



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

# FH100 Series

● Operating stroke length: 8, 11, 14, 18, 20 mm

Double acting



Single acting (normally open)



## Specifications

| Descriptions                          | FH100                                                              |         |         |         |         |                         |         |         |         |         |
|---------------------------------------|--------------------------------------------------------------------|---------|---------|---------|---------|-------------------------|---------|---------|---------|---------|
|                                       | FH110-D                                                            | FH112-D | FH116-D | FH120-D | FH125-D | FH110-0                 | FH112-0 | FH116-0 | FH120-0 | FH125-0 |
| 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                             | M3×0.5                                                             |         | M5×0.8  |         |         | M3×0.5                  |         | M5×0.8  |         |         |
| Operating stroke length mm            | 8                                                                  | 11      | 15      | 18      | 20      | 8                       | 11      | 15      | 18      | 20      |
| Weight g                              | 51                                                                 | 71      | 124     | 176     | 284     | 51                      | 71      | 124     | 177     | 286     |
| Repeatability (initial value) mm      | ±0.03                                                              |         |         |         |         |                         |         |         |         |         |
| Max. operating frequency times/second | 3                                                                  |         |         |         |         |                         |         |         |         |         |
| Cushion                               | Open side rubber cushion                                           |         |         |         |         |                         |         |         |         |         |
| Option                                | Proximity switch (2-wire/3-wire)<br>* Closed side speed controller |         |         |         |         |                         |         |         |         |         |

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

**FH1** - **10** - **D** - **Y1** - **B**

With switch (built-in magnet for switch)

**FH1** - **10** - **D** - **Y1** - **T2H** - **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 **D** 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>25</b>                 | φ25                                       |                          |                |                |                 |                  |
| <b>B Option</b>           |                                           |                          |                |                |                 |                  |
| <b>D</b>                  | Standard (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> |                                           |                          |                |                |                 |                  |
| <b>Axial lead wire</b>    | <b>Radial lead wire</b>                   | <b>Proximity Contact</b> | <b>Voltage</b> |                | <b>Display</b>  | <b>Lead wire</b> |
|                           |                                           |                          | <b>AC</b>      | <b>DC</b>      |                 |                  |
| <b>T2H*</b>               | <b>T2V*</b>                               |                          |                | ●              | 1-color display | 2-wire           |
| <b>T3H*</b>               | <b>T3V*</b>                               |                          | ●              | 3-wire display | 3-wire          |                  |
| <b>* Lead wire length</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 right (port) side open position      |                          |                |                |                 |                  |
| <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.]

### FH112-ZY1-T2V-D-B

Model: Feather hand (mini-parallel hand)

- A** Bore size : φ12
- B** Option : Double acting integrated speed controller
- C** Small jaw : With small jaw (Material S50C)
- D** Switch model No. : Proximity T2V switch, lead wire 1 m
- E** Switch quantity : 2
- 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     |
| <b>25</b>          | φ25     |

### How to order switch

**SW** - **T2H**

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

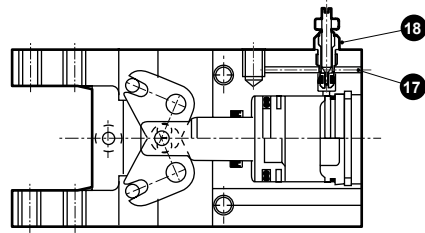
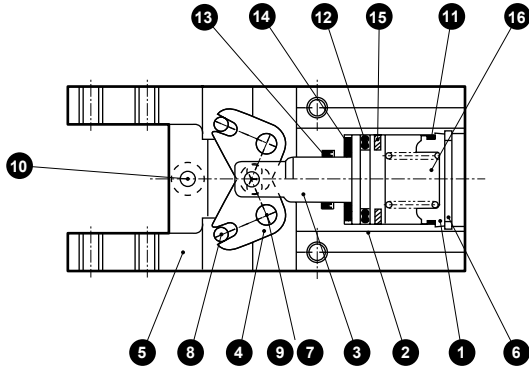
|              |
|--------------|
| LCW          |
| LCR          |
| LCG          |
| LCX          |
| LCM          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| 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          |
| <b>FH100</b> |
| 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          |

# FH100 Series

## Internal structure and parts list

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

● With speed controller



**Cannot be disassembled**

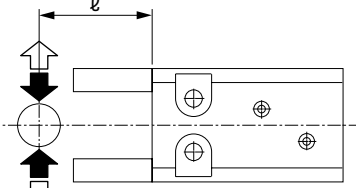
Standard (double acting) does not contain a 16 spring.

| No. | Part name                | Material        | Remarks                       | No. | Part name                     | Material        | Remarks   |
|-----|--------------------------|-----------------|-------------------------------|-----|-------------------------------|-----------------|-----------|
| 1   | Cylinder guard           | Acetal resin    |                               | 10  | Hexagon socket head cap screw | Alloy steel     |           |
| 2   | Body                     | Aluminum alloy  | Lubrication alumite treatment | 11  | Cylinder gasket               | Nitrile rubber  |           |
| 3   | Piston                   | Stainless steel |                               | 12  | Piston packing                | Nitrile rubber  |           |
| 4   | Arm                      | Stainless steel | Heat treatment                | 13  | Rod packing                   | Nitrile rubber  |           |
| 5   | Master key               | Stainless steel |                               | 14  | Cushion                       | Urethane rubber |           |
| 6   | Snap ring                | Stainless steel |                               | 15  | Magnet                        |                 | Nickeling |
| 7   | Fulcrum axis             | Alloy steel     | Heat treatment                | 16  | Spring                        | Stainless steel |           |
| 8   | Operation shaft          | Alloy steel     | Heat treatment                | 17  | Steel ball                    | Stainless steel |           |
| 9   | Hexagon socket set screw | Stainless steel |                               | 18  | Flow control valve assembly   |                 |           |

## Gripping power performance data

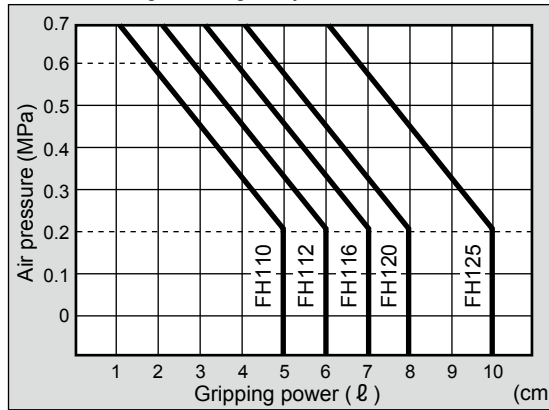
The gripping power in the opening/closing directions with jaw length L of hand with a supply pressure of 0.15 to 0.7 MPa is shown.

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

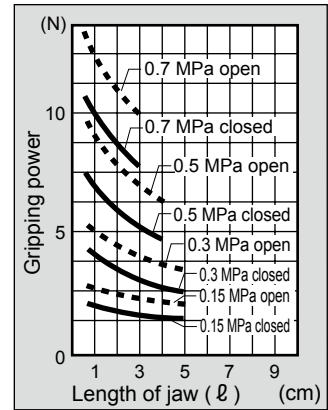


(Note) Single acting closed side gripping power is decreased by 25 to 30% compared to the double acting.

Restriction range for length of jaw  $\ell$

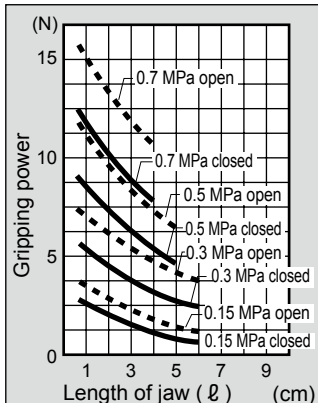


● FH110

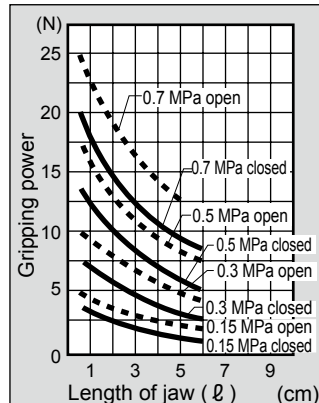


When making a selection, read the precautions for design and selection on page 1636.

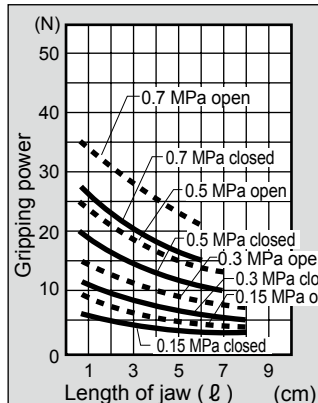
● FH112



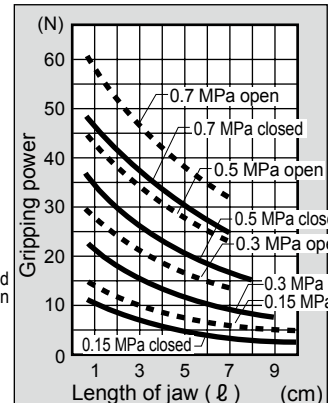
● FH116



● FH120



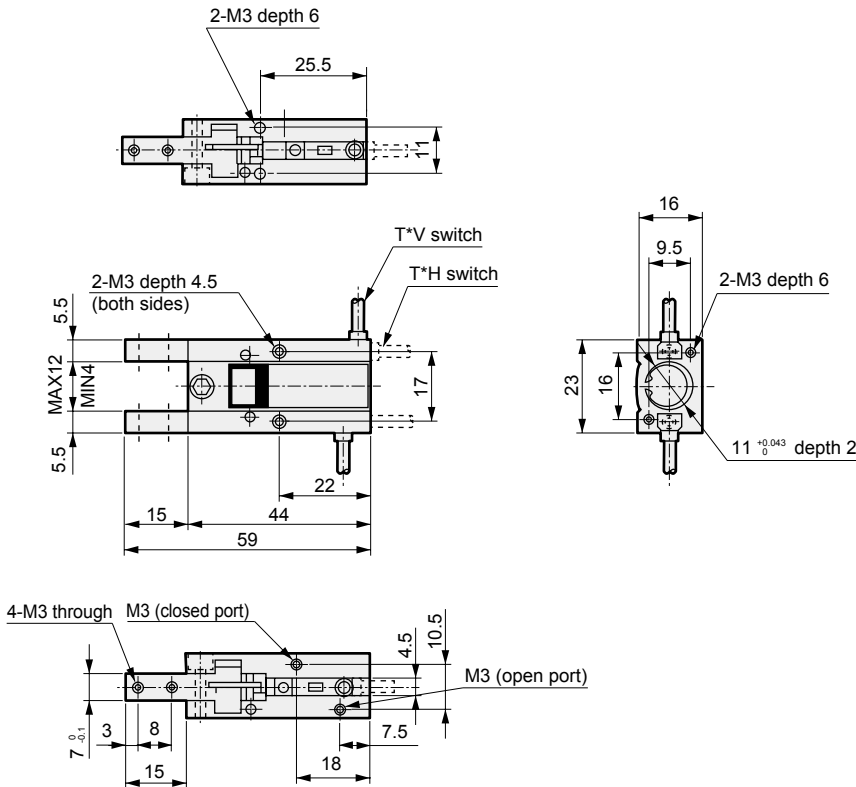
● FH125



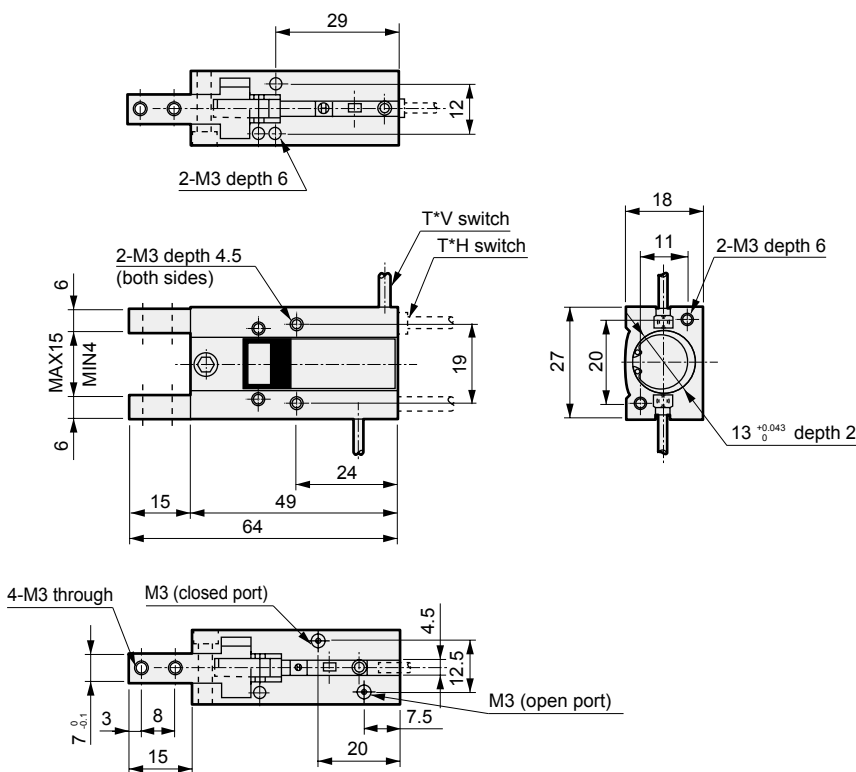
### Dimensions



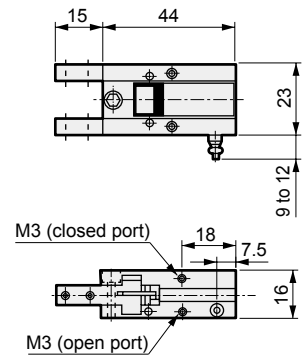
#### ● FH110-D/FH110-O



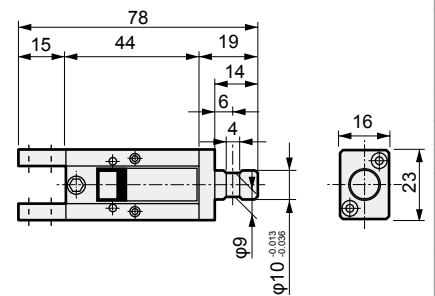
#### ● FH112-D/FH112-O



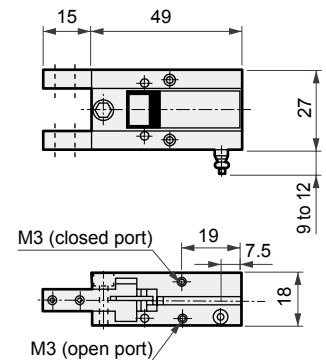
#### ● With speed controller (FH110-Z)



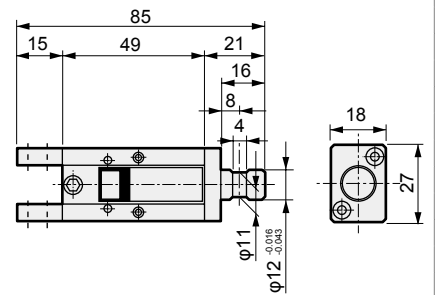
#### ● With end mount



#### ● With speed controller (FH112-Z)



#### ● With end mount



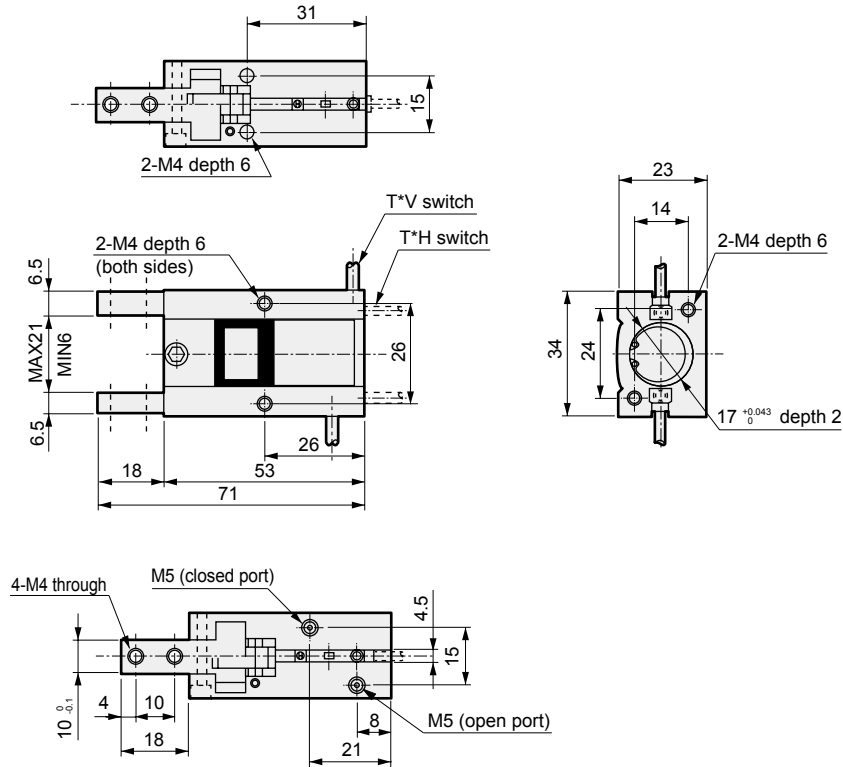
|              |
|--------------|
| LCW          |
| LCR          |
| LCG          |
| LCX          |
| LCM          |
| STM          |
| STG          |
| STS/STL      |
| STR2         |
| UCA2         |
| ULK*         |
| JSK/M2       |
| JSG          |
| JSC3/JSC4    |
| USSD         |
| UFCD         |
| 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          |
| <b>FH100</b> |
| 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          |

# FH100 Series

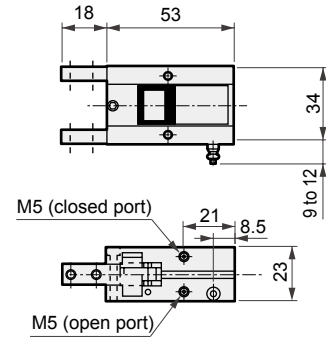
## Dimensions



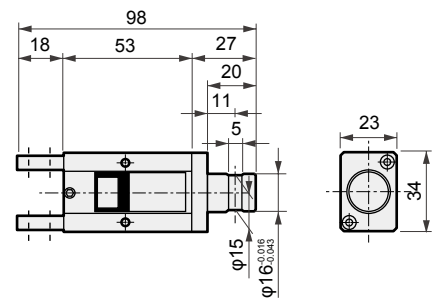
### ● FH116-D/FH116-O



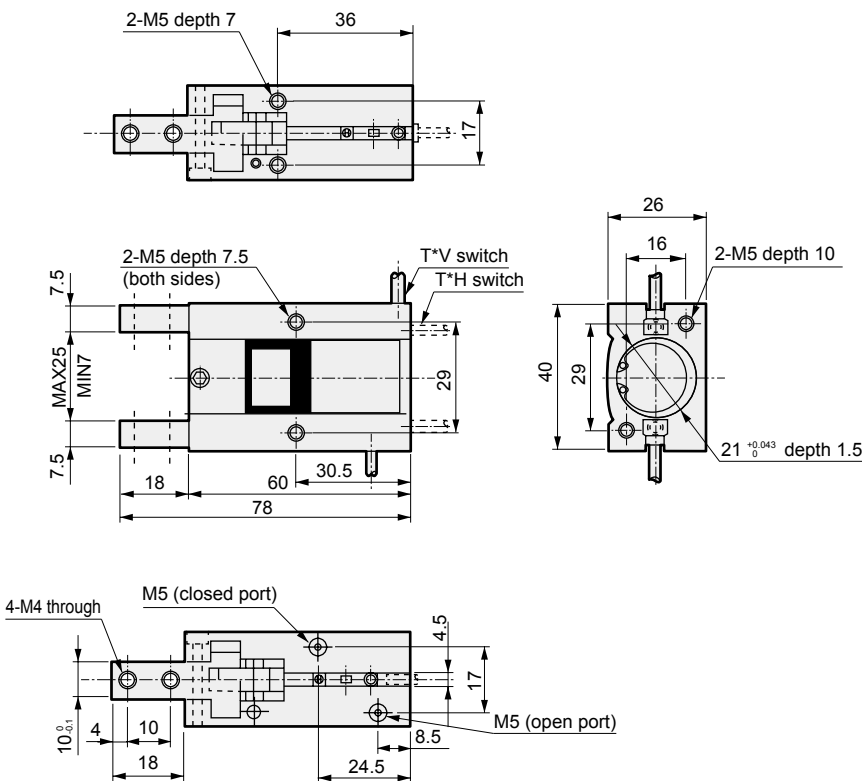
### ● With speed controller (FH116-Z)



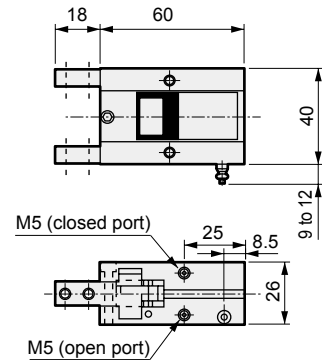
### ● With end mount



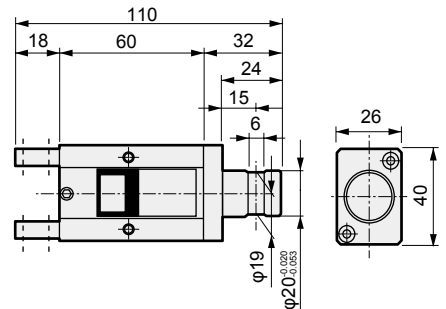
### ● FH120-D/FH120-O



### ● With speed controller (FH120-Z)



### ● With end mount

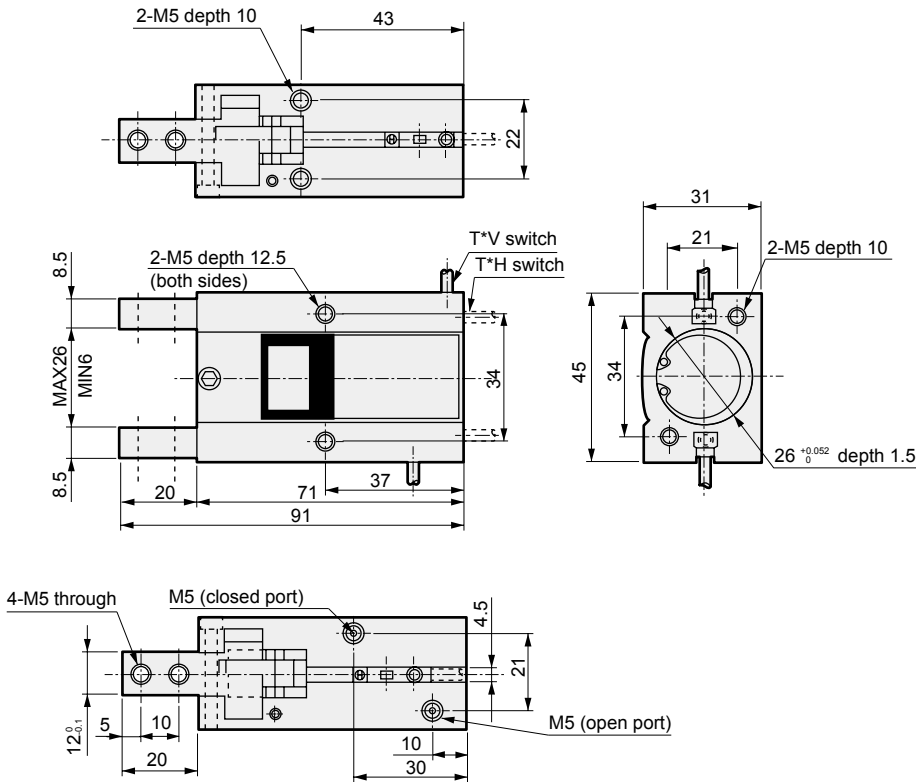


- LCW
- LCR
- LCG
- LCX
- LCM
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK\*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- JSB3
- LMB
- LML
- HCM
- HCA
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCC2
- RCS
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3\*
- NHS
- HR
- LN
- Hand**
- Chuk
- MecHnd/Chuk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

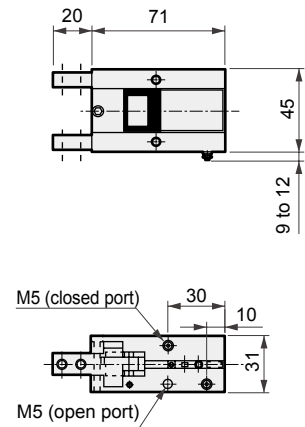
### Dimensions



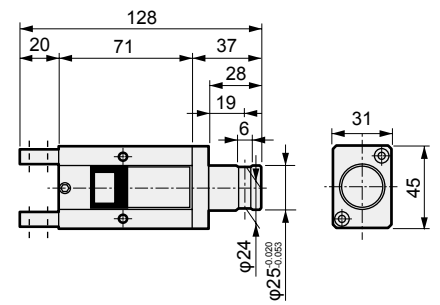
● FH125-D/FH125-O



● With speed controller (FH125-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          |
| <b>FH100</b> |
| 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          |