

HP04L Series

Gripper with Linear Bearing Guide

(Longer Gripping Point)



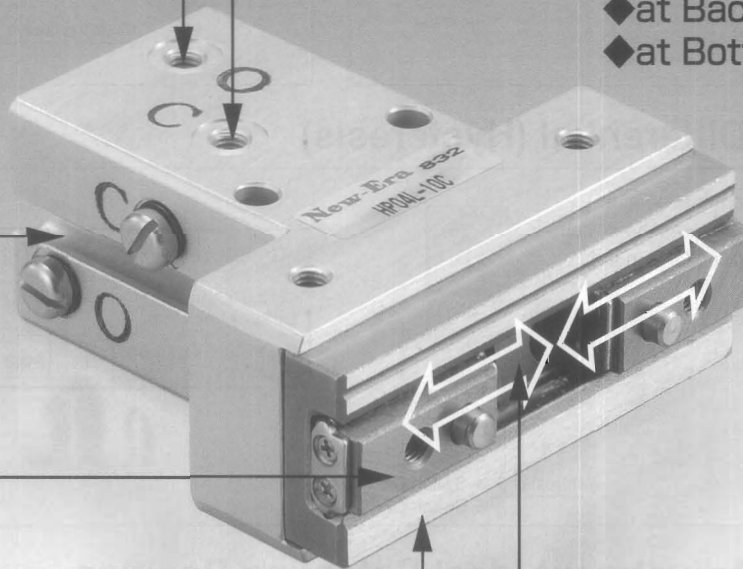
Groove for ZE or ES type
Sensor Switch

Connection Ports at Both Sides

◆except HP04L-8

Positioning Holes

- ◆at Backside
- ◆at Bottom



Great Centering Accuracy

◆below $\pm 0.07\text{mm}$

Longer Stroke

◆Twice Stroke of
Standard HP04 with
almost same main body

Linear Bearing Guide

- ◆High Rigidity
- ◆High Accuracy
(Repeat accuracy : below $\pm 0.01\text{mm}$)

HP04L Series

HP04L

Model Code No.

HP04L - 10 C ※ HAE - ZE255 A 2

Series Name

Bore Size

- 8 : 8mm
- 10 : 10mm
- 16 : 16mm
- 20 : 20mm

Action Type

- C : Double Acting

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

(Option)

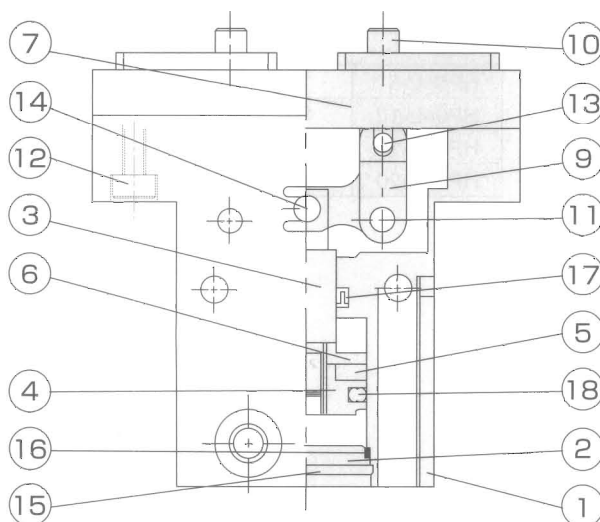
●Mounting Adapter

Blank : without Adapter

- HAE : HAE type
- HFE : HFE type (except HP04L-8)
- HFEL : HFE-L type (HP04L-16 only)

Refer to "Mounting Adapter for Gripper" (page 179).

Internal Structure



Parts List

No.	Name	Material
1	Main Body	Aluminium Alloy
2	Head Cover	Aluminium Alloy
3	Piston Rod	Stainless Steel
4	Piston	Aluminium Alloy
5	Magnet	Resin
6	Holding Cover	Aluminium Alloy
7	Linear Bearing	Bearing Steel
8	—	—
9	Action Lever	Carbon Steel
10	Knuckle	Stainless Steel
11	Fulcrum Pin	Carbon Tool Steel
12	Hexagon Socket Head Bolt	Carbon Tool Steel
13	Press-in Pin	Carbon Tool Steel
14	Press-in Pin	Carbon Tool Steel
15	Snap Ring	Carbon Tool Steel
16	O-ring	NBR
17	Rod Packing	NBR
18	Piston Packing	NBR

HP04L Series

HP04L

Specifications

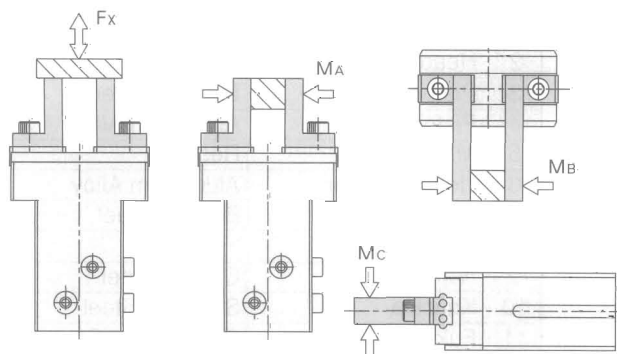
Action Type	Double acting
Working Fluid	Air
Maximum Operating Pressure [MPa]	0.7
Proof Pressure [MPa]	1.05
Operating Ambient Temperature [°C]	0 to 60
Lubrication	Need (mechanically sliding parts only)
Connection Ports (Air Ports)	M3×0.5 (HP04L-8, HP04L-10) M5×0.8 (HP04L-16, HP04L-20)
Max. Operating Cycle [cycles per min.]	120
Centering Accuracy [mm]	0.07 (+0.07 to -0.07)
Repeatability Accuracy [mm]	0.01 (+0.01 to -0.01)
Switch Attachment	ZE, ES type (Solid state type switch)

Action type	Model	Norminal Size (Bore Size) [mm]	Minimum Operating Pressure [MPa]	Maximum Stroke [mm]	Gripping Force [N]	Dimensions (T×W×L) [mm]	Weight [g]	
Double Acting	HP04L-8C	8	0.22	8	Close	5.78	13×26×32	27
					Open	9.9		
	HP04L-10C	10	0.2	12	Close	10	20×45×49	90
					Open	15.6		
	HP04L-16C	16	0.12	16	Close	26	25×56×56	168
					Open	39		
	HP04L-20C	20	0.1	22	Close	45	32×73×73	368
					Open	60		

Gripping Force is measured at the levers in medium stroke with gripping point (30mm) at operating pressure (0.5MPa).

Gripping Force (Open) of **Single Acting type** shows spring force itself.

Permissible Load and Permissible Moment

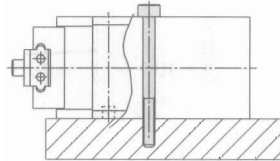


Model	FX (N)	MA (N·m)	MB (N·m)	MC (N·m)
HP04L-8	12	0.04	0.04	0.08
HP04L-10	50	0.4	0.4	0.8
HP04L-16	120	1.0	1.0	2.0
HP04L-20	200	1.5	1.5	3.0

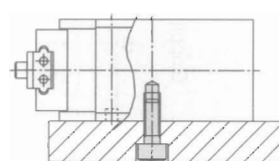
■ Installation Examples

* Several installation styles provide great versatile applications.

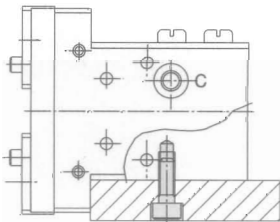
1. Using Body Through Holes (HP04L-8 only)



2. Using Holes at Backside (except HP04L-8)

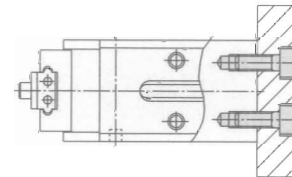


3. Using Holes at Flank (Available at both flanks)

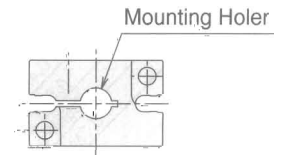
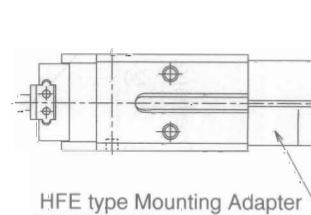
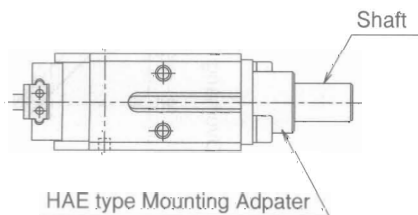


4. Using Holes at Bottom

Plate like a spacer is needed to make a space to prevent switch body from protruding above the body surface of gripper.



5. Using Mounting Adapters at Bottom



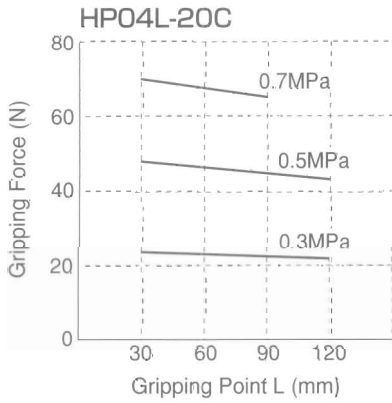
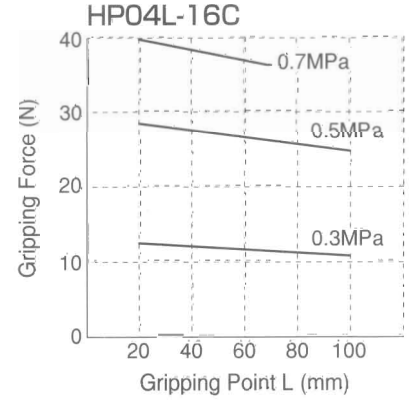
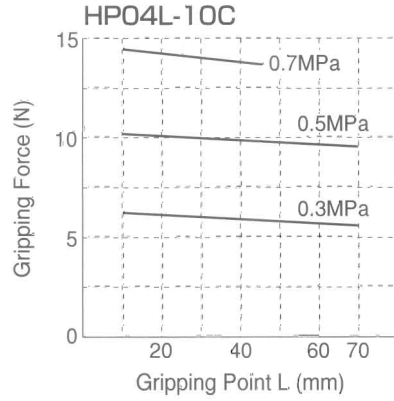
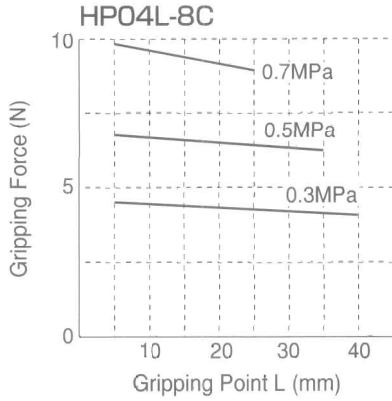
HP04L Series

HP04L

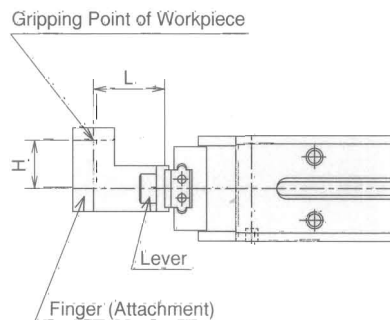
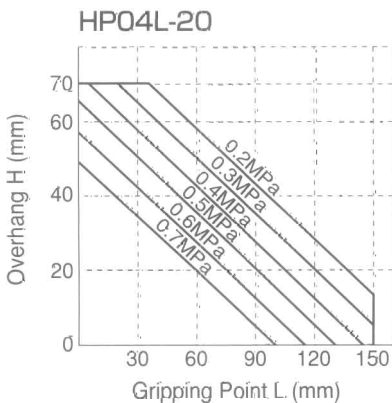
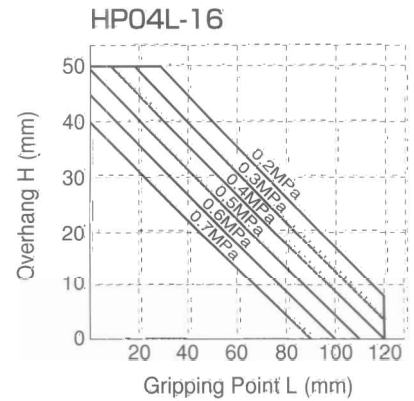
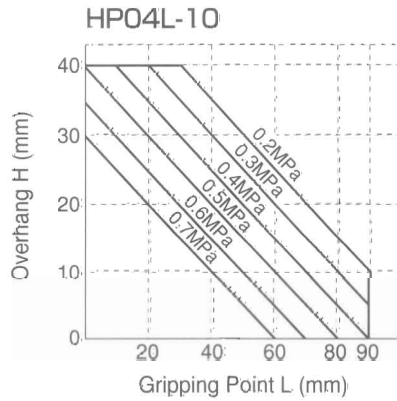
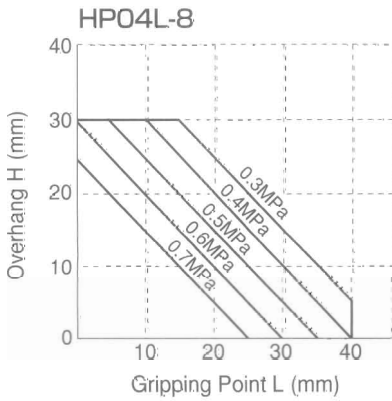
Effective Gripping Force

* Effective gripping force shown in the table is when closing the levers

〈Double Acting Type〉



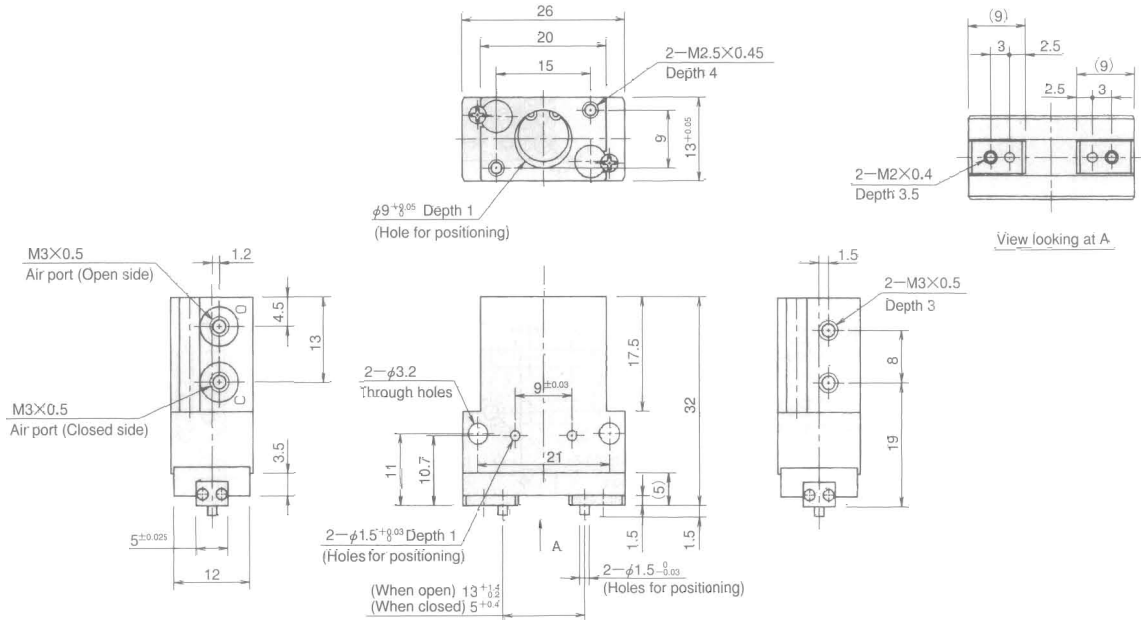
Available Range of Gripping Point



Dimensions

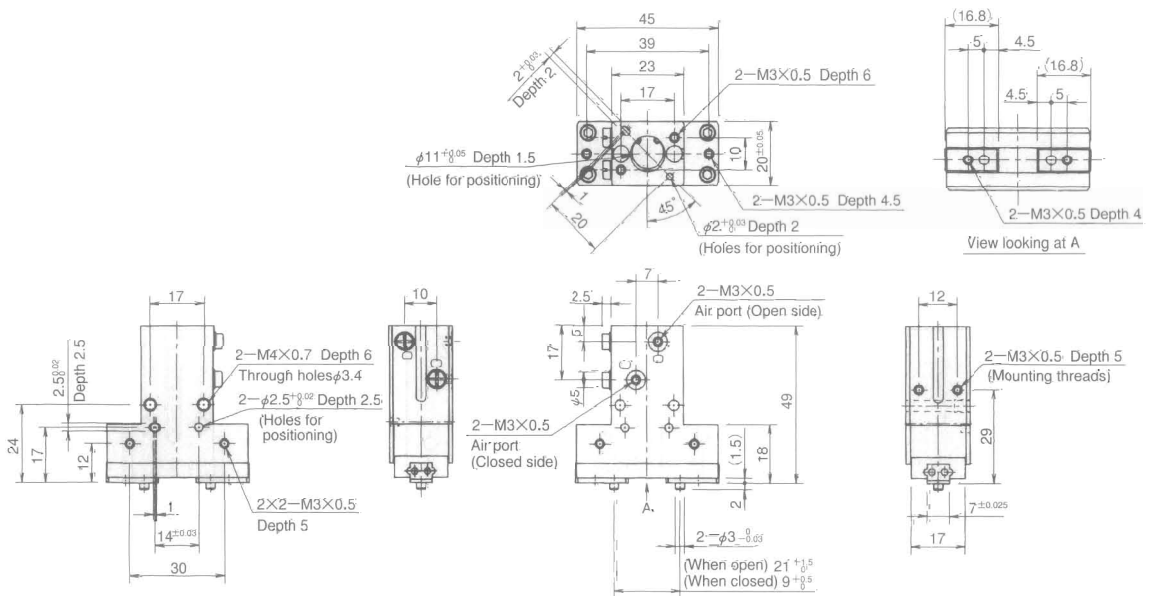
Unit : mm

HP04L-8C Weight 27g



HP04L-10C Weight 90g

Unit : mm



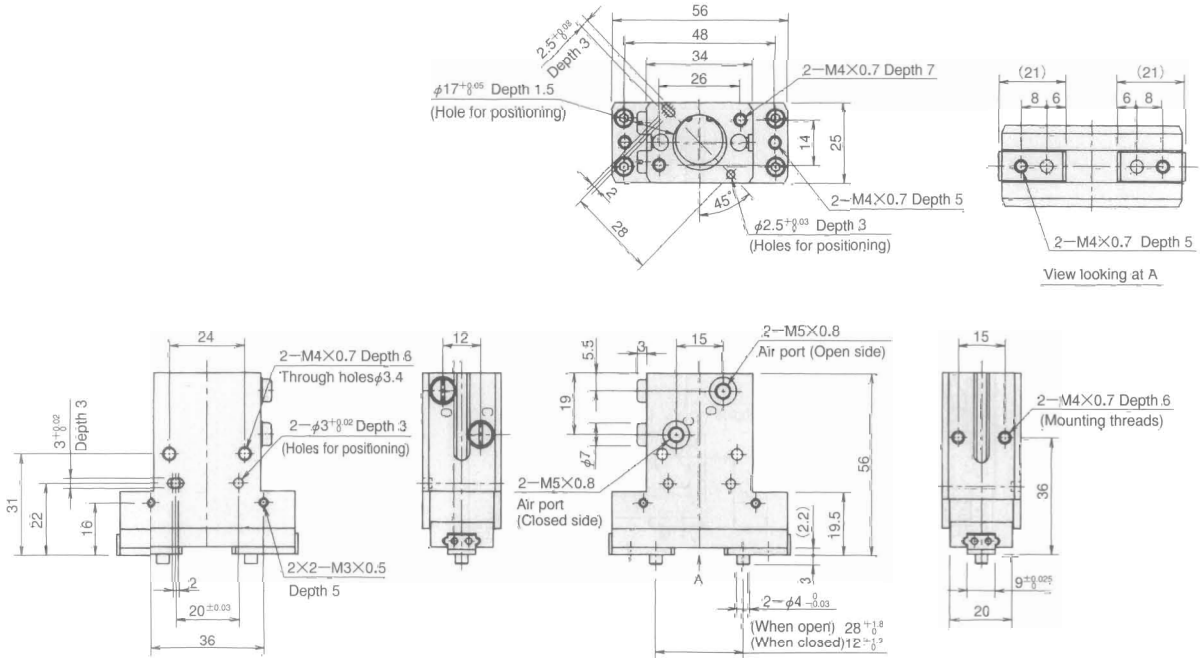
HP04L Series

HP04L

Dimensions

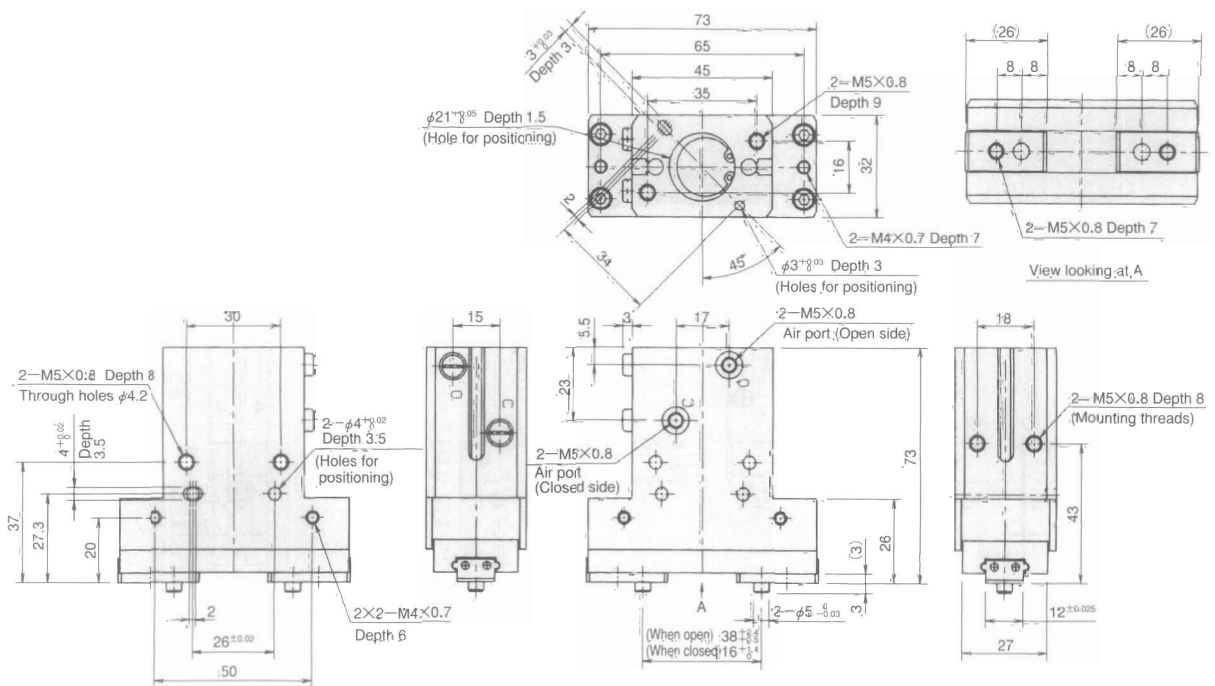
Unit : mm

Weight
HP04L-16C 168g

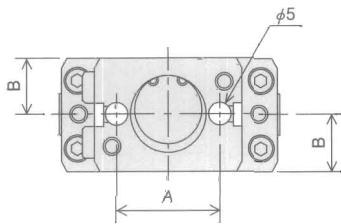


Weight
HP04L-20C 368g

Unit : mm



■ Dimensions of Groove for Sensor Switch

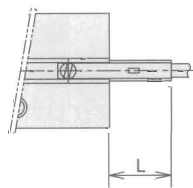


Code	Gripper : HP04L			
	HP04L-8	HP04L-10	HP04L-16	HP04L-20
A	15	17	24	30
B	3	10	12.5	16

■ Protruding Length of Switch

Refer to protruding length (L) of switch body from HP04L body at the levers closed fully.

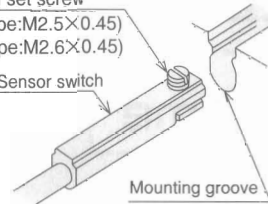
HP04L Series	Unit : mm			
	-8	-10	-16	-20
Max.Protruding Length (L)	9	3	3	2



■ Switch Installation

Switch set screw
(ZE type:M2.5×0.45)
(ES type:M2.6×0.45)

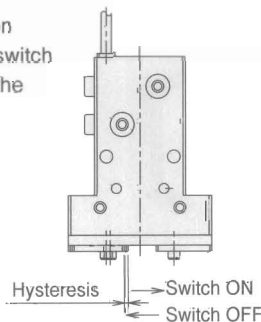
ZE/ES Sensor switch



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)

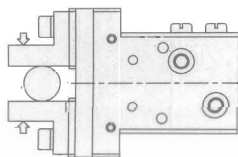
This shows the stroke from the location where the lever moves and turns the switch ON to where the switch turns OFF in the opposite direction.



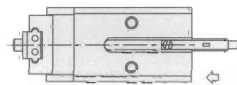
HP04L Series	Unit : mm			
	-8	-10	-16	-20
Max. Response Differential (mm)	0.3	0.3	0.4	0.4
Operating Position Accuracy	0.2	0.2	0.2	0.2

■ Finding & Adjustment Ideal Detecting Position

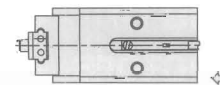
Levers-Inside Gripping (Workpiece-External Gripping)



① Check the levers are completely closed and inside gripping works.

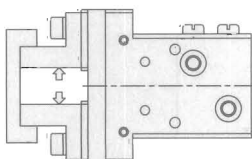


② Fit the switch into the groove in the direction of arrow. Continue inserting the switch further, then LED turns ON.

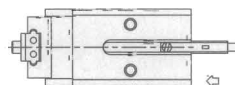


③ Insert the switch in the direction of arrow by 0.6mm from position ② furthermore and fix it there with set screw.

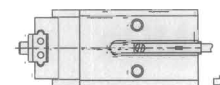
Levers-Outside Gripping (Workpiece-Internal Gripping)



① Check the levers are completely open and outside gripping works.



② Fit the switch into the groove in the direction of arrow. Continue inserting the switch further until LED turns ON. By moving it more, LED is OFF.



③ Move back the switch in the reverse direction of arrow by 0.6mm from position ② furthermore and fix it there with set screw.