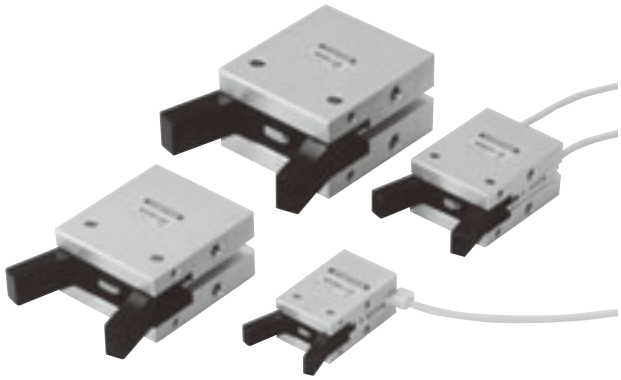
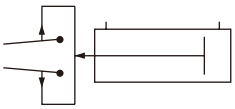
HNHB SERIES
SWING TYPE

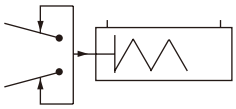
Double Acting Type,
Single Acting Normally Open Type



Symbols



Double Acting Type



Single Acting
Normally Open Type

Specifications

●Double acting swing type

Item \ Basic model		HNHBDS-10	HNHBDS-16	HNHBDS-20	HNHBDS-25
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.]		0.1～0.7 [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)			
Theoretical gripping moment (M)[Note1] N・cm [in・lbf]	Closed side	17×P [0.0104×P]	90×P [0.0549×P]	170×P [0.104×P]	340×P [0.208×P]
	Open side	27×P [0.0165×P]	120×P [0.0732×P]	230×P [0.140×P]	440×P [0.269×P]
Maximum grip point length[Note2] mm [in.]		30 [1.18]	40 [1.57]	60 [2.36]	70 [2.76]
Effective gripping force (F)[Note1] N [lbf.]		F=M/L×8.5 [F=M/L×0.85]			
Lever open/closed angles		–10°～+30°			
Port size		M3×0.5	10-32 UNF		
Mass[Note3] g [oz.]		40 [1.41] (51 [1.80])	96 [3.39] (115 [4.06])	180 [6.35] (206 [7.27])	313 [11.04] (364 [12.84])

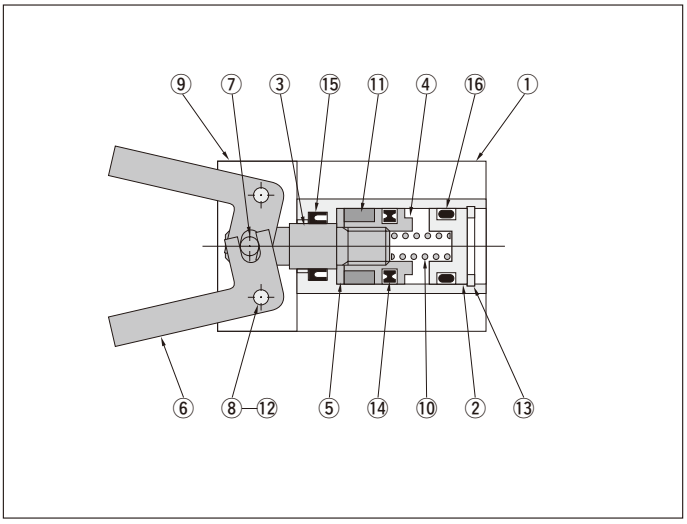
Notes: 1. F: Effective gripping force, M: Theoretical gripping moment, P: Operating pressure MPa [psi.], L: Grip point length mm [in.]. Values of P and L should vary from SI unit to imperial units. For details of the effective gripping force, see the graphs.
2. The grip point length is measured from the fulcrum pin.
3. ( ) mean the mass with the mounting bracket: **-M**.

●Single acting normally open swing type

Item \ Basic model		HNHBRS-10	HNHBRS-16	HNHBRS-20	HNHBRS-25
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.]		0.3～0.7 [44～102]	0.2～0.7 [29～102]		
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)			
Theoretical gripping moment (M)[Note1] N・cm [in・lbf]	Closed side	17×P−3.4 [0.0104×P−0.30]	90×P−9.8 [0.0549×P−0.87]	170×P−20.5 [0.104×P−1.81]	340×P−35.3 [0.208×P−3.12]
	Open side	3.4 [0.30]	9.8 [0.87]	20.5 [1.81]	35.3 [3.12]
Maximum grip point length[Note2] mm [in.]		30 [1.18]	40 [1.57]	60 [2.36]	70 [2.76]
Effective gripping force (F)[Note1] N [lbf.]		F=M/L×8.5 [F=M/L×0.85]			
Lever open/closed angles		−10°～+30°			
Port size		M3×0.5	10-32 UNF		
Mass[Note3] g [oz.]		40 [1.41] (51 [1.80])	96 [3.39] (115 [4.06])	182 [6.42] (208 [7.34])	317 [11.18] (368 [12.98])

Notes: 1. F: Effective gripping force, M: Theoretical gripping moment, P: Operating pressure MPa [psi.], L: Grip point length mm [in.]. Values of P and L should vary from SI unit to imperial units. For details of the effective gripping force, see the graphs.
2. The grip point length is measured from the fulcrum pin.
3. ( ) mean the mass with the mounting bracket: **-M**.

Inner Construction



Major Parts and Materials

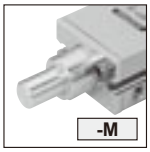
No.	Parts	Materials	Remarks
①	Body	Aluminum alloy	
②	Head cover	Aluminum alloy	
③	Piston rod	Stainless steel	
④	Piston	Aluminum alloy	
⑤	Magnet holder	Aluminum alloy	
⑥	Lever	Chrome molybdenum steel	
⑦	Rod pin	Carbon steel	
⑧	Fulcrum pin	Carbon steel	
⑨	Slide plate	Carbon steel	
⑩	Spring	Spring steel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

Order Codes

■Mounting bracket

No mounting bracket

With mounting bracket



★ Included at shipping

■Sensor switch

No sensor switch

With **ZE135**

- Solid state type
- With indicator lamp
- DC10～28V
- 2-lead wire
- Horizontal lead wire

With **ZE155**

- Solid state type
- With indicator lamp
- DC4.5～28V
- 3-lead wire
- Horizontal lead wire

With **ZE235**

- Solid state type
- With indicator lamp
- DC10～28V
- 2-lead wire
- Vertical lead wire

With **ZE255**

- Solid state type
- With indicator lamp
- DC4.5～28V
- 3-lead wire
- Vertical lead wire

■Lead wire length

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

■Number of sensor switches (for air hands with sensor switches)

- **1** : With 1 sensor switch
- **2** : With 2 sensor switches

★Included at shipping

Basic model	Cylinder bore size	Mounting bracket	Sensor switch	Lead wire length	Number of sensor switches
Double acting type **HNHBDS**	**-10** **-16** **-20** **-25**	**-M**	**-ZE135** **-ZE155** **-ZE235** **-ZE255**	**A** **B**	**1** **2**
Single acting normally open type **HNHBRS**	**-10** **-16** **-20** **-25**	**-M**	**-ZE135** **-ZE155** **-ZE235** **-ZE255**	**A** **B**	**1** **2**

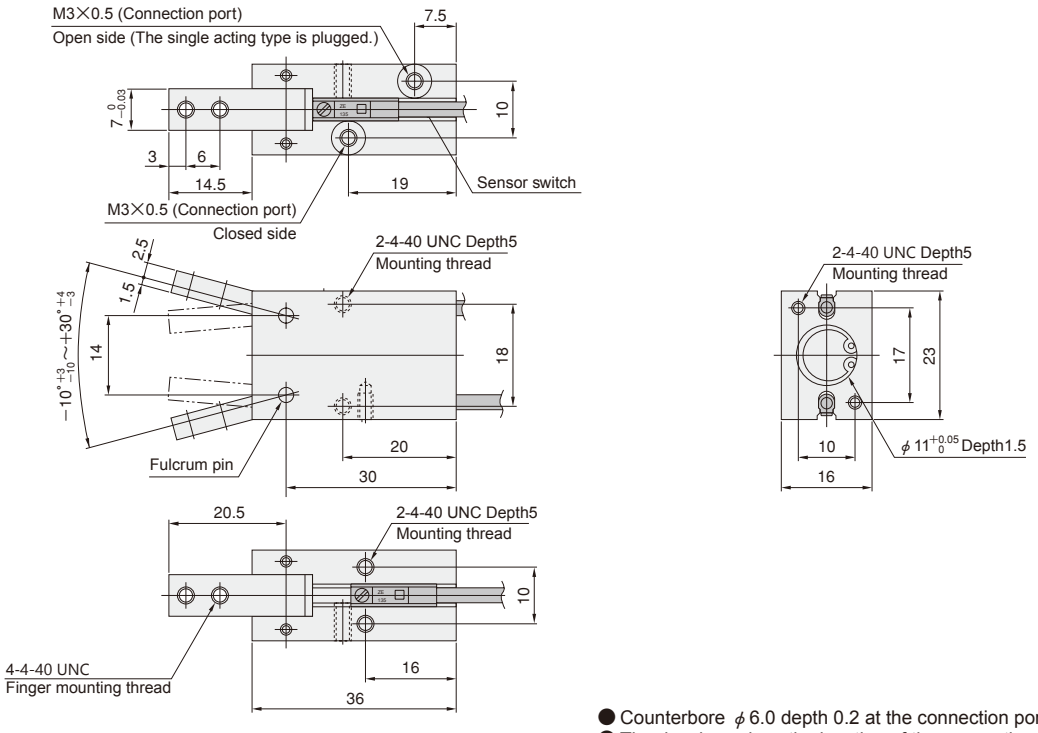
Additional Parts (To be ordered separately)

Mounting bracket
(Mounting screws are not included)

- For ϕ 10 [0.394in.] —**HNHB-M10**
- For ϕ 16 [0.630in.] —**HNHB-M16**
- For ϕ 20 [0.787in.] —**HNHB-M20**
- For ϕ 25 [0.984in.] —**HNHB-M25**

Dimensions of Swing Type (mm)

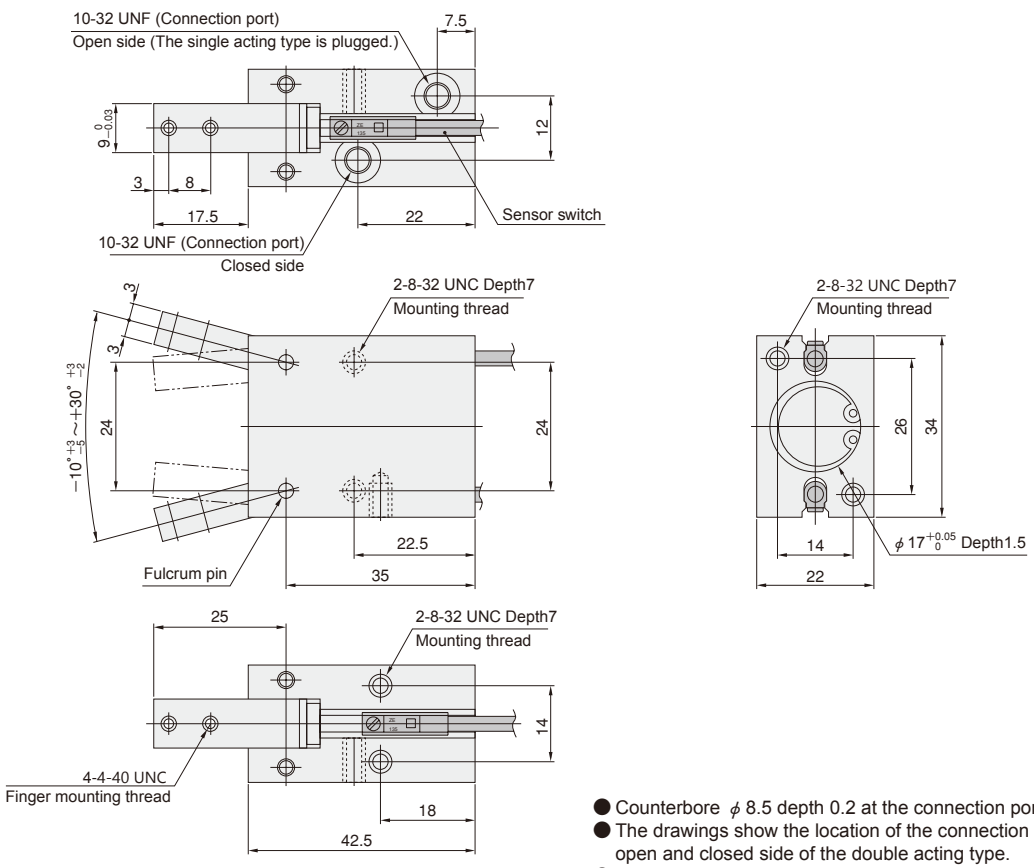
HNHBDS-10
HNHBRS-10



- Counterbore ϕ 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 sensor switch is optional. (The drawings show a horizontal lead wire type.) When mounting the sensor switch always be sure to see the cautions for mounting.

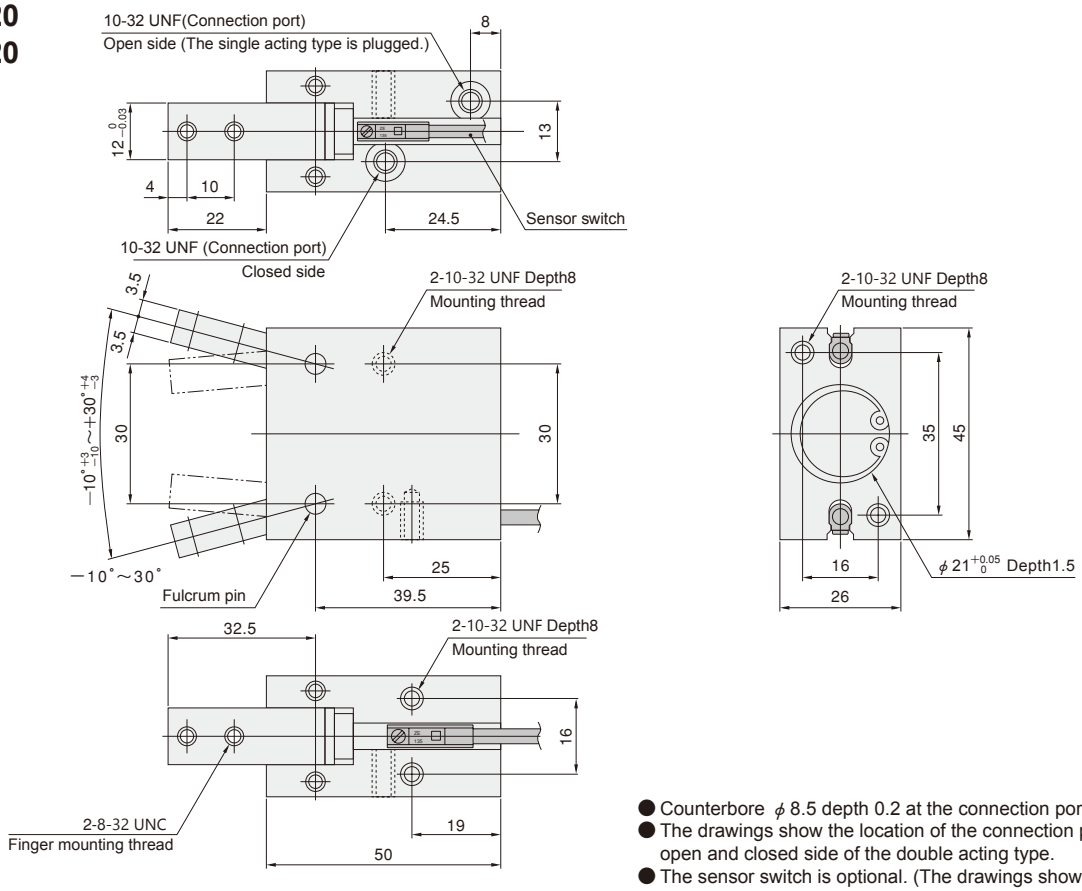
Dimensions of Swing Type (mm)

HNHBDS-16
HNHBRS-16



- Counterbore ϕ 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 sensor switch is optional. (The drawings show a horizontal lead wire type.) When mounting the sensor switch, always be sure to see the cautions for mounting.

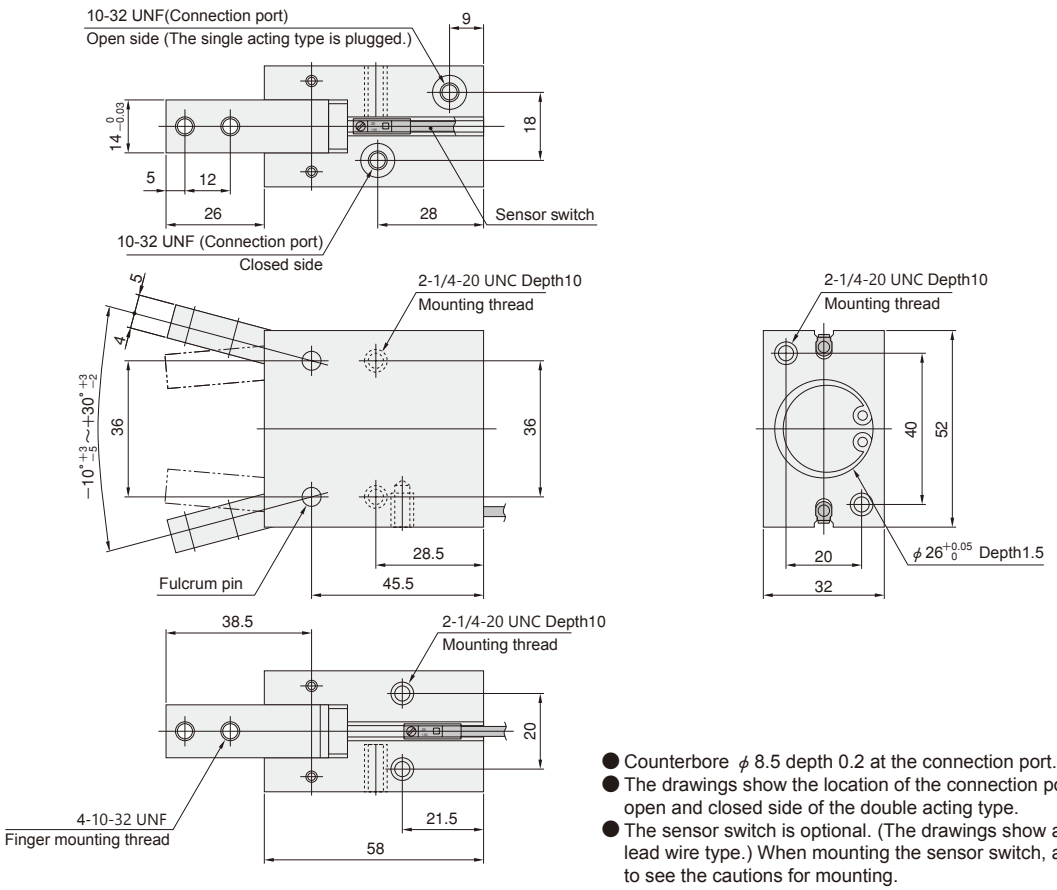
HNHBDS-20
HNHBRS-20



- Counterbore ϕ 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 sensor switch is optional. (The drawings show a horizontal lead wire type.) When mounting the sensor switch, always be sure to see the cautions for mounting.

Dimensions of Swing Type (mm)

HNHBDS-25
HNHBRS-25

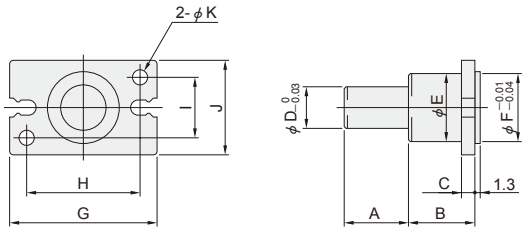


- Counterbore ϕ 8.5 depth 0.2 at the connection port.
- The drawings show the location of the connection ports for the open and closed side of the double acting type.
- The sensor switch is optional. (The drawings show a horizontal lead wire type.) When mounting the sensor switch, always be sure to see the cautions for mounting.

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

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

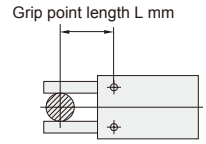
The product can be used without lubrication, if lithium-based grease or urea-based grease is applied, it will increase the product's operating life.

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

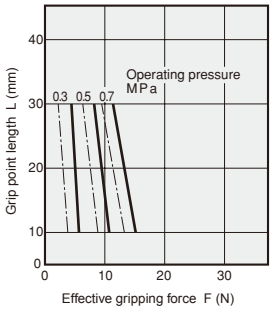
Effective gripping force



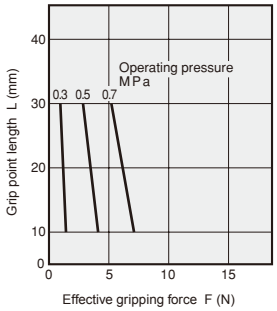
—·—·— : Open side
——— : Closed side

● **Swing type**

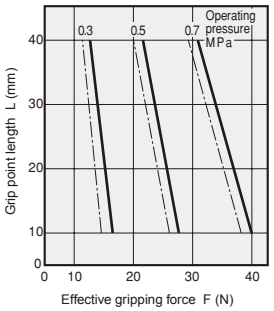
HNHBDS-10



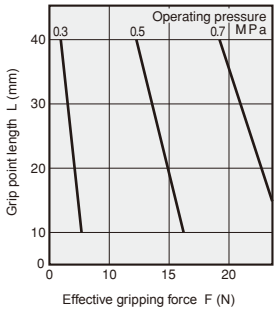
HNHBRS-10



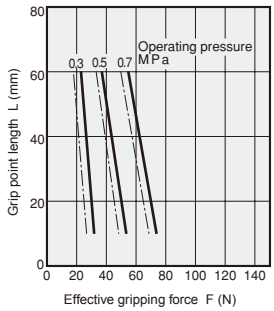
HNHBDS-16



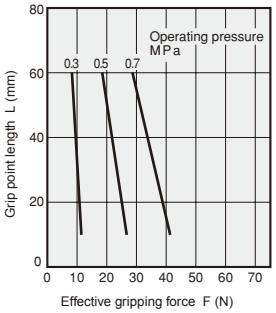
HNHBRS-16



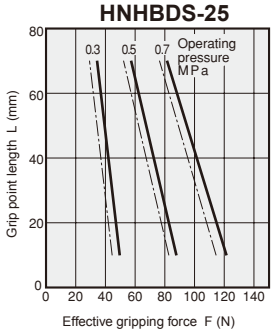
HNHBDS-20



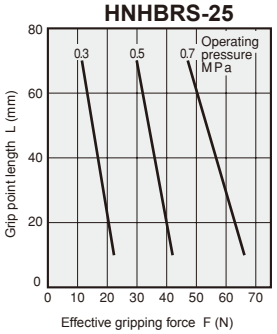
HNHBRS-20



HNHBDS-25



HNHBRS-25

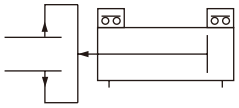


1mm = 0.0394in.
1N = 0.2248lbf.
1MPa = 145psi.

SENSOR SWITCHES

Solid State Type

Symbol



Order Codes

● **Sensor switch only**

● **HNHB** 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

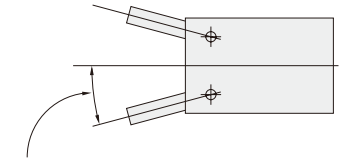
Lead wire length
A — 1000mm [39in.]
B — 3000mm [118in.]

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.

Swing type



Open/closed angle (One side)

●Swing type

Model	Open/closed angle differential	Operating position repeatability
HNHB□S-10	2.0°	1.0°
HNHB□S-16	1.5°	0.6°
HNHB□S-20	1.5°	0.5°
HNHB□S-25	1.0°	0.5°

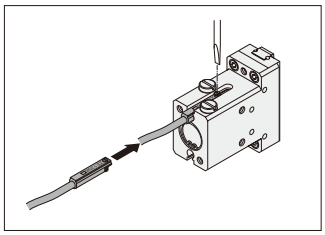
Remark: The above table shows reference values.

Mounting Sensor Switch

●HNHB series

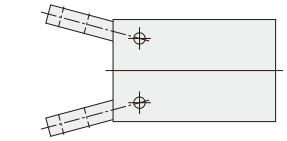
Tighten the mounting screw after the sensor switch is inserted in the switch mounting groove in the direction of the arrow in the diagram and move to the proper location. Tightening torque of the mounting screw is 0.1～0.2N・m [0.9～1.8in・lbf].

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

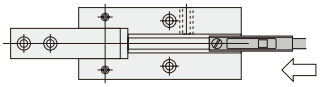


●For swing type (Mount the sensor switch so that the model marking surface faces up.)

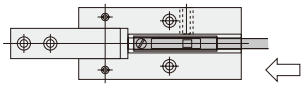
《For inside gripping》



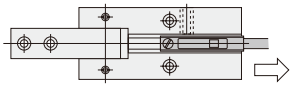
1) Confirm the levers are completely open.



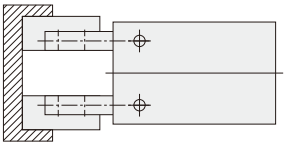
2) Push the switch into the groove on the body in the direction of the arrow.



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

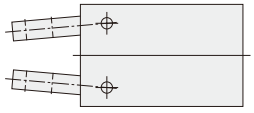


4) By moving back the sensor switch in the direction of the arrow (opposite direction), the lamp turns ON, and it should be secured by the sensor switch mounting screw after moving it about 0.3 mm [0.012in.] further.

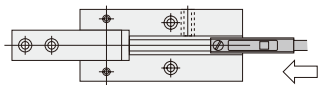


1) Confirm workpiece is inside gripped one.

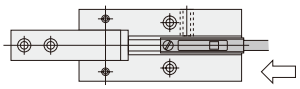
《For outside gripping》



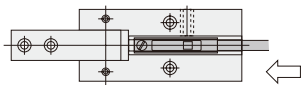
1) Confirm the levers are completely closed.



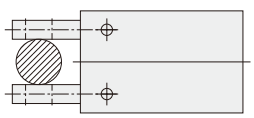
2) Push the switch into the groove on the body in the direction of the arrow.



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



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).



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.