

**RCP2 Series
Catalogue No.0305-E**

The information contained in this catalog is subject to change without notice for the purpose of product improvement



IAI
Quality and Innovation

GB

New RoboCylinder
Slider / Rod / Gripper / Rotary Type

RCP2

IAI
Quality and Innovation

IAI Industrieroboter GmbH
Ober der Röth 4
D-65824 Schwalbach am Taunus
Germany
Tel.: +49-6196-8895-0
Fax: +49-6196-8895-24
E-Mail: info@IAI-GmbH.de
Internet: <http://www.eu.IAI-GmbH.de>

IAI America Inc.
2690 W. 237th Street, Torrance, CA 90505, U.S.A
Tel.: +1-310-891-6015 Fax: +1-310-891-0815

IAI CORPORATION
645-1 Shimizu Hirose, Shizuoka 424-0102, Japan
Tel.: +81-543-64-5105 Fax: +81-543-64-5182



Driving the Constant
Evolution of Cylinders

**ROBO
CYLINDER**

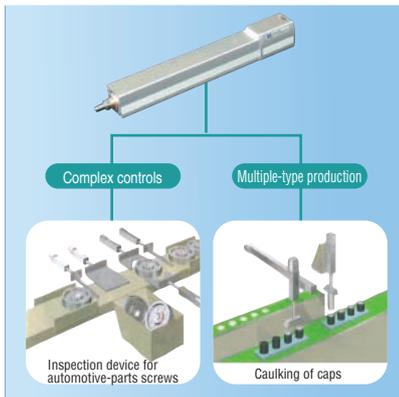
www.robocylinder.de

The all-new RCP ROBO Cylinder Series provides higher accuracy, higher rigidity and a new level of user-friendliness.

The ROBO Cylinder is a motorized cylinder equipped with a ball screw, linear guide and AC servo motor. It provides a degree of performance, rigidity and functionality that places it among the top in the industry, and adopts a universal design that ensures effortless operation for everyone.

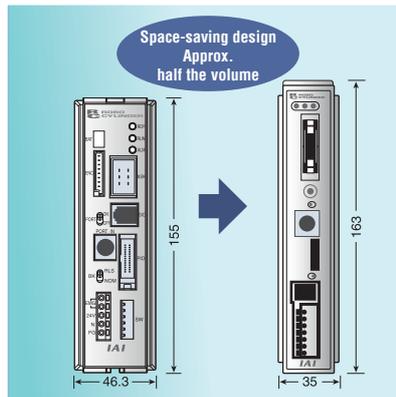
The new ROBO Cylinder achieves enhanced ease of use by incorporating characteristics such as quiet operation, superior maintainability and multi-point positioning, which covers up to 64 points.

Use the new ROBO Cylinder to improve the efficiency of your multiple-type, small-volume production or solve various issues associated with your production line.



Complex movements can be performed swiftly, thanks to 64-point positioning (maximum).

The new controller achieves multi-point positioning covering up to 64 points, thus enabling more complex movement. Additionally, speed change is now possible while the slider/rod is moving.



A significantly compact controller saves installation space for the control panel.

The new, slim controller is W35 x H163 x D68.1 (mm), which is approximately half that of a conventional type (RCP-C) in volume. The compact body saves installation space.

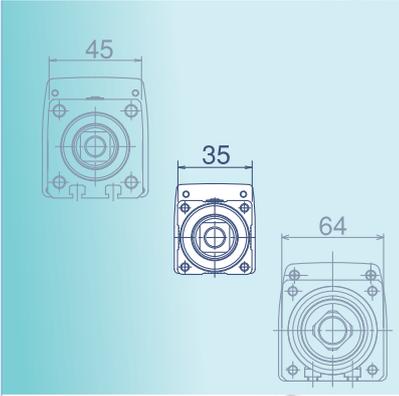


The 73mm wide model offers a larger load capacity.

A new model with a 73mm wide aluminum base has been added to the slider lineup. This model nearly triples the load capacity of the widest conventional model (58mm).

Save up to 67% in operating costs over air cylinders!

Think air cylinders are inexpensive? Consider the amount of electricity required to run the compressors that drive the air cylinders. Because the Robo Cylinder is an electric actuator, relative power consumption is roughly 1/3 compared to that needed to operate air cylinders. Reduced electrical consumption not only reduces operating costs, but also contributes to global energy conservation and that's good for everyone!



The 35mm ultrathin head contributes to size reduction in your equipment.

The new rod type with an ultrathin head (35mm square) helps you make the most of limited space and reduces the overall size of your mechanical equipment.

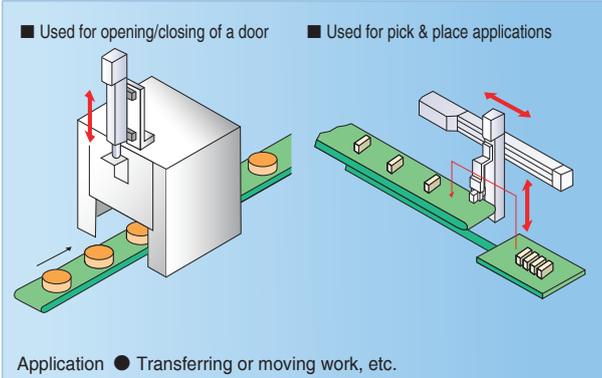


**ROBO
CYLINDER**

Function Explanation of the ROBO Cylinder Series

Operation pattern 1 Positioning Operation

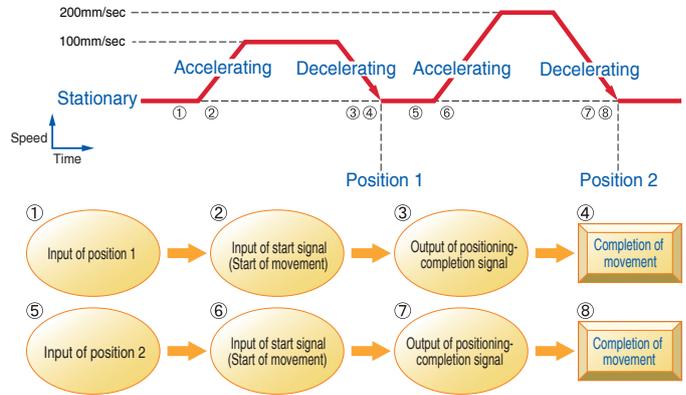
The ROBO Cylinder moves the load installed on the axis slider or rod and performs positioning with a repeatability of $\pm 0.02\text{mm}$.



Features

- Multi-point positioning covering a maximum of 64 points
- Speed and acceleration/deceleration rates can be set for each position.
- A positioning-completion signal can be output at an arbitrary position before a specified position simply by setting an appropriate positioning width.
- Acceleration and deceleration rates can be set separately.
- Speed can be changed during movement without stopping.

Example of operation



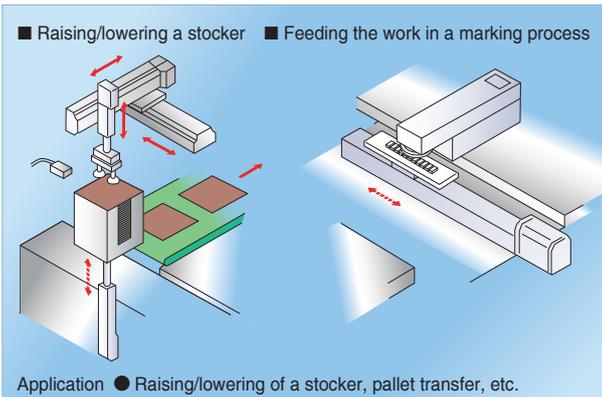
Position-Data Table

(Set by the teaching pendant or PC software)

No.	Position (mm)	Speed (mm/sec)	Acceleration/deceleration (G)	Push motion (%)	Positioning width (mm)	Acceleration only MAX (0or1)
1	100	100	0.3	0	10	0
2	200	200	0.3	0	20	0

Operation pattern 2 Incremental Moves

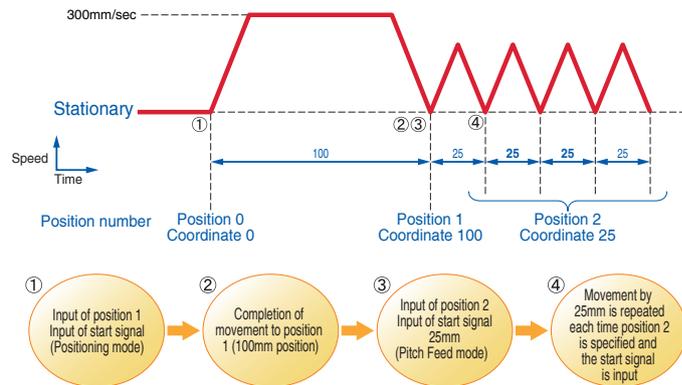
The ROBO Cylinder performs positioning based on coordinates specified with respect to origin, or travels an arbitrary distance relative to the current position.



Features

- Positioning to 64 points or more at a constant pitch is enabled by specifying repeated travel. (Movement can be initiated for as many times as possible within the stroke range.)
- The desired pitch is easily specified using the position-data table.

Example of operation



Position-Data Table

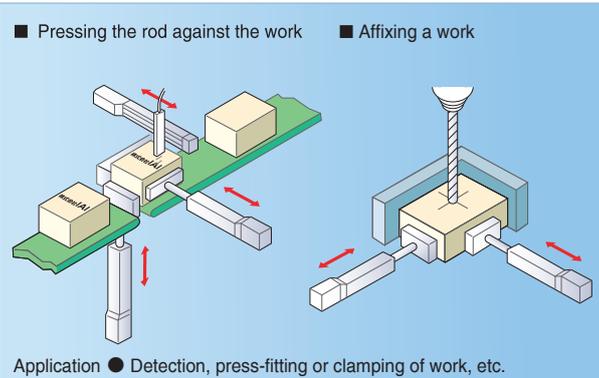
(Set by the teaching pendant or PC software)

No.	Position (mm)	Speed (mm/sec)	Acceleration/deceleration (G)	Push motion (%)	Positioning width (mm)	Acceleration only MAX (0or1)
1	100	300	0.3	0	0.1	0
2	= 25	300	0.3	0	0.1	0

"=" is indicated during Incremental Move mode.

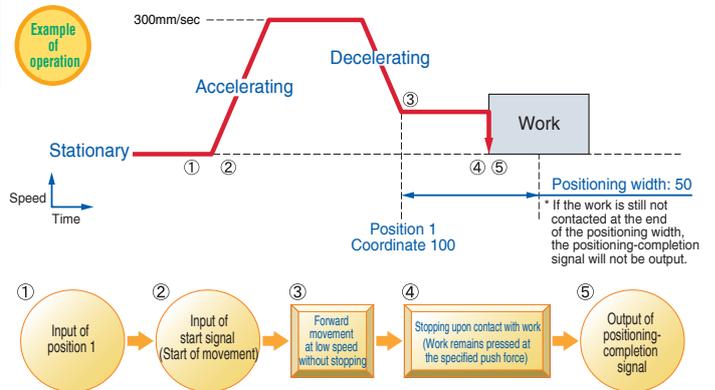
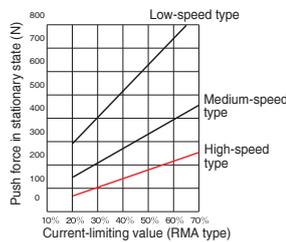
Operation pattern 3 Push & Hold Operation

With the ROBO Cylinder the rod can be maintained in a condition where it is continually pressed against the work, etc., just like an air cylinder.



Features

- A positioning-completion signal is output the moment the rod contacts the work, so the ROBO Cylinder can be used for the screening of work, etc., by combining a positioning-completion signal with zone signals.
- The force to push the work (push force) can be changed over a range from several N to a maximum of 800N by changing the setting in the position-data table.



Position-Data Table

(Set by the teaching pendant or PC software)

No.	Position (mm)	Speed (mm/sec)	Acceleration/deceleration (G)	Push motion (%)	Positioning width (mm)	Acceleration only MAX (0or1)
1	100	300	0.3	50	50	0

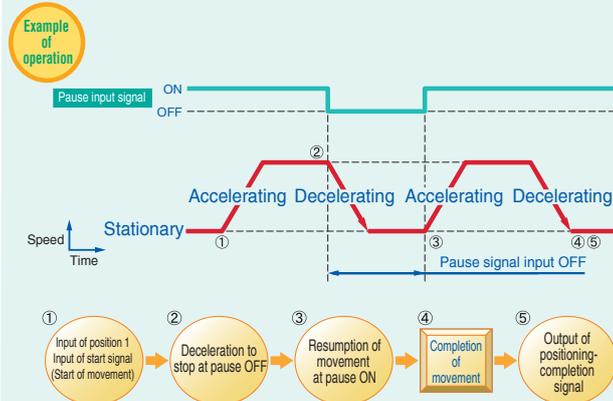


The accuracy of push force is not guaranteed in the stationary state. The above figure is provided only as a reference. Caution should be exercised, because if the push force is too small, push-motion operation may not be performed properly due to slide resistance, etc.

Pause Input

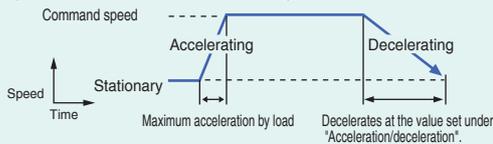
The slider decelerates to a stop upon the input of an external signal.

You can set an interlock (interference prevention) with peripheral equipment to cause the slider to decelerate and stop the moment the pause input turns OFF. When the pause input turns ON, the operation will resume to complete the remaining movements. For safety reasons, this signal uses contact B logic (the slider operates when the signal turns OFF).



The acceleration and deceleration rates can be set separately.

The acceleration and deceleration rates of the ROBO Cylinder are set using the position-data table. Normally the ROBO Cylinder accelerates/decelerates at the specified rate, but setting "1" under "Acceleration only MAX" enables quick acceleration and gradual deceleration.



Position-Data Table

(Set by the teaching pendant or PC software)

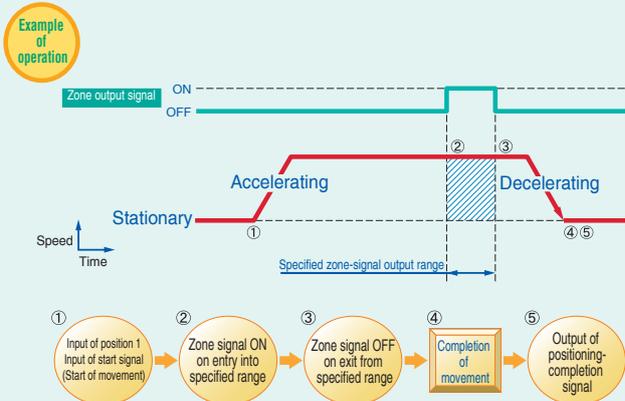
No.	Position (mm)	Speed (mm/sec)	Acceleration/deceleration (G)	Push motion (%)	Positioning width (mm)	Acceleration only MAX (0or1)
1	300	100	0.3	0	0.1	1
2			0.3			0

* If "Acceleration only MAX" is set to "0" the setting under "Acceleration/deceleration" will apply to both acceleration and deceleration.

Zone Output

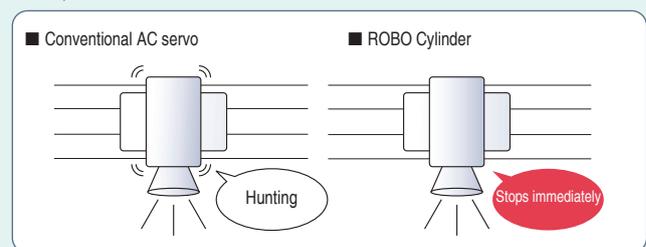
A signal is output when the slider enters the specified range.

A signal can be output at arbitrary positions during movement (the range of positions being set by parameter), so the ROBO Cylinder can be used to set a danger area, shorten the tact time, etc.

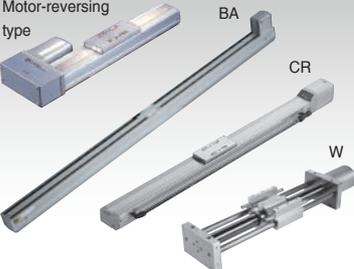
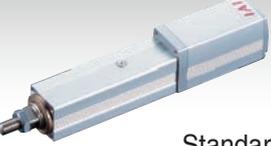
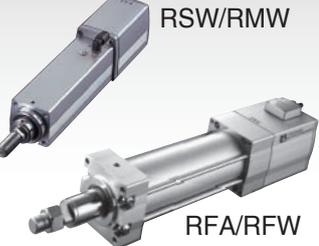
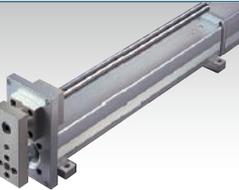


No micro-vibration at stop (RCP Series)

There is no micro-vibration, which is experienced by conventional servo motors in the action of stopping. This makes the ROBO Cylinder ideal for measurement in tandem with an attached camera, etc.

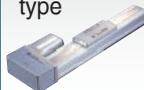


ROBO Cylinder RCP2 Series Product List

Type	Shape	Actuator type	Actuator width (mm)	Base material	Maximum speed (mm/s)	Maximum stroke (mm)	Page	
Slider type and special models	 <p>Straight type</p>	SA5	Lightweight, compact and affordable aluminum base. Ideal for transferring or positioning a light work on the slider.	52	Aluminum	600	500	P13
		SA6		58	Aluminum	600	600	P14
		SA7		73	Aluminum	533	800	P15
		SS	Compact, highly rigid iron base. Ideal for uses in which an overhung load is applied.	60	Iron	600	600	P16
		SM		80	Iron	666(600)	1000	P17
	 <p>Motor-reversing type</p>	SA5R	Motor-reversing type: A space-saving type with a shorter overall length achieved by reversing the motor. Ideal for limited-space application.	52	Aluminum	600	500	P18
		SA6R		58	Aluminum	600	600	P19
		SA7R		73	Aluminum	533(400)	800	P20
		SSR		60	Iron	600(440)	600	P21
		SMR		80	Iron	600(333)	1000	P22
		BA	Long stroke type (belt-driven)	58..68	Aluminum	1000..1500	1000..1200	Please contact IAI for more details
		CR	Clean room type	52..80	Aluminum	533..666	500..1000	
	W	Water-proof type (IP67)	158	Aluminum	180	600		
Rod type and special models	 <p>Standard type</p>	RPA	The rod extends/contracts from the actuator. Ideal for transferring a work with a chuck attached at the rod tip, or pushing a work with the rod.	25	Aluminum	25	100	P23
		RXA		35	Aluminum	187	200	P24
		RSA		45	Aluminum	458	300	P25
		RMA		64	Aluminum	450(400)	300	P26
	 <p>RSW/RMW RFA/RFW</p>	RSW	Dustproof, splash-proof type (IP65)	45	Aluminum	450	300	Please contact IAI for more details
		RMW		64	Aluminum	320	300	
		RFA	High thrust type	100	Aluminum	250	300	
		RFW	Dustproof, splash-proof high thrust type (IP54)	100	Aluminum	250	300	
	 <p>With single guide</p>	RSGS	The actuator is equipped with one guide. Ideal for applications in which the rod receives a load or linearity of movement is required.	45	Aluminum	458	300	P27
		RMGS		64	Aluminum	450	300	P28
	 <p>With double guides</p>	RXGD	The actuator is equipped with two guides. Ideal for applications in which the rod receives a load or linearity of movement is required.	35	Aluminum	187	200	P29
		RSGD		45	Aluminum	458	200	P30
RMGD		64		Aluminum	450	300	P31	

* The figures in parentheses under "Maximum speed" apply to a vertical application.

ROBO Cylinder RCP2 Series Specification Table (Extract)

Type	Shape	Stroke (mm), maximum speed (mm/s) (Note 1)														Load capacity (Note 2)		Lead (mm)	Model	Page
		50	100	150	200	250	300	350	400	450	500	550	600	700	800	900	1000			
Slider type	Straight type 	600														4	1	12	RCP2-SA5-I-PM-12-□-	P13
		300														8	2.5	6	RCP2-SA5-I-PM-6-□-	
		150														8	4.5	3	RCP2-SA5-I-PM-3-□-	
		600 (540)														6	1.5~1	12	RCP2-SA6-I-PM-12-□-	P14
		300 (270)														12	3~2.5	6	RCP2-SA6-I-PM-6-□-	
		150 (135)														12	6~4	3	RCP2-SA6-I-PM-3-□-	
		533 (480)														35~7	5~0.5	16	RCP2-SA7-I-PM-16-□-	P15
		266 (240)														40~10	10~1.5	8	RCP2-SA7-I-PM-8-□-	
		133 (120)														40	15~5	4	RCP2-SA7-I-PM-4-□-	
	600 (470)														30~6	4~1	12	RCP2-SS-I-PM-12-□-	P16	
	300 (230)														30~20	8~2	6	RCP2-SS-I-PM-6-□-		
	150 (115)														30~20	12~4	3	RCP2-SS-I-PM-3-□-		
	666(600) (515)														40~10	5~0.5	20	RCP2-SM-I-PM-20-□-	P17	
	333(300) (255)														50~4	1~2	10	RCP2-SM-I-PM-10-□-		
	165(150) (125)														55~10	20~0.5	5	RCP2-SM-I-PM-5-□-		
Motor-reversing type 	600(440) (440)														20~5.5	4~0.5	12	RCP2-SSR-I-PM-12-□-	P21	
	250 (230)														20~2.5	5~0.5	6	RCP2-SSR-I-PM-6-□-		
	105 (105)														30~20	10~1.5	3	RCP2-SSR-I-PM-3-□-		
	600(333) (333)														23~1	3~0.5	20	RCP2-SMR-I-PM-20-□-	P22	
	300(250) (255)														28~4	9~0.5	10	RCP2-SMR-I-PM-10-□-		
	160(140) (125)														55~1.5	20~0.5	5	RCP2-SMR-I-PM-5-□-		
Rod type 	187														1~2	6~1	5	RCP2-RXA-I-PM-5-□-	P24	
	114														30~4	10~2	2.5	RCP2-RXA-I-PM-2.5-□-		
	458 (458) (350)														25~5	4.5~0.5	10	RCP2-RSA-I-PM-10-□-	P25	
	250 (237) (175)														40~10	12~2	5	RCP2-RSA-I-PM-5-□-		
	125(110) (118) (87)														40	19~2.5	2.5	RCP2-RSA-I-PM-2.5-□-		
	450(400)														40~10	5~1	16	RCP2-RMA-I-PM-16-□-	P26	
	210														50~30	17.5~1.5	8	RCP2-RMA-I-PM-8-□-		
	130														55~35	26~1.5	4	RCP2-RMA-I-PM-4-□-		

(Note 1) The figure in the elongated circle indicates the maximum speed for each stroke. The figures in parentheses apply to a vertical application. The stroke is set in 100mm increments for SA7, SS, SM, SSR and SMR.

(Note 2) The load capacity will vary according to the speed. Refer to "Correlation Diagrams of Speed and Load Capacity" on pages 10 and 11.

ROBO Cylinder Series Model Standards

Actuator Model

RCP2-RMA-I-PM-8-300-P1-M-FT

Series	Type	Encoder type	Motor	Lead (mm)	Stroke (mm)	Applicable controller	Cable length	Option
RCP2	SA5	I: Incremental	PM: Pulse motor	12, 6, 3	50~500	P1: RCP2-C RCP2-CG	N: None P: 1m S: 3m M: 5m X□□: Length specification R□□: Robot cable	B: Brake BE: Brake (front) BL: Brake (left) BR: Brake (right) FL: Flange FT: Foot bracket NM: Reversed origin R: Inverse motor-reversing direction
	SA6			12, 6, 3	50~600			
	SA7			16, 8, 4	100~800			
	SS	A: Absolute		12, 6, 3	100~600			
	SM			20, 10, 5	100~1000			
	SSR			12, 6, 3	100~600			
	SMR	20, 10, 5		100~1000				
	RXA			5, 2.5	50~200			
	RSA			10, 5, 2.5	50~300			
	RMA			16, 8, 4	50~300			

(Note 1) The stroke is set in 50mm increments for SA5, SA6, RXA, RSA and RMA, and in 100mm increments for SA7, SS, SM, SSR and SMR.
 (Note 2) Depending on the type, not all options may be applicable. For details, refer to the page showing the specifications for each type.

Controller Model

RCP2-C-RMA-I-PM-O-P

Series	Controller type	Actuator type	Encode type	Motor	Power-supply voltage	I/O signal format
RCP2	C : Internal drive-power cutoff relay CG: External drive-power cutoff relay	SA5, SA6, SA7 SS, SM, SSR, SMR RXA, RSA, RMA	I: Incremental	PM: Pulse motor	O: 24VDC	Not specified: NPN P: PNP

Explanation of Specification Items for Actuator Model

(Refer to page 26 for the specification items for the controller model.)

① Series

Indicate the name of each series.

② Type

Indicate the shape (slider, rod, etc.), size (SA5, RXA, etc.), function (dustproof/splash-proof, etc.) and guide category.

③ Encoder type

Indicate whether the encoder installed in the actuator should be an Absolute type or an Incremental type.

I: Incremental type Slider position data will be lost when the power is turned off, so origin return is required each time the power is turned on.

A: Absolute type Current position of the system will be held even if power is disconnected.

④ Motor

PM: Pulse motor

⑤ Lead

Travel distance per revolution of the ball screw.

⑥ Stroke

Indicate the actuator stroke (range of operation). (Unit: mm)

⑧ Cable length

Indicate the length of motor/encoder cables used for connecting the actuator and controller.

N: No cable
 P: 1m, X□□: When specifying a length other than 1m, 3m or 5m (e.g., X08: 8m)
 S: 3m, R□□: Specification for robot cable (e.g., R08: 8m)
 M: 5m

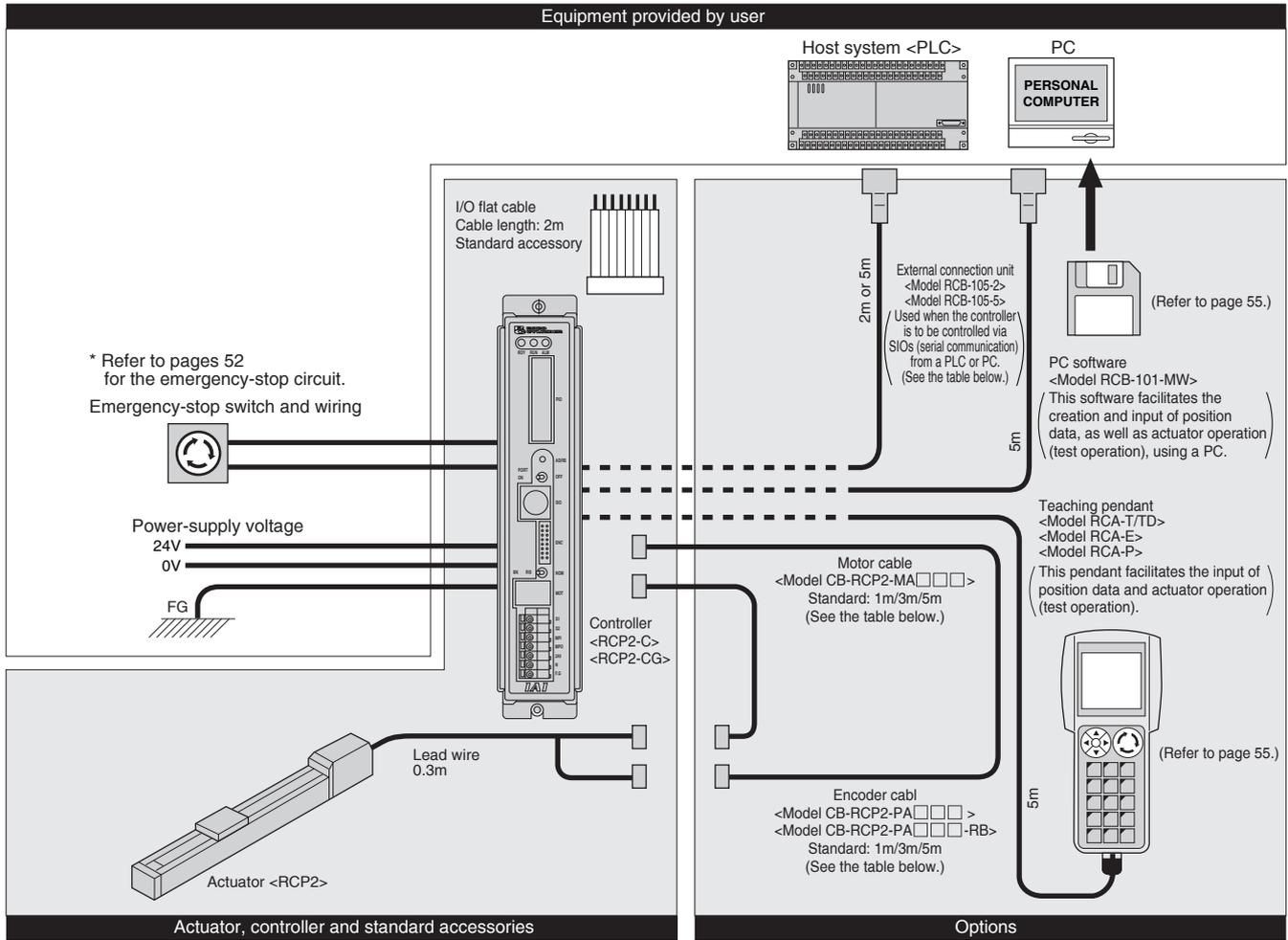
⑨ Option

Indicate the option(s) to be installed on the actuator. * When selecting multiple options, specify them in alphabetical order (e.g., B-FL-NM).

- B: [Brake] A brake for preventing the slider from falling in a vertical application when the power or servo is turned off
- BE, BL, BR: [Brake] Indicate the exit direction of the brake cable for the SA5, SA6 or SA7 slider whose brake cable must be wired outside the actuator.
- FL: [Flange] A flange for mounting the rod type actuator with a clearance (see page 24)
- FT: [Foot bracket] A foot bracket for mounting the rod type actuator from above using bolts (see page 24)
- NM: [Reversed-origin specification] Normally the origin is set on the motor side. Enter this option to specify the origin on the counter-motor side (not available with the rod type).
- R: [Inverse motor-reversing direction] Enter this option for the motor-reversing type to specify the inverse direction for the reversing of the motor.

ROBO Cylinder Series System Configuration

Controller System Configuration Diagram



Controller Options Table

Controller Options

Item	Model	Description	Page
Teaching Pendant (NOTE 1)	RCA-T	Position data input, actuator test operation, etc.	P55
Teaching Pendant (Deadman Switch Specification)(NOTE 1)	RCA-TD	RCA-T with a deadman switch	
Simple Teaching Pendant (NOTE 1)	RCA-E	An economical type offering functions equivalent to those of RCA-T	
Data Setting Unit (NOTE 1)	RCA-P	Used exclusively for data input (cannot be used for actuator operation)	
PC Software (NOTE 2)	RCB-101-MW	Position data input, actuator test operation, etc.	
External Connection Unit	RCB-105-2(5)	Serial communication cable unit (external equipment communication cable + RS485 conversion adapter)	—

(Note 1) A product of an earlier version cannot be used with the RCP2. Upgrade the version as necessary.

(Note 2) If you are currently using PC Software for the RCP (RCA-101-MW), the software can be used continuously after a proper version upgrade. The shape of RCB-101-MW's RS485 conversion adapter has changed from that of the adapter used with RCA-101-MW, but functionality remains the same.

Controller Spare Parts

Item	Model	Description	Page
Motor Cable	CB-RCP2-MA□□□	Motor power cable (for controller and actuator connection) Enter the cable length in □□□. Example 080 = 8m (maximum length: 20m) * The standard motor cables are robot types.	P56
Encoder Cable	CB-RCP2-PA□□□	Encoder signal cable (for controller and actuator connection) Enter the cable length in □□□. Example 080 = 8m (maximum length: 20m)	
Encoder Robot Cable	CB-RCP2-PA□□□-RB	Highly flexible encoder cable	
I/O Flat Cable	CB-RCA-PIO020	Parallel communication cable (for PLC and controller connection) No connector on PLC end	
External Equipment Communication Cable	CB-RCA-SIO020(050)	Serial communication cable *Used with an RS485 conversion adapter	
RS485 Conversion Adapter	RCB-CV-MW	Adapter for converting RS485 communication signals to RS232 communication signals	

ROBO Cylinder Series Points to Note

Notes on Catalog Specifications <Common to all models>

Speed

“Speed” refers to the specified speed at which the actuator slider (or rod, arm or output shaft) will move. The slider accelerates from a stationary state, and once the specified speed is reached it will maintain that speed until the specified position (immediately before the target position), where it will begin decelerating to stop at the target position.

<Caution>

- (1) The maximum speed of the RCP2 Series will vary according to the weight of the slider load (rod, arm). Select an appropriate model by referring to “Correlation Diagrams of Speed and Load Capacity” on pages 10 and 11.
- (2) The time needed to reach the specified speed will vary according to the acceleration (deceleration) rate.
- (3) If the travel distance is short, the specified speed may not be reached.
- (4) With a long-stroke axis, the maximum speed will drop to avoid reaching a dangerous speed. (If you are using a stroke of 600mm or longer, check the maximum speed for the applicable stroke in the corresponding dimensional drawing.)
- (5) When calculating the travel time, consider acceleration, deceleration and stabilization periods in addition to the travel time at the specified speed.
- (6) Speed can be set in increments of 1mm/sec. in position data.

Acceleration/Deceleration Rates

“Acceleration rate” refers to the rate of change of speed when the speed rises from zero (stationary state) to the specified speed. “Deceleration rate” refers to the rate of change of speed when the specified speed drops to zero (stationary state). In the programs, both are specified in “G” ($0.3G = 2940\text{mm/sec}^2$).

<Caution>

- (1) Increasing the acceleration (deceleration) rate will shorten the duration of acceleration (deceleration) and decrease the travel time. However, doing so will also cause rapid acceleration (deceleration), resulting in increased shock.
- (2) The rated acceleration rate is 0.3G (or 0.2G if the lead is 2.5, 3 or 4, or in the case of a vertical application). (The load capacity is set based on the rated acceleration rate.)
- (3) If the ROBO Cylinder is operated at an acceleration (deceleration) rate exceeding the rated acceleration rate, its life may be significantly reduced or breakdown may occur. Be sure to use an acceleration rate not exceeding the rated acceleration rate, or use a single-axis robot of the high-acceleration/deceleration type. (The ISP Series supports the maximum acceleration rate of 1G.) Increasing the acceleration (deceleration) rate will decrease the load capacity from the level corresponding to the rated acceleration rate.
- (4) Acceleration rate can be set in increments of 0.01G in position data.

Positioning Repeatability

“Positioning repeatability” refers to the positioning accuracy of repeated movements to a pre-stored position. This is not the same as “absolute positioning accuracy”, so exercise caution.

Origin

The origin is set on the motor side for the standard specification, or on the counter-motor side for the reversed-origin specification.

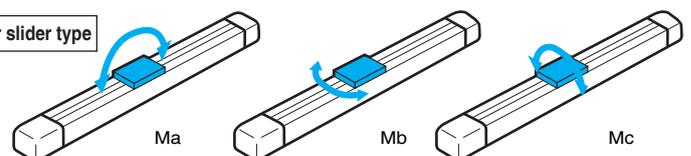
<Caution>

- (1) The incremental actuator always requires origin return each time the power is reconnected.
- (2) During origin return the slider (or rod) will move to the mechanical end before reversing, so be careful to prevent contact with surrounding parts

Load Moment/Life

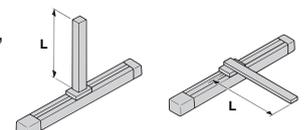
Each load moment is calculated based on an assumed distance of 5,000mm for SA5, SA6 and SA7 or 10,000mm for SS, SM, SSR and SMR. Exercise caution, because applying a moment exceeding the specified value will reduce the life of the guide.

Directions of load moment for slider type



Overhung Load Length

When each model is used with an overhung load exceeding the allowable length, vibration or stabilization delay may result. Therefore, be sure to keep the overhung load length within the allowable value.



Correlation Diagrams of Speed and Load Capacity

RCP Slider Type

Selection of horizontal or vertical installation

Selection of speed type based on equipment cycle time

Select a desired type that meets your purpose by referring to the diagrams for speed and load capacity below.

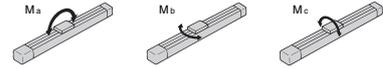


Precaution for use

If you are using the slider type and the load on the slider will extend considerably from the center, give consideration to the load moments and overhung load length.

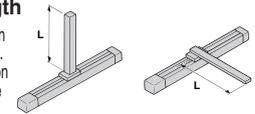
Load moments

Ma, Mb and Mc must be within the specified range of load moment.



Overhung load length

The specified value applies when the load's center of gravity is L/2. If the load extends in the direction of Ma, Mb or Mc, keep within the specified range.

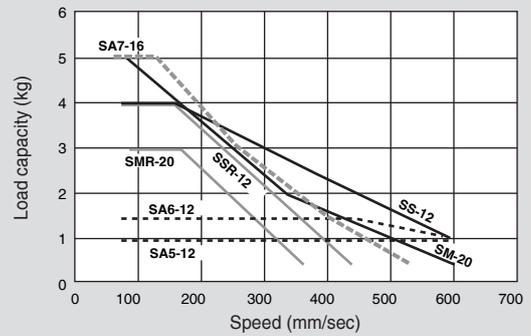
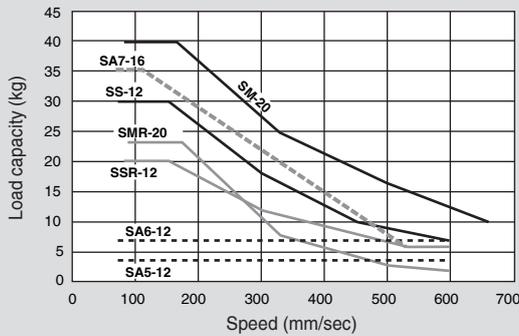


Maximum speed
600
mm/sec

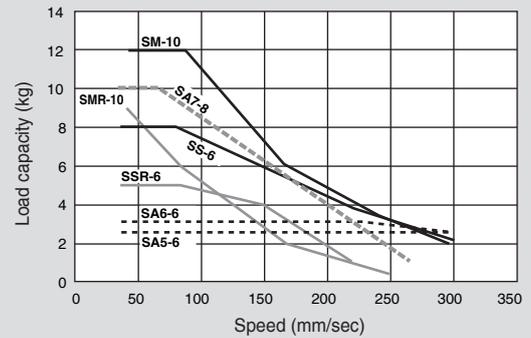
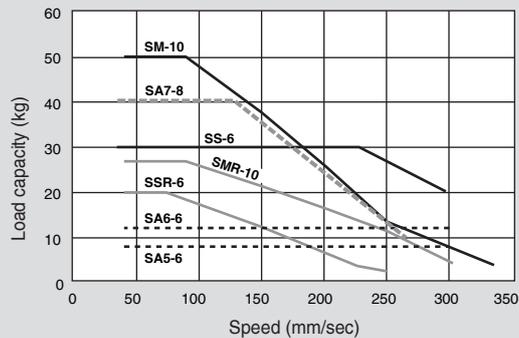
High-speed type

Horizontal installation

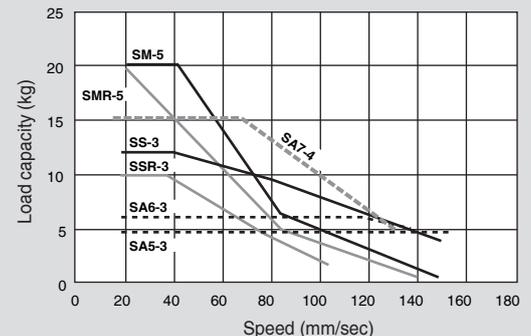
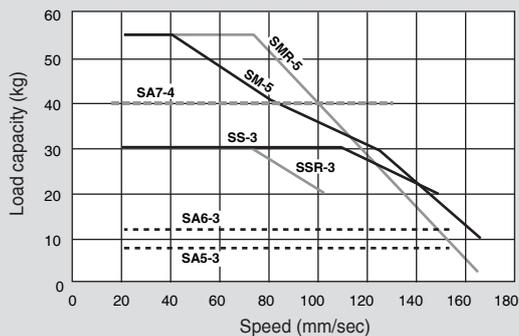
Vertical installation



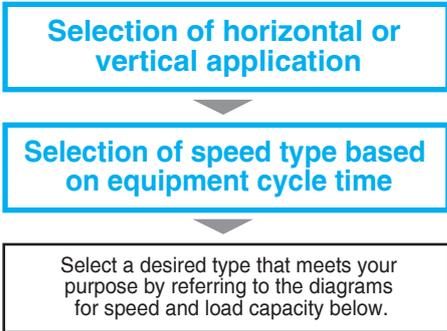
Medium-speed type



Low-speed type



(Note) The number shown after the type in the above graphs indicates the lead specification.



⚠ Precaution for use

- The rod type only considers external forces from the rod's direction of movement. If the rod will receive external forces from the vertical direction or rotary direction, use a high-rigidity type or purchase a separate guide.
- The maximum speed is limited only with the RSA type with a stroke of 250mm or 300mm.
 250mm stroke(Lead 10: 458mm/sec., lead 5: 237mm/sec., lead 2.5: 118mm/sec.)
 300mm stroke(Lead 10: 350mm/sec., lead 5: 175mm/sec., lead 2.5: 87mm/sec.)

Maximum speed
500 mm/sec

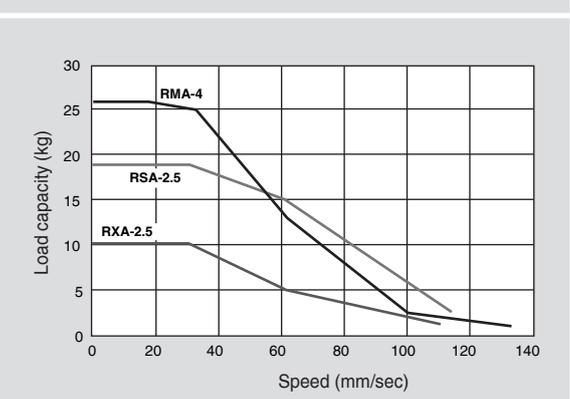
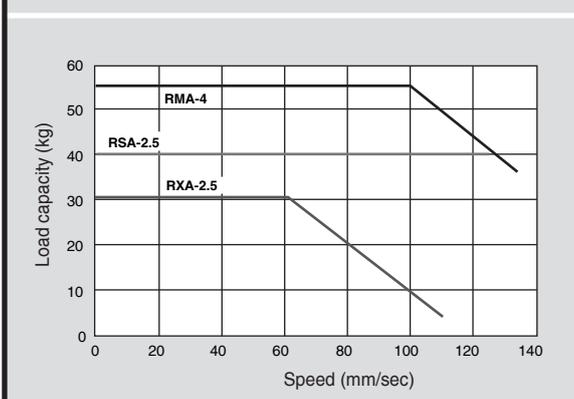
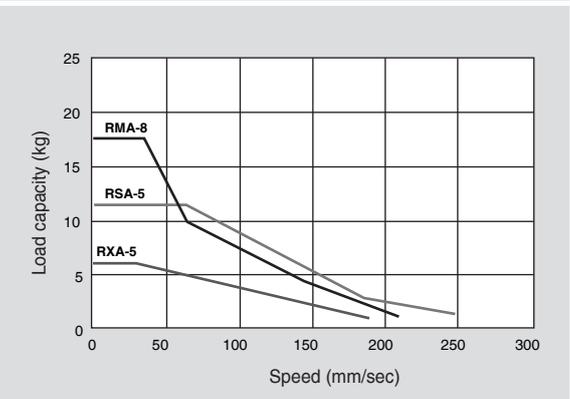
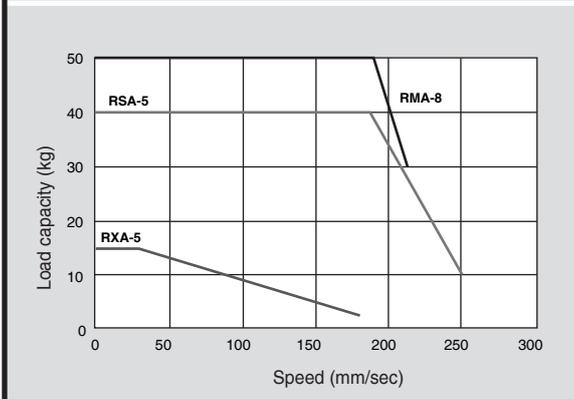
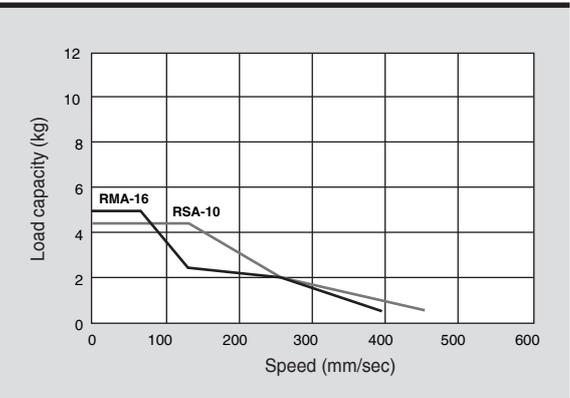
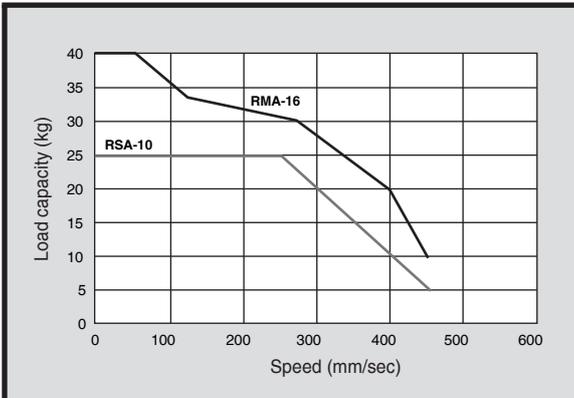
Horizontal application (Note 1)

Vertical application (Note 2)

High-speed type

Medium-speed type

Low-speed type



(Note) The number shown after the type in the above graphs indicates the lead specification.
 (Note 1) The horizontal application assumes the use of an external guide.
 (Note 2) If the ROBO Cylinder is operated under the maximum load capacity for a given speed, overshoot may occur due to vibration. Therefore, when selecting a model provide an allowance of approximately 70%.

Correlation Diagrams of Push Force and Current-Limiting Value

RCP Rod Type

Push-Motion Operation

The push force used during push-motion operation can be changed freely by changing the controller's current-limiting value. The maximum push force will vary according to the model. Confirm the required push force from the graphs below and select a type that meets your purpose.



Precaution for use

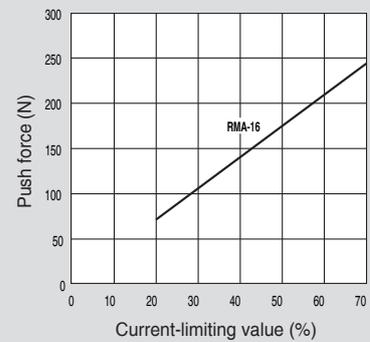
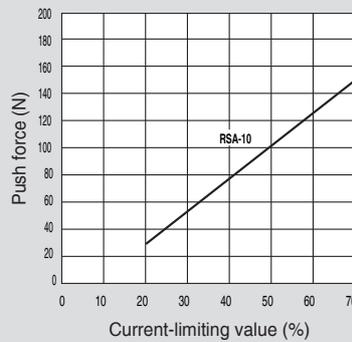
- The relationships of push force and current-limiting value are provided for reference only. The actual figures may vary slightly.
- If the current-limiting value is under 20%, the push force may become subject to fluctuation. Therefore, set the current-limiting value to 20% or more.

RXA type

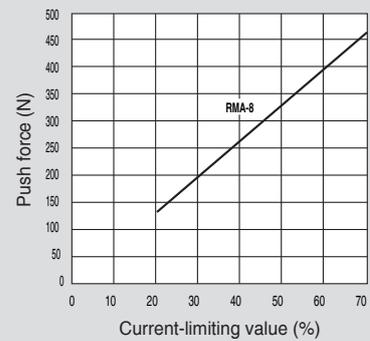
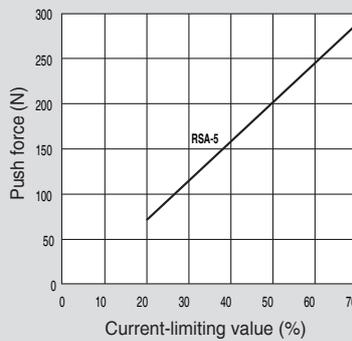
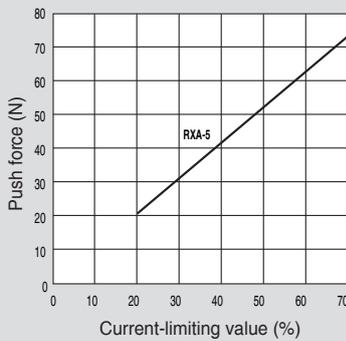
RSA type

RMA type

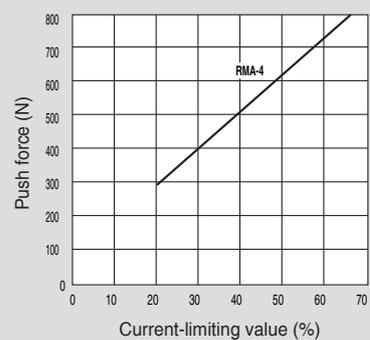
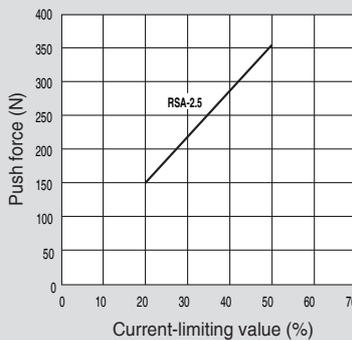
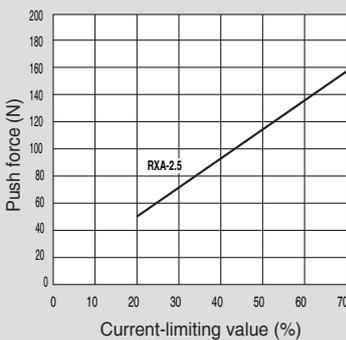
High-speed type



Medium-speed type



Low-speed type



(Note) The number shown after the type in the above graphs indicates the lead specification.

RCP2-SA5

ROBO Cylinder Slider Type: Unit Width 52mm, Pulse Motor, Straight Shape



Type Slider (52mm wide) Stroke 50~500mm Load capacity 8kg (horizontal)/4.5kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - SA5 - I - PM - 6 - 500 - P1 - S - BE

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (mm/s)	Load capacity (Note 1)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SA5-O-PM-12***-P1-△-□	Incremental/ Absolute	12	50~500	10~600	4	1	0.02
RCP2-SA5-I-PM-6***-P1-△-□		6		5~300	8	2.5	
RCP2-SA5-I-PM-3***-P1-△-□		3		1~150	8	4.5	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

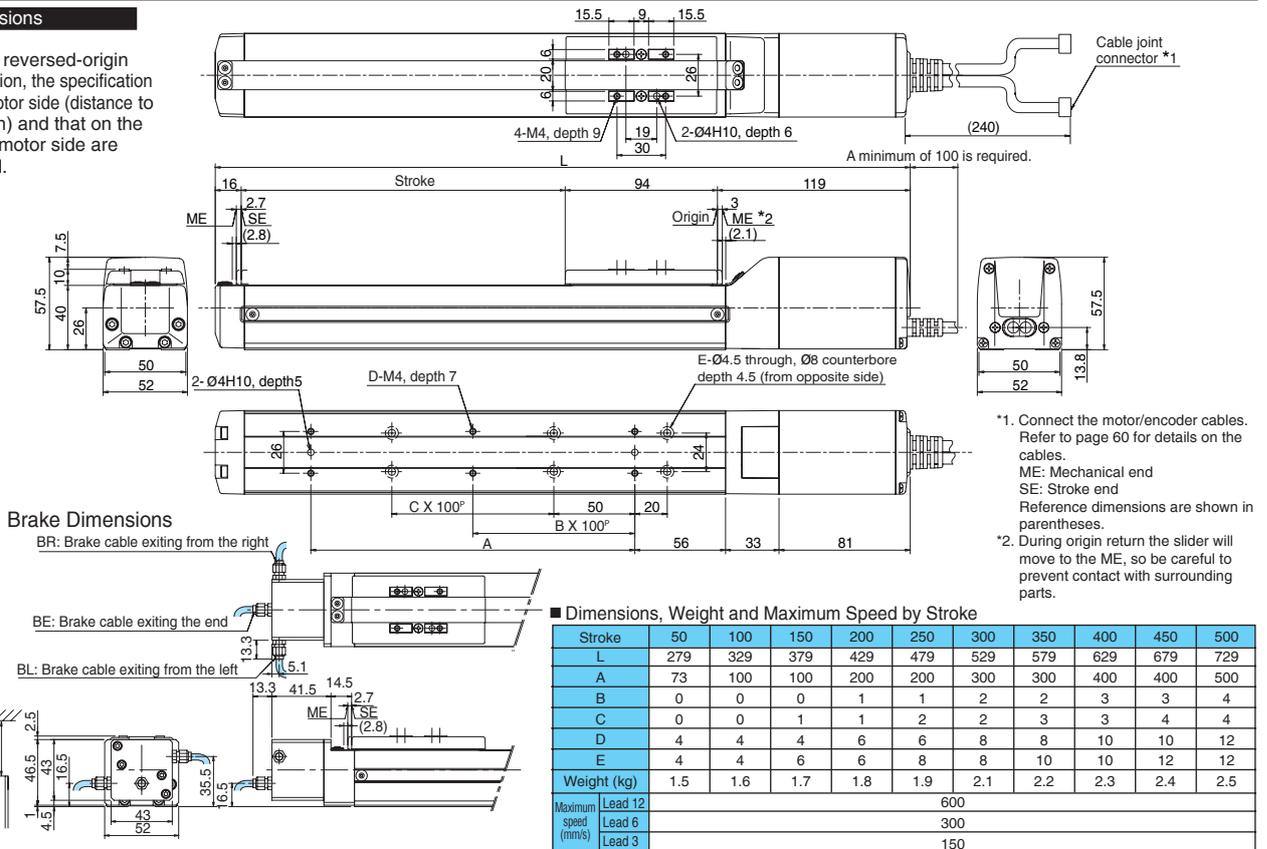
Name	Model	Page
Brake (Cable exiting the end)	BE	→P33
Brake (Cable exiting from the left)	BL	→P33
Brake (Cable exiting from the right)	BR	→P33
Reversed-origin specification	NM	→P33

Common Specifications

Drive system	Ball screw, ø10mm, rolled C10
Backlash	0.1mm or less
Guide	Integrated with base
Allowable load moment (Note 2)	Ma: 4.9Nm Mb: 6.8Nm Mc: 11.7Nm
Overhung load length	Ma direction: 150mm or less, Mb/Mc directions: 150mm or less
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental	X	O	X	24VDC	→P49
RCP2-CG	1 axis	Absolute	X	O	X		→P49



(Note 1) Load capacity at the rated acceleration rate (Refer to page 9).
 (Note 2) Mc moment will become 7.8Nm with a stroke of 350mm or longer.
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-SA7

ROBO Cylinder Slider Type: Unit Width 73mm, Pulse Motor, Straight Shape



Type Slider (73mm wide) Stroke 100~800mm Load capacity 40kg (horizontal)/15kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - SA7 - I - PM - 8 - 800 - P1 - S - BE

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 100mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SA7-O-PM-16***-P1-△-□	Incremental/ Absolute	16	100~800	10~533	35~7	5~0.5	0.02
RCP2-SA7-O-PM-8***-P1-△-□		8		5~266	40~10	10~1.5	
RCP2-SA7-O-PM-4***-P1-△-□		4		1~133	40	15~5	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, O encoder type "I" or "A".

Options

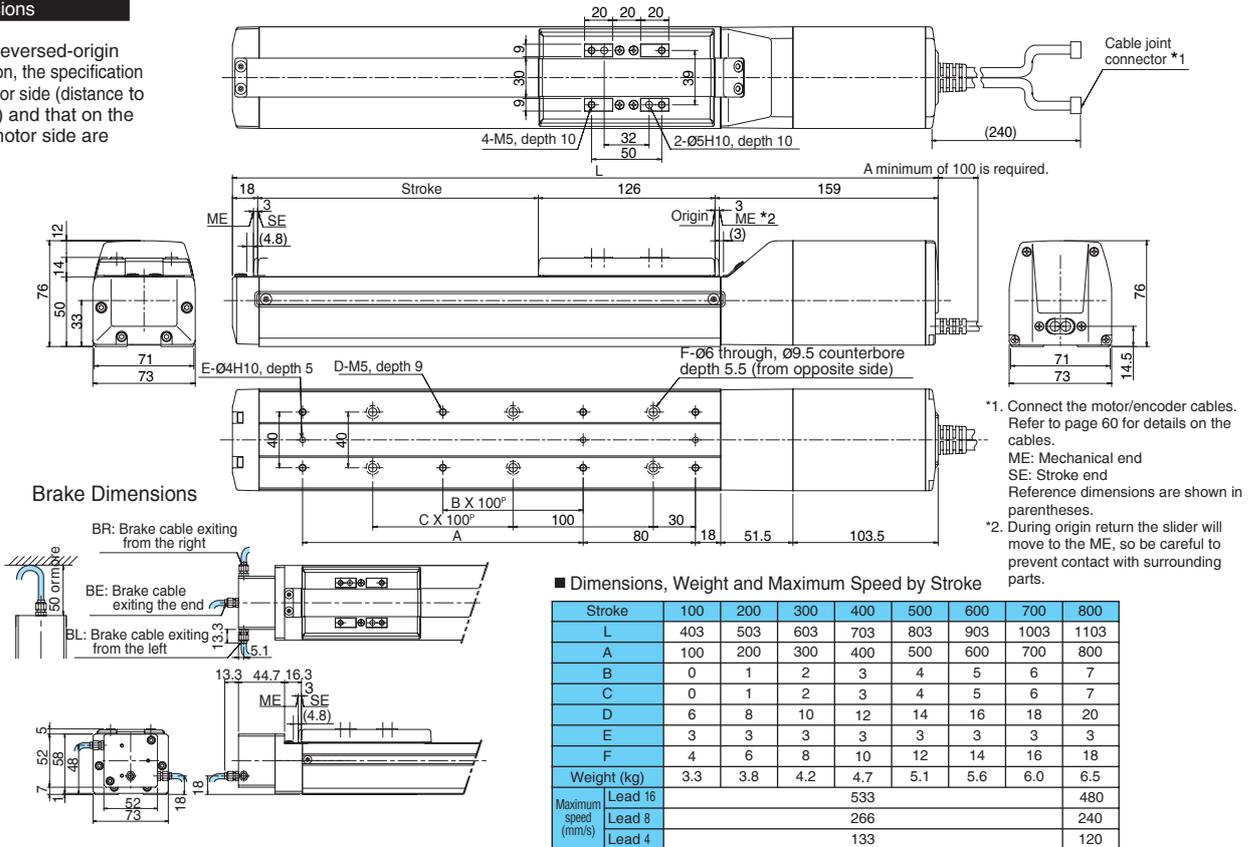
Name	Model	Page
Brake (Cable exiting the end)	BE	→P33
Brake (Cable exiting from the left)	BL	→P33
Brake (Cable exiting from the right)	BR	→P33
Reversed-origin specification	NM	→P33

Common Specifications

Drive system	Ball screw ϕ 12mm, rolled C10
Backlash	0.1mm or less
Guide	Integrated with base
Allowable load moment	Ma: 13.9Nm Mb: 19.9Nm Mc: 38.3Nm
Overhung load length	Ma/Mb/Mc directions: 230mm or less
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental	X	O	X	24VDC	→P49
RCP2-CG	1 axis	Absolute	X	O	X		→P49



(Note1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.)
 (Note 2) Load capacity at the rated acceleration rate (Refer to page 9).
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-SS

ROBO Cylinder Slider Type with Iron Base: Unit Width 60mm, Pulse Motor, Straight Shape

Type Slider (60mm wide) Stroke 100~600mm Load capacity 30kg (horizontal)/12kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - SS - I - PM - 6 - 600 - P1 - S - B



Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 100mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SS-○-PM-12***-P1-△-□	Incremental/ Absolute	12	100~600	10~600	30~6	4~1	0.02
RCP2-SS-○-PM-6***-P1-△-□		6		5~300	30~20	8~2	
RCP2-SS-○-PM-3***-P1-△-□		3		1~150	30~20	12~4	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

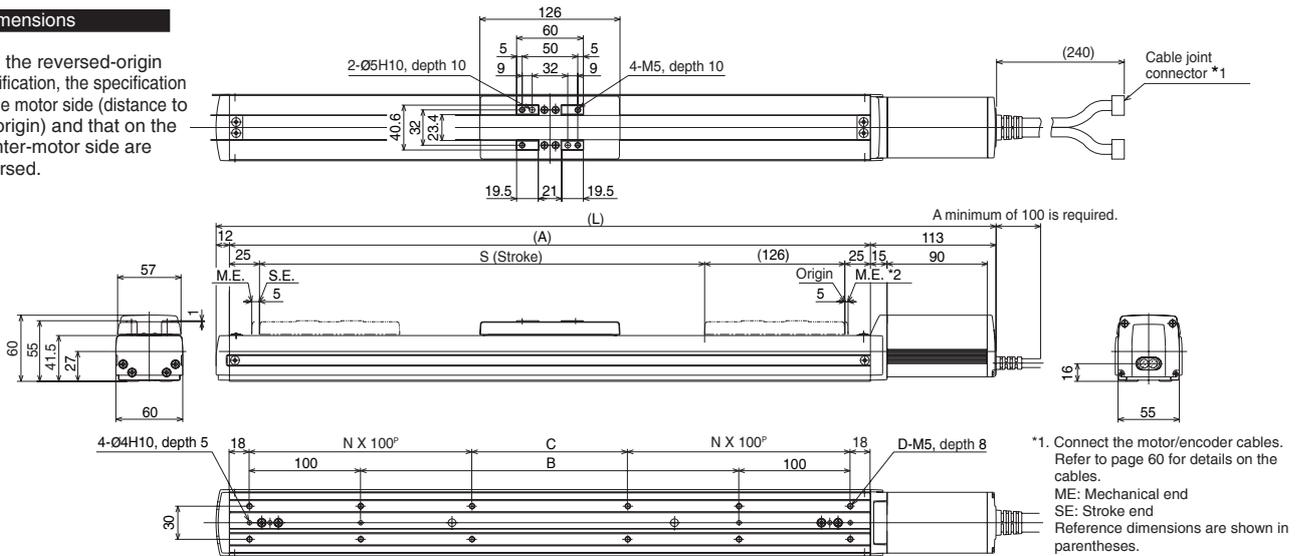
Name	Model	Page
Brake	B	→P33
Reversed-origin specification	NM	→P33

Common Specifications

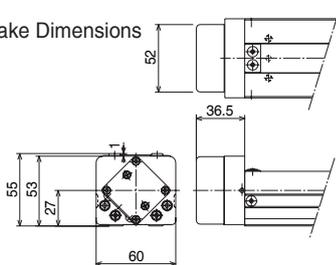
Drive system	Ball screw ϕ 10mm, rolled C10
Backlash	0.05mm or less
Guide	Integrated with base
Allowable load moment	Ma: 14.7Nm Mb: 14.7Nm Mc: 33.3Nm
Overhung load length	Ma/Mb/Mc directions: 300mm or less
Base	Material: Special alloy steel
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



Brake Dimensions



* The brake cable is routed inside the actuator and is connected to the motor cable.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	100	200	300	400	500	600
L	401	501	601	701	801	901
A	276	376	476	576	676	776
B	40	140	240	340	440	540
C	40	140	40	140	40	140
D	8	8	12	12	16	16
E	1	1	2	2	3	3
Weight (kg)	3.4	4.0	4.7	5.4	6.1	6.7
Maximum speed (mm/s)	Lead 12		600		470	
	Lead 6		300		230	
	Lead 3		150		115	

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	○	X	24VDC	→P49
RCP2-CG	1 axis		X	○	X		→P49



(Note1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.)
 (Note 2) Load capacity at the rated acceleration rate (Refer to page 9.)
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-SM

ROBO Cylinder Slider Type with Iron Base: Unit Width 80mm, Pulse Motor, Straight Shape



Type Slider (80mm wide) Stroke 100~1000mm Load capacity 55kg (horizontal)/20kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - SM - I - PM - 10 - 1000 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (mm/s)	Load capacity (Note 1)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SM-○-PM-20***-P1-△-□	Incremental/ Absolute	20	100~1000	10~666 (600)	40~10	5~0.5	0.02
RCP2-SM-○-PM-10***-P1-△-□		10		5~333 (300)	50~4	12~2	
RCP2-SM-○-PM-5***-P1-△-□		5		1~165 (150)	55~10	20~0.5	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

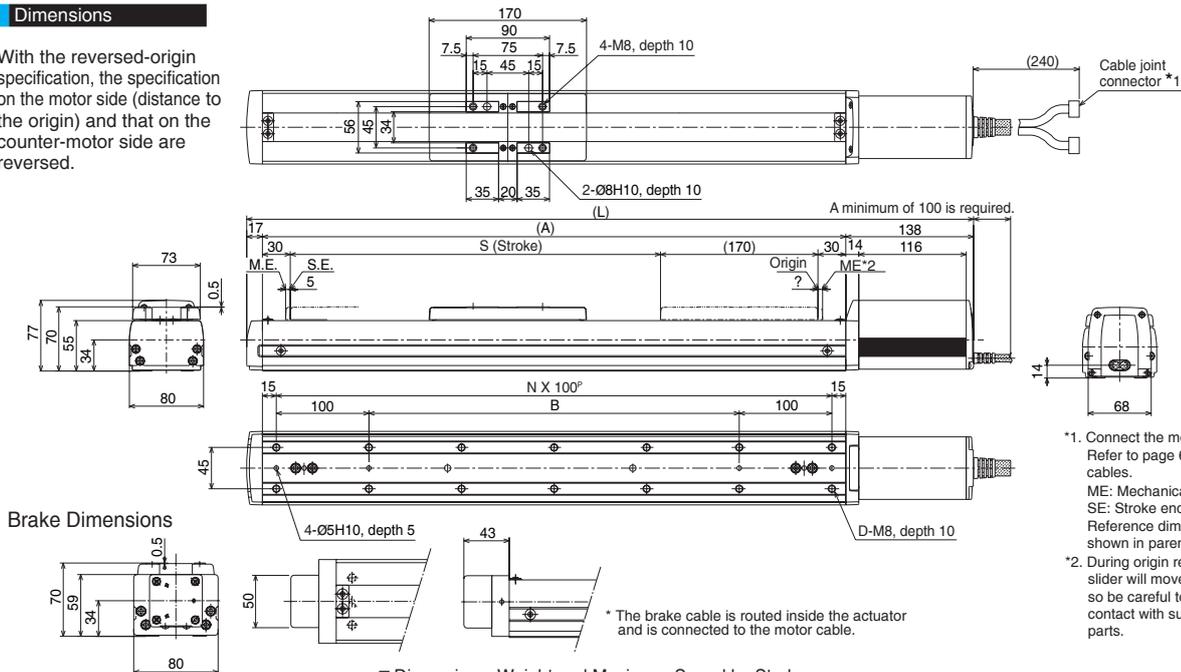
Name	Model	Page
Brake	B	→P33
Reversed-origin specification	NM	→P33

Common Specifications

Drive system	Ball screw \varnothing 16mm, rolled C10
Backlash	0.05mm or less
Guide	Integrated with base
Allowable load moment	Ma: 36.3Nm Mb: 36.3Nm Mc: 77.4Nm
Overhung load length	Ma/Mb/Mc directions: 450mm or less
Base	Material: Special alloy steel
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



1. Connect the motor/encoder cables. Refer to page 60 for details on the cables.
ME: Mechanical end
SE: Stroke end
Reference dimensions are shown in parentheses.
2. During origin return the slider will move to the ME, so be careful to prevent contact with surrounding parts.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	100	200	300	400	500	600	700	800	900	1000	
L	485	585	685	785	885	985	1085	1185	1285	1385	
A	330	430	530	630	730	830	930	1030	1130	1230	
B	100	200	300	400	500	600	700	800	900	1000	
D	8	10	12	14	16	18	20	22	24	26	
N	3	4	5	6	7	8	9	10	11	12	
Weight (kg)	7.1	8.1	9.2	10.2	11.3	12.3	13.4	14.5	15.5	16.6	
Maximum speed (mm/s) (Note 1)	Lead 20	666 (600)							515		515
	Lead 10	333 (300)							255		255
	Lead 5	165 (150)							125		125

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.) The figures in parentheses apply to a vertical application.
 (Note 2) Load capacity at the rated acceleration rate (Refer to page 9).
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-SA5R

ROBO Cylinder Slider Type:
Unit Width 52mm, Pulse Motor, Folded Motor Shape



Type Slider (52mm wide) **Stroke** 50~500mm **Load capacity** 8kg (horizontal)/4.5kg (vertical)

Model details — Series — Type — Encoder type — Motor — Lead — Stroke — Applicable controller — Cable length — Options
 (Example) RCP2 -SA5R- I - PM - 6 - 500 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (mm/s)	Load capacity (Note 1)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SA5R-○-PM-12-***-P1-△-□	Incremental/ Absolute	12	50~500	10~600	4	1	0.02
RCP2-SA5R-○-PM-6-***-P1-△-□		6		5~300	8	2.5	
RCP2-SA5R-○-PM-3-***-P1-△-□		3		1~150	8	4.5	

* In the above model names,*** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

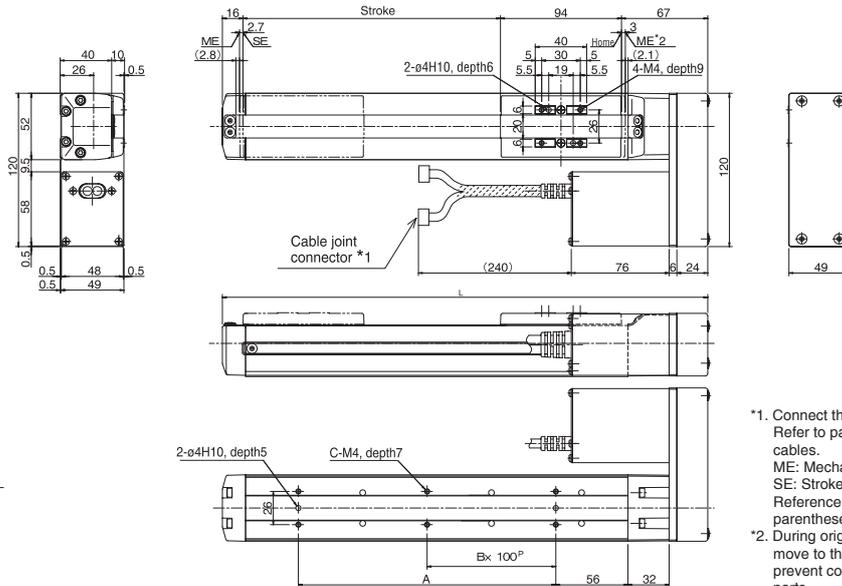
Name	Model	Page
Brake	B	→P33
Inverse motor-reversing direction	R	→P33
Reverse homing specification	NM	→P33

Common Specifications

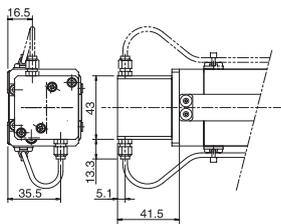
Drive system	Ball screw, ø10mm, rolled C10
Backlash	0.1mm or less
Guide	Integrated with base
Allowable load moment (Note 2)	Ma: 4.9Nm Mb: 6.8Nm Mc: 11.7Nm
Overhung load length	Ma direction: 150mm or less, Mb/Mc directions: 150mm or less
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



Brake Dimensions



* The brake cable is routed inside the actuator and is connected to the motor cable.

- *1. Connect the motor/encoder cables. Refer to page 60 for details on the cables.
ME: Mechanical end
SE: Stroke end
Reference dimensions are shown in parentheses.
- *2. During origin return the slider will move to the ME, so be careful to prevent contact with surrounding parts.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	50	100	150	200	250	300	350	400	450	500	
L	227	277	327	377	427	477	527	577	627	677	
A	73	100	100	200	200	300	300	400	400	500	
B	0	0	0	1	1	2	2	3	3	4	
C	4	4	4	6	6	8	8	10	10	12	
Weight (kg)	2.0	2.1	2.2	2.3	2.4	2.6	2.7	2.8	2.9	3.0	
Maximum speed (mm/s)	Lead 12	600									
	Lead 6	300									
	Lead 3	150									

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental	X	○	X	24VDC	→P49
RCP2-CG	1 axis	Absolute	X	○	X		→P49



(Note 1) Load capacity at the rated acceleration rate (Refer to page 9).
 (Note 2) Mc moment will become 7.8Nm with a stroke of 350mm or longer.
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-SA6R

ROBO Cylinder Slider Type:
Unit Width 58mm, Pulse Motor, Folded Motor Shape



Type Slider (58mm wide) Stroke 50~600mm Load capacity 12kg (horizontal)/6kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
(Example) RCP2-SA6R- I - PM - 6 - 600 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SA6R-○-PM-12-***-P1-△-□	Incremental/ Absolute	12	50~600	10~600	6	1.5~0.5	0.02
RCP2-SA6R-○-PM-6-***-P1-△-□		6		5~300	12	3~2	
RCP2-SA6R-○-PM-3-***-P1-△-□		3		1~150	12	6~4	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

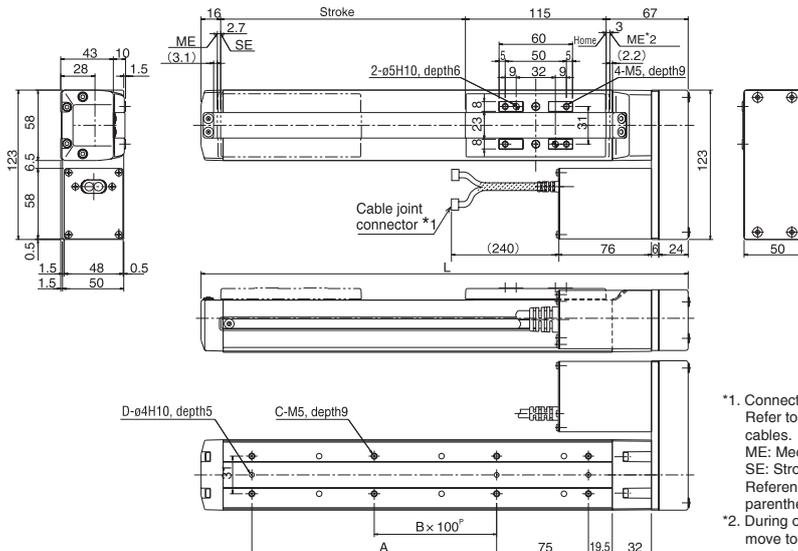
Name	Model	Page
Brake	B	→P33
Inverse motor-reversing direction	R	→P33
Reverse homing specification	NM	→P33

Common Specifications

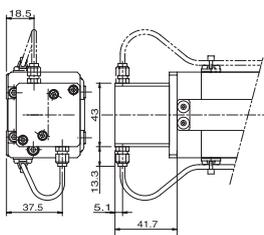
Drive system	Ball screw ϕ 10mm, rolled C10
Backlash	0.1mm or less
Guide	Integrated with base
Allowable load moment	Ma: 8.9Nm Mb: 12.7Nm Mc: 18.6Nm
Overhung load length	Ma/Mb/Mc directions: 220mm or less
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X □ □: Length specification, R □ □: Robot cable

Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



Brake Dimensions



* The brake cable is routed inside the actuator and is connected to the motor cable.

1. Connect the motor/encoder cables. Refer to page 60 for details on the cables.
ME: Mechanical end
SE: Stroke end
Reference dimensions are shown in parentheses.
2. During origin return the slider will move to the ME, so be careful to prevent contact with surrounding parts.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	50	100	150	200	250	300	350	400	450	500	550	600
L	248	298	348	398	448	498	548	598	648	698	748	798
A	0	100	100	200	200	300	300	400	400	500	500	600
B	0	0	0	1	1	2	2	3	3	4	4	5
C	4	6	6	8	8	10	10	12	12	14	14	16
D	2	3	3	3	3	3	3	3	3	3	3	3
Weight (kg)	2.3	2.5	2.6	2.7	2.9	3.0	3.2	3.3	3.4	3.6	3.7	3.9
Maximum speed (mm/s)	Lead 12	600										
	Lead 6	300										
	Lead 3	150										

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental	X	○	X	24VDC	→P49
RCP2-CG	1 axis	Absolute	X	○	X		→P49



- (Note 1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.)
(Note 2) Load capacity at the rated acceleration rate (Refer to page 9.)
(Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-SA7R

ROBO Cylinder Slider Type:
Unit Width 73mm, Pulse Motor, Folded Motor Shape



Type Slider (73mm wide) Stroke 100~800mm Load capacity 35kg (horizontal)/15kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
(Example) RCP2-SA7R-I-PM-8-800-P1-S-B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 100mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SA7R-○-PM-16-***-P1-△-□	Incremental/ Absolute	16	100~800	10~533 <400>	25~4	5~1	0.02
RCP2-SA7R-○-PM-8-***-P1-△-□		8		5~266	35~7	10~1.5	
RCP2-SA7R-○-PM-4-***-P1-△-□		4		1~133	35~20	15~3	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

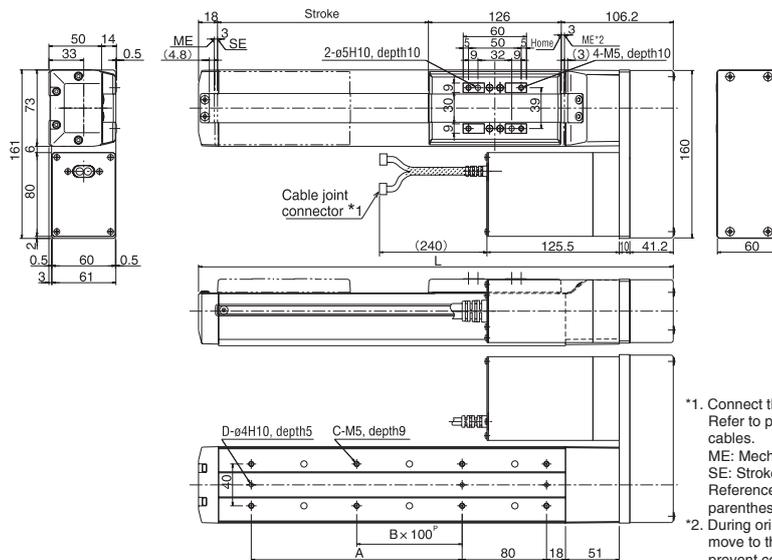
Name	Model	Page
Brake	B	→P33
Inverse motor-reversing direction	R	→P33
Reverse homing specification	NM	→P33

Common Specifications

Drive system	Ball screw ϕ 12mm, rolled C10
Backlash	0.1mm or less
Guide	Compatible with base
Allowable load moment	Ma: 13.9Nm Mb: 19.9Nm Mc: 38.3Nm
Overhung load length	Ma/Mb/Mc directions: 230mm or less
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

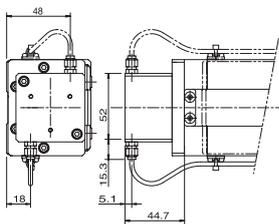
Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



*1. Connect the motor/encoder cables. Refer to page 60 for details on the cables.
ME: Mechanical end
SE: Stroke end
Reference dimensions are shown in parentheses.
*2. During origin return the slider will move to the ME, so be careful to prevent contact with surrounding parts.

Brake Dimensions



* The brake cable is routed inside the actuator and is connected to the motor cable.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	100	200	300	400	500	600	700	800	
L	350.2	450.2	550.2	650.2	750.2	850.2	950.2	1050.2	
A	100	200	300	400	500	600	700	800	
B	0	1	2	3	4	5	6	7	
C	6	8	10	12	14	16	18	20	
D	3	3	3	3	3	3	3	3	
Weight (kg)	3.3	3.8	4.2	4.7	5.1	5.6	6.0	6.5	
Maximum speed (mm/s)	Lead 16	533 <400>						480 <400>	
	Lead 8	266						240	
	Lead 4	133						120	

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental	X	O	X	24VDC	→P49
RCP2-CG	1 axis	Absolute	X	O	X		→P49



(Note1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.)
(Note 2) Load capacity at the rated acceleration rate (Refer to page 9).
(Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-SMR

ROBO Cylinder Slider Type with Iron Base: Unit Width 80mm, Pulse Motor, Motor-Reversing Shape



Type	Slider (80mm wide), motor-reversing	Stroke	100~1000mm	Load capacity	55kg (horizontal)/20kg (vertical)
------	-------------------------------------	--------	------------	---------------	-----------------------------------

Model details — Series — Type — Encoder type — Motor — Lead — Stroke — Applicable controller — Cable length — Options
 (Example) RCP2 - SMR - I - PM - 10 - 1000 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 100mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)	
RCP2-SMR-○-PM-20***-P1-△-□	Incremental/ Absolute	20	100~1000	10~600 (333)	23~1	3~0.5	0.02
RCP2-SMR-○-PM-10***-P1-△-□		10		5~300 (250)	28~4	9~0.5	
RCP2-SMR-○-PM-5***-P1-△-□		5		1~166 (140)	55~1.5	20~0.5	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

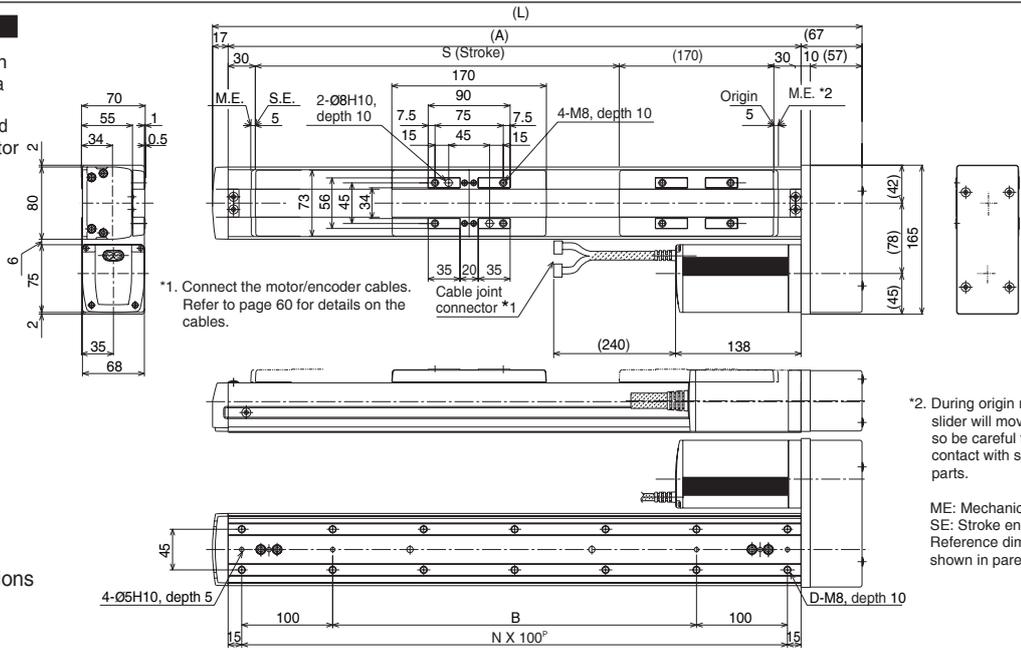
Name	Model	Page
Brake	B	→P33
Inverse motor-reversing direction	R	→P33
Reversed-origin specification	NM	→P33

Common Specifications

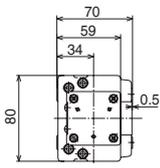
Drive system	Ball screw \varnothing 16mm, rolled C10
Backlash	0.05mm or less
Guide	Integrated with base
Allowable load moment	Ma: 36.3Nm Mb: 36.3Nm Mc: 77.4Nm
Overhung load length	Ma/Mb/Mc directions: 450mm or less
Base	Material: Special alloy steel
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X □: Length specification, R □: Robot cable

Dimensions

* With the reversed-origin specification, the specification on the motor side (distance to the origin) and that on the counter-motor side are reversed.



Brake Dimensions



* The brake cable is routed inside the actuator and is connected to the motor cable.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	100	200	300	400	500	600	700	800	900	1000
L	414	514	614	714	814	914	1014	1114	1214	1314
A	330	430	530	630	730	830	930	1030	1130	1230
B	100	200	300	400	500	600	700	800	900	1000
D	8	10	12	14	16	18	20	22	24	26
N	3	4	5	6	7	8	9	10	11	12
Weight (kg)	7.9	9.0	10	11.1	12.1	13.2	14.3	15.3	16.4	17.4
Maximum speed (mm/s) (Note 1)	Lead 20	600 (333)								515 (333)
	Lead 10	300 (250)								255
	Lead 5	166 (140)								125

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	○	X	24VDC	→P49
RCP2-CG	1 axis		X	○	X		→P49

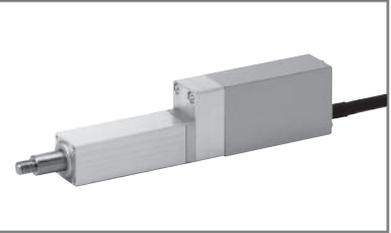


(Note 1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.) The figures in parentheses apply to a vertical application.
 (Note 2) Load capacity at the rated acceleration rate (Refer to page 9.)
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-RPA

ROBO Cylinder Rod Type: Unit Width 25mm, Pulse Motor, Standard Specification



Type Rod (25mm wide), standard Stroke 25~100mm Load capacity 7kg (horizontal)/2.5kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - RPA - I - PM - 1 - 100 - P1 - S - FL

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RPA-○-PM-1-***-P1-△-□	Incremental/ Absolute	1	25~100	1~25	7	2.5	100	0.02

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

Name	Model	Page
With flange	FL	→P33
With foot bracket	FT	→P33

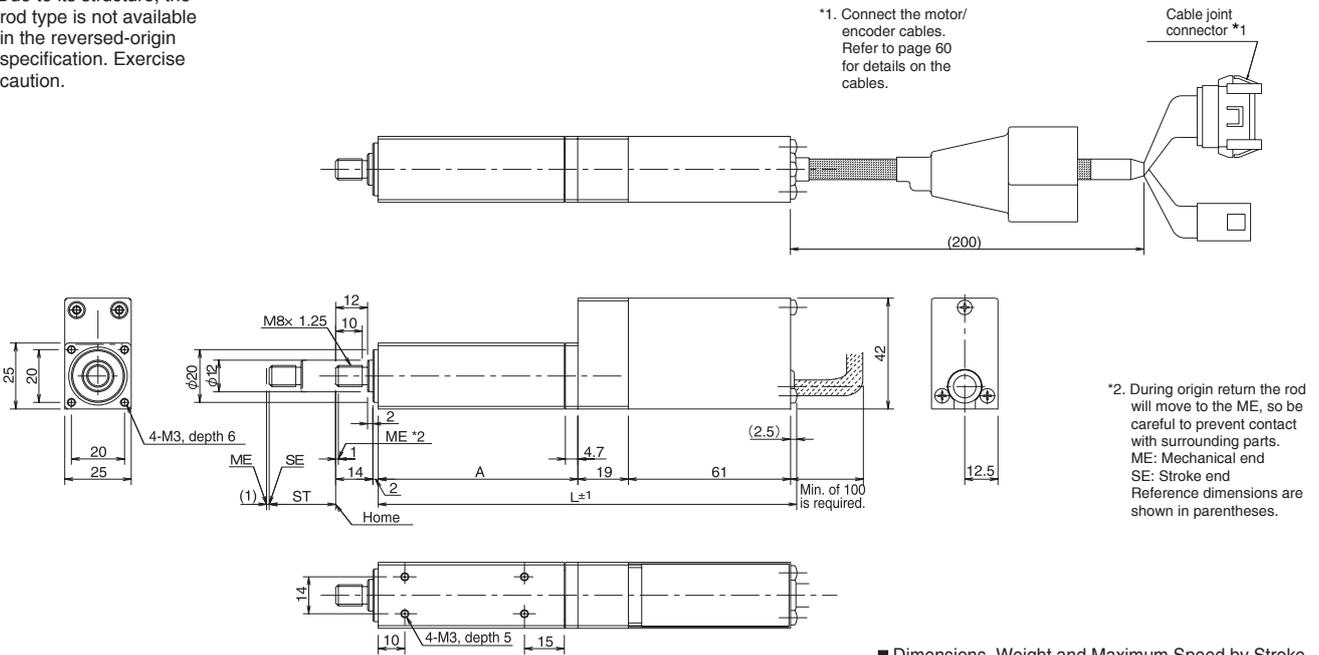
Note) The RPA type is not available with a brake.

Common Specifications

Drive system	Ball screw ϕ 6mm, rolled C-10
Backlash	0.05mm or less
Rated Life	2.000 km
Rod diameter	ϕ 12mm
Rod non-rotative accuracy	\pm 2.1°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* Due to its structure, the rod type is not available in the reversed-origin specification. Exercise caution.



Dimensions, Weight and Maximum Speed by Stroke

Stroke	25	50	75	100
A	75	100	125	150
L	157.5	182.5	207.5	232.5
Weight (kg)	0.4	0.5	0.6	0.7
Maximum speed (mm/s)	Lead 1 25			

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.) The figures in parentheses apply to a vertical application.
 (Note 2) Load capacity at the rated acceleration rate (Refer to page 9.)
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-RXA

ROBO Cylinder Rod Type: Unit Width 35mm, Pulse Motor, Standard Specification

Type Rod (35mm wide), standard Stroke 50~200mm Load capacity 30kg (horizontal)/10kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - RXA - I - PM - 5 - 200 - P1 - S - FL



Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (mm/s)	Load capacity (Note 1)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RXA-O-PM-5***-P1-△-□	Incremental/ Absolute	5	50~200	5~187	15~2	6~1	73.5	0.02
RCP2-RXA-O-PM-2.5***-P1-△-□		2.5		1~114	30~4	10~2	156.8	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

Name	Model	Page
With flange	FL	→P33
With foot bracket	FT	→P33

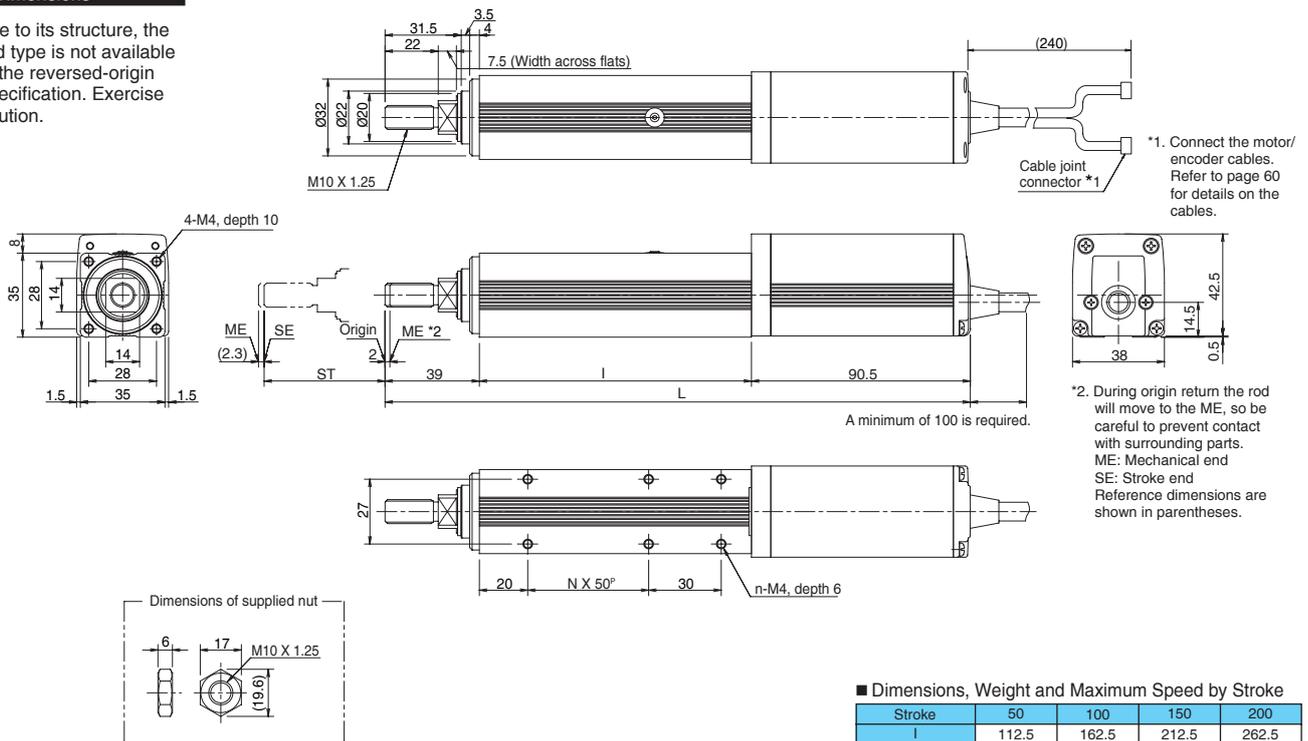
Note) The RXA type is not available with a brake.

Common Specifications

Drive system	Ball screw Ø8mm, rolled C10
Backlash	0.05mm or less
Guide	—
Rod diameter	Ø22mm
Rod non-rotative accuracy	±1.5°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 2)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* Due to its structure, the rod type is not available in the reversed-origin specification. Exercise caution.



Dimensions, Weight and Maximum Speed by Stroke

Stroke	50	100	150	200
I	112.5	162.5	212.5	262.5
L	203	253	303	353
N	1	2	3	4
n	6	8	10	12
Weight (kg)	0.8	0.95	1.1	1.25
Maximum speed (mm/s)	Lead 5	187		
	Lead 2.5	114		

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) Load capacity at the rated acceleration rate (Refer to page 9.)
 (Note 2) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-RSA

ROBO Cylinder Rod Type: Unit Width 45mm, Pulse Motor, Standard Specification



Type Rod (45mm wide), standard Stroke 50~300mm Load capacity 40kg (horizontal)/19kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - RSA - I - PM - 5 - 300 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RSA-O-PM-10***-P1-△-□	Incremental/ Absolute	10	50~300	10~458	25~5	4.5~0.5	150	0.02
RCP2-RSA-O-PM-5***-P1-△-□		5		5~250	40~10	12~2	284	
RCP2-RSA-O-PM-2.5***-P1-△-□		2.5		1~125	40	19~2.5	358	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

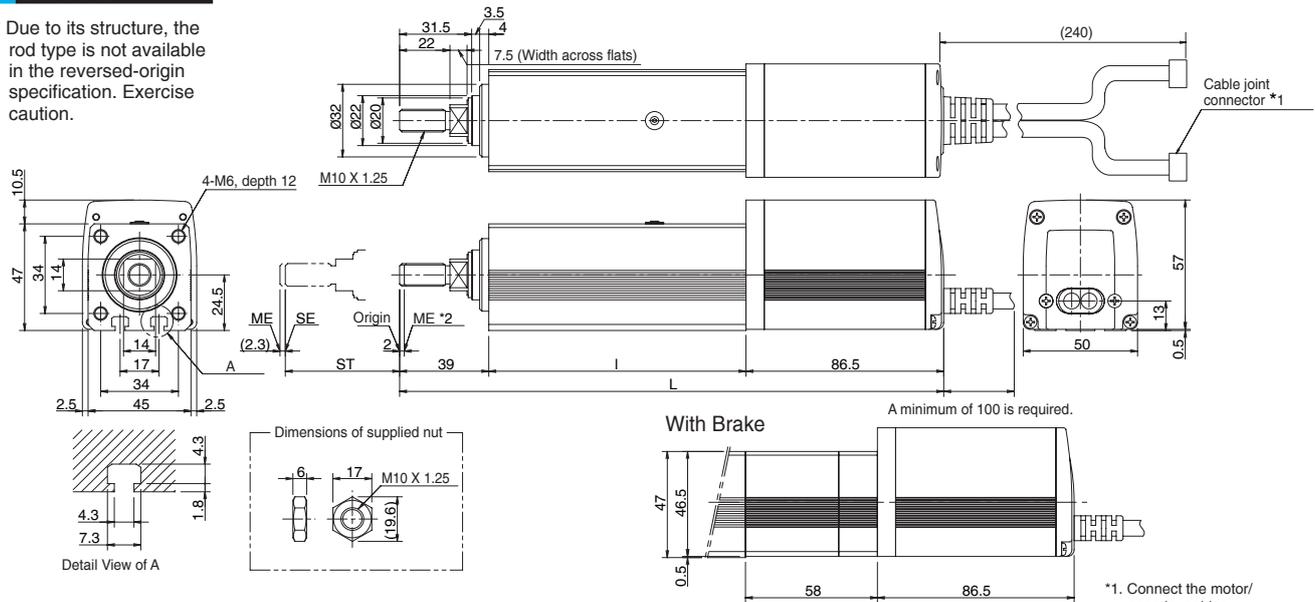
Name	Model	Page
Brake	B	→P33
With flange	FL	→P33
With foot bracket	FT	→P33

Common Specifications

Drive system	Ball screw Ø8mm, rolled C10
Backlash	0.05mm or less
Guide	—
Rod diameter	Ø22mm
Rod non-rotative accuracy	±1.5°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* Due to its structure, the rod type is not available in the reversed-origin specification. Exercise caution.



* The figures in parentheses apply to the brake type, while those in < > apply to a vertical application.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	50	100	150	200	250	300
I	112.5	162.5	212.5	262.5	312.5	362.5
L	199(257)	249(307)	299(357)	349(407)	399(457)	449(507)
Weight (kg)	1.35 (1.75)	1.6 (2)	1.85 (2.25)	2.1 (2.5)	2.35 (2.75)	2.6 (3)
Maximum speed (mm/s)	Lead 10	458		458		350
	Lead 5	250		237		175
	Lead 2.5	125 <110>		118		87

*1. Connect the motor/encoder cables. Refer to page 60 for details on the cables.

*2. During origin return the rod will move to the ME, so be careful to prevent contact with surrounding parts.
 ME: Mechanical end
 SE: Stroke end
 Reference dimensions are shown in parentheses.

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note1) A longer stroke will result in a lower maximum speed to prevent the ball screw from reaching a dangerous speed. (Refer to the above table for the maximum speed at a given stroke.) The figures in parentheses apply to a vertical application.
 (Note 2) Load capacity at the rated acceleration rate (Refer to page 9.)
 (Note 3) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-RMA

ROBO Cylinder Rod Type: Unit Width 64mm, Pulse Motor, Standard Specification

Type Rod (64mm wide), standard Stroke 50~300mm Load capacity 55kg (horizontal)/26kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - RMA - I - PM - 8 - 300 - P1 - S - B



Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on page 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (mm/s)	Load capacity (Note 1)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RMA-○-PM-16***-P1-△-□	Incremental/ Absolute	16	50~300	10~450	40~10	5~1	240	0.02
RCP2-RMA-○-PM-8***-P1-△-□		8		5~210	50~30	17.5~1.5	470	
RCP2-RMA-○-PM-4***-P1-△-□		4		1~130	55~35	26~1.5	800	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

Options

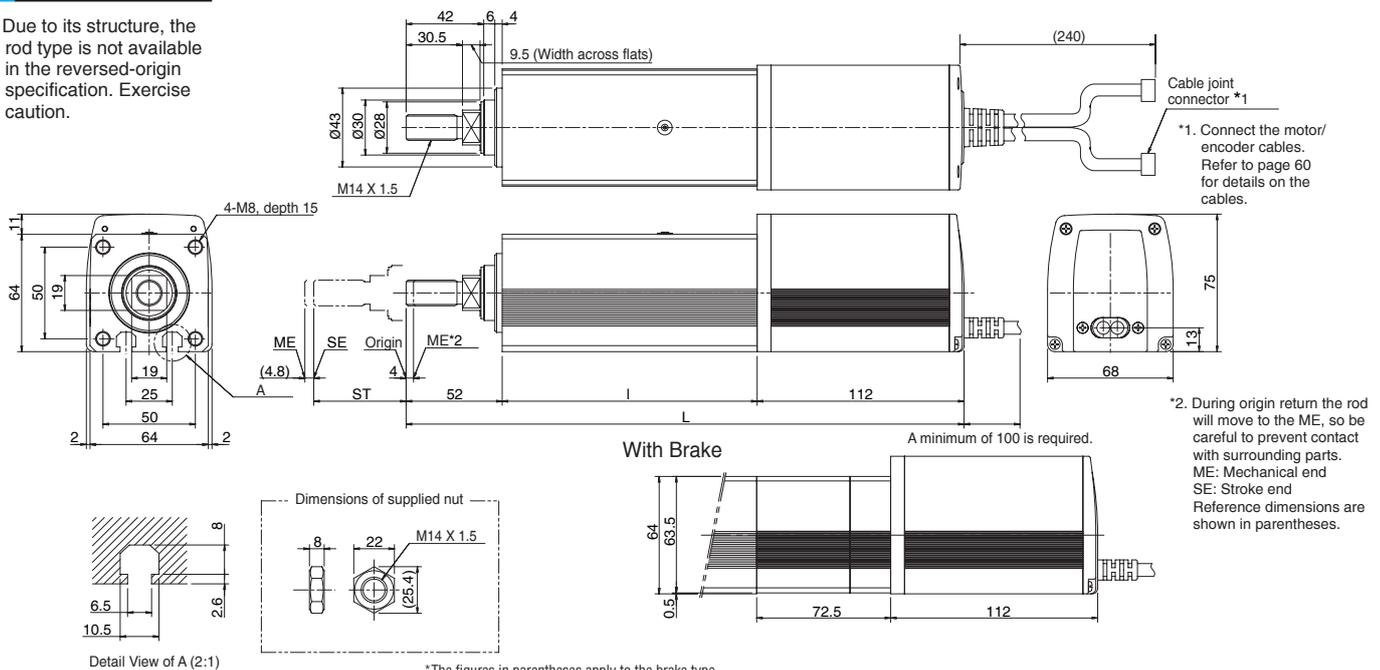
Name	Model	Page
Brake	B	→P33
With flange	FL	→P33
With foot bracket	FT	→P33

Common Specifications

Drive system	Ball screw \varnothing 12mm, rolled C10
Backlash	0.05mm or less
Guide	—
Rod diameter	\varnothing 30mm
Rod non-rotative accuracy	\pm 1.0°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 2)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions

* Due to its structure, the rod type is not available in the reversed-origin specification. Exercise caution.



Dimensions, Weight and Maximum Speed by Stroke

*The figures in parentheses apply to the brake type, while those in < > apply to a vertical application.

Stroke	50	100	150	200	250	300
I	138	188	238	288	338	388
L	250 (322.5)	300 (372.5)	350 (422.5)	400 (472.5)	450 (522.5)	500 (572.5)
Weight (kg)	3.1 (3.98)	3.6 (4.48)	4.1 (4.98)	4.6 (5.48)	5.1 (5.98)	5.6 (6.48)
Maximum speed (mm/s)	Lead 16	450 <400>				
	Lead 8	210				
	Lead 4	130				

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) Load capacity at the rated acceleration rate (Refer to page 9.)
 (Note 2) The maximum cable length is 20m. Specify the desired length in meters (e.g., X08 = 8m).

* Refer to page 9 for other points to note.

RCP2-RSGS

ROBO Cylinder Rod Type: Unit Width 45mm, Pulse Motor, Straight Shape, Parallel Single Guide



Type Rod (45mm wide) Stroke 50~300mm Load capacity 4 kg (horizontal)/18 kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - RSGS - I - PM - 5 - 300 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RSGS-○-PM-10-***-P1-△-□	Incremental/ Absolute	10	50~300	10~458	2.5~0.5	3.5~0.5	150	0.02
RCP2-RSGS-○-PM-5-***-P1-△-□		5		5~250	3.5~1	11~0.5	284	
RCP2-RSGS-○-PM-2.5-***-P1-△-□		2.5		1~125<114>	4~1.5	18~1.5	358	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

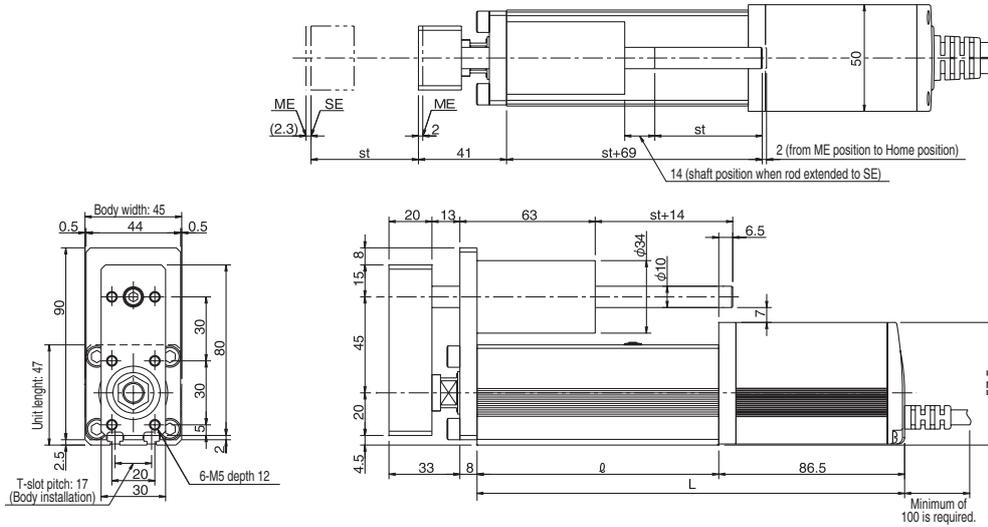
Options

Name	Model	Page
Brake	B	→P33
With flange	FL	→P33
Foot bracket	FT	→P33

Common Specifications

Drive system	Ball screw Ø8mm, rolled C10
Backlash	0.05mm or less
Guide	Single guide Ø10mm
Rod diameter	Ø22mm
Rod non-rotative accuracy	±0.05°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

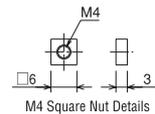
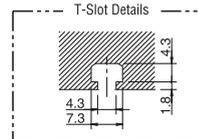
Dimensions



Dimensions, Weight and Maximum Speed by Stroke

* The figures in parentheses apply to the brake type, while those in < > apply to a vertical application.

Stroke	50	100	150	200	250	300
I	112.5	162.5	212.5	262.5	312.5	362.5
L	199(257)	249(307)	299(357)	349(407)	399(457)	449(507)
Weight (kg)	1.8	2.1	2.4	2.7	2.9	3.2
Maximum speed (mm/s)	Lead 10	458		458		350
	Lead 5	250		237		175
	Lead 2.5	125<114>		118<114>		87



Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) The figures in brackets apply to a vertical application.

(Note 2) The load acceleration is 0.2G. These figures only apply to an actuator equipped with the guide supporting the full weight of a payload in a horizontal application (no additional guide needed).

(Note 3) The maximum cable length is 15m for the absolute encoder type and 20m for the incremental type. Specify the desired length in meters (e.g., X08=8m).

* Refer to page 9 for other points to note.

RCP2-RMGS

ROBO Cylinder Rod Type: Unit Width 64mm, Pulse Motor, Straight Shape, Parallel Single Guide



Type Rod (64mm wide) Stroke 50~300mm Load capacity 5kg (horizontal)/24kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 - RMGS - I - PM - 8 - 300 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on page 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RMGS-○-PM-16***-P1-△-□	Incremental/ Absolute	16	50~300	10~450<400>	3~1	4~0.5	240	0.02
RCP2-RMGS-○-PM-8***-P1-△-□		8		5~210	4~1.5	16~1	470	
RCP2-RMGS-○-PM-4***-P1-△-□		4		1~133	5~2	24~0.5	800	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

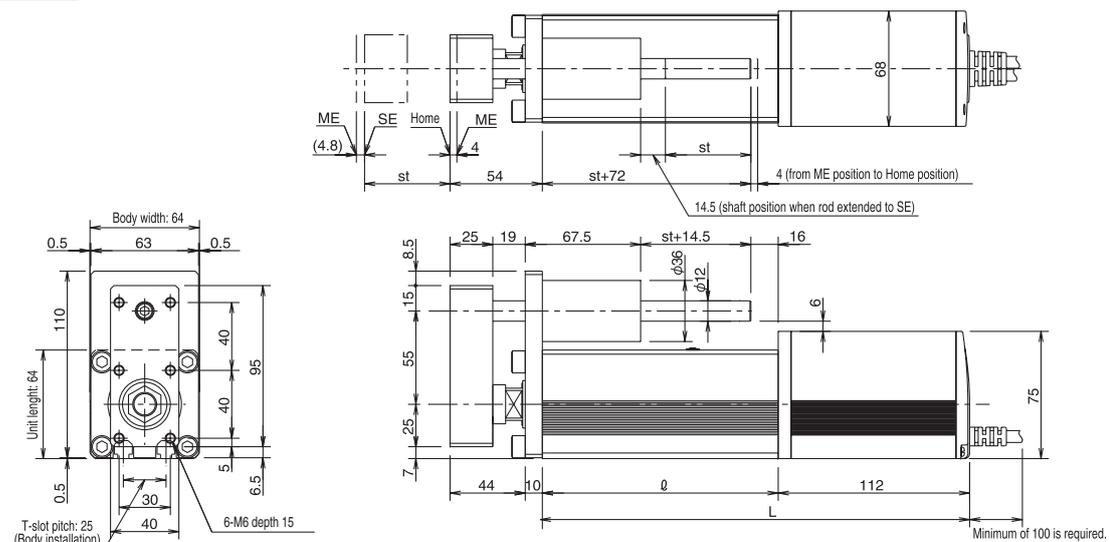
Options

Name	Model	Page
Brake	B	→P33
With foot bracket	FT	→P33

Common Specifications

Drive system	Ball screw \varnothing 12mm, rolled C10
Backlash	0.05mm or less
Guide	—
Rod diameter	\varnothing 30mm
Rod non-rotative accuracy	\pm 0.05°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

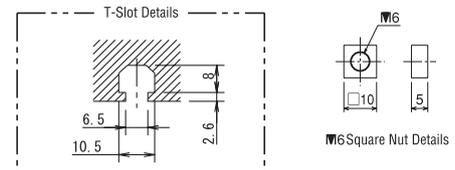
Dimensions



Dimensions, Weight and Maximum Speed by Stroke

*The figures in parentheses apply to the brake type, while those in < > apply to a vertical application.

Stroke	50	100	150	200	250	300
L	138	188	238	288	338	388
L	250 (322.5)	300 (372.5)	350 (422.5)	400 (472.5)	450 (522.5)	500 (572.5)
Weight (kg)	3.6	4.4	5.0	5.5	6.1	6.6
Maximum speed (mm/s)	Lead 16	450 <400>				
	Lead 8	210				
	Lead 4	133				



Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) The figures in brackets apply to a vertical application.

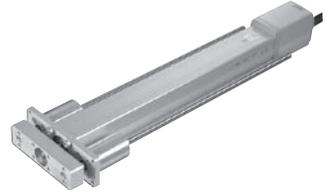
(Note 2) The load acceleration is 0.2G. These figures only apply to an actuator equipped with the guide supporting the full weight of a payload in a horizontal application (no additional guide needed).

(Note 3) The maximum cable length is 15m for the absolute encoder type and 20m for the incremental type. Specify the desired length in meters (e.g., X08=8m).

* Refer to page 9 for other points to note.

RCP2-RXGD

ROBO Cylinder Rod Type: Unit Width 35mm, Pulse Motor, Straight Shape, Parallel Double Guide



Type Rod (35mm wide) Stroke 50~200mm Load capacity 2 kg (horizontal) / 9 kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 -RXGD - I - PM - 5 - 200 - P1 - S - FT

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RXGD-○-PM-5***-P1-△-□	Incremental/ Absolute	5	50~200	5~187	1.5~0.5	5~0.5	73.5	0.02
RCP2-RXGD-○-PM-2.5***-P1-△-□		2.5		1~114	2~0.5	9~1	156.8	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

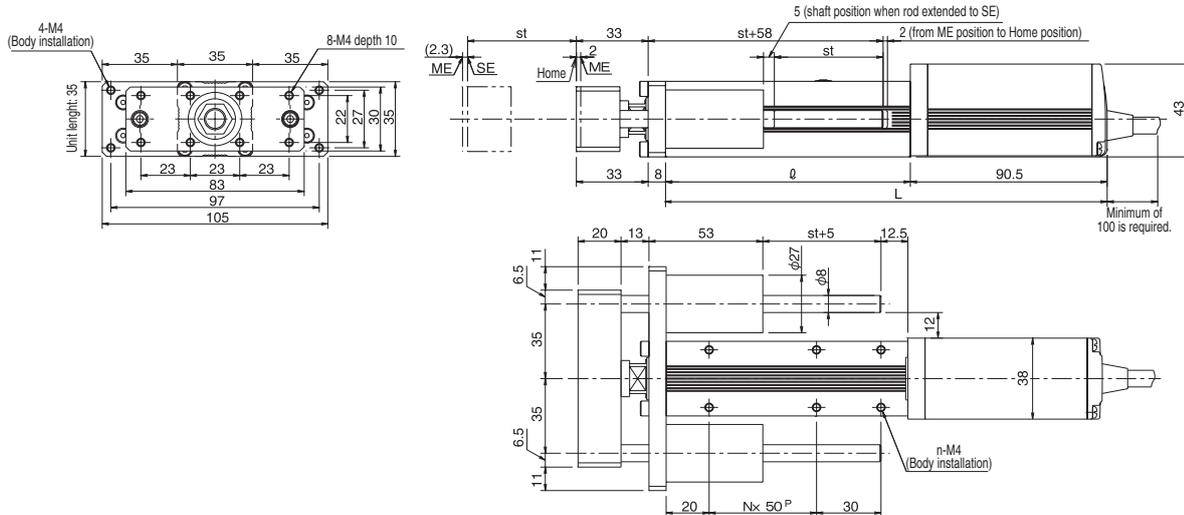
Options

Name	Model	Page
With flange	FT	→P33

Common Specifications

Drive system	Ball screw \varnothing 8mm, rolled C10
Backlash	0.05mm or less
Guide	Double guide \varnothing 10mm
Rod diameter	\varnothing 22mm
Rod non-rotative accuracy	\pm 0.05°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions



* The figures in parentheses apply to the brake type, while those in < > apply to a vertical application.

Dimensions, Weight and Maximum Speed by Stroke

Stroke	50	100	150	200
I	112.5	162.5	212.5	262.5
L	203	253	303	353
N	1	2	3	4
n	6	8	10	12
Weight (kg)	1.1	1.3	1.4	1.6
Maximum speed (mm/s)	Lead 5	187		
	Lead 2.5	114<133>		

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) The figures in brackets apply to a vertical application.

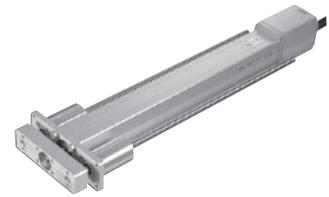
(Note 2) The load acceleration is 0.2G. These figures only apply to an actuator equipped with the guide supporting the full weight of a payload in a horizontal application (no additional guide needed).

(Note 3) The maximum cable length is 15m for the absolute encoder type and 20m for the incremental type. Specify the desired length in meters (e.g., X08=8m).

* Refer to page 9 for other points to note.

RCP2-RSGD

ROBO Cylinder Rod Type: Unit Width 45mm,
Pulse Motor, Straight Shape, Parallel Double Guide



Type Rod (45mm wide) Stroke 50~300mm Load capacity 5kg (horizontal)/18kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
(Example) RCP2 - RSGD - I - PM - 5 - 300 - P1 - S - B

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on page 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RSGD-○-PM-10-***-P1-△-□	Incremental/ Absolute	10	50~300	10~458	3.5~1	3.5~0.5	150	0.02
RCP2-RSGD-○-PM-5-***-P1-△-□		5		5~250	4.5~2	11~0.5	284	
RCP2-RSGD-○-PM-2.5-***-P1-△-□		2.5		1~125<114>	5~2.5	18~1.5	358	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

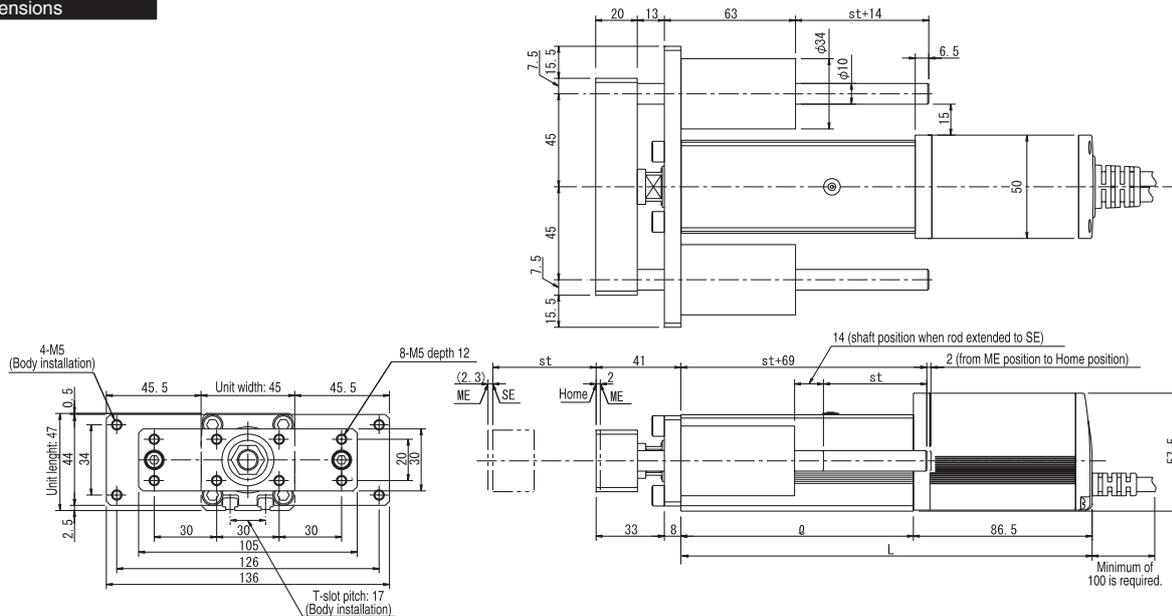
Options

Name	Model	Page
Brake	B	→P33
With foot bracket	FT	→P33

Common Specifications

Drive system	Ball screw \varnothing 8mm, rolled C10
Backlash	0.05mm or less
Guide	Double guide \varnothing 10mm
Rod diameter	\varnothing 22mm
Rod non-rotative accuracy	\pm 0.05°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

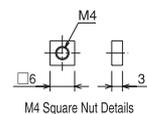
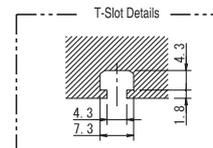
Dimensions



Dimensions, Weight and Maximum Speed by Stroke

*The figures in parentheses apply to the brake type, while those in < > apply to a vertical application.

Stroke	50	100	150	200	250	300
L	112.5	162.5	212.5	262.5	312.5	362.5
L	199(257)	249(307)	299(357)	349(407)	399(457)	449(507)
Weight (kg)	2.2	2.5	2.8	3.1	3.4	3.7
Maximum speed (mm/s)	Lead 10	458		458		350
	Lead 5	250		237		175
	Lead 2.5	125<114>		118<114>		87



Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) The figures in brackets apply to a vertical application.

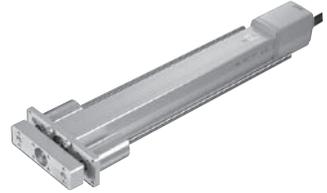
(Note 2) The load acceleration is 0.2G. These figures only apply to an actuator equipped with the guide supporting the full weight of a payload in a horizontal application (no additional guide needed).

(Note 3) The maximum cable length is 15m for the absolute encoder type and 20m for the incremental type. Specify the desired length in meters (e.g., X08=8m).

* Refer to page 9 for other points to note.

RCP2-RMGD

ROBO Cylinder Rod Type: Unit Width 64 mm, Pulse Motor, Straight Shape, Parallel Double Guide



Type Rod (64mm wide) Stroke 50~300mm Load capacity 5 kg (horizontal) / 24 kg (vertical)

Model details Series Type Encoder type Motor Lead Stroke Applicable controller Cable length Options
 (Example) RCP2 -RMGD- I - PM 8 - 300 - P1 - S - FT

Model/Specifications

* The maximum speed limit of the RCP2 Series will vary according to the weight of the load on the slider (rod). Refer to Correlation Diagrams of Speed and Load Capacity on pages 10 and 11.

Model	Encoder type	Lead (mm)	Stroke 50mm increments (mm)	Speed (Note 1) (mm/s)	Load capacity (Note 2)		Maximum push force (N)	Positioning repeatability (mm)
					Horizontal (kg)	Vertical (kg)		
RCP2-RMGD-○-PM-16***-P1-△-□	Incremental/ Absolute	16	50~300	10~450<400>	4~1	4~0.5	240	0.02
RCP2-RMGD-○-PM-8***-P1-△-□		8		5~210	5~1.5	16~1	470	
RCP2-RMGD-○-PM-4***-P1-△-□		4		1~133	5~2	24~0.5	800	

* In the above model names, *** indicates the stroke, △ the cable length and □ the applicable options, ○ encoder type "I" or "A".

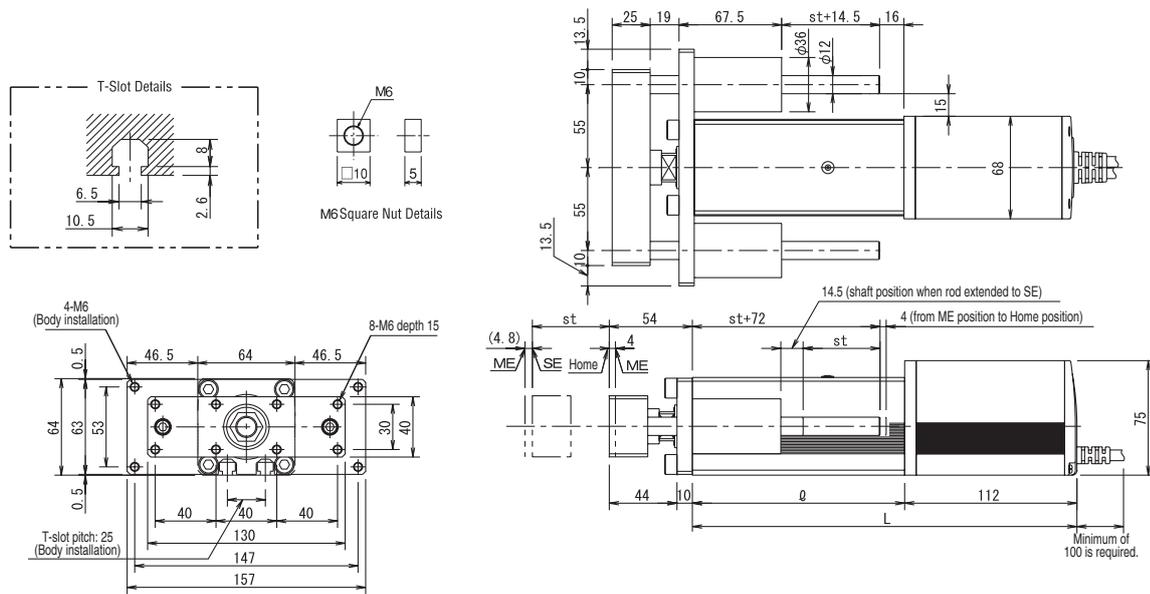
Options

Name	Model	Page
Brake	B	→P33
With flange	FT	→P33

Common Specifications

Drive system	Ball screw ϕ 12mm, rolled C10
Backlash	0.05mm or less
Guide	Double guide ϕ 10mm
Rod diameter	ϕ 30mm
Rod non-rotative accuracy	\pm 0.05°
Base	Material: Aluminum with white alumite treatment
Cable length (Note 3)	N: No cable, P: 1m, S: 3m, M: 5m, X□□: Length specification, R□□: Robot cable

Dimensions



Dimensions, Weight and Maximum Speed by Stroke

*The figures in parentheses apply to the brake type, while those in < > apply to a vertical application.

Stroke	50	100	150	200	250	300
I	138	188	238	288	338	388
L	250 (322.5)	300 (372.5)	350 (422.5)	400 (472.5)	450 (522.5)	500 (572.5)
Weight (kg)	4.4	5.0	5.5	6.1	6.7	7.3
Maximum speed (mm/s)	450 <400>					
	210					
	133					

Applicable Controller Specifications

Applicable Controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental/ Absolute	X	O	X	24VDC	→P49
RCP2-CG	1 axis		X	O	X		→P49



(Note 1) The figures in brackets apply to a vertical application.

(Note 2) The load acceleration is 0.2G. These figures only apply to an actuator equipped with the guide supporting the full weight of a payload in a horizontal application (no additional guide needed).

(Note 3) The maximum cable length is 15m for the absolute encoder type and 20m for the incremental type. Specify the desired length in meters (e.g., X08=8m).

* Refer to page 9 for other points to note.

Actuator Options

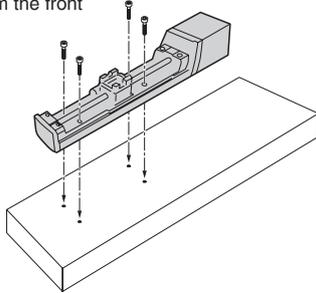
Installation Method

Slider Type

SA5, SA6, SA7

■ Remove the cover and affix from the front side using bolts.

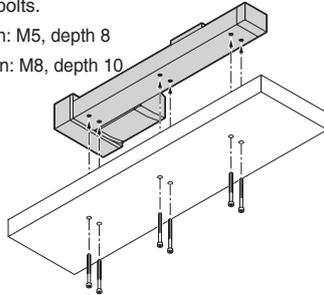
- RCP2-SA5: $\varnothing 4.5$
- RCP2-SA6: $\varnothing 4.5$
- RCP2-SA7: $\varnothing 6$



SSR, SMR

■ Affix from the reverse side using bolts.

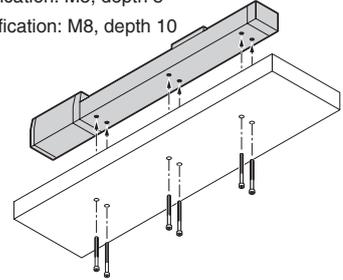
- RCP2-SSR screw-hole specification: M5, depth 8
- RCP2-SMR screw-hole specification: M8, depth 10



SA5, SA6, SA7, SS, SM

■ Affix from the reverse side using bolts.

- RCP2-SA5 screw-hole specification: M4, depth 7
- RCP2-SA6 screw-hole specification: M5, depth 9
- RCP2-SA7 screw-hole specification: M5, depth 9
- RCP-SS screw-hole specification: M5, depth 8
- RCP-SM screw-hole specification: M8, depth 10

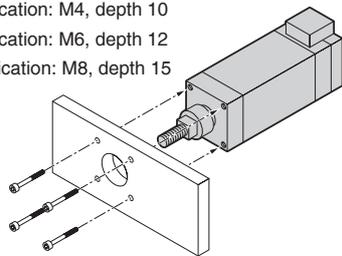


Rod Type

RXA, RSA, RMA

■ Affix through the screw holes provided on the rod side.

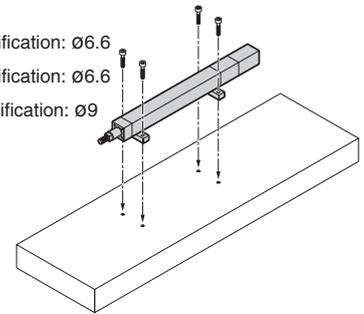
- RCP2-RXA screw-hole specification: M4, depth 10
- RCP2-RSA screw-hole specification: M6, depth 12
- RCP2-RMA screw-hole specification: M8, depth 15



RXA, RSA, RMA (Foot bracket specification)

■ Affix from above using bolts.

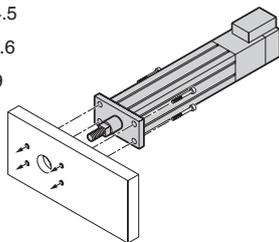
- RCP2-RXA foot-bracket specification: $\varnothing 6.6$
- RCP2-RSA foot-bracket specification: $\varnothing 6.6$
- RCP2-RMA foot-bracket specification: $\varnothing 9$



RXA, RSA, RMA (Flange specification)

■ Affix from the actuator side using bolts.

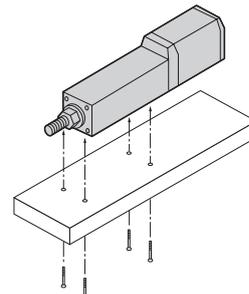
- RCP2-RXA flange specification: $\varnothing 4.5$
- RCP2-RSA flange specification: $\varnothing 6.6$
- RCP2-RMA flange specification: $\varnothing 9$



RXA, RSA, RMA

■ Affix from the reverse side using bolts.

- RCP2-RXA screw-hole specification: M4, depth 6
- RCP2-RSA square-nut insertion: M4 (T-groove depth 6.1)
- RCP2-RMA square-nut insertion: M6 (T-groove depth 10.6)



Actuator Options

Brake (Additional price)

Model **BE, BL, BR** (SA5, SA6, SA7 types) **B** (Other types)

Explanation

This brake is used with the ROBO Cylinder installed vertically in order to prevent the work attached at the tip of the slider or rod from falling due to dead weight when the servo or power is turned off.

Remarks

With the SA5, SA6 or SA7 type, the brake cable is not routed within the actuator. Instead, the cable exits the actuator and is guided into the joint cable near the motor cover.

The brake cable can be taken out at end (BE), right (BR) or left (BL).

All other types are specified with "B," since the brake cable is routed within the actuator.

Reversed-Origin Specification (Free of charge)

Model **NM**

Explanation

Normally the origin is set on the motor side.

Specify this option if the origin must be set on the counter-motor side due to the equipment structure.

Remarks

The rod type is not available in the reversed-origin specification due to its structure. Exercise caution.

Inverse Motor-Reversing Direction (Free of charge)

Model **R**

Explanation

The reversing direction of the motor for the motor-reversing type actuator (SSR, SMR) is set to the inverse direction.

Foot Bracket (Additional price)

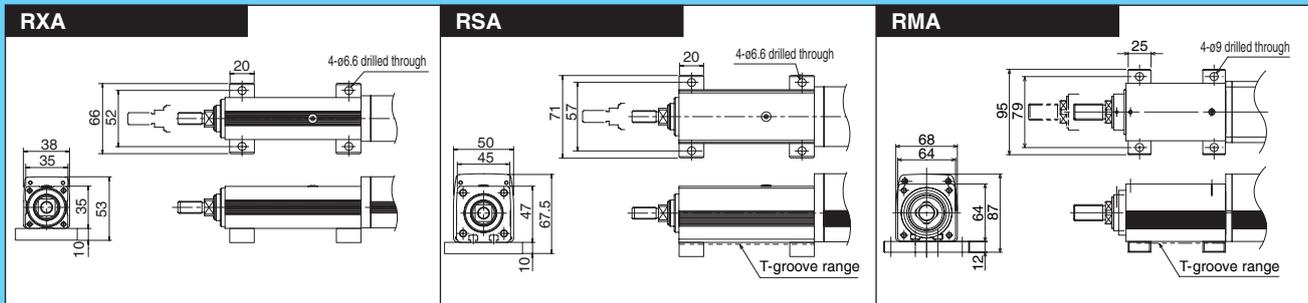
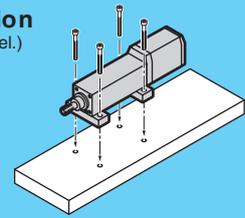
Model **FT**

Explanation

This bracket is used to affix the actuator from above using bolts. Since the foot bracket is affixed into the T-grooves provided at the bottom of the actuator, it can be adjusted in the length direction to a certain degree. (In the RXA type the bracket is installed using tapping holes.) Refer to the drawings below for the dimensions of each actuator with a foot bracket.

Foot Bracket Specification (Specify "FT" after the actuator model.)

Affix from above using bolts.



Flange (Additional price)

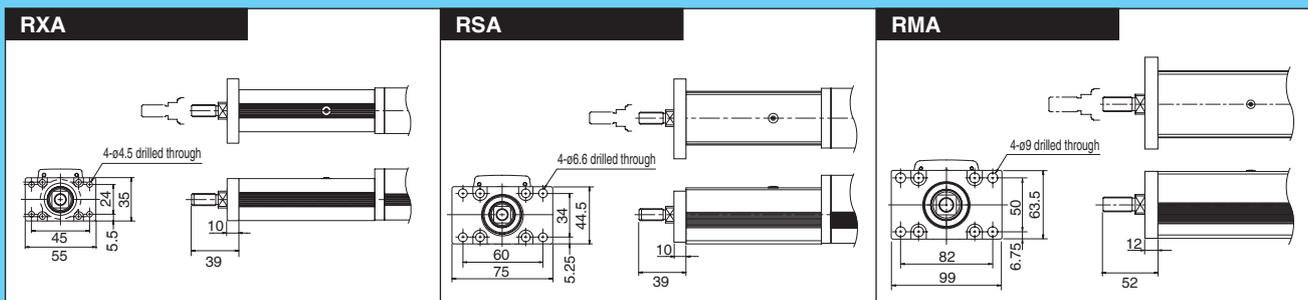
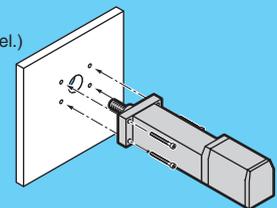
Model **FL**

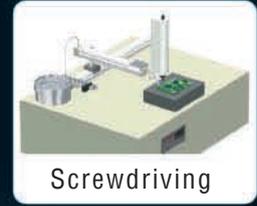
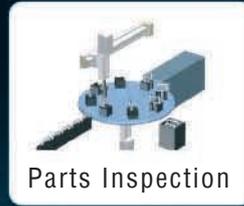
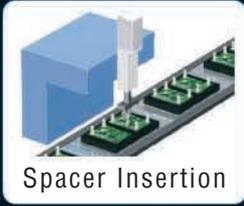
Explanation

This bracket is used to affix the actuator from the actuator side using bolts. Refer to the drawings below for the dimensions of each actuator with a flange.

Flange Specification (Specify "FL" after the actuator model.)

Affix from the actuator side using bolts.





G R I P P E R

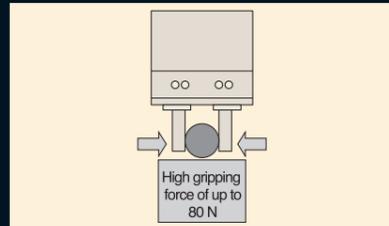
R O T A R Y

RCP2 Series

Robo Gripper

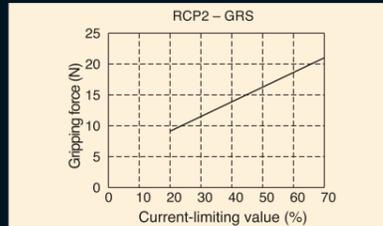
1 Generating high gripping force with a compact, lightweight body

The servo-controlled, motorized chuck with a built-in encoder is housed in a compact body equivalent to the size of an air chuck. The maximum gripping force is 80 N, approximately three times the gripping force generated by a conventional motorized chuck (GRM type).



2 Adjustable gripping force

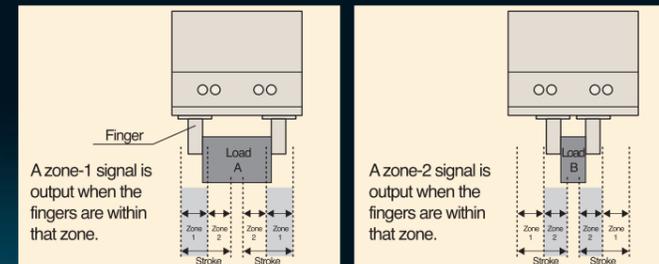
The gripping force is easily adjusted. Simply change the data value (push force) setting in the controller. This easy adjustment function lets you protect a fragile load from damage during transfer by instantly reducing the gripping force.



3 Zone signal, pause and other useful functions

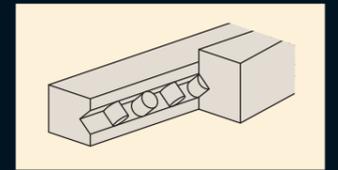
The zone signal, pause signal and other popular functions of the Robo Cylinder are also available on the Robo Gripper. The zone-signal function, which allows the detection of up to two zones (**1), lets you identify the gripped load or check the current actuator position in case of an emergency stop.

**1 This function is available when the PIO pattern is set to "2 zone output signals."



4 Cross-roller finger guide

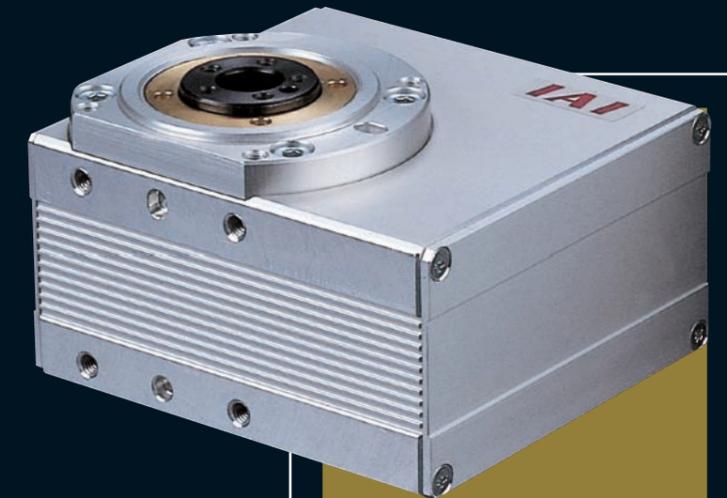
The finger guide adopts a cross-roller bearing guide of the line-contact type, thus providing higher rigidity and load compared with other point-contact ball-bearing guides.



5 The current actuator position is maintained even after power-off.

The current actuator position is maintained by the self-lock function even after the power or servo is turned off. This function prevents the load from dropping in the event of a power failure or emergency stop.

ROBO GRIPPER



RCP2 SERIES

SMALL & HIGH POWER

1 Select from two compact, lightweight types offering different output shaft orientations

The servo-controlled, motorized rotary actuator, featuring a built-in encoder, comes in a compact body equivalent to the size of an air rotary actuator. Choose either of two types: the vertical type (B) and the flat type (C). The output shaft of the flat type employs a hollow structure, so you can use the space within it to guide the cables of the equipment installed at the tip of the shaft.

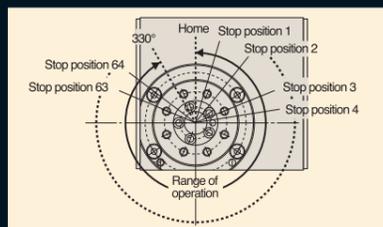


Vertical type (B)

Flat type (C)

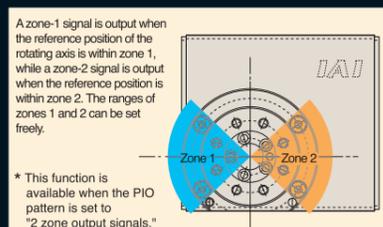
2 Positioning to a maximum of 64 points

A maximum of 64 positioning points can be set. Given the remarkably high accuracy with which the stop position is repeated (± 0.01 deg), the robot is suitable for applications requiring extremely precise rotary action.



3 Zone signal, pause and other useful functions

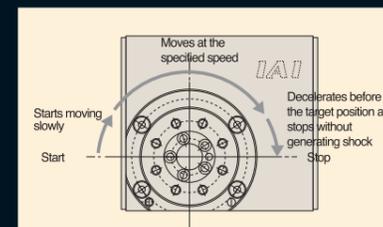
The zone signal, pause signal and other popular functions of the Robo Cylinder are also available on the Robo Rotary. That means you can use the zone signal to check the current actuator position during movement, or use the pause signal as an interlock signal to prevent contact between the robot and surrounding equipment.



* This function is available when the PIO pattern is set to "2 zone output signals."

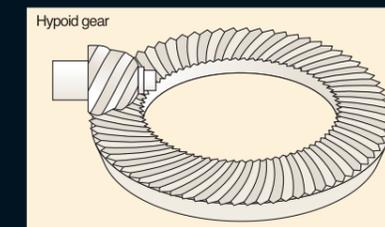
4 Easy setting of speed/acceleration rate

The rotating speed and acceleration rate are easily altered. Simply change the setting to the desired value. By reducing the acceleration rate, you can virtually eliminate the shock upon stopping and prevent the load from overshooting.



5 Hypoid gear for a compact body and longer life

The speed-reduction mechanism's hypoid gear design contributes to the compact design and also ensures a longer life.



ROBO ROTARY

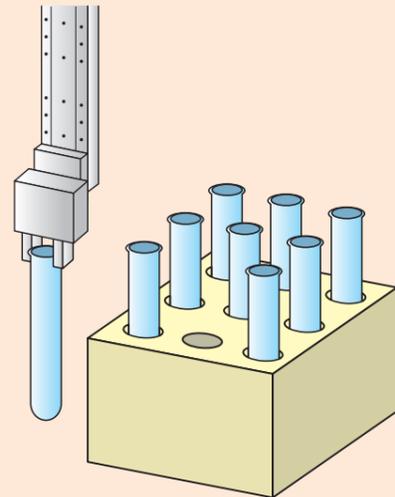
RCP2 Series

Robo Rotary

Use Examples

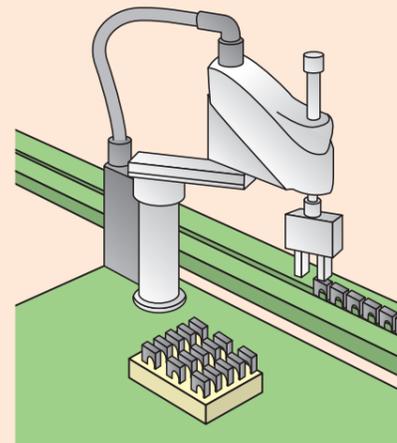
Gripping test tubes, etc.

Fragile loads such as test tubes can be gripped safely.



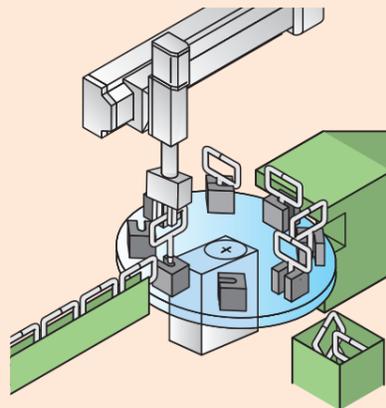
In combination with a SCARA robot

Attach the gripper at the tip of a SCARA robot and eliminate the need for an air supply.



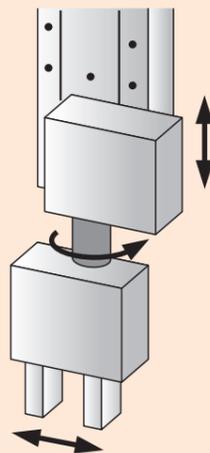
Parts inspection machine

Use the Robo Rotary's positioning function to achieve the same effect as a rotating index table, and apply the Robo Gripper's soft-grip function as a load chuck.



In combination with the Robo Rotary

Install the Robo Rotary and Gripper together at the tip of a Cartesian robot to construct a rotary chuck.



RCP2 Series Specification Table

Explanation by Type

	Classification	Actuator type	Actuator dimensions	Description	Page
Gripper		Compact RCP2-GRS	W69 × T30 × H71	A encoder-controlled, motorized chuck that makes it easy to adjust the load gripping position/force and change the speed of finger movement. Select a model that suits your application from two types (GRS and GRM) each of which offers a different stroke.	P41
		Medium RCP2-GRM	W74 × T36 × H79		P42
Rotary		Vertical RCP2-RTB	W88 × T50 × H83.5	A motorized rotary actuator with a built-in encoder-controlled pulse motor. Specific speeds and acceleration rates can be set simply by entering values, so shock-free start/stop action or operation at a specified speed are effortless. Choose from two types (vertical and flat) with the output shaft provided in different orientations.	P43
		Flat RCP2-RTC	W88 × T81 × H55		P44

Specification Table

	Actuator type	Feed screw lead (mm)	Stroke (mm)	Maximum gripping force (N)	Maximum speed (mm/sec)	Positioning repeatability (mm)	Model	Page
Gripper	RCP2-GRS	1.5	10 (5 each side)	21.0	33.3 (each side)	± 0.01	RCP2-GRS-I-PM-1-10-P1-△-□	P41
	RCP2-GRM	1.5	14 (7 each side)	80.0	36.7 (each side)	± 0.01	RCP2-GRM-I-PM-1-14-P1-△-□	P42

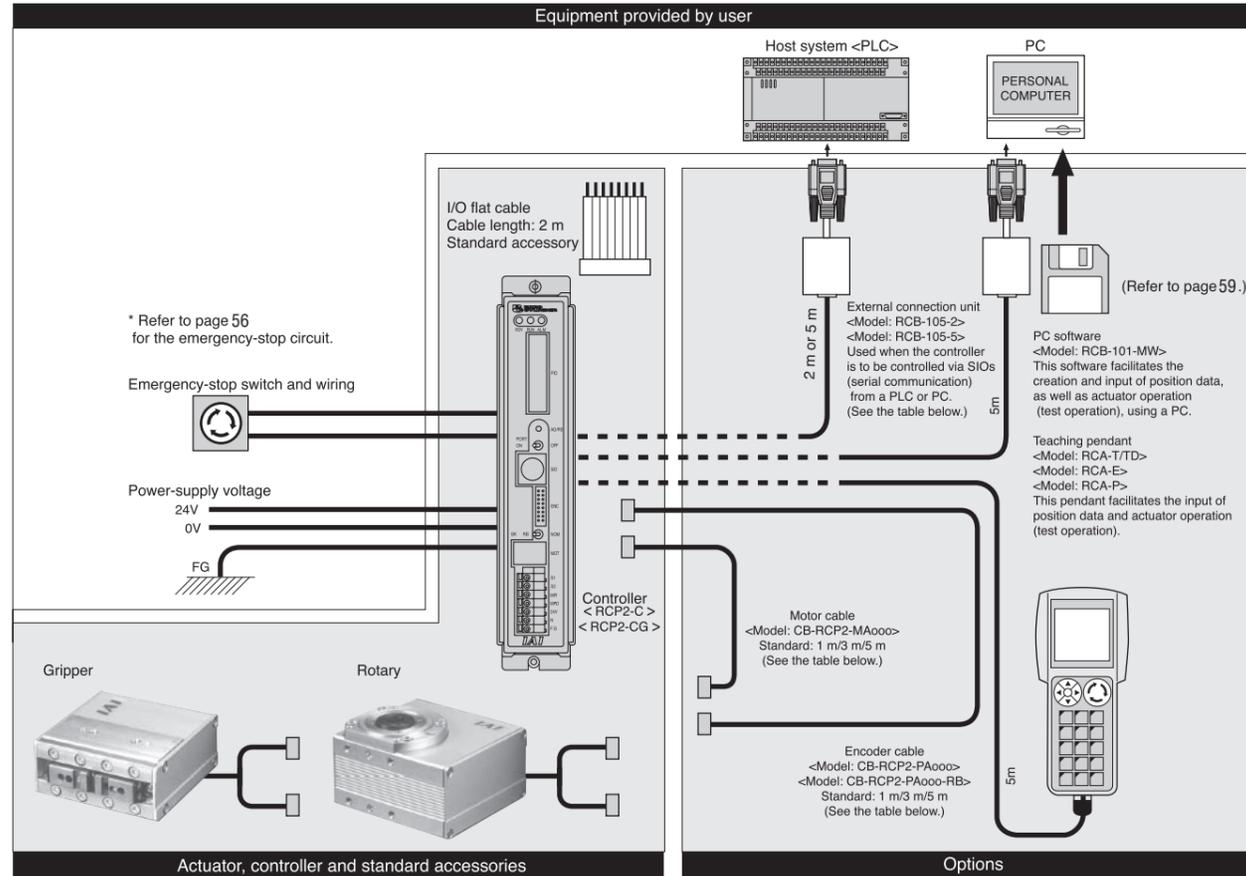
* In the above model names, △ indicates the cable length and □ the applicable option(s).

	Actuator type	Gear ratio	Oscillation angle (deg)	Maximum torque (N-m)	Maximum speed (deg/sec)	Positioning repeatability (deg)	Model	Page
Rotary	RCP2-RTB	1/20	330	1.1	600	± 0.01	RCP2-RTB-I-PM-20-330-P1-△-□	P43
		1/30	330	1.7	400	± 0.01	RCP2-RTB-I-PM-30-330-P1-△-□	
	RCP2-RTC	1/20	330	1.1	600	± 0.01	RCP2-RTC-I-PM-20-330-P1-△-□	P44
		1/30	330	1.7	400	± 0.01	RCP2-RTC-I-PM-30-330-P1-△-□	

* In the above model names, △ indicates the cable length and □ the applicable option(s).

Gripper/Rotary Series System Configuration

Controller System Configuration Diagram



Controller Options Table

Controller Options			
Item	Model	Description	Page
Teaching Pendant (Note 1)	RCA-T	Position data input, actuator test operation, etc.	P59
Teaching Pendant (Deadman Switch Specification) (Note 1)	RCA-TD	RCA-T with a deadman switch	
Simple Teaching Pendant (Note 1)	RCA-E	An economical type offering functions equivalent to those of RCA-T	
Data Setting Unit (Note 1)	RCA-P	Used exclusively for data input (cannot be used for actuator operation)	
PC Software (Note 2)	RCB-101-MW	Position data input, actuator test operation, etc.	
External Connection Unit	RCB-105-2(5)	Serial communication cable unit (external equipment communication cable + RS485 conversion adapter)	—
SIO Converter	RCB-TU-SIO-A(B)	A unit for linking multiple controllers and rewriting the position data in all connected controllers from a single point	P57
Controller Link Cable	CB-RCP2-CTL002	A cable for linking multiple controllers (refer to page 57 for details)	

(Note 1) A product of an earlier version cannot be used with the RCP2. Upgrade the version as necessary.
 (Note 2) If you are currently using PC software for the RCP (RCA-101-MW), the software can be used continuously after a proper version upgrade. The shape of RCB-101-MW's RS485 conversion adapter has changed from that of the adapter used with RCA-101-MW, but functionality remains the same.

Controller Spare Parts

Item	Model	Description	Page
Motor Cable	CB-RCP2-MA□□□□	Motor power cable (for controller and actuator connection) Enter the cable length in ooo. Example : 080 = 8 m (maximum length: 20 m) * The standard motor cables are robot types.	P60
Encoder Cable	CB-RCP2-PA□□□□	Encoder signal cable (for controller and actuator connection) Enter the cable length in ooo. Example : 080 = 8 m (maximum length: 20 m)	
Encoder Robot Cable	CB-RCP2-PA□□□□-RB	Highly flexible encoder cable	
I/O Flat Cable	CB-RCA-PI0020	Parallel communication cable (for PLC and controller connection) No connector on PLC end	
External Equipment Communication Cable	CB-RCA-SIO020(050)	Serial communication cable * Used with an RS485 conversion adapter	
RS485 Conversion Adapter	RCB-CV-MW	Adapter for converting RS485 signals to RS232 signals	

Gripper/Rotary Series Points to Note

Notes on Catalog Specifications <Common to all models>

Speed

"Speed" refers to the specified speed at which the fingers of the gripper actuator are opened/closed or the output shaft of the rotary actuator is rotated. The fingers/output shaft accelerate from a stationary state, and once the specified speed is reached they will maintain that speed until immediately before the target position (specified position), where they will begin decelerating to stop at the target position.

<Caution>

- (1) The maximum speed of the RCP2 Gripper/Rotary will vary according to the weight of the fingers or output shaft and that of the installed load.
- (2) The time needed to reach the specified speed will vary according to the acceleration (deceleration) rate.
- (3) Speed can be set in increments of 1 mm/sec (or in increments of 1 deg/sec when setting the speed of the rotating axis) in position data.

Acceleration/Deceleration Rate

"Acceleration rate" refers to the rate of change of speed when the speed rises from zero (stationary state) to the specified speed.

"Deceleration rate" refers to the rate of change of speed when the specified speed drops to zero (stationary state).

In the programs, both are specified in "G" (0.3 G = 2940 mm(deg)/sec²). The smaller the acceleration/deceleration rate, the smaller the starting/stopping shock becomes.

<Caution>

- (1) The upper and lower limits of acceleration rate are 0.3 G and 0.01 G, respectively.
- (2) Acceleration rate can be set in increments of 0.01 G in position data.

Backlash

"Backlash" refers to a mechanical play. Immediately after the moving direction reverses, the fingers or output shaft will not operate for the motor revolutions corresponding to the specified backlash, so exercise caution.

Positioning Repeatability

"Positioning repeatability" refers to the positioning accuracy of repeated movements to a pre-stored position from the same direction. If the moving direction changes, the achieved position will offset due to the effect of backlash, even when the target position remains the same, so exercise caution. Also note that the absolute positioning accuracy is not guaranteed.

Home

Since the RCP2 Gripper/Rotary adopts an incremental encoder, every time the power is reconnected, homing must be performed. With the gripper type, the home is set on the open side (outer side). With the rotary type, the home is where the output shaft hits the stopper and reverses its direction when the shaft is turned counterclockwise as viewed from above.

Duty

IAI's actuators should be used at a duty of 50% or less, as a rule.

Duty (%) = [Operating time / (Operating time + Stopped time)] x 100

Allowable Load Moment

"Allowable load moment" refers to the allowable level of load moment that can be borne by the guide of the gripper actuator or output shaft of the rotary actuator.

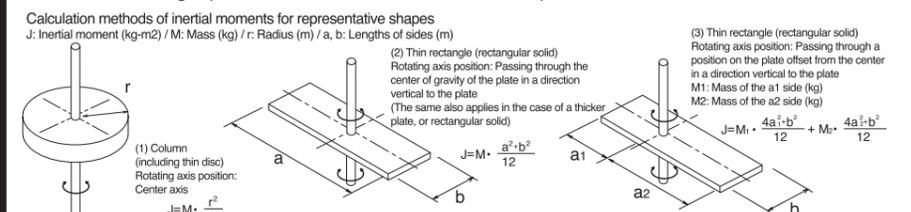
If the moment of the load installed on the fingers or output shaft exceeds the range of allowable moments, the actuator life may be shortened or malfunction may result, so exercise caution.

Allowable Inertial Moment

"Allowable inertial moment" refers to the allowable, controllable level of inertia (inertial moment) generated when the load installed on the output shaft of the rotary actuator is rotated.

Use this value as a reference when determining the weight and size of the load that can be operated on the rotary actuator.

Refer to the following explanations for the calculation methods of representative inertial moments.



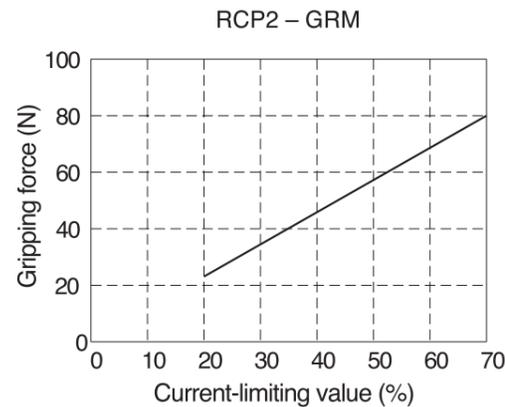
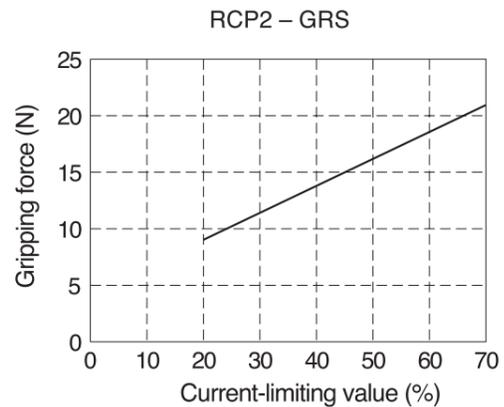
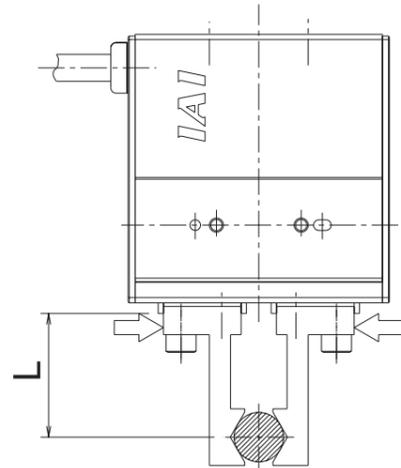
Notes on Selection

Gripper

Adjustment of Gripping Force

In a push & hold operation, the gripping force can be adjusted freely within a current-limiting range of 20 to 70% being set on the controller. Since the push force varies from one model to another, confirm the required gripping force from the graph below and select an appropriate type that can produce the required force.

* The gripping force shown in the graph below represents the sum of gripping forces of both fingers.



Guide for Model Selection Based on Load Weight

The load weight that can be transferred by the actuator will vary depending on the friction coefficient determined by the finger and load materials, as well as the shape of the load. Generally the load weight should be 1/10 to 1/20 the gripping force or even less. If the load will receive large acceleration/deceleration force or impact during transfer, an additional allowance must be considered (1/30 to 1/50).

Finger Attachment Shape

The distance (L) from the finger attachment surface to the gripping point must not exceed the following dimensions:

- RCP2-GRS → 50mm
- RCP2-GRM → 80mm

Minimize the size and weight of the fingers attached to the actuator. If the fingers are long, large or heavy, the inertial force and bending moment generated upon opening/closing may affect the actuator performance or guide structure.

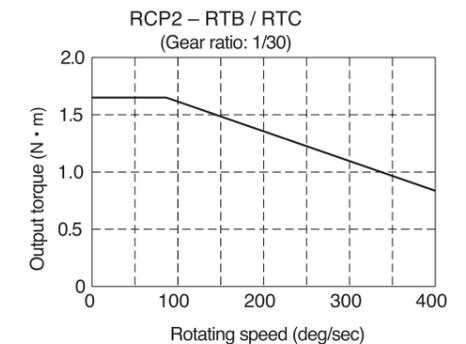
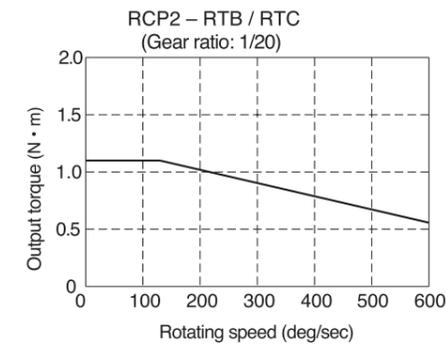
Caution Note

- The above graph of push force (gripping force) and current-limiting value is provided for reference purpose only. The values shown are subject to a slight margin of error.
- If the push force is too small, the push force may fluctuate due to a slide resistance, etc., or malfunction may occur. Therefore, exercise caution when setting the push force. Always keep the current-limiting value at 20% or above.
- Minimize the size and weight of the fingers. Long, large or heavy fingers may affect the actuator performance or guide structure.

Rotary

Output Torque

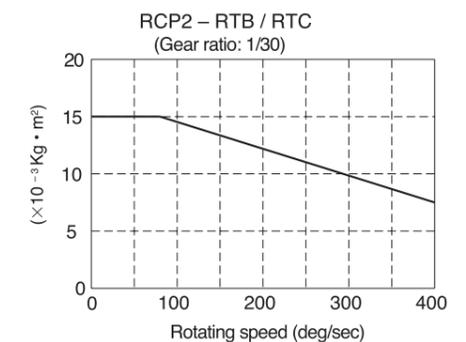
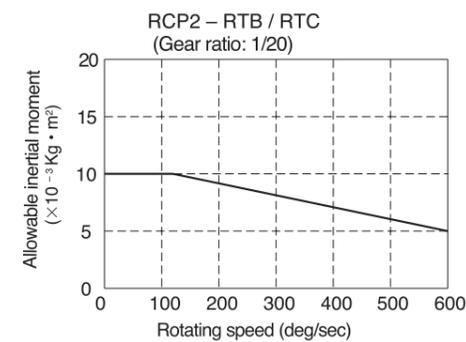
The output torque decreases as the rotating speed increases. Check on the graph below to see if the speed and torque required in your intended operation can be achieved.



Allowable Load

1. Allowable inertial moment

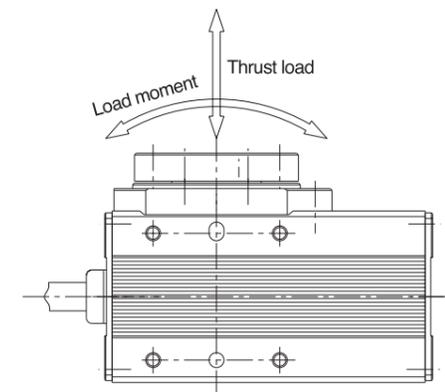
The allowable inertial moment of the load that can be rotated will vary depending on the rotating speed. Select an appropriate model after confirming the operating condition as well as the inertial moment of the load to be rotated on the actuator (refer to page 8).



When the rotating axis is oriented horizontally, a gravitational load torque will be generated if the center of gravity of the load is positioned away from the center of rotation. In this case, you must reduce either the rotating speed or the load's inertial moment.

2. Allowable load moment/thrust load

Confirm that the load moment and thrust load applied to the rotating axis do not exceed the allowable values specified in the catalog.



Caution Note

- Operating the actuator with a load exceeding the allowable value may result in malfunction, shorter life or damage. The load must be set so the allowable value will not be exceeded.
- If the rotating axis is oriented horizontally, make sure the load structure is such that the applied load torque will be minimized.

RCP2-GRS

Robo Gripper: Actuator Width 69 mm, Pulse Motor

Type Gripper (69 mm wide) Stroke 10 mm (5 mm each side) Maximum gripping force 21.0 N

Model details Series Type Encoder type Motor Gear ratio Stroke Applicable controller Cable length Options
 (Example) RCP2 - GRS - I - PM - 1 - 10 - P1 - S - SB



* Refer to page 5 for details on the specification items.

Model/Specifications

Model	Encoder type	Motor	Gear ratio	Stroke (mm)	Maximum opening/closing speed (Note 1) (mm/sec)	Maximum gripping force (Note 2) (N)	Positioning repeatability (Note 3) (mm)
RCP2-GRS-I-PM-1-10-P1-△-□	Incremental	Pulse motor	1 / 1	10 (5 each side)	333	21.0	± 0.01

* In the above model name, △ indicates the cable length and □ the applicable option(s).

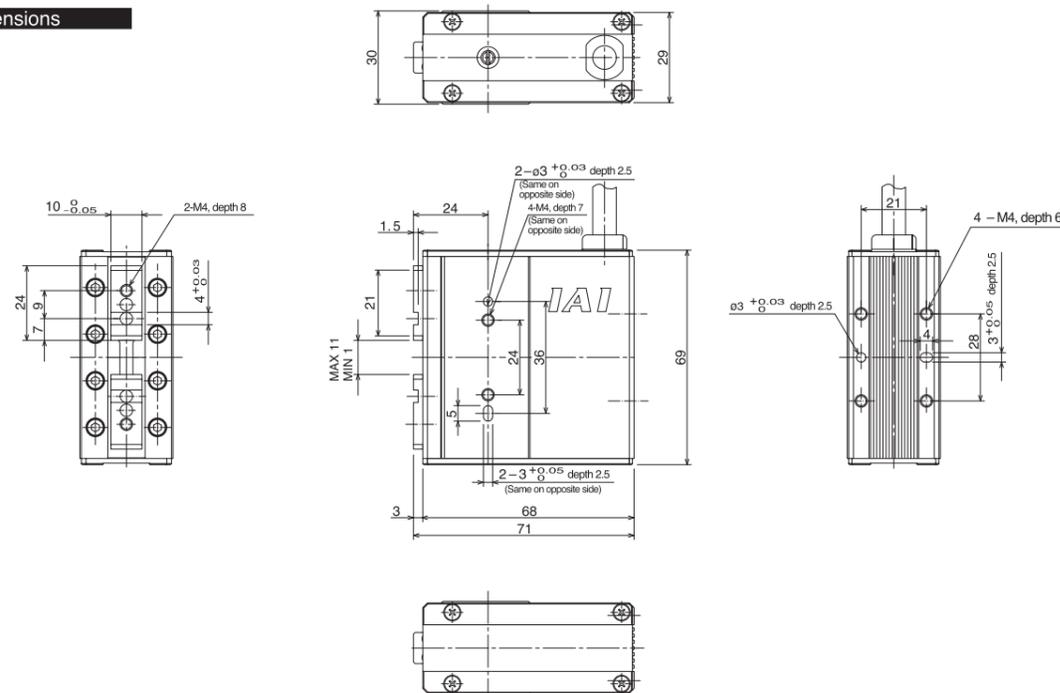
Options

Name	Type	Page	Remarks
Shaft Bracket	SB	→ P40	
Flange Bracket	FB	→ P40	

Common Specifications

Drive system	Timing belt + Trapezoid screw (lead 1.5)
Backlash	0.15 mm or less each side (Always pressured to open condition using spring)
Guide	Cross roller guide
Allowable load moment	Ma : 6.3N · m Mb : 6.3N · m Mc : 7.0N · m
Base	Material: Aluminum with white alumite treatment
Cable length (Note 4)	N: No cable, P: 1 m, S: 3 m, M: 5 m, X□□ : Length specification, R□□ : Robot cable
Weight	0.36kg

Dimensions



Weight (kg) 0.36

Specifications

Applicable controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental	×	○	×	DC24V	→P49
RCP2-CG	1 axis	Incremental	×	○	×	DC24V	→P49

Caution
 (Note 1) The speed of one finger. The relative speed of two fingers is twice the specified value.
 (Note 2) The sum of gripping forces of both fingers when the gripping point distance and overhanging distance are both 0. The actual feasible gripping force will vary depending on various conditions. Refer to page 9 for details.
 (Note 3) The positioning repeatability when the target position is approached from the same direction.
 (Note 4) The maximum cable length is 20 m. Specify the desired length in meters (e.g., X08 = 8 m).

* Refer to page 8 for other points to note.

RCP2-GRM

Robo Gripper: Actuator Width 74 mm, Pulse Motor

Type Gripper (74 mm wide) Stroke 14 mm (7 mm each side) Maximum gripping force 80.0 N

Model details Series Type Encoder type Motor Gear ratio Stroke Applicable controller Cable length Options
 (Example) RCP2 - GRM - I - PM - 1 - 14 - P1 - S - SB



* Refer to page 5 for details on the specification items.

Model/Specifications

Model	Encoder type	Motor	Gear ratio	Stroke (mm)	Maximum opening/closing speed (Note 1) (mm/sec)	Maximum gripping force (Note 2) (N)	Positioning repeatability (Note 3) (mm)
RCP2-GRM-I-PM-1-14-P1-△-□	Incremental	Pulse motor	1 / 1	14 (7 each side)	36.7	80.0	± 0.01

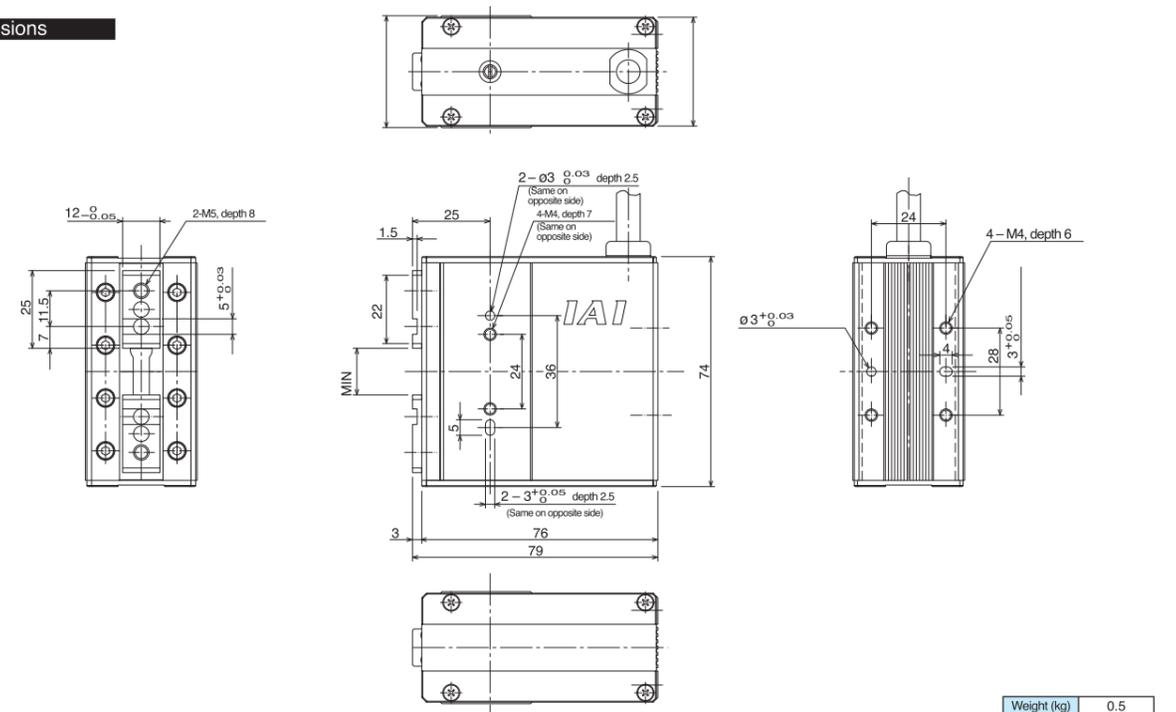
Options

Name	Type	Page	Remarks
Shaft Bracket	SB	→ P40	
Flange Bracket	FB	→ P40	

Common Specifications

Drive system	Timing belt + Trapezoid screw (lead 1.5)
Backlash	0.15 mm or less each side (Always pressured to open condition using spring)
Guide	Cross roller guide
Allowable load moment	Ma : 6.3N · m Mb : 6.3N · m Mc : 8.3 N · m
Base	Material: Aluminum with white alumite treatment
Cable length (Note 4)	N: No cable, P: 1 m, S: 3 m, M: 5 m, X□□ : Length specification, R□□ : Robot cable
Weight	0.5kg

Dimensions



Weight (kg) 0.5

Specifications

Applicable controller	Maximum number of controlled axes	Compatible encoder type	Program operation	Positioner operation	Pulse-train control	Power-supply voltage	Page
RCP2-C	1 axis	Incremental	×	○	×	DC24V	→P49
RCP2-CG	1 axis	Incremental	×	○	×	DC24V	→P49

Caution
 (Note 1) The speed of one finger. The relative speed of two fingers is twice the specified value.
 (Note 2) The sum of gripping forces of both fingers when the gripping point distance and overhanging distance are both 0. The actual feasible gripping force will vary depending on various conditions. Refer to page 9 for details.
 (Note 3) The positioning repeatability when the target position is approached from the same direction.
 (Note 4) The maximum cable length is 20 m. Specify the desired length in meters (e.g., X08 = 8 m).

* Refer to page 8 for other points to note.

RCP2-C/CG Dedicated RCP2 Controller

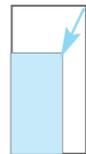
Operating method	Positioner operation
Number of positions that can be registered	Standard 16 positions / Maximum 64 positions
Power-supply voltage	24 VDC



1 Features

1 Space-saving design with a 49% smaller footprint

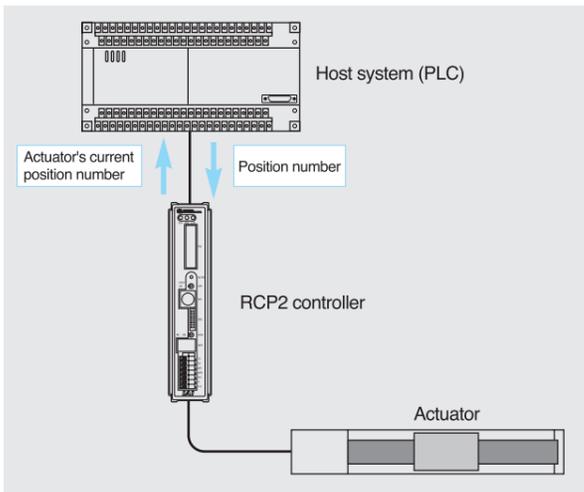
The compact, slim body of 35 mm in width x 68.1 mm in depth saves space in the installation of the panel. Of course, the driver, control unit and power stages are all housed within the unit, so no cumbersome wiring or adjustment is needed. Simply connect the actuator, and your equipment is ready to go.



A footprint reduction of approx. 49%

2 Multi-point positioning covering up to 64 points

The increased PIO points and expanded internal memory allow the registration of position data for up to 64 points, so the controller can effortlessly perform complex operations. With this simple, high-function controller you can also perform positioning at an accuracy of ± 0.01 mm or ± 0.01 deg, simply by specifying PIO positions from a PLC.



3 Five pin-assignment patterns for PIO signals

You can now choose from a total of five pin-assignment patterns for PIO signals, including the pattern allowing for position specification of up to 64 points, the pattern providing two zone-signal outputs, and the pattern for teaching operation (refer to page 53).

4 Internal or external relay for cutting off the motor's drive power upon emergency stop

The controller, which incorporates its own drive-power cutoff relay, ensures safety by cutting off the motor's drive power when an emergency stop is actuated. To further enhance safety, use the external relay type that cuts off the motor's drive power using a safety relay provided externally to the controller.

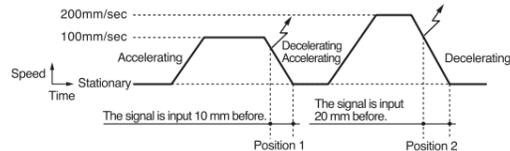
5 Useful software functions

The controller provides a range of useful functions that take advantage of the AC servo features, thus allowing the setting and execution of complex operations. Convenience is further enhanced with an increase in the number of zone-signal outputs to two.

Useful Software Functions

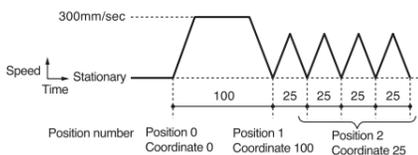
1 Positioning band setting function

Normally a movement completion signal (position complete signal) is output when the target position is reached. With the RCP2 this signal can be output at an arbitrary position before the target position. For example, this function can be used to shorten the tact time.



2 Incremental move function

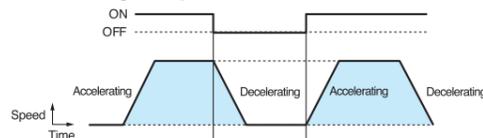
The controller allows for incremental movement, or movement of an arbitrary distance specified from the current position. You can perform continuous moves at a fixed pitch for as many positioning points as desired, simply by repeating incremental movements with the same distance specification.



3 Pause function

The slider operation can be paused in keeping with the ON/OFF status of an external signal. Use this function to stop the operation temporarily or provide an interlock with surrounding equipment.

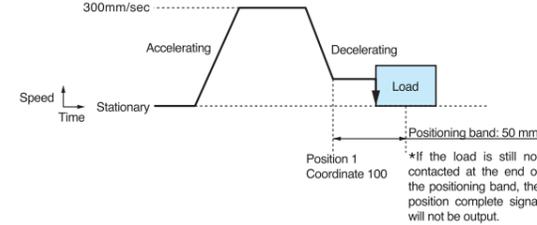
Pause-signal input



4 Push & hold operation

The slider can be maintained in a condition where it is continually pressed against the load, just like an air cylinder. This function is used for clamp fitting or other applications requiring that the load be pressed.

Example of push & hold operation



2 Model

RCP2 - C - RXA - I - PM - 0 - P

① ② ③ ④ ⑤ ⑥ ⑦

① Series

Indicate the name of each series.

② Controller type

Indicate the classification by controller function.

C : An emergency-stop circuit is provided, and when an external emergency-stop input is received the actuator will be stopped and the motor drive power will be cut off at the relay inside the controller.
(Use this type for general applications.)

GC : There is no emergency-stop circuit in the controller, but a terminal to cut off the motor drive power is provided. Therefore, the safety standard corresponding to Safety Category 2 can be met if the user constructs an emergency-stop circuit externally to the controller using a safety relay, etc.

③ Actuator type

Indicate the type of the actuator used.
(SA5, SA6, SA7, SS, SM, SSR, SMR, RXA, RSA, RMA, GRS, GRM, RTB, RTC)

④ Encoder type

Indicate "absolute type" or "incremental type" as the type of the encoder in the actuator used.

I: Incremental type

Slider position data will be lost when the power is turned off, so home return is required each time the power is turned on.

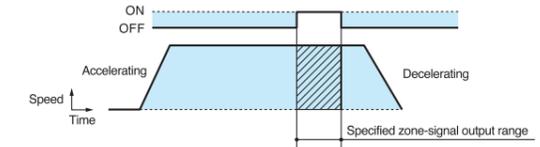
A: Absolute type

With absolute encoder option which holds the current position of the system if power is disconnected, the actuator can operate immediately. This selection is not provided for the Gripper and Rotary type.

5 Zone output function

This function outputs a signal when the slider enters a specified range during operation. It can be used to set a danger area or provide a pseudo sensor function.

Zone-signal output



⑤ Motor

Indicate the type of motor in the actuator used.
PM: Pulse motor

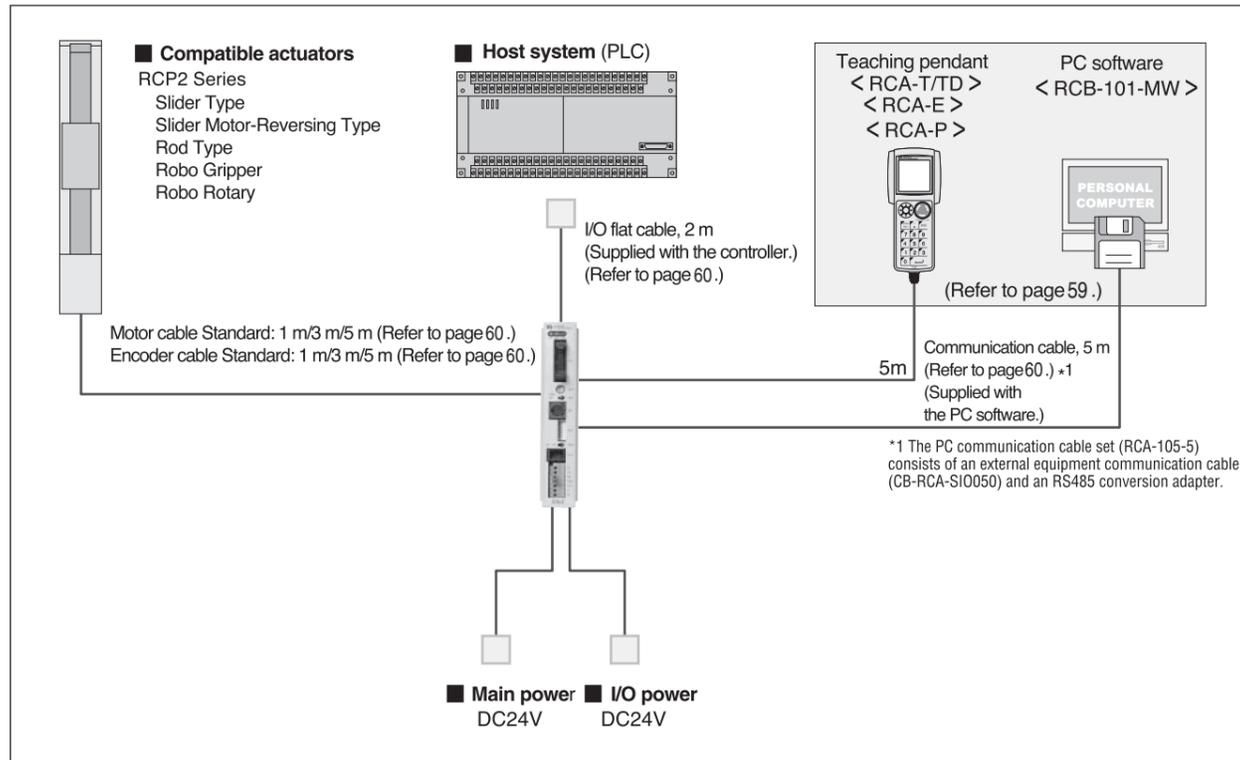
⑥ Power-supply voltage

Indicate the type of the input power (main power supply) of the controller.
0: 24 VDC

⑦ I/O signal pattern

Indicate the type (current direction) of input/output signals.
* This field need not be entered unless you require a NPN type.
(Blank) : NPN type
P : PNP type

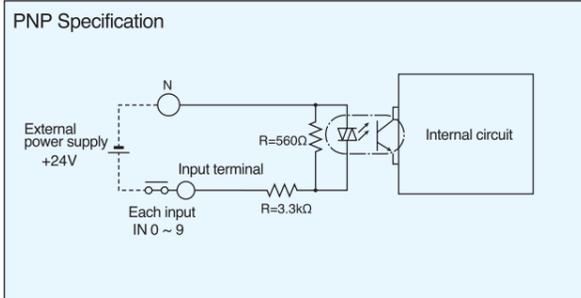
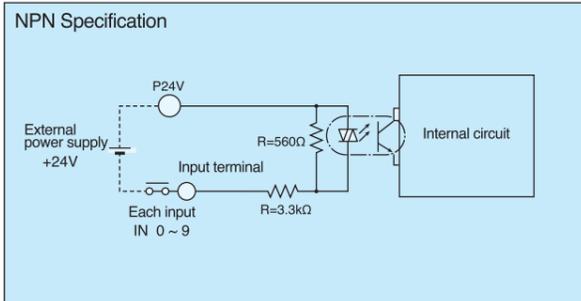
3 System Configuration Diagram



4 I/O Wiring Diagrams

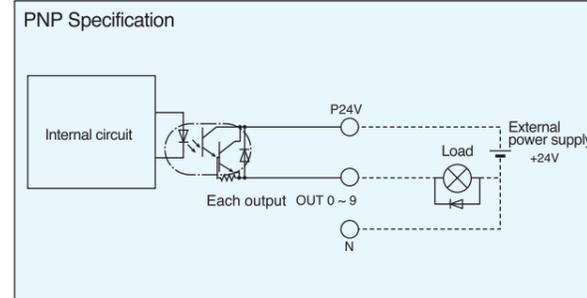
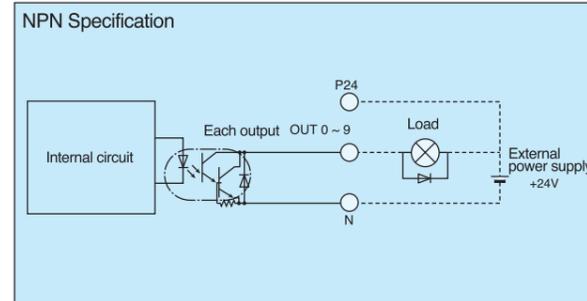
Input Part External input

Item	Specification
Input voltage	24 VDC ± 10%
Input current	7 mA / point
Number of input points	10 points
Leak current	1 mA or less / point Insulation
Method	Photocoupler



Output Part External output

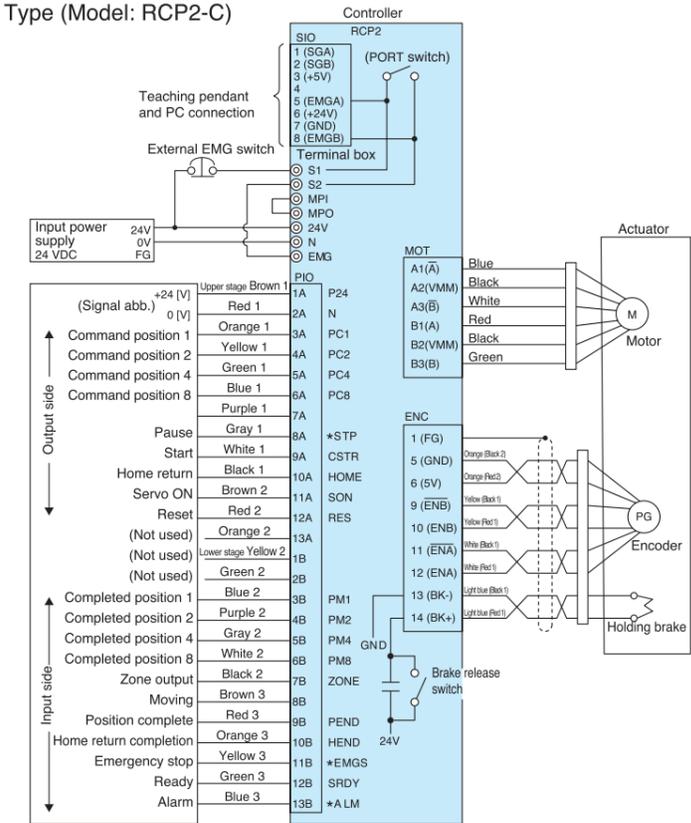
Item	Specification
Load voltage	24 VDC
Maximum load current	20 mA / point
Number of output points	10 points
Residual voltage	2 V or less Insulation
Method	Photocoupler



5 External Connection Diagrams

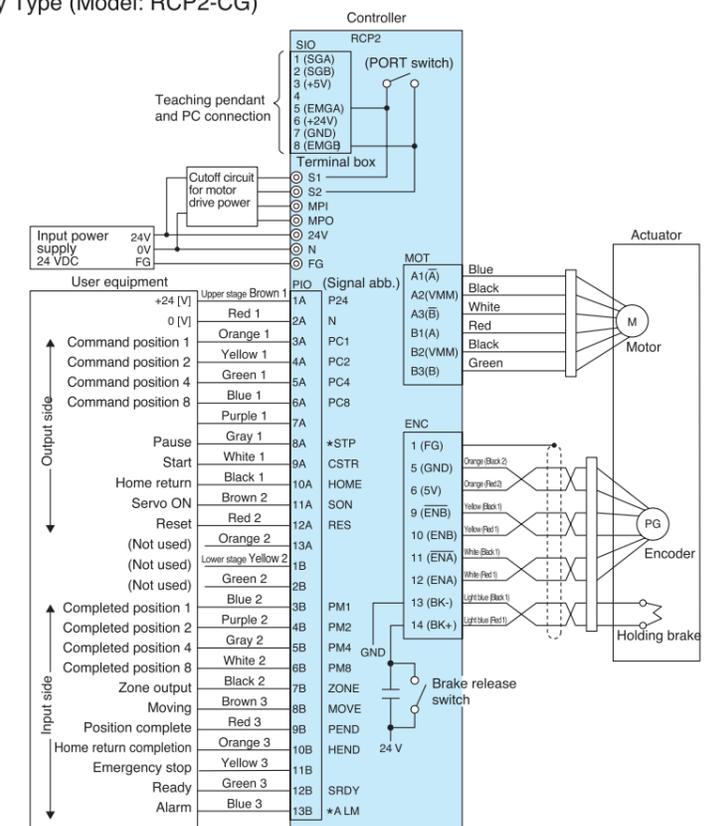
Internal Drive-Power Cutoff Relay Type (Model: RCP2-C)

* The wiring diagram shown to the right is based on PIO pattern 1: Standard. (The default PIO pattern set at the factory is 0: Conventional,) so exercise caution.



External Drive-Power Cutoff Relay Type (Model: RCP2-CG)

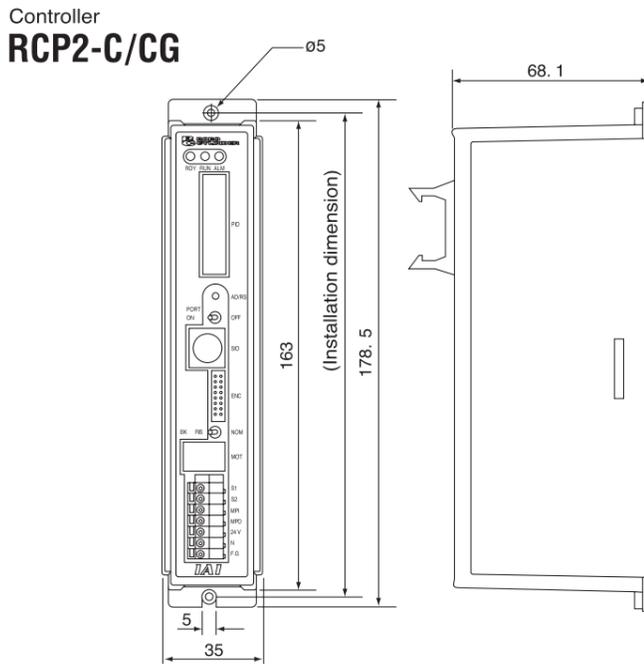
* The wiring diagram shown to the right is based on PIO pattern 1: Standard. (The default PIO pattern set at the factory is 0: Conventional,) so exercise caution.



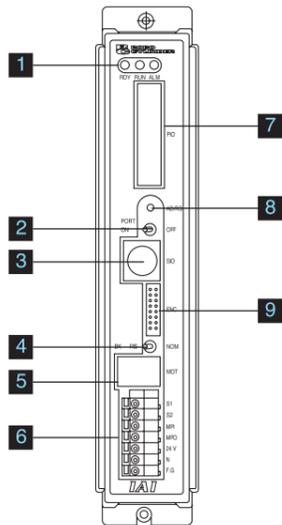
8 Specification Table

Item	Description
Controller series / type	
Compatible actuators	RCP2-SA5(R) / SA6(R) / SA7(R) / SS(R) / SM(R) / BA / CR RCP2-RPA / RXA / RSA / RMA / RSW / RMW RCP2-RSGS / RMGS / RXGD / RSGD / RMGD RCP2-GRS / GRM / RTB / RTC
Input power	DC24V ±10%
Power capacity	2 A max.
Number of controlled axes	1 axis
Control method	Weak field-magnet vector control (patent pending)
Positioning command	Position number specification
Position number	Standard 16 points, maximum 64 points
Backup memory	Position number data and parameters are saved in the nonvolatile memory. The serial E2PROM can be rewritten 100,000 times.
PIO	PIO RCP2-C (CG) : 10 dedicated inputs (10 points) / 10 dedicated outputs (11 points), selectable from five patterns
LED indicators	RDY (green), RUN (green), ALM (red)
I/F power	External power supply: 24 V ± 10%, 0.3 A, insulated
Communication	RS485 1 channel (terminated externally)
Encoder interface	Incremental specification conforming to EIA RS-422A/423A
Forced release of electromagnetic brake	Toggle switch on front panel of enclosure
Cable length	Motor/encoder cables: 20 m or less PIO cable: 5 m or less
Insulation strength	DC500V 10MΩ
Vibration resistance	10 ~ 57 Hz in XYZ directions / Pulsating amplitude: 0.035 mm (continuous), 0.075 mm (intermittent)
Operating temperature	0 ~ 40 deg
Operating humidity	85%RH or less (non-condensing)
Operating environment	Not subject to corrosive gases.
Protection class	IP20
Weight	300g
Accessory	PIO flat cable (2 m)

9 External Dimensions



10 Names and Functions of Parts



1 LED indicators

- RDY** Indicates that the CPU is operating normally
- RUN** Indicates a normal operating condition (the motor and encoder wiring has been checked and the servo is ON)
- ALM** Indicates that an alarm is present or an emergency stop has been actuated

2 Port switch (PORT)

- A signal-output selector switch for the SIO connector (3).
- ON** Power for the teaching pendant and IAI RS485 conversion adapter is output from the SIO connector (3). This switch is connected to the EMG line (S1, S2) of (6) of the teaching pendant.
- OFF** Communication with the teaching pendant or PC is disabled. However, since the SIO signal line is active, the controllers can still communicate with each other.

Note: Be sure to turn this switch OFF each time the SIO connector has been plugged in or unplugged.

3 Teaching pendant/PC connector (SIO)

A connector for the teaching pendant or dedicated communication cable

4 Brake release switch (BK)

This switch is enabled only when the actuator is used with a brake option.

- RLS** Brake is forcibly released

- NOM** Brake is in use (normal setting)

5 Motor cable connector (MOT)

A motor cable connector for the actuator

6 Terminal block

- S1 · S2** An emergency-stop switch contact. When the PORT switch (2) is turned ON, the emergency-stop switch on the teaching pendant will be connected. When the PORT switch is turned OFF, S1 and S2 will be shorted.
- MPI** These terminals are used to cut off the motor's drive power directly and externally using a safety relay, etc. (Refer to page 56.)
- MPO**
- 24V** Positive side of the 24-VDC power supply
- N** Negative side of the 24-VDC power supply
- EMG** Emergency-stop input (RCP2-C)
- F.G** Ground terminal (RCP2-CG)

7 PIO connector (PIO)

A PIO cable connector

8 Address switch (ADRS)

This switch is used to set the address for the controller axis. If two or more controllers are connected via communication cables, prevent duplicate controller addresses.

Setting range 0 ~ F

9 Encoder/brake connector (ENC)

This connector is used to connect the actuator's encoder/brake cables.

11 Emergency-Stop Circuit

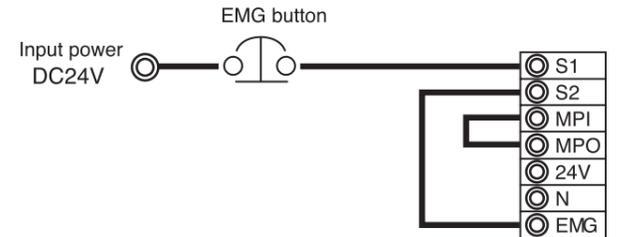
Internal Drive-Power Cutoff Relay Type (Model: RCP2-C)

The internal drive-power cutoff relay type will stop the actuator operation and cut off the motor's drive power of the actuator using the internal relay when the EMG (emergency stop) input signal is turned OFF at the controller's terminal block. Representative connection examples are given below.

* The emergency stop will not be cancelled without the following wiring, so exercise caution. Refer to the operating manual for details.

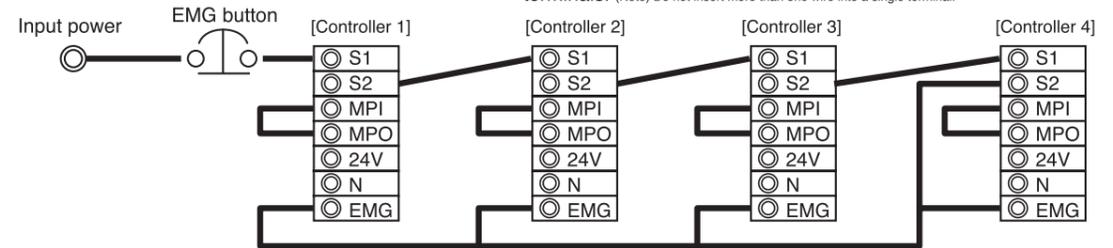
(1) When only one controller is used

- Connect the MPI and MPO terminals using a jumper cable (factory setting).
- Connect one end of the EMG button to the 24-V input power, and connect the other end to the S1 terminal. Also connect the S2 and EMG terminals using a jumper cable.



(2) When two to eight controllers are used with a single power supply

- Connect the MPI and MPO terminals using a jumper cable (factory setting).
- Connect one end of the EMG button to the 24-v input power, and connect the other end to the S1 terminal. Then, provide crossover connections by sequentially connecting the S2 terminal of controller 1 to the S1 terminal of controller 2, the S2 terminal of controller 2 to the S1 terminal of controller 3, the S2 terminal of controller 3 to the S1 terminal of controller 4, and so on, and connect the S2 terminal of the last controller to the EMG terminals of all controllers. Use a relay terminal block for connection to the EMG terminals. (Note) Do not insert more than one wire into a single terminal.

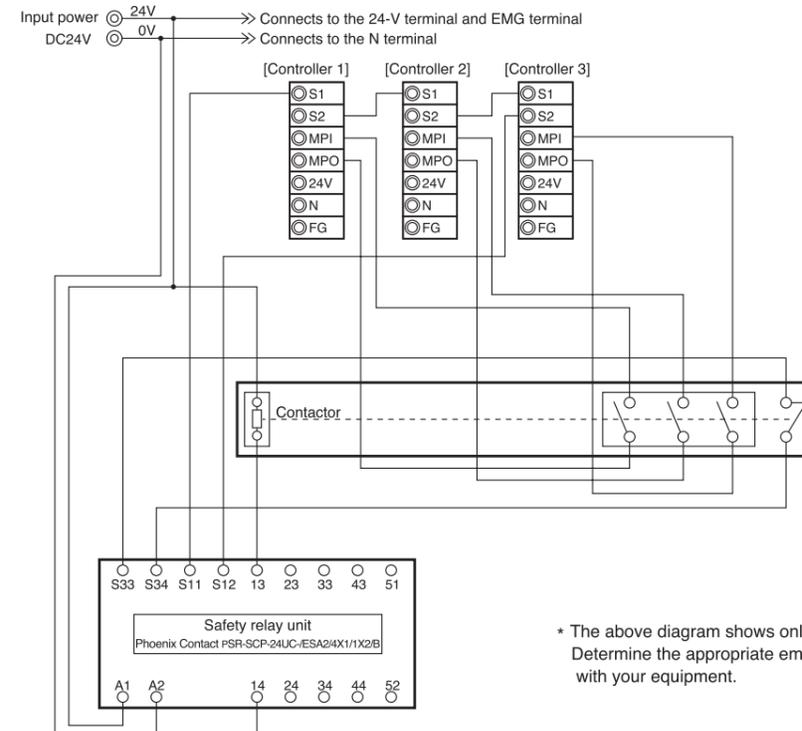


(3) When nine or more controllers are used

Please contact IAI.

External Drive-Power Cutoff Relay Type (Model: RCP2-CG)

The external drive-power cutoff relay type is designed to cut off the motor's drive power using an external safety relay, etc., and therefore no internal emergency-stop circuit is provided. Accordingly, the user must design a circuit such as the one shown below, using a safety relay unit, a contactor, etc.



* The above diagram shows only the safety-relay output circuit. Determine the appropriate emergency-stop input circuit in accordance with your equipment.

12 Connection of Multiple Controllers via Serial Communication

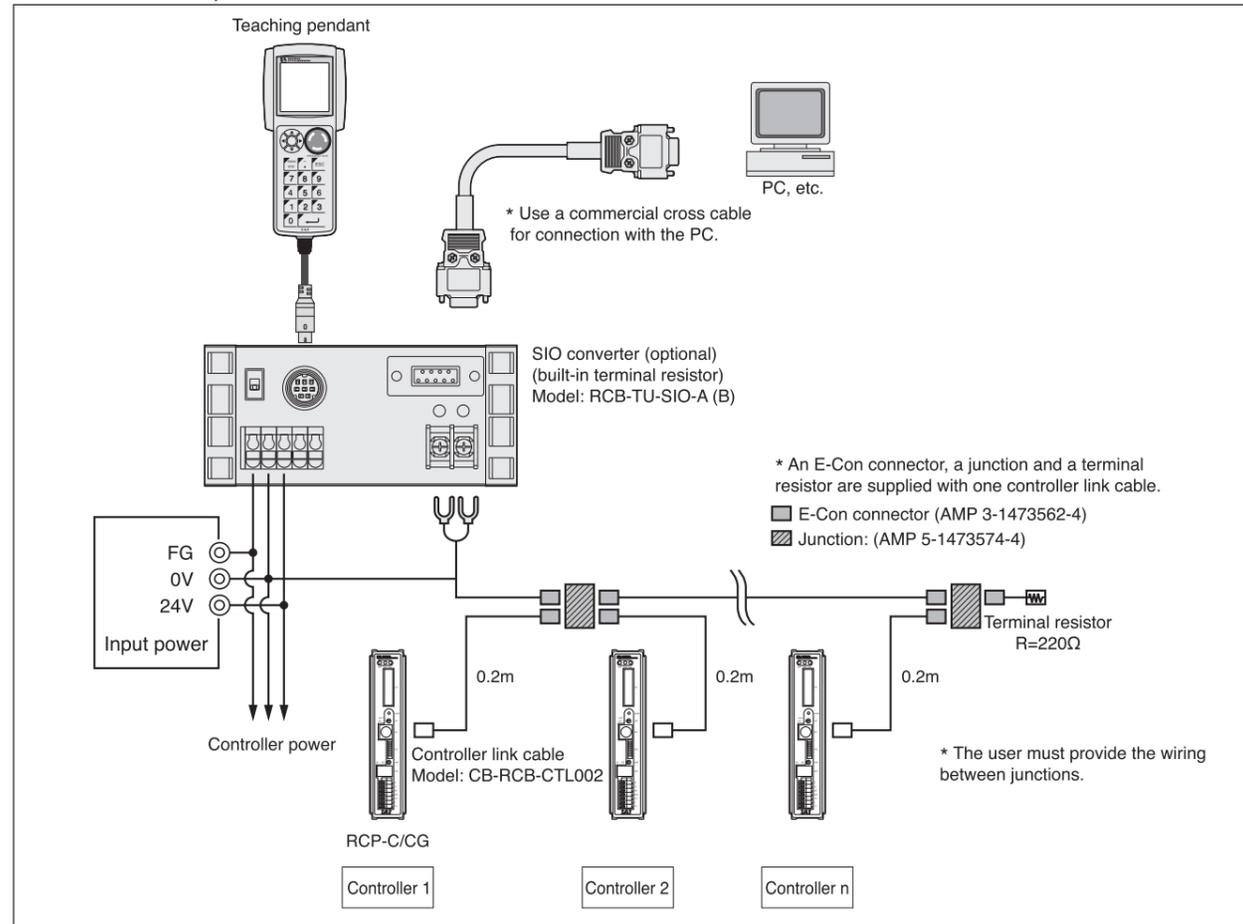
The following explains how to connect multiple controllers using a PC or PLC communication module as the host:

Basic Specifications

Item	Specification
Maximum number of units that can be connected	16 units
Maximum cable length	100 m or less
Terminal resistor	220Ω

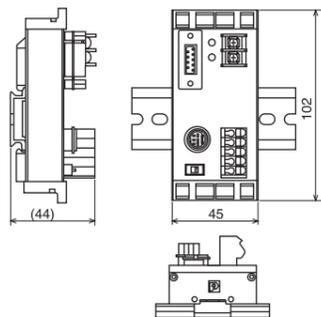
* Provide a communication path via bus connection and be sure to provide a terminal resistor at the end.

Connection Example

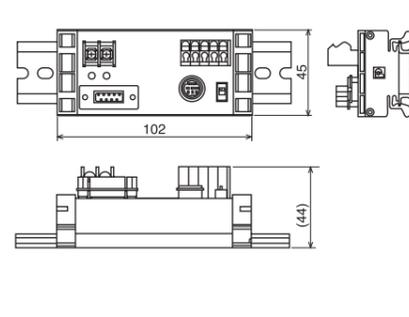


External Dimensions of SIO Converter

Vertical mounting specification using DIN rail
Model: RCB-TU-SIO-A



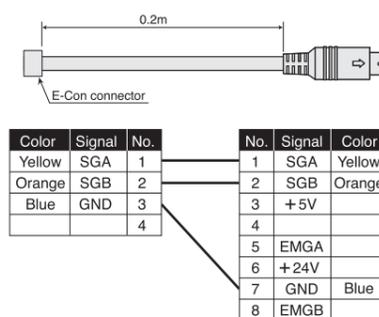
Horizontal mounting specification using DIN rail
Model: RCB-TU-SIO-B



* The DIN rail is not supplied.

Controller Link Cable

(Supplied with E-Con connector, junction and terminal resistor)
Model: CB-RCB-CTL002



Multiple Axes Control via Profibus-Gateway

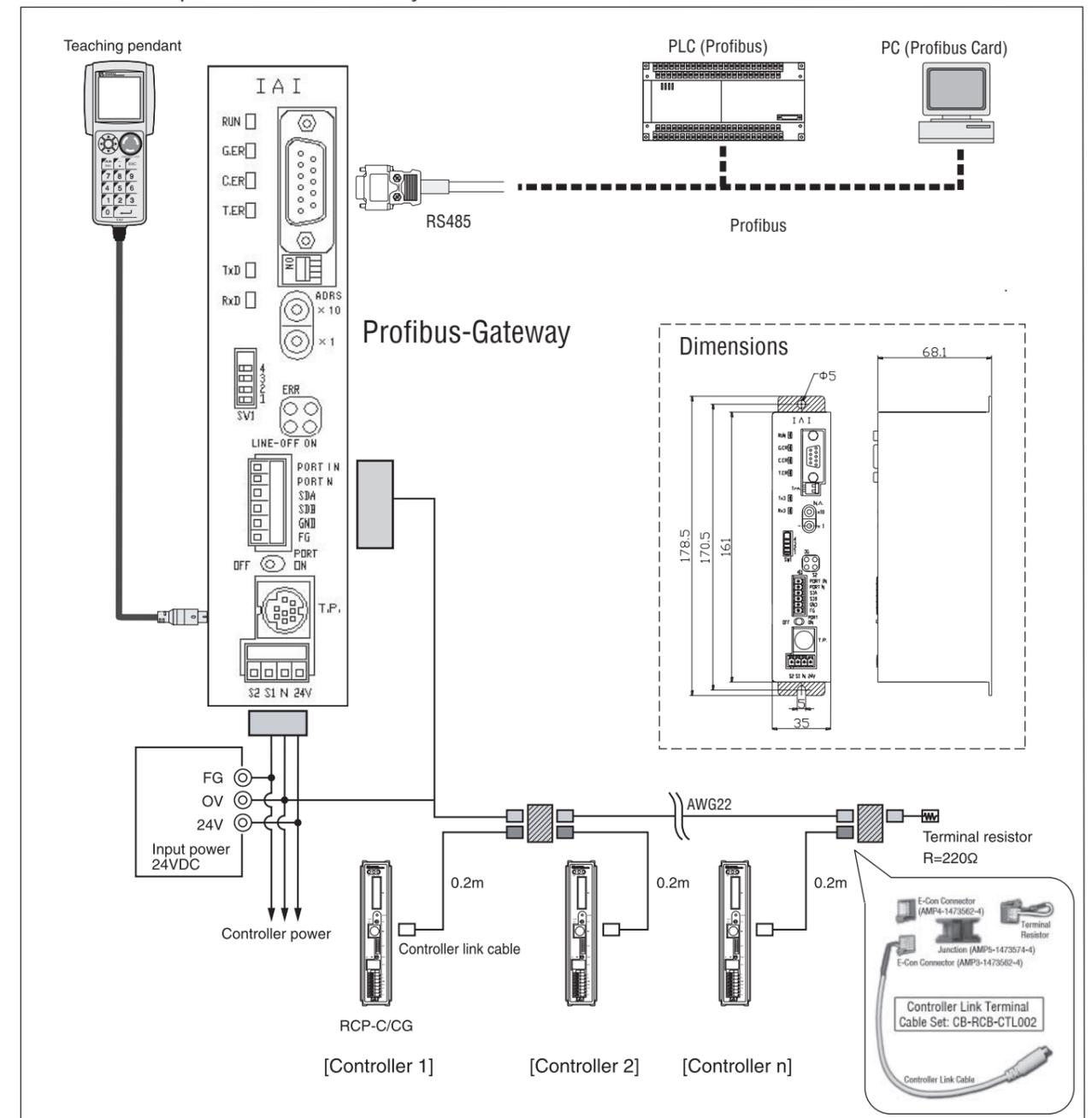
The following explains how to connect multiple controllers using a PC or PLC with Profibus module as the host

Basic specifications

Specification item	Description
Maximum number of axes that can be connected	16 axes
Maximum cable length	100 m or less
Terminal resistor	220 Ω

Provide a communication path via profibus connection and be sure to provide a terminal resistor at the end

Connection Example with Profibus-Gateway



13 Controller Options

Teaching Pendant

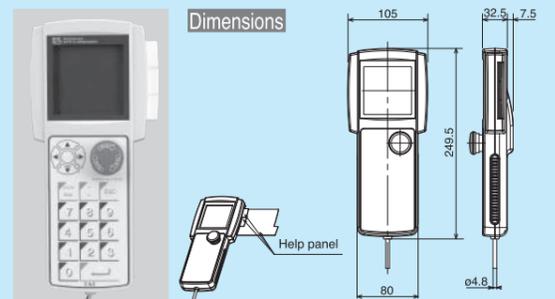
A product older than Ver. 1.61 cannot be used with the RCP2. (The customer's existing product can be sent to IAI for a version upgrade.)

Model
RCA-T (Standard) **RCA-TD** (With deadman switch)

- Features**
- A teaching device that provides all of the functions needed for test operation/adjustment, such as position-data input, test operation and monitoring of the current axis position and I/O signals.
 - The interactive-type panel ensures easy operation. All you need is to enter values in the required fields, so you won't need the operation manual for basic operations.
 - The internal help panel allows you to quickly check the desired operating procedure whenever necessary.

Specifications

Item	Specification
Operating temperature/humidity	Temperature: 0 ~ 40°C, Humidity: 85%RH or less
Weight	Approx. 550 g (including cables)
Cable length	5m
Display	21 characters x 16 lines, LCD



Data Setting Unit

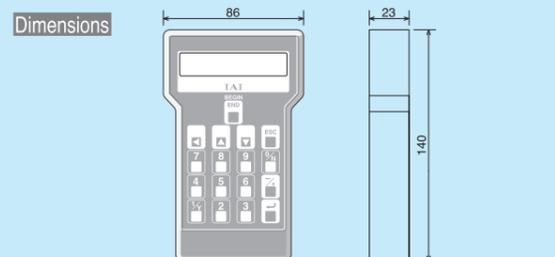
A product older than Ver. 1.61 cannot be used with the RCP2. (The customer's existing product can be sent to IAI for a version upgrade.)

Model
RCA-P * Operations involving axis movement cannot be performed

- Features**
- An affordable data setting unit offering edit functions, except for operations involving axis movement.
- Edit functions**
- Position data input
 - Confirmation of current axis position
 - I/O signal monitoring, etc.

Specifications

Item	Specification
Operating temperature/humidity	Temperature: 0 ~ 40°C, Humidity: 85%RH or less
Weight	Approx. 360 g (including cables)
Cable length	5m
Display	16 characters x 2 lines, LCD



Simple Teaching Pendant

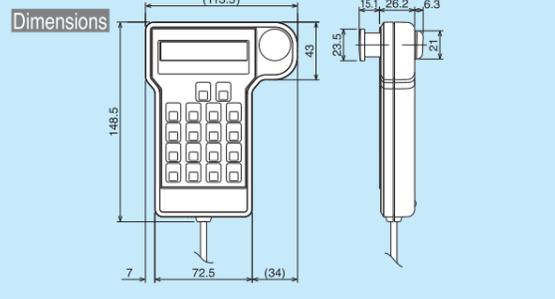
A product older than Ver. 1.61 cannot be used with the RCP2. (The customer's existing product can be sent to IAI for a version upgrade.)

Model
RCA-E

- Features**
- A highly cost-effective teaching device that provides the same functions as the RCA-T at a significantly lower price.
 - The unit size has been reduced through the use of a two-line display.

Specifications

Item	Specification
Operating temperature/humidity	Temperature: 0 ~ 40°C, Humidity: 85%RH or less
Weight	Approx. 400 g (including cables)
Cable length	5m
Display	16 characters x 2 lines, LCD

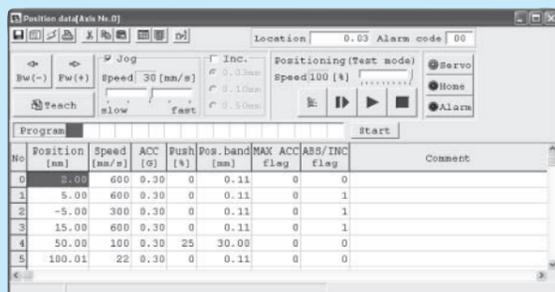


PC Software

Model
RCB-101-MW (DOS/V, Windows version)
 [Content] Floppy disk, PC communication cable (5 m) (Note 1)

- Features**
- A support software for position data input and test operation.
 - This software significantly improves the equipment debugging operations by offering wide-ranging functions such as jogging, inching, step operation and continuous operation, and also by allowing easy operation via a large PC screen.

(Note 1) Refer to RCA-105-5 on page 60 for the PC communication cable set.

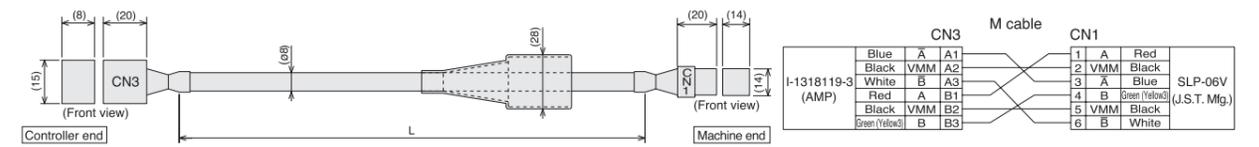


(*) If you are using RCA-101-MW, the software can be used with the RCP2 after a proper version upgrade. The shape of RCB-101-MW's RS485 conversion adapter has changed from that of the adapter used with RCA-101-MW, but functionality remains the same.

14 Cables

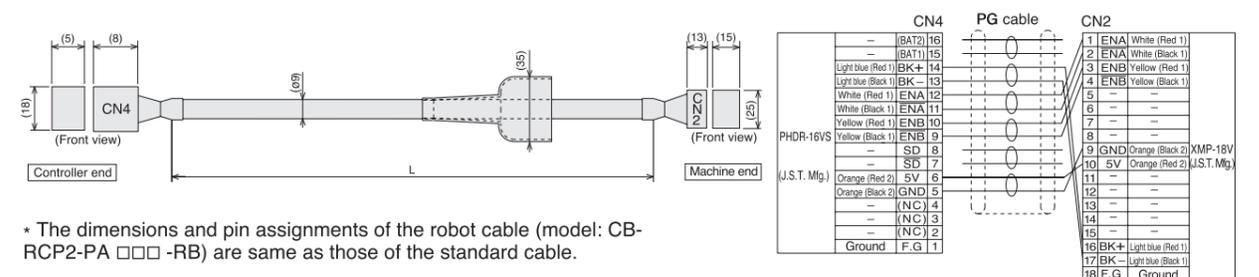
Motor Cable

Model **CB-RCP2-MA** * The standard motor cables are robot types. * Enter the cable length (L) in □□□. The maximum cable length is 20 m. Example) 080 = 8 m



Encoder Cable

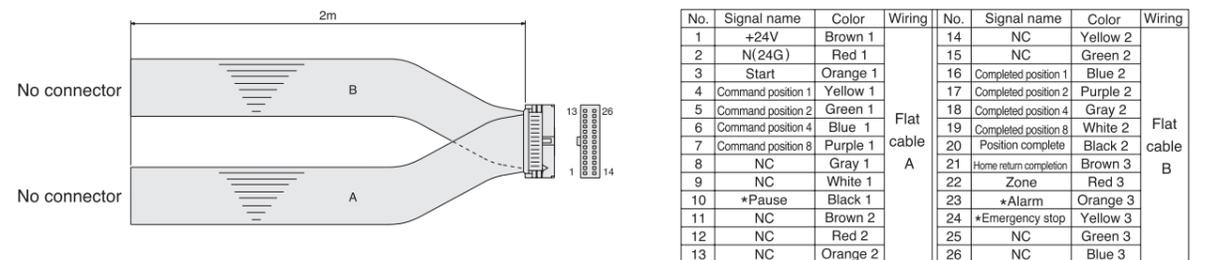
Model **CB-RCP2-PA** * The standard encoder cables are normal types. * Enter the cable length (L) in □□□. The maximum cable length is 20 m. Example) 080 = 8 m



* The dimensions and pin assignments of the robot cable (model: CB-RCP2-PA □□□ -RB) are same as those of the standard cable.

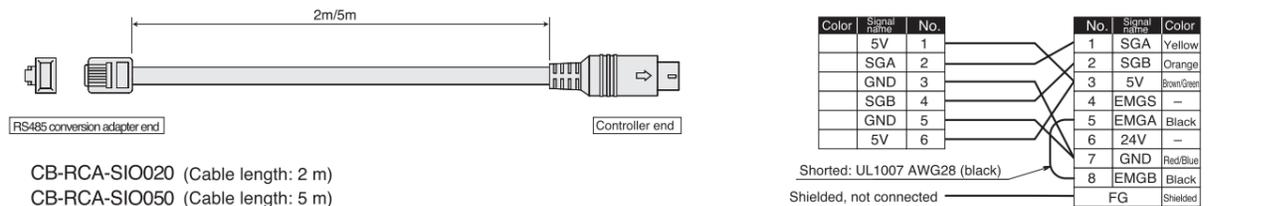
I/O Flat Cable (Common to RCP, RCP2-C and RCP2-CG)

Model **CB-RCA-PI0020**



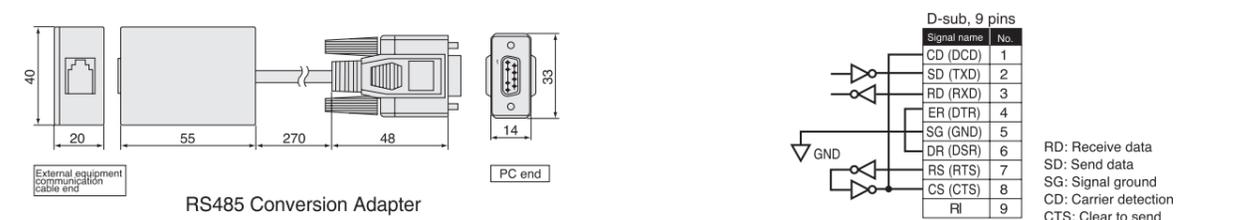
External Equipment Communication Cable

Model **CB-RCA-SIO020(050)**

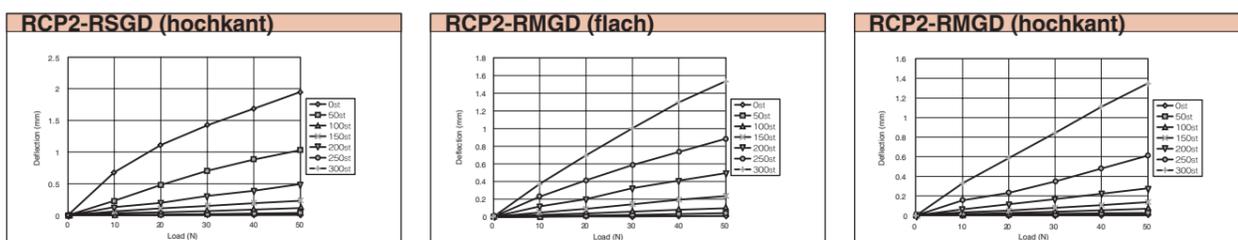
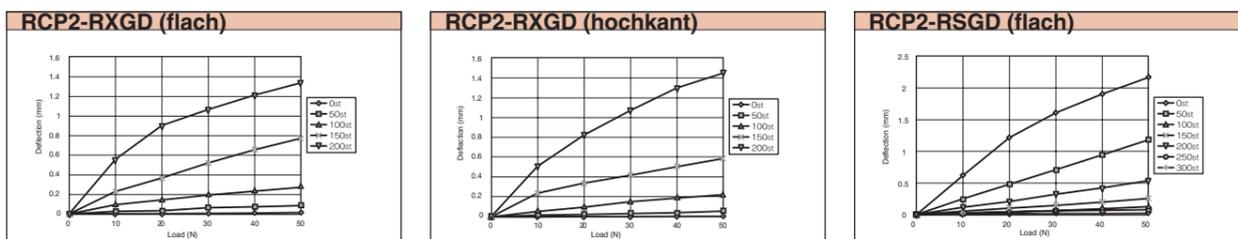
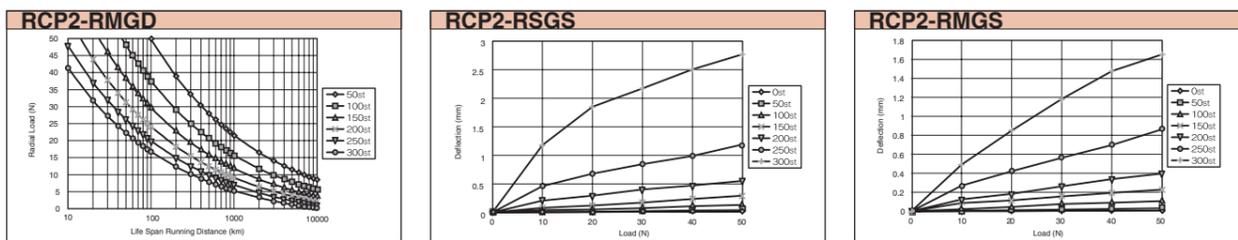
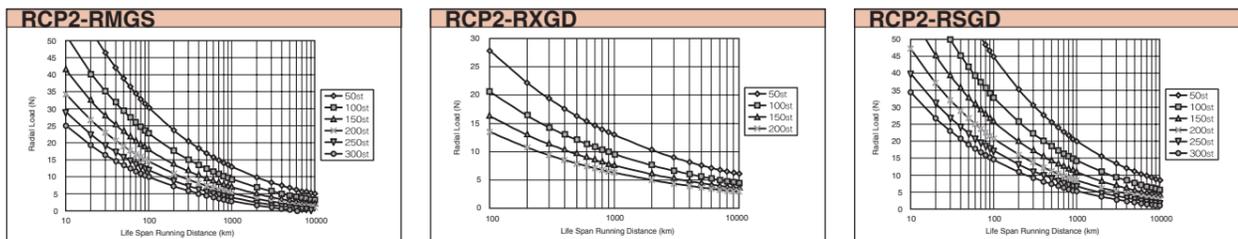
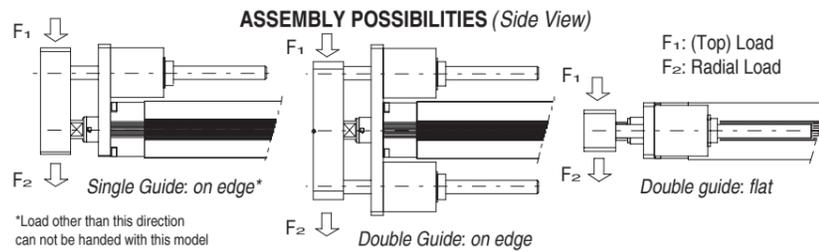
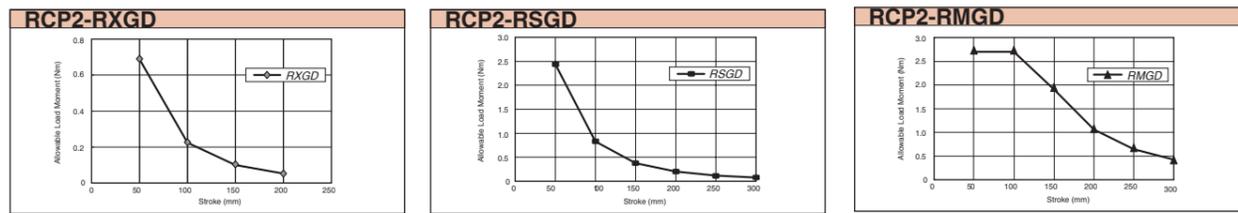


PC Communication Cable Set (CB-RCA-SIO050 + RS485 Conversion Adapter)

Model **RCA-105-5**



Diagrams of Single and Double Guide Models



Application Examples of combined Linear Axes

<p>Indexing & Loading</p> <p>RC Line: RCP2-RMA, RCP2-SA6 Controller: RCP2-Cx2</p>	<p>Sorting Out</p> <p>RC Line: RCP2-RMAx5 Controller: RCP2-Cx5</p>	<p>Parts Inspection</p> <p>RC Line: RCS-R20, RCP2-GRM, RCP2-RSA, ISA-SYM IA Line: RCP2-RSA, ISA-SYM Controller: ECONx2, RCP2-Cx2</p>
<p>Pick & Place</p> <p>RC Line: ICSA2, RCP2-RMA, RCS-RB75 IA Line: RCP2-RMA, RCS-RB75 Controller: XSEL-J, RCP2-C, RCS-C</p>	<p>Aligning Device</p> <p>RC Line: RCP2-SA6 Controller: RCP2-C</p>	<p>Mixing</p> <p>RC Line: RCP2-SM Controller: RCP2-C</p>
<p>Optical Test Unit</p> <p>RC Line: RCP2-SMx2, RCP2-RMA Controller: RCP2-Cx3</p>	<p>Coating</p> <p>RC Line: RCP2-SSx3, RCS-SM Controller: RCP2-Cx3, RCS-C</p>	<p>Pushing In</p> <p>RC Line: RCP2-RSA, RCP2-RMA Controller: RCP2-Cx2</p>
<p>Package Sorting</p> <p>RC Line: RCP2-RMA, RCP2-SS, RCP2-RSA, RCP2-GRS Controller: RCP2-Cx4</p>	<p>Spacer Insertion</p> <p>RC Line: RCP2-RMA, RCP2-GRS Controller: RCP2-C</p>	<p>Box Shutting</p> <p>RC Line: RCP2-RMAx2, RCS-SM Controller: RCP2-Cx2, RCS-C</p>