

## Electric Actuator 2-Finger Gripper

# FFLD-08

☐ 20 stepper motor



### How to order

**FFLD** - **08** **50** **N C N 30** - **LK** **S** **R 00**

**A** Gripping power

|           |     |
|-----------|-----|
| <b>08</b> | 80N |
|-----------|-----|

**C** Interface specifications

|           |         |
|-----------|---------|
| <b>LK</b> | IO-Link |
|-----------|---------|

**B** Stroke

|           |                            |
|-----------|----------------------------|
| <b>50</b> | 100 mm (single side 50 mm) |
|-----------|----------------------------|

**D** Relay cable

|             |               |
|-------------|---------------|
| <b>R 00</b> | Movable cable |
|-------------|---------------|

### Specifications

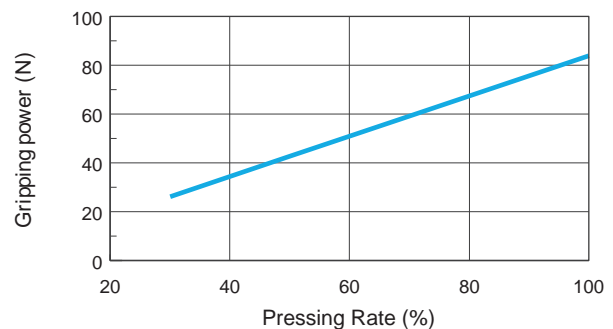
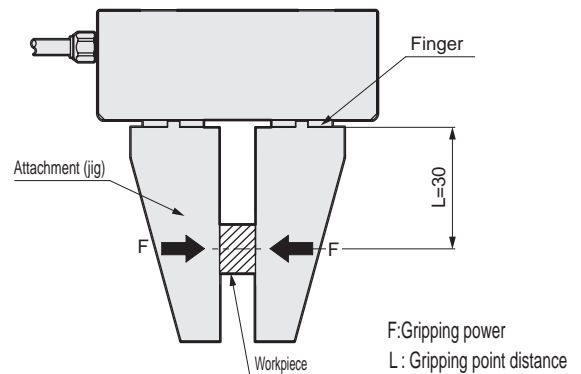
|  |   |                        |
|--|---|------------------------|
| Motor                                    | <input type="checkbox"/> 20 stepper motor                   |                        |
| Encoder type                             | Incremental encoder   |                        |
| Drive method                             | Rack and pinion, worm gear                                  |                        |
| Controller                               | Built in  |                        |
| Stroke                                   | mm  | 100 (50 per side)      |
| Max. gripping power *1                   | N   | 80 (per side)          |
| Open/close speed range                   | mm/s  | 1 to 10 (per side)     |
| Gripping speed range *1                  | mm/s  | 1 to 5 (per side)      |
| Repeatability *2                         | mm  | ±0.02                  |
| Positioning repeatability *3             | mm  | ±0.05 (per side)       |
| Lost motion                              | mm  | 0.4 or less (per side) |
| Static allowable moment                  | N·m   | MP: 15, MY: 15, MR: 15 |
| Settings tool                            | Setting software (S-Tools)                                  |                        |
| External interface                       | IO-Link   |                        |
| Power supply voltage                     | Communication/control                                       | 24 VDC ±10%            |
|  | Power   | 24 VDC ±10%            |
| Current consumption                      | Communication/control                                       | A 0.2 or less          |
|  | Power   | A 1.1 or less          |
| Motor section max. instantaneous current | A   | 1.5                    |
| Power capacity                           | Max. 100 W  |                        |
| Insulation resistance                    | 10 MΩ, 500 VDC  |                        |
| Withstand voltage                        | 500 VAC for 1 minute  |                        |
| Operating ambient temperature, humidity  | 0 to 40 °C (no freezing)<br>35 to 80% RH (no condensation)  |                        |
| Storage ambient temperature, humidity    | -10 to 50°C (no freezing)<br>35 to 80% RH (no condensation) |                        |
| Atmosphere                               | No corrosive gas, explosive gas, or dust                    |                        |
| Degree of protection                     | IP20  |                        |
| Weight                                   | kg  | 1.2                    |

\*1 Gripping is done with pressing operation.

\*2 Repeat accuracy indicates the variation when the same workpiece is repeatedly gripped at the same power, under the same operation conditions.

\*3 The stop position will vary if positioning repeatability is checked using the same point.

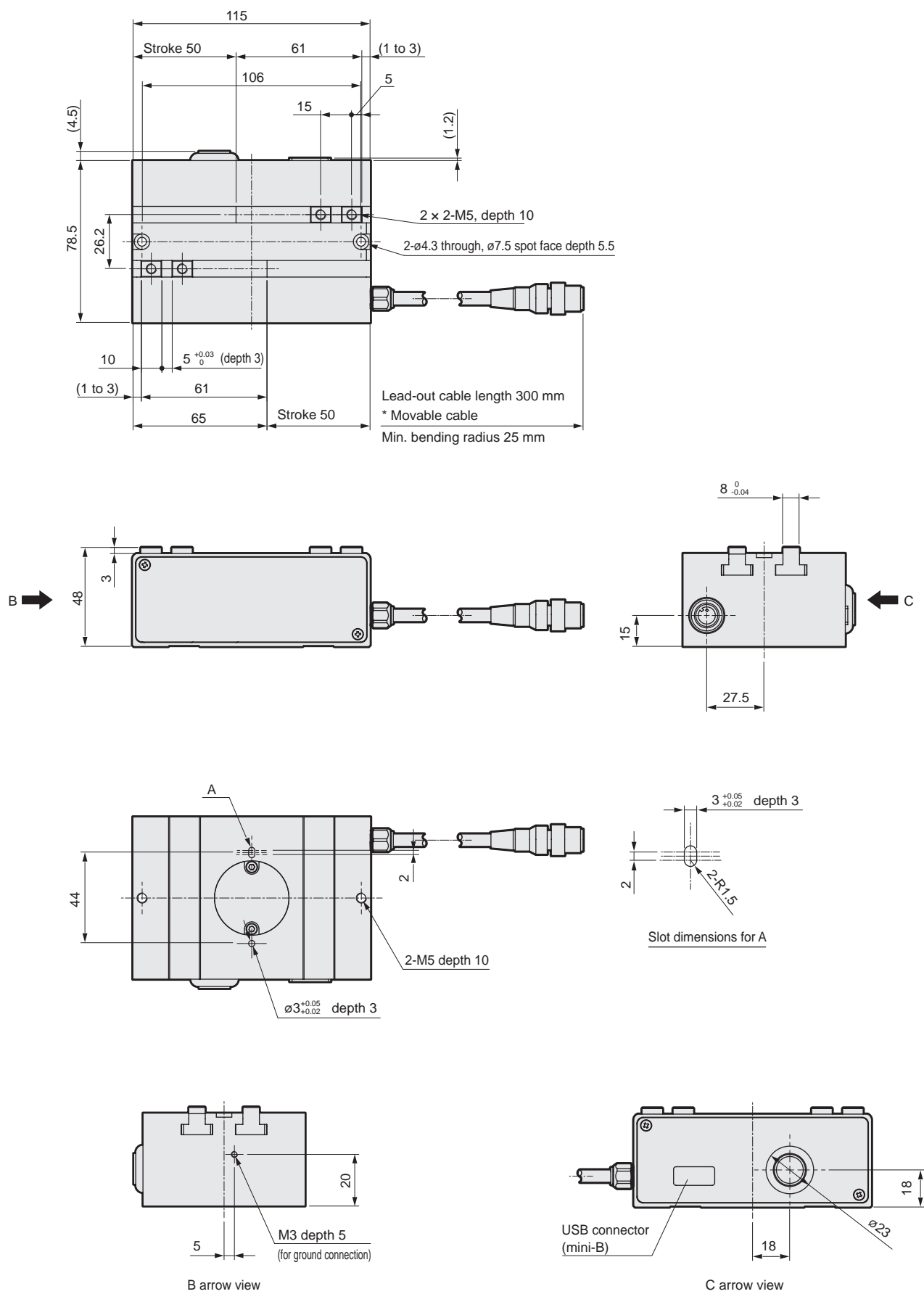
### Gripping power and pressing rate

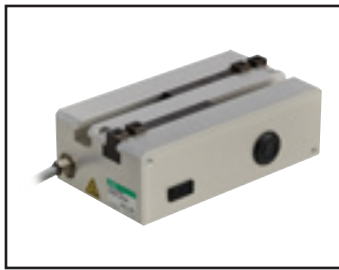


\* The gripping power and pressing rate correlation diagram is merely a guideline. Individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.

\* When gripping speed is 5mm/s. (L=30)

## Dimensions





## Electric Actuator 2-Finger Gripper

# FFLD-30

□ 25L stepper motor



### How to order

**FFLD** - **30** **70** **N C N 30** - **LK** **S** **R 00**

|                                      |                                   |
|--------------------------------------|-----------------------------------|
| <b>A</b> Gripping power              | <b>C</b> Interface specifications |
| <b>30</b> 300 N                      | <b>LK</b> IO-Link                 |
| <b>B</b> Stroke                      | <b>D</b> Relay cable              |
| <b>70</b> 140 mm (single side 70 mm) | <b>R 00</b> Movable cable         |

### Specifications

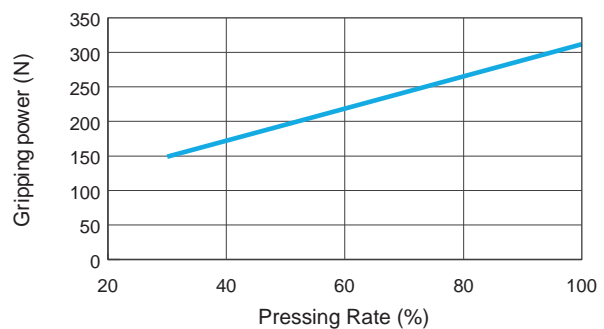
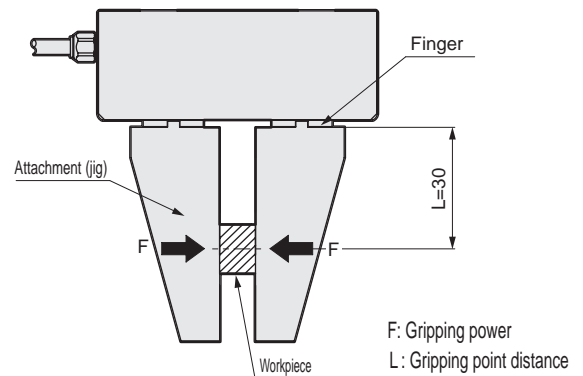
|  |   |                        |
|--|---|------------------------|
| Motor                                    | □ 25L stepper motor   |                        |
| Encoder type                             | Incremental encoder   |                        |
| Drive method                             | Rack and pinion, worm gear                                  |                        |
| Controller                               | Built in  |                        |
| Stroke                                   | mm  | 140 (70 per side)      |
| Max. gripping power *1                   | N   | 300 (per side)         |
| Open/close speed range                   | mm/s  | 1 to 10 (per side)     |
| Gripping speed range *1                  | mm/s  | 1 to 5 (per side)      |
| Repeatability *2                         | mm  | ±0.02                  |
| Positioning repeatability *3             | mm  | ±0.05 (per side)       |
| Lost motion                              | mm  | 0.4 or less (per side) |
| Static allowable moment                  | N·m   | MP: 45, MY: 45, MR: 45 |
| Settings tool                            | Setting software (S-Tools)                                  |                        |
| External interface                       | IO-Link   |                        |
| Power supply voltage                     | Communication/control                                       | 24 VDC ±10%            |
|  | Power   | 24 VDC ±10%            |
| Current consumption                      | Communication/control                                       | A 0.2 or less          |
|  | Power   | A 2.8 or less          |
| Motor section max. instantaneous current | A   | 4.0                    |
| Power capacity                           | Max. 100 W  |                        |
| Insulation resistance                    | 10 MΩ, 500 VDC  |                        |
| Withstand voltage                        | 500 VAC for 1 minute  |                        |
| Operating ambient temperature, humidity  | 0 to 40 °C (no freezing)<br>35 to 80% RH (no condensation)  |                        |
| Storage ambient temperature, humidity    | -10 to 50°C (no freezing)<br>35 to 80% RH (no condensation) |                        |
| Atmosphere                               | No corrosive gas, explosive gas, or dust                    |                        |
| Degree of protection                     | IP20  |                        |
| Weight                                   | kg  | 1.7                    |

\*1 Gripping is done with pressing operation.

\*2 Repeat accuracy indicates the variation when the same workpiece is repeatedly gripped at the same power, under the same operation conditions.

\*3 The stop position will vary if positioning repeatability is checked using the same point.

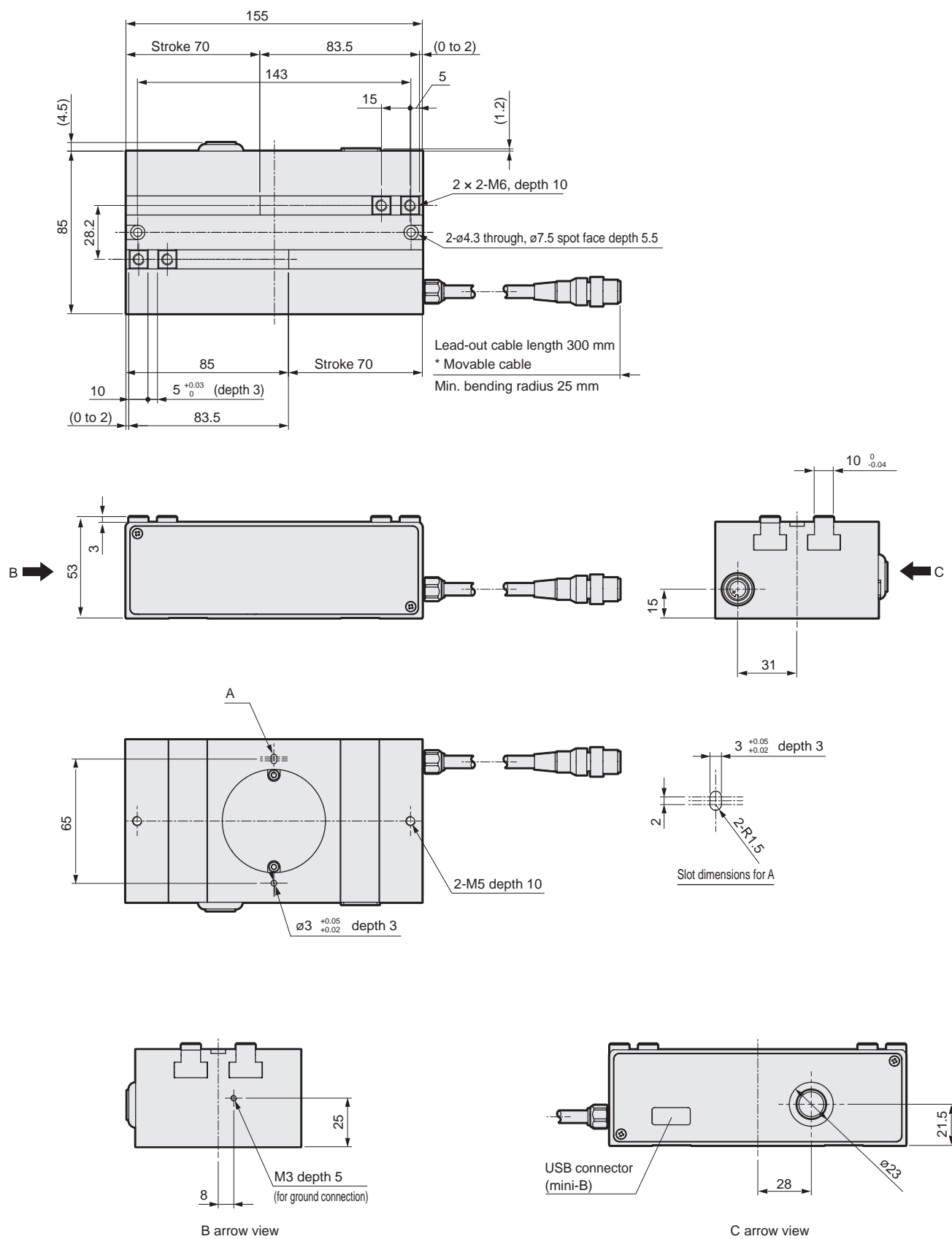
### Gripping power and pressing rate

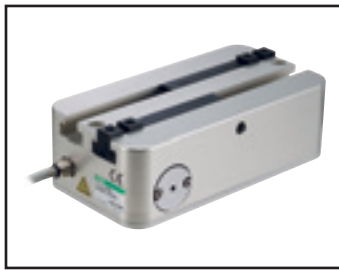


\* The gripping power and pressing rate correlation diagram is merely a guideline. Individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.

\* When gripping speed is 5mm/s. (L=30)

## Dimensions





## Electric Actuator 2-Finger Gripper

# FFLD-50

□ 25L stepper motor



### How to order

**FFLD** - **50** **80** **N C N 30** - **LK** **S** **R 00**

**A** Gripping power

|           |       |
|-----------|-------|
| <b>50</b> | 500 N |
|-----------|-------|

**C** Interface specifications

|           |         |
|-----------|---------|
| <b>LK</b> | IO-Link |
|-----------|---------|

**B** Stroke

|           |                            |
|-----------|----------------------------|
| <b>80</b> | 160 mm (single side 80 mm) |
|-----------|----------------------------|

**D** Relay cable

|             |               |
|-------------|---------------|
| <b>R 00</b> | Movable cable |
|-------------|---------------|

### Specifications

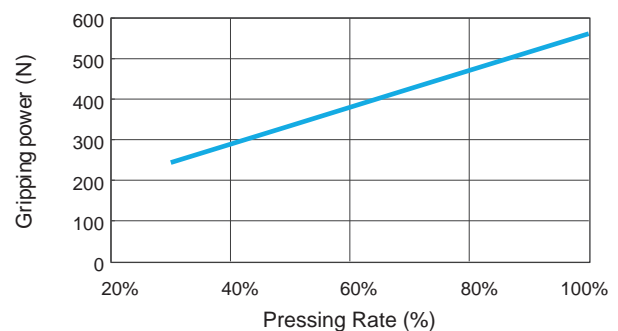
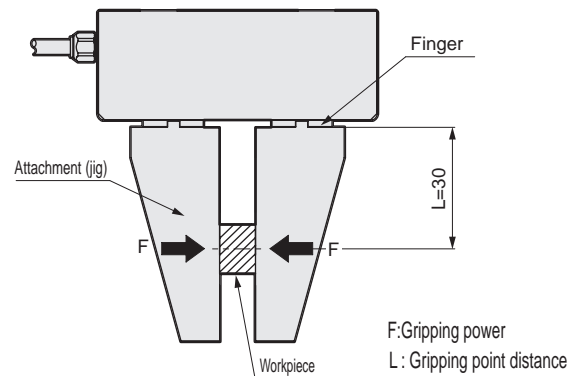
|  |  |                        |
|--|--|------------------------|
| Motor                                    | □ 25L stepper motor                      |                        |
| Encoder type                             | Incremental encoder                      |                        |
| Drive method                             | Rack and pinion, worm gear               |                        |
| Controller                               | Built in                                 |                        |
| Stroke                                   | mm                                       | 160 (80 per side)      |
| Max. gripping power *1                   | N  | 500 (per side)         |
| Open/close speed range                   | mm/s                                     | 1 to 10 (per side)     |
| Gripping speed range *1                  | mm/s                                     | 1 to 5 (per side)      |
| Repeatability *2                         | mm                                       | ±0.02                  |
| Positioning repeatability *3             | mm                                       | ±0.05 (per side)       |
| Lost motion                              | mm                                       | 0.4 or less (per side) |
| Static allowable moment                  | N·m                                      | MP: 64, MY: 55, MR: 64 |
| Settings tool                            | Setting software (S-Tools)               |                        |
| External interface                       | IO-Link                                  |                        |
| Power supply                             | Communication/control voltage            | 24 VDC ±10%            |
|  | Power                                    | 24 VDC ±10%            |
| Current consumption                      | Communication/control                    | 0.2 or less            |
|  | Power                                    | 2.8 or less            |
| Motor section max. instantaneous current | A  | 4.0                    |
| Power capacity                           | Max. 100 W                               |                        |
| Insulation resistance                    | 10 MΩ, 500 VDC                           |                        |
| Withstand voltage                        | 500 VAC for 1 minute                     |                        |
| Operating ambient temperature, humidity  | 0 to 40 °C (no freezing)                 |                        |
|  | 35 to 80% RH (no condensation)           |                        |
| Storage ambient temperature, humidity    | -10 to 50 °C (no freezing)               |                        |
|  | 35 to 80% RH (no condensation)           |                        |
| Atmosphere                               | No corrosive gas, explosive gas, or dust |                        |
| Degree of protection                     | IP20                                     |                        |
| Weight                                   | kg                                       | 2.5                    |

\*1 Gripping is done with pressing operation.

\*2 Repeat accuracy indicates the variation when the same workpiece is repeatedly gripped at the same power, under the same operation conditions.

\*3 The stop position will vary if positioning repeatability is checked using the same point.

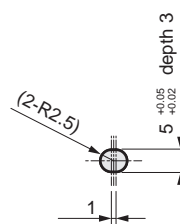
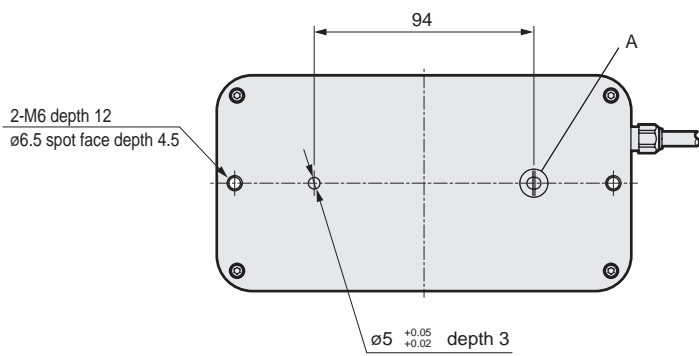
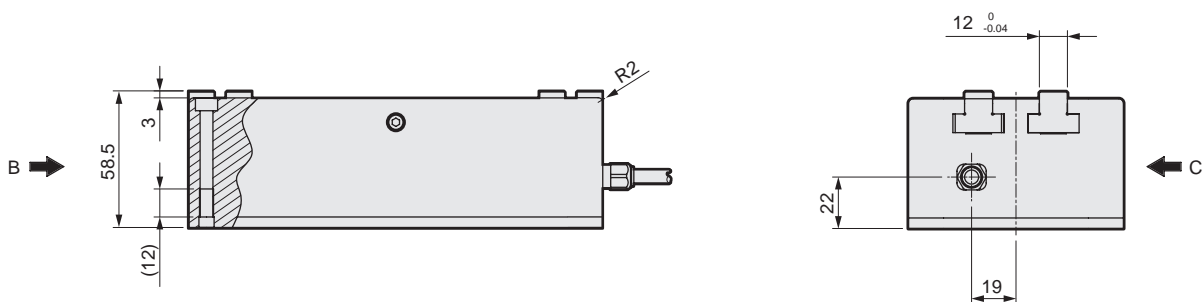
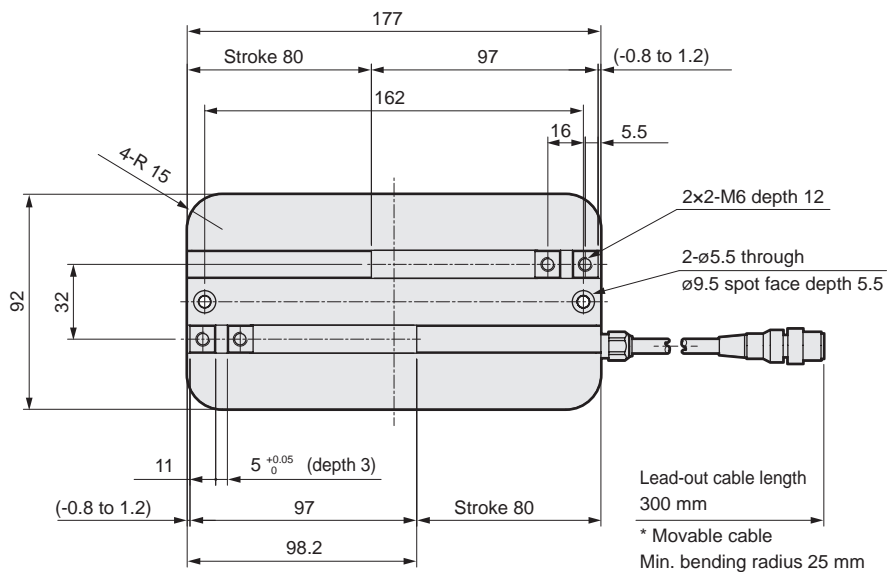
### Gripping power and pressing rate



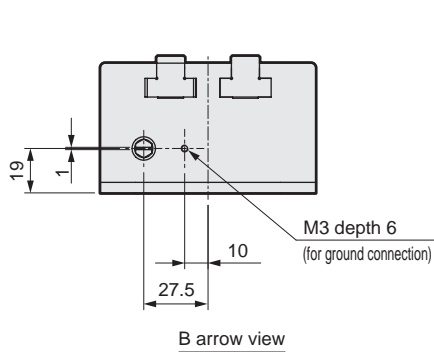
\* The gripping power and pressing rate correlation diagram is merely a guideline. Individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.

\* When gripping speed is 5mm/s. (L=30)

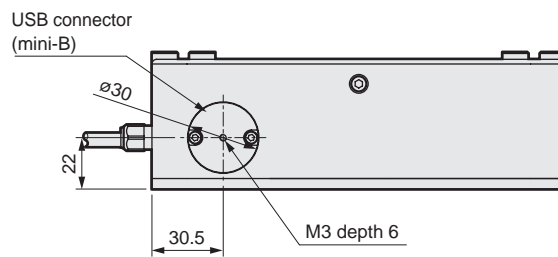
## Dimensions



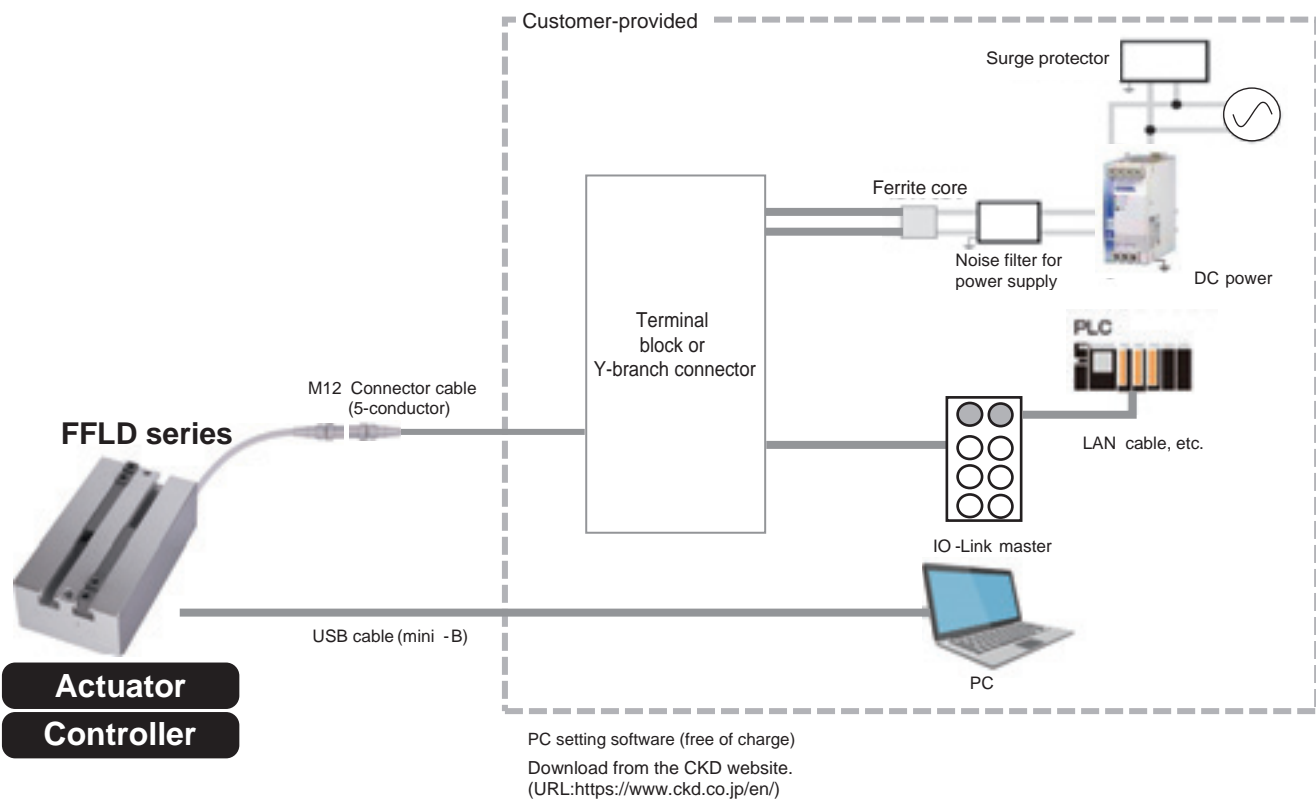
Slot dimensions for A



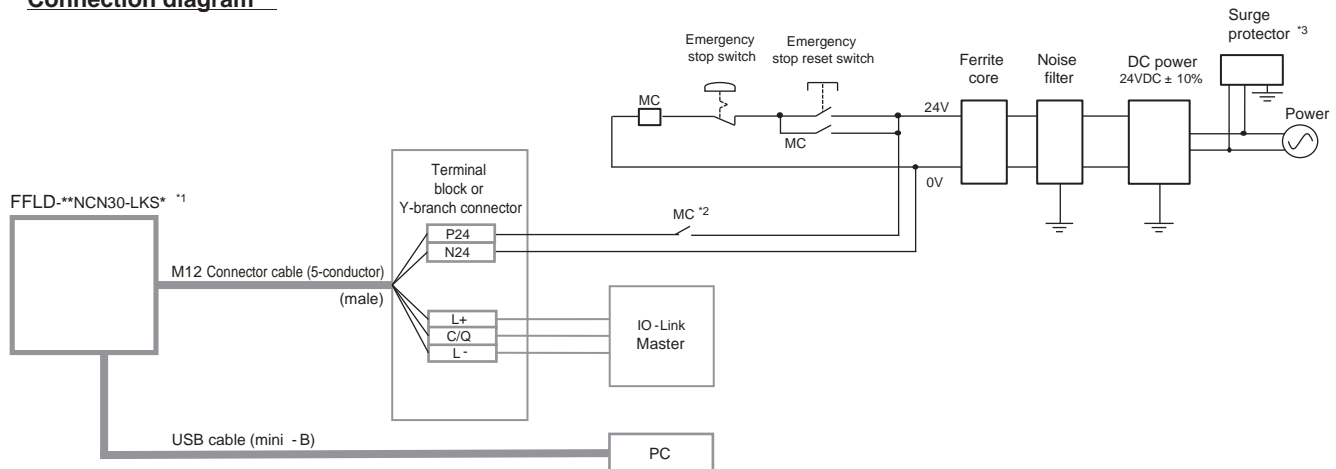
B arrow view



C arrow view



### Connection diagram

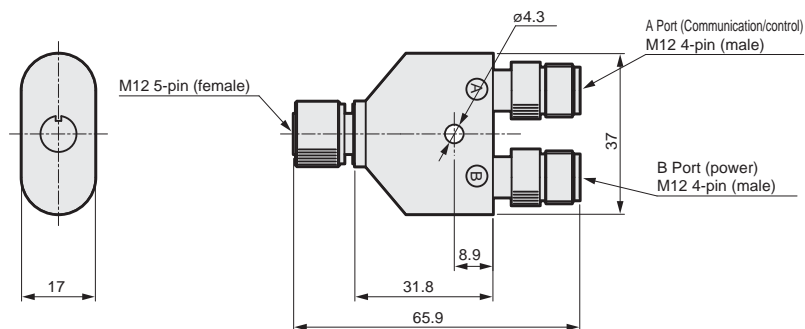


\*1 Product not compatible with IO-Link Class B. It is possible to connect to the IO-Link Class B master, however, communication/control and motor power supplies are isolated, so other equipment may be affected if an error occurs. Refer to the instruction manual before wiring. Incorrect wiring could result in part damage.

\*2 For safety category support, connect the contact of an electromagnetic switch or other device when motor drive power must be shut OFF.

\*3 A surge protector is required to comply with the CE marking.

### ● Y branch connector EA-YJOINT-1



Refer to the Instruction Manual for the wiring diagram.

### Field Network Description

| Overview |  |
|----------|--|
| FDP      | 64-point operation is possible. Switching the direct travel selection signal enables full direct value operation with which the operating conditions can be set to a desired value from the PLC. Monitoring can also be confirmed. Refer to the table below for details. |

|     | Direct value travel selection | Positioning point count | Direct value travel Item |       |               |                |                               |                |             |              |              | Monitor Item |         |       |
|-----|-------------------------------|-------------------------|--------------------------|-------|---------------|----------------|-------------------------------|----------------|-------------|--------------|--------------|--------------|---------|-------|
|     |                               |                         | Target position          | Speed | Pressing rate | Pressing speed | Position specification method | Operation mode | Stop method | Point zone + | Point Zone - | Position     | Current | Speed |
| FDP | 0                             | 64 points               | -                        | -     | -             | -              | -                             | -              | -           | -            | -            | ○            | ▲       | ▲     |
|     | 1                             | No limit                | ○                        | ○     | ○             | ○              | ○                             | ○              | ○           | ○            | ○            | ○            | ▲       | ▲     |

\*For ▲, use ▲ to select only 1 item to be monitored    -: N/A, ○ : Yes, ▲ : Conditional

#### [Communication specifications]

| Item                           | Specifications           |
|--------------------------------|--------------------------|
| Communication protocol version | V1.1                     |
| Transmission bit rate          | COM2 (38.4kbps)          |
| Port                           | Class A                  |
| Process data length (Input)    | 5 byte                   |
| PD (in) data length            |                          |
| Process data length (Output)   | 15 byte                  |
| PD (out) data length           |                          |
| Minimum cycle time             | 10ms                     |
| Monitor function               | Position, current, speed |

#### Cyclic data from master

| PD (out) | Bit    | Item  |
|----------|--------|---|
| 0        | 7      | -   |
|          | 6      | Stop  |
|          | 5      | Alarm reset   |
|          | 4      | Servo ON  |
|          | 3      | Origin return start                                 |
|          | 2      | Travel start  |
|          | 1      | Direct value travel selection                       |
|          | 0      | -   |
| 1        | 7      | -   |
|          | 6      | -   |
|          | 5      | Point number confirmation bit 5                     |
|          | 4      | Point number confirmation bit 4                     |
|          | 3      | Point number confirmation bit 3                     |
|          | 2      | Point number confirmation bit 2                     |
|          | 1      | Point number confirmation bit 1                     |
|          | 0      | Point number confirmation bit 0                     |
| 2 to 3   | 7 to 0 | Position (direct value travel)                      |
| 4        | 7 to 0 | Speed (direct value travel)                         |
| 5        | 7 to 0 | Pressing ratio (direct value travel)                |
| 6 to 7   | 7 to 0 | Pressing distance (direct value travel)             |
| 8        | 7 to 0 | Pressing speed (direct value travel)                |
| 9        | 7      | Position specification method (direct value travel) |
|          | 6 to 5 | Operation method (direct value travel)              |
|          | 4 to 3 | -   |
|          | 2 to 0 | Stop method (direct value travel)                   |
| 10 to 11 | 7 to 0 | Point zone(+) (direct value travel)                 |
| 12 to 13 | 7 to 0 | Point zone (-) (direct value travel)                |
| 14       | 7      | INCH selection                                      |
|          | 6      | JOG/INCH(+) Travel start                            |
|          | 5      | JOG/INCH (-) travel start                           |
|          | 4 to 3 | -   |
|          | 2 to 0 | Monitor selection                                   |

#### Cyclic data from controller

| PD (in) | Bit    | Item                            |
|---------|--------|---------------------------------|
| 0       | 7      | Operation preparation complete  |
|         | 6      | Warning                         |
|         | 5      | Alarm                           |
|         | 4      | Servo ON state                  |
|         | 3      | Origin return complete          |
|         | 2      | Travel complete                 |
|         | 1      | Moving                          |
|         | 0      | Point zone                      |
| 1       | 7      | Direct value travel status      |
|         | 6      | -                               |
|         | 5      | Point number confirmation bit 5 |
|         | 4      | Point number confirmation bit 4 |
|         | 3      | Point number confirmation bit 3 |
|         | 2      | Point number confirmation bit 2 |
|         | 1      | Point number confirmation bit 1 |
|         | 0      | Point number confirmation bit 0 |
| 2 to 3  | 7 to 0 | Current position                |
| 4       | 7 to 0 | Selection monitor               |