IAI
Quality and Innovation

GB

Simple-to-use ELECYLINDER with Built-in Controller
Medium & Large Vertical 2-Finger Gripper Standard & High-thrust Type

EC GRB 8/10/13 M/L

Simple-to-use ELECYLINDER with Built-in Controller
Medium Flat 2-Finger Gripper Standard & High-thrust Type

EC GRC 6/7 M/L

Simple-to-use ELECYLINDER with Built-in Controller
Small & Medium Long Stroke 2-Finger Gripper Standard & High-thrust Type

EC GRST 3/6/7 M/L

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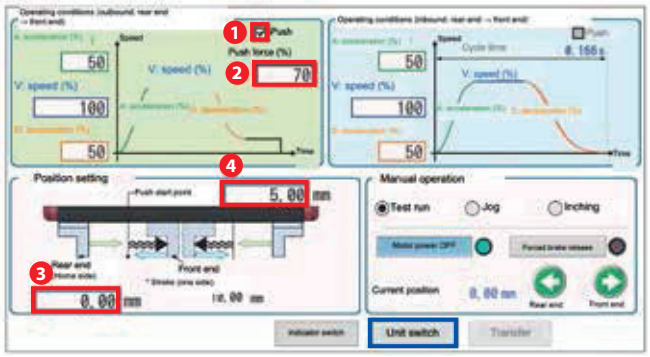
ELECYLINDER

ELECYLYNDER GRIPPER TYPE

Easy setting

Teaching pendant [TB-03] simple data setting screen



Setting complete in just 4 steps!

Step 1 Check at "Push" — Gripping is done with push-motion operation.

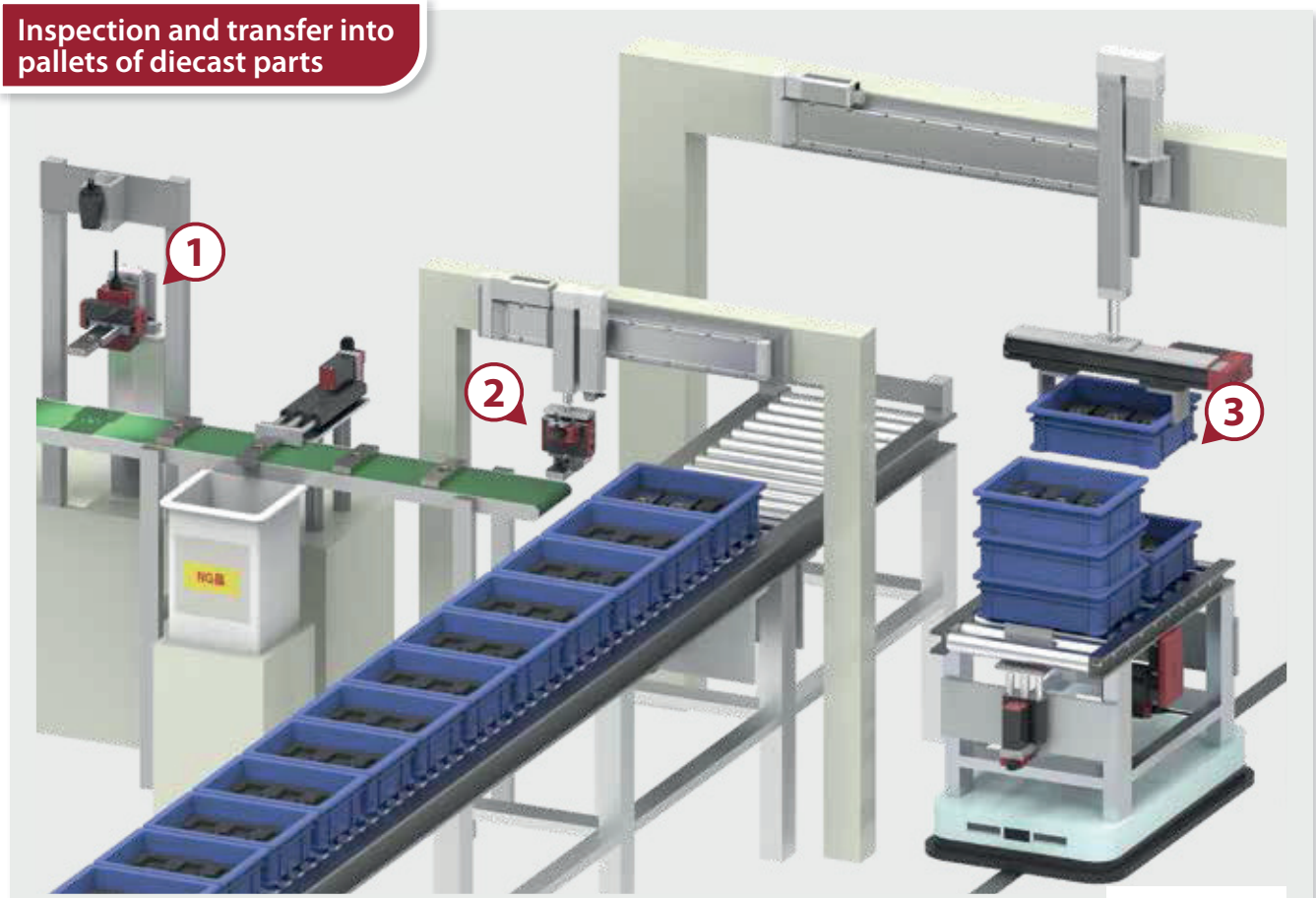
Step 2 Set grip force — Setting by switching to Newton display (guideline value) with "**Unit change**" is also possible.

Step 3 Set standby position

Step 4 Set grip start point

The precise numerical setting allows for gripping of easily deformable workpieces

Inspection and transfer into pallets of diecast parts



①: Inspection of front and back of the parts using a flat gripper and rotary combined.

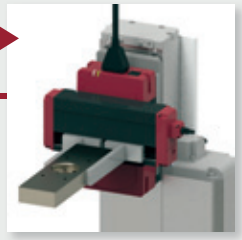
②: Transfer of parts to the pallet using a vertical gripper installed on the rod tip.

③: The long-stroke gripper grabs the pallets and places them on an AGV.

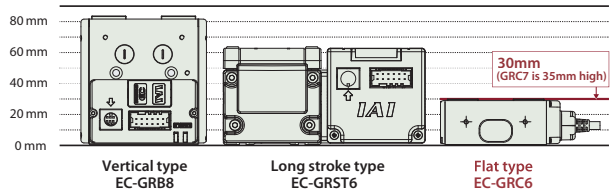
Flat type, vertical type and long stroke type grippers with built-in controller

Flat type

EC-GRC



Point Low profile, with heights of 30-35mm



Point Industry-leading performance

Model	GRC6	GRC7	
Lead	M Standard	M Standard	L High-thrust force
Max. grip force (both sides)	36N	150N	350N
Max. speed when approaching	52.5mm/s	137.5mm/s	87.5mm/s
Main unit mass	0.32/0.4kg	0.4-0.96kg	

Vertical type

EC-GRB

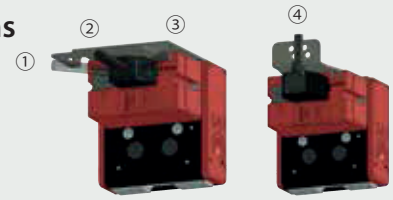
Point Best suited for use in multiaxis systems

The vertical type is suitable for mounting on the Z-axis tip.

There is only one ø7.2 cable, making wiring easy.

The cable mounting bracket (optional) allows for easier wiring and cable routing.

Cable mounting bracket (optional)

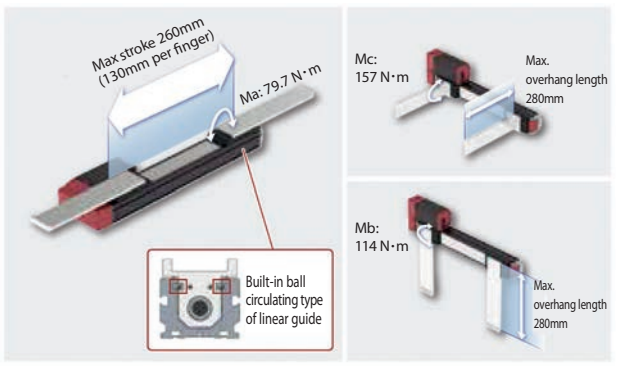


Supports 4-way cable exit

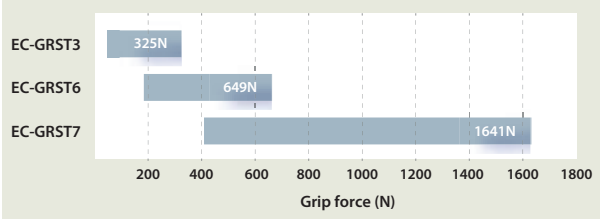
Long stroke type

EC-GRST

Point Long stroke and high-rigidity



Point High grip force up to 1641N (both sides)



Model Specification Items

EleCylinder Vertical Gripper

EC - [Type] [Reduction ratio] - [Stroke (both sides)] - [Power / I/O cable length] - [Options]

Series

Type

GRB8	82mm width
GRB10	98mm width
GRB13	130mm width

Reduction ratio

<GRB8>

M		Trapezoidal screw Lead 1.5mm Pulley Reduction ratio 1.5

<GRB10>

M		Trapezoidal screw Lead 1.5mm Pulley Reduction ratio 1.15

<GRB13>

M	Standard	Trapezoidal screw Lead 2mm Pulley Reduction ratio 1.25
L	High thrust force	Trapezoidal screw Lead 2mm Pulley Reduction ratio 2.5

Stroke (both sides)

<GRB8>

20	20mm (10mm per finger)

<GRB10>

30	30mm (15mm per finger)

<GRB13>

40	40mm (20mm per finger)

Power / I/O cable length

0	No cable Power / I/O connector included *
(S) 1	1m
〜	〜
(S) 10	10m

(every 1 m)

(S): 4-way connector cable

* Power / I/O connector is not included if RCON-EC connection specification(ACR) is selected.

Options

Blank	Incremental encoder specification, NPN specification, without option
ACR	RCON-EC connection specification *1
FST	Cable mounting bracket (front)
NM	Non-motor end specification
PN	PNP specification *1
TMD2	Split motor and controller power supply pecification *1
TST	Cable mounting bracket (top) *2
WA	Battery-less absolute encoder specification *3
WL	Wireless communication specification
WL2	Wireless axis operation specification

*1 "PN" and "TMD2" cannot be selected when "ACR" is selected

*2 Can only be selected with the 4-way connector cable.

*3 Available only for GRB10/GRB13.

EleCylinder Flat Gripper

EC - [Type] [Reduction ratio] - [Stroke (both sides)] - [Actuator cable length] - [Power / I/O cable length] - [Options]

Series

Type

GRC6	60mm width
GRC7	70mm width

Reduction ratio

<GRC6>

M		Trapezoidal screw Lead 1.5mm Pulley Reduction ratio 1.43

<GRC7>

M	Standard	Ball screw Lead 2.5mm Pulley Reduction ratio 1.36
L	High thrust force	Ball screw Lead 2.5mm Pulley Reduction ratio 2.14

Stroke (both sides)

<GRC6>

20	20mm (10mm per finger)
30	30mm (15mm per finger)

<GRC7>

20	20mm (10mm per finger)
40	40mm (20mm per finger)
60	60mm (30mm per finger)
80	80mm (40mm per finger)

Actuator cable length

1	1m
〜	〜
10	10m

(every 1m)

(Note) When using an interface box, the maximum actuator cable length is 9m.

Power / I/O cable length

0	No cable Power / I/O connector included *
(S)1	1m
〜	〜
(S)9	9m

(every 1m)

(S): 4-way connector cable

* Choose "0" if RCON-EC connection specification (ACR) is selected. Power / I/O connector is not included.

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

Options

Blank	Incremental encoder specification, NPN specification, without option
ACR	RCON-EC connection specification *1, *4
B	Brake *2
CJB	Cable exit direction (bottom)
CJL	Cable exit direction (left)
CJR	Cable exit direction (right)
CJT	Cable exit direction (top)
G1/G5	Designated grease specification *3
MJF1	Finger attachment mounting jig (Open/close direction screw hole)
MJF2	Finger attachment mounting jig (Side screw hole)
MJF3	Finger attachment mounting jig (Open/close direction through hole)
NM	Non-motor end specification
PN	PNP specification *1
TMD2	Split motor and controller power supply specification *1
WA	Battery-less absolute encoder specification
WL	Wireless communication specification *4
WL2	Wireless axis operation specification *4

*1 "PN" and "TMD2" cannot be selected, when "ACR" is selected.

*2 Can only be selected for 40/60/80 strokes of GRC7.

*3 Can only be selected for GRC7.

*4 When "ACR" is selected, "WL" and "WL2" cannot be selected. (For wireless communication, an interface box and cable must be ordered separately.)

EleCylinder Long Stroke Gripper (EC-GRST3)

EC - [Type] [Reduction ratio] - [Stroke (both sides)] - [Actuator cable length] - [Power / I/O cable length] - [Options]

Series

Type

GRST3	35mm width

Reduction ratio

M	Standard	Ball screw Lead 2.5mm Pulley Reduction ratio 1.05
L	High thrust force	Ball screw Lead 2.5mm Pulley Reduction ratio 1.64

Stroke (both sides)

50	50mm (25mm per finger)
100	100mm (50mm per finger)
150	150mm (75mm per finger)
200	200mm (100mm per finger)

Actuator cable length

1	1m
≀	≀
10	10m

(every 1m)

(Note) When using an interface box, the maximum actuator cable length is 9m.

Power / I/O cable length

0	No cable Power / I/O connector included *
(S) 1	1m
≀	≀
(S) 9	9m

(every 1m)

(S): 4-way connector cable

* Choose "0" if RCON-EC connection specification (ACR) is selected. Power / I/O connector is not included.

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

Options

Blank	Incremental encoder specification, NPN specification, without option
ACR	RCON-EC connection specification *1, *2
B	Brake
CJB	Cable exit direction (bottom)
CJL	Cable exit direction (left)
CJR	Cable exit direction (right)
G1/G5	Designated grease specification
MJF	Finger attachment mounting jig
NM	Non-motor end specification
PN	PNP specification *1
TMD2	Split motor and controller power supply specification *1
WA	Battery-less absolute encoder specification
WL	Wireless communication specification *2
WL2	Wireless axis operation specification *2

*1 "PN" and "TMD2" cannot be selected when "ACR" is selected.

*2 When "ACR" is selected, "WL" and "WL2" cannot be selected.
(For wireless communication, an interface box and cable must be ordered separately.)

EleCylinder Long Stroke Gripper (EC-GRST6/GRST7)

EC - [Type] [Reduction ratio] - [Stroke (both sides)] - [Power / I/O cable length] - [Options]

Series

Type

GRST6	63mm width
GRST7	73mm width

Reduction ratio

<GRST6>

M	Standard	Ball screw Lead 3mm Pulley Reduction ratio 1
L	High thrust force	Ball screw Lead 3mm Pulley Reduction ratio 1.44

<GRST7>

M	Standard	Ball screw Lead 4mm Pulley Reduction ratio 1
L	High thrust force	Ball screw Lead 4mm Pulley Reduction ratio 1.5

Stroke (both sides)

<GRST6>

180	180mm (90mm per finger)
230	230mm (115mm per finger)

<GRST7>

210	210mm (105mm per finger)
260	260mm (130mm per finger)

Power / I/O cable length

0	No cable Power / I/O connector included *
(S)1	1m
≀	≀
(S)10	10m

(every 1m)

(S): 4-way connector cable

* Power / I/O connector is not included if RCON-EC connection specification(ACR) is selected.

Options

Blank	Incremental encoder specification, NPN specification, without option
ACR	RCON-EC connection specification *1
B	Brake
G1/G5	Designated grease specification
ML	Motor side-mounted (left) *2
MR	Motor side-mounted (right) *2
NM	Non-motor end specification
PN	PNP specification *1
SR	Slider roller specification
TMD2	Split motor and controller power supply specification *1
WA	Battery-less absolute encoder specification
WL	Wireless communication specification
WL2	Wireless axis operation specification

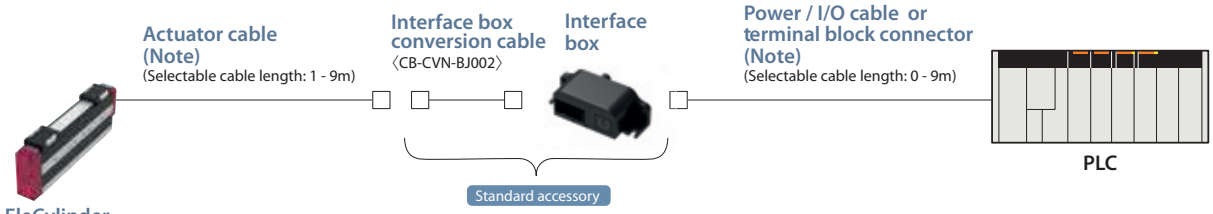
*1 "PN" and "TMD2" cannot be selected when "ACR" is selected.

*2 "ML" or "MR" must be specified in the model number.

Connection method to PLC

Three methods for the connection of EC-GRC6/GRC7/GRST3 and the PLC are as shown below.

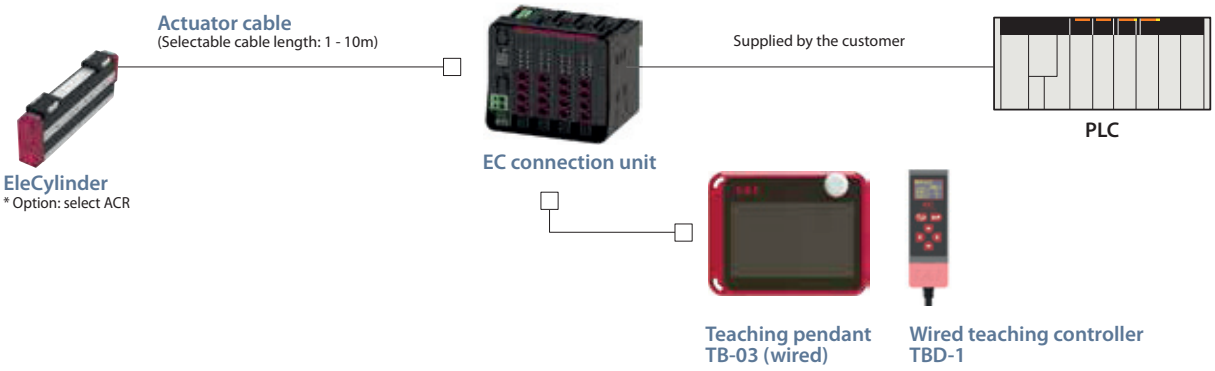
1. Direct connection to PLC (PNP/NPN specification)



* The specification of the interface box varies depending on the options selected. Refer to P.38 for details.

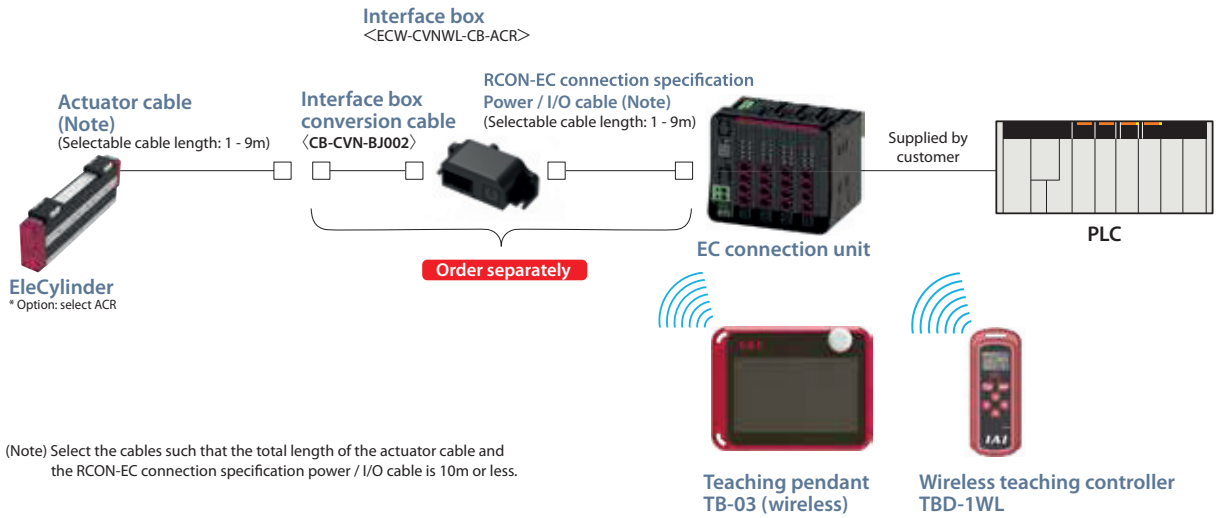
(Note) Select the cables such that the total length of the actuator cable and power / I/O cable (in case of the terminal block connector, the cable that the customer supplies) is 10m or less.

2. When connecting to PLC via EC connection unit (RCON-EC connection specification) [Wired connection of the teaching pendant]



3. When connecting to PLC via EC connection unit (RCON-EC connection specification) [Teaching pendant is connected wirelessly]

The configuration below shows the part numbers for the wireless communication specification (WL). For the wireless axis operation specification (WL2), contact IAI.



(Note) Select the cables such that the total length of the actuator cable and the RCON-EC connection specification power / I/O cable is 10m or less.

Specifications

Type		Reduction ratio	Stroke (both sides) (mm) and maximum speed at approach (mm/s) * Band = Stroke, *Numbers in the band = Maximum speed													Max. grip force (both sides) N	Reference page
			20	30	40	50	60	80	100	150	180	200	210	230	260		
Vertical type	GRB8	M	45													28	P11
	GRB10	M		95												100	P13
	GRB13	M			120											150	P15
		L			60											360	
Flat type	GRC6	M	52.5													36	P17
	GRC7	M	137.5		137.5		137.5									150	P21
		L	87.5		87.5		87.5									350	
Long stroke type	GRST3	M				175			175			175				125	P24
		L				107			107			107				325	
	GRST6	M									225			225		449	P27
		L									156			156		649	
	GRST7	M											175		175	1094	P30
		L											117		117	1641	

Auto servo OFF function

"Auto servo OFF function" can be set up using the PC software (RCM-101) or teaching pendant (TB-02/03).

When the auto servo OFF function is activated, the servo is automatically turned off after a fixed time has passed since the gripper has completed its last move.

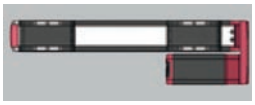
When the next command is entered, the servo will be automatically turned ON and the gripper will move to the specified position.

Since there is no holding current when the actuator is stopped, power consumption is reduced.

When the brake option is selected, the auto servo OFF function can be used to maintain the grip force until the brake is activated after the power is turned off. (However, this does not guarantee that the workpiece will not be dropped.)

Mounting Orientation

○ : Mounting possible

	Mounting orientation			
				
Type	**Horizontal mounting on flat surface**	**Vertical mounting**	**Side mounting**	**Ceiling mounting**
GRB☐	○	○	○	○
GRC☐	○	○	○	○
GRST☐	○	○	○*	○*

* Side mounting and ceiling mounting may cause sagging or misalignment of the stainless sheet in particular.
Continued use of the product with sagging or misalignment may cause breakage or failure of the stainless sheet.
Carry out daily inspections and adjust the stainless sheet if sagging or misalignment occurs.

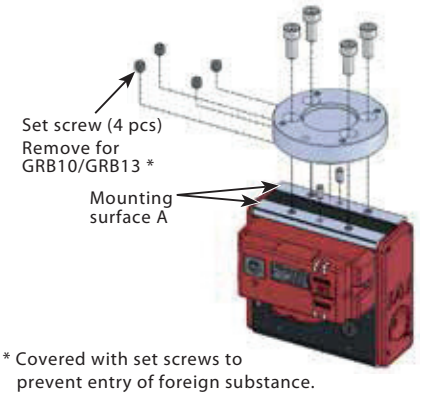
Precautions on mounting

The flatness of the mounting surface of the body and the workpiece should be within 0.05 mm/m.
Poor flatness increases the sliding resistance of the fingers and may cause operation failures.

Mounting Method

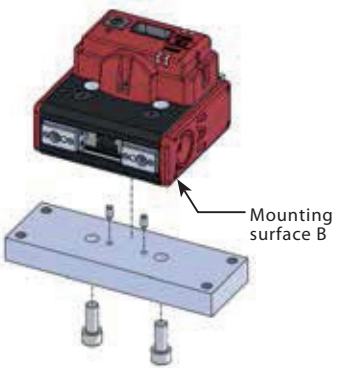
■ Mounting of the body (GRB8/GRB10/GRB13)

Mounting surface A, screw hole fixed

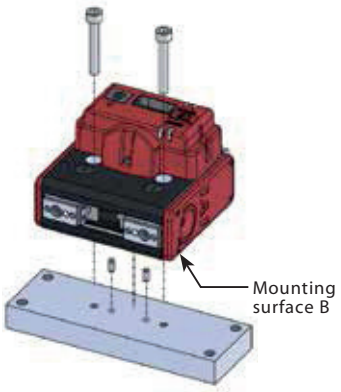


* Covered with set screws to prevent entry of foreign substance.

Mounting surface B, screw hole fixed

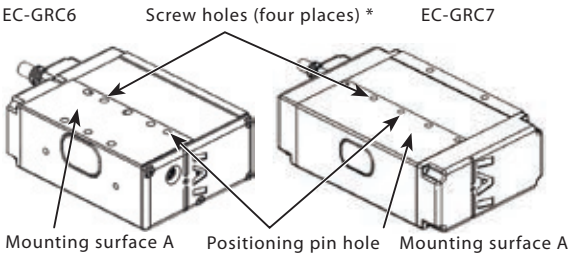


Mounting surface B, through hole fixed



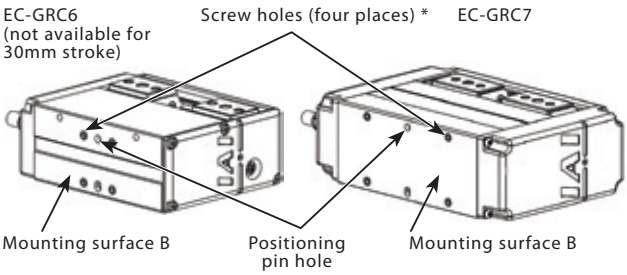
■ Mounting of the body (GR6/GR7)

Mounting surface A, screw hole fixed



* Covered with set screws to prevent entry of foreign substance. (EC-GR7 only)

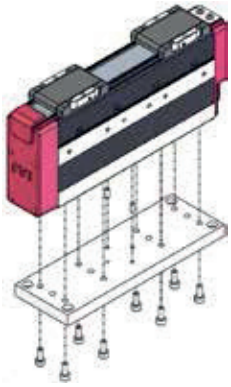
Mounting surface B, screw hole fixed



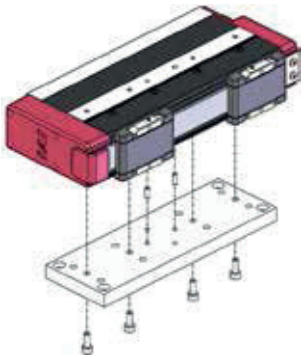
* Covered with set screws to prevent entry of foreign substance.

■ Mounting of the body (GRST3)

Bottom surface, screw hole fixed

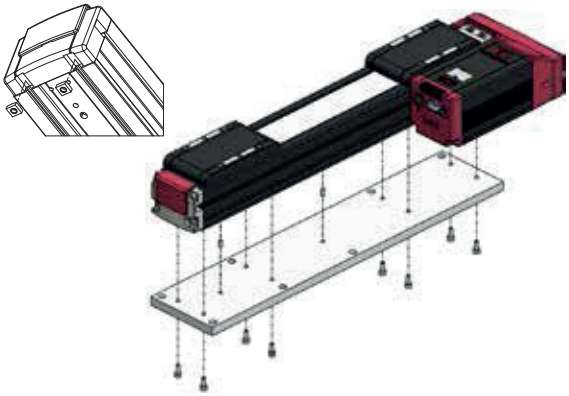


Side surface, screw hole fixed



■ Mounting of the body (GRST6/GRST7)

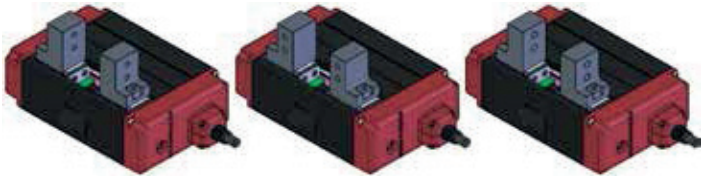
On the body bottom surface, there are T-slots for mounting. Square nuts (accessories) can be inserted into the T-slot and bolted from the back side.



■ Mounting of the finger attachment (GRC6/GRC7/GRST3)

For EC-GRC6/GRC7/GRST3, optional finger attachment is available. Refer to P.34 for details.

EC-GRC6/GRC7

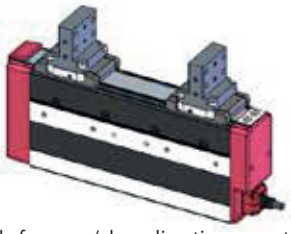


Open/close direction screw hole (Model: MJF1)

Side screw hole (Model: MJF2)

Open/close direction through hole (Model: MJF3)

EC-GRST3



Available for open/close direction mounting / side mounting (Model: MJF)

Gripper Selection Method

Selection process

Step 1
Check the required grip force and allowable workpiece mass

Step 2
Check the gripping point distance

Step 3
Check external force applied to fingers

Step 1 Check the required grip force and allowable workpiece mass

When gripping the workpiece with frictional grip force, calculate the required grip force as follows.

(1) For normal transfer

F: Grip force (N): Total value of each finger's push force
μ: Static friction coefficient between finger attachment and workpiece
W: Weight [N] = mg
m: Workpiece mass (kg)
g: Gravitational acceleration (= 9.8m/s²)

- Conditions under which workpiece will not fall when gripped statically

$$F\mu > mg \qquad F > \frac{mg}{\mu}$$

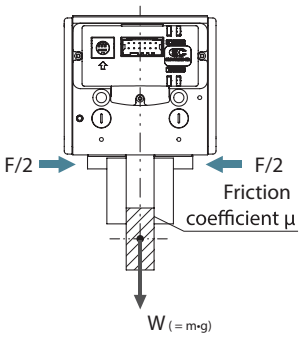
- In case of the safety factor of 2, the required grip force for transfer is

$$F > \frac{mg}{\mu} \times 2 \text{ (safety factor)}$$

* A typical safety factor is 2 - 5 (guideline)

- At friction coefficient μ0.1 to 0.2

$$F > \frac{mg}{0.1 \sim 0.2} \times 2 = (10 \sim 20) \times mg$$



For normal workpiece transfer (guideline)

Required grip force **F** ▶ At least 10 to 20x the workpiece mass (W)
Max. allowable mass **W** ▶ At most 1/10 to 1/20 the grip force

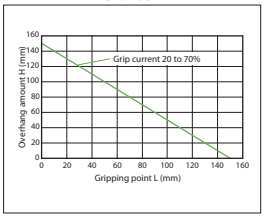
(2) When high acceleration/deceleration or impact force is applied during transfer of the workpiece

In addition to gravity, even stronger inertial force is applied to the workpiece.
In such cases, select a model with an even higher safety factor (guideline: 5 to 10).

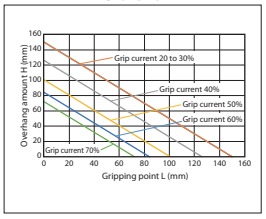
Step 2 Check the gripping point distance

The distance (L, H) from the finger attachment surface to the gripping point should be within the range shown in the graph of "Check of gripping point distance" on each product specification page.
Attempting to use the gripper outside of the limited range will cause excessive moments on the sliding part of the finger and internal mechanisms, which will decrease operation life.

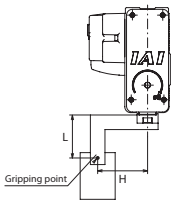
EC-GRB8M



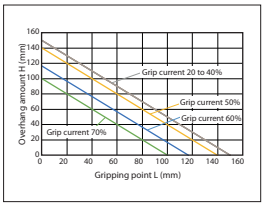
EC-GRB10M



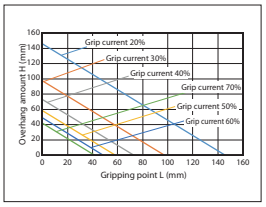
<Distance to gripping point>



EC-GRB13M



EC-GRB13L



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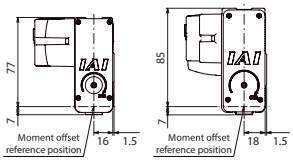


EC-GRB8 EC-GRB10/13

Even with the gripping point distance within the limit range, keep the finger attachments as small and lightweight as possible.
A longer or heavier finger may cause performance deterioration or damage the internal guides due to inertial force and bending moment during opening and closing.

Step 3 Check external force applied to fingers

(1) Allowable vertical load

Check that the vertical load applied to each finger does not exceed the allowable value.

(2) Allowable load moment

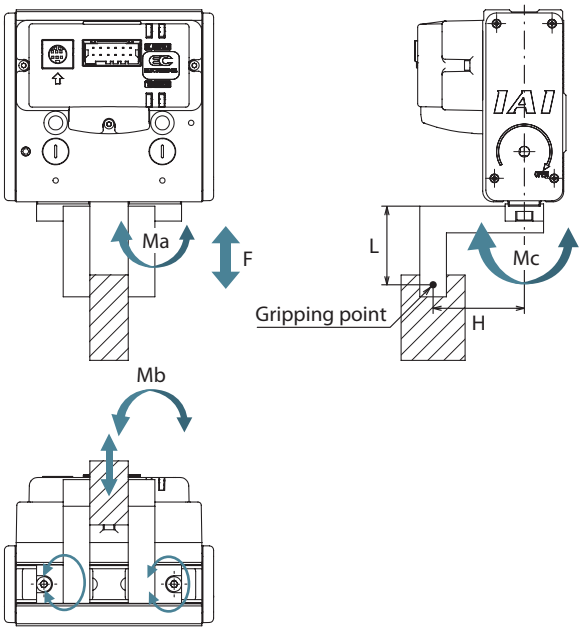
Calculate Ma and Mc with L and Mb with H. Check that the moment applied to each finger does not exceed the maximum allowable load moment.

- Allowable external force with moment load applied to each finger

$$\text{Allowable vertical load F (N)} > \frac{\text{Maximum allowable load moment (N•m)}}{\text{L or H (mm)} \times 10^{-3}}$$

Calculate the allowable vertical load F (N) for both L and H.

Check that the external force applied to the finger does not exceed the calculated allowable vertical load F (N) (the smaller value of L and H).



Model	Allowable vertical load F (N)	Maximum allowable load moment (N•m)		
		Ma	Mb	Mc
EC-GRB8	598	3.60	3.60	10.2
EC-GRB10	598	3.60	3.60	10.2
EC-GRB13	898	7.52	7.52	15.3
EC-GRC6	20ST: 398 30ST: 498	20ST: 2.61 30ST: 3.60	20ST: 2.61 30ST: 3.60	20ST: 8.50 30ST: 10.2
EC-GRC7	20ST: 498 Other than 20ST: 798	20ST: 3.60 Other than 20ST: 7.52	20ST: 3.60 Other than 20ST: 7.52	20ST: 10.2 Other than 20ST: 15.3
EC-GRST3	810	9.9	14.2	17.2
EC-GRST6	1800	48.5	69.3	97.1
EC-GRST7	2330	79.7	114.0	157.0

1. The allowable value above is a static value. 2. Indicates the allowable value for one finger.

*The load point above indicates the position where the load is applied to the finger.
The position varies depending on the load type.
- Load due to grip force: Gripping point
- Load due to gravity: Center of mass
- Inertial force when moving or centrifugal force when rotating: Center of mass

Load moment is the total value calculated for each load type.

*When calculating the external force, please make sure to take into consideration all of the causes of force on the fingers, including: finger weight, workpiece weight, inertial forces due to acceleration/deceleration while in motion, and centrifugal forces if the gripper is being rotated.

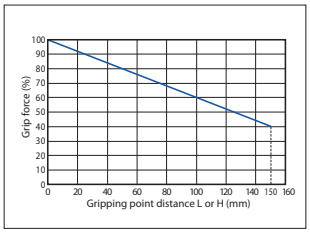
Guidelines for Gripping Point Distance and Grip Force

1. Graphs show grip force of gripping point distance when maximum grip force is set to 100%.

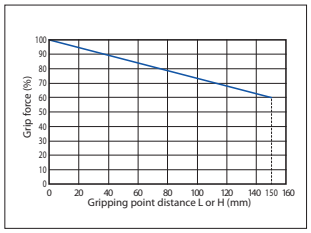
2. Gripping point distance indicates to the distance (L or H) from the finger attachment mounting surface to the gripping point.

3. Grip force may vary due to individual differences. Consider this as a guideline.

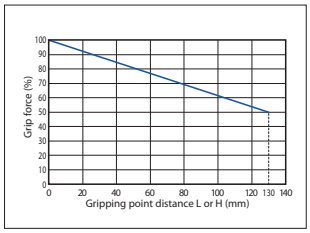
EC-GRB8M



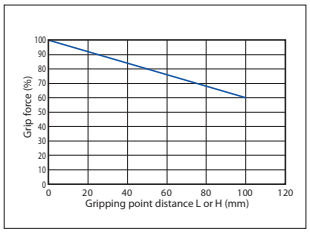
EC-GRB10M/13M/13L



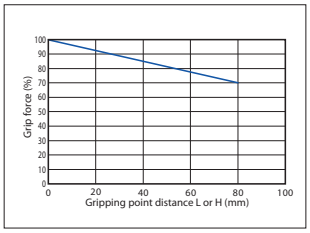
EC-GRC6M



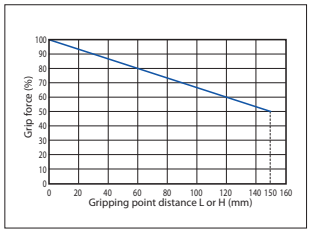
EC-GRC7M



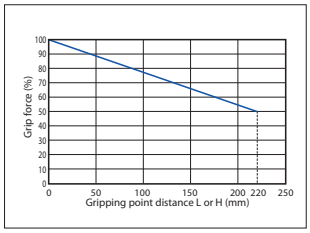
EC-GRC7L



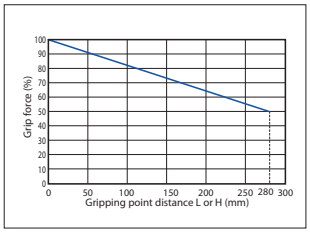
EC-GRST3M/3L



EC-GRST6M/6L



EC-GRST7M/7L



EC-GRB8

Slider | 2-Finger | Body Width 80 mm | 24V Pulse Motor

Model Specification Items

EC	-	GRB8	M	-	20	-		-	
Series	-	Type	Reduction ratio	-	Stroke	-	Power / I/O cable length	-	Options
			M: Trapezoidal screw, Lead 1.5mm, Pulley reduction ratio 1.5		20: 20mm (10mm per finger)		Refer to Power / I/O cable length below		Refer to Options below

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

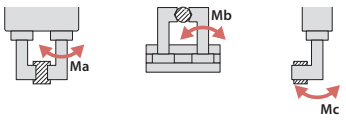
(3) When gripping the workpiece, be sure to use push-motion operation.

(4) The workpiece grip force will be maintained via self-lock even during power cutoff. To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

Main Specifications

Item		Description
Lead	Trapezoidal screw lead (mm)	1.5
	Pulley reduction ratio	1.5
Grip operation	Max. grip force (N) (both sides)	28
	Max. speed during grip operation (mm/s) (one side)	5
Approach operation	Max. speed (mm/s) (one side)	45
	Min. speed (mm/s) (one side)	5
	Rated acceleration/deceleration (G) (one side)	0.3
	Max. acceleration/deceleration (G) (one side)	0.3
Brake	Brake specification	-
	Brake holding force (kgf)	-
Stroke (one side)	Min. stroke (mm) (one side)	10
	Max. stroke (mm) (one side)	10

Slide type moment direction



Item	Description
Drive system	Trapezoidal screw ø8
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.2mm or less
Linear guide	Limited guide
Allowable static moment	Ma: 3.60N•m
	Mb: 3.60N•m
	Mc: 10.2N•m
Allowable vertical load (Note 1)	598N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	-
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□20) (Power capacity: max. 1A)
Encoder type	Incremental (battery-less absolute option is not available)
Number of encoder pulses	800 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

Power / I/O cable length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 43 for details.
(Note) Robot cable is standard.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

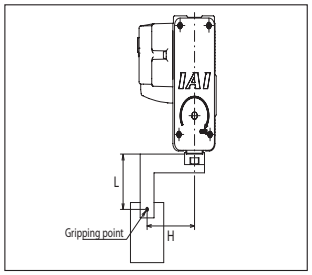
Options

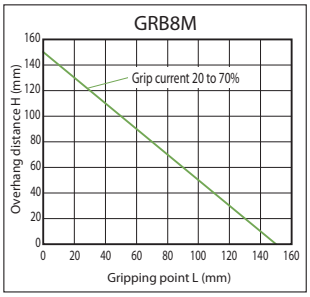
Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	33
Cable mounting bracket (front)	FST	33
Non-motor end specification	NM	35
PNP specification	PN	35
Split motor and controller power supply specification	TMD2	36
Cable mounting bracket (top) (Note 2)	TST	35
Wireless communication specification	WL	36
Wireless axis operation specification	WL2	36

(Note 1) 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.
(Note 2) Can be selected only when selecting the 4-way connector cable.

Check of Gripping Point Distance

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

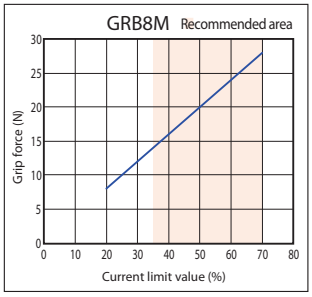




(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

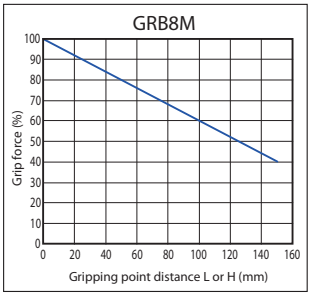
Grip Force

Correlation between grip force and current limit value



(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
(Note) For gripping (pushing), the speed is fixed at 5mm/s.

Guidelines for gripping point distance and grip force



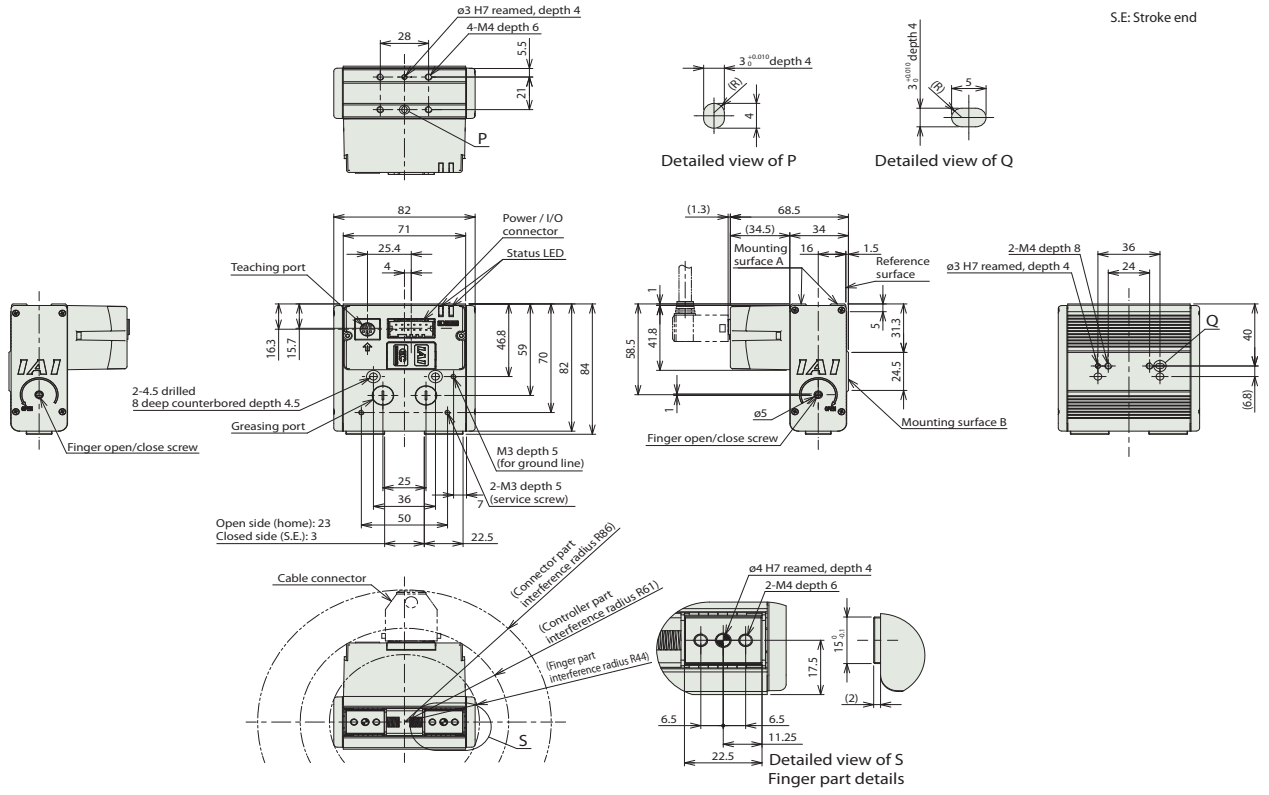
(Note) Shows grip force of overhang position when maximum grip force is set to 100%. The results may differ due to the rigidity of the finger attachment used.

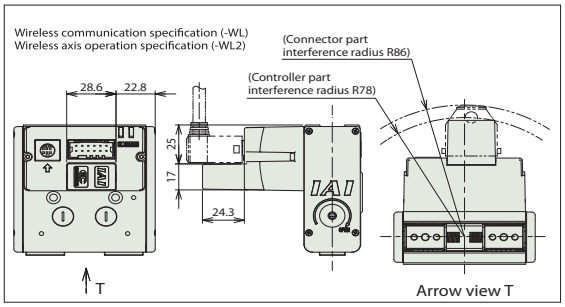
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).

S.E: Stroke end





Mass

Item	Description
Mass	0.51kg

Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 42 for details on built-in controllers.

EC-GRB10

Slider | 2-Finger | Body Width 100 mm | 24V Pulse Motor

■ Model Specification Items

EC	-	GRB10	M	-	30	-		-	
Series	-	Type	Reduction ratio	-	Stroke	-	Power / I/O cable length	-	Options
			M: Trapezoidal screw, Lead 1.5mm, Pulley reduction ratio 1.15		30: 30mm (15mm per finger)		Refer to Power / I/O cable length below		Refer to Options below

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

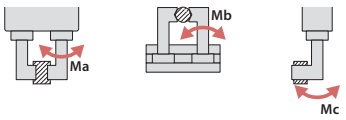
(3) When gripping the workpiece, be sure to use push-motion operation.

(4) The workpiece grip force will be maintained via self-lock even during power cutoff. To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

Main Specifications

Item		Description
Lead	Trapezoidal screw lead (mm)	1.5
	Pulley reduction ratio	1.15
Grip operation	Max. grip force (N) (both sides)	100
	Max. speed during grip operation (mm/s) (one side)	5
Approach operation	Max. speed (mm/s) (one side)	95
	Min. speed (mm/s) (one side)	5
	Rated acceleration/deceleration (G) (one side)	0.3
	Max. acceleration/deceleration (G) (one side)	0.3
Brake	Brake specification	-
	Brake holding force (kgf)	-
Stroke (one side)	Min. stroke (mm) (one side)	15
	Max. stroke (mm) (one side)	15

■ Slide type moment direction



Item	Description
Drive system	Trapezoidal screw ø8
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.2mm or less
Linear guide	Limited guide
Allowable static moment	Ma: 3.60N•m
	Mb: 3.60N•m
	Mc: 10.2N•m
Allowable vertical load (Note 1)	598N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	-
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□28) (Power capacity: max. 2A)
Encoder type	Incremental (standard) /battery-less absolute (option)
Number of encoder pulses	800 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

Power / I/O cable length

■ Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 43 for details.
(Note) Robot cable is standard.

■ 4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

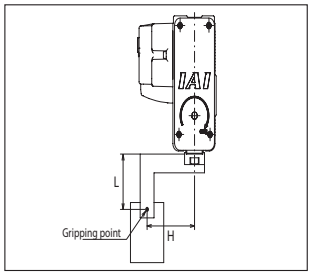
Options

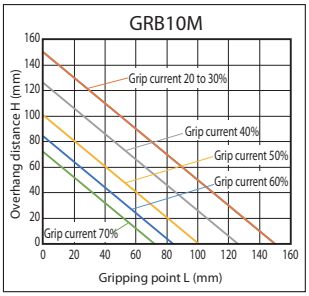
Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	33
Cable mounting bracket (front)	**FST**	33
Non-motor end specification	**NM**	35
PNP specification	**PN**	35
Split motor and controller power supply specification	**TMD2**	36
Cable mounting bracket (top) (Note 2)	**TST**	35
Battery-less absolute encoder specification	**WA**	36
Wireless communication specification	**WL**	36
Wireless axis operation specification	**WL2**	36

(Note 1) 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.
(Note 2) Can be selected only when selecting the 4-way connector cable.

Check of Gripping Point Distance

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

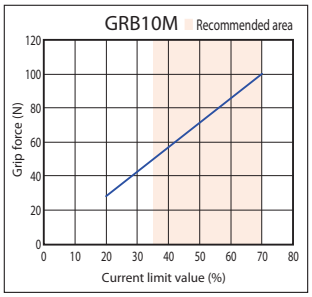




(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

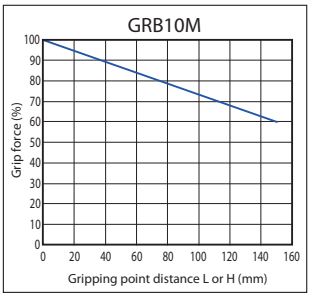
Grip Force

Correlation between grip force and current limit value



(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
(Note) For gripping (pushing), the speed is fixed at 5mm/s.

Guidelines for gripping point distance and grip force



(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.

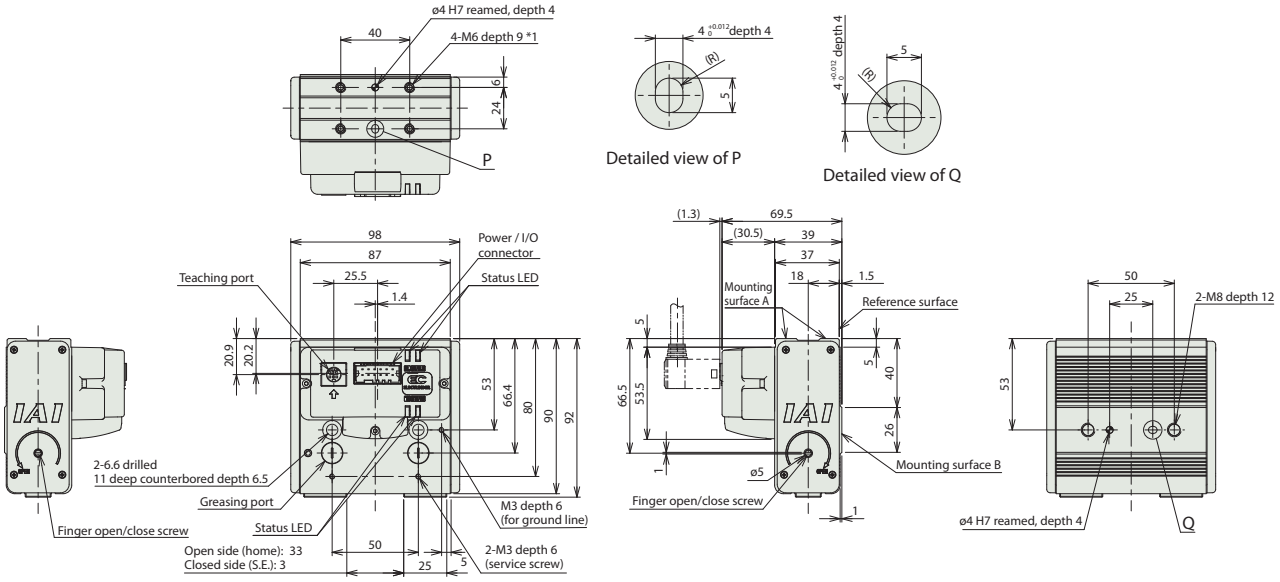
Dimensions

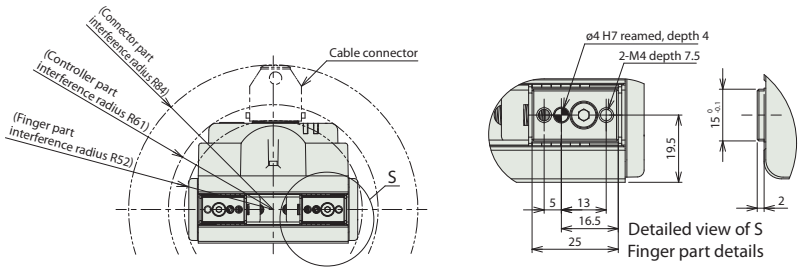
CAD drawings can be downloaded from our website.
www.iai-automation.com

2D CAD 3D CAD

*1 Covered with set screws to prevent entry of foreign substance. Remove when using mounting surface A.
(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).

S.E: Stroke end





Mass

Item	Description
Mass	0.69kg

Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 42 for details on built-in controllers.

EC-GRB13

Slider | 2-Finger | Body Width 130 mm | 24v Pulse Motor

■ Model Specification Items

EC	-	GRB13		-	40	-		-	
Series	-	Type	Reduction ratio	-	Stroke	-	Power / I/O cable length	-	Options
			M Standard: Trapezoidal screw, Lead 2mm, Pulley reduction ratio 1.25 L High thrust: Trapezoidal screw, Lead 2mm, Pulley reduction ratio 2.50		40: 40mm (20mm per finger)		Refer to Power / I/O cable length below		Refer to Options below

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

(3) When gripping the workpiece, be sure to use push-motion operation.

(4) The workpiece grip force will be maintained via self-lock even during power cutoff. To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

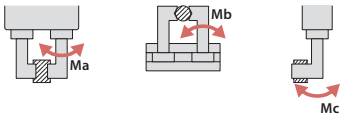
Main Specifications

Item		Description	
Reduction ratio		M	L
Lead	Trapezoidal screw lead (mm)	2	2
	Pulley reduction ratio	1.25	2.50
Grip operation	Max. grip force (N) (both sides)	150	360
	Max. speed during grip operation (mm/s) (one side)	5	5
Approach operation	Max. speed (mm/s) (one side)	120	60
	Min. speed (mm/s) (one side)	5	5
	Rated acceleration/deceleration (G) (one side)	0.3	0.3
	Max. acceleration/deceleration (G) (one side)	0.3	0.3
Brake	Brake specification	-	-
	Brake holding force (kgf)	-	-
Stroke (one side)	Min. stroke (mm) (one side)	20	20
	Max. stroke (mm) (one side)	20	20

Item	Description
Drive system	Trapezoidal screw ø10
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.2mm or less
Linear guide	Limited guide
Allowable static moment	Ma: 7.52 N•m
	Mb: 7.52 N•m
	Mc: 15.3 N•m
Allowable vertical load (Note 1)	898N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	-
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□28) (Power capacity: max. 2A)
Encoder type	Incremental (standard) /battery-less absolute (option)
Number of encoder pulses	800 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

■ Slide type moment direction



Power / I/O cable length

■ Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 43 for details.
(Note) Robot cable is standard.

■ 4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

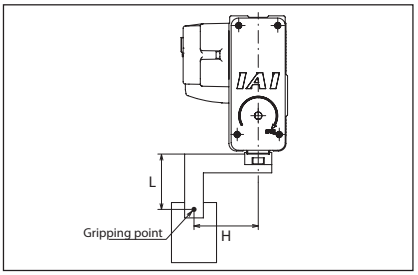
Options

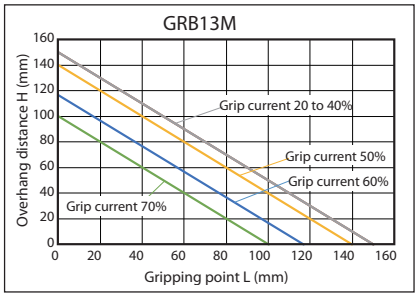
Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	33
Cable mounting bracket (front)	FST	33
Non-motor end specification	NM	35
PNP specification	PN	35
Split motor and controller power supply specification	TMD2	36
Cable mounting bracket (top) (Note 2)	TST	35
Battery-less absolute encoder specification	WA	36
Wireless communication specification	WL	36
Wireless axis operation specification	WL2	36

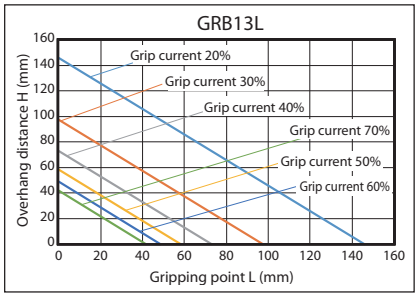
(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Can be selected only when selecting the 4-way connector cable.

Check of Gripping Point Distance

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



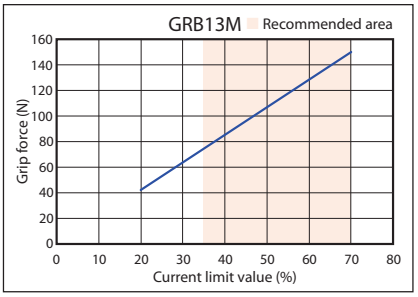


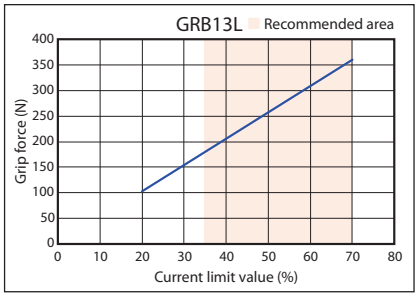


(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

Grip Force

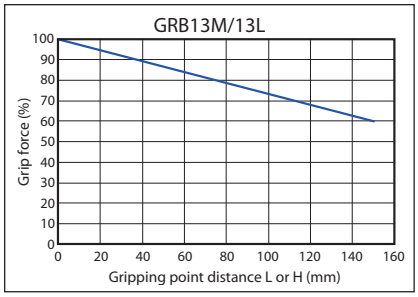
■ Correlation diagrams between grip force and current limit value





(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
(Note) For gripping (pushing), the speed is fixed at 5mm/s.

■ Guidelines for gripping point distance and grip force

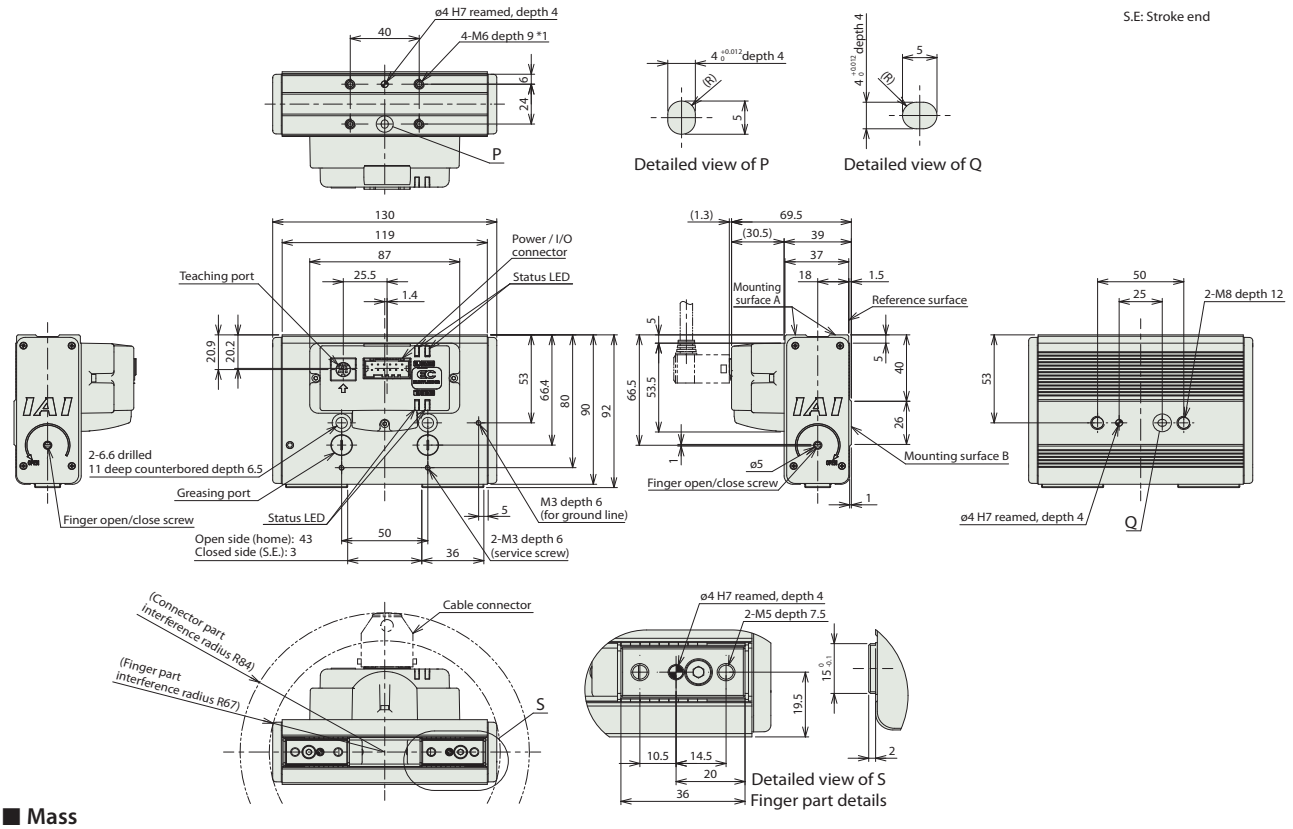


(Note) Shows grip force of overhang position when maximum grip force is set to 100%. The results may differ due to the rigidity of the finger attachment used.

Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

*1 Covered with set screws to prevent entry of foreign substance. Remove when using mounting surface A.
(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).



■ Mass

Item	Description
Mass	0.99kg

Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 42 for details on built-in controllers.

EC-GRC6

Slider | 2-Finger | Body Width 60 mm | 24v Pulse Motor

Model Specification Items

EC - GRC6 - M - [ ] - [ ] - [ ] - [ ]

Series	Type	Reduction ratio	Stroke	Actuator cable length	Power / I/O cable length	Options
EC	GRC6	M: Trapezoidal screw, Lead 1.5mm, Pulley reduction ratio 1.43	20: 20mm (10mm per finger) 30: 30mm (15mm per finger)	Refer to the actuator cable length below	Refer to Power / I/O cable length below	Refer to Options below

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

(3) When gripping the workpiece, be sure to use push-motion operation.

(4) The workpiece grip force will be maintained via self-lock even during power cutoff. To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

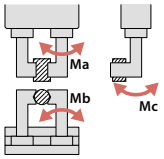
Main Specifications

Item		Description
Lead	Trapezoidal screw lead (mm)	1.5
	Pulley reduction ratio	1.43
Grip operation	Max. grip force (N) (both sides)	36
	Max. speed during grip operation (mm/s) (one side)	5
Approach operation	Max. speed (mm/s) (one side)	52.5
	Min. speed (mm/s) (one side)	10
	Rated acceleration/deceleration (G) (one side)	0.3
	Max. acceleration/deceleration (G) (one side)	0.3
Brake	Brake specification	-
	Brake holding force (kgf)	-
Stroke (one side)	Min. stroke (mm) (one side)	10
	Max. stroke (mm) (one side)	15

Item	Description
Drive system	Timing belt + both sides trapezoidal screw
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.2mm or less
Linear guide	Limited guide
Allowable static moment	Ma : <20st> 2.61 N·m <30st> 3.60 N·m
	Mb : <20st> 2.61 N·m <30st> 3.60 N·m
	Mc : <20st> 8.50 N·m <30st> 10.2 N·m
Allowable vertical load (Note 1)	<20st> 398N <30st> 498N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□20) (Power capacity: max. 1.25A)
Encoder type	Incremental (standard) /battery-less absolute (option)
Number of encoder pulses	16384 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

Slide type moment direction



Actuator cable length

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

(Note 1) When connection is via the interface box, the maximum is 9m.
(Note) Select the cable so that the total length with the power / I/O 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 (flying leads)
0	No cable	Terminal block supplied (Note 1)
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied
4 ~ 5	4 ~ 5m	
6 ~ 9	6 ~ 9m	

(Note 1) Only terminal block connector is included.
* Choose "0" if optional RCON-EC connection specification (ACR) is selected.
Terminal block connector is not included. Refer to P43 for details.
(Note) Robot cable is standard

■4-way connector cable

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

(Note) Robot cable is standard

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1) (Note 2)	**ACR**	33
Cable exit direction (bottom)	**CJB**	33
Cable exit direction (left)	**CJL**	33
Cable exit direction (right)	**CJR**	33
Cable exit direction (top)	**CJT**	33
Finger attachment mounting jig (Open/close direction screw hole)	**MJF1**	34
Finger attachment mounting jig (Side screw hole)	**MJF2**	34
Finger attachment mounting jig (Open/close direction through hole)	**MJF3**	34
Non-motor end specification	**NM**	35
PNP specification (Note 1)	**PN**	35
Split motor and controller power supply specification	**TMD2**	36
Battery-less absolute encoder specification	**WA**	36
Wireless communication specification (Note 2)	**WL**	36
Wireless axis operation specification (Note 2)	**WL2**	36

(Note 1) 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 2) 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 prepared separately. Refer to P5 for details. For the wireless axis operation specification (WL2), contact one of IAI representatives.

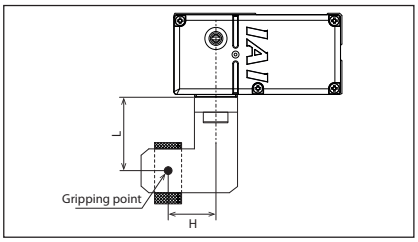
Separately sold options

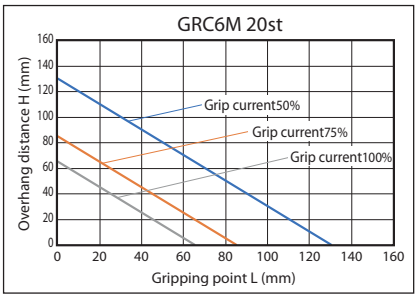
Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	44
RCON-EC connection specification power / I/O cable (Standard connector cable)	CB-REC-PWBIO□□□-RB	47
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	47
RCON-EC connection specification interface box for split motor and controller power supply (Wireless specification)	ECW-CVNWL-CB-ACR	44

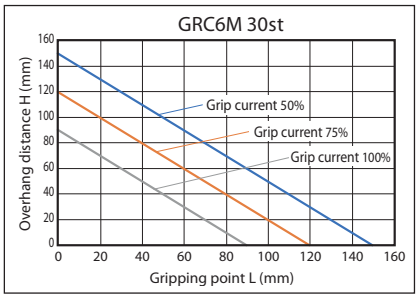
(Note) Power / I/O cable is a robot cable.
Specify the cable length in □□□. (Ex. 010=10m)

Check of Gripping Point Distance

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



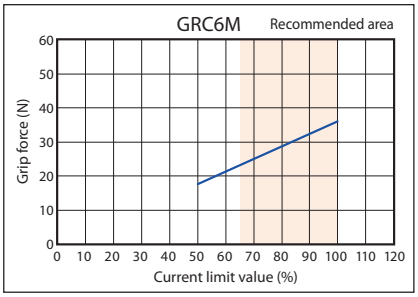




(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

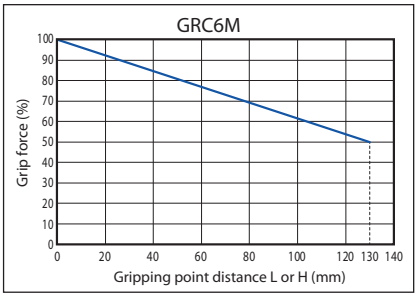
Grip Force

■Correlation diagram between grip force and current limit value



(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
(Note) For gripping (pushing), the speed is fixed at 5mm/s.

■Guidelines for gripping point distance and grip force



(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.

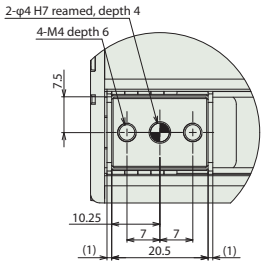
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

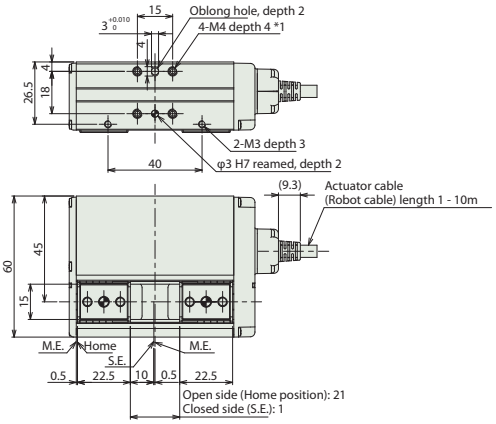
20 Stroke

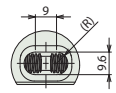
*1 Covered with set screws to prevent entry of foreign substance. Remove when using mounting surface.
*1 Pay attention to the bolt length being used for mounting, because if the bolt is deeper than the depth shown in the drawing, it may interfere with internal parts.
(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).
(Note) Secure the cable so that the base of the cable does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (optional) can be changed by changing the direction of the cable box.

M.E.: Mechanical end
S.E.: Stroke end

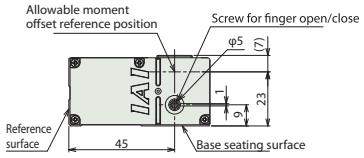


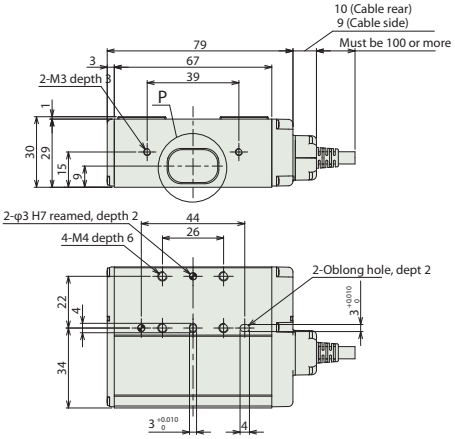
Detail view of finger part

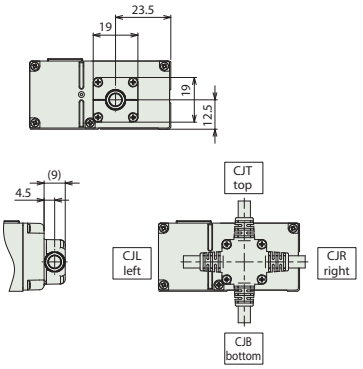




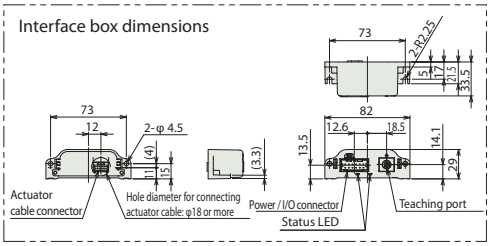
Detail view of P
Grease port







Cable exit direction (option)
* Standard cable exit direction is rear.



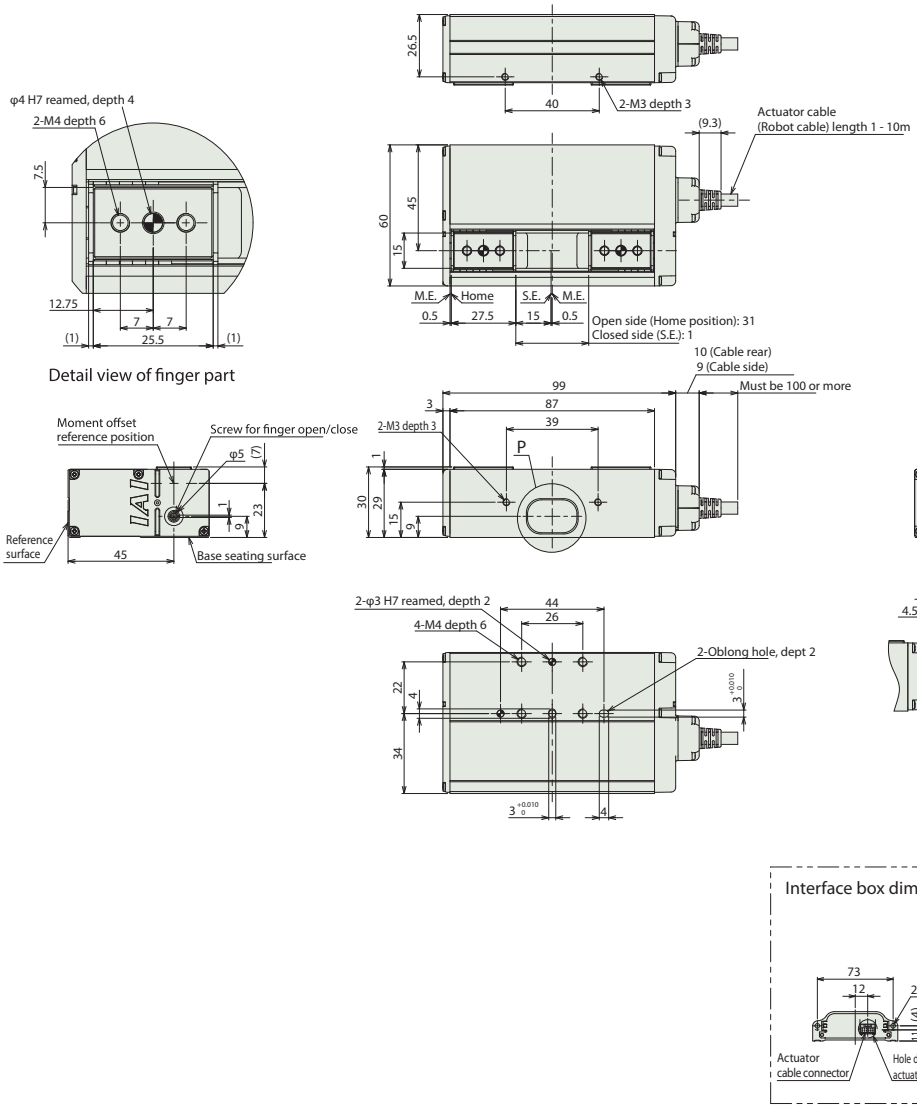
Mass

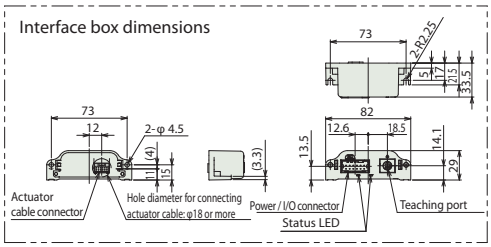
Item	Description
Mass	0.32kg

■30 Stroke

(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).
(Note) Secure the cable so that the base of the cable does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (optional) can be changed by changing the direction of the cable box.

M.E.: Mechanical end
S.E.: Stroke end





■Mass

Item	Description
Mass	0.40kg

Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 42 for details on built-in controllers.

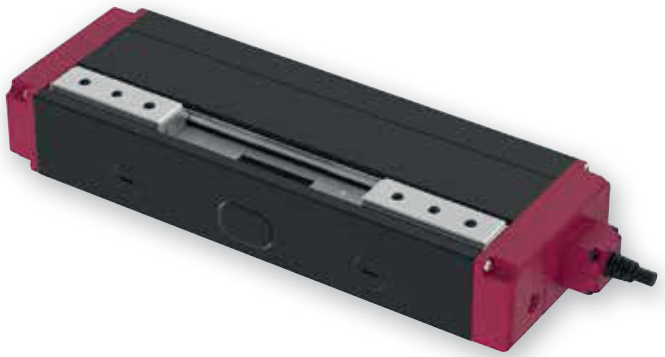
EC-GRC7

Slider | 2-Finger | Body Width 70 mm | 24v Pulse Motor

Model Specification Items

EC - GRC7 [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Series	Type	Reduction ratio			Stroke		Actuator cable length	Power / I/O cable length	Options
EC	GRC7	M	Standard	Ball screw Lead 2.5mm Pulley reduction ratio 1.36	20	20mm (10mm per finger)	Refer to the actuator cable length below	Refer to Power / I/O cable length below	Refer to Options below
		L	High-thrust force	Ball screw Lead 2.5mm Pulley reduction ratio 2.14	40	40mm (20mm per finger)			
					60	60mm (30mm per finger)			
					80	80mm (40mm per finger)			



CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

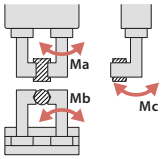
(3) When gripping the workpiece, be sure to use push-motion operation.

(4) This model does not have the self-lock mechanism. If a holding mechanism is required, select the brake option. By using the automatic servo OFF function, the grip force can be maintained until the brake is activated after the power is turned off. (However, this does not guarantee that the workpiece will not be dropped.) To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

Main Specifications

Item		Description	
Reduction ratio		M	L
Lead	Ball screw lead (mm)	2.5	2.5
	Pulley reduction ratio	1.36	2.14
Grip operation	Max. grip force (N) (both sides)	150	350
	Max. speed during grip operation (mm/s) (one side)	20	20
Approach operation	Max. speed (mm/s) (one side)	137.5	87.5
	Min. speed (mm/s) (one side)	10	10
	Rated acceleration/deceleration (G) (one side)	0.3	0.3
	Max. acceleration/deceleration (G) (one side)	0.3	0.3
Brake	Brake specification (Mass: 0.2kg)	Non-excitation actuating solenoid brake	
	Brake-holding force (N) (both sides)	107	175
Stroke (one side)	Min. stroke (mm) (one side)	10	10
	Max. stroke (mm) (one side)	40	40

Slide type moment direction



Item	Description
Drive system	Timing belt + both sides ball screw
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.1mm or less
Linear guide	Limited guide
Allowable static moment	Ma : <20st> 3.60 N·m <40/60/80st> 7.52 N·m
	Mb : <20st> 3.60 N·m <40/60/80st> 7.52 N·m
	Mc : <20st> 10.2 N·m <40/60/80st> 15.3 N·m
Allowable vertical load (Note 1)	<20st> 498N <40/60/80st> 798N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□28) (Power capacity: max. 2A)
Encoder type	Incremental (standard) /battery-less absolute (option)
Number of encoder pulses	16384 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

Actuator cable length

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

(Note 1) When connection is via the interface box, the maximum is 9m.
(Note) Select the cable so that the total length with the power / I/O 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 (flying leads)
0	No cable	Terminal block supplied (Note 1)
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied
4 ~ 5	4 ~ 5m	
6 ~ 9	6 ~ 9m	

(Note 1) Only terminal block connector is included.
* Choose "0" if optional RCON-EC connection specification (ACR) is selected.
Terminal block connector is not included. Refer to P43 for details.
(Note) Robot cable is standard

■ 4-way connector cable

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

(Note) Robot cable is standard

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1) (Note 2)	**ACR**	33
Brake (Note 3)	**B**	33
Cable exit direction (bottom)	**CJB**	33
Cable exit direction (left)	**CJL**	33
Cable exit direction (right)	**CJR**	33
Cable exit direction (top)	**CJT**	33
Designated grease specification	**G1/G5**	33
Finger attachment mounting jig (Open/close direction screw hole)	**MJF1**	34
Finger attachment mounting jig (Side screw hole)	**MJF2**	34
Finger attachment mounting jig (Open/close direction through hole)	**MJF3**	34
Non-motor end specification	**NM**	35
PNP specification (Note 1)	**PN**	35
Split motor and controller power supply specification	**TMD2**	36
Battery-less absolute encoder specification	**WA**	36
Wireless communication specification (Note 2)	**WL**	36
Wireless axis operation specification (Note 2)	**WL2**	36

(Note 1) 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 2) 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 prepared separately. Refer to P5 for details. For the wireless axis operation specification (WL2), contact one of IAI representatives.
(Note 3) Cannot be selected for 20 stroke.

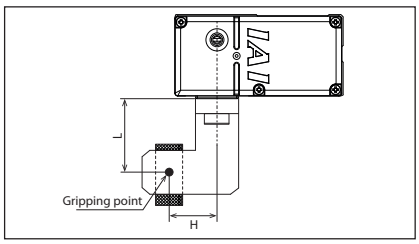
Separately sold options

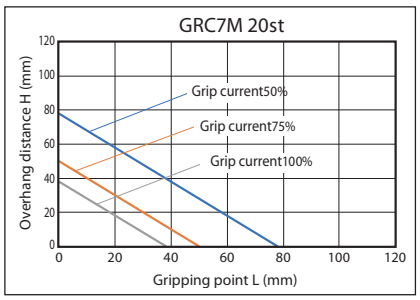
Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	44
RCON-EC connection specification power / I/O cable (Standard connector cable)	CB-REC-PWBIO□□□-RB	47
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	47
RCON-EC connection specification interface box for split motor and controller power supply (Wireless specification)	ECW-CVNWL-CB-ACR	44

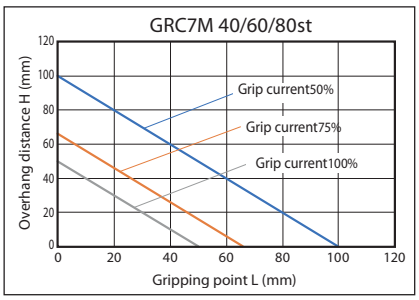
(Note) Power / I/O cable is a robot cable. Specify the cable length in □□□. (Ex. 010=10m)

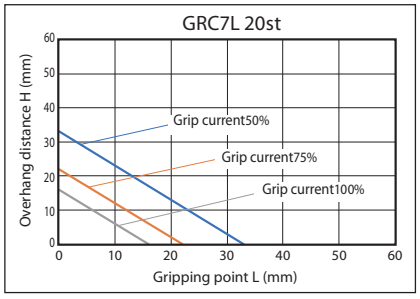
Check of Gripping Point Distance

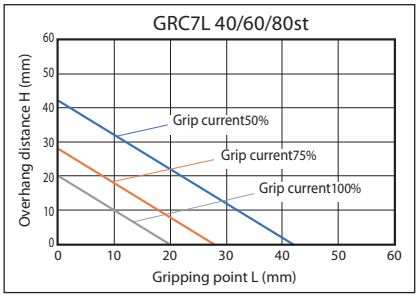
Use with distance (L, H) from finger (jaw) mounting surface to gripping point within the range in the graph.







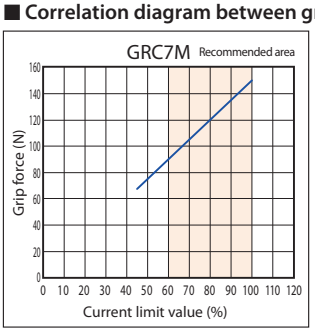


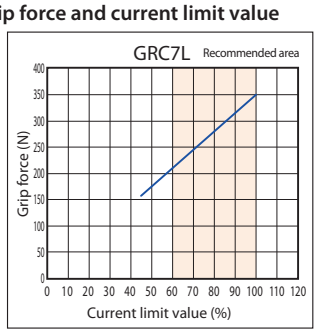


(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

Grip Force

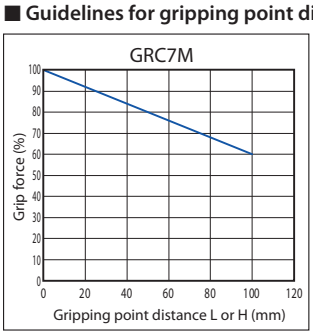
■ Correlation diagram between grip force and current limit value

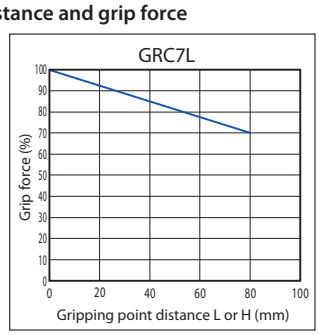




(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
(Note) For gripping (pushing), the speed is 20mm/s. When the approach speed is 20mm/s or less, gripping is carried out at the approach speed.

■ Guidelines for gripping point distance and grip force





(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.

Dimensions

CAD drawings can be downloaded from our website.
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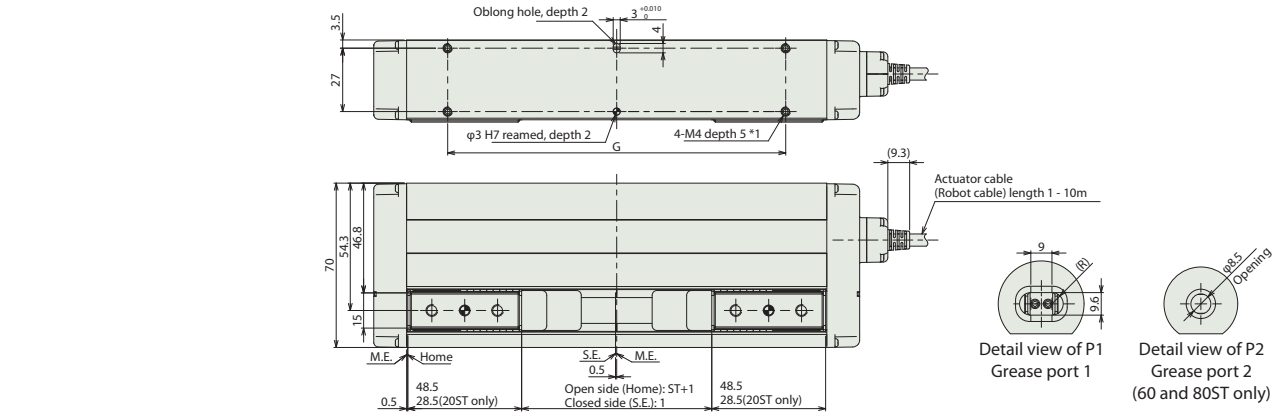
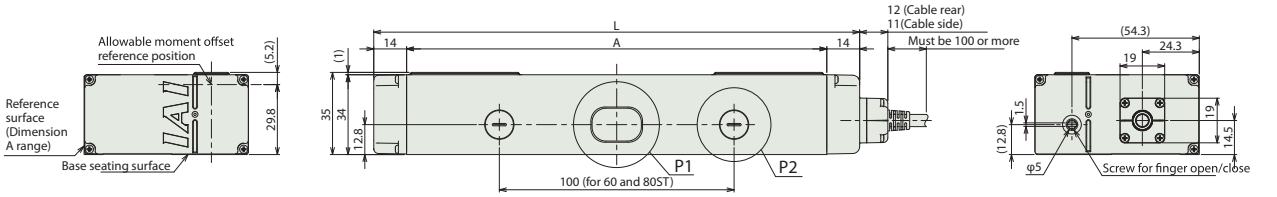
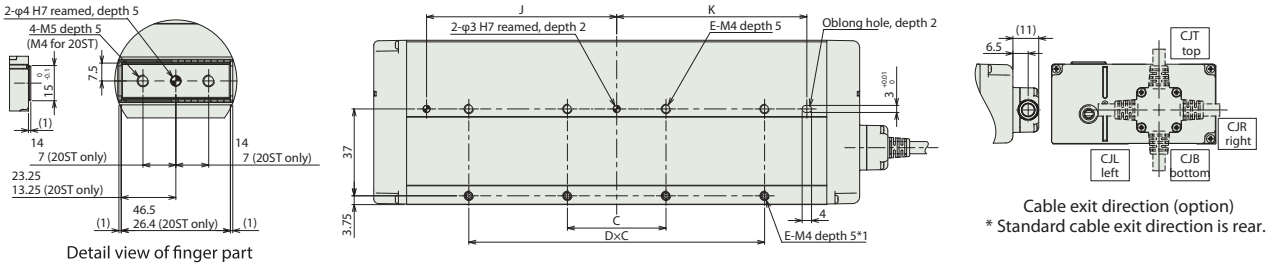
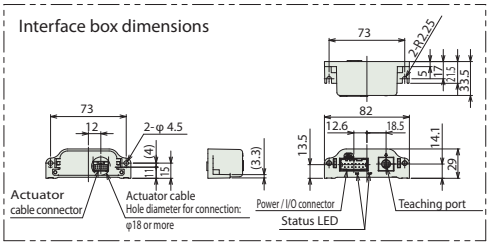
*1 Covered with set screws to prevent entry of foreign substance. Remove when using mounting surface.
*1 Pay attention to the bolt length being used for mounting, because if the bolt is deeper than the depth shown in the drawing, it may interfere with internal parts.
(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).
(Note) Secure the cable so that the base of the cable does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (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	20	40	60	80
L	107	167	187	207
A	79	139	159	179
C	36	66	36	42
D	0	0	3	3
E	2	2	4	4
G	46	84	122	144
J	37	51	65	81
K	37	51	65	81

Mass by stroke

Stroke			20	40	60	80
Mass (kg)	GRC7M	Without brake	0.40	0.65	0.69	0.73
		With brake	-	0.80	0.85	0.88
	GRC7L	Without brake	0.58	0.73	0.77	0.81
		With brake	-	0.88	0.92	0.96

Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 42 for details on built-in controllers.

EC-GRST3

Simple dust-proof | Slider | 2-Finger | Body Width 40 mm | 24v Pulse Motor

Model Specification Items

EC - GRST3 - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Series	Type	Reduction ratio			Stroke		Actuator cable length	Power / I/O cable length	Options
EC	GRST3	M	Standard	Ball screw Lead 2.5mm Pulley reduction ratio 1.05	50	50mm (25mm per finger)	Refer to the actuator cable length below	Refer to Power / I/O cable length below	Refer to Options below
		L	High-thrust force	Ball screw Lead 2.5mm Pulley reduction ratio 1.64	100	100mm (50mm per finger)			
					150	150mm (75mm per finger)			
					200	200mm (100mm per finger)			

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

(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 P36 for details.

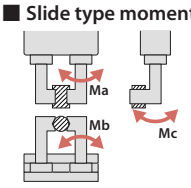
(5) Pay close attention to the installation orientation. Refer to P7 for details.

(6) This model does not have the self-lock mechanism. If a holding mechanism is required, select the brake option. By using the automatic servo OFF function, the grip force can be maintained until the brake is activated after the power is turned off. (However, this does not guarantee that the workpiece will not be dropped.) To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

Main Specifications

Item		Description	
Reduction ratio		M	L
Lead	Ball screw lead (mm)	2.5	2.5
	Pulley reduction ratio	1.05	1.64
Grip operation	Max. grip force (N) (both sides)	125	325
	Max. speed during grip operation (mm/s) (one side)	20	20
Approach operation	Max. speed (mm/s) (one side)	175	107
	Min. speed (mm/s) (one side)	10	10
	Rated acceleration/deceleration (G) (one side)	0.3	0.3
	Max. acceleration/deceleration (G) (one side)	0.3	0.3
Brake	Brake specification	Non-excitation actuating solenoid brake	
	Brake-holding force (N) (both sides)	131	206
Stroke (one side)	Min. stroke (mm) (one side)	25	25
	Max. stroke (mm) (one side)	100	100

Slide type moment direction



Item	Description
Drive system	Both sides ball screw ø8mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.03mm or less
Base	Dedicated aluminum extruded material (equivalent to A6063SS-T5) Black alumite treated
Linear guide	Direct-acting infinite circulation type
Allowable static moment	Ma : 9.9 N·m
	Mb : 14.2 N·m
	Mc : 17.2 N·m
Allowable vertical load (Note 1)	810N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□28) (Power capacity: max. 2A)
Encoder type	Incremental (standard) /battery-less absolute (option)
Number of encoder pulses	16384 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

Actuator cable length

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

(Note 1) When connection is via the interface box, the maximum is 9m.
(Note) Select the cable so that the total length with the power / I/O 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 (flying leads)
0	No cable	Terminal block supplied (Note 1)
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied
4 ~ 5	4 ~ 5m	
6 ~ 9	6 ~ 9m	

(Note 1) Only terminal block connector is included.
* Choose "0" if optional RCON-EC connection specification (ACR) is selected.
Terminal block connector is not included. Refer to P43 for details.
(Note) Robot cable is standard

■4-way connector cable

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

(Note) Robot cable is standard

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1) (Note 2)	**ACR**	33
Brake	**B**	33
Cable exit direction (bottom)	**CJB**	33
Cable exit direction (left)	**CJL**	33
Cable exit direction (right)	**CJR**	33
Designated grease specification	**G1/G5**	33
Finger attachment mounting jig	**MJF**	34
Non-motor end specification	**NM**	35
PNP specification (Note 1)	**PN**	35
Split motor and controller power supply specification	**TMD2**	36
Battery-less absolute encoder specification	**WA**	36
Wireless communication specification (Note 2)	**WL**	36
Wireless axis operation specification (Note 2)	**WL2**	36

(Note 1) 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 2) 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 prepared separately. Refer to P5 for details. For the wireless axis operation specification (WL2), contact one of IAI representatives.

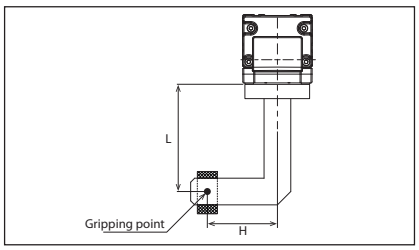
Separately sold options

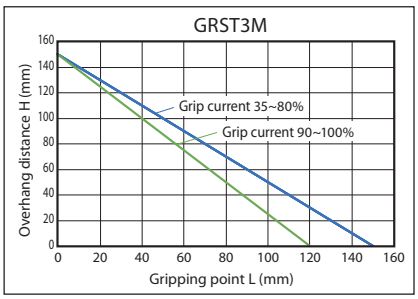
Name	Model	Reference page
Interface box conversion cable	CB-CVN-BJ002	44
RCON-EC connection specification power / I/O cable (Standard connector cable)	CB-REC-PWBIO□□□-RB	47
RCON-EC connection specification power / I/O cable (4-way connector cable)	CB-REC2-PWBIO□□□-RB	47
RCON-EC connection specification interface box for split motor and controller power supply (Wireless specification)	ECW-CVNWL-CB-ACR	44

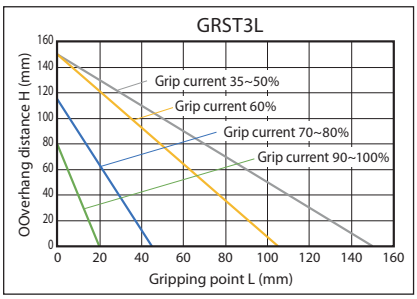
(Note) Power / I/O cable is a robot cable. Specify the cable length in □□□. (Ex. 010=10m)

Check of Gripping Point Distance

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



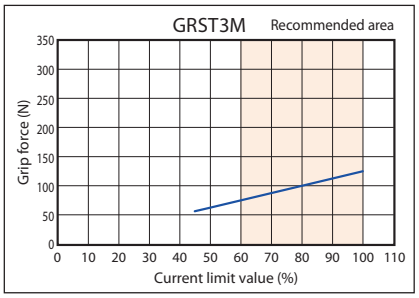


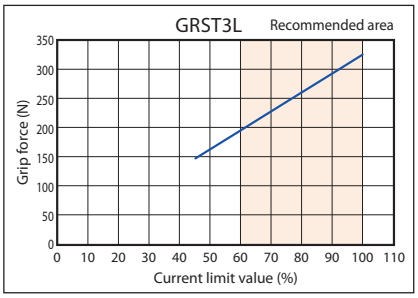


(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

Grip Force

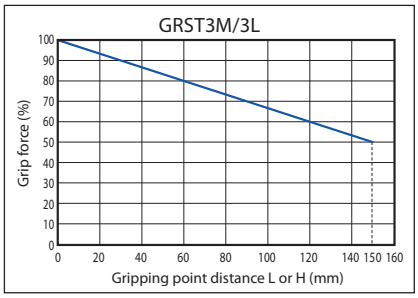
■Correlation diagram between grip force and current limit value





(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
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.

■Guidelines for gripping point distance and grip force



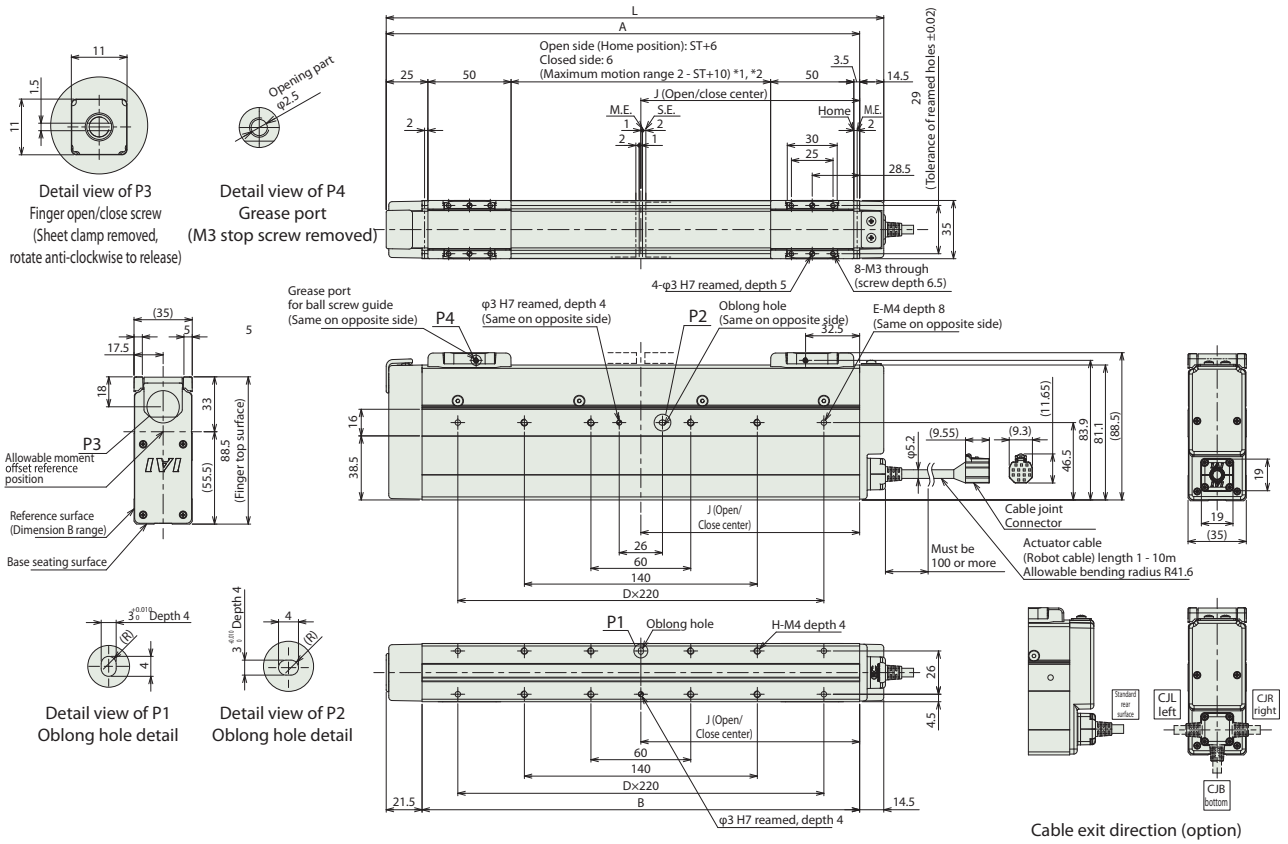
(Note) Shows grip force of overhang position when maximum grip force is set to 100%. The results may differ due to the rigidity of the finger attachment used.

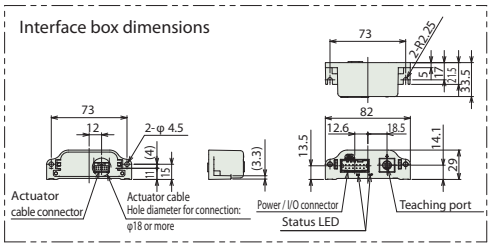
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

*1 When returning to the home position, both fingers will move to the M.E.. Be careful of interface with surrounding objects.
*2 Both fingers move in opposite directions at the same time.
(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).
(Note) Secure the cable so that the base of the cable does not move.
The cable can be separated and replaced. (Connected to the connector in the cable box)
The cable exit direction (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. 42 for details on built-in controllers.

EC-GRST6

Simple dust-proof | Slider | 2-Finger | Side-mounted motor | Body Width 60 mm | 24v Pulse Motor

Model Specification Items

EC - GRST6 - [ ] - [ ] - [ ] - [ ]

Series	Type	Reduction ratio			Stroke		Power / I/O cable length	Options
EC	GRST6	M	Standard	Ball screw Lead 3mm Pulley reduction ratio 1	180	180mm (90mm per finger)	Refer to Power / I/O cable length below	Refer to Options below
		L	High-thrust force	Ball screw Lead 3mm Pulley r4eduction ratio 1.44	230	230mm (115mm per finger)		

(Note) The above picture shows the side-mounted motor to the left (ML).

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

(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 P36 for details.

(5) Pay close attention to the installation orientation. Refer to P7 for details.

(6) This model does not have the self-lock mechanism. If a holding mechanism is required, select the brake option. By using the automatic servo OFF function, the grip force can be maintained until the brake is activated after the power is turned off. (However, this does not guarantee that the workpiece will not be dropped.) To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

(7) This actuator cannot be used with "Power-saving mode".

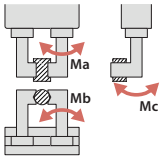
Main Specifications

Item		Description	
Reduction ratio		M	L
Lead	Ball screw lead (mm)	3	3
	Pulley reduction ratio	1.00	1.44
Grip operation	Max. grip force (N) (both sides)	449	649
	Max. speed during grip operation (mm/s) (one side)	20	20
Approach operation	Max. speed (mm/s) (one side)	225	156
	Min. speed (mm/s) (one side)	10	10
	Rated acceleration/deceleration (G) (one side)	0.3	0.3
	Max. acceleration/deceleration (G) (one side)	1	1
Brake	Brake specification	Non-excitation actuating solenoid brake	
	Brake-holding force (N) (both sides)	308	445
Stroke (one side)	Min. stroke (mm) (one side)	90	90
	Max. stroke (mm) (one side)	115	115

Item	Description
Drive system	Both sides ball screw ø10mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.03mm or less
Base	Dedicated aluminum extruded material (equivalent to A6063SS-T5) Black alumite treated
Linear guide	Direct-acting infinite circulation type
Allowable static moment	Ma : 48.5 N·m
	Mb : 69.3 N·m
	Mc : 97.1 N·m
Allowable vertical load (Note 1)	1800N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□42) (Power capacity: max. 4.2A)
Encoder type	Incremental (standard) /battery-less absolute (option)
Number of encoder pulses	800 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

Slide type moment direction



Power / I/O Cable Length

■ Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 43 for details.
(Note) Robot cable is standard.

■ 4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

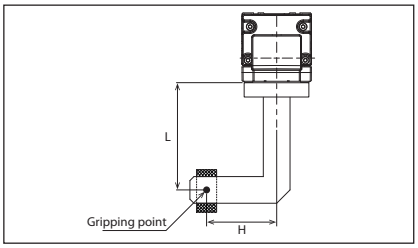
Options

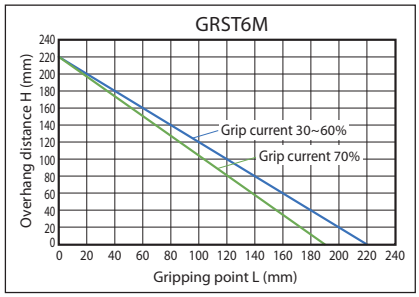
Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	33
Brake	**B**	33
Designated grease specification	**G1/G5**	33
Side-mounted motor to the left (Note 2)	**ML**	35
Side-mounted motor to the right (Note 2)	**MR**	35
—	**—**	—
Non-motor end specification	**NM**	35
PNP specification (Note 1)	**PN**	35
Slider part roller specification	**SR**	35
Split motor and controller power supply specification	**TMD2**	36
Battery-less absolute encoder specification	**WA**	36
Wireless communication specification	**WL**	36
Wireless axis operation specification	**WL2**	36

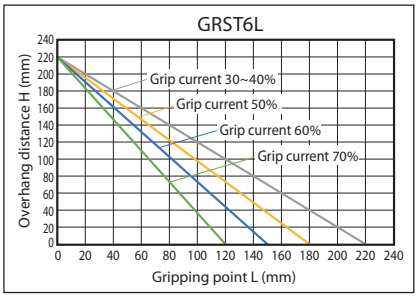
(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Make sure to specify either "ML" or "MR" in the correct location in the actuator model number.

Check of Gripping Point Distance

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



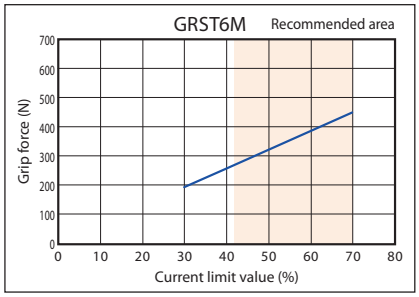


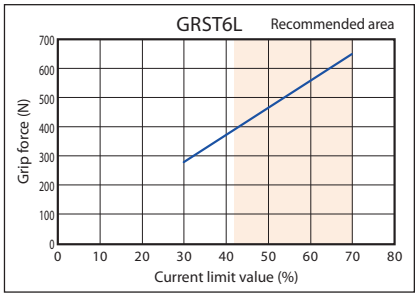


(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

Grip Force

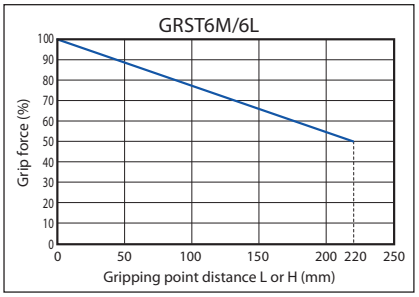
■ Correlation diagram between grip force and current limit value





(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
(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.

■ Guidelines for gripping point distance and grip force



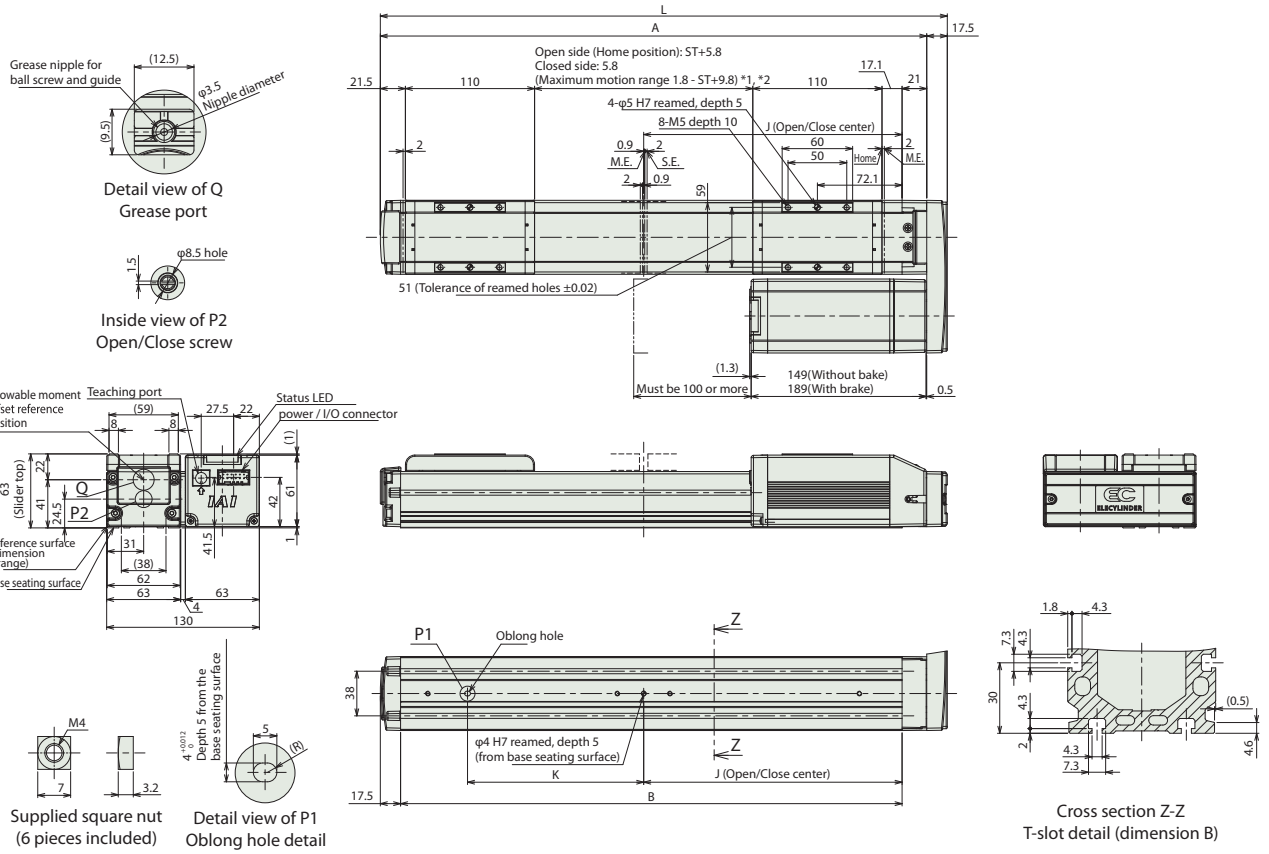
(Note) Shows grip force of overhang position when maximum grip force is set to 100%. The results may differ due to the rigidity of the finger attachment used.

Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

*1 When returning to the home position, both sliders will move to the M.E.. Be careful of interface with surrounding objects.
*2 Both sliders move in opposite directions at the same time.
(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).
(Note) Square nuts come with six nut holders.
(Note) The drawings below are for the side-mounted motor to the left (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



Dimensions by stroke

Stroke	180	230
L	483	533
A	465.5	515.5
B	427	477
J	220	245
K	150	175

Mass by stroke

Stroke			180	230
Mass (kg)	GRST6M	Without brake	3.5	3.7
		With brake	3.7	3.9
	GRST6L	Without brake	3.6	3.8
		With brake	3.8	4.0

Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 42 for details on built-in controllers.

EC-GRST7

Simple dust-proof | Slider | 2-Finger | Side-mounted motor | Body Width 70 mm | 24v Pulse Motor

Model Specification Items

EC - GRST7 - [ ] - [ ] - [ ] - [ ]

Series	Type	Reduction ratio			Stroke		Power / I/O cable length	Options
EC	GRST7	M	Standard	Ball screw Lead 4mm Pulley reduction ratio 1	210	210mm (105mm per finger)	Refer to Power / I/O cable length below	Refer to Options below
		L	High-thrust force	Ball screw Lead 4mm Pulley reduction ratio 1.5	260	260mm (130mm per finger)		

(Note) The above picture shows the side-mounted motor to the left (ML).

CE RoHS 10

Horizontal | Vertical | Side | Ceiling

POINT Selection Notes

(1) The maximum opening/closing 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 gripping point distance and overhang distance are both 0. For the workpiece weight which can actually be moved, refer to the "Check of Gripping Point Distance".

(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 P36 for details.

(5) Pay close attention to the installation orientation. Refer to P7 for details.

(6) This model does not have the self-lock mechanism. If a holding mechanism is required, select the brake option. By using the automatic servo OFF function, the grip force can be maintained until the brake is activated after the power is turned off. (However, this does not guarantee that the workpiece will not be dropped.) To release the workpiece being gripped during a power cutoff, turn the open/close screw on the side, or remove the finger attachment to release the workpiece.

(7) This actuator cannot be used with "Power-saving mode".

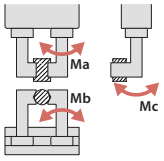
Main Specifications

Item		Description	
Reduction ratio		M	L
Lead	Ball screw lead (mm)	4	4
	Pulley reduction ratio	1.00	1.50
Grip operation	Max. grip force (N) (both sides)	1094	1641
	Max. speed during grip operation (mm/s) (one side)	20	20
Approach operation	Max. speed (mm/s) (one side)	175	117
	Min. speed (mm/s) (one side)	10	10
	Rated acceleration/deceleration (G) (one side)	0.3	0.3
	Max. acceleration/deceleration (G) (one side)	1	1
Brake	Brake specification	Non-excitation actuating solenoid brake	
	Brake-holding force (N) (both sides)	785	1178
Stroke (one side)	Min. stroke (mm) (one side)	105	105
	Max. stroke (mm) (one side)	130	130

Item	Description
Drive system	Both sides ball screw ø12mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (not available due to 2-point positioning function)
Backlash (one side)	0.03mm or less
Base	Dedicated aluminum extruded material (equivalent to A6063SS-T5) Black alumite treated
Linear guide	Direct-acting infinite circulation type
Allowable static moment	Ma : 79.7 N·m
	Mb : 114.0 N·m
	Mc : 157.0 N·m
Allowable vertical load (Note 1)	2330N
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration/shock resistance	4.9m/s²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor (□56) (Power capacity: max. 4.2A)
Encoder type	Incremental (standard) /battery-less absolute (option)
Number of encoder pulses	800 pulse/rev

(Note 1) Use at a load exceeding the value above could reduce operation life or lead to damage.

Slide type moment direction



Power / I/O Cable Length

■ Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 43 for details.
(Note) Robot cable is standard.

■ 4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable is standard.

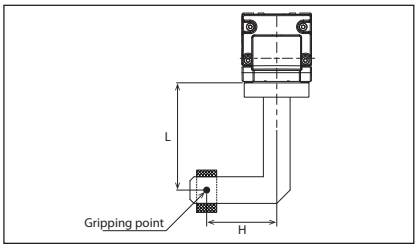
Options

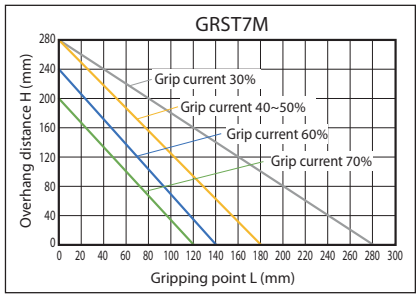
Name	Option code	Reference page
RCON-EC connection specification (Note 1)	**ACR**	33
Brake	**B**	33
Designated grease specification	**G1/G5**	33
Side-mounted motor to the left (Note 2)	**ML**	35
Side-mounted motor to the right (Note 2)	**MR**	35
—	**—**	—
Non-motor end specification	**NM**	35
PNP specification (Note 1)	**PN**	35
Slider part roller specification	**SR**	35
Split motor and controller power supply specification	**TMD2**	36
Battery-less absolute encoder specification	**WA**	36
Wireless communication specification	**WL**	36
Wireless axis operation specification	**WL2**	36

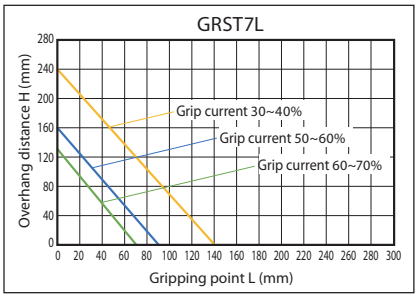
(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Make sure to specify either "ML" or "MR" in the correct location in the actuator model number.

Check of Gripping Point Distance

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



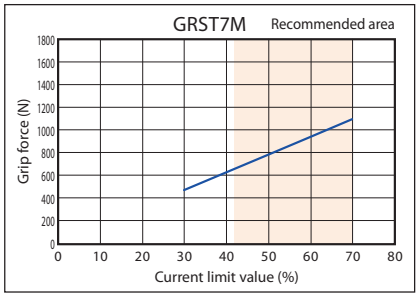


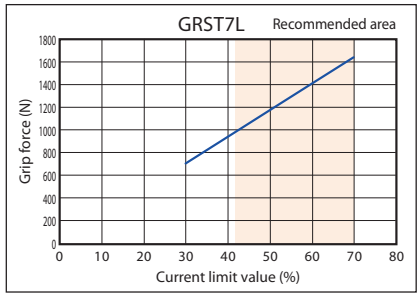


(Note) Use outside of the limited range will cause excessive moment on the finger sliding part and internal mechanisms, negatively affecting operation life.

Grip Force

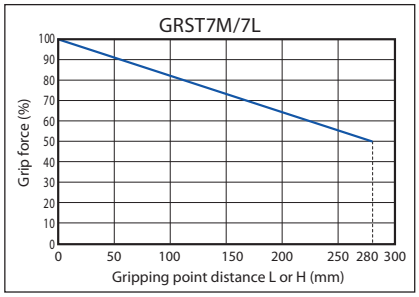
■ Correlation diagram between grip force and current limit value





(Note) Total value of both fingers when gripping point distance (L, H) is 0.
(Note) Guideline values. There is variation of 0 to 60%. In particular, current limit values set outside the recommended range (colored part of the graph) are more likely to lead to variation.
(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.

■ Guidelines for gripping point distance and grip force



(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.

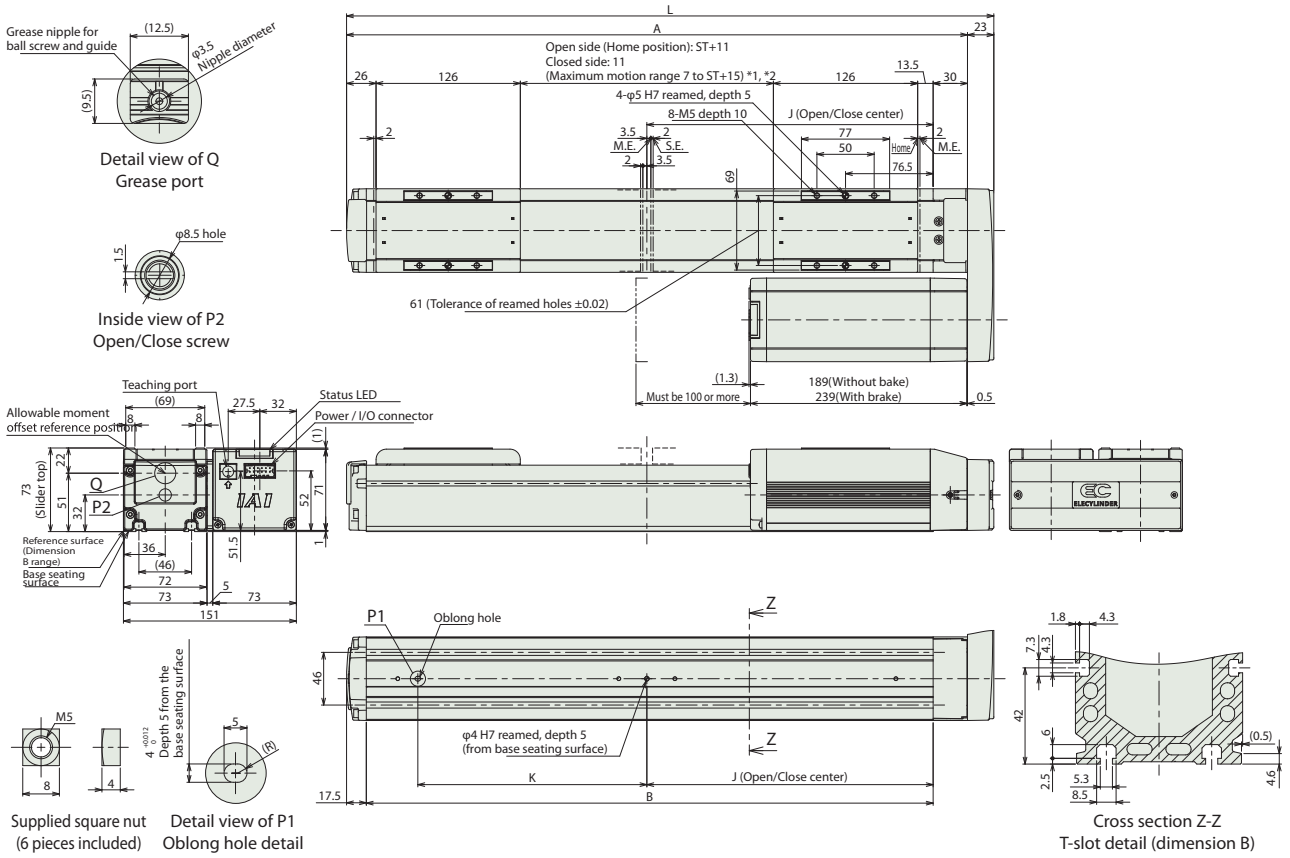
Dimensions

CAD drawings can be downloaded from our website.
www.iai-automation.com

2D CAD 3D CAD

*1 When returning to the home position, both sliders will move to the M.E.. Be careful of interface with surrounding objects.
*2 Both sliders move in opposite directions at the same time.
(Note) The open side is home as standard. To set the closed side as home, specify the option (model: NM).
(Note) Square nuts come with six nut holders.
(Note) The drawings below are for the side-mounted motor to the left (ML).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end



Dimensions by stroke

Stroke	210	260
L	565.5	615.5
A	542.5	592.5
B	495	545
J	250	275
K	200	225

Mass by stroke

Stroke			210	260
Mass (kg)	GRST7M	Without brake	6.5	6.7
		With brake	6.7	6.9
	GRST7L	Without brake	6.5	6.7
		With brake	6.7	6.9

Applicable Controllers

(Note) The EC series is equipped with a built-in controller. Please refer to P. 42 for details on built-in controllers.

Options

RCON-EC connection spec.

* TMD2 and PN options cannot be selected at the same time (ACR option includes split motor and controller power supply spec.)

Model ACR **Applicable models** All models

Description This option is for connecting to field networks via RCON-EC.
This option provides split motor and controller power supply specification. The input/output specification must be NPN.
This option cannot be ordered with the PN or TMD2 options.

Brake

Model B **Applicable models** EC-GRC7(40, 60, 80mm strokes) / GRST3 /GRST6 / GRST7

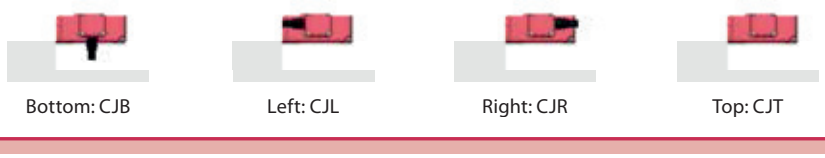
Description This option holds the fingers in place whenever the servo or power is OFF.

Cable exit direction

Model CJB / CJL / CJR / CJT **Applicable models** EC-GRC6 / GRC7 / GRST3 (CJT is not supported)

Description The exit direction of the actuator cable can be changed to top, bottom, left and right.

* The following pictures are for EC-GRC.



Bottom: CJB | Left: CJL | Right: CJR | Top: CJT

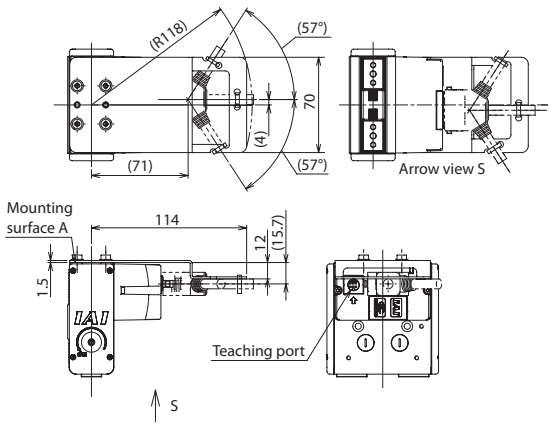
Cable mounting bracket (front)

Model FST **Applicable models** EC-GRB8 / GRB10 / GRB13

Description This is a bracket used to secure the cable near the connector with a cable tie. The teaching port can be accessed even with the bracket mounted (However, if the cable exit direction is towards the teaching port, access to the teaching port will not be possible due to interference). *Not assembled before shipment. Refer to the drawings for mounting instructions. When mounting the gripper using surface A, fix the cable mounting bracket together with the gripper body as well.

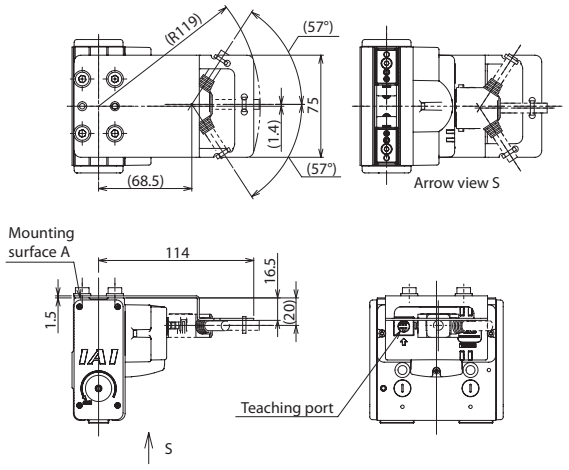
EC-GRB8 EC-GRB10 EC-GRB13

EC-GRB8 Single unit model EC-FST-GRB8
(Single unit mass: 0.1kg / Material: Stainless steel)



Accessories other than the bracket
- Flange head hex bolts (stainless steel): M4 x 6 (4 pcs)
- Cable tie (1 pc)

EC-GRB10/GRB13 Single unit model EC-FST-GRB1013
(Single unit mass: 0.11kg / Material: Stainless steel)



Accessories other than the bracket
- Flange head hex bolts (stainless steel): M6 x 10 (4 pcs)
- Cable tie (1 pc)

Designated grease specification

Model G1 / G5 **Applicable models** EC-GRC7 / GRST3 / GRST6 / GRST7

Description The grease applied to the actuator ball screw and linear guide will be changed to low-dust grease for cleanroom environment (Kuroda C grease) for the G1, and to food machine grease (White Alcom grease) for the G5.

Finger attachment mounting jig

Model **MJF / MJF1 / MJF2 / MJF3** **Applicable models** **EC-GRC6 / GRC7 / GRST3**

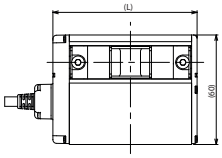
Description This jig is for mounting the finger attachment on sliders (delivered assembled).

EC-GRC6

Single unit model MJF1: EC-MJF1-GRC6
MJF2: EC-MJF2-GRC6
MJF3: EC-MJF3-GRC6
(Single unit mass: 0.02kg x 2 pieces / Material: Aluminum)

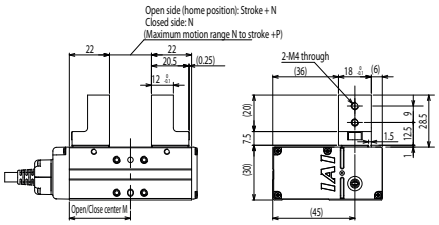
◆ Components
Adaptor: 2 pieces
Bolt with hexagonal hole: 2 pieces
Parallel pin: 2 pieces

(2 pieces / set)

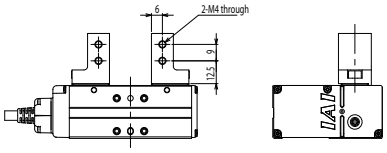


Stroke (mm)	20	30
L	79	99
M	33.5	43.5
N	3	8
P	4	9

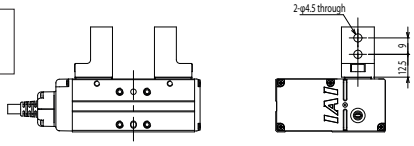
MJF1
Open/close direction screw hole



MJF2
Side screw hole



MJF3
Open/close direction through hole

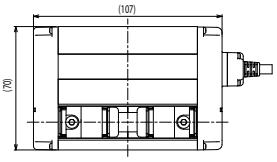


EC-GRC7 20mm stroke

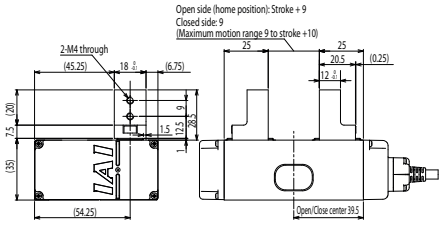
Single unit model MJF1: EC-MJF1-GRC7L
MJF2: EC-MJF2-GRC7L
MJF3: EC-MJF3-GRC7L
(Single unit mass: 0.02kg x 2 pieces / Material: Aluminum)

◆ Components
Adaptor: 2 pieces
Bolt with hexagonal hole: 2 pieces
Parallel pin: 2 pieces

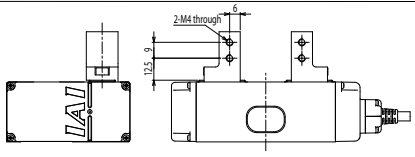
(2 pieces / set)



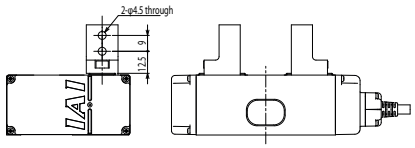
MJF1
Open/close direction screw hole



MJF2
Side screw hole



MJF3
Open/close direction through hole

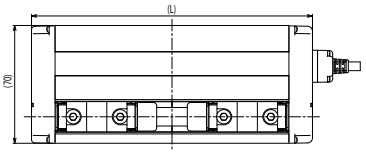


EC-GRC7 40, 60, 80mm strokes

Single unit model MJF1: EC-MJF1-GRC7T
MJF2: EC-MJF2-GRC7T
MJF3: EC-MJF3-GRC7T
(Single unit mass: 0.03kg x 2 pieces / Material: Aluminum)

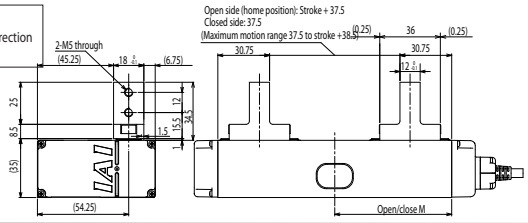
◆ Components
Adaptor: 2 pieces
Bolt with hexagonal hole: 4 pieces
Parallel pin: 2 pieces

(2 pieces / set)

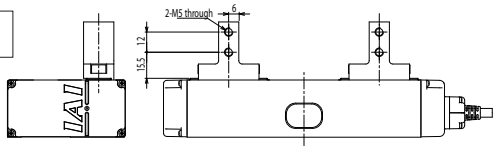


Stroke (mm)	40	60	80
L	167	187	207
M	69.5	79.5	89.5

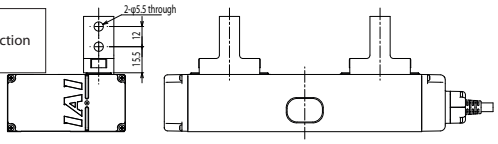
MJF1
Open/close direction screw hole



MJF2
Side screw hole



MJF3
Open/close direction through hole



EC-GRST3

Single unit model EC-MJF-GRST3
(Single unit mass: 0.05kg x 2 pieces / Material: Aluminum)
(2 pieces / set)

◆ Components
Adaptor: 2 pieces
Bolt with hexagonal hole: 8 pieces
Parallel pin: 4 pieces

Refer to the instruction manual for details.

Options

Motor side-mounted direction

Model **ML / MR** Applicable models **EC-GRST6 / GRST7**

Description This code specifies the direction of the side-mounted motor. ML indicates side-mounted to the left and MR to the right.
* One of these codes must be specified in the model number.

Non-motor end specification

Model **NM** Applicable models **All models**

Description The home position is normally set to the finger opening side. This option is for setting the home position on the other side in order to accommodate variations in equipment layout, etc. (Because the home position is adjusted to the factory default for shipping, when changing the home position after delivery the product must be returned to IAI for adjustment.)

PNP specification *Cannot be selected simultaneously with the ACR option, which is NPN specification.

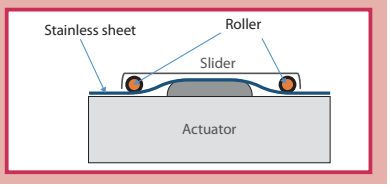
Model **PN** Applicable models **All models**

Description EC Series products provide NPN specification input/output for connecting to external devices by default. Specifying this option changes input/output to the PNP specification.

Slider roller specification

Model **SR** Applicable models **EC-GRST6 / GRST7**

Description The slider mechanism of the standard specification will be changed to the roller type which is same as that for the cleanroom specification.



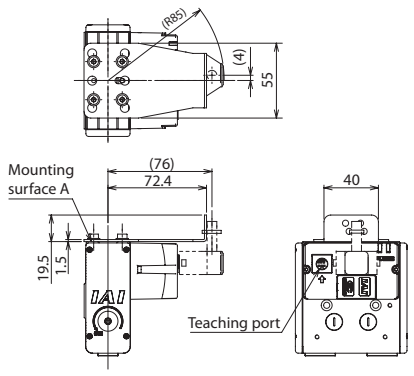
Cable mounting bracket (top)

Model **TST** Applicable models **EC-GRB8 / GRB10 / GRB13**

Description This is a bracket used to secure the cable near the connector with a cable tie. The teaching port can be accessed even with the fixing bracket mounted. *Can only be used with the 4-way connector cable. *Not assembled before shipment. Refer to the drawings for mounting instructions. When mounting the gripper using surface A, fix the cable mounting bracket together with the gripper body as well.

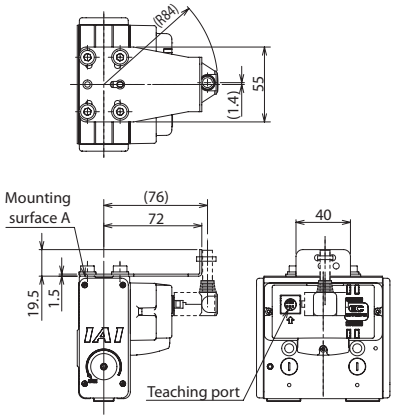
EC-GRB8 EC-GRB10 EC-GRB13

EC-GRB8 Single unit model EC-TST-GRB8
(Single unit mass: 0.06kg / Material: Stainless steel)



Accessories other than the bracket
- Flange head hex bolts (stainless steel): M4 x 6 (4 pcs)
- Cable tie (1 pc)

EC-GRB10/GRB13 Single unit model EC-TST-GRB1013
(Single unit mass: 0.06kg / Material: Stainless steel)



Accessories other than the bracket
- Flange head hex bolts (stainless steel): M6 x 10 (4 pcs)
- Cable tie (1 pc)

Split motor and controller power supply specification

* Cannot be selected with the ACR option (the RCON-EC connection specification is a split motor and controller power supply specification)

Model **TMD2** Applicable models **All models**

Description This option includes an actuator operation stop input.
Select this option to allow shutting down the actuator motor power only.
Please refer to P. 43 for more information on wiring.

Battery-less absolute encoder specification

Model **WA** Applicable models **All models (except for EC-GRB8)**

Description The EC grippers use the incremental encoder by default.
Specify this option to have a built-in battery-less absolute encoder installed.

Wireless communication specification

Model **WL** Applicable models **All models**

Description This option enables support for wireless communication. Specifying this option enables wireless communication with the TB-03 teaching pendant and the wireless teaching controller. The start point, end point, and AVD can be adjusted via wireless communication.

Wireless axis operation specification

Model **WL2** Applicable models **All models**

Description Specifying WL2 allows the product to operate wirelessly as with WL (start point, end point, and AVD adjustment), and also to perform axis travel operation tests (forward end/backward end movement, jog, and inching). However, this function is not meant to perform automatic operation. Please refer to P. 118 of the EC main catalogue V10 for precautions on axis operations using a wireless connection.
(Note) Customers cannot change WL to WL2, or WL2 to WL. Please contact IAI for this.

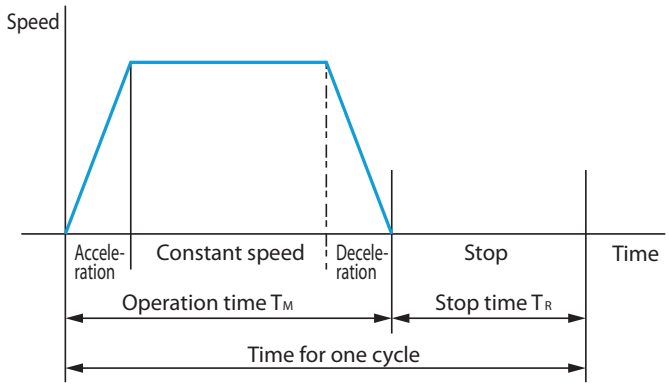
Duty ratio

The duty ratio refers to the operating rate expressed as percentage (%) of the actuator operating during one cycle.

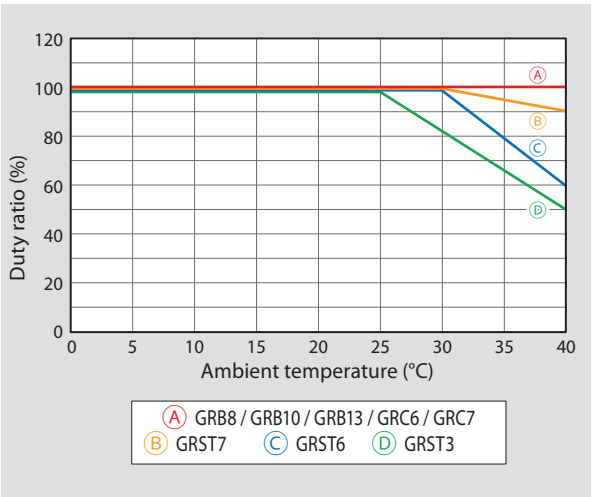
The EC-GRB/GRC types can operate at 100% duty ratio.
There is a limitation on the duty ratio for the EC-GRST type as shown below.
Operations at the maximum speed and acceleration/deceleration are also as shown below.

$$D = \frac{T_M}{T_M + T_R} \times 100(\%)$$

D : Duty ratio
T_M: Operating time (including push-motion operation)
T_R: Stop time

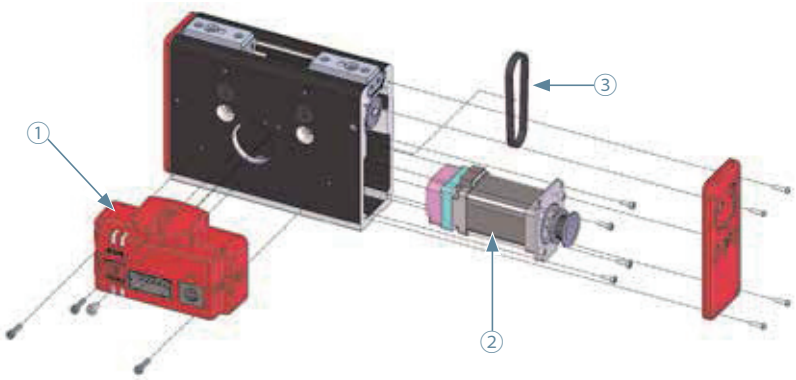


■ Correlation between ambient temperature and the duty ratio



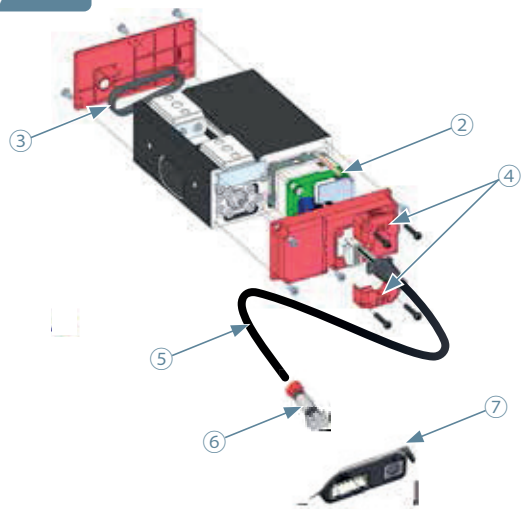
Maintenance parts

EC-GRB8 / GRB10 / GRB13



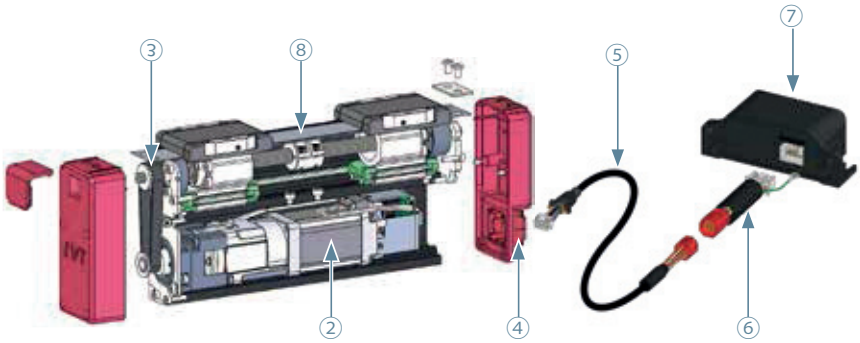
① Controller cover assembly
② Motor unit
③ Timing belt

EC-GRC6 / GRC7



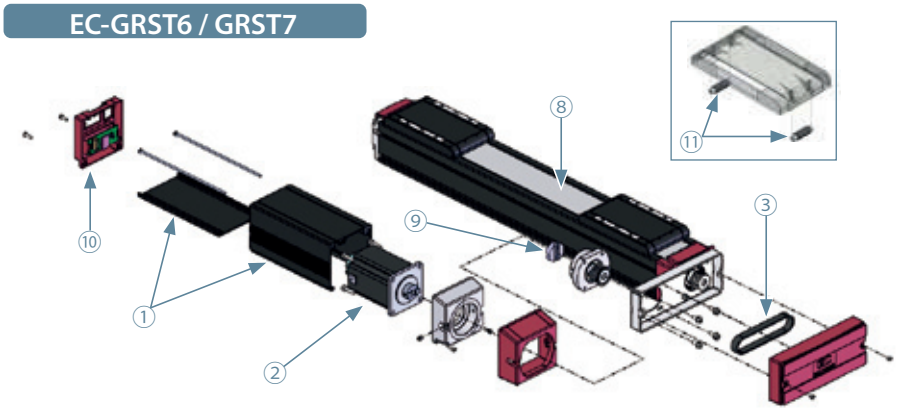
② Motor unit
③ Timing belt
④ Actuator cable mounting box
⑤ Actuator cable assembly
⑥ Interface box conversion cable
⑦ Interface box

EC-GRST3



② Motor unit
③ Timing belt
④ Actuator cable mounting box
⑤ Actuator cable assembly
⑥ Interface box conversion cable
⑦ Interface box
⑧ Stainless sheet

EC-GRST6 / GRST7



① Motor cover assembly
② Motor unit
③ Timing belt
⑧ Stainless sheet
⑨ Coupling spacer
⑩ End cover assembly
⑪ Slider roller assembly

The number at the table correspond to those in the schematic drawings.
(Note) Mounting screws are not included in the maintenance parts (except for ④). For modifications, contact IAI.

①-1 Controller cover assembly

Type	I/O	Wireless	Model		
			Standard	When TMD2 is selected	When ACR is selected
GRB8	NPN	No	CCA-EC-GRB8	CCA-EC-GRB8-TMD2	CCA-EC-GRB8-ACR
		WL	CCA-EC-GRB8-WL	CCA-EC-GRB8-TMD2-WL	CCA-EC-GRB8-ACR-WL
		WL2	CCA-EC-GRB8-WL2	CCA-EC-GRB8-TMD2-WL2	CCA-EC-GRB8-ACR-WL2
	PNP	No	CCA-EC-GRB8-P	CCA-EC-GRB8-P-TMD2	
		WL	CCA-EC-GRB8-P-WL	CCA-EC-GRB8-P-TMD2-WL	
		WL2	CCA-EC-GRB8-P-WL2	CCA-EC-GRB8-P-TMD2-WL2	
GRB10 GRB13	NPN	No	CCA-EC-GRB1013	CCA-EC-GRB1013-TMD2	CCA-EC-GRB1013-ACR
		WL	CCA-EC-GRB1013-WL	CCA-EC-GRB1013-TMD2-WL	CCA-EC-GRB1013-ACR-WL
		WL2	CCA-EC-GRB1013-WL2	CCA-EC-GRB1013-TMD2-WL2	CCA-EC-GRB1013-ACR-WL2
	PNP	No	CCA-EC-GRB1013-P	CCA-EC-GRB1013-P-TMD2	
		WL	CCA-EC-GRB1013-P-WL	CCA-EC-GRB1013-P-TMD2-WL	
		WL2	CCA-EC-GRB1013-P-WL2	CCA-EC-GRB1013-P-TMD2-WL2	

①-2 Motor cover assembly

[Model configuration] Base model - (when ACR selected) - (when TMD2 selected) - (when WL2 selected)

Type	Brake	I/O	Base model code	RCON-EC connection specification *	Split motor and controller power supply specification *	Wireless axis operation specification
				Model: ACR	Model: TMD2	Model: WL2
GRST6	No	NPN	MWB-EC-SR6	ACR (I/O is for NPN only)	TMD2	WL2
		PNP	MWB-EC-SR6-P			
	Yes	NPN	MWB-EC-SR6-B			
		PNP	MWB-EC-SR6-B-P			
GRST7	No	NPN	MWB-EC-SR7			
		PNP	MWB-EC-SR7-P			
	Yes	NPN	MWB-EC-SR7-B			
		PNP	MWB-EC-SR7-B-P			

* Same when the wireless communication specification (model: WL) is selected.
(Note) Does not include the wireless communication board

② Motor unit

Type	Encoder	Deceleration ratio	Brake	Model
GRB8	Incremental	M	No	EC-MUGRB8
GRB10	Incremental	M		EC-MUGRB10
	Battery-less absolute	M		EC-MUGRB10-WA
GRB13	Incremental	M		EC-MUGRB13M
		L		EC-MUGRB13L
	Battery-less absolute	M		EC-MUGRB13M-WA
		L		EC-MUGRB13L-WA
GRC6	Incremental	M	No	EC-MUGRST6
	Battery-less absolute			EC-MUGRST6-WA
GRC7 GRST3	Incremental	M	No	EC-MUGR37
			Yes	EC-MUGR37-B
		L	No	EC-MUGR37S
			Yes	EC-MUGR37S-B
	Battery-less absolute	M	No	EC-MUGR37-WA
			Yes	EC-MUGR37-WA-B
		L	No	EC-MUGR37S-WA
			Yes	EC-MUGR37S-WA-B
GRST6	Incremental	Common for M/L	No	EC-MUSR6
			Yes	EC-MUSR6-B
	Battery-less absolute		No	EC-MUSR6-WA
			Yes	EC-MUSR6-WA-B
GRST7	Incremental		No	EC-MUR7
			Yes	EC-MUGRST7-B
	Battery-less absolute		No	EC-MUR7-WA
			Yes	EC-MUGRST7-WA-B

③ Timing belt

Type	Deceleration ratio	Model
GRB8	M	TB-EC-GRB8
GRB10	M	TB-EC-GRB10
GRB13	M	TB-EC-GRB13M
	L	TB-EC-GRB13L
GRC6	M	TB-EC-GRC6
GRC7	M	TB-EC-GRC7M
	L	TB-EC-GRC7L
GRST3	M	TB-EC-GRST3M
	L	TB-EC-GRST3L
GRST6	M	TB-EC-SRR6R
	L	TB-EC-GRST6L
GRST7	M	TB-EC-SRR7R
	L	TB-EC-GRST7L

④ Actuator cable mounting box

Type	Cable exit direction	Model
GRC6/GRC7 GRST3	Rear	EC-CASBR-SLTGD3
	Side	EC-CASBS-SLTGD3

(Accessory: screws)

⑤ Actuator cable assembly

Type	Internal wiring method	Model
GRC6/GRC7 GRST3	Junction connection	CB-EC-GR367-MPA□□□-AS
	Motor direct	CB-EC-GR367D-MPA□□□-AS

* □□□ indicates cable length.
* Motor direct ··· GRC6M/GRC7L 20mm stroke
GRC7L with brake 40mm stroke

⑥ Interface box conversion cable

Type	Model
GRC6/GRC7 GRST3	CB-CVN-BJ002

⑧ Stainless sheet

Type	Model
GRST3	ST-EC-GRST3-□□□
GRST6	ST-EC-S6D-□□□
GRST7	ST-EC-S7D-□□□

* □□□ indicates stroke.

⑦ Interface box

Type	Wireless	I/O	Model		
			Standard	When TMD2 is selected	When ACR is selected
GRC6 GRC7 GRST3	No	NPN	ECW-CVN-CB	ECW-CVN-CB-TMD2	
		PNP	ECW-CVP-CB	ECW-CVP-CB-TMD2	
	WL/WL2	NPN	ECW-CVNWL-CB	ECW-CVNWL-CB-TMD2	ECW-CVNWL-CB-ACR
		PNP	ECW-CVPWL-CB	ECW-CVPWL-CB-TMD2	

⑨ Coupling spacer

Type	Model
GRST6	CPG-EC-SR6
GRST7	CPG-EC-SR7

⑩ End cover assembly

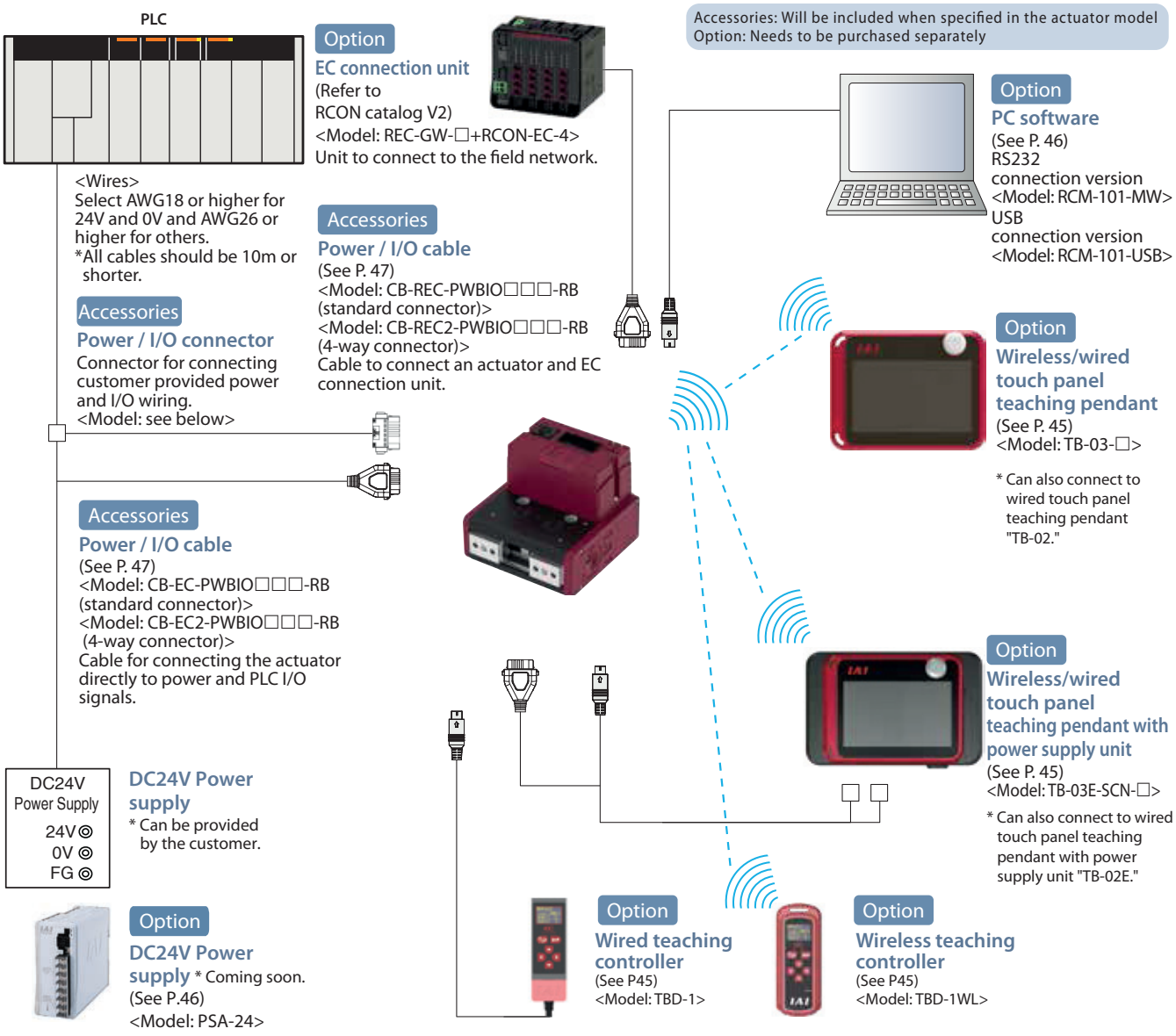
Type	Model
GRST6	EWB-EC-SR6
GRST7	EWB-EC-SR7

(Note) Comes with the wireless communication board cable.
For non-wireless communication specification, contact one of IAI representatives.

⑪ Slider roller assembly

Type	Model
GRST6 GRST7	EC-SR-S467

System configuration [EC-GRB8 / GRB10 / GRB13 / GRST6 / GRST7]



List of Accessories [EC-GRB8 / GRB10 / GRB13 / GRST6 / GRST7]

■ Power / I/O cable and connector

[Standard connector]

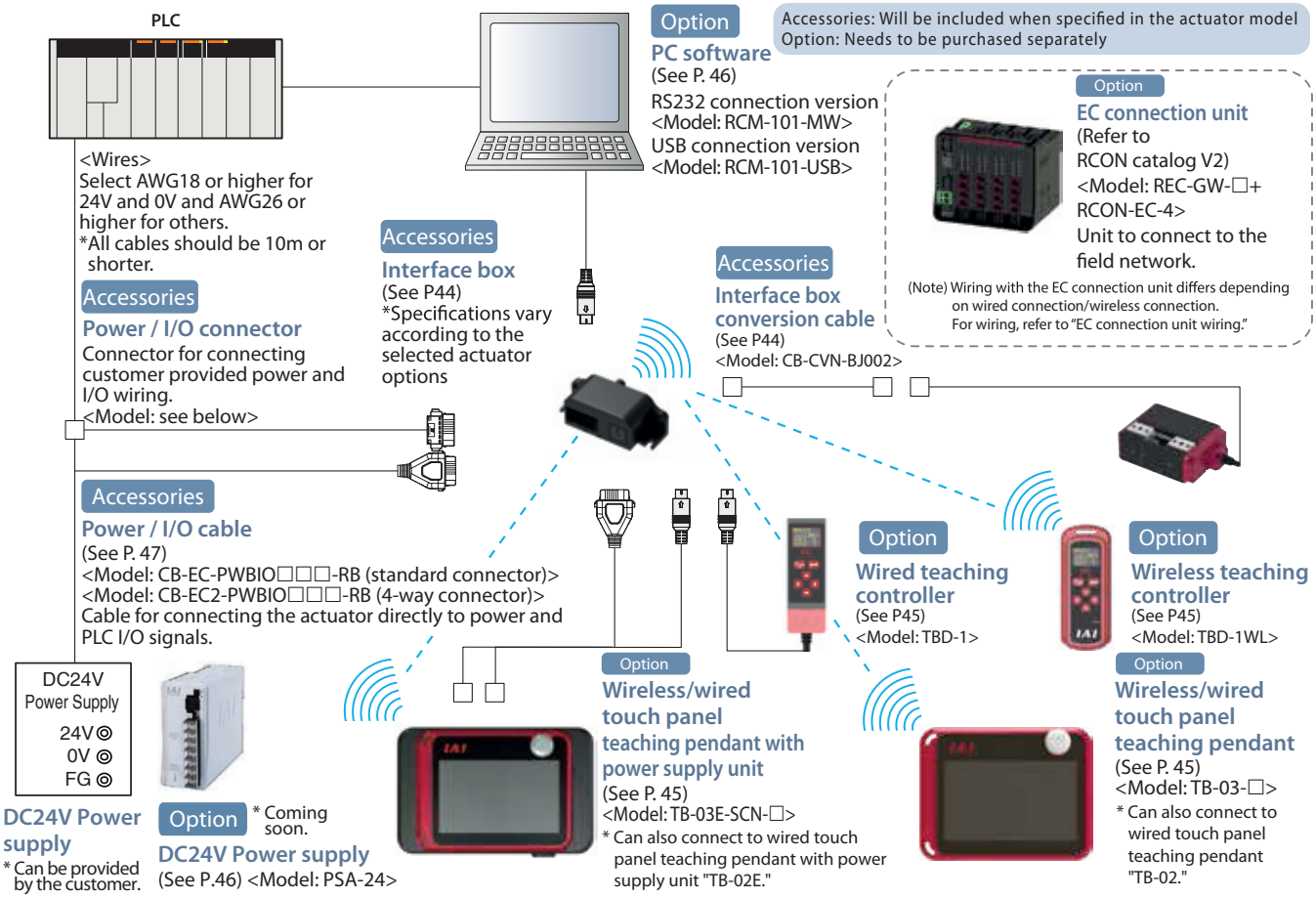
Product category		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
0	Not selected	Power / I/O connector *
	Selected	—
1 ~ 10	Not selected	Power / I/O cable (CB-EC-PWBIO□□□-RB)
	Selected	Power / I/O cable (CB-REC-PWBIO□□□-RB)

* Model code: 81702010-03-000-00 in case of TMD2 selection; otherwise 1-1871940-6-ENG

[4-way connector]

Product category		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
S1 ~ S10	Not selected	Power / I/O cable (CB-EC2-PWBIO□□□-RB)
	Selected	Power / I/O cable (CB-REC2-PWBIO□□□-RB)

System configuration [EC-GRC6 / GRC7 / GRST3]



EC connection unit wiring

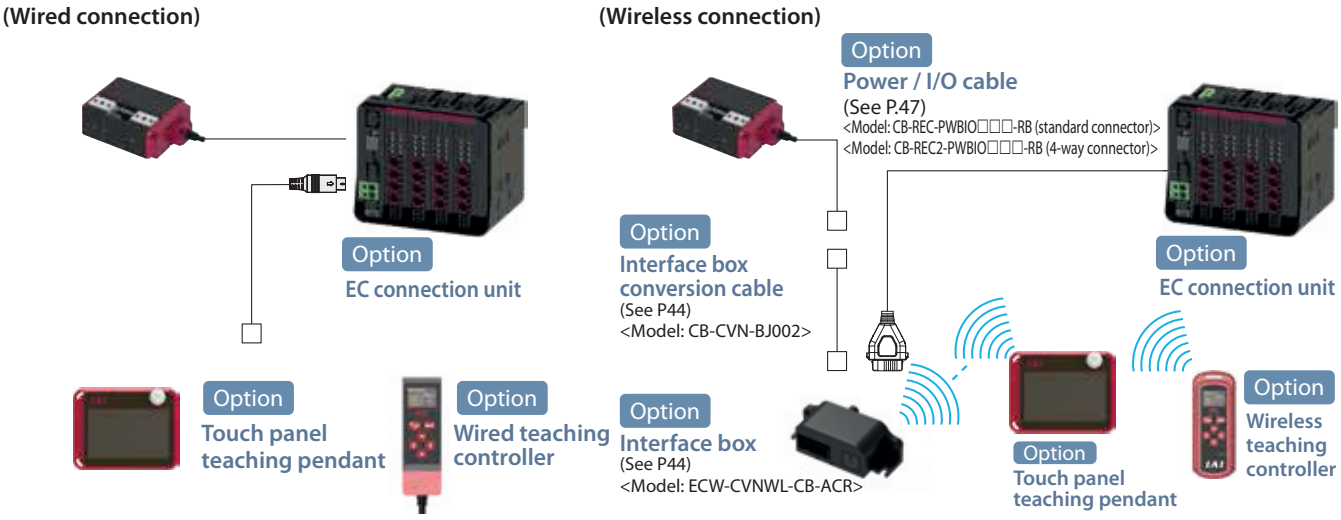


Table of accessories [EC-GRC6 / GRC7 / GRST3]

■ Power / I/O cable and connector

[Standard connector]

Classification		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
0	Not selected	Power / I/O connector *
	Selected	-
1 ~ 9	Not selected	Power / I/O cable (CB-EC-PWBIO□□□-RB)

* Model code: 81702010-03-000-00 in case of TMD2 selection; otherwise 1-1871940-6-ENG

[4-way connector]

Classification		Accessories
Power / I/O cable length (specified in actuator model number)	RCON-EC connection specification (ACR)	
S1 ~ S9	Not selected	Power / I/O cable (CB-EC2-PWBIO□□□-RB)

Table of connectability for EleCylinder and teaching tools

■ EleCylinder single unit

○ : Connection/Operation possible

Teaching tool			Connection/Operation possibility	Priority order (When connected simultaneously)
Wired connection	TB-02/03		○	1
	Wired teaching controller (TBD-1)		○	1
Wireless connection	TB-03		○ *1 *2	2
	Wireless teaching controller (TBD-1WL)		○ *1 *2	2

*1 Connectable only when EleCylinder is of the wireless connection specification (WL or WL2 is suffixed to the option code).
*2 Trial operations are not possible when connected with WL specification, but possible when connected with WL2 specification.

■ When EleCylinder is connected to REC/RCON/RSEL (RCON-EC-4 connection).

Connection patters

○ : Connection/Operation possible, △ : Connection possible/Operation partially possible, — : Connection/Operation impossible

Teaching tool			Connection pattern	Auto (during automatic operation)		Manual	
				Connection/Operation possibility	Priority order (when connected simultaneously)	Connection/Operation possibility	Priority order (when connected simultaneously)
Wired connection	TB-02/03		Ⓐ	—		—	
			Ⓑ	△ *3	1	○	1
	Wired teaching controller (TBD-1)		Ⓐ	—		—	
			Ⓑ	—		—	
Wireless connection	TB-03		Ⓒ	△ *1 *3	2	○ *1 *2	2
	Wireless teaching controller (TBD-1WL)		Ⓒ	△ *1 *4	2	○ *1 *2	2

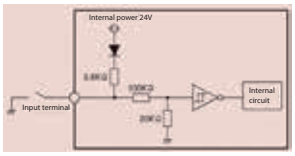
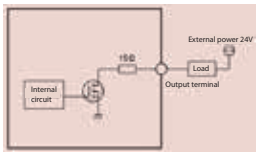
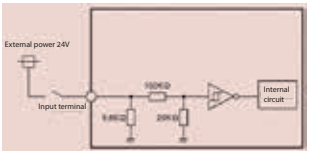
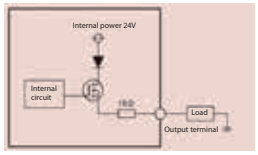
*1 Connectable only when EleCylinder is of the wireless connection specification (WL or WL2 is suffixed to the option code).
*2 Trial operations are not possible when connected with WL specification, but possible when connected with WL2 specification.
*3 Only monitoring is possible (operations are not possible).
*4 Setting of speed and acceleration/deceleration is possible. Position edits and trial operations are not possible.

Basic Controller Specifications

Specification item			Specification content
Number of controlled axes			1 axis
Power supply voltage			24VDC ±10%
Power capacity (Including 0.3A control current) (Note 1)		GRC6	Rated 0.95A, maximum 1.25A (only with enabled energy-saving setting)
		GRB8	Max. 1A (only with enabled energy-saving setting)
		GRC7/GRST3	Rated 1.5A, maximum 2A (only with enabled energy-saving setting)
		GRB10/GRB13	Max. 2A (only with enabled energy-saving setting)
		GRST6/GRST7	Rated 3.5A, maximum 4.2A (only with disabled energy-saving setting)
Brake release power			24VDC±10%, 200mA (only for external brake release)
Generated heat (at duty ratio 100%)		GRB8	2W
		GRC6	3W
		GRB10/GRB13 GRC7/GRST3	5W
		GRST6/GRST7	8W
Inrush current (Note 2)		GRB8/GRB10 GRB13/GRC6/ GRC7/GRST3	2A
		GRST6/GRST7	8.3A (with inrush current limit circuit)
Momentary power failure resistance			Max 500µs
Motor size			□20, □28, □42, □56
Motor rated current		GRB8	0.4A
		GRC6	0.65A
		GRB10/GRB13 GRC7/GRST3 GRST6/GRST7	1.2A
Motor control system			Weak field-magnet vector control
Supported encoders			Incremental, battery-less absolute encoder
SIO			RS485 1ch (Modbus protocol compliant)
PIO	Input specification	No. of inputs	3 points (forward, backward, alarm clear)
		Input voltage	24VDC ±10%
		Input current	5mA per circuit
		Leakage current	Max. 1mA/1 point
		Isolation method	Non-isolated
	Output specification	No. of outputs	3 points (forward complete, backward complete, alarm)
		Output voltage	24VDC ±10%
		Output current	50mA/1 point
		Residual voltage	2V or less
		Isolation method	Non-isolated
Data setting, input method			PC software, touch panel teaching pendant, digital speed controller
Data retention memory			Position and parameters are saved in non-volatile memory (no limit to number of rewrites)
LED display (Note 3)	Controller status display		Servo ON (green light ON) / Alarm (red light ON) / Initializing when power comes ON (orange light ON) / Minor failure alarm (green/red alternately blinking) / Operation from teaching: Stop from teaching (red light ON) / Servo OFF (light OFF) / AUTO Servo OFF (green blinking)
	Wireless status display		Initializing wireless hardware, without wireless connection, or connecting from SIO port board (light OFF) Connecting through wireless (green blinking) / Wireless hardware error (red blinking) / Initializing when power comes ON (orange light ON)
Predictive maintenance/ preventative maintenance			When the number of movements or operation distance has exceeded the set value or in case of overload warning, the LED (right side) blinks alternately green and red. *Only when configured in advance
Ambient operating temperature			0 ~ 40°C
Ambient operating humidity			5%RH - 85%RH or less (no condensation or freezing)
Operating environment			No corrosive gas or excessive dust
Insulation resistance			500VDC 10MΩ
Electric shock protection mechanism			Class 1 basic insulation
Cooling method			Natural air cooling

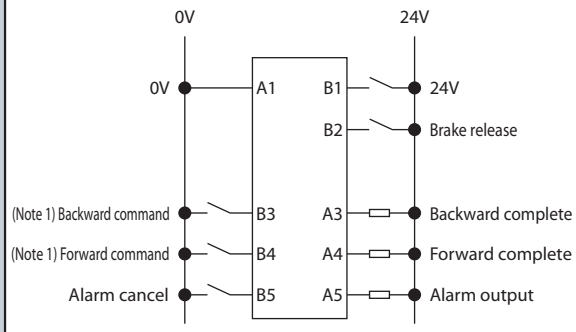
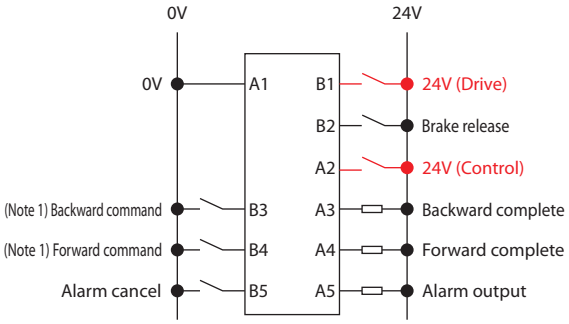
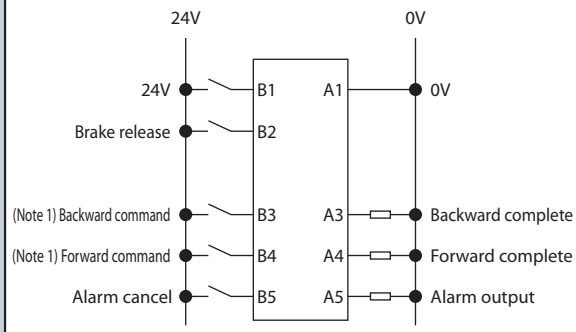
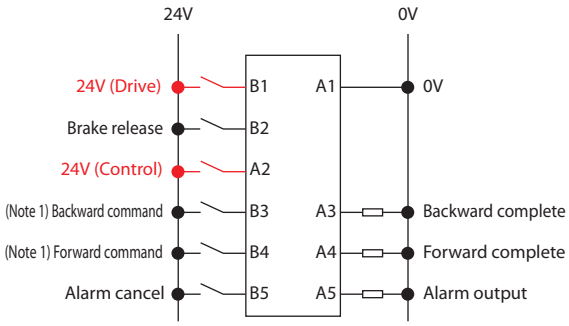
(Note 1) For RCON-EC connection, the value is subtracted by 0.3A control current.
(Note 2) Inrush current flows for 5ms after power is turned on (at 40°C). Inrush current value varies depending on the impedance of the power line.
(Note 3) EC-GRC6/GRC7/GRST3 do not have an LED indicator on the main unit. The status of these units can be checked on either the interface box or EC-connection unit.

I/O (Input/Output) Specifications

I/O		Input		Output	
Specifications		Input voltage	24VDC ±10%	Load voltage	24VDC ±10%
		Input current	5mA per circuit	Maximum load current	50mA/1 point
		ON/OFF voltage	ON voltage: Min. 18VDC OFF voltage: Max. 6VDC	Residual voltage	2V or less
		Leakage current	Max. 1mA/1 point	Leakage current	Max. 0.1mA/1 point
Isolation method		Non-isolated from external circuit		Non-isolated from external circuit	
I/O logic	NPN				
	PNP				

(Note) Isolation method is non-isolated. When grounding an external device (such as a PLC) connected to EleCylinder, use the same ground as EleCylinder.

I/O Signal Wiring Diagram

I/O		Standard specification	Split motor and controller power supply specification (option model: TMD2)
Power / I/O connector		 0V A1 (Reserved) A2 Backward complete A3 Forward complete A4 Alarm output A5 (Reserved) A6 B1 24V B2 Brake release B3 Backward command (Note 1) B4 Forward command (Note 1) B5 Alarm cancel B6 (Reserved)	 0V A1 24V (Control) A2 Backward complete A3 Forward complete A4 Alarm output A5 (Reserved) A6 B1 24V (Drive) B2 Brake release B3 Backward command (Note 1) B4 Forward command (Note 1) B5 Alarm cancel B6 (Reserved)
I/O logic	NPN	 0V 24V 0V A1 B1 24V B2 Brake release (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output	 0V 24V 0V A1 B1 24V (Drive) B2 Brake release A2 24V (Control) (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output
	PNP	 24V 0V 24V B1 A1 0V Brake release B2 (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output	 24V 0V 24V (Drive) B1 A1 0V Brake release B2 24V (Control) A2 (Note 1) Backward command B3 A3 Backward complete (Note 1) Forward command B4 A4 Forward complete Alarm cancel B5 A5 Alarm output

(Note 1) Switching to the single solenoid mode will change B3 to "Forward/Backward command" and B4 to "Unused."

I/O Signal Table

Power / I/O connector pin assignment			
Pin No.	Connector nameplate name	Signal abbreviation	Function overview
B3 (Note 1)	Backward	ST0	Backward command
B4 (Note 1)	Forward	ST1	Forward command
B5	Alarm cancel	RES	Alarm cancel
A3	Backward complete	LS0/PE0	Backward complete/push complete
A4	Forward complete	LS1/PE1	Forward complete/push complete
A5	Alarm	*ALM	Alarm detection (b-contact)
B2	Brake release	BKRLS	Brake forced release (for brake equipped specification)
B1 (Note 2)	24V	24V	24V input
A1	0V	0V	0V input
A2 (Note 2)	(24V)	(24V)	24V input

(Note 1) Switching to the single solenoid mode will change B3 to "Forward/backward" and B4 to "Unused." However, the power / I/O connector display will still read "B3: Backward" and "B4: Forward."
(Note 2) B1 is 24V (Drive) and A2 is 24V (Control) for the split motor and controller power supply specification (TMD2).

Solenoid system

EleCylinder products are normally controlled in double solenoid mode.
Change parameter number 9 (solenoid valve type selection) to switch to single solenoid mode.

<Caution>
Operations cannot be performed in single solenoid mode when operating connected to RCON-EC.

Options [EC-GRC6/GRC7/GRST3]

RCON-EC connection specification split motor and controller power supply interface box (wireless)

Model **ECW-CVNWL-CB-ACR** **Applicable models** EC-GRC6/GRC7/GRST3

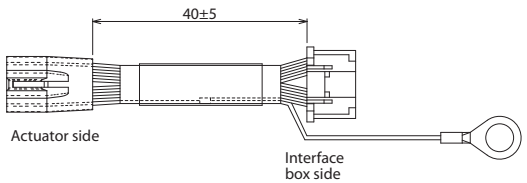
Description Necessary for connecting to the EC connection unit and also performing wireless teaching.

* Wireless communication (WL).
For wireless axis operation specification (WL2), contact one of IAI representatives.

Interface box conversion cable

Model **CB-CVN-BJ002** **Applicable models** EC-GRC6/GRC7/GRST3

Description Cable for connecting the actuator cable and interface box.



DF62B-13EP-2.2C(18) (Hirose)

Color	Size	Signal name	No.
Yellow	AWG26	MP	1
Black	AWG26	GND	2
Pink	AWG26	IN0	3
White	AWG26	IN1	4
Purple	AWG26	SD+	6
Green	AWG26	SD-	10
Sky blue	AWG26	OUT0	7
Orange	AWG26	OUT1	8
Brown	AWG26	OUT2	9
Blue	AWG26	BKRLS	11
Gray	AWG26	CP	12
Red	AWG26	FG	13

PUDP-12V-S(JST)

No.	Signal name	Size	Color
4	MP	AWG26	Yellow
10	GND	AWG26	Black
11	sub_SD+	AWG26	Pink
9	sub_SD-	AWG26	White
7	main_SD+	AWG26	Purple
5	main_SD-	AWG26	Green
12	STOP_EXT	AWG26	Sky blue
3	rsv(VPS)	AWG26	Orange
1	rsv	AWG26	Brown
6	BK_EXT	AWG26	Blue
8	VP24	AWG26	Gray
2	FG	AWG26	Red

0.5-5

No.	Signal name	Size	Color
1	FG	AWF22	Green

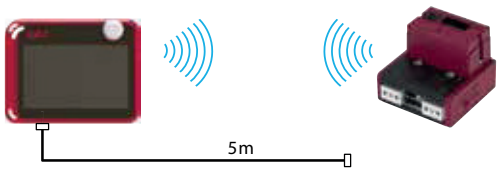
Option

Wireless/wired touch panel teaching pendant

Features This teaching device supports wireless connections.
Start point/end point/AVD input and axis operations can be performed wirelessly.

Model **TB-03-□** Please contact IAI for the current supported versions.

Configuration Wireless or wired connection



Specifications

Rated voltage	24VDC ±10%
Power consumption	3.6W or less (150mA or less)
Operating ambient temperature	0 - 40°C (non-condensing, no frost)
Operating ambient humidity	5 - 85%RH (non-condensing, no frost)
Degree of protection	IPX0
Mass	Approx. 485g (body) + approx. 175g (battery)
Charging method	Wired connection with dedicated adapter/controller
Wireless connection	Bluetooth4.2 class2

Wireless teaching controller (wireless digital teaching controller)

Features Start point/end point/AVD input and jog motions can be performed remotely.
(Only for the EleCylinder with wireless option)

Model **TBD-1WL-□**

Configuration Wireless connection

Specifications

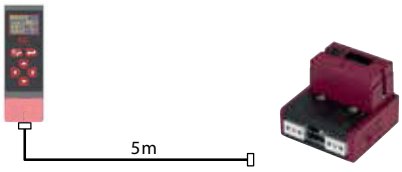
Power input voltage range	5.9VDC (5.7 - 6.3V) [Supplied from the dedicated AC adapter]
Operating ambient temperature	0 - 40°C (non-condensing, no frost)
Operating ambient humidity	5 - 85%RH (non-condensing, no frost)
Degree of protection	IPX0
Mass	Approx. 115g (including 55g battery)
Charging method	Dedicated adapter
Wireless connection	Bluetooth4.2 class2

Wired teaching controller

Features Start point/end point/AVD input and jog motions can be performed easily.
Can be used for all EleCylinder models.

Model **TBD-1**

Configuration Wired connection



Specifications

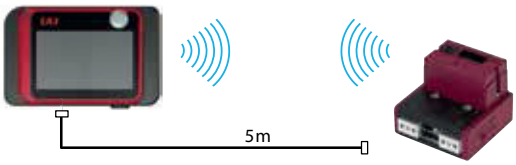
Rated voltage	24VDC ±10% [supplied from the controller]
Power consumption	1.44W or less (60mA or less)
Operating ambient temperature	0 - 40°C (non-condensing, no frost)
Operating ambient humidity	5 - 85%RH (non-condensing, no frost)
Degree of protection	IP20
Mass	Approx. 21g (main unit) + 184g (5m main unit integrated cable)

Wired/wireless touch panel teaching pendant with power supply unit

Features Since the TB-03 has a separate power unit, brake release, trial operation and data setting can be performed even before the machine wiring has been completed.

Model **TB-03E-□** Please contact IAI for the current supported versions.

Configuration Wireless or wired connection



Specifications

Rated voltage		Single-phase 100-230VAC ±10%
Input current	Under rated input/output conditions at an ambient temperature of 25°C	1.4A typ. (100VAC) 0.6A typ. (230VAC)
Frequency range		50/60Hz ±5%
Power capacity	Under rated input/output conditions at an ambient temperature of 25°C	141VA (100VAC) 145VA (230VAC)
Output voltage		24VDC ±10%
Mass		Approx. 740g
Cooling system		Natural air cooling

PC software (Windows only)

Features This start-up support software provides functions such as position teaching, trial operation, and monitoring. A complete range of functions needed for making adjustments contributes to shortened start-up time.

Model **RCM-101-MW** (with an external device communication cable + RS232 conversion unit)

Configuration

PC software (CD)

Please contact IAI for the current supported versions.

RS232 conversion adapter
RCB-CV-MW

0.3m

5m

External device communication cable
CB-RCA-SIO050

Model **RCM-101-USB** (with an external device communication cable + USB conversion adapter + USB cable)

Configuration

PC software (CD)

Please contact IAI for the current supported versions.

USB conversion adapter
RCB-CV-USB

3m

USB cable
CB-SEL-USB030

5m

External device communication cable
CB-RCA-SIO050

24V power supply

Model **PSA-24** (without fan) Coming soon

Model **PSA-24L** (with fan) Coming soon

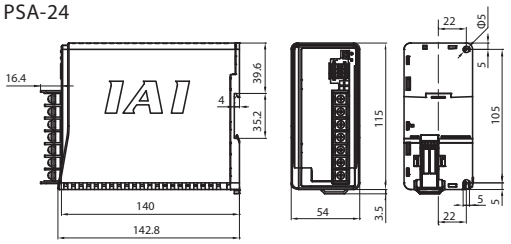
Specifications

Item	Specification for 230VAC input
Power input voltage range	230VAC ±10%
Input power current	1.9A or less
Power capacity	Without fan: 280VA With fan: 380VA
Inrush current *1	Without fan: 34A (typ) With fan: 54.8A (typ)
Generated heat	23W (at 204W continuous rated) 37W (at 330W continuous rated)
Output voltage range *2	24V ±10%
Continuous rated output	Without fan: 8.5A (204W) With fan: 13.8A (330W)
Peak output	17A (408W)
Efficiency	90% or higher
Parallel connection *3	Up to 5 units

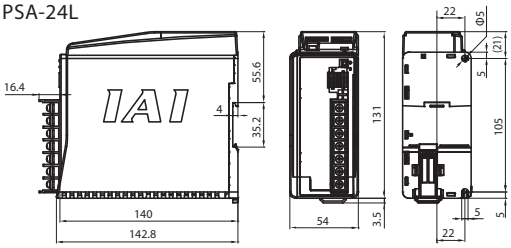
*1 The pulse width of inrush current flow is 5ms or less.
*2 This power source can change output voltage according to the load to enable parallel operations. Therefore, this power unit is only for IAI controllers.
*3 Parallel connections under the following conditions are not possible.
- Parallel connection of PSA-24 (without fan) and PSA-24L (with fan).
- Parallel connection with power supply units other than this unit.

External dimensions

PSA-24



PSA-24L



Maintenance Parts (Cables)

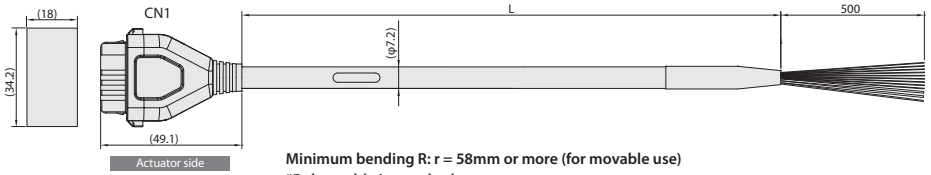
When placing an order for a replacement cable after purchasing a product, please use the model name shown below.

■ **Table of Compatible Cables**

Cable type	Cable model
Power / I/O cable (user-wired specification)	CB-EC-PWBIO□□□-RB
Power / I/O cable (user-wired specification, four-way connector)	CB-EC2-PWBIO□□□-RB
Power / I/O cable (RCON-EC connection specification)	CB-REC-PWBIO□□□-RB
Power / I/O cable (RCON-EC connection specification, four-way connector)	CB-REC2-PWBIO□□□-RB

Model CB-EC-PWBIO□□□-RB

*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Minimum bending R: r = 58mm or more (for movable use)
***Robot cable is standard.**

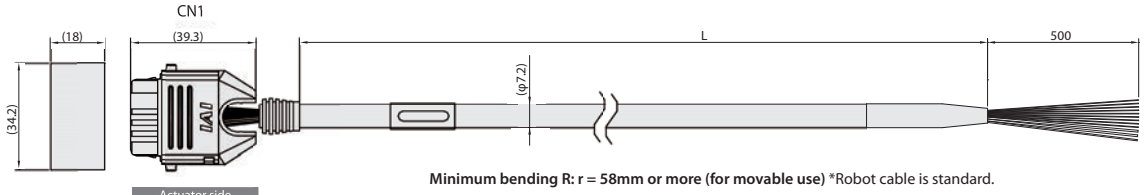
1-1871940-6

Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V	B1
Light blue (AWG22)	(Reserved) (Note 1)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Pink (AWG26)	(Reserved)	B6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
White (AWG26)	(Reserved)	A6
Brown (AWG26)	BKRLS	B2

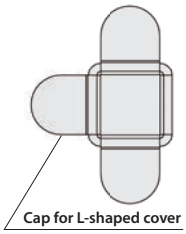
(Note 1) 24V (Control) when split motor and controller power supply specification (TMD2) is selected.

Model CB-EC2-PWBIO□□□-RB

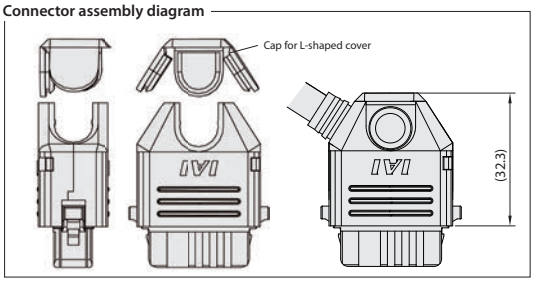
*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Minimum bending R: r = 58mm or more (for movable use) *Robot cable is standard.



Connector assembly diagram



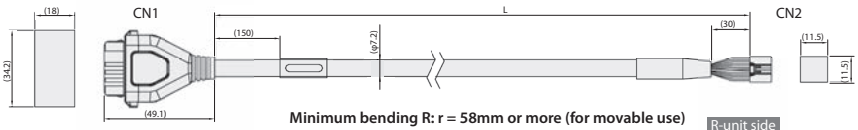
1-1871940-6

Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V	B1
Light blue (AWG22)	(Reserved) (Note 1)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Pink (AWG26)	(Reserved)	B6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
White (AWG26)	(Reserved)	A6
Brown (AWG26)	BKRLS	B2

(Note 1) 24V (Control) when split motor and controller power supply specification (TMD2) is selected.

Model CB-REC-PWBIO□□□-RB

*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Minimum bending R: r = 58mm or more (for movable use)
*Robot cable is standard.

1-1871940-6

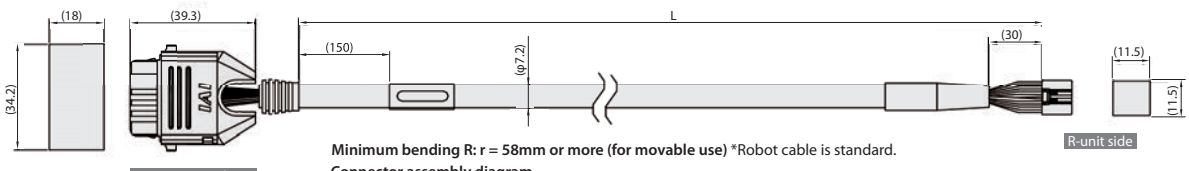
Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V (MP)	B1
Light blue (AWG22)	24V (CP)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Yellow (AWG26)	SD+	B6
Light gray (AWG26)	SD-	A6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
Brown (AWG26)	BKRLS	B2

DF62E-13S-2.2C(18)

Pin No.	Signal name	Color
2	0V	Black (AWG18)
1	24V (MP)	Red (AWG18)
12	24V (CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Yellow (AWG26)
10	SD-	Light gray (AWG26)
3	INO	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

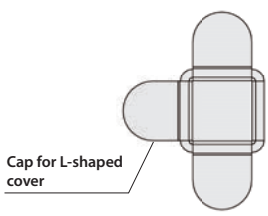
Model CB-REC2-PWBIO□□□-RB

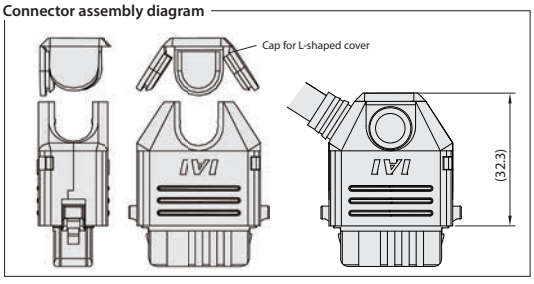
*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Minimum bending R: r = 58mm or more (for movable use) *Robot cable is standard.

Connector assembly diagram





1-1871946-6

Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V (MP)	B1
Light blue (AWG22)	24V (CP)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Yellow (AWG26)	SD+	B6
Light gray (AWG26)	SD-	A6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
Brown (AWG26)	BKRLS	B2

DF62E-13S-2C(18)

Pin No.	Signal name	Color
2	0V	Black (AWG22)
1	24V (MP)	Red (AWG22)
12	24V (CP)	Light blue (AWG22)
7	OUT0	Orange (AWG26)
8	OUT1	Yellow (AWG26)
9	OUT2	Green (AWG26)
6	SD+	Yellow (AWG26)
10	SD-	Light gray (AWG26)
3	INO	Blue (AWG26)
4	IN1	Purple (AWG26)
5	IN2	Gray (AWG26)
11	BKRLS	Brown (AWG26)
13	FG	Green (AWG26)

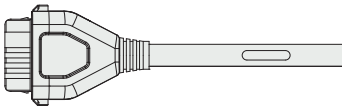
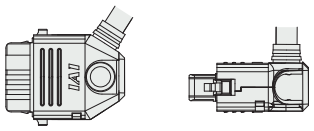
Maintenance Parts (Cables)

■ Four-way connector cable

The cable exit direction from the connector can be freely selected from four directions.
The cable wiring for the connector is the same as that of power / I/O cable CB-EC-PWBIO□□□-RB / CB-REC-PWBIO□□□-RB.

■Model

Indicate the cable length (L) in □□□,
(e.g.) 050=5m

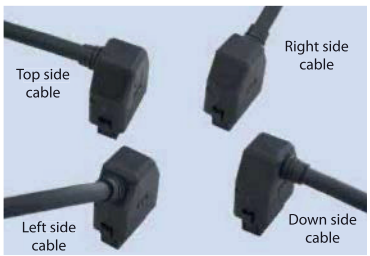
	Standard connector (actuator side)	4-way connector (actuator side)
External view		
User wiring specification	CB-EC-PWBIO□□□-RB	CB-EC**2**-PWBIO□□□-RB
RCON-EC connection specification	CB-REC-PWBIO□□□-RB	CB-REC**2**-PWBIO□□□-RB

■Ordering method

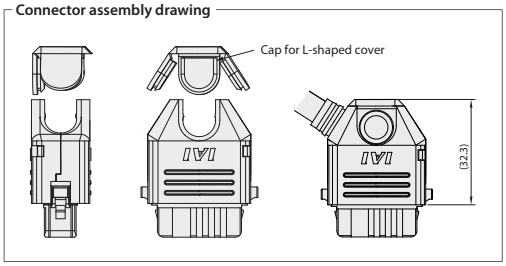
The cable length is minimum 1m and maximum 10m.
Can be specified in 1m units.

(ex.) When ordering a 4-way connector with a 3m/10m cable.
Cable length **3**m : CB-EC2-PWBIO**030**-RB
Cable length **10**m : CB-EC2-PWBIO**100**-RB

■Assembling method



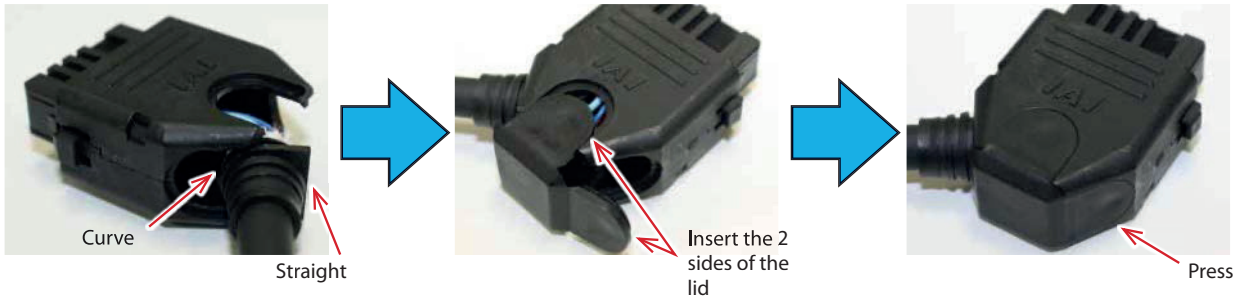
Cable direction can be set to any of 4 directions



① Insert while sliding along the groove in the desired direction from the semi-cylindrical curved portion.

② Confirm that the cable has been firmly inserted, and then insert the 2 sides of the lid along the groove.

③ Finally, press the remaining side of the lid.



EC EleCylinder Series
2-Finger Gripper Type V2
Catalogue No. 0424-E

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