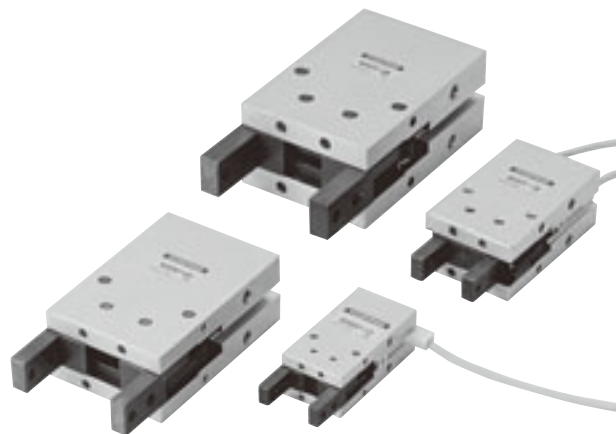
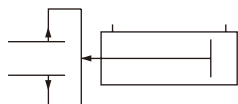


# HNHB SERIES PARALLEL TYPE

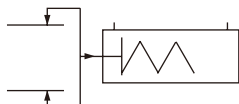
Plain Bearing Specification  
Double Acting Type,  
Single Acting Normally Open Type



## Symbols



Double Acting Type



Single Acting  
Normally Open Type

## Specifications

### ● Double acting parallel type

Basic model		HNHBDP-10	HNHBDP-16	HNHBDP-20	HNHBDP-25
Item					
Cylinder bore size	mm [in.]	10 [0.394]	16 [0.630]	20 [0.787]	25 [0.984]
Operation type		Double acting type			
Media		Air			
Operating pressure range	MPa [psi.]	0.15~0.7 [22~102]	0.1~0.7 [15~102]		
Proof pressure	MPa [psi.]	1.05 [152]			
Operating temperature range	°C [°F]	0~60 [32~140]			
Maximum operating frequency	cycle/min	180			
Lubrication	Cylinder portion	Not required			
	Lever portion	Required (Apply grease to the sliding portion)			
Maximum grip point length	mm [in.]	30 [1.18]	40 [1.57]	60 [2.36]	70 [2.76]
Gripping force <sup>Note 1</sup> N [lbf.]	Closed side	7.8 [1.75]	23.5 [5.28]	46.1 [10.36]	76.5 [17.20]
	Open side	4.9 [1.10]	17.7 [3.98]	34.3 [7.71]	58.8 [13.22]
Lever open/closed stroke	mm [in.]	4 [0.157]	8 [0.315]	12 [0.472]	14 [0.551]
Port size		M3×0.5		10-32 UNF	
Mass <sup>Note 2</sup>	g [oz.]	47 [1.66] (58 [2.05])	120 [4.23] (139 [4.90])	230 [8.11] (256 [9.03])	388 [13.69] (439 [15.49])

Notes: 1. Values are obtained when grip point length is 30mm [1.18in.] under operating pressure 0.5 MPa [73psi.]. For details of the effective gripping force, see the graphs on p.1387.

2. ( ) mean the mass with the mounting bracket: -M.

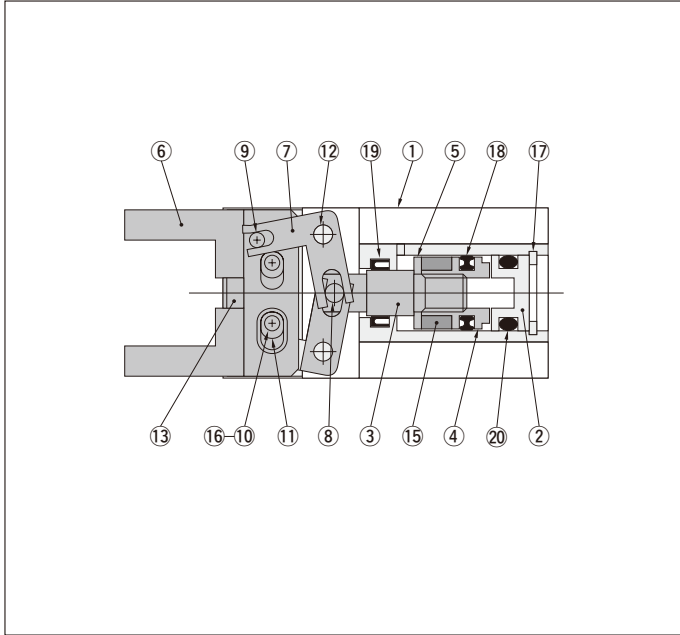
### ● Single acting normally open parallel type

Basic model		HNHBRP-10	HNHBRP-16	HNHBRP-20	HNHBRP-25
Item					
Cylinder bore size	mm [in.]	10 [0.394]	16 [0.630]	20 [0.787]	25 [0.984]
Operation type		Single acting normally open type			
Media		Air			
Operating pressure range	MPa [psi.]	0.35~0.7 [51~102]	0.25~0.7 [36~102]		
Proof pressure	MPa [psi.]	1.05 [152]			
Operating temperature range	°C [°F]	0~60 [32~140]			
Maximum operating frequency	cycle/min	180			
Lubrication	Cylinder portion	Not required			
	Lever portion	Required (Apply grease to the sliding portion)			
Maximum grip point length	mm [in.]	30 [1.18]	40 [1.57]	60 [2.36]	70 [2.76]
Gripping force <sup>Note 1</sup> N [lbf.]	Closed side	2.9 [0.65]	12.7 [2.85]	22.6 [5.08]	37.3 [8.39]
	Open side	2.0 [0.45]	3.9 [0.88]	6.9 [1.55]	13.7 [3.08]
Lever open/closed stroke	mm [in.]	4 [0.157]	8 [0.315]	12 [0.472]	14 [0.551]
Port size		M3×0.5		10-32 UNF	
Mass <sup>Note 2</sup>	g [oz.]	48 [1.69] (59 [2.08])	121 [4.27] (140 [4.94])	232 [8.18] (258 [9.10])	392 [13.83] (443 [15.63])

Notes: 1. Values are obtained when grip point length is 30mm [1.18in.] under operating pressure 0.5 MPa [73psi.]. For details of the effective gripping force, see the graphs on p.1387.

2. ( ) mean the mass with the mounting bracket: -M.

## Inner Construction

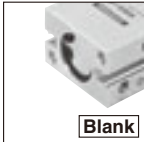



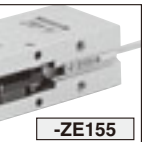

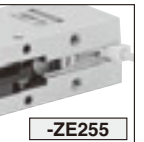


Note: Diagram shows the double acting type with the levers completely opened.

## Major Parts and Materials


No.	Parts	Materials	Remarks
①	Body	Aluminum alloy	
②	Head cover	Aluminum alloy	
③	Piston rod	Stainless steel	
④	Piston	Aluminum alloy	
⑤	Magnet holder	Aluminum alloy	
⑥	Slide lever	Carbon steel	
⑦	Action lever	Carbon steel	
⑧	Rod pin	Carbon steel	
⑨	Slide pin	Carbon steel	
⑩	Slide guide pin	Carbon steel	
⑪	Ring	Carbon steel	
⑫	Fulcrum pin	Carbon steel	
⑬	Slide plate	Carbon steel	
⑭	Spring	Spring steel	Single acting type only
⑮	Magnet	Magnet material	
⑯	Hexagon socket setscrew	Mild steel	
⑰	C-shaped snap ring	Steel	
⑱	Piston seal	Synthetic rubber (NBR)	
⑲	Rod seal	Synthetic rubber (NBR)	
⑳	O-ring	Synthetic rubber (NBR)	

## Order Codes

	Mounting bracket		Sensor switch					Lead wire length	Number of sensor switches (for air hands with sensor switches)
	No mounting bracket	With mounting bracket	No sensor switch	With ZE135	With ZE155	With ZE235	With ZE255		
	 Blank	 Blank	 Blank	 -ZE135	 -ZE155	 -ZE235	 -ZE255	A : 1000mm [39in.] B : 3000mm [118in.]	● 1 : With 1 sensor switch ● 2 : With 2 sensor switches ★ Included at shipping
	★ Included at shipping		● Solid state type ● With indicator lamp ● DC10~28V ● 2-lead wire ● Horizontal lead wire	● Solid state type ● With indicator lamp ● DC4.5~28V ● 3-lead wire ● Horizontal lead wire	● Solid state type ● With indicator lamp ● DC10~28V ● 2-lead wire ● Vertical lead wire	● Solid state type ● With indicator lamp ● DC10~28V ● 2-lead wire ● Vertical lead wire	● Solid state type ● With indicator lamp ● DC4.5~28V ● 3-lead wire ● Vertical lead wire		
	Basic model	Cylinder bore size							
Double acting type	HNHBDP	-10 -16 -20 -25	-M	-ZE135 -ZE155 -ZE235 -ZE255	A B	1 2			
Single acting normally open type	HNHBRP	-10 -16 -20 -25	-M	-ZE135 -ZE155 -ZE235 -ZE255	A B	1 2			

### Additional Parts (To be ordered separately)

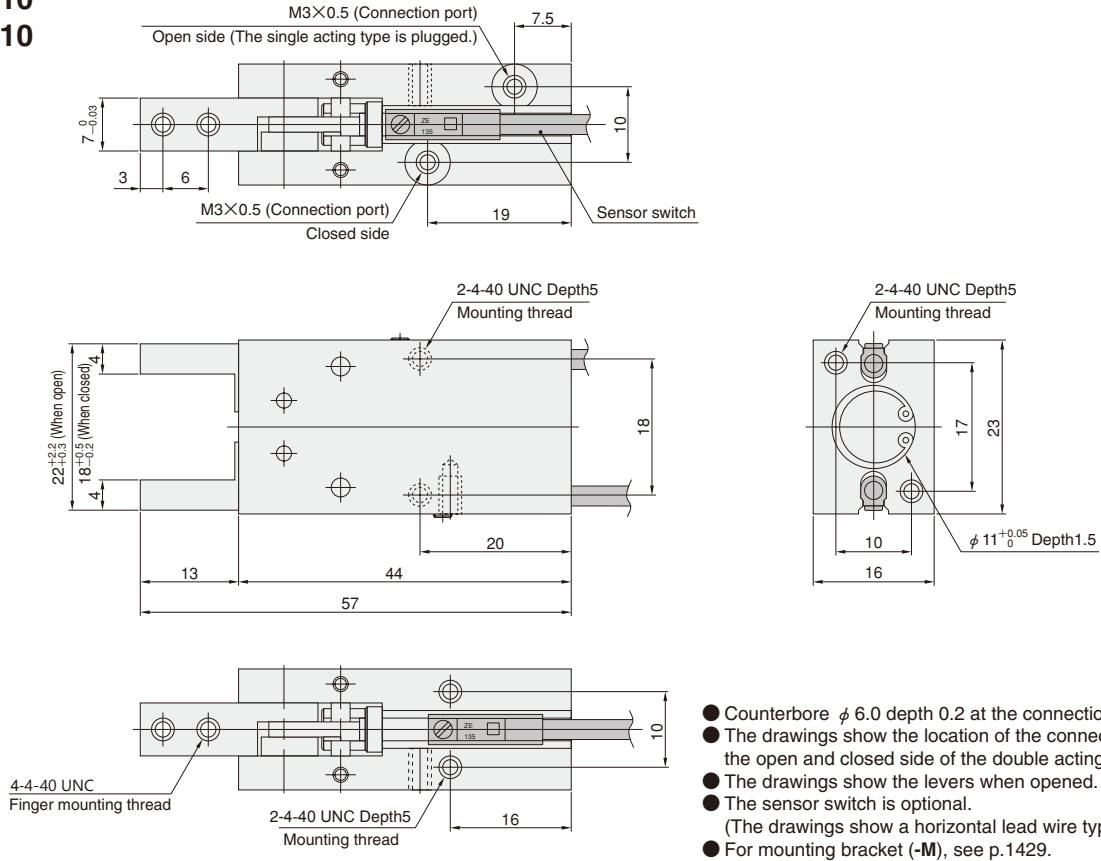
Mounting bracket (Mounting screws are not included)



- For  $\phi$  10 [0.394in.] — HNHBM10
- For  $\phi$  16 [0.630in.] — HNHBM16
- For  $\phi$  20 [0.787in.] — HNHBM20
- For  $\phi$  25 [0.984in.] — HNHBM25

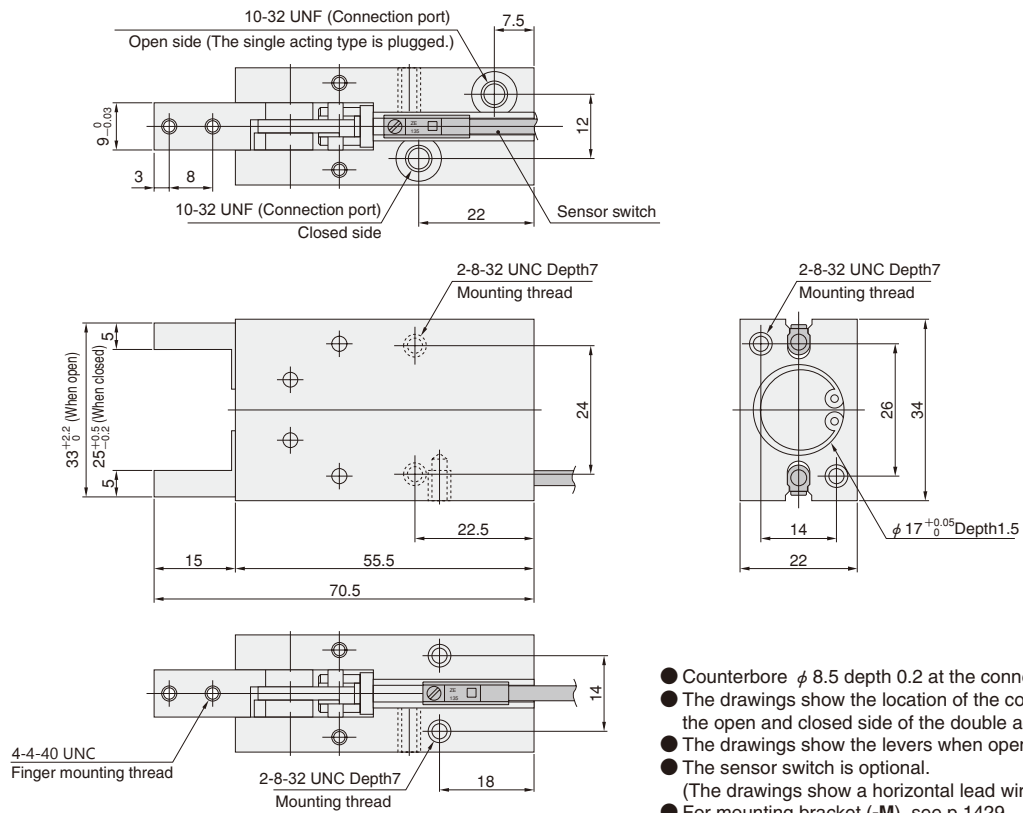
## Dimensions of Parallel Type Plain Bearing Specification (mm)

### HNHBDP-10 HNHBRP-10



- Counterbore  $\phi 6.0$  depth 0.2 at the connection port.
- The drawings show the location of the connection ports for the open and closed side of the double acting type.
- The drawings show the levers when opened.
- The sensor switch is optional.  
(The drawings show a horizontal lead wire type.)
- For mounting bracket (-M), see p.1429.

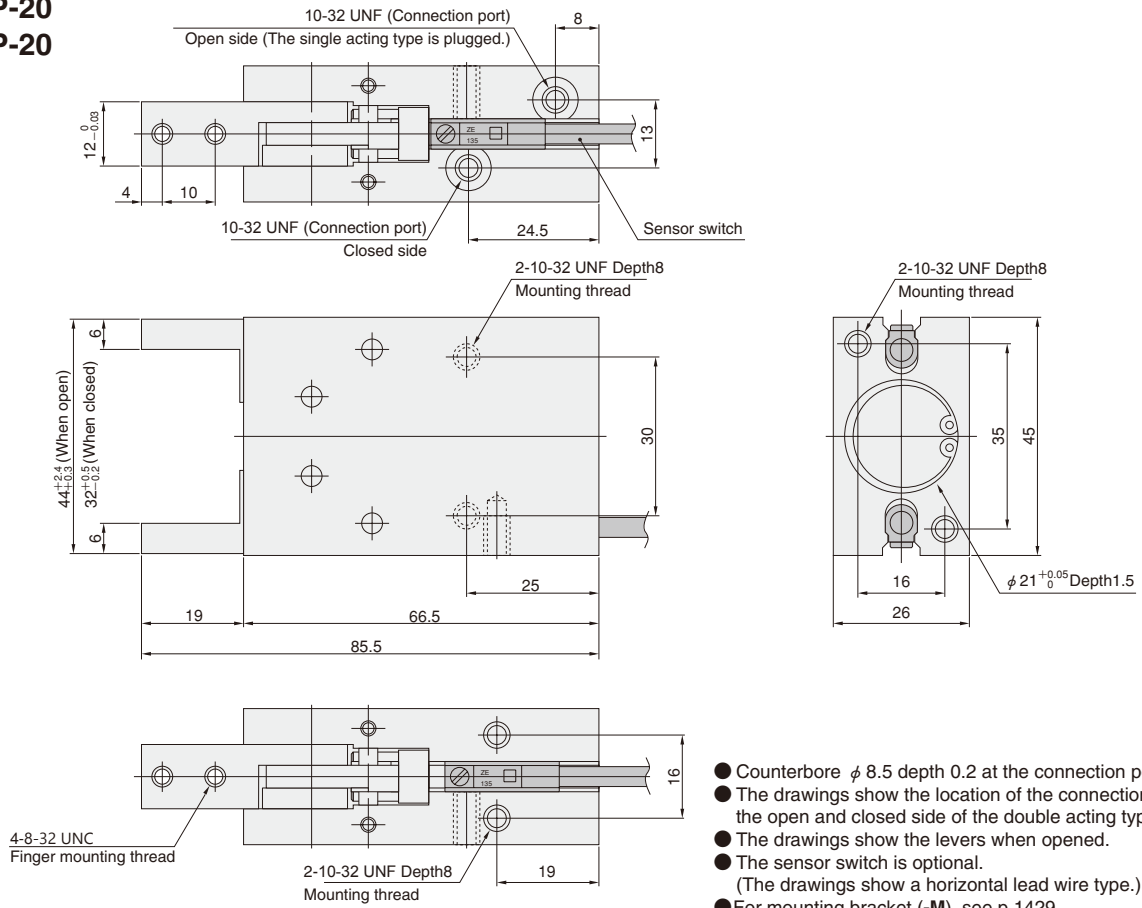
### HNHBDP-16 HNHBRP-16



- Counterbore  $\phi 8.5$  depth 0.2 at the connection port.
- The drawings show the location of the connection ports for the open and closed side of the double acting type.
- The drawings show the levers when opened.
- The sensor switch is optional.  
(The drawings show a horizontal lead wire type.)
- For mounting bracket (-M), see p.1429.

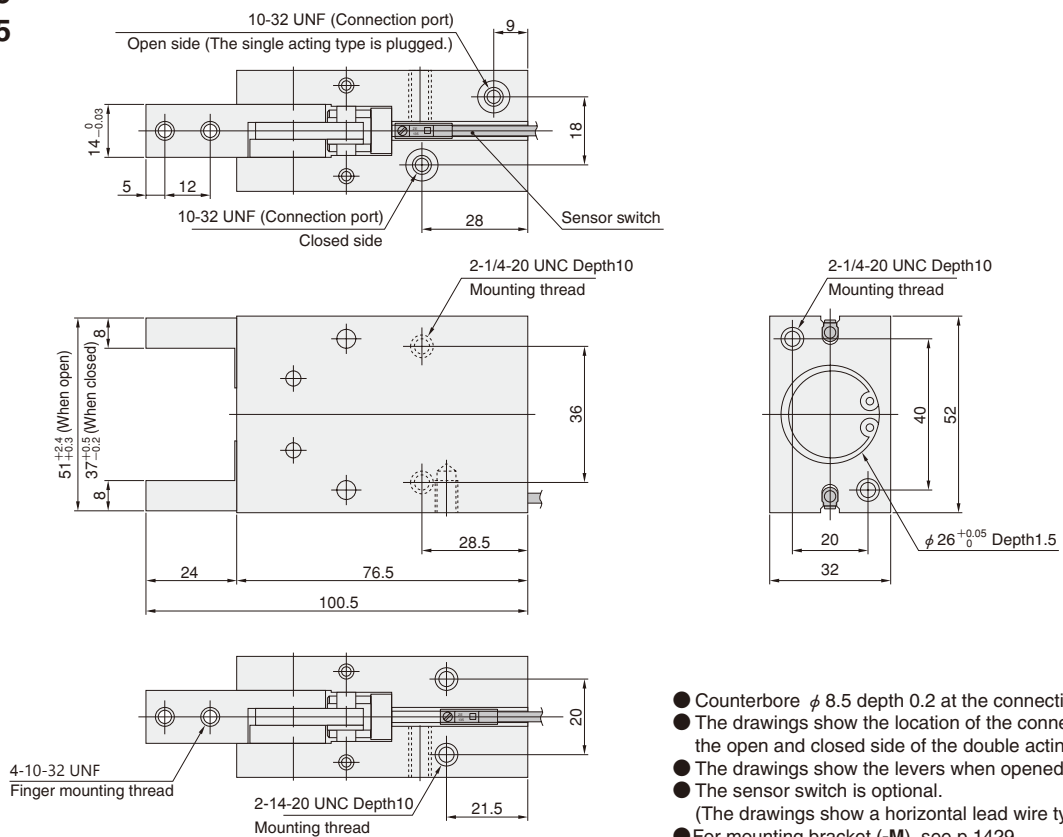
# Dimensions of Parallel Type Plain Bearing Specification (mm)

## HNHBDP-20 HNHBRP-20



- Counterbore  $\phi 8.5$  depth 0.2 at the connection port.
- The drawings show the location of the connection ports for the open and closed side of the double acting type.
- The drawings show the levers when opened.
- The sensor switch is optional.  
(The drawings show a horizontal lead wire type.)
- For mounting bracket (-M), see p.1429.

## HNHBDP-25 HNHBRP-25

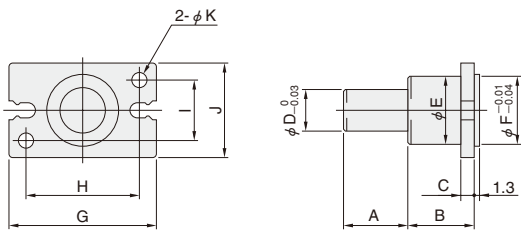


- Counterbore  $\phi 8.5$  depth 0.2 at the connection port.
- The drawings show the location of the connection ports for the open and closed side of the double acting type.
- The drawings show the levers when opened.
- The sensor switch is optional.  
(The drawings show a horizontal lead wire type.)
- For mounting bracket (-M), see p.1429.

## Options

● Mounting bracket: -M

### HNHB-M10~25



Model	Code	A	B	C	D	E	F	G	H	I	J	K
HNHB-M10		15	15	3	10	11	11	23	17	10	16	3.4
HNHB-M16		15	15	3	10	16	17	34	26	14	22	4.5
HNHB-M20		15	15	3	10	18	21	45	35	16	26	5.5
HNHB-M25		25	17	5	14	26	26	52	40	20	32	6.6

# Handling Instructions and Precautions



## General precautions

### Media

1. Use air for the media. For the use of any other media, consult us.
2. Air used for the air hand (gripper) should be clean air that contains no deteriorated compressor oil, etc. Install an air filter (with filtration of a minimum 40µm) near the air hand (gripper) or valve to remove collected liquid or dust. In addition, drain the air filter periodically.

### Piping

1. Always thoroughly blow off (use compressed air) the tubing before connecting it to the air hand (gripper). Entering metal chips, sealing tape, rust, etc., generated during piping work could result in air leaks or other defective operation.
2. When screwing in piping or fittings to the air hand (gripper), tighten to the appropriate tightening torque shown below.

Connecting thread	Tightening torque N · m [ft · lbf]
M3×0.5	0.6 [0.44]
10-32 UNF	1.6 [1.18]

### Lubrication

#### Cylinder portion

The product can be used without lubrication, if lubrication is required, use Turbine Oil Class 1 (ISO VG32) or equivalent. Avoid using spindle oil or machine oil.

#### Lever slide portion

The product can be used without lubrication, if lithium-based grease or urea-based grease is applied, it will increase the product's operating life.

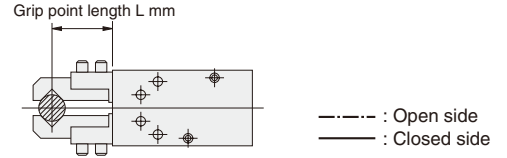
### Atmosphere

If using in locations subject to dripping water, dripping oil, etc., or to large amount of dust, use a cover to protect the unit. Select the rubber cover specification, if using in locations subject to large amounts of dust.

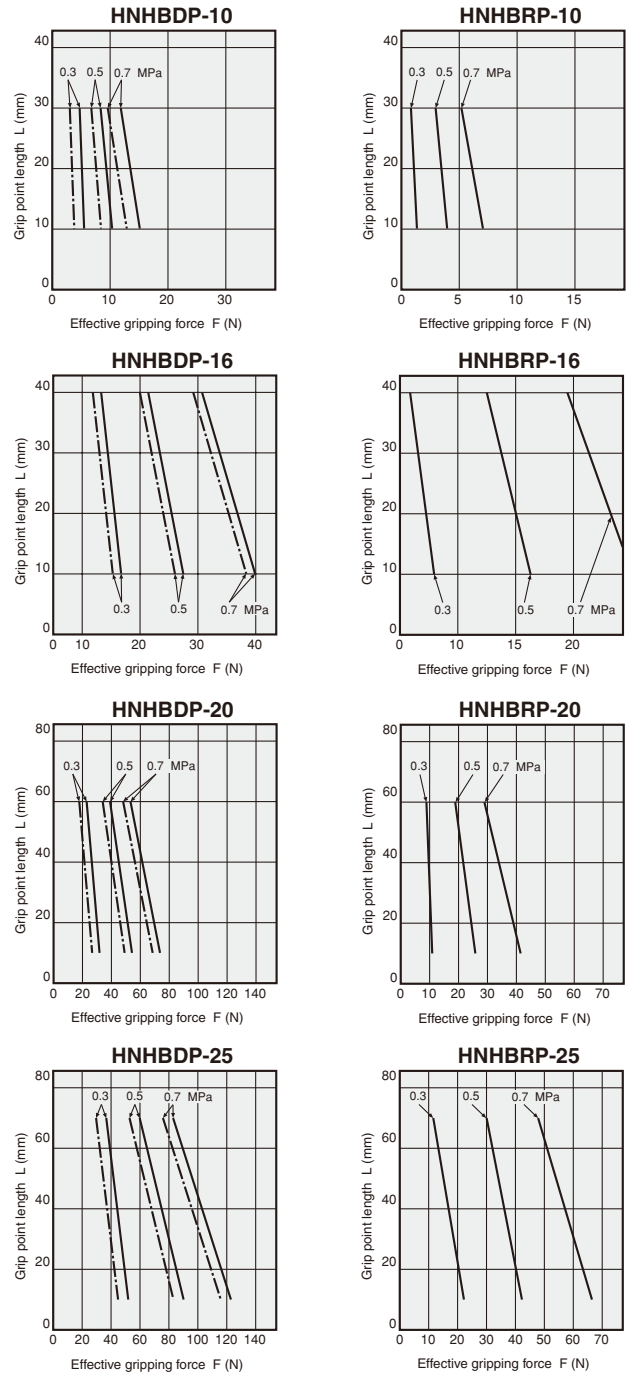


## Selection

### Effective gripping force



### ● Parallel type Plain bearing specification

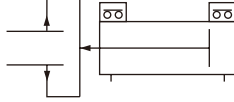


1mm = 0.0394in.  
1N = 0.2248lbf.  
1MPa = 145psi.

# SENSOR SWITCHES

## Solid State Type

### Symbol



### Order Codes

#### ● Sensor switch only

#### ● NHB series

Sensor switch  
ZE135 — Solid state type 2-lead wire  
ZE235 — Solid state type 2-lead wire  
ZE155 — Solid state type 3-lead wire  
ZE255 — Solid state type 3-lead wire



#### Lead wire length

A — 1000mm [39in.]  
B — 3000mm [118in.]

● For details of sensor switches, see p.1544.

# Sensor Switch Operating Range and Response Differential

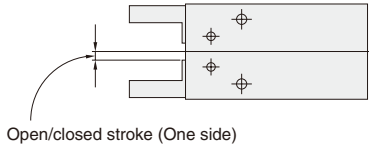
## ● Open/closed stroke differential (Open/closed angle differential)

The stroke differential (angle differential) between the point where the lever on one side moves and turns the switch ON and the point where the switch is turned OFF as the lever travels in the opposite direction.

## ● Operating position repeatability

When the lever on one side moves in the same direction, operating position repeatability is defined as the range of the deviation of the position where the switch is turned ON or turned OFF.

### Parallel type



## ● Parallel type

Model	Open/closed stroke differential	Operating position repeatability
NHB□P□-10	0.5 [0.020]	0.2 [0.008]
NHB□P□-16	0.6 [0.024]	0.2 [0.008]
NHB□P□-20	0.6 [0.024]	0.2 [0.008]
NHB□P□-25	0.6 [0.024]	0.2 [0.008]

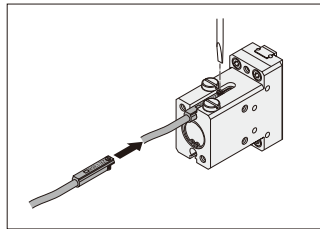
Remark: The above table shows reference values.

# Mounting Sensor Switch

## ● NHB series

Tighten the mounting screw after the sensor switch is inserted in the switch mounting groove in the direction of the arrow in the diagram and move to the proper location. Tightening torque of the mounting screw is 0.1~0.2N·m [0.9~1.8in·lbf].

**Caution:** Care must be exercised that the sensor switch cannot be inserted into the switch mounting groove from the digram's top direction.



## ● For parallel type (Mount the sensor switch so that the model marking surface faces up.)

《For inside gripping》

1) Confirm the levers are completely open.

2) Push the switch into the groove on the body in the direction of the arrow.

3) By moving the switch in the direction of the arrow, the lamp turns ON.

4) Secure the sensor switch by the mounting screw after moving it about 0.3 mm [0.012in.] further in the direction of the arrow from where the lamp turned ON in step 3).

《For outside gripping》

1) Confirm workpiece is inside gripped one.

《For outside gripping》

1) Confirm the levers are completely closed.

2) Push the switch into the groove on the body in the direction of the arrow.

3) By moving the switch in the direction of the arrow, the lamp turns ON, and by moving it further, the lamp turns OFF.

4) By moving back the sensor switch in the direction of the arrow (opposite direction), the lamp turns ON, and it should be secured by the mounting screw after moving it about 0.3 mm [0.012in.] further.

《For outside gripping》

1) Confirm workpiece is outside gripped one.

Remark: Step 1) shows the location where you want to confirm the switch turns ON. Install and adjust it in accordance with step 1) ~ 4) above.