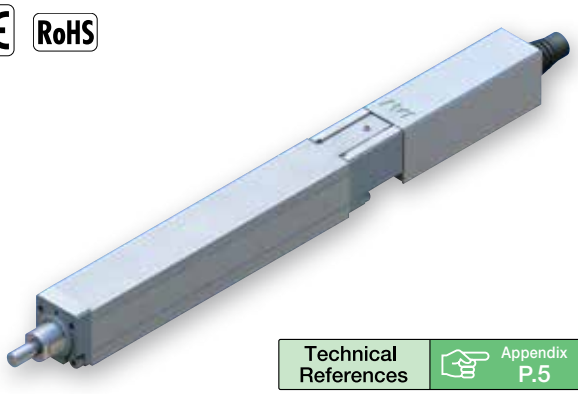
RCP3-RA2BC

ROBO Cylinder, Mini Rod Type, Motor Unit Coupled Type, Actuator Width 28mm
Pulse Motor, Ball Screw Specification/Lead Screw Specification

Model Specification Items: **RCP3** — **RA2BC** — **I** — □ — □ — □ — □ — □ — □ — □

- Series: RCP3
- Type: RA2BC
- Encoder type: I: Incremental (*The Simple absolute encoder is also considered type "I".)
- Motor type: 20P: Pulse motor, size 20□ Standard type; 20SP: Pulse motor, size 20□ High thrust type
- Lead: 6: Ball screw 6mm; 4: Ball screw 4mm; 2: Ball screw 2mm; 1: Ball screw 1mm; 6S: Lead screw 6mm; 4S: Lead screw 4mm; 2S: Lead screw 2mm
- Stroke: 25: 25mm ~ 150: 150mm (every 25mm)
- Applicable controller: P1: PCON-PL/PO/SE PSEL; P3: PCON-CA PMEC/PSEP MSEP
- Cable length: N: None; P: 1m; S: 3m; M: 5m; X□□: Custom length
- Options: B: Brake; NM: Non-motor end

* See page Pre-47 for details on the model descriptions.



Technical References → Appendix P.5

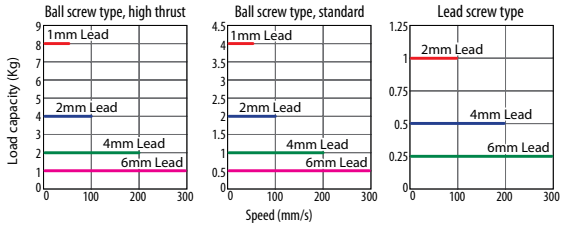
POINT — Notes on Selection

(1) The payload is the value when the actuator is operated at an acceleration of 0.3G (0.2G for the lead screw specification, if used vertically). The acceleration limit is the value indicated above.
(2) The horizontal payload is the value when used in combination with an external guide. Please note that if an external force is applied to the rod in a direction other than the proper direction the rod travels, the detent may get damaged.
(3) The maximum pushing force is the value when the actuator is operated at a speed of 5mm/s. See page A-71 for details on push motion.
(4) Service life decreases significantly if used in a dusty environment.

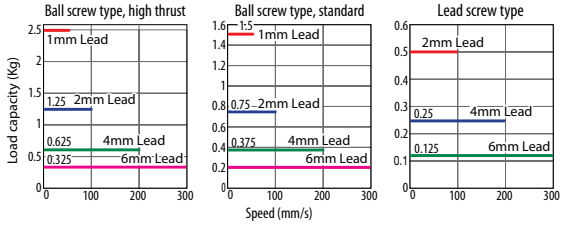
■ Correlation Diagrams of Speed and Load Capacity

With the RCP3 series, due to the characteristics of the pulse motor, load capacity decreases as the speed increases. Use the chart below to confirm that the desired speed and load capacity requirements are met.

Horizontal



Vertical



Actuator Specifications

■ Leads and Payloads

Model number	Motor type	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Maximum pushing force (N)	Positioning repeatability (mm)	Stroke (mm)
RCP3-RA2BC-1-20SP-6-①-②-③-④	High thrust	Ball screw	6	1	0.325	See page A-81.	±0.02	25 to 150 (every 25mm)
RCP3-RA2BC-1-20SP-4-①-②-③-④			4	2	0.625			
RCP3-RA2BC-1-20SP-2-①-②-③-④			2	4	1.25			
RCP3-RA2BC-1-20SP-1-①-②-③-④			1	8	2.5			
RCP3-RA2BC-1-20P- 6-①-②-③-④	Standard		6	0.5	0.2			
RCP3-RA2BC-1-20P- 4-①-②-③-④			4	1	0.375			
RCP3-RA2BC-1-20P- 2-①-②-③-④			2	2	0.75			
RCP3-RA2BC-1-20P- 1-①-②-③-④			1	4	1.5			
RCP3-RA2BC-1-20P-6S-①-②-③-④	Standard	Lead screw	6	0.25	0.125		±0.05	
RCP3-RA2BC-1-20P-4S-①-②-③-④			4	0.5	0.25			
RCP3-RA2BC-1-20P-2S-①-②-③-④			2	1	0.5			

■ Stroke and Maximum Speed

Lead \ Stroke	25 (mm)	50 (mm)	75~150 (mm)
Ball screw 6	180	280	300
Ball screw 4	180	200	
Ball screw 2	100		
Ball screw 1	50		
Lead screw 6	180	280	300
Lead screw 4	180	200	
Lead screw 2	100		

Legend ① Stroke ② Applicable Controller ③ Cable length ④ Options *See page A-71 for details on push motion.

(Unit: mm/s)

①Stroke

①Stroke (mm)	Standard price: Feed screw: Ball screw: High thrust type	Standard price: Feed screw: Ball screw: Standard type	Standard price: Feed screw: Lead screw
25	—	—	—
50	—	—	—
75	—	—	—
100	—	—	—
125	—	—	—
150	—	—	—

③Cable Length

Type	Cable symbol	Standard price
Standard type (Robot cable)	**P** (1m)	—
	S (3m)	—
	M (5m)	—
Special length	**X06** (6m) ~ **X10** (10m)	—
	X11 (11m) ~ **X15** (15m)	—
	X16 (16m) ~ **X20** (20m)	—

* The standard cable for the RCP3 is the robot cable.
* See page A-59 for cables for maintenance.

④Options

Name	Option code	Page	Standard Price
Brake	**B**	→ A-42	—
Non-motor end specification	**NM**	→ A-52	—

Actuator Specifications

Item		Description
Drive method		Ball screw/Lead screw, ø6mm, rolled C10
Lost motion		Ball screw: 0.1mm or less/Lead screw: 0.3mm or less (default value)
Base		Material: Aluminum, white alumite treated
Guide		Slide guide
Ambient operating temperature/humidity		0 to 40°C, 85% RH max. (No condensing)
Service life	Lead screw specification	Horizontal: 5 million cycles, Vertical: 10 million cycles
	Ball screw specification	5,000km or 50 million cycles

Dimensional Drawings

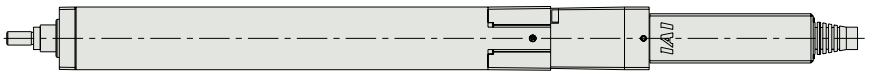
CAD drawings can be downloaded from the website. www.intelligentactuator.com

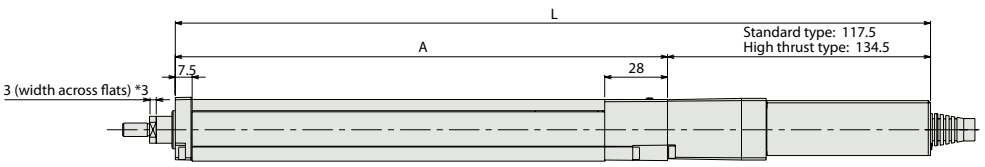
For Special Orders Appendix P.15

2D CAD 3D CAD

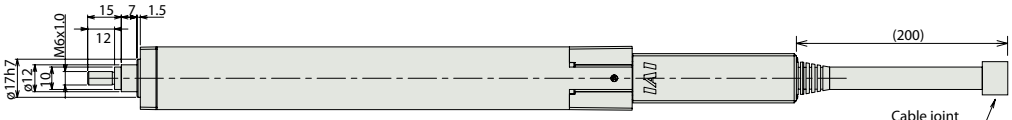
(*1) Connect the motor-encoder integrated cable here.
(*2) During home return, be careful to avoid interference from peripheral objects because the slider travels until the mechanical end.
(*3) The orientation of the bolt varies depending on the product.

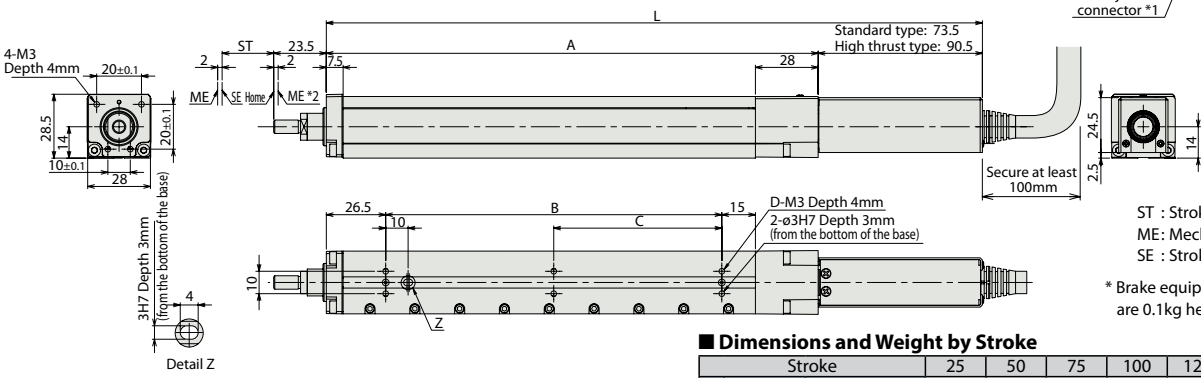
(Brake-equipped)





(No brake)



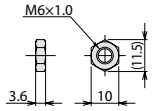


Detail Z

ST : Stroke
ME: Mechanical end
SE : Stroke end

* Brake equipped models are 0.1kg heavier.

Dimensions of nut at tip of rod



Note:
Do not apply any external force on the rod from any direction other than the direction of the rod's motion. If a force is exerted on the rod in a perpendicular or rotational direction, the detent may become damaged.

■ Dimensions and Weight by Stroke

Stroke			25	50	75	100	125	150
L	Standard type	No brake	168	193	218	243	268	293
		Brake-equipped	212	237	262	287	312	337
	High thrust type	No brake	185	210	235	260	285	310
		Brake-equipped	229	254	279	304	329	354
A			94.5	119.5	144.5	169.5	194.5	219.5
B			25	50	75	100	125	150
C			0	0	0	50	62.5	75
D			4	4	4	6	6	6
Weight (kg)			0.36	0.39	0.42	0.45	0.48	0.51

②Applicable Controllers

RCP3 series actuators can be operated with the controllers indicated below. Select the type according to your intended application.

Name	External view	Model number	Features	Maximum number of positioning points	Input power	Power-supply capacity	Standard price	Reference page
Solenoid Valve Type		PMEC-C-20SPI-Ⓘ-2-Ⓘⅰ PMEC-C-20PI-Ⓘ-2-Ⓘⅰ	Easy-to-use controller, even for beginners	3 points	AC100V AC200V	Refer to P541	—	→ P537
		PSEP-C-20SPI-Ⓘ-2-0 PSEP-C-20PI-Ⓘ-2-0	Simple controller operable with the same signal as a solenoid valve		DC24V	Refer to P555	—	→ P547
Solenoid valve multi-axis type PIO specification		MSEP-C-Ⓘⅰ-~~-Ⓘ-2-0	Positioner type based on PIO control, allowing up to 8 axes to be connected			Refer to P572	—	→ P563
Solenoid valve multi-axis type Network specification		MSEP-C-Ⓘⅰ-~~-Ⓥ-0-0	Field network-ready positioner type, allowing up to 8 axes to be connected	256 points				
Positioner type High-output specification		PCON-CA-20SPI-Ⓘ-2-0 PCON-CA-20PI-Ⓘ-2-0	Equipped with a high-output driver Positioner type based on PIO control	512 points		Refer to P618	—	→ P607
Pulse-train type High-output specification		PCON-CA-20SPI-PL□-2-0 PCON-CA-20PI-PL□-2-0	Equipped with a high-output driver Pulse-train input type	(—)			—	
Field network type High-output specification		PCON-CA-20SPI-Ⓥ-0-0 PCON-CA-20PI-Ⓥ-0-0	Equipped with a high-output driver Supporting 7 major field networks	768 points			—	
Pulse Train Input Type (Differential Line Driver)		PCON-PL-20SPI-Ⓘ-2-0 PCON-PL-20PI-Ⓘ-2-0	Pulse train input type with differential line driver support	(—)		Refer to P628	—	→ P623
Pulse Train Input Type (Open Collector)		PCON-PO-20SPI-Ⓘ-2-0 PCON-PO-20PI-Ⓘ-2-0	Pulse train input type with open collector support				—	
Serial Communication Type		PCON-SE-20SPI-N-0-0 PCON-SE-20PI-N-0-0	Dedicated Serial Communication	64 points			—	
Program Control Type		PSEL-CS-1-20SPI-Ⓘ-2-0 PSEL-CS-1-20PI-Ⓘ-2-0	Programmed operation is possible. Can operate up to 2 axes	1500 points		Refer to P671	—	→ P665

* This is for the single-axis PSEL. * Ⓘ indicates I/O type (NP/PN). * Ⓘⅰ indicates power supply voltage (1: 100V / 2: 100~240V).
* Ⓘⅱ indicates number of axes (1 to 8). * Ⓥ indicates field network specification symbol. * □ indicates N (NPN specification) or P (PNP specification) symbol.