

# EC-GRST3

Simple  
dust-proof

Slider

2-Finger

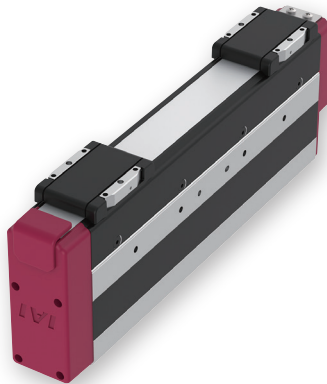
Body Width  
**40**  
mm**24v**  
Stepper  
Motor

## Model Specification Items

EC - GRST3

| Series | Type | Deceleration ratio                                                              | Stroke                             | Actuator cable length                          | Power • I/O cable length                | Option                |
|--------|------|---------------------------------------------------------------------------------|------------------------------------|------------------------------------------------|-----------------------------------------|-----------------------|
|        | M    | Standard<br>Ball screw<br>Lead 2.5mm<br>Pulley deceleration ratio 1.05          | 50<br>50mm<br>(25mm per finger)    | Refer to the actuator cable length table below | Refer to Power • I/O cable length below | Refer to Option below |
|        | L    | High-thrust force<br>Ball screw<br>Lead 2.5mm<br>Pulley deceleration ratio 1.64 | 100<br>100mm<br>(50mm per finger)  |                                                |                                         |                       |
|        |      |                                                                                 | 150<br>150mm<br>(75mm per finger)  |                                                |                                         |                       |
|        |      |                                                                                 | 200<br>200mm<br>(100mm per finger) |                                                |                                         |                       |

\*NPN specification is standard. PNP option is available.



## Stroke

| Stroke<br>(mm) | EC-GRST3                                  |                       |
|----------------|-------------------------------------------|-----------------------|
|                | RCON-EC connection specification (Note 1) | NPN/PNP specification |
| 50             | ✓                                         | ✓                     |
| 100            | ✓                                         | ✓                     |
| 150            | ✓                                         | ✓                     |
| 200            | ✓                                         | ✓                     |

(Note 1) Make sure to select "ACR" option.

## Options \* Please check the Options reference pages to confirm each option.

| Name                                                    | Option code | Reference page |
|---------------------------------------------------------|-------------|----------------|
| RCON-EC connection specification (Note 3) (Note 4)      | ACR         | 43             |
| Brake                                                   | B           | 43             |
| Cable exit orientation (bottom)                         | CJB         | 43             |
| Cable exit orientation (left)                           | CJL         | 43             |
| Cable exit orientation (right)                          | CJR         | 43             |
| Specified grease specification                          | G1/G5       | 43             |
| Finger attachment mounting jig                          | MJF         | 44             |
| Closed homing specification                             | NM          | 45             |
| PNP specification (Note 3)                              | PN          | 45             |
| Split motor and controller power specification (Note 3) | TMD2        | 46             |
| Battery-less absolute encoder specification             | WA          | 46             |
| Wireless communication specification (Note 4)           | WL          | 46             |
| Wireless axis operation specification (Note 4)          | WL2         | 46             |

(Note 3) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected. The interface box and conversion cable are not included.

(Note 4) If the RCON-EC connection specification (ACR) is selected, the wireless communication specification (WL) and wireless axis operation specification (WL2) cannot be selected. For wireless communication (WL) with RCON-EC connection, an interface box, conversion cable and power • I/O cable should be ordered separately. Refer to P5 for details. For the wireless axis operation specification (WL2), contact one of IAI representatives.

## Sold Separately \*Please check the Options reference pages to confirm each option.

| Name                                                                                                            | Model               | Reference page |
|-----------------------------------------------------------------------------------------------------------------|---------------------|----------------|
| Interface box conversion cable                                                                                  | CB-CVN-BJ002        | 54             |
| RCON-EC connection specification power • I/O cable (Standard connector cable)                                   | CB-REC-PWBIO□□□-RB  | 57             |
| RCON-EC connection specification power • I/O cable (4-way connector cable)                                      | CB-REC2-PWBIO□□□-RB | 57             |
| Interface box for Split motor and controller power specification of RCON-EC connection (Wireless specification) | ECW-CVNWLCB-ACR     | 54             |

(Note) Power • I/O cable is a robot cable.  
Specify the cable length in □□□. (Ex. 010=10m)



- (1) The maximum open/close speed in the Main Specifications represents the operation speed for one side. The relative operation speed is twice the value.
- (2) The maximum grip force in the Main Specifications is the total of the grip force of both fingers when the grip point distance and overhang distance are both 0. For the workpiece weight which can actually be conveyed, refer to the Confirmation of Grip Point Distance table below.
- (3) When gripping the workpiece, be sure to use push-motion operation.
- (4) Duty must be restricted depending on the ambient operating temperature. Refer to P46 for details.
- (5) Pay close attention to the installation orientation. Refer to P7 for details.
- (6) The workpiece grip force will be maintained via self-lock even during power cutoffs. (However, this does not guarantee that the workpiece will not be dropped.) To move the slider fingers during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

## Actuator cable length

| Cable code | Cable length     | Actuator cable length |
|------------|------------------|-----------------------|
| 1 ~ 3      | 1 ~ 3m           | ✓                     |
| 4 ~ 5      | 4 ~ 5m           | ✓                     |
| 6 ~ 10     | 6 ~ 10m (Note 5) | ✓                     |

(Note 5) When connection is via the interface box, the maximum length is 9m.

(Note) Select the cable so that the total length with the actuator cable is 10m or less.

(Note) Robot cable is standard

## Power • I/O Cable Length

### Standard connector cable

| Cable code | Cable length | User wiring specification<br>(flying leads) |
|------------|--------------|---------------------------------------------|
|            |              | CB-EC-PWBIO□□□-RB supplied                  |
| 0          | No cable     | ✓ (Note 6)                                  |
| 1 ~ 3      | 1 ~ 3m       | ✓                                           |
| 4 ~ 5      | 4 ~ 5m       | ✓                                           |
| 6 ~ 9      | 6 ~ 9m       | ✓                                           |

(Note 6) Only the terminal connector is included. \* Choose "0" if optional RCON-EC connection specification (ACR) is selected. Power-I/O cable is not included. Refer to P53 for details.

(Note) Robot cable is standard

### 4-way connector cable

| Cable code | Cable length | User wiring specification<br>(flying leads) |
|------------|--------------|---------------------------------------------|
|            |              | CB-EC2-PWBIO□□□-RB supplied                 |
| S1 ~ S3    | 1 ~ 3m       | ✓                                           |
| S4 ~ S5    | 4 ~ 5m       | ✓                                           |
| S6 ~ S9    | 6 ~ 9m       | ✓                                           |

(Note) Robot cable is standard

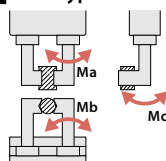
## Main Specifications

| Item                | Description                                          | Deceleration ratio                 |      |
|---------------------|------------------------------------------------------|------------------------------------|------|
|                     |                                                      | M                                  | L    |
| Lead                | Ball screw lead (mm)                                 | 2.5                                | 2.5  |
|                     | Pulley deceleration ratio                            | 1.05                               | 1.64 |
| Grip operation      | Max. grip force (N) (both sides)                     | 125                                | 325  |
|                     | Max. speed during grip operation (mm/s) (per finger) | 20                                 | 20   |
| Approach operation  | Max. speed (mm/s) (per finger)                       | 175                                | 107  |
|                     | Min. speed (mm/s) (per finger)                       | 10                                 | 10   |
|                     | Rated acceleration/deceleration (G) (per finger)     | 0.3                                | 0.3  |
|                     | Max. acceleration/deceleration (G) (per finger)      | 0.3                                | 0.3  |
| Brake               | Brake specification                                  | non-exciting electromagnetic brake |      |
|                     | Brake-holding force (N) (both sides)                 | 131                                | 206  |
| Stroke (per finger) | Min. stroke (mm) (per finger)                        | 25                                 | 25   |
|                     | Max. stroke (mm) (per finger)                        | 100                                | 100  |

| Item                                    | Description                                                                              |
|-----------------------------------------|------------------------------------------------------------------------------------------|
| Drive system                            | Coupled left and right handed ball screws $\phi 8\text{mm}$ , Rolled C10                 |
| Positioning repeatability               | $\pm 0.05\text{mm}$                                                                      |
| Lost motion                             | - (notation not available due to 2-point positioning function)                           |
| Backlash (per finger)                   | 0.3mm or less                                                                            |
| Base                                    | Dedicated aluminum extruded material (equivalent to A6063SS-T5)<br>Black alumite treated |
| Linear guide                            | Direct-acting infinite circulation type                                                  |
| Static allowable moment                 | Ma : 9.9 N-m                                                                             |
|                                         | Mb : 14.2 N-m                                                                            |
|                                         | Mc : 17.2 N-m                                                                            |
| Vertical allowable load<br>(Note 7)     | 810N                                                                                     |
| Ambient operating temperature, humidity | 0 ~ 40°C, 85%RH or less (no condensation)                                                |
| Degree of protection                    | IP20                                                                                     |
| Vibration/shock resistance              | 4.9m/s <sup>2</sup>                                                                      |
| Overseas standards                      | CE marking, RoHS directive                                                               |
| Motor type                              | Stepper motor (□28) (Power capacity: maximum 2A)                                         |
| Encoder type                            | Incremental (standard) / battery-less absolute (option)                                  |
| Number of encoder pulses                | 16384 pulse/rev                                                                          |

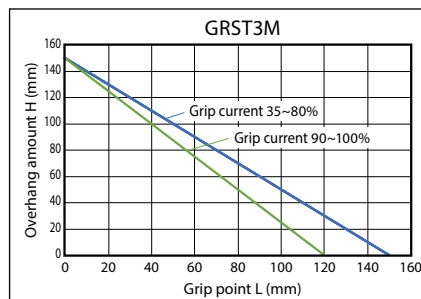
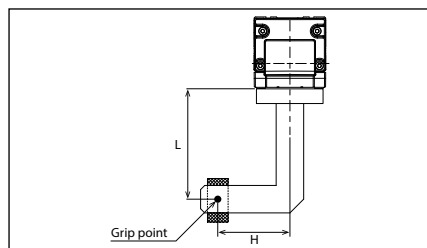
(Note 7) Use at a load exceeding the value above could reduce operation life or lead to damage.

### Slide type moment direction

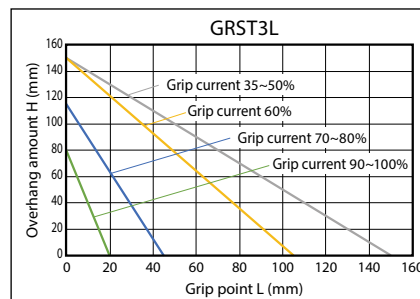


## Confirmation of Grip Point Distance

Use with distance (L, H) from finger (jaw) mounting surface to grip point within the range in the graph.

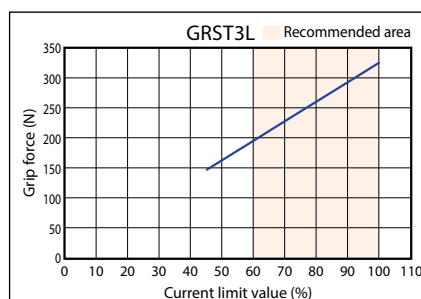
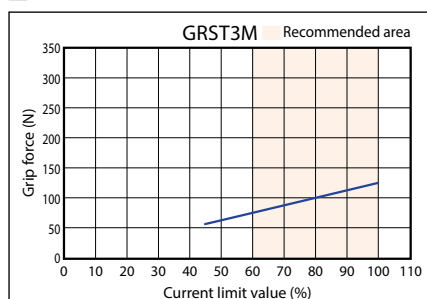


(Note) Use beyond the limited range will cause excessive moment loading on the finger sliding part and interior mechanisms, negatively affecting operation life.

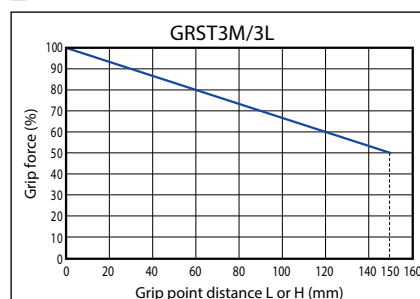


## Grip Force

### Correlation diagram between grip force and current limit value



### Guidelines for grip point distance and grip force



(Note) Total value of both fingers when grip point distance (L, H) is 0.

(Note) These are reference values. There is a potential variation of 0 to 60%, in particular if the current limit values are set outside of the recommended range (colored part of the graph).

(Note) For gripping (pushing), the speed is 20mm/s. When the approach speed is 20mm/s or less, gripping is carried out at the approach speed.

(Note) Shows grip force of overhang position when maximum grip force is set to 100%. The results may differ due to the rigidity of the finger attachment used.

\*1 Plugged with a set screw to prevent contamination with foreign matter. Remove when using mounting surface.

\*1 Pay attention to the bolt length being used for mounting, because if the bolt is deeper than the depth shown in the drawing, it may interfere with internal parts.

(Note) The opening side is home as standard. To set the closing side as home, designate the option (model: NM).

(Note) Secure the cable so that the base of the cable does not move.

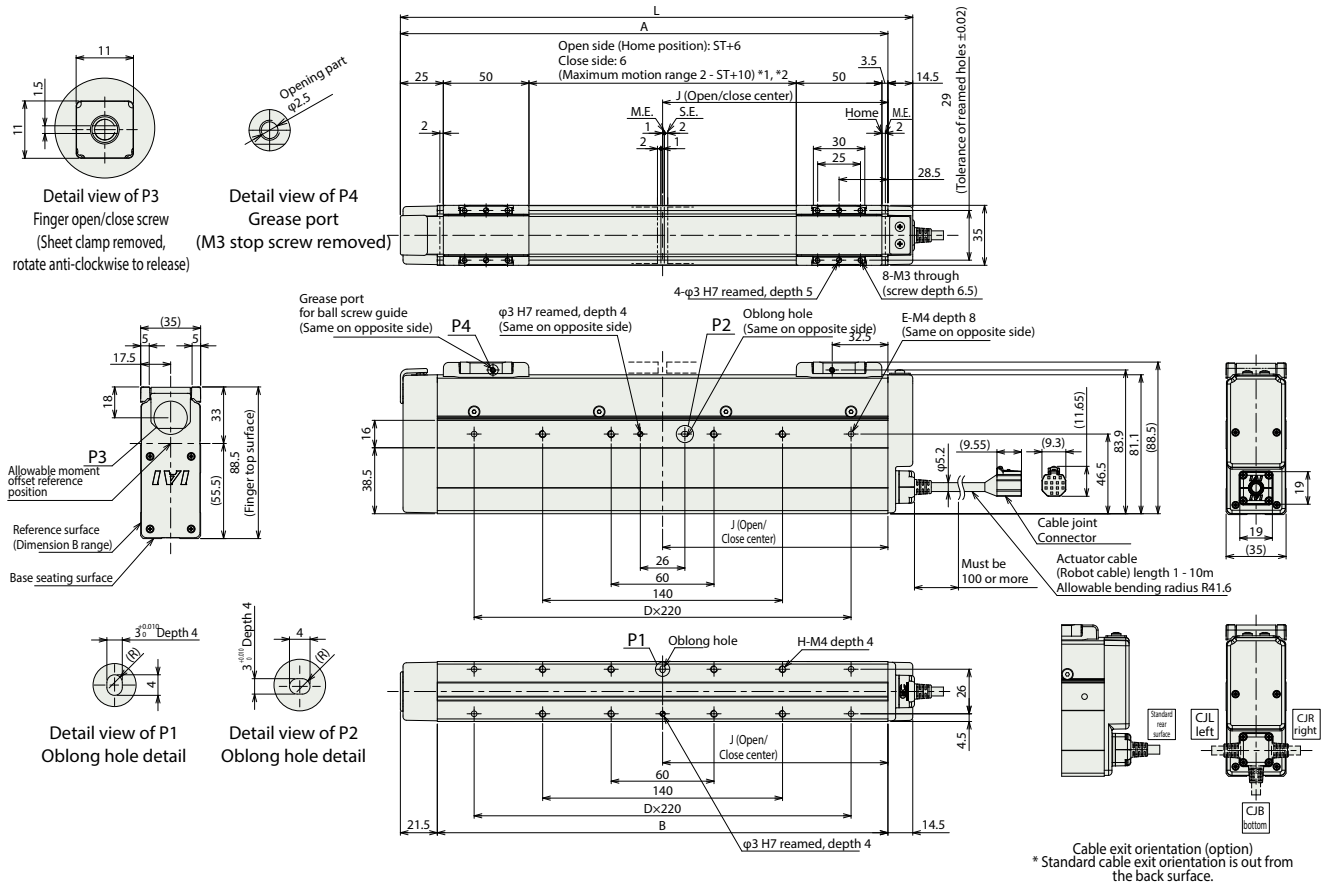
The cable can be disconnected and replaced. (Attached to a connector in the cable box)

The cable exit orientation (optional) can be changed by changing the direction of the cable box.

ST: Stroke

M.E.: Mechanical end

S.E.: Stroke end



### ■ Dimensions by stroke

| Stroke | 50    | 100   | 150   | 200   |
|--------|-------|-------|-------|-------|
| L      | 199   | 249   | 299   | 349   |
| A      | 184.5 | 234.5 | 284.5 | 334.5 |
| B      | 163   | 213   | 263   | 313   |
| D      | 0     | 0     | 1     | 1     |
| E      | 4     | 4     | 6     | 6     |
| H      | 8     | 8     | 12    | 12    |
| J      | 81.5  | 106.5 | 131.5 | 156.5 |

### ■ Mass by stroke

| Stroke    |        |               | 50  | 100 | 150 | 200 |
|-----------|--------|---------------|-----|-----|-----|-----|
| Mass (kg) | GRST3M | Without brake | 1.0 | 1.1 | 1.3 | 1.4 |
|           |        | With brake    | 1.2 | 1.3 | 1.5 | 1.6 |
|           | GRST3L | Without brake | 1.1 | 1.2 | 1.3 | 1.5 |
|           |        | With brake    | 1.3 | 1.4 | 1.5 | 1.7 |

## Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 52 for details on built-in controllers.