RCAW-RA4C/RA4D/RA4R

Robo Cylinder, Splash-Proof Rod Type, ø37mm Diameter, 24V Servo Motor, Coupled/Built-In/Side-Mounted Motor Specification

Model Specification Items

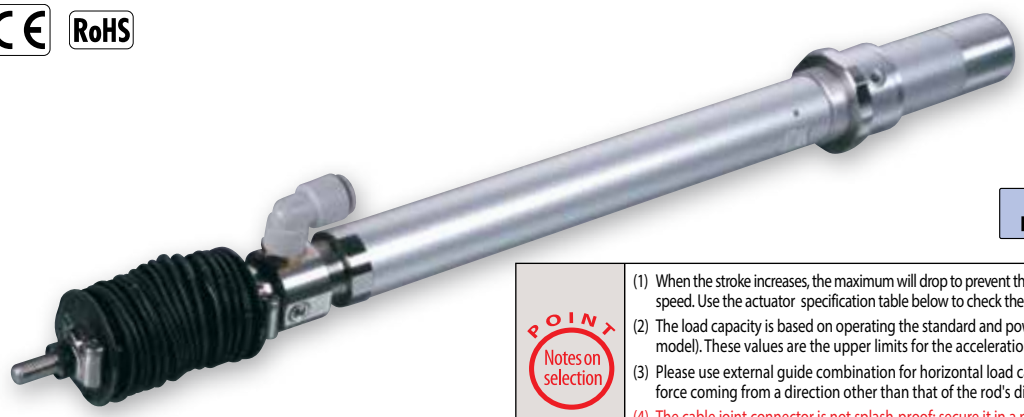
RCAW — Series — [ ] Type — [ ] Encoder type — [ ] Motor type — [ ] Lead — [ ] Stroke — [ ] Applicable controller — [ ] Cable length — [ ] Options

- Type: RA4C: Coupled type; RA4D: Built-in; RA4R: Side-mounted motor
- Encoder type: I: Incremental; A: Absolute. * The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental.
- Motor type: 20: 20W Servo motor; 30: 30W Servo motor
- Lead: 12: 12mm; 6: 6mm; 3: 3mm
- Stroke: 50: 50mm ~ 300: 300mm (50mm pitch increments)
- Applicable controller: A1: ACON, ASEL, A3: AMEC, ASEP, MSEP
- Cable length: N: None; P: 1m; S: 3m; M: 5m; X□□: Custom Length; R□□: Robot Cable
- Options: See Options below.

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

CE RoHS

Power-saving



*Please note that the bellows shape has some change from the photo above.

Technical References — Appendix P.5

POINT — Notes on selection

(1) When the stroke increases, the maximum will drop to prevent the ball screw from reaching the critical rotational speed. Use the actuator specification table below to check the maximum speed at the stroke you desire.
(2) The load capacity is based on operating the standard and power-saving models at 0.3G (0.2G for 3mm-lead model). These values are the upper limits for the acceleration.
(3) Please use external guide combination for horizontal load capacity; the value is for when no external force coming from a direction other than that of the rod's direction of travel is applied.
(4) The cable joint connector is not splash-proof; secure it in a place that is not prone to water spills.
(5) See page A-71 for details on push motion.

Actuator Specifications

■ Lead and Payload

Model number	Motor output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated thrust (N)	Stroke (mm)
RCAW-①-②-20-12-③-④-⑤-⑥	20	12	3.0	1.0	18.9	50~300 (every 50mm)
RCAW-①-②-20-6-③-④-⑤-⑥		6	6.0	2.0	37.7	
RCAW-①-②-20-3-③-④-⑤-⑥		3	12.0	4.0	75.4	
RCAW-①-②-30-12-③-④-⑤-⑥	30	12	4.0	1.5	28.3	
RCAW-①-②-30-6-③-④-⑤-⑥		6	9.0	3.0	56.6	
RCAW-①-②-30-3-③-④-⑤-⑥		3	18.0	6.5	113.1	

■ Stroke and Maximum Speed

Lead \ Stroke	50~300 (every 50mm)
12	600
6	300
3	150

(Unit: mm/s)

Code explanation ① Type ② Encoder ③ Stroke ④ Applicable controller ⑤ Cable Length ⑥ Options

*See page A-71 for details on push motion.

②Encoder/ ③Stroke

③Stroke (mm)	Standard price							
	RA4C/RA4D				RA4R			
	②Encoder Type				②Encoder Type			
	Incremental		Absolute		Incremental		Absolute	
	Motor power output		Motor power output		Motor power output		Motor power output	
	20W	30W	20W	30W	20W	30W	20W	30W
50	—	—	—	—	—	—	—	—
100	—	—	—	—	—	—	—	—
150	—	—	—	—	—	—	—	—
200	—	—	—	—	—	—	—	—
250	—	—	—	—	—	—	—	—
300	—	—	—	—	—	—	—	—

⑤Cable Length

Type	Cable symbol	Standard Price
Standard	**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.

⑥Options

Name	Option code	See page	Standard price
Brake (*1)	**B**	→ A-42	—
Flange bracket	**FL**	→ A-45	—
Foot bracket (front)	**FT**	→ A-49	—
Home sensor (*2)	**HS**	→ A-50	—
Power-saving	**LA**	→ A-52	—
Knuckle joint	**NJ**	→ A-53	—
Non-motor end specification (*2)	**NM**	→ A-52	—
Clevis bracket (*3)	**QR**	→ A-53	—
Rear mounting plate (*3)	**RP**	→ A-54	—
Trunnion bracket (front) (*4)	**TRF**	→ A-57	—
Trunnion bracket (rear) (*4)	**TRR**	→ A-58	—

(*1) No brake option for RA4D.
(*2) The home sensor (HS) cannot be used on the Non-motor end models (NM).
(*3) Clevis bracket and rear mounting plate only available for RA4R.
(*4) Trunnion bracket (rear) only available for RA4C/RA4D.

Actuator Specifications

Item	Description
Drive System	Ball screw, ø10mm, rolled C10
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Base	Material: Aluminum, white alumite treated
Rod diameter	ø20mm
Non-rotating accuracy of rod	±1.0 deg
Protection structure	IP54
Ambient operating temperature, humidity	0 to 40°C, 85% RH or less (Non-condensing)

Dimensional Drawings

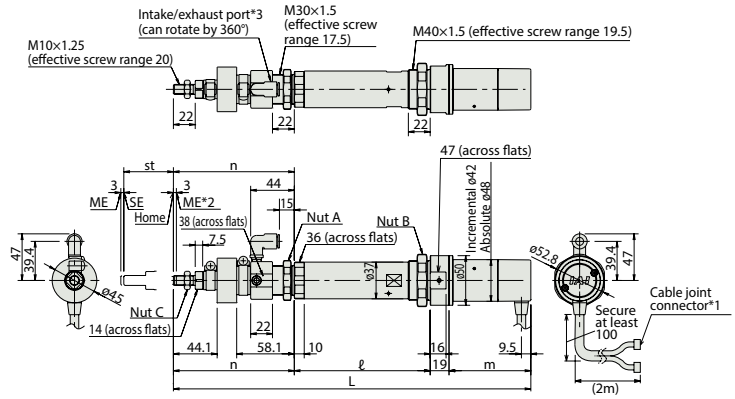
CAD drawings can be downloaded from the website. www.intelligentactuator.com

2D CAD 3D CAD (Note) No 3D CAD data for RA4D type.

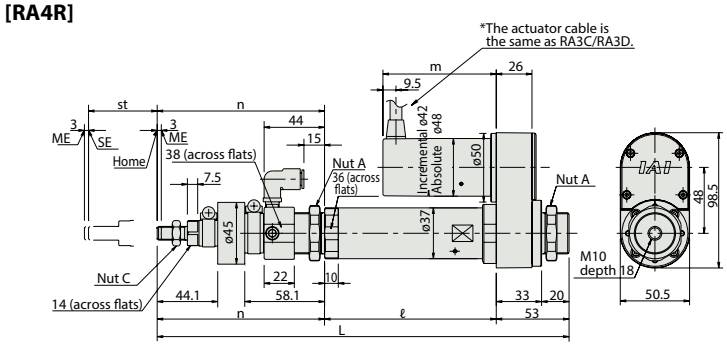
For Special Orders Appendix P.15

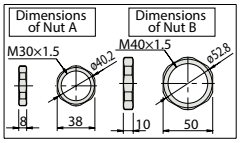
(*1) Connect the motor and encoder cables here. See page A-59 for details on cables.
(*2) After homing, the slider moves to the ME, therefore, please watch for any interference with surrounding objects.
ME : Mechanical end SE : Stroke end
(*3) Intake/exhaust port is the air exhaust tube in the main body. Insert OD ø10 mm tube and use it extended to a place that is not prone to water spills or intake.

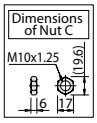
[RA4C/RA4D]



[RA4R]







Note:
Please don't apply an external force coming from a direction other than that of the rod's direction of travel. The detent may break if a force is applied other than in the direction of travel or a torque is applied to the rod.

■ Dimensions and Weight by Stroke

RCAW-RA4C/RA4D/RA4R (without brake)

Stroke				50	100	150	200	250	300
L	RA4C	20W	Incremental	345.4	405.4	465.4	525.4	586.4	647.4
			Absolute	358.4	418.4	478.4	538.4	599.4	660.4
		30W	Incremental	360.4	420.4	480.4	540.4	601.4	662.4
			Absolute	373.4	433.4	493.4	553.4	614.4	675.4
	RA4D	20W	Incremental	323.4	383.4	443.4	503.4	564.4	625.4
			Absolute	336.4	396.4	456.4	516.4	577.4	638.4
		30W	Incremental	338.4	398.4	458.4	518.4	579.4	640.4
			Absolute	351.4	411.4	471.4	531.4	592.4	653.4
	RA4R	20W	Incremental	299.9	359.9	419.9	479.9	540.9	601.9
			Absolute	299.9	359.9	419.9	479.9	540.9	601.9
		30W	Incremental	299.9	359.9	419.9	479.9	540.9	601.9
			Absolute	299.9	359.9	419.9	479.9	540.9	601.9
ℓ	RA4C	20W	Incremental Absolute Common	137	187	237	287	337	387
		30W		137	187	237	287	337	387
	RA4D	20W		137	187	237	287	337	387
		30W		137	187	237	287	337	387
	RA4R	20W		125	175	225	275	325	375
		30W		125	175	225	275	325	375
m	RA4C	20W	Incremental	67.5					
			Absolute	80.5					
		30W	Incremental	82.5					
			Absolute	95.5					
	RA4D	20W	Incremental	45.5					
			Absolute	58.5					
		30W	Incremental	60.5					
			Absolute	73.5					
	RA4R	20W	Incremental	67.5					
			Absolute	80.5					
		30W	Incremental	82.5					
			Absolute	95.5					
n	RA4C	20W	Incremental Absolute Common	121.9	131.9	141.9	151.9	162.9	173.9
		30W		121.9	131.9	141.9	151.9	162.9	173.9
	RA4D	20W		121.9	131.9	141.9	151.9	162.9	173.9
		30W		121.9	131.9	141.9	151.9	162.9	173.9
	RA4R	20W		121.9	131.9	141.9	151.9	162.9	173.9
		30W		121.9	131.9	141.9	151.9	162.9	173.9
Weight (Kg)	RA4C	20W/30W		1.4	1.5	1.7	1.8	2.0	2.1
	RA4D	20W/30W		1.3	1.5	1.6	1.8	1.9	2.1
	RA4R	20W/30W		1.5	1.7	1.8	2.0	2.1	2.3

* Adding a brake increases the RA4C type's overall length by 43mm. Adding a brake also increases the RA4R type's motor portion length by 43mm. However, the overall length does not change because the type is a Side-Mounted type. No brake setting for the RA4D type. Also the weight increases by 0.2kg for all types.

④Applicable Controllers

RCAW 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
Solenoid Valve Type		AMEC-C-20Ⅰ-Ⅲ-2-1 AMEC-C-30Ⅰ-Ⅲ-2-1	Easy-to-use controller, even for beginners	3 points	AC100V	2.4A rated	—	→ P537
		ASEP-C-20Ⅰ-Ⅲ-2-0 ASEP-C-30Ⅰ-Ⅲ-2-0	Simple controller operable with the same signal as a solenoid valve		DC24V	(Standard) 20W 1.3A rated 4.4A max. 30W 1.3A rated 4.4A max. (Power-saving) 20W 1.3A rated 2.5A max. 30W 1.3A rated 2.2A max.	—	→ P547
Solenoid valve multi-axis type PIO specification		MSEP-C-Ⅴ-~~-Ⅲ-2-0	Positioner type based on PIO control, allowing up to 8 axes to be connected				—	→ P563
Solenoid valve multi-axis type Network specification		MSEP-C-Ⅴ-~~-Ⓥ-0-0	Field network-ready positioner type, allowing up to 8 axes to be connected	256 points				
Positioner type		ACON-C-20Ⅰ-Ⅲ-2-0 ACON-C-30Ⅰ-Ⅲ-2-0	Positioning is possible for up to 512 points	512 points			—	→ P631
Safety-Compliant Positioner Type		ACON-CG-20Ⅰ-Ⅲ-2-0 ACON-CG-30Ⅰ-Ⅲ-2-0					—	
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20Ⅰ-Ⅲ-2-0 ACON-PL-30Ⅰ-Ⅲ-2-0	Pulse train input type with differential line driver support	(—)			—	
Pulse Train Input Type (Open Collector)		ACON-PO-20Ⅰ-Ⅲ-2-0 ACON-PO-30Ⅰ-Ⅲ-2-0	Pulse train input type with open collector support				—	
Serial Communication Type		ACON-SE-20Ⅰ-N-0-0 ACON-SE-30Ⅰ-N-0-0	Dedicated Serial Communication	64 points			—	
Program Control Type		ASEL-CS-1-20Ⅰ-Ⅲ-2-0 ASEL-CS-1-30Ⅰ-Ⅲ-2-0	Programmed operation is possible. Can operate up to 2 axes	1,500 points			—	→ P675

* This is for the single-axis ASEL.
* Ⅲ indicates I/O type (NP/PN).
* Ⅰ indicates encoder type (I: incremental, A: absolute)
* Ⅴ indicates number of axes (1 to 8).
* Enter the code "LA" in Ⅲ when the power-saving option is specified.
* Ⓥ indicates field network specification symbol.