



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

Item	HBL			
	1C	2CS	3CS	4CS
Size	1C	2CS	3CS	4CS
Bore size mm	ø15	ø20	ø25	ø40
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	ø8	ø10	ø12	ø14
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

Item	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 *3	

*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 detailed switch specifications and dimensions.

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

- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFGD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3*
- NHS
- HRL
- LN
- Hand
- Chuk
- MecHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending
- LSH-HP
- LSH
- FH100
- BSA2
- BHA/BHG
- LHA
- LHAG
- HAP
- HKP
- HCP
- HGP
- HLF2
- HLA/HLB
- HLAG/HLBG
- HLC
- HLD
- HMF
- HMF-G
- HMFB
- HFP
- FH500
- HBL**
- HJL
- HMD
- HDL
- HJD
- 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	Description					
A Size						
1C						
2CS						
3CS						
4CS						
B Option						
Blank	Standard (double acting)					
O	Single acting (normally open)					
C	Single acting (normally closed)					
Y1	With attachment (S50C)					
Y2	With attachment (MC nylon)					
C Switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
			AC	DC		
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 1762 and 1763 for the dimensions and compatible model of the attachment.
When ordered as an option, two are attached at shipment.

*2 : If **A** Size is "1C", switch mounting 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)

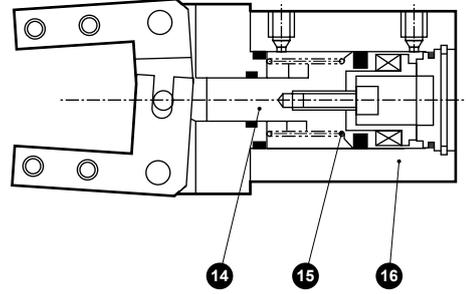
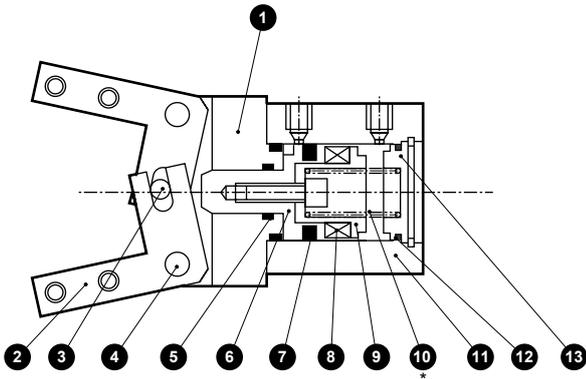
(Select either R (open side) or H (closed side) for sections marked with an asterisk (*).)

LCM
LCR
LCC
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH-HP
LSH
FH100
BSA2
BHA/BHG
LHA
LHAG
HAP
HKP
HCP
HGP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMF
HMF-G
HMFB
HFP
FH500
HBL
HJL
HMD
HDL
HJD
BHE

Internal structure and parts list

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

● C (normally closed)



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

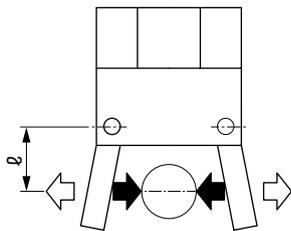
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Body	Aluminum alloy		9	Piston B	Stainless steel (1CS) Acetal resin (2 to 4CS)	
2	Finger	Steel		10	Spring	Stainless steel	O type only
3	Operation shaft	Steel		11	Cylinder	Aluminum alloy	
4	Fulcrum axis	Steel		12	Cylinder gasket	Nitrile rubber	
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

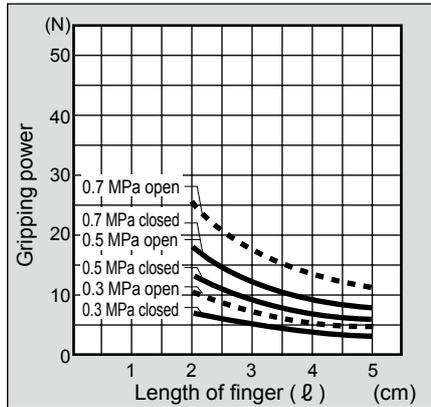
• Gripping power represents the thrust (per one finger) in the arrow direction shown in the figure.

• The gripping power 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.

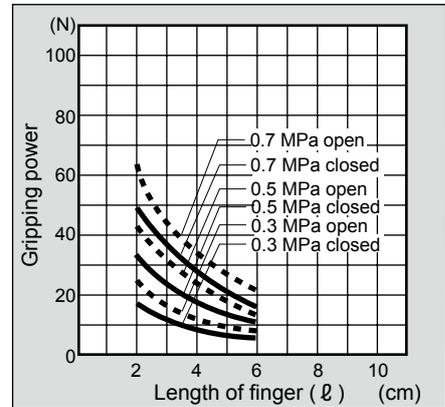
● Open direction (←) - - - - - (shown with broken line)
● Closed direction (→) ——— (shown with continuous line)



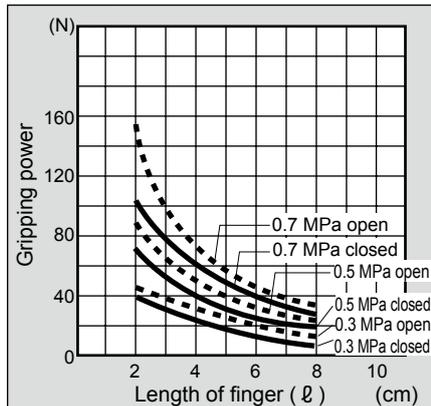
● HBL-1C



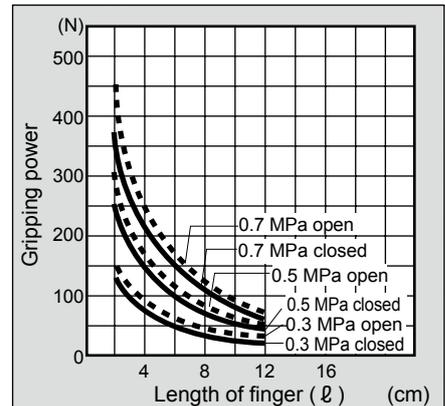
● HBL-2CS



● HBL-3CS



● HBL-4CS

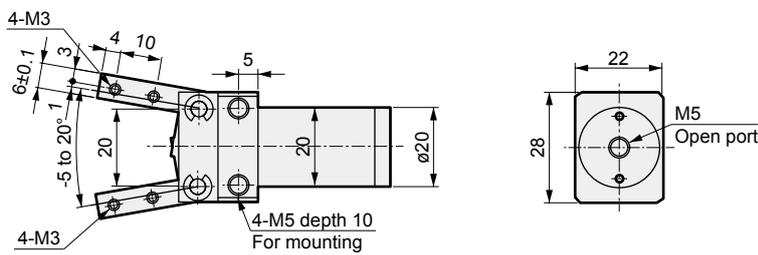
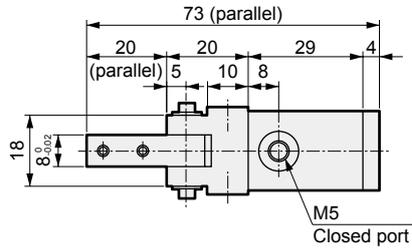


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to double acting.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting.
When making a selection, read the precautions for design and selection on page 1764.

- LCM
- LCR
- LCC
- LCW
- LCC
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3*
- NHS
- HRL
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- HKP
- HCP
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- HLAG/HLBG
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- HMF-G
- HMFB
- HFP
- FH500
- HBL
- HJL
- HMD
- HDL
- HJD
- BHE

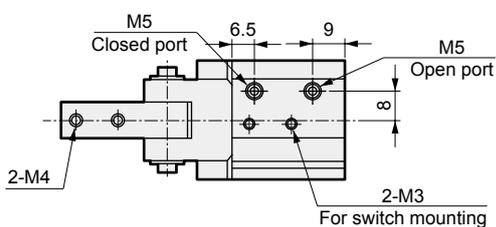
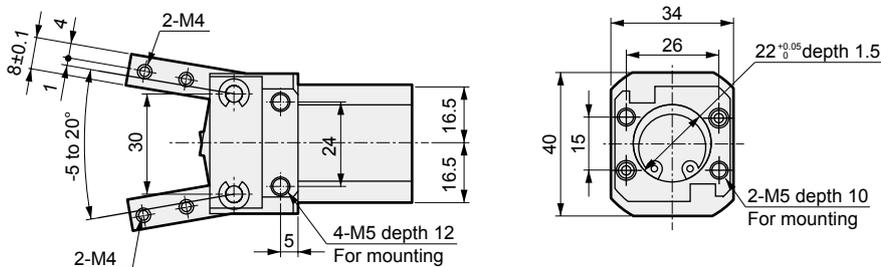
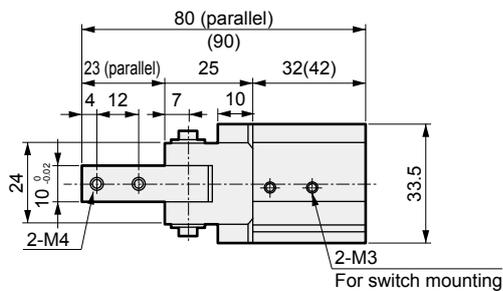
Dimensions

● HBL-1C Standard/O/C

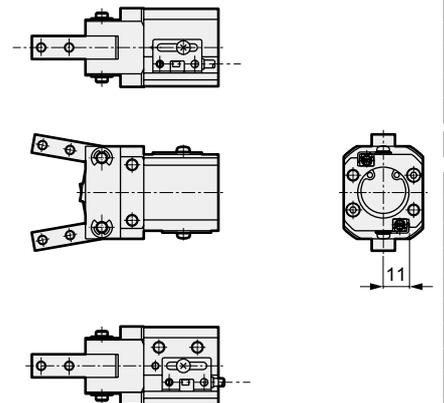


● HBL-2CS Standard/O/C

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



● With switch



LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN

Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr

Ending

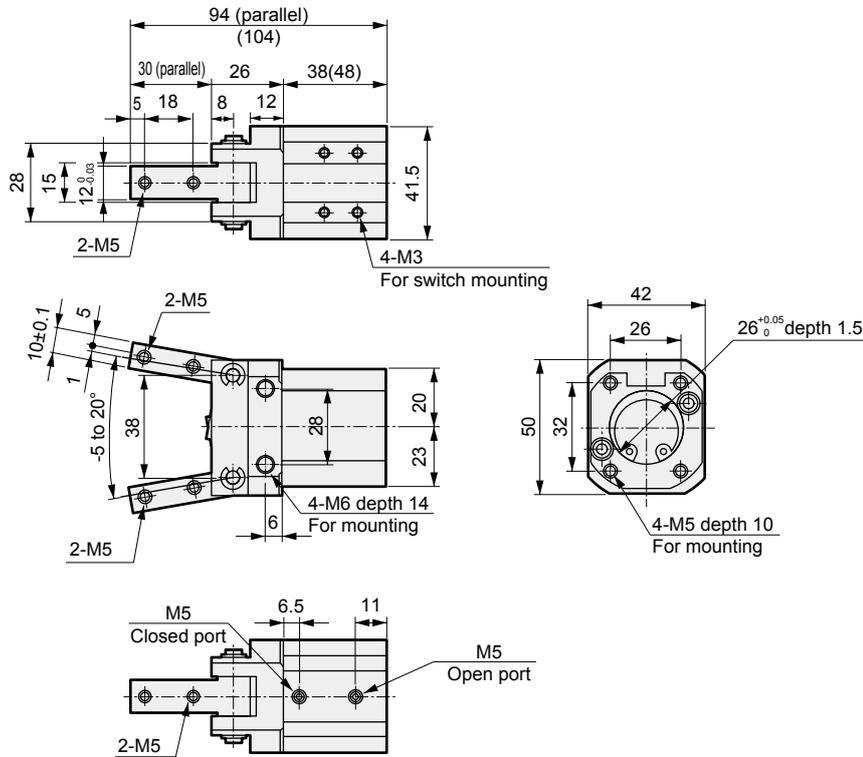
LSH-HP
LSH
FH100
BSA2
BHA/BHG
LHA
LHAG
HAP
HKP
HCP
HGP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMF
HMF-G
HMFB
HFP
FH500
HBL
HJL
HMD
HDL
HJD
BHE

Dimensions

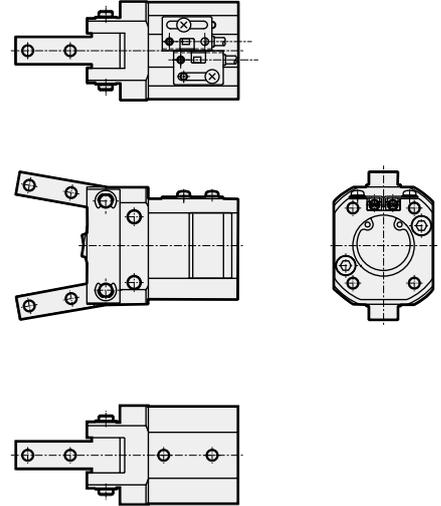


● HBL-3CS Standard/O/C

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

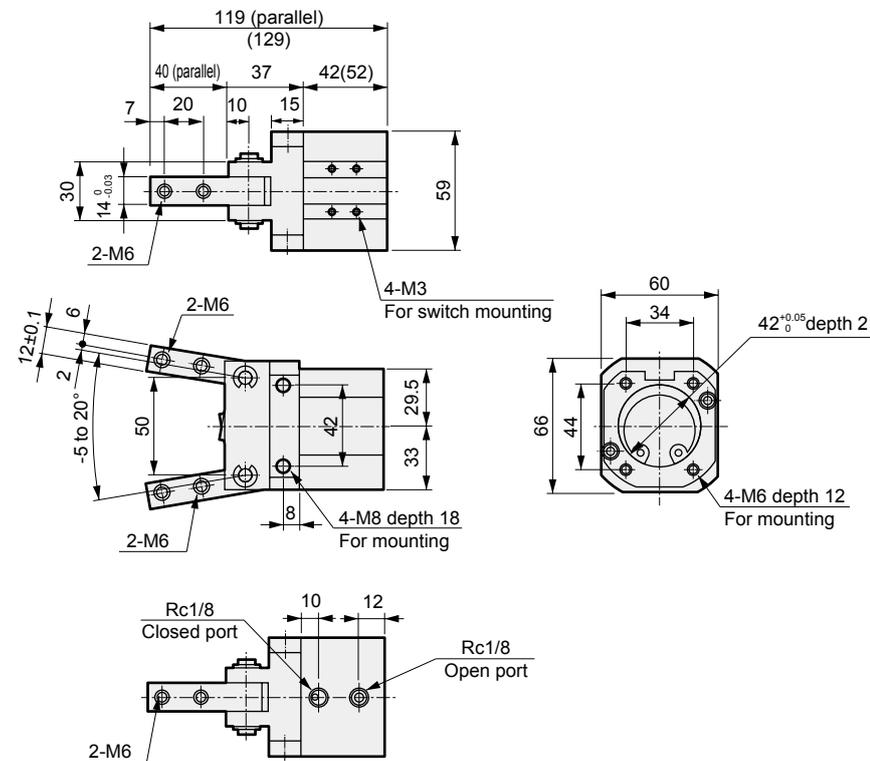


● With switch

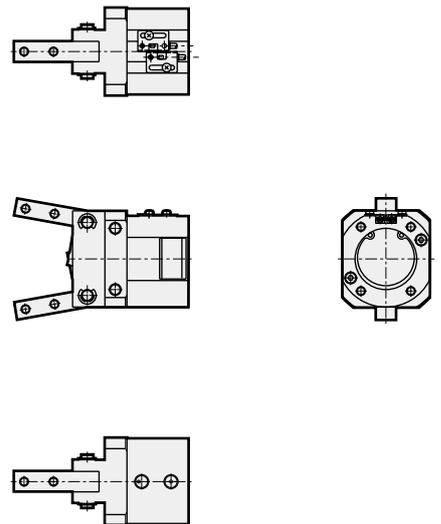


● HBL-4CS Standard/O/C

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



● With switch



LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
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Hand
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MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH-HP
LSH
FH100
BSA2
BHA/BHG
LHA
LHAG
HAP
HKP
HCP
HGP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
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HMF-G
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HJL
HMD
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BHE