# RCP4-RA6R

ROBO Cylinder, Rod Type, Side-mounted Motor, Actuator Width 61mm, 24-V Pulse Motor

| Model Specification Items | RCP4 | RA6R | I | 56P | ☐ | ☐ | P3 | ☐ | ☐ |
|---|---|---|---|---|---|---|---|---|---|
| | Series | Type | Encoder type | Motor type | Lead | Stroke | Applicable controller | Cable length | Options |
| | | | I: Incremental | 56P: Pulse motor, size 56☐ | 24: 24mm<br>16: 16mm<br>8: 8mm<br>4: 4mm | 50: 50mm<br>〜<br>500: 500mm<br>(50mm pitch increments) | P3: PCON-CA<br>MSEP-C | N: None<br>P: 1m<br>S: 3m<br>M: 5m<br>X☐☐: Custom length<br>R☐☐: Robot cable | See Options below.<br>* Be sure to specify either "ML" or "MR" as the motor side-mounted direction. |

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

## Built-in guide mechanism

The "Motor side-mounted to the left (ML)" option is selected for the actuator shown above.

Technical References → Appendix P.5

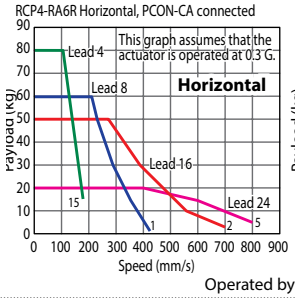
**POINT** Notes on selection

(1) The maximum payload is the value when operated at 0.3G (0.2G with some models) acceleration. The upper limit of acceleration is 1 G (*).
Note that raising the acceleration causes the payload to drop.
(*) The specific value varies depending on the connected controller and actuator lead. For details, refer to "Selection References" on page A-105 and A-107.
(2) Take note that the maximum payload and maximum speed vary depending on the controller connected to the RCP4.
(Refer to the actuator specifications below.)
(3) All horizontal payloads are values when an external guide is used.
(4) See page A-71 for details on push motion.

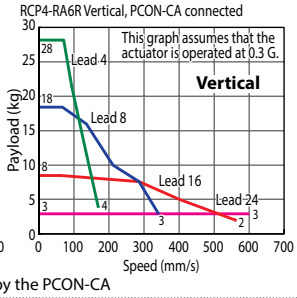
## ■ Correlation Diagrams of Speed and Payload

* The values of the horizontal specification assume that an external guide is used.

RCP4-RA6R Horizontal, PCON-CA connected

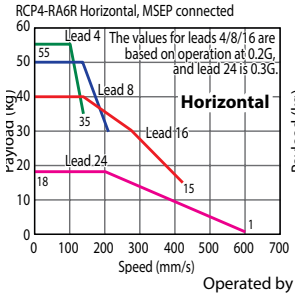



RCP4-RA6R Vertical, PCON-CA connected

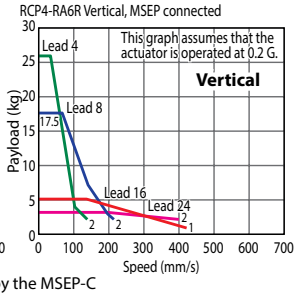



Operated by the PCON-CA

RCP4-RA6R Horizontal, MSEP connected




RCP4-RA6R Vertical, MSEP connected




Operated by the MSEP-C

## Actuator Specifications

### ■ Leads and Payloads

(*) When operated at 0.2 G

| Model number | Lead (mm) | Connected controller | Maximum payload Horizontal (kg) | Maximum payload Vertical (kg) | Max. push force (N) | Stroke (mm) |
|---|---|---|---|---|---|---|
| RCP4-RA6R-I-56P-24-①-P3-②-③ | 24 | PCON-CA | 20 | 3 | 182 | 50 to 500 (every 50mm) |
| | | MSEP-C | 18 | 3 (*) | | |
| RCP4-RA6R-I-56P-16-①-P3-②-③ | 16 | PCON-CA | 50 | 8 | 273 | |
| | | MSEP-C | 40 (*) | 5 (*) | | |
| RCP4-RA6R-I-56P-8-①-P3-②-③ | 8 | PCON-CA | 60 | 18 | 547 | |
| | | MSEP-C | 50 (*) | 17.5 (*) | | |
| RCP4-RA6R-I-56P-4-①-P3-②-③ | 4 | PCON-CA | 80 | 28 | 1094 | |
| | | MSEP-C | 55 (*) | 26 (*) | | |

Code explanation ① Stroke ② Cable length ③ Options *See page A-71 for details on push motion.

### ■ Stroke and Maximum Speed

(Unit: mm/s)

| Lead (mm) | Stroke / Connected controller | 50~500 (every 50mm) |
|---|---|---|
| 24 | PCON-CA | 800<600> |
| | MSEP-C | 600<400> |
| 16 | PCON-CA | 560 |
| | MSEP-C | 420 |
| 8 | PCON-CA | 420<350> |
| | MSEP-C | 210 |
| 4 | PCON-CA | 175 |
| | MSEP-C | 140 |

*The values of lead 8 apply when acceleration is at 0.1G.

The values in < > apply when the actuator is used vertically.

### ①Stroke

| Stroke (mm) | Standard price |
|---|---|
| 50 | — |
| 100 | — |
| 150 | — |
| 200 | — |
| 250 | — |
| 300 | — |
| 350 | — |
| 400 | — |
| 450 | — |
| 500 | — |

### ②Cable Length

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

* See page A-59 for cables for maintenance.

### ③Options

| Name | Option code | Page | Standard Price |
|---|---|---|---|
| Brake (*) | **B** | → A-42 | — |
| Optional cable exit direction (top) | **CJT** | → A-42 | — |
| Optional cable exit direction (outside) | **CJO** | → A-42 | — |
| Optional cable exit direction (bottom) | **CJB** | → A-42 | — |
| Flange bracket (*) | **FL** | → A-44 | — |
| Motor side-mounted to the left (Standard) | **ML** | → A-52 | — |
| Motor side-mounted to the Right | **MR** | → A-52 | — |
| Non-motor end specification | **NM** | → A-52 | — |
| Scraper | **SC** | → A-55 | — |

* With brake option at 50 stroke, flange bracket can not be used because flange and motor cover may interfere.

### Actuator Specifications

| Item | Description |
|---|---|
| Drive method | Ball screw, ø12mm, rolled C10 |
| Positioning repeatability (*1) | ±0.02mm [±0.03mm] |
| Lost motion | 0.1mm or less |
| Rod | ø25mm stainless steel pipe |
| Rod non-rotation precision | ±0 deg |
| Allowable rod load mass | Refer to page 154 and page A-117 |
| Rod tip overhang distance | 100mm or less |
| Ambient operating temperature/humidity | 0 to 40°C, 85% RH max. (Non-condensing) |

(*1) The value at lead 24 is shown in [ ].

## Dimensional Drawings

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

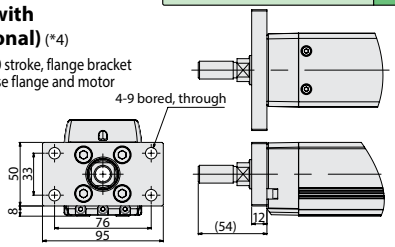
2D CAD 3D CAD

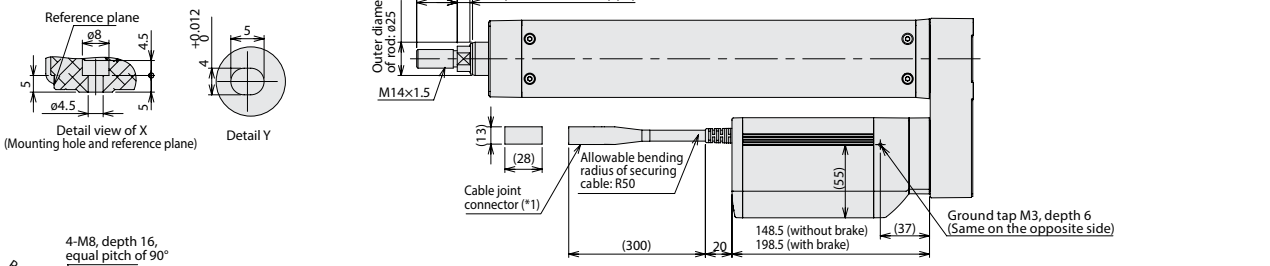
For Special Orders Appendix P.15

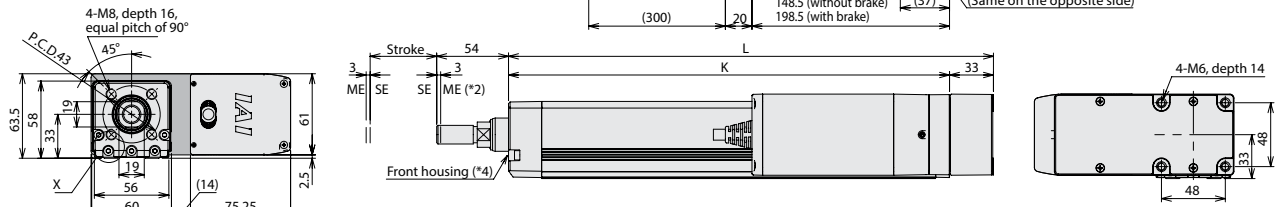
(*1) Connect the motor-encoder integrated cable here.
(*2) During home return, be careful to avoid interference from peripheral objects because the slider travels until the mechanical end.
(*3) The orientation of the bolt varies depending on the product.
(*4) If the actuator is installed using the front housing and flange, make sure the actuator will not receive any external force.
ME : Mechanical end
SE : Stroke end

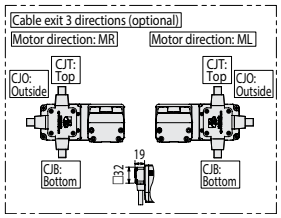
### ■ Dimensions with Flange (Optional) (*4)

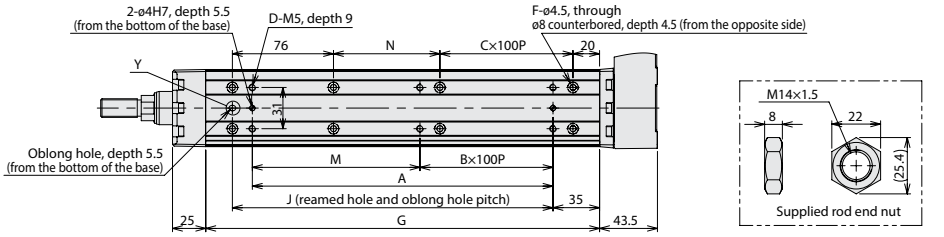
* With brake option at 50 stroke, flange bracket can not be used because flange and motor cover may interfere.



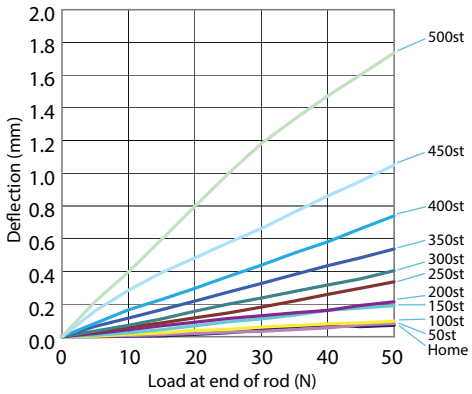




### ■ Rod Deflection of RCP4-RA6R (Reference Values)

(The graph below plots deflection as measured by installing the actuator vertically and applying a force to the rod from one side.)




### ■ Dimensions and Mass by Stroke

| Stroke | | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L | | 214.5 | 264.5 | 314.5 | 364.5 | 414.5 | 464.5 | 514.5 | 564.5 | 614.5 | 664.5 |
| A | | 76 | 126 | 176 | 226 | 276 | 326 | 376 | 426 | 476 | 526 |
| B | | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 |
| C | | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 |
| D | | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 |
| F | | 6 | 6 | 6 | 8 | 8 | 10 | 10 | 2 | 12 | 14 |
| G | | 146 | 196 | 246 | 296 | 346 | 396 | 446 | 496 | 546 | 596 |
| J | | 91 | 141 | 191 | 241 | 291 | 341 | 391 | 441 | 491 | 541 |
| K | | 181.5 | 231.5 | 281.5 | 331.5 | 381.5 | 431.5 | 481.5 | 531.5 | 581.5 | 631.5 |
| M | | 76 | 126 | 76 | 126 | 76 | 126 | 76 | 126 | 76 | 126 |
| N | | 30 | 80 | 130 | 80 | 130 | 80 | 130 | 80 | 130 | 80 |
| Allowable static load at end of rod (N) | | 112.7 | 91.5 | 76.7 | 65.7 | 57.2 | 50.4 | 44.8 | 40.2 | 36.2 | 32.7 |
| Allowable dynamic load at end of rod (N) | Load offset 0mm | 49.0 | 37.4 | 29.9 | 24.5 | 20.4 | 17.1 | 14.5 | 12.3 | 10.3 | 8.6 |
| | Load offset 100mm | 38.7 | 31.0 | 25.5 | 21.4 | 18.1 | 15.4 | 13.2 | 11.2 | 9.5 | 8.0 |
| Allowable static torque at end of rod (N•m) | | 11.4 | 9.3 | 7.9 | 6.8 | 6.0 | 5.4 | 4.9 | 4.5 | 4.1 | 3.8 |
| Allowable dynamic torque at end of rod (N•m) | | 3.9 | 3.1 | 2.5 | 2.1 | 1.8 | 1.5 | 1.3 | 1.1 | 1.0 | 0.8 |
| Weight (kg) | Without brake | 3.9 | 4.2 | 4.5 | 4.8 | 5.1 | 5.5 | 5.8 | 6.1 | 6.4 | 6.8 |
| | With brake | 4.4 | 4.7 | 5.0 | 5.3 | 5.6 | 6.0 | 6.3 | 6.6 | 6.9 | 7.3 |

## Applicable Controllers

RCP4 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 |
|---|---|---|---|---|---|---|---|---|
| Positioner type High-output specification |  | PCON-CA-56PI-Ⓘ-2-0 | Equipped with a high-output driver PIO control supported | 512 points | DC24V | Refer to P618 | — | → P607 |
| Pulse-train type High-output specification | | PCON-CA-56PI-PL-☐-2-0 | Equipped with a high-output driver Pulse-train input supported | — | | | — | |
| Field network type High-output specification | | PCON-CA-56PI-Ⓘⅈ-0-0 | Equipped with a high-output driver Field network supported | 768 points | | | — | |
| 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 | 3 points | | Refer to P572 | — | → P563 |
| Solenoid valve multi-axis type Network specification | | MSEP-C-Ⓘⅈ-~-Ⓘⅈ-0-0 | Field network-ready positioner type, allowing up to 8 axes to be connected | 256 points | | | | |

* Ⓘ indicates I/O type (NP/PN). * Ⓘⅈ indicates number of axes (1 to 8). * Ⓘⅈ indicates field network specification symbol. * ☐ indicates N (NPN specification) or P (PNP specification) symbol.