



Fulcrum hand Double acting/single acting

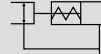
HBL Series

● Open/close angle: -5° to 20°

Double acting

Single acting (normally open)

Single acting (normally closed)



Specifications

Descriptions	HBL			
	1C	2CS	3CS	4CS
Size	1C	2CS	3CS	4CS
Bore size mm	φ15	φ20	φ25	φ40
Actuation	Double acting/single acting			
Working fluid	Compressed air			
Max. working pressure MPa	0.7 (≈100 psi, 7 bar)			
Min. working pressure MPa	0.3 (≈44 psi, 3 bar)			
Ambient temperature °C	5 (41°F) to 60 (140°F)			
Port size	M5			Rc1/8
Open and close angle °	-5 to 20			
Rod diameter mm	φ8	φ10	φ12	φ14
Volumetric capacity (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 (use turbine oil class 1 ISO VG32 if necessary for lubrication)			

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire
	T2H/V	T3H/V
Applications	Dedicated for programmable controller	For programmable controller, relay
Output method	-	NPN output
Power supply voltage	-	10 to 28 VDC
Load voltage/current	10 to 30 VDC, 5 to 20 mA (*1)	30 VDC or less, 100 mA or less
Indicator lamp	LED (Lit when ON)	
Leakage current	1 mA or less	10 μA or less
Weight	1 m:18 g 3 m:49 g 5 m:80 g	

*1 : The above max. load current is 20 mA at 25°C.

The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

*2 : Refer to Ending Page 1 for other switch specifications.

*3 : The weight of switch mounting bracket is 1.5 g.

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HLD
HCP
HMF
HMFb
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJD
HJL
BHE

How to order

Without switch (built-in magnet for switch)

HBL - 2CS - O

With switch (built-in magnet for switch)

HBL - 2CS - O - T2H - R

A Size

B Option
*1

C Switch model No.

D Switch quantity
*2

Code	Content				
A Size					
1C					
2CS					
3CS					
4CS					
B Option					
Blank	Standard (double acting)				
O	Single acting (normally open)				
C	Single acting (normally closed)				
Y1	With small jaw (S50C)				
Y2	With small jaw (MC nylon)				
C Switch model No.					
Axial lead wire	Radial lead wire	Contact	Voltage AC DC	Display	Lead wire
T2H*	T2V*	Proximity	●	1-color	2-wire
T3H*	T3V*		●	display	3-wire
* Lead wire length					
Blank	1 m (standard)				
3	3 m (option)				
5	5 m (option)				
D Switch quantity					
R	1 on open side				
H	1 on closed side				
D	2				

⚠ Precautions for model No. selection

*1 : Refer to pages 1634 to 1635 for the dimensions and compatible model of the small jaw.
When ordered as an option, two are attached at shipment.

*2 : If **A** Size is "1C", the switch model No. cannot be selected.

[Example of model No.]

HBL-2CS-O-T2H-R

Model: Fulcrum hand

- A** Size : 2CS
- B** Option : Single acting, normally open
- C** Switch model No.: Proximity T2H switch, lead wire 1 m
- D** Switch quantity : 1 on open side

How to order switch

● For switch T*H*

· Switch body + mounting bracket set

HBL - T2H

Switch model No.
(Item **C** above)

· Switch body

SW - T2H

Switch model No.
(Item **C** above)

· Mounting bracket set

HBL - T

● For switch T*V*

· Switch body + mounting bracket set

HBL - T2V - *

Switch model No.
(Item **C** above)

· Switch body

SW - T2V

Switch model No.
(Item **C** above)

· Mounting bracket set

HBL - 2CS - TV - *

Size
(Item **A** above)

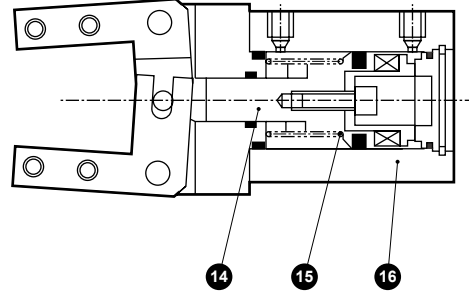
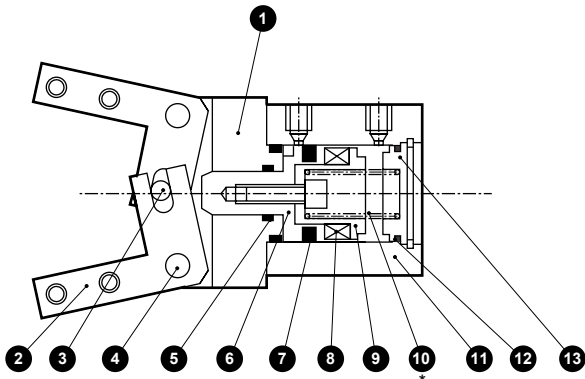
(Select either R (open side) or H (closed side) for sections marked with an asterisk (*).)

LCW
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STR2
UCA2
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JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
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HLC
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HDL
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BHE

Internal structure and parts list

● Standard (double acting)/O (normally open)

● C (normally closed)



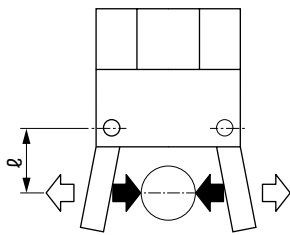
* Standard (double acting) does not contain 10 spring.

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Body	Aluminum alloy		9	Piston B	Stainless steel (1CS) Acetal resin (2 to 4CS)	
2	Master key	Steel		10	Spring	Stainless steel	O type only
3	Operation shaft	Steel		11	Cylinder	Aluminum alloy	
4	Fulcrum axis	Steel		12	Cylinder gasket	Nitrile rubber	
5	Rod packing	Nitrile rubber		13	Cylinder guard	Aluminum alloy (1CS) Acetal resin (2 to 4CS)	
6	Piston A	Stainless steel		14	Piston	Stainless steel	
7	Piston packing	Nitrile rubber		15	Spring	Stainless steel	
8	Magnet			16	Cylinder	Aluminum alloy	

Gripping power performance data

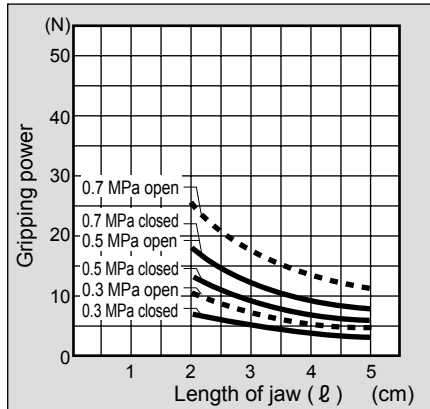
The gripping power in the opening/closing directions with jaw length L of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

● Open direction (←) ----- (shown with broken line)
● Closed direction (→) ————— (shown with continuous line)

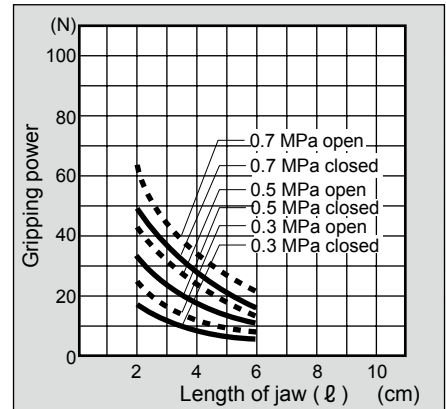


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to double acting.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting.
When making a selection, read the precautions for design and selection on page 1636.

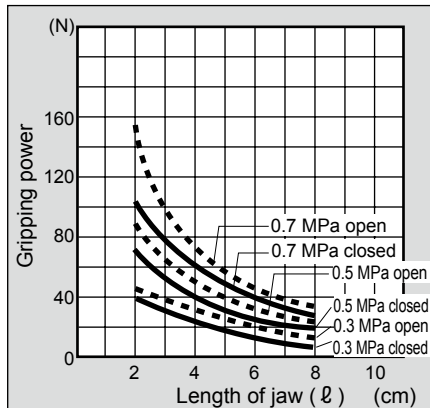
● HBL-1C



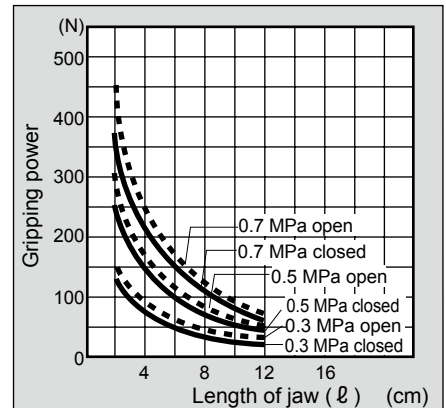
● HBL-2CS



● HBL-3CS

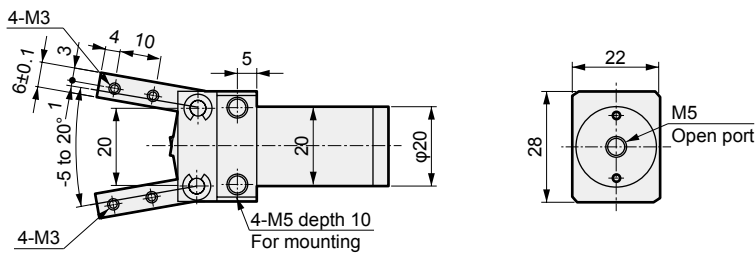
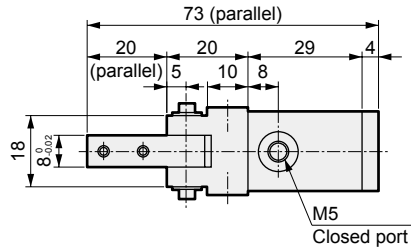


● HBL-4CS



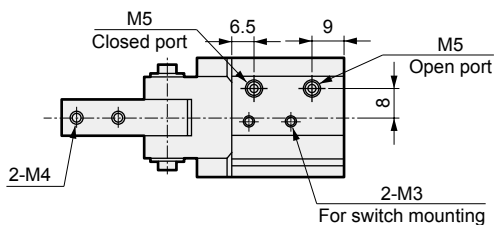
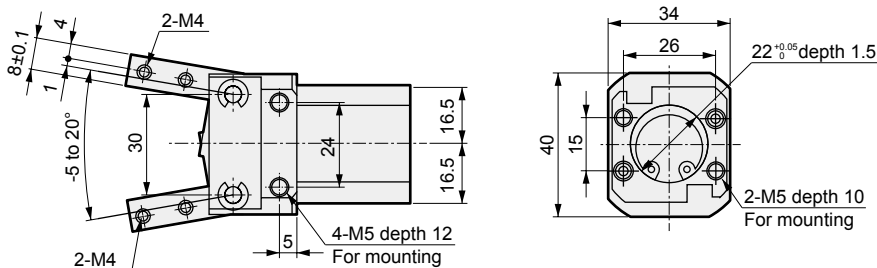
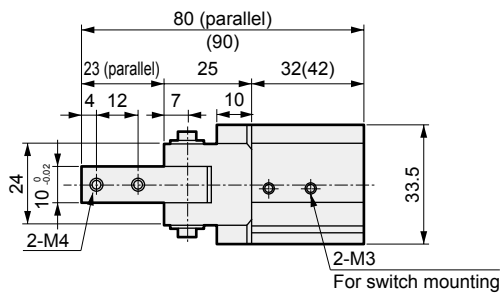
Dimensions

● HBL-1C Standard/O/C

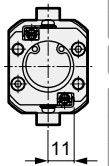
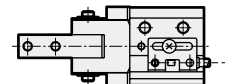
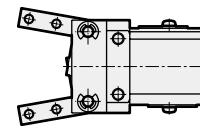
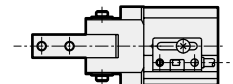


● HBL-2CS Standard/O/C

● Dimensions in () are for C [normally closed] specifications.



● With switch



LCW
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STS/STL
STR2
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ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
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HKP
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HLC
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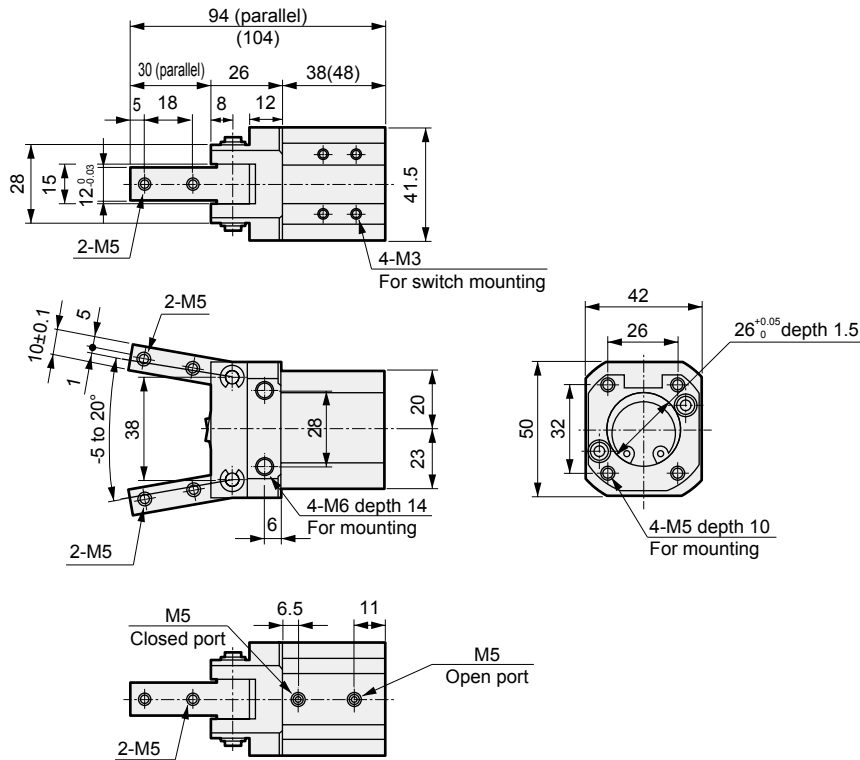
HBL Series

Dimensions

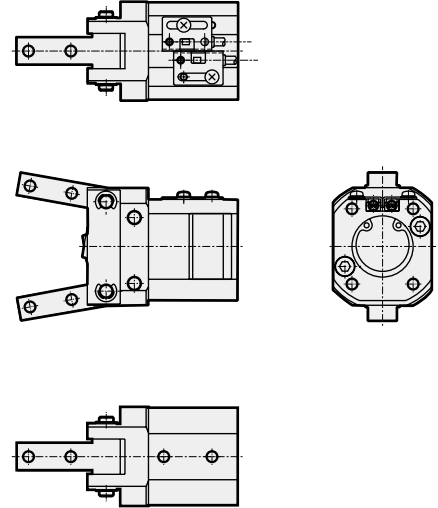


● HBL-3CS Standard/O/C

● Dimensions in () are for C [normally closed] specifications.

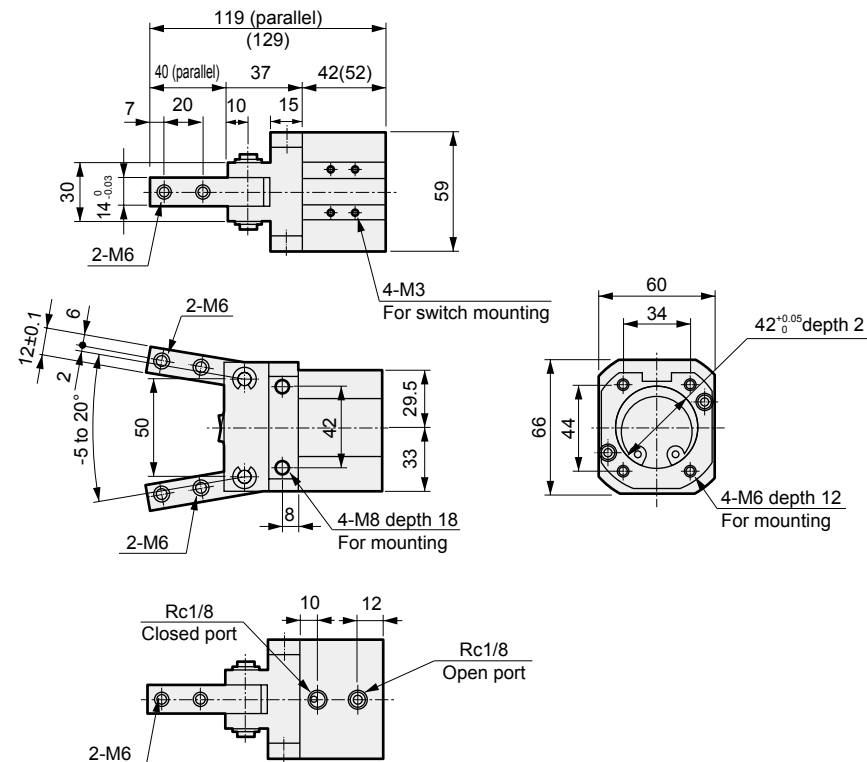


● With switch

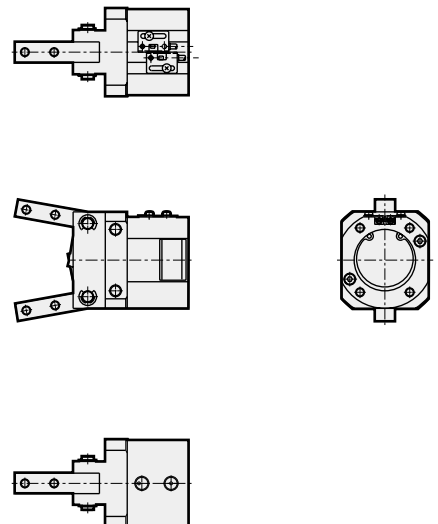


● HBL-4CS Standard/O/C

● Dimensions in () are for C [normally closed] specifications.



● With switch



- LCW
- LCR
- LCG
- LCX
- LCM
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCC2
- RCS
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3*
- NHS
- HR
- LN
- Hand**
- Chuk
- MecHnd/Chuk
- ShkAbs
- FJ
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- BHE