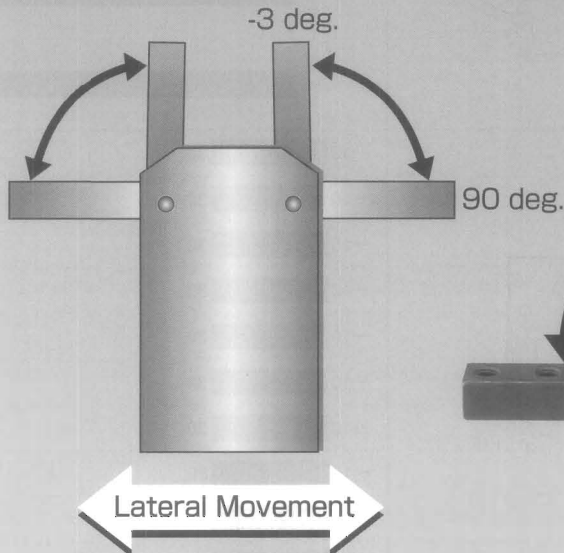


HV02E Series

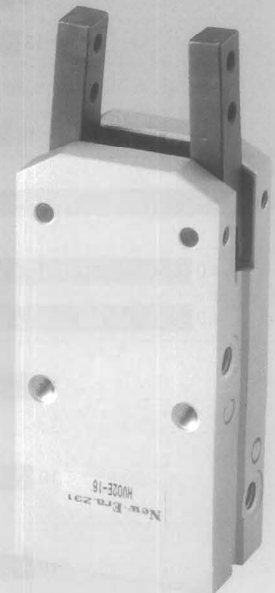
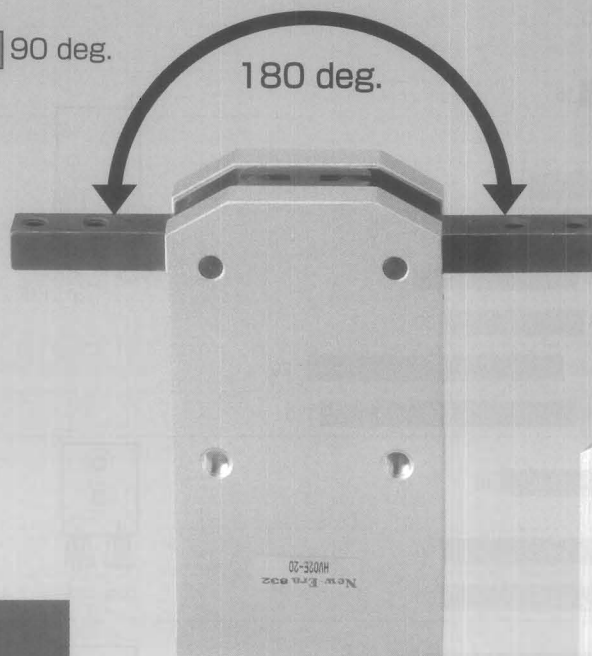
# Compact Angular Gripper

## Widely Opening Angle

◆ Lateral Movement available to eliminate interference



Double Acting Type



### 3-Way Installation available

- ◆ Mounting Holes with Threads
- ◆ Mounting Adapters available (Option)

### ZE or ES type Sensor Switch

(Sensor switch is an option)

- ◆ detecting Levers OPEN
- ◆ detecting Levers CLOSED

## High Gripping Force & Accuracy

◆ High Gripping Force can be attained with the levers in parallel.

# HV02E Series

HV02E

## Model Code No.

**HV02E - 12 \* HAE - ZE135 A 2**

Series Name

Normal Size (Bore Size)

- 10 : 10mm
- 16 : 16mm
- 20 : 20mm
- 25 : 25mm

Number of Switch

- 1 : 1 Switch
- 2 : 2 Switches

Switch Lead Wire

- A : 1m
- B : 3m

(Option)

(Option)

### ● Mounting Adapter for Gripper

- Blank : without Adapter
- HAE : HAE type
- HFE : HFE type
- HFE-L : HFE-L type (HV02E-16 only)

### ● Sensor Switch

Blank : without Switch

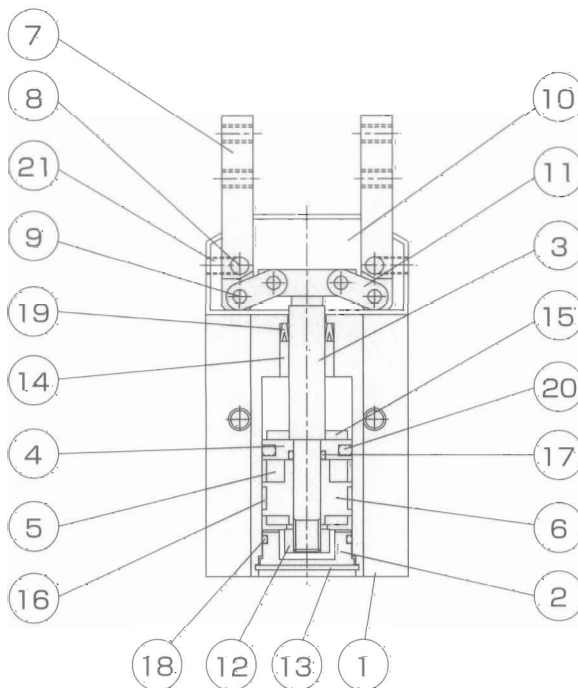
#### Straight type

- 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

## Internal Structure



### Parts List

No.	Name	Material
1	Main Body	Aluminium Alloy
2	Head Cover	Aluminium Alloy
3	Piston Rod	Carbon Steel
4	Piston	Aluminium Alloy
5	Magnet	Plastic Magnet
6	Magnet Holder	Aluminium Alloy
7	Lever	Carbon Tool Steel
8	Fulcrum Pin	Carbon Tool Steel
9	Press-in Pin	Carbon Steel
10	Slide Plate	Carbon Steel
11	Link Lever	Carbon Steel
12	U-Nut	Carbon Steel
13	Snap Ring	Hard Steel
14	Sintered Oilless Bearing	Sintered Alloy
15	Bumper	Urethane Rubber
16	Wearing	Resin
17	O-ring	NBR
18	O-ring	NBR
19	Rod Packing	NBR
20	Piston Packing	NBR
21	Set Screw	Soft Steel

Note:  
Nos.15 and 16 are provided only for HV02E-16 and HV02E-20.

**Specifications**

Action Type	Double Acting
Working Fluid	Air
Maximum Operating Pressure [MPa]	0.7
Operating Pressure [MPa]	0.2~0.7
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.]	100
Maximum Mechanical Life [million cycles]	3
Air port	M3×0.5 (HV02E-12 only) M5×0.8
Available Switch type	ZE, ES type (Solid state type)

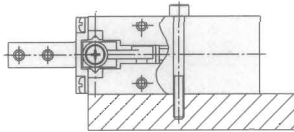
Action type	Model	Norminal Size [mm]	Levers Opening Angle [deg.]	Thread Holes on Levers [mm]	Effective Gripping Force [N]	External Dimensions (Thick×Width×Length) [mm]	Weight [g]	
Double Acting	HV02E-12	12	Each lever: -3 to 90	4-M3×0.5	Close	6.7	16×27×47	55
					Open	8.0		
	HV02E-16	16		4-M3×0.5	Close	18.3	22×34×69	146
					Open	21.3		
	HV02E-20	20		4-M4×0.7	Close	31.7	26×45×81	277
					Open	37.7		
	HV02E-25	25		4-M5×0.8	Close	73.3	32×52×88	427
					Open	86.7		

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

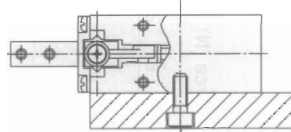
## ■ Installation Examples

### 1. Using Through Holes of Body

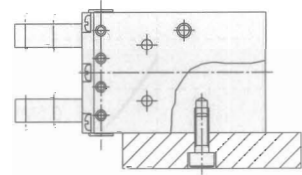
(only for HV02E-12, HV02E-25)



### 2. Using Thread Holes at Backside

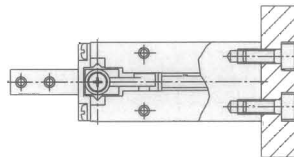


### 3. Using Thread Holes at Body Shoulders



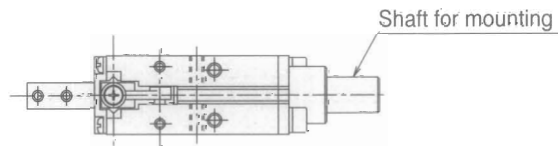
### 4. Using Thread Holes at Bottom

A spacer is needed at bottom to prevent sensor switches from protruding above the bottom surface.

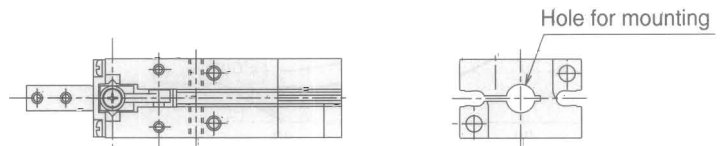


### 5. Using Mounting Adapter at Bottom

Using HAE type mounting adapter (except HV02E-12)

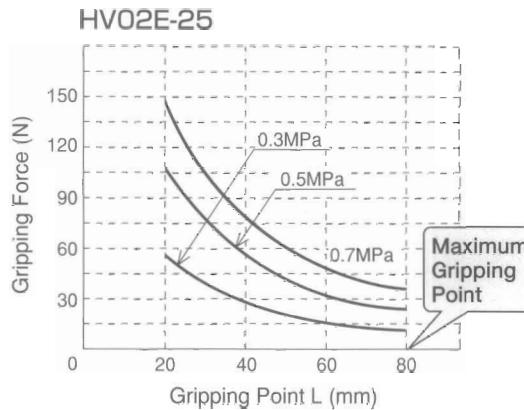
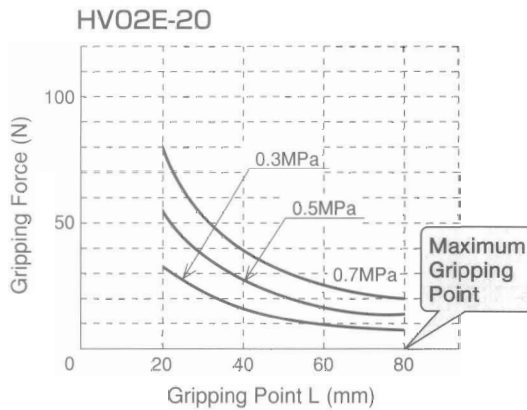
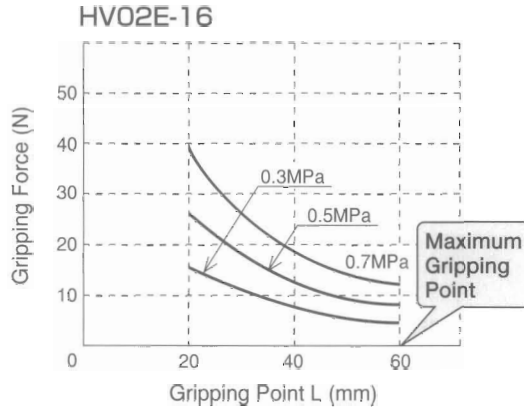
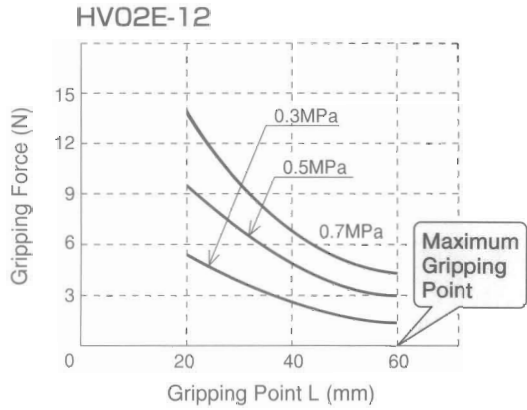


Using HFE or HFEL types mounting adapter



## Effective Gripping Force (When closing) :

〈Double Acting Type〉

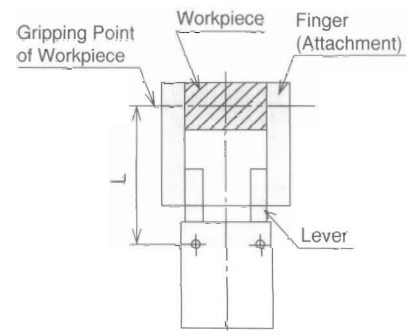


## Effective Gripping Force (When opening)

Effective opening force can be calculated by the following formula.

$$\text{Effective opening Force} = \text{Effective closing Force} \times Fr$$

	HV02E-12	HV02E-16	HV02E-20	HV02E-25
Fr	1.21	1.16	1.17	1.19



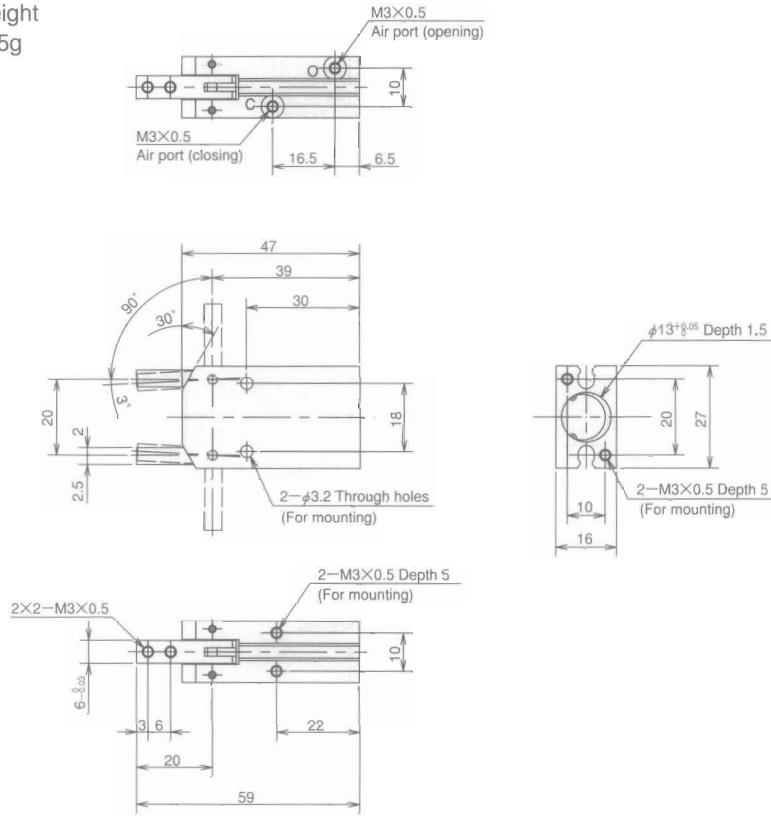
**NOTE:**

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 above 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.

Unit : mm

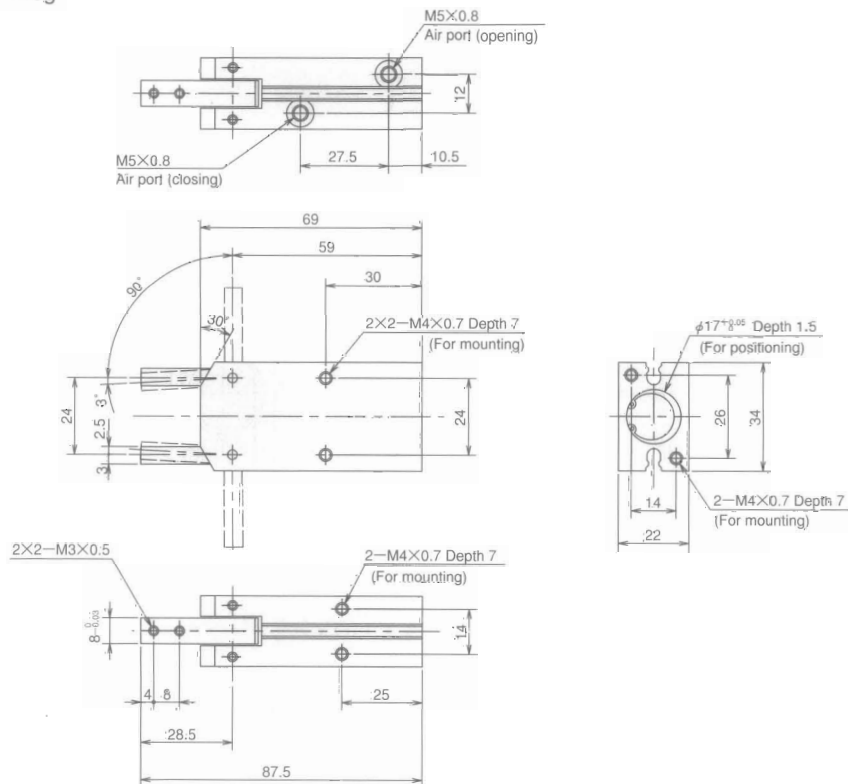
Dimensions

**HV02E-12** Weight 55g



**HV02E-16** Weight 146g

Unit : mm

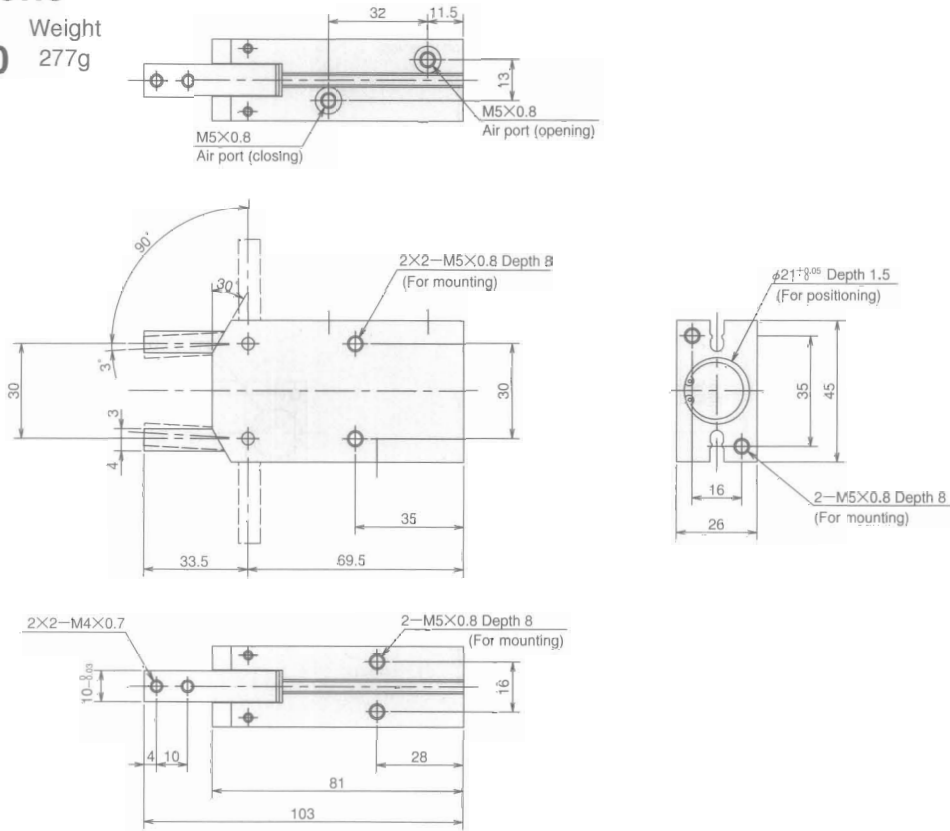


# HV02E Series

HV02E

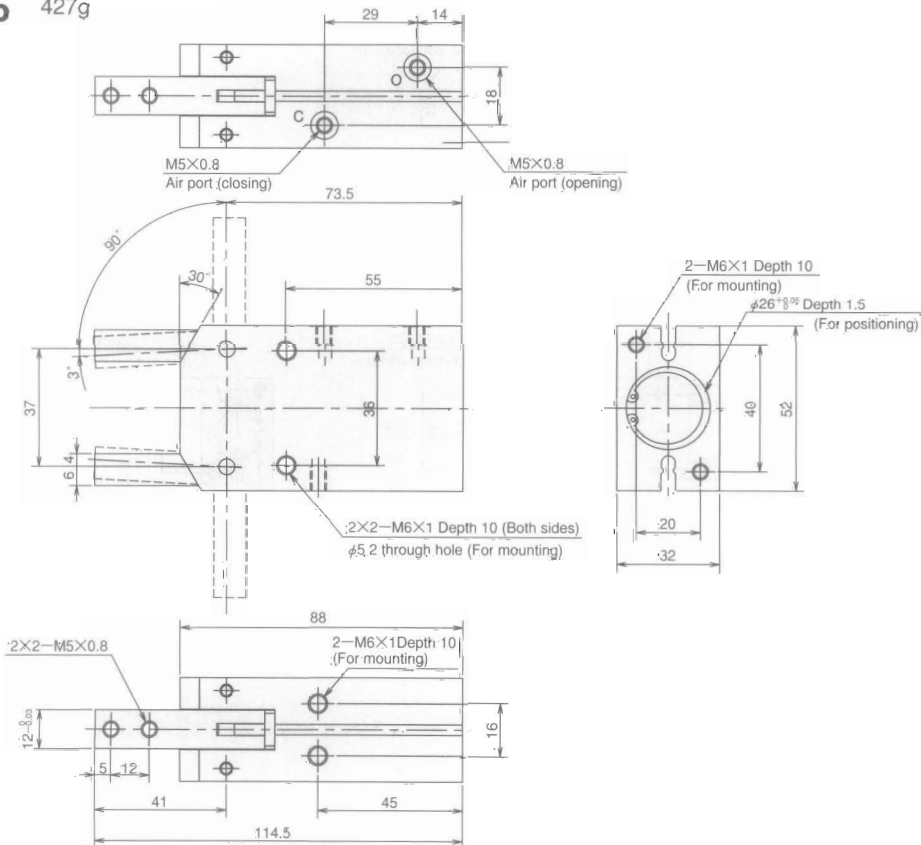
## Dimensions

**HV02E-20** Weight 277g



**HV02E-25** Weight 427g

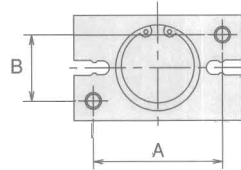
Unit : mm



## Dimensions of Groove for Sensor Switch

Unit : mm

	HV02E-12	HV02E-16	HV02E-20	HV02E-25
A	20	26	35	40
B	8	11	13	16

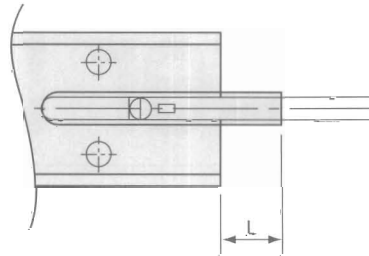


## Protruding Length of Switch

Refer to protruding length of switch body from HV02E body at the levers closed or opened fully.

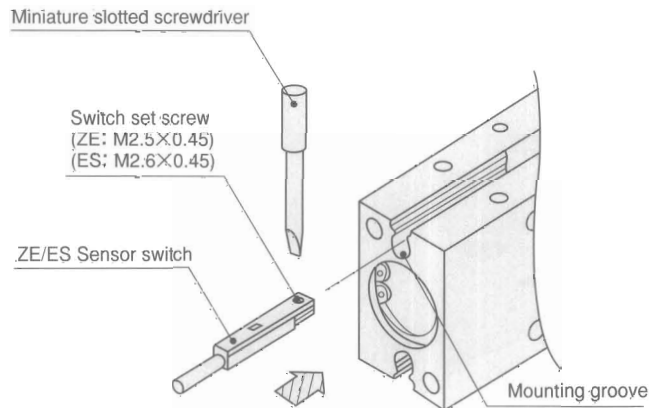
Unit : mm

	HV02E-12	HV02E-16	HV02E-20	HV02E-25
Max. producing Length "L"	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)

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 : degree

	Max. Response Differentia	Operating Position Accuracy
HV02E-12	1.5	0.5
HV02E-16	0.8	0.5
HV02E-20	1.3	0.5
HV02E-25	0.8	0.5

