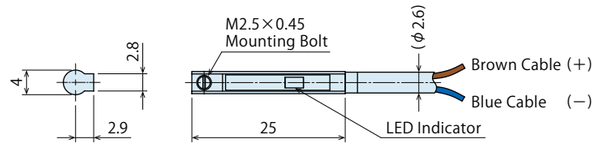


Note :
1. Auto switch will instantly break due to over loading current if turning on the auto switches without connecting the load. (Refer to Notes on Wiring 4) and 5) on P.413.)

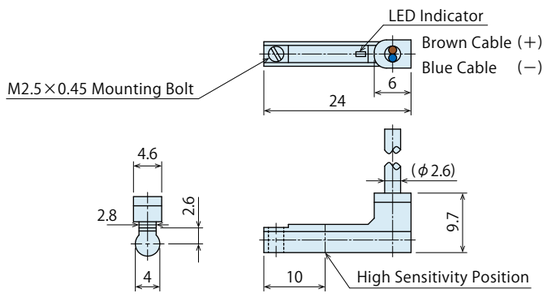
External Dimensions : JEP0000-A1 / A1L



External Dimensions : JEP0000-A2 / A2L



External Dimensions : JEP0000-A2V / A2VL

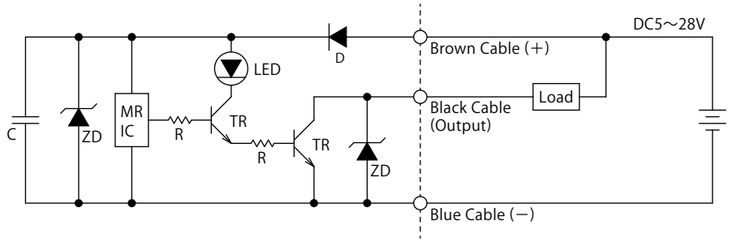


JEP0000-B1/B1L/B2/B2L (3-Wire Solid State Auto Switch)

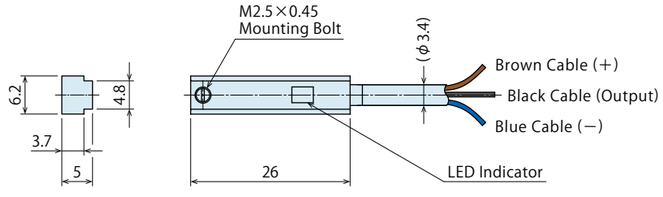
Specifications

Model No.	JEP0000-B1	JEP0000-B1L	JEP0000-B2	JEP0000-B2L
Name	Solid State Auto Switch			
Wiring Type	3-Wire			
Applicable Load	Relay, Programmable Logic Controller (PLC)			
Output Type	NPN			
Load Voltage / Load Current	Less than DC5 ~ 28V / 50mA			
Internal Voltage Drop	Less than 0.8V			
Leakage Current	Less than 0.1mA			
Current Consumption	Less than 10mA			
Operating Time	Less than 1ms			
Ambient Temperature	−10 ~ 60℃			
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)			
Insulation Resistance	More than 50MΩ / DC500V (Between the Case and Signal Cable)			
Shock Resistance	30G			
Protection Grade	IP67 (IEC Standard)			
Indicator Light	Red LED illuminates when turned ON			
Electric Cable Length	**1m**	**3m**	**1m**	**3m**

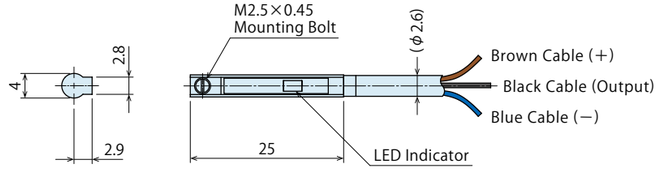
Electric Circuit Diagram



External Dimensions：JEP0000-B1/B1L



External Dimensions：JEP0000-B2/B2L

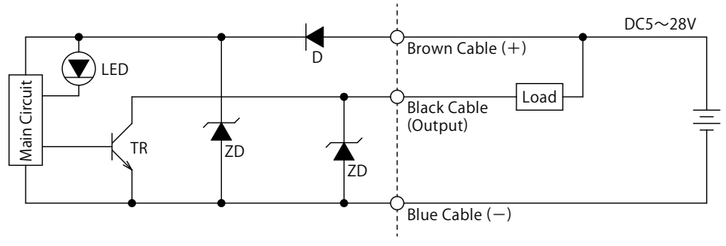


JEP0000-B3C/B3CL (3-Wire L-Shaped Solid State Auto Switch)

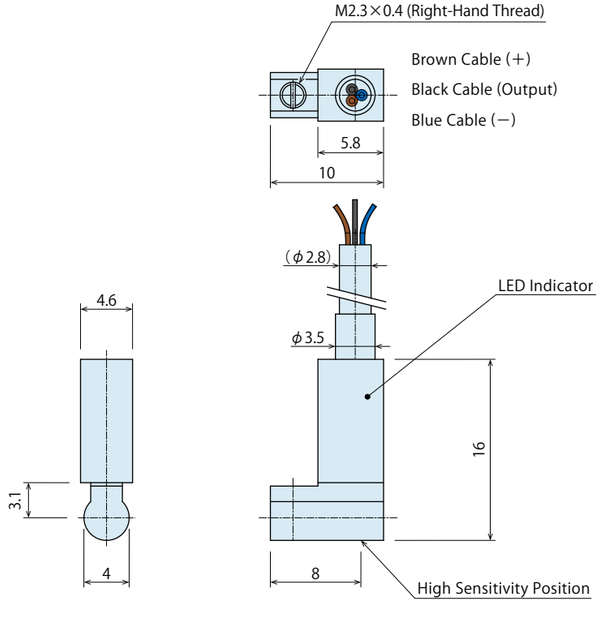
Specifications

Model No.	JEP0000-B3C	JEP0000-B3CL
Name	Solid State Auto Switch	
Wiring Type	3-Wire	
Applicable Load	Relay, Programmable Logic Controller (PLC)	
Output Type	NPN	
Load Voltage / Load Current	DC5 ~ 28V / 50mA	
Internal Voltage Drop	Less than 0.8V	
Leakage Current	Less than 0.1mA	
Current Consumption	Less than 10 mA	
Operating Time	Less than 1ms	
Ambient Temperature	−10 ~ 60℃	
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)	
Insulation Resistance	More than 100MΩ / DC500V (Between the Case and Signal Cable)	
Shock Resistance	30G	
Protection Grade	IP67(IEC Standard)	
Indicator Light	Red LED illuminates when turned ON	
Electric Cable Length	**1m**	**3m**

Electric Circuit Diagram



External Dimensions：JEP0000-B3C/B3CL

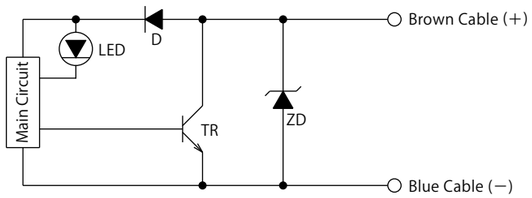


JEP0000-B3B/B3BL (2-Wire L-Shaped Solid State Auto Switch)

Specifications

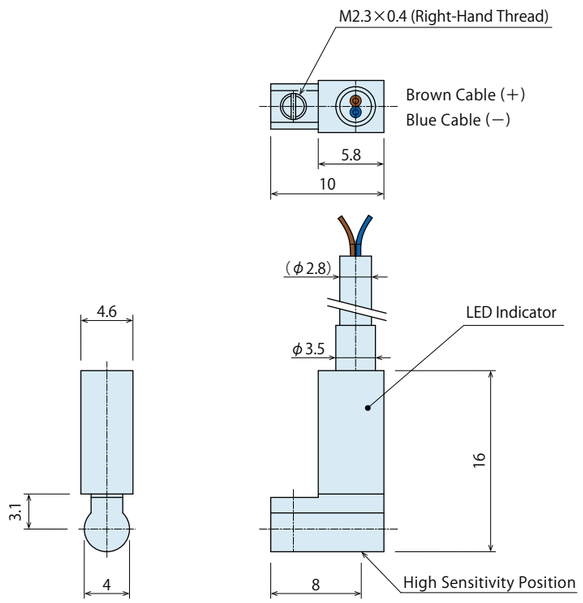
Model No.	JEP0000-B3B	JEP0000-B3BL
Name	Solid State Auto Switch	
Wiring Type	2-Wire	
Applicable Load	Relay, Programmable Logic Controller (PLC)	
Load Voltage / Load Current	Less than DC10～28V / 50mA	
Internal Voltage Drop	Less than 5V	
Leakage Current	Less than 1mA	
Current Consumption	Less than 10 mA	
Operating Time	Less than 1ms	
Ambient Temperature	−10～60℃	
Withstand Voltage	AC1500V (There should be no abnormalities in 1 min. application.)	
Insulation Resistance	More than 50MΩ / DC500V (Between the Case and Signal Cable)	
Shock Resistance	30G	
Protection Grade	IP67 (IEC Standard)	
Indicator Light	Red LED illuminates when turned ON	
Electric Cable Length	**1m**	**3m**

Electric Circuit Diagram



Note :
1. Auto switch will instantly break due to over loading current if turning on the auto switches without connecting the load.
(Refer to Notes on Wiring 4) and 5) on P.413.)

External Dimensions：JEP0000-B3B/B3BL

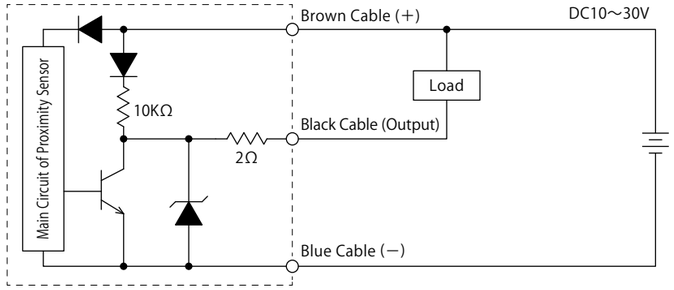


JEP0000-P/P2 (3-Wire Proximity Switch for Gripping Detection)

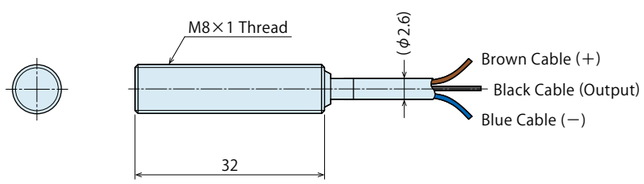
Specifications

Model No.	JEP0000-P	JEP0000-P2
Name	Proximity Switch for Gripping Detection	
Wiring Type	3-Wire	
Output Type	NPN	
Moving Distance	1mm ±10%	
Voltage Range	DC10 ~ 30V	
Opening / Closing Voltage	Less than 200mA	
Current Consumption	Less than 10mA	
Response Frequency	800Hz	
Ambient Temperature	−25 ~ 70℃	
Withstand Voltage	AC2000V (There should be no abnormalities in 1 min. application.)	
Protection Grade	IP67 (IEC Standard)	
Indicator Light	Red LED illuminates when turned ON	
Electric Cable Length	2m	

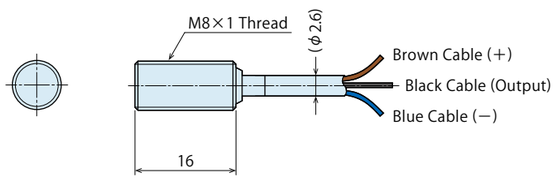
Electric Circuit Diagram



External Dimensions：JEP0000-P



External Dimensions：JEP0000-P2



Cautions

Notes for Design

1) Check the Specifications
- Please use each product according to the specifications. The product may be damaged or malfunction if used outside the range of load or specifications.

2) Notes on Use in the Interlock Circuit
- When the auto switch is used for an interlock signal that requires high reliability, please use a double interlock system by providing a mechanical protection function. Or by using another safety switch (sensor) together with the auto switch. Also, please perform periodic maintenance and confirm proper operation.

3) Wiring should be prepared as short as possible.
- For the reed auto switch, if the wiring length to the load is excessively long, inrush current to the auto switch increases and the operational life span will be shortened. (Remains ON)
- If the wiring length of the solid state auto switch is long, we recommend installing the ferrite core on both ends of the electric cable for noise control.

4) Notes when connecting to a load that generates surge voltage.
- When connecting a load that generates surge voltage such as relay, please use the auto switch equipped with junction protective circuit or use a junction protective element connecting to the auto switch in parallel.
- If surge voltage is repeatedly generated even with the auto switch equipped with junction protective circuit, it may damage the contact. In this case, please reduce the surge voltage by connecting a surge-absorption element to a surge-generating source (load) in parallel.

5) Notes when connecting auto switches in series.
- Due to voltage drop (refer to internal voltage drop on the specifications) caused by LED, voltage drop of n auto switches connected in series will be multiplied by n times. As a result, in some cases the load will not activate even if the auto switch drives properly.

6) Be careful with the polarity when wiring.
- When connected reversely, the auto switch may malfunction or be damaged.

7) When multiple cylinders or robotic hands are placed close together.
- Please provide enough space when using multiple actuators such as cylinders or robotic hands equipped with auto switches. (If allowable distance of each actuator is specified please follow specified instructions.) If they are too close, auto switches may malfunction due to magnetic interference.

8) Secure space for maintenance and inspection
- Please secure space for maintenance and inspection of auto switches when setting actuators such as cylinders and robotic hands equipped with auto switches.

Notes on Operating Environment

1) Never use the product in an atmosphere with explosive gases.
- Auto switches are not designed to prevent explosion. Do not use the product in an atmosphere with explosive gases since it may cause serious explosions.

2) Do not use the product in an area where a magnetic field is generated.
- Auto switches may malfunction, or internal magnet actuators, such as cylinders or robotic hands, equipped with auto switches will be demagnetized.

3) Do not use the product in an environment where the auto switches are continuously exposed to water or coolant.
- Although IEC standard IP67 structure is satisfied, please avoid using auto switches in an environment where continuously exposed to water or coolant. This may cause insulation failure or malfunction.

4) Do not use the product in an environment with oil or chemicals.
- If auto switches are used in an environment with coolant or cleaning solvent, even in a short time, they may be adversely affected by improper insulation, malfunction due to swelling of potting resin and/or hardening of electric cable.

5) Do not use the product in an environment subject to large temperature cycle.
- Heat cycles other than ordinary changes in temperature may adversely affect the internal structure of auto switches.

6) Avoid accumulation of steel dust and close connection of magnetic materials.
- An amount of steel chips or steel dusts, such as sputters of welding accumulate around an actuator. Cylinders, robotic hand equipped with auto switches and or magnetic materials (those attracted by magnet) are gathered closely to the actuator. These can weaken internal magnet actuators.

7) Do not use the product in an environment with excessive impact.
- Under the condition of the excessive impact of more than 30G, the contact of the reed auto switch will malfunction and the indicator light may signal or may be disconnected.

Installation Notes

1) Do not drop or bump.
- Do not drop, bump or apply excessive impact on auto switches. The auto switches may be damaged and cause malfunction.

2) Tighten auto switches with appropriate tightening torque.
- Please follow the tightening torque below.
Excessive tightening torque may damage the mounting screw, fitting or main body of the auto switch.
Also, mounting position may be shifted due to insufficient tightening torque.

Mounting Screw Size	Tightening Torque (N·m)
M2.3×0.4	0.15
M2.5×0.45	0.25

3) Do not carry cylinders or robotic hands by holding the electric cable of the auto switch.
- It may break the electric cable or damage the internal element.

4) Do not fix auto switches with the mounting screws other than attached in main body of the auto switches.
- Using non-designated screws may damage auto switches.

5) Install the auto switches at the center of the operating area.
- Installation position of auto switches should be adjusted so that a detected object (piston etc.) stops at the center of operating range. (Installation position shown in the catalog shows the most suitable fixed position of stroke end.) Please refer to P.345 for WPS, P.355 for WPA, P.363 for WPH, P.375 for WPP and P.391 for WPQ. If the auto switches are installed at the edge of operating range (near the boundary of ON and OFF), output movement may be unstable.

6) Installation position of the auto switches should be adjusted by checking actual operating state.
- Depending on the installation environment, actuators such as cylinders and robotic hands may not operate properly even if they are installed to the appropriate position. Make sure to check the operating condition even when mounting them at the middle of the stroke.

Cautions

Notes on Wiring

1) Check the insulation of wiring.
- Insulation failure (interference with other circuit, ground fault, and insulation failure between terminals) may send excessive voltage or current to the auto switches causing damage.

2) Do not place wires and auto switch cables close to other cables and high voltage cables.
- Otherwise, surge voltages will be induced creating noise and leading to malfunctions.

3) Repeated bending stress or stretching force should be avoided on electric cables.
- Wiring with bending stress or stretching force repeatedly applied on electric cables will prematurely breakdown.
  Bending stress or stretching force applied on the connecting area of electric cables and main body of the auto switches will damage the electric cables.
  Auto switches or wires should not be moving especially near the connecting areas.

4) Make sure to check the load state (connection and current value) before turning on the power.
- For 2-Wire Type
  Auto switches will instantly break due to over loading current if turning on the auto switches without connecting the load (Shorted Load Circuit). The above statement is also applied to the condition when the brown cable (+, output) of 2-wire type is directly connected to the (+) power terminal of a fixture and etc.

5) Avoid shorted load circuit.
- Reed Auto Switch
  Auto switches will instantly break due to over loading current if turning on the auto switch in load short circuit condition.
- Solid State Auto Switch
  Be aware of auto switch breakages when products with PNP output is not equipped with short-circuit protection.

6) Avoid wrong wiring
- Reed Auto Switch
  The electric circuit has polarities. The reed switch can operate even with reversed connection, but LED light will not illuminate. Also, flowing excessive current will damage LED and it will not operate properly.
- Solid State Auto Switch
  In case of 2-wire type, even if connected reversely, the auto switch will not be damaged due to protection circuit, but it is always ON.
  If reversely connected under short circuit condition, the auto switch will be damaged.
  In case of 3-wire type, even if the connections are reversed (power supply line "+" and "−"), the auto switch will be protected by a protection circuit.
  However, if connecting the power supply "+" to the blue cable and "−" to the black cable, the auto switch will be damaged.

Notes on Handling

1) It should be operated by qualified personnel.
- Machines and devices with hydraulic and pneumatic equipment should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
③ After stopping the product, do not remove until the temperature drops.
④ Make sure there is no trouble/issue in the bolts and respective parts before restarting the machine or equipment.

3) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

Maintenance・Inspection

Conduct the below maintenances and inspections periodically in order to avoid unintended malfunctions and to ensure the safety.

1) Removal of the Product and Shut-off of Pressure Source
- Before removing the product, make sure that safety devices and preventive devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
- Make sure there is no trouble/issue in the bolts and respective parts before restarting.

2) Never touch terminals while the power is on.
- It will cause electric shock, malfunction and damage to the auto switches.

3) Retightening of Mounting Screws
- Retighten the screws after adjusting the mounting position when the mounting position of the auto switches is shifted due to the looseness of the mounting screws.

4) Check if the electric cable is damaged or not.
- Damaged cables may cause insulation failure.
  Exchange the auto switch or repair the reed if there is damage on the electric cable.

5) Check the setting position of the detector.
- Confirm the set position is stopped at the center of the detecting range (the area that red LED illuminates).

6) Cleaning Auto Switches
- The auto switch should be clean. Do not use benzene, paint thinner or alcohol for cleaning. Doing so will cause scratches on the product and indications may be erased. If it is hard to remove stains from the product, wipe it out with a cloth soaked in a neutral detergent diluted with water. Wipe with a dry cloth to remove wet residue.

7) Product Storage
- Keep the product out of direct sunlight in a cool area where it is protected from water and humidity.

8) Please contact us for auto switch replacements.

※ Please refer to P.716 for common cautions. ・Warranty

Cautions

Notes on Handling

1) It should be operated by qualified personnel.
- The hydraulic machine and air compressor should be operated and maintained by qualified personnel.

2) Do not operate or remove the product unless the safety protocols are ensured.
① The machine and equipment can only be inspected or prepared when it is confirmed that the safety devices are in place.
② Before the product is removed, make sure that the above-mentioned safety devices are in place. Shut off the pressure and power source, and make sure no pressure exists in the air and hydraulic circuits.
③ After stopping the product, do not remove until the temperature drops.
④ Make sure there is no trouble/issue in the bolts and respective parts before restarting the machine or equipment.

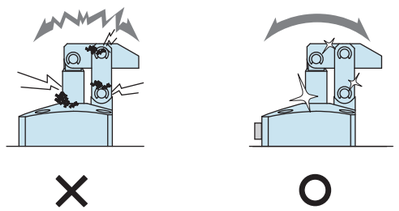
3) Do not touch a clamp (cylinder) while it is working.
Otherwise, your hands may be injured.

4) Do not disassemble or modify.
- If the equipment is taken apart or modified, the warranty will be voided even within the warranty period.

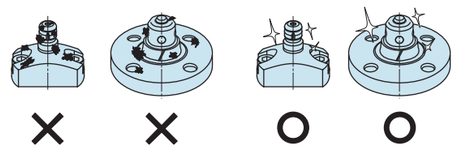
Maintenance and Inspection

1) Removal of the Machine and Shut-off of Pressure Source
- Before removing the product, make sure that the safety devices are in place. Shut off the pressure and power source and make sure no pressure exists in the air and hydraulic circuits.
- Make sure there is no trouble/issue in the bolts and respective parts before restarting.

2) Regularly clean the area around the piston rod and plunger.
- If it is used when the surface is contaminated with dirt, it may lead to packing seal damage, malfunctioning, fluid leakage.



3) Regularly clean the reference surfaces (taper reference surface and seating surface) of locating products (SWT/SWQ/SWP/VRA/VRC/VX/VXE/VXF/WVS/VWH/VWM/VWK).
- Locating products (except VRA/VRC/VX/VXE/VXF and SWR without air blow port) can remove contaminants with the cleaning function. When installing a workpiece or a pallet, make sure there are no contaminants such as thick sludge.
- Continuous use with dirt on components will lead to locating failure, fluid leakage and malfunction.



4) Regularly tighten pipe, mounting bolt, nut, snap ring, cylinder and others to ensure proper use.

5) Make sure the hydraulic fluid has not deteriorated.

6) Make sure there is a smooth action without an irregular noise.
- Especially when it is restarted after left unused for a long period, make sure it can be operated correctly.

7) The products should be stored in the cool and dark place without direct sunshine or moisture.

8) Please contact us for overhaul and repair.

Warranty

1) Warranty Period
- The product warranty period is 18 months from shipment from our factory or 12 months from initial use, whichever is earlier.

2) Warranty Scope
- If the product is damaged or malfunctions during the warranty period due to faulty design, materials or workmanship, we will replace or repair the defective part at our expense.
Defects or failures caused by the following are not covered.

① If the stipulated maintenance and inspection are not carried out.
② Failure caused by the use of the non-confirming state at the user's discretion.
③ If it is used or operated in an inappropriate way by the operator.
(Including damage caused by the misconduct of the third party.)
④ If the defect is caused by reasons other than our responsibility.
⑤ If repair or modifications are carried out by anyone other than Kosmek, or without our approval and confirmation, it will void warranty.
⑥ Other caused by natural disasters or calamities not attributable to our company.
⑦ Parts or replacement expenses due to parts consumption and deterioration.
(Such as rubber, plastic, seal material and some electric components.)

Damages excluding from direct result of a product defect shall be excluded from the warranty.

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