

HP06 Series

Applying PATENT

Parallel Linear Guide Gripper

(Synchronous Type)

Linear Bearing Guide

- ◆High Rigidity
- ◆High Accuracy

High Accuracy

- ◆Repeatability: below $\pm 0.07\text{mm}$
- ◆Centering Accuracy : $\pm 0.1\text{mm}$

3-Way Installation available

- ◆Mounting Holes with Threads

Ultra Thin Body

Long Stroke

- ◆Maximum: 80mm
(HP06-18*L)

Opening/Closing Levers
stop wherever by
fine adjustment

Opening/Closing directional
Stroke adjustable by Bolt

High Gripping Force

- ◆Double Piston

Straight and/or L-shaped ZE or ES type Sensor Switches

(Sensor switch is an option)

- ◆detecting Levers OPEN
- ◆detecting Levers CLOSED

HP06 Series**Model Code No.****HP06 - 12 JA - S ※ ZE135 A 2**

Series Name

Normal Size (Bore Size)

6 : 6mm
 8 : 8mm
 12 : 12mm
 14 : 14mm
 18 : 18mm

●Lever Stroke Adjustment

Blank : Without Stroke Adjusting Bolt
 JA : Opening Directional Stroke Adjusting
 for Internal Gripping(Outside Gripping)
 JB : Closing Directional Stroke Adjusting
 for External Gripping(Inside Gripping)
 JC : Closing & Opening Directional Stroke Adjusting

Number of Switch

1 : 1 Switch
 2 : 2 Switches

Switch Lead Wire

A : 1m
 B : 3m

(Option)

●Sensor Switch

Blank : without Switch

Straight type

ES13, ZE135 : Solid state type, 2 wire
 ES15, ESP15, ZE155 : Solid state type, 3 wire

L-shaped type

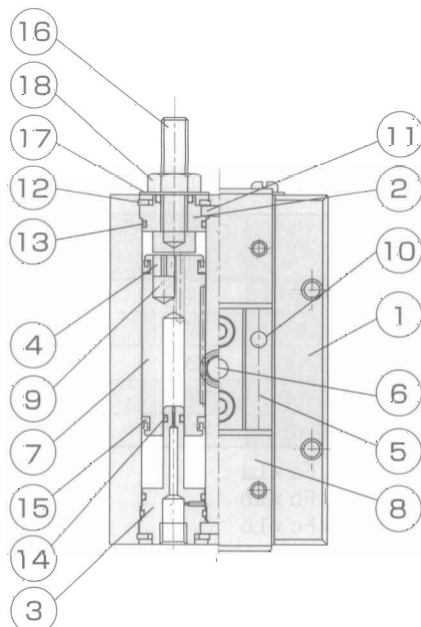
ES23, ZE235 : Solid state type, 2 wire
 ES25, ESP25, ZE255 : Solid state type, 3 wire

●Lever Stroke

Blank : only for HP06-6, HP06-8 and HP06-12
 S : Short stroke
 only for HP06-14 and HP06-18
 L : Long stroke
 only for HP06-14 and HP06-18

Internal Structure

Example: HP06-8JA
 HP06-8JB

**Parts List**

No.	Name	Material
1	Main Body	Aluminium Alloy
2	Head Cover	Aluminium Alloy
3	Head Cover	Aluminium Alloy
4	Holding Cover	Aluminium Alloy
5	Lever	Carbon Steel
6	Pinion	Stainless Steel
7	Rack Piston	Stainless Steel
8	Bearing	Stainless Steel
9	Magnet	Plastic Magnet
10	Roller	Carbon Steel
11	Roller	Carbon Steel
12	Snap Ring	Carbon Steel
13	O-ring	NBR
14	O-ring	NBR
15	Packing for Piston	NBR
16	Adjusting Bolt	Carbon Steel
17	Fastener Seal	NBR
18	Hexagonal Nut	Soft Steel

Caution:

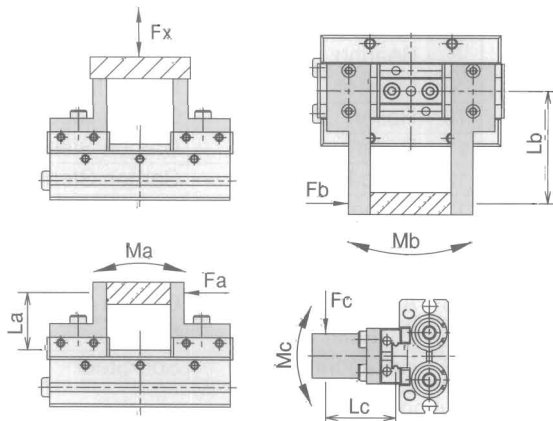
Do not remove ⑯ Adjusting Bolt from Main Body.
 (HP06-8JA and HP06-8JB only)

Specifications

Action Type	Double Acting	
Working Fluid	Air	
Maximum Operating Pressure [MPa]	0.7	
Proof Pressure [MPa]	1.05	
Operating Ambient Temperature [°C]	0 to 60	
Lubrication	Not required (need for Levers sliding portion only)	
Max.Operating Cycle [cycles per min.]	120 (HP06-6, HP06-8 and HP06-12) 100 (HP06-14 and HP06-18)	
Centering Accuracy [mm]	0.1 (+0.1 to -0.1)	
Repeatability Accuracy [mm]	0.07 (+0.07 to -0.07)	
Air port	M3×0.5 (HP06-6, HP06-8) M5×0.8 (HP06-12, HP06-14 and HP06-18)	
Available Switch type	ZE, ES type (Solid state type)	

Action type	Model	Normal Size [mm]	Minimum Operating Pressure [MPa]	Maximum Stroke [mm]	Effective Gripping Force [N]		External Dimensions (Thick×Width×Length) [mm]	Weight [g]
Double Acting	HP06-6	6×2	0.2	12	Closing	12	15×29×45	Refer to the next page
					Opening	12		
	HP06-8	8×2	0.2	16	Closing	16.7	19×32×52	
					Opening	16.7		
	HP06-12	12×2	0.15	22	Closing	44	25×41×66	
					Opening	44		
	HP06-14※-S	14×2	0.15	30	Closing	58.8	31×48×86	
					Opening	58.8		
	HP06-14※-L	14×2	0.15	60	Closing	58.8	31×48×130	
					Opening	58.8		
	HP06-18※-S	16×2	0.15	40	Closing	107.8	37×57×110	
					Opening	107.8		
	HP06-18※-L	16×2	0.15	80	Closing	107.8	37×57×166	
					Opening	107.8		

Note: Effective Gripping Force (N) is the value at gripping point of 30 mm in length under operating pressure of 0.5MPa.

Permissible Load and Permissible Moment

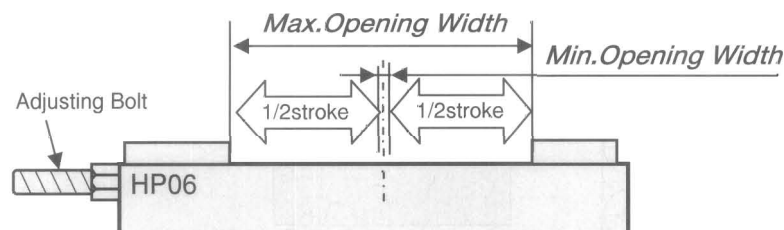
Model	FX (N)	MA (N·m)	MB (N·m)	MC (N·m)
HP06-6	12	0.04	0.04	0.08
HP06-8	40	0.3	0.3	0.5
HP06-12	120	1.0	1.0	2.0
HP06-14	190	3.4	4.0	8.0
HP06-18	210	4.4	5.4	9.0

$$Ma = Fa \times La$$

$$Mb = Fb \times Lb$$

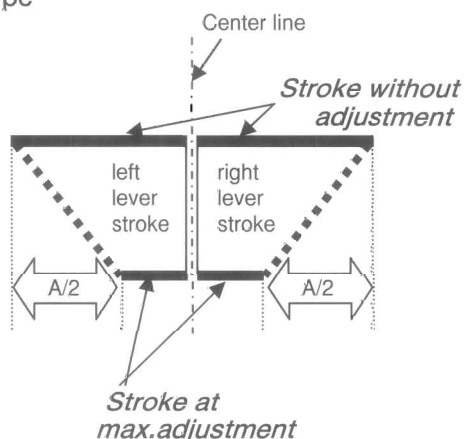
$$Mc = Fc \times Lc$$

Adjustable Stroke Range & Weight

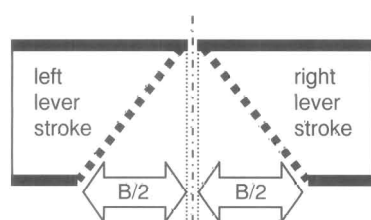


Lever stroke range

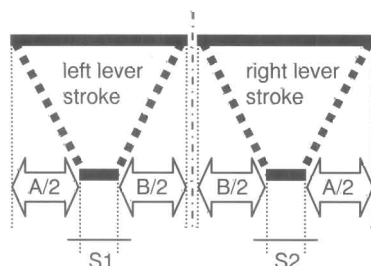
JA type



JB type



JC type



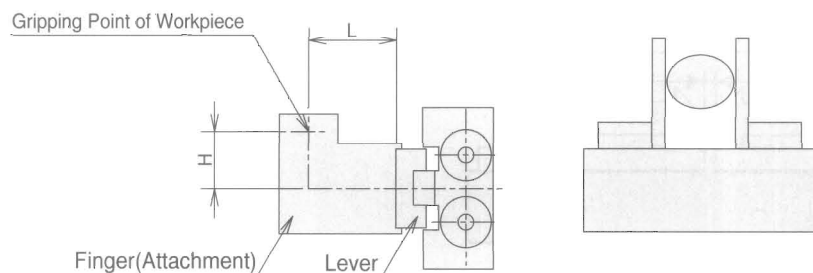
Note:

Adjusting bolts are backed off to get maximum stroke when shipping at factory.

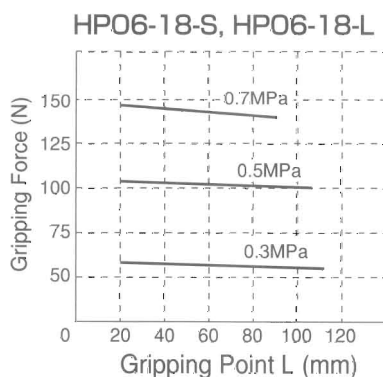
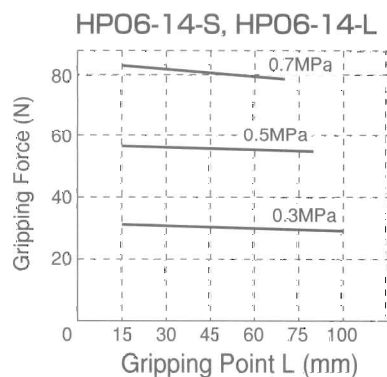
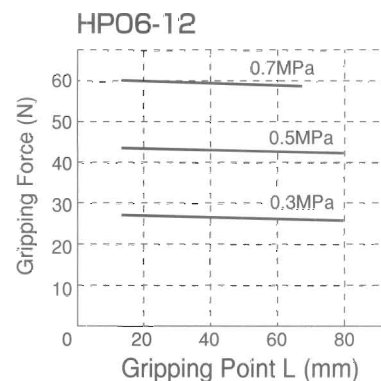
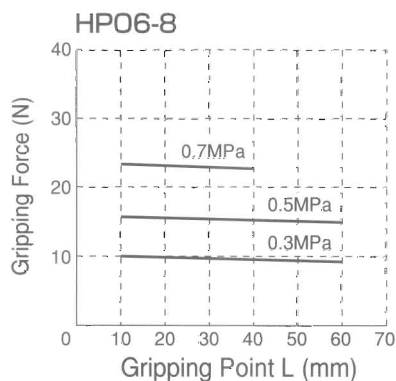
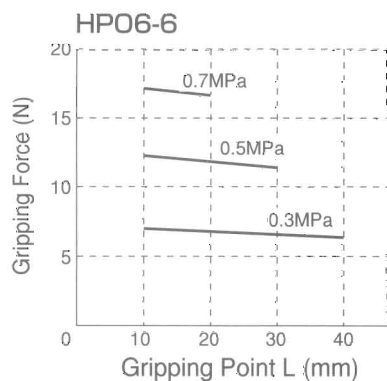
Caution:

Total stroke($S1 + S2$) should be kept "3mm" at least for HP06-6JC and HP06-8JC. Refer to (*1) in the below list.

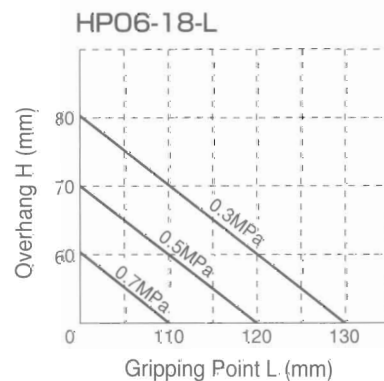
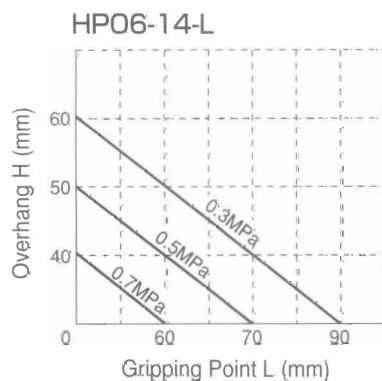
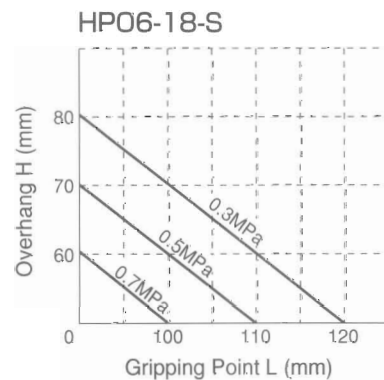
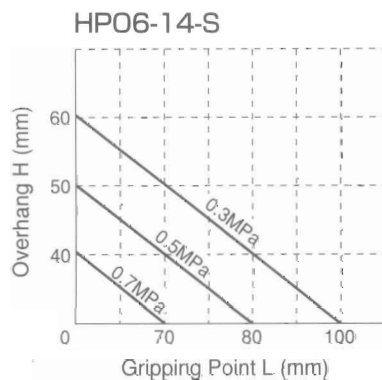
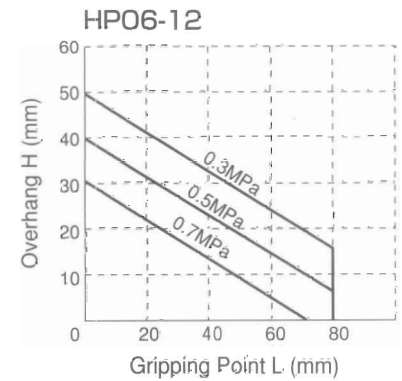
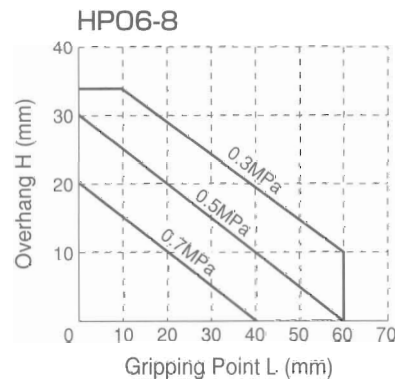
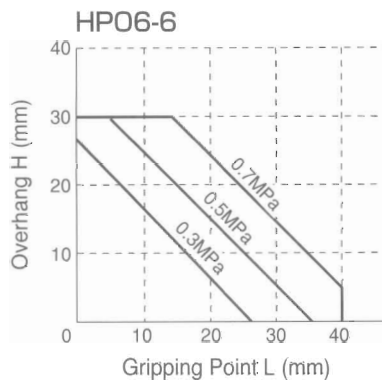
HP06 series	Max.Adjustable Stroke (mm)	Weight (g)
HP06-6	(without Adjusting Bolt)	52
HP06-6JA	Opening direction, $A=6$	52
HP06-6JB	Closing direction, $B=6$	52
HP06-6JC	Both directions, $A+B=9$ (*1)	52
HP06-8	(without Adjusting Bolt)	86
HP06-8JA	Opening direction, $A=8$	87
HP06-8JB	Closing direction, $B=8$	87
HP06-8JC	Both directions, $A+B=13$ (*1)	88
HP06-12	(without Adjusting Bolt)	200
HP06-12JA	Opening direction, $A=8$	203
HP06-12JB	Closing direction, $B=8$	203
HP06-12JC	Both directions, $A+B=16$	206
HP06-14-S	(without Adjusting Bolt)	390
HP06-14JA-S	Opening direction, $A=15$	395
HP06-14JB-S	Closing direction, $B=15$	395
HP06-14JC-S	Both directions, $A+B=30$	405
HP06-14-L	(without Adjusting Bolt)	570
HP06-14JA-L	Opening direction, $A=15$	580
HP06-14JB-L	Closing direction, $B=15$	580
HP06-14JC-L	Both directions, $A+B=30$	590
HP06-18-S	(without Adjusting Bolt)	690
HP06-18JA-S	Opening direction, $A=15$	700
HP06-18JB-S	Closing direction, $B=15$	700
HP06-18JC-S	Both directions, $A+B=30$	710
HP06-18-L	(without Adjusting Bolt)	1,020
HP06-18JA-L	Opening direction, $A=15$	1,030
HP06-18JB-L	Closing direction, $B=15$	1,030
HP06-18JC-L	Both directions, $A+B=30$	1,040

Effective Gripping Force**NOTE:**

1. When gripping a workpiece, the mass of workpiece should be within the range between 5 to 10% of the above Effective Gripping Force.
2. When moving a workpiece with gripping it, the mass of workpiece should be within the range between 2 to 4% of the below Effective Gripping Force.
3. The necessary gripping force depends on the material (surface) of workpiece, shape of fingers and moving speed and direction (horizontally or vertically) of gripper. Therefore, please take your operational condition into consideration.

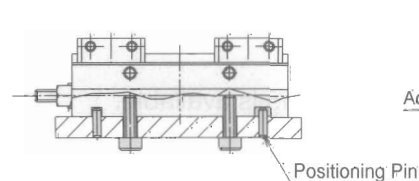


Available Range of Gripping Point

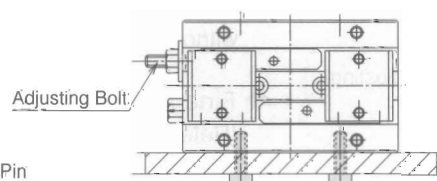


Installation Examples

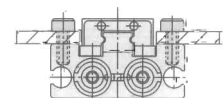
1. Using Thread Holes at bottom



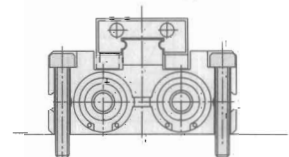
2. Using Thread Holes at side (both sides)



3. Using Thread Holes at shoulders

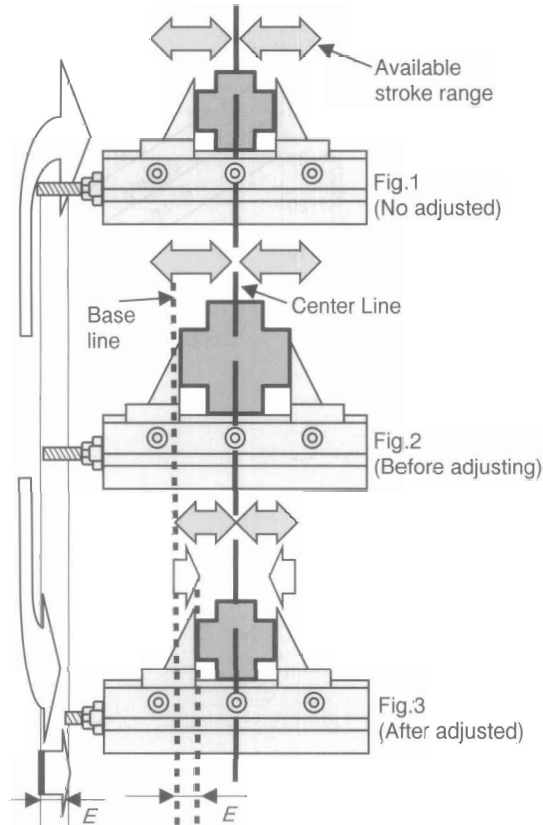


4. Using Through Holes on body (Custom-made only)

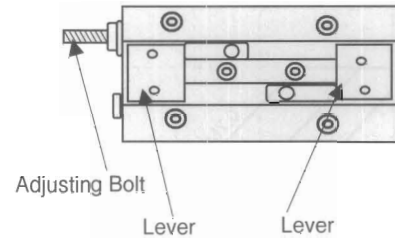


Note: L-shaped switches only can be used.

Gripper type	Thread Holes for installation		
	At Bottom side	At Both sides	At Shoulders
HP06-6	2×M2.5 Depth 4	2×M2.5 Depth 3.5	4×M2.5 Depth 4
HP06-8	2×M3 Depth 5	4×M3 Depth 3	4×M3 Depth 5
HP06-12	2×M4 Depth 8	6×M3 Depth 5	4×M4 Depth 6
HP06-14	2×M5 Depth 8	6×M4 Depth 6	4×M4 Depth 6
HP06-18	2×M5 Depth 8	6×M5 Depth 7	4×M4 Depth 8

Stroke & Positioning Adjustment**Opening Directional Stroke Adjustment for Workpiece-External Gripping**

HP06- * JA

◆ **Different Size Gripping is available.**

(Refer to Fig.2 and then Fig.1)

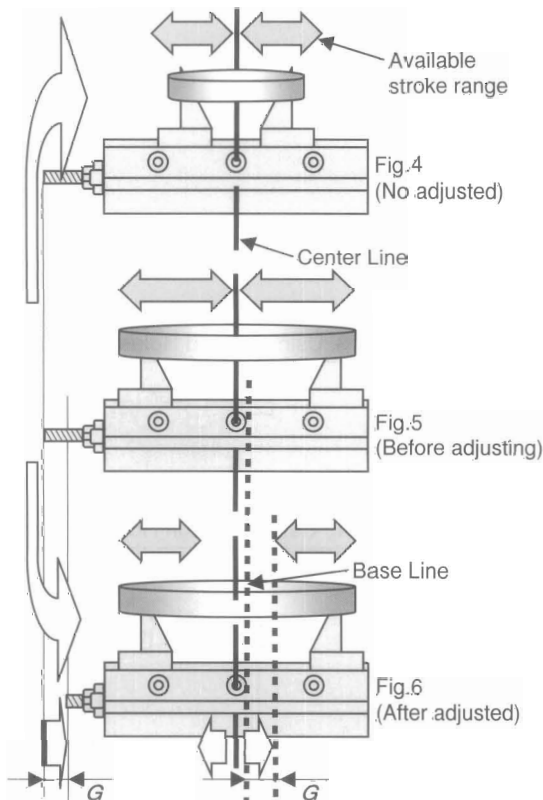
After gripping the larger workpiece (fig.2), the next smaller workpiece (Fig.1) also can be gripped firmly by the both levers without adjusting Adjusting Bolt.

◆ **Fine Adjusting for Positioning is available.**

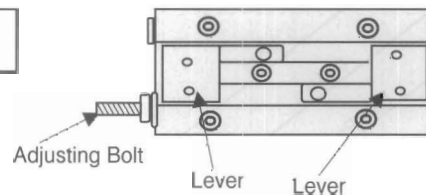
(Refer to Fig.2 and then Fig.3)

The opening width can be narrowed "E" by tightening Adjusting Bolt "E" to avoid a collision surroundings with levers or work with efficiency.

Adjusting Bolt	Stroke
Back off	increase
Tighten	decrease

Closing Directional Stroke Adjustment for Workpiece-Internal Gripping

HP06- * JB

◆ **Different Size Gripping is available.**

(Refer to Fig.5 and then Fig.4)

After gripping the larger workpiece (Fig.5), the next smaller workpiece (Fig.4) also can be gripped firmly by the both levers without adjusting Adjusting Bolt.

◆ **Fine Adjusting for Positioning is available.**

(Refer to Fig.5 and then Fig.6)

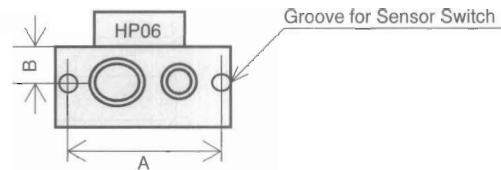
The stroke range can be narrowed "G" by tightening Adjusting Bolt "G" to avoid a head-on collision between the mounted fingers or work with efficiency.

Adjusting Bolt	Stroke
Back off	increase
Tighten	decrease

■ Dimensions of Groove for Sensor Switch

Unit : mm

HP06 series	-6	-8	-12	-14	-18
A	24	27	36	43	52
B	6.5	8	11	18	24.5

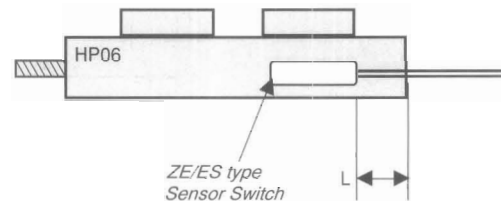


■ Protruding Length of Switch

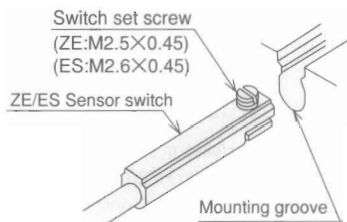
Refer to protruding length of switch body from HP06 body at the levers closed or opened fully.

Unit : mm

HP06 series	-6	-8	-12	-14	-18
Max. producing Length "L"	0	0	0	0	0



■ Switch Installation



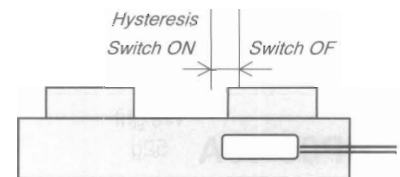
Insert switch into mounting groove. Locate in detecting position and then tighten set screw with miniature screwdriver up to 0.1N·m.

■ Response Differential (Hysteresis)

Response Differential shows the stroke from the location where the lever moves and turns the switch ON to where the switch turns OFF in the opposite direction.

Unit : mm

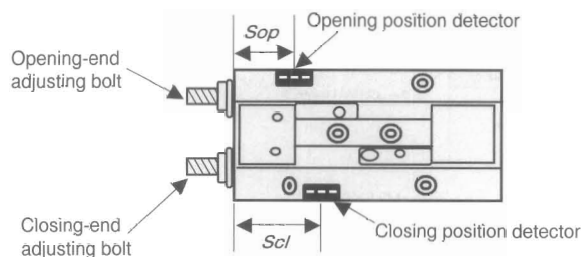
HP06 series	All
Max. Response Differential	0.3
Operating Position Accuracy	0.2



■ Finding Most Sensitive Detecting Position (shows)

Most sensitive detecting position

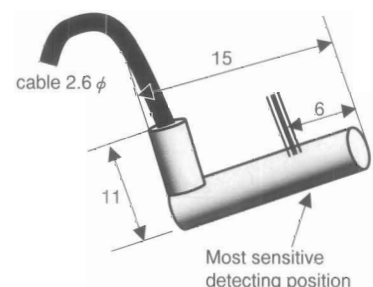
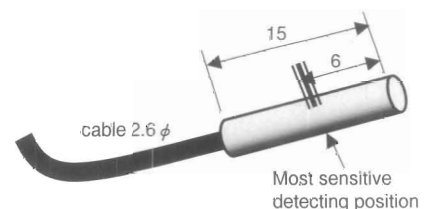
Example: JC type



- ① Make sure that the levers stay at the position where required.
- ② Insert the sensor switches into the grooves until LED turns ON, and then insert another 0.5mm
- ③ Fix the sensor switches there with set screws.

HP06 series	Sop	Scl
HP06-6	12	18
HP06-8	15	23
HP06-12	17	28
HP06-14*S	13	28
HP06-14*L	13	43
HP06-18*S	14	34
HP06-18*L	14	54

ZE/ES sensor switches



Note: "Sop" and "Scl" are reference only when the levers are fully retracted with Adjusting bolts backed off completely.

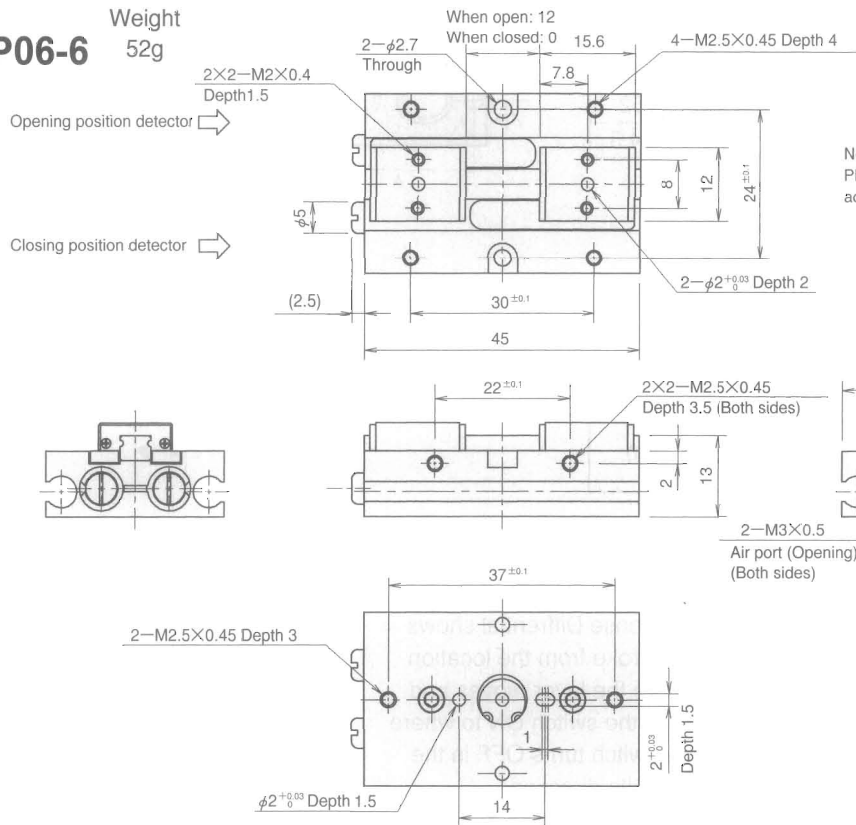
HP06 Series

HP06

Unit : mm

Dimensions

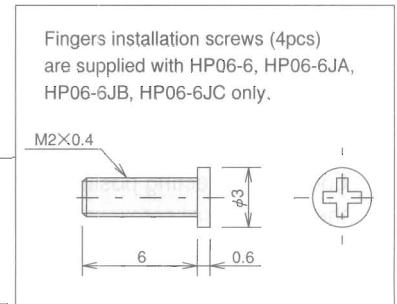
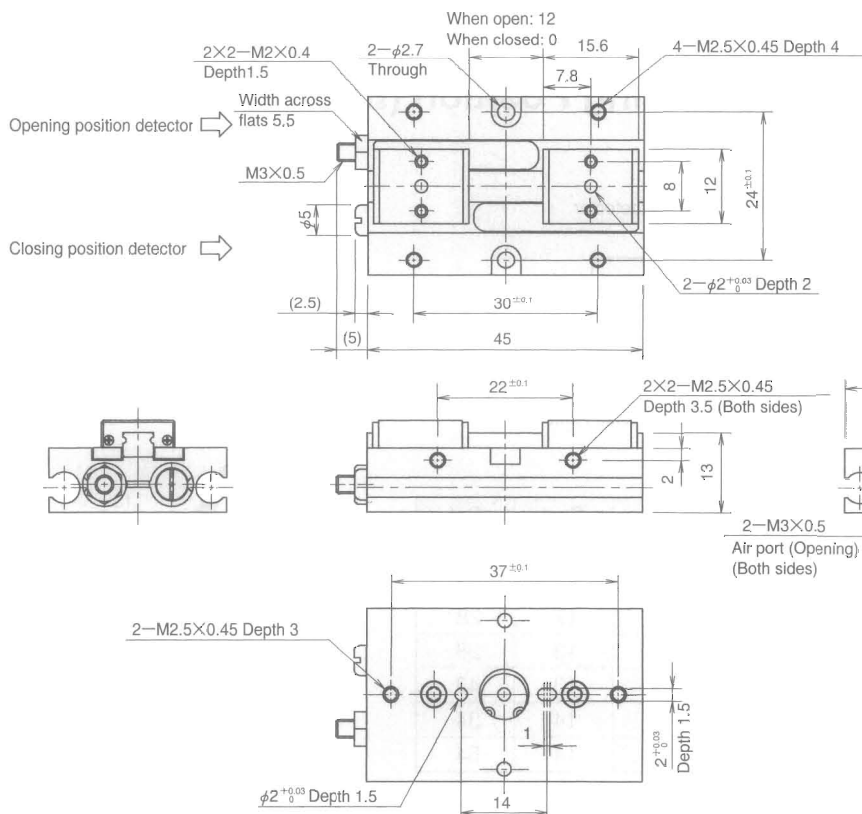
HP06-6 Weight 52g



Note:
Please choice air ports from both sides
according to mounting position.

HP06-6JA Weight 52g

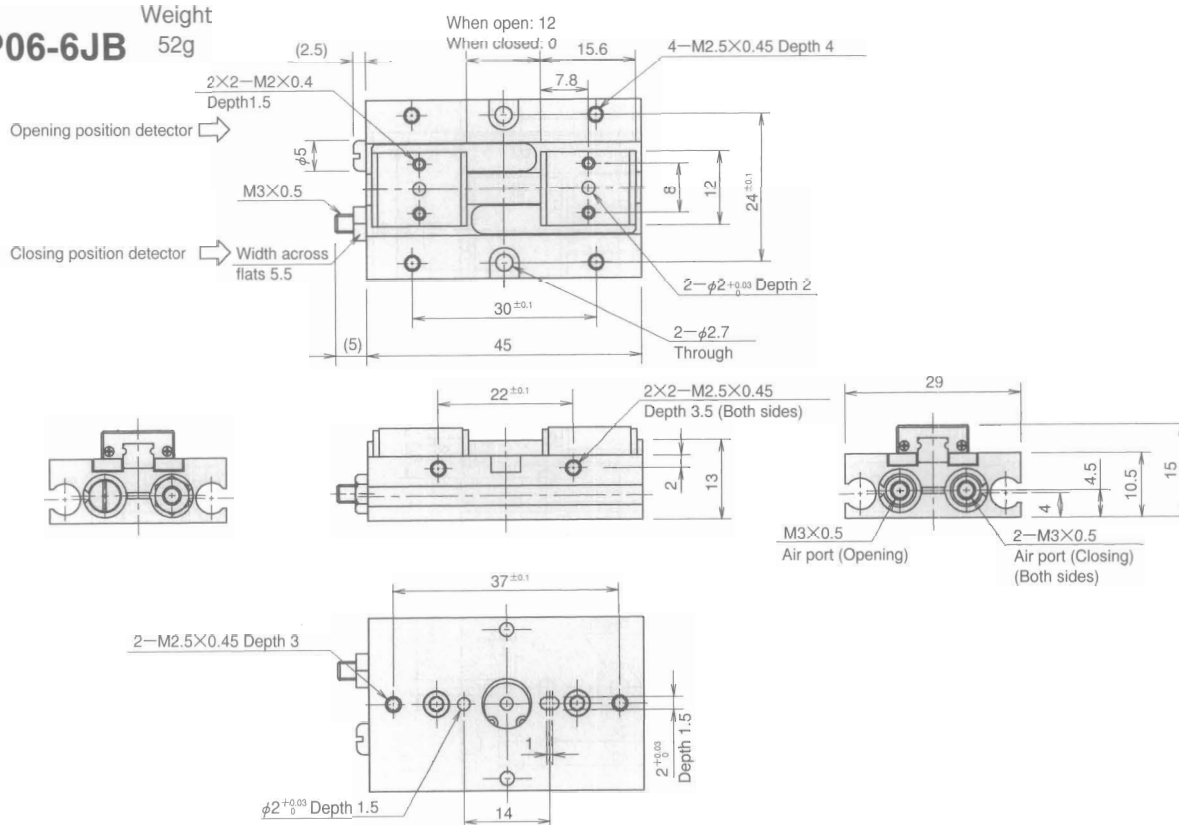
Unit : mm



Unit : mm

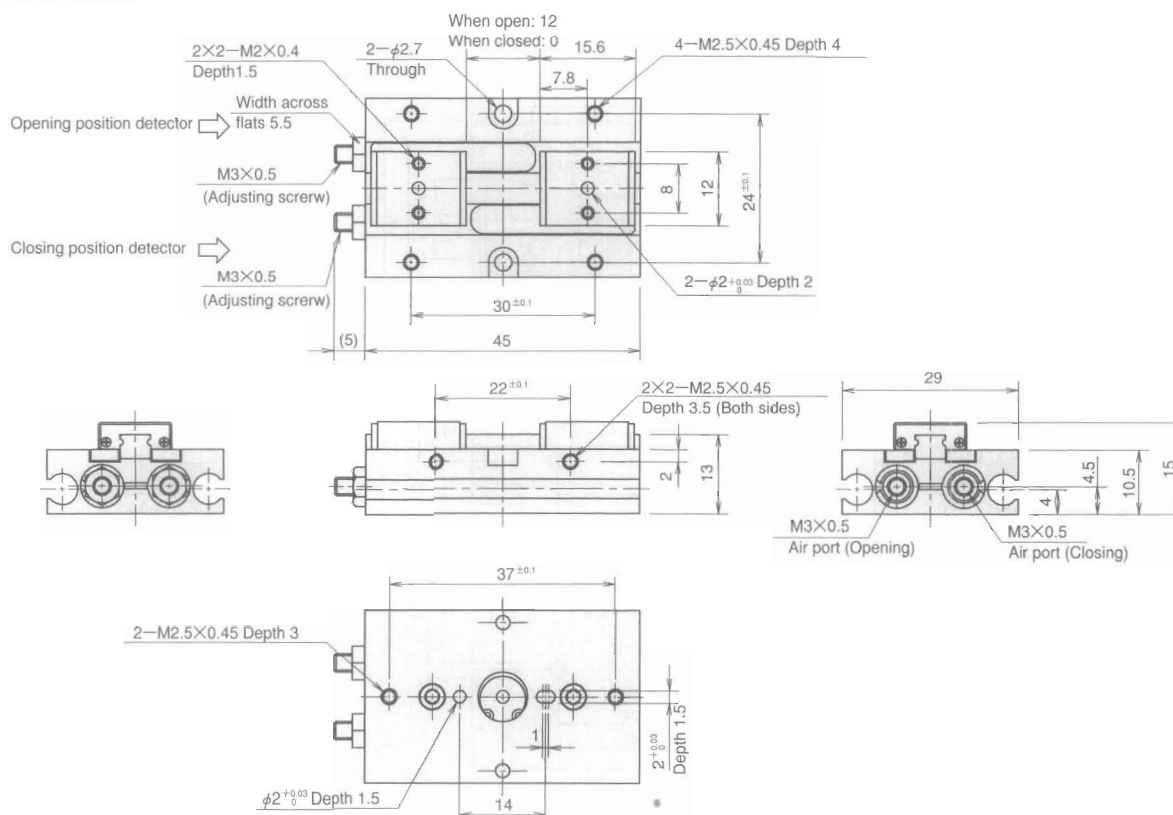
Dimensions

Weight
HP06-6JB 52g



Weight
HP06-6JC 52g

Unit : mm



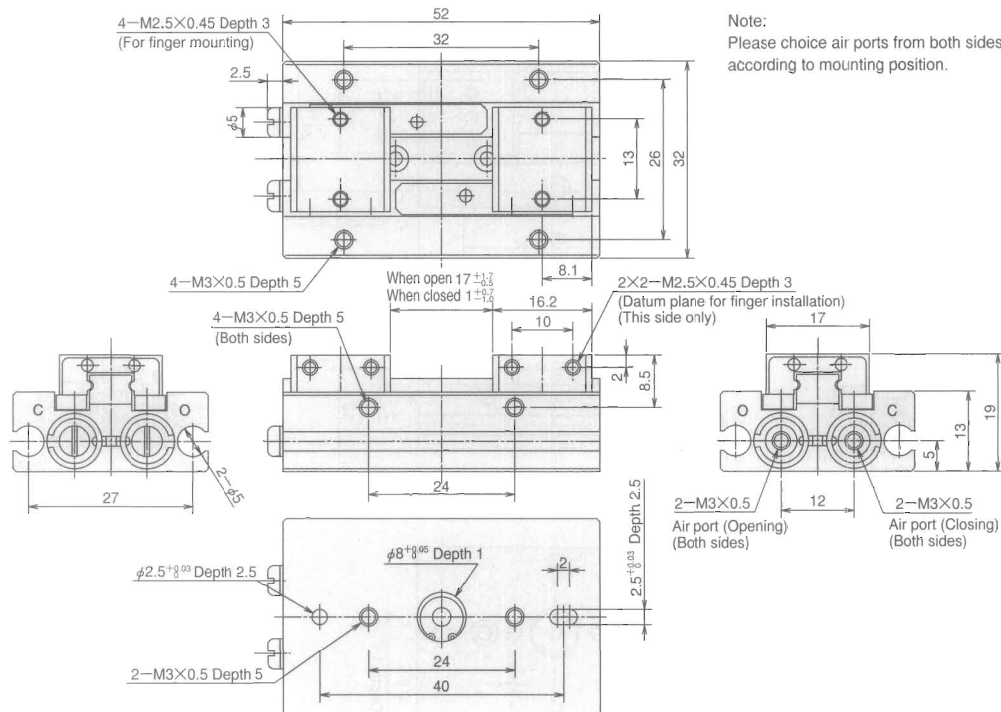
HP06 Series

HP06

Dimensions

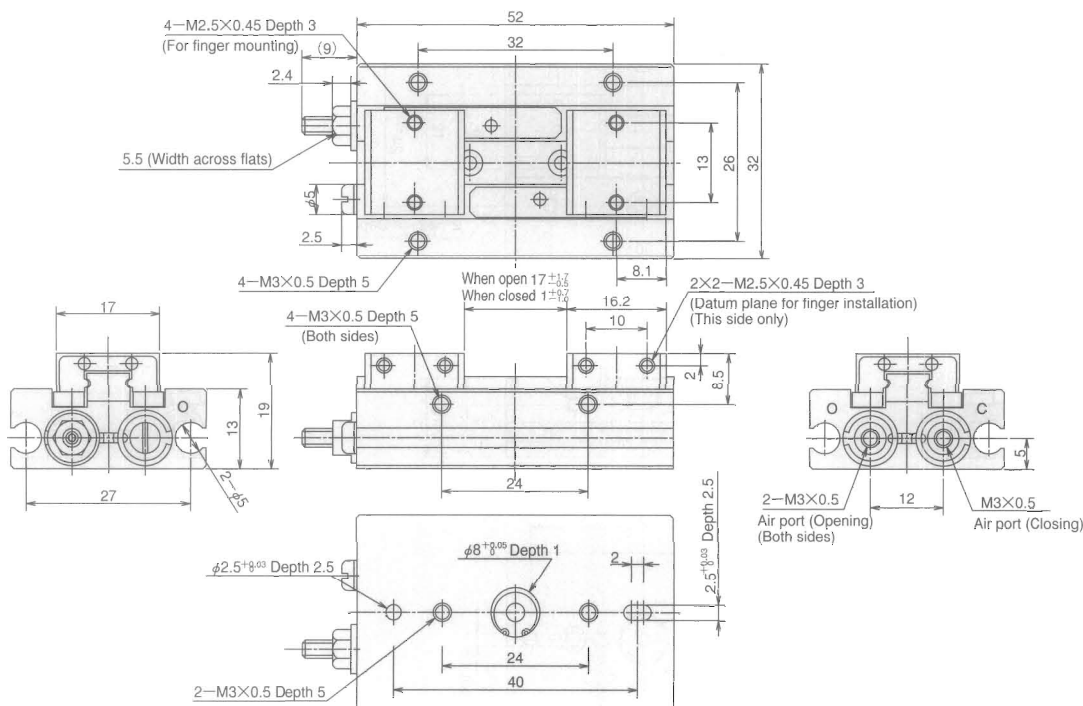
HP06-8 Weight 86g

Unit : mm



HP06-8JA Weight 87g

Unit : mm

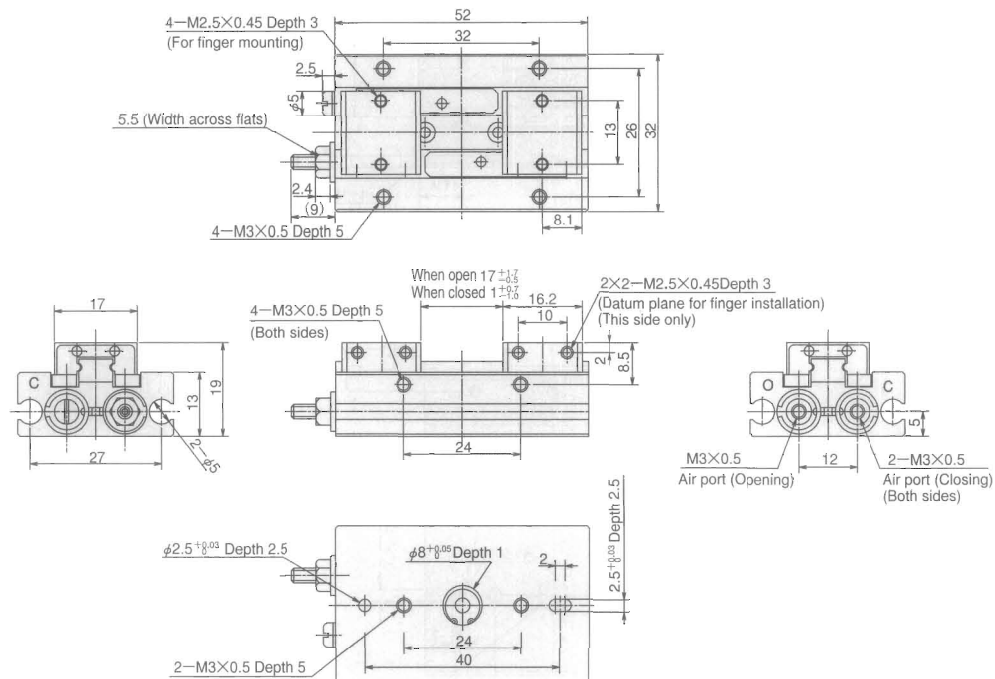


Unit : mm

HP06

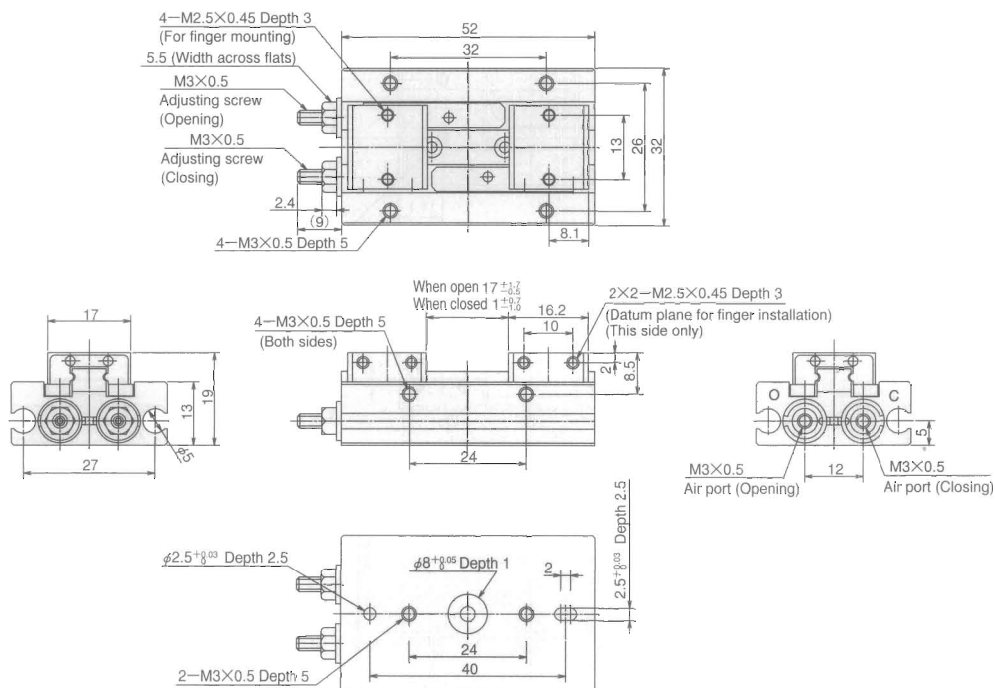
Dimensions

Weight
HP06-8JB 86g



Weight
HP06-8JC 87g

Unit : mm



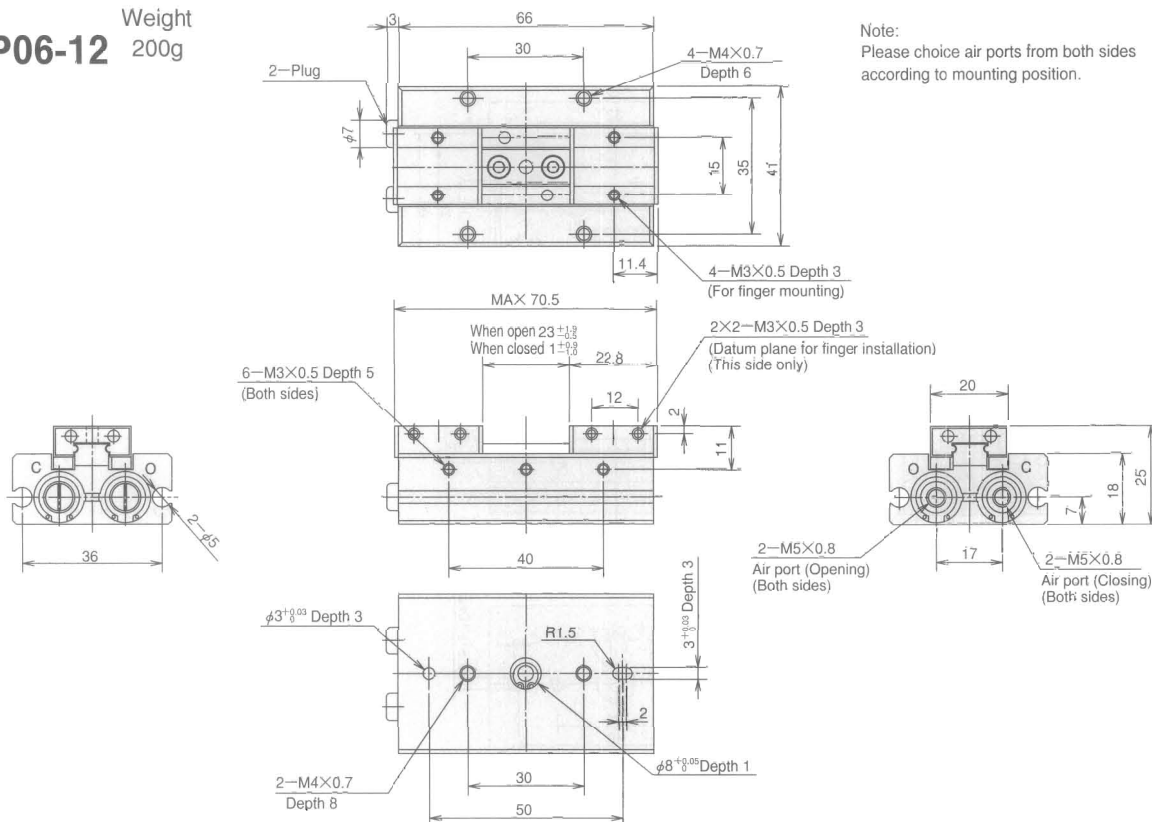
HP06 Series

HP06

Dimensions

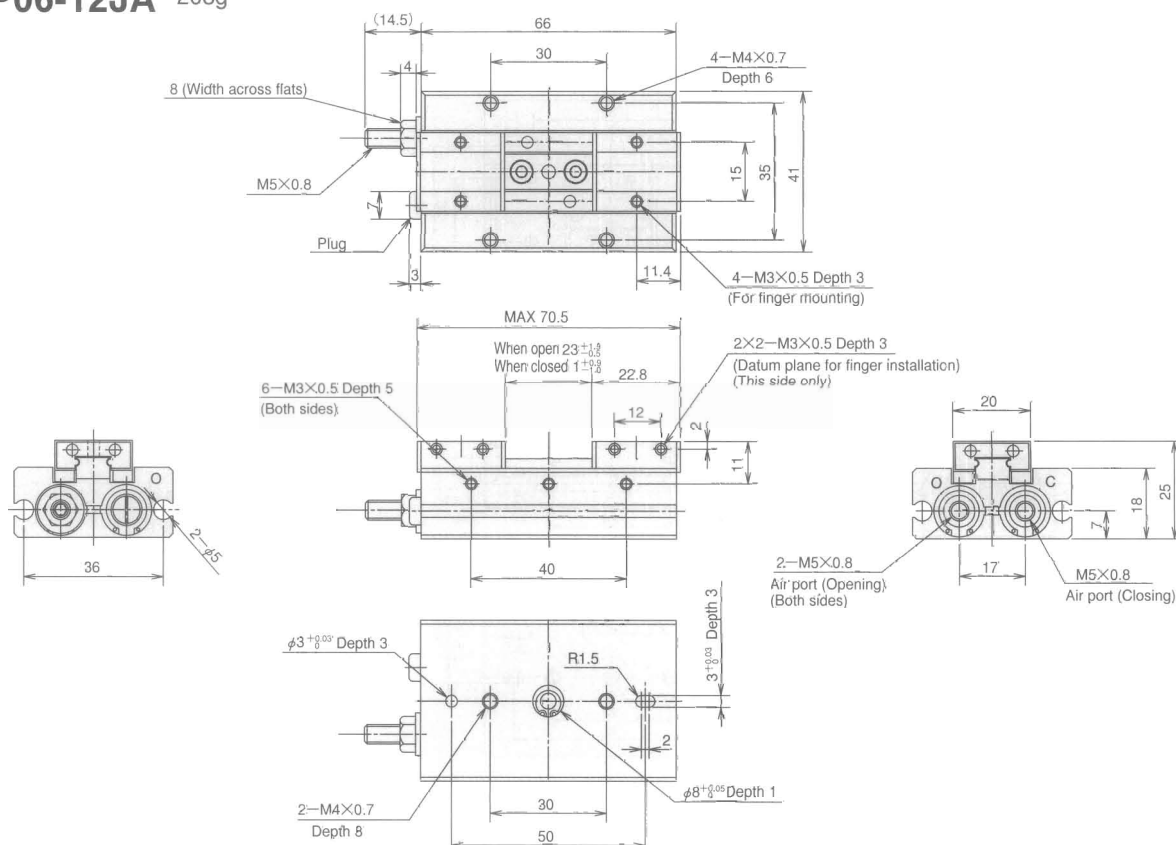
HP06-12 Weight 200g

Unit : mm



HP06-12JA Weight 203g

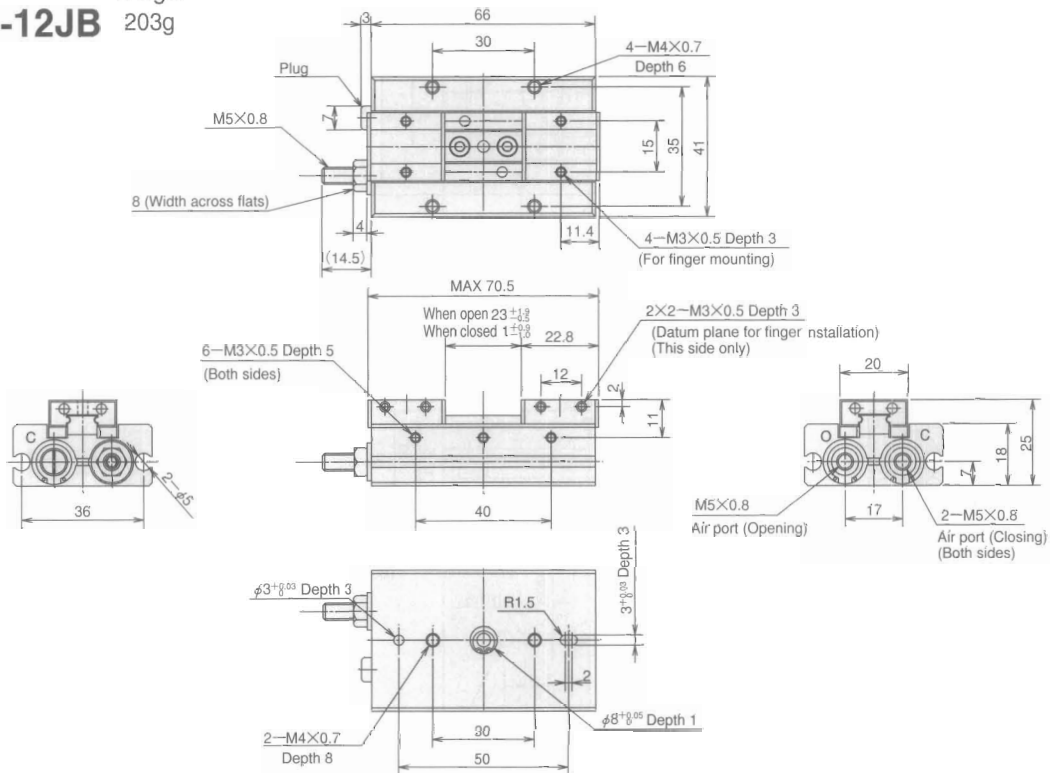
Unit : mm



Unit : mm

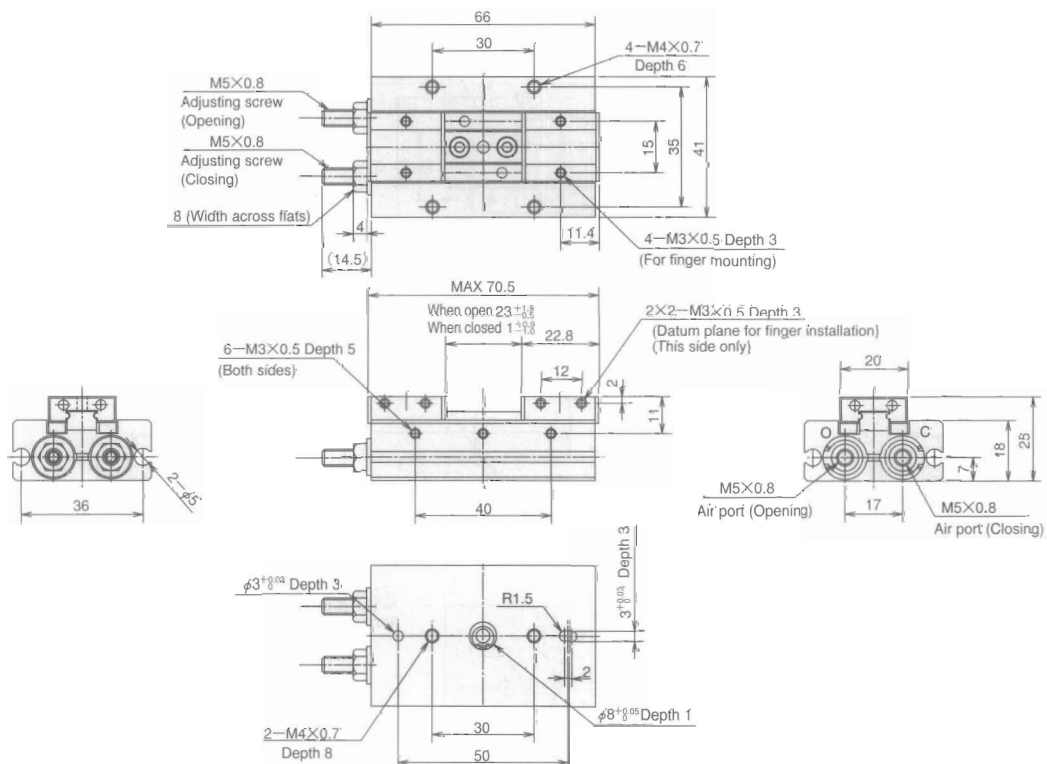
Dimensions

Weight
HP06-12JB 203g



Weight
HP06-12JC 206g

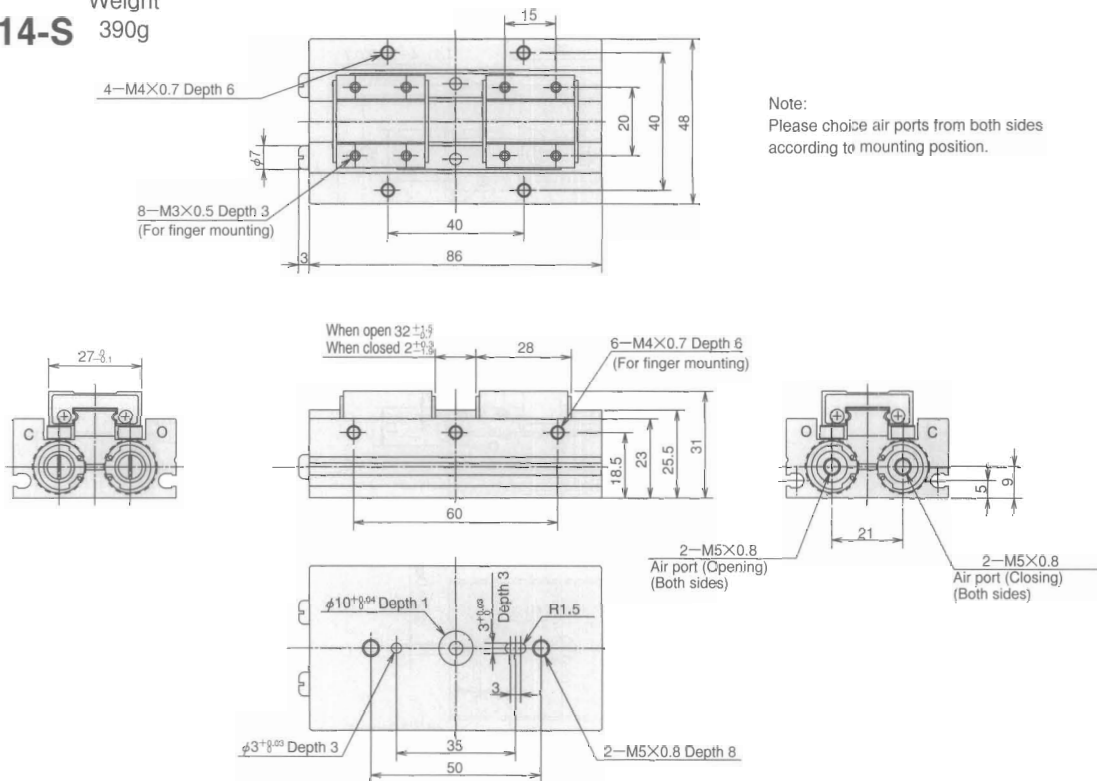
Unit : mm



Dimensions

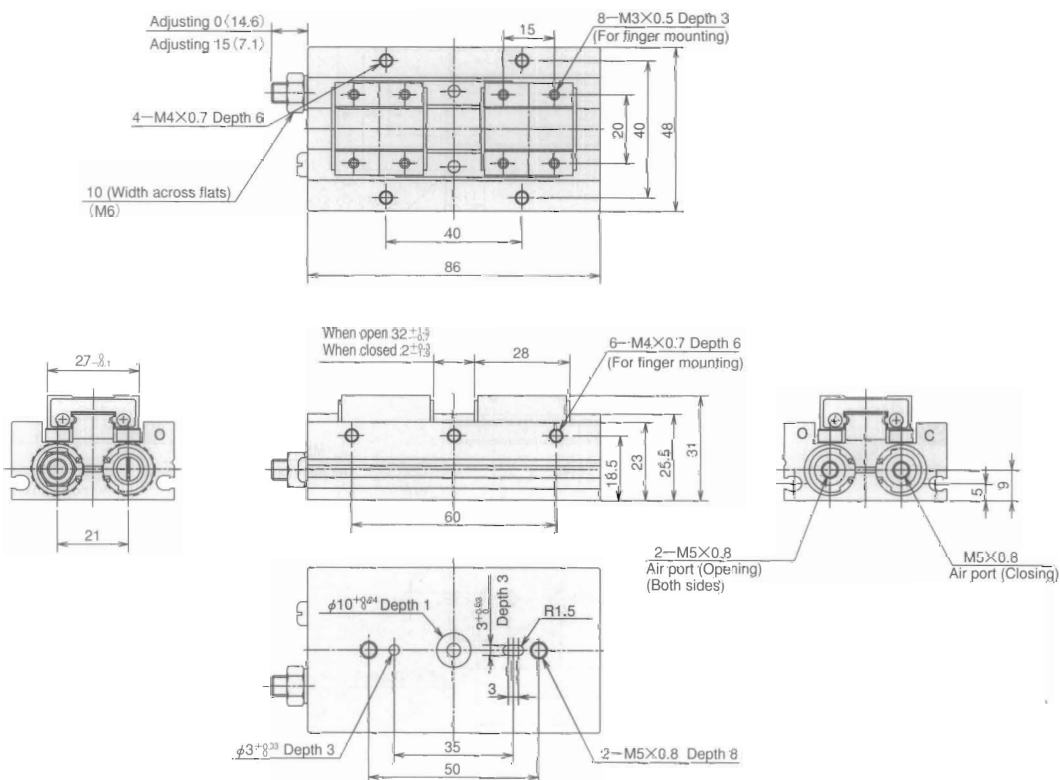
Unit : mm

HP06-14-S Weight 390g



HP06-14JA-S Weight 395g

Unit : mm

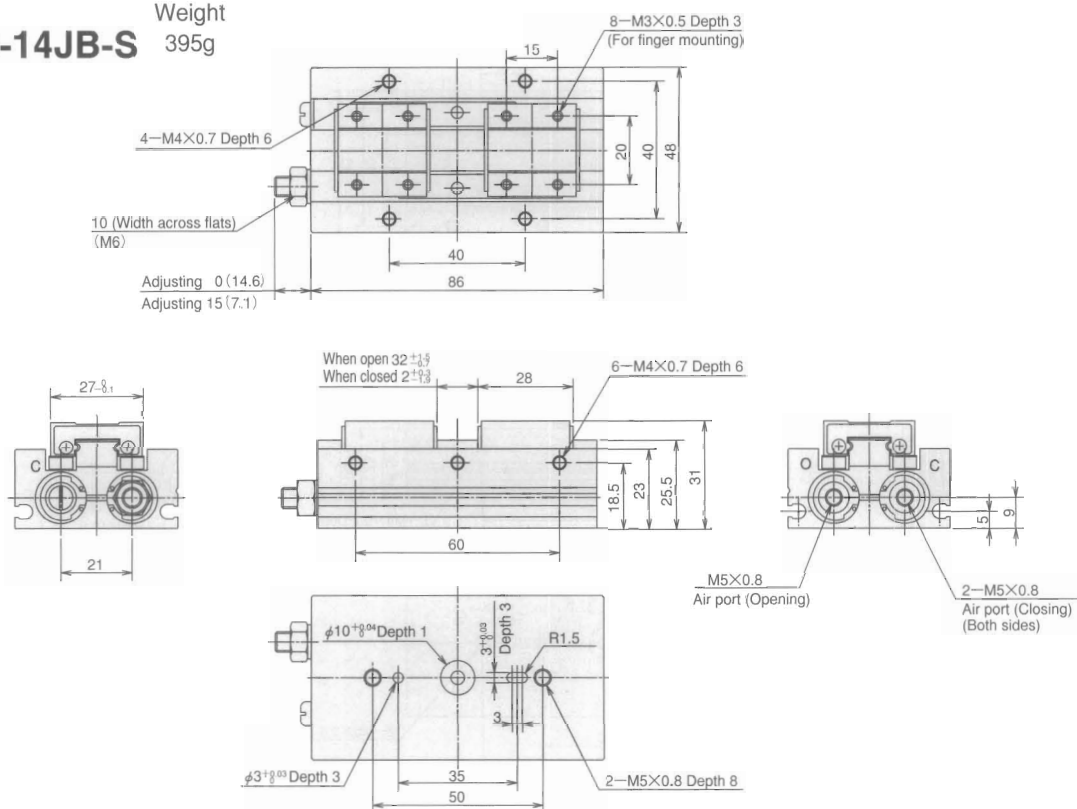


Unit : mm

HP06

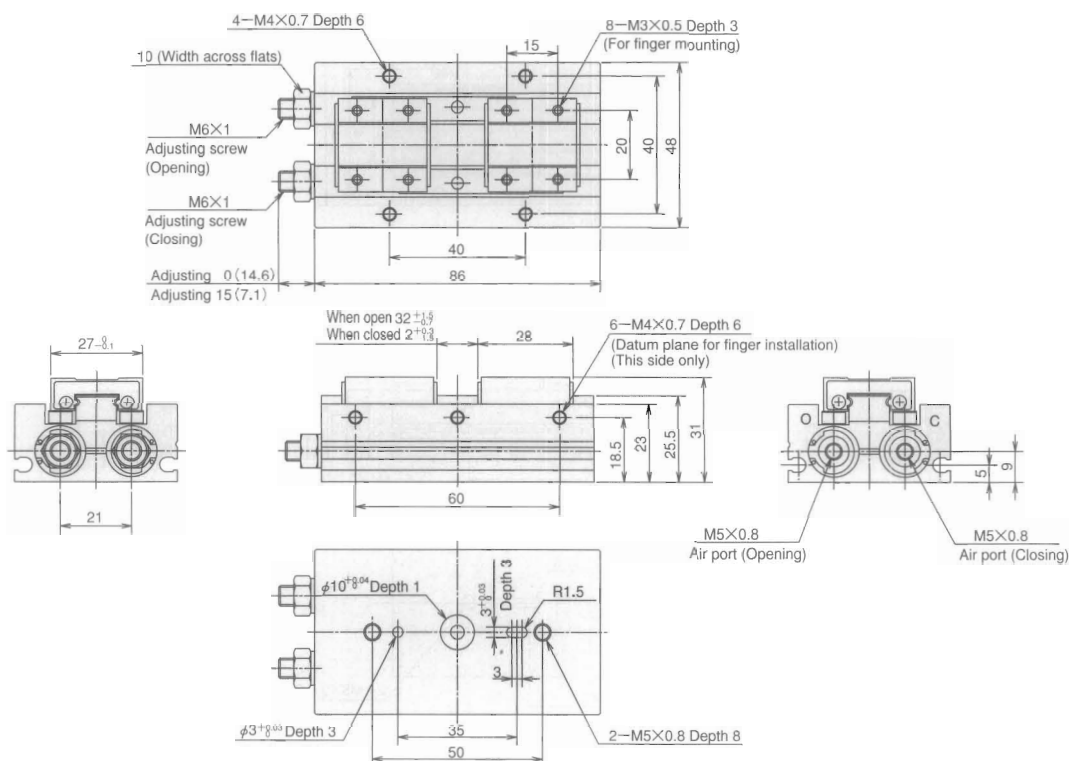
Dimensions

HP06-14JB-S Weight 395g



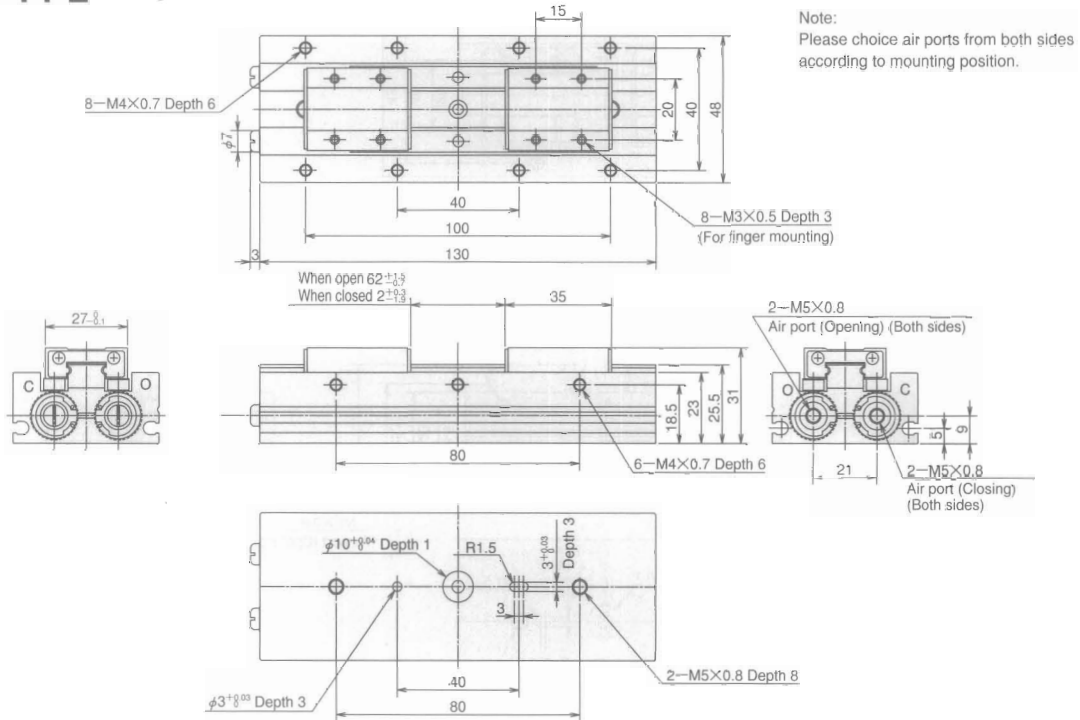
HP06-14JC-S Weight 405g

Unit : mm

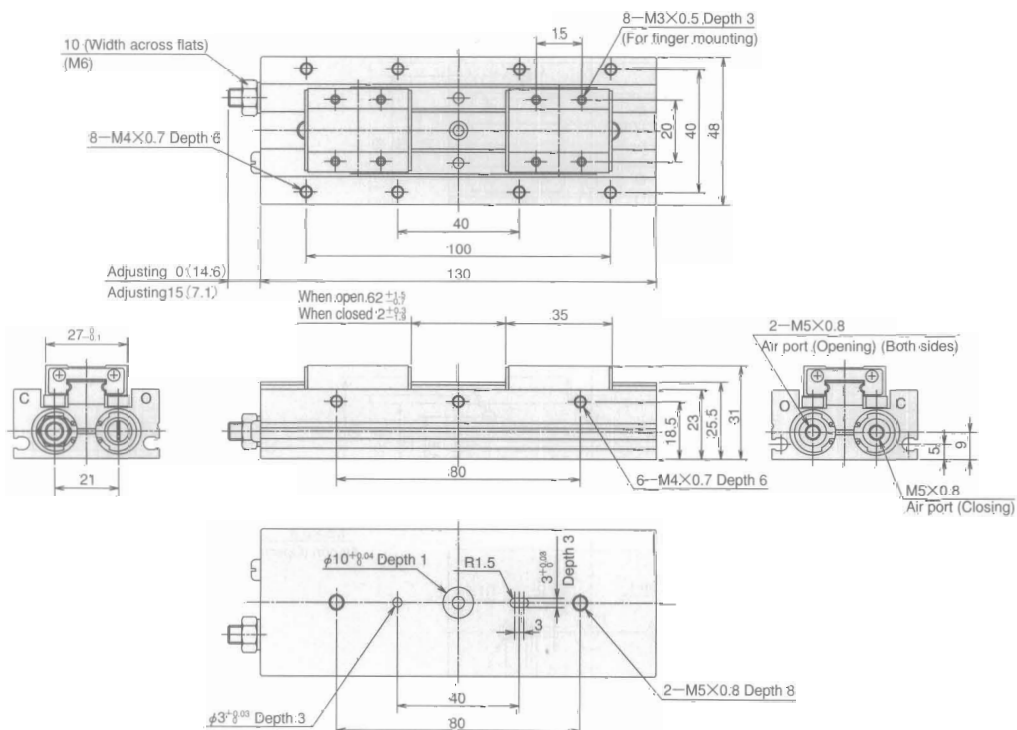


Dimensions

Unit : mm

HP06-14-L Weight 570g**HP06-14JA-L** Weight 580g

Unit : mm

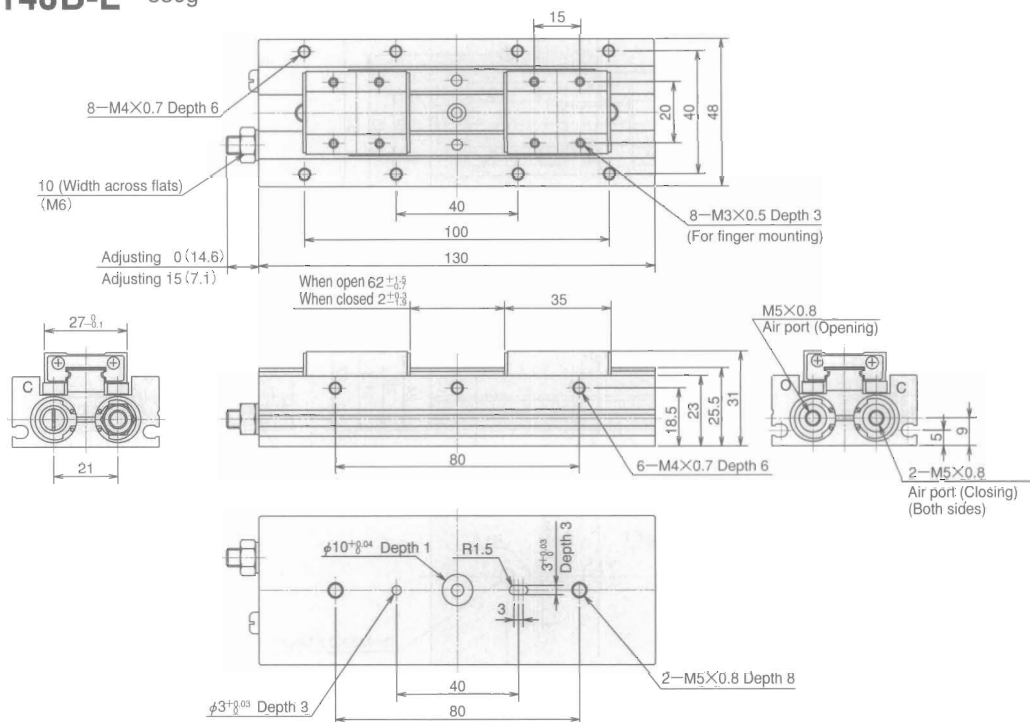


Unit : mm

HP06

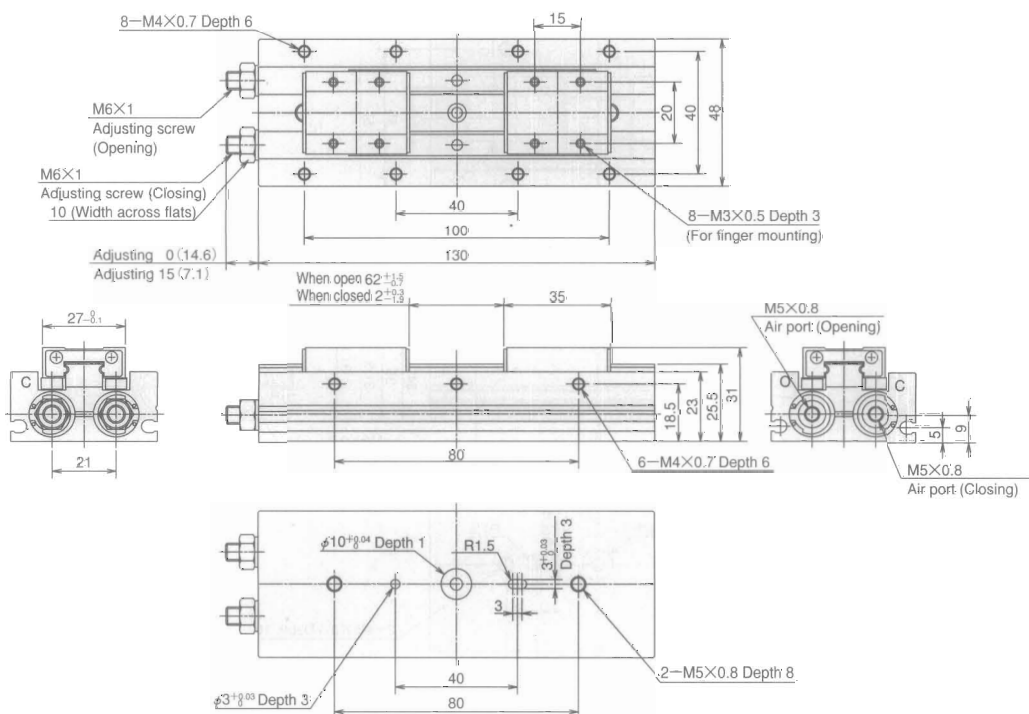
Dimensions

Weight
HP06-14JB-L 580g



Weight
HP06-14JC-L 590g

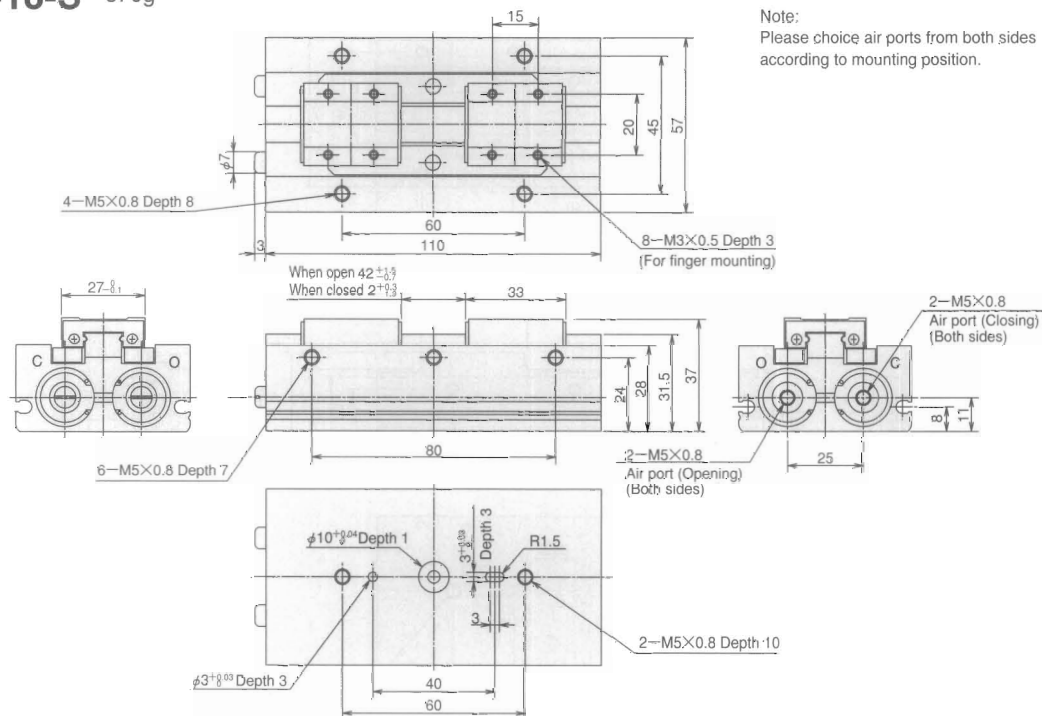
Unit : mm



Unit : mm

■ Dimensions

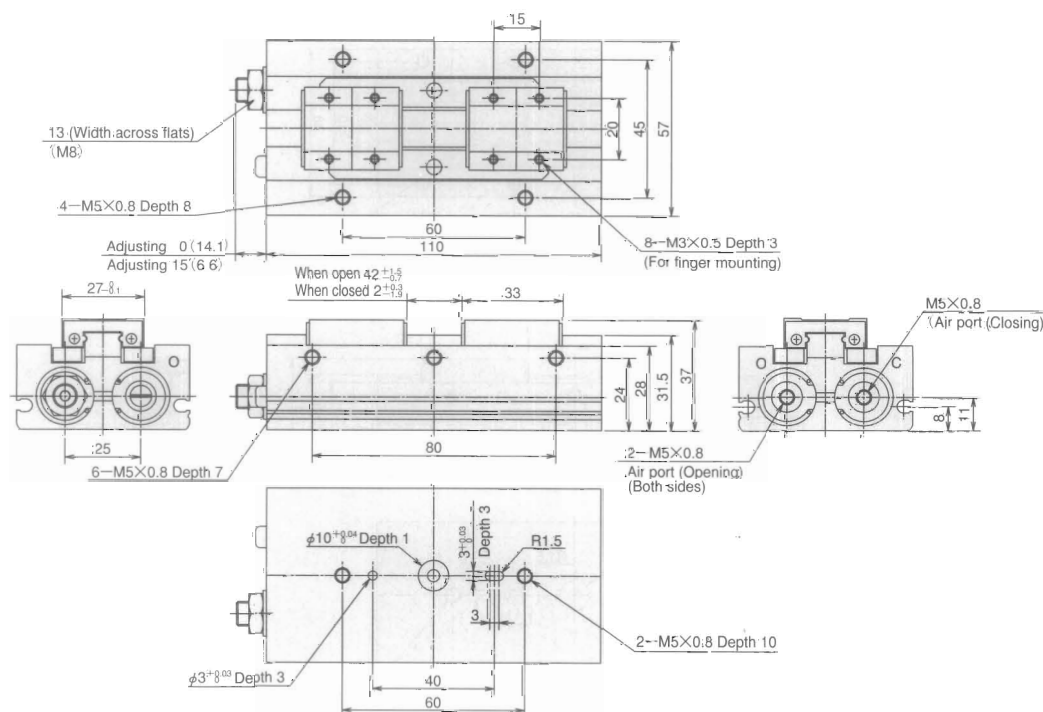
HP06-18-S Weight 570g



Note:
Please choice air ports from both sides
according to mounting position.

HP06-18JA-S Weight 700g

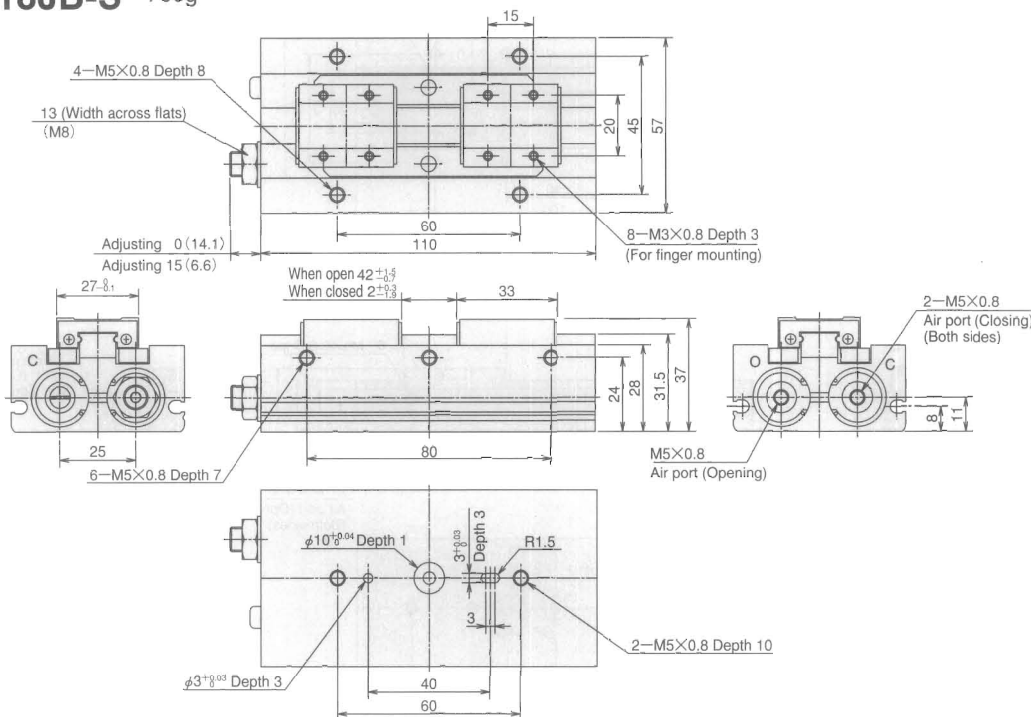
Unit : mm



Unit : mm

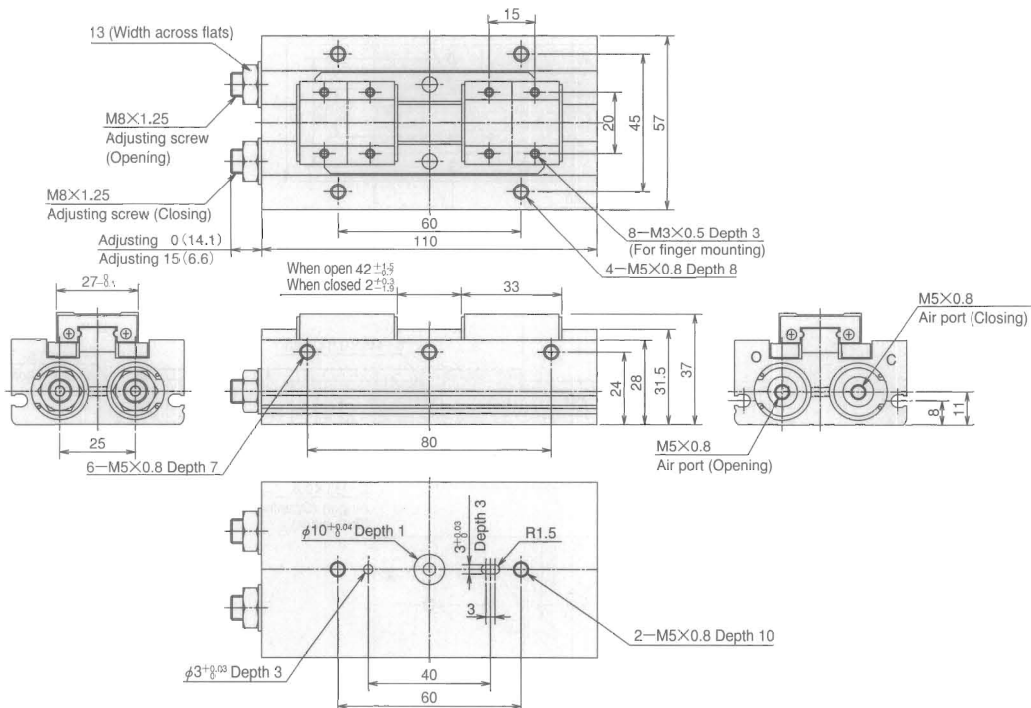
Dimensions

Weight
HP06-18JB-S 700g



Weight
HP06-18JC-S 710g

Unit : mm



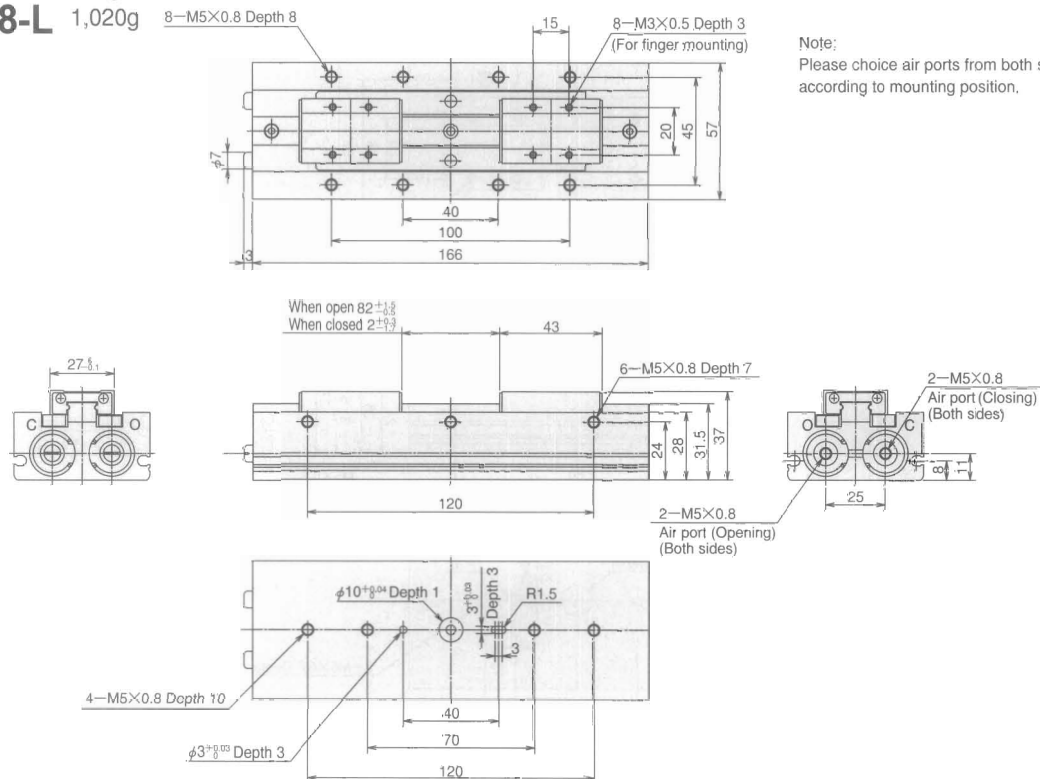
HP06 Series

HP06

Unit : mm

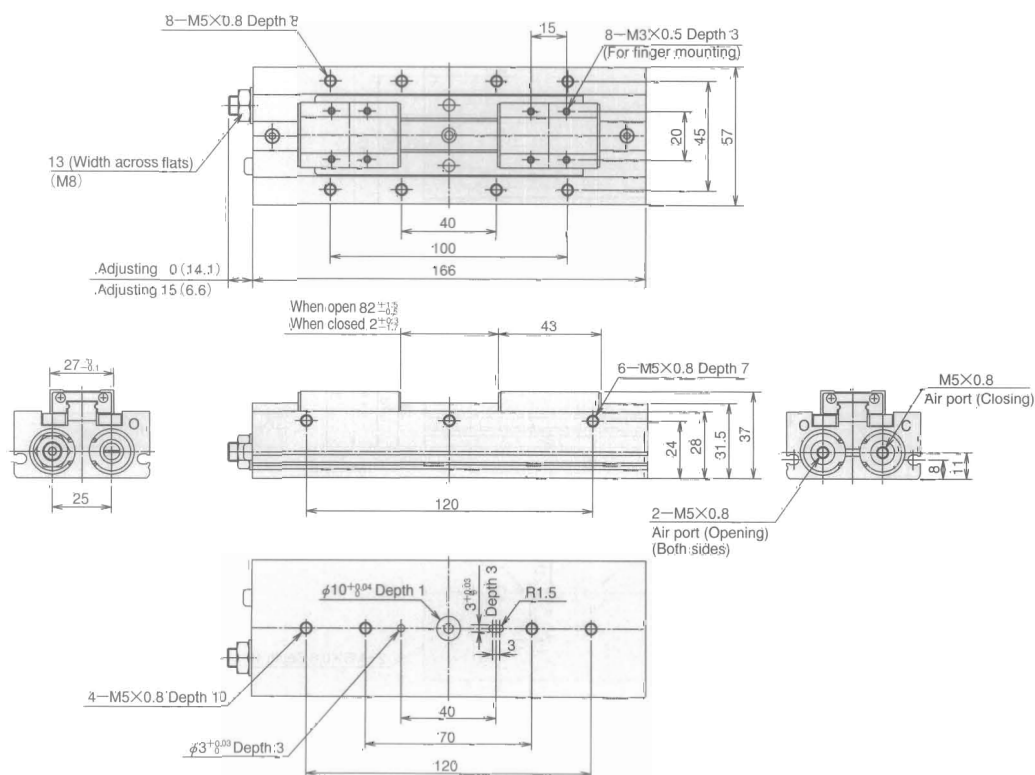
Dimensions

Weight
HP06-18-L 1,020g



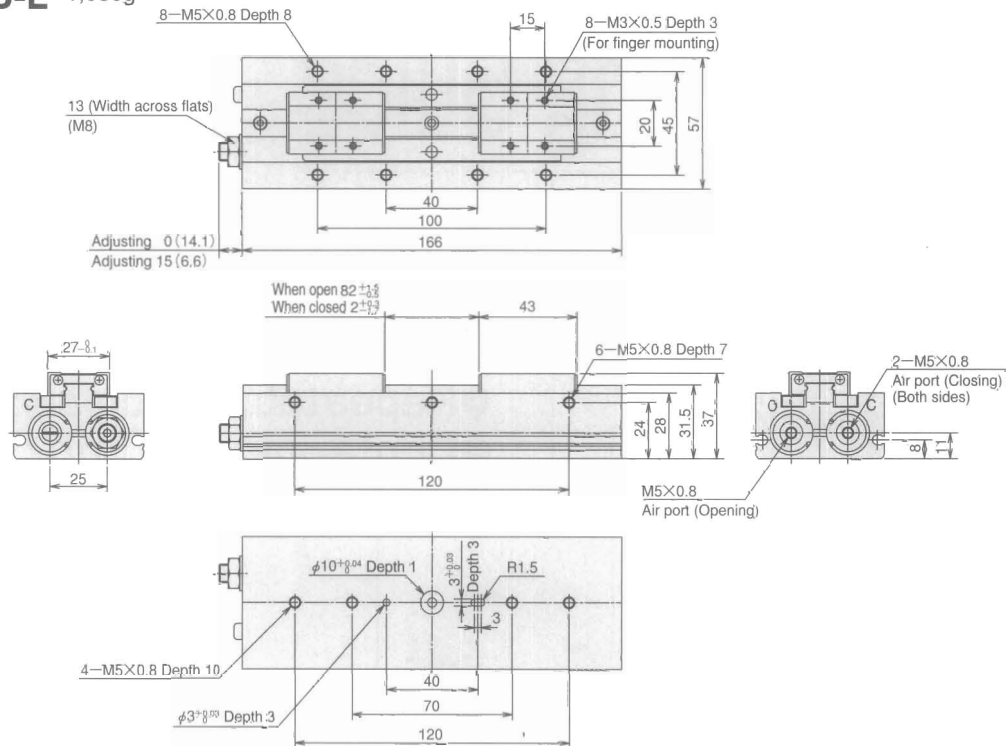
Weight
HP06-18JA-L 1,030g

Unit : mm



Unit : mm

HP06-18JB-L Weight 1,030g



HP06-18JC-L Weight 1,040g

Unit : mm

