

# RCP2-BA7/BA7U

ROBO Cylinder Belt Type 68mm Width Pulse Motor  
Top-Mounted Motor / Bottom-Mounted Motor

■ Configuration: **RCP2** —  — **I** — **42P** — **54** —  —  —  —

Series — Type — Encoder — Motor — Lead — Stroke — Compatible Controllers — Cable Length — Option

BA7 : Belt type Top-mounted motor  
BA7U: Belt type Bottom-mounted motor

I: Incremental \* The Simple absolute encoder models are labeled as "I".

42P: Pulse motor 42 □ size

54: 54mm

Stroke: 600: 600mm  
1200: 1200mm (50mm pitch increments)

P1: PCON RPCON PSEL  
P3: PMEC PSEP

N : None  
P : 1m  
S : 3m  
M : 5m  
X □ □ : Custom Length  
R □ □ : Robot cable

NM: Reversed-home

\* See page Pre-35 for explanation of each code that makes up the configuration name.

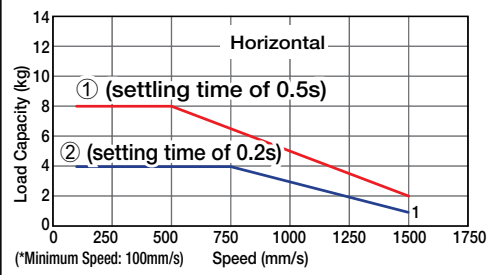


Technical References A-5



- (1) Operating the belt type actuator at low speeds may cause vibration and/or resonance. Therefore, please set the speed at 100mm/s or faster.
- (2) Since the RCP2 series use a pulse motor, the load capacity decreases at high speeds. Check in the Speed vs. Load Capacity graph to see if your desired speed and load capacity are supported.
- (3) The load capacity is based on operation at an acceleration of 0.5G. 0.5G is the upper limit for the acceleration.

■ Speed vs. Load Capacity  
Due to the characteristics of the pulse motor, the RCP2 series' load capacity decreases at high speeds. In the table below, check if your desired speed and load capacity are supported.



Note:  
Graph ① is for standard specifications, with settling time of 0.5s for calculating the positioning time.  
Graph ② reflects some changes in the controller settings. The load capacity is lower, however the settling time is decreased to 0.2s.  
If the load capacity is lower than graph ②, and you want to shorten the positioning time, change the controller settings. (See the manual for details.)  
(Vertical operation is not possible.)

| Actuator Specifications                                                               |                          |               |                             |               |                                             |
|---------------------------------------------------------------------------------------|--------------------------|---------------|-----------------------------|---------------|---------------------------------------------|
| Lead and Load Capacity                                                                |                          |               | Stroke and Maximum Speed    |               |                                             |
| (Note 1) Please note that the maximum load capacity decreases as the speed increases. |                          |               |                             |               |                                             |
| Model                                                                                 | Motor Mounting Direction | Lead (mm)     | Max. Load Capacity (Note 1) |               | Stroke (mm)                                 |
| RCP2-BA7-I-42P-54-①-②-③-④                                                             | Top                      | 54 equivalent | Horizontal (kg)             | Vertical (kg) | 600 ~ 1200 (50mm increments)                |
| RCP2-BA7U-I-42P-54-①-②-③-④                                                            | Bottom                   |               | ~ 8                         | Not Allowed   |                                             |
|                                                                                       |                          |               |                             |               | Stroke / Lead: 600 ~ 1200 (50mm increments) |
|                                                                                       |                          |               |                             |               | 54 equivalent                               |
|                                                                                       |                          |               |                             |               | 1500                                        |

Legend ① Stroke ② Compatible controller ③ Cable length ④ Options (Unit: mm/s)

① Stroke List

| Stroke (mm) | Standard Price |
|-------------|----------------|
| 600         | -              |
| 650         | -              |
| 700         | -              |
| 750         | -              |
| 800         | -              |
| 850         | -              |
| 900         | -              |
| 950         | -              |
| 1000        | -              |
| 1050        | -              |
| 1100        | -              |
| 1150        | -              |
| 1200        | -              |

③ Cable List

| Type            | Cable Symbol          | Standard Price |
|-----------------|-----------------------|----------------|
| Standard        | P (1m)                | -              |
|                 | S (3m)                | -              |
|                 | M (5m)                | -              |
| Special Lengths | X06 (6m) ~ X10 (10m)  | -              |
|                 | X11 (11m) ~ X15 (15m) | -              |
|                 | X16 (16m) ~ X20 (20m) | -              |
|                 | R01 (1m) ~ R03 (3m)   | -              |
| Robot Cable     | R04 (4m) ~ R05 (5m)   | -              |
|                 | R06 (6m) ~ R10 (10m)  | -              |
|                 | R11 (11m) ~ R15 (15m) | -              |
|                 | R16 (16m) ~ R20 (20m) | -              |

\* See page A-39 for cables for maintenance.

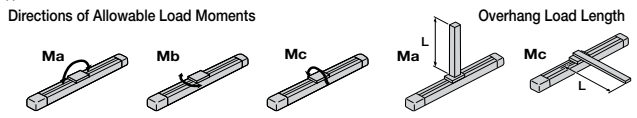
④ Option List

| Name          | Option Code | See Page | Standard Price |
|---------------|-------------|----------|----------------|
| Reversed-home | NM          | → A-33   | -              |

Actuator Specifications

| Item                             | Description                                                 |
|----------------------------------|-------------------------------------------------------------|
| Drive System                     | Timing Belt                                                 |
| Positioning Repeatability        | ±0.1mm                                                      |
| Lost Motion                      | 0.1mm or less                                               |
| Allowable Dynamic Moment (*)     | Ma: 13.8 N·m Mb: 19.7 N·m Mc: 29.0 N·m                      |
| Overhang Load Length             | Ma direction: 150mm or less; Mb-Mc direction: 150mm or less |
| Ambient Operating Temp./Humidity | 0~40°C, 85% RH or less (Non-condensing)                     |

(\*) Based on 5,000km travel life.



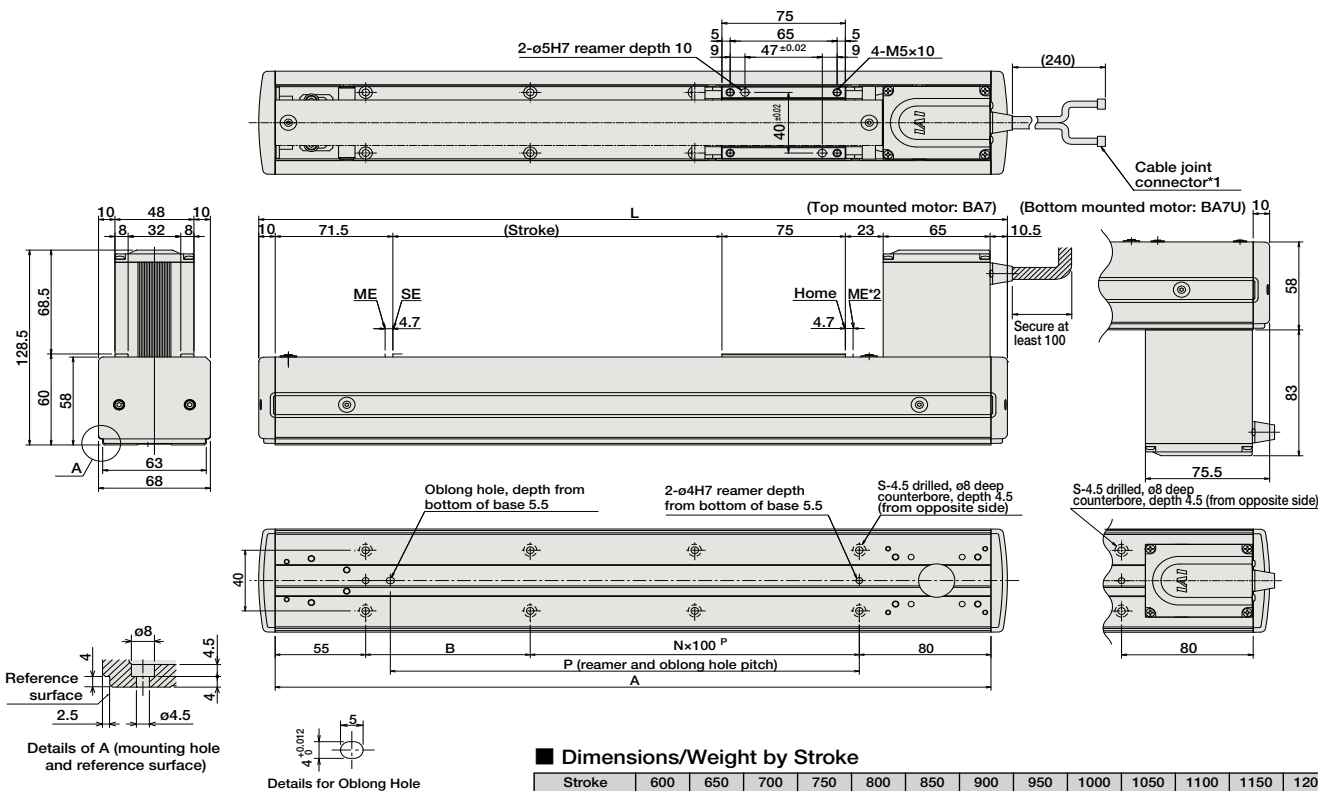
Dimensions

CAD drawings can be downloaded from IAI website. [www.intelligentactuator.com](http://www.intelligentactuator.com)

For Special Orders A-9



\*1 The motor-encoder cable is connected here. See page A-39 for details on cables.  
\*2 When homing, the slider moves to the ME; therefore, please watch for any interference with the surrounding objects.  
ME: Mechanical end  
SE: Stroke end



■ Dimensions/Weight by Stroke

| Stroke      | 600 | 650 | 700 | 750  | 800  | 850  | 900  | 950  | 1000 | 1050 | 1100 | 1150 | 1200 |
|-------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|
| L           | 855 | 905 | 955 | 1005 | 1055 | 1105 | 1155 | 1205 | 1255 | 1305 | 1355 | 1405 | 1455 |
| A           | 835 | 885 | 935 | 985  | 1035 | 1085 | 1135 | 1185 | 1235 | 1285 | 1335 | 1385 | 1435 |
| B           | 100 | 50  | 100 | 50   | 100  | 50   | 100  | 50   | 100  | 50   | 100  | 50   | 100  |
| N           | 6   | 7   | 7   | 8    | 8    | 9    | 9    | 10   | 10   | 11   | 11   | 12   | 12   |
| P           | 685 | 735 | 785 | 835  | 885  | 935  | 985  | 1035 | 1085 | 1135 | 1185 | 1235 | 1285 |
| S           | 16  | 18  | 18  | 20   | 20   | 22   | 22   | 24   | 24   | 26   | 26   | 28   | 28   |
| Weight (kg) | 3.6 | 3.7 | 3.9 | 4.0  | 4.2  | 4.3  | 4.4  | 4.6  | 4.7  | 4.9  | 5.0  | 5.2  | 5.3  |

② Compatible Controllers

The RCP2 series actuators can operate with the controllers below. Select the controller according to your usage.

| Name                                              | External View | Model                                     | Description                                                                                                                                 | Max. Positioning Points | Input Voltage    | Power Supply Capacity | Standard Price | See Page |
|---------------------------------------------------|---------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------|-----------------------|----------------|----------|
| Solenoid Valve Type                               |               | PMEC-C-42PI-NP-2-①                        | Easy-to-use controller, even for beginners                                                                                                  | 3 points                | AC100V<br>AC200V | See P481              | -              | → P477   |
| Splash-Proof Solenoid Valve Type                  |               | PSEP-C-42PI-NP-2-0<br>PSEP-CW-42PI-NP-2-0 | Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type. |                         |                  |                       |                |          |
| Positioner Type                                   |               | PCON-C-42PI-NP-2-0                        | Positioning is possible for up to 512 points                                                                                                | 512 points              | DC24V            | 2A max.               | -              | → P525   |
| Safety-Compliant Positioner Type                  |               | PCON-CG-42PI-NP-2-0                       |                                                                                                                                             |                         |                  |                       |                |          |
| Pulse Train Input Type (Differential Line Driver) |               | PCON-PL-42PI-NP-2-0                       | Pulse train input type with differential line driver support                                                                                | (-)                     | DC24V            | 2A max.               | -              | → P525   |
| Pulse Train Input Type (Open Collector)           |               | PCON-PO-42PI-NP-2-0                       | Pulse train input type with open collector support                                                                                          |                         |                  |                       |                |          |
| Serial Communication Type                         |               | PCON-SE-42PI-N-0-0                        | Dedicated to serial communication                                                                                                           | 64 points               |                  |                       | -              |          |
| Field Network Type                                |               | RPCON-42P                                 | Dedicated to field network                                                                                                                  | 768 points              |                  |                       | -              | → P503   |
| Program Control Type                              |               | PSEL-C-1-42PI-NP-2-0                      | Programmed operation is possible<br>Can operate up to 2 axes                                                                                | 1500 points             |                  |                       | -              | → P557   |

\* This is for the single-axis PSEL.  
\* ① is a placeholder for the power supply voltage (1: 100V / 2: 100~240V).