



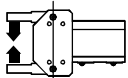




# Series variation

## Hand (wide angle/centering hand)

\* Refer to pages 1470 to 1471 for parallel hand.

### Range of gripping power at supply pressure 0.5 MPa and general jaw length

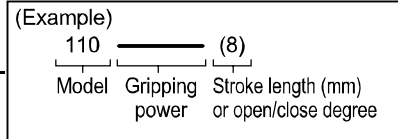
Variation	Model No.	Action of jaw (J)	Gripping power (N)		
			5	10	50
Wide angle hand	Feather hand (Mini-fulcrum hand)	FH500 	510 512 516	(10° open / -25° closed) (10° open / -25° closed)	(10° open / -25° closed) (10° open / -25° closed)
	Fulcrum hand	HBL 	1C	(15) 2CS 3CS	4CS
	Wide angle hand	HDL 	3CS	(25) 4CS	
	Thin wide angle hand	HMD 			16C 25C
	High gripping wide angle hand	HJD 			HJD-32CS
	Parallel hand	Toggle hand	HJL 		
Centering hand		BHE 		01CS (7) 03CS (10) 04CS (14)	

- LCW
- LCR
- LCG
- LCX
- LCM
- STM
- STG
- ST9/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
- SsdContr
- 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

# Hand (wide angle/centering hand)

Series variation

Gripping power (N)						Switch model No.	Page
50	100	500	1000	2000			
						T2H/V T3H/V	1594
						T2H/V T3H/V	1600
						T2H/V T3H/V	1606
						T2H/V T3H/V	1610
						T2H/V T3H/V T2WH/V T3WH/V	1614
						T2H/V T3H/V	1618
						T2H/V T3H/V	1624



- 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
- MecHand/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
- HLB
- HDL
- HMD
- HJD
- HJL
- BHE



Feather hand (mini-fulcrum hand) Double acting/single acting

# FH500 Series

● Open/close angle: 20° at open, -5° at closed

Double acting



Single acting (normally open)



## Specifications

Descriptions	FH500							
	FH510-D	FH512-D	FH516-D	FH520-D	FH510-O	FH512-O	FH516-O	FH520-O
Actuation	Double acting				Single acting			
Working fluid	Compressed air							
Max. working pressure MPa	0.7 (≈100 psi, 7 bar)							
Min. working pressure MPa	0.15 (≈22 psi, 1.5 bar)				0.25 (≈36 psi, 2.5 bar)			
Proof pressure MPa	1.05 (≈150 psi, 10.5 bar)							
Ambient temperature °C	5 (41°F) to 60 (140°F)							
Port size	M3		M5		M3		M5	
Open and close angle °	20° at open -5° at closed							
Weight g	43	53	92	135	43	53	92	136
Repeatability (initial value) mm	±0.03							
Max. operating frequency times/second	3							
Cushion	Open side rubber cushion							
Option	Proximity switch (2-wire/3-wire) * Closed side speed controller/end mount							

\* Integrated speed controller is available only for double acting.

## 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.

- LCW
- LCR
- LCC
- 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)

**FH5** - **10** - **D** - **Y1** - **B**

With switch (built-in magnet for switch)

**FH5** - **10** - **D** - **Y1** - **T2V** - **R** - **B**

**A** Bore size

**B** Option

**C** Small jaw  
\*1

**D** Switch model No.  
\*2  
\* indicates the lead wire length.

**E** Switch quantity

**F** End mount  
\*3

### ⚠ 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 : Switches other than **Ⓧ** Switch model No. are also available. (Custom order)  
Refer to Ending Page 1 for details.
- \*3 : When with end mount (model No. **B**), select switch with radial lead wire (model No. **T\*V**).  
The end mount is attached at delivery.

Code	Content					
<b>A Bore size</b>						
<b>10</b>	φ10					
<b>12</b>	φ12					
<b>16</b>	φ16					
<b>20</b>	φ20					
<b>B Option</b>						
<b>D</b>	Double acting					
<b>O</b>	Single acting (normally open)					
<b>Z</b>	Double acting integrated speed controller					
<b>C Small jaw</b>						
<b>Blank</b>	Without small jaw					
<b>Y1</b>	With small jaw (Material S50C)					
<b>Y2</b>	With small jaw (Material MC nylon)					
<b>D Switch model No.</b>						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
			AC	DC		
<b>T2H*</b>	<b>T2V*</b>	Proximity		●	1-color display	2-wire
<b>T3H*</b>	<b>T3V*</b>			●		3-wire
<b>* Lead wire length 3-wire</b>						
<b>Blank</b>	1 m (standard)					
<b>3</b>	3 m (option)					
<b>5</b>	5 m (option)					
<b>E Switch quantity</b>						
<b>R</b>	1 on open side					
<b>H</b>	1 on closed side					
<b>D</b>	2					
<b>F End mount</b>						
<b>Blank</b>	Without end mount					
<b>B</b>	With end mount					

[Example of model No.]

**FH512-DY1-T2V-R-B**

Model: Feather hand (mini-fulcrum hand)

- A** Bore size : φ12
- B** Option : Double acting
- C** Small jaw : With small jaw (Material S50C)
- D** Switch model No. : Proximity T2V switch, lead wire 1 m
- E** Switch quantity : 1 on right (port) side open position
- F** End mount : With end mount

### How to order end mount

**FH** - **B** - **10**

Code	Content
<b>A Bore size</b>	
<b>10</b>	φ10
<b>12</b>	φ12
<b>16</b>	φ16
<b>20</b>	φ20

### How to order switch

**SW** - **T2H**

Switch model No.  
(Item **Ⓧ** above)

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
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr

Ending

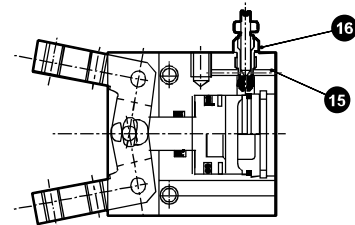
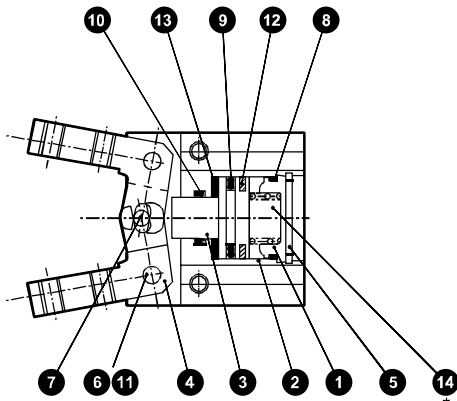
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HLD
HCP
HMF
HMFB
HFP
HLC
HGP
<b>FH500</b>
HBL
HDL
HMD
HJD
HJL
BHE

# FH500 Series

## Internal structure and parts list

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

● With speed controller



Cannot be disassembled

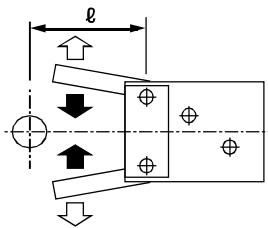
\* Standard (double acting) does not contain 10 spring

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Cylinder guard	Acetal resin		9	Piston packing	Nitrile rubber	
2	Body	Aluminum alloy	Lubrication alumite treatment	10	Rod packing	Nitrile rubber	
3	Piston	Stainless steel		11	Hexagon socket set screw	Stainless steel	
4	Master key	Alloy steel	Heat treatment	12	Magnet		Nickeling
5	Snap ring	Stainless steel		13	Cushion	Urethane rubber	
6	Fulcrum axis	Alloy steel	Heat treatment	14	Spring	Stainless steel	
7	Operation shaft	Alloy steel	Heat treatment	15	Steel ball	Stainless steel	
8	Cylinder gasket	Nitrile rubber		16	Flow control valve assembly		

## Gripping power performance data

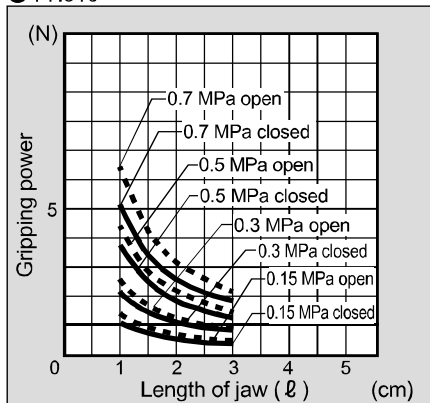
The gripping power in the opening/closing directions with jaw length L of hand with a supply pressure of 0.15 to 0.7 MPa is shown.

● Open direction (◁) ----- (shown with broken line)  
● Closed direction (▶) ————— (shown with continuous line)

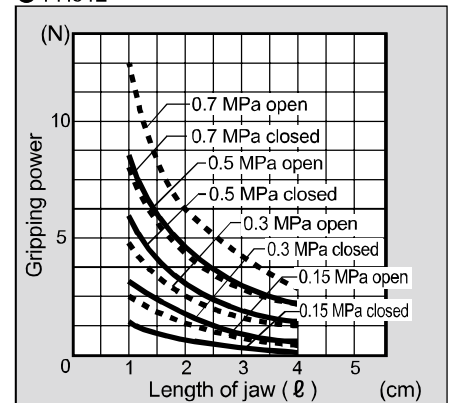


(Note) Single acting closed side gripping power is decreased by 25 to 30% compared to the double acting. When making a selection, read the precautions for design and selection on page 1636.

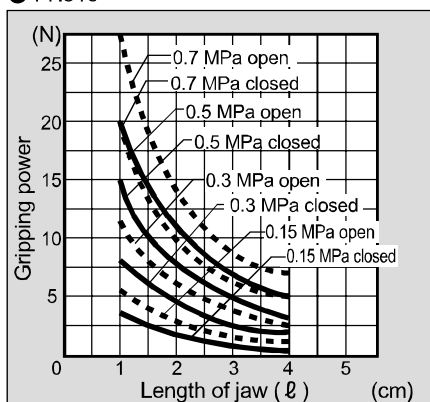
● FH510



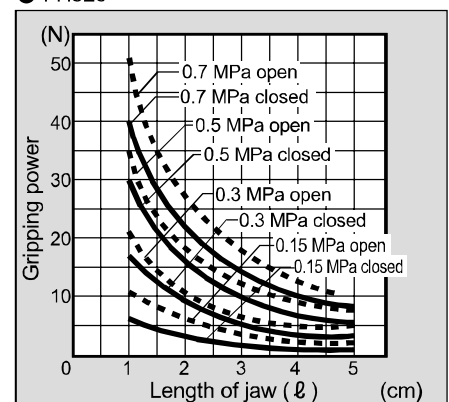
● FH512



● FH516

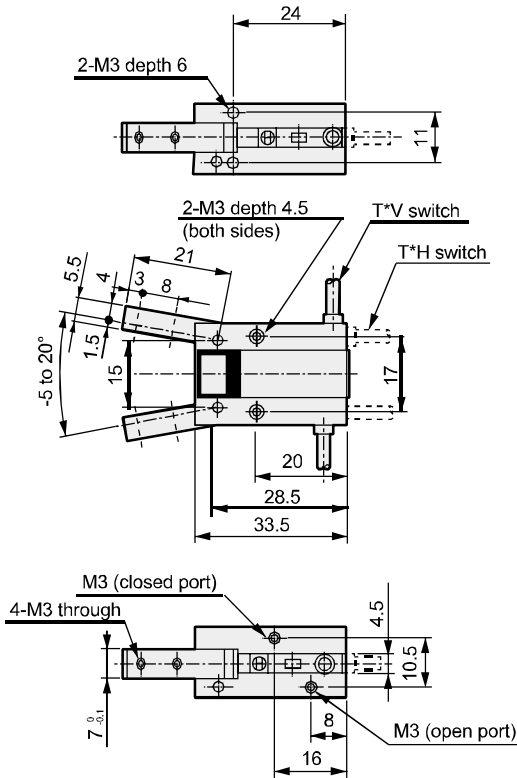


● FH520

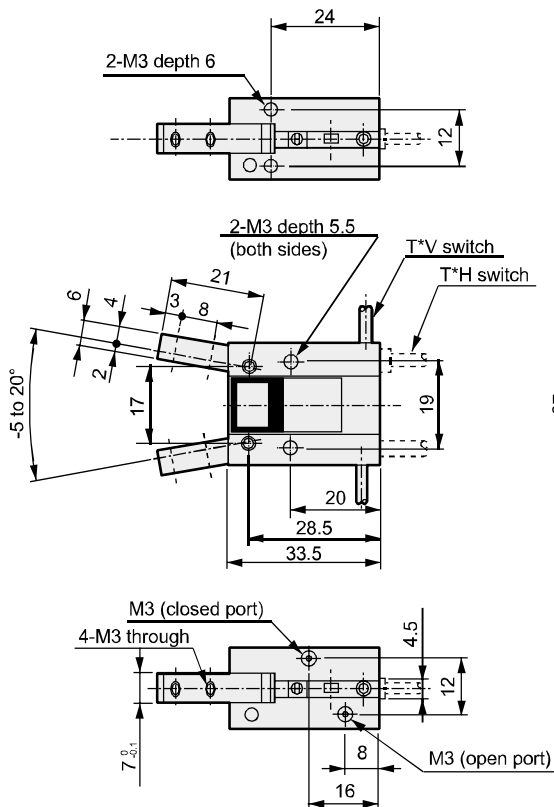


### Dimensions

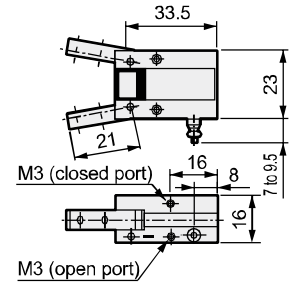
● FH510-D/FH510-O



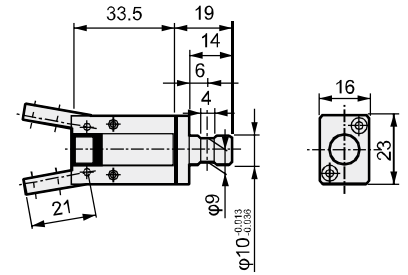
● FH512-D/FH512-O



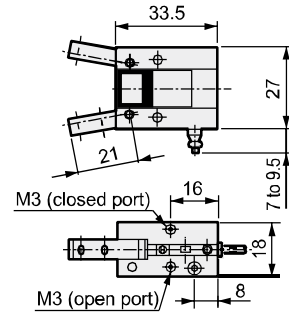
● With speed controller (FH510-Z)



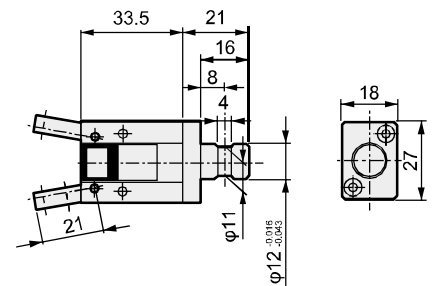
● With end mount



● With speed controller (FH512-Z)



● With end mount



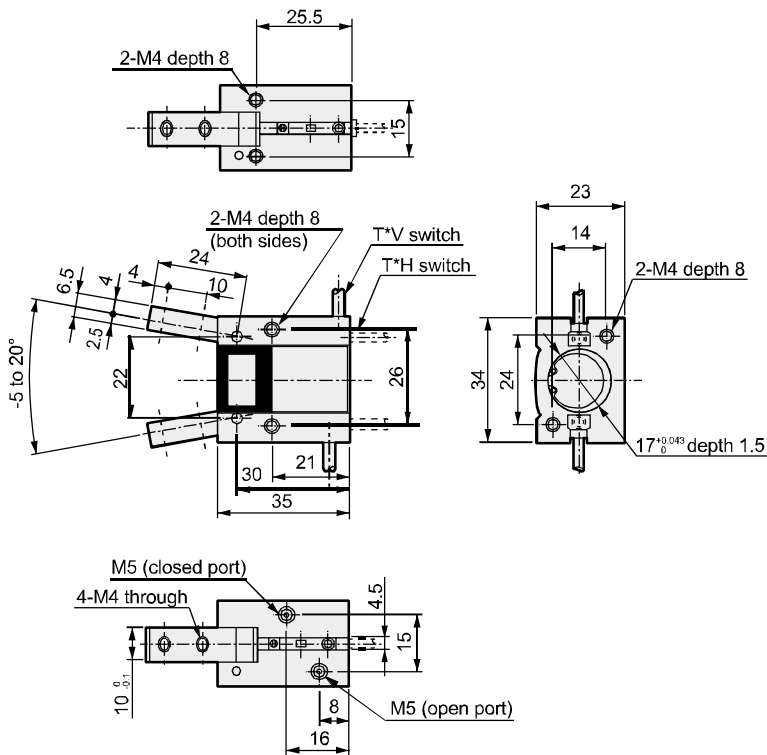
LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG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

# FH500 Series

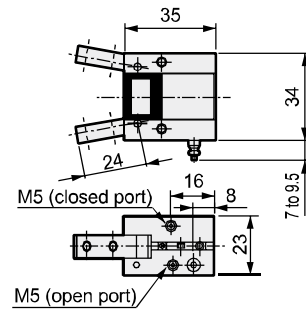
## Dimensions



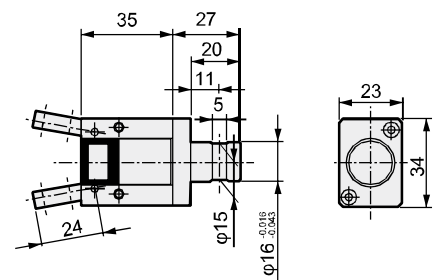
### ● FH516-D/FH516-O



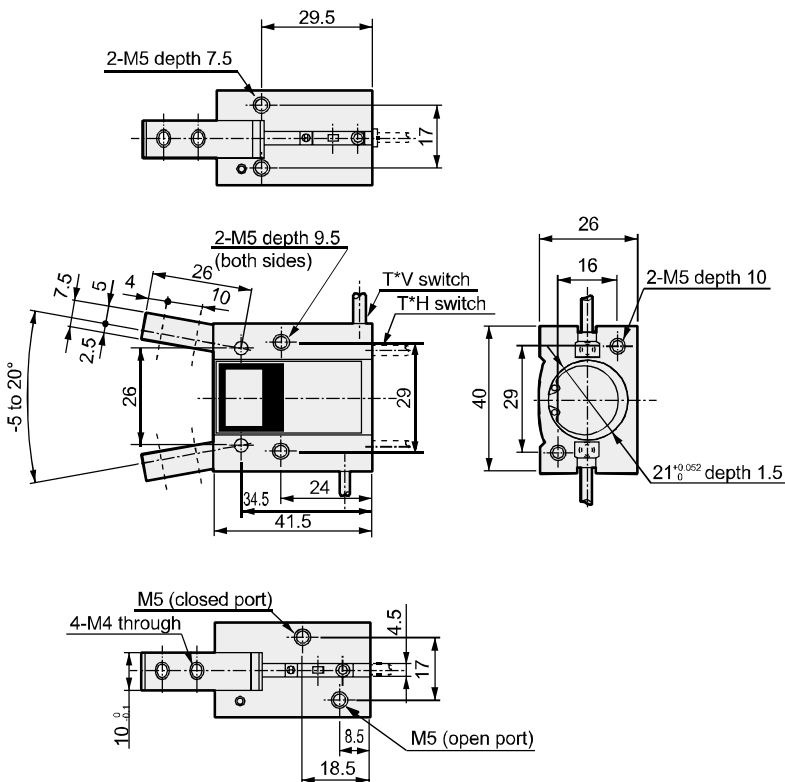
### ● With speed controller (FH516-Z)



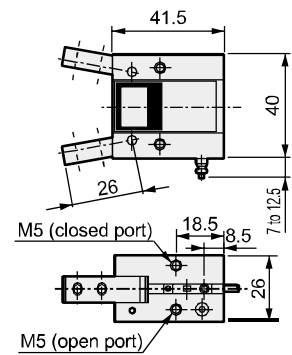
### ● With end mount



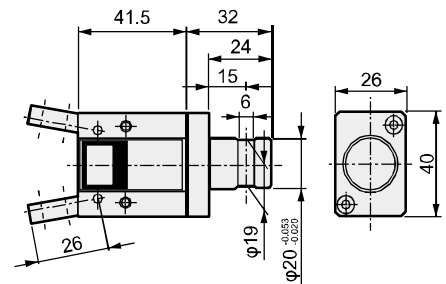
### ● FH520-D/FH520-O



### ● With speed controller (FH520-Z)



### ● With end mount



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
SsdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HLD
HCP
HMF
HMFB
HFP
HLC
HGP
<b>FH500</b>
HBL
HDL
HMD
HJD
HJL
BHE

# MEMO

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
<b>Hand</b>
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
<b>FH500</b>
HBL
HDL
HMD
HJD
HJL
BHE





Fulcrum hand Double acting/single acting

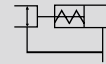
# HBL Series

● 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 <sup>3</sup>	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
- LCC
- 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
- SsdContr
- 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					
<b>A Size</b>						
1C						
2CS						
3CS						
4CS						
<b>B Option</b>						
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)					
<b>C Switch model No.</b>						
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
<b>* Lead wire length</b>						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
<b>D Switch quantity</b>						
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)

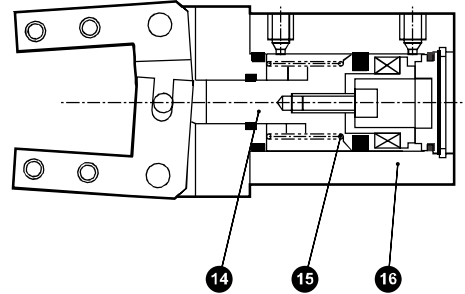
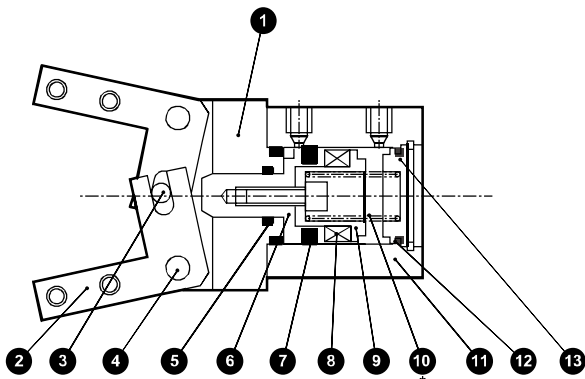
(Select either R (open side) or H (closed side) for sections marked with an asterisk (\*).)

LCW
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
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
<b>Ending</b>
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HLD
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
<b>HBL</b>
HDL
HMD
HJD
HJL
BHE

## Internal structure and parts list

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

● C (normally closed)



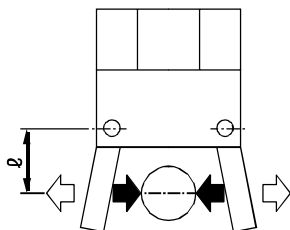
\* Standard (double acting) does not contain 10 spring.

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	

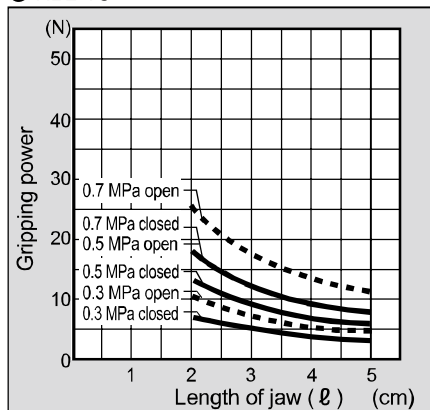
## Gripping power performance data

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.

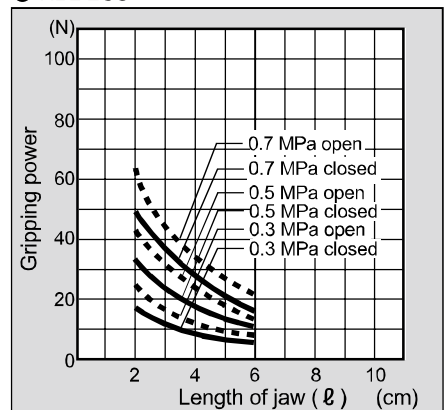
● Open direction (←)----- (shown with broken line)  
● Closed direction (→)————— (shown with continuous line)



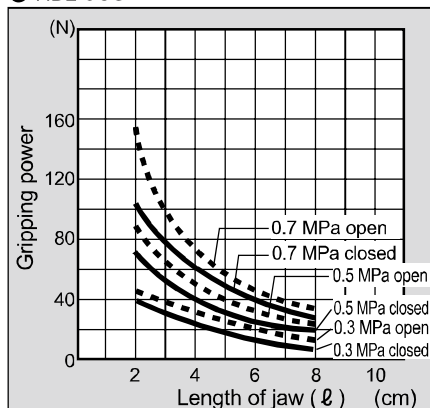
● HBL-1C



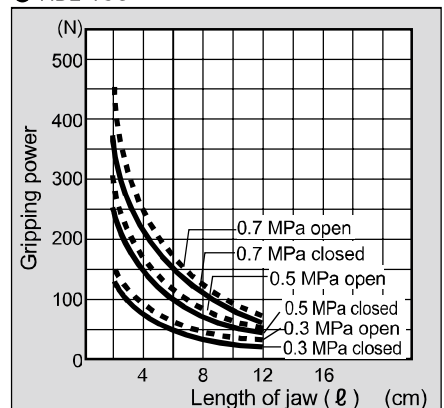
● HBL-2CS



● HBL-3CS



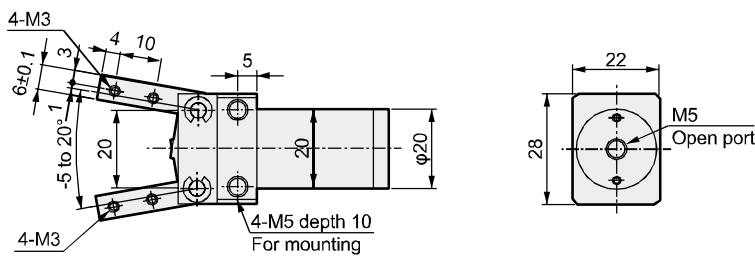
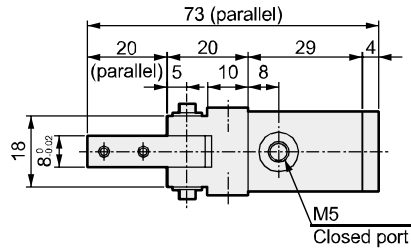
● HBL-4CS



(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 1636.

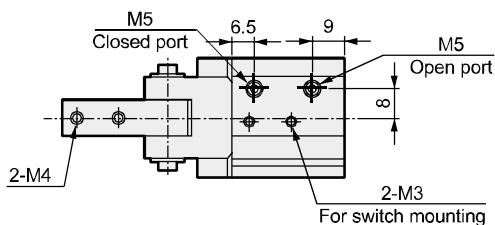
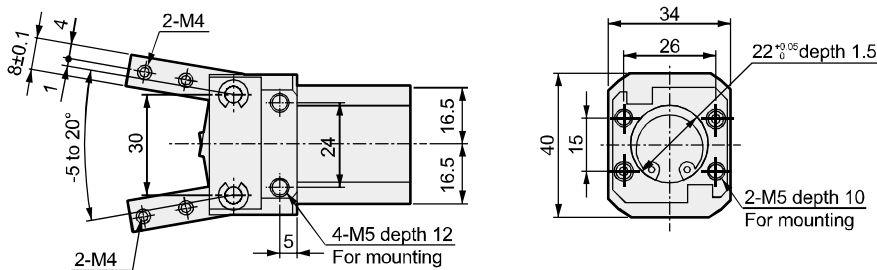
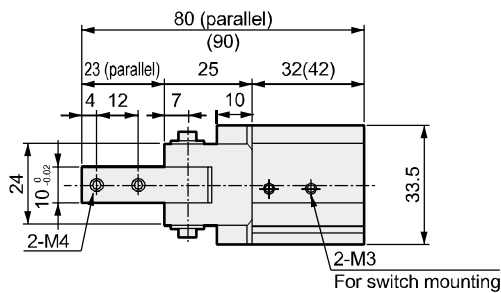
## Dimensions

● HBL-1C Standard/O/C

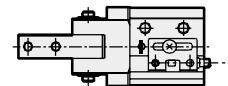
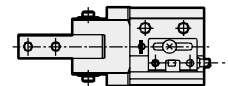
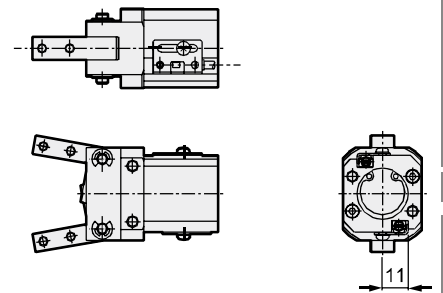


● HBL-2CS Standard/O/C

● 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
<b>Hand</b>
Chuk
MecHand/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
<b>HBL</b>
HDL
HMD
HJD
HJL
BHE

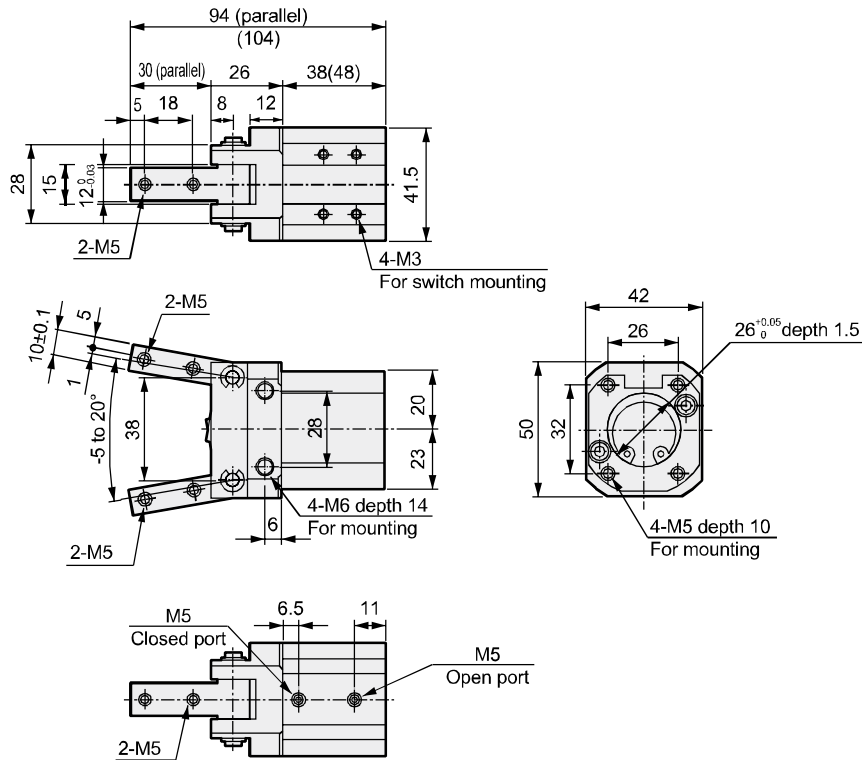
# HBL Series

## Dimensions

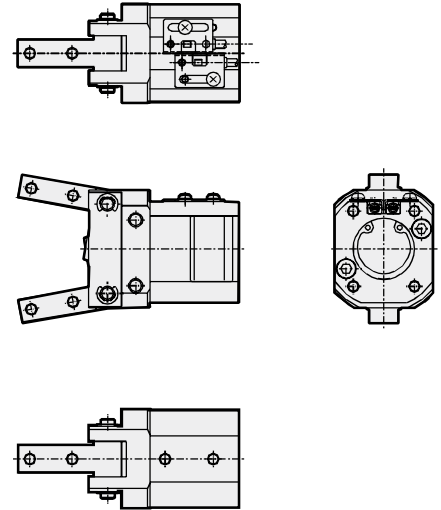


### ● HBL-3CS Standard/O/C

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

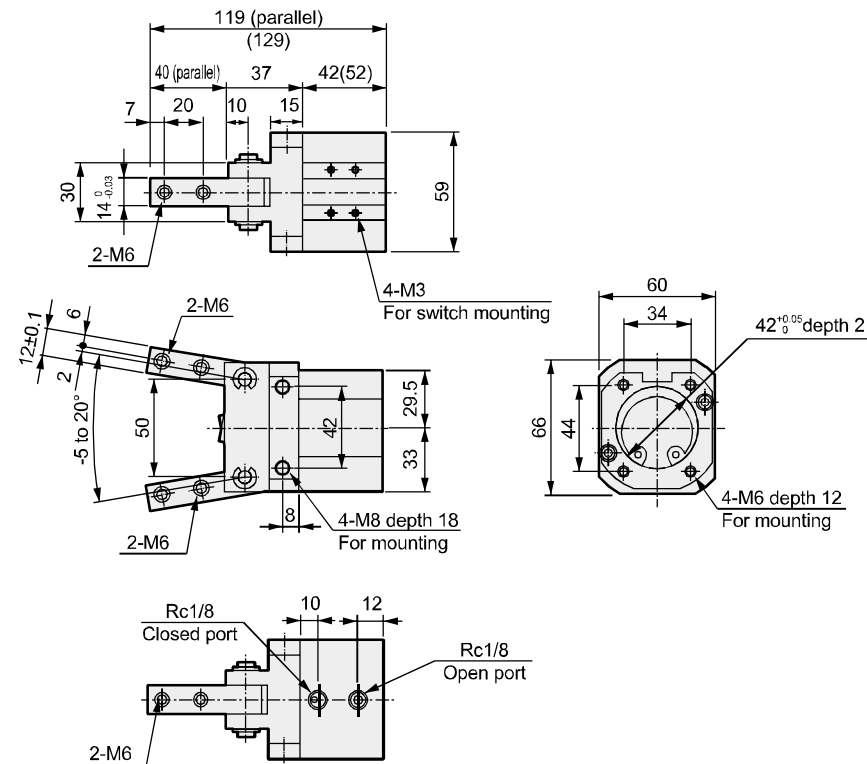


### ● With switch

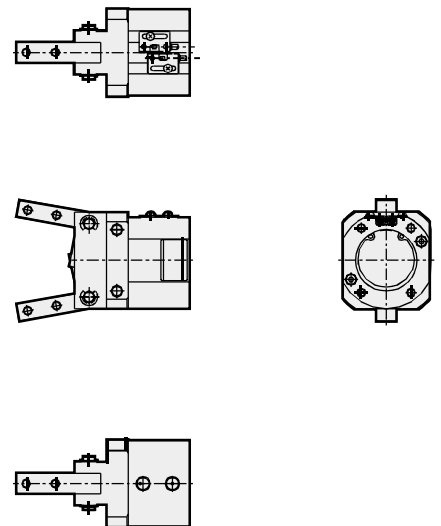


### ● HBL-4CS Standard/O/C

● 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
- FK
- SsdContr
- Ending
- LSH
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLA/HLBC
- HLD
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL**
- HDL
- HMD
- HJD
- HJL
- BHE

# MEMO

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
<b>Hand</b>
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
<b>HBL</b>
HDL
HMD
HJD
HJL
BHE



Wide angle hand Double acting/single acting

# HDL Series

● Open/close angle: 0° to 180°

Double acting

Single acting (normally open)

Single acting (normally closed)



## Specifications

Descriptions	HDL	
	3CS	4CS
Size	3CS	4CS
Bore size mm	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 °	0 to 180	
Rod diameter mm	φ14	φ16
Volumetric capacity (reciprocating) cm <sup>3</sup>	7.8	53.2
Repeatability mm	±0.2	±0.1
Weight kg	0.6	2.40
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 *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 other switch specifications.

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

- LCW
- LCR
- LCC
- 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
- SsdContr
- 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)

**HDL** - **3CS** - **O**

With switch (built-in magnet for switch)

**HDL** - **3CS** - **O** - **T2H** - **R**

**A** Size

**B** Option

**C** Switch model No.

\* indicates the lead wire length.

**D** Switch quantity

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

[Example of model No.]

**HDL-3CS-O-T2H-R**

Model : Wide angle hand

- A** Size : 3CS
- 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

**HDL** - **T2H**

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

· Switch body

**SW** - **T2H**

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

· Mounting bracket set

**HDL** - **T**

● For switch T\*V\*

· Switch body + mounting bracket set

**HDL** - **T2V** - \*

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

· Switch body

**SW** - **T2V**

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

· Mounting bracket set

**HDL** - **TV** - \*

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

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
<b>Hand</b>
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
<b>HDL</b>
HMD
HJD
HJL
BHE

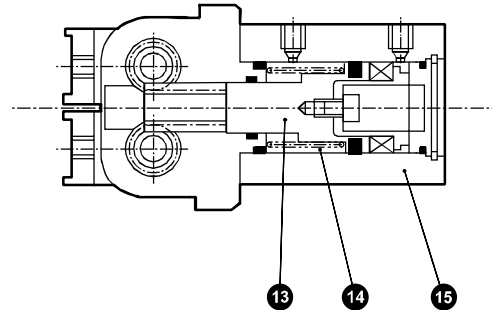
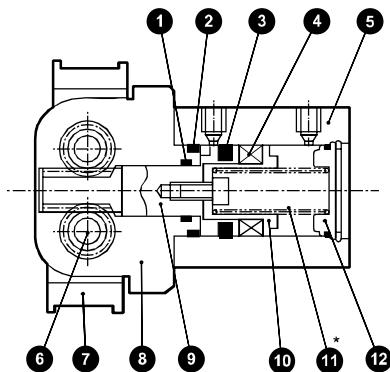


- LCW
- LCR
- LCG
- LCX
- LCM
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCC2
- RCS
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HR
- LN
- Hand
- Chuk
- Mec/Hnd/Chuk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

## Internal structure and parts list

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

● C (normally closed)



**Cannot be disassembled**

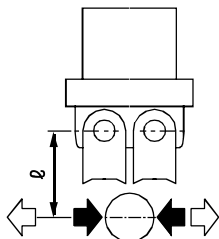
\* Standard (double acting) does not contain 11 spring.

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

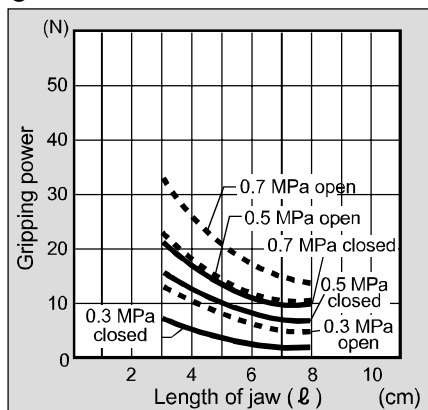
## Gripping power performance data

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.

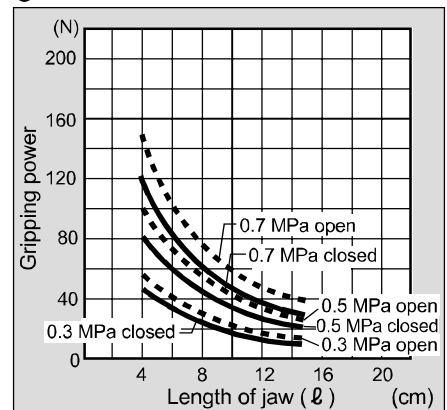
- Open direction (←) --- (shown with broken line)
- Closed direction (→) — (shown with continuous line)



● HDL-3CS



● HDL-4CS

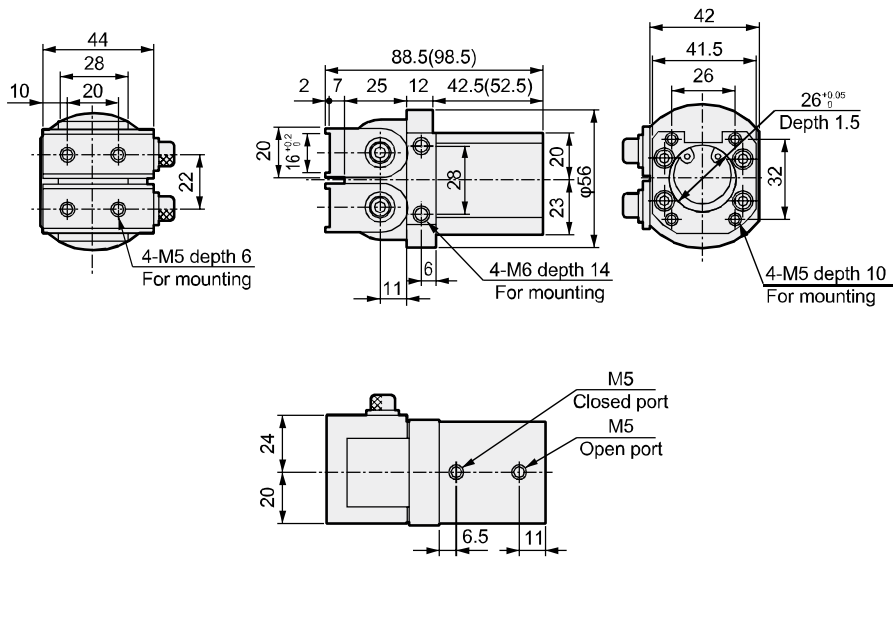


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to double acting.  
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting.  
When making a selection, read the precautions for design and selection on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

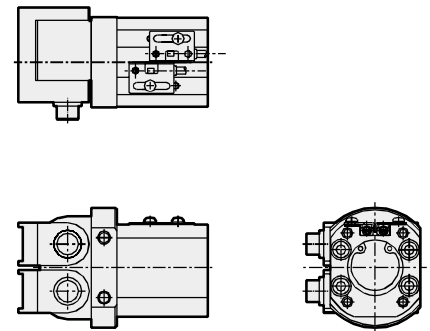
## Dimensions

### ● HDL-3CS Standard/O/C

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

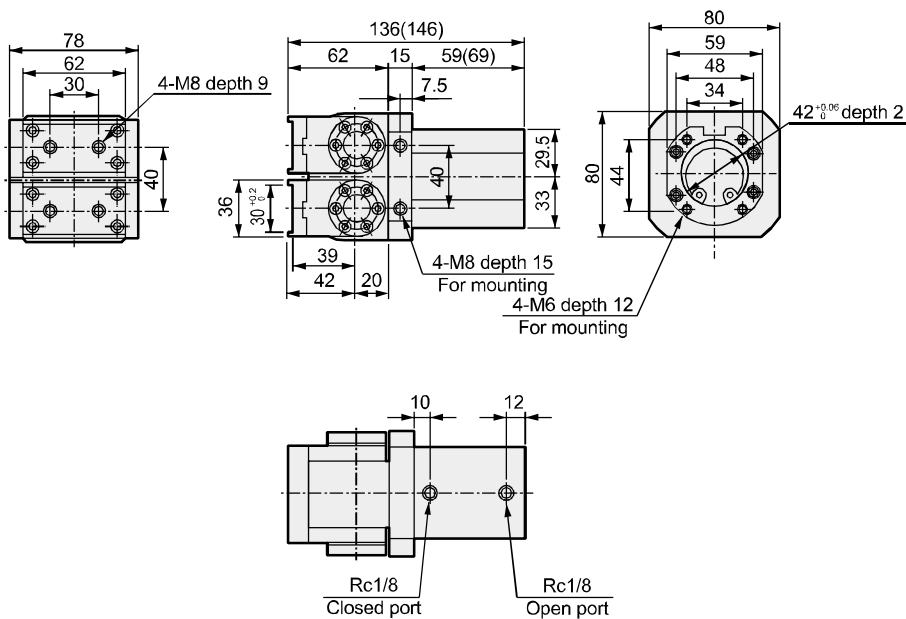


### ● With switch

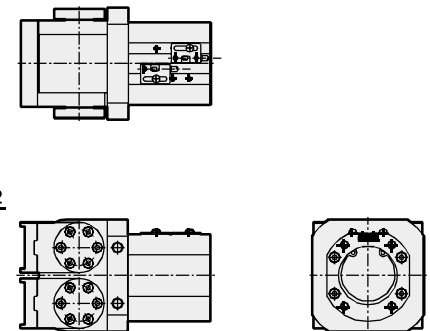


### ● HDL-4CS Standard/O/C

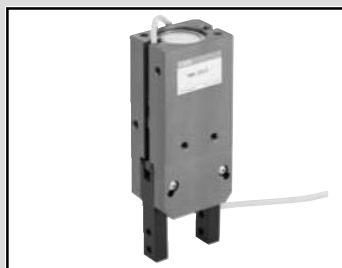
● Dimensions in ( ) are for C [normally closed] specifications.



### ● 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
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLA/HLBG
HLD
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
<b>HDL</b>
HMD
HJD
HJL
BHE



# Thin wide angle hand HMD Series

● Open/close angle:  $-4^{\circ}$  to  $184^{\circ}$

Double acting



## Specifications

Descriptions	HMD	
Size	16CS	25CS
Bore size mm	$\phi 16$	$\phi 25$
Actuation	Double acting	
Working fluid	Compressed air	
Max. working pressure MPa	0.7 ( $\approx 100$ psi, 7 bar)	
Min. working pressure MPa	0.3 ( $\approx 44$ psi, 3 bar)	
Ambient temperature $^{\circ}\text{C}$	5 ( $41^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ )	
Port size	M3	M5
Open and close angle $^{\circ}$	-4 to 184	
Rod diameter mm	$\phi 6$	$\phi 8$
Volumetric capacity (reciprocating) $\text{cm}^3$	5.8	19.4
Repeatability mm	$\pm 0.2$	
Weight kg	0.13	0.38
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 $\mu\text{A}$ 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  $25^{\circ}\text{C}$ .

The current is lower than 20 mA if the operating ambient temperature around the switch is higher than  $25^{\circ}\text{C}$ . (5 to 10 mA at  $60^{\circ}\text{C}$ )

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

- 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)

**HMD** - **16CS**

With switch (built-in magnet for switch)

**HMD** - **16CS** - **T2H** - **(R)**

Model No.

**A** Size

**B** Switch model No.

\* indicates the lead wire length.

**C** Switch quantity

Code	Content					
<b>A Size</b>						
16CS						
25CS						
<b>B Switch model No.</b>						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
			AC	DC		
T2H*	T2V*	Proximity		●	1-color display	2-wire
T3H*	T3V*			●		3-wire
<b>* Lead wire length</b>						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
<b>C Switch quantity</b>						
R	1 on open side					
H	1 on closed side					
D	2					

[Example of model No.]

**HMD-16CS-T2H-R**

Model : Thin wide angle hand

**A** Size : 16CS

**B** Switch model No. : Proximity T2H switch, lead wire 1 m

**C** Switch quantity : 1 on open side

### How to order switch

**SW** - **T2H\***

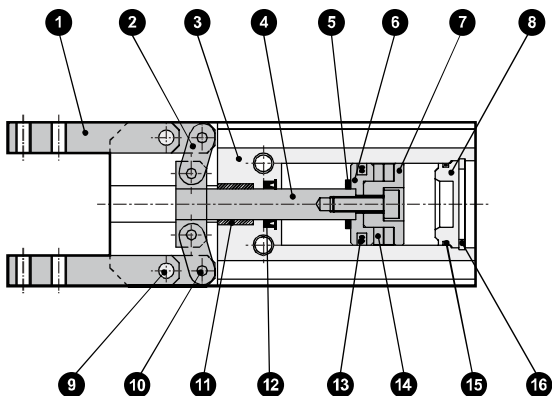
Switch model No.  
(Item **B** above)

Specifications for rechargeable battery (Catalog No. CC-1226A)

**HMD** - ... - **P4\*** ● Design compatible with rechargeable battery manufacturing process.

\* Contact CKD for details.

### Internal structure and parts list



**Cannot be disassembled**

No.	Part name	Material	Remarks
1	Master key	Steel	
2	Link	Steel	
3	Body	Aluminum alloy	
4	Piston A	Stainless steel	
5	Cushion	Urethane rubber	
6	Piston B	Copper alloy	
7	Piston C	Copper alloy	
8	Cylinder guard	Acetal resin	
9	Fulcrum axis	Alloy steel	
10	Operation shaft	Alloy steel	
11	Bush	Sintering oil impregnated alloy	
12	Rod sealant	Nitrile rubber	
13	Piston seal	Nitrile rubber	
14	Magnet		
15	Cylinder sealant	Nitrile rubber	
16	Snap ring	Stainless steel	

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
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr

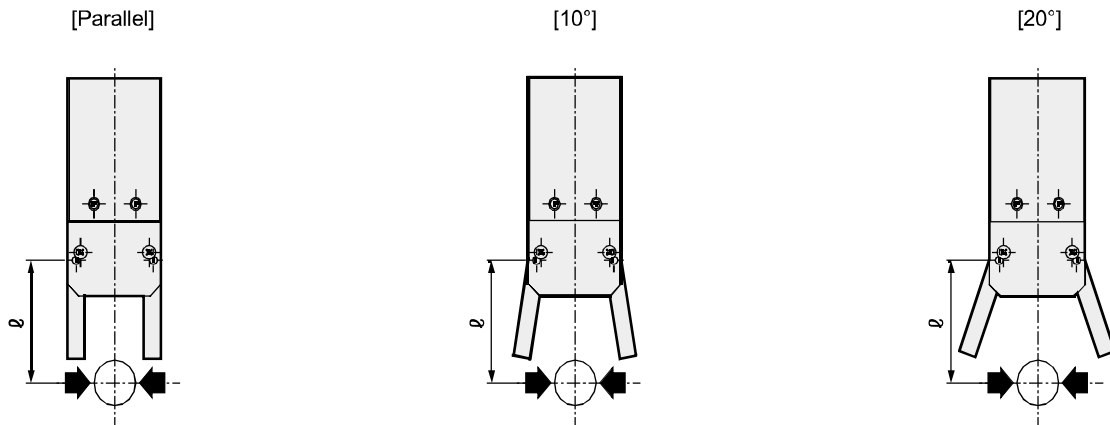
Ending

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

## Gripping power performance data

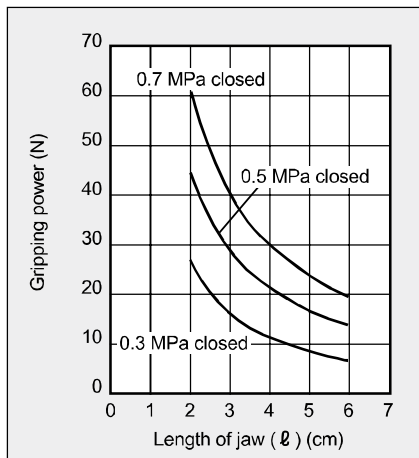
The gripping power with jaw length  $L$  of hand and a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

· Closed direction (→) (shown with continuous line)

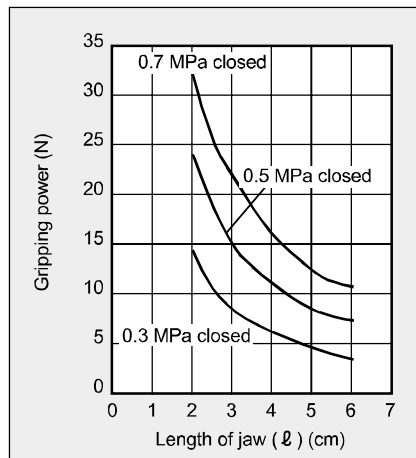


(Note) When making a selection, read the precautions for design and selection on page 1636.

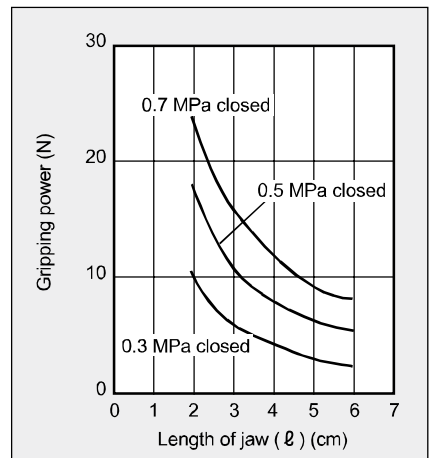
● HMD-16CS



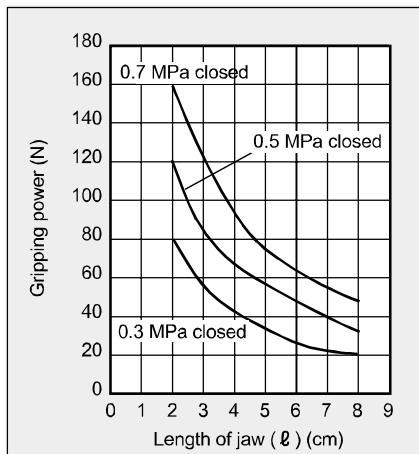
● HMD-16CS



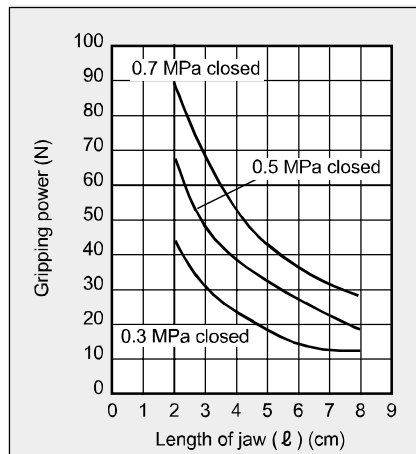
● HMD-16CS



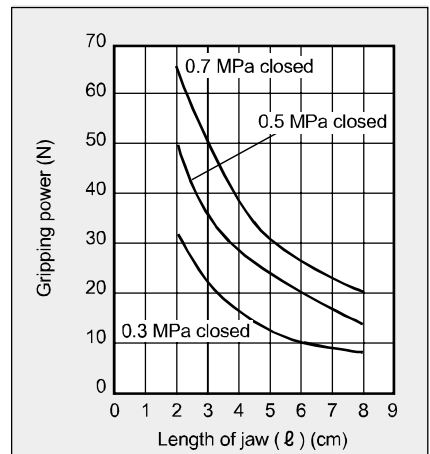
● HMD-25CS



● HMD-25CS



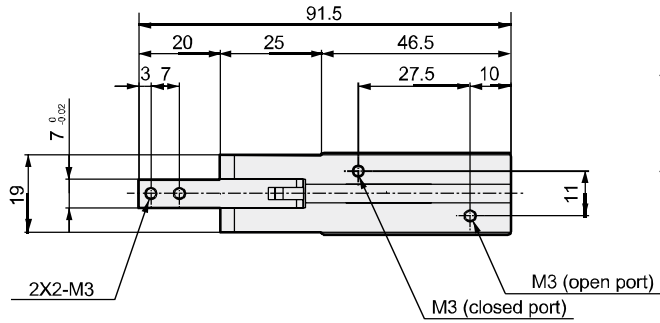
● HMD-25CS



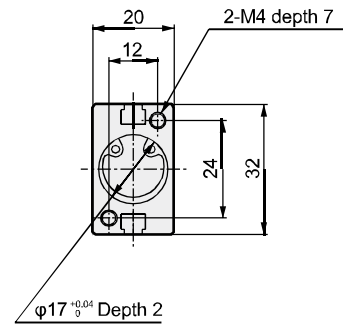
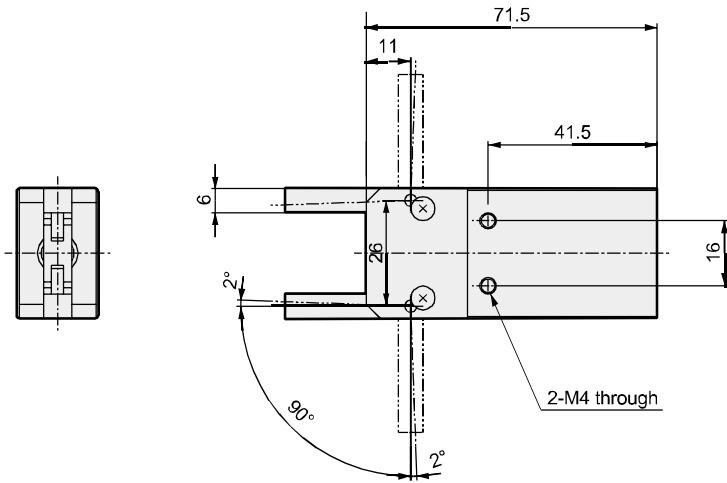
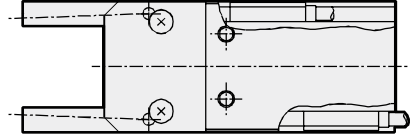
- LCW
- LCR
- LCG
- LCX
- LCM
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCC2
- RCS
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HR
- LN
- Hand
- Chuk
- MechHnd/Chuk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

## Dimensions

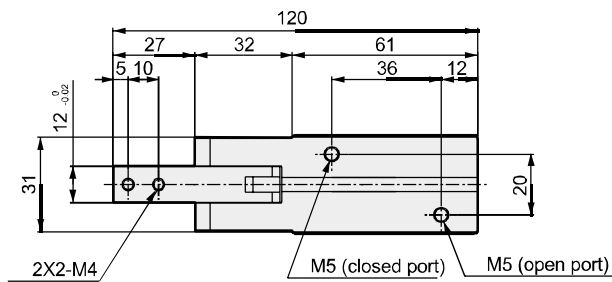
### ● HMD-16CS



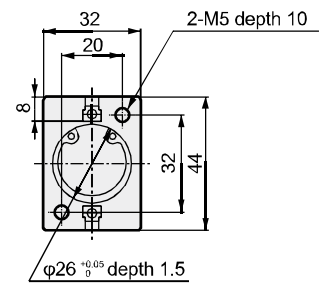
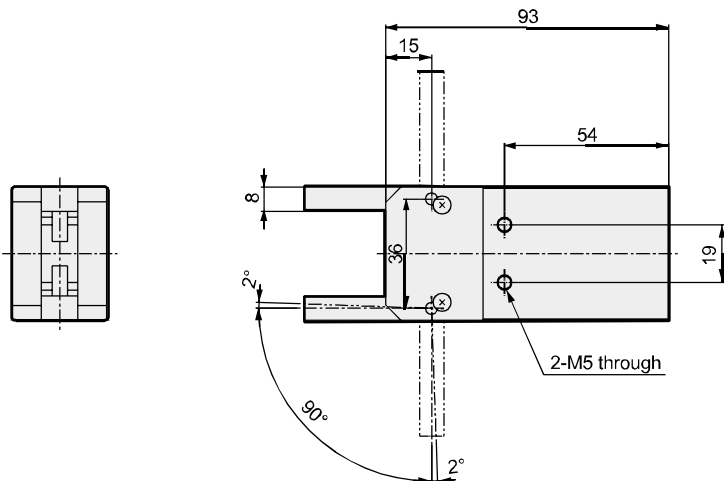
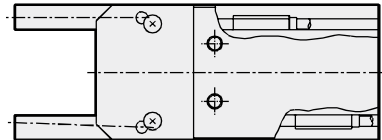
### ● With switch



### ● HMD-25CS



### ● 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
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
Speed controller
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HLD
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
<b>HMD</b>
HJD
HJL
BHE



High gripping wide angle hand

# HJD Series

● Open/close angle:  $-4^{\circ}$  to  $184^{\circ}$



## Specifications

Model No.	HJD			
Size	32CS	40CS	50CS	63CS
Bore size mm	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$
Working fluid	Compressed air			
Max. working pressure MPa	0.7 ( $\approx 100$ psi, 7 bar)			
Min. working pressure MPa	0.3 ( $\approx 44$ psi, 3 bar)			
Ambient temperature $^{\circ}\text{C}$	5 ( $41^{\circ}\text{F}$ ) to 60 ( $140^{\circ}\text{F}$ )			
Port size	M5	Rc1/8		
Open and close angle $^{\circ}$	-4 to 184			
Rod diameter mm	$\phi 14$	$\phi 16$	$\phi 20$	$\phi 20$
Volumetric capacity (reciprocating) $\text{cm}^3$	46	88.7	180.8	331.5
Repeatability mm	$\pm 0.1$			
Weight kg	1.03	1.58	2.67	3.97
Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)			

## Switch specifications

Descriptions	Proximity 2-wire		Proximity 3-wire	
	T2H/T2V	T2WH/T2WV (2-color display)	T3H/T3V	T3WH/T3WV (2-color display)
Applications	Dedicated for programmable controller		For programmable controller, relay	
Output method	-		NPN output	
Power supply voltage	-		10 to 28 VDC	
Load voltage	10 to 30 VDC	24 VDC $\pm 10\%$	30 VDC or less	
Load current	5 to 20 mA		100 mA or less	50 mA or less
Indicator lamp	LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 $\mu\text{A}$ or less	
Weight	1 m:18 g 3 m:49 g 5 m:80 g		1 m:18 g 3 m:49 g 5 m:80 g	

\*1 : The above max. load current is 20 mA at  $25^{\circ}\text{C}$ .

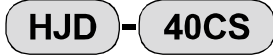
The current is lower than 20 mA if the operating ambient temperature around the switch is higher than  $25^{\circ}\text{C}$ . (5 to 10 mA at  $60^{\circ}\text{C}$ )

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

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  
MechHnd/Chuk  
ShkAbs  
FJ  
FK  
SsdContr  
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)



With switch (built-in magnet for switch)



Ⓐ Size

Ⓑ Switch model No.

Ⓒ Switch quantity

[Example of model No.]

**HJD-40CS-T2H-R**

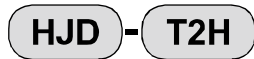
- Ⓐ Size : 40CS
- Ⓑ Switch model No.: Proximity T2H switch, lead wire 1 m
- Ⓒ Switch quantity : 1 on open side

Code	Content					
<b>Ⓐ Size</b>						
	32CS					
	40CS					
	50CS					
	63CS					
<b>Ⓑ Switch model No.</b>						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
			AC	DC		
T2H*	T2V*	Proximity		●	1-color display	2-wire
T3H*	T3V*			●	display	3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T3WH*	T3WV*			●	display	3-wire
<b>* Lead wire length</b>						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
<b>Ⓒ Switch quantity</b>						
R	1 on open side					
H	1 on closed side					
D	2					

## How to order switch

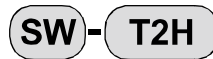
- For switch T\*H\* or T\*WH\*

· Switch body + mounting bracket set



Switch model No.  
(Item Ⓑ above)

· Switch body



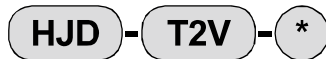
Switch model No.  
(Item Ⓑ above)

· Mounting bracket set



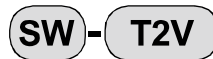
- For switch T\*V\* or T\*WV\*

· Switch body + mounting bracket set



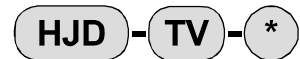
Switch model No.  
(Item Ⓑ above)

· Switch body



Switch model No.  
(Item Ⓑ above)

· Mounting bracket set



- Select either R (open side) or H (closed side) for sections marked with an asterisk (\*).
- HJD (- 50CS, 63CS) can be mounted without a mounting bracket.

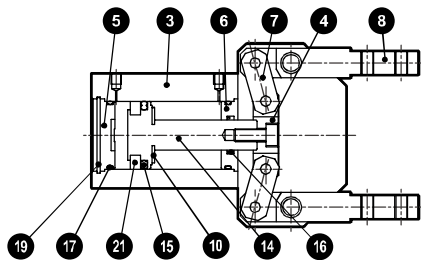
LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLA/HLBG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



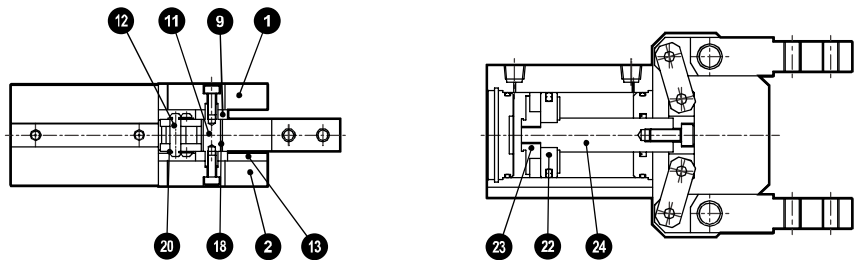
- LCW
- LCR
- LCG
- LCX
- LCM
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCC2
- RCS
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HR
- LN
- Hand
- Chuk
- MechHnd/Chuk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

## Internal structure and parts list

### ● HJD-32CS



### ● HJD-40CS to 63CS



Cannot be disassembled

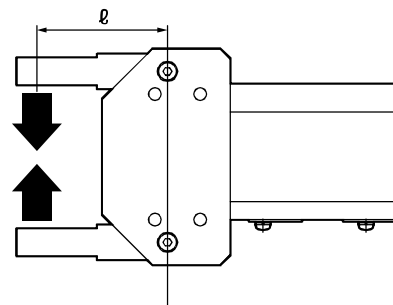
No.	Part name	Material	No.	Part name	Material	No.	Part name	Material
1	Body A	Aluminum alloy	9	Collar	Steel	17	Cylinder sealant	Nitrile rubber
2	Body B	Aluminum alloy	10	Cushion	Urethane rubber	18	Bush	Sintering oil impregnated alloy
3	Cylinder	Aluminum alloy	11	Fulcrum axis	Steel	19	C type snap ring	Stainless steel
4	Operation plate	Steel	12	Operation shaft	Steel	20	E type snap ring	Stainless steel
5	Cylinder guard	Aluminum alloy	13	Guide rail	Steel	21	Magnet	
6	Rod cover	Aluminum alloy	14	Piston	Aluminum alloy/stainless steel	22	Piston A	Aluminum alloy
7	Link	Steel	15	Piston seal	Nitrile rubber	23	Piston B	Stainless steel
8	Master key	Steel	16	Rod sealant	Nitrile rubber	24	Piston rod	Stainless steel

## Gripping power performance data

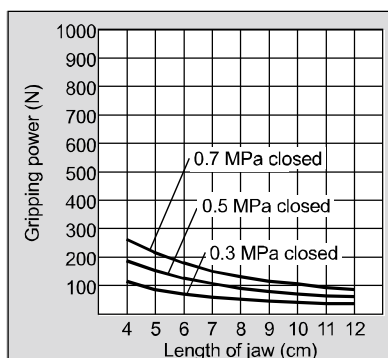
The gripping power in the opening/closing directions with jaw length L of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

### ● Closed direction (⇐)

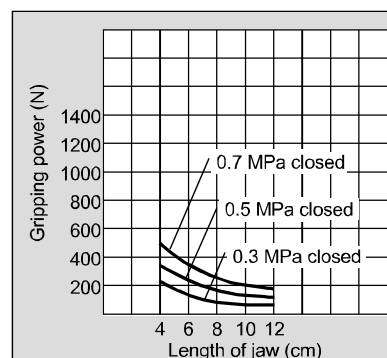
(Note) When making a selection, read the precautions for design and selection on page 1636.



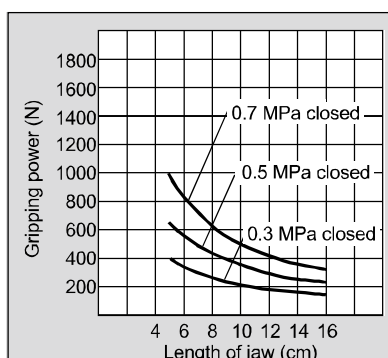
### ● HJD-32CS



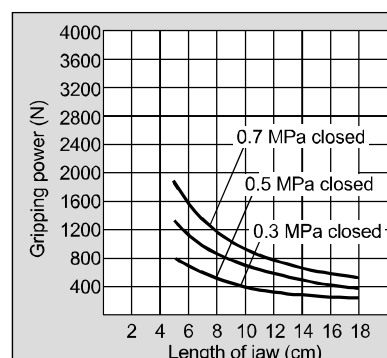
### ● HJD-40CS



### ● HJD-50CS

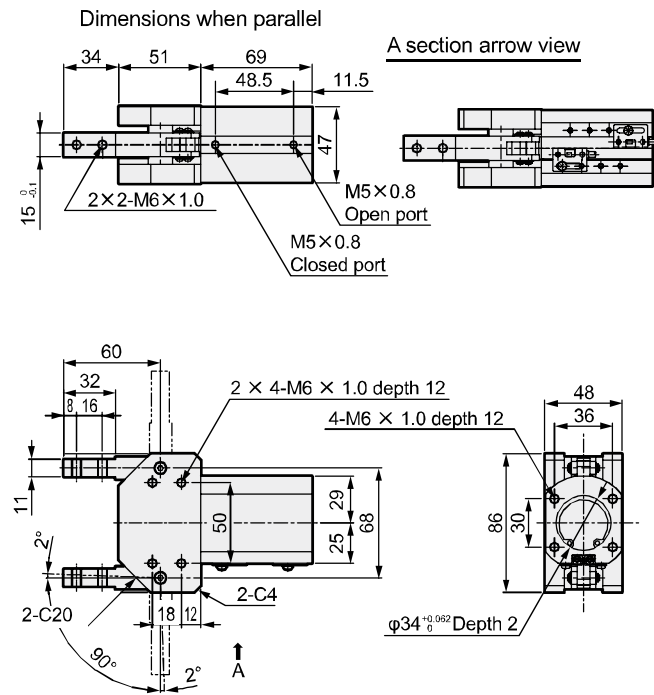


### ● HJD-63CS

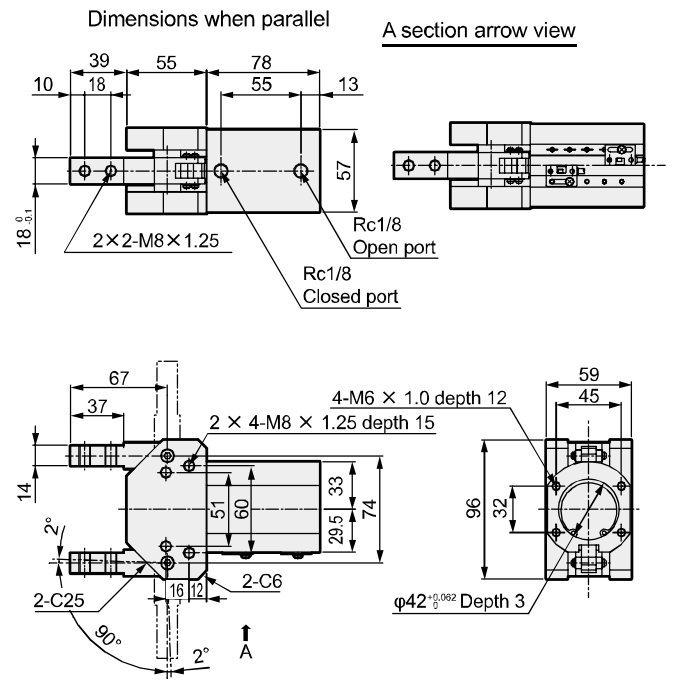


## Dimensions

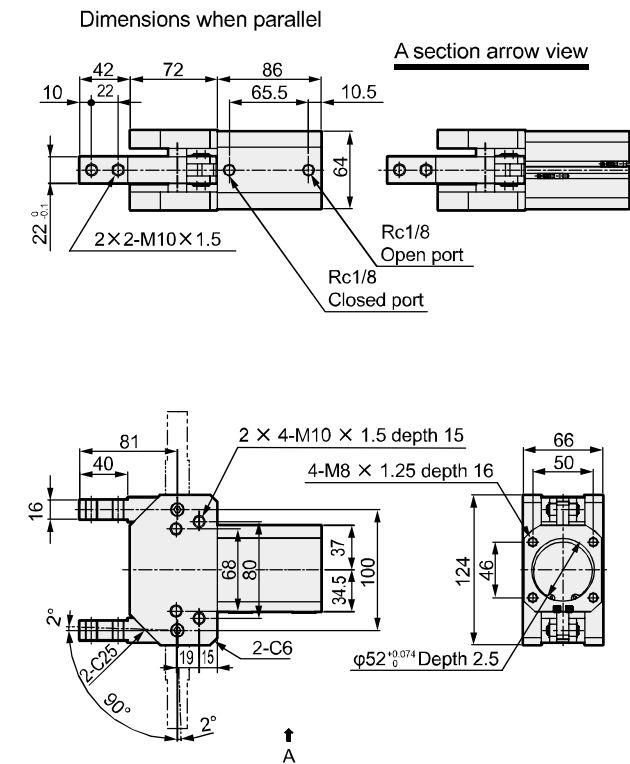
### ● HJD-32CS



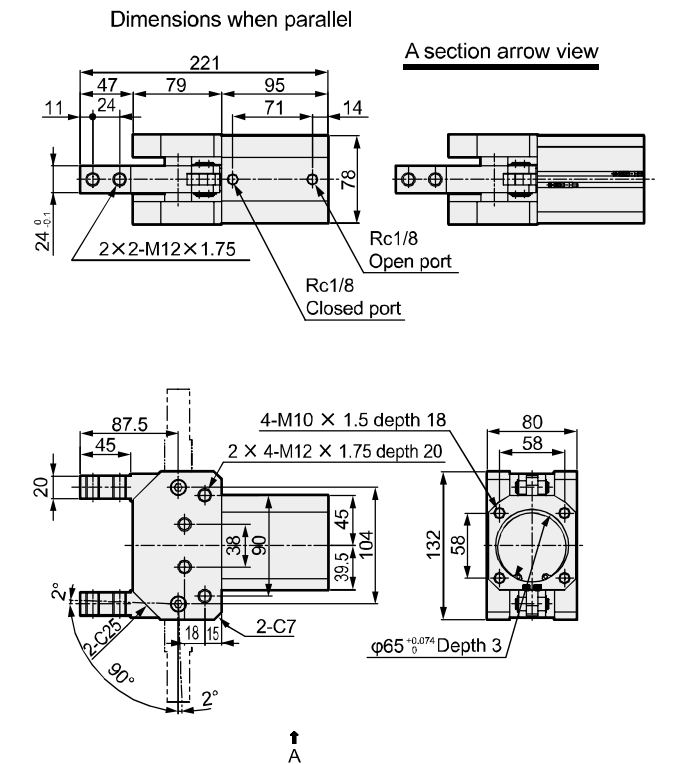
### ● HJD-40CS



### ● HJD-50CS



### ● HJD-63CS



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
<b>Hand</b>
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
HLB
HDL
HMD
<b>HJD</b>
HJL
BHE



# Toggle hand HJL Series

Double acting



## Specifications

Descriptions	HJL			
	32CS	40CS	50CS	63CS
Size	32CS	40CS	50CS	63CS
Bore size mm	φ32	φ40	φ50	φ63
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 °	-3 to 28			
Rod diameter mm	φ14	φ16	φ20	φ20
Volumetric capacity (reciprocating) cm <sup>3</sup>	21.9	37.0	72.3	118.4
Repeatability mm	±0.1			
Weight kg	0.88	1.24	2.11	3.00
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
- Mec:Hnd/Chuk
- ShkAbs
- FJ
- FK
- SsdContr
- 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)

**HJL** - **40CS**

With switch (built-in magnet for switch)

**HJL** - **40CS** - **T2H** - **R**

**A** Size

**B** Switch model No.

\* indicates the lead wire length.

**C** Switch quantity

[Example of model No.]

**HJL-40CS-T2H-R**

Model : Toggle hand

**A** Size : 12CS

**B** Switch model No.: Proximity T2H switch, lead wire 1 m

**C** Switch quantity : 1 on open side

Code	Content					
<b>A Size</b>						
32CS						
40CS						
50CS						
63CS						
<b>B Switch model No.</b>						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
			AC	DC		
T2H*	T2V*	Prox.	●	1-color	2-wire	
T3H*	T3V*		●	display	3-wire	
<b>* Lead wire length</b>						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
<b>C Switch quantity</b>						
R	1 on open side					
H	1 on closed side					
D	2					

## How to order switch

● For switch T\*H\*

· Switch body + mounting bracket set

**HJL** - **T2H**

Switch model No.  
(Item ② above)

· Switch body only

**SW** - **T2H**

Switch model No.  
(Item ② above)

· Mounting bracket set

**HJL** - **T**

Mounting bracket

● For switch T\*V\*

· Switch body + mounting bracket set

**HJL** - **T2V** - \*

Switch model No.  
(Item ② above)

· Switch body only

**SW** - **T2V**

Switch model No.  
(Item ② above)

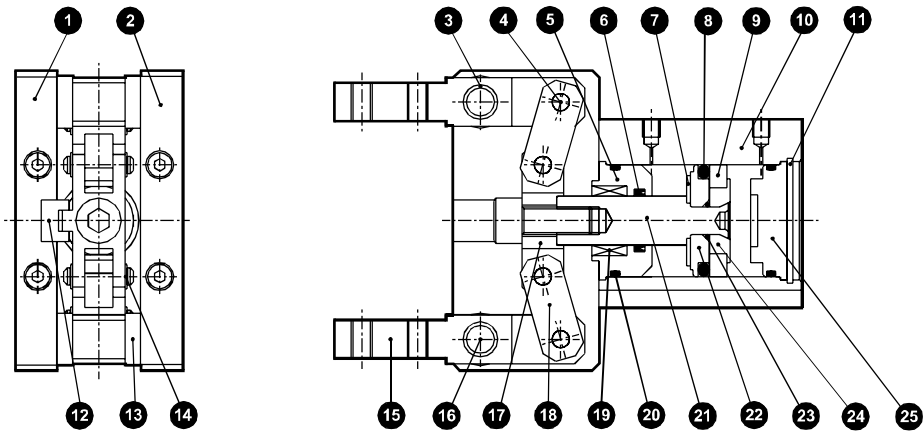
· Mounting bracket set

**HJL** - **TV** - \*

- Select either R (open side) or H (closed side) for sections marked with an asterisk (\*).
- HJL-[50CS, 63CS] can be mounted without a mounting bracket.

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
<b>Hand</b>
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
HLB
HDL
HMD
HJD
<b>HJL</b>
BHE

## Internal structure and parts list



**Cannot be disassembled**

### Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Body B	Aluminum alloy		14	E type snap ring	Carbon steel	
2	Body A	Aluminum alloy		15	Master key	Carbon steel	
3	DU dry bearing	Sintering oil impregnated alloy		16	Fulcrum axis	Carbon steel	
4	Operation axis	Carbon steel		17	Operation plate	Carbon steel	
5	Rod cover	Aluminum alloy		18	Link	Carbon steel	
6	Rod sealant	Nitrile rubber		19	Die slide bush	Copper alloy casting	
7	Cushion	Urethane rubber		20	Cylinder sealant	Nitrile rubber	
8	Piston seal	Nitrile rubber		21	Piston rod	Stainless steel	
9	Magnet			22	Piston A	Aluminum alloy	
10	Cylinder	Aluminum alloy		23	O-ring	Nitrile rubber	
11	C type snap ring	Stainless steel		24	Piston B	Aluminum alloy	
12	Guide rail	Carbon steel		25	Cylinder guard	Aluminum alloy	
13	Collar	Carbon steel					

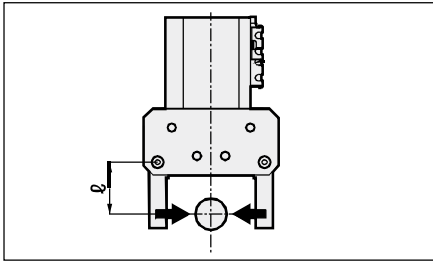
- LCW
- LCR
- LCG
- LCX
- LCM
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCC2
- RCS
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HR
- LN
- Hand
- Chuk
- MecHnd/Chuk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

### Gripping power performance data

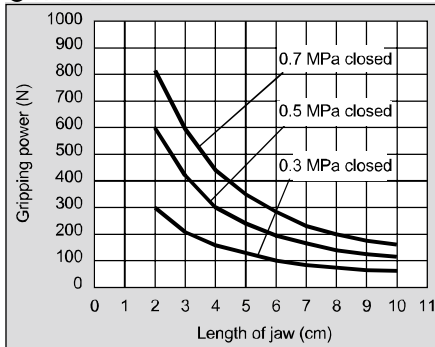
The gripping power with jaw length L of hand and a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

→ Closed direction (■) ——— (shown with continuous line)

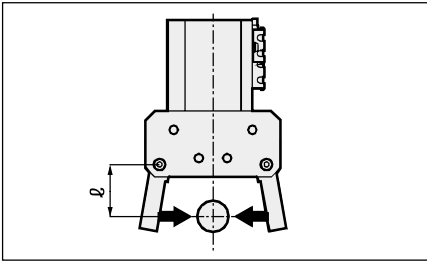
[Parallel]



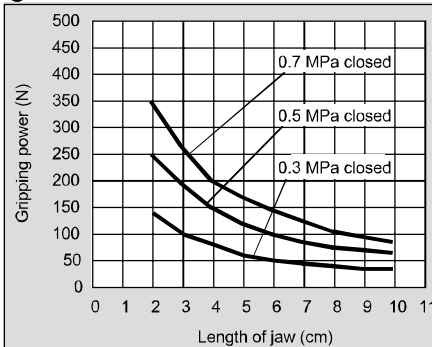
● HJL-32CS



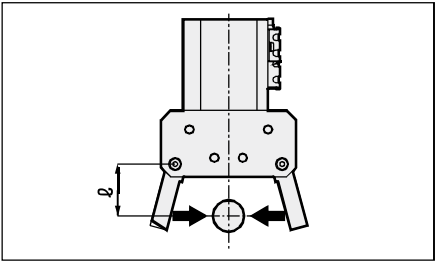
[At 10°]



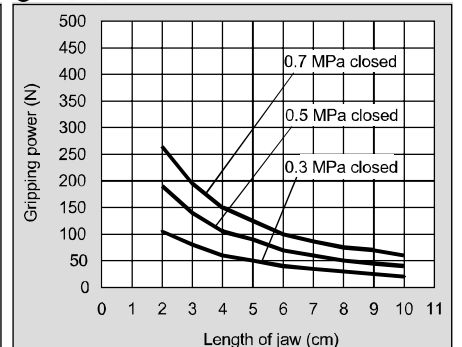
● HJL-32CS



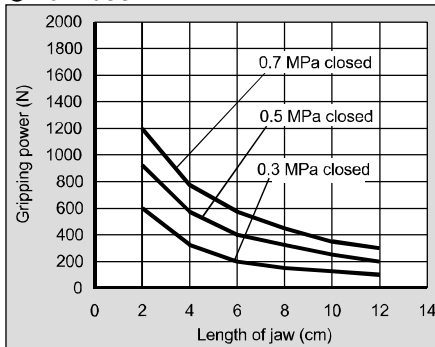
[At 20°]



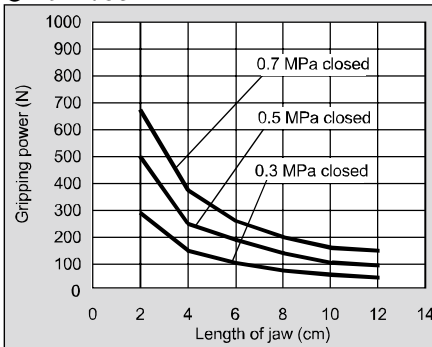
● HJL-32CS



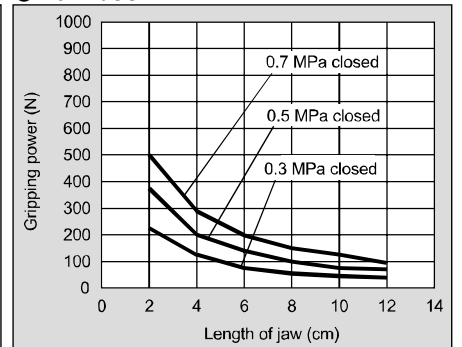
● HJL-40CS



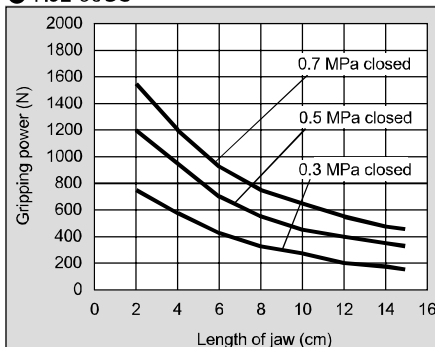
● HJL-40CS



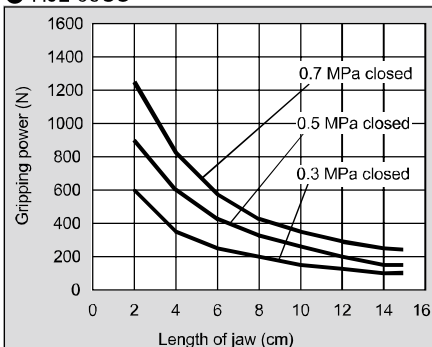
● HJL-40CS



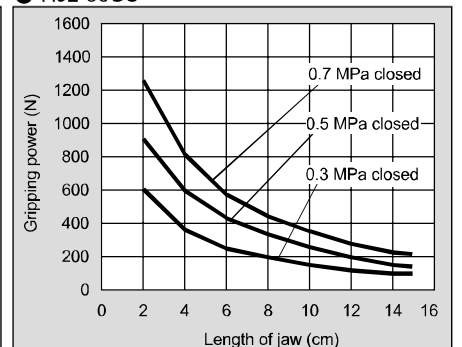
● HJL-50CS



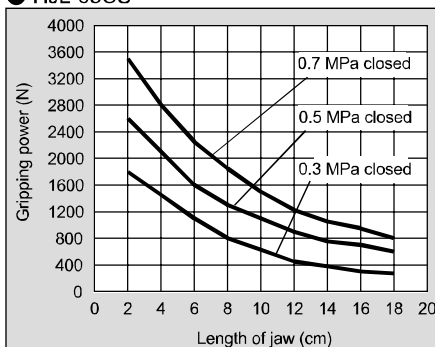
● HJL-50CS



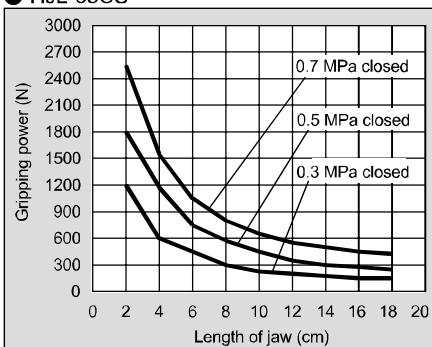
● HJL-50CS



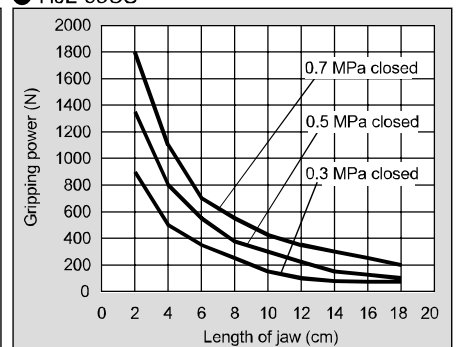
● HJL-63CS



● HJL-63CS



● HJL-63CS



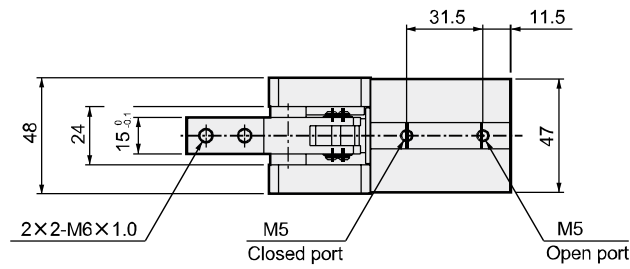
(Note) When making a selection, read the precautions for design and selection on page 1636.

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
MechHrd/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
HLB
HDL
HMD
HJD
HJL
BHE

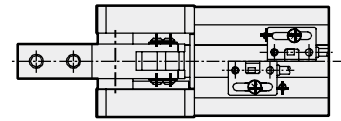
## Dimensions



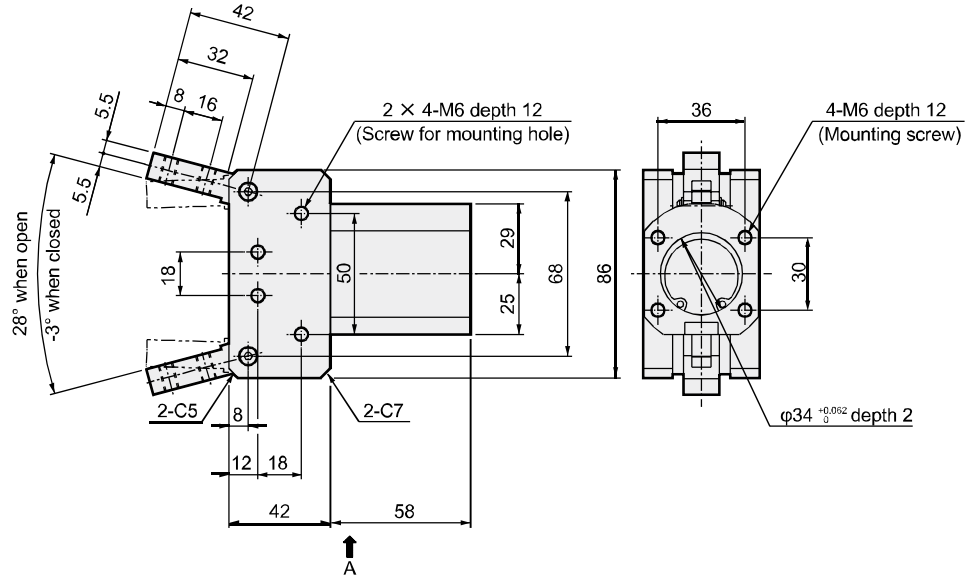
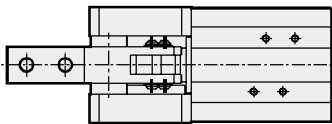
### ● HJL-32CS



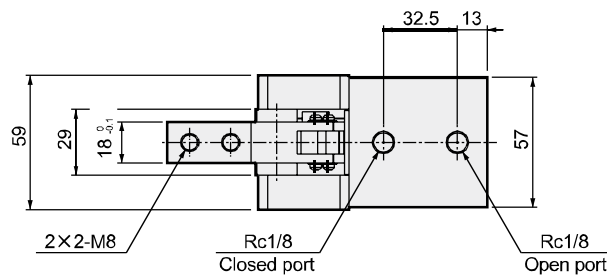
### ● With switch



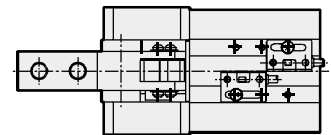
### A section arrow view



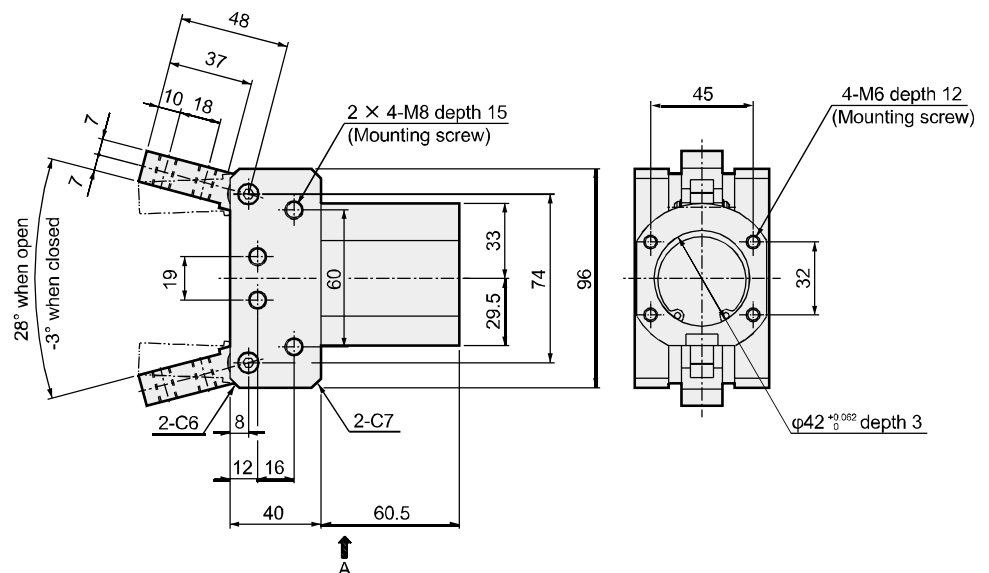
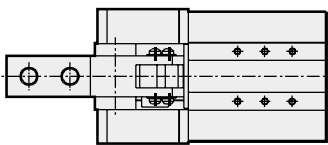
### ● HJL-40CS



### ● With switch



### A section arrow view

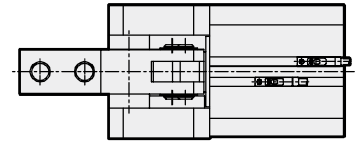
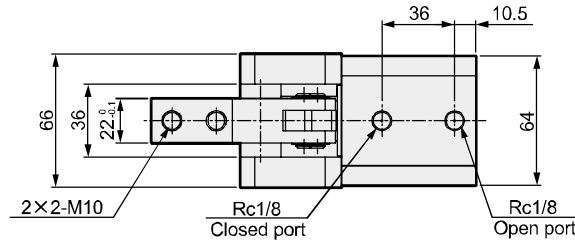


LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SsdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBC
HLD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

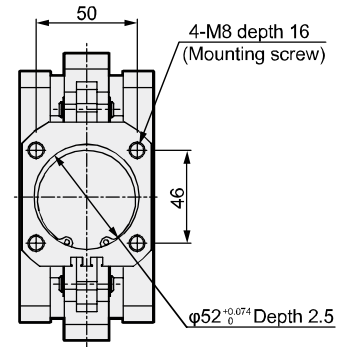
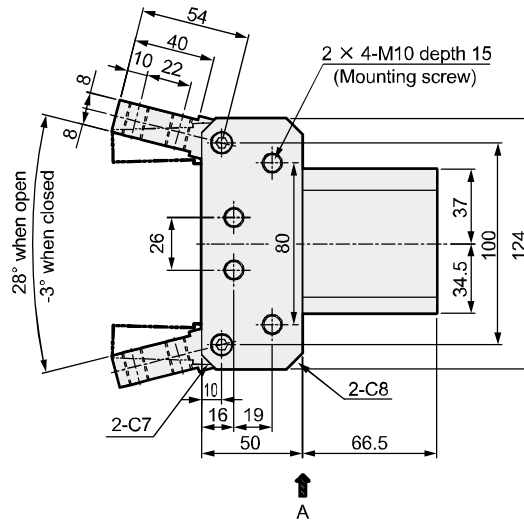
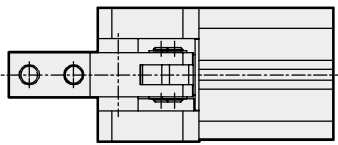
## Dimensions

● HJL-50CS

● With switch

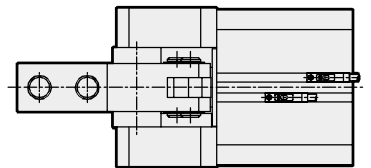
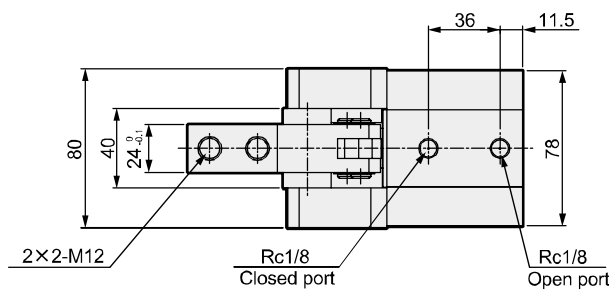


A section arrow view

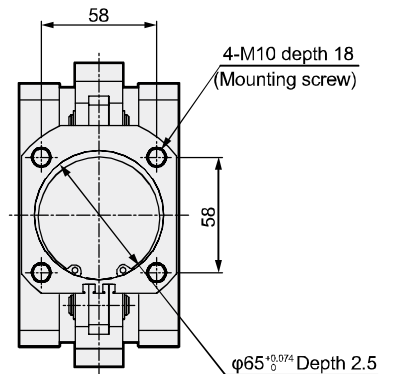
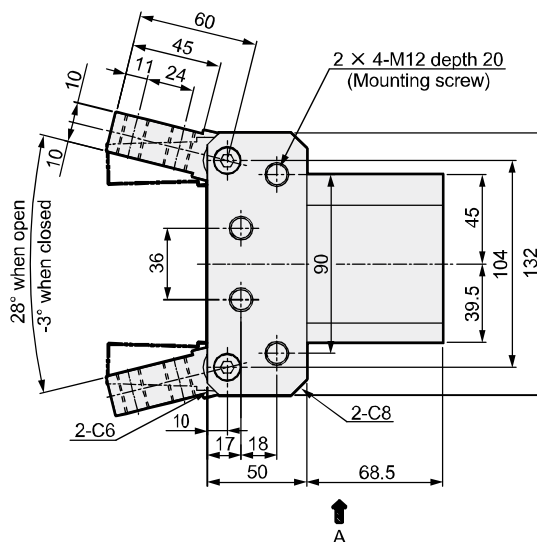
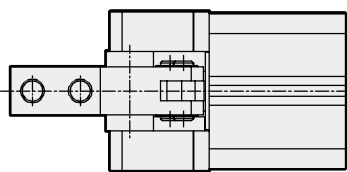


● HJL-63CS

● With switch



A section arrow view



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
<b>Hand</b>
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
HLB
HDL
HMD
HJD
<b>HJL</b>
BHE





# Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

## Product-specific cautions: Hand Series

### Design/selection

#### 1. Common

#### WARNING

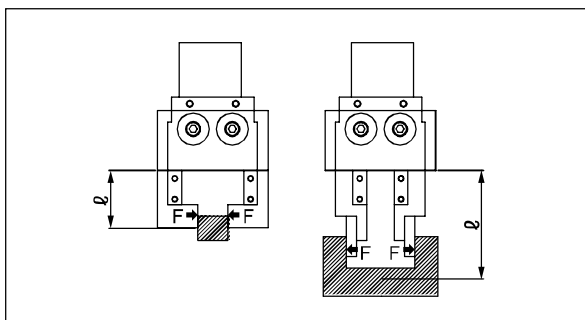
■ If the moving workpiece poses a possible risk to personnel or if fingers could be caught in the master key, etc., install a protective cover, etc.

■ If the circuit pressure drops due to power failure or air source trouble, the gripping power may decrease and the workpiece may fall. Provide position locking measures, etc., so that personnel are not injured or machines damaged.

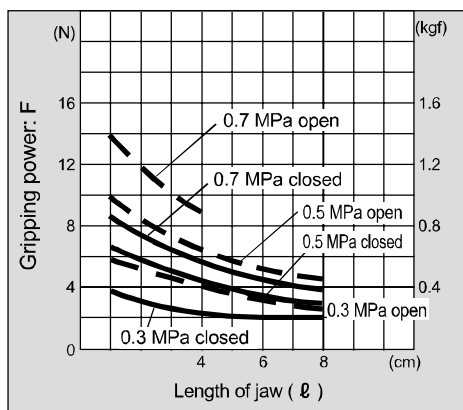
#### CAUTION

■ Precautions for gripping power

- Gripping power represents the force holding the workpiece, as shown in the figure below.



- Performance data indicates the gripping power at hand jaw length  $l$  at a supply pressure of 0.15 to 0.7 MPa.



- To find the gripping power from performance data, if the distance from the small jaw to the workpiece center of gravity when manufactured is  $l$ , gripping power  $F$   
 When  $l = l_1$   $F = F_1$   
 When  $l = l_2$   $F = F_2$  Refer to the upper right figure is expressed as above.

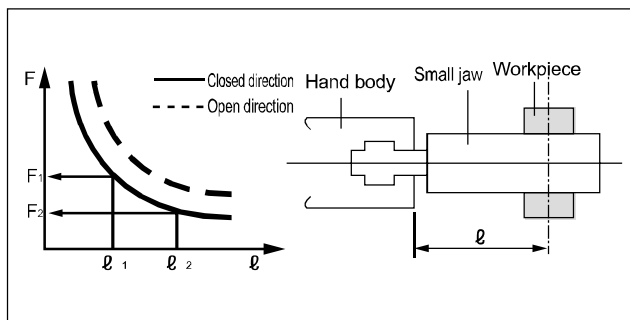
- When mounting an L-shaped jaw, select length as shown below.  
 Example: If the L-shape is 30 mm in the master key direction and 30 mm at a 90° angle, assume the small jaw length is 60 mm.
- Length of jaw should be within the numerical value given in the gripping power performance data table of each model.
- Max. working length of jaw should be within the performance data.  
 When transferring workpiece (weight  $W_L$ ), the reference is as below.

$$W_L \times 9.8 \times 5 < (F \times N) \text{ [holding only]}$$

$$W_L \times 9.8 \times 10 < (F \times N) \text{ [normal transport]}$$

$$W_L \times 9.8 \times 20 < (F \times N) \text{ [sudden accelerated transport]}$$

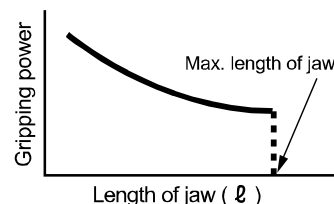
$W_L$ : Weight of workpiece [kg]  
 $F$ : Gripping power [N]  
 $N$ : Number of jaws [pcs.]



■ Use small jaws as short and lightweight as possible.

If the small jaw is long and heavy, inertia increases when opening and closing. This may cause play in the master key, and adversely affect durability.

- Length of small jaw should be within the numerical values of performance data.
- The weight of the small jaw affects durability, so check that the weight is less than the following value:  
 $W < 1/4H$  (1 pc.)  $W$ : Weight of small jaw  
 $H$ : Product weight of Hand



- Single acting has minimum gripping power near the stroke end (open end for NO, closed end for NC). Due to the spring structure, it may not return when operating with a short stroke; therefore, consider a jaw shape that clamps the workpiece with a sufficient stroke.

LCW
LCR
LCC
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
SrdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLA/HLBG
HLD
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJD
HJL
BHE

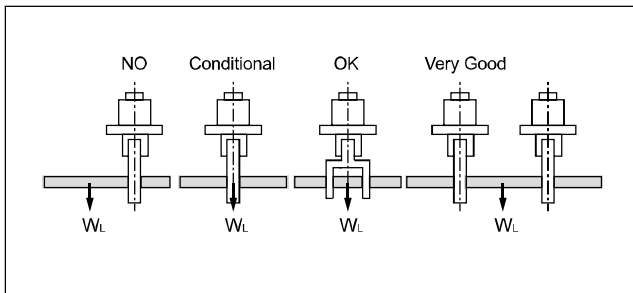
### ■ Working environment

At cutting, casting, or welding plants, there is a risk of foreign matter, such as cutting fluid, chips, powder and dust, entering the equipment. Use covers and such to prevent this as much as possible.

Do not use the equipment under the following environments.

- Exposed to cutting oil (because the sliding section is abraded by abrasive or polishing debris in the liquid)
- When the atmosphere contains organic solvents, chemicals, acids, alkalis, kerosene, etc.
- Exposed to water

- When gripping long or large workpieces, stable gripping requires a grip on the center of gravity. Stability is a must when using larger or multiple workpieces as well.



- Select a model that has sufficient power to grip the workpiece weight.

- Select a model that has sufficient opening/closing width for the workpiece size.

- If directly inserting the workpiece into the jig with the hand, consider clearance during design. The hand could be damaged.

Hand

● Push-in jig with ejector

● When using push cylinder

Note) Since the workpiece slides over the top of the small jaw, it may significantly shorten the service life of the chuck. The shape of the small jaw should be sufficiently considered.

- If the small jaw is not rigid enough, the resulting sag could cause the master key to twist or adversely affect operation.

- Adjust the chuck open/close speed with the speed controller (optional).  
When used at high speed, backlash may occur sooner.

## 2. Linear slide cylinder LSH Series

- When mounting an L-shaped jaw, use within the range on page 1480.

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
<b>Hand</b>
Chuk
MechHand/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

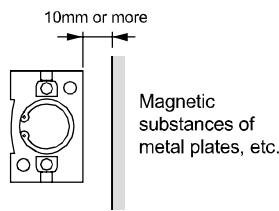
## Mounting, installation and adjustment

### 1. Common

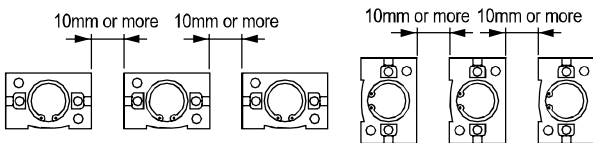
#### CAUTION

■ If a lateral load or load with a large impact is applied to the master key, play or damage could occur. Adjust and check that external force is not applied to the master key.

■ The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Check that a distance of 10 mm is provided from the surface of the cylinders.



■ The cylinder switch may malfunction if cylinders are installed adjacently. Check that the following distances are provided between cylinders.

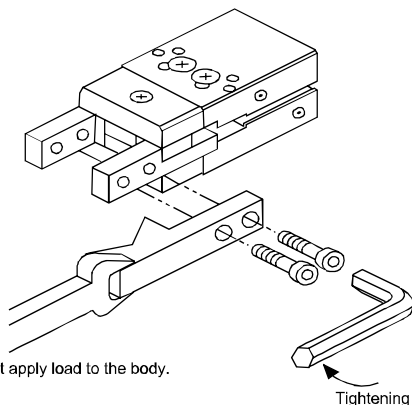


■ Clamping operation is accurate when performed as softly as possible at a low speed. Repeatability is also stable.

■ Regularly grease the sliding section of the master key. Regular replenishment can extend service life further.

#### Installing the jaw

When mounting the jaw to the master key, to prevent any effect on the hand, support with a wrench, etc., when tightening so that the master key is not twisted.

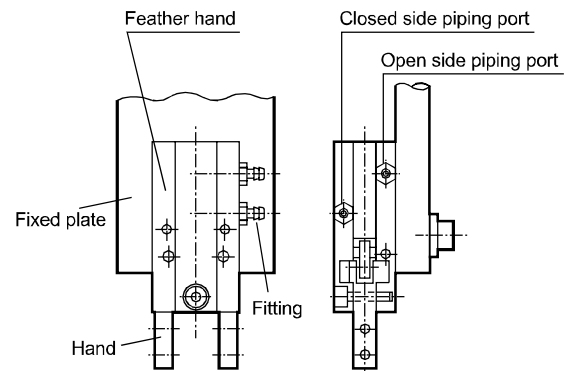


■ Do not retighten or disassemble, other than the screws used for fixing the body and jaw. This could lead to malfunction.

### 2. Installation

■ Do not cause dents or scratches that may damage flatness or perpendicularity on the body mounting surface or master key.

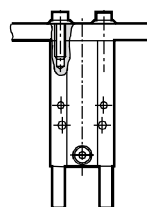
■ If there is a limit to the thickness direction of the FH Series body, the available piping fitting will be limited. Refer to the following fittings.



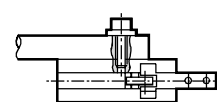
Model	FH*10	FH*12	FH*16	FH*20	FH*25	
Bore size	M3			M5		
Fitting	Model No.	Applicable O.D. (mm)	Eff. X-sectional area (mm <sup>2</sup> )	Model No.	Applicable O.D. (mm)	Eff. X-sectional area (mm <sup>2</sup> )
	Straight FTS					
Barbed fitting	FTS4-M3	φ3.2/ φ4	0.4	FTS4-M5	φ3.2/φ4	2.1
	-	-	-	FTS6-M5	φ6	4.1

■ Refer to the following section for FH Series body mounting.

#### ● Top mounting

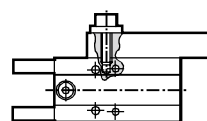


#### ● Front mounting



Note) For types with switch, ensure that the screw insertion depth is less than that in the table below, so that the bolt tip does not press the switch.

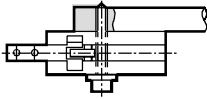
#### ● Side mounting



Note) Ensure that the fixed plate does not contact the master key fulcrum.

Model	Working bolt size	Max. screw insertion depth (mm)	Recommended tightening torque (N·cm)
FH*10	M3×0.5	4.5	70
FH*12	M3×0.5	4.5	70
FH*16	M4×0.7	6	160
FH*20	M5×0.8	7.5	330
FH*25	M5×0.8	12	330

### ● Use of through hole

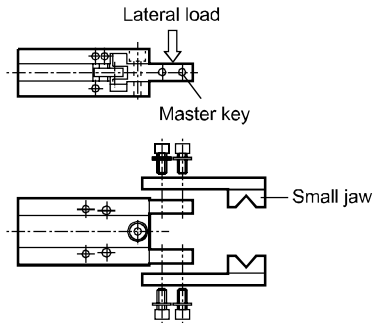


Note) Through hole cannot be used when switch is provided.

Note) Ensure that the fixed plate does not contact the master key fulcrum.

Model	Working bolt size	Recommended tightening torque (N·cm)
FH*10	M3×0.5	32
FH*12	M2.5×0.45	32
FH*16	M3×0.5	90
FH*20	M4×0.7	210
FH*25	M4×0.7	210

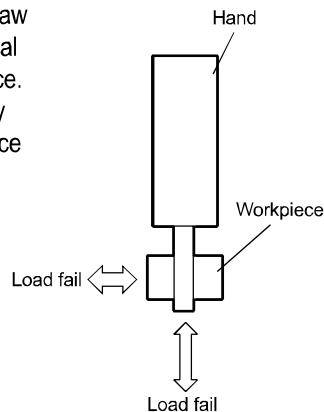
### ■ When installing the small jaw, check that a lateral load is not applied to the master key.



### ■ Tighten with the following tightening torque when mounting.

Thread nominal	M3	M4	M5	M6	M8
Recommended tightening torque (N·m)	0.59	1.4	2.8	4.8	12.0

### ■ Do not apply load to the jaw during attachment/removal and transport of workpiece. Scratches and dents may occur on the rolling surface of the master key linear guide, possibly causing malfunction.

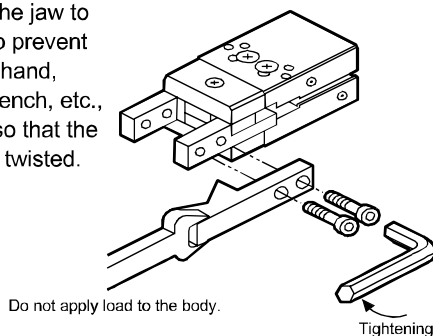


## 3. Linear Slide Hand LSH Series

### ⚠ CAUTION

#### ■ Installing the jaw

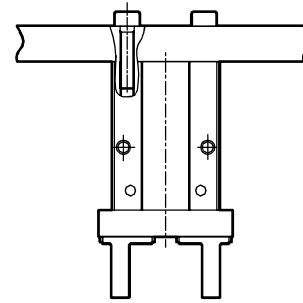
When mounting the jaw to the master key, to prevent any effect on the hand, support with a wrench, etc., when tightening so that the master key is not twisted.



Descriptions	Bolt used	Tightening torque (N·m)
LSH-10	M2.5×0.45	0.32
LSH-16	M3×0.5	0.59
LSH-20	M4×0.7	1.4
LSH-25	M5×0.8	2.8

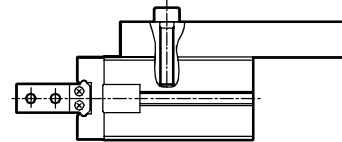
### ■ Refer to the following section for body mounting.

#### ● Top mounting



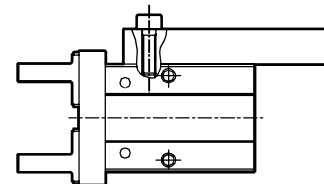
Descriptions	Bolt used	Tightening torque (N·m)	Max. insertion depth L (mm)
LSH-10	M3×0.5	0.88	6
LSH-16	M4×0.7	2.1	8
LSH-20	M5×0.8	4.3	10
LSH-25	M6×1.0	7.3	12

#### ● Front mounting



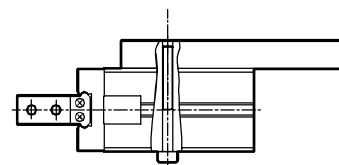
Descriptions	Bolt used	Tightening torque (N·m)	Max. insertion depth L (mm)
LSH-10	M3×0.5	0.69	5
LSH-16	M4×0.7	2.1	8
LSH-20	M5×0.8	4.3	10
LSH-25	M6×1.0	7.3	12

#### ● Side mounting



Descriptions	Bolt used	Tightening torque (N·m)	Max. insertion depth L (mm)
LSH-10	M3×0.5	0.88	6
LSH-16	M4×0.7	1.6	4.5
LSH-20	M5×0.8	3.3	8
LSH-25	M6×1.0	5.9	10

#### ● Use of through hole



Descriptions	Bolt used	Tightening torque (N·m)
LSH-10	M2.5×0.45	0.32
LSH-16	M3×0.5	0.88
LSH-20	M4×0.7	2.1
LSH-25	M5×0.8	4.3

Note) Through hole cannot be used when switch is provided.

### ■ Do not retighten or disassemble, other than the screws used for fixing the body and jaw. This could lead to malfunction.

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
<b>Hand</b>
Chuk
MecHand/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HLD
HCP
HMFB
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJD
HJL
BHE

### 1. Common

#### ⚠ CAUTION

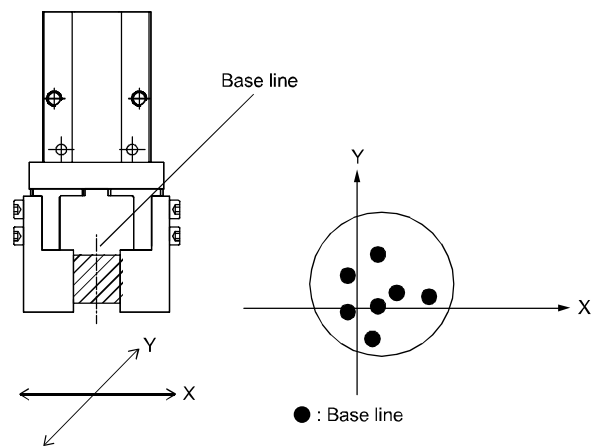
■ Do not disassemble or modify the body.  
(excluding LSH Series)

#### ■ Repeatability

The repeatability here indicates the displacement of the workpiece in the case of repeated clamping and unclamping in the same conditions (hand fixed, same workpiece used: see below).

#### Conditions

- Workpiece dimensions, shape, weight
- Workpiece transfer position
- Clamp method, length
- Workpiece and workpiece receiving surface resistance
- Fluctuation of gripping power (air pressure), etc.



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
<b>Hand</b>
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SsdContr
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