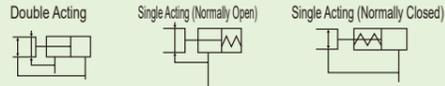




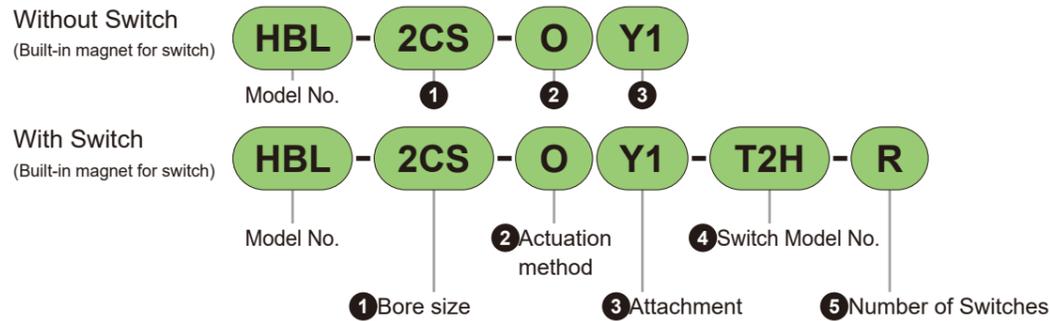
Pivot Gripper Double Acting/Single Acting Type

HBL Series

●Opening/closing angle: -5° to 20°



Model No. Notation Method



① Bore Size (mm)

Code	Content
1C	ø15
2CS	ø20
3CS	ø25
4CS	ø40

② Actuation method

Code	Content
Blank	Standard (Double Acting)
O	Single Acting Type (Normally Open:)
C	Single Acting Type (Normally Closed:)

③ Attachment

Code	Content
Blank	Without attachments
Y1	With attachments Material (S50C)
Y2	With attachments Material (MC Nylon)

Note) For the outline dimensions and compatible models of the attachments, refer to P. 334 and 335. When ordered as an option, it will be shipped included with a quantity of 2.

④ Switch Model No.

For switch details, please refer to P. 573. Switches are included with the product and shipped.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1	
			AC	DC	AC	DC	Straight	L-shape
Solid State	1-Color	2-wire	-	10 to 30	-	5 to 20 *2	T2H□	T2V□
							T2HR3	T2VR3
	1-Color Flex-Resistant Lead Wire	2-wire	-	10 to 30	-	5 to 20 *2	T3H□	T3V□
							T3PH□	T3PV□

*Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

Example) Lead wire length
1 m T2H
3 m T2H③
5 m T2H⑤

*1: For "□" in the switch model number, enter the code selected from the "Lead wire length" table.

*2: The maximum load current value above, 20 mA, is at 25 °C. If the switch operating ambient temperature is higher than 25 °C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

*3: Switches other than the model numbers listed above are also available. (Custom Product) For details, see P. 573.

*4: ① For size "1C", switch mounting cannot be selected.

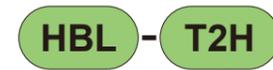
⑤ Number of Switches

Code	Content
R	With 1 pc. on Open Side
H	With 1 pc. on Close Side
D	With 2 pcs

Switch Single Unit Model No. Notation Method

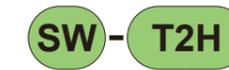
●For switch T□H□

• Switch body + Mounting bracket set



④ Switch Model No.

• Switch body



④ Switch Model No.

• Mounting bracket set



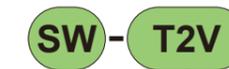
●For switch T□V□

• Switch body + Mounting bracket set



④ Switch Model No.

• Switch body



④ Switch Model No.

• Mounting bracket set



Code	Content
R	Open side
H	Closed side

Code	Content
R	Open side
H	Closed side

Note1) For 1C, switch mounting is not possible.

Hand (Gripper)

LSH-HP

LSH

FH100

BSA2

BHA

BHG

BHE

LHA

LHAG

HAP-1C

HAP-2 to 4CS

HKP

HCP

HGP

LST-HP

HLF2

HLA/HLB

HLAG/HLBG

HLC

HLD

HMC-HP

HMF

HMF-G

HMFB

HFP

FH500

HBL

HJL

HMD

HDL

HJD

Cylinder Switch

Ending

Hand (Gripper)

LSH-HP

LSH

FH100

BSA2

BHA

BHG

BHE

LHA

LHAG

HAP-1C

HAP-2 to 4CS

HKP

HCP

HGP

LST-HP

HLF2

HLA/HLB

HLAG/HLBG

HLC

HLD

HMC-HP

HMF

HMF-G

HMFB

HFP

FH500

HBL

HJL

HMD

HDL

HJD

Cylinder Switch

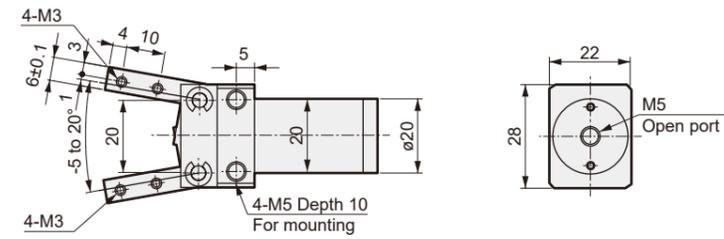
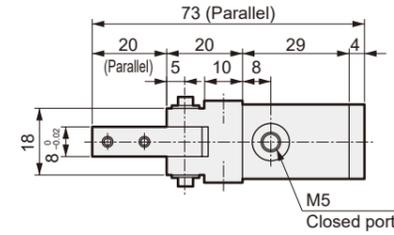
Ending

Specifications

Item	HBL			
Size	1C	2CS	3CS	4CS
Bore size	mm $\phi 15$	$\phi 20$	$\phi 25$	$\phi 40$
Actuation method	Double Acting/Single Acting Type			
Operating Fluid	Compressed Air			
Max. Working Pressure	MPa 0.7			
Min. Operating Pressure	MPa 0.3			
Ambient Temperature	$^{\circ}\text{C}$ 5 to 60			
Port Size	M5		Rc1/8	
Opening/closing angle	$^{\circ}$ -5 to 20			
Rod diameter	mm $\phi 8$	$\phi 10$	$\phi 12$	$\phi 14$
Internal volume (reciprocating)	cm ³ 0.5	2.2	4.3	14.2
Repeatability	mm ± 0.03			
Weight	kg 0.09	0.22	0.39	0.82
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)			

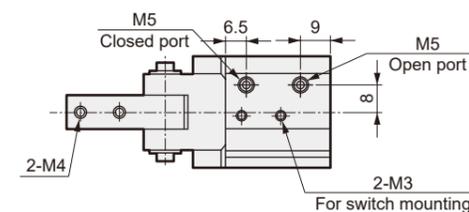
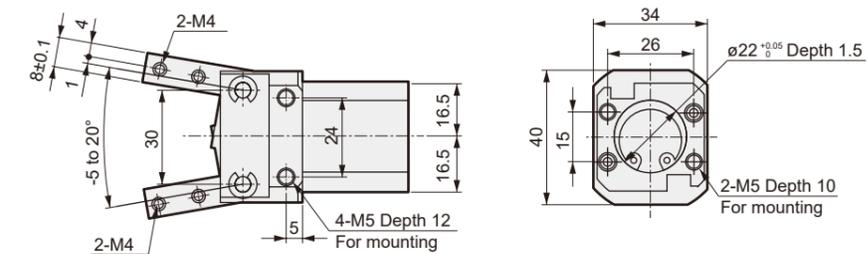
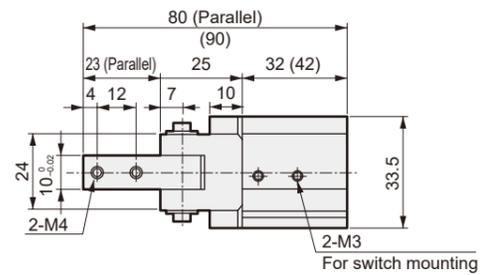
Outline Dimension Drawing

●HBL-1C Standard/O/C

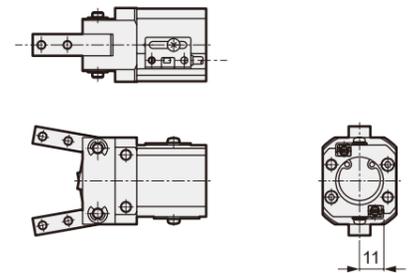


●HBL-2CS Standard/O/C

- Dimensions in () are for C [Normally Closed] specification.



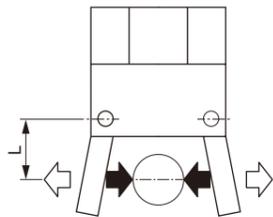
●With Switch



Gripping Force Performance Data

- Gripping force represents the thrust (for one finger) in the direction of the arrow shown in the figure.
- The gripping force in the opening/closing directions with Finger length L of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

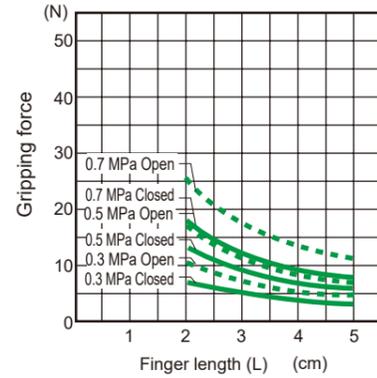
- Open direction (↔) --- (broken line)
- Closing direction (↔) — (solid line)



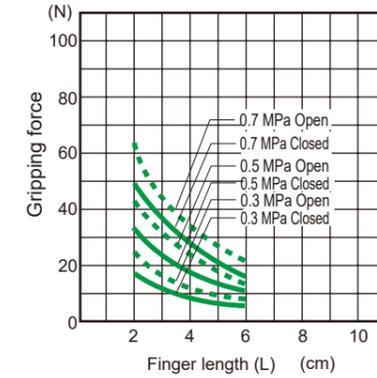
Note) O type gripping force is approx. 20 to 30 % lower in the closing direction compared to the double acting type. C type gripping force is approx. 10 to 20 % lower in the opening direction compared to the double acting type.

When selecting, check the design and selection precautions on P. 336.

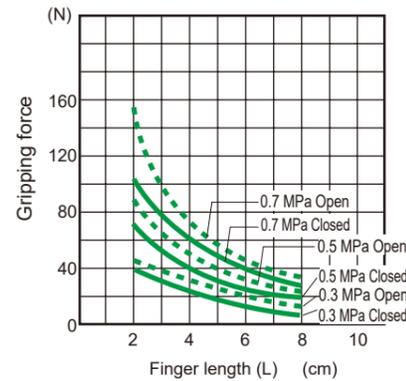
●HBL-1C



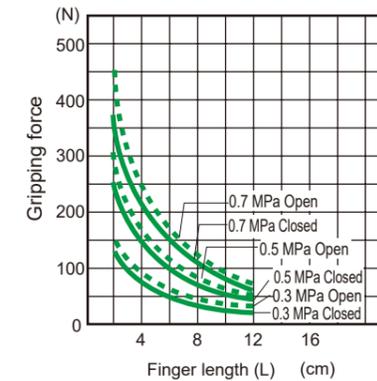
●HBL-2CS



●HBL-3CS



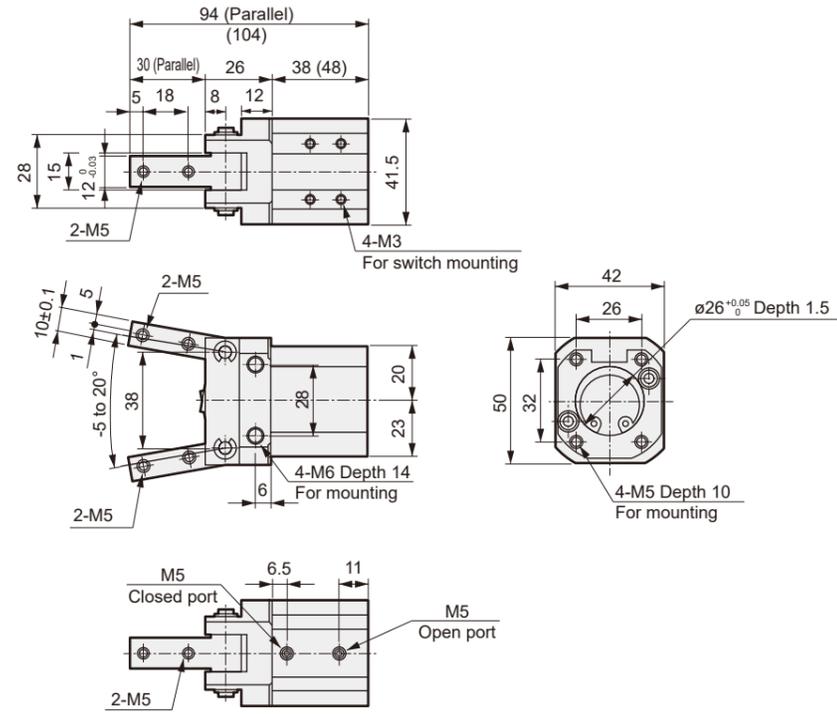
●HBL-4CS



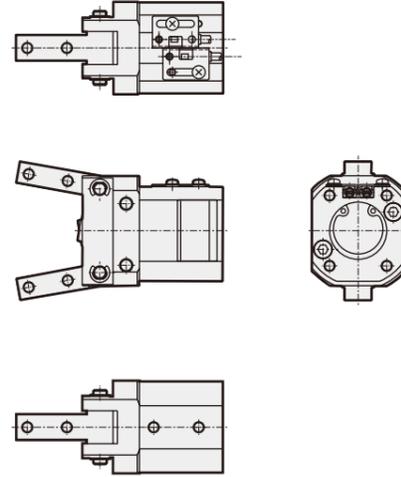
Outline Dimension Drawing

HBL-3CS Standard/O/C

● () Dimensions are for C (Normally Closed) type.

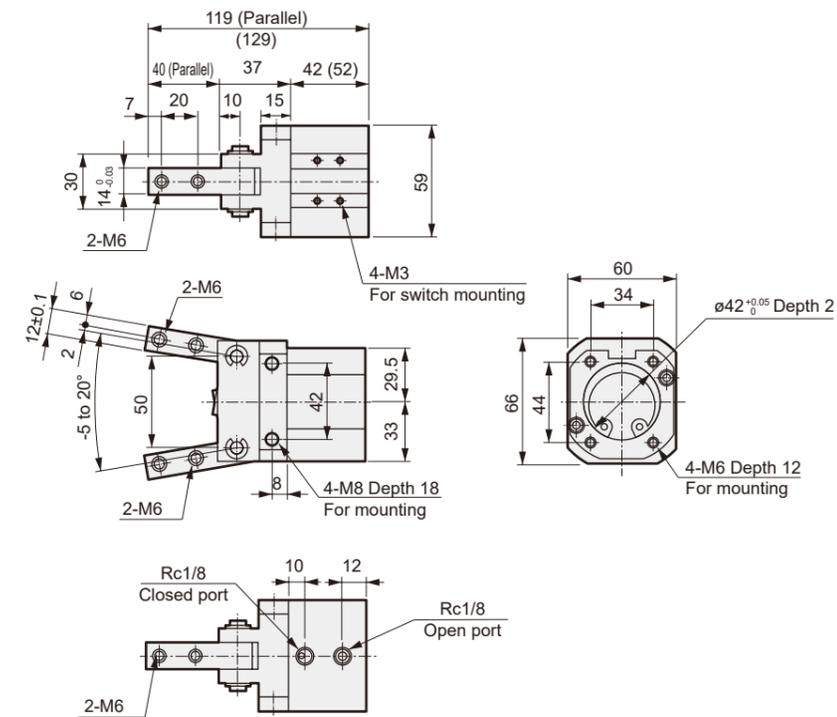


● With Switch

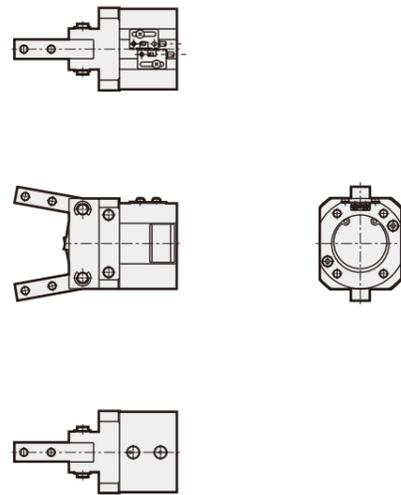


● HBL-4CS Standard/O/C

● () Dimensions are for C (Normally Closed) type.



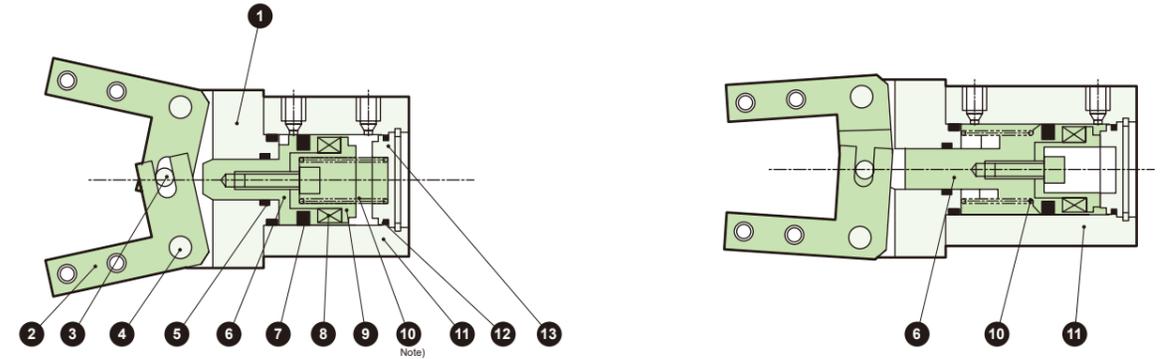
● With Switch



Internal Structure Diagram/Material

● Standard (double acting), O (normally open) type

● C (Normally Closed) Type



Note) The standard (double acting) type does not include 10 springs.

No.	Part Name	Material	Remarks	No.	Part Name	Material	Remarks
1	Adapter	Aluminum Alloy		9	Piston B	Stainless Steel	1CS only
2	Finger	Steel		10	Coil Spring	Stainless Steel	O type only
3	Operating Shaft	Steel		11	Body	Aluminum Alloy	
4	Pivot Shaft	Steel		12	Gasket	Nitrile Rubber	
5	Rod Packing	Nitrile Rubber		13	Cover	Aluminum Alloy	1CS only
6	Piston A	Stainless Steel				Polyacetal	2 to 4CS only
7	Piston Packing	Nitrile Rubber					
8	Magnet						

Hand (Gripper)

LSH-HP

LSH

FH100

BSA2

BHA

BHG

BHE

LHA

LHAG

HAP-1C

HAP-2 to 4CS

HKP

HCP

HGP

LST-HP

HLF2

HLA/HLB

HLAG/HLBG

HLC

HLD

HMC-HP

HMF

HMF-G

HMFB

HFP

FH500

HBL

HJL

HMD

HDL

HJD

Cylinder Switch

Ending