RCS2-RA13R

(Servo press specification)

Battery-less absolute | Side-mounted motor | Body width 130 mm | 200V AC servo motor | 750 W

Model Specification ItemsItems

RCS2 – RA13R – WA – 750 – [ ] – [ ] – T2 – [ ] – [ ]

Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
		WA: Battery-less Absolute	750: Servo motor 750W	2.5: 2.5mm 1.25: 1.25mm	100 (50mm) ~ 200 (200mm) (Every 50mm)	T2: SCON	N: None P: 1m S: 3m M: 5m X□□: Specified length R□□: Robot cable	Refer to the option table below.

CE RoHS

Horizontal | Vertical | Side | Ceiling

(Note) The above photo shows the side-mounted to the top with the cable exit direction top specification (MT1).

POINT Selection Notes

(1) For push-motion operations, the continuous operation time is determined by the pushing force to be set. Also for the normal operations, make sure that the continuous operational thrust force considering load and duty is less than the allowable continuous operational thrust force, and that the duty is less than 50%. Refer to the "Correlation Diagram of Push Force and Current Limit Value."
(2) The value of payload is when operating at an acceleration of 0.02G for lead 2.5 and 0.01G for lead 1.25. The value listed above is the upper limit of acceleration.
(3) Customer's tooling is to be mounted on the load cell itself. Install an external guide to avoid radial and moment loads on the load cell. The value of the horizontal payload assumes that there is an external guide and that the rod is not subjected to external force other than in the moving direction.
(4) For the brake option, a brake box (See P.5-60) is required in addition to the main unit and controller.
(5) Cannot be used for operations when tensile load is applied to the load cell.
(6) Precautions are necessary depending on the installation posture.
(7) The horizontal payload in the "main specifications" shows in the case of using an external guide.

Stroke and Max Speed

Lead \ Stroke	50	100	150	200
2.5	85	120	125	
1.25	62			

(Unit: mm/s)

Stroke

Stroke (mm)	1t Type (Lead 2.5)	2t Type (Lead 1.25)
50	○	○
100	○	○
150	○	○
200	○	○

Option

* Please check the Options reference pages to confirm each option.

Name	Option code	Reference page
Brake (with brake box)	**B**	5-69
Brake (without brake box) (Note 1)	**BN**	5-69
Flange (front) (Note 2)	**FL**	5-69
Foot bracket (Notes 3 & 6)	**FT**	5-70
With load cell (with cable track for wiring) (Notes 2 & 4)	**LCT**	5-71
With load cell (without cable track for wiring) (Note 4)	**LCN**	5-71
Motor side-mounted (top) (Note 5)	**MT1/MT2/MT3**	5-72
Motor side-mounted (right) (Notes 5 & 6)	**MR1/MR2**	5-72
Motor side-mounted (left) (Notes 5 & 6)	**ML1/ML3**	5-72

(Note 1) A cable must be purchased separately when the brake (without brake box) "BN" is selected and used as the second axis of the brake box. Refer to P.7-206 for details.
(Note 2) The load cell option (with cable track for wiring) "LCT" and the flange option "FL" cannot be selected at the same time.
(Note 3) Refer to P.5-71 for the quantity of brackets included.
(Note 4) Make sure to specify either code in the option column of the model specification items.
(Note 5) Make sure to specify either code in the option column of the model specification items.
(Note 6) FT cannot be selected together with MR1/MR2/ML1/ML3.

Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**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)

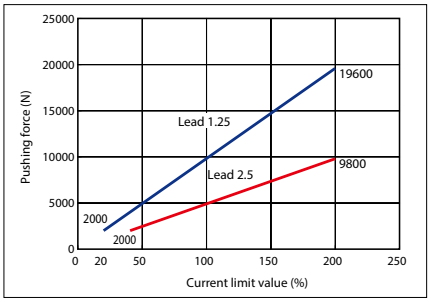
Main specifications

Item			Description	
Lead		Ball screw lead (mm)	2.5	1.25
Horizontal	Payload	Max. payload (kg)	100	200
	Acceleration/deceleration	Max. speed (mm/s)	125	62
		Rated acceleration/deceleration (G)	0.02	0.01
		Max. acceleration/deceleration (G)	0.02	0.01
Vertical	Payload	Max. payload (kg)	100	200
	Speed/Acceleration/deceleration	Max. speed (mm/s)	125	62
		Rated acceleration/deceleration (G)	0.02	0.01
		Max. acceleration/deceleration (G)	0.02	0.01
Thrust force		Rated thrust force (N)	5106	10211
		Max. pushing force (N)	9800	19600
		Pushing max. speed (mm/s)	10	10
Brake		Brake specification	Non-exciting electromagnetic brake	
		Brake holding-force (kgf)	100	200
Stroke		Min. stroke (mm)	50	50
		Max. stroke (mm)	200	200
		Stroke pitch (mm)	50	50

Item	Description
Driving method	Ball screw φ32mm, Rolled C10
Positioning repeatability	±0.01mm
Loading repeatability (Note 7)	±0.5% F.S (Note 8)
Load cell rated capacity	20000N
Lost motion	0.2mm or less
Rod	φ50mm ball spline
Rod non-rotational precision (Note 9)	±0.1 degrees
Ambient operating temperature and humidity	0-40°C, 85%RH or less (non-condensing)
Degree of protection	IP30
Vibration resistance and shock resistance	4.9m/s^2
International standards	CE marking, RoHS
Motor type	AC servo motor
Encoder type	Battery-less absolute
Number of encoder pulses	16384 pulse/rev

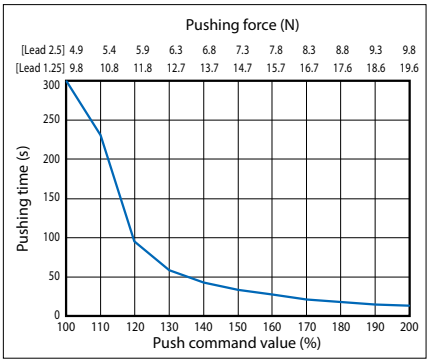
(Note 7) Ratio (in percentage) of the load variations caused by repeated operations to the load cell rated capacity.
(Note 8) FS: Full Scale. the maximum measurable value.
(Note 9) Displacement angle on rod tip (initial guided value) when static allowable torque is applied on the rod tip that is fully retracted into the actuator.

Correlation Diagram of Push Force and Current Limit Value



(Note) The pushing force is a guide value. Allow some deviations from the actual value. There could be some dispersions in pushing force when the current limit value is low. Use 20% or higher for lead 1.25 and 41% or higher for 2.5 lead.

Push command value (%)	Max. push time (s)
70 or less	Continuous pushing possible
71~100	300
110	230
120	95
130	58
140	43
150	33
160	27
170	21
180	18
190	15
200	13



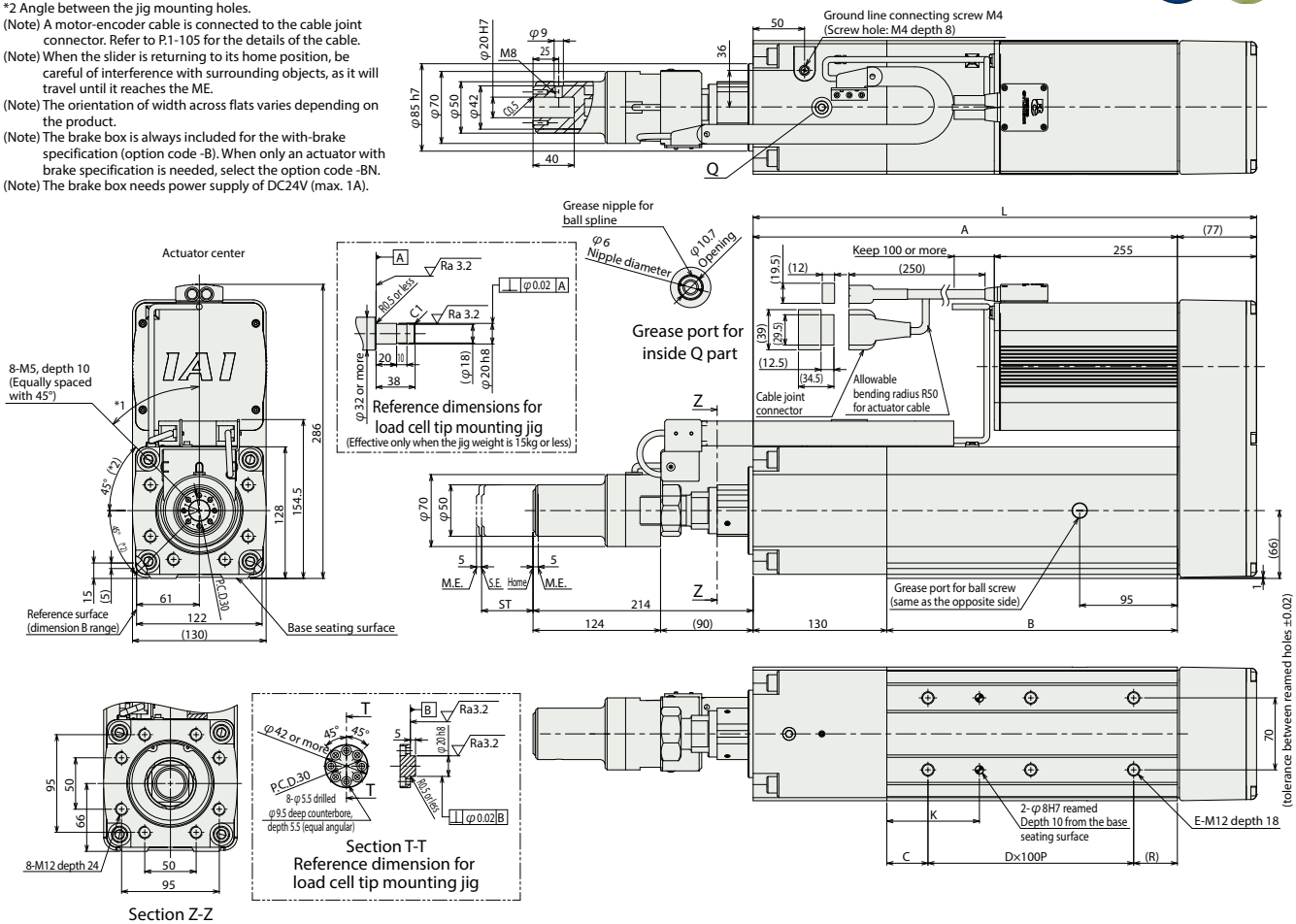
Dimensions

Without Brake

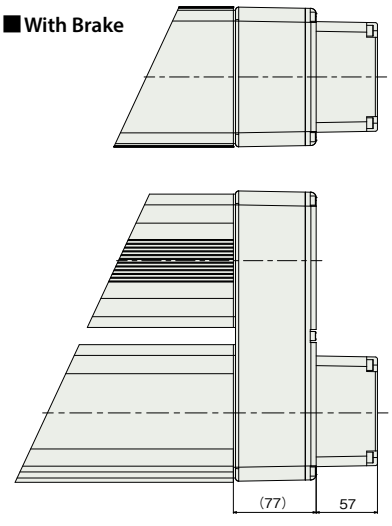
*1 This angle is not controlled (Rod center <-> M5 hole). Contact IAI for details.
*2 Angle between the jig mounting holes.
(Note) A motor-encoder cable is connected to the cable joint connector. Refer to P.1-105 for the details of the cable.
(Note) When the slider is returning to its home position, be careful of interference with surrounding objects, as it will travel until it reaches the ME.
(Note) The orientation of width across flats varies depending on the product.
(Note) The brake box is always included for the with-brake specification (option code -B). When only an actuator with brake specification is needed, select the option code -BN.
(Note) The brake box needs power supply of DC24V (max. 1A).

ST: Stroke
M.E.: Mechanical end
S.E.: Stroke end

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



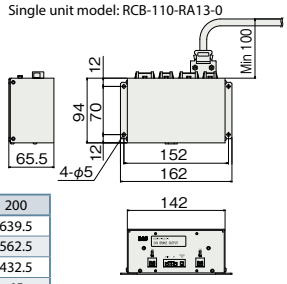
With Brake



(Note) The brake box is always included for the with-brake specification (option code -B). When only an actuator with brake specification is needed, select the option code -BN.
(Note) The brake box needs power supply of DC24V (max. 1A).

Brake box (included)

Single unit model: RCB-110-RA13-0



Dimensions by stroke

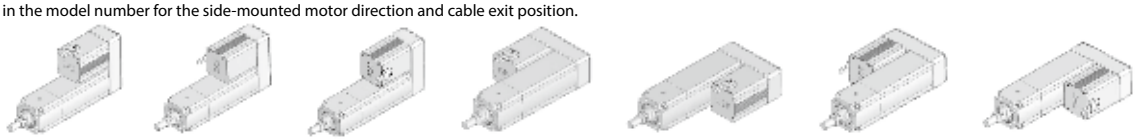
Stroke	50	100	150	200
L	489.5	539.5	589.5	639.5
A	412.5	462.5	512.5	562.5
B	282.5	332.5	382.5	432.5
C	40	65	40	65
D	2	2	3	3
E	6	6	8	8
K	90	115	90	115
R	42.5	67.5	42.5	67.5

Mass by stroke

	Stroke	50	100	150	200
Mass (kg)	With brake	38.5	39.5	40.5	41.5
	Without brake	40.5	41.5	42.5	43.5

Motor side-mounted direction/Cable exit direction (option)

Be sure to select a symbol in the model number for the side-mounted motor direction and cable exit position.



Option Code	MT1	MT2	MT3	MR1	ML1	MR2	ML3
Side-mounted motor direction	Top (standard)	Top	Top	Right side	Left side	Right side	Left side
Cable exit position	Top (standard)	Right side	Left side	Top	Top	Right side	Left side

Applicable Controllers

Actuators shown on this page are operable with the following controllers. Select an optimal type that best suits your application.

Name	External view	Max. number of positioning points	Power supply voltage	Control method												Max. number of positioning points	Reference page
				Positioner	Pulse train	Program	Network *option										
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN	ECM	
SCON-CB/CGB		1	Single phase 200VAC	●	●	–	●	●	●	●	●	●	●	●	●	●	–	–	512 (768 for the use of network)	Please contact IAI for more information.
SCON-CB/CGB (for press programs)		1		–	–	● (Press program)	●	●	●	●	●	●	–	●	●	●	–	–	–	

(Note) To connect with the R unit (RCON/RSEL), an additional expandable unit (RCON-EXT) and a SCON are necessary separately. Not connectable for press programs (SCON-CB-F).

RCS2-RA13R High-Payload Rod Type (Position Type without Load Cell)

Battery-less Absolute | Motor Unit Type | Side-mounted Motor | Body Width 130* mm | 200V AC Servo Motor

Model Specification Items

RCS2 — RA13R — WA — 750 — ☐ — ☐ — T2 — ☐ - ☐

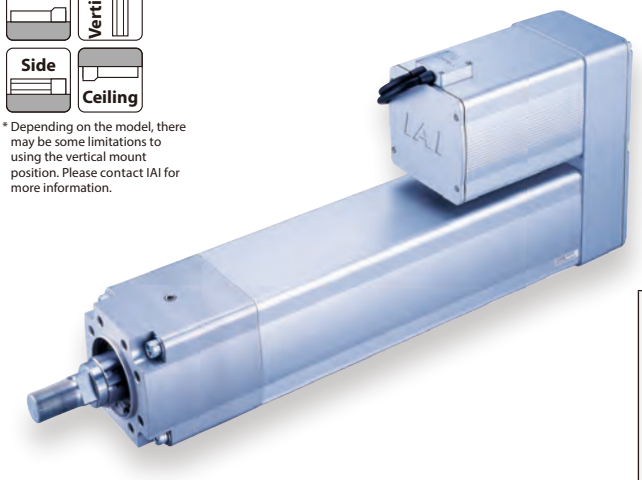
Series	Type	Encoder Type	Motor Type	Lead	Stroke	Applicable Controllers	Cable Length	Options
RCS2	RA13R	WA: Battery-less Absolute	750: Servo motor 750W	2.5:2.5mm 1.25:1.25mm	50: 50mm ｓ 200: 200mm (Every 50mm)	T2:SCON SSEL XSEL-P/Q XSEL-RA/SA	N : None P : 1m S : 3m M : 5m X☐☐ : Specified length R☐☐ : Robot cable	Refer to Options table below. * One of motor mount direction type needs to be selected from MT1/MT2/MT3/MR1/MR2/ML1/ML3.

* Does not include a controller.
* Please contact IAI for more information about the model specification items.
* Body width does not include the width of the side-mounted motor.

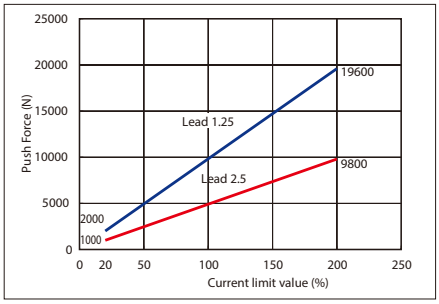
CE RoHS

Horizontal | Vertical | Side | Ceiling

* Depending on the model, there may be some limitations to using the vertical mount position. Please contact IAI for more information.



Correlation Diagram of Push Force and Current Limit Value



Caution:
- The correlation between push force and current limit value is strictly for reference purposes. Actual numbers may vary slightly.
- The current limit value should be 20% or more because the push force will be unstable when the current limit value is low.
- The travel speed during push-motion operation is fixed at 10mm/s.
  Please note that the graph shows push-motion at 10mm/s, and the push force will decrease as the speed changes.
- Depending on the operating conditions, the push force may decrease due to the temperature rise of the motor

POINT Selection Notes

(1) For push-motion operation, check the allowable time period of continuous push-motion set with a different thrust force. Also, please check that the allowable continuous operational thrust force for the actual push cycle is less than the allowable continuous operational thrust force and that the duty cycle is 50% or less. Please refer to the Selection Guidelines (P.28) for more information.
(2) The value of payload is when operating at an acceleration of 0.02G for lead 2.5 and 0.01G for lead 1.25. The value listed above is the upper limit of acceleration.
(3) Estimated allowable duty varies depending on operating conditions (payload, acceleration/deceleration, etc.). Please refer to P. 31 for more information.
(4) The value of the horizontal payload assumes that there is an external guide and that the rod is not subjected to external force other than in the moving direction.
(5) Loads can be applied to the rod tip. Please refer to P.33 for more information.
(6) For the brake option, a brake box (see P.22) is required in addition to the main unit and controller.

Actuator Specifications

Lead and Payload

Model Number	Motor wattage (W)	Lead (mm)	Max. acceleration (G)	Max. payload Horizontal (kg)	Max. payload Vertical (kg)	Rated thrust (N)	Max. push force (N)	Stroke (mm)
RCS2-RA13R-WA-750-2.5-①-T2-②-③	750	2.5	0.02	400	200	5106	9800	50~200 (Every 50mm)
RCS2-RA13R-WA-750-1.25-①-T2-②-③		1.25	0.01	500	300	10211	19600	

Legend: ① Stroke ② Cable Length ③ Option

* Max. horizontal payload means max. weight on the customer's external guide.
** Max. push force can be achieved only within 5~10mm/s speed range.

Stroke and Max Speed

Lead (mm) \ Stroke (mm)	50	100	150	200
2.5	85	120	125	
1.25	62			

(Unit: mm/s)

① Stroke

① Stroke (mm)	RCS2-RA13R	
	1t Type (Lead 2.5)	2t Type (Lead 1.25)
50	○	○
100	○	○
150	○	○
200	○	○

② Cable Length

Type	Cable Code
Standard	**P**(1m)
	S(3m)
	M(5m)
Specified length (Standard cable)	**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)

* Please contact IAI for maintenance cables.

③ Options * Please check the Options reference pages to confirm each option.

Name	Option Code	Reference Page
Brake (With brake box)	**B**	See P.35
Brake (Without brake box)	**BN** (*1)	See P.35
Flange	**FL**	See P.36
Foot Bracket	**FT** (*2)	See P.37
Motor top side-mounted	**MT1/MT2/MT3**	See P.38
Motor right side-mounted	**MR1/MR2** (*2)	See P.38
Motor left side-mounted	**ML1/ML3** (*2)	See P.38

(*1) Option: When selecting the brake (without brake box) "BN" and using it as the second axis of the brake box, a cable must be separately purchased.
Please refer to P.42 for more information.
(*2) Option: MR1/MR2/ML1/ML3 and FT cannot be selected together.

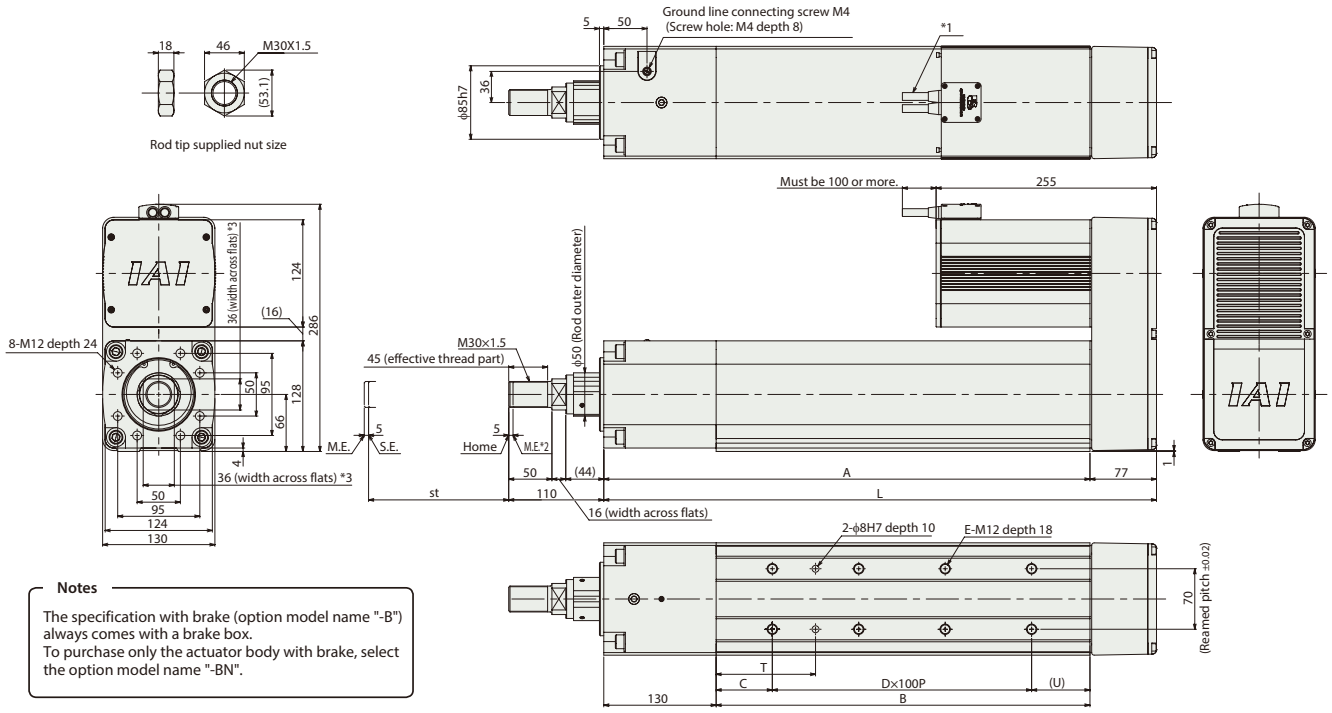
Actuator Specifications

Item	Description
Drive system	Ball screw ϕ32mm rolled C10
Positioning repeatability	±0.01mm
Backlash	0.2mm or less
Rod diameter	ϕ50mm (ball spline)
Allowable moment load to rod	120N·m Please see P.33
Ambient operating temp. & humidity	0~40°C, 85% RH or less (non-condensing)

Dimensions

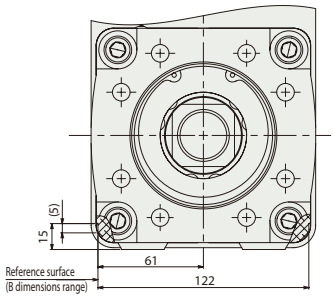
CAD drawings can be downloaded from our website.
www.intelligentactuator.com

*1. Connect the motor-encoder cables. Please contact IAI for more details on the cable.
*2. While the rod is returning to its home position, please be careful of interference from surrounding objects, as it will travel until it reaches the mechanical end.
M.E: Mechanical end S.E.: Stroke end
*3. The direction of width across flats varies depending on the product. Those flats cannot be used for vertical or horizontal reference plane.



Notes

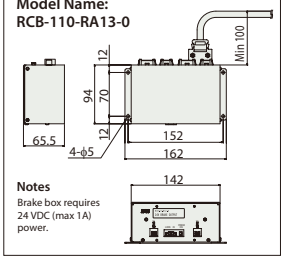
The specification with brake (option model name "-B") always comes with a brake box.
To purchase only the actuator body with brake, select the option model name "-BN".



Brake box (accessory)

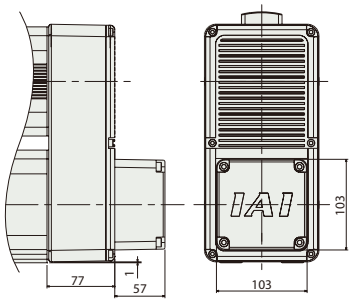
(Accessories for brake equipped specification)

Model Name:
RCB-110-RA13-0



Notes
Brake box requires 24 VDC (max 1A) power.

■ Dimensions with Brake



■ Dimensions and Mass by Stroke

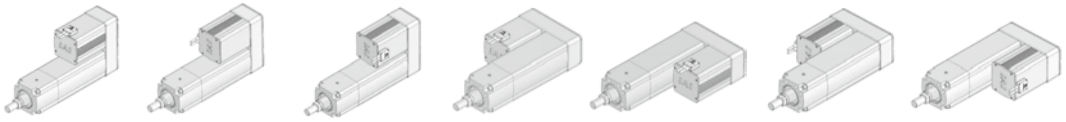
RCS2-RA13R
*** The brake option has a 57mm longer total length and 2kg heavier weight.**

Stroke	50	100	150	200
L	489.5	539.5	589.5	639.5
A	412.5	462.5	512.5	562.5
B	282.5	332.5	382.5	432.5
C	40	65	40	65
D	2	2	3	3
E	6	6	8	8
T	90	115	90	115
U	42.5	67.5	42.5	67.5
Mass (kg)	33	34	35	36

Side-mounted motor direction / Cable exit position (Option)

Notes

Be sure to select a symbol in the model number for the side-mounted motor direction and cable exit position.



Option Code	MT1	MT2	MT3	MR1	ML1	MR2	ML3
Side-mounted motor direction	Top (standard)	Top	Top	Right side	Left side	Right side	Left side
Cable exit position	Top (standard)	Right side	Left side	Top	Top	Right side	Left side

Applicable Controllers

The RCS2 series actuators can be operated by the controllers indicated below. Please select the type depending on your intended use.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method				Maximum number of positioning points	Reference page
				Positioner	Pulse train	Program	Network * Option		
SCON-CB/CGB		1	Single-phase 200VAC	●	●	–	DeviceNet, CC-Link, PROFIBUS, CompoNet, MECHATROLINK, EtherCAT, EtherNet/IP, PROFINET	512 (768 for network spec.)	Please contact IAI for more information.
SCON-LC/LCG		1		–	–	●		512 (768 for network spec.)	
SSEL-CS		2		●	–	●		20000	
XSEL-P/Q/RA/SA		8	Three-phase 200VAC	–	–	●	Note: The type of compatible networks will vary depending on the controller. Please refer to the reference page for more information.	55,000 (Depending on the type)	