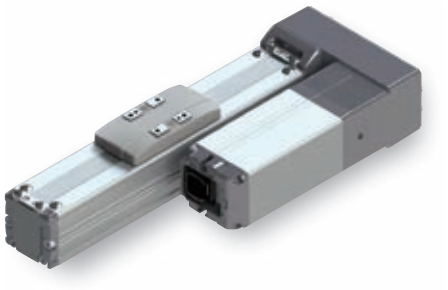
# RCP4-SA3R

RoboCylinder, Slider Type, Side-mounted Motor Type, Actuator Width 32mm, 24-V Pulse Motor

Model Specification Items: **RCP4** — **SA3R** — **I** — **28P** — ☐ — ☐ — **P3** — ☐ — ☐

| Series | Type | Encoder type | Motor type | Lead | Stroke | Applicable controller | Cable length | Options |
|---|---|---|---|---|---|---|---|---|
| RCP4 | SA3R | I: Incremental specification | 28P: Pulse motor, size 28 ☐ | 6: 6mm<br>4: 4mm<br>2: 2mm | 25: 25mm<br>~<br>300: 300mm<br>(every 25 mm) | P3: PCON-CA<br>MSEP<br>MSEL | N: None<br>P: 1m<br>S: 3m<br>M: 5m<br>X☐☐: Specified length<br>R☐☐: Robot cable | Refer to the option list below. |



Pictured: Left-mounted motor model (ML).

**POINT** Note on selection

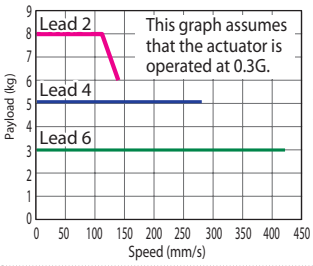
(1) Even though the payload described in the actuator specifications is the maximum value, it may vary depending on the acceleration. Refer to "Tables for Payload by Acceleration and Speed" on pg. 4-2 for details.

(2) Refer to "Relative Graph for Pressing Force and Current Limit" on pg. 10 of RCP4-SA3/RA3 straight motor type catalogue for the pressing operation.

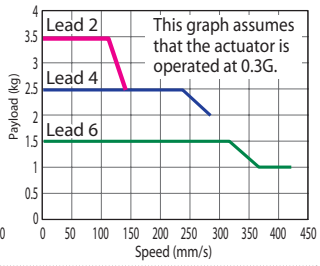
## ■Correlation Diagrams of Speed and Payload

①**High output enabled (PowerCon) - PCON-CA•MSEP•MSEL connected**

**RCP4-SA3R Horizontal**

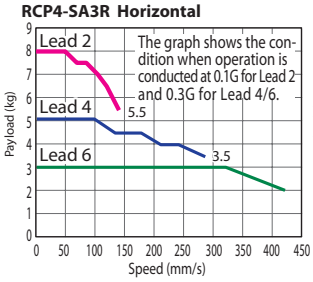



**RCP4-SA3R Vertical**

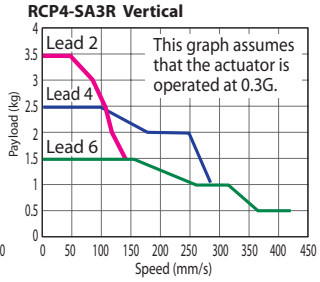



②**High output disabled (standard) - PCON-CA•MSEP connected**

**RCP4-SA3R Horizontal**




**RCP4-SA3R Vertical**




## Actuator Specifications

### ■Leads and Payloads

| Model number | Lead (mm) | Maximum payload Horizontal (kg) | Maximum payload Vertical (kg) | Stroke (mm) |
|---|---|---|---|---|
| RCP4-SA3R-I-28P-6-①-P3-②-③ | 6 | 3 | 1.5 | 25 ~ 300 (every 25mm) |
| RCP4-SA3R-I-28P-4-①-P3-②-③ | 4 | 5 | 2.5 | |
| RCP4-SA3R-I-28P-2-①-P3-②-③ | 2 | 8 | 3.5 | |

Legend ① Stroke ② Cable length ③ Options

### ■Stroke and Max. Speed (unit: mm/s)

| Lead (mm) | High-Output Setting | 25 ~ 300 (every 25mm) |
|---|---|---|
| 6 | Enabled | 420 |
| | Disabled | |
| 4 | Enabled | 280 |
| | Disabled | |
| 2 | Enabled | 140 |
| | Disabled | |

## Cable Length

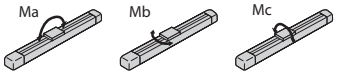
| Type | Cable symbol |
|---|---|
| Standard type | **P** (1m) |
| | **S** (3m) |
| | **M** (5m) |
| Special length | **X06** (6m) ~ **X10** (10m) |
| | **X11** (11m) ~ **X15** (15m) |
| | **X16** (16m) ~ **X20** (20m) |
| Robot cable | **R01** (1m) ~ **R03** (3m) |
| | **R04** (4m) ~ **R05** (5m) |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

## Actuator Specifications

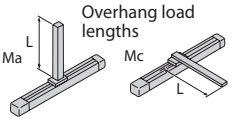
| Item | Description |
|---|---|
| Drive system | Ball screw Ø6mm rolled C10 |
| Positioning repeatability | ±0.02mm |
| Lost motion | 0.1mm or less |
| Base | Material: Aluminum with white alumite treatment |
| Dynamic allowable moment (*1) | Ma: 3.82 N•m, Mb: 5.45 N•m, Mc: 6.10 N•m |
| Static allowable moment | Ma: 6.3 N•m, Mb: 8.9 N•m, Mc: 10.0 N•m |
| Allowable overhang | Ma direction: 100mm or less Mb•Mc direction: 100mm or less |
| Ambient operating temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) Based on 5000km of traveling life.

Allowable load moment directions




Overhang load lengths




## Options

| Name | Option code | Reference page | |
|---|---|---|---|
| Brake | **B** | Refer to RoboCylinder General Catalog | |
| Left-mounted motor | **ML** | | |
| Right-mounted motor | **MR** | | |
| Home-position check sensor (on right) | **HSR** (Note1) | | |
| Home-position check sensor (on left) | **HSL** (Note1) | | |
| Non-motor end specification | **NM** | | |
| Slider roller specification | **SR** | | |
| Back-mounting plate | **RP** | -> P4-2 | |

(Note 1)
For the left-mounted motor type "ML" the home-position check sensor is mounted on the right ("HSR"), and for the right-mounted motor type "MR" on the left ("HSL").

## Dimensions

CAD drawings can be downloaded from the website. www.robocylinder.de

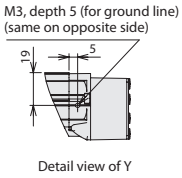
2D CAD

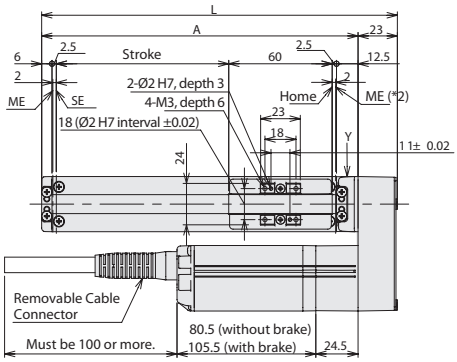
*1 On the 25mm stroke type, there are six counterbored mounting holes on the bottom of the base. The two counterbored mounting holes in the middle are not available to use.

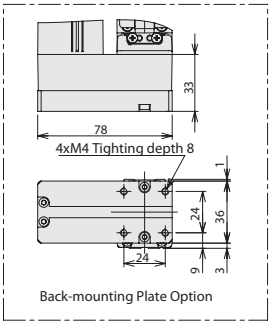
*2 During home return, be sure to avoid interference from peripheral objects because the slider travels until reaching the mechanical end.

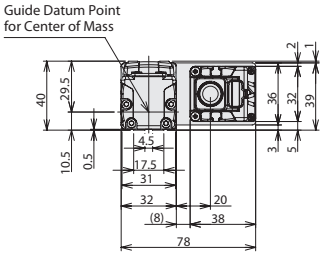
ME : Mechanical end

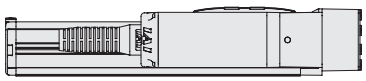
SE : Stroke end

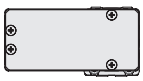


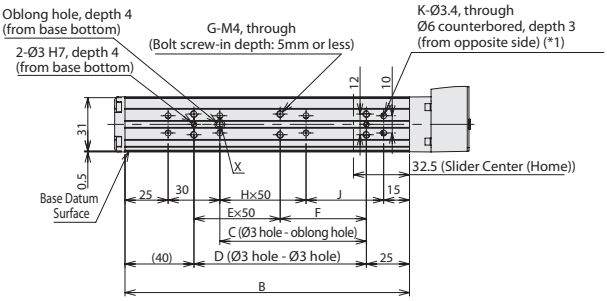



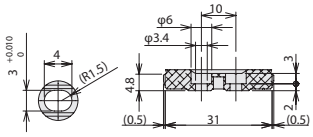



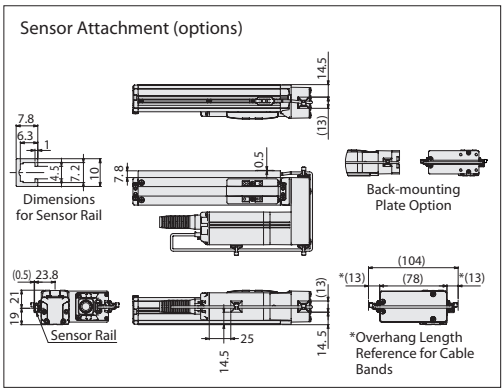








### ■Dimensions and Mass by Stroke

| Stroke | | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | Standard | 131.5 | 156.5 | 181.5 | 206.5 | 231.5 | 256.5 | 281.5 | 306.5 | 331.5 | 356.5 | 381.5 | 406.5 |
| | with backside holes | 141.5 | 166.5 | 191.5 | 216.5 | 241.5 | 266.5 | 291.5 | 316.5 | 341.5 | 366.5 | 391.5 | 416.5 |
| A | | 108.5 | 133.5 | 158.5 | 183.5 | 208.5 | 233.5 | 258.5 | 283.5 | 308.5 | 333.5 | 358.5 | 383.5 |
| B | | 90 | 115 | 140 | 165 | 190 | 215 | 240 | 265 | 290 | 315 | 340 | 365 |
| C | | 10 | 35 | 60 | 85 | 110 | 135 | 160 | 185 | 210 | 235 | 260 | 285 |
| D | | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 |
| E | | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| F | | 25 | 50 | 75 | 50 | 75 | 50 | 75 | 50 | 75 | 50 | 75 | 50 |
| G | | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 |
| H | | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| J | | (20) | 45 | 70 | 45 | 70 | 45 | 70 | 45 | 70 | 45 | 70 | 45 |
| K | | (6) | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 | 14 | 16 |
| Mass (kg) | without brake | 0.64 | 0.68 | 0.71 | 0.74 | 0.78 | 0.81 | 0.84 | 0.88 | 0.91 | 0.94 | 0.98 | 1.01 |
| | with brake | 0.73 | 0.77 | 0.80 | 0.83 | 0.87 | 0.90 | 0.93 | 0.97 | 1.00 | 1.03 | 1.07 | 1.10 |

## Tables for Payload by Acceleration and Speed

**High output enabled (PowerCon spec.) Lead 6**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 50 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 105 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 155 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 210 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 260 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 315 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 365 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 |
| 420 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 |

**High output enabled (PowerCon spec.) Lead 4**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 35 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 70 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 105 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 140 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 175 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 210 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2 |
| 245 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2 |
| 280 | 5 | 5 | 5 | 5 | 4.5 | 2 | 2 | 1.75 |

**High output enabled (PowerCon spec.) Lead 2**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 15 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 35 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 50 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 70 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 85 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 105 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 120 | 7 | 7 | 6 | 6 | 5 | 3 | 3 | 2.5 |
| 140 | 6 | 6 | 6 | 5 | 5 | 2.5 | 2.5 | 2 |

**High output disabled (standard spec.) Lead 6**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 50 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 105 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 155 | 3 | 3 | 3 | 3 | 3 | 1.5 | 1.5 | 1.5 |
| 210 | 3 | 3 | 3 | 3 | 3 | 1.25 | 1.25 | 1.25 |
| 260 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 |
| 315 | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 1 |
| 365 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 0.5 | 0.5 | 0.5 |
| 420 | 2 | 2 | 2 | 2 | 2 | 0.5 | 0.5 | 0.5 |

**High output disabled (standard spec.) Lead 4**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 35 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 70 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 105 | 5 | 5 | 5 | 5 | 4.5 | 2.5 | 2.5 | 2.5 |
| 140 | 4.5 | 4.5 | 4.5 | 4.5 | 4 | 2.25 | 2.25 | 2.25 |
| 175 | 4.5 | 4.5 | 4.5 | 4.5 | 4 | 2 | 2 | 2 |
| 210 | 4 | 4 | 4 | 4 | 3.5 | 2 | 2 | 1.5 |
| 245 | 4 | 4 | 4 | 3.5 | 3 | 2 | 2 | 1.5 |
| 280 | 3.5 | 3.5 | 3.5 | 3 | 2.5 | 1 | 1 | 0.75 |

**High output disabled (standard spec.) Lead 2**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed (mm/s) | Acceleration | | | | | | | |
| | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 15 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 35 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 50 | 8 | 8 | 7 | 6 | 5 | 3.5 | 3.5 | 3.5 |
| 70 | 7.5 | 7 | 6 | 5 | 4.5 | 3.25 | 3.25 | 3.25 |
| 85 | 7.5 | 7 | 6 | 5 | 4.5 | 3 | 3 | 3 |
| 105 | 7 | 6.5 | 6 | 5 | 4.5 | 2.5 | 2.5 | 2 |
| 120 | 6.5 | 6 | 5 | 4.5 | 4 | 2 | 2 | 1.5 |
| 140 | 5.5 | 5 | 4.5 | 4 | 3.5 | 1.5 | 1.5 | 1 |

(Note) MSEP is available for high output only if "High-Output Specification" (PowerCon) is selected in the options.

# RCP4-RA3R

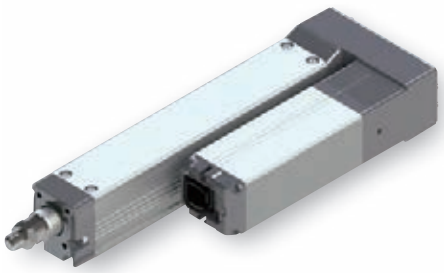
RoboCylinder, Rod Type, Side-mounted Motor Type, Actuator Width 32mm, 24-V Pulse Motor

Model Specification Items

| RCP4 | RA3R | I | 28P | ☐ | ☐ | P3 | ☐ | ☐ |
|---|---|---|---|---|---|---|---|---|
| Series | Type | Encoder type | Motor type | Lead | Stroke | Applicable controller | Cable length | Options |
| | | I : Incremental specification | 28P : Pulse motor, size 28 ☐ | 16 :16mm<br>10 :10mm<br>5 : 5mm<br>2.5 :2.5mm | 25 : 25mm<br>↓<br>300 : 300mm<br>(every 25 mm) | P3 : PCON-CA<br>MSEP<br>MSEL | N : None<br>P : 1m<br>S : 3m<br>M : 5m<br>X ☐☐: Specified length<br>R ☐☐: Robot cable | Refer to the option list below. |

CE RoHS

Radial Load OK



Pictured: Left-mounted motor model (ML).

POINT Note on selection

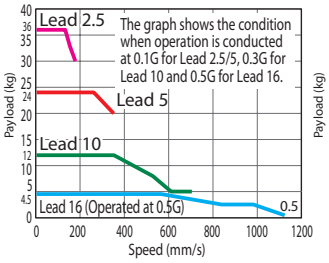
(1) Even though the payload described in the actuator specifications is the maximum value, it may vary depending on the acceleration. Refer to "Tables for Payload by Acceleration and Speed" on pg. 6-2 for details.

(2) Refer to "Relative Graph for Pressing Force and Current Limit" on pg. 10 of RCP4-SA3/RA3 straight motor type catalogue for the pressing operation.

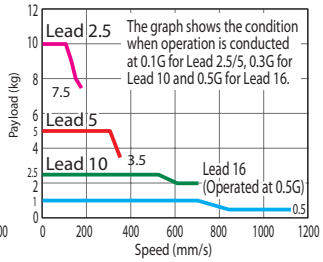
## ■Correlation Diagrams of Speed and Payload

①High output enabled (PowerCon) - PCON-CA•MSEP•MSEL connected

RCP4-RA3R Horizontal

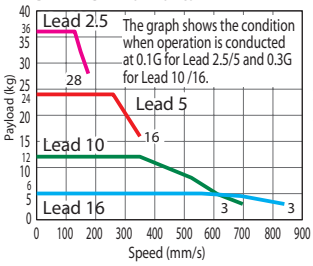



RCP4-RA3R Vertical

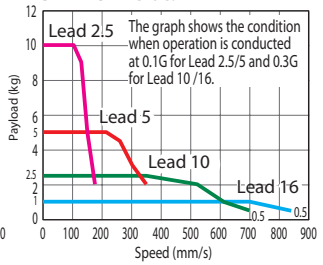



②High output disabled (standard) - PCON-CA•MSEP connected

RCP4-RA3R Horizontal




RCP4-RA3R Vertical




## Actuator Specifications

### ■Leads and Payloads

| Model number | Lead (mm) | Maximum payload Horizontal (kg) | Maximum payload Vertical (kg) | Maximum push force (N) | Stroke (mm) |
|---|---|---|---|---|---|
| RCP4-RA3R-I-28P-16-①-P3-②-③ | 16 | 5 | 1 | 36 | 25 ~ 300 (every 25mm) |
| RCP4-RA3R-I-28P-10-①-P3-②-③ | 10 | 12 | 2.5 | 57 | |
| RCP4-RA3R-I-28P-5-①-P3-②-③ | 5 | 24 | 5 | 114 | |
| RCP4-RA3R-I-28P-2.5-①-P3-②-③ | 2.5 | 36 | 10 | 229 | |

Legend ① Stroke ② Cable length ③ Options

### ■Stroke and Max. Speed (unit: mm/s)

| Lead (mm) | High-Output Setting | 25 ~ 300 (every 25mm) |
|---|---|---|
| 16 | Enabled | 1120 |
| | Disabled | 840 |
| 10 | Enabled | 700 |
| | Disabled | |
| 5 | Enabled | 350 |
| | Disabled | |
| 2.5 | Enabled | 175 |
| | Disabled | |

## Cable Length

| Type | Cable symbol |
|---|---|
| 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) |

## Options

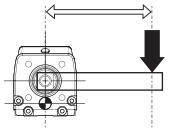
| Name | Option code | Reference page | |
|---|---|---|---|
| Brake | **B** | Refer to RoboCylinder General Catalog | — |
| Left-mounted motor | **ML** | | — |
| Right-mounted motor | **MR** | | — |
| Home-position check sensor (top) | **HS** | | — |
| Non-motor end specification | **NM** | | — |
| Back-mounting plate | **RP** | | — |

## Actuator Specifications

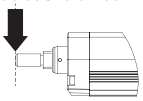
| Item | Description |
|---|---|
| Drive system | Ball screw Ø8mm rolled C10 |
| Positioning repeatability | ±0.02mm |
| Lost motion | 0.1mm or less |
| Rod | Ø16mm Aluminum |
| Rod non-rotation precision(*1) | ±0 deg |
| Allowable rod load mass | Refer to reference at the back |
| Rod tip overhang distance | 100mm or less |
| Ambient operating temperature, humidity | 0 to 40°C, 85% RH or less (Non-condensing) |

(*1) Accuracy of rod displacement in rotating direction when no load is received.

Offset distance at end of rod (100mm or less)



Load at end of rod

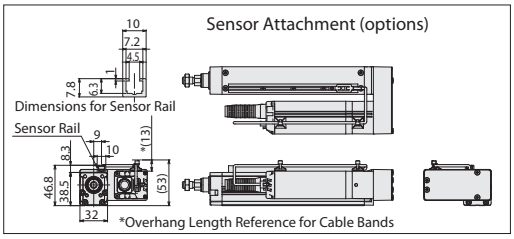


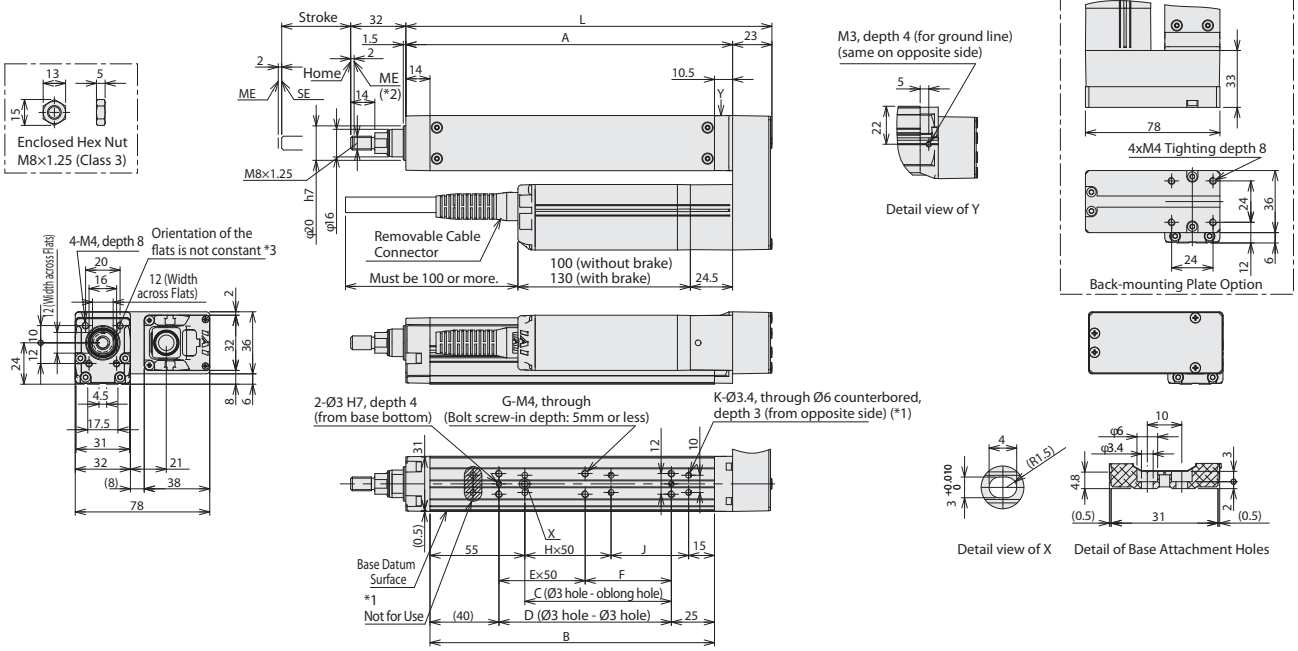
## Dimensions

CAD drawings can be downloaded from the website. www.robocylinder.de

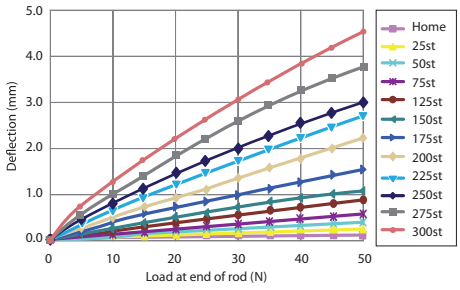
2D CAD

*1 The two counterbored mounting holes on the bottom of the base near the rod end are not available to use.
*2 During home return, be sure to avoid interference from peripheral objects because the slider travels until reaching the mechanical end.
ME : Mechanical end SE : Stroke end
*3 The orientation of the bolt varies depending on the product.
*4 Do not attempt to apply external force on the main body when installing the body using the front housing. Refer to the instruction manual for details.




## ■RCP4-RA3R Rod Deflection (reference)




## ■Dimensions and Mass by Stroke

| Stroke | | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | Standard | 137.5 | 162.5 | 187.5 | 212.5 | 237.5 | 262.5 | 287.5 | 312.5 | 337.5 | 362.5 | 387.5 | 412.5 |
| | with backside holes | 147.5 | 172.5 | 197.5 | 222.5 | 247.5 | 272.5 | 297.5 | 322.5 | 347.5 | 372.5 | 397.5 | 422.5 |
| A | | 114.5 | 139.5 | 164.5 | 189.5 | 214.5 | 239.5 | 264.5 | 289.5 | 314.5 | 339.5 | 364.5 | 389.5 |
| B | | 90 | 115 | 140 | 165 | 190 | 215 | 240 | 265 | 290 | 315 | 340 | 365 |
| C | | 10 | 35 | 60 | 85 | 110 | 135 | 160 | 185 | 210 | 235 | 260 | 285 |
| D | | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 | 300 |
| E | | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| F | | 25 | 50 | 75 | 50 | 75 | 50 | 75 | 50 | 75 | 50 | 75 | 50 |
| G | | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 |
| H | | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| J | | 20 | 45 | 70 | 45 | 70 | 45 | 70 | 45 | 70 | 45 | 70 | 45 |
| K | | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 10 | 10 | 12 | 12 | 14 |
| Allowable static load at end of rod(N) | | 38.8 | 33.5 | 29.5 | 26.3 | 23.7 | 21.6 | 19.8 | 18.2 | 16.9 | 15.7 | 14.7 | 13.8 |
| Allowable dynamic load at end of rod (N) | Load offset 0mm | 19.4 | 16.6 | 14.2 | 12.2 | 10.7 | 9.5 | 8.5 | 7.7 | 7.0 | 6.4 | 5.8 | 5.4 |
| | Load offset 100mm | 9.1 | 9.4 | 8.9 | 8.3 | 7.7 | 7.1 | 6.6 | 6.1 | 5.6 | 5.2 | 4.9 | 4.5 |
| Allowable static torque at end of rod (N•m) | | 3.9 | 3.4 | 3.0 | 2.7 | 2.4 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 | 1.4 |
| Allowable dynamic torque at end of rod (N•m) | | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.7 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 | 0.5 |
| Mass (kg) | without brake | 0.71 | 0.76 | 0.81 | 0.85 | 0.90 | 0.95 | 1.00 | 1.05 | 1.10 | 1.14 | 1.19 | 1.24 |
| | with brake | 0.80 | 0.85 | 0.90 | 0.94 | 0.99 | 1.04 | 1.09 | 1.14 | 1.19 | 1.23 | 1.28 | 1.33 |

## Tables for Payload by Acceleration and Speed

**High output enabled (PowerCon spec.) Lead 16**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 5 | 5 | 4.5 | 3 | 2.5 | 1 | 1 | 1 |
| 140 | 5 | 5 | 4.5 | 3 | 2.5 | 1 | 1 | 1 |
| 280 | 5 | 5 | 4.5 | 3 | 2 | 1 | 1 | 1 |
| 420 | 5 | 5 | 4.5 | 3 | 2 | 1 | 1 | 1 |
| 560 | | 5 | 4.5 | 2.5 | 2 | | 1 | 1 |
| 700 | | 4.5 | 3.5 | 2 | 1.5 | | 1 | 1 |
| 840 | | 3 | 2.5 | 1 | 0.5 | | 0.5 | 0.5 |
| 980 | | | 2.5 | 1 | 0.5 | | | 0.5 |
| 1120 | | | 0.5 | 0.5 | 0.5 | | | 0.5 |

**High output enabled (PowerCon spec.) Lead 10**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 12 | 12 | 10 | 9 | 6 | 2.5 | 2.5 | 2.5 |
| 85 | 12 | 12 | 10 | 9 | 6 | 2.5 | 2.5 | 2.5 |
| 175 | 12 | 12 | 10 | 9 | 6 | 2.5 | 2.5 | 2.5 |
| 260 | 12 | 12 | 10 | 9 | 5 | 2.5 | 2.5 | 2.5 |
| 350 | 12 | 12 | 10 | 8 | 5 | 2.5 | 2.5 | 2.5 |
| 435 | 12 | 10 | 8 | 6 | 4 | 2.5 | 2.5 | 2.5 |
| 525 | 12 | 8 | 6 | 3 | 2 | 2.5 | 2.5 | 2 |
| 610 | | 5 | 2 | 2 | 2 | | 2 | 1.5 |
| 700 | | 5 | 2 | 2 | 2 | | 2 | 1.5 |

**High output enabled (PowerCon spec.) Lead 5**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 40 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 85 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 130 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 175 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 215 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 260 | 24 | 22 | 20 | 16 | 10 | 5 | 5 | 5 |
| 305 | 22 | 20 | 16 | 12 | 7 | 5 | 4 | 4 |
| 350 | 20 | 16 | 10 | 8 | 5 | 3.5 | 3 | 3 |

**High output enabled (PowerCon spec.) Lead 2.5**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 20 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 40 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 65 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 85 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 105 | 36 | 36 | 33 | 26 | 20 | 10 | 10 | 10 |
| 130 | 36 | 33 | 28 | 22 | 16 | 9 | 9 | 8 |
| 150 | 33 | 30 | 24 | 18 | 14 | 8 | 8 | 7 |
| 175 | 30 | 26 | 20 | 14 | 10 | 7.5 | 7 | 6 |

**High output disabled (standard spec.) Lead 16**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 5 | 5 | 4.5 | 3 | 2.5 | 1 | 1 | 1 |
| 140 | 5 | 5 | 4.5 | 3 | 2.5 | 1 | 1 | 1 |
| 280 | 5 | 5 | 4.5 | 3 | 2 | 1 | 1 | 1 |
| 420 | 5 | 5 | 4.5 | 3 | 2 | 1 | 1 | 1 |
| 560 | | 5 | 3.5 | 2.5 | 2 | | 1 | 1 |
| 700 | | 4.5 | 2.5 | 2 | 1.5 | | 1 | 1 |
| 840 | | 3 | 2.5 | 1 | 0.5 | | 0.5 | 0.5 |
| 980 | | | | | | | | |
| 1120 | | | | | | | | |

**High output disabled (standard spec.) Lead 10**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 12 | 12 | 10 | 9 | 6 | 2.5 | 2.5 | 2.5 |
| 85 | 12 | 12 | 10 | 9 | 6 | 2.5 | 2.5 | 2.5 |
| 175 | 12 | 12 | 10 | 9 | 6 | 2.5 | 2.5 | 2.5 |
| 260 | 12 | 12 | 10 | 9 | 5 | 2.5 | 2.5 | 2.5 |
| 350 | 12 | 12 | 10 | 8 | 5 | 2.5 | 2.5 | 2.5 |
| 435 | 12 | 10 | 8 | 6 | 4 | 2.25 | 2.25 | 2.25 |
| 525 | 11 | 8 | 6 | 3 | 2 | 2 | 2 | 2 |
| 610 | | 5 | 2 | 2 | 2 | | 1 | 1 |
| 700 | | 3 | 2 | 1.5 | 1 | | 0.5 | 0.5 |

**High output disabled (standard spec.) Lead 5**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 40 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 85 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 130 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 175 | 24 | 24 | 22 | 18 | 12 | 5 | 5 | 5 |
| 215 | 24 | 24 | 20 | 16 | 10 | 5 | 5 | 5 |
| 260 | 24 | 20 | 16 | 12 | 7.5 | 4.5 | 4.5 | 4 |
| 305 | 20 | 16 | 12 | 10 | 5 | 3 | 3 | 3 |
| 350 | 16 | 11 | 7 | 6 | 3 | 2 | 2 | 2 |

**High output disabled (standard spec.) Lead 2.5**

| Orientation | Horizontal | | | | | Vertical | | |
|---|---|---|---|---|---|---|---|---|
| Speed | Acceleration | | | | | | | |
| (mm/s) | 0.1 | 0.3 | 0.5 | 0.7 | 1 | 0.1 | 0.3 | 0.5 |
| 0 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 20 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 40 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 65 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 85 | 36 | 36 | 36 | 30 | 20 | 10 | 10 | 10 |
| 105 | 36 | 36 | 30 | 22 | 18 | 10 | 10 | 10 |
| 130 | 36 | 30 | 24 | 18 | 14 | 9 | 9 | 8 |
| 150 | 32 | 26 | 20 | 14 | 12 | 5 | 5 | 5 |
| 175 | 28 | 18 | 16 | 12 | 8 | 2 | 2 | 2 |

(Note) MSEP is available for high output only if "High-Output Specification" (PowerCon) is selected in the options.