RoboCylinder Miniature Models
4th Revised Edition

RCA2-RA2 Tiny Rod Type
RCP3-SA2R Tiny Slider Type
Motor-reversing specification
RCA2-GD3/GD4 & RCS2-GD5
Short Rod Type with Double Guide
RCA2-S23/S24 & RCS2-S25
Short Slide Unit Rod Type with Double Guide
RCA2-TCA3/TCA4 & RCS2-TCA5
Short Compact Table Type
RCA2-TFA3/TFA4 & RCS2-TFA5
Short Flat Table Type
RCA2-RP3/RP4 & RCS2-RP5
Short Rod Type
RCD-GRSNA
Ultra-compact Gripper Type
RCD-RA1D
Ultra-compact Rod Type

New
RCA2 & RCS2
Rod Types available
with Cleanroom and Dust/Splash-proof Specification

RCP3/4
RCA2
RCS2
RCD
Electric Cylinders of Miniature Size

Mini RoboCylinder

Also special variants of many standard types:
Cleanroom suitable or dust-/splashproof rod types according to ISO cleanliness class 5 or IP52 protection class

Space Saving

Incorporating a newly developed motor, the Mini RoboCylinder has achieved smaller size with significantly reduced overall length, width and height which are comparable to air cylinders. Systems that could only use air cylinders previously due to size constraints, can now benefit from IAI’s electromechanical solution.

The mini table type RCA2-TCA3NA has a footprint smaller than a business card.

Shape & Usability like an Air Cylinder

The Mini RoboCylinder is available in shapes similar to that of air cylinders. Users who are comfortable with the handling and operation of pneumatic systems are now able to switch to RoboCylinder effortlessly.

Wide Range of Model Variations

Further models have been added, including slim type with contracted actuator width and high-payload, long-stroke types of 46 mm in actuator width, to support greater applications.
### Mini Slider Type

<table>
<thead>
<tr>
<th>Motor Unit Type Description</th>
<th>Model Type</th>
<th>Encoder Type</th>
<th>Series</th>
<th>Type</th>
<th>Motor Type</th>
<th>Motor Size</th>
<th>Feed Screw</th>
<th>Load (N)</th>
<th>Rated Thrust (N)</th>
<th>Max. Load Capacity (kg)</th>
<th>Max. Speed (mm/s)</th>
<th>Stroke (mm)</th>
<th>Repeatability (mm)</th>
<th>Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tiny Coupling Slider Type</strong></td>
<td>SA2AC</td>
<td>RCP3</td>
<td></td>
<td></td>
<td>Pulse Motor</td>
<td>Lead Screw</td>
<td>4</td>
<td>0.25</td>
<td>0.125</td>
<td>200</td>
<td>25±100 (25 mm steps)</td>
<td>±0.05</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td><strong>Tiny Motor-reversing Slider Type</strong></td>
<td>SA2BC</td>
<td>RCA2</td>
<td></td>
<td></td>
<td>Servo Motor</td>
<td>Ball Screw</td>
<td>4</td>
<td>21.4</td>
<td>0.5</td>
<td>0.25</td>
<td>200</td>
<td>25±150 (25 mm steps)</td>
<td>±0.02</td>
<td>28</td>
</tr>
</tbody>
</table>

* RCP4CR : Cleanroom type (ISO class 4) only available with straight motor (model type RCP4CR-SA3C)

### Mini Rod Type

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<thead>
<tr>
<th>Motor Unit Type Description</th>
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<tr>
<td><strong>Tiny Coupling Rod Type</strong></td>
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<tr>
<td><strong>Tiny Motor-reversing Rod Type</strong></td>
<td>RA2BC</td>
<td>RA2BR</td>
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<td>Servo Motor</td>
<td>Ball Screw</td>
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<td>21.4</td>
<td>0.5</td>
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<td>200</td>
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</tr>
</tbody>
</table>

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## RCP3/4 RCA2 RCS2 RCD Series Mini Type Lineup

### Motor
- **Built-in Motor (Direct-coupled)**

### Guide
- **Tapped Hole Guide**
- **Double-with Rod Type Slide Unit**

### Encoder
- **Type Description Encoder**

### Model
- **RP3(4)(5)N**
- **RN3(4)(5)N**
- **GS3N**
- **RP5N**
- **GD5N**
- **SD4N**
- **SD5N**

### Motor Type
- **RCA2**, **RCA2**, **RCA2**, **RCA2**
- **RCA2**, **RCA2**, **RCA2**, **RCA2**
- **RCA2**, **RCA2**, **RCA2**, **RCA2**
- **RCA2**, **RCA2**, **RCA2**, **RCA2**

### Series
- **RN2N**, **RN4N**, **RN6N**
- **RP3N**, **RP4N**, **RP6N**
- **RP4N**, **RP6N**, **RP6N**
- **RP4N**, **RP6N**, **RP6N**

### Model Type
- **CR**, **CR**, **CR**, **CR**
- **W**, **W**, **W**, **W**

### Type
- **RCS2CR**, **RCS2CR**, **RCS2CR**, **RCS2CR**
- **RCS2CR**, **RCS2CR**, **RCS2CR**, **RCS2CR**
- **RCS2CR**, **RCS2CR**, **RCS2CR**, **RCS2CR**
- **RCS2CR**, **RCS2CR**, **RCS2CR**, **RCS2CR**

### Value inside < >: Max. speed with vertical usage
- *** RCA2CR, RSC2CR: Cleanroom type (ISO class 5) ** RCA2W, RSC2W: Dust/splash-proof type (IP52)

### Specifications
- **Series**
  - **Type**
  - **Encoder Type**
  - **Motor Type**
  - **Motor Size**
- **Feed Screw**
- **Load (mm)**
- **Rated Torque (N•m)**
- **Max. Load Capacity (kgf)**
- **Max. Speed (mm/min)**
- **Stroke (mm)**
- **Repeatability (mm)**
- **Weight (kg)**

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### Built-in Motor (Direct-coupled)

**Motor Type:** RCA2, RCS2CR, RSC2CR

**Type Description:** Motor

**Encoder:** Type Description Encoder

**Model:** RP3(4)(5)N, RN3(4)(5)N, GS3N, RP5N, GD5N, SD4N, SD5N

**Motor Type:** RCA2, RCA2CR, RCA2W

**Series:** RN2N, RN4N, RN6N, RP3N, RP4N, RP6N

**Service Motor (230V):**
- **Type:** Ball Screw
- **Load (mm):** 10, 79, 5, 1.5
- **Rated Torque (N•m):** 30, 50
- **Max. Load Capacity (kgf):** 380, 330
- **Max. Speed (mm/min):** 250, 200
- **Stroke (mm):** 50, 75
- **Repeatability (mm):** ±0.05, ±0.02
- **Weight (kg):** 28, 34

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- **Weight (kg):** 28, 34

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**Notes:**
- RCA2CR, RSC2CR: Cleanroom type (ISO class 5)
- RCA2W, RSC2W: Dust/splash-proof type (IP52)
- Value inside < >: Max. speed with vertical usage
# Mini Table Type

<table>
<thead>
<tr>
<th>Motor Unit</th>
<th>Type Description</th>
<th>Model</th>
<th>Encoder Type</th>
<th>Motor Type</th>
<th>Motor Size</th>
<th>Feed Screw</th>
<th>Load (N)</th>
<th>Rated Torque (Nm)</th>
<th>Max. Load Capacity (Nm)</th>
<th>Max. Speed (rpm)</th>
<th>Stroke (mm)</th>
<th>Repeatability (mm)</th>
<th>Width (mm)</th>
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<tbody>
<tr>
<td>Short Compact Table Type</td>
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<tr>
<td>Servo Motor (24 V)</td>
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<td>TCA3NA</td>
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<td>TCA5N</td>
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<tr>
<td>Short Wide Table Type</td>
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</tr>
<tr>
<td>Servo Motor (24 V)</td>
<td></td>
<td>TWA4NA</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Servo Motor (230 V)</td>
<td></td>
<td>TWASN</td>
<td></td>
<td></td>
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<tr>
<td>Short Flat Table Type</td>
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<td>TFA3NA</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Servo Motor (24 V)</td>
<td></td>
<td>TFA4NA</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Servo Motor (230 V)</td>
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<td>TFASN</td>
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</tr>
</tbody>
</table>

## Features
- Select from Tiny Motor Unit types and Short Length types having greatly reduced overall length.
- Select from Guide types with highly rigid/linear built-in guides and those without guides having drastically miniaturized main body sizes.

## Usage
- Used for raising/lowering products and jigs, pushing, clamping, etc.
### Mini Table Type

<table>
<thead>
<tr>
<th>Motor Unit</th>
<th>Type Description</th>
<th>Model</th>
<th>Encoder Type</th>
<th>Motor Type</th>
<th>Feed Screw</th>
<th>Load (min)</th>
<th>Rated Torque (N)</th>
<th>Max. Load Capacity (kg)</th>
<th>Max Speed (mm/s)</th>
<th>Stroke (mm)</th>
<th>Repeatability (mm)</th>
<th>Width (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCP3</td>
<td>Coupling Table Type</td>
<td>RCP3</td>
<td>TA3C</td>
<td>Pulse</td>
<td>Ball Screw</td>
<td>6</td>
<td>-0.7</td>
<td>-0.3</td>
<td>20 (&lt; 200)</td>
<td>20</td>
<td>±0.02</td>
<td>36</td>
</tr>
<tr>
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<td></td>
<td>RCP3</td>
<td>TA4C</td>
<td>Ball Screw</td>
<td>4</td>
<td>-1.4</td>
<td>-0.6</td>
<td>20 (&lt; 150)</td>
<td>100</td>
<td>5</td>
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<td></td>
</tr>
<tr>
<td>RCA2</td>
<td>Separate Motor (Removable)</td>
<td>RCA2</td>
<td>TA4C</td>
<td>servo</td>
<td>Ball Screw</td>
<td>2</td>
<td>-0.2</td>
<td>-1</td>
<td>200</td>
<td>300</td>
<td></td>
<td>40</td>
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<td>RCA2</td>
<td>TA4R</td>
<td>Ball Screw</td>
<td>3</td>
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<td>-1.5</td>
<td>300</td>
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<td>RCP3</td>
<td>Motor-reversing Table Type</td>
<td>RCP3</td>
<td>TA3R</td>
<td>Pulse</td>
<td>Ball Screw</td>
<td>6</td>
<td>-0.7</td>
<td>-0.3</td>
<td>20 (&lt; 200)</td>
<td>100</td>
<td>±0.02</td>
<td>72</td>
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<td></td>
<td>RCP3</td>
<td>TA4R</td>
<td>Ball Screw</td>
<td>4</td>
<td>-1.4</td>
<td>-0.6</td>
<td>20 (&lt; 150)</td>
<td>100</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCA2</td>
<td></td>
<td>RCA2</td>
<td>TA4R</td>
<td>servo</td>
<td>Ball Screw</td>
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<td>-0.2</td>
<td>-1</td>
<td>200</td>
<td>300</td>
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<td>81</td>
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<td>RCA2</td>
<td>TA4R</td>
<td>Ball Screw</td>
<td>3</td>
<td>-0.2</td>
<td>-1.5</td>
<td>300</td>
<td></td>
<td>81</td>
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</table>

Value inside < > : Max. speed with vertical usage

### Mini BLDC Motor Type

<table>
<thead>
<tr>
<th>Motor Unit</th>
<th>Type Description</th>
<th>Model</th>
<th>Encoder Type</th>
<th>Motor Type</th>
<th>Feed Screw</th>
<th>Load (min)</th>
<th>Rated Thrust/ Holding Force (N)</th>
<th>Max. Load Capacity (kg)</th>
<th>Max Speed (mm/s)</th>
<th>Stroke (mm)</th>
<th>Repeatability (mm)</th>
<th>Width (mm)</th>
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<tbody>
<tr>
<td>RCP3</td>
<td>Slim Brushless DC Motor Rod Type</td>
<td>RA1D</td>
<td>RA1D</td>
<td>BLDC</td>
<td>Lead Screw</td>
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<td>4.2</td>
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<td>0.3</td>
<td>300</td>
<td>10/20/30</td>
<td>Ø12</td>
</tr>
<tr>
<td></td>
<td>Combined Motor-to-Body System (Micro Cylinder)</td>
<td>RCD</td>
<td>GRSNA</td>
<td>Servo-Motor</td>
<td>Lead Screw + Grooved Cam</td>
<td>2</td>
<td>4.2</td>
<td>0.7</td>
<td>0.3</td>
<td>300</td>
<td>10/20/30</td>
<td>Ø12</td>
</tr>
</tbody>
</table>

### Features
- Comes equipped with an integrated guide that keeps overhung loads balanced
- Select from Compact, Short Length types and Separate Motor Unit types

### Usage
- Used for raising/lowering products and jigs, horizontal moving, and pushing (handles overhung loads from the main unit)

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## Mini BLDC Motor Type

- Equipped with a high acceleration/deceleration brushless DC motor capable of operation at up to 1G and a maximum speed of 300mm/s
- Available in Rod type and 2-finger Gripper type
- Adjustable Pushing and Gripping forces

### Usage
- Used for transfers requiring short cycle times, etc.
Operate using the same Signals used for Air Cylinder Solenoid Valves

**MEC & SEP Operating Methods**

MEC and SEP controllers (24VDC/230VAC) can be operated with the same signals used for air cylinder solenoid valves. Solenoid valves come in two types: Single solenoids and Double solenoids. The PMEC and PSEP/ASEP/DSEP support signals for both.

**Single solenoid**
- (Air cylinder)
- (PMEC, PSEP/ASEP/DSEP)

**Double solenoid**
- (Air cylinder)
- (PMEC, PSEP/ASEP/DSEP)

The actuator can also be moved among 3 points by switching the parameters.
Lineup of Controllers meeting various Applications, from 3-point Positioning Types controlled like Solenoid Valves to Network Types

You can choose a desired controller from those of various control methods, such as 3-point positioning types whose teaching and trial operation can be done using the controller's operation panel, multi-point positioning types supporting up to 512 positioning points, and network types that can be connected to various networks.

Since 3-point positioning types (3 position controller) can be operated with the same signal as the ones of solenoid valves, the device with the currently used air can be changed to an electric cylinder.

Refer to the table below for the various actuator models (series) and controllers that can be connected.

<table>
<thead>
<tr>
<th>Type of controller</th>
<th>Positioner type</th>
<th>Network type</th>
<th>Program type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3-position controller</td>
<td>512-position controller</td>
<td>Directly connectable to key field networks.</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>• Easy to operate, as the actuator can be operated simply by turning signals ON/OFF. • Can be operated using the same signals used for solenoid valves.</td>
<td>• Multi-point positioning to 512 points is possible. • Pulse-train control is also supported (only PCON, ACON, SCON).</td>
<td>• Standalone operation is possible without using a PLC or other host device. • Simultaneous control of up to 2 axes (PSEL, ASEL, SSEL) or 6 axes (XSEL, MSEL) is possible.</td>
</tr>
<tr>
<td><strong>RCP3/4</strong></td>
<td>PMEC</td>
<td>PCON</td>
<td>PSEL</td>
</tr>
<tr>
<td></td>
<td>PSEP</td>
<td>MSEP</td>
<td>MSEL</td>
</tr>
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<td><strong>RCA2</strong></td>
<td>ASEP</td>
<td>ACON</td>
<td>ASEL</td>
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<td>MSEP</td>
<td>MSEL</td>
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<td><strong>RCS2</strong></td>
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<td>XSEL</td>
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<td>MSEP</td>
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