

**HP04L Series**

■ 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)

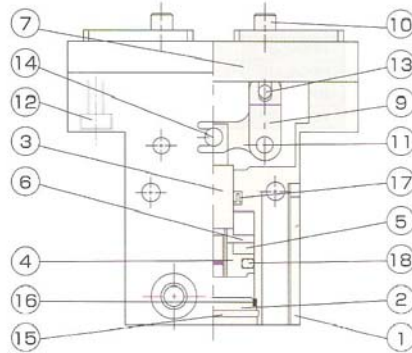
● Mounting Adapter

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

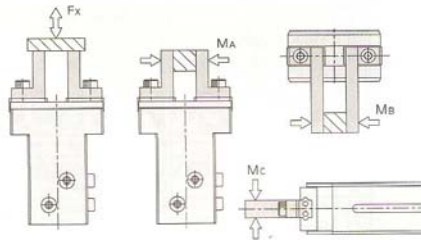
## Specifications

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	Nominal 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

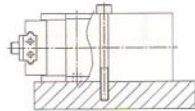


Model	FX (N)	MA (N·m)	MB (N·m)	MC (N·m)
HP04L-8	12	0.04	0.04	0.08
HP04L-10	50	0.4	0.4	0.8
HP04L-16	120	1.0	1.0	2.0
HP04L-20	200	1.5	1.5	3.0

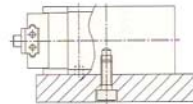
## Installation Examples

\* Several installation styles provide great versatile applications.

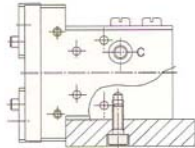
### 1. Using Body Through Holes (HP04L-8 only)



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

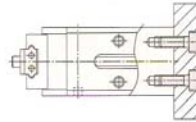


### 3. Using Holes at Flank (Available at both flanks)

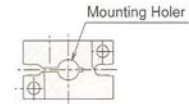
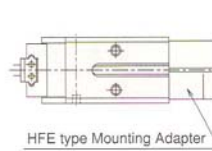
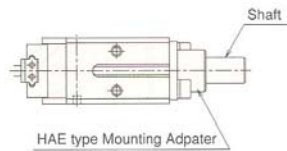


### 4. Using Holes at Bottom

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

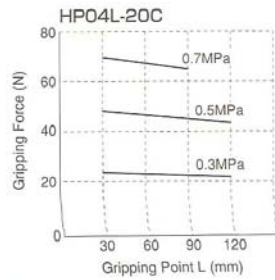
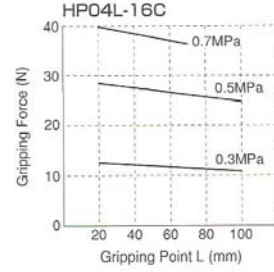
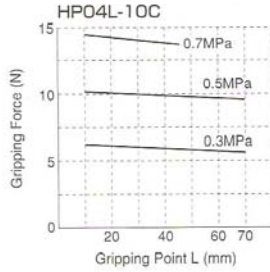
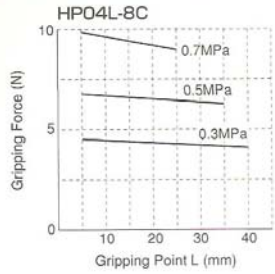


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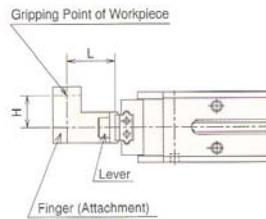
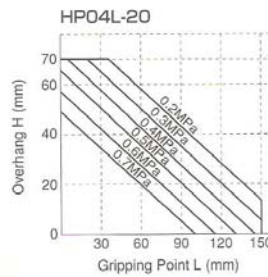
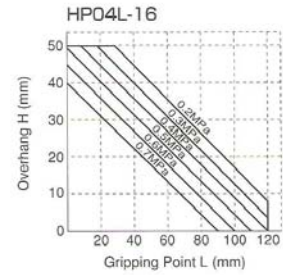
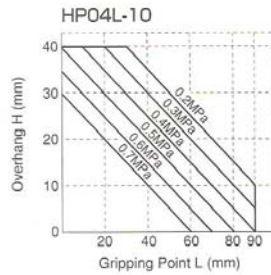
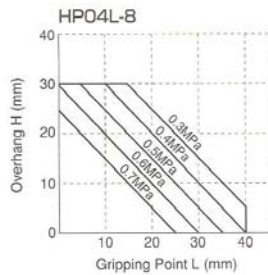
## Effective Gripping Force

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

〈Double Acting Type〉



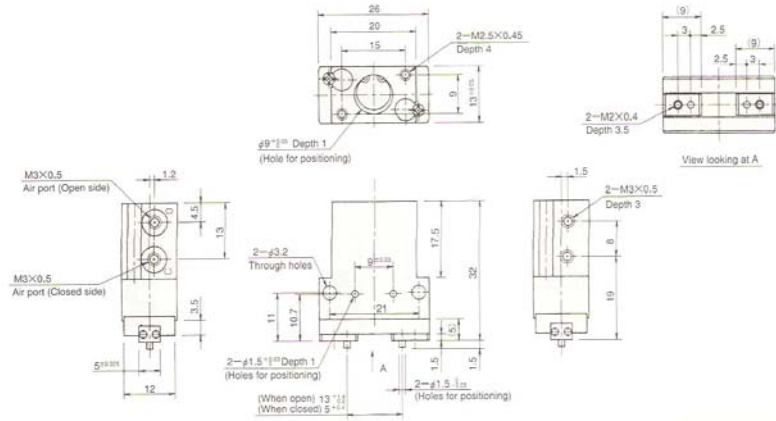
## Available Range of Gripping Point



Dimensions

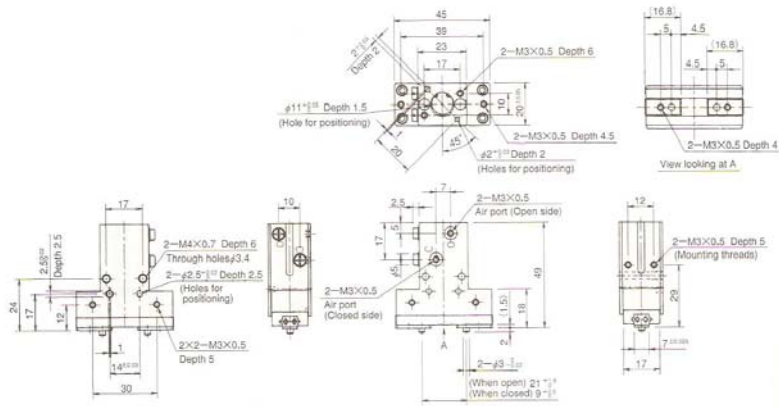
Unit : mm

HP04L-8C Weight 27g



HP04L-10C Weight 90g

Unit : mm



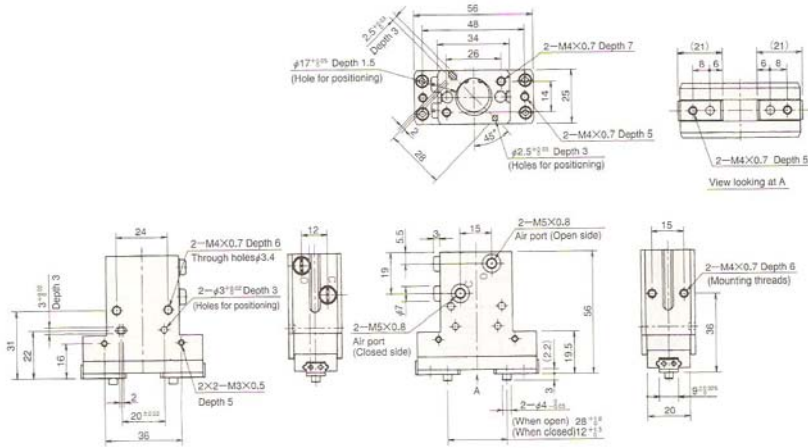
# HP04L Series

## Dimensions

Unit : mm

### HP04L-16C

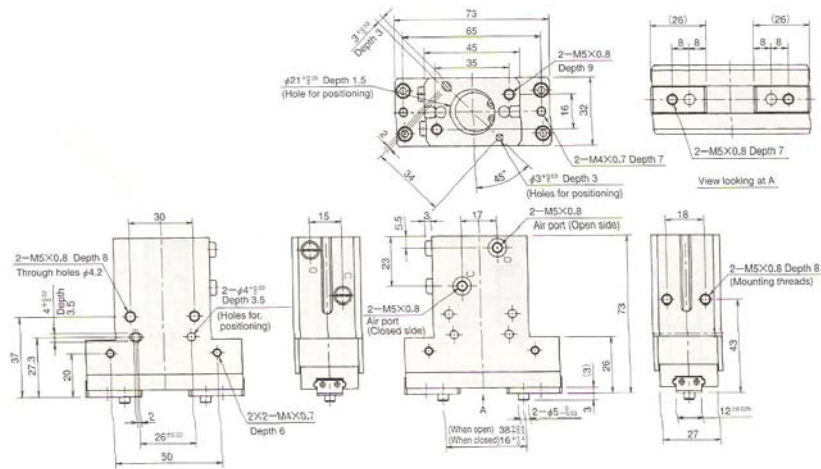
Weight  
168g



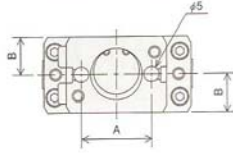
### HP04L-20C

Weight  
368g

Unit : mm



### ■ Dimensions of Groove for Sensor Switch



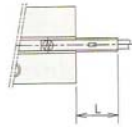
Code	Gripper : HP04L			
	HP04L-8	HP04L-10	HP04L-16	HP04L-20
A	15	17	24	30
B	3	10	12.5	16

### ■ Protruding Length of Switch

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

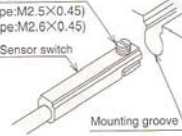
Unit : mm

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



### ■ Switch Installation

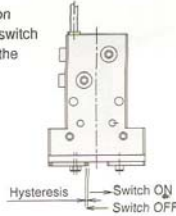
Switch set screw  
(ZE type:M2.5X0.45)  
(ES type:M2.6X0.45)  
ZE/ES Sensor switch



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.

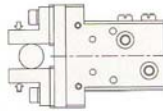


Unit : mm

HP04L Series	-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.

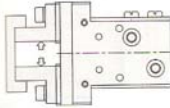


② Fit the switch into the groove in the direction of arrow. Continue inserting the switch further, then LED turns ON.

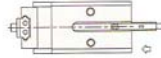


③ Insert the switch in the direction of arrow by 0.6mm from position ② furthermore and fix it there with set screw.

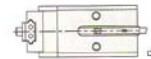
#### Levers-Outside Gripping (Workpiece-Internal Gripping)



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.