IAI
Quality and Innovation

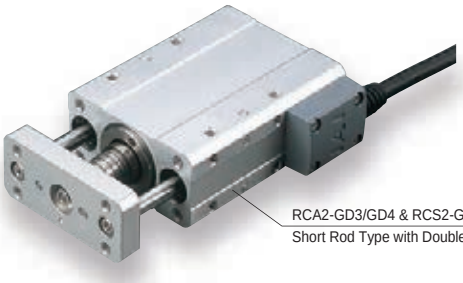
Product Overview
24 VDC Pulse/Servo Motor & 230 VAC Servo Motor
Mini RoboCylinder with dedicated Controller

GB

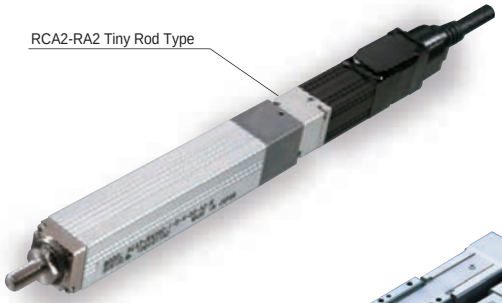
RoboCylinder Miniature Models

4th Revised Edition

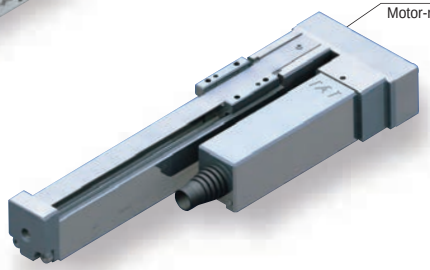
ROBO CYLINDER



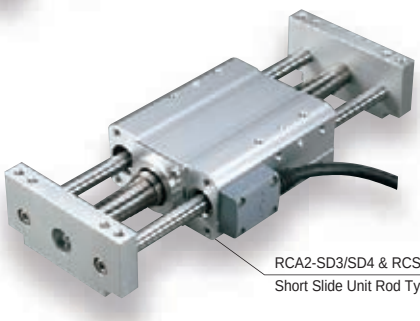
RCA2-GD3/GD4 & RCS2-GD5
Short Rod Type with Double Guide



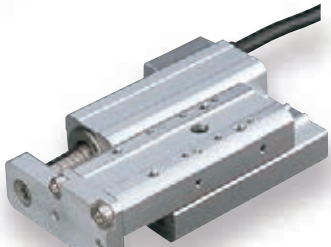
RCA2-RA2 Tiny Rod Type



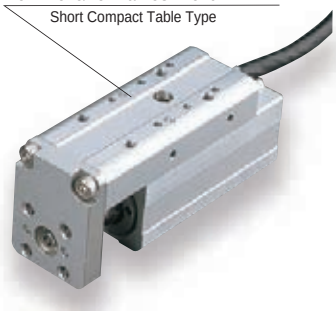
RCP3-SA2R Tiny Slider Type
Motor-reversing specification



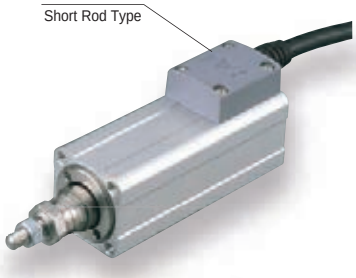
RCA2-SD3/SD4 & RCS2-SD5
Short Slide Unit Rod Type with Double Guide



RCA2-TFA3/TFA4 & RCS2-TFA5
Short Flat Table Type

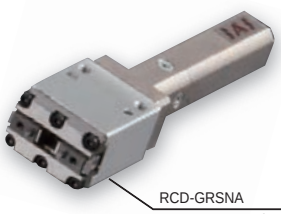


RCA2-TCA3/TCA4 & RCS2-TCA5
Short Compact Table Type

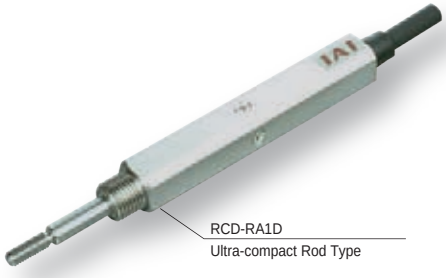


RCA2-RP3/RP4
& RCS2-RP5
Short Rod Type

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



RCD-GRSNA
Utra-compact Gripper Type



RCD-RA1D
Ultra-compact Rod Type

RCP3/4 RCP4CR | RCA2 RCA2CR RCA2W | RCS2 RCS2CR RCS2W | RCD

green automation
GO ELECTRIC
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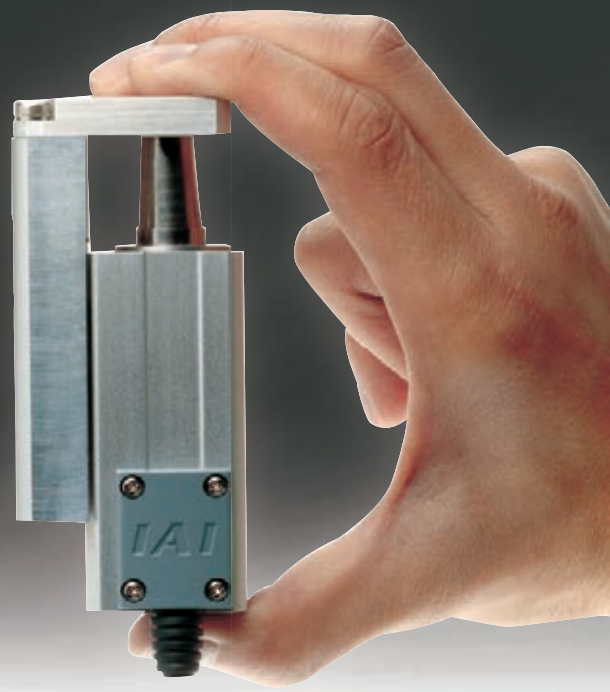
Electric Cylinders of Miniature Size

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**

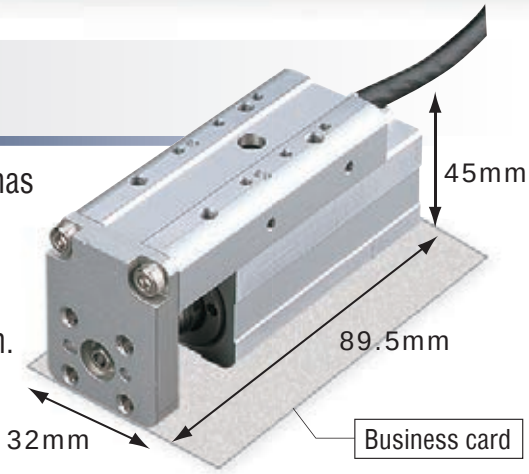
ROBO CYLINDER



Space Saving

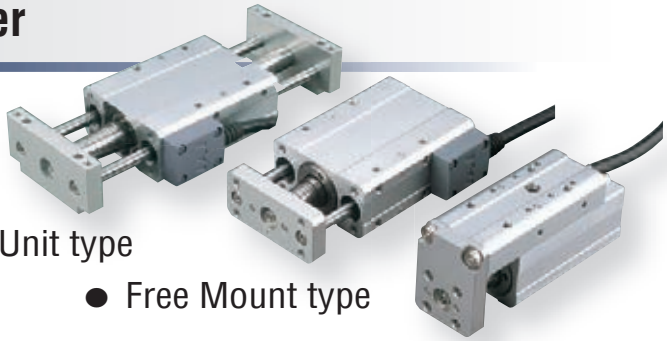
Incorporating a newly developed motor, the Mini RoboCylinder has achieved smaller size with significantly reduced overall length, width and height which are comparable to air cylinders.
Systems that could only use air cylinders previously due to size constraints, can now benefit from IAI's electromechanical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

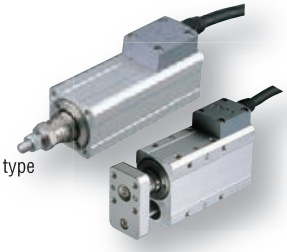


- Slide Unit type
- Free Mount type
- Table type

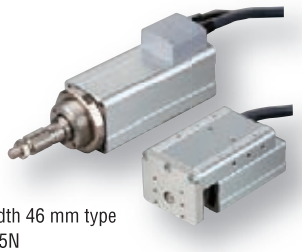
Wide Range of Model Variations

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.

Slim BLDC Motor type
RCD-RA1D

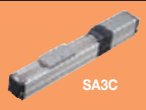


Short ball screw type
RCA2-□□3NA
RCA2-□□4NA
50 mm stroke



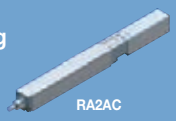
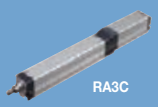
Actuator width 46 mm type
RCS2-□□5N

Mini Slider Type

Motor Unit	Type Description	Model: Series	Model: Type	Encoder Type	Motor: Motor Type	Motor: Motor Size	Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg): Horizontal	Max. Load Capacity (kg): Vertical	Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)
Separate Motor (Removable)	Tiny Coupling Slider Type SA2AC	RCP3	SA2AC SA2AR	Incremental	Pulse Motor	20□	Lead Screw	4	—	0.25	—	200	25~100 (25-mm steps)	±0.05	22
								2	—	0.5	—	100			
								1	—	1	—	50			
			SA2BC SA2BR					6	—	0.25	—	300	25~150 (25-mm steps)		28
								4	—	0.5	—	200			
								2	—	1	—	100			
	Tiny Motor-reversing Slider Type SA2A(B)R	RCA2	SA2AC SA2AR		Servo Motor	5W	Ball Screw	4	21.4	0.5	0.25	200	25~100 (25-mm steps)	±0.02	20
								2	42.3	1	0.5	100			
								1	85.5	2	1	50			
Built-in Motor (Direct-coupled)	Tiny Coupling PowerCon Slider Type  SA3C	RCP4 RCP4CR*	SA3C	Incremental	High-end Pulse Motor	28□	Ball Screw	6	—	3	1.5	420	25~300 (25-mm steps)	±0.02	32
								4	—	5	2.5	280			
								2	—	8	3.5	140			
	Tiny Motor-reversing PowerCon Slider Type SA3R		SA3R					6	—	3	1.5	420			
								4	—	5	2.5	280			
								2	—	8	3.5	140			

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

Mini Rod Type

Motor Unit	Type Description	Model: Series	Model: Type	Encoder Type	Motor: Motor Type	Motor: Motor Size	Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg): Horizontal	Max. Load Capacity (kg): Vertical	Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)
Separate Motor (Removable)	Tiny Coupling Rod Type  RA2AC	RCP3	RA2AC RA2AR	Incremental	Pulse Motor	20□	Lead Screw	4	—	0.25	0.125	200	25~100 (25-mm steps)	±0.05	22
								2	—	0.5	0.25	100			
								1	—	1	0.5	50			
							Ball Screw	4	—	0.5	0.2	200		±0.02	
								2	—	1	0.375	100			
								1	—	2	0.75	50			
						20□ High-load		4	—	1	0.325	200			
								2	—	2	0.625	100			
								1	—	4	1.25	50			
			RA2BC RA2BR			20□	Lead Screw	6	—	0.25	0.125	300	25~150 (25-mm steps)	±0.05	28
								4	—	0.5	0.25	200			
								2	—	1	0.5	100			
							Ball Screw	6	—	0.5	0.2	300		±0.02	
								4	—	1	0.375	200			
								2	—	2	0.75	100			
								1	—	4	1.5	50			
						20□ High-load		6	—	1	0.325	300			
								4	—	2	0.625	200			
								2	—	4	1.25	100			
								1	—	8	2.5	50			
	Tiny Motor-reversing Rod Type RA2A(B)R	RCA2	RA2AC RA2AR		Servo Motor	5W	Ball Screw	4	21.4	0.5	0.25	200	25~100 (25-mm steps)	±0.02	18
								2	42.3	1	0.5	100			
								1	85.5	2	1	50			
Built-in Motor (Direct-coupled)	Tiny Coupling PowerCon Rod Type  RA3C	RCP4	RA3C	Incremental	High-end Pulse Motor	28□	Ball Screw	16	—	6	1.5	1120	25~300 (25-mm steps)	±0.02	32
								10	—	12	2.5	700			
								5	—	24	5	350			
								2.5	—	36	10	175			
	Tiny Motor-reversing PowerCon Rod Type RA3R		RA3R					16	—	5	1	1120			
								10	—	12	2.5	700			
								5	—	24	5	350			
								2.5	—	36	10	175			

Mini Rod Type

Motor Unit	Type Description	Model Series	Model Type	Encoder Type	Motor Type	Motor Size	Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg) Horizontal	Max. Load Capacity (kg) Vertical	Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)
Built-in Motor (Direct-coupled)	Short Fixed Nut Rod Type RN3(4)(5)N	RCA2	RN3N RP3N	Inkremental	Servo Motor (24V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	28
								2	50.3	0.5	0.25	100			
								1	100.5	1	0.5	50			
		RCA2 RCA2CR* RCA2W**					Ball Screw	4	42.7	0.75	0.25	200		±0.02	
								2	85.5	1.5	0.5	100			
								1	170.9	3	1	50			
	Short Tapped Hole Rod Type RP3(4)(5)N	RCA2	RN4N RP4N			20W	Lead Screw	6	19.9	0.25	0.125	300	30 50	±0.05	34
								4	29.8	0.5	0.25	200			
								2	59.7	1	0.5	100			
		RCA2 RCA2CR* RCA2W**					Ball Screw	6	33.8	2	0.5	300		±0.02	
								4	50.7	3	0.75	200			
								2	101.5	6	1.5	100			
		RCS2 RCS2CR* RCS2W**	RN5N RP5N		Servo Motor (230V)	60W	Ball Screw	10	89	5	1.5	380<330>	50 75	±0.02	46
								5	178	10	3	250			
								2.5	356	20	6	125			
	Short Free Mount Rod Type with Single-Guide	RCA2	GS3N		Servo Motor (24V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	28
								2	50.3	0.5	0.25	100			
								1	100.5	1	0.5	50			
		RCA2 RCA2CR* RCA2W**					Ball Screw	4	42.7	0.75	0.25	200		±0.02	
								2	85.5	1.5	0.5	100			
								1	170.9	3	1	50			
		RCA2	GS4N			20W	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	34
								4	29.8	0.5	0.25	200			
								2	59.7	1	0.5	100			
		RCA2 RCA2CR* RCA2W**					Ball Screw	6	33.8	2	0.5	270 <220>		±0.02	
								4	50.7	3	0.75	200			
								2	101.5	6	1.5	100			
		RCS2 RCS2CR* RCS2W**	GS5N		Servo Motor (230V)	60W	Ball Screw	10	89	5	1.5	380 <330>	50 75	±0.02	46
								5	178	10	3	250			
								2.5	356	20	6	125			
	Short Free Mount Rod Type with Double-Guide	RCA2	GD3N		Servo Motor (24V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	28
								2	50.3	0.5	0.25	100			
								1	100.5	1	0.5	50			
		RCA2 RCA2CR* RCA2W**					Ball Screw	4	42.7	0.75	0.25	200		±0.02	
								2	85.5	1.5	0.5	100			
								1	170.9	3	1	50			
		RCA2	GD4N			20W	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	34
								4	29.8	0.5	0.25	200			
								2	59.7	1	0.5	100			
		RCA2 RCA2CR* RCA2W**					Ball Screw	6	33.8	2	0.5	270 <220>		±0.02	
								4	50.7	3	0.75	200			
								2	101.5	6	1.5	100			
		RCS2 RCS2CR* RCS2W**	GD5N		Servo Motor (230V)	60W	Ball Screw	10	89	5	1.5	380 <330>	50 75	±0.02	46
								5	178	10	3	250			
								2.5	356	20	6	125			
	Short Slide Unit Rod Type with Double-Guide	RCA2	SD3N		Servo Motor (24V)	10W	Lead Screw	4	25.1	0.25	0.125	200	25 50	±0.05	60
								2	50.3	0.5	0.25	100			
								1	100.5	1	0.5	50			
		RCA2 RCA2CR* RCA2W**					Ball Screw	4	42.7	0.75	0.25	200		±0.02	
								2	85.5	1.5	0.5	100			
								1	170.9	3	1	50			
		RCA2	SD4N			20W	Lead Screw	6	19.9	0.25	0.125	300	25 50 75	±0.05	72
								4	29.8	0.5	0.25	200			
								2	59.7	1	0.5	100			
		RCA2 RCA2CR* RCA2W**					Ball Screw	6	33.8	2	0.5	300		±0.02	
								4	50.7	3	0.75	200			
								2	101.5	6	1.5	100			
		RCS2 RCS2CR* RCS2W**	SD5N		Servo Motor (230V)	60W	Ball Screw	10	89	5	1.5	380 <330>	50 75	±0.02	94
								5	178	10	3	250			
								2.5	356	20	6	125			

* RCA2CR, RSC2CR : Cleanroom type (ISO class 5) ** RCA2W, RSC2W : Dust/splash-proof type (IP52)

Value inside < > : Max. speed with vertical usage

Mini Table Type

Motor Unit	Type Description	Model Series	Model Type	Encoder Type	Motor Type	Motor Size	Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg) Horizontal	Max. Load Capacity (kg) Vertical	Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)
Built-in Motor (Direct-coupled)	Short Compact Table Type	RCA2	TCA3NA	Incremental	Servo Motor (24 V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	32
								2	50.3	0.5	0.25	100			
								1	100.5	1	0.5	50			
							Ball Screw	4	42.7	0.75	0.25	200		±0.02	
								2	85.5	1.5	0.5	100			
								1	170.9	3	1	50			
			TCA4NA			20W	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	36
								4	29.8	0.5	0.25	200			
								2	59.7	1	0.5	100			
							Ball Screw	6	33.8	2	0.5	270(220)		±0.02	
								4	50.7	3	0.75	200			
								2	101.5	6	1.5	100			
		RCS2	TCA5N		Servo Motor (230 V)	60W	Ball Screw	10	89	5	1.5	380(330)	50 75	±0.02	48
								5	178	10	3	250			
								2.5	356	20	6	125			
	Short Wide Table Type	RCA2	TWA3NA		Servo Motor (24 V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	50
								2	50.3	0.5	0.25	100			
								1	100.5	1	0.5	50			
							Ball Screw	4	42.7	0.75	0.25	200		±0.02	
								2	85.5	1.5	0.5	100			
								1	170.9	3	1	50			
			TWA4NA			20W	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	58
								4	29.8	0.5	0.25	200			
								2	59.7	1	0.5	100			
							Ball Screw	6	33.8	2	0.5	270(220)		±0.02	
								4	50.7	3	0.75	200			
								2	101.5	6	1.5	100			
		RCS2	TWA5N		Servo Motor (230 V)	60W	Ball Screw	10	89	5	1.5	380(330)	50 75	±0.02	80
								5	178	10	3	250			
								2.5	356	20	6	125			
	Short Flat Table Type	RCA2	TFA3NA		Servo Motor (24 V)	10W	Lead Screw	4	25.1	0.25	0.125	200	30 50	±0.05	61
								2	50.3	0.5	0.25	100			
								1	100.5	1	0.5	50			
							Ball Screw	4	42.7	0.75	0.25	200		±0.02	
								2	85.5	1.5	0.5	100			
								1	170.9	3	1	50			
			TFA4NA			20W	Lead Screw	6	19.9	0.25	0.125	220	30 50	±0.05	71
								4	29.8	0.5	0.25	200			
								2	59.7	1	0.5	100			
							Ball Screw	6	33.8	2	0.5	270(220)		±0.02	
								4	50.7	3	0.75	200			
								2	101.5	6	1.5	100			
		RCS2	TFA5N		Servo Motor (230 V)	60W	Ball Screw	10	89	5	1.5	380(330)	50 75	±0.02	95
								5	178	10	3	250			
								2.5	356	20	6	125			

Value inside < > : Max. speed with vertical usage

Mini Slider Type

Features

- The motor can easily perform switching operations for the unit model.
- Select from Side-Mounted Motor type with a reduced total length and Tiny Straight type (Coupling type).

Usage

Used for jig and workpiece positioning, table travel, etc

Mini Rod Type

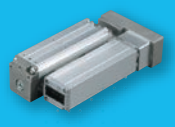
Features

- 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

Motor Unit	Type Description	Model: Series	Model: Type	Encoder Type	Motor: Motor Type	Motor: Motor Size	Feed Screw	Lead (mm)	Rated Thrust (N)	Max. Load Capacity (kg): Horizontal	Max. Load Capacity (kg): Vertical	Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)
Separate Motor (Removable)	Coupling Table Type	RCP3	TA3C	Incremental	Pulse Motor	20□	Ball Screw	6	—	~0.7	~0.3	300 <200>	20~100 (10-mm steps)	±0.02	36
								4	—	~1.4	~0.6	200 <133>			
								2	—	~2	~1	100 <67>			
			TA4C			28□		6	—	~1	~0.5	300			40
								4	—	~2	~1	200			
								2	—	~3	~1.5	100			
		RCA2	TA4C		Servo Motor	10W	Ball Screw	6	—	1	0.5	300			40
								4	—	2	1	200			
								2	—	3	1.5	100			
	Motor-reversing Table Type 	RCP3	TA3R		Pulse Motor	20□	Ball Screw	6	—	~0.7	~0.3	300 <200>			72
								4	—	~1.4	~0.6	200 <133>			
								2	—	~2	~1	100 <67>			
			TA4R			28□		6	—	~1	~0.5	300			81
								4	—	~2	~1	200			
								2	—	~3	~1.5	100			
		RCA2	TA4R		Servo Motor	10W	Ball Screw	6	—	1	0.5	300			81
								4	—	2	1	200			
								2	—	3	1.5	100			

Value inside < > : Max. speed with vertical usage

Mini BLDC Motor Type

Motor Unit	Type Description	Model: Series	Model: Type	Encoder Type	Motor: Motor Type	Motor: Motor Size	Feed Screw	Lead (mm)	Rated Thrust/ Gripping Force (N)	Max. Load Capacity (kg): Horizontal	Max. Load Capacity (kg): Vertical	Max. Speed (mm/s)	Stroke (mm)	Repeat-ability (mm)	Width (mm)
Combined Motor-to-Body System (Micro Cylinder)	Slim Brushless DC Motor Rod Type	RCD	RA1D	Incremental	BLDC Servo-Motor	2.5W	Lead Screw	2	4.2	0.7	0.3	300	10 20 30	±0.05	ø12
	Slim Brushless DC Motor Gripper Type		GRSNA				Lead Screw + Grooved Cam	2	10 (5 per side)	—	—	67	4 (2 per side)		22

Mini Table Type

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)

Mini BLDC Motor Type

Features
- 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.

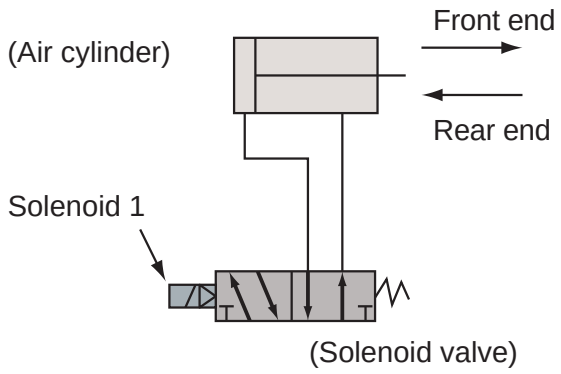
Operate using the same Signals used for Air Cylinder Solenoid Valves

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.

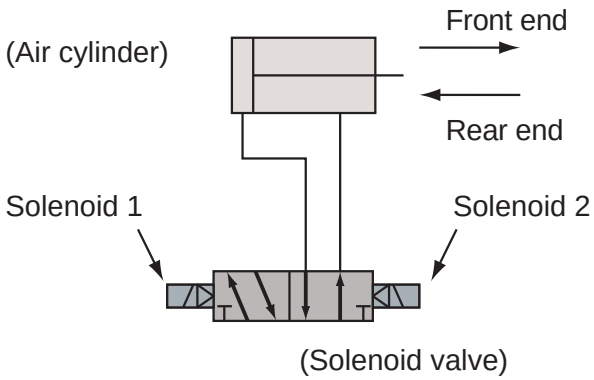
■ When using an air cylinder solenoid valve:

<Single solenoid>



Signal to solenoid 1	Rod movement
ON	Front end
OFF	Rear end

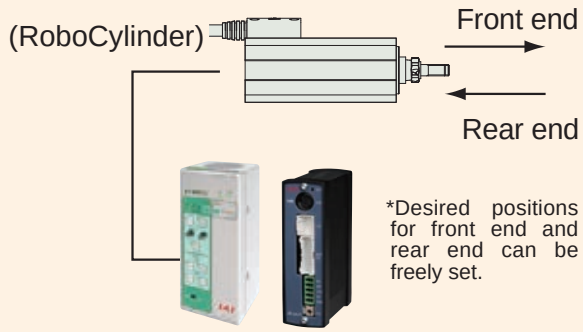
<Double solenoid>



Signal to solenoid 1	Signal to solenoid 2	Rod movement
ON	OFF	Front end
OFF	ON	Rear end

■ PMEC, PSEP/ASEP/DSEP:

<Replacement of single solenoid>

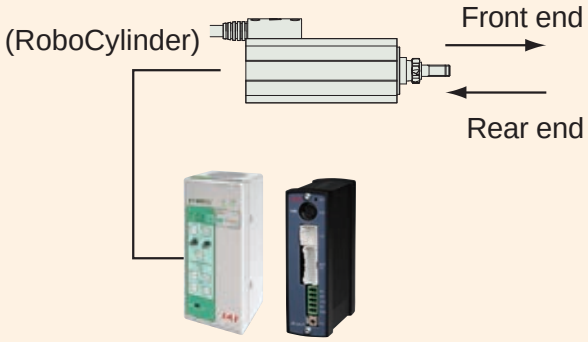


*Desired positions for front end and rear end can be freely set.

(PMEC, PSEP/ASEP/DSEP)

Signal to controller Input 0	Rod movement
ON	Front end
OFF	Rear end

<Replacement of double solenoid>



(PMEC, PSEP/ASEP/DSEP)

Signal to controller Input 1	Signal to controller Input 0	Rod movement
ON	OFF	Front end
OFF	ON	Rear end

* 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.

Type of controller	Positioner type		Network type	Program type
	3-position controller	512-position controller		
Features	• 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.	• Multi-point positioning to 512 points is possible. • Pulse-train control is also supported (only PCON, ACON, SCON).	• Directly connectable to key field networks. • Coordinate values can be specified directly using numeric values to move the actuator. • The current position and axis condition can be checked with a host device.	• 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.
RCP3/4	PMEC PSEP	PCON MSEP	PCON MSEP MCON	PSEL MSEL
RCA2	ASEP	ACON MSEP	ACON MSEP MCON	ASEL
RCS2		SCON	SCON MSCON	SSEL XSEL
RCD	DSEP	DCON MSEP	MSEP MCON	

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