IAI

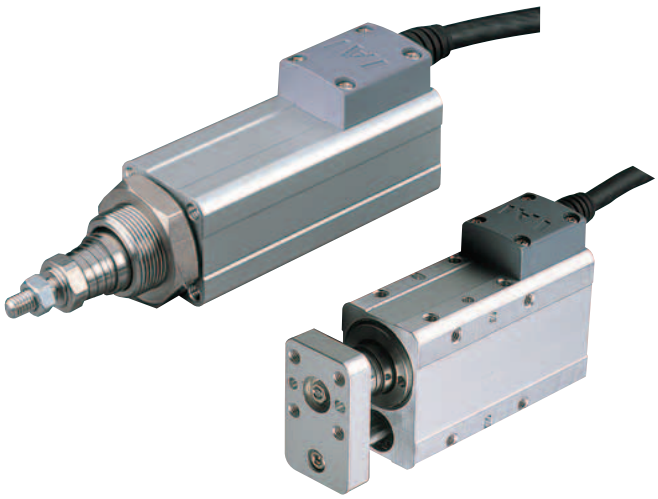
ROBO CYLINDER

24 VDC Servo Motor

RCA & RCA2

with dedicated controllers ACON and ASEL

Rod Type



RCA2-RA2AC

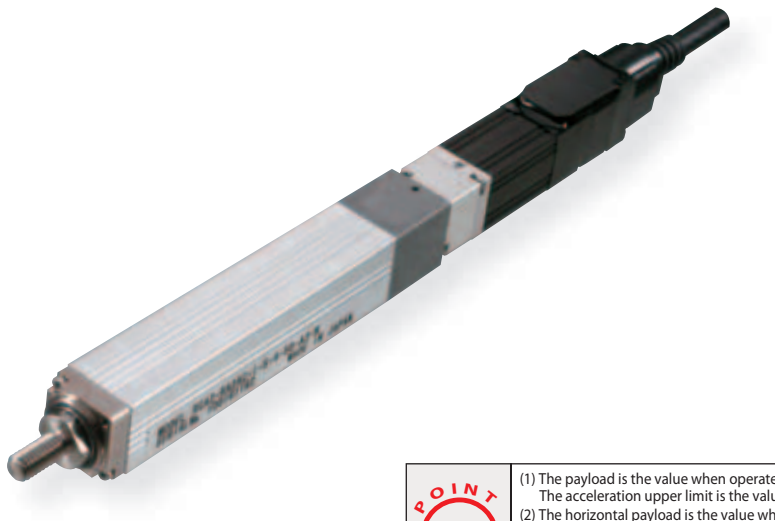
RoboCylinder Mini Rod Type Motor Unit Coupling Type 18mm Width 24 V Servo Motor Ball Screw

■ Configuration

RCA2 – RA2AC – I – 5 – [ ] – [ ] – A3 – [ ] – [ ]

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental specification * Model number is "I" when used with simple absolute unit.	5: Servo Motor 5W	4: 4mm 2: 2mm 1: 1mm	25: 25mm ~ 100: 100mm (every 25mm)	A3: ASEP	N: None P: 1m S: 3m M: 5m X□□: Custom Length	Following options Refer to below table

*See page Pre-35 for details on the model descriptions.



Technical References P. A-5

POINT Notes on selection

(1) The payload is the value when operated at 0.3G acceleration. The acceleration upper limit is the value indicated above.
(2) The horizontal payload is the value when used in combination with an external guide. Please note that if an external force is applied to the rod in a direction other than the proper direction the rod travels, the detent may get damaged.
(3) Take note that, since there is no brake, the slider may come down when the power is turned off if the actuator is used vertically.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Rated Thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-RA2AC-I-5-4-①-A3-②-③	5	Ball screw	4	0.5	0.25	21.4	±0.02	25 to 100 (every 25mm)
RCA2-RA2AC-I-5-2-①-A3-②-③			2	1	0.5	42.3		
RCA2-RA2AC-I-5-1-①-A3-②-③			1	2	1	85.5		

Legend ① Stroke ② Cable length ③ Option

■ Stroke and Maximum Speed

Lead \ Stroke	25 (mm)	50 to 100 (mm)
Ball screw 4	180	200
Ball screw 2	100	
Ball screw 1	50	

(Unit = mm/s)

Cable List

Type	Cable symbol	
Standard type (Robot cable)	**P** (1m)	
	S (3m)	
	M (5m)	
Special length	**X06** (6m) to **X10** (10m)	
	X11 (11m) to **X15** (15m)	
	X16 (16m) to **X20** (20m)	

* The standard cable for the RCA2 is the robot cable.

Actuator Specifications

Item	Description
Drive System	Ball screw, ø4mm, rolled C10
Lost Motion	0.1mm or less
Base	Material: Aluminum, white alumite treated
Non-rotating accuracy of rod	±3.0 deg
Ambient Operating Temp., Humidity	0 to 40 °C, 85% RH or less (No condensation)
Service life	5000 km

Option List

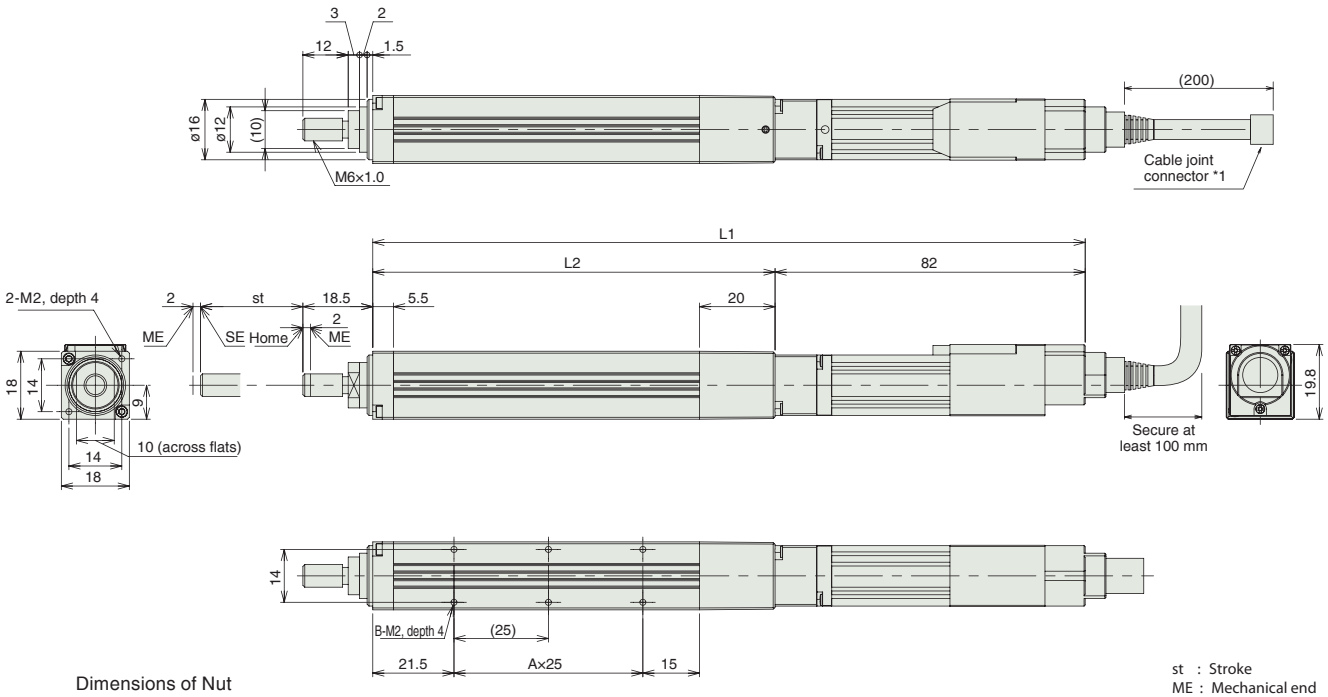
Name	Option code	See page	
Reversed-home specification	**NM**	A-33	

Dimensions

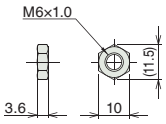
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Orders P. A-9

2/3D CAD



Dimensions of Nut



st : Stroke
ME : Mechanical end
SE : Stroke end

Dimensions and Weight by Stroke

Stroke	25	50	75	100
L1	163.5	188.5	213.5	238.5
L2	81.5	106.5	131.5	156.5
A	1	2	3	4
B	4	6	8	10
Mass (kg)	0.17	0.19	0.2	0.22

*1 Connect the motor and encoder cables.

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

*3 The direction of the surface across flats varies depending on the product.

Compatible Controllers

RCA2 series actuators can be operated with the controllers indicated below. Select the type according to your intended application.

Title	External View	Model	Features	Maximum number of positioning points	Input power	Power-supply capacity		Reference Page
Solenoid valve type		ASEP-C-5SI-NP-2-0	Simple controller capable of operating with the same signal as the solenoid valve. Supports the use of both the single solenoid and the double solenoid types. Simple Absolute type makes the return to home unnecessary.	3 points	DC24V	(Standard) 1.5A rated 2.5A max.		→P487
Dust-proof solenoid valve type		ASEP-CW-5SI-NP-2-0						

RCA2-RA2AR

RoboCylinder Mini Rod Type Side-Mounted Motor 41mm Width 24 V Servo Motor Ball Screw

■ Configuration

RCA2 – RA2AR – I – 5 – [ ] – [ ] – A3 – [ ] – [ ]

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental specification * Model number is "I" when used with simple absolute unit.	5: Servo Motor 5W	4: 4mm 2: 2mm 1: 1mm	25: 25mm ~ 100: 100mm (every 25mm)	A3: ASEP	N: None P: 1m S: 3m M: 5m X□□: Custom Length	Following options Refer to below table * Be sure to specify which side the motor is to be mounted (ML/MR/MT)

*See page Pre-35 for details on the model descriptions.

Technical References P. A-5

POINT Notes on selection

(1) The payload is the value when operated at 0.3G acceleration. The acceleration upper limit is the value indicated above.
(2) The horizontal payload is the value when used in combination with an external guide. Please note that if an external force is applied to the rod in a direction other than the proper direction the rod travels, the detent may get damaged.
(3) Take note that, since there is no brake, the slider may come down when the power is turned off if the actuator is used vertically.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Rated Thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-RA2AR-I-5-4-①-A3-②-③	5	Ball screw	4	0.5	0.25	21.4	±0.02	25 to 100 (every 25mm)
RCA2-RA2AR-I-5-2-①-A3-②-③			2	1	0.5	42.3		
RCA2-RA2AR-I-5-1-①-A3-②-③			1	2	1	85.5		

Legend ① Stroke ② Cable length ③ Option

■ Stroke and Maximum Speed

Lead \ Stroke	25 (mm)	50 to 100 (mm)
Ball screw 4	180	200
Ball screw 2	100	
Ball screw 1	50	

(Unit = mm/s)

Cable List

Type	Cable symbol	
Standard type (Robot cable)	**P** (1m)	
	S (3m)	
	M (5m)	
Special length	**X06** (6m) to **X10** (10m)	
	X11 (11m) to **X15** (15m)	
	X16 (16m) to **X20** (20m)	

* The standard cable for the RCA2 is the robot cable.

Actuator Specifications

Item	Description
Drive System	Ball screw, ø4mm, rolled C10
Lost Motion	0.1mm or less
Base	Material: Aluminum, white alumite treated
Non-rotating accuracy of rod	±3.0 deg
Ambient Operating Temp., Humidity	0 to 40 °C, 85% RH or less (No condensation)
Service life	5000 km

Option List

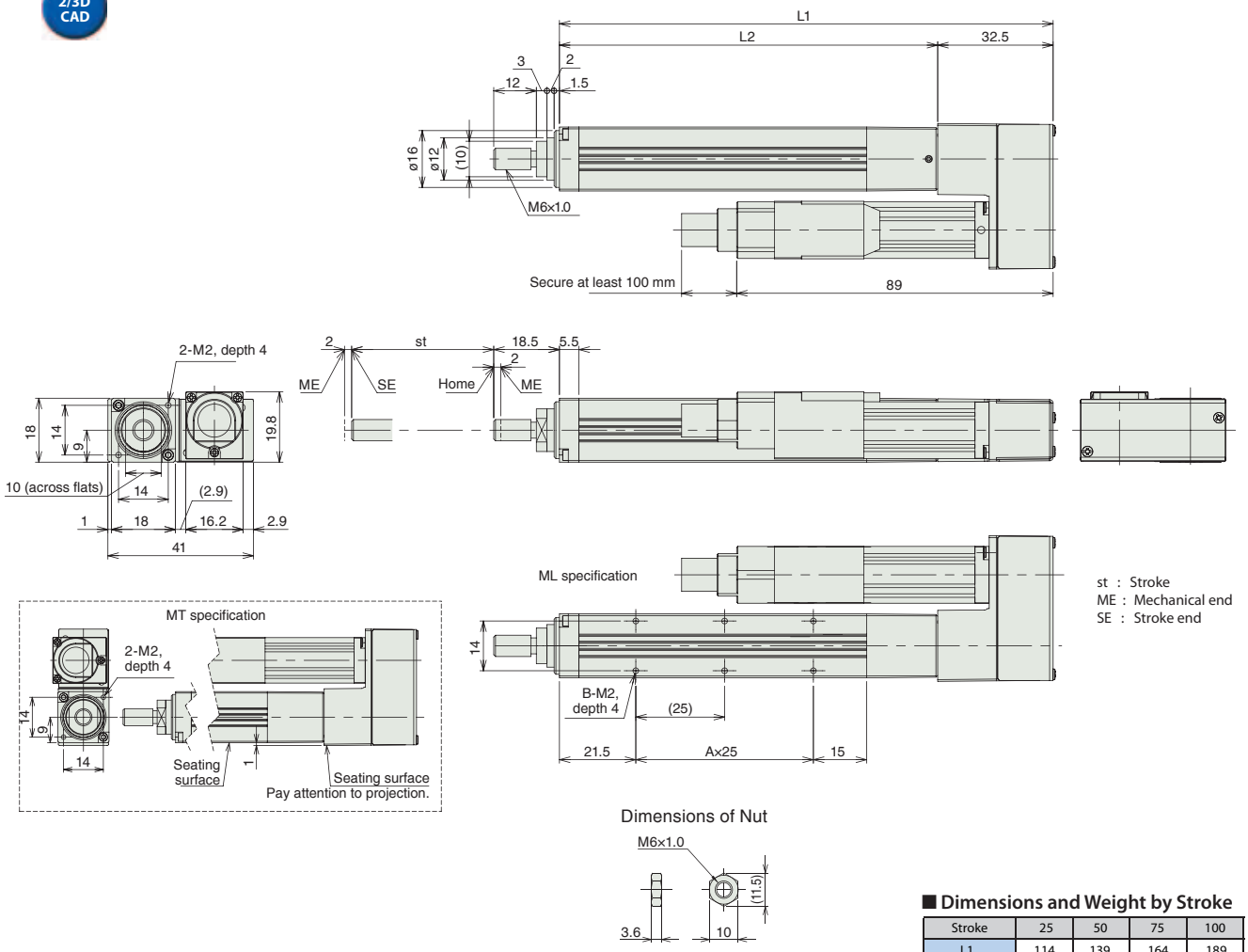
Name	Option code	See page	
Reversed-home specification	**NM**	A-33	
Motor side mounted to the right	**MR**	A-33	
Motor side mounted to the left	**ML**	A-33	
Motor side mounted to the top	**MT**	A-33	

Dimensions

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

For Special Orders P. A-9

2/3D CAD



■ Dimensions and Weight by Stroke

Stroke	25	50	75	100
L1	114	139	164	189
L2	81.5	106.5	131.5	156.5
A	1	2	3	4
B	4	6	8	10
Mass (kg)	0.21	0.22	0.24	0.25

*1 Connect the motor and encoder cables.

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

*3 The direction of the surface across flats varies depending on the product.

Compatible Controllers

RCA2 series actuators can be operated with the controllers indicated below. Select the type according to your intended application.

Title	External View	Model	Features	Maximum number of positioning points	Input power	Power-supply capacity		Reference Page
Solenoid valve type		ASEP-C-5SI-NP-2-0	Simple controller capable of operating with the same signal as the solenoid valve. Supports the use of both the single solenoid and the double solenoid types. Simple Absolute type makes the return to home unnecessary.	3 points	DC24V	(Standard) 1.5A rated 2.5A max.		→P487
Dust-proof solenoid valve type		ASEP-CW-5SI-NP-2-0						

RCA2-RN3NA

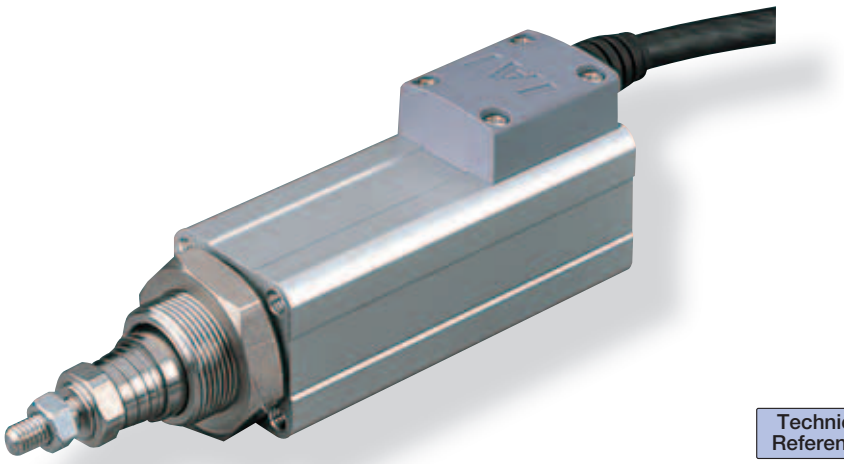
RoboCylinder Mini Rod Type Short-Length Nut-Mounting Type
28mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 — RN3NA — I — 10 — □ — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	10 : 10W Servo Motor	4: Ball screw 4mm 2: Ball screw 2mm 1: Ball screw 1mm 4S: lead screw 4mm 2S: lead screw 2mm 1S: lead screw 1mm	30:30mm 50:50mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The feed screw is not equipped with an anti-rotation device, so please attach a guide or similar locking device to the tip of the feed screw prior to use. (If there is no antirotation device attached, the lead screw cannot extend or retract.)
(2) The horizontal payload is the value when used in combination with an external guide.
(3) The payload is the value when the actuator is operated at an acceleration of 0.3 G (0.2G for lead 1, if used vertically and for lead screw specification). The acceleration limit is the value indicated above.
(4) Do not apply an external force on the rod in any direction other than the direction the rod is moving in.
(5) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■Lead and Load Capacity

Model	Motor output (W)	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Rated thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-RN3NA-I-10-4-①-②-③-④	10	Ball screw	4	0.75	0.25	42.7	±0.02	30 50
RCA2-RN3NA-I-10-2-①-②-③-④			2	1.5	0.5	85.5		
RCA2-RN3NA-I-10-1-①-②-③-④			1	3	1	170.9		
RCA2-RN3NA-I-10-4S-①-②-③-④	10	Lead screw	4	0.25	0.125	25.1	±0.05	30 50
RCA2-RN3NA-I-10-2S-①-②-③-④			2	0.5	0.25	50.3		
RCA2-RN3NA-I-10-1S-①-②-③-④			1	1	0.5	100.5		

■Stroke and Maximum Speed

	Lead \ Stroke	30 (mm)	50 (mm)
Ball screw	4	200	
	2	100	
	1	50	
Lead screw	4	200	
	2	100	
	1	50	

Legend ① Stroke ② Compatible Controllers ③ Cable length ④ Option

(Unit = mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	**P** (1m)	
	S (3m)	
	M (5m)	
Special Lengths	**X06** (6m) ~ **X10** (10m)	
	X11 (11m) ~ **X15** (15m)	
	X16 (16m) ~ **X20** (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø4 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 ˚C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

Name	Option Code	See Page	
Connector cable exit direction	K2	→ A-32	
Power-saving	LA	→ A-32	

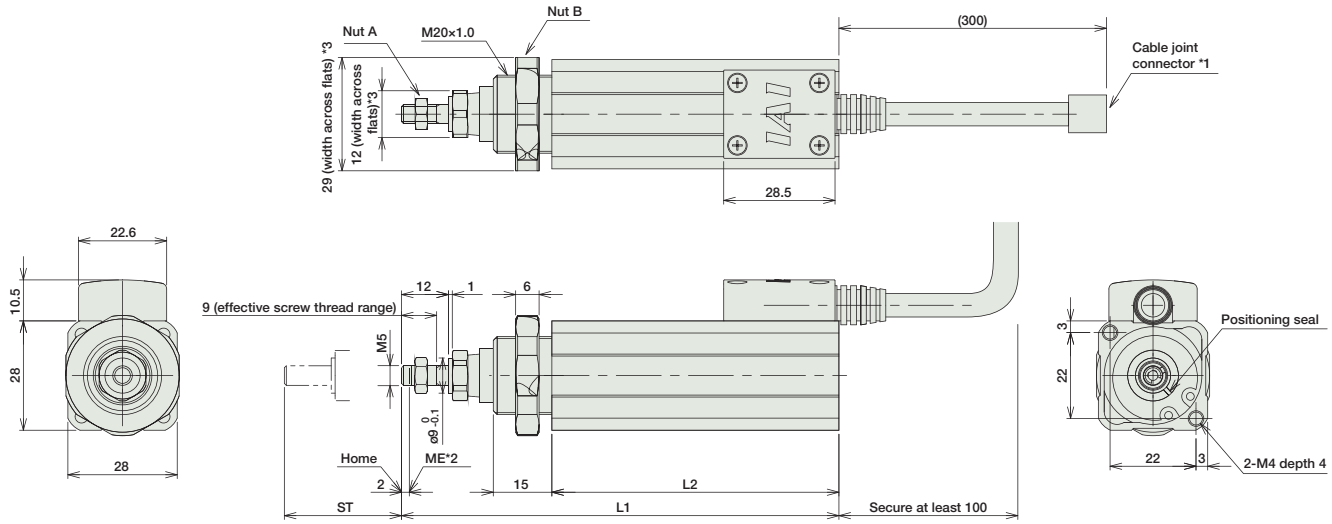
Dimensions

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

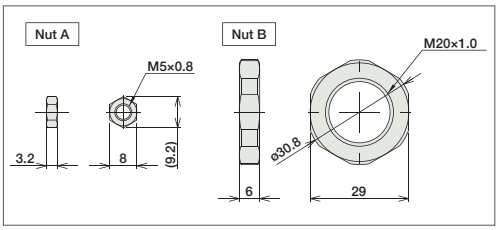
For Special Orders P. A-9

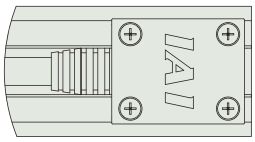
2/3D CAD

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.
*3 The orientation of the bolt will vary depending on the product.



ME: Mechanical end





Connector cable exit direction (Model: K2)

* Rotates 180 degrees with respect to the standard model.

Dimensions and Weight by Stroke

Stroke	30	50
L1	112	132
L2	73.5	93.5
Weight (kg)	0.25	0.27

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-10I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-10I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-10I①-NP-2-0						
Positioner Type		ACON-C-10I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-10I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-10I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-10I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-10I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-10①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-10I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-RN4NA

RoboCylinder Mini Rod Type Short-Length Nut-Mounting Type 34mm Width
24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 – RN4NA – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	6 : 6mm ball screw 4 : 4mm ball screw 2 : 2mm ball screw 6S : 6mm lead screw 4S : 4mm lead screw 2S : 2mm lead screw	30 : 30mm 50 : 50mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving

Technical References P. A-5

POINT Notes on Selection

(1) The feed screw is not equipped with an anti-rotation device, so please attach a guide or similar locking device to the tip of the feed screw prior to use. (If there is no antirotation device attached, the lead screw cannot extend or retract.)
(2) The horizontal payload is the value when used in combination with an external guide.
(3) The payload is the value when the actuator is operated at an acceleration of 0.3 G (0.2G for lead 2, if used vertically and for lead screw specification). The acceleration limit is the value indicated above.
(4) Do not apply an external force on the rod in any direction other than the direction the rod is moving in.
(5) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Feed Screw	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-RN4NA-I-20-6-①-②-③	20	Ball Screw	6	2	0.5	33.8	±0.02	30 50
RCA2-RN4NA-I-20-4-①-②-③			4	3	0.75	50.7		
RCA2-RN4NA-I-20-2-①-②-③			2	6	1.5	101.5		
RCA2-RN4NA-I-20-6S-①-②-③	20	Lead Screw	6	0.25	0.125	19.9	±0.05	30 50
RCA2-RN4NA-I-20-4S-①-②-③			4	0.5	0.25	29.8		
RCA2-RN4NA-I-20-2S-①-②-③			2	1	0.5	59.7		

Legend ① Compatible controller ② Cable length ③ Options

■ Stroke and Maximum Speed

	Lead \ Stroke	30 (mm)	50 (mm)
Ball Screw	6	270 <220>	300
	4	200	
	2	100	
Lead Screw	6	220	300
	4	200	
	2	100	

* The values enclosed in < > apply for vertical usage. (Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ~ X10 (10m)	
	X11 (11m) ~ X15 (15m)	
	X16 (16m) ~ X20 (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø6 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 °C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

Name	Option Code	See Page	
Connector cable exit direction	K2	→ A-32	
Power-saving	LA	→ A-32	

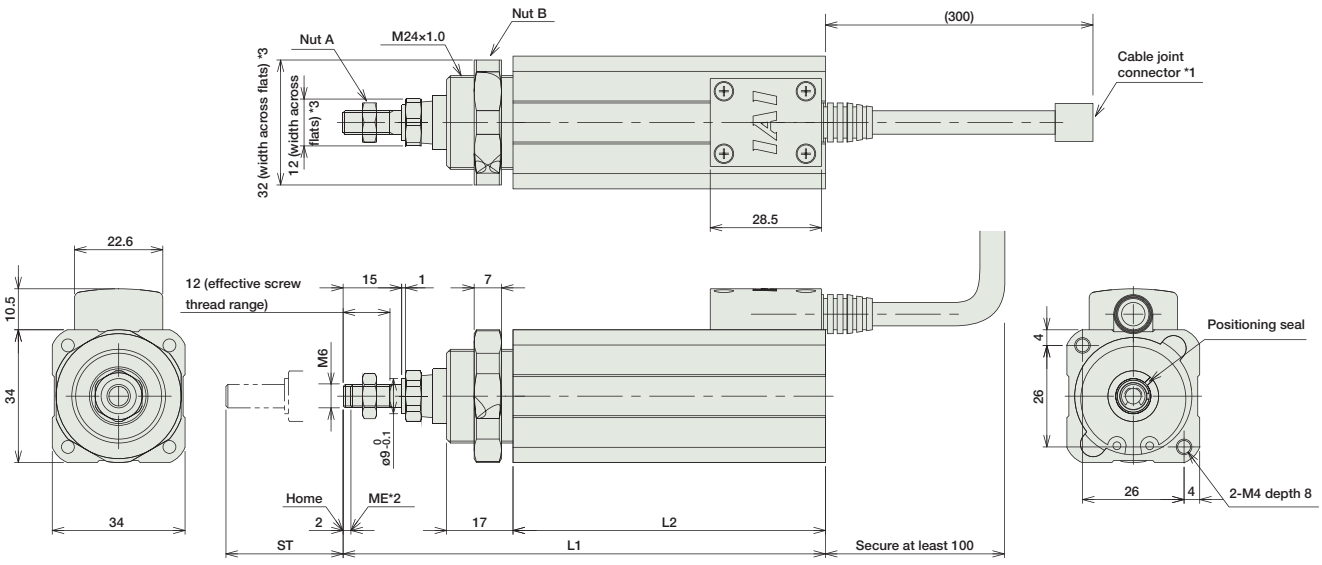
Dimensions

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

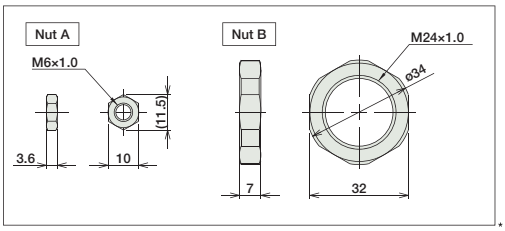
For Special Orders P. A-9

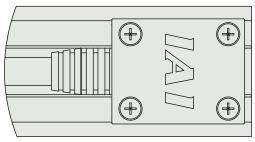
2/3D CAD

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.
*3 The orientation of the bolt will vary depending on the product.



ME: Mechanical end





Connector cable exit direction (Model: K2)

* Rotates 180 degrees with respect to the standard model.

Dimensions and Weight by Stroke

Stroke	30	50
L1	123.5	143.5
L2	80	100
Weight (kg)	0.40	0.44

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→P477
		ASEP-C-20I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I①-NP-2-0						
Positioner Type		ACON-C-20I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→P535
Safety-Compliant Positioner Type		ACON-CG-20I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20①	Dedicated to field network	768 points				→P503
Program Control Type		ASEL-C-1-20I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-RP3NA

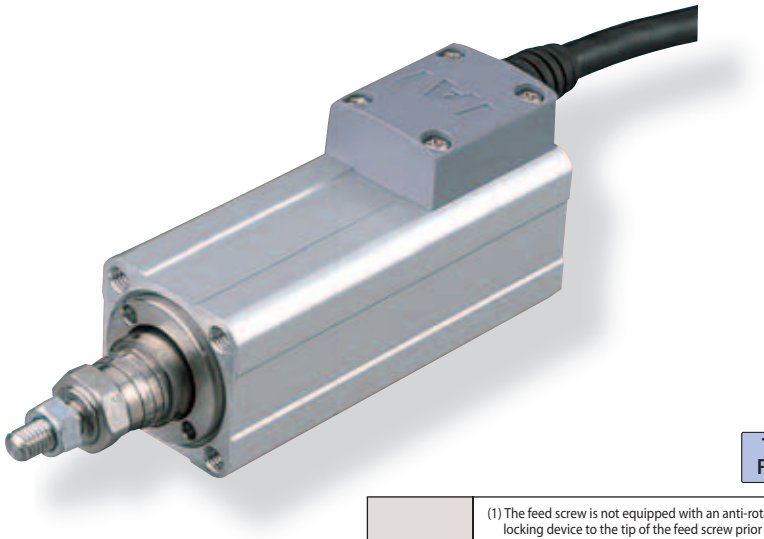
RoboCylinder Mini Rod Type Short-Length Tapped-Hole Mounting Type 28mm Width
24V Servo Motor Ball screw/Lead Screw

■ Configuration: RCA2 — RP3NA — I — 10 — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	10 : 10W Servo Motor	4 : Ball screw 4mm 2 : Ball screw 2mm 1 : Ball screw 1mm 4S : Lead screw 4mm 2S : Lead screw 2mm 1S : Lead screw 1mm	30 : 30mm 50 : 50mm	A1 : ACON, RACON, ASEL A3 : AMEC, ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The feed screw is not equipped with an anti-rotation device, so please attach a guide or similar locking device to the tip of the feed screw prior to use. (If there is no antirotation device attached, the lead screw cannot extend or retract.)
(2) The horizontal payload is the value when used in combination with an external guide.
(3) The payload is the value when the actuator is operated at an acceleration of 0.3 G (0.2G for lead 1, if used vertically and for lead screw specification). The acceleration limit is the value indicated above.
(4) Do not apply an external force on the rod in any direction other than the direction the rod is moving in.
(5) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■Lead and Load Capacity

Model	Motor output (W)	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Rated thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-RP3NA-I-10-4-①-②-③-④	10	Ball screw	4	0.75	0.25	42.7	±0.02	30 50
RCA2-RP3NA-I-10-2-①-②-③-④			2	1.5	0.5	85.5		
RCA2-RP3NA-I-10-1-①-②-③-④			1	3	1	170.9		
RCA2-RP3NA-I-10-4S-①-②-③-④	10	Lead screw	4	0.25	0.125	25.1	±0.05	30 50
RCA2-RP3NA-I-10-2S-①-②-③-④			2	0.5	0.25	50.3		
RCA2-RP3NA-I-10-1S-①-②-③-④			1	1	0.5	100.5		

■Stroke and Maximum Speed

Lead		Stroke 30 (mm)	Stroke 50 (mm)
Ball screw	4	200	
	2	100	
	1	50	
Lead screw	4	200	
	2	100	
	1	50	

(Unit = mm/s)

Legend ① Stroke ② Compatible Controllers ③ Cable length ④ Option

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ～ X10 (10m)	
	X11 (11m) ～ X15 (15m)	
	X16 (16m) ～ X20 (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø4 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 ˚C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

Name	Option Code	See Page	
Connector cable exit direction	K2	→ A-32	
Power-saving	LA	→ A-32	

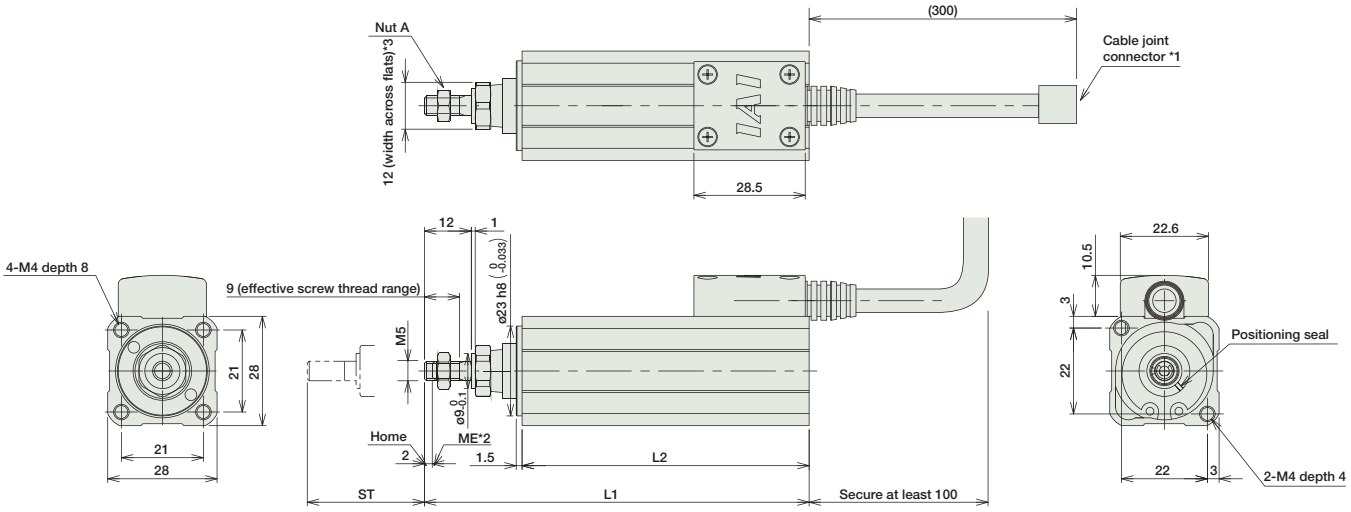
Dimensions

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

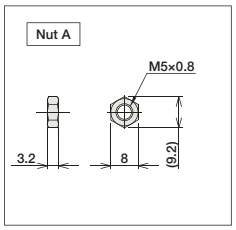
For Special Orders P. A-9

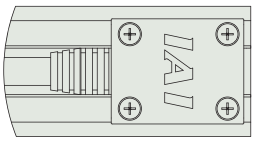
2/3D CAD

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.
*3 The orientation of the bolt will vary depending on the product.



ME: Mechanical end





Connector cable exit direction (Model: K2)

* Rotates 180 degrees with respect to the standard model.

Dimensions/Weight by Stroke

Stroke	30	50
L1	98.5	118.5
L2	73.5	93.5
Weight (kg)	0.20	0.22

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-10I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-10I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-10I①-NP-2-0						
Positioner Type		ACON-C-10I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-10I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-10I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-10I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-10I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-10①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-10I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-RP4NA

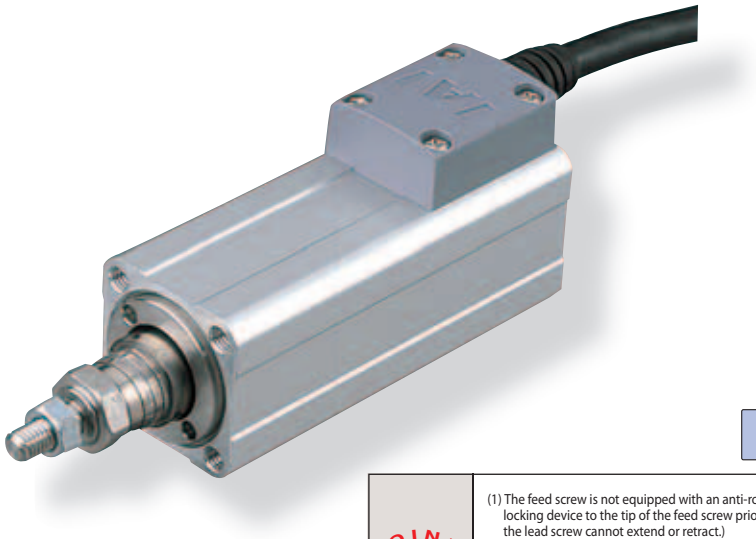
RoboCylinder Mini Rod Type Short-Length Tapped-Hole Mounting Type
34mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 — RP4NA — I — 20 — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	6 : 6mm ball screw 4 : 4mm ball screw 2 : 2mm ball screw 6S : 6mm lead screw 4S : 4mm lead screw 2S : 2mm lead screw	30 : 30mm 50 : 50mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The feed screw is not equipped with an anti-rotation device, so please attach a guide or similar locking device to the tip of the feed screw prior to use. (If there is no antirotation device attached, the lead screw cannot extend or retract.)
(2) The horizontal payload is the value when used in combination with an external guide.
(3) The payload is the value when the actuator is operated at an acceleration of 0.3 G (0.2G for lead 2, if used vertically and for lead screw specification). The acceleration limit is the value indicated above.
(4) Do not apply an external force on the rod in any direction other than the direction the rod is moving in.
(5) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Feed Screw	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-RP4NA-I-20-6-①-②-③	20	Ball Screw	6	2	0.5	33.8	±0.02	30 50
RCA2-RP4NA-I-20-4-①-②-③			4	3	0.75	50.7		
RCA2-RP4NA-I-20-2-①-②-③			2	6	1.5	101.5		
RCA2-RP4NA-I-20-6S-①-②-③	20	Lead Screw	6	0.25	0.125	19.9	±0.05	30 50
RCA2-RP4NA-I-20-4S-①-②-③			4	0.5	0.25	29.8		
RCA2-RP4NA-I-20-2S-①-②-③			2	1	0.5	59.7		

Legend ① Compatible controller ② Cable length ③ Options

■ Stroke and Maximum Speed

	Lead \ Stroke	30 (mm)	50 (mm)
Ball Screw	6	270 <220>	300
	4	200	
	2	100	
Lead Screw	6	220	300
	4	200	
	2	100	

* The values enclosed in < > apply for vertical usage. (Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ~ X10 (10m)	
	X11 (11m) ~ X15 (15m)	
	X16 (16m) ~ X20 (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø6 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 ˚C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

Name	Option Code	See Page	
Connector cable exit direction	K2	→ A-32	
Power-saving	LA	→ A-32	

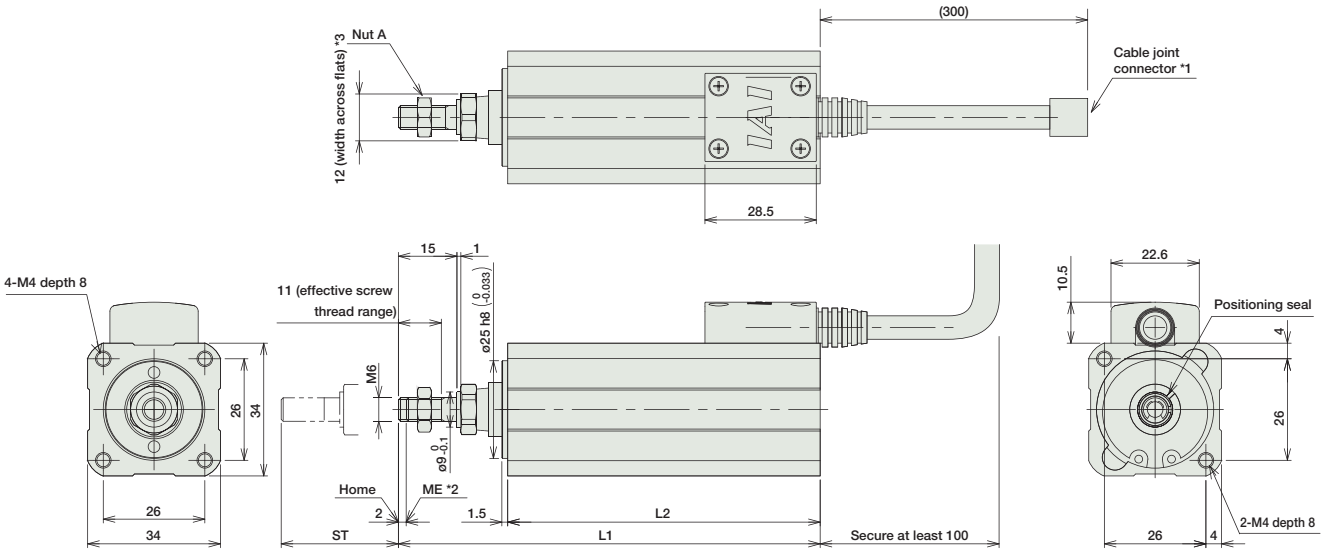
Dimensions

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

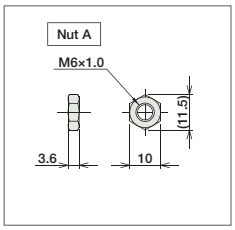
For Special Orders P. A-9

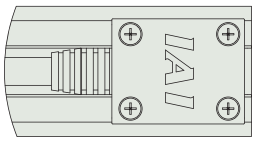
2/3D CAD

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.
*3 The orientation of the bolt will vary depending on the product.



ME: Mechanical end





Connector cable exit direction
(Model: K2)
* Rotates 180 degrees with respect to the standard model.

Dimensions/Weight by Stroke

Stroke	30	50
L1	108	128
L2	80	100
Weight (kg)	0.32	0.36

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I①-NP-2-0						
Positioner Type		ACON-C-20I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-GS3NA

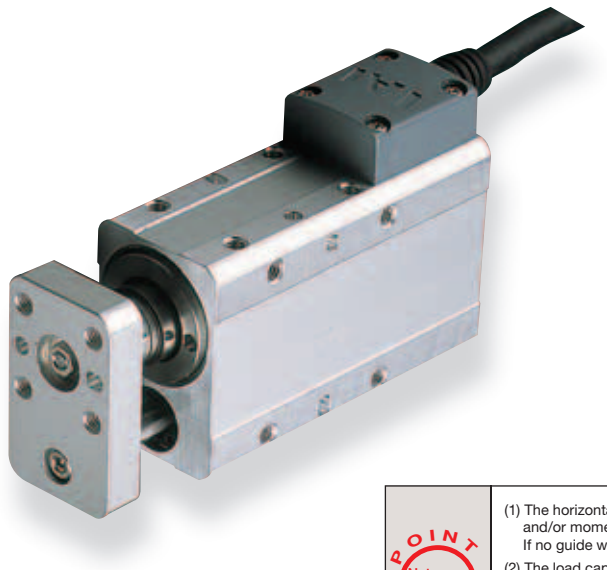
RoboCylinder Mini Rod Type Short-Length Free Mounting Type with Single Guide
28mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 — GS3NA — I — 10 — □ — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	10 : 10W Servo Motor	4 : Ball screw 4mm 2 : Ball screw 2mm 1 : Ball screw 1mm 4S : lead screw 4mm 2S : lead screw 2mm 1S : lead screw 1mm	30 : 30mm 50 : 50mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The horizontal load capacity is based on the use of a guide to prevent any radial and/or moment load on the rod.
If no guide will be installed, see the Tip Load vs. Service Life graph → page (A-81).
(2) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 1mm-lead model, lead screw model, or when used vertically). This is the upper limit of the acceleration.
(3) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor output (W)	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Rated thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-GS3NA-I-10-4-①-②-③-④	10	Ball screw	4	0.75	0.25	42.7	±0.02	30 50
RCA2-GS3NA-I-10-2-①-②-③-④			2	1.5	0.5	85.5		
RCA2-GS3NA-I-10-1-①-②-③-④			1	3	1	170.9		
RCA2-GS3NA-I-10-4S-①-②-③-④	10	Lead screw	4	0.25	0.125	25.1	±0.05	30 50
RCA2-GS3NA-I-10-2S-①-②-③-④			2	0.5	0.25	50.3		
RCA2-GS3NA-I-10-1S-①-②-③-④			1	1	0.5	100.5		

■ Stroke and Maximum Speed

	Lead \ Stroke	30 (mm)	50 (mm)
Ball screw	4	200	
	2	100	
	1	50	
Lead screw	4	200	
	2	100	
	1	50	

Legend ① Stroke ② Compatible Controllers ③ Cable length ④ Option

(Unit = mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	**P** (1m)	
	S (3m)	
	M (5m)	
Special Lengths	**X06** (6m) ～ **X10** (10m)	
	X11 (11m) ～ **X15** (15m)	
	X16 (16m) ～ **X20** (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø4 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 ˚C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

Name	Option Code	See Page	
Connector cable exit direction	K2	→ A-32	
Power-saving	LA	→ A-32	

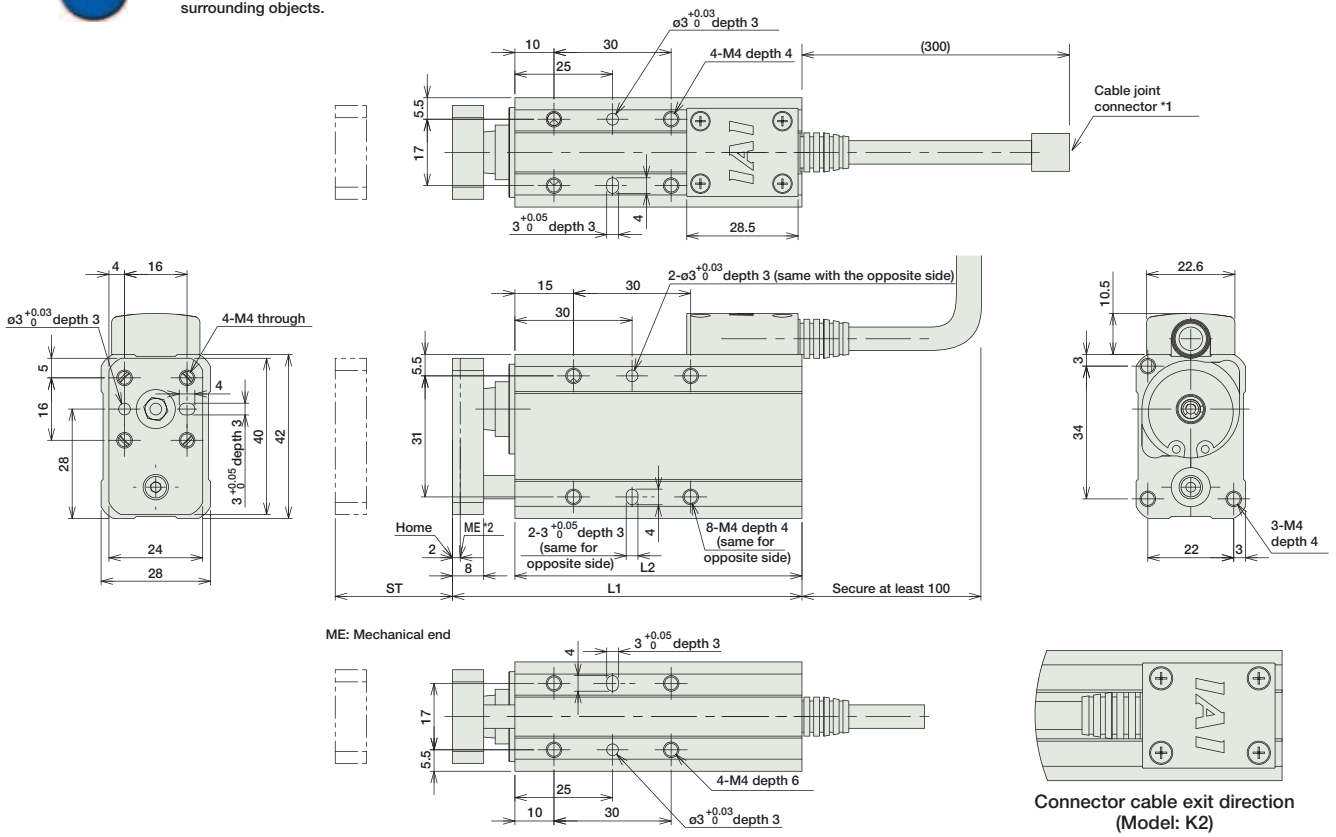
Dimensions

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

For Special Orders P. A-9

2/3D CAD

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.



Connector cable exit direction (Model: K2)

* Rotates 180 degrees with respect to the standard model.

Dimensions/Weight by Stroke

Stroke	30	50
L1	89.5	109.5
L2	73.5	93.5
Weight (kg)	0.32	0.36

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-10I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-10I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-10I①-NP-2-0						
Positioner Type		ACON-C-10I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-10I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-10I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-10I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-10I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-10①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-10I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-GS4NA

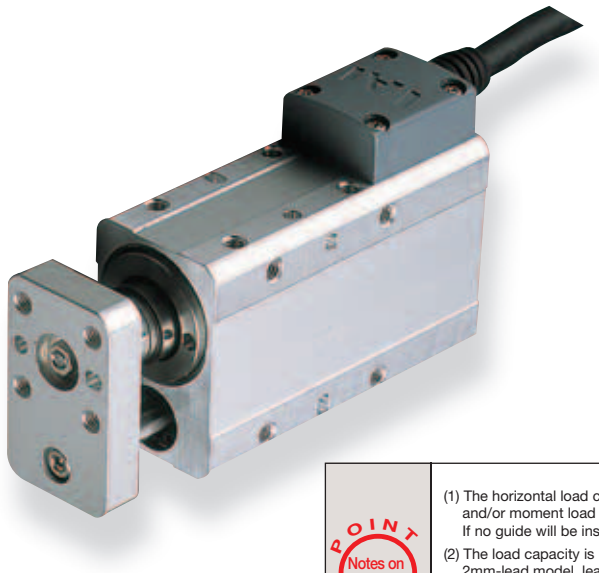
RoboCylinder Mini Rod Type Short-Length Free Mounting Type with Single Guide
34mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 — GS4NA — I — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA2	GS4NA	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	6 : 6mm ball screw 4 : 4mm ball screw 2 : 2mm ball screw 6S : 6mm lead screw 4S : 4mm lead screw 2S : 2mm lead screw	30 : 30mm 50 : 50mm	A1 : ACON, RACON, ASEL A3 : AMEC, ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The horizontal load capacity is based on the use of a guide to prevent any radial and/or moment load on the rod.
If no guide will be installed, see the Tip Load vs. Service Life graph → page (A-81).
(2) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 2mm-lead model, lead screw model, or when used vertically). This is the upper limit of the acceleration.
(3) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Feed Screw	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-GS4NA-I-20-6-①-②-③	20	Ball Screw	6	2	0.5	33.8	±0.02	30 50
RCA2-GS4NA-I-20-4-①-②-③			4	3	0.75	50.7		
RCA2-GS4NA-I-20-2-①-②-③			2	6	1.5	101.5		
RCA2-GS4NA-I-20-6S-①-②-③	20	Lead Screw	6	0.25	0.125	19.9	±0.05	30 50
RCA2-GS4NA-I-20-4S-①-②-③			4	0.5	0.25	29.8		
RCA2-GS4NA-I-20-2S-①-②-③			2	1	0.5	59.7		

Legend ① Compatible controller ② Cable length ③ Options

■ Stroke and Maximum Speed

	Lead \ Stroke	30 (mm)	50 (mm)
Ball Screw	6	270 <220>	300
	4	200	
	2	100	
Lead Screw	6	220	300
	4	200	
	2	100	

* The values enclosed in < > apply for vertical usage. (Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ~ X10 (10m)	
	X11 (11m) ~ X15 (15m)	
	X16 (16m) ~ X20 (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø6 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 °C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

Name	Option Code	See Page	
Connector cable exit direction	K2	→ A-32	
Power-saving	LA	→ A-32	

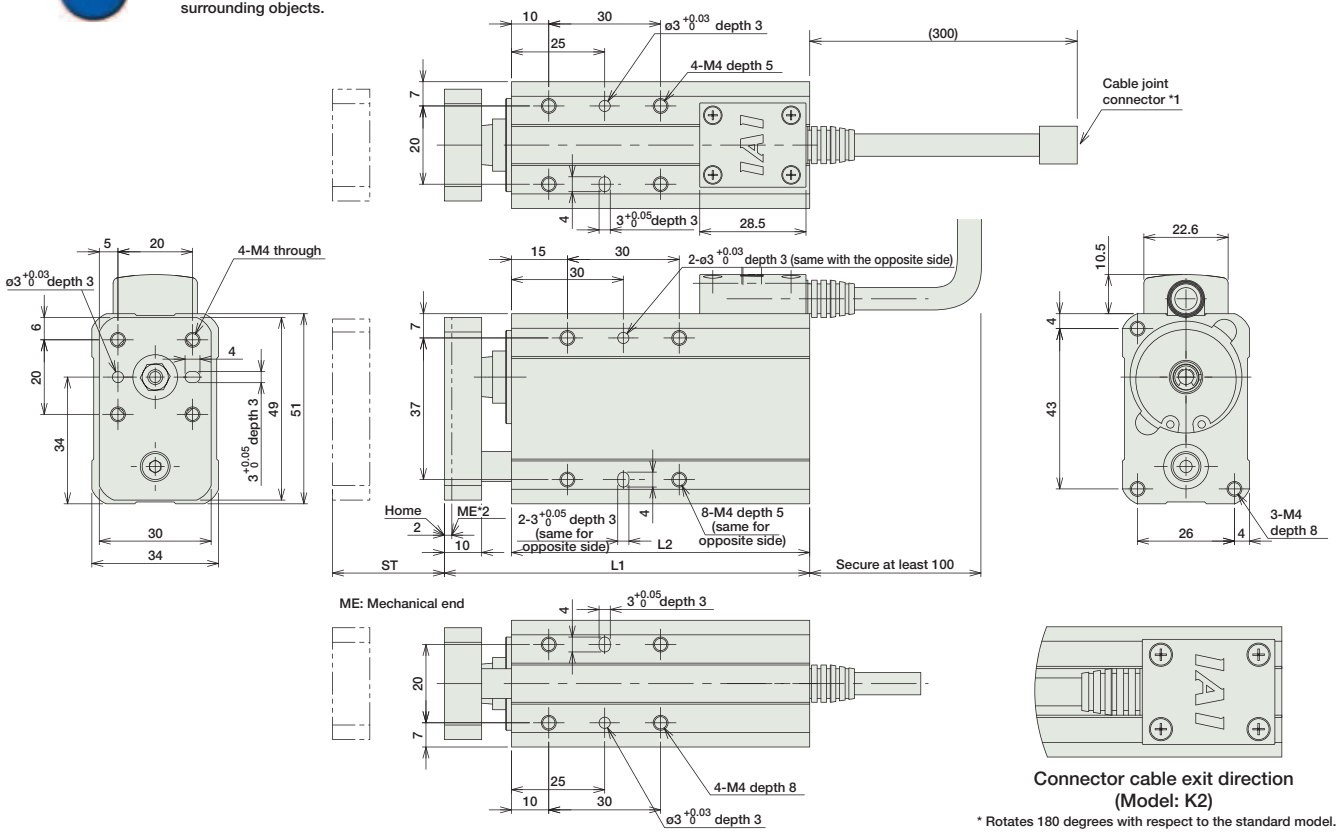
Dimensions

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

For Special Orders P. A-9

2/3D CAD

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.



Connector cable exit direction (Model: K2)

* Rotates 180 degrees with respect to the standard model.

Dimensions/Weight by Stroke

Stroke	30	50
L1	98	118
L2	80	100
Weight (kg)	0.55	0.63

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I①-NP-2-0						
Positioner Type		ACON-C-20I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-GD3NA

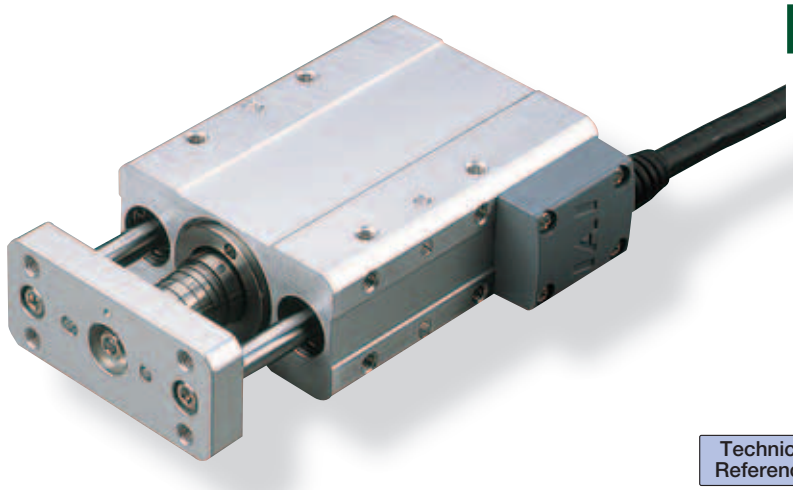
RoboCylinder Mini Rod Type Short-Length Free Mounting Type with Double Guide
28mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 – GD3NA – I – 10 – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA2	GD3NA	I: Incremental * The Simple absolute encoder is also considered type "I".	10 : 10W Servo Motor	4: Ball screw 4mm 2: Ball screw 2mm 1: Ball screw 1mm 4S: lead screw 4mm 2S: lead screw 2mm 1S: lead screw 1mm	30 : 30mm 50 : 50mm	A1 : ACON, RACON, ASEL A3 : AMEC, ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The horizontal load capacity is based on the use of a guide to prevent any radial and/or moment load on the rod.
If no guide will be installed, see the Tip Load vs. Service Life graph → page (A-82).
(2) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 1mm-lead model, lead screw model, or when used vertically). This is the upper limit of the acceleration.
(3) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor output (W)	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Rated thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-GD3NA-I-10-4 -①-②-③-④	10	Ball screw	4	0.75	0.25	42.7	±0.02	30 50
RCA2-GD3NA-I-10-2 -①-②-③-④			2	1.5	0.5	85.5		
RCA2-GD3NA-I-10-1 -①-②-③-④			1	3	1	170.9		
RCA2-GD3NA-I-10-4S -①-②-③-④	10	Lead screw	4	0.25	0.125	25.1	±0.05	30 50
RCA2-GD3NA-I-10-2S -①-②-③-④			2	0.5	0.25	50.3		
RCA2-GD3NA-I-10-1S -①-②-③-④			1	1	0.5	100.5		

■ Stroke and Maximum Speed

Lead		Stroke 30 (mm)	Stroke 50 (mm)
Ball screw	4	200	
	2	100	
	1	50	
Lead screw	4	200	
	2	100	
	1	50	

Legend ① Stroke ② Compatible Controllers ③ Cable length ④ Option

(Unit = mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	**P** (1m)	
	S (3m)	
	M (5m)	
Special Lengths	**X06** (6m) ~ **X10** (10m)	
	X11 (11m) ~ **X15** (15m)	
	X16 (16m) ~ **X20** (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø4 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 °C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

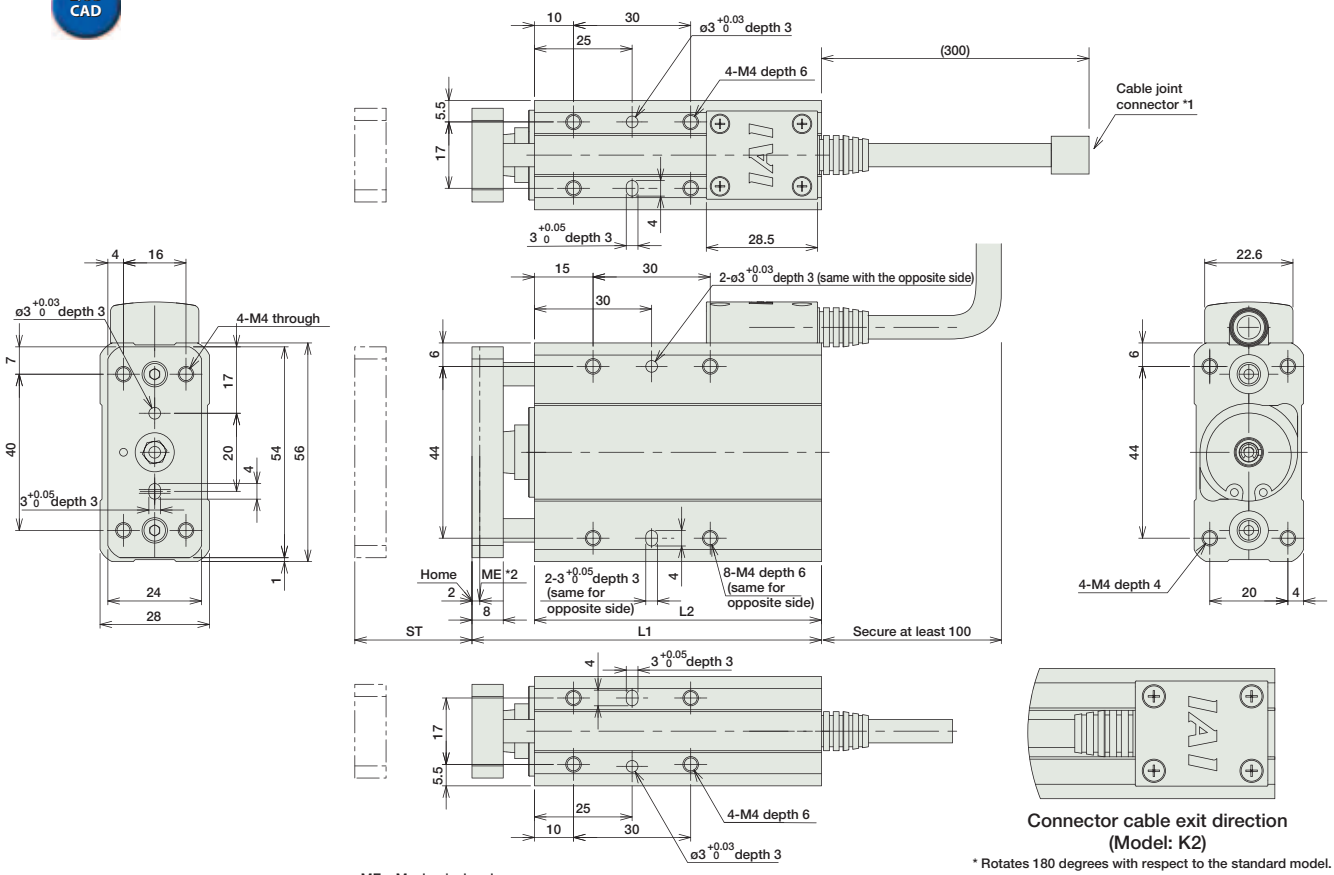
Name	Option Code	See Page	
Connector cable exit direction	**K2**	→ A-32	
Power-saving	**LA**	→ A-32	

Dimensions

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

For Special Orders P. A-9

2/3D CAD



ME : Mechanical end
SE : Stroke end

Connector cable exit direction
(Model: K2)
* Rotates 180 degrees with respect to the standard model.

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.

Dimensions/Weight by Stroke

Stroke	30	50
L1	89.5	109.5
L2	73.5	93.5
Weight (kg)	0.41	0.48

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-10I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-10I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-10I①-NP-2-0						
Positioner Type		ACON-C-10I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-10I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-10I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-10I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-10I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-10①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-10I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-GD4NA

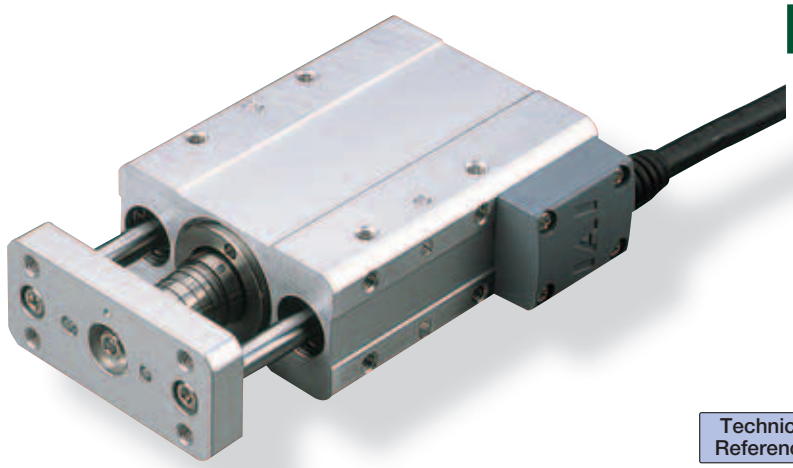
RoboCylinder Mini Rod Type Short-Length Free Mounting Type with Double Guide
34mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 — GD4NA — I — 20 — □ — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	6 : Ball screw 6mm 4 : Ball screw 4mm 2 : Ball screw 2mm 6S : lead screw 6mm 4S : lead screw 4mm 2S : lead screw 2mm	30 : 30mm 50 : 50mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	K2 : Connector Cable exit direction LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The horizontal load capacity is based on the use of a guide to prevent any radial and/or moment load on the rod.
If no guide will be installed, see the Tip Load vs. Service Life graph → page (A-82).
(2) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 2mm-lead model, lead screw model, or when used vertically). This is the upper limit of the acceleration.
(3) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Feed Screw	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-GD4NA-I-20-6- ① - ② - ③	20	Ball Screw	6	2	0.5	33.8	±0.02	30 50
RCA2-GD4NA-I-20-4- ① - ② - ③			4	3	0.75	50.7		
RCA2-GD4NA-I-20-2- ① - ② - ③			2	6	1.5	101.5		
RCA2-GD4NA-I-20-6S- ① - ② - ③	20	Lead Screw	6	0.25	0.125	19.9	±0.05	30 50
RCA2-GD4NA-I-20-4S- ① - ② - ③			4	0.5	0.25	29.8		
RCA2-GD4NA-I-20-2S- ① - ② - ③			2	1	0.5	59.7		

Legend ① Compatible controller ② Cable length ③ Options

■ Stroke and Maximum Speed

	Lead \ Stroke	30 (mm)	50 (mm)
Ball Screw	6	270 <220>	300
	4	200	
	2	100	
Lead Screw	6	220	300
	4	200	
	2	100	

* The values enclosed in < > apply for vertical usage. (Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ~ X10 (10m)	
	X11 (11m) ~ X15 (15m)	
	X16 (16m) ~ X20 (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø6 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 °C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

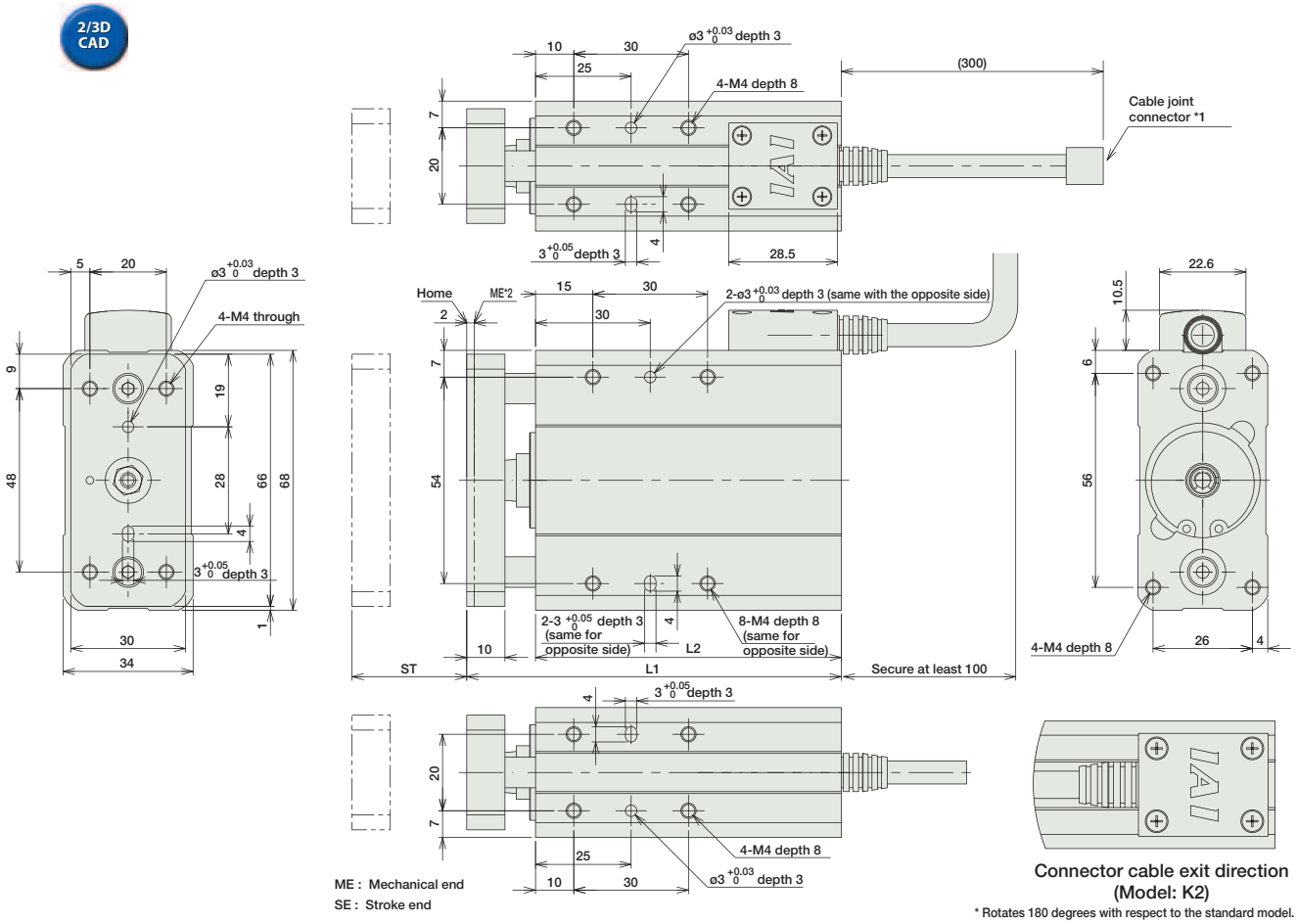
Name	Option Code	See Page	
Connector cable exit direction	K2	→ A-32	
Power-saving	LA	→ A-32	

Dimensions

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

For Special Orders P. A-9

2/3D CAD



Connector cable exit direction (Model: K2)

* Rotates 180 degrees with respect to the standard model.

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.

*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.

Dimensions/Weight by Stroke

Stroke	30	50
L1	98	118
L2	80	100
Weight (kg)	0.64	0.76

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I①-NP-2-0						
Positioner Type		ACON-C-20I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-SD3NA

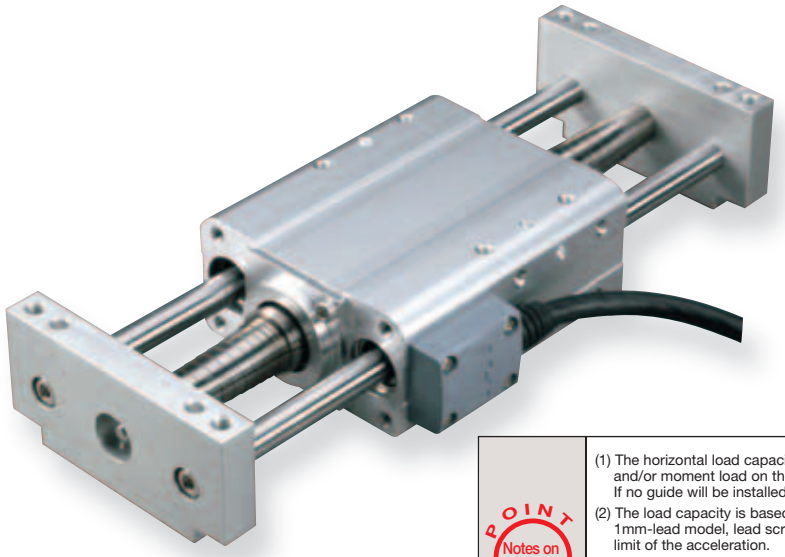
RoboCylinder Mini Rod Type Short-Length Slide Unit Type with Double Guide
60mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 — SD3NA — I — 10 — □ — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	10 : 10W Servo Motor	4 : Ball screw 4mm 2 : Ball screw 2mm 1 : Ball screw 1mm 4S : lead screw 4mm 2S : lead screw 2mm 1S : lead screw 1mm	25 :25mm 50 :50mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The horizontal load capacity is based on the use of a guide to prevent any radial and/or moment load on the rod.
If no guide will be installed, see the Tip Load vs. Service Life graph → page (A-82).
(2) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 1mm-lead model, lead screw model, or when used vertically). This is the upper limit of the acceleration.
(3) The values for the vertical load capacity are based on a setup in which the actuator is secured and the side bracket is moved. Please note that moving the actuator against the secured side bracket is not possible.
(4) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specification Table

■Leads and Payloads

Model	Motor output (W)	Feed screw	Lead (mm)	Maximum payload Horizontal (kg)	Maximum payload Vertical (kg)	Rated thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-SD3NA-I-10-4-①-②-③-④	10	Ball screw	4	0.75	0.25 (*)	42.7	±0.02	25 50
RCA2-SD3NA-I-10-2-①-②-③-④			2	1.5	0.5 (*)	85.5		
RCA2-SD3NA-I-10-1-①-②-③-④			1	3	1 (*)	170.9		
RCA2-SD3NA-I-10-4S-①-②-③-④	10	Lead screw	4	0.25	0.125 (*)	25.1	±0.05	25 50
RCA2-SD3NA-I-10-2S-①-②-③-④			2	0.5	0.25 (*)	50.3		
RCA2-SD3NA-I-10-1S-①-②-③-④			1	1	0.5 (*)	100.5		

■Stroke and Maximum Speed

Lead	Stroke 25 (mm)	Stroke 50 (mm)
Ball screw 4	200	
Ball screw 2	100	
Ball screw 1	50	
Lead screw 4	200	
Lead screw 2	100	
Lead screw 1	50	

Legend ① Stroke ② Compatible Controllers ③ Cable length ④ Option

(*) When the main unit side is fixed

(Unit = mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ～ X10 (10m)	
	X11 (11m) ～ X15 (15m)	
	X16 (16m) ～ X20 (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø4 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 ˚C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

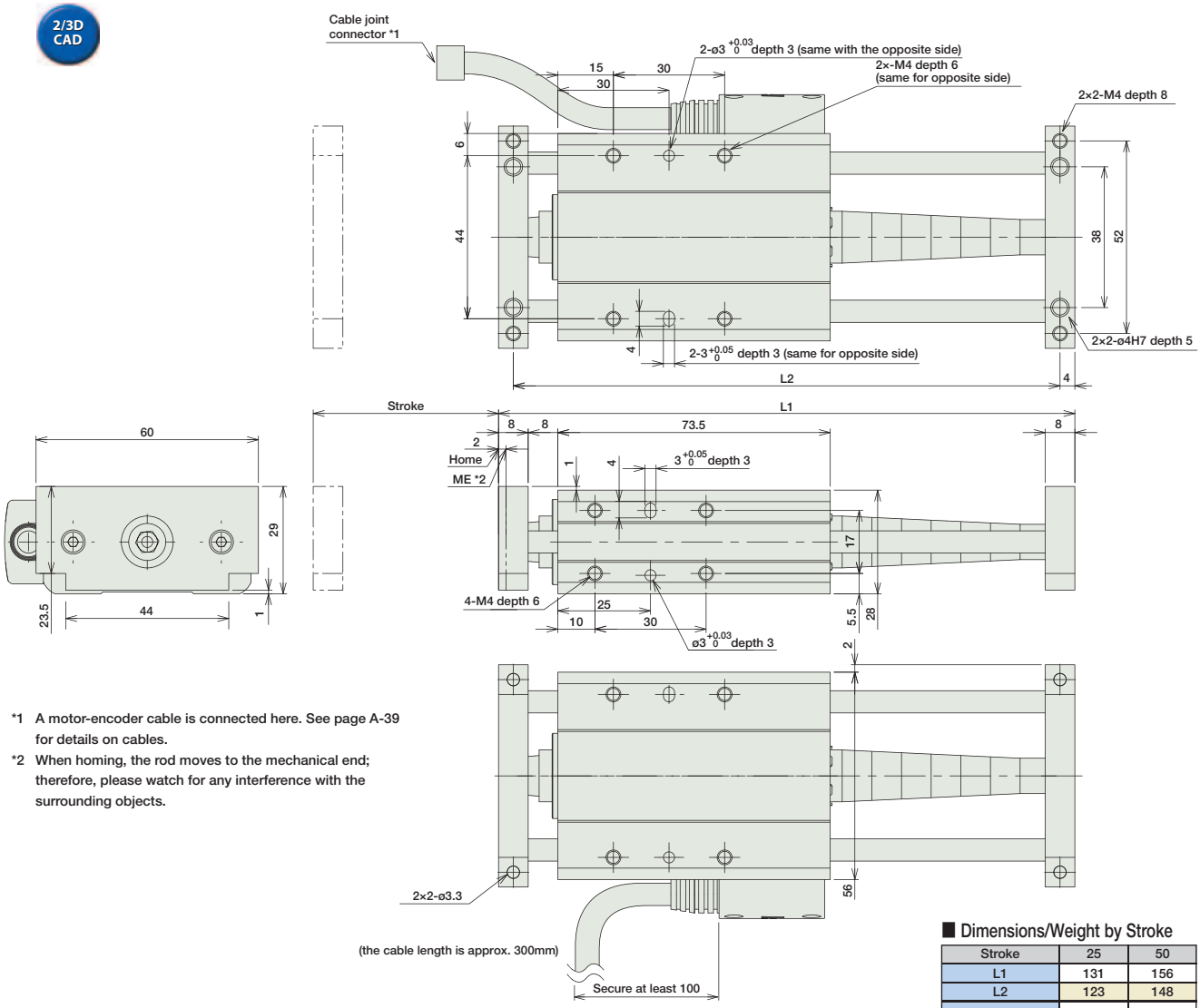
Name	Option Code	See Page	
Power-saving	LA	→ A-32	

Dimensions

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

For Special Orders P. A-9

2/3D CAD



*1 A motor-encoder cable is connected here. See page A-39 for details on cables.

*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.

Dimensions/Weight by Stroke

Stroke	25	50
L1	131	156
L2	123	148
Weight (kg)	0.48	0.5

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-10I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-10I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-10I①-NP-2-0						
Positioner Type		ACON-C-10I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-10I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-10I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-10I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-10I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-10①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-10I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA2-SD4NA

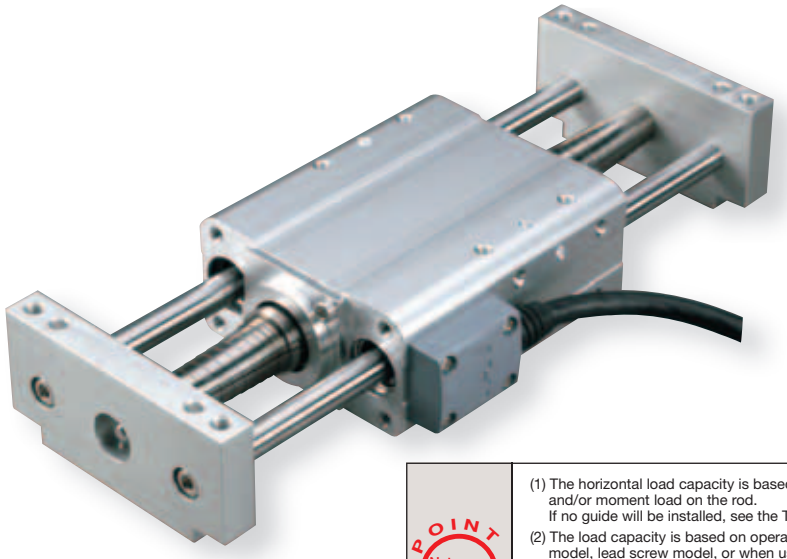
RoboCylinder Mini Rod Type Short-Length Slide Unit Type with Double Guide
72mm Width 24V Servo Motor Ball Screw/Lead Screw

■ Configuration: RCA2 — SD4NA — I — 20 — □ — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	6 : 6mm ball screw 4 : 4mm ball screw 2 : 2mm ball screw 6S : 6mm lead screw 4S : 4mm lead screw 2S : 2mm lead screw	25 : 25mm 50 : 50mm 75 : 75mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length	LA : Power-saving

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The horizontal load capacity is based on the use of a guide to prevent any radial and/or moment load on the rod.
If no guide will be installed, see the Tip Load vs. Service Life graph → page (A-82).
(2) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 2mm-lead model, lead screw model, or when used vertically). This is the upper limit of the acceleration.
(3) The values for the vertical load capacity are based on a setup in which the actuator is secured and the side bracket is moved. Please note that moving the actuator against the secured side bracket is not possible.
(4) If the actuator is used vertically, pay attention to rod contact because the rod will come down when the power is turned off.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Feed Screw	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Positioning Repeatability (mm)	Stroke (mm)
RCA2-SD4NA-I-20-6-①-②-③-④	20	Ball Screw	6	2	0.5 (*1)	33.8	±0.02	25 50 75
RCA2-SD4NA-I-20-4-①-②-③-④			4	3	0.75 (*1)	50.7		
RCA2-SD4NA-I-20-2-①-②-③-④			2	6	1.5 (*1)	101.5		
RCA2-SD4NA-I-20-6S-①-②-③-④	20	Lead Screw	6	0.25	0.125 (*1)	19.9	±0.05	25 50 75
RCA2-SD4NA-I-20-4S-①-②-③-④			4	0.5	0.25 (*1)	29.8		
RCA2-SD4NA-I-20-2S-①-②-③-④			2	1	0.5 (*1)	59.7		

Legend ① Stroke ② Compatible controller ③ Cable length ④ Options

(*1) When the main unit is fixed

■ Stroke and Maximum Speed

	Lead \ Stroke	25 (mm)	50 ~ 75 (mm)
Ball Screw	6	240 <200>	300
	4	200	200
	2	100	100
Lead Screw	6	200	300
	4	200	200
	2	100	100

* The values enclosed in < > apply for vertical usage. (Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ~ X10 (10m)	
	X11 (11m) ~ X15 (15m)	
	X16 (16m) ~ X20 (20m)	

* The RCA2 comes standard with a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item		Description
Drive System		Ball screw/Lead screw, Ø6 mm, rolled C10
Lost motion		Ball screw: 0.1 mm or less/Lead screw: 0.3 mm or less (default value)
Frame		Material: Aluminum, white alumite treated
Ambient operating temperature, humidity		0 to 40 °C, 85% RH or less (Non-condensing)
Service life	Lead screw specification	Horizontal specification: 10 million cycles, Vertical specification: 5 million cycles
	Ball screw specification	5000 km

Option List

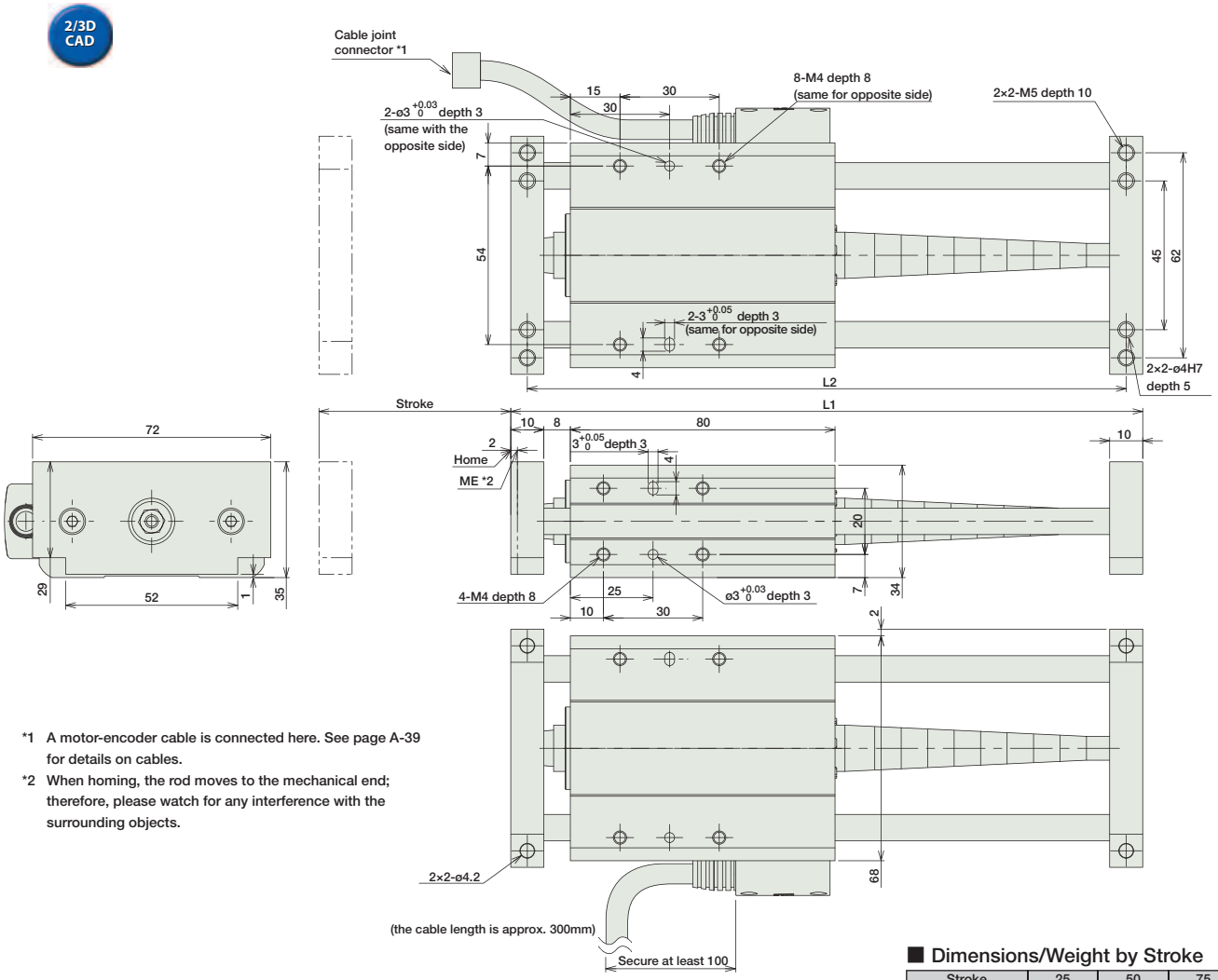
Name	Option Code	See Page	
Power-saving	LA	→ A-32	

Dimensions

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

For Special Orders P. A-9

2/3D CAD



*1 A motor-encoder cable is connected here. See page A-39 for details on cables.

*2 When homing, the rod moves to the mechanical end; therefore, please watch for any interference with the surrounding objects.

Dimensions/Weight by Stroke

Stroke	25	50	75
L1	141	166	191
L2	131	156	181
Weight (kg)	0.73	0.75	0.77

Compatible Controllers

The RCA2 series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I①-NP-2-0						
Positioner Type		ACON-C-20I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA-RA3C RoboCylinder Rod Type ø32mm Diameter 24V Servo Motor Coupled

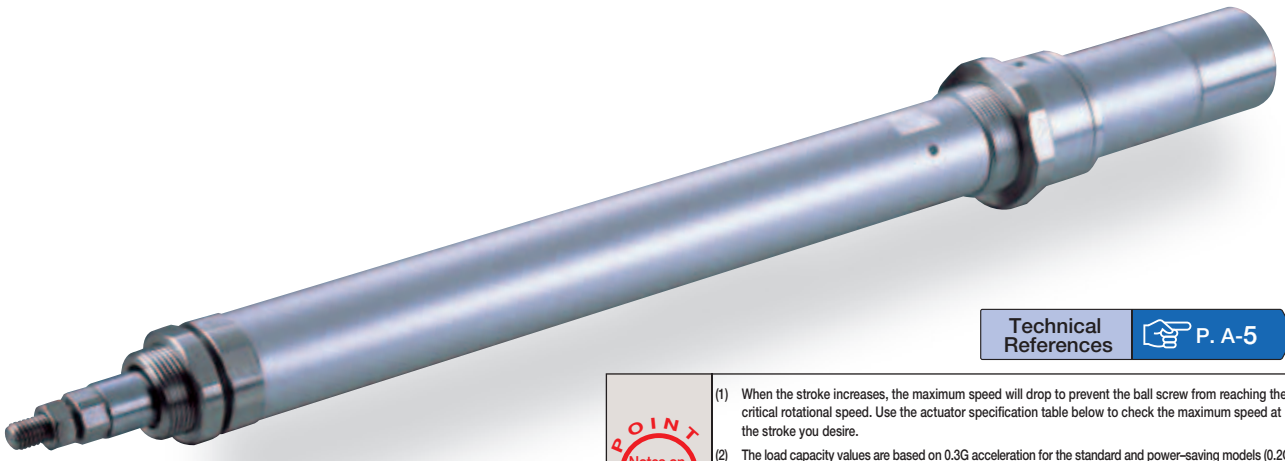
■ Configuration: RCA – RA3C – I – 20 – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RA3C	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm 〉 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* See page Pre-35 for an explanation of the naming convention.

For High Acceleration/Deceleration **Power-saving**

(Except the 2.5mm–lead model)



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 values are based on 0.3G acceleration for the standard and power-saving models (0.2G for 2.5mm–lead), and 1G acceleration for the high–acceleration models (2.5mm–lead model excluded). (The values in the table below are the upper limits, even if the acceleration/deceleration is decreased.)

(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA–RA3C–I–20–10–①–②–③–④	20	10	4.0	1.5	36.2	50～200 (50mm increments)
RCA–RA3C–I–20–5–①–②–③–④		5	9.0	3.0	72.4	
RCA–RA3C–I–20–2.5–①–②–③–④		2.5	18.0	6.5	144.8	

■ Stroke and Maximum Speed

Lead \ Stroke	50 ～ 200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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–39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Base	Material: Aluminum (white alumite treated)
Rod Diameter	ø16mm
Non–rotating accuracy of rod	±1.0 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non–condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A–25	
Foot bracket	FT	→ A–29	
Flange bracket (front)	FL	→ A–27	
Flange bracket (back)	FLR	→ A–28	
High–acceleration/deceleration (*1)	HA	→ A–32	
Home sensor (*2)	HS	→ A–32	
Power–saving (*3)	LA	→ A–32	
Knuckle joint	NJ	→ A–34	
Reversed–home	NM	→ A–33	
Trunnion bracket (front)	TRF	→ A–38	
Trunnion bracket (back)	TRR	→ A–38	

(*1) The high–acceleration/deceleration option is not available for 2.5mm–lead model.
(*2) The home sensor (HS) cannot be used on the reversed–home models.
(*3) The high acceleration/deceleration option and the power–saving option cannot be used simultaneously.

Dimensions

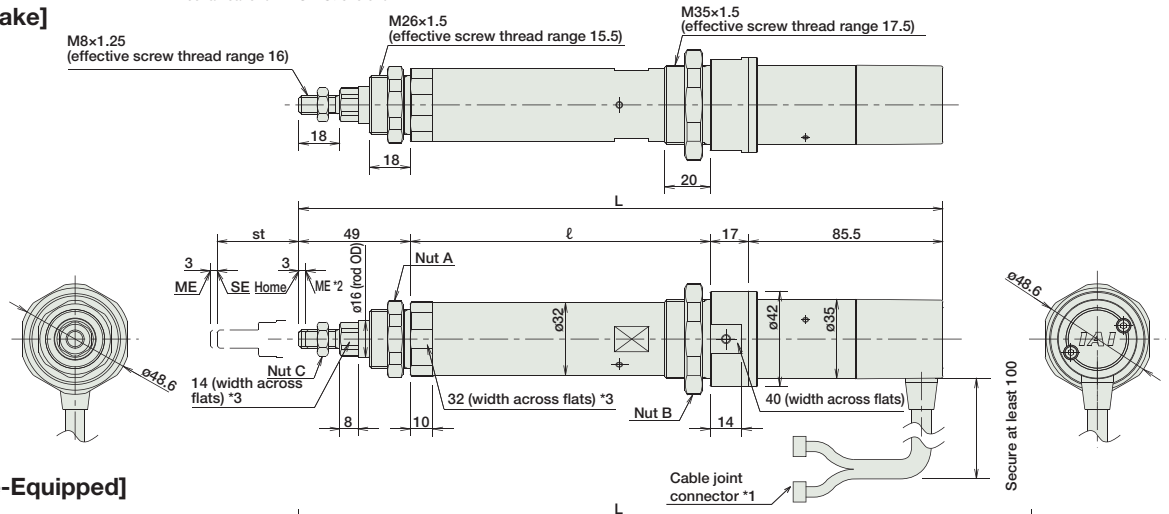
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Order P. A-9

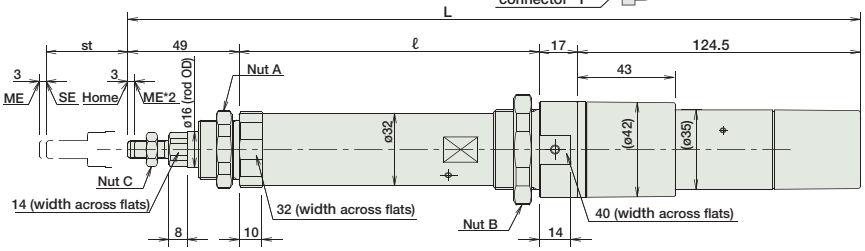
2/3D CAD

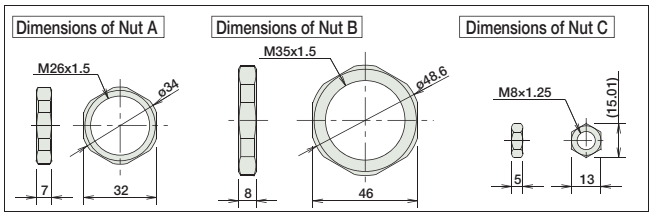
*1. A motor–encoder cable is connected here. See page A–39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end
*3. The orientation of the bolt will vary depending on the product.

[No Brake]



[Brake-Equipped]





■ Dimensions/Weight by Stroke

RCA–RA3C (without brake)

Stroke	50	100	150	200
L	283.5	333.5	383.5	433.5
ℓ	132	182	232	282
Weight (kg)	0.7	0.8	0.9	1.0

RCA–RA3C (with brake)

Stroke	50	100	150	200
L	322.5	372.5	422.5	472.5
ℓ	132	182	232	282
Weight (kg)	0.9	1.0	1.1	1.2

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC–C–20SI ① –NP–2–2	Easy–to–use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP–C–20SI ① –NP–2–0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash–Proof Solenoid Valve Type		ASEP–CW–20SI ① –NP–2–0						
Positioner Type		ACON–C–20SI ① –NP–2–0	Positioning is possible for up to 512 points	512 points				→ P535
Safety–Compliant Positioner Type		ACON–CG–20SI ① –NP–2–0						
Pulse Train Input Type (Differential Line Driver)		ACON–PL–20SI ① –NP–2–0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON–PO–20SI ① –NP–2–0	Pulse train input type with open collector support					
Serial Communication Type		ACON–SE–20SI ① –N–0–0	Dedicated to serial communication	64 points				
Field Network Type		RACON–20S①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL–C–1–20SI ① –NP–2–0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single–axis ASEL.
* ① is a placeholder for the code "HA" or "LA" if the high acceleration/deceleration option or the power–saving option is specified.

RCA-RA4C RoboCylinder Rod Type ø37mm Diameter 24V Servo Motor Coupled

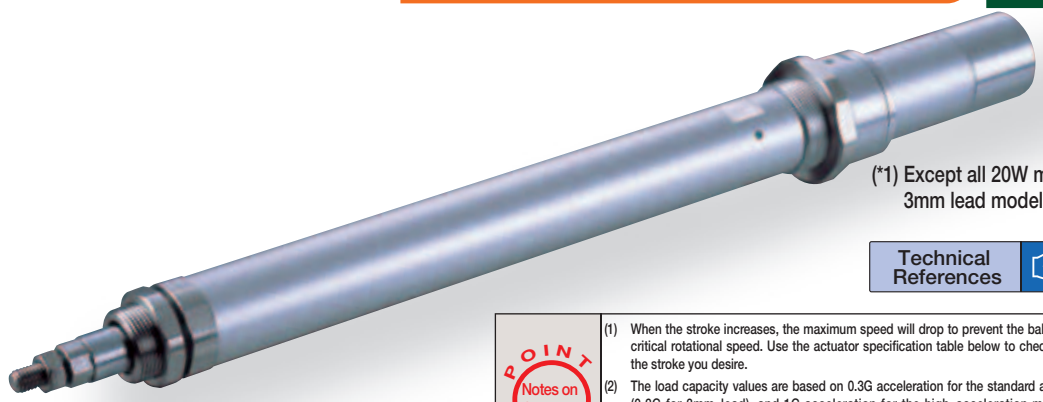
■ Configuration: RCA – RA4C – [Encoder] – [Motor] – [Lead] – [Stroke] – [Compatible Controllers] – [Cable Length] – [Option]

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RA4C	I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〉 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental.

* See page Pre-35 for an explanation of the naming convention.

For High Acceleration/Deceleration **Power-saving**



(*1) Except all 20W models and 30W 3mm lead models

Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 values are based on 0.3G acceleration for the standard and power-saving models (0.2G for 3mm-lead), and 1G acceleration for the high-acceleration models (3mm-lead model excluded).
(The values in the table below are the upper limits, even if the acceleration/deceleration is decreased.)

(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RA4C-①-20-12-②-③-④-⑤	20	12	3.0	1.0	18.9	50～300 (50mm increments)
RCA-RA4C-①-20-6-②-③-④-⑤		6	6.0	2.0	37.7	
RCA-RA4C-①-20-3-②-③-④-⑤		3	12.0	4.0	75.4	
RCA-RA4C-①-30-12-②-③-④-⑤	30	12	4.0	1.5	28.3	
RCA-RA4C-①-30-6-②-③-④-⑤		6	9.0	3.0	56.6	
RCA-RA4C-①-30-3-②-③-④-⑤		3	18.0	6.5	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

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

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
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
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page
Brake	B	→ A-25
Foot bracket	FT	→ A-29
Flange bracket (front)	FL	→ A-27
Flange bracket (back)	FLR	→ A-28
High-acceleration/deceleration (*1)	HA	→ A-32
Home sensor (*2)	HS	→ A-32
Power-saving (*3)	LA	→ A-32
Knuckle joint	NJ	→ A-34
Reversed-home	NM	→ A-33
Trunnion bracket (front)	TRF	→ A-38
Trunnion bracket (back)	TRR	→ A-38

(*1) The high-acceleration/deceleration option is not available for all 20W models and 30W model with 3mm lead.
(*2) The home sensor (HS) cannot be used on the reversed-home models.
(*3) The high acceleration/deceleration option and the power-saving option cannot be used simultaneously.

Dimensions

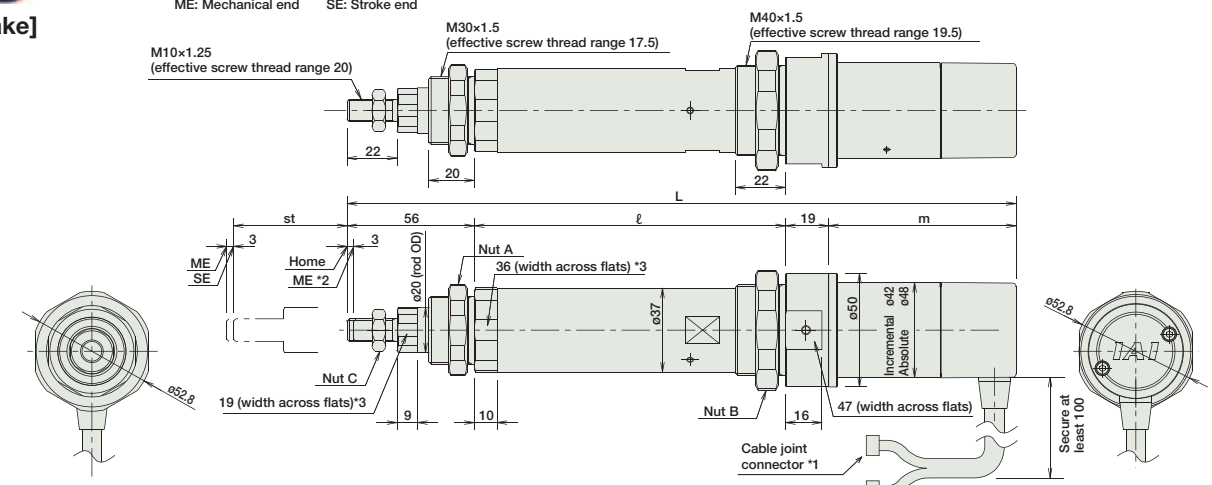
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Order P. A-9

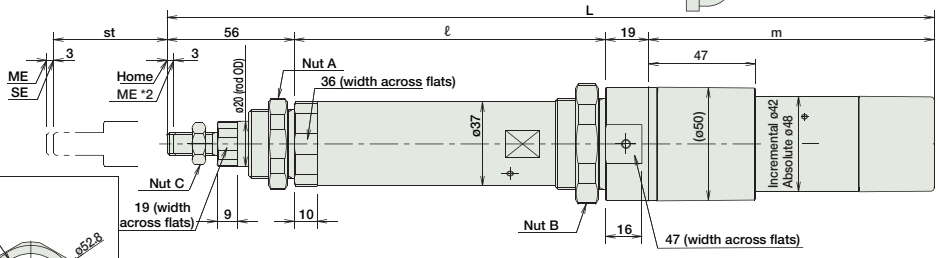
2/3D CAD

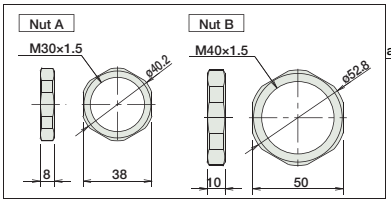
*1 A motor–encoder cable is connected here. See page A–39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end
*3. The orientation of the bolt will vary depending on the product.

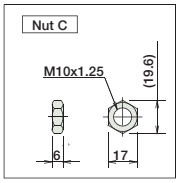
[No Brake]



[Brake-Equipped]







■ Dimensions/Weight by Stroke

RCA–RA4C (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	279.5	329.5	379.5	429.5	479.5	529.5
		Absol.	292.5	342.5	392.5	442.5	492.5	542.5
	30W	Increm.	294.5	344.5	394.5	444.5	494.5	544.5
		Absol.	307.5	357.5	407.5	457.5	507.5	557.5
ℓ			137	187	237	287	337	387
m	20W	Increm.	67.5					
		Absol.	80.5					
	30W	Increm.	82.5					
		Absol.	95.5					
Weight (kg)			1.1	1.2	1.4	1.5	1.7	1.8

RCA–RA4C (with brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	322.5	372.5	422.5	472.5	522.5	572.5
		Absol.	335.5	385.5	435.5	485.5	535.5	585.5
	30W	Increm.	337.5	387.5	437.5	487.5	537.5	587.5
		Absol.	350.5	400.5	450.5	500.5	550.5	600.5
ℓ			137	187	237	287	337	387
m	20W	Increm.	110.5					
		Absol.	123.5					
	30W	Increm.	125.5					
		Absol.	138.5					
Weight (kg)			1.3	1.4	1.6	1.7	1.9	2.0

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC–C–20I ② –NP–2–2 AMEC–C–30I ② –NP–2–2	Easy–to–use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP–C–20I ② –NP–2–0 ASEP–C–30I ② –NP–2–0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash–Proof Solenoid Valve Type		ASEP–CW–20I ② –NP–2–0 ASEP–CW–30I ② –NP–2–0						
Positioner Type		ACON–C–20I ② –NP–2–0 ACON–C–30I ② –NP–2–0	Positioning is possible for up to 512 points	512 points				→ P535
Safety–Compliant Positioner Type		ACON–CG–20I ② –NP–2–0 ACON–CG–30I ② –NP–2–0						
Pulse Train Input Type (Differential Line Driver)		ACON–PL–20I ② –NP–2–0 ACON–PL–30I ② –NP–2–0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON–PO–20I ② –NP–2–0 ACON–PO–30I ② –NP–2–0	Pulse train input type with open collector support					
Serial Communication Type		ACON–SE–20I ② –N–0–0 ACON–SE–30I ② –N–0–0	Dedicated to serial communication	64 points				
Field Network Type		RACON–20② RACON–30②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL–C–1–20 ①② –NP–2–0 ASEL–C–1–30 ①② –NP–2–0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single–axis ASEL.
* ① is a placeholder for the encoder type (I: incremental/A: absolute).
* ② is a placeholder for the code "HA" or "LA" if the high acceleration/deceleration option or the power–saving option is specified.

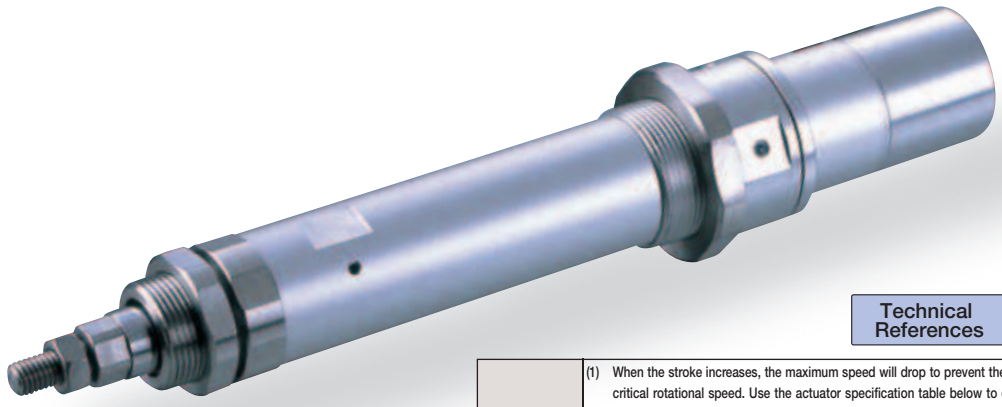
RCA-RA3D RoboCylinder Rod Type ø32mm Diameter 24V Servo Motor Built-In (Direct-Coupled) Motor

■ Configuration:

RCA	RA3D	I	20	□	□	□	□	□	□
Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option	
		I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm \ 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below	

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 2.5mm-lead model). This is the upper limit of the acceleration.
(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod.
(4) Please note that models with built-in motor are not equipped with a brake.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RA3D-I-20-10-①-②-③-④	20	10	4.0	1.5	36.2	50～200 (50mm increments)
RCA-RA3D-I-20-5-①-②-③-④		5	9.0	3.0	72.4	
RCA-RA3D-I-20-2.5-①-②-③-④		2.5	18.0	6.5	144.8	

■ Stroke and Maximum Speed

Lead \ Stroke	50 ～ 200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Base	Material: Aluminum (white alumite treated)
Rod Diameter	ø16mm
Non-rotating accuracy of rod	±1.0 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Foot bracket	FT	→ A-29	
Flange bracket (front)	FL	→ A-27	
Flange bracket (back)	FLR	→ A-28	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Knuckle joint	NJ	→ A-34	
Reversed-home	NM	→ A-33	
Trunnion bracket (front)	TRF	→ A-38	
Trunnion bracket (back)	TRR	→ A-38	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

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

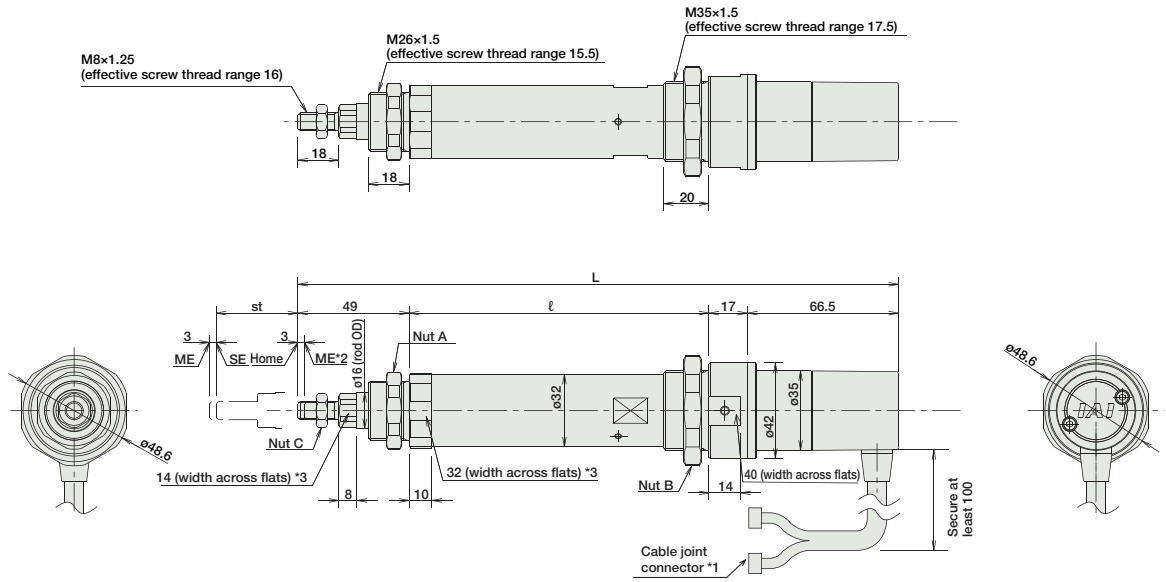
For Special Order P. A-9

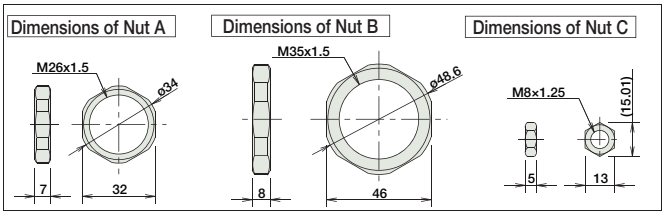
2/3D CAD

*1 A motor–encoder cable is connected here. See page A–39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

*3. The orientation of the bolt will vary depending on the product.

[No Brake]





■ Dimensions/Weight by Stroke

RCA–RA3D (without brake)

Stroke	50	100	150	200
L	264.5	314.5	364.5	414.5
ℓ	132	182	232	282
Weight (kg)	0.7	0.8	0.9	1.0

The RCA–RA3D models are not equipped with a brake.

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC–C–20SI–① NP–2–2	Easy–to–use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP–C–20SI–① NP–2–0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash–Proof Solenoid Valve Type		ASEP–CW–20SI–① NP–2–0						
Positioner Type		ACON–C–20SI–① NP–2–0	Positioning is possible for up to 512 points	512 points				→ P535
Safety–Compliant Positioner Type		ACON–CG–20SI–① NP–2–0						
Pulse Train Input Type (Differential Line Driver)		ACON–PL–20SI–① NP–2–0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON–PO–20SI–① NP–2–0	Pulse train input type with open collector support					
Serial Communication Type		ACON–SE–20SI–① N–0–0	Dedicated to serial communication	64 points				
Field Network Type		RACON–20S ①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL–C–1–20SI–① NP–2–0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single–axis ASEL.
* ① is a placeholder for the code "LA" if the power–saving option is specified.

RCA-RA4D RoboCylinder Rod Type ø37mm Diameter 24V Servo Motor Built-In (Direct-Coupled) Motor

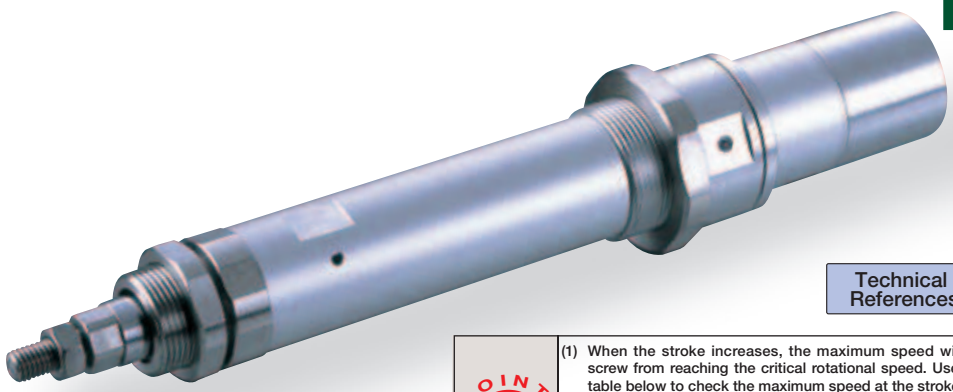
■ Configuration: RCA – RA4D – □ – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RA4D	I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〜 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 3mm–lead model).
This is the upper limit of the acceleration.

(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA–RA4D–①–20–12–②–③–④–⑤	20	12	3.0	1.0	18.9	50〜300 (50mm increments)
RCA–RA4D–①–20–6–②–③–④–⑤		6	6.0	2.0	37.7	
RCA–RA4D–①–20–3–②–③–④–⑤		3	12.0	4.0	75.4	
RCA–RA4D–①–30–12–②–③–④–⑤	30	12	4.0	1.5	28.3	
RCA–RA4D–①–30–6–②–③–④–⑤		6	9.0	3.0	56.6	
RCA–RA4D–①–30–3–②–③–④–⑤		3	18.0	6.5	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 〜 300 (50mm increments)
12	600
6	300
3	150

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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–39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
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
Ambient Operating Temp./Humidity	0〜40°C, 85% RH or less (non–condensing)

Option List

Name	Option Code	See Page	
Foot bracket	FT	→ A–29	
Flange bracket (front)	FL	→ A–27	
Flange bracket (back)	FLR	→ A–28	
Home sensor	HS	→ A–32	
Power–saving	LA	→ A–32	
Knuckle joint	NJ	→ A–34	
Reversed–home	NM	→ A–33	
Trunnion bracket (front)	TRF	→ A–38	
Trunnion bracket (back)	TRR	→ A–38	

Dimensions

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

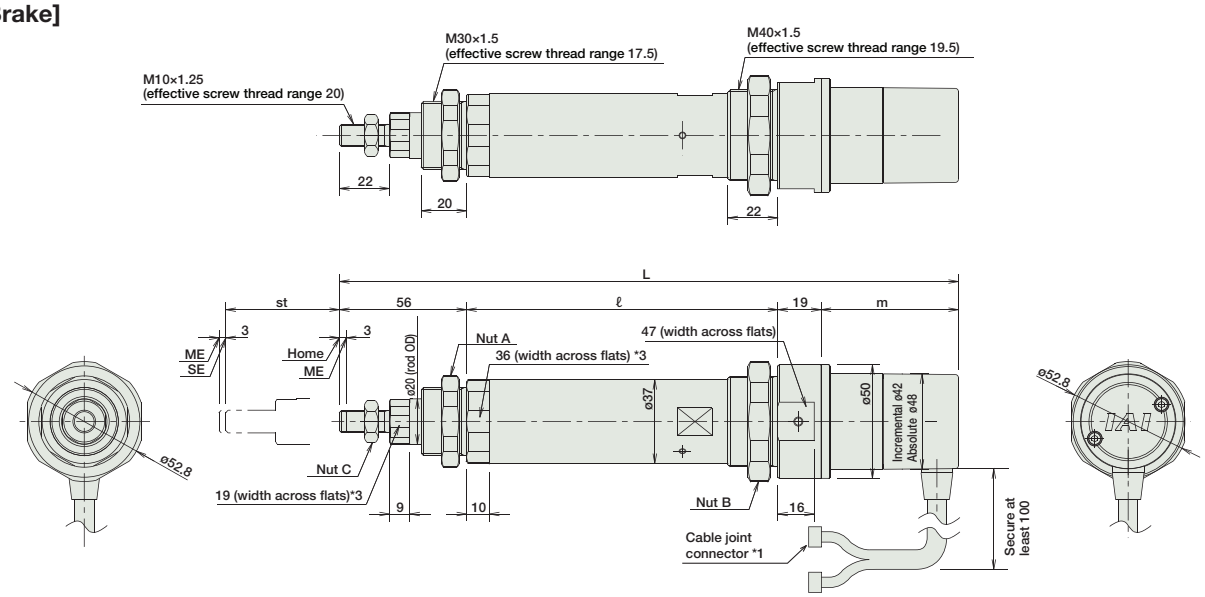
For Special Order P. A-9

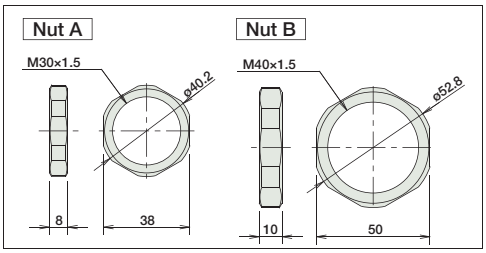
2/3D CAD

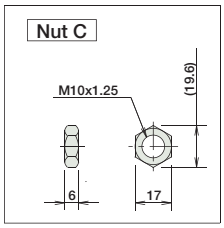
*1 A motor–encoder cable is connected here. See page A–39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

*3. The orientation of the bolt will vary depending on the product.

[No Brake]







■ Dimensions/Weight by Stroke

RCA–RA4D (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	257.5	307.5	357.5	407.5	457.5	507.5
		Absol.	270.5	320.5	370.5	420.5	470.5	520.5
	30W	Increm.	272.5	322.5	372.5	422.5	472.5	522.5
		Absol.	285.5	335.5	385.5	435.5	485.5	535.5
ℓ			137	187	237	287	337	387
m	20W	Increm.	45.5					
		Absol.	58.5					
	30W	Increm.	60.5					
		Absol.	73.5					
Weight (kg)			1.0	1.2	1.3	1.5	1.6	1.8

Brake–equipped configuration is not available with the RCA–RA4D.

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC–C–20I–② NP–2–2 AMEC–C–30I–② NP–2–2	Easy–to–use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP–C–20I–② NP–2–0 ASEP–C–30I–② NP–2–0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash–Proof Solenoid Valve Type		ASEP–CW–20I–② NP–2–0 ASEP–CW–30I–② NP–2–0						
Positioner Type		ACON–C–20I–② NP–2–0 ACON–C–30I–② NP–2–0	Positioning is possible for up to 512 points	512 points				→ P535
Safety–Compliant Positioner Type		ACON–CG–20I–② NP–2–0 ACON–CG–30I–② NP–2–0						
Pulse Train Input Type (Differential Line Driver)		ACON–PL–20I–② NP–2–0 ACON–PL–30I–② NP–2–0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON–PO–20I–② NP–2–0 ACON–PO–30I–② NP–2–0	Pulse train input type with open collector support					
Serial Communication Type		ACON–SE–20I–② N–0–0 ACON–SE–30I–② N–0–0	Dedicated to serial communication	64 points				
Field Network Type		RACON–20② RACON–30②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL–C–1–20–①② NP–2–0 ASEL–C–1–30–①② NP–2–0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single–axis ASEL.
* ① is a placeholder for the encoder type (I: incremental/A: absolute).
* ② is a placeholder for the code "LA" if the power–saving option is specified.

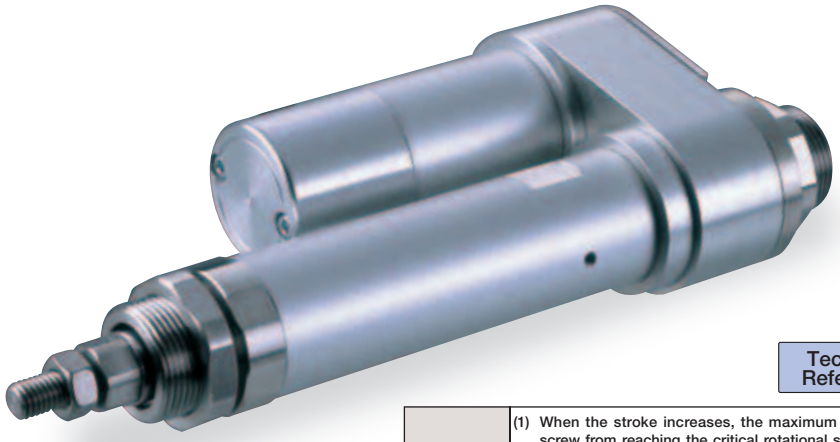
RCA-RA3R RoboCylinder Rod Type ø32mm Diameter 24V Servo Motor Side-Mounted Motor

■ Configuration: RCA – RA3R – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RA3R	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm 〉 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 2.5mm–lead model).
This is the upper limit of the acceleration.
(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA–RA3R–I–20–10–①–②–③–④	20	10	4.0	1.5	36.2	50～200 (50mm increments)
RCA–RA3R–I–20–5–①–②–③–④		5	9.0	3.0	72.4	
RCA–RA3R–I–20–2.5–①–②–③–④		2.5	18.0	6.5	144.8	

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 ～ 200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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–39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Base	Material: Aluminum (white alumite treated)
Rod Diameter	ø16mm
Non–rotating accuracy of rod	±1.0 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non–condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A–25	
Foot bracket	FT	→ A–29	
Flange bracket (front)	FL	→ A–27	
Flange bracket (back)	FLR	→ A–28	
Home sensor	HS	→ A–32	
Power–saving	LA	→ A–32	
Knuckle joint	NJ	→ A–34	
Reversed–home	NM	→ A–33	
Clevis Bracket	QR	→ A–34	
Back–mounting plate	RP	→ A–35	
Trunnion bracket (front)	TRF	→ A–38	

* The home sensor (HS) cannot be used on the reversed–home models.

Dimensions

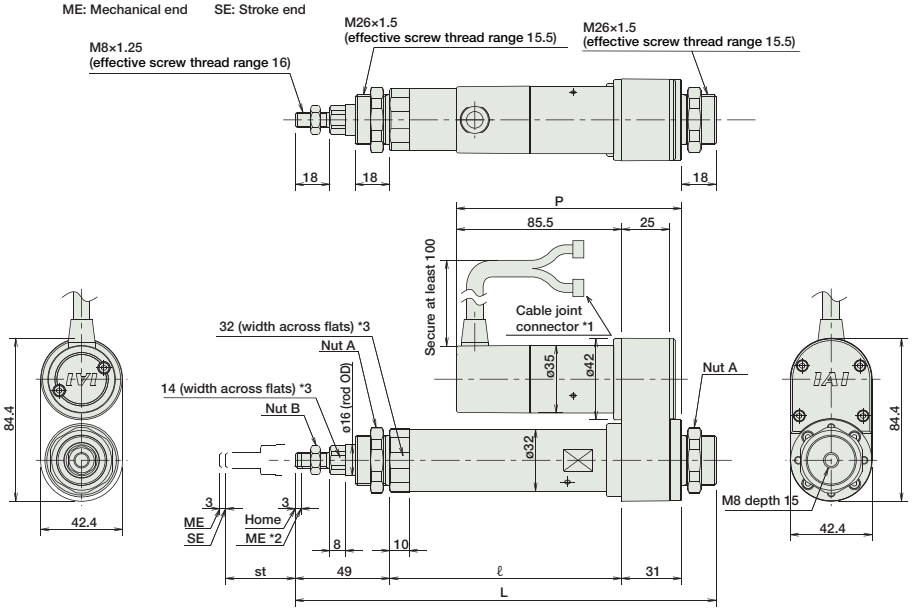
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Order P. A-9

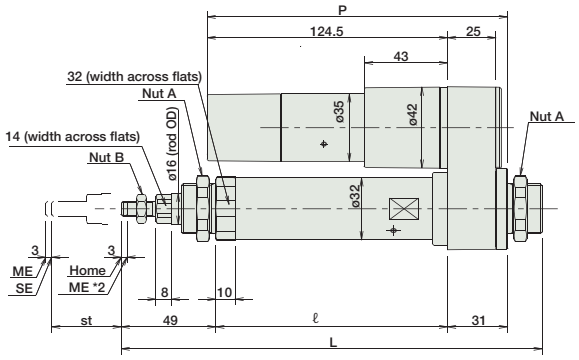
2/3D CAD

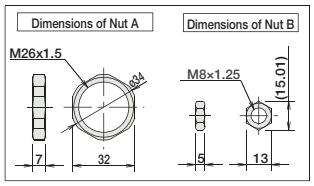
*1 A motor–encoder cable is connected here. See page A–39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end
*3. The orientation of the bolt will vary depending on the product.

[No Brake]



[Brake-Equipped]





■ Dimensions/Weight by Stroke

RCA–RA3R (without brake)

Stroke	50	100	150	200
L	218	268	318	368
r	120	170	220	270
P	116.5			
Weight (kg)	0.8	0.9	1.0	1.1

RCA–RA3R (with brake)

Stroke	50	100	150	200
L	218	268	318	368
r	120	170	220	270
P	155.5			
Weight (kg)	1.0	1.1	1.2	1.3

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC–C–20SI–① NP–2–2	Easy–to–use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP–C–20SI–① NP–2–0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash–Proof Solenoid Valve Type		ASEP–CW–20SI–① NP–2–0						
Positioner Type		ACON–C–20SI–① NP–2–0	Positioning is possible for up to 512 points	512 points				→ P535
Safety–Compliant Positioner Type		ACON–CG–20SI–① NP–2–0						
Pulse Train Input Type (Differential Line Driver)		ACON–PL–20SI–① NP–2–0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON–PO–20SI–① NP–2–0	Pulse train input type with open collector support					
Serial Communication Type		ACON–SE–20SI–① N–0–0	Dedicated to serial communication	64 points				
Field Network Type		RACON–20S ①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL–C–1–20SI–① NP–2–0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single–axis ASEL.
* ①is a placeholder for the code "LA" if the power–saving option is specified.

RCA-RA4R RoboCylinder Rod Type ø37mm Diameter 24V Servo Motor Side-Mounted Motor

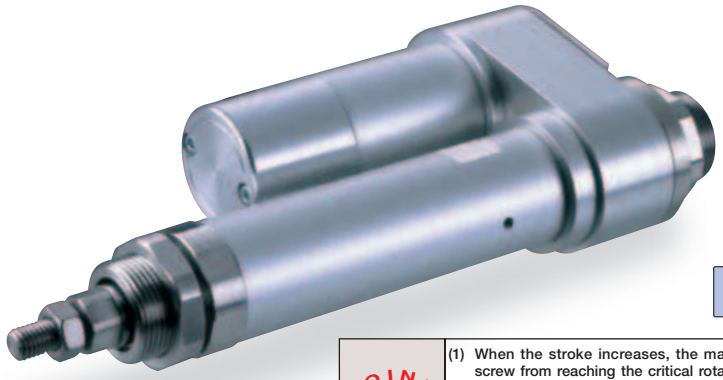
■ Configuration: RCA — RA4R — □ — □ — □ — □ — □ — □ — □ — □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RA4R	I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〜 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* The absolute models are only compatible with ASEL Simple absolute encoders are considered incremental

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 3mm-lead model).
This is the upper limit of the acceleration.
(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RA4R-①-20-12-②-③-④-⑤	20	12	3.0	1.0	18.9	50〜300 (50mm increments)
RCA-RA4R-①-20-6-②-③-④-⑤		6	6.0	2.0	37.7	
RCA-RA4R-①-20-3-②-③-④-⑤		3	12.0	4.0	75.4	
RCA-RA4R-①-30-12-②-③-④-⑤	30	12	4.0	1.5	28.3	
RCA-RA4R-①-30-6-②-③-④-⑤		6	9.0	3.0	56.6	
RCA-RA4R-①-30-3-②-③-④-⑤		3	18.0	6.5	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 〜 300 (50mm increments)
12	600
6	300
3	150

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
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
Ambient Operating Temp./Humidity	0〜40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket	FT	→ A-29	
Flange bracket (front)	FL	→ A-27	
Flange bracket (back)	FLR	→ A-28	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Knuckle joint	NJ	→ A-34	
Reversed-home	NM	→ A-33	
Clevis Bracket	QR	→ A-34	
Back-mounting plate	RP	→ A-35	
Trunnion bracket (front)	TRF	→ A-38	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

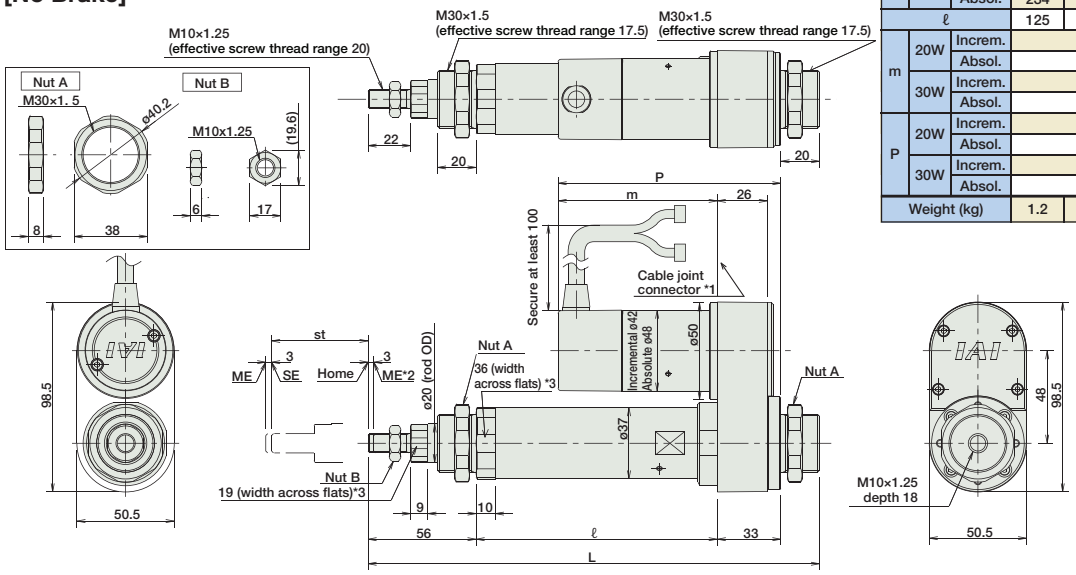
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Order P. A-9

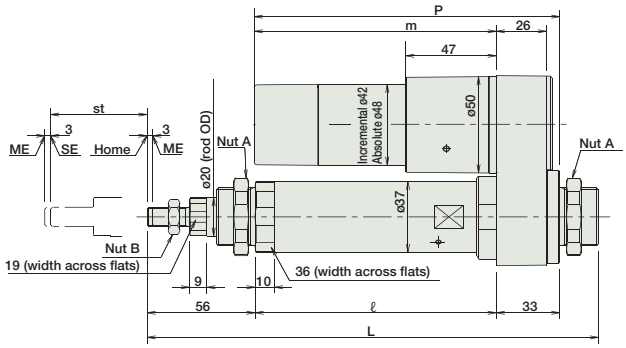
2/3D CAD

*1. A motor–encoder cable is connected here. See page A–39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end
*3. The orientation of the bolt will vary depending on the product.

[No Brake]



[Brake-Equipped]



■ Dimensions/Weight by Stroke

RCA–RA4R (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	234	284	334	384	434	484
		Absol.	234	284	334	384	434	484
	30W	Increm.	234	284	334	384	434	484
		Absol.	234	284	334	384	434	484
ℓ			125	175	225	275	325	375
m	20W	Increm.	67.5					
		Absol.	80.5					
	30W	Increm.	82.5					
		Absol.	95.5					
P	20W	Increm.	100.5					
		Absol.	113.5					
	30W	Increm.	115.5					
		Absol.	128.5					
Weight (kg)			1.2	1.4	1.5	1.7	1.8	2.0

RCA–RA4R (with brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	234	284	334	384	434	484
		Absol.	234	284	334	384	434	484
	30W	Increm.	234	284	334	384	434	484
		Absol.	234	284	334	384	434	484
ℓ			125	175	225	275	325	375
m	20W	Increm.	110.5					
		Absol.	123.5					
	30W	Increm.	125.5					
		Absol.	138.5					
P	20W	Increm.	143.5					
		Absol.	156.5					
	30W	Increm.	158.5					
		Absol.	171.5					
Weight (kg)			1.4	1.6	1.7	1.9	2.0	2.2

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity	Standard Price	See Page
Solenoid Valve Type		AMEC-C-20I-② NP-2-2 AMEC-C-30I-② NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→P477
		ASEP-C-20I-② NP-2-0 ASEP-C-30I-② NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I-② NP-2-0 ASEP-CW-30I-② NP-2-0						
Positioner Type		ACON-C-20I-② NP-2-0 ACON-C-30I-② NP-2-0	Positioning is possible for up to 512 points	512 points				→P535
Safety-Compliant Positioner Type		ACON-CG-20I-② NP-2-0 ACON-CG-30I-② NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I-② NP-2-0 ACON-PL-30I-② NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I-② NP-2-0 ACON-PO-30I-② NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I-② N-0-0 ACON-SE-30I-② N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20② RACON-30②	Dedicated to field network	768 points				→P503
Program Control Type		ASEL-C-1-20-①② NP-2-0 ASEL-C-1-30-①② NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→P567

* This is for the single-axis ASEL.
* ① is a placeholder for the encoder type (I: incremental / A: absolute).
* ② is a placeholder for the code "LA" if the power-saving option is specified.

RCA-SRA4R

RoboCylinder Rod Type 45mm Diameter 24V Servo Motor Short-Length Type Side-Mounted Motor

■ Configuration: RCA – SRA4R – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	SRA4R	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	5 : 5mm 2.5 : 2.5mm	50 : 50mm \ 200 : 200mm (50mm pitch increments) * Set in 50mm increments over 100mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom	See Options below

* See page Pre-35 for an explanation of the naming convention.

Power-saving

Technical References P. A-5

POINT Notes on Selection

(1) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 2.5mm-lead model, or when used vertically). This is the upper limit of the acceleration.

(2) The horizontal load capacity is based on the use of an external guide. If an external force is exerted on the rod from a direction other than the motion of the rod, the detent may become damaged.

Actuator Specifications

■ Lead and Load Capacity

Model	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-SRA4R-I-20-5-①-②-③-④	5	9	3	41	20～200 (10mm increments) (Note 1)
RCA-SRA4R-I-20-2.5-①-②-③-④	2.5	18	6.5	81	

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

(Note 1) 50mm increments over 100mm.

■ Stroke and Maximum Speed

Lead \ Stroke	20 ～ 200 (10mm increments)
5	250
2.5	125

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) ～ X10 (10m)	
	X11 (11m) ～ X15 (15m)	
	X16 (16m) ～ X20 (20m)	

* The cable is a motor-encoder integrated cable, and is provided as a robot cable.

* See page A-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Rod Diameter	ø22mm
Non-rotating accuracy of rod	–
Ambient Operating Temp./Humidity	0 ～ 40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Flange bracket (front)	FL	→ A-27	
Flange bracket (back)	FLR	→ A-28	
Foot bracket 1 (base mounting)	FT	→ A-29	
Foot bracket 2 (right/left side mounting)	FT2/FT4	→ A-31	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	

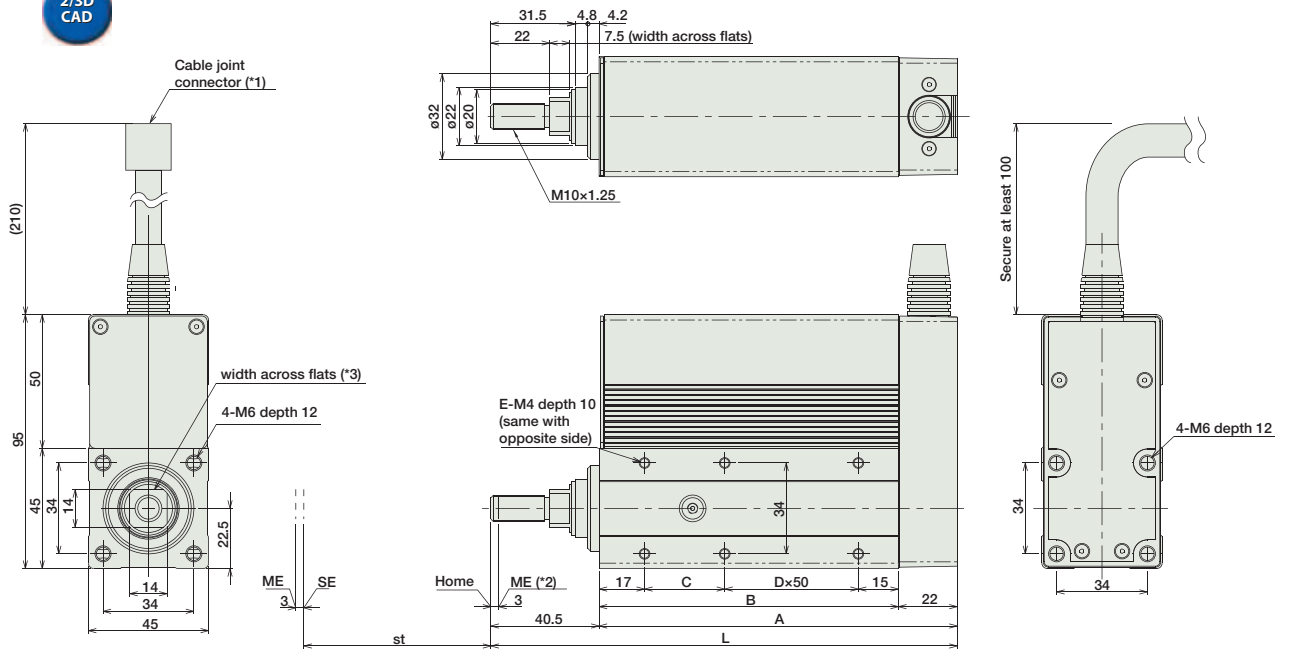
* The brake is available for strokes of 70mm or more.

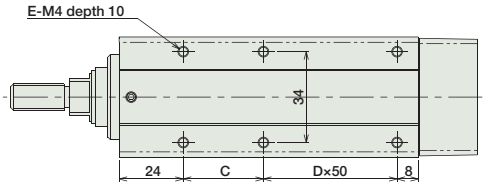
Dimensions

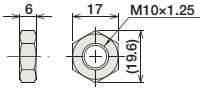
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Order P. A-9

2/3D CAD







Dimensions of the Supplied Nut

* The exterior dimensions for the brake-equipped model is no different than the standard model.
However, 70mm is the minimum stroke of the brake-equipped models.
(i.e. The brake is not compatible at 60mm strokes and under.)

ST : Stroke
SE : Stroke end
ME : Mechanical end

(*1) The motor-encoder cable is connected here. See page A-39 for details on cables.
(*2) When homing, the rod moves to the mechanical end position; therefore, please watch for any interference with the surrounding objects.
(*3) The orientation of the bolt will vary depending on the product.

Dimensions/Weight by Stroke (Add 0.2kg for brake equipped)

Stroke	20	30	40	50	60	70	80	90	100	150	200
L	124.5	134.5	144.5	154.5	164.5	174.5	184.5	194.5	204.5	254.5	304.5
A	84	94	104	114	124	134	144	154	164	214	264
B	62	72	82	92	102	112	122	132	142	192	242
C	30	40	50	60	70	30	40	50	60	60	60
D	0	0	0	0	0	1	1	1	1	2	3
E	4	4	4	4	4	6	6	6	6	8	10
Weight (kg)	0.78	0.84	0.9	0.96	1.03	1.09	1.15	1.21	1.27	1.59	1.9

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I ① -NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I ① -NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I ① -NP-2-0						
Positioner Type		ACON-C-20I ① -NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I ① -NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I ① -NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I ① -NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I ① -N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20 ①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20I ① -NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA-RGS3C RoboCylinder Rod Type with Single Guide ø32mm Diameter 24V Servo Motor Coupled

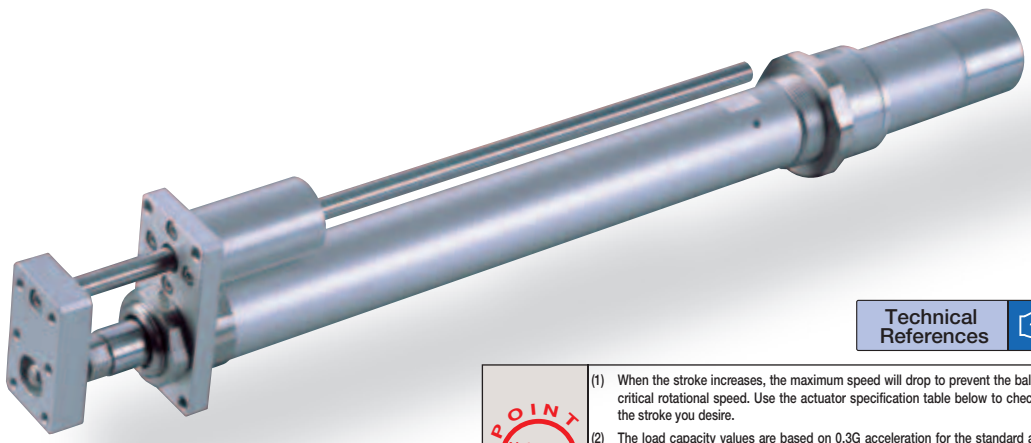
■ Configuration: RCA – RGS3C – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RGS3C	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm \ 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* See page Pre-35 for an explanation of the naming convention.

For High Acceleration/Deceleration **Power-saving**

(Except the 2.5mm-lead model)



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 values are based on 0.3G acceleration for the standard and power-saving models (0.2G for 2.5mm-lead), and 1G acceleration for the high-acceleration models (2.5mm-lead model excluded).
(The values in the table below are the upper limits, even if the acceleration/deceleration is decreased.)

(3) The values for the horizontal load capacity reflect the use of an external guide.
See the technical resources (page A-81) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGS3C-I-20-10-①-②-③-④	20	10	4.0	1.2	36.2	50～200 (50mm increments)
RCA-RGS3C-I-20-5-①-②-③-④		5	9.0	2.7	72.4	
RCA-RGS3C-I-20-2.5-①-②-③-④		2.5	18.0	6.2	144.8	

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 ～ 200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Single guide (guide rod diameter ø12mm, Ball bush type)
Rod Diameter	ø16mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket	FT	→ A-29	
High-acceleration/deceleration (*1)	HA	→ A-32	
Home sensor (*2)	HS	→ A-32	
Power-saving (*3)	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

(*1) The high-acceleration/deceleration option is not available for 2.5mm-lead model.
(*2) The home sensor (HS) cannot be used on the reversed-home models.
(*3) The high acceleration/deceleration option and the power-saving option cannot be used simultaneously.

Dimensions

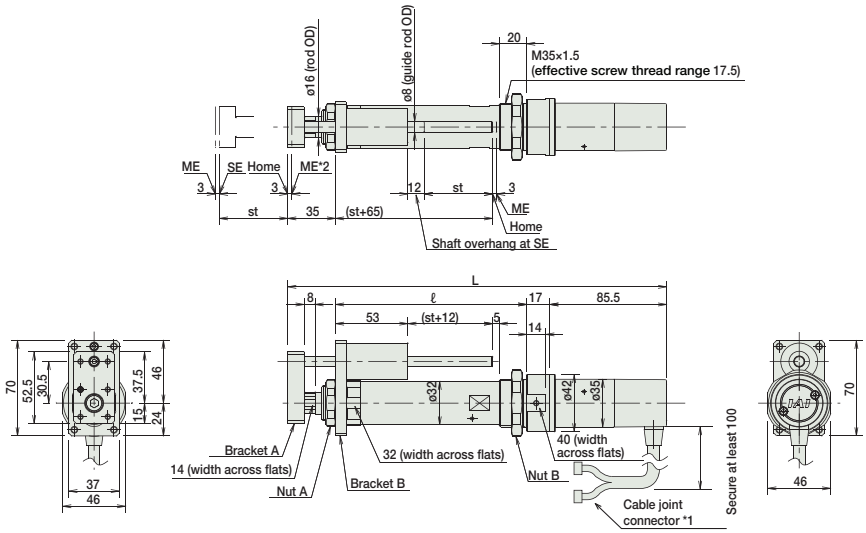
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Order P. A-9

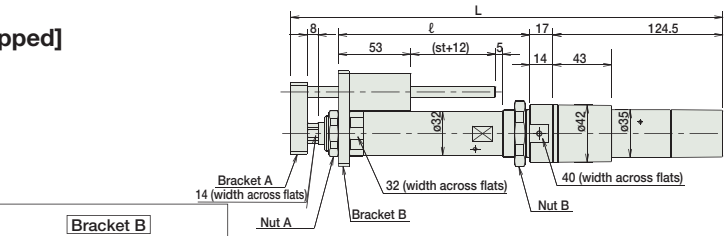
2/3D CAD

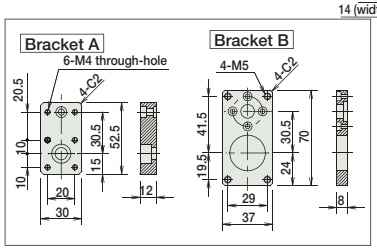
*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

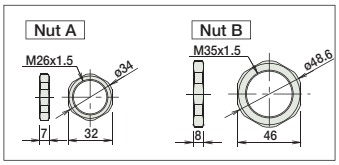
[No Brake]



[Brake-Equipped]







■ Dimensions/Weight by Stroke

RCA-RGS3C (without brake)

Stroke	50	100	150	200
L	277.5	327.5	377.5	427.5
ℓ	140	190	240	290
Weight (kg)	0.9	1.1	1.2	1.3

RCA-RGS3C (with brake)

Stroke	50	100	150	200
L	316.5	366.5	416.5	466.5
ℓ	140	190	240	290
Weight (kg)	1.1	1.3	1.4	1.5

Compatible controller

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		MEC-C-20SI ① -NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20SI ① -NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20SI ① -NP-2-0						
Positioner Type		ACON-C-20SI ① -NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20SI ① -NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20SI ① -NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20SI ① -NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20SI ① -N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20S①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20SI ① -NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "HA" or "LA" if the high acceleration/deceleration option or the power-saving option is specified.

RCA-RGS4C

RoboCylinder Rod Type with Single Guide ø37mm Diameter 24V Servo Motor Coupled

■ Configuration: RCA – RGS4C – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

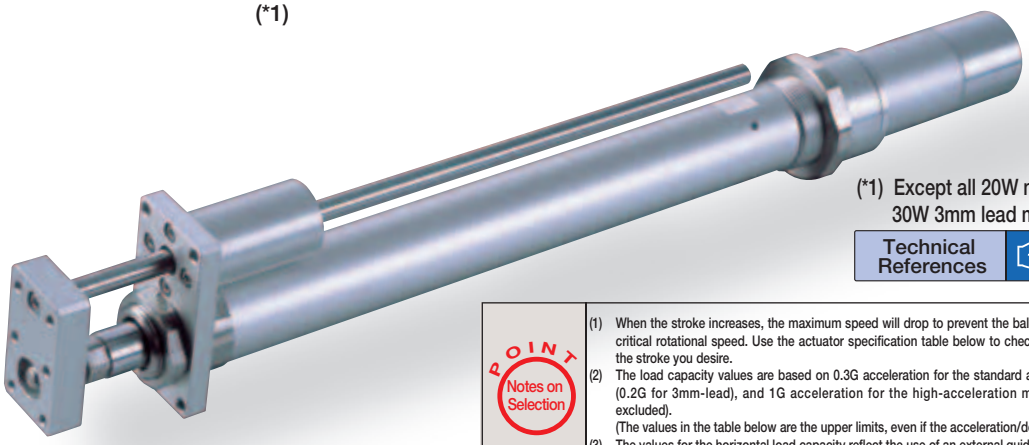
Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RGS4C	I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〜 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental.

* See page Pre-35 for an explanation of the naming convention.

For High Acceleration/Deceleration **Power-saving**

(*1)



(*1) Except all 20W models and 30W 3mm lead models

Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 values are based on 0.3G acceleration for the standard and power-saving models (0.2G for 3mm-lead), and 1G acceleration for the high-acceleration models (3mm-lead model excluded).
(The values in the table below are the upper limits, even if the acceleration/deceleration is decreased.)
(3) The values for the horizontal load capacity reflect the use of an external guide.
See the technical resources (page A-81) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGS4C-①-20-12-②-③-④-⑤	20	12	3.0	0.5	18.9	50〜300 (50mm increments)
RCA-RGS4C-①-20-6-②-③-④-⑤		6	6.0	1.5	37.7	
RCA-RGS4C-①-20-3-②-③-④-⑤		3	12.0	3.5	75.4	
RCA-RGS4C-①-30-12-②-③-④-⑤	30	12	4.0	1.0	28.3	
RCA-RGS4C-①-30-6-②-③-④-⑤		6	9.0	2.5	56.6	
RCA-RGS4C-①-30-3-②-③-④-⑤		3	18.0	6.0	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 〜 300 (50mm increments)
12	600
6	300
3	150

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Single guide (guide rod diameter ø10mm, Ball bush type)
Rod Diameter	ø20mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0〜40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket	FT	→ A-29	
High-acceleration/deceleration (*1)	HA	→ A-32	
Home sensor (*2)	HS	→ A-32	
Power-saving (*3)	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

(*1) The high-acceleration/deceleration option is not available for all 20W models and 30W model with 3mm lead.
(*2) The home sensor (HS) cannot be used on the reversed-home models.
(*3) The high acceleration/deceleration option and the power-saving option cannot be used simultaneously.

Dimensions

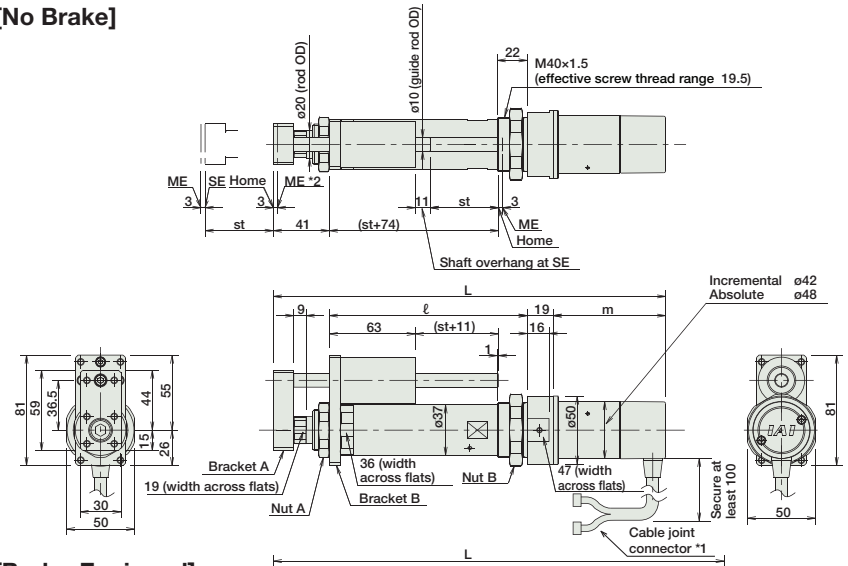
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Order P. A-9

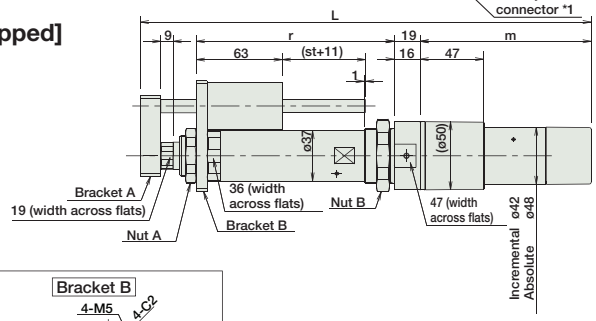
2/3D CAD

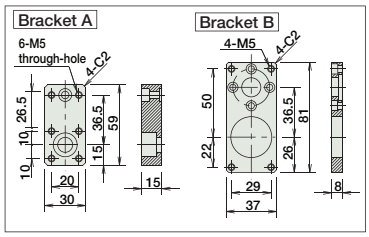
*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

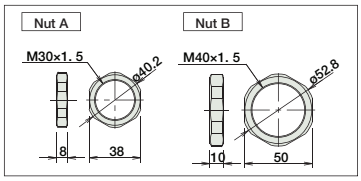
[No Brake]



[Brake-Equipped]







■ Dimensions/Weight by Stroke

RCA-RGS4C (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	272.5	322.5	372.5	422.5	472.5	522.5
		Absol.	285.5	335.5	385.5	435.5	485.5	535.5
	30W	Increm.	287.5	337.5	387.5	437.5	487.5	537.5
		Absol.	300.5	350.5	400.5	450.5	500.5	550.5
ℓ			145	195	245	295	345	395
m	20W	Increm.	67.5					
		Absol.	80.5					
	30W	Increm.	82.5					
		Absol.	95.5					
Weight (kg)			1.5	1.6	1.8	2.0	2.2	2.4

RCA-RGS4C (with brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	315.5	365.5	415.5	465.5	515.5	565.5
		Absol.	328.5	378.5	428.5	478.5	528.5	578.5
	30W	Increm.	330.5	380.5	430.5	480.5	530.5	580.5
		Absol.	343.5	393.5	443.5	493.5	543.5	593.5
ℓ			145	195	245	295	345	395
m	20W	Increm.	110.5					
		Absol.	123.5					
	30W	Increm.	125.5					
		Absol.	138.5					
Weight (kg)			1.7	1.8	2.0	2.2	2.4	2.6

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I ② -NP-2-2 AMEC-C-30I ② -NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I ② -NP-2-0 ASEP-C-30I ② -NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I ② -NP-2-0 ASEP-CW-30I ② -NP-2-0						
Positioner Type		ACON-C-20I ② -NP-2-0 ACON-C-30I ② -NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I ② -NP-2-0 ACON-CG-30I ② -NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I ② -NP-2-0 ACON-PL-30I ② -NP-2-0	Pulse train input type with differential line driver support	(-)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I ② -NP-2-0 ACON-PO-30I ② -NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I ② -N-0-0 ACON-SE-30I ② -N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20② RACON-30②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20 ①② -NP-2-0 ASEL-C-1-30 ①② -NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the encoder type (I: incremental / A: absolute).
* ② is a placeholder for the code "HA" or "LA" if the high acceleration/deceleration option or the power-saving option is specified.

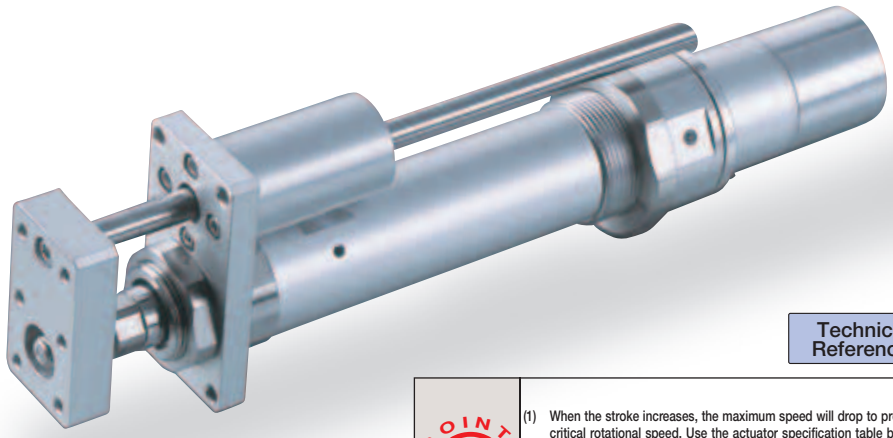
RCA-RGS3D RoboCylinder Rod Type with Single Guide ø32mm Diameter 24V Servo Motor Built-In Model

■ Configuration: RCA – RGS3D – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RGS3D	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm \ 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 2.5mm-lead model). This is the upper limit of the acceleration.
(3) The values for the horizontal load capacity reflect the use of an external guide. See the technical resources (page A-81) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGS3D-I-20-10-①-②-③-④	20	10	4.0	1.2	36.2	50～200 (50mm increments)
RCA-RGS3D-I-20-5-①-②-③-④		5	9.0	2.7	72.4	
RCA-RGS3D-I-20-2.5-①-②-③-④		2.5	18.0	6.2	144.8	

■ Stroke and Maximum Speed

Lead \ Stroke	50～200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Single guide (guide rod diameter ø12mm, Ball bush type)
Rod Diameter	ø16mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Foot bracket	FT	→ A-29	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

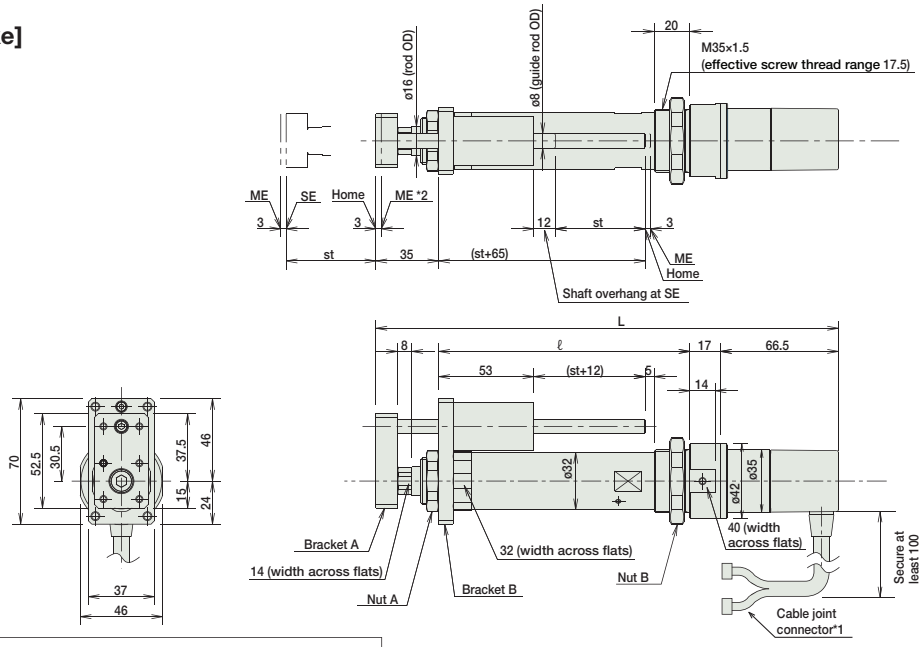
CAD drawings can be downloaded from IAI website. www.robocylinder.de

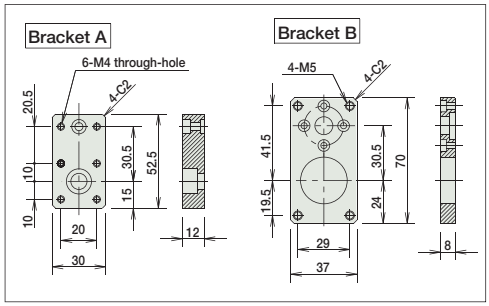
For Special Order P. A-9

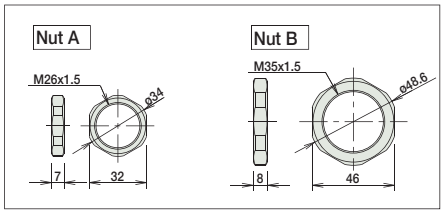
2/3D CAD

*1. A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

[No Brake]







■ Dimensions/Weight by Stroke

RCA-RGS3D (without brake)

Stroke	50	100	150	200
L	258.5	308.5	358.5	408.5
ℓ	140	190	240	290
Weight (kg)	0.9	1.1	1.2	1.3

Brake-equipped configuration is not available with the RCA-RGS3D.

Compatible controller

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20SI ① -NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20SI ① -NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20SI ① -NP-2-0						
Positioner Type		ACON-C-20SI ① -NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20SI ① -NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20SI ① -NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20SI ① -NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20SI ① -N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20S①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20SI ① -NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ①is a placeholder for the code "LA" if the power-saving option is specified.

RCA-RGS4D RoboCylinder Rod Type with Single Guide ø37mm Diameter 24V Servo Motor Built-In Model

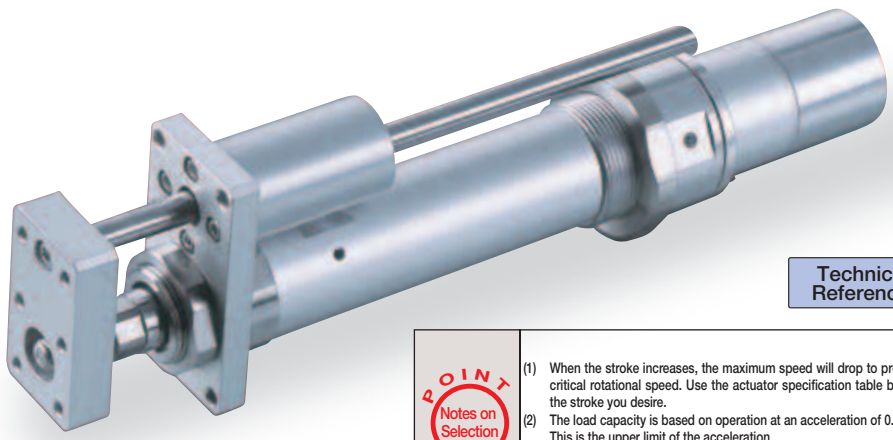
■ Configuration: RCA – RGS4D – ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〜 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X☐☐ : Custom R☐☐ : Robot cable	See Options below

* The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 3mm-lead model). This is the upper limit of the acceleration.
(3) The values for the horizontal load capacity reflect the use of an external guide. See the technical resources (page A-81) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGS4D-①-20-12-②-③-④-⑤	20	12	3.0	0.5	18.9	50〜300 (50mm increments)
RCA-RGS4D-①-20-6-②-③-④-⑤		6	6.0	1.5	37.7	
RCA-RGS4D-①-20-3-②-③-④-⑤		3	12.0	3.5	75.4	
RCA-RGS4D-①-30-12-②-③-④-⑤	30	12	4.0	1.0	28.3	
RCA-RGS4D-①-30-6-②-③-④-⑤		6	9.0	2.5	56.6	
RCA-RGS4D-①-30-3-②-③-④-⑤		3	18.0	6.0	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 〜 300 (50mm increments)
12	600
6	300
3	150

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Single guide (guide rod diameter ø10mm, Ball bush type)
Rod Diameter	ø20mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0〜40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Foot bracket	FT	→ A-29	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

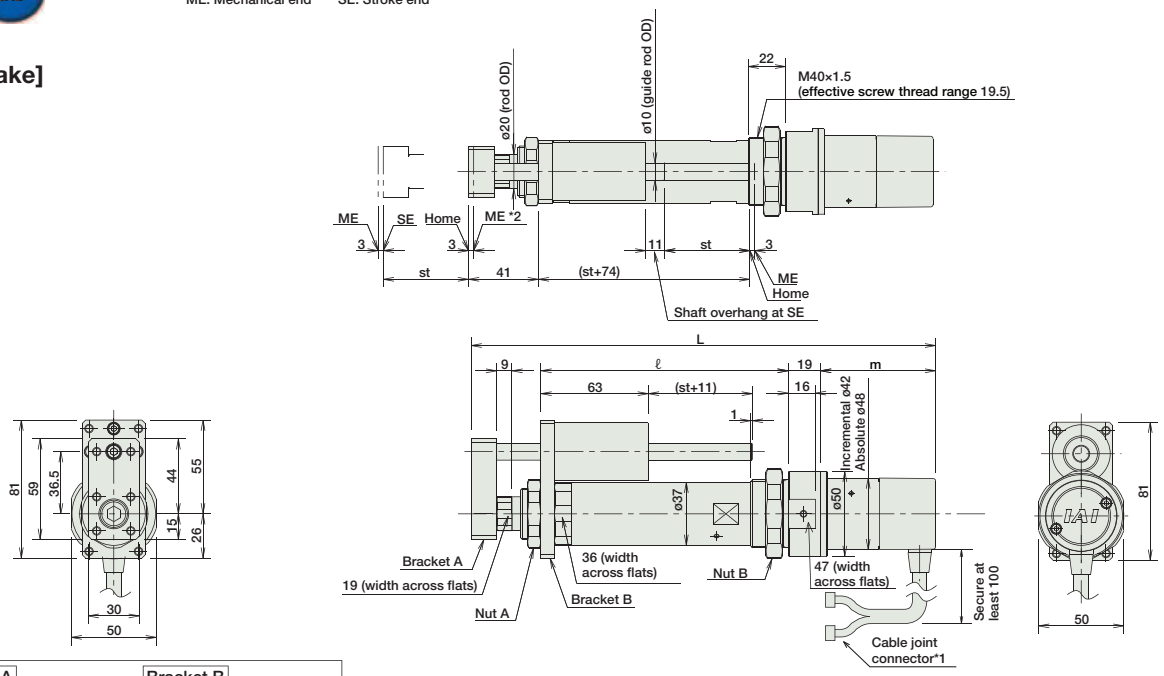
CAD drawings can be downloaded from IAI website. www.robocylinder.de

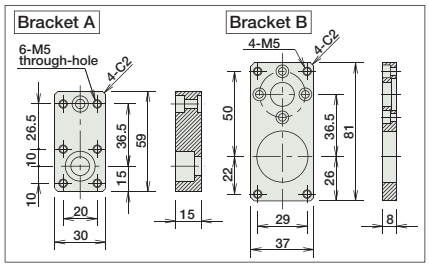
For Special Order P. A-9

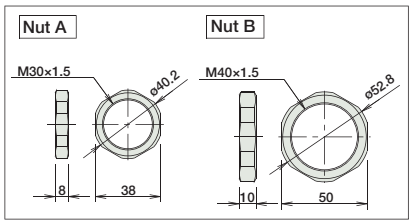
2/3D CAD

*1. A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

[No Brake]







■ Dimensions/Weight by Stroke

RCA-RGS4D (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	250.5	300.5	350.5	400.5	450.5	500.5
		Absol.	263.5	313.5	363.5	413.5	463.5	513.5
	30W	Increm.	265.5	315.5	365.5	415.5	465.5	515.5
		Absol.	278.5	328.5	378.5	428.5	478.5	528.5
ℓ			145	195	245	295	345	395
m	20W	Increm.	45.5					
		Absol.	58.5					
	30W	Increm.	60.5					
		Absol.	73.5					
Weight (kg)			1.3	1.5	1.7	1.9	2.1	2.3

Brake-equipped configuration is not available with the RCA-RGS4D.

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I ②-NP-2-2 AMEC-C-30I ②-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I ②-NP-2-0 ASEP-C-30I ②-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I ②-NP-2-0 ASEP-CW-30I ②-NP-2-0						
Positioner Type		ACON-C-20I ②-NP-2-0 ACON-C-30I ②-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I ②-NP-2-0 ACON-CG-30I ②-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I ②-NP-2-0 ACON-PL-30I ②-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I ②-NP-2-0 ACON-PO-30I ②-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I ②-N-0-0 ACON-SE-30I ②-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20② RACON-30②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20 ①②-NP-2-0 ASEL-C-1-30 ①②-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the encoder type (I: incremental / A: absolute).
* ② is a placeholder for the code "LA" if the power-saving option is specified.

RCA-SRGS4R

RoboCylinder Rod Type with Single Guide 45mm Width 24V Servo Motor
Short-Length Model Side-Mounted Motor

■ Configuration: RCA – SRGS4R – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	SRGS4R	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	5 : 5mm 2.5 : 2.5mm	20 : 20mm 〜 200 : 200mm (10mm pitch increments) * Set in 50mm increments over 100mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom	See Options below

* See page Pre-35 for an explanation of the naming convention.

Power-saving

Technical References P. A-5

POINT Notes on Selection

(1) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 2.5mm-lead model, or when used vertically). This is the upper limit of the acceleration.
(2) The values for the horizontal load capacity reflect the use of an external guide. See the technical resources (page A-82) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-SRGS4R-I-20-5-①-②-③-④	5	9	2	41	20 〜 200 (10mm increments) (Note 1)
RCA-SRGS4R-I-20-2.5-①-②-③-④	2.5	18	5.5	81	

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

(Note 1) 50mm increments over 100mm.

■ Stroke and Maximum Speed

Lead \ Stroke	20 〜 200 (10mm increments)
5	250
2.5	125

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) 〜 X10 (10m)	
	X11 (11m) 〜 X15 (15m)	
	X16 (16m) 〜 X20 (20m)	

* The cable is a motor-encoder integrated cable, and is provided as a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Rod Diameter	ø22 mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0 〜 40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Flange bracket (back)	FLR	→ A-28	
Foot bracket 1 (base mounting)	FT	→ A-29	
Foot bracket 2 (right/left side mounting)	FT2/FT4	→ A-31	
Guide mounting direction	GS2 〜 GS4	→ A-32	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	

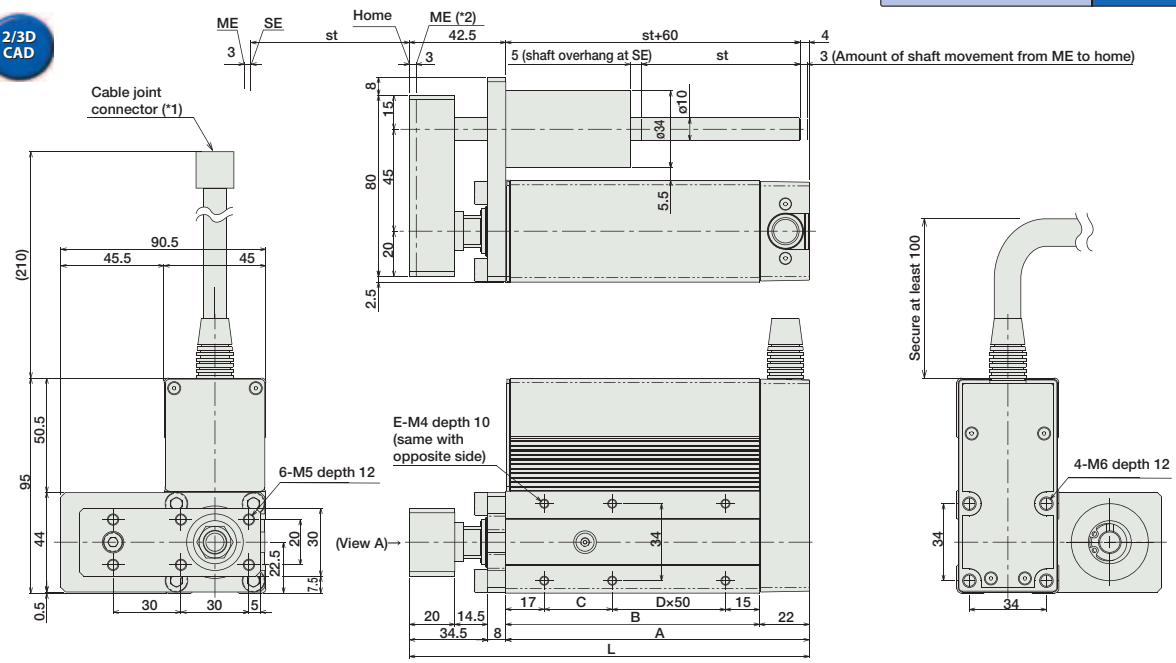
* The brake is available for strokes of 70mm or more.
* Please be sure that the mounting direction of the guide is specified in the product name.
* The guide and the foot bracket cannot be mounted in the same direction.

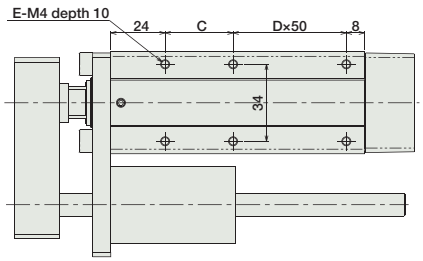
Dimensions

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

For Special Order P. A-9

2/3D CAD





GS4 Left-mounted | Actuator | GS2 Right-mounted

GS3 Bottom-mounted

Guide mounting direction (as viewed from View A)

* The exterior dimensions for the brake-equipped model is no different than the standard model.
However, 70mm is the minimum stroke of the brake-equipped models.
(i.e. The brake is not compatible at 60mm strokes and under.)

ST : Stroke
SE : Stroke end
ME : Mechanical end

(*1) The motor-encoder cable is connected here. See page A-39 for details on cables.

(*2) When homing, the rod moves to the mechanical end position; therefore, please watch for any interference with the surrounding objects.

Dimensions/Weight by Stroke (Add 0.2kg for brake equipped)

Stroke	20	30	40	50	60	70	80	90	100	150	200
L	126.5	136.5	146.5	156.5	166.5	176.5	186.5	196.5	206.5	256.5	306.5
A	84	94	104	114	124	134	144	154	164	214	264
B	62	72	82	92	102	112	122	132	142	192	242
C	30	40	50	60	70	30	40	50	60	60	60
D	0	0	0	0	0	1	1	1	1	2	3
E	4	4	4	4	4	6	6	6	6	8	10
Weight (kg)	1.15	1.21	1.28	1.35	1.42	1.49	1.56	1.62	1.69	2.03	2.38

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I①-NP-2-0						
Positioner Type		ACON-C-20I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA-RGD3C

RoboCylinder Rod Type with Double Guide ø32mm Diameter 24V Servo Motor Coupled

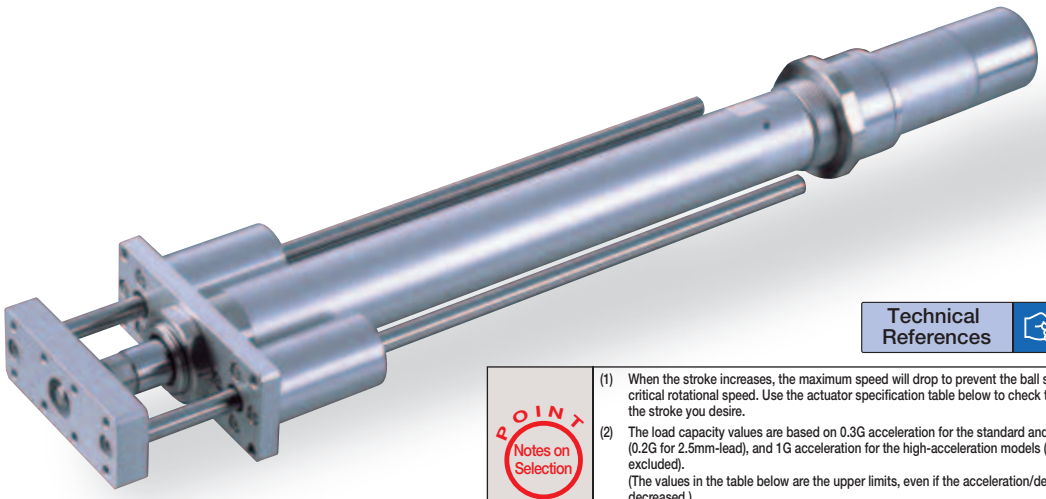
■ Configuration: RCA – RGD3C – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RGD3C	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm \ 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* See page Pre-35 for an explanation of the naming convention.

For High Acceleration/Deceleration **Power-saving**

(Except the 2.5mm-lead model)



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 values are based on 0.3G acceleration for the standard and power-saving models (0.2G for 2.5mm-lead), and 1G acceleration for the high-acceleration models (2.5mm-lead model excluded).
(The values in the table below are the upper limits, even if the acceleration/deceleration is decreased.)

(3) The values for the horizontal load capacity reflect the use of an external guide.
See the technical resources (page A-83) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGD3C-I-20-10-①-②-③-④	20	10	4	1.2	36.2	50～200 (50mm increments)
RCA-RGD3C-I-20-5-①-②-③-④		5	9	2.7	72.4	
RCA-RGD3C-I-20-2.5-①-②-③-④		2.5	18	6.2	144.8	

■ Stroke and Maximum Speed

Lead \ Stroke	50 ～ 200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Double guide (guide rod diameter ø10mm, Ball bush type)
Rod Diameter	ø16mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket	FT	→ A-29	
High-acceleration/deceleration (*1)	HA	→ A-32	
Home sensor (*2)	HS	→ A-32	
Power-saving (*3)	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

(*1) The high-acceleration/deceleration option is not available for 2.5mm-lead model.
(*2) The home sensor (HS) cannot be used on the reversed-home models.
(*3) The high acceleration/deceleration option and the power-saving option cannot be used simultaneously.

Dimensions

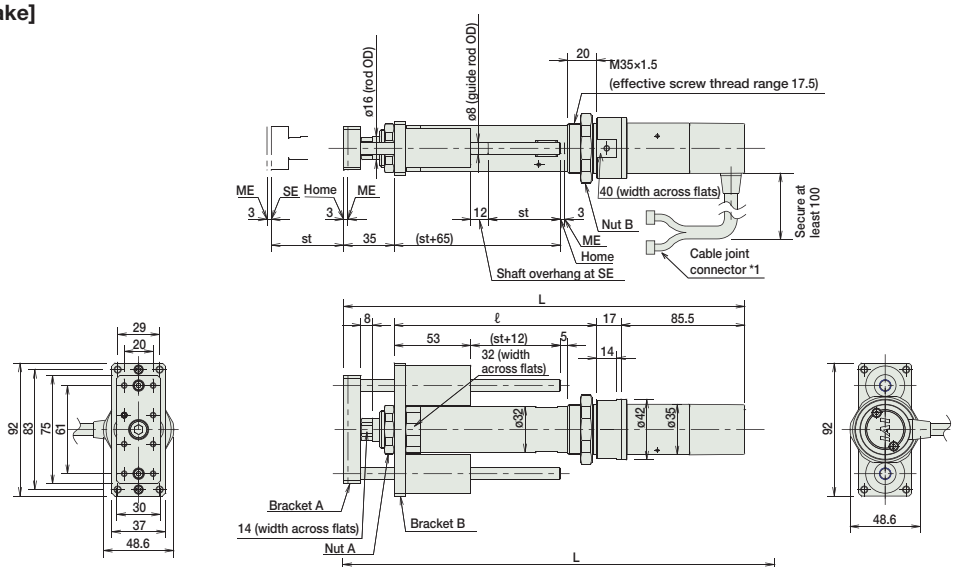
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Orders P. A-9

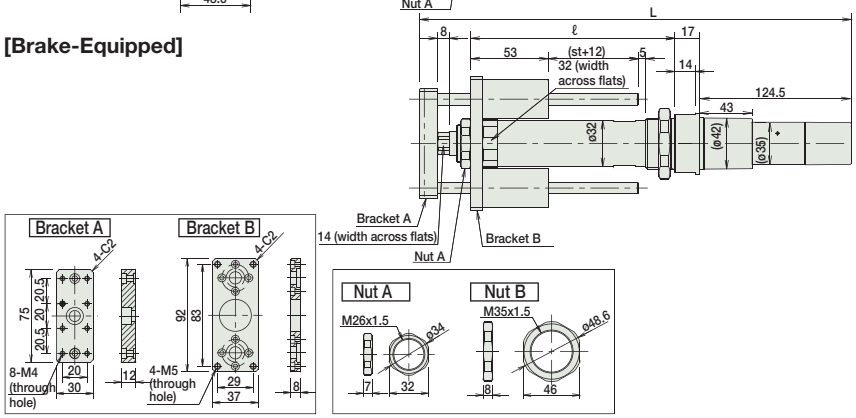
2/3D CAD

*1. A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

[No Brake]



[Brake-Equipped]



■ Dimensions/Weight by Stroke

RCA-RGD3C (without brake)

Stroke	50	100	150	200
L	277.5	327.5	377.5	427.5
ℓ	140	190	240	290
Weight (kg)	1.1	1.2	1.4	1.5

RCA-RGD3C (with brake)

Stroke	50	100	150	200
L	316.5	366.5	416.5	466.5
ℓ	140	190	240	290
Weight (kg)	1.3	1.4	1.6	1.7

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20SI①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20SI①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20SI①-NP-2-0						
Positioner Type		ACON-C-20SI①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20SI①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20SI①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20SI①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20SI①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20S①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20SI①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "HA" or "LA" if the high acceleration/deceleration option or the power-saving option is specified.

RCA-RGD4C

RoboCylinder Rod Type with Double Guide ø37mm Diameter 24V Servo Motor Coupled

■ Configuration: RCA – RGD4C – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

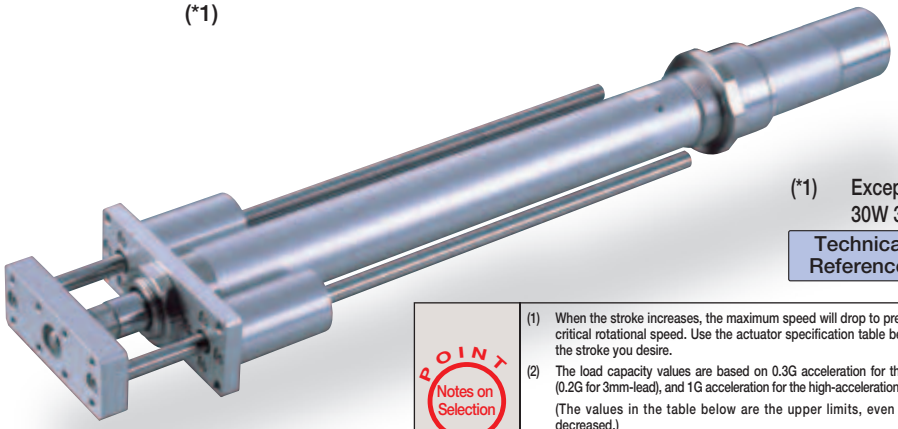
Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〉 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental

* See page Pre-35 for an explanation of the naming convention.

For High Acceleration/Deceleration **Power-saving**

(*1)



(*1) Except all 20W models and 30W 3mm lead models

Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 values are based on 0.3G acceleration for the standard and power-saving models (0.2G for 3mm-lead), and 1G acceleration for the high-acceleration models (3mm-lead model excluded).
(The values in the table below are the upper limits, even if the acceleration/deceleration is decreased.)

(3) The values for the horizontal load capacity reflect the use of an external guide.
See the technical resources (page A-83) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGD4C-①-20-12-②-③-④-⑤	20	12	3.0	0.5	18.9	50～300 (50mm increments)
RCA-RGD4C-①-20-6-②-③-④-⑤		6	6.0	1.5	37.7	
RCA-RGD4C-①-20-3-②-③-④-⑤		3	12.0	3.5	75.4	
RCA-RGD4C-①-30-12-②-③-④-⑤	30	12	4.0	1.0	28.3	
RCA-RGD4C-①-30-6-②-③-④-⑤		6	9.0	2.5	56.6	
RCA-RGD4C-①-30-3-②-③-④-⑤		3	18.0	6.0	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

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

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Double guide (guide rod diameter ø10mm, Ball bush type)
Rod Diameter	ø20mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket	FT	→ A-29	
High-acceleration/deceleration (*1)	HA	→ A-32	
Home sensor (*2)	HS	→ A-32	
Power-saving (*3)	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

(*1) The high-acceleration/deceleration option is not available for all 20W models and 30W model with 3mm lead.
(*2) The home sensor (HS) cannot be used on the reversed-home models.
(*3) The high acceleration/deceleration option and the power-saving option cannot be used simultaneously.

Dimensions

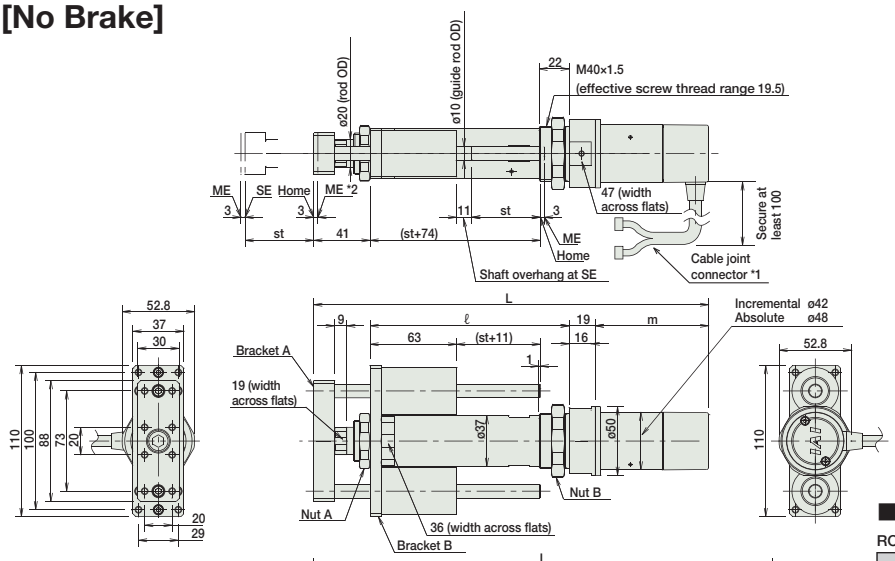
CAD drawings can be downloaded from IAI website. www.robocylinder.de

For Special Orders P. A-9

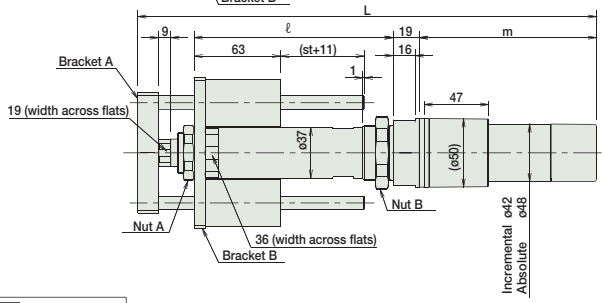
2/3D CAD

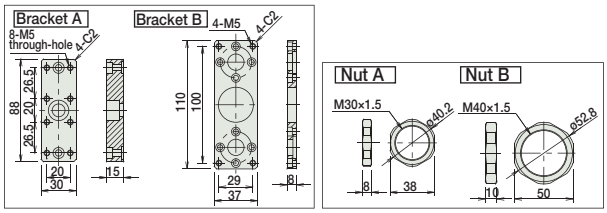
*1. A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

[No Brake]



[Brake-Equipped]





Dimensions/Weight by Stroke

RCA-RGD4C (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	272.5	322.5	372.5	422.5	472.5	522.5
		Absol.	285.5	335.5	385.5	435.5	485.5	535.5
	30W	Increm.	287.5	337.5	387.5	437.5	487.5	537.5
		Absol.	300.5	350.5	400.5	450.5	500.5	550.5
ℓ			145	195	245	295	345	395
m	20W	Increm.	67.5					
		Absol.	80.5					
	30W	Increm.	82.5					
		Absol.	95.5					
Weight (kg)			1.8	2.0	2.2	2.4	2.6	2.8

RCA-RGD4C (with brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	315.5	365.5	415.5	465.5	515.5	565.5
		Absol.	328.5	378.5	428.5	478.5	528.5	578.5
	30W	Increm.	330.5	380.5	430.5	480.5	530.5	580.5
		Absol.	343.5	393.5	443.5	493.5	543.5	593.5
ℓ			145	195	245	295	345	395
m	20W	Increm.	110.5					
		Absol.	123.5					
	30W	Increm.	125.5					
		Absol.	138.5					
Weight (kg)			2.0	2.2	2.4	2.6	2.8	3.0

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I②-NP-2-2 AMEC-C-30I②-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I②-NP-2-0 ASEP-C-30I②-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I②-NP-2-0 ASEP-CW-30I②-NP-2-0						
Positioner Type		ACON-C-20I②-NP-2-0 ACON-C-30I②-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I②-NP-2-0 ACON-CG-30I②-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I②-NP-2-0 ACON-PL-30I②-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I②-NP-2-0 ACON-PO-30I②-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I②-N-0-0 ACON-SE-30I②-NP-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20② RACON-30②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20 ①②-NP-2-0 ASEL-C-1-30 ①②-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the encoder type (I: incremental / A: absolute).
* ② is a placeholder for the code "HA" or "LA" if the high acceleration/deceleration option or the power-saving option is specified.

RCA-RGD3D

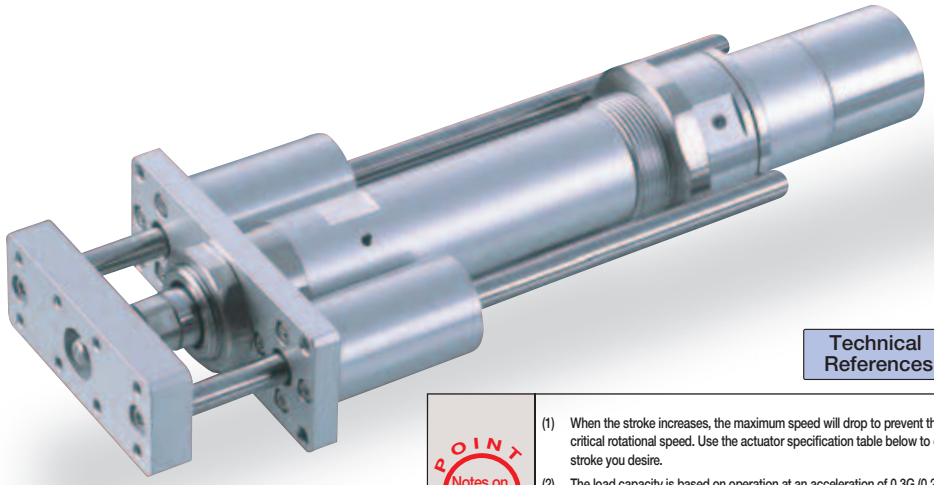
RoboCylinder Rod Type with Double Guide ø32mm Diameter 24V Servo Motor Built-In Model

■ Configuration: RCA – RGD3D – I – 20 – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	RGD3D	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm \ 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 2.5mm-lead model). This is the upper limit of the acceleration.

(3) The values for the horizontal load capacity reflect the use of an external guide. See the technical resources (page A-83) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGD3D-I-20-10-①-②-③-④	20	10	4	1.2	36.2	50～200 (50mm increments)
RCA-RGD3D-I-20-5-①-②-③-④		5	9	2.7	72.4	
RCA-RGD3D-I-20-2.5-①-②-③-④		2.5	18	6.2	144.8	

■ Stroke and Maximum Speed

Lead \ Stroke	50 ～ 200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Double guide (guide rod diameter ø10mm, Ball bush type)
Rod Diameter	ø16mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0～40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Foot bracket	FT	→ A-29	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

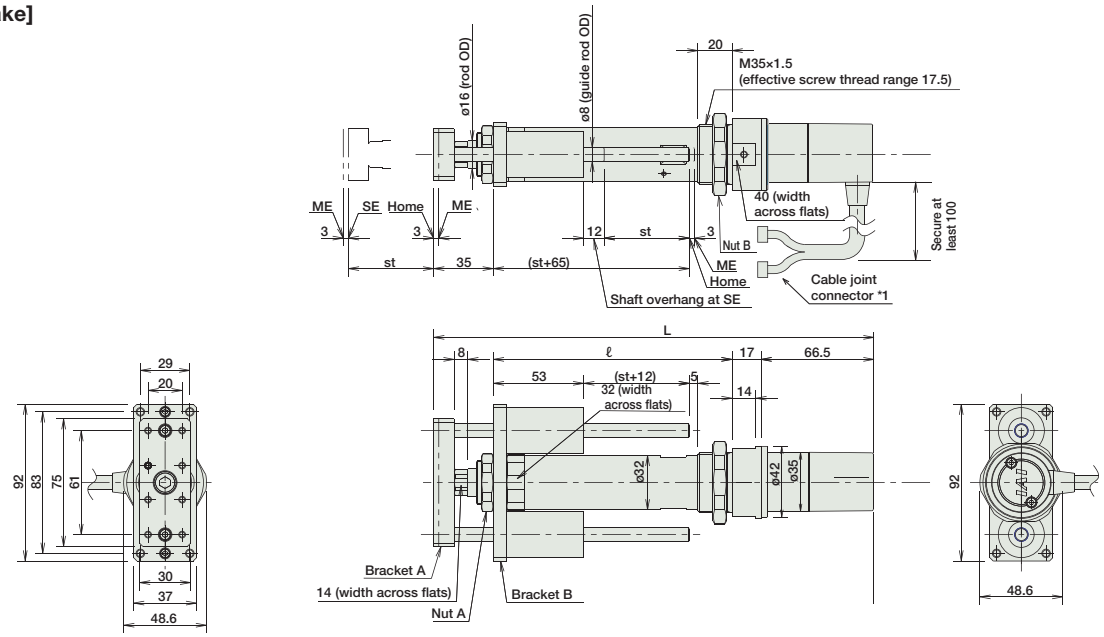
CAD drawings can be downloaded from IAI website. www.robocylinder.de

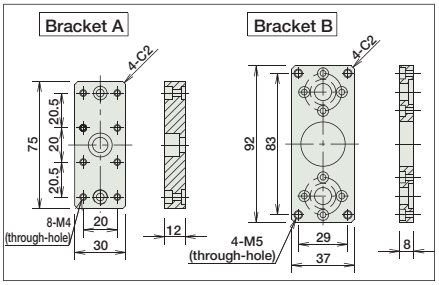
For Special Orders P. A-9

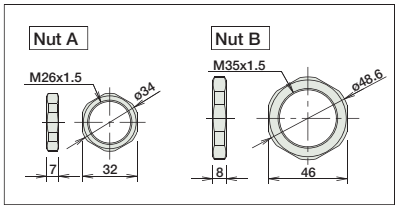
2/3D CAD

*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

[No Brake]







■ Dimensions/Weight by Stroke

RCA-RGD3D (without brake)

Stroke	50	100	150	200
L	258.5	308.5	358.5	408.5
ℓ	140	190	240	290
Weight (kg)	1.1	1.2	1.4	1.5

Brake-equipped configuration is not available with the RCA-RGD3D.

Compatible controller

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20SI①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20SI①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20SI①-NP-2-0						
Positioner Type		ACON-C-20SI①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20SI①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20SI①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20SI①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20SI①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20S①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20SI①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCA-RGD4D

RoboCylinder Rod Type with Double Guide ø37mm Diameter 24V Servo Motor Built-In Model

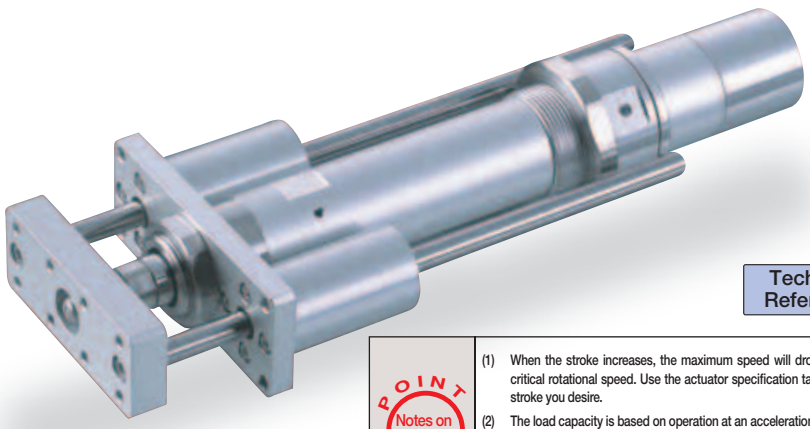
■ Configuration: RCA – RGD4D – □ – □ – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〜 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom R□□ : Robot cable	See Options below

* The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 3mm-lead model). This is the upper limit of the acceleration.

(3) The values for the horizontal load capacity reflect the use of an external guide. See the technical resources (page A-83) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGD4D-①-20-12-②-③-④-⑤	20	12	3.0	0.5	18.9	50〜300 (50mm increments)
RCA-RGD4D-①-20-6-②-③-④-⑤		6	6.0	1.5	37.7	
RCA-RGD4D-①-20-3-②-③-④-⑤		3	12.0	3.5	75.4	
RCA-RGD4D-①-30-12-②-③-④-⑤	30	12	4.0	1.0	28.3	
RCA-RGD4D-①-30-6-②-③-④-⑤		6	9.0	2.5	56.6	
RCA-RGD4D-①-30-3-②-③-④-⑤		3	18.0	6.0	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 〜 300 (50mm increments)
12	600
6	300
3	150

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Guide	Double guide (guide rod diameter ø10mm, Ball bush type)
Rod Diameter	ø20mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0〜40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Foot bracket	FT	→ A-29	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	
Trunnion bracket (back)	TRR	→ A-38	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

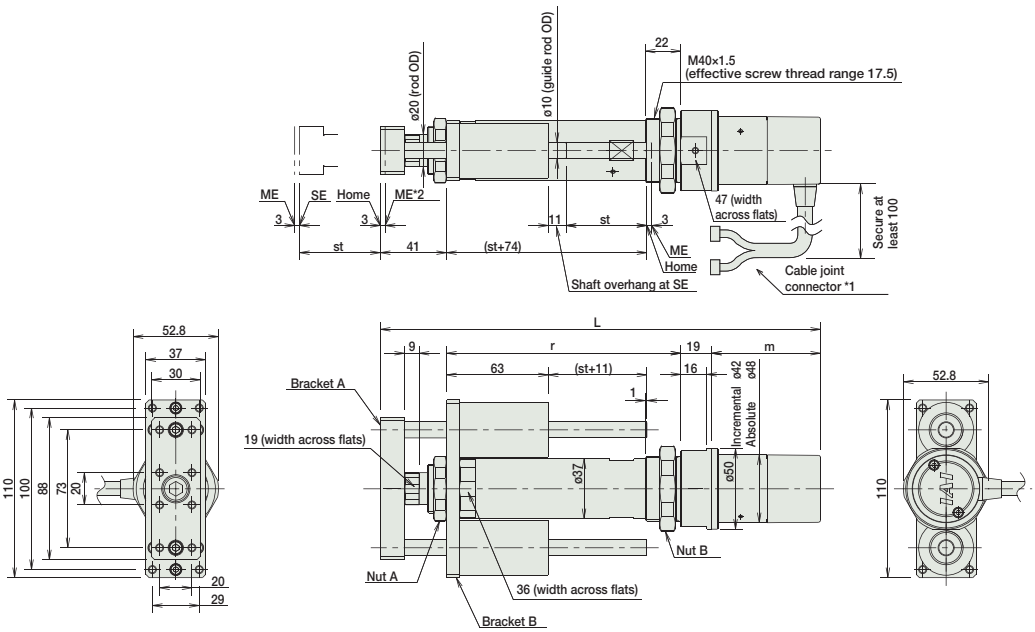
CAD drawings can be downloaded from IAI website. www.robocylinder.de

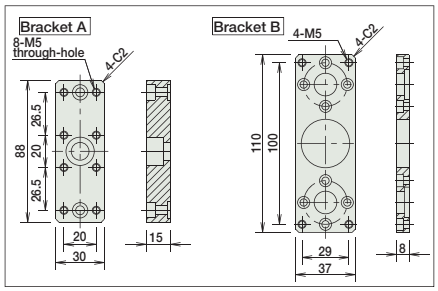
For Special Orders P. A-9

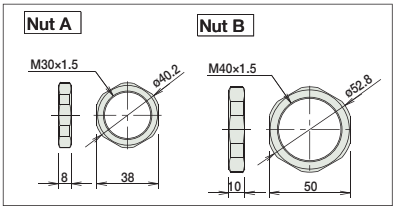
2/3D CAD

*1. A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

[No Brake]







Dimensions/Weight by Stroke

RCA-RGD4D (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	250.5	300.5	350.5	400.5	450.5	500.5
		Absol.	263.5	313.5	363.5	413.5	463.5	513.5
	30W	Increm.	265.5	315.5	365.5	415.5	465.5	515.5
		Absol.	278.5	328.5	378.5	428.5	478.5	528.5
ℓ			145	195	245	295	345	395
m	20W	Increm.	45.5					
		Absol.	58.5					
	30W	Increm.	60.5					
		Absol.	73.5					
Weight (kg)			1.6	1.8	2.1	2.3	2.5	2.7

Brake-equipped configuration is not available with the RCA-RGD4D.

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I②-NP-2-2 AMEC-C-30I②-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I②-NP-2-0 ASEP-C-30I②-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I②-NP-2-0 ASEP-CW-30I②-NP-2-0						
Positioner Type		ACON-C-20I②-NP-2-0 ACON-C-30I②-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I②-NP-2-0 ACON-CG-30I②-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I②-NP-2-0 ACON-PL-30I②-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I②-NP-2-0 ACON-PO-30I②-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I②-N-0-0 ACON-SE-30I②-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20② RACON-30②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20①②-NP-2-0 ASEL-C-1-30①②-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the encoder type (I: incremental / A: absolute).
* ② is a placeholder for the code "LA" if the power-saving option is specified.

RCA-RGD3R

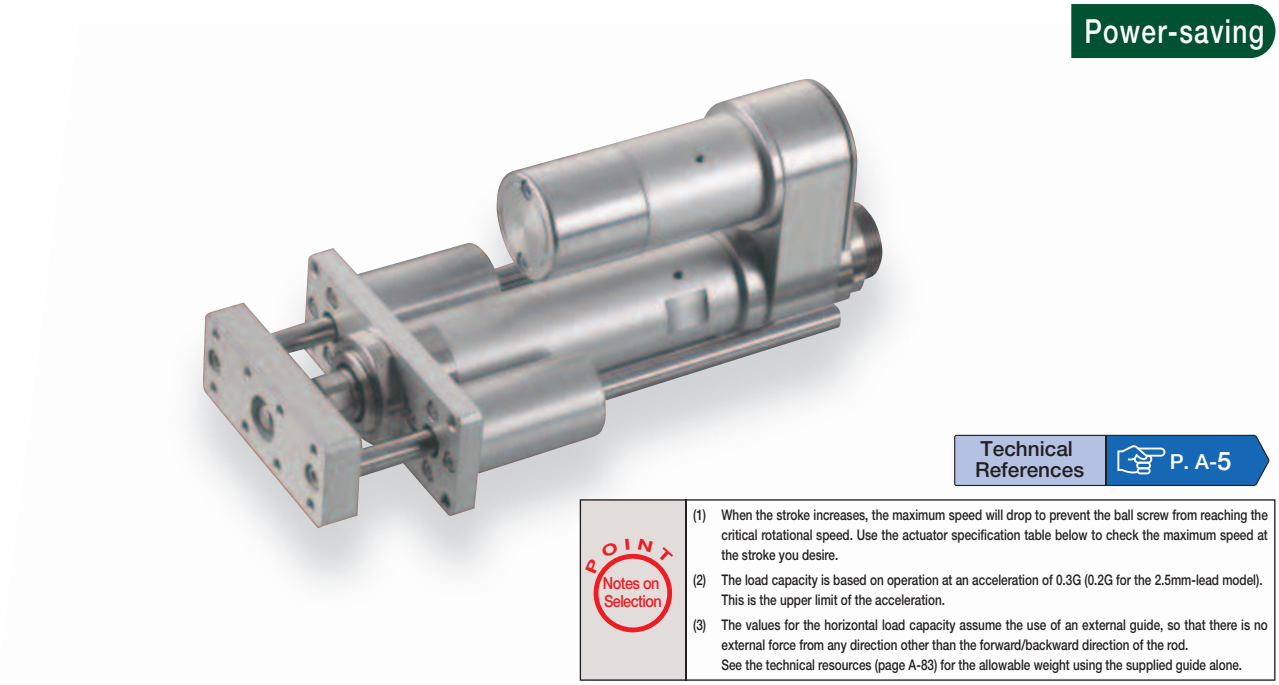
RoboCylinder Rod Type with Double Guide ø32mm Diameter 24V Servo Motor
Side-Mounted Motor

■ Configuration:

RCA	RGD3R	I	20	☐	☐	☐	☐	☐
Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50 : 50mm 〉 200 : 200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X☐☐ : Custom R☐☐ : Robot cable	See Options below

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 2.5mm-lead model). This is the upper limit of the acceleration.

(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod.
See the technical resources (page A-83) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGD3R-I-20-10-①-②-③-④	20	10	4.0	1.2	36.2	50 ~ 200 (50mm increments)
RCA-RGD3R-I-20-5-①-②-③-④		5	9.0	2.7	72.4	
RCA-RGD3R-I-20-2.5-①-②-③-④		2.5	18.0	6.2	144.8	

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 ~ 200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Base	Material: Aluminum (white alumite treated)
Rod Diameter	ø16mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0 ~ 40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket	FT	→ A-29	
Flange bracket (back)	FLR	→ A-28	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	
Clevis Bracket	QR	→ A-34	
Back-mounting plate	RP	→ A-35	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

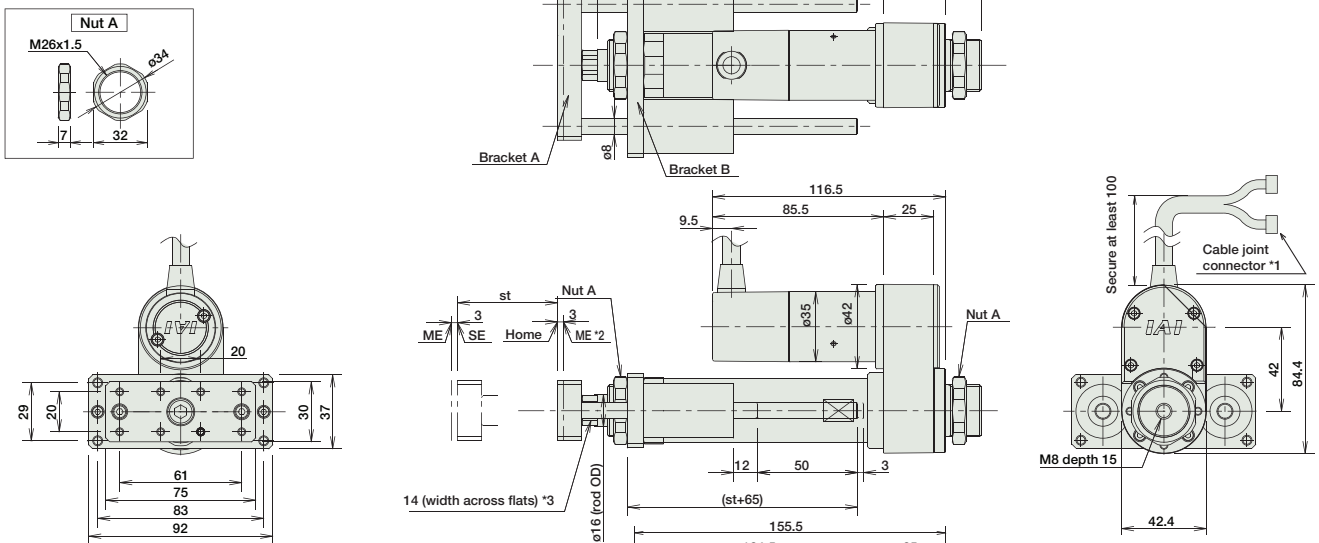
CAD drawings can be downloaded from IAI website. www.robocylinder.de

2/3D CAD

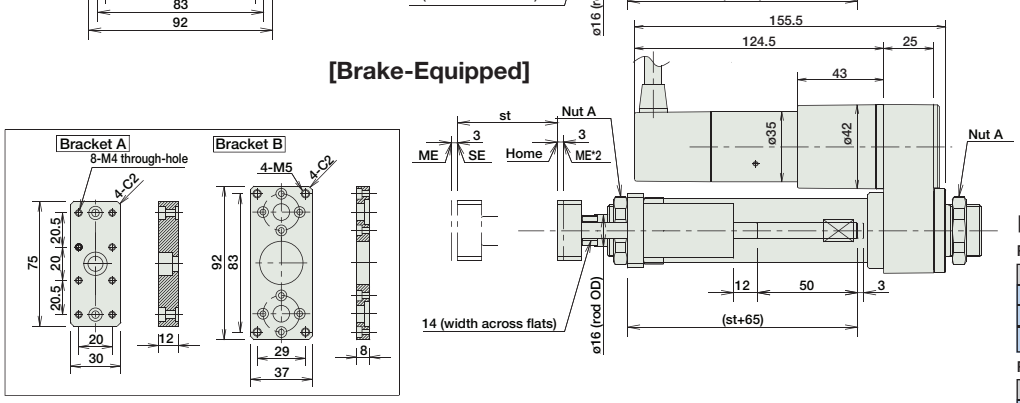
For Special Orders P. A-9

*1. A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end
*3. The orientation of the bolt will vary depending on the product.

[No Brake]



[Brake-Equipped]



■ Dimensions/Weight by Stroke

RCA-RGD3R (without brake)

Stroke	50	100	150	200
L	212	262	312	362
ℓ	128	178	228	278
Weight (kg)	1.2	1.3	1.5	1.6

RCA-RGD3R (with brake)

Stroke	50	100	150	200
L	212	262	312	362
ℓ	128	178	228	278
Weight (kg)	1.4	1.5	1.7	1.8

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20SI②-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20SI②-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7 A rated 5.1 A max. (Power-saving) 1.7 A rated 3.4 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20SI②-NP-2-0						
Positioner Type		ACON-C-20SI②-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20SI②-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20SI②-NP-2-0	Pulse train input type with differential line driver support	(-)				
Pulse Train Input Type (Open Collector)		ACON-PO-20SI②-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20SI②-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20S②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20SI②-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ② is a placeholder for the code "LA" if the power-saving option is specified.

RCA-RGD4R

RoboCylinder Rod Type with Double Guide ø37mm Diameter 24V Servo Motor
Side-Mounted Motor

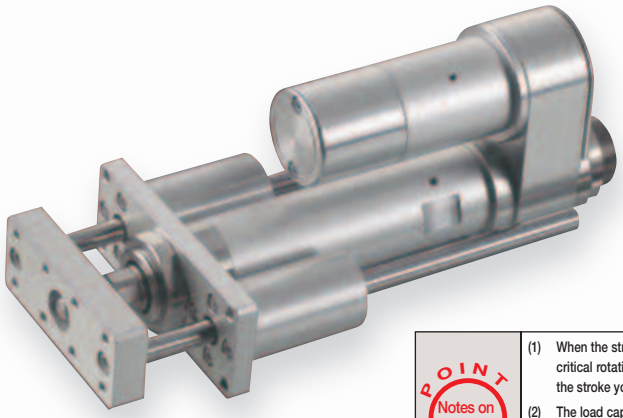
■ Configuration: RCA – RGD4R – ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
		I : Incremental A : Absolute	20 : 20W Servo Motor 30 : 30W Servo Motor	12 : 12mm 6 : 6mm 3 : 3mm	50 : 50mm 〜 300 : 300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X☐☐ : Custom R☐☐ : Robot cable	See Options below

* The absolute models are only compatible with ASEL. Simple absolute encoders are considered incremental.

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 3mm-lead model). This is the upper limit of the acceleration.

(3) The values for the horizontal load capacity assume the use of an external guide, so that there is no external force from any direction other than the forward/backward direction of the rod. See the technical resources (page A-83) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-RGD4R-①-20-12-②-③-④-⑤	20	12	3.0	0.5	18.9	50 〜 300 (50mm increments)
RCA-RGD4R-①-20-6-②-③-④-⑤		6	6.0	1.5	37.7	
RCA-RGD4R-①-20-3-②-③-④-⑤		3	12.0	3.5	75.4	
RCA-RGD4R-①-30-12-②-③-④-⑤	30	12	4.0	1.0	28.3	
RCA-RGD4R-①-30-6-②-③-④-⑤		6	9.0	2.5	56.6	
RCA-RGD4R-①-30-3-②-③-④-⑤		3	18.0	6.0	113.1	

Legend ① Encoder ② Stroke ③ Compatible controller ④ Control length ⑤ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50 〜 300 (50mm increments)
12	600
6	300
3	150

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Base	Material: Aluminum (white alumite treated)
Rod Diameter	ø20mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0 〜 40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket	FT	→ A-29	
Flange bracket (back)	FLR	→ A-28	
Home sensor	HS	→ A-32	
Power-saving	LA	→ A-32	
Reversed-home	NM	→ A-33	
Clevis Bracket	QR	→ A-34	
Back-mounting plate	RP	→ A-35	

* The home sensor (HS) cannot be used on the reversed-home models.

Dimensions

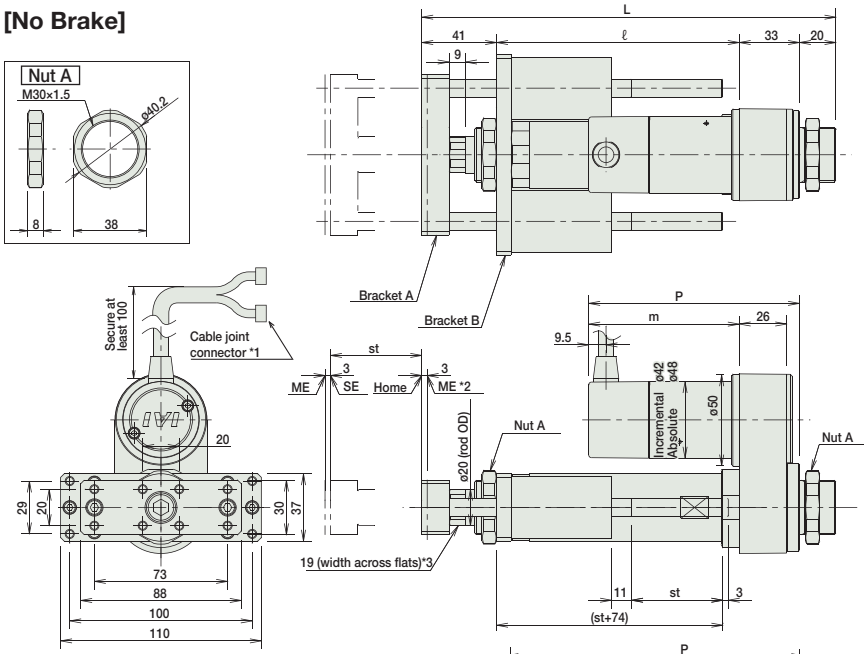
CAD drawings can be downloaded from IAI website. www.robocylinder.de

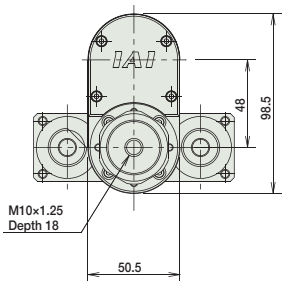
For Special Orders P. A-9

2/3D CAD

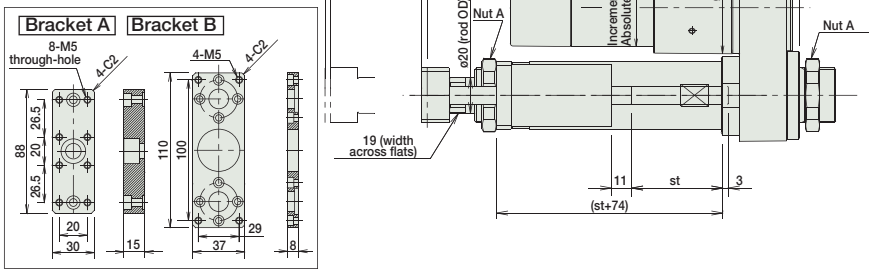
*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2. When homing, the rod moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end
*3. The orientation of the bolt will vary depending on the product.

[No Brake]





[Brake-Equipped]



■ Dimensions/Weight by Stroke

RCA-RGD4R (without brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	227	277	327	377	427	477
		Absol.	227	277	327	377	427	477
	30W	Increm.	227	277	327	377	427	477
		Absol.	227	277	327	377	427	477
ℓ			133	188	233	288	333	383
m	20W	Increm.	67.5					
		Absol.	80.5					
	30W	Increm.	82.5					
		Absol.	95.5					
P	20W	Increm.	100.5					
		Absol.	113.5					
	30W	Increm.	115.5					
		Absol.	128.5					
Weight (kg)			1.9	2.2	2.3	2.6	2.7	3.0

RCA-RGD4R (with brake)

Stroke			50	100	150	200	250	300
L	20W	Increm.	227	277	327	377	427	477
		Absol.	227	277	327	377	427	477
	30W	Increm.	227	277	327	377	427	477
		Absol.	227	277	327	377	427	477
ℓ			133	188	233	288	333	383
m	20W	Increm.	110.5					
		Absol.	123.5					
	30W	Increm.	125.5					
		Absol.	138.5					
P	20W	Increm.	143.5					
		Absol.	156.5					
	30W	Increm.	158.5					
		Absol.	171.5					
Weight (kg)			2.1	2.4	2.5	2.8	2.9	3.2

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I②-NP-2-2 AMEC-C-30I②-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I②-NP-2-0 ASEP-C-30I②-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I②-NP-2-0 ASEP-CW-30I②-NP-2-0						
Positioner Type		ACON-C-20I②-NP-2-0 ACON-C-30I②-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I②-NP-2-0 ACON-CG-30I②-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I②-NP-2-0 ACON-PL-30I②-NP-2-0	Pulse train input type with differential line driver support	(-)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I②-NP-2-0 ACON-PO-30I②-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I②-N-0-0 ACON-SE-30I②-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20② RACON-30②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20①②-NP-2-0 ASEL-C-1-30①②-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the encoder type (I: incremental / A: absolute).
* ② is a placeholder for the code "LA" if the power-saving option is specified.

RCA-SRGD4R

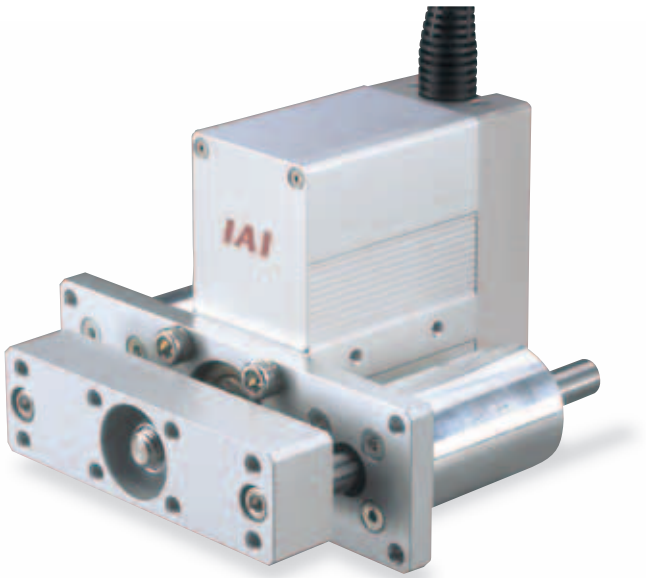
RoboCylinder Rod Type with Double Guide 45mm Width 24V Servo Motor
Short-Length Model

■ Configuration: RCA – SRGD4R – I – 20 – □ – □ – □ – □ – □

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCA	SRGD4R	I: Incremental * The Simple absolute encoder is also considered type "I".	20 : 20W Servo Motor	5 : 5mm 2.5 : 2.5mm	20 : 20mm 〜 200 : 200mm (50mm pitch increments) * Set in 50mm increments over 100mm	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X □□ : Custom	See Options below

* See page Pre-35 for an explanation of the naming convention.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) The load capacity is based on operation at an acceleration of 0.3G (0.2G for the 2.5mm-lead model, or when used vertically). This is the upper limit of the acceleration.
(2) The values for the horizontal load capacity reflect the use of an external guide. See the technical resources (page A-83) for the allowable weight using the supplied guide alone.

Actuator Specifications

■ Lead and Load Capacity

Model	Lead (mm)	Max. Load Capacity Horizontal (kg)	Max. Load Capacity Vertical (kg)	Rated Thrust (N)	Stroke (mm)
RCA-SRGD4R-I-20-5-①-②-③-④	5	9	2	41	20〜200 (10mm increments) (Note 1)
RCA-SRGD4R-I-20-2.5-①-②-③-④	2.5	18	5.5	81	

Legend ① Stroke ② Compatible controllers ③ Cable length ④ Options

(Note 1) 50mm increments over 100mm.

■ Stroke and Maximum Speed

Lead \ Stroke	20 〜 200 (10mm increments)
5	250
2.5	125

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard (Robot Cables)	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	X06 (6m) 〜 X10 (10m)	
	X11 (11m) 〜 X15 (15m)	
	X16 (16m) 〜 X20 (20m)	

* The cable is a motor-encoder integrated cable, and is provided as a robot cable.
* See page A-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1mm or less
Rod Diameter	ø22 mm
Non-rotating accuracy of rod	±0.05 deg
Ambient Operating Temp./Humidity	0 〜 40°C, 85% RH or less (non-condensing)

Option List

Name	Option Code	See Page	
Brake	B	→ A-25	
Foot bracket 1 (base mounting)	FT	→ A-29	
Reversed-home	NM	→ A-33	

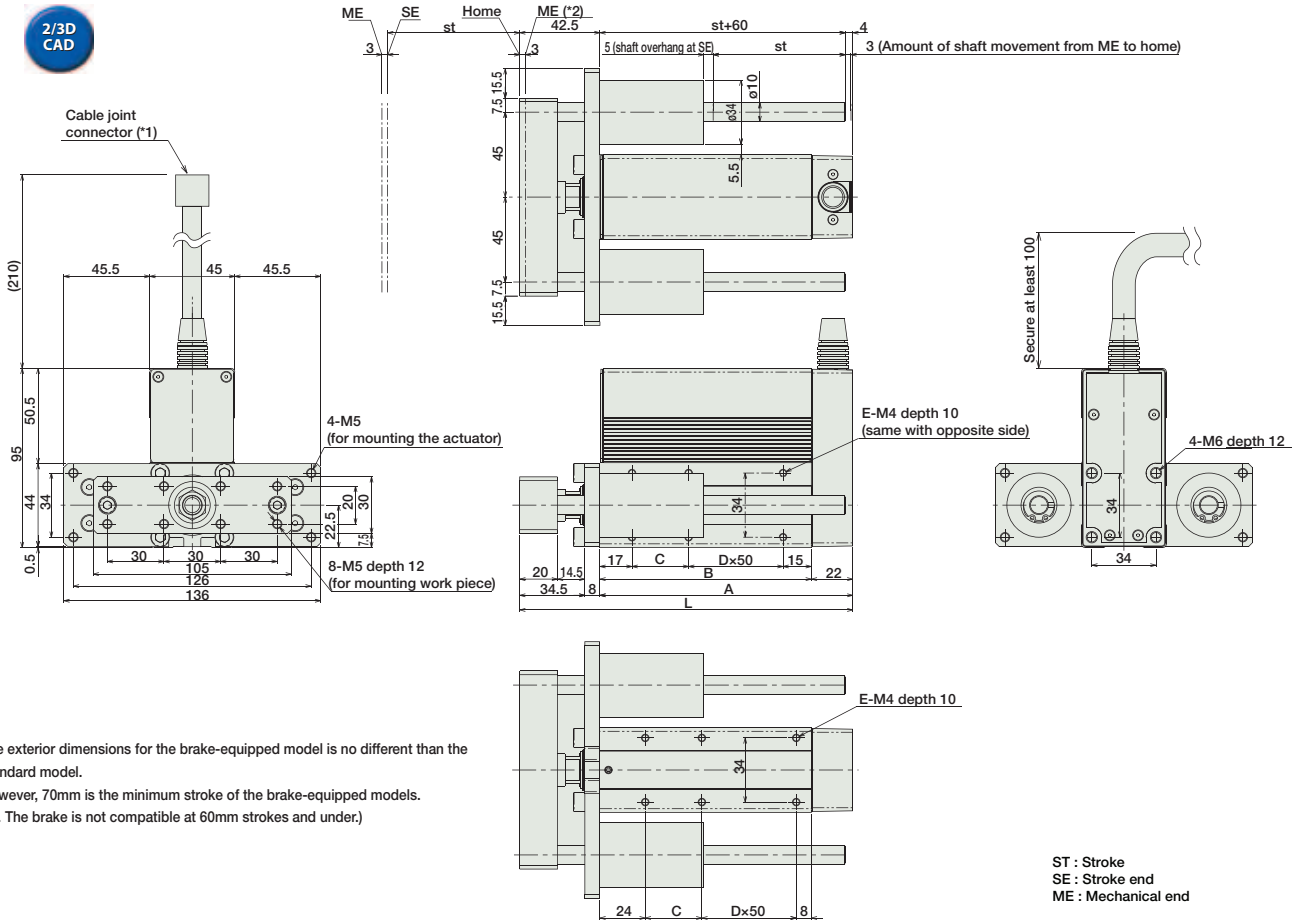
* The brake is available for strokes of 70mm or more.
* The foot bracket cannot be mounted on the side.

Dimensions

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

For Special Orders P. A-9

2/3D CAD



* The exterior dimensions for the brake-equipped model is no different than the standard model.
However, 70mm is the minimum stroke of the brake-equipped models.
(i.e. The brake is not compatible at 60mm strokes and under.)

ST : Stroke
SE : Stroke end
ME : Mechanical end

(*1) The motor-encoder cable is connected here. See page A-39 for details on cables.
(*2) When homing, the rod moves to the mechanical end position; therefore, please watch for any interference with the surrounding objects.

Dimensions/Weight by Stroke

(Add 0.2kg for brake equipped)

Stroke	20	30	40	50	60	70	80	90	100	150	200
L	126.5	136.5	146.5	156.5	166.5	176.5	186.5	196.5	206.5	256.5	306.5
A	84	94	104	114	124	134	144	154	164	214	264
B	62	72	82	92	102	112	122	132	142	192	242
C	30	40	50	60	70	30	40	50	60	60	60
D	0	0	0	0	0	1	1	1	1	2	3
E	4	4	4	4	4	6	6	6	6	8	10
Weight (kg)	1.42	1.49	1.56	1.64	1.71	1.79	1.86	1.94	2.01	2.38	2.75

Compatible Controllers

The RCA series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid Valve Type		AMEC-C-20I①-NP-2-2	Easy-to-use controller, even for beginners	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3 A rated 4.4 A max. (Power-saving) 1.3 A rated 2.5 A max.		→ P487
Splash-Proof Solenoid Valve Type		ASEP-CW-20I①-NP-2-0						
Positioner Type		ACON-C-20I①-NP-2-0	Positioning is possible for up to 512 points	512 points				→ P535
Safety-Compliant Positioner Type		ACON-CG-20I①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I①-NP-2-0	Pulse train input type with differential line driver support	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I①-NP-2-0	Pulse train input type with open collector support					
Serial Communication Type		ACON-SE-20I①-N-0-0	Dedicated to serial communication	64 points				
Field Network Type		RACON-20①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20I①-NP-2-0	Programmed operation is possible Operation is possible on up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA" if the power-saving option is specified.

RCAW-RA3C/RA3D/RA3R

RoboCylinder Splash-proof Rod Type
ø32mm Diameter 24V Servo Motor
Coupled/Built-in/Side-Mounted Motor Specification

■ Configuration: RCAW — [ ] — I — 20 — [ ] — [ ] — [ ] — [ ] — [ ] — [ ]

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
RCAW	RA3C: Coupled type RA3D: Built-in RA3R: Side-Mounted Motor	I: Incremental Type * The simple absolute encoder is also considered type "I".	20 : 20W servo motor	10 : 10mm 5 : 5mm 2.5 : 2.5mm	50:50mm 〜 200:200mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length R□□ : Robot Cable	See Options below

* See page Pre-35 for explanation of each code that makes up the configuration name.

Power-saving

Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 2.5mm-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 rod's advance is applied.
(4) The cable joint connector is not splash-proof; secure it in a place that is not prone to water spills.

Actuator Specifications

■ Lead and Load Capacity

Model	Motor Output (W)	Lead (mm)	Max. load capacity Horizontal(kg)	Max. load capacity Vertical(kg)	Rated thrust (N)	Stroke (mm)
RCAW-①-I-20-10-②-③-④-⑤	20	10	4	1.5	36.2	50~200 (50mm increments)
RCAW-①-I-20-5-②-③-④-⑤		5	9	3	72.4	
RCAW-①-I-20-2.5-②-③-④-⑤		2.5	18	6.5	144.8	

Legend ① Type ② Stroke ③ Compatible controller ④ Cable length ⑤ Options

■ Stroke and Maximum Speed

Lead \ Stroke	50~200 (50mm increments)
10	500
5	250
2.5	125

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø8mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1 mm or less
Base	Material: Aluminum (white alumite treated)
Rod diameter	ø16mm
Rod non-rotational accuracy	±1.0 degrees
Protection Structure	IP54
Ambient Operating Temp./Humidity	0~40°C, 85%RH or less (Non-condensing)

Option List

Name	Option Code	See Page	
Brake (*1)	B	→ A-25	
Flange bracket	FL	→ A-27	
Foot bracket	FT	→ A-29	
Home confirmation sensor (*2)	HS	→ A-32	
Power-saving	LA	→ A-32	
Knuckle Joint	NJ	→ A-34	
Reversed-home (*2)	NM	→ A-33	
Clevis Bracket (*3)	QR	→ A-34	
Rear mounting plate (*3)	RP	→ A-33	
Trunnion Bracket (Front) (*4)	TRF	→ A-38	
Trunnion Bracket (Back) (*4)	TRR	→ A-38	

(*1) No brake option for RA3D.
(*2) Home sensor (HS) can't be used with reversed-home (NM).
(*3) Clevis bracket and rear mounting plate only available for RA3R.
(*4) Trunnion bracket (rear) only available for RA3C/RA3D.

Dimensions

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

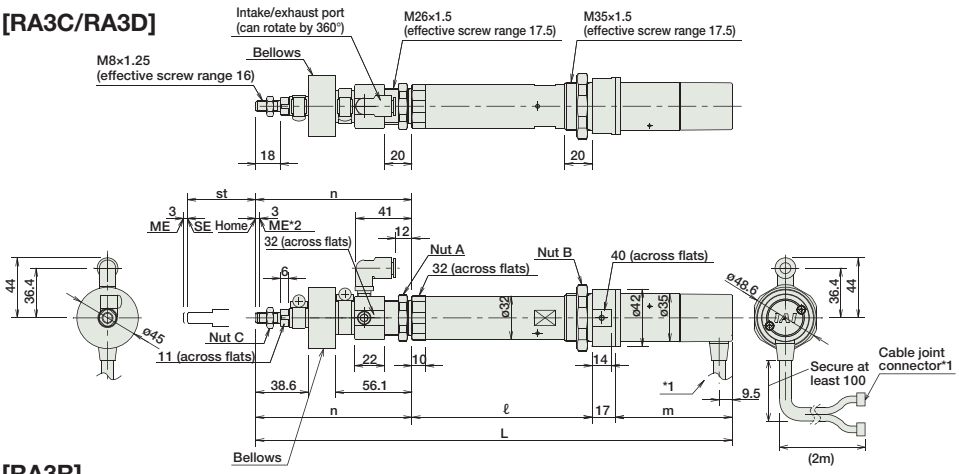
For Special Orders P. A-9

2/3D CAD

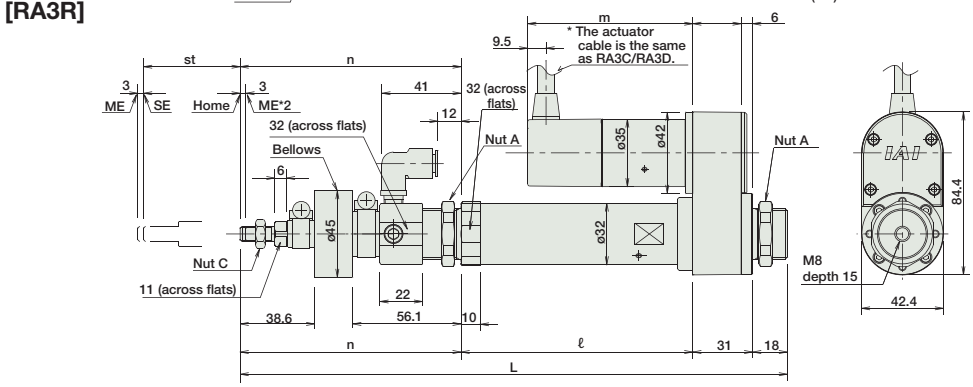
Note: No 3D CAD data for RA3D type.

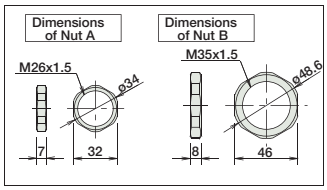
*1 A motor-encoder cable is connected here. See page A-39 for details on cables.
*2 When homing, the slider moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

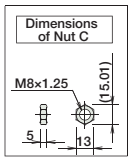
[RA3C/RA3D]



[RA3R]







Note:
Do not apply any external force on the rod from any direction other than the direction of the rod's motion. If a force is exerted on the rod in a perpendicular or rotational direction, the detent may become damaged.

■ Dimensions/Weight by Stroke

RCAW-RA3C/RA3D/RA3R (without brake)

Stroke		50	100	150	200
L	RA3C	348.9	408.9	468.9	528.9
	RA3D	329.9	389.9	449.9	509.9
	RA3R	283.4	343.4	403.4	463.4
ℓ	RA3C	132	182	232	282
	RA3D	132	182	232	282
	RA3R	120	170	220	270
m	RA3C	85.5			
	RA3D	66.5			
	RA3R	85.5			
n	RA3C	114.4	124.4	134.4	144.4
	RA3D	114.4	124.4	134.4	144.4
	RA3R	114.4	124.4	134.4	144.4
Weight (kg)	RA3C	1.0	1.1	1.2	1.3
	RA3D	1.0	1.1	1.2	1.3
	RA3R	1.1	1.2	1.3	1.4

RCAW-RA3C/RA3D/RA3R(with brake)

Stroke		50	100	150	200
L	RA3C	387.9	447.9	507.9	567.9
	RA3D	No brake-equipped model.			
	RA3R	283.4	343.4	403.4	463.4
ℓ	RA3C	132	182	232	282
	RA3D	No brake-equipped model.			
	RA3R	120	170	220	270
m	RA3C	124.5			
	RA3D	No brake-equipped model.			
	RA3R	124.5			
n	RA3C	114.4	124.4	134.4	144.4
	RA3D	No brake-equipped model.			
	RA3R	114.4	124.4	134.4	144.4
Weight (kg)	RA3C	1.2	1.3	1.4	1.5
	RA3D	1.2	1.3	1.4	1.5
	RA3R	1.3	1.4	1.5	1.6

Compatible Controllers

The RCAW series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid ValveType		AMEC-C-20SI ①-NP-2-2	Easy-to-use controller, even for beginners.	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20SI ①-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.7A rated 5.1A max. (Power-saving) 1.7A rated 3.4A max.		→ P487
Splash-Proof Solenoid ValveType		ASEP-CW-20SI ①-NP-2-0						
Positioner Type		ACON-C-20SI ①-NP-2-0	Positioning possible for up to 512 points	512 points				→ P535
Safety Category Compliant Positioner Type		ACON-CG-20SI ①-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20SI ①-NP-2-0	Differential line driver support Pulse Train Input Type	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20SI ①-NP-2-0	Open Collector Pulse Train Input Type					
Serial Communication Type		ACON-SE-20SI ①-N-0-0	Dedicated to serial communication	64 points				
Field NetworkType		RACON-20S ①	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20SI ①-NP-2-0	Programmed operation is possible Can operate up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the code "LA", when the the energy-saving option is selected.

RCAW-RA4C/RA4D/RA4R

RoboCylinder Splash-proof Rod Type
ø37mm Diameter 24V Servo Motor
Coupled/Built-in/Side-Mounted Motor Specification

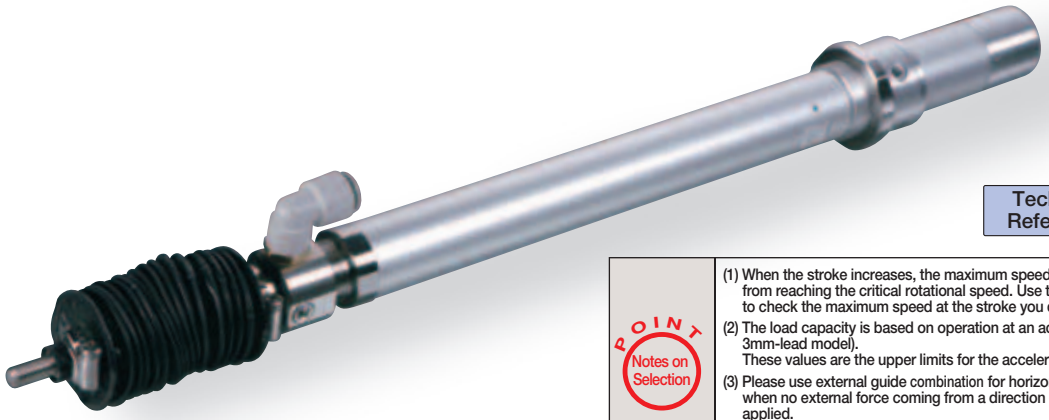
■ Configuration: RCAW — [Type] — [Encoder] — [Motor] — [Lead] — [Stroke] — [Compatible Controllers] — [Cable Length] — [Option]

Series	Type	Encoder	Motor	Lead	Stroke	Compatible Controllers	Cable Length	Option
	RA4C: Coupled type RA4D Built-in RA4R: Side-Mounted Motor	I : Incremental Type A : Absolute Type	20 : 20W servo motor 30 : 30W servo motor	12 : 12mm 6 : 6mm 3 : 3mm	50:50mm 〃 300:300mm (50mm pitch increments)	A1 : ACON RACON ASEL A3 : AMEC ASEP	N : None P : 1m S : 3m M : 5m X□□ : Custom Length R□□ : Robot Cable	See Options below

* See page Pre-35 for explanation of each code that makes up the configuration name.

* The absolute model can only use ASEL.
The simple absolute type is considered an incremental model.

Power-saving



Technical References P. A-5

POINT Notes on Selection

(1) When the stroke increases, the maximum speed 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 operation at an acceleration of 0.3G (0.2G for the 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 rod's advance is applied.
(4) The cable joint connector is not splash-proof; secure it in a place that is not prone to water spills.

Actuator Specifications

■ Lead and Load Capacity

Model	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 (50mm increments)
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	

Legend ① Type ② Encoder ③ Stroke ④ Compatible controler ⑤ Cable lengh ⑥ Options

■ Stroke and Maximum Speed

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

(Unit: mm/s)

Cable List

Type	Cable Symbol	
Standard	P (1m)	
	S (3m)	
	M (5m)	
Special Lengths	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-39 for cables for maintenance.

Actuator Specifications

Item	Description
Drive System	Ball screw ø10mm C10 grade
Positioning Repeatability	±0.02mm
Lost Motion	0.1 mm or less
Base	Material: Aluminum (white alumite treated)
Rod diameter	ø20mm
Rod non-rotational accuracy	±1.0 degrees
Protection Structure	IP54
Ambient Operating Temp./Humidity	0~40°C, 85%RH or less (Non-condensing)

Option List

Name	Option Code	See Page	
Brake (*1)	B	→ A-25	
Flange bracket	FL	→ A-27	
Foot bracket	FT	→ A-29	
Home confirmation sensor (*2)	HS	→ A-32	
Power-saving	LA	→ A-32	
Knuckle Joint	NJ	→ A-34	
Reversed-home (*2)	NM	→ A-33	
Clevis Bracket (*3)	QR	→ A-34	
Rear mounting plate (*3)	RP	→ A-33	
Trunnion Bracket (Front) (* 4)	TRF	→ A-38	
Trunnion Bracket (Back) (* 4)	TRR	→ A-38	

(*1) No brake setting for RA4D.
(*2) Home sensor (HS) can't be used under reversed-home (NM).
(*3) Clevis bracket and rear mounting plate only available for RA4R.
(*4) Trunnion bracket only available for RA4C/RA4D.

Dimensions

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

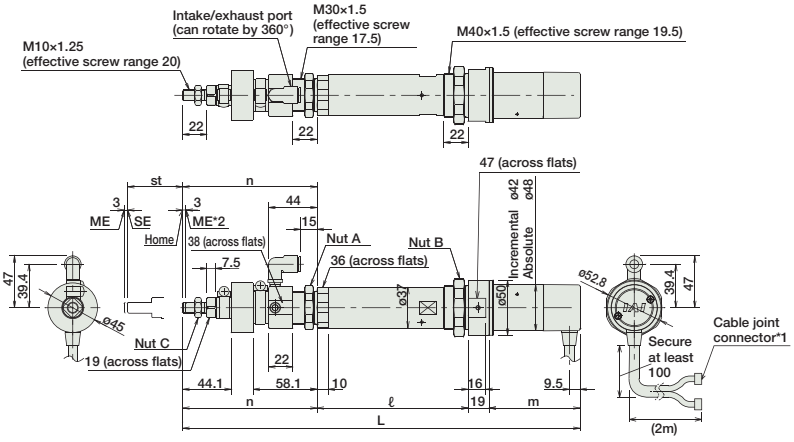
For Special Orders P. A-9

2/3D CAD

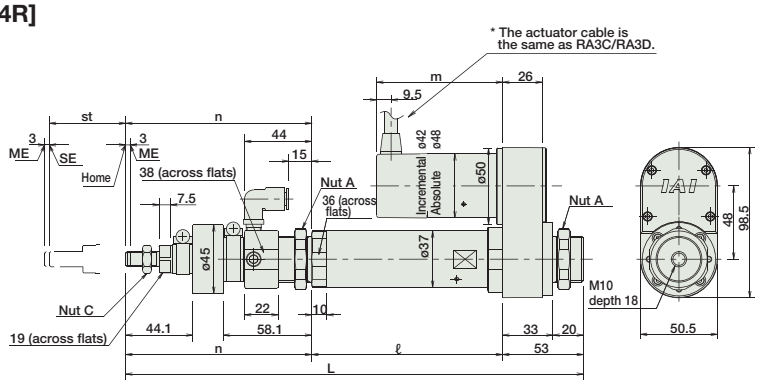
Note: No 3D CAD data for RA4D type.

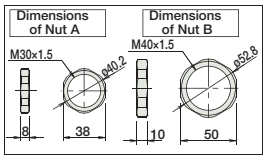
* 1 A motor-encoder cable is connected here. See page A-39 for details on cables.
* 2 When homing, the slider moves to the ME; therefore, please watch for any interference with the surrounding objects.
ME: Mechanical end SE: Stroke end

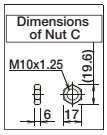
[RA4C/RA4D]



[RA4R]







Note:
Do not apply any external force on the rod from any direction other than the direction of the rod's motion. If a force is exerted on the rod in a perpendicular or rotational direction, the detent may become damaged.

■ Dimensions/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.

Compatible Controllers

The RCAW series actuators can operate with the controllers below. Select the controller according to your usage.

Name	External View	Model	Description	Max. Positioning Points	Input Voltage	Power Supply Capacity		See Page
Solenoid ValveType		AMEC-C-20I ②-NP-2-2 AMEC-C-30I ②-NP-2-2	Easy-to-use controller, even for beginners.	3 points	AC115V / AC230V* *planned	2.4A rated		→ P477
		ASEP-C-20I ②-NP-2-0 ASEP-C-30I ②-NP-2-0	Operable with same signal as solenoid valve. Supports both single and double solenoid types. No homing necessary with simple absolute type.		DC24V	(Standard) 1.3A rated 4.4A max. (Power-Saving) 1.3A rated 2.5A max.		→ P487
Splash-Proof Solenoid ValveType		ASEP-CW-20I ②-NP-2-0 ASEP-CW-30I ②-NP-2-0						
Positioner Type		ACON-C-20I ②-NP-2-0 ACON-C-30I ②-NP-2-0	Positioning possible for up to 512 points	512 points				→ P535
Safety Category Compliant Positioner Type		ACON-CG-200I ②-NP-2-0 ACON-CG-300I ②-NP-2-0						
Pulse Train Input Type (Differential Line Driver)		ACON-PL-20I ②-NP-2-0 ACON-PL-30I ②-NP-2-0	Differential line driver support Pulse Train Input Type	(–)				
Pulse Train Input Type (Open Collector)		ACON-PO-20I ②-NP-2-0 ACON-PO-30I ②-NP-2-0	Open Collector Pulse Train Input Type					
Serial Communication Type		ACON-SE-20I ②-N-0-0 ACON-SE-30I ②-N-0-0	Dedicated to serial communication	64 points				
Field NetworkType		RACON-20 ② RACON-30 ②	Dedicated to field network	768 points				→ P503
Program Control Type		ASEL-C-1-20 ① ②-NP-2-0 ASEL-C-1-30 ① ②-NP-2-0	Programmed operation is possible Can operate up to 2 axes	1500 points				→ P567

* This is for the single-axis ASEL.
* ① is a placeholder for the encoder type (I : incremental, A : absolute).
* ② is a placeholder for the code"LA", when the energy-saving option is selected.

ACON

■ Models C / CG / CY / PL / PO / SE

Position Controllers
For RCA2/RCA/RCL series

C/CG CY PL/PO SE

List of models

This position controller enables movement of the RCA2/RCA/RCL series actuators. A line-up of 5 types to support various controlling methods.

Type	C	CG	CY	PL/PO	SE
Name	Positioner type	Safety category compatible type	Solenoid valve type	Pulse train control type	Serial Communication Type
External view					
Description	Positioner capable of a maximum of 512 points of Positioning	Conforming to type C safety category specifications	Can be operated using the same control as the air cylinder type	For pulse train control	For serial communication
Position points	512 points	512 points	3 points	(–)	64 points

Model

ACON – [ ] – [ ] I [ ] – [ ] – [ ] – 0 – [ ]

Series | Type | Motor | Encoder | Option | I/O Type | I/O Cable Length | Power Voltage | Simple absolute unit

I	Incremental

The absolute-type RCA actuators cannot be operated with the ACON controller
To operate an absolute-type actuator, use the ASEL controller.
However, you can operate a simple absolute-type actuator, in which the absolute unit ACON-ABU (see P545) is attached to an incremental actuator.

HA	High Accel./Decel.
LA	Power-saving

Blank	Not used
ABU	Used

0	DC24V

C	Positioner Type
CG	Safety-compliant type
CY	Solenoid Valve Type
SE	Serial Communication Type
PL	Pulse Train Control Type (differential line driver model)
PO	Pulse Train Control Type (open collector model)

2	2W motor-compatible
5	5W motor-compatible
10	10W motor-compatible
20S	20W motor-compatible (*)
20	20W motor-compatible
30	30W motor-compatible

* When connecting an RCA-RA3□/ RGS3□/RGD3□ and RCA2-SA4□/TA5□, the motor type is 20S.

NP	NPN
PN	PNP (standard)
DV	DeviceNet
CC	CC-Link
PR	ProfiBus
PT	ProfiNet
ML	MechatroLink
CN	CompoNet
EC	EtherCAT
EP	EtherNet/IP
SC	Sercos III (*)
N	No I/O (SE type only)

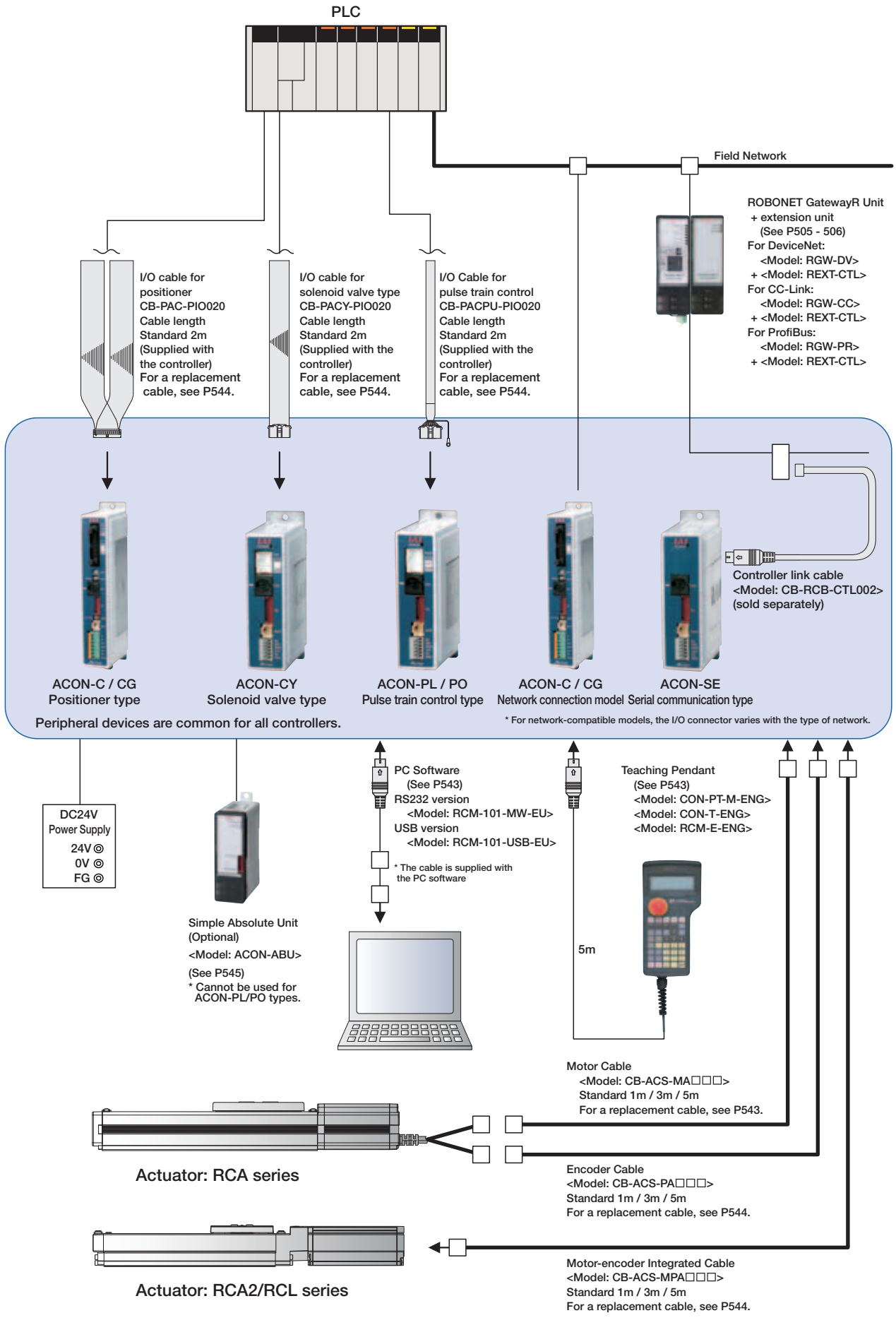
* Planned industrial ethernet interface

The network models (DV .. SC) support C/CG types only.
When selecting type SE (serial communication), the standard I/O is "N" (no I/O).

0	No cable (*)
2	2m (standard)
3	3m
5	5m

* If SE (serial communication type), and the network model (I/O type DV, CC, PR, PN, ML, CN, EC, SC or EP) is selected, specify "0" (no cable) for the I/O cable.

System configuration



I/O Specifications

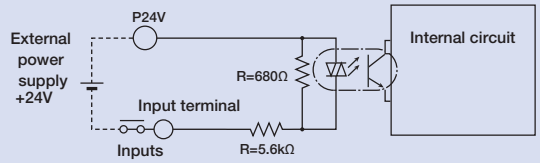
■ Input section External input specifications

Item	Specifications
Input voltage	DC24V ±10%
Input current	4mA/circuit
Leak current	1mA max./point
Isolation method	Photocoupler

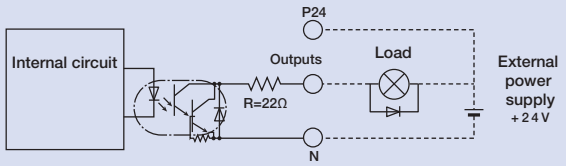
■ Output section External output specifications

Item	Specifications
Load Voltage	DC24V
Max. load current	50mA/point
Remaining voltage	2V or less
Isolation method	Photocoupler

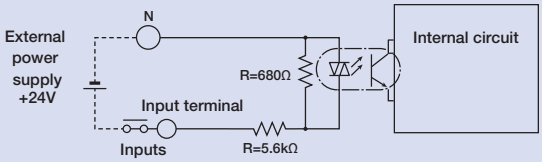
NPN Specifications



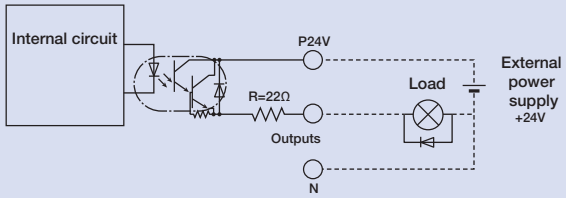
NPN Specifications



PNP Specifications



PNP Specifications



I/O Specifications

The 4 types of controllers (C/CG, CY, PL/PO, and SE) are classified by their respective I/O specifications. Also, for the positioner type and solenoid valve type, the I/O signal information can be changed in the controller settings, so multiple functions can be effectively used.

■ Control Function by Type

Type	C/CG	CY	PL/PO	SE	Features
Name	Positioner type	Solenoid valve type	Pulse train control type	Serial communication type	
Positioner mode	○	-	-	○ (*1)	This is the basic operating mode, in which the user designates position numbers and inputs start signals.
Teaching mode	○	-	-	○ (*1)	In this mode, the slider (rod) moves based on an external signal, and the stopped positions can be registered as position data.
Solenoid valve mode	○	○	-	○ (*1)	The actuator can be moved simply by ON/OFF position signals. This mode supports the same control signals you are already familiar with on solenoid valves of air cylinders.
Pulse train mode	-	-	○	-	In this mode, you can operate the actuator freely without inputting position data.
Network compatible	○ (*2)	-	-	○ (*3)	The controller can be connected to a DeviceNet or CC-Link network.

*1 Operates using network communications or serial communications.
*2 Can make a direct connection to a field network with the network specifications.
*3 Can be connected to a field network using a gateway unit.

Explanation of I/O Signal Functions

The table below explains the functions allocated to the controller's I/O signal.
Since the signals that can be used vary depending on the controller type and settings, check the signal table for each controller to confirm the available functions.

■ Signal Function Description

Classification	Signal abbreviations	Signal	Function description
Input	CSTR	Start signal	Input this signal to cause the actuator to start moving to the position set by the command position number signal.
	PC1 to PC256	Command position number signal	This signal is used to input a target position number (binary input).
	BKRL	Brake forced release signal	This signal forcibly releases the brake.
	RMOD	Running mode switching signal	This signal can switch the running mode when the MODE switch on the controller is set to AUTO. (AUTO when this signal is OFF, or MANU when the signal is ON).
	* STP	Pause signal (*1)	Turning this signal OFF causes the moving actuator to decelerate to a stop. The actuator will resume the remaining movement if the signal is turned ON during the pause.
	RES	Reset signal	Turning this signal ON resets the alarms that are present. If this signal is turned ON while the actuator is paused (*STP is OFF), the remaining movement can be cancelled.
	SON	Servo ON signal	The servo remains on while this signal is ON, or off while the signal is OFF.
	HOME	Home return signal	Turning this signal ON performs home-return operation.
	MODE	Teaching mode signal	Turning this signal ON switches the controller to teaching mode (provided that CSTR, JOG+ and JOG- are all OFF and the actuator is not moving).
	JISL	JOG/INJOG switching signal	When the main signal is off, the JOG operation will be conducted for JOG+ and JOG-. When the signal is on, the unit will do the inching operation for JOG+ and JOG-.
	JOG+, JOG–	JOG signal	When the JISL signal is off and the JOG +/- signal turns on, the unit will jog in the + (positive) direction when the JOG + turns on and the - (negative) direction when the JOG - turns on. During the JOG operation, the unit slows to a stop when the JOG +/- signal turns off.
	PWRT	Teaching signal	In the teaching mode, specify a desired position number and then turn this signal ON for at least 20ms to write the current position to the specified position number.
	ST0 to ST6	Start position command	Turning this signal ON in the solenoid valve mode causes the actuator to move to the specified position. (Start signal is not required)
	TL	Torque limit selection signal	While this signal is ON, torque is limited by the value set by a parameter. The TLR signal turns on if torque has reached the specified value. (Dedicated pulse train type)
	DCLR	Deviation counter clear signal	The position deviation counter is continuously cleared while this signal is ON. (Dedicated pulse train type)
Output	PEND/INP	In position signal	This signal turns ON when the actuator has entered the positioning band after movement. If the actuator has exceeded the positioning band, PEND does not turn OFF, but INP does. PEND and INP can be swapped within parameters.
	PM1 to PM256	Position complete signal	This signal is used to output the position number achieved at the completion of positioning (binary output)
	HEND	Home return completion signal	This signal turns ON upon completion of home return.
	ZONE1	Zone signal	This signal turns ON when the current actuator position has entered the range specified by the parameters.
	PZONE	Positioning zone signal	Turns ON when actuator moves into a position within the range of the target position data that was set. PZONE can be used together with ZONE1, but PZONE is valid only during movement to a specified position.
	RMDS	Running mode status signal	This outputs the operation mode status.
	* ALM	Controller alarm status signal	This signal remains ON while the controller is not in the alarm condition, and turns OFF when an alarm has occurred.
	MOVE	Moving signal	Turns ON while the actuator is moving (home return), including when there is push force.
	SV	Servo ON status signal	This signal turns ON when servo is ON.
	* EMGS	Emergency stop status signal	This signal remains ON while the controller is not in the emergency stop mode, and turns OFF once an emergency stop has been actuated.
	MODES	Mode status signal	The mode signal input turns it ON when it goes into teaching mode. It turns OFF when it goes into normal mode.
	WEND	Writing complete signal	This signal remains OFF after the controller has switched to the teaching mode. It turns ON upon completion of data write using the PWRT signal. If the PWRT signal is turned Off, this signal also turns OFF.
	PE0 to PE6	Current position number signal	This signal turns ON after the controller has completed moving to the target position in the solenoid valve mode.
	TLR	Torque limiting signal	This signal turns ON once the motor torque has reached the specified value in a condition where torque is being limited by the TL signal. (Dedicated pulse train type)
	LSO to LS2	Limit switch output signal	Each signal turns ON when the current actuator position has entered the positioning band before or after the target position. If the actuator has already completed home return, these signals are output even before a movement command is issued or while the servo is OFF. (Dedicated Solenoid Valve Mode)

(Note) Signals with asterisks (*) are normally ON and OFF during operation.
(*1) A „pause" function is not available during S-curve motion.

I/O Signal table

■ Positioner type (ACON-C / CG)

Pin No.	Classification		Parameters (select PIO pattern) 0	1	2	3	4	5
			Positioning mode	Teaching mode	256-point mode	512-point mode	Solenoid Valve Mode 1	Solenoid Valve Mode 2
		Positioning Points	64 points	64 points	256 points	512 points	7 points	3 points
		Zone signal	○	–	–	–	○	○
		P-zone signal	○	○	○	–	○	○
1A	24V		P24					
2A	24V		P24					
3A	–		NC					
4A	–		NC					
5A	Input	IN0	PC1	PC1	PC1	PC1	ST0	ST0
6A		IN1	PC2	PC2	PC2	PC2	ST1	ST1 (JOG+)
7A		IN2	PC4	PC4	PC4	PC4	ST2	ST2 (–)
8A		IN3	PC8	PC8	PC8	PC8	ST3	–
9A		IN4	PC16	PC16	PC16	PC16	ST4	–
10A		IN5	PC32	PC32	PC32	PC32	ST5	–
11A		IN6	–	MODE	PC64	PC64	ST6	–
12A		IN7	–	JISL	PC128	PC128	–	–
13A		IN8	–	JOG+	–	PC256	–	–
14A		IN9	BKRL	JOG-	BKRL	BKRL	BKRL	BKRL
15A		IN10	RMOD	RMOD	RMOD	RMOD	RMOD	RMOD
16A		IN11	HOME	HOME	HOME	HOME	HOME	–
17A		IN12	* STP	* STP	* STP	* STP	* STP	–
18A		IN13	CSTR	CSTR/PWRT	CSTR	CSTR	–	–
19A		IN14	RES	RES	RES	RES	RES	RES
20A		IN15	SON	SON	SON	SON	SON	SON
1B	Output	OUT0	PM1	PM1	PM1	PM1	PE0	LSO
2B		OUT1	PM2	PM2	PM2	PM2	PE1	LS1
3B		OUT2	PM4	PM4	PM4	PM4	PE2	LS2 (–)
4B		OUT3	PM8	PM8	PM8	PM8	PE3	–
5B		OUT4	PM16	PM16	PM16	PM16	PE4	–
6B		OUT5	PM32	PM32	PM32	PM32	PE5	–
7B		OUT6	MOVE	MOVE	PM64	PM64	PE6	–
8B		OUT7	ZONE1	MODES	PM128	PM128	ZONE1	ZONE1
9B		OUT8	PZONE	PZONE	PZONE	PM256	PZONE	PZONE
10B		OUT9	RMDS	RMDS	RMDS	RMDS	RMDS	RMDS
11B		OUT10	HEND	HEND	HEND	HEND	HEND	HEND
12B		OUT11	PEND	PEND/WEND	PEND	PEND	PEND	–
13B		OUT12	SV	SV	SV	SV	SV	SV
14B		OUT13	* EMGS	* EMGS	* EMGS	* EMGS	* EMGS	* EMGS
15B		OUT14	* ALM	* ALM	* ALM	* ALM	* ALM	* ALM
16B		OUT15	–	–	–	–	–	–
17B	–		NC					
18B	–		NC					
19B	0V		N					
20B	0V		N					

(Note) The names of signals above inside ( ) are functions before the unit returns home.
(Note) Signals with asterisks (*) are normally ON, and OFF during operation.

■ Solenoid valve type (ACON-CY)

Pin No.	Classification		Parameters (select PIO pattern) 0	1
			Solenoid valve mode 0	Solenoid valve mode 1
		Positioning Points	3 points	3 points
		Zone signal	–	–
		P-zone signal	–	○
1	24V			
2	0V			
3	Input	IN0	ST0	ST0
4		IN1	ST1 (JOG+)	ST1 (JOG+)
5		IN2	ST2 (RES)	ST2 (RES)
6		IN3	SON	SON
7	Output	OUT0	LS0	PE0
8		OUT1	LS1	PE1
9		OUT2	LS2 (–)	PE2 (–)
10		OUT3	SV	PZONE
11		OUT4	HEND	HEND
12		OUT5	* ALM	* ALM

(Note) The names of signals above inside ( ) are functions before the unit returns home.
(Note) Signals with asterisks (*) are normally ON, and OFF during operation.

■ Pulse Train Type (ACON-PL/PO)

Pin No.	Classification		Parameters (select PIO pattern) 0	1
			Standard mode	Push mode
		Positioning Points	–	–
		Zone signal	–	–
		P-zone signal	–	–
1	24V			
2	0V			
3	Input	IN0	SON	SON
4		IN1	TL	TL
5		IN2	HOME	HOME
6		IN3	RES	RES / DCLR
7	Output	OUT0	SV	SV
8		OUT1	INP	INP / TLR
9		OUT2	HEND	HEND
10		OUT3	* ALM	* ALM
11	Input		* PP	* PP
12			PP	PP
13			* NP	* NP
14			NP	NP

(Note) Signals with asterisks (*) are normally ON, and OFF during operation.

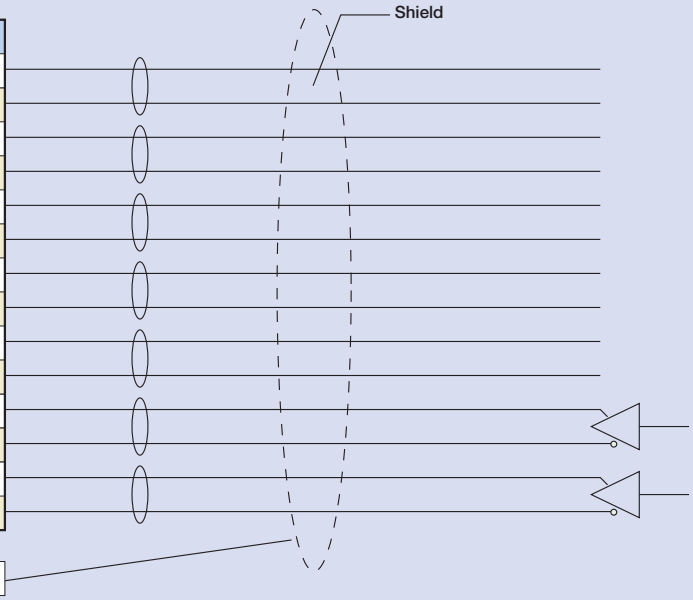
Wiring Diagram for the Pulse-Train Input Type

■ Differential Line Driver Method (ACON-PL)

Max. input pulse frequency	:	Max. 200 kpps
Cable Length	:	Max. 10m

PIO connector

Pin Number	Classification	Signal
1	External 24V	24V
2	External 0V	0V
3	Input	SON
4	Input	TL
5	Input	HOME
6	Input	RES
7	Output	SV
8	Output	INP
9	Output	HEND
10	Output	* ALM
11	Differential input	/PP
12		PP
13		/NP
14		NP



Mounting plate	FG

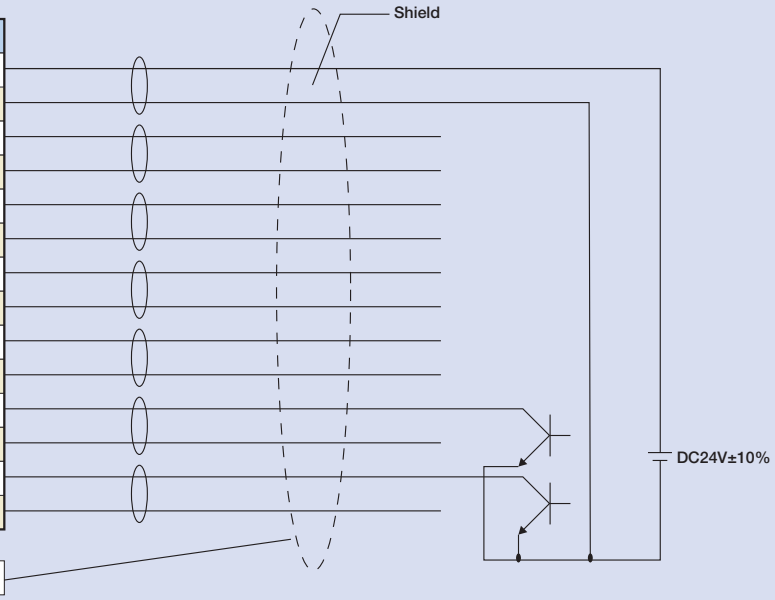
* The shield on the twisted pair cable connected to the pulse connector must be connected to the mounting plate.

■ Open Collector Method (ACON-PO)

Max. input pulse frequency	:	Max. 60 kpps
Cable Length	:	Max. 2m

PIO connector

Pin Number	Classification	Signal
1	External 24V	24V
2	External 0V	0V
3	Input	SON
4	Input	TL
5	Input	HOME
6	Input	RES
7	Output	SV
8	Output	INP
9	Output	HEND
10	Output	* ALM
11	Open collector input	/PP
12	N.C	PP
13	Open collector input	/NP
14	N.C	NP



Mounting plate	FG

* The shield on the twisted pair cable connected to the pulse connector must be connected to the mounting plate.
* Connect the external 0V to the COMMON of the command pulse.

Command Pulse Input State

	Command pulse train state	Input terminal	During forward operation	During reversed operation
Negative logic	Forward pulse train	PP・/PP		
	Reversed pulse train	NP・/NP		
	The forward pulse train causes the motor to rotate forward, and the reverse pulse train causes the motor to rotate in reverse.			
	Pulse train	PP・/PP		
	Symbols	NP・/NP	Low	High
	The command pulse is used for the amount of motor rotation, and the command symbol is used for rotational direction.			
	A/B phase pulse train	PP・/PP		
		NP・/NP		
	An A/B phase pulse with a 90° phase difference (multiplier is 4) is used to generate commands for the amount of rotation and rotational direction.			
Positive logic	Forward pulse train	PP・/PP		
	Reversed pulse train	NP・/NP		
	Pulse train	PP・/PP		
	Symbols	NP・/NP	High	Low
	A/B phase pulse train	PP・/PP		
		NP・/NP		

Table of specifications

Item	Specifications					
Controller type	C	CG	CY	PL	PO	SE
Connected actuator	RCA/RCA2/RCL Series Actuator					
Number of control axes	1-axis					
Operating method	Positioner type		Solenoid valve type	Pulse train input type		Serial communication type
Positioning Points	512 points		3 points	—		64 points
Backup memory	EEPROM					
I/O connector	40-pin connector		12-pin connector	14-pin connector		None
Number of I/O	16 input points/16 output points		4 input points / 6 output points	4 input points/4 output points		None
I/O power	External supply DC24V±10%					—
Serial Communication	RS485 1ch					
Peripheral device communication cable	CB-PAC-PIO □□□		CB-PACY-PIO □□□	CB-PACPU-PIO □□□		CB-RCB-CTL002
Command pulse train input method	—			Differential line driver	Open collector	—
Max. input pulse frequency (Note 1)	—			Max. 200 kpps	Max. 60 kpps	—
Position detection method	Incremental encoder					
Drive-source cutoff relay at emergency stop	Integrated	External				
Forced release of electromagnetic brake	Brake release switch ON/OFF		ON/OFF terminal signal inside the power terminal for brake release			
Input Voltage	DC24V ± 10%					
Dielectric strength voltage	DC500V 1MΩ					
Vibration resistance	XYZ directions	10 to 57Hz, One side amplitude: 0.035mm (continuous), 0.075mm (intermittent) 58 to 150 Hz 4.9 m/s² (continuous), 9.8 m/s² (intermittent)				
Ambient operating temperature	0 ~ 40°C					
Ambient operating humidity	10 - 95% (non-condensing)					
Ambient operating atmosphere	Without corrosive gases					
Protection class	IP20					
Weight	Approx. 300g		Approx. 130g			

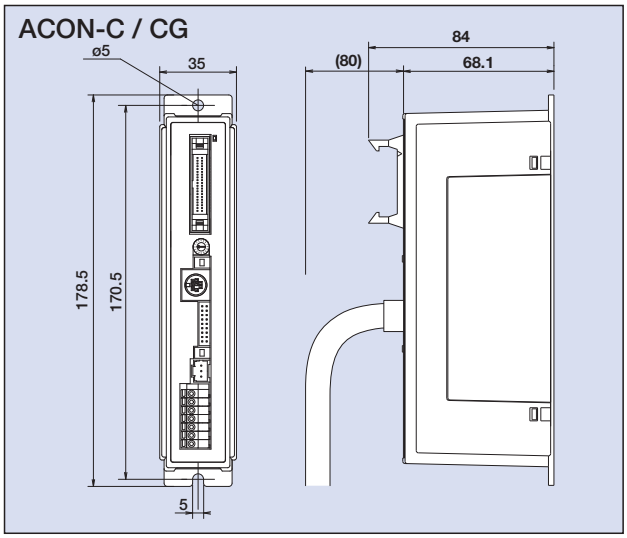
(Note 1) With the open collector specification, keep the maximum input frequency to 60 kpps or below to prevent malfunction. For applications exceeding 60kpps, use the differential line driver.

	Actuator	Motor	Standard specifications/high acceleration and deceleration model		Power-saving model	
			Rated [A]	Max. [A]	Rated [A]	Max. [A]
Motor Power Supply Capacity (Note 2)	RCA RCA2	10W	1.3	4.4	1.3	2.5
		20W [Model symbol: 20]	1.3	4.4	1.3	2.5
		30W	1.3	4.4	1.3	2.2
		20W [Model symbol: 20S] SA4, RA3, TA5 Type dedicated	1.7	5.1	1.7	3.4
	RCL	2W	0.8	4.6		
		5W	1.0	6.4		
		10W	1.3	6.4		

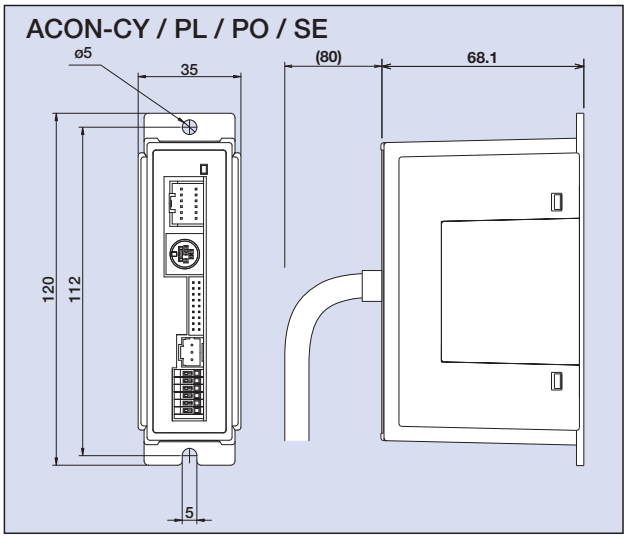
(Note 2) Other than motor power supply capacity, increase 0.5A as control power supply. Inrush current of approx. 5 to 12 times the rated current occurs within 1 to 2 msec from turning the power on. The inrush current changes depending on the power supply line impedance.

External Dimensions

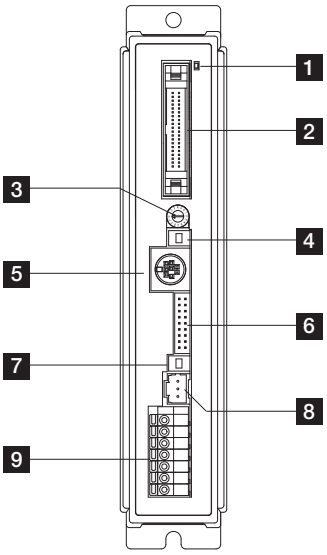
ACON-C / CG



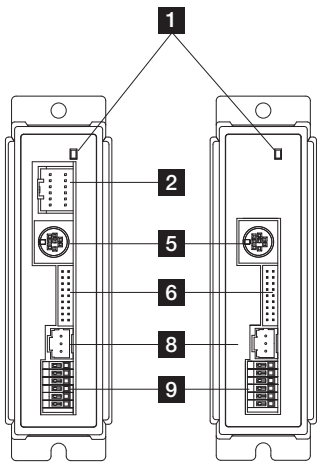
ACON-CY / PL / PO / SE



Name of Each Part



C / CG type



CY / PL / PO Type　　SE Type

* PIO connectors are:
CY: 12 pin
PL/PO: 14 pin

1 LED display

These LED colors indicate the condition of the controller.

Lit (green) Servo ON　Lit (red) Alarm activated　Unlit Servo OFF　Blinking (green) Automatic servo-OFF
Emergency stop

2 PIO connector

Connects a cable for communicating with a PLC or other external equipment.

3 Address-setting rotary switch

This switch sets the addresses for controllers used when the unit is linked with controllers.

4 Mode switch

Switches between manual teaching pendant operations (MANU) and automatic operations (AUTO).

Operation details

MANUAL	I/O commands are not accepted. Data can be written from a teaching pendant or PC.
AUTO	I/O commands are valid, while operations from a teaching pendant or PC are not accepted. However, monitoring is possible.

5 SIO connector

Connects a teaching pendant, PC cable, controller, or gateway unit to a controller.

Operation details

Pin No.	Signal	Name	Remarks
1	SGA	Positive side, RS485 differential signal	
2	SGB	Negative side, RS485 differential signal	
3	5V	+5V output	For RS232/485 conversion
4	ENBL	Enable signal	
5	EMGA	EMG line connection to external equipment	
6	24V	24-V power for T/P	For T/P
7	0V	GND	
8	EMGB	EMG line connection to external equipment	
9	0V	EMG line connection to external equipment ground	

6 Encoder brake connector

Connects the encoder/brake cable for the actuator.

7 Brake release switch

This switch forces the brake to release.

8 Motor connector

Connects the motor cable for the actuator.

9 Power terminal block

Main power for controller(s), emergency stop

C / CG type

Terminal number	Signal	Name
7	S1	External drive-source cutoff for TP_EMG terminal
6	S2	
5	MPI	Motor drive-source cutoff terminal
4	MPO	Motor drive-source cutoff terminal
3	24V	Positive side of the 24-V power supply
2	0V	Negative side of the 24-V power supply
1	EMG	EMG signal (application of 24 V)

CY / PL / PO / SE type

Terminal number	Signal	Name
6	BK	BK release
5	MPI	Motor drive-source cutoff terminal
4	MPO	Motor drive-source cutoff terminal
3	24V	Positive side of the 24-V power supply
2	0V	Negative side of the 24-V power supply
1	EMG	EMG signal (application of 24 V)

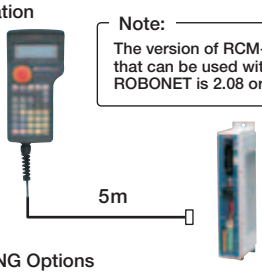
Option

Teaching Pendant

Features This is a teaching device that provides information on functions such as position input, performing test runs, and monitoring.

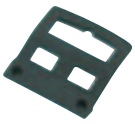
Model **CON-PT-M-ENG** (Touch panel teaching pendant)
CON-T-ENG (Standard type)
RCM-E-ENG (Simple teaching pendant)

Configuration

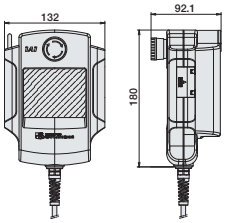


Note:
The version of RCM-E that can be used with ROBONET is 2.08 or later.

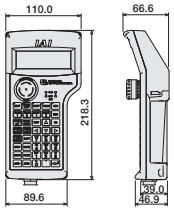
CON-T-ENG Options
- Wall-mounting hook Model HK-1
- Strap Model STR-1



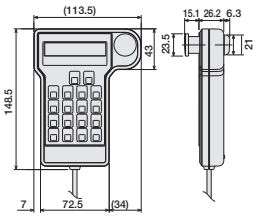
CON-PT-M-ENG



CON-T-ENG



RCM-E-ENG



Specifications

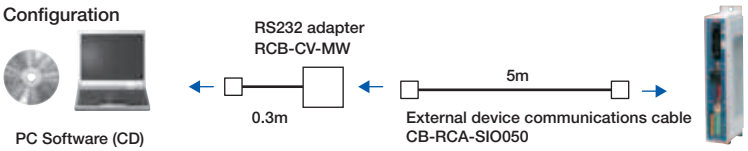
Item	CON-PT-M-ENG	CON-T-ENG	RCM-E-ENG
Data Input	O	O	O
Actuator motion	O	O	O
Ambient Operating Temp./Humidity	Temp: 0~40°C; Humidity: 85% RH or below		
Ambient Operating Atmosphere	No corrosive gases. Especially no dust.		
Protection class	IP40	IP54	–
Weight	Approx. 750g	Approx. 400g	Approx. 400g
Cable Length		5m	
Display	3-color LED touch panel with backlight	20 char. × 4 lines LCD display	16 char. × 2 lines LCD display

PC Software (Windows Only)

Features A startup support software for inputting positions, performing test runs, and monitoring. With enhancements for adjustment functions, the startup time is shortened.

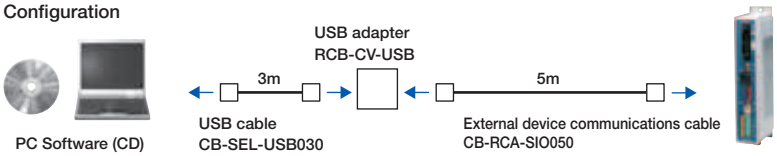
Model **RCM-101-MW-EU** (External device communications cable + RS232 conversion unit)

Configuration



Model **RCM-101-USB-EU** (External device communications cable + USB adapter + USB cable)

Configuration



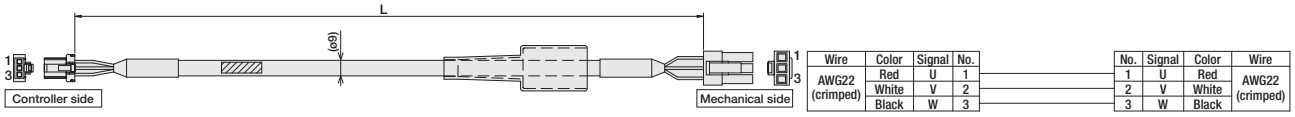
Spare parts

When you need spare parts after purchasing the product, such as when replacing a cable, refer to the list of models below.

Motor Cable for RCA

Model **CB-ACS-MA** □□□

* The standard cable for the motor cable is a robot cable.
* Enter the cable length (L) into □□□. Compatible to a maximum of 20 meters. Ex.: 080 = 8 m



Wire	Color	Signal	No.
AWG22 (crimped)	Red	U	1
	White	V	2
	Black	W	3

No.	Signal	Color	Wire
1	U	Red	AWG22 (crimped)
2	V	White	
3	W	Black	

Min. bend radius r = 50 mm or larger (when movable type is used)

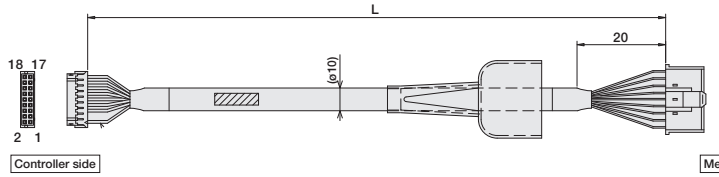
Encoder Cable / Encoder Robot Cable for RCA

Model **CB-ACS-PA□□□/CB-ACS-PA□□□-RB**

* The standard cable for the encoder cable is the normal cable. A robot cable can be specified as an option.

* Enter the cable length (L) into □□□. Compatible to a maximum of 20 meters. Ex.: 080 = 8 m

Min. bend radius r = 50 mm or larger (when movable type is used)
* Only robot cable is to be used in a cable track.



CN2 Cable color (Robot Cable)	CN2 Cable color (Standard Cable)	Signal	Pin No.
White/Purple	Blue	LS+	18
White/Gray	Orange	LS–	17
Yellow	Green	BK+	16
Blue	Brown	BK–	15
White/Blue	Gray	ENA	14
White/Yellow	Red	ENA	13
White/Red	Black	ENB	12
White/Black	Yellow	ENB	11
Orange	Pink	ENZ	10
Green	Purple	ENZ	9
Purple	White	–	8
Gray	Blue/red	VPS	7
Red	Orange/White	5V	6
Black	Green/White	GND	5
–	–	–	4
–	–	–	3
–	–	–	2
Ground	Ground	F.G	1

Housing : PHDR-18VR (JST)
Contact : SPHD-001T-P0.5 (JST)

CN1 Pin No.	Signal	Cable color Standard Cable	Cable color Robot Cable
1	ENA	Gray	White/Blue
2	ENA	Red	White/Yellow
3	ENB	Black	White/Red
4	ENB	Yellow	White/Black
5	–	–	–
6	–	–	–
7	LS+	Blue	White/Purple
8	–	–	–
9	FG	Ground	Ground
10	ENZ	Pink	Orange
11	ENZ	Purple	Green
12	–	White	Purple
13	VPS	Blue/red	Gray
14	5V	Orange/White	Red
15	GND	Green/White	Black
16	LS–	Orange	White/Gray
17	BK–	Brown	Blue
18	BK+	Green	Yellow

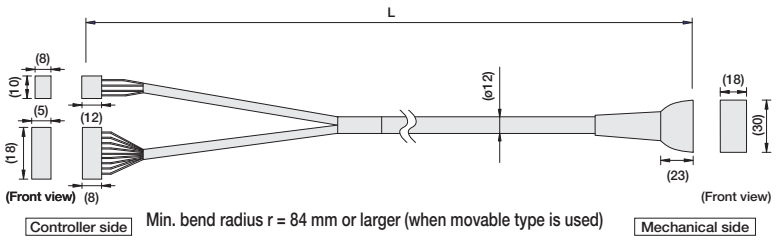
Plug housing : XMP-18V (JST)
Socket contact : BXA-001T-P0.6 (JST)
Retainer : XMS-09V (JST)

Motor-Encoder Integrated Cable for RCA2/RCL

Model **CB-ACS-MPA□□□**

* The standard cable for the motor-encoder cable is a robot cable.

* Enter the cable length (L) into □□□. Compatible to a maximum of 20 meters. Ex.: 080 = 8 m



Signal	Pin No.
U	1
V	2
W	3
BK+	16
BK–	15
LS+	18
LS–	17
A+	14
A–	13
B+	12
B–	11
Z+	10
Z–	9
–	8
/PS	7
VCC	6
GND	5
NC	
FG	1

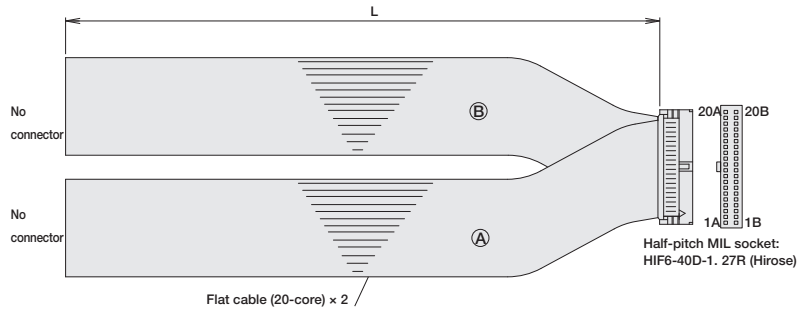
(Wire color)
Red
Yellow
Black
Yellow (Red ●)
Yellow (Blue ●)
Pink (Red ●)
Pink (Blue ●)
White (Red ●)
White (Blue ●)
Orange (Red ●)
Orange (Blue ●)
Gray (Red ●)
Gray (Blue ●)
Orange (Red ● Consecutive)
Orange (Blue ● Consecutive)
Gray (Red ● Consecutive)
Gray (Blue ● Consecutive)
Shield

Pin No.	Signal
A1	U
B1	V
A2	W
B2	NC
A3	NC
B3	NC
A4	BK+
B4	BK–
A5	LS+
B5	LS–
A6	A+
B6	A–
A7	B+
B7	B–
A8	Z+
B8	Z–
A9	–
B9	/PS
A10	VCC
B10	GND
A11	NC
B11	FG

I/O Flat Cable (for ACON-C/CG)

Model **CB-PAC-PIO□□□**

* Enter the cable length (L) into □□□. Compatible to a maximum of 10 meters. Ex.: 080 = 8 m



HIF6-40D-1. 27R

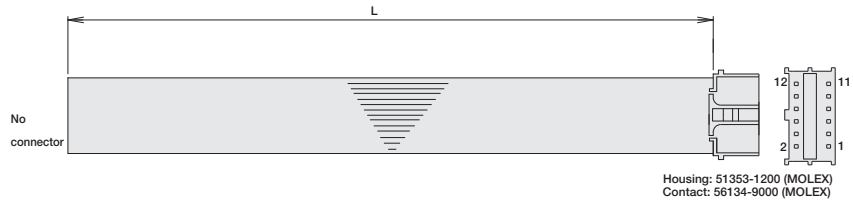
Pin No.	Signal	Cable Color	Wire
1A	24V	Brown-1	Flat cable A (crimped)
2A	24V	Red-1	
3A	–	Orange-1	
4A	–	Yellow-1	
5A	IN0	Green-1	
6A	IN1	Blue-1	
7A	IN2	Purple-1	
8A	IN3	Gray-1	
9A	IN4	White-1	
10A	IN5	Black-1	
11A	IN6	Brown-2	
12A	IN7	Red-2	
13A	IN8	Orange-2	
14A	IN9	Yellow-2	
15A	IN10	Green-2	
16A	IN11	Blue-2	
17A	IN12	Purple-2	
18A	IN13	Gray-2	
19A	IN14	White-2	
20A	IN15	Black-2	

Pin No.	Signal	Cable Color	Wire
1B	OUT0	Brown-3	Flat cable B (crimped) AWG28
2B	OUT1	Red-3	
3B	OUT2	Orange-3	
4B	OUT3	Yellow-3	
5B	OUT4	Green-3	
6B	OUT5	Blue-3	
7B	OUT6	Purple-3	
8B	OUT7	Gray-3	
9B	OUT8	White-3	
10B	OUT9	Black-3	
11B	OUT10	Brown-4	
12B	OUT11	Red-4	
13B	OUT12	Orange-4	
14B	OUT13	Yellow-4	
15B	OUT14	Green-4	
16B	OUT15	Blue-4	
17B	–	Purple-4	
18B	–	Gray-4	
19B	0V	White-4	
20B	0V	Black-4	

I/O Cable for Solenoid Valve Type (for ACON-CY)

Model **CB-PACY-PIO□□□**

* Enter the cable length (L) into □□□. Compatible to a maximum of 10 meters. Ex.: 080 = 8 m



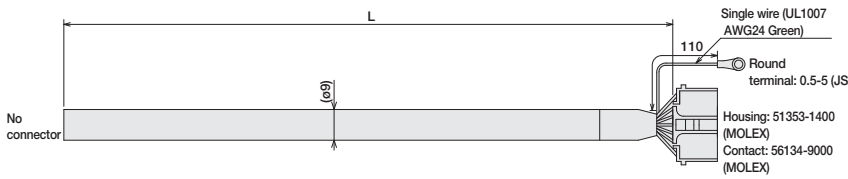
51353-1200 (MOLEX)

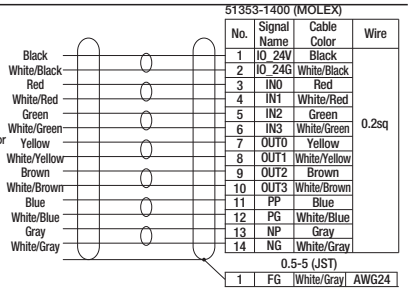
Pin No.	Signal	Cable Color	Wire
1	24V	Brown-1	Flat cable (crimped) AWG28
2	0V	Red-1	
3	IN0	Orange-1	
4	IN1	Yellow-1	
5	IN2	Green-1	
6	IN3	Blue-1	
7	OUT0	Purple-1	
8	OUT1	Gray-1	
9	OUT2	White-1	
10	OUT3	Black-1	
11	OUT4	Brown-2	
12	OUT5	Red-2	

Pulse Train Control I/O Cable (for ACON-PL/PO)

Model **CB-PACPU-PIO□□□**

* Enter the cable length (L) into □□□. Compatible to a maximum of 10 meters. Ex.: 080 = 8 m





51353-1400 (MOLEX)

No.	Signal Name	Cable Color	Wire
1	IO_24V	Black	0.2sq
2	IO_24G	White/Black	
3	IN0	Red	
4	IN1	White/Red	
5	IN2	Green	
6	IN3	White/Green	
7	OUT0	Yellow	
8	OUT1	White/Yellow	
9	OUT2	Brown	
10	OUT3	White/Brown	
11	PP	Blue	
12	PG	White/Blue	
13	NP	Gray	
14	NG	White/Gray	

0.5-5 (JST)

1	FG	White/Gray	AWG24

ASEL

Program controller
For RCA2/RCA/RCL series

List of models

Program controller for operating RCA2/RCA/RCL series actuators. One unit can handle various controls.

Type	C	
Name	Program mode	Positioner Mode
External view		
Description	Both the actuator operation and communication with external equipment can be handled by a single controller. When two axes are connected, arc interpolation, path operations, and synchronization can be performed.	Up to 1500 positioning points are supported. Push-motion operation and teaching operation are also possible.
Position points	1500 points	
Number of control axes	Up to 2 axes	

Model

* 2nd axis specs not applicable to the single-axis model.

ASEL – C – □ – □ □ □ – □ □ □ – □ – □ – 0

Series | Type | Number of Axes | (Specs for 1st axis): Motor, Encoder, Option | (Specs for 2nd axis): Motor, Encoder, Option | I/O Type | I/O Cable Length | Power/ Voltage

C	Standard Type

1	Single-axis model
2	2-axis model

I	Incremental
A	Absolute

2	2W motor
5	5W motor
10	10W motor
20S	20W motor (*)
20	20W motor
30	30W motor

* When connecting an RCA-RA3□/ RGS3□/RGD3□ and RCA2-SA4□/TA5□, the motor type is 20S.

B	Brake
H	Home sensor compatible
HA	High Accel./Decel.
LA	Power-saving

I	Incremental
A	Absolute

2	2W motor
5	5W motor
10	10W motor
20S	20W motor (*)
20	20W motor
30	30W motor

* When connecting an RCA-RA3□/ RGS3□/RGD3□ and RCA2-SA4□/TA5□, the motor type is 20S.

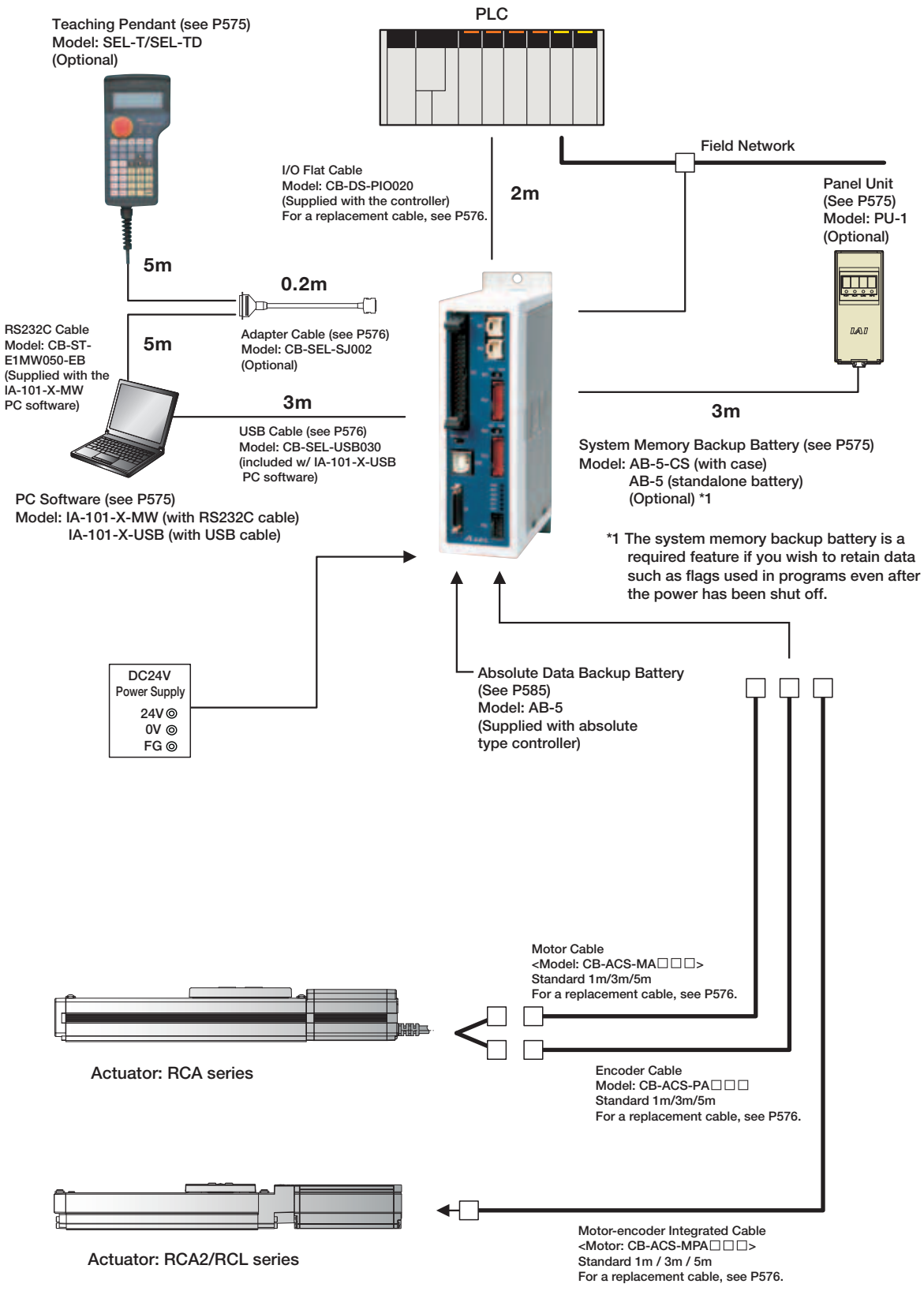
B	Brake
H	Home sensor compatible
HA	High Accel./Decel.
LA	Power-saving

NP	PIO NPN
PN	PIO PNP (standard)
DV	DeviceNet
CC	CC-Link
PR	ProfiBus

0	No cable
2	2m (standard)
3	3m
5	5m

0	DC24V

System configuration



I/O Specifications

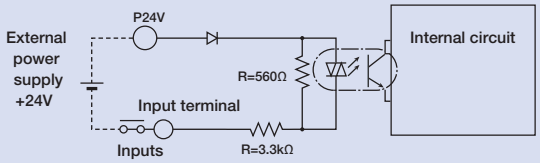
■ Input section External input specifications

Item	Specifications	
Input voltage	DC24V ±10%	
Input current	7mA / circuit	
ON/OFF voltage	ON voltage (min.)	NPN : DC16V / PNP : DC8V
	OFF voltage (max.)	NPN : DC5V / PNP : DC19V
Isolation method	Photocoupler	

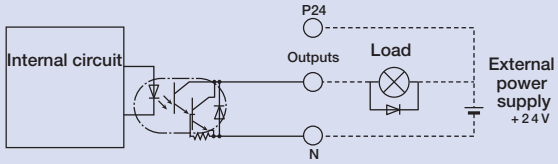
■ Output section External output specifications

Item	Specifications
Load Voltage	DC24V
Max. load current	100mA / 1 point 400mA / 8 points in total
Residual voltage (Max.)	Max 0.1mA / 1 point
Isolation method	Photocoupler

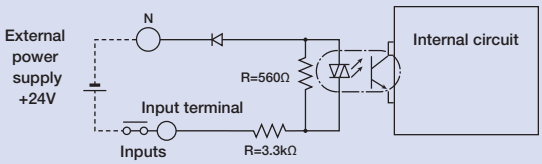
NPN Specifications



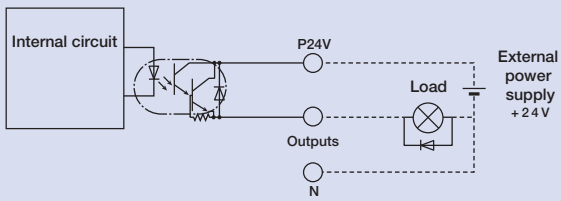
NPN Specifications



PNP Specifications



PNP Specifications



Explanation of I/O Signal Functions

Two modes can be selected for the ASEL controller: “Program Mode,” in which the actuator is operated by entering a program, and “Positioner Mode,” in which PLC signals are received and the actuator is moved to designated positions.
The Positioner Mode has the five input patterns listed below to enable various applications.

■ Control Function by Type

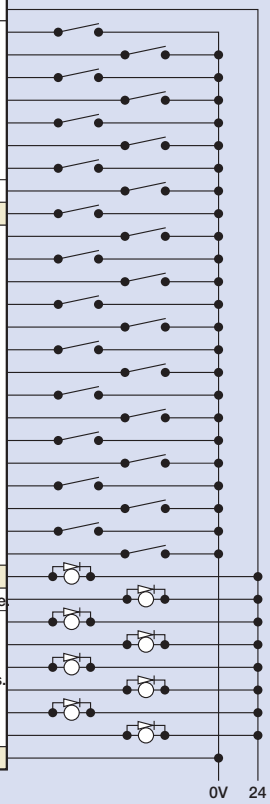
Operation mode		Features
Program mode		Various operations including linear/arc interpolation operation, path operation ideal for coating processes, etc., arch-motion operation and palletizing operation can be performed using the Super SEL language that lets you program complex control actions using simple commands.
Positioner mode	Standard mode	This is the basic mode from which operations can be conducted by designating position numbers and inputting the start signal. Push-motion operation and teaching operation are also possible.
	Product Change mode	Multiple parts of the same shape with slightly different hole positions can be handled using movement commands to the same position numbers by simply changing the product type number.
	2-axis independent mode	With a 2-axis controller, each axis can be commanded and operated separately.
	Teaching mode	In this mode, the slider (rod) moves based on an external signal, when the actuator is stopped, the current location can be registered as position data.
	DS-S-C1 Compatible mode	If you were using a DS-S-C1 controller, you can replace it with a ASEL controller without having to change the host programs. *This mode does not ensure actuator compatibility.

Explanation of I/O Signal Functions

Program mode

Pin Number	Category	Port No.	Program Mode	Functions
1A	P24		24V input	Connect 24V.
1B	Input	016	Select Program No. 1	Selects the program number to start. (Input as BCD values to ports 016 to 022)
2A		017	Select Program No. 2	
2B		018	Select Program No. 4	
3A		019	Select Program No. 8	
3B		020	Select Program No. 10	
4A		021	Select Program No. 20	
4B		022	Select Program No. 40	
5A		023	CPU reset	Resets the system to the same state as when the power is turned on.
5B		000	Start	Starts the program selected by ports 016 to 022.
6A		001	General-purpose input	Waits for external input via program instructions.
6B		002	General-purpose input	
7A		003	General-purpose input	
7B		004	General-purpose input	
8A		005	General-purpose input	
8B		006	General-purpose input	
9A		007	General-purpose input	
9B		008	General-purpose input	
10A		009	General-purpose input	
10B		010	General-purpose input	
11A		011	General-purpose input	
11B		012	General-purpose input	
12A		013	General-purpose input	
12B		014	General-purpose input	
13A		015	General-purpose input	
13B	Output	300	Alarm	Turns off when an alarm occurs. (Contact B)
14A		301	Ready	Turns on when the controller starts up normally and is in an operable state.
14B		302	General-purpose output	These outputs can be turned ON/OFF as desired via program instructions.
15A		303	General-purpose output	
15B		304	General-purpose output	
16A		305	General-purpose output	
16B		306	General-purpose output	
17A		307	General-purpose output	
17B	N		0V input	Connect 0V.

NPN* Wiring Diagram

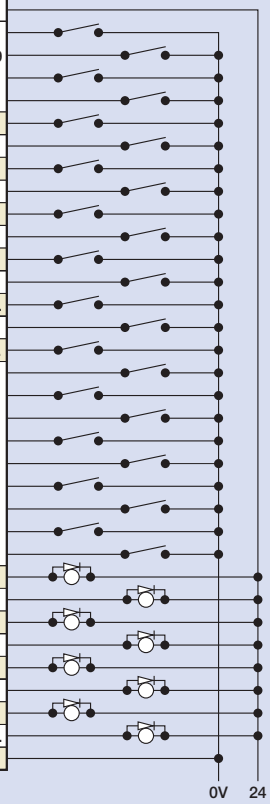


*Note: With regard to PNP wiring diagram, please refer to ASEL manual.

Positioner mode

Pin Number	Category	Port No.	Positioner Standard Mode	Functions
1A	P24		24V input	Connect 24V.
1B	Input	016	Position input 10	Specifies the position numbers to move to, using port number 007 to 019 The number can be specified either as BCD or binary.
2A		017	Position input 11	
2B		018	Position input 12	
3A		019	Position input 13	
3B		020	–	–
4A		021	–	–
4B		022	–	–
5A		023	Error reset	Resets minor errors. (Severe errors require a restart.)
5B		000	Start	Starts moving to the selected position.
6A		001	Home Return	Performs Home Return.
6B		002	Servo ON	Switches between Servo ON and OFF.
7A		003	Push	Performs a push motion.
7B		004	Pause	Pauses the motion when turned OFF, and resumes motion when turned ON.
8A		005	Cancel	Stops the motion when turned OFF. The remaining motion is canceled.
8B		006	Interpolation settings	When this signal turned ON for a 2-axis model, the actuator moves by linear interpolation.
9A		007	Position input 1	Specifies the position numbers to move to, using ports 007 to 019. The number can be specified either as BCD or binary.
9B		008	Position input 2	
10A		009	Position input 3	
10B		010	Position input 4	
11A		011	Position input 5	
11B		012	Position input 6	
12A		013	Position input 7	
12B		014	Position input 8	
13A		015	Position input 9	
13B	Output	300	Alarm	Turns off when an alarm occurs. (Contact B)
14A		301	Ready	Turns on when the controller starts up normally and is in an operable state.
14B		302	Positioning complete	Turns on when the movement to the destination is complete.
15A		303	Home Return complete	Turns on when the home return operation is complete.
15B		304	Servo ON output	Turns on when servo is ON.
16A		305	Pushing complete	Turns on when a push motion is complete.
16B		306	System battery error	Turns on when the system battery runs low (warning level).
17A		307	Absolute encoder battery error	Turns on when the battery for the absolute encoder runs low (warning level).
17B	N		0V input	Connect 0V.

NPN* Wiring Diagram



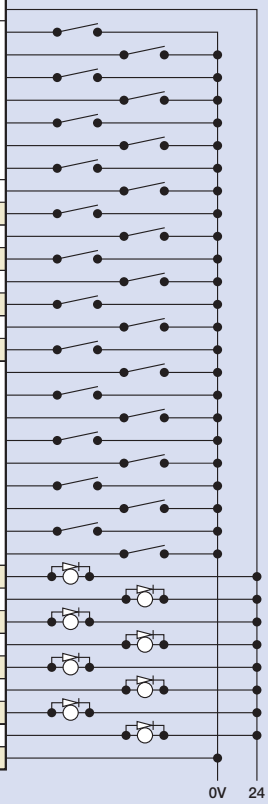
*Note: With regard to PNP wiring diagram, please refer to ASEL manual.

Explanation of I/O Signal Functions

Positioner, Product-Type Change Mode

Pin Number	Category	Port No.	Positioner Product Type Change Mode	Functions
1A	P24		24V input	Connect 24V.
1B	Input	016	Position/Product Type Input 10	Specifies the position numbers to move to, and the product type numbers, using ports 007 to 022. The position and product type numbers are assigned by parameter settings. The number can be specified either as BCD or binary.
2A		017	Position/Product Type Input 11	
2B		018	Position/Product Type Input 12	
3A		019	Position/Product Type Input 13	
3B		020	Position/Product Type Input 14	
4A		021	Position/Product Type Input 15	
4B		022	Position/Product Type Input 16	
5A		023	Error reset	Resets minor errors. (Severe errors require a restart.)
5B		000	Start	Starts moving to the selected position.
6A		001	Home Return	Performs Home Return.
6B		002	Servo ON	Switches between Servo ON and OFF.
7A		003	Push	Performs a push motion.
7B		004	Pause	Pauses the motion when turned OFF, and resumes motion when turned ON.
8A		005	Cancel	Stops the motion when turned OFF. The remaining motion is canceled.
8B		006	Interpolation settings	When this signal is turned ON for a 2-axis model, the actuator moves by linear interpolation.
9A		007	Position/Product Type Input 1	Specifies the position numbers to move to, and the product type numbers, using ports 007 to 022. The position and product type numbers are assigned by parameter settings. The number can be specified either as BCD or binary.
9B		008	Position/Product Type Input 2	
10A		009	Position/Product Type Input 3	
10B		010	Position/Product Type Input 4	
11A		011	Position/Product Type Input 5	
11B		012	Position/Product Type Input 6	
12A		013	Position/Product Type Input 7	
12B		014	Position/Product Type Input 8	
13A		015	Position/Product Type Input 9	
13B	Output	300	Alarm	Turns off when an alarm occurs (Contact B)
14A		301	Ready	Turns on when the controller starts up normally and is in an operable state.
14B		302	Positioning complete	Turns on when the movement to the destination is complete.
15A		303	Home Return complete	Turns on when the home return operation is complete.
15B		304	Servo ON output	Turns on when servo is ON.
16A		305	Pushing complete	Turns on when a push motion is complete.
16B		306	System battery error	Turns on when the system battery runs low (warning level).
17A		307	Absolute encoder battery error	Turns on when the battery for the absolute encoder runs low (warning level).
17B	N		0V input	Connect 0V.

NPN* Wiring Diagram

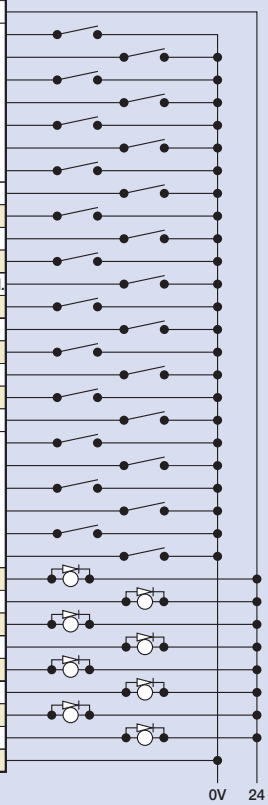


*Note: With regard to PNP wiring diagram, please refer to ASEL manual.

Positioner, 2-axis Independent Mode

Pin Number	Category	Port No.	Positioner 2-axis Independent Mode	Functions
1A	P24		24V input	Connect 24V.
1B	Input	016	Position input 7	Specifies the position numbers to move to, using ports 010 to 022. The position numbers on the 1st and 2nd axes are assigned by parameter settings. The number can be specified either as BCD or binary.
2A		017	Position input 8	
2B		018	Position input 9	
3A		019	Position input 10	
3B		020	Position input 11	
4A		021	Position input 12	
4B		022	Position input 13	
5A		023	Error reset	Resets minor errors. (Severe errors require a restart.)
5B		000	Start 1	Starts movement to the selected position number on the 1st axis.
6A		001	Home Return 1	Performs home return on the 1st axis.
6B		002	Servo ON 1	Switches between servo ON and OFF for the 1st axis.
7A		003	Pause 1	Pauses the motion on 1st axis when turned OFF, and resumes motion when turned ON.
7B		004	Cancel 1	Cancels the movement on the 1st axis.
8A		005	Start 2	Starts the movement to the selected position number on the 2nd axis.
8B		006	Home Return 2	Performs home return on the 2nd axis.
9A		007	Servo ON 2	Switches between servo ON and OFF for the 2nd axis.
9B		008	Pause 2	Pauses the motion on 2nd axis when turned OFF, and resumes when turned ON.
10A		009	Cancel 2	Cancels the movement on the 2nd axis.
10B		010	Position input 1	Specifies the position numbers to move to, using ports 010 to 022. The position numbers on the 1st and 2nd axes are assigned by parameter settings. The number can be specified either as BCD or binary.
11A		011	Position input 2	
11B		012	Position input 3	
12A		013	Position input 4	
12B		014	Position input 5	
13A		015	Position input 6	
13B	Output	300	Alarm	Turns off when an alarm occurs (Contact B)
14A		301	Ready	Turns on when the controller starts up normally and is in an operable state.
14B		302	Positioning complete 1	Turns on when the movement to the specified position on the 1st axis is complete.
15A		303	Home Return complete 1	Turns on when home return on the 1st axis is complete.
15B		304	Servo ON output 1	Turns on when the 1st axis is in a servo ON state.
16A		305	Positioning complete 2	Turns on when the movement to the specified position on the 2nd axis is complete.
16B		306	Home Return complete 2	Turns on when home return on the 2nd axis is complete.
17A		307	Servo ON output 2	Turns on when the 2nd axis is in a servo ON state.
17B	N		0V input	Connect 0V.

NPN* Wiring Diagram



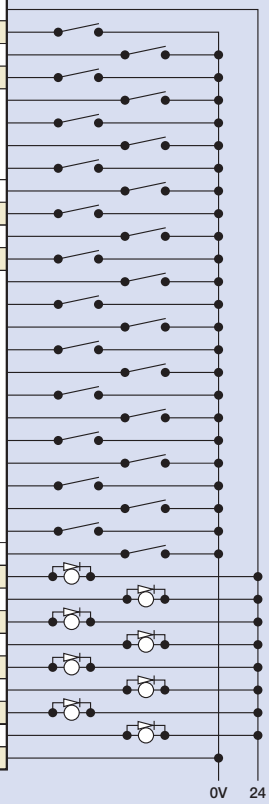
*Note: With regard to PNP wiring diagram, please refer to ASEL manual.

Explanation of I/O Signal Functions

Positioner, Teaching Mode

Pin Number	Category	Port No.	Positioner Teaching Mode	Functions
1A	P24		24V input	Connect 24V.
1B	Input	016	JOG– on 1st axis	While the signal is on, the 1st axis is moved in the - (negative) direction.
2A		017	JOG+ on 2nd axis	While the signal is on, the 2nd axis is moved in the + (positive) direction.
2B		018	JOG– on 2nd axis	While the signal is on, the 2nd axis is moved in the - (negative) direction.
3A		019	Specify inching (0.01mm)	Specifies how much to move during inching. (Total of the values specified for ports 019 to 022)
3B		020	Specify inching (0.1mm)	
4A		021	Specify inching (0.5mm)	
4B		022	Specify inching (1mm)	
5A		023	Error reset	Resets minor errors. (Severe errors require a restart.)
5B		000	Start	Starts moving to selected position.
6A		001	Servo ON	Switches between Servo ON and OFF.
6B		002	Pause	Pauses the motion when turned OFF, and resumes motion when turned ON.
7A		003	Position input 1	Ports 003 to 013 are used to specify the position number to move, and the position number for inputting the current position. - When the teaching mode setting on port 014 is in the ON state, the current value is written to the specified position number.
7B		004	Position input 2	
8A		005	Position input 3	
8B		006	Position input 4	
9A		007	Position input 5	
9B		008	Position input 6	
10A		009	Position input 7	
10B		010	Position input 8	
11A		011	Position input 9	
11B		012	Position input 10	
12A		013	Position input 11	
12B		014	Teaching mode setting	
13A		015	JOG+ on 1st axis	While the signal is input, the 1st axis is moved in the + (positive) direction.
13B	Output	300	Alarm	Turns off when an alarm occurs. (Contact B)
14A		301	Ready	Turns on when the controller starts up normally and is in an operable state.
14B		302	Positioning complete	Turns on when the movement to the destination is complete.
15A		303	Home return complete	Turns on when the home return operation is complete.
15B		304	Servo ON output	Turns on when servo is ON.
16A		305	–	–
16B		306	System battery error	Turns on when the system battery runs low (warning level).
17A		307	Absolute encoder battery error	Turns on when the battery for the absolute encoder runs low (warning level).
17B	N		0V input	Connect 0V.

NPN* Wiring Diagram

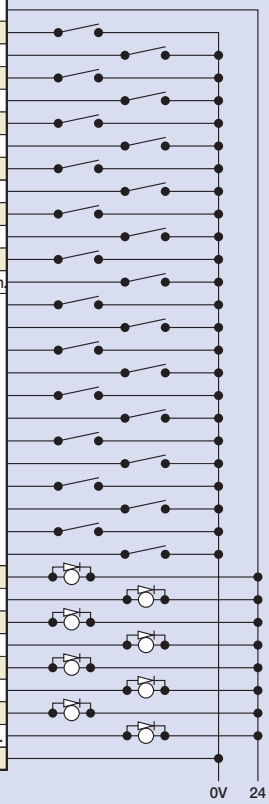


*Note: With regard to PNP wiring diagram, please refer to ASEL manual.

Positioner, DS-S-C1 Compatible Mode

Pin Number	Category	Port No.	Positioner DS-S-C1 Compatible Mode	Functions
1A	P24		24V input	Connect 24V.
1B	Input	016	Position No. 1000	(Same as ports 004 through 015)
2A		017	–	–
2B		018	–	–
3A		019	–	–
3B		020	–	–
4A		021	–	–
4B		022	–	–
5A		023	CPU reset	Resets the system to the same state as when the power is turned on.
5B		000	Start	Starts moving to selected position.
6A		001	Hold (Pause)	Pauses the motion when turned ON, and resumes when turned OFF.
6B		002	Cancel	Stops the motion when turned ON. The remaining motion is canceled.
7A		003	Interpolation settings	When this signal is turned ON for a 2-axis model, the actuator moves by linear interpolation.
7B		004	Position No. 1	Ports 004 through 016 are used to specify the position number to move. The numbers are specified as BCD.
8A		005	Position No. 2	
8B		006	Position No. 4	
9A		007	Position No. 8	
9B		008	Position No. 10	
10A		009	Position No. 20	
10B		010	Position No. 40	
11A		011	Position No. 80	
11B		012	Position No. 100	
12A		013	Position No. 200	
12B		014	Position No. 400	
13A		015	Position No. 800	
13B	Output	300	Alarm	Turns off when an alarm occurs. (Contact A)
14A		301	Ready	Turns on when the controller starts up normally and is in an operable state.
14B		302	Positioning complete	Turns on when the movement to the destination is complete.
15A		303	–	–
15B		304	–	–
16A		305	–	–
16B		306	System battery error	Turns on when the system battery runs low (warning level).
17A		307	Absolute encoder battery error	Turns on when the battery for the absolute encoder runs low (warning level).
17B	N		0V input	Connect 0V.

NPN* Wiring Diagram



*Note: With regard to PNP wiring diagram, please refer to ASEL manual.

Table of specifications

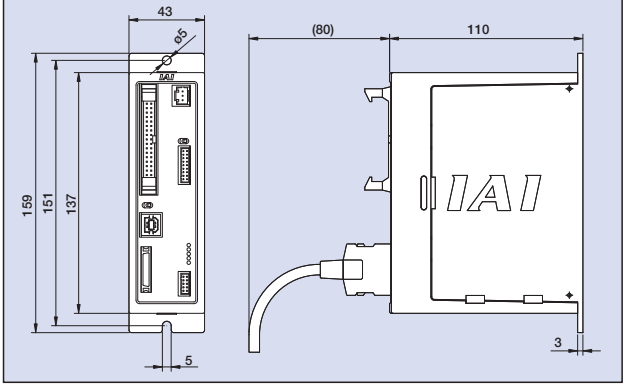
	Item	Specifications
Basic Specifications	Connected actuator	RCA/RCA2/RCL Series Actuator
	Input Voltage	DC24V ±10%
	Power Supply Capacity	Control power supply (Max. 1.2A) + motor power supply (See the table below)
	Dielectric strength voltage	DC500V 10MΩ or higher
	Withstand voltage	AC500V 1 min.
	Rush current	Max. 30A
	Vibration resistance	XYZ directions 10 to 57Hz, One side amplitude: 0.035mm (continuous), 0.075mm (intermittent) 58 to 150 Hz 4.9 m/s² (continuous), 9.8 m/s²(intermittent)
Control specification	Number of control axes	1 axis / 2 axis
	Maximum total output of connected axis	60W (30W + 30W)
	Position detection method	Incremental encoder / Absolute encoder
	Speed setting	1mm/sec and up, the maximum depends on actuator specifications
	Acceleration setting	0.01G and up, the maximum depends on the actuator
	Operating method	Program operation / Positioner operation (switchable)
Program	Programming language	Super SEL language
	Number of programs	64 programs
	Number of program steps	2000 steps
	Number of multi-tasking programs	8 points
	Positioning Points	1500 points
	Data memory device	FLASHROM (A system-memory backup battery can be added as an option)
	Data input method	Teaching pendant or PC software
Communication	Number of I/O	24 input points / 8 output points (NPN or PNP selectable)
	I/O power	Externally supplied 24VDC ± 10%
	PIO cable	CB-DS-PIO □□□ (supplied with the controller)
	Serial communications function	RS232C (D-Sub Half-pitch connector) / USB connector
	Field Network	DeviceNet, CC-Link, ProfiBus
	Motor Cable	RCA: CB-ACS-MA □□□ (Max. 20m) / RCA2&RCL: CB-ACS-MPA □□□ (Max. 20m)
	Encoder cable	RCA: CB-ACS-PA □□□ (Max. 20m) / RCA2&RCL: see motor cable (dual motor-encoder cable)
General specifications	Protection function	Motor overcurrent, Motor driver temperature check, Overload check, Encoder open-circuit check Soft limit over, system error, battery error, etc.
	Ambient operating humidity and temperature	0 to 40ºC 10 to 95% (non-condensing)
	Ambient atmosphere	Free from corrosive gases. In particular, there shall be no significant dust.
	Protection class	IP20
	Weight	Approx. 450g
	External dimensions	43 mm (W) x 159 mm (H) x 110 mm (D)

	Actuator type		1-Axis specification				2-Axis specification			
			Standard specifications/high acceleration and deceleration model		Power-saving		Standard specifications/high acceleration and deceleration model		Power-saving	
			Rated	Max. (Note2)	Rated	Max. (Note3)	Rated	Max. (Note2)	Rated	Max. (Note3)
Motor power supply capacity (Note1)	RCA RCA2	10W, 20W [Model symbol: 20]	1.3A	4.4A	1.3A	2.5A	2.6A	8.8A	2.6A	5.0A
		30W	1.3A	4.4A	1.3A	2.2A	2.6A	8.8A	2.6A	4.4A
		20W [Model symbol: 20S] SA4, RA3, TA5 type dedicated	1.7A	5.1A	1.7A	3.4A	3.4A	10.2A	3.4A	6.8A
	RCL	2W	0.8A	4.6A	–	–	1.6A	9.2A	–	–
		5W	1.0A	6.4A	–	–	2.0A	12.8A	–	–
		10W	1.3A	6.4A	–	–	2.6A	12.8A	–	–

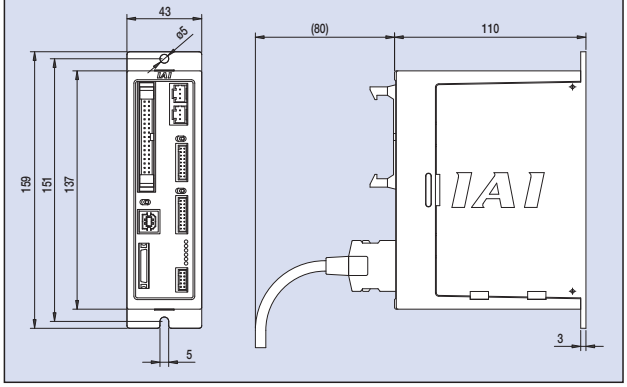
(Note 1) For both 1-axis and 2-axis specifications, approx. 30.0A inrush current flows for 5 ms when the control power supply is turned on.
(Note 2) Max. current at accelerating/decelerating
(Note 3) Current reaches the maximum when detecting the servo motor excitation phase at the first servo on after the power is on. (Normal: Approx. 1 to 2 sec., Max.: 10 sec)
(Note 4) Other than motor power supply capacity, it increases 0.5A for control power.

External Dimensions

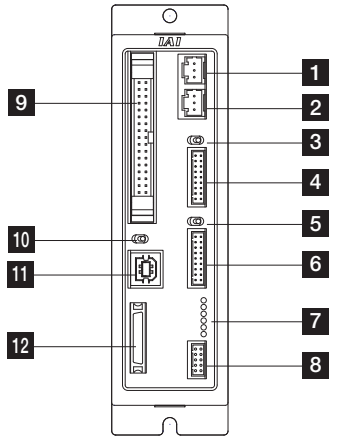
ASEL 1-axis controller

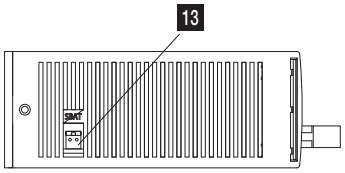


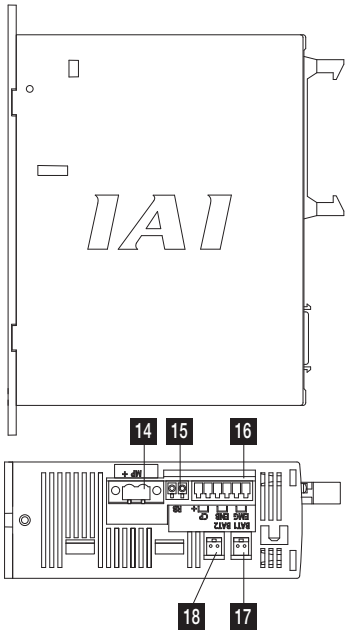
ASEL 2-axis controller



Name of Each Part







1 Motor connector for axis 1
Connect the motor cable of the axis 1 actuator.

2 Motor connector for axis 2
Connect the motor cable of the axis 2 actuator.

3 Brake switch for axis 1
This switch is used to release the axis brake. Setting it to the left position (RLS side) forcibly releases the brake, while setting it to the right position (NOM side) causes the controller to automatically control the brake.

4 Encoder connector for axis 1
Connect the encoder cable of the axis 1 actuator.

5 Brake switch for axis 2
This switch is used to release the axis brake.

Setting it to the left position (RLS side) forcibly releases the brake, while setting it to the right position (NOM side) causes the controller to automatically control the brake.

6 Encoder connector for axis 2
Connect the encoder cable of the axis 2 actuator.

7 Status indicator LEDs
These LEDs are used to indicate the operating condition of the controller.

The LED status indicators are as follows:

PWR	:	Power is input to controller.
RDY	:	The controller is ready to perform program operation.
ALM	:	The controller is abnormal.
EMG	:	An emergency stop is actuated and the drive source is cut off.
SV1	:	The axis 1 actuator servo is on.
SV2	:	The axis 2 actuator servo is on.

8 Panel unit connector
A connector for the panel unit (optional) that displays the controller status and error codes.

9 I/O Connector
A connector for interface I/Os.

34-pin flat cable connector for DIO (24IN/8OUT) interface.

I/O power is also supplied to the controller via this connector (Pin No. 1 and No. 34).

10 Mode switch
This switch is used to specify the running mode of the controller. The left position indicates the MANU (manual operation) mode, while the right position indicates the AUTO (automatic operation) mode. Teaching can only be performed in manual operation, and automatic operation using external I/Os is not possible in the MANU mode.

11 USB connector
A connector for PC connection via USB. If the USB connector is connected, the TP connector is disabled and all communication inputs to the TP connector are cut off.

12 Teaching pendant connector
A half-pitch I/O 26-pin connector that connects a teaching pendant when the running mode is MANU. A special conversion cable is needed to connect a conventional Dsub, 25-pin connector.

13 System-memory backup battery connector
If you wish to retain the various data recorded in the SRAM of the controller even after the power is cut off, connect the necessary battery to this connector. This battery is installed externally to the unit. The controller does not come standard with the battery (Option).

14 Motor power input connector
This connector is used to input the motor power. It consists of a 2-pin, 2-piece connector by Phoenix Contact.

15 External regenerative resistor connector
A connector for the regenerative resistor that must be connected when the built-in regenerative resistor alone does not offer sufficient capacity in high-acceleration/high-load operation, etc.

Whether or not an external regenerative resistor is necessary depends on the conditions of your specific application such as the axis configuration.

16 Control power/System input connector
This connector is used to connect the control power input, emergency stop switch, and enable switch. It consists of a Phoenix Contact 6-pin 2-piece connector.

17 Absolute-data backup battery connector for axis 1
A connector for the battery that backs up absolute data when the actuator uses an absolute encoder. Secure installation of the battery is the customer's responsibility.

18 Absolute-data backup battery connector for axis 2
A connector for the battery that backs up absolute data when the actuator uses an absolute encoder. Secure installation of the battery is the customer's responsibility.

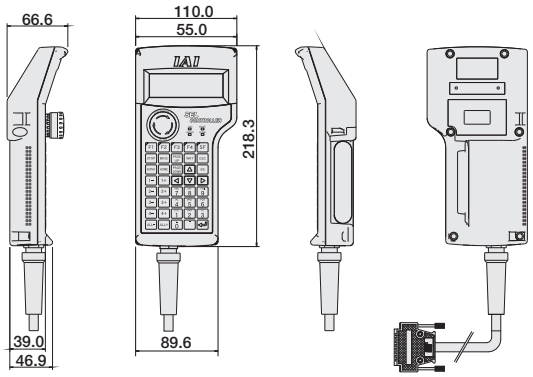
Option

Teaching Pendant

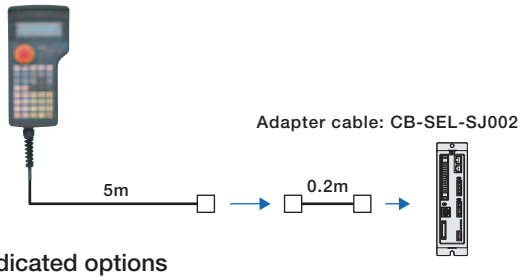
Features This is a teaching device that provides information on functions such as position input, test runs, and monitoring.

Model

Model	Description
SEL-T-J	Standard type with adapter cable
SEL-TD-J	Equipped with a deadman switch and adapter cable

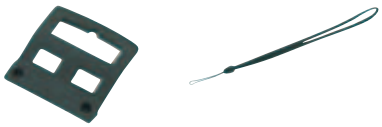


Configuration



SEL-T dedicated options

- Wall-mounting hook Model HK-1
- Strap Model STR-1

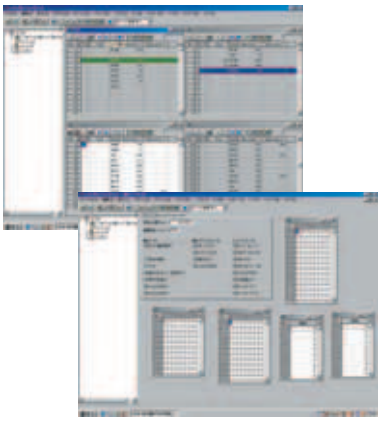


Specifications

Item	SEL-T-J	SEL-TD-J
3-position Enable Switch	No	Yes
ANSI/UL standards	Non-compliant	Compliant
CE mark	Compliant	
Display	20 char. × 4 lines	
Ambient Operating Temp./Humidity	0~40°C 10~90% RH (non-condensing)	
Protective structure	IP54	
Weight	Approx. 0.4kg (not incl. cable)	

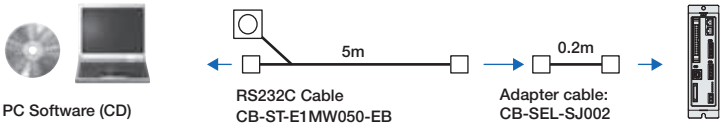
PC Software (Windows Only)

Features A startup support software for entering programs/positions, performing test runs, and monitoring. More functions have been added for debugging, and improvements have been made to shorten the start-up time.



Model **IA-101-X-MW-J** (with RS232C cable + adapter cable)
IA-101-X-MW (with RS232C cable)

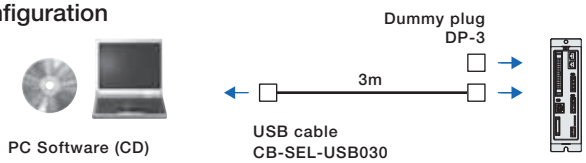
Configuration



Model **IA-101-X-USB** (with USB cable)

Note:
Only versions 7.0.0.0 and later can be used with the PSEL controller.

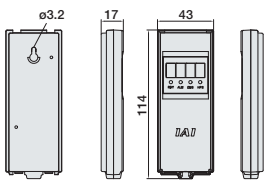
Configuration



Panel Unit

Features Display device that shows the error code from the controller or the currently running program number.

Model **PU-1** (Cable length: 3m)



Absolute Data Backup Battery

Features Battery for saving absolute data, when operating an actuator with an absolute encoder.
Same as the battery used for system memory backup.

Model **AB-5**

System Memory Backup Battery

Features This battery is required when you are using global flags in the program and you want to retain your data even after the power has been turned OFF.

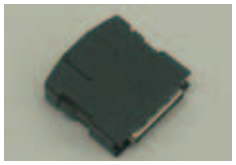
Model **AB-5-CS** (with case)
AB-5 (Standalone battery)

Option

Dummy Plug

Features When connecting the ASEL controller to a computer with a USB cable, this plug is inserted in the teaching port to shut off the enable circuit.
(Supplied with the PC software IA-101-X-USB)

Model **DP-3**



USB Cable

Features A cable for connecting the controller to the USB port to a computer.
A controller with no USB port (e.g. XSEL) can be connected to the USB port of a computer by connecting an RS232C cable to the USB cable via a USB adapter.
(See PC software IA-101-X-USBMW)

Model **CB-SEL-USB030** (Cable length: 3m)

Adapter Cable

Features An adapter cable to connect the D-sub 25-pin connector from the teaching pendant or a PC to the teaching connector (half-pitch) of the ASEL controller.

Model **CB-SEL-SJ002** (Cable length: 0.2m)

Spare Parts

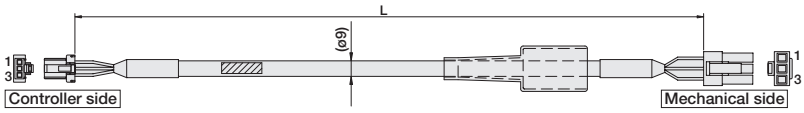
When you need spare parts after purchasing the product, such as when replacing a cable, refer to the list of models below.

Motor cable

Model **CB-ACS-MA** □□□

* The standard motor cable is a robot cable.

* Enter the cable length (L) into □□□. Compatible to a maximum of 20 meters.
Ex.: 080 = 8 m



Min. bend radius r = 50 mm or larger (when movable type is used)

DF1E-3S-2.5C

Wire	Color	Signal	Pin No.
AWG22 (crimped)	Red	U	1
	White	V	2
	Black	W	3

SLP-03V

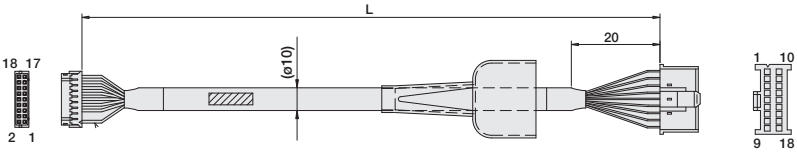
Pin No.	Signal	Color	Wire
1	U	Red	AWG22 (crimped)
2	V	White	
3	W	Black	

Encoder cable/Encoder robot cable

Model **CB-ACS-PA** □□□ / **CB-ACS-PA** □□□ **-RB**

* The standard cable for the encoder cable is a normal cable. A robot cable can be specified as an option.

* Enter the cable length (L) into □□□. Compatible to a maximum of 20 meters.
Ex.: 080 = 8 m



Min. bend radius r = 50 mm or larger (when movable type is used)
* Only the robot cable is to be used in a cable track.

CN2

Cable color		Signal	Pin No.
Robot Cable	Standard Cable		
White/Purple	Blue	LS+	18
White/Gray	Orange	LS–	17
Yellow	Green	BK+	16
Blue	Brown	BK–	15
White/Blue	Gray	ENA	14
White/Yellow	Red	ENA	13
White/Red	Black	ENB	12
White/Black	Yellow	ENB	11
Orange	Pink	ENZ	10
Green	Purple	ENZ	9
Purple	White	–	8
Gray	Blue/red	VPS	7
Red	Orange/White	5V	6
Black	Green/White	GND	5
–	–	–	4
–	–	–	3
–	–	–	2
Ground	Ground	F.G	1

Housing : PHDR-18VR (JST)
Contact : SPHD-001T-P0.5 (JST)

CN1

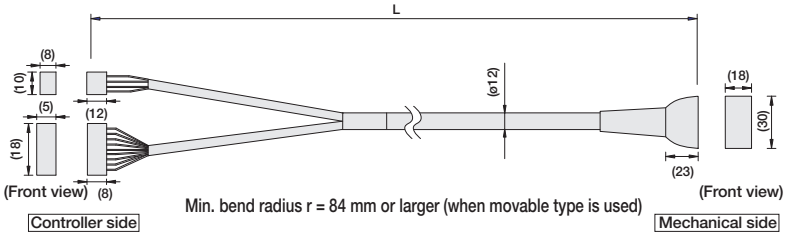
Pin No.	Signal	Cable color	
		Standard Cable	Robot Cable
1	ENA	Gray	White/Blue
2	ENA	Red	White/Yellow
3	ENB	Black	White/Red
4	ENB	Yellow	White/Black
5	–	–	–
6	–	–	–
7	LS+	Blue	White/Purple
8	–	–	–
9	FG	Ground	Ground
10	ENZ	Pink	Orange
11	ENZ	Purple	Green
12	–	White	Purple
13	VPS	Blue/red	Gray
14	5V	Orange/White	Red
15	GND	Green/White	Black
16	LS–	Orange	White/Gray
17	BK–	Brown	Blue
18	BK+	Green	Yellow

Plug housing : XMP-18V (JST)
Socket contact : BXA-001T-P0.6 (JST)
Retainer : XMS-09V (JST)

Motor-Encoder Integrated Cable for RCA2/RCL

Model **CB-ACS-MPA** □□□

* Enter the cable length (L) into □□□. Compatible to a maximum of 20 meters.
Ex.: 080 = 8 m



Min. bend radius r = 84 mm or larger (when movable type is used)

Signal	Pin No.
U	1
V	2
W	3
BK+	16
BK–	15
LS+	18
LS–	17
A+	14
A–	13
B+	12
B–	11
Z+	10
Z–	9
–	8
/PS	7
VCC	6
GND	5
NC	
FG	1

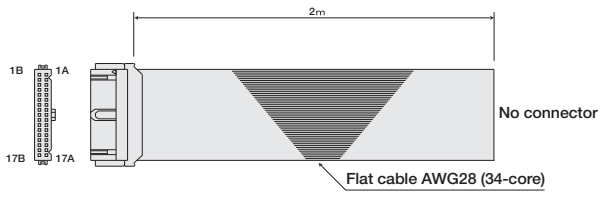
(Wire color)
Red
Yellow
Black
Yellow (Red ●)
Yellow (Blue ●)
Pink (Red ●)
Pink (Blue ●)
White (Red ●)
White (Blue ●)
Orange (Red ●)
Orange (Blue ●)
Gray (Red ●)
Gray (Blue ●)
Orange (Red ● Contiguous)
Orange (Blue ● Contiguous)
Gray (Red ● Contiguous)
Gray (Blue ● Contiguous)
Shield

Pin No.	Signal
A1	U
B1	V
A2	W
B2	NC
A3	NC
B3	NC
A4	BK+
B4	BK–
A5	LS+
B5	LS–
A6	A+
B6	A–
A7	B+
B7	B–
A8	Z+
B8	Z–
A9	–
B9	/PS
A10	VCC
B10	GND
A11	NC
B11	FG

I/O Flat Cable

Model **CB-DS-PIO** □□□

* Enter the cable length (L) into □□□. Compatible to a maximum of 10 meters.
Ex.: 080 = 8 m



Pin No.	Color	Wire	Pin No.	Color	Wire
1A	Brown 1	Flat cable crimped	9B	Gray 2	Flat cable crimped
1B	Red 1		10A	White 2	
2A	Orange 1		10B	Black 2	
2B	Yellow 1		11A	Brown-3	
3A	Green 1		11B	Red 3	
3B	Blue1		12A	Orange 3	
4A	Purple 1		12B	Yellow 3	
4B	Gray 1		13A	Green 3	
5A	White 1		13B	Blue 3	
5B	Black 1		14A	Purple 3	
6A	Brown-2		14B	Gray 3	
6B	Red 2		15A	White 3	
7A	Orange 2		15B	Black 3	
7B	Yellow 2		16A	Brown-4	
8A	Green 2		16B	Red 4	
8B	Blue 2		17A	Orange 4	
9A	Purple 2		17B	Yellow 4	

■ Notes on Specifications in this Catalog (All Models)

1. Speed

This refers to the set speed when moving the slider (or rod, arm, output axis) of the actuator.
The slider accelerates from rest to the specified speed, and continues to move at that speed until it decelerates to a stop at the specified target position.

<Note>

❶ For models equipped with a pulse motor (ERC2, RCP3, and RCP2), the maximum speed changes with the weight of the load being transported.
When selecting an actuator, refer to the "Speed vs. Load Capacity" (on each product page).

❷ If the axis has a short stroke, or if it has a long stroke but the travel distance is short, the specified speed may not be reached.

❸ As the stroke becomes longer, the maximum speed decreases, due to hazardous RPMs.
For details, see "■ Stroke vs. Maximum Speed" on each product page.

❹ For the RCP2 high-speed slider type (HS8C/HS8R) and belt type, vibration and/or resonance may occur when operated at low speeds. Therefore, use these models at 100mm/s or faster.

❺ For PMEC/AMEC controllers, a minimum speed is set for each actuator.
See the instructions manual for the PMEC/AMEC controllers.

❻ When calculating the time travelled, take into account the time taken to accelerate, decelerate, and converge, as opposed to only the time travelled at the specific speed.

2. Acceleration/Deceleration

Acceleration is the rate of change in speed from rest until a specified speed is reached.

Deceleration is the rate of change in speed from the specified speed to a state of rest.

Both are specified in "G" in programs (0.3G = 2940mm/sec^2).

* For rotary type, 0.3G = 2940 degrees/sec^2

<Note>

❶ Increasing the acceleration (deceleration) speeds up acceleration (deceleration), shortening the travel time.
However, caution should be exercised, as excessively high acceleration/deceleration may cause an error or a malfunction.

❷ The rated acceleration (deceleration) is 0.3G (2.0G, if the lead is 2.5, 3, or 4, or if used vertically)
With the exception of the high-acceleration/deceleration model, use the actuators at or below the rated acceleration.

❸ For models such as RCS2-SRA7 and RCS2-RA13R, use the actuator at or below the acceleration (deceleration) mentioned in "Notes on Selection" on the respective product page.

3. Duty

IAI's actuators should be used at a duty of 50% or below.

If used at over 50% duty, an excessive load error may occur depending on the load, speed, or acceleration.

4. Positioning Repeatability

A JIS B6192-compliant method for evaluating performance.

In this method, a positioning operation (stopping of the actuator at target point) is repeated seven times from the same direction, each time measuring the end position. Then the difference between the maximum and minimum values is calculated.

By using this measuring method for both end-points and the mid-point of the maximum stroke, the largest calculated value is multiplied by 1/2 and expressed with a ±.

5. Lead Screw

When using a lead screw type actuator, note the following:

<Note>

❶ This type is suited for applications with low frequency of use. (As a point of reference, one motion per 10 seconds, 24 hours per day, 240 days per year = approximately 5 years)

❷ This is suited for applications in which the load capacity and load requirements are low. (1kg or less)

❸ Use for applications that do not require a positioning repeatability smaller than ±0.05mm.

❹ Set up in a place that allows for easy maintenance.

6. Home Position

The home position is the reference point from which the actuator determines the target position.
Note that if the home position becomes misaligned, the target position also shifts by the same amount.

<Note>

❶ Actuators with an incremental encoder must be homed upon power-on.

❷ During homing operation, the slider (rod, table) moves to actuator's mechanical end, and then reverses. Therefore, watch for any interference with its surroundings.

❸ By default, the home position is on the motor-side (i.e. the open side on the gripper type, or the left side on the rotary type (looking down at the output shaft.)) Optionally, the home position can be moved to the opposite side (i.e. away from the motor). To change the home position after the actuator has been delivered, it must be sent back to IAI for adjustment.

❹ Models without the option code "NM" do not support reversed home position.

7. Encoder Type (Incremental/Absolute/Simple Absolute)

There are two types of encoders that can be used in an actuator, "incremental" and "absolute" encoders.

Incremental encoder .....When an incremental encoder is powered off, its coordinate data is erased. Therefore, homing is necessary each time it is powered back on.

Absolute encoder .....When an absolute encoder is powered off, it uses a battery to store its coordinate data. Therefore, homing is not necessary when it is powered back on. However, note that it cannot be operated once the battery for storing data runs out.

<Note>

In addition to the above two types of encoders, there is the "simple absolute" type, which is an incremental encoder with a dedicated simple absolute unit connected to the actuator's controller, for storing its coordinate data. This eliminates the need for homing upon power-on. Note that the simple absolute actuators (encoders) fall under the incremental type and not the absolute type.

8. Encoder Pulse Number

The pulse number of the encoder varies depending on the actuator. See the table below for the pulse number of each actuator.

Series	Type	Encoder Pulse Number
RCP3	All models	800
RCP2	All models	800
RCA2	RN□N/RP□N/GS□N/ GD□N/SD□N/TCA□N/ TWA□N/TFA□N	1048
	All other models	800

Series	Type	Encoder Pulse Number
RCA	All models	800
RCL	SA1L/RA1L	715
	SA2L/RA2L	855
	SA3L/RA3L	1145
RCS2	SRA7BD	3072
	All other models	16384

9. Motor

Different motors are used depending on the series.

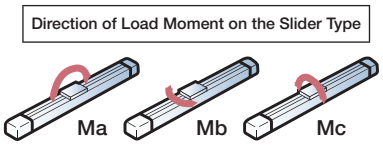
- ERC2/RCP2 (CR)/RCP3: Pulse motor
- RCA (CR)/RCA2: Servo motor (24V)
- RCS2 (CR): Servo motor (230V)

Pulse motors and 24V servo motors may exhibit slight vibration when the motor is excited while the servo is on.

■ Notes on Specifications in this Catalog (All Models)

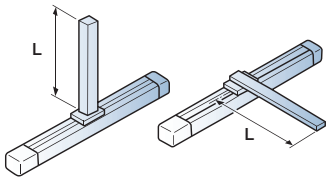
10. Allowable Load Moment (Ma, Mb, Mc)

Models with a built-in linear guide have static and dynamic allowable moments. Please note that using the guide with a load moment that exceeds specification will result in shorter service life of the guide.
(See page A-5 for details on load moment and its calculation method)



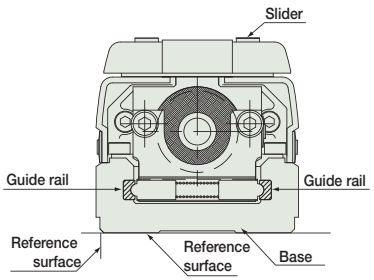
11. Overhang Load Length (L)

When mounting a workpiece or a bracket at an offset distance from the center of actuator/slider, the overhang load length indicates the maximum offset at which the actuator can operate smoothly.
Please make sure to keep the overhang load length within the allowable value, as exceeding the allowable value for for each model may cause vibration or shorten the service life .



12. Actuator Body Precision

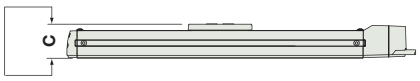
Below are the measures of precision for the body of the slider-type RoboCylinder. Moreover, the side and bottom surfaces of the actuator's base provide references for the run of the slider, and hence can be used as a guide to ensure parallel mounting of the actuator.



* Parallelism does not apply to RCP2W-SA16C, due to its sliding guide.

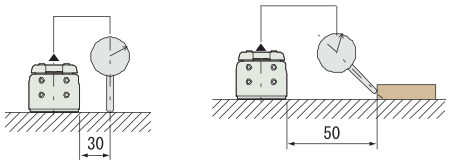
Parallelism: Base Underside & Load Surface (Top Side)

ERC2: ≤ ±0.1mm/m
RCP2/RCA/RCS2: ≤ ±0.05mm/m



Parallelism When Mounted onto a Frame (Fixed onto a Smooth Surface*1)

ERC2: ≤ ±0.1mm/m
RCP2/RCA/RCS2: ≤ ±0.05mm/m



Condition: The above values were measured at 20°C. *1: 0.05mm or less deviation from flatness.

13. Rod Type (Rod End vibration)

The standard rod-type actuators do not take into account any vibration or load resistance (The non-rotational accuracy values documented in the actuator specifications are initial values, and the backlash will increase with operation). If the rod vibrates or if the non-rotational accuracy fluctuates, or if a there is a force being applied from any direction other than the actuator's linear movement, use the guide-equipped actuator type, or use an external guide.

14. Vertical Setup and Use

When using the actuator in a vertical setup, add the optional brake to prevent the slider (or rod) from falling and breaking the machine when the power is turned off or an emergency stop is activated.
However, when mounting a brake-equipped RoboCylinder, be aware that the slider (or rod) will not move unless it is connected to the controller and the brake is released.

15. Moving the Slider Manually

For ball screws with a low (1, 2.5, 3, 4) lead, the actuator's slider cannot be moved by hand, even if the power and/or servo is off, due to high sliding resistance.
To move the slider on a low-lead actuator, use the teaching box or the JOG function of the computer software.

16. Actuator Cable

The actuator cable is the cable that extends from the rear of the actuator's motor.
Secure the actuator cable in place so that it does not move, as any force exerted on the actuator cable may cause a malfunction. If the cable must support bending motion, use a motor-encoder cable, designed for robots.

17. Motor-Encoder Cable

The motor-encoder cable is the cable that connects the actuator and the controller.
Depending on the actuator type, some models use a motor-encoder cable that is split into a separate motor cable and an encoder cable, and other models use an integrated motor-encoder cable.
Moreover, there are two different specifications of this cable: The standard cable specification and the robot cable specification, which has an outstanding flex resistance.
To use in a cable track, be sure to use the robot cable, using caution not to bend beyond the minimum bend radius R for the cable. (The minimum bend radius R is specified for each cable on the respective pages.)
To check the cable type for each model, see "Table of Actuator-Controller Connection Cable Types" on page A-39.

18. About the Splash-Proof Actuator Cable

Although the scope of protective construction of the splash-proof type includes the cable, the connector at the end of the actuator cable is not splash proof. Therefore, secure the end of the actuator cable in a place that is not prone to water spills. (For this reason, the actuator cable for a splash-proof model is 2m long)

19. Service Life

The service life of the actuator is directly related to the service life of the components that make up the actuator (guide, ball screw, motor, etc.).
Moreover, the service life for these components changes significantly depending on the usage requirements. For example, each guide has an allowable load moment (see page A-5). If the guide is hypothetically used at half the moment of the allowable moment, its service life is eight times more than the specified service life.
If used conservatively, it can be used for 10 years or more.
Therefore, when selecting a model, it is recommended that you select a model with more head room.

20. Warranty

The warranty period expires upon elapse of one of the following periods, whichever occurs first.

- 18 months after shipment from IAI factory in Japan
- 12 months after delivery to the location specified
- 2500 hours after start of operation

IAI will repair free of charge any actuator defects due to craftsmanship or material that may occur during the above warranty period despite use under appropriate conditions. Note, however, that defects resulting from handling or use in any condition or environment not specified in the catalog, operation manual are excluded from the scope of warranty. The warranty covers only the actuator delivered by IAI or by IAI authorized distributors, and any secondary losses arising from a failure of the delivered product is excluded from the scope of warranty.
The defective actuator must be sent in for repair.

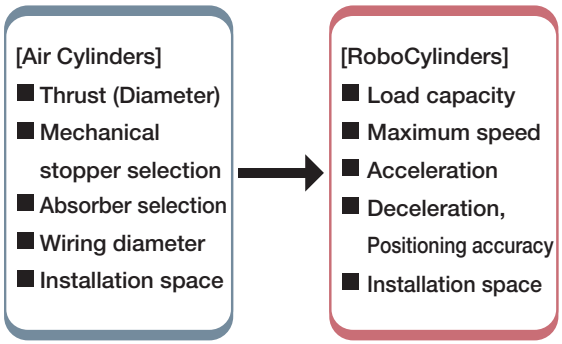
Considerations when Switching from Air Cylinders

Air Cylinder and RoboCylinder

Air cylinders are devices used to push and grasp objects by means of supplying and releasing compressed air. Air cylinders are used widely in all industries, mainly for transfer equipment, assembly systems, various automation systems, etc.
Air cylinders generally have diameters of between 4mm and 320mm, and their lengths (strokes) can also be set in fine steps. There are several tens to hundreds of thousands of different air cylinder products, which makes it easy to select optimal models for a variety of applications. However, since product lines are overly complex, many with identical specs, it can be difficult to select the best model for your specifications.
For this reason, there are many cases where air cylinders are selected largely out of past experience and familiarity. RoboCylinders are easy-to-use electric cylinders offering a variety of functions not achievable with air cylinders. The RoboCylinder product family makes it easy for you to select the model that best suits the needs of your application. However, the controls and configuration possibilities of RoboCylinders are completely different from air cylinders.
This section explains some of the key points to consider when switching from air cylinders to RoboCylinders.

Overview of Switching

The following explains the differences in the basic items to be checked when selecting RoboCylinders and air cylinders.
Since both are linear motion actuators, there are some common matters that must be taken into consideration. However, the different configurations and controls described above result in different designations for adjustments and check items between the two. A comparison of these various items is shown at right.



The above diagram shows that the two have different mechanical viewpoints to consider.

Installation Space

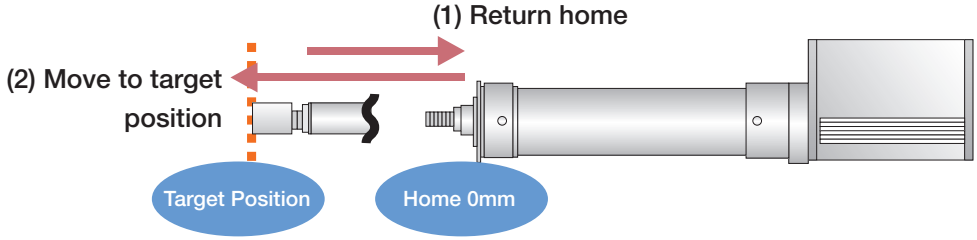
RoboCylinders are driven by a motor. Compared with air cylinders, simply from a size perspective, the RoboCylinder requires more attention paid to space requirements for installation.

Home Return

Unlike air cylinders, RoboCylinder operation is based on a “coordinates” concept. A home return operation is necessary at the beginning of operation because operations are controlled in movement quantities that are always referenced against a home point (0 point).

Specifically, in the case of incremental specifications, bear in mind that a pushing operation to the actuator stroke end will be performed as the initial operation when the power is turned ON.

- Incremental Specification: Return home operation after power is turned ON
- Absolute Specification : Absolute reset operation during initialization



Critical Rotating Speed

The ball screw inevitably deflects due to bending and its own deadweight. The RoboCylinder operates at high speeds causing the ball screw to rotate faster, and as the rotations increase the screw deflection also increases until the rotating axis is ultimately damaged. Hazardous rotational speeds that may damage the rotary axis are referred to as “critical speeds”, “whirling speeds” or “whipping speeds”.
Ball screw type RoboCylinders operate linearly as the ball screw is rotated with the end of the ball screw supported by a bearing. Although the maximum speed is specified for each RoboCylinder in accordance with the actuator type, some models with certain strokes have their maximum speed set in consideration of the aforementioned critical rotating speeds.

General Purpose (Types, Modes, Parameters)

RoboCylinders offer the “air-cylinder specification (or air cylinder mode)” that allows the RoboCylinder to be used just like an air cylinder. When using these, it is possible to operate the actuator by simple ON/OFF control by an external signal in exactly the same way as an air cylinder. This type or mode may be sufficient in the case of a simple swap-out, but a variety of types and parameters have been introduced for customers who desire higher value-added uses.
Feel free to contact IAI to discuss features to match your use conditions and needs when the equipment is actually installed.

Maintenance

The key maintenance points of air cylinders and RoboCylinders are compared.
Air cylinders require periodic maintenance performed according to the frequency and conditions of use. Although air cylinders offer a certain level of flexibility in that minor damage or malfunction can be ignored by means of increasing the source air pressure and moving the cylinder with a greater force, ignoring maintenance will inevitably shorten the service life of the air cylinder.
On the other hand, RoboCylinders have a more complex structure and use a greater number of parts and are therefore seen as requiring cumbersome maintenance work. This is wrong. RoboCylinders are clearly easier to use and offer longer life than air cylinders. Of course, RoboCylinders also require lubrication of sliding parts just as air cylinders do. However, RoboCylinders are equipped with a lubrication unit (AQ Seal) for ball screw and the sliding parts of the guides. This ensures a long maintenance-free period (5000 km of traveled distance, or three years). After 5000 km or travel or 3 years, greasing every 6 months to 1 year as instructed in the Operating Manual will vastly prolong the service life of the product.
In addition, absolute type controllers are currently equipped with a position retention battery. Since this is a consumable part, it must be periodically replaced (for periods that vary with the product).

[Primary Maintenance Tasks]

[Air Cylinders]
- Lubricating sliding parts
- Replacing gasket
- Draining
- Replacing absorber

[RoboCylinders]
- Lubricating ball screw and guide (after AQ seals have worn out)
- Replacing battery (absolute encoder types only)

Operation

Air cylinders are generally operated with the use of a direction control valve to determine the direction of reciprocating motion, as well as a flow control valve (speed controller) to determine the speed. Immediately after their system is started up, many users operate the air cylinder at low speed by restricting the flow control valve.

The same procedure is also recommended for RoboCylinders after the system is started up.
With RoboCylinders, “speed setting” replaces the flow control valve. Operate your RoboCylinder at speeds where safety is ensured, and then change to the desired speed after safety is confirmed.

Service Life and Moment

One of the main factors related to an actuator's service life is the "load rating".
There are two types of load rating: A static load is the weight of a load that leaves a small amount of indentation when the load is applied. A dynamic load is the weight of a load that maintains a constant survival probably of the guide when the load is applied while moving a constant distant.
Guide manufacturers rate dynamic load values to maintain a 90% survival rate at a travel distance of 50km. However, when taking account the speed of movement and work rate, the actual travel distance needs to be 5000 to 10000km. While the life of a guide is sufficiently long for radial loads, it is actually the moment load that is offset from the guide center that is most problematic to its service life.
The service life for IAI actuators as documented in this catalog shows the allowable dynamic moment based on a 5000 or 10000km service life.

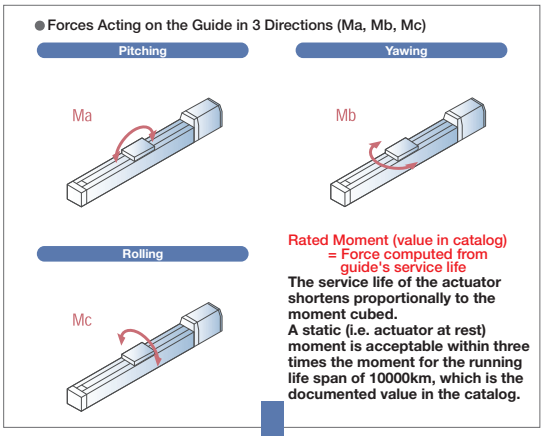
IAI uses the following equation calculate the service life: (for 10000km service life)

$$L_{10}=\left(\frac{C_{IA}}{P}\right)^{3}\cdot 10000\text{km}$$

L_{10} : Service life (90% Survival Probability)
C_{IA} : Allowable Dynamic Moment in IAI Catalog
P : Moment used

Allowable Dynamic Moment

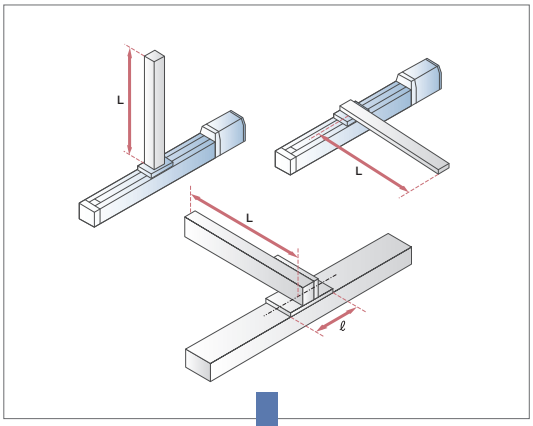
The allowable dynamic moment is the maximum offset load exerted on the slider, calculated from the guide service life. The direction in which force is exerted on the guide is categorized into 3 directions - Ma (pitch), Mb (yaw), Mc (roll) - the tolerance for each of which are set for each actuator. Applying a moment exceeding the allowable value will reduce the service life of the actuator. Use an auxiliary guide when working within or in excess of these tolerances.



The allowable dynamic moment is calculated from the service life of the guide.

Overhang load length

An overhang load length is specified for a slider-type actuator to indicate the length of overhang (offset) from the actuator.
When the length of an object mounted to the slider actuator exceeds this length, it will generate vibration and increase the settling time. So, pay attention to the allowable overhang length as well as the allowable dynamic moment.



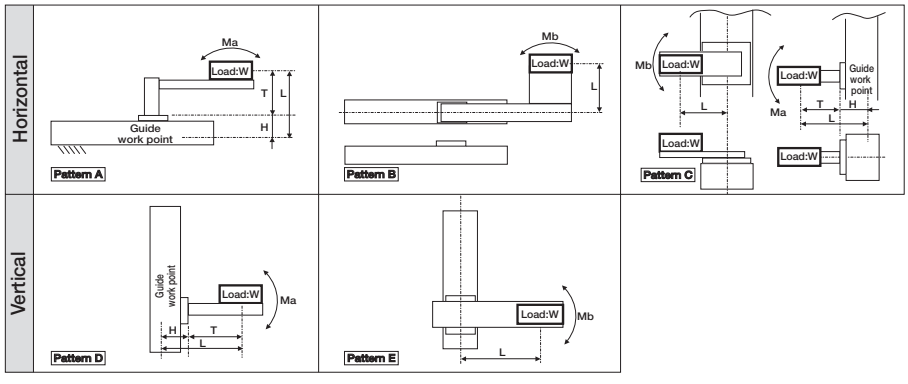
The allowable overhang load length is determined by the slider length.

An overhang that exceeds the allowable overhang length will generate vibration and increase settling time.

L/ℓ = 5 or less
* Between 3 to 4 for a camera-equipped measuring machine.
● For example:
L/ℓ=1.2 Mechanical machine
L/ℓ= 3 Measuring machine
L/ℓ= 5 Robot

How to calculate allowable dynamic moment

M2 (N•m) = W (kg) × L (mm) × a (G) × 9.8/1000



W : Load
L : Distance from work point to the center of gravity of payload (L=T+H)
T : Distance from top surface of slider to the center of gravity of payload
H : Distance from guide work point to the top surface of slider
a : Specified acceleration

Allowable Dynamic Moment and Allowable Static Moment

There are two types of moment that can be applied to the the guide: the allowable dynamic moment and the allowable static moment.
The allowable dynamic moment is calculated from the travel life (when flaking occurs) when moved with the moment load applied.
In contrast, the static moment is calculated from the load that causes permanent deformation to the steel ball or its rolling surface (i.e. rated static moment), taking into account the rigidity and deformity of the base.

[Allowable Dynamic Moment]

IAI's catalog contains the allowable dynamic moments based on a load coefficient of 1.2 and 10000km or 5000km.
This value is different from the so-called basic rated dynamic moment, which is based on a 50km travel life.
To calculate the basic rated dynamic moment for a 50km travel life, use the following equation.

$$M_{50}=f_w \times M_S \div \left(\frac{50}{S}\right)^{\frac{1}{3}} \quad \cdots\cdot \text{Equation 1}$$

M_S : Allowable dynamic moment at an assumed travel distance (catalog value)
S : IAI catalog assumed travel life (5000km or 10000km)
f_w : Load coefficient (=1.2)
M_{50} : Basic rated dynamic moment (50km travel life)

The allowable dynamic moments mentioned in the catalog (10000km or 5000km life) are based on a load coefficient fw=1.2. To calculate the service life of a guide with a different load coefficient, use Table 1 below to determine the load coefficient that matches your requirements.

Table 1: Load Coefficients

Operation and Load Requirements	Load Coefficient fw
Slow operation with light vibration/shock (1500mm/s or less, 0.3G or less)	1.0～1.5
Moderate vibration/shock, abrupt braking and accelerating (2500mm/s or less, 1.0G or less)	1.5～2.0
Operation with abrupt acceleration/deceleration with heavy vibration/shock (2500mm/s or faster, 1.0G or faster)	2.0～3.5

$$L_{10}=\left(\frac{C_{IA}}{P} \cdot \frac{1.2}{f_w}\right)^3 \times S \quad \cdots\cdot \text{Equation (2)}$$

L_{10} : Service life (90% Survival Probability)
C_{IA} : Allowable dynamic moment in IAI Catalog (5000km or 10000km)
P : Moment used ($\leq$ CIA)
S : IAI catalog assumed travel life (5000km or 10000km)
f_w : Load coefficient (from Table 1)

[Allowable Static Moment]

The maximum moment that can be applied to a slider at rest.
These values are calculated by taking the basic rated static moment of the slider and multiplying with the safety rate that takes into consideration any effects from the rigidity and deformity of the base.
Therefore, if a moment load is applied to the slider at rest, keep the moment within this allowable static moment. However, use caution to avoid adding any unexpected shock load from any inertia that reacts on the load.

[Basic Rated Static Moment]

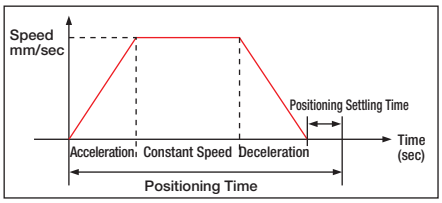
The basic rated static moment is the moment value at which the sum of the permanent deformation at the center of contact between the rolling body (steel ball) and the rolling surface (rail) is 0.0001 times the diameter of the rolling body.
These values are simply calculated strictly from the permanent deformation done to the steel ball and its rolling surface. However, the actual moment value is restricted by the rigidity and deformation of the base. Hence, the allowable static moment the actual moment that can be applied statically, taking into account those factors.

Technical Information

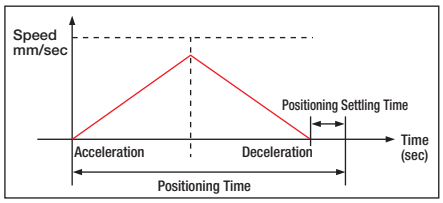
How to calculate positioning time

The actuator positioning time can be found from an equation.
Depending on the distance to be moved and the amount of acceleration/deceleration to be applied, the positioning operation can follow one of two patterns, shown below:

A Trapezoidal Pattern



B Triangular Pattern



First confirm the movement pattern as trapezoidal or triangular, then calculate the positioning time using the respective equation.

Confirming the Movement Pattern

Whether a movement pattern is trapezoidal or triangular can be determined by whether the peak speed reached after accelerating over a distance at a specified rate is greater than or less than the specified speed.

$$\text{Peak speed (Vmax)} = \sqrt{\text{Distance travelled S(mm)} \times \text{Specified acceleration}}$$

$$= \sqrt{\text{Smm} \times 9800\text{mm/sec}^2 \times \text{Acceleration setting (G)}}$$

If Vmax > V: Trapezoidal pattern

If Vmax < V: Triangular pattern, where Vmax is the peak speed reached and V is the speed that was specified.

Method of Calculating the Positioning Time

A Trapezoidal Pattern

$$\text{Positioning Time (T)} = \frac{\text{Distance (mm)}}{\text{Speed (mm/sec)}} + \frac{\text{Speed (mm/sec)}}{\text{Accel. (mm/sec}^2\text{)}} + \text{Positioning Settling Time}$$

B Triangular Pattern

$$\text{Positioning Time} = 2\sqrt{\frac{\text{Distance (mm)}}{\text{Accel. (mm/sec}^2\text{)}}} + \text{Positioning Settling Time}$$

$$\text{Accel. Time} = \frac{\text{Speed* (mm/sec)}}{\text{Accel. (mm/sec}^2\text{)}}$$

$$\text{Distance Accelerated} = \frac{\text{Accel. (mm/sec}^2\text{)} \times (\text{Accel. Time (sec)})^2}{2}$$

* Here, "Speed" refers to the specified speed in the trapezoid pattern, and the peak speed in the triangle pattern.

Note

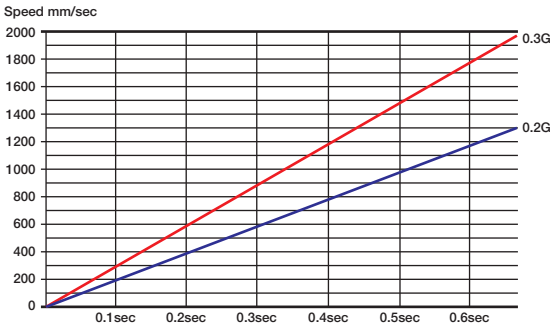
- The acceleration is calculated by the following: Acceleration setting in the controller (G)×9800mm/sec². If the acceleration setting in the controller is 0.3G, then 0.3×9800mm/sec² = 2940mm/sec².
- The positioning settling time is the time required to determine the completion of movement to the target position, typically around 0.15sec for ball screw types and 0.2sec for belt types.

Positioning time (sec)

Accel. Setting	Specified Speed (mm/sec)	Distance Moved (mm) 10	20	30	40	50	100	150	200	250	300	350	400	450	500	600	1000	1100	1300	1400
0.3G	100	0.13	0.23	0.33	0.43	0.53	1.03	1.53	2.03	2.53	3.03	3.53	4.03	4.53	5.03	6.03	10.03	11.03	13.03	14.03
	200	0.12	0.17	0.22	0.27	0.32	0.57	0.82	1.07	1.32	1.57	1.82	2.07	2.32	2.57	3.07	5.07	5.57	6.57	7.07
	300	0.12	0.16	0.2	0.24	0.27	0.44	0.6	0.77	0.94	1.1	1.27	1.44	1.6	1.77	2.1	3.44	3.77	4.44	4.77
	400	0.12	0.16	0.2	0.23	0.26	0.39	0.51	0.64	0.76	0.89	1.01	1.14	1.26	1.39	1.64	2.64	2.89	3.39	3.64
	500	0.12	0.16	0.2	0.23	0.26	0.37	0.47	0.57	0.67	0.77	0.87	0.97	1.07	1.17	1.37	2.17	2.37	2.77	2.97
	600	0.12	0.16	0.2	0.23	0.26	0.37	0.45	0.54	0.62	0.7	0.79	0.87	0.95	1.04	1.2	1.87	2.04	2.37	2.54
	700	0.12	0.16	0.2	0.23	0.26	0.37	0.45	0.52	0.6	0.67	0.74	0.81	0.88	0.95	1.1	1.67	1.81	2.1	2.24
	800	0.12	0.16	0.2	0.23	0.26	0.37	0.45	0.52	0.58	0.65	0.71	0.77	0.83	0.9	1.02	1.52	1.65	1.9	2.02
	900	0.12	0.16	0.2	0.23	0.26	0.37	0.45	0.52	0.58	0.64	0.7	0.75	0.81	0.86	0.97	1.42	1.53	1.75	1.86
	1000	0.12	0.16	0.2	0.23	0.26	0.37	0.45	0.52	0.58	0.64	0.69	0.74	0.79	0.84	0.94	1.34	1.44	1.64	1.74
	1750	0.12	0.16	0.2	0.23	0.26	0.37	0.45	0.52	0.58	0.64	0.69	0.74	0.78	0.82	0.9	1.17	1.37	1.56	1.65
	2000	0.12	0.16	0.2	0.23	0.26	0.37	0.45	0.52	0.58	0.64	0.69	0.74	0.78	0.82	0.9	1.17	1.22	1.33	1.48

Note: Does not include the positioning settling time (0.15sec for ball screw, and 0.2sec for belt). Triangular Pattern

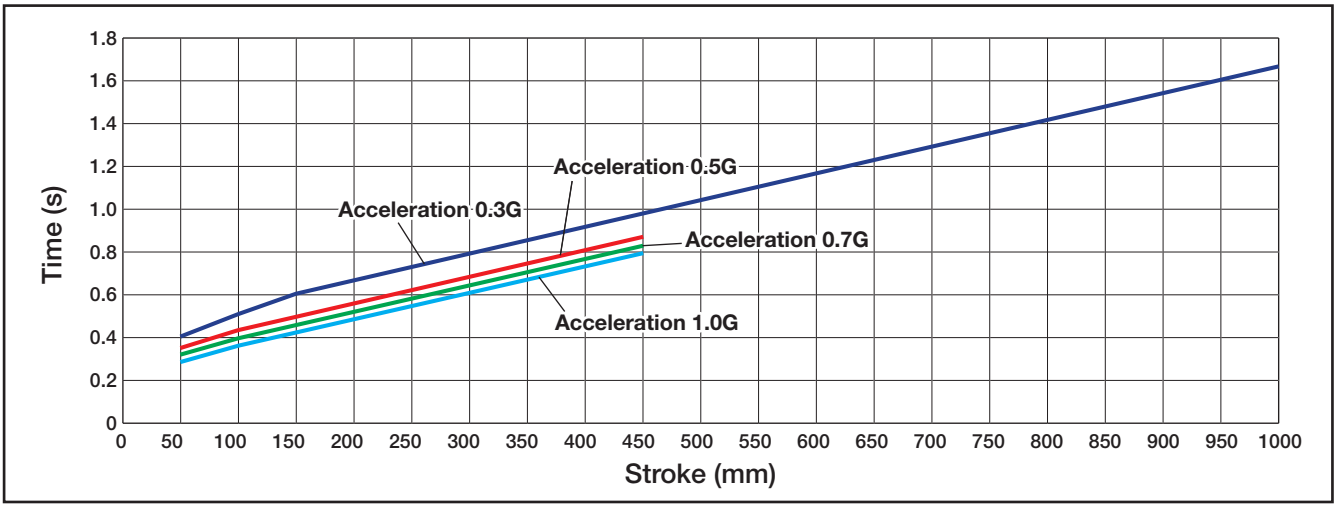
Acceleration time



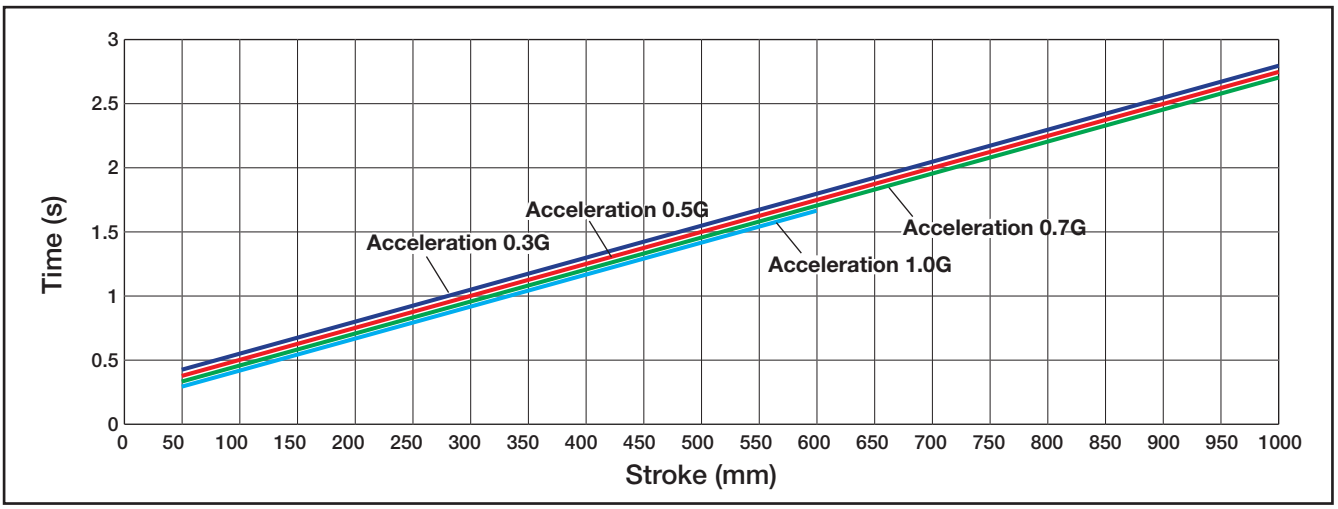
Reference Chart of Movement Time per Speed/Acceleration

The charts below show the estimated time required for the movement per speed/acceleration. Please use it as a reference for cycle time.
(Note) Stroke indicates the one-sided and unidirectional movement distance. For RCP2, RCP3 and ERC2, please note that the maximum speed varies depending on load capacity.

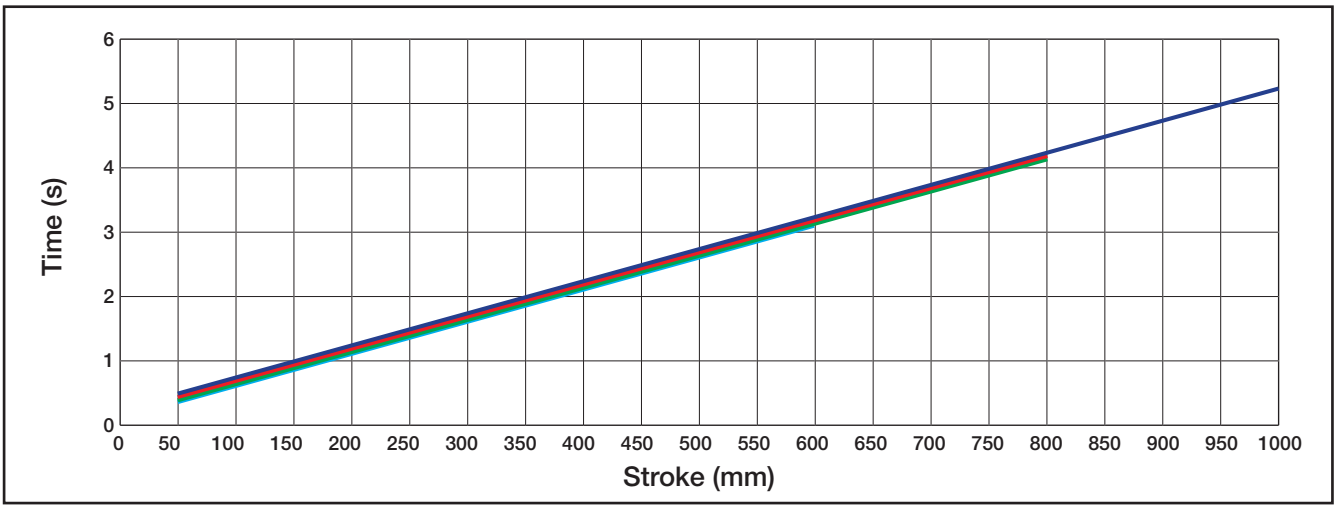
Speed 800mm/s



Speed 400mm/s

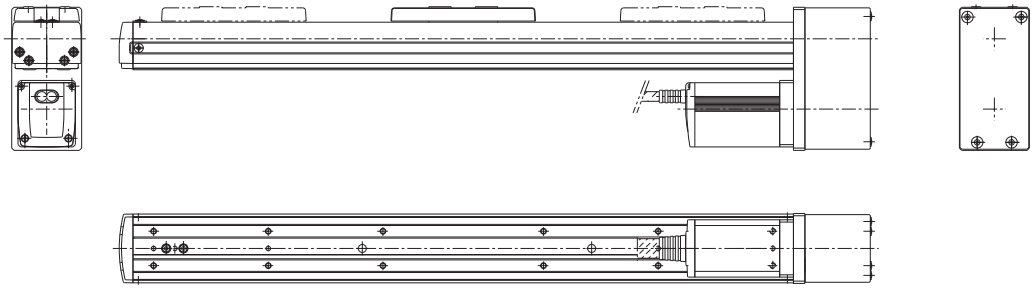


Speed 200mm/s



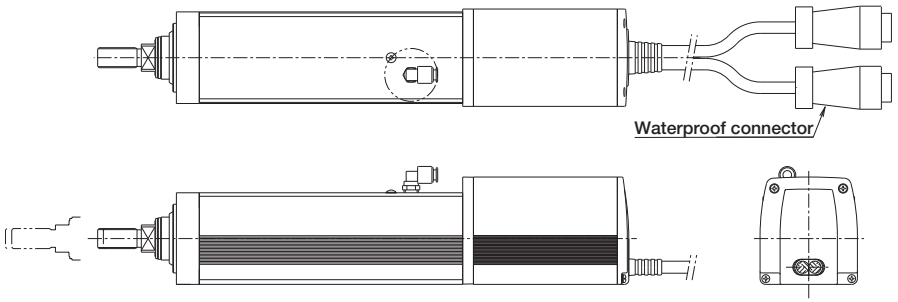
Side-Mount Motor Orientation

Ex.) Side-Mount Motor to the Bottom



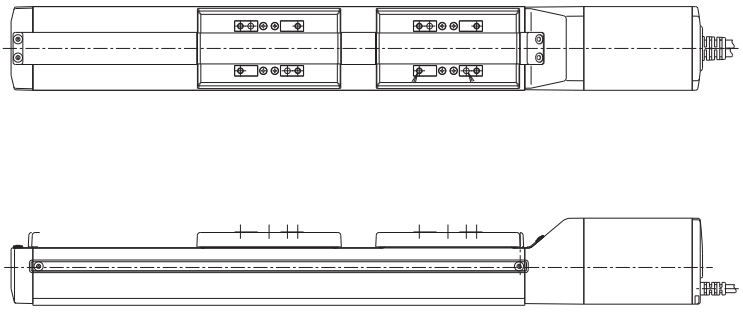
Special Connector

Ex.) Change motor-encoder connector to waterproof connector



Special Slider

Double Slider Specification (Add non-driven slider)



Explanation of Terms

(This terminology is related to IAI products, and so the definitions are more limited than usual.)

10,000km service life

Around 10000 hours are guaranteed for actual use in the field. When considering the speed, work ratio, etc, this translates to a distance of 5000 to 10000km. While the life of a guide is sufficiently long for radial loads, it is the uneven loads due to moment loads that are problematic to its service life.

For this reason, the 10000km service life is established by specifying the rated dynamic load moment that can guarantee 10000km of travel distance.

50km service life

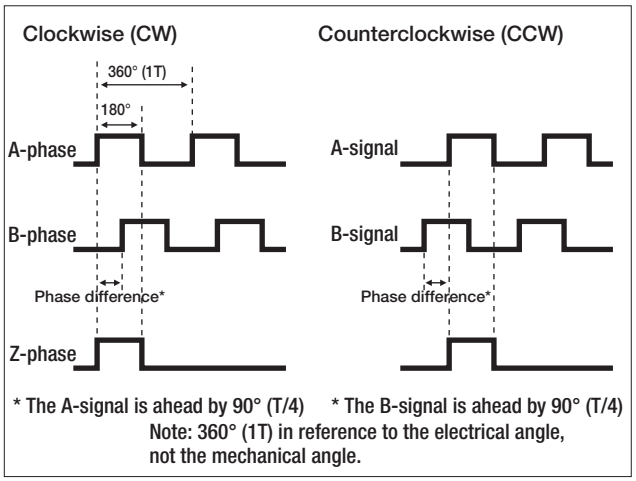
A way of expressing the allowable load capacity, submitted by the guide manufacturer. This is the value at which the probability of the guide not breaking (i.e. survival probability) when used with this allowable radial load (basic dynamic rated load) is 90%.

Calculating the actual distance of travel, considering the motion velocity and work rate, etc, an actual industrial equipment, it is necessary to ensure 5000km to 10000km of travel. From that viewpoint, this data is difficult to understand and difficult to utilize.

A-phase (signal) output / B-phase (signal) output

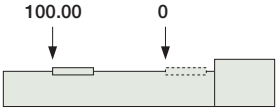
The direction of rotation (CW or CCW) of the axis is determined from the phase difference between the A-phase and the B-phase of the incremental encoder output, as shown in the diagram below. In a clockwise rotation, the A-phase is ahead of the B-phase.

■ Diagram of Output Modes

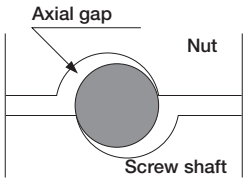


Absolute positioning accuracy

When positioning is performed to an arbitrary target point specified in coordinate values, the difference between the coordinate values and the actual measured values.



Backlash



As shown in the figure on the right, there is a gap between the nut and the ball (steel ball) and the screw shaft. Even if the screw shaft moves, the nut will not move the extent of the gap. The mechanical play in the direction of this slider movement is called the backlash. The measurement method used is to feed the slider, then use the reading for the slight amount of movement time shown on a test indicator as a standard. Also, in that condition, without using the feed device, move the slider in the same direction with a fixed load, then without the load. Then find the difference between the standard value and the time when the load was removed. This measurement is conducted at the midpoint of the distance of movement and at points nearly at the two ends. The maximum value obtained among the values is used as the measurement value.

Bellows

A cover to prevent the infiltration of dust or debris from outside.

Brake

Primarily used for the vertical axis to prevent the slider from dropping when the servo is turned off. The brake activates when the power is turned off.

C10

One of the grades of a ball screw. The lower the number, the higher the precision.

Grade C10 has a typical movement error of ±0.21mm for a 300mm stroke.

CCW (Counterclockwise rotation)

Abbreviation for counterclockwise rotation.

It describes a rotation to the left, as viewed from above, i.e. opposite of the rotation of a clock's hands.

Explanation of Terms

Cleanliness

Grade of cleanliness for cleanrooms according to ISO standard. ISO class 4 (equivalent to US FED STD class 10) indicates an environment in which there are fewer than 10 pieces of debris 0.5µm or smaller per cubic foot.

Coupling

A component used as a joint to join a shaft to another shaft.
e.g. The joint between the ball screw and the motor.

Creep sensor

An optional sensor to allow high-speed homing operation.

Critical speed

Ball screw resonation with slider speed (No. of ball screw rotations). The maximum physical speed limit that can be utilized.

CW (Clockwise rotation)

Abbreviation for clockwise rotation.
It describes a rotation to the right, as viewed from above, i.e. same as the rotation of a clock's hands.

Cycle time

The time taken by one process.

Dispenser

A device that controls the flow rate of a liquid. This is integrated into devices for applying adhesives, sealants, etc.

Duty

Indicates the work ratio in the equipment industry. (e.g. The time that the actuator operates in one cycle.)

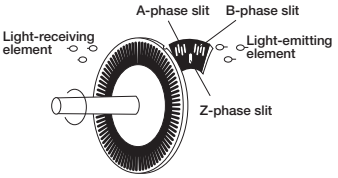
Dynamic brake

A brake that uses the motor's regenerative energy.

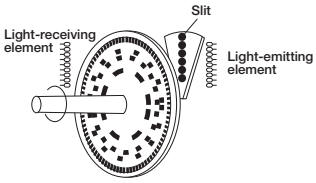
Encoder

A device for recognizing the RPM and the direction of a rotation by shining a light onto a disc with slits, and using a sensor to detect whether the light is ON or OFF as the disc is rotated. (i.e. a device that converts rotation into pulses.) The controller uses this signal from the encoder to determine the position and speed of the slider.

■ Incremental



■ Absolute



An incremental encoder
detects the rotational angle and the RPM of the axis from the number of output pulses. To detect the rotational angle and the RPM, a counter is needed to cumulatively add the number of output pulses. An incremental encoder allows you to electrically increase the resolution by using the rise and fall points on the pulse waveform to double or quadruple the pulse generation frequency.

An absolute encoder
detects the rotation angle of the axis from the state of the rotation slit, enabling you to know the absolute position at all times, even when the rotating slit is at rest. Consequently, the rotational position of the axis can always be checked even without a counter.
In addition, since the home position of the input rotation axis is determined at the time it is assembled into the machine, the number of rotations from home can always be accurately expressed, even when turning the power ON during startup or after a power outage or an emergency stop.

Excess voltage

Voltage applied to motor that exceeds regulation value when commanded speed is too fast.

External operation mode

This is the operation mode started by a start signal from an external device (PLC, etc.). This is also called automatic operation.

Flexible hose

Tube for SCARA Robot MPG cable that the user passes wiring through.

Gain

The numeric value of an adjustment of the controller's reaction (response) when controlling the servo motor. Generally, the higher the gain the faster the response, and the lower it is the slower the response.

Gantry

A type of two-axis (X and Y) assembly in which a support guide is mounted to support the Y-axis, so that heavier objects can be carried on the Y-axis.

Grease

High-viscosity oil applied to contact surfaces to make the guide and the ball screw move smoothly.

Greasing

Injection or application of grease to sliding parts.

Guide

A mechanism for guiding (supporting) the slider of the actuator. A bearing mechanism that supports linear motions.

Guide module

An axis in a two-shaft assembly that is used in parallel with the X-shaft to support the end of the Y-shaft when the Y-shaft overhang is long. Typical models include the FS-12WO and FS-12NO.

Home

Reference point for actuator operation. The pulse counts are determined and recorded for all positions the actuator moves to / from home.

Home accuracy

The amount of variation among the positions when home return is performed (if home varies, all positions vary).

Key slotted

A rotary shaft or mounting component is machined with a slot for key mounting.
(Key: One means of preventing positional slip in the rotation direction of the rotary axis and the mounting component)

Lead

The lead of the feed screw is the distance moved after the motor (hence the feed screw) has rotated one turn.

Understanding lead value

The lead value changes the actuator speed and thrust.

- Speed: With an AC230V servo motor, the rated rpm is 3000rpm. In other words, this is 50 revolutions per second. In this case, with a 20mm screw lead,
  the speed is 50 revolutions/s×20mm/revolution = 1000mm/s.
- Thrust: If the lead is large, then the thrust is small; and vice-versa.

Load capacity (Payload)

The weight of objects that can be moved by the actuator's slider or rod.

Lost Motion [mm]

First, for one position, run with positioning straight in front and then measure that position. Next, make a movement in the same direction by issuing a command. Then, issue the same command for movement in a negative direction from the position. Conduct positioning in the negative direction and measure that position. Again, issue a command for a movement in the negative direction, and issue the same command for a positioning movement straight ahead from that position. Then measure that position.
Using this method, repeat measurement in positive and negative directions, seven times each. Conduct positioning for each and obtain the deviation from the average value for each stop position. Determine the position for the center of the movements in these measurements and positions nearly at both ends. The measurement value will be the maximum value among those obtained. (Complies with JIS B6201)

Mechanical end

Position where actuator slider comes to mechanical stop. Mechanical stopper. (Example: Urethane rubber)

Offline

A state in which the PC software is started without the RS232 cable connected to the controller.

Explanation of Terms

Offset

To shift from a position.

Online mode

The state in which the PC software is started with the RS232 cable connected to the controller.

Open collector output

A system with no overload resistance in the voltage output circuit, that outputs signals by sinking the load current. Since this circuit can turn the load current ON/OFF regardless of voltage potential to which the current is connected, it is useful for switching an external load and is widely used as a relay or ramp circuit or the like for switching external loads, etc.

Open loop system

A type of control system. This system only outputs commands and does not take feedback.

A typical example of this is the stepping motor. Since it does not compare each actual value against the commanded value, even if a loss of synchronization (i.e signal error) occurs, the controller would not be able to correct it.

Operation

Operation.

Overhang

The state in which the object that is mounted onto the actuator extends out to the front/rear, left/right, or above/below the axis of movement.

Overload check

A check for overload. (One of the protection functions)

Override

A setting for the percentage with respect to the running speed. (e.g. If VEL is set to 100mm/sec, an override setting of 30 will yield 30mm/sec)

Pitch error [pitch deviation or lead deviation]

Due to problems in the manufacturing, such as the heat treatment process used, the deviations of the ball screws, which are a key mechanical element of the actuator, are not always small when inspected closely. A JIS rating is used to indicate the qualitative accuracy of these items.

These items made for the market must meet tolerance values set as Class C10.

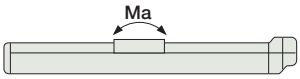
The accuracy required to meet the C10 standard is to be within a margin of error of ±0.21mm for every 300mm of length. Generally the screw pitch error deviation accumulates in a plus or minus direction. One method of improving these items is to grind them in a finishing process.

[e.g.] When positioning 300mm from home:

The machine accepts a set position of 300 ±0.21. Supposing that the actual stop position is 300.21, if this position is repeatable and maintained at 300.21 ± 0.02 using a JIS6201-compliant method, then the repeatability standard for accuracy is met.

Pitching

Forward-backward motion along the axis of the slider's movement. (Direction of Ma)



PLC

Abbreviation for Programmable Logic Controller.

(Also referred to as sequencers or programmable controllers).

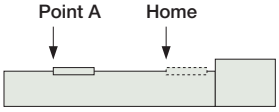
These are controllers that can be programmed to control production facilities and equipment.

Positioning band

The span within which a positioning operation is deemed as complete with respect to the target point. This is specified by a parameter. (PEND BAND)

Positioning repeatability

The variation in stop position accuracy for repeated positioning toward the same point.



Positioning settling time

The gap between the actual movement time and the ideal calculated value for movement. (Positioning operation time; processing time for internal controller operations.) The broader meaning includes the time for convergence of the mechanical swing.

Radial load

Load up to down in a direction 90° to horizontal slider.

Regenerative energy

Energy, generated by the motor's rotation. When the motor decelerates, this energy returns to the motor's driver (controller). This energy is called regenerative energy.

Regenerative resistance

The resistance that discharges the regenerative current.
The regenerative resistance required for IAI's controllers is noted in the respective page of each controller.

Rolling

An angular movement around the axis of the slider's movement. (Mc direction)

SCARA

SCARA is an acronym for Selective Compliance Assembly Robot Arm, and refers to a robot that maintains compliance (tracking) in a specific direction (horizontal) only, and is highly rigid in the vertical direction.

Screw type

The types of screws for converting rotary motion of a motor to linear motion are summarized on the right.
IAI's single-axis robots and electric cylinders use rolled ball screws as a standard feature.

		Characteristics
Ball screw	Polished	Screws are polished for good precision, but expensive
	Rolled	Since the screws are rolled, they can be mass produced
Lead screw		Cheap, but poor precision and short life. Also not suitable for high-speed operation.

SEL language

The name of IAI's proprietary programming language, derived from an acronym for SHIMIZUKIDEN ECOLOGY LANGUAGE.

Semi-closed loop system

A system for controlling the position information or velocity information sent from the encoder with constant feedback to the controller.

Servo-free (servo OFF)

The state in which the motor power is OFF. The slider can be moved freely.

Servo-lock (servo ON)

The state in which, opposite to the above, the motor power is turned ON. The slider is continually held at a determined position.

Slider mounting weight [kg]

The maximum mounting weight of the slider when operating normally, without major distortion in the velocity waveform or current waveform, when operated at the specified acceleration/deceleration factor (factory settings).

Software limit

A limit in the software beyond which a given set stroke will not advance.

Stainless sheet

A dust-proof sheet used in slider types.

Stepper motor (Pulse motor)

A motor that performs angular positioning in proportion to an input pulse signal by means of open loop control.

Thrust load

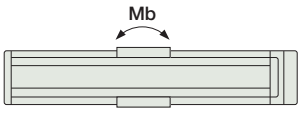
The load exerted in the axial direction.

Work rate

The ratio between the time during which the actuator is operating and the time during which it is stopped. This is also called duty.

Yawing

Motion at an angle in a left-right direction along slider movement axis. (Mb direction)



Along with pitching, laser angle measurement system is used for measurement, and the reading is the indication of maximum difference.

Z-phase

The phase (signal) that detects the incremental encoder reference point, used to detect the home position during homing operation.
Searching for the Z-phase signal for the reference during homing is called the "Z-phase search".

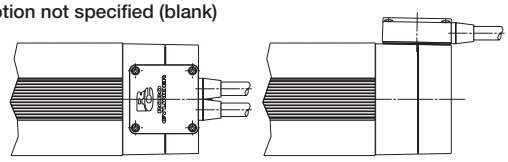
Cable exit direction

■ Models A1, A2, and A3

Applicable models	RCP2 / RCP2W-RA10C RCS2-RA5C / RA5R / SRA7BD
Description	Specify this option when you wish to change the direction from which the actuator cable is taken out.

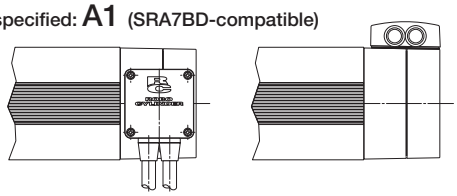
Actuator cable taken out from motor side (standard)

■ Option not specified (blank)



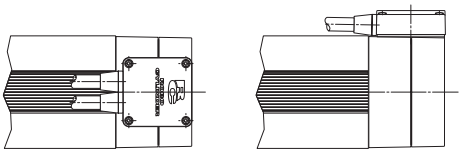
Actuator cable taken out from left

■ Option specified: **A1** (SRA7BD-compatible)



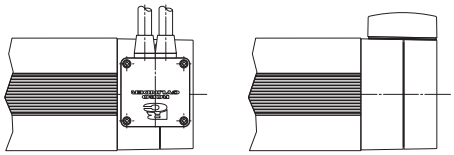
Actuator cable taken out from rod side

■ Option specified: **A2** (RA5C/RA5R/SRA7BD-compatible)



Actuator cable taken out from right

■ Option specified: **A3** (SRA7BD-compatible)



Brake

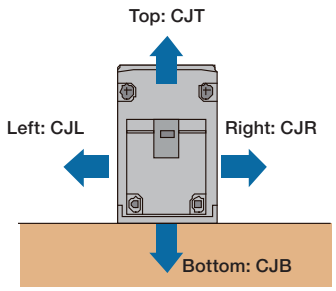
■ Models B, BE, BL and BR

Applicable models	All slider-type models (excluding RCP3-SA2A□ / SA2B□ and RCP2-BA6 / BA7) All rod-type models (excluding RCP2-RA2C / RA3C, RCA2-RN□N, RP□N, GS□N, GD□N, SD□N and RCA / RCS2 built-in types) All table-type models (excluding TCA□N, TWA□N and TFA□N) All arm-type and flat-type models (the arm type is a standard feature) Linear Motor Rod type All cleanroom type models Dust-proof / Splash-proof type (excluding RCP2W-SA16C, RCAW-RA3 / 4D and RCS2W-RA4D)
Description	A retention mechanism used on an actuator positioned vertically to prevent the slider from dropping and damaging the part, etc., when the power or servo is turned off.

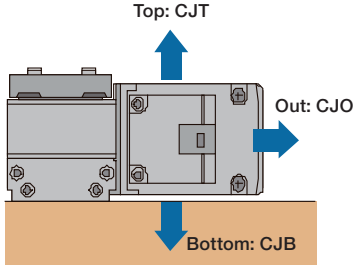
Cable exit direction

■ Models CJT, CJR, CJL, CJB and CJO

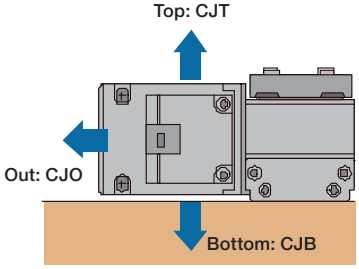
Applicable models	RCP3 (RCA2)-SA3C / SA4C / SA5C / SA6C / SA3R / SA4R / SA5R / SA6R RCP3 (RCA2)-TA4C / TA5C / TA6C / TA7C / TA4R / TA5R / TA6R / TA7R
Description	The direction of the motor-encoder cable mounted on the actuator can be changed vertically or horizontally.



Straight Type



Side-Mounted Motor Type
Mounted on left side (ML)



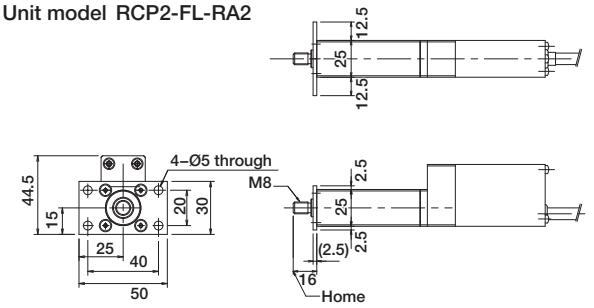
Side-Mounted Motor Type
Mounted on right side (MR)

Front flange

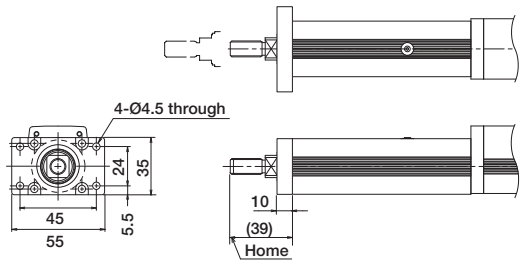
■ Models FL

Applicable models	All rod type models (excluding RCP3 and RCA2)
Description	A bracket for affixing the actuator using bolts from the actuator side.

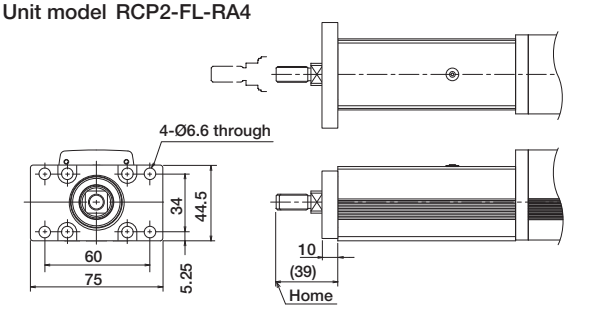
RCP2-RA2C
Unit model RCP2-FL-RA2



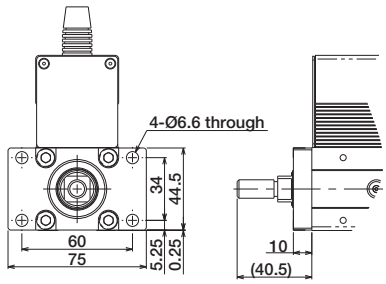
RCP2-RA3C
Unit model RCP2-FL-RA3



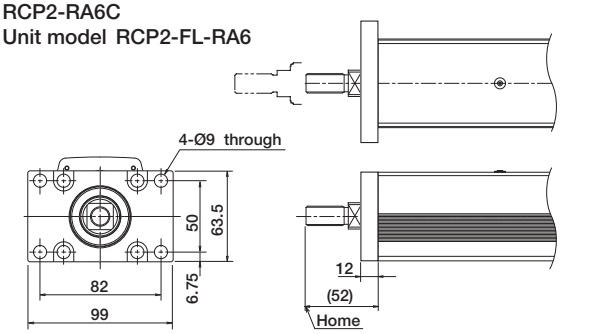
RCP2-RA4C
Unit model RCP2-FL-RA4



RCP2/RCA-SRA4R
Unit model RCP2-FL-SRA4

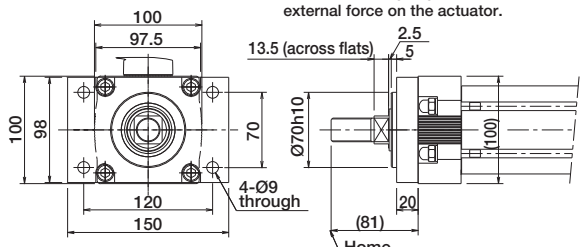


RCP2-RA6C
Unit model RCP2-FL-RA6



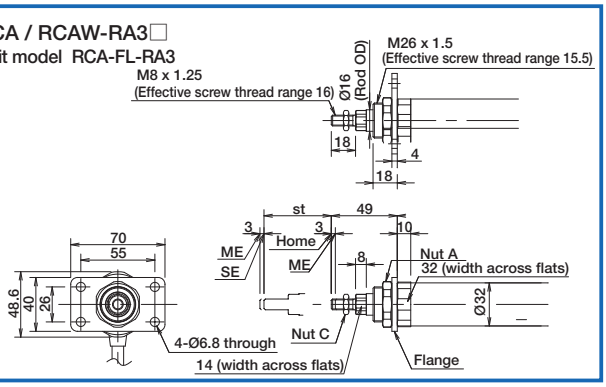
RCP2 / RCP2W-RA10C
Unit model RCP2-FL-RA10

* When using in horizontal setting, be careful not apply any excessive external force on the actuator.

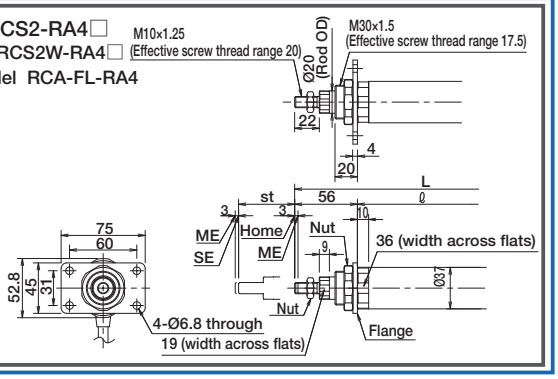


Mounting flange weight: Approx. 2kg

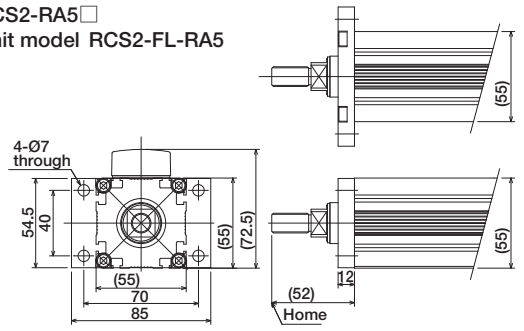
RCA / RCAW-RA3□
Unit model RCA-FL-RA3



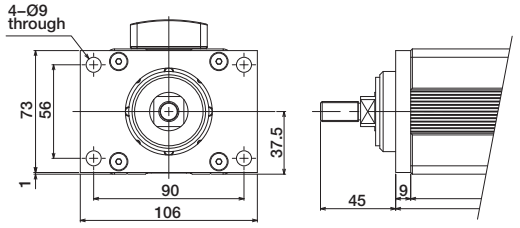
RCA / RCS2-RA4□
RCAW / RCS2W-RA4□
Unit model RCA-FL-RA4



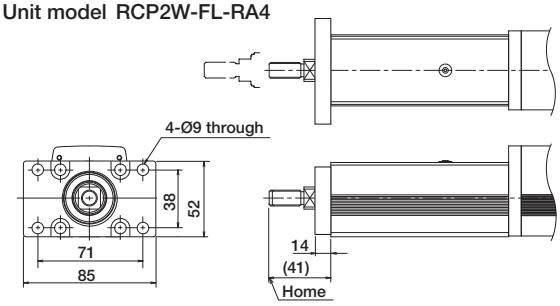
RCS2-RA5□
Unit model RCS2-FL-RA5



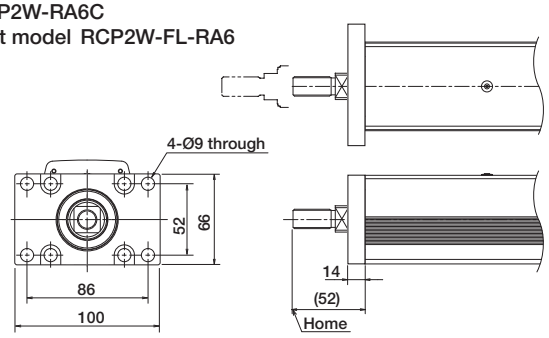
RCS2-SRA7BD
Unit model RCS2-FL-SRA7



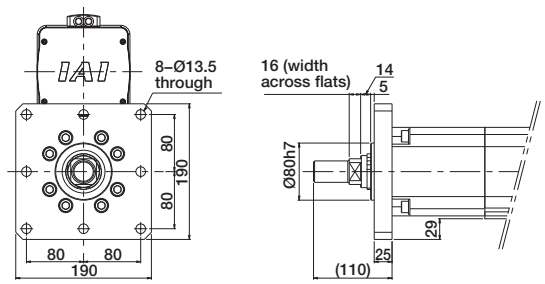
RCP2W-RA4C
Unit model RCP2W-FL-RA4



RCP2W-RA6C
Unit model RCP2W-FL-RA6



RCS2-RA13R
Unit model RCS2-FL-RA13

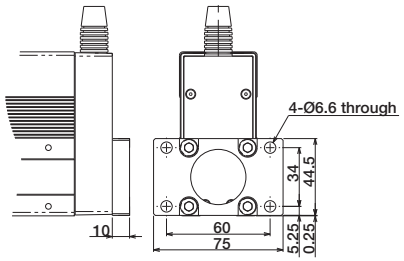


Rear flange

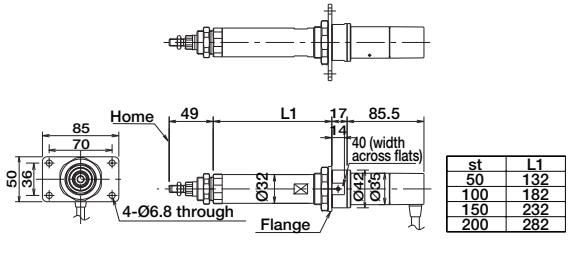
■ Models FLR

Applicable models	RCP2-SRA4R RCA (RCAW)-RA3C / RA3D / RA3R / RA4C / RA4D / RA4R / SRA4R RCS2 (RCS2W)-RA4C / RA4D / RA4R
Description	A bracket to fix a rod-type actuator on the rear (motor side).

RCP2/RCA-SRA4R
Unit model RCP2-FL-SRA4

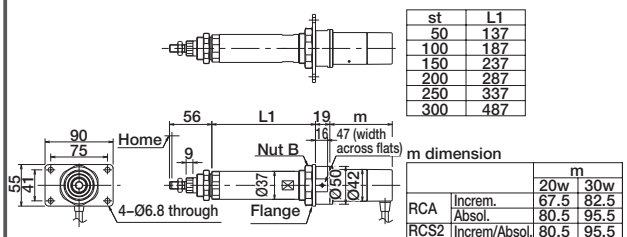


RCA / RCAW-RA3C and RA3D
Unit model RCA-FLR-RA3



st	L1
50	132
100	182
150	232
200	282

RCA / RCAW-RA4C and RA4D
RCS2 / RCS2W-RA4C / RA4D
Unit model RCA-FLR-RA4



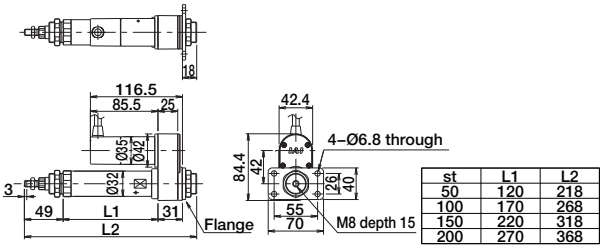
st	L1
50	137
100	187
150	237
200	287
250	337
300	487

m dimension

		m	
		20w	30w
RCA	Increm.	67.5	82.5
	Absol.	80.5	95.5
RCS2	Increm/Absol.	80.5	95.5

RCA / RCAW-RA3R
Unit model RCA-FL-RA3

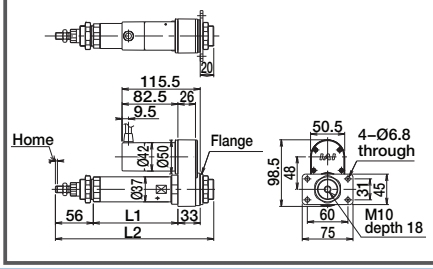
* On the side-mounted motor type, the same flanges can be used on the front and rear.



st	L1	L2
50	120	218
100	170	268
150	220	318
200	270	368

RCA / RCAW-RA4R
RCS2 / RCS2W-RA4R
Unit model RCA-FL-RA4

* On the side-mounted motor type, the same flanges can be used on the front and rear.



st	L1	L2
50	125	234
100	175	284
150	225	334
200	275	384
250	325	434
300	375	484

Foot

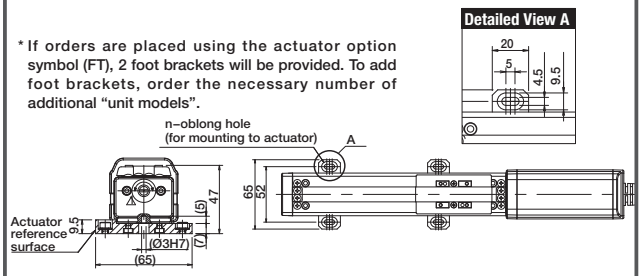
■ Models FT

*** See the mounting pitch dimensions on the actuator drawing for mounting pitch dimensions between foot brackets.**

Applicable models	Slider Type RCA (RCACR)-SA4C / SA5C / SA6C / SA4D / SA5D / SA6D RCS2 (RCS2CR)-SA4C / SA5C / SA6C All rod-type models (excluding RCA2-RN□N / RP□N / GS□N / GD□N / SD□N)
Description	A bracket for affixing the actuator using bolts from the top side. With a slider type subject to large moment load, install foot brackets at all mounting holes in the actuator. If the number of foot brackets is not sufficient, the actuator may deflect, resulting in a shorter service life.

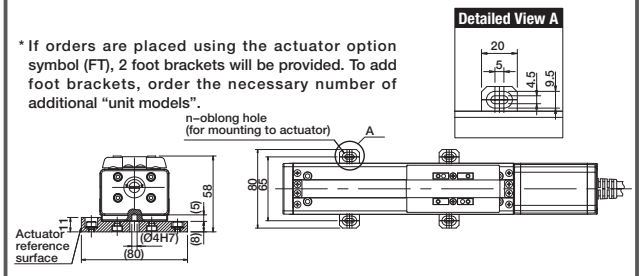
RCA / RCACR-SA4C RCS2 / RCS2CR-SA4C
Unit model RCA-FT-SA4

* If orders are placed using the actuator option symbol (FT), 2 foot brackets will be provided. To add foot brackets, order the necessary number of additional "unit models".



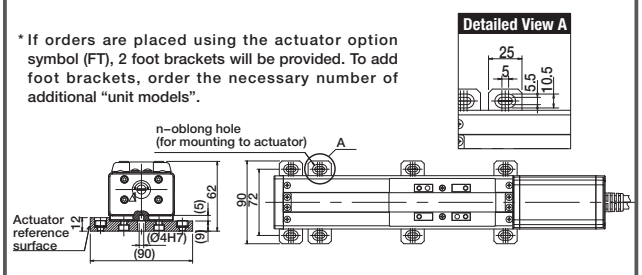
RCA / RCACR-SA5C RCS2 / RCS2CR-SA5C
Unit model RCA-FT-SA5

* If orders are placed using the actuator option symbol (FT), 2 foot brackets will be provided. To add foot brackets, order the necessary number of additional "unit models".

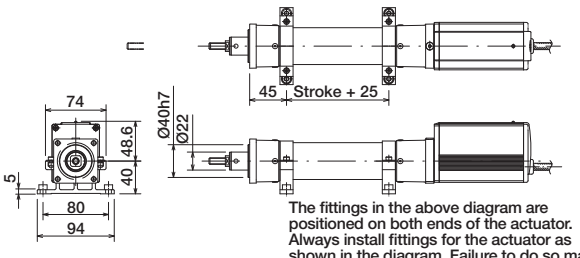


RCA / RCACR-SA6C RCS2 / RCS2CR-SA6C
Unit model RCA-FT-SA6

* If orders are placed using the actuator option symbol (FT), 2 foot brackets will be provided. To add foot brackets, order the necessary number of additional "unit models".



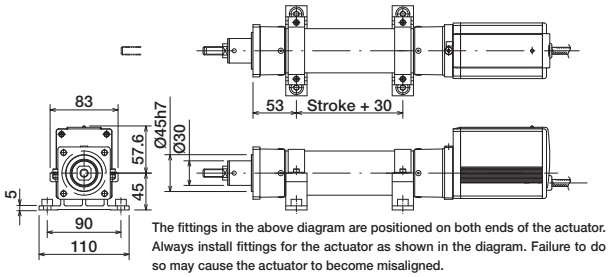
ERC2-RA6C / RGS6C / RGD6C
Unit model ERC2-FT-RA6



The fittings in the above diagram are positioned on both ends of the actuator. Always install fittings for the actuator as shown in the diagram. Failure to do so may cause the actuator to become misaligned.

* Mounting bolt (M6) is not provided.

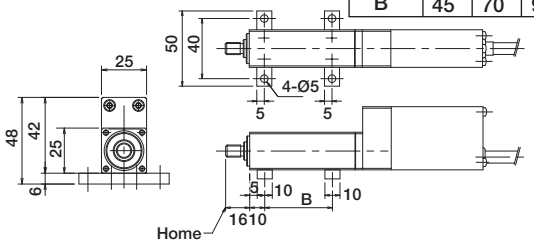
ERC2-RA7C / RGS7C / RGD7C
Unit model ERC2-FT-RA7



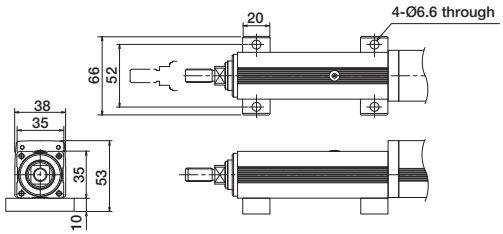
The fittings in the above diagram are positioned on both ends of the actuator. Always install fittings for the actuator as shown in the diagram. Failure to do so may cause the actuator to become misaligned.

RCP2-RA2C
Unit model RCP2-FT-RA2

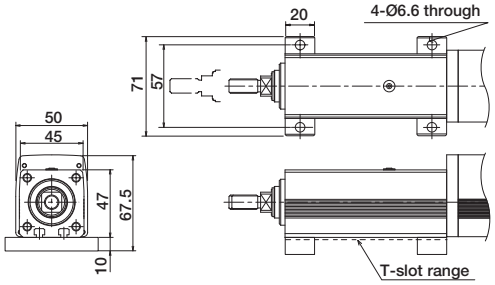
Length \ Stroke	25	50	75	100
B	45	70	95	120



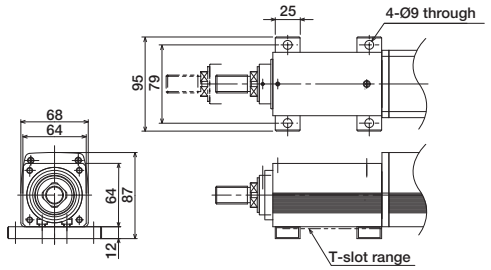
RCP2-RA3C / RGD3C
Unit model RCP2-FT-RA3



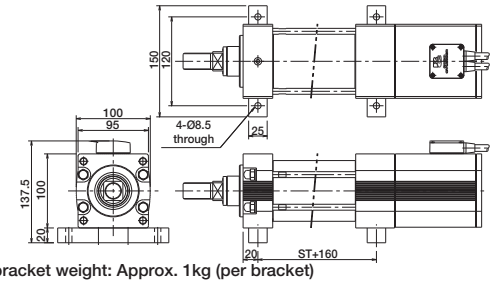
RCP2-RA4C / RGS4C / RGD4C / RCP2W-RA4C
Unit model RCP2-FT-RA4



RCP2-RA6C / RGS6C / RGD6C / RCP2W-RA6C
Unit model RCP2-FT-RA6

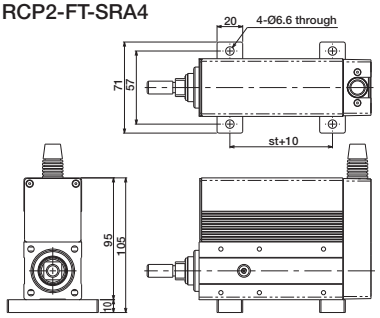


RCP2-RA10C / RCP2W-RA10C
Unit model RCP2-FT-RA10

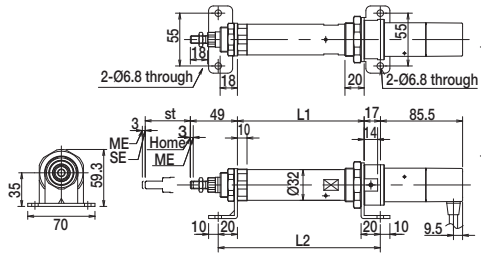


Foot bracket weight: Approx. 1kg (per bracket)

RCP2 / RCA-SRA4R
Unit model RCP2-FT-SRA4



RCA-RA3C / RGS3C / RGD3C
Unit model RCA-FT-RA3



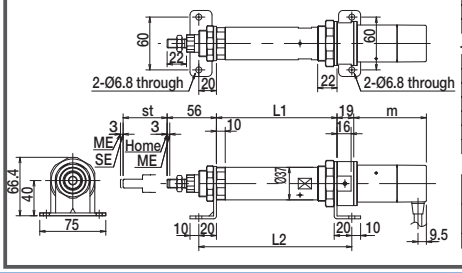
<RA3C>

st	L1	L2
50	132	168.8
100	182	218.8
150	232	268.8
200	282	318.8

<RGS3C/RGD3C>

st	L1	L2
50	140	176.8
100	190	226.8
150	240	276.8
200	290	326.8

RCA (RCS2)-RA4C / RGS4C / RGD4C
Unit model RCA-FT-RA4



<RA4C>

st	L1	L2
50	137	173.8
100	187	223.8
150	237	273.8
200	287	323.8
250	337	373.8
300	487	423.8

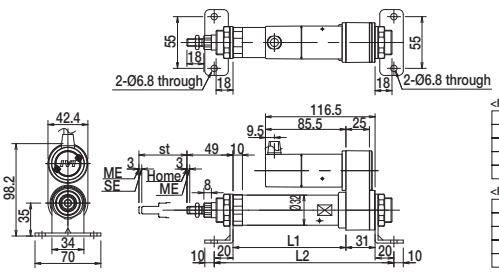
<RGS4C/RGD4C>

st	L1	L2
50	145	181.8
100	195	231.8
150	245	281.8
200	295	331.8
250	345	381.8
300	495	431.8

m dimension

		m	
		20w	30w
RCA	Incremental	67.5	82.5
	Absolute	80.5	95.5
RCS2	Incrt/Abst	80.5	95.5

RCA / RA3R / RGS3R / RGD3R
Unit model RCA-FT-RA3R



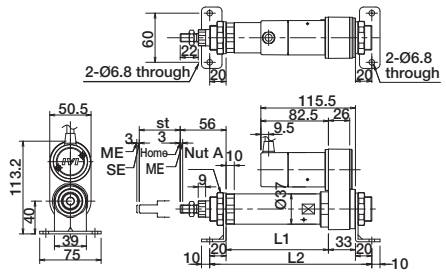
<RA3R>

st	L1	L2
50	120	191
100	170	241
150	220	291
200	270	341

<RGS3R/RGD3R>

st	L1	L2
50	128	199
100	178	249
150	228	299
200	278	349

RCA (RCS2)-RA4R / RGS4R / RGD4R
Unit model RCA-FT-RA4R



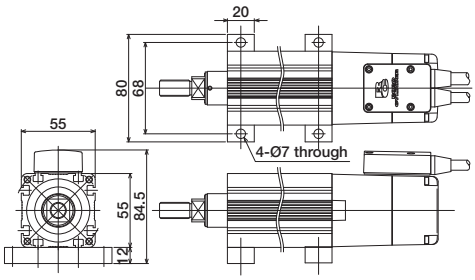
<RA4R>

st	L1	L2
50	125	198
100	175	248
150	225	298
200	275	348
250	325	398
300	375	448

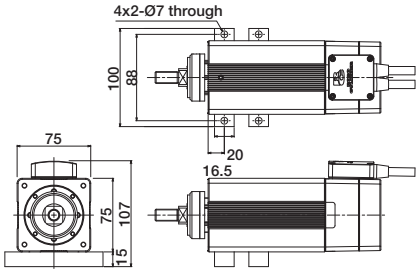
<RGS4R/RGD4R>

st	L1	L2
50	133	206
100	183	256
150	233	306
200	283	356
250	333	406
300	383	456

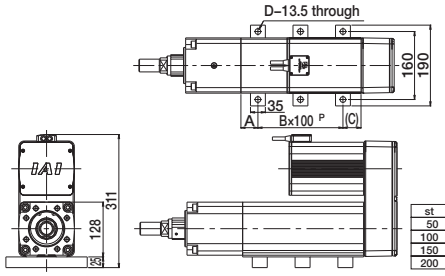
RCS2-RA5C / RA5R / RGS5C / RGD5C
Unit model RCS2-FT-RA5



RCS2-SRA7BD
Unit model RCS2-FT-SRA7



RCS2-RA13R
Unit model RCS2-FT-RA13



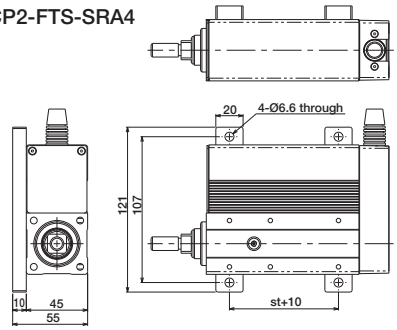
st	A	B	C	D
50	40	2	42.5	6
100	65	2	67.5	6
150	40	3	42.5	8
200	65	3	67.5	8

Foot (Mounted on right side face/left side face)

■Models FT2(Mounted on right side face)
FT4(Mounted on right side face)

Applicable models	RCP2 (RCA)-SRA4R
Description	A bracket for affixing the actuator using bolts from the top side. RCP2(RCA)-SRA4R can be mounted on the side face also.

RCP2 / RCA-SRA4R
Unit model RCP2-FTS-SRA4



Guide mounting direction (for single-guide type only)

■ Models GS2, GS3 and GS4

Applicable models	RCP2 (RCA)-SRGS4R RCS2-RGS5C / SRA7BD
Description	For the single-guide model, the mounting position of the rod can be selected from the right (GS2), bottom (GS3), or left side (GS4).

High acceleration/deceleration

■ Models HA

Applicable models	RCA-SA4C / SA5C / SA6C / RA3C / RA4C RCS2-SA4C / SA5C / SA6C / SA7C / RA4C / RA5C
Description	Option to increase to 1G the standard acceleration rate of 0.3G. An actuator with 1G of acceleration can be operated with the same load capacity as the 0.3G unit. The controller settings are different from the standard specification, so when operating with high acceleration, the controller also needs to be set to the high acceleration specification.

Home check sensor

■ Models HS

Applicable models	Slider Type	RCA (RCACR)-SA4C / SA5C / SA6C, RCS2 (RCS2CR)-SA4C / SA5C / SA6C RCA-SA4R / SA5R / SA6R and RCS2-SA4R / SA5R / SA6R
	Rod Type	RCA-RA3C / RA3D / RA3R / RA4C / RA4D / RA4R and RCS2-RA4C / RA4D / RA4R
Description	When an actuator is instructed to return home, this sensor checks to make sure that the slider moves to the home position. * This cannot be used with the reversed-home specification for rod types.	

Connector cable exit direction

■ Models K1, K2 and K3

Applicable models	RCA2-RN□NA / RP□NA / GS□NA / GD□NA / TCA□NA / TWA□NA / TFA□NA RCS2-RN5N / RP5N / GS5N / GD5N / SD5N /TCA5N / TWA5N / TFA5N
Description	Connector cable outlet direction can be changed to left (K1), from the front to the rear(K2) and to right (K3).

Limit switch

■ Models L

Applicable models	Rotary Type	RCS2-RT6 / RT6R / RT7R
Description	When home return is performed, the home will be determined after the actuator reverses following contact with the mechanical end. This optional sensor is used to detect this reversing.(However, with the rotary type, all models will have the standard settings.)	

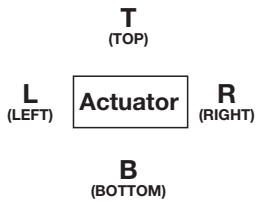
Low power compatible

■ Models LA

Applicable models	RCA / RCA2 / RCACR / RCA Series, all models
Description	This option decreases the power capacity of the controller. With the standard specification and high-speed acceleration specification, the maximum is 5.1A, but if the low-power specification is selected, the maximum decreases to 3.4A. (The maximum values differ for some models, so see the power capacities of the ACON/ASEL controllers for details.)

Side-Mounted Motor Orientation

■ Models MB, ML, MR and MT



Applicable models	All side-mounted motor type models
Description	These abbreviations specify the motor reversing direction of the motor reversing type. Viewed from the motor side, downward reversing is MB (arm type only), leftward reversing is ML (all models), rightward reversing is MR (all models), and upward reversing is MT (limited to RCS2-RA13R). The arm type is MB, but for other models, ML is standard. (MT has different criteria for RCS2-RA13R.)

No cover

■ Models NCO

Applicable models	RCP3 (RCA2)-SA3C / SA4C / SA5C / SA6C / SA3R / SA4R / SA5R / SA6R
Description	By removing the cover from the actuator, the cost reduction can be achieved and the maintainability can be enhanced.

Reversed-home specification

■ Models NM

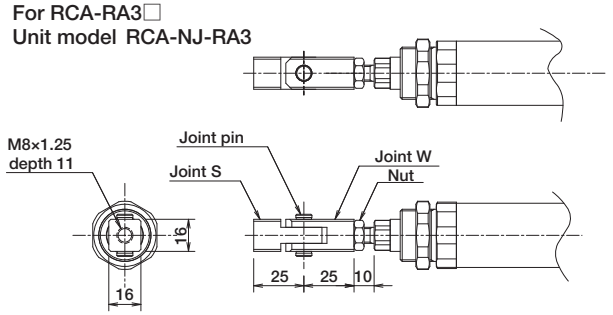
Applicable models	All slider-type models All rod-type, table-type, arm-type, and flat-type models (* excluding RCP2-RA2C / SRA4R / RA10C, RCA2-RN / RP / GS / GD / SD / TCA / TWA / TFA □N, RCA-SRA4R and RCS2-RA5C / RA5R / SRA7BD / RA13R)
Description	The normal home position is set by the slider and rod on the motor side, but there is the option for the home position to be on the other side to accomodate variations in device layout, etc. (Note: Home position settings are factory settings. Changes to these settings after the product is delivered will require shipping the product back to IAI for re-setting.)

Knuckle joint

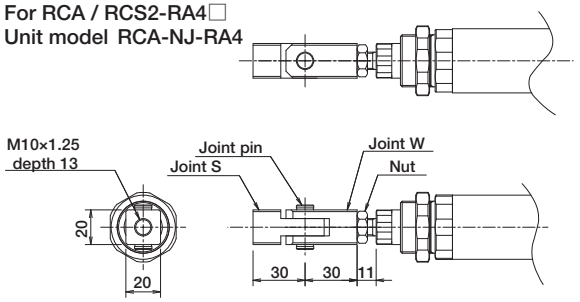
■ Models NJ

Applicable models	Rod Type	RCA-RA3C / RA3D / RA3R / RA4C / RA4D / RA4R RCS2-RA4C / RA4D / RA4R
Description	Clevis or trunnion fittings give rotational freedom of movement for the ends of the actuator rods.	

For RCA-RA3□
Unit model RCA-NJ-RA3



For RCA / RCS2-RA4□
Unit model RCA-NJ-RA4



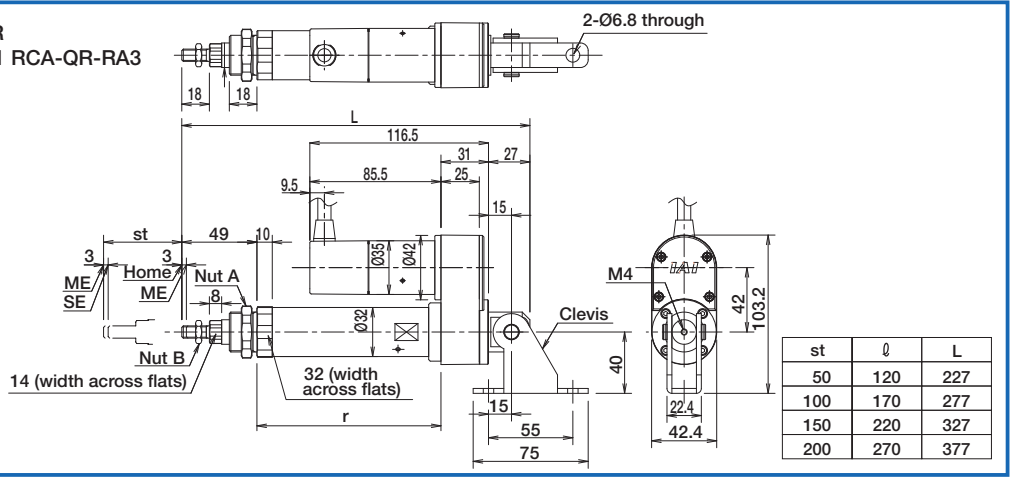
Clevis

■ Models QR

Applicable models	Rod Type	RCA-RA3R / RA4R RCS2-RA4R
Description	A bracket for aligning the cylinder movement when the load installed at the tip of the rod moves in a direction different from the rod.	

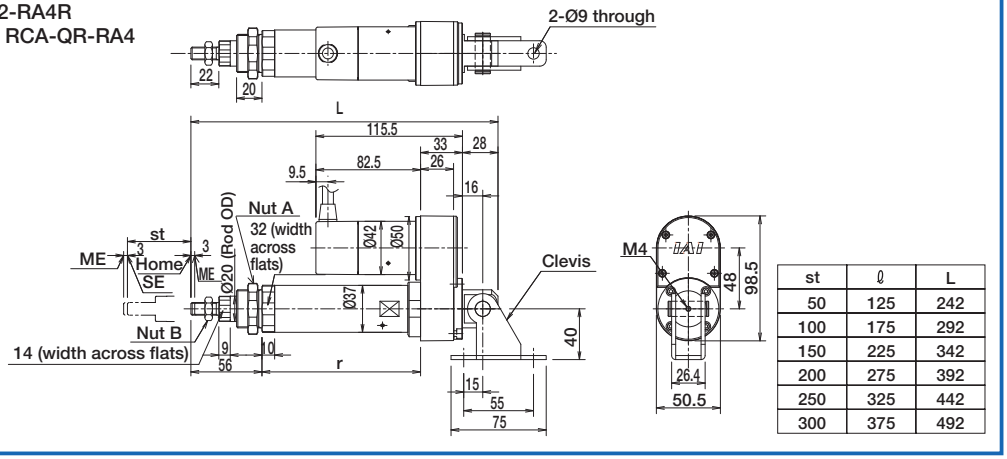
Caution If the rod is to be moved with a clevis bracket attached to it, use a guide type or install an external guide to prevent the rod from receiving any load other than from its moving direction.

RCA-RA3R
Unit model RCA-QR-RA3



st	ℓ	L
50	120	227
100	170	277
150	220	327
200	270	377

RCA / RCS2-RA4R
Unit model RCA-QR-RA4



st	ℓ	L
50	125	242
100	175	292
150	225	342
200	275	392
250	325	442
300	375	492

Rod end extension specification

■ Models RE

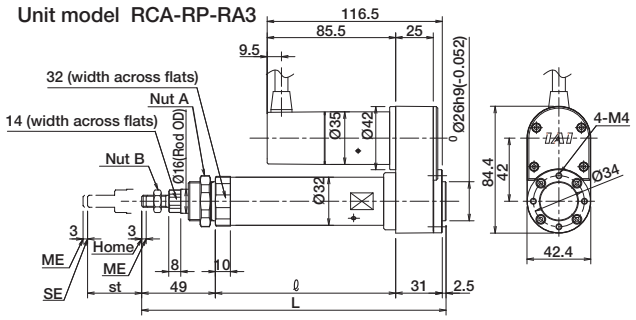
Applicable models	RCS2-SRA7BD
Description	An adapter for extending the rod end so that the distance between the mounting hole and the rod end can be the same as that of RCS2-RA7BD.

Rear mounting plate

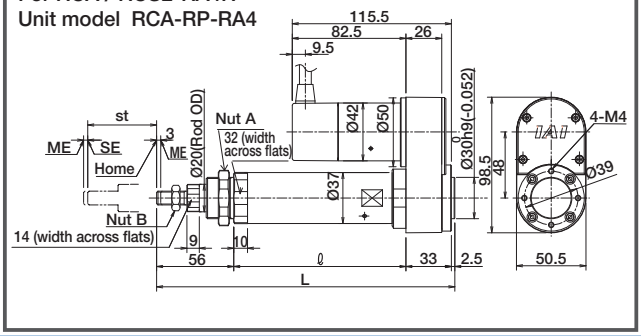
■ Models RP

Applicable models	Motor reversing rod types RCA-RA3R / RA4R and RCS2-RA4R
Description	A bracket (plate) for affixing the back of a motor-reversing rod type (RA3R/RA4R) to the system.

For RCA-RA3R
Unit model RCA-RP-RA3



For RCA / RCS2-RA4R
Unit model RCA-RP-RA4

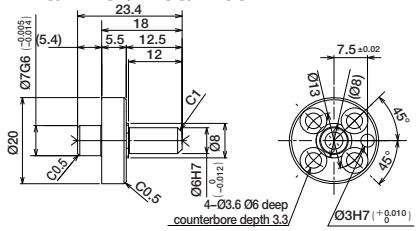


Shaft adapter

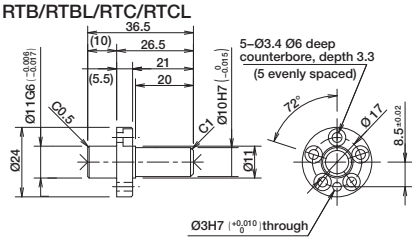
■ Models SA

Applicable models	All RCP2 rotary type models
Description	An adapter for installing a jig, etc., onto the rotating part of a rotary type.

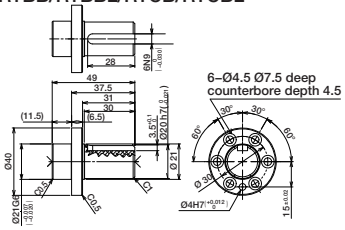
RTBS/RTBSL/RTCS/RTCSL



RTB/RTBL/RTC/RTCL

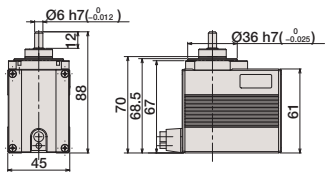


RTBB/RTBBL/RTCB/RTCBL



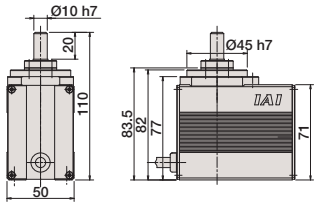
Combined w/ RCP2-RTBS/RTBSL

Configuration: RCP2-SA-RTS
(Weight: 0.02kg)



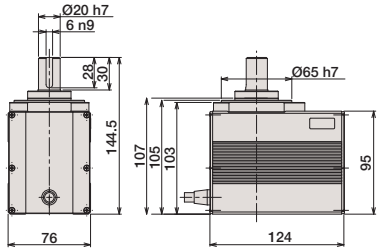
Combined w/ RCP2-RTB/RTBL

Configuration: RCP2-SA-RT
(Weight: 0.04kg)



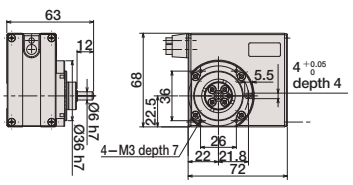
Combined w/ RCP2-RTBB/RTBBL

Configuration: RCP2-SA-RTB (Weight: 0.2kg)



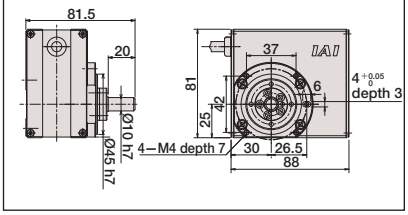
Combined w/ RCP2-RTCS/RTCSL

Configuration: RCP2-SA-RTS
(Weight: 0.02kg)



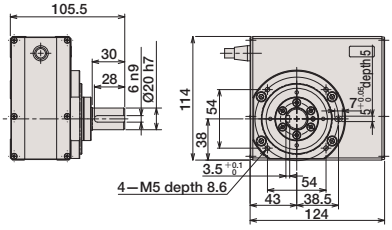
Combined w/ RCP2-RTC/RTCL

Configuration: RCP2-SA-RT
(Weight: 0.04kg)



Combined w/ RCP2-RTCB/RTCBL

Configuration: RCP2-SA-RTB
(Weight: 0.2kg)



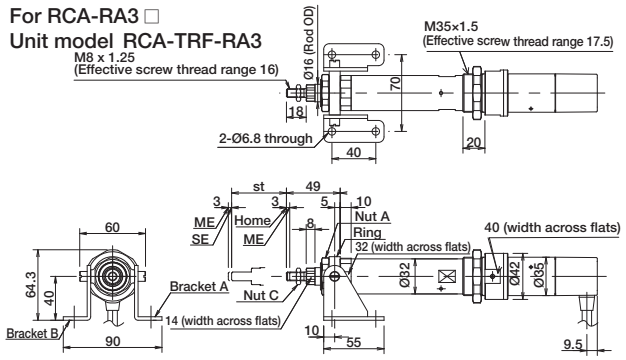
Front trunnion

■ Models TRF

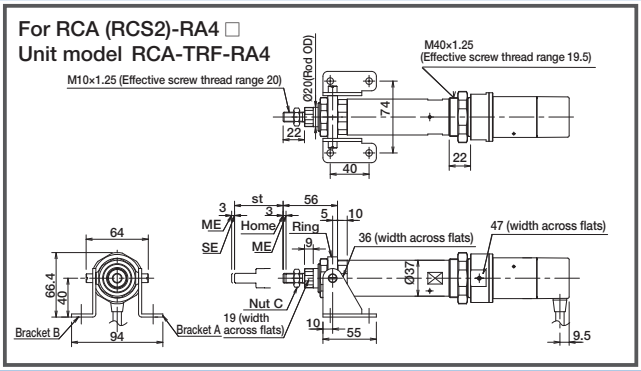
Applicable models	Rod Type	RCA-RA3C / RA3D / RA3R / RA4C / RA4D / RA4R RCS2-RA4C / RA4D / RA4R
Description	A bracket for aligning the cylinder movement when the load installed at the tip of the rod moves in a direction different from the rod.	

Caution If a rod is moved with a trunnion bracket mounted to it, use a guide type or install an external guide so no load is applied to the rod in a direction other than the proper direction the rod travels.

For RCA-RA3 □
Unit model RCA-TRF-RA3



For RCA (RCS2)-RA4 □
Unit model RCA-TRF-RA4



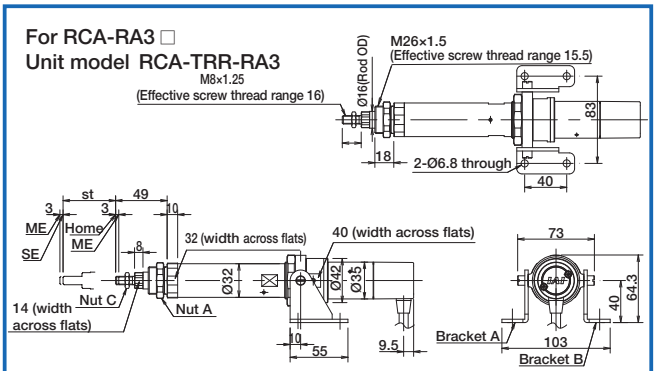
Rear trunnion

■ Models TRR

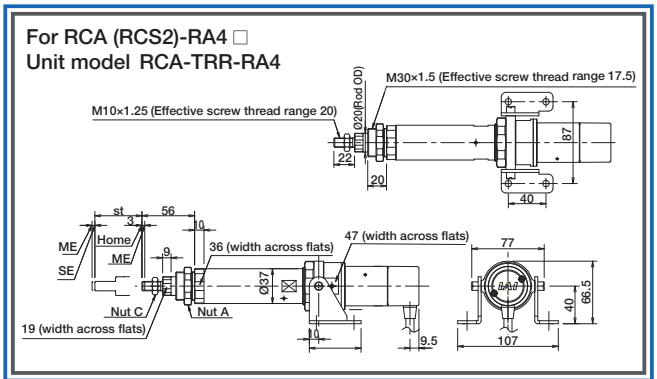
Applicable models	Rod Type	RCA-RA3C / RA3D / RA4C / RA4D RCS2-RA4C / RA4D
Description	A bracket for aligning the cylinder movement when the load installed at the tip of the rod moves in a direction different from the rod.	

Caution If a rod is moved with a trunnion bracket mounted to it, use a guide type or install an external guide so no load is applied to the rod in a direction other than the proper direction the rod travels.

For RCA-RA3 □
Unit model RCA-TRR-RA3



For RCA (RCS2)-RA4 □
Unit model RCA-TRR-RA4



Vacuum joint mounted on opposite side

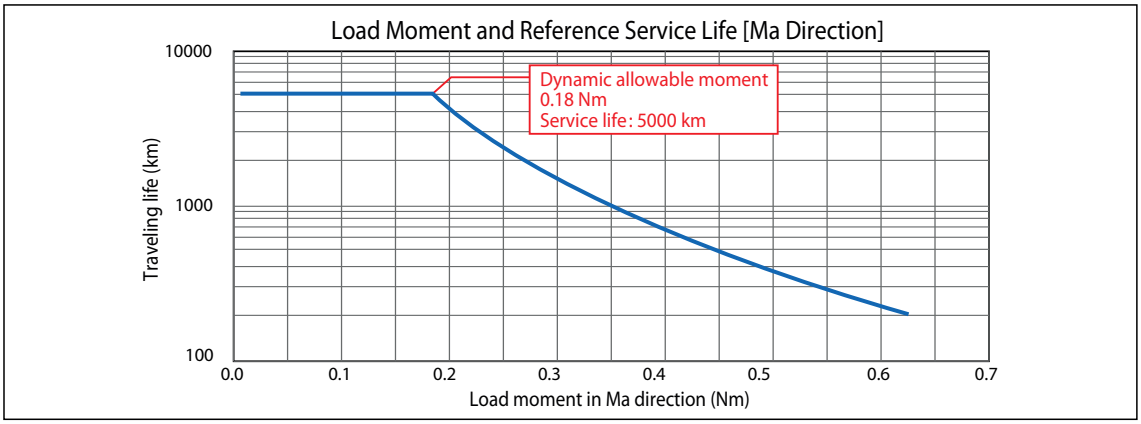
■ Models VR

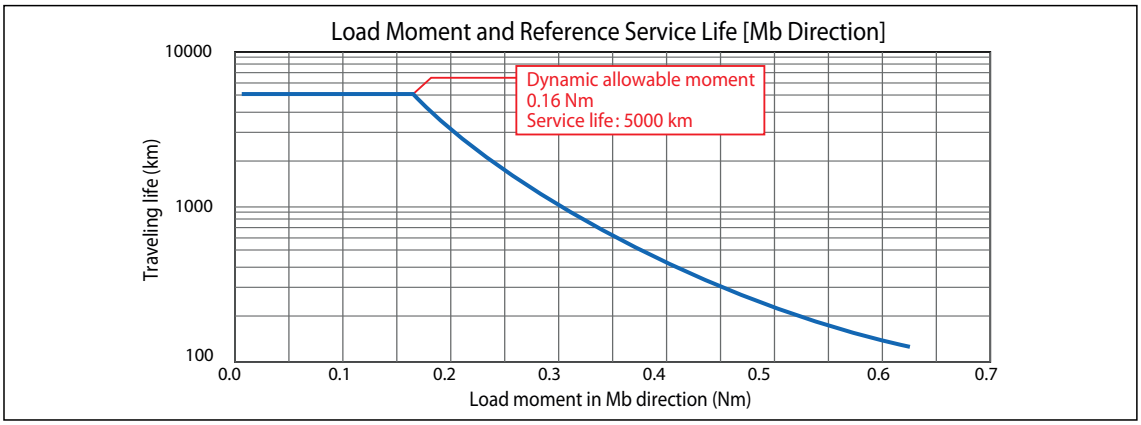
Applicable models	All cleanroom type models
Description	Looking from the motor side, the standard position for the vacuum joint is on the left side of the actuator, but this option allows users to change the position to the opposite side (right side).

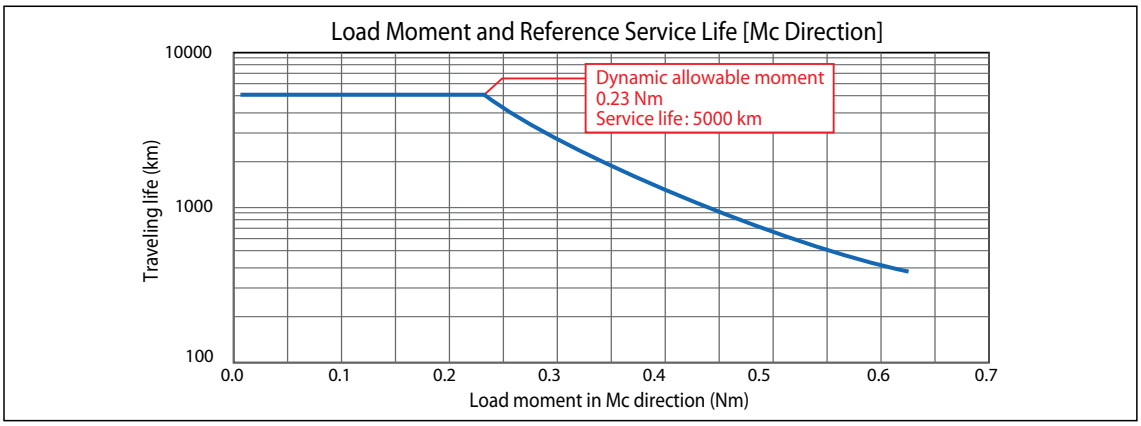
Selection Guide (Load Moment/Reference Service Life)

RCA2 Series Mini-Slim Slider Type

Actuators of mini slider type (RCA2-SA2AC/SA2AR) have a built-in guide, so they can receive a load overhanging from the slider.
Note, however, that the service life of the actuator will decrease if the specified dynamic allowable moment is exceeded.
(See the graphs below.)
When calculating this moment, use a point 25 mm below the top surface of the slider as the reference point.
Even when the allowable moment is not breached, keep the overhang length from the actuator (overhang length) within 40 mm.







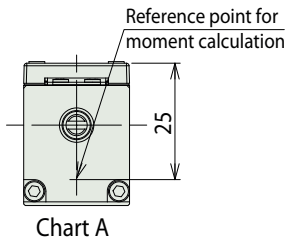
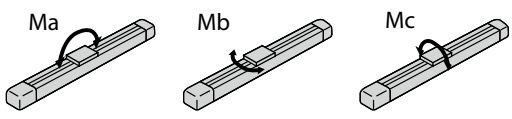
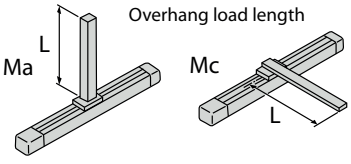


Chart A

Directions of allowable load moments



Overhang load length



Selection Guide (Push Force / Continuous Operation Thrust)

Using the selection method:

Condition 1. Confirm push operation time

By comparing our push time of 3 seconds with the maximum push time for a push order value of 200%, which is 13 seconds (see Table 1 on page A-71), it is clear that the pressing time is acceptable.

Condition 2. Calculate the continuous operation thrust

Substitute the above operational pattern to the previously mentioned equation for continuous operation thrust.

$$F_t = \sqrt{\frac{F_{1a}^2 \times t_{1a} + F_{1f}^2 \times t_{1f} + F_{1d}^2 \times t_{1d} + F_0^2 \times t_0 + F_{2a}^2 \times t_{2a} + F_{2f}^2 \times t_{2f} + F_{2d}^2 \times t_{2d} + F_w^2 \times t_w}{t}}$$

At this point, by looking at the motion pattern for t1a/t1d/t2a/t2d, the peak speed (Vmax) $=\sqrt{0.05 \times 0.098} \rightarrow 0.07$m/s, which is greater that the set speed, 62mm/s (0.06m/s). Hence this is a trapezoidal pattern.

Hence, $t_{1a}/t_{1d}/t_{2a}/t_{2d} = 0.062 \div 0.098 \rightarrow 0.63$s

Next, calculate t_{1f}/t_{2f}:
Distance moved at constant speed $= 0.05-\{(0.062 \times 0.062) \div (2 \times 0.098)\} \times 2 \rightarrow 0.011$m, so $t_{1f}/t_{2f} = 0.011 \div 0.062 \rightarrow 0.17$s.

Also, calculating the F1a/F1f/F1d/F2a/F2f/F2d from the equations yields the following:
$F_{1a} = F_{2d} = (9+100) \times 9.8-(9+100) \times 0.098 \rightarrow 1058$N
$F_{1d} = F_{2a} = (9+100) \times 9.8+(9+100) \times 0.098 \rightarrow 1079$N
$F_{1f} = F_{2f} = f_w = (9+100) \times 9.8 \rightarrow 1068$N

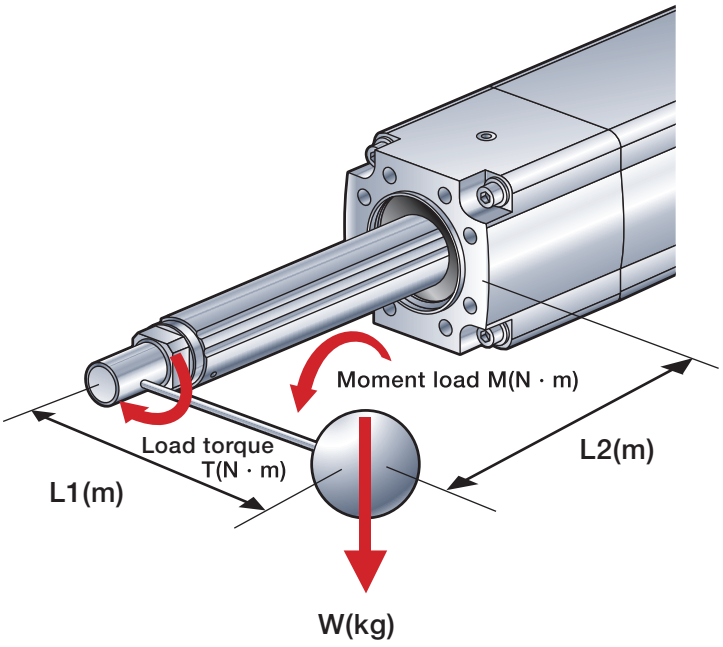
By substituting these values to the continuous operation thrust equation,

$$F_t = \sqrt{\{(1058 \times 1058) \times 0.63+(1068 \times 1068) \times 0.17+(1079 \times 1079) \times 0.63+(19600 \times 19600) \times 3+(1079 \times 1079) \times 0.63 +(1068 \times 1068) \times 0.17+(1058 \times 1058) \times 0.63+(1068 \times 1068) \times 2\} \div (0.63+0.17+0.63+3+0.63+0.17+0.63+2)} \rightarrow 12113\text{N}$$

Since this exceeds the rated thrust for the 2-ton ultra-high-thrust actuator, which is 10200N, operation with this pattern is not possible.

In response, let us increase the wait time. (i.e. decrease the duty)
Recalculating with tw=6.12s(t=12s) will change the thrust to F_t=9814N, making it operable.

Information on Moment Selection



The ultra-high-thrust actuator can apply a load on the rod within the range of conditions calculated below.

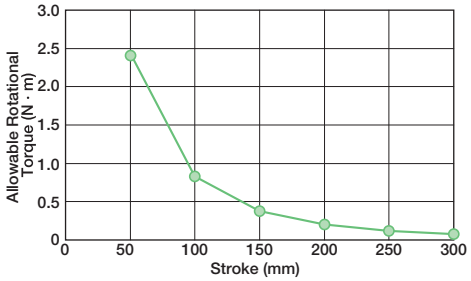
$M+T \leqq 120$ (N · m)
Moment Load $M = Wg \times L_2$
Load Torque $T = Wg \times L_1$

* g = Gravitational acceleration 9.8
* L1 = Distance from the center of rod to the center of gravity of the work piece
* L2 = Distance from the actuator mounting surface to the center of gravity of the work piece + 0.07

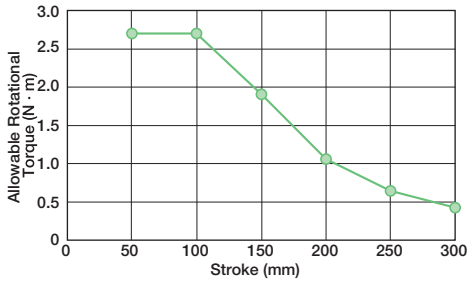
If the above condition is not met, consider installing an external guide, or the like, so that the load is not exerted on the rod.

RCP2-RGD3C Type

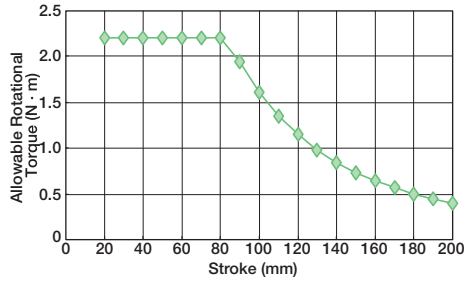
RCP2-RGD4C Type



RCP2-RGD6C Type



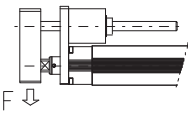
RCP2-SRGD4R Type



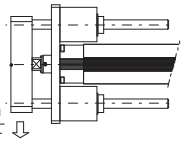
Relationship Between Allowable Load at Tip & Running Service Life

The greater the load at the guide tip, the shorter the running service life. Select the appropriate model, considering balance between load and service life.

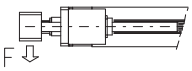
■ Single-guide type



■ Double-guide type
<Vertical>



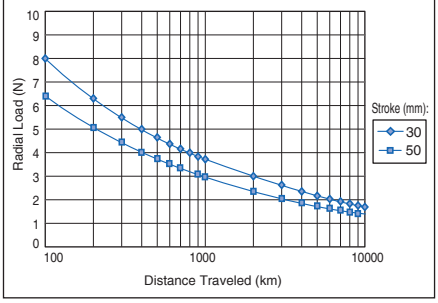
<Horizontal>



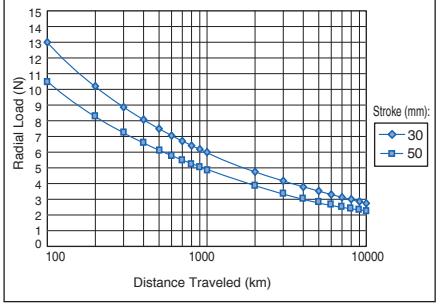
* The single-guide specification can only be used with vertical loads.

Single-guide

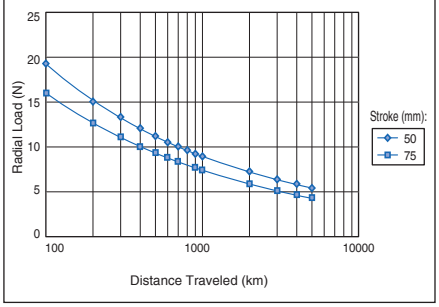
RCA2-GS3NA Type



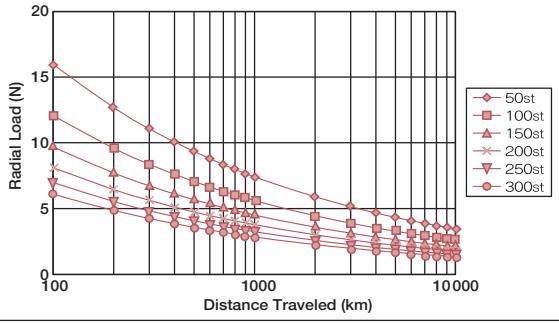
RCA2-GS4NA Type



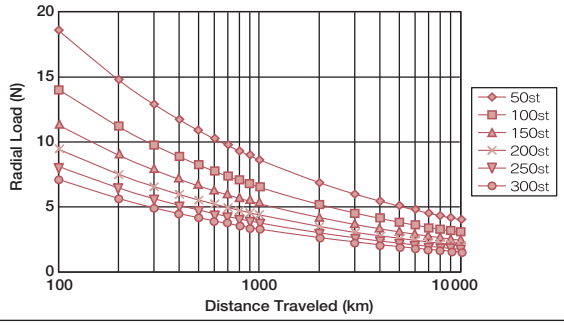
RCS2-GS5N Type



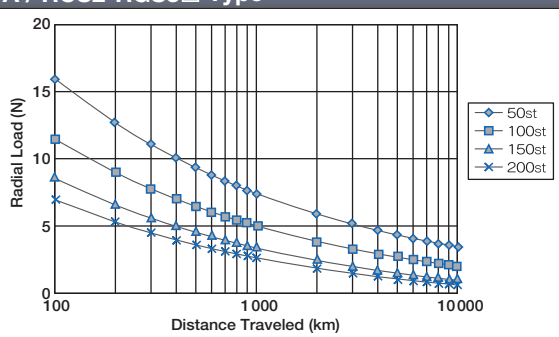
ERC2-RGS6C Type



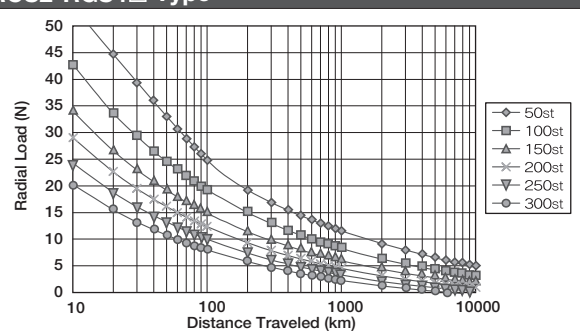
ERC2-RGS7C Type



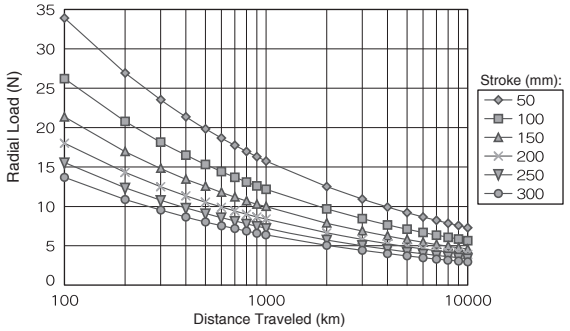
RCA / RCS2-RGS3□ Type



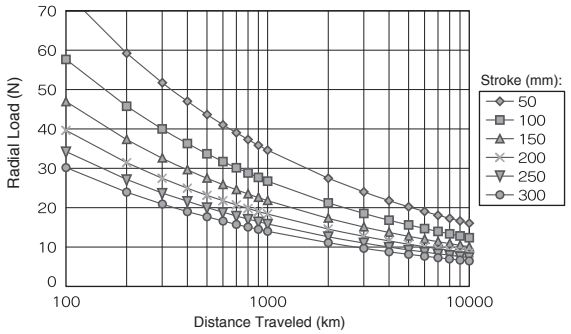
RCS2-RGS4□ Type



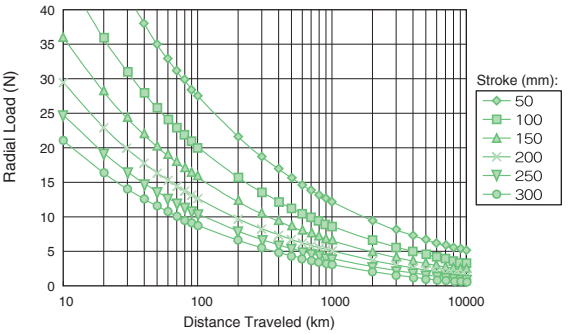
RCS2-RGS5C Type



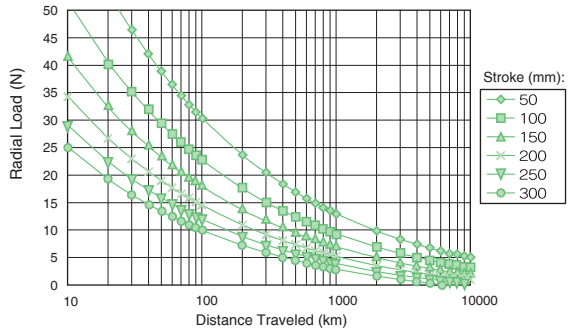
RCS2-SRGS7BD Type



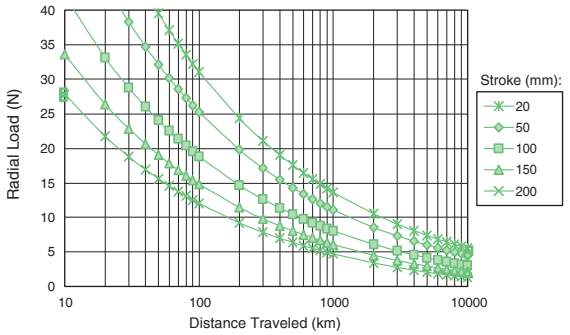
RCP2-RGS4C Type



RCP2-RGS6C Type

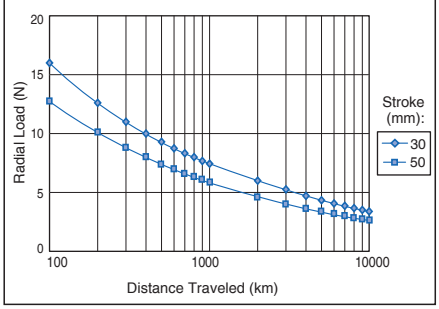


RCP2-SRGS4R Type

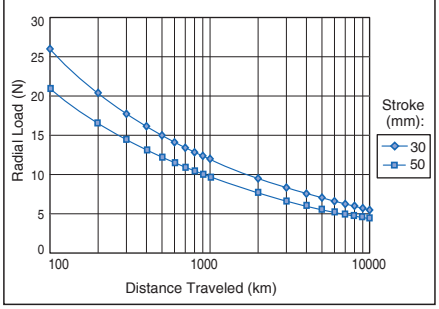


Double-Guide

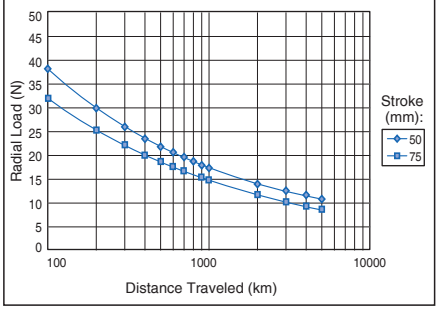
RCA2-GD3NA Type



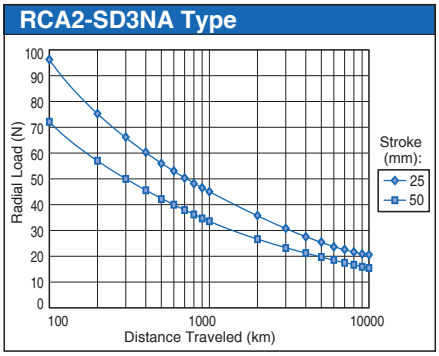
RCA2-GD4NA Type



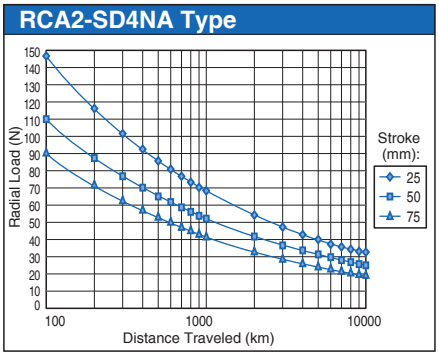
RCS2-GD5N Type



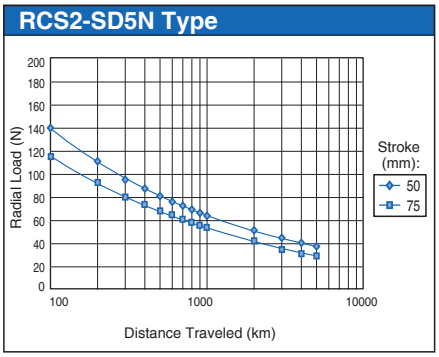
RCA2-SD3NA Type



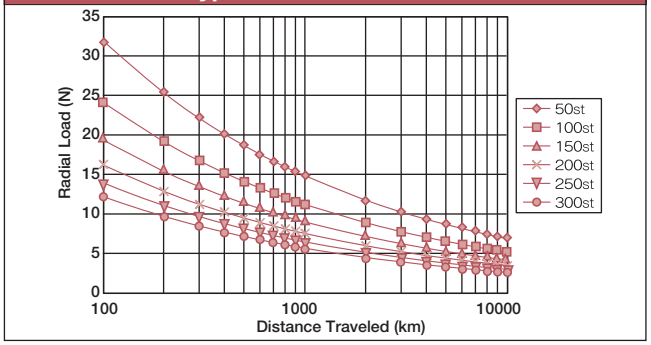
RCA2-SD4NA Type



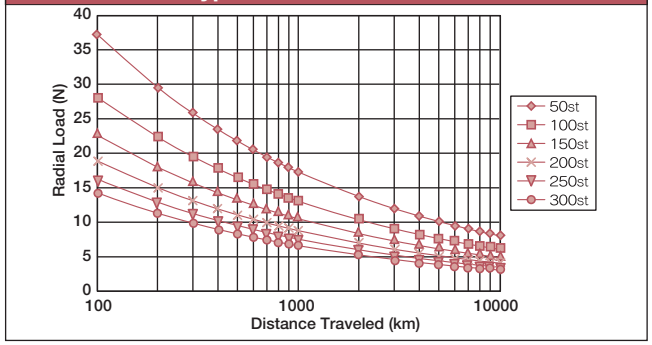
RCS2-SD5N Type



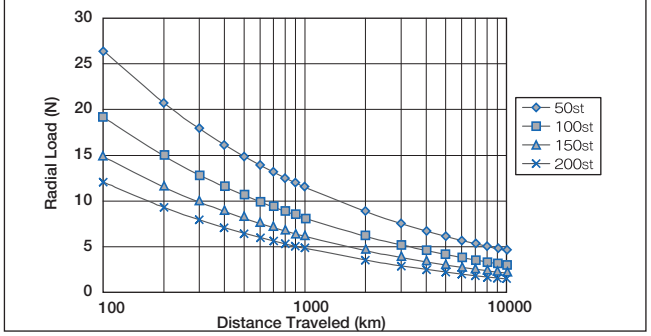
ERC2-RGD6C Type



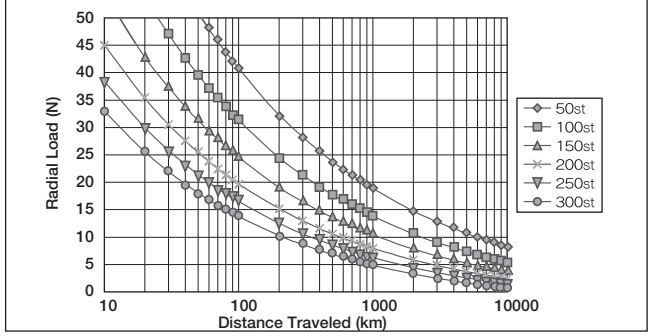
ERC2-RGD7C Type



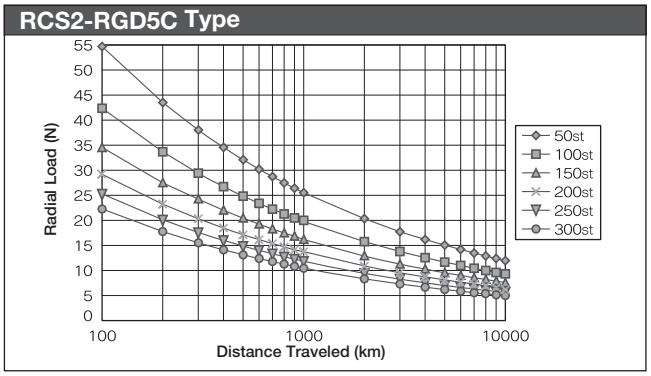
RCA / RCS2-RGD3□ Type



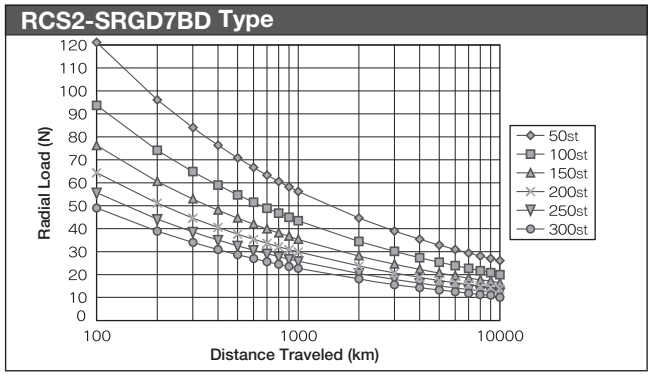
RCS2-RGD4□ Type



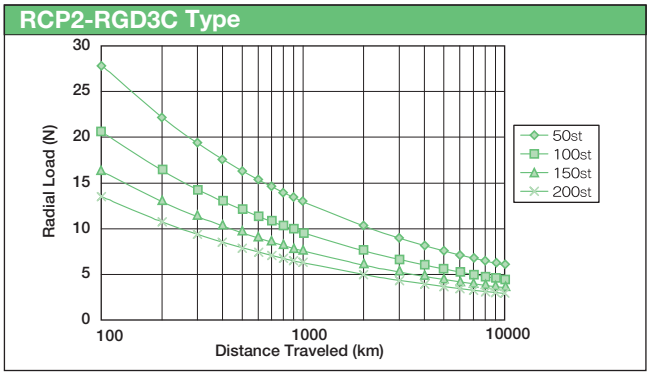
RCS2-RGD5C Type



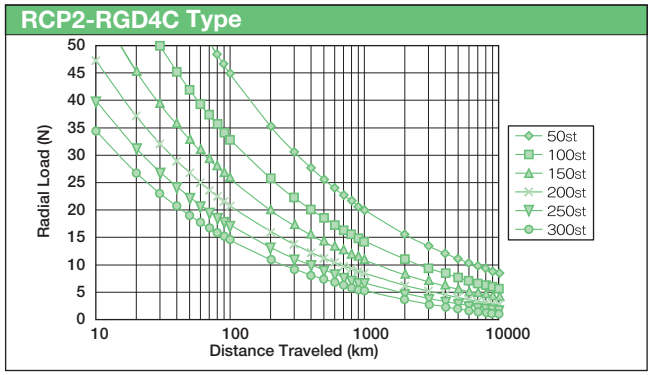
RCS2-SRGD7BD Type



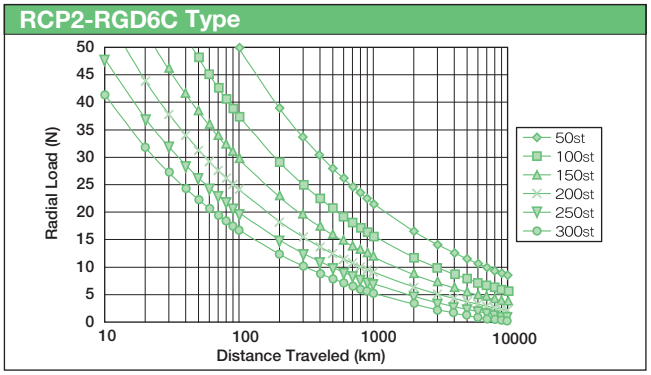
RCP2-RGD3C Type



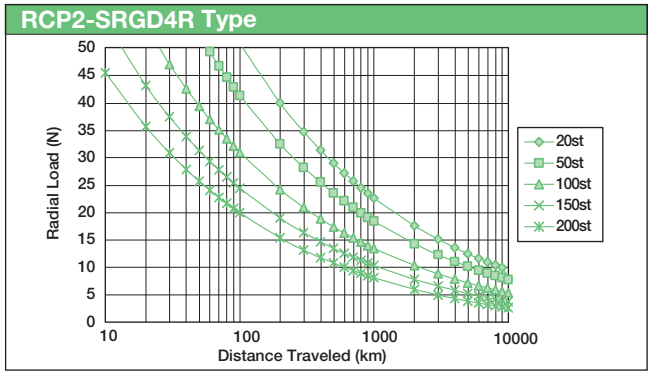
RCP2-RGD4C Type



RCP2-RGD6C Type



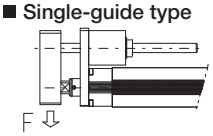
RCP2-SRGD4R Type



Radial Load & Tip Deflection

The graph below shows the correlation between the load exerted at the guide tip and the amount of deflection generated.

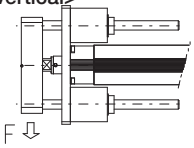
■ Single-guide type



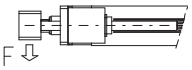
* The single-guide specification can only be used with vertical loads.

■ Double-guide type

<Vertical>

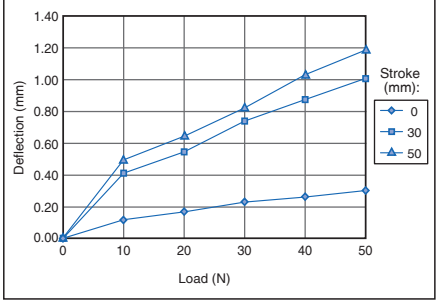


<Horizontal>

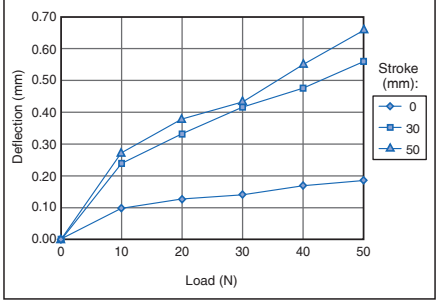


Single-guide

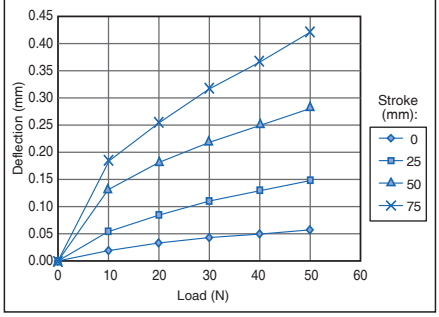
RCA2-GS3NA Type



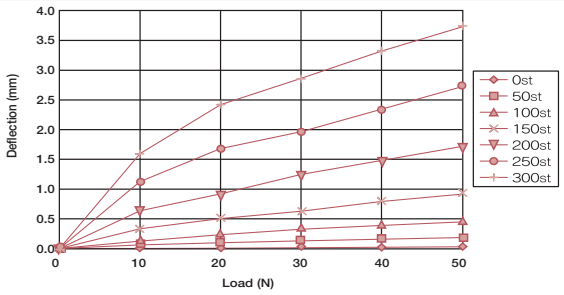
RCA2-GS4NA Type



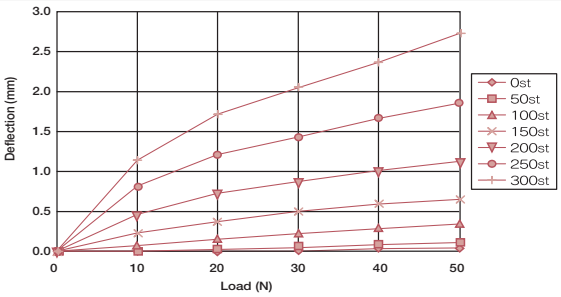
RCS2-GS5N Type



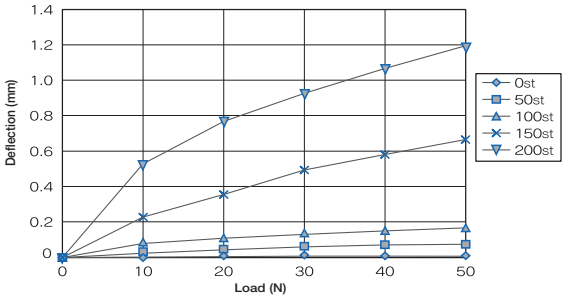
ERC2-RGS6C Type



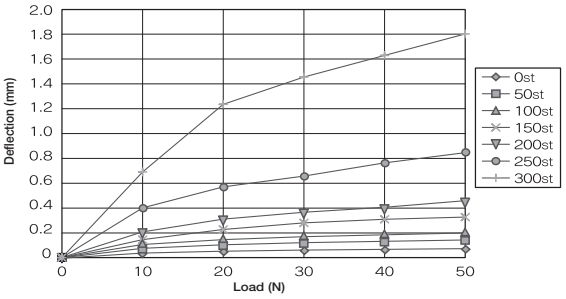
ERC2-RGS7C Type



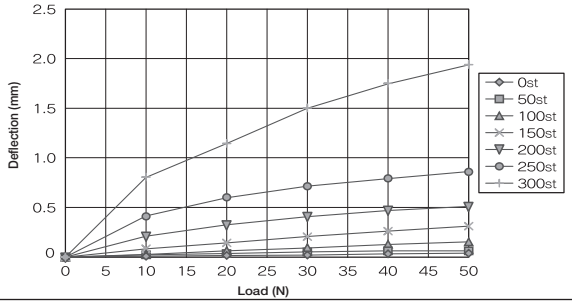
RCA / RCS2-RGS3□ Type



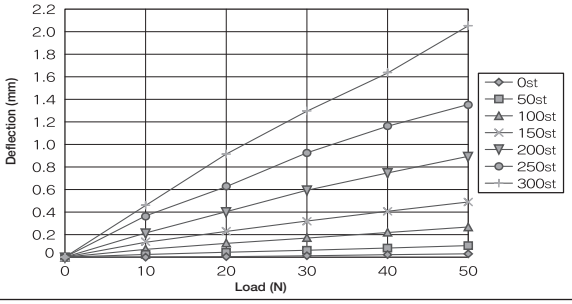
RCS2-RGS4□ Type



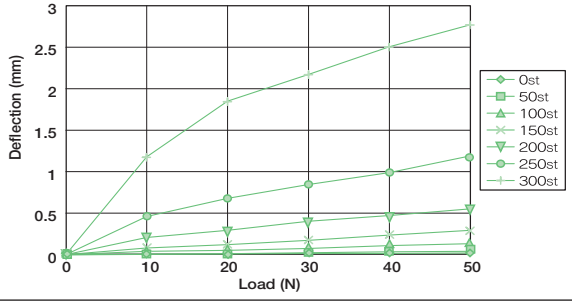
RCS2-RGS5C Type



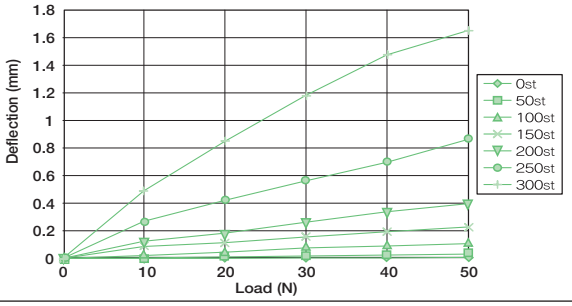
RCS2-SRGS7BD Type



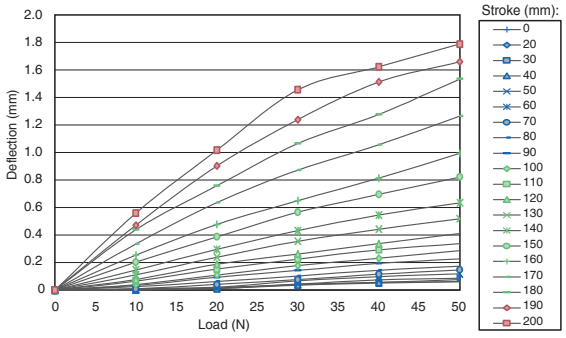
RCP2-RGS4C Type



RCP2-RGS6C Type



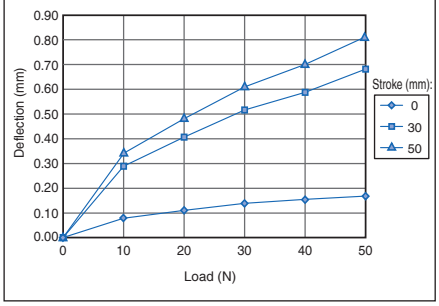
RCP2-SRGS4R Type



Double-Guide

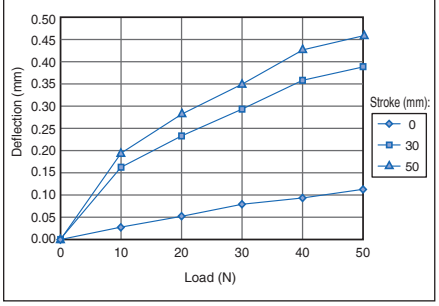
RCA2-GD3NA Type

■ Double-Guide <Vertical> Specification



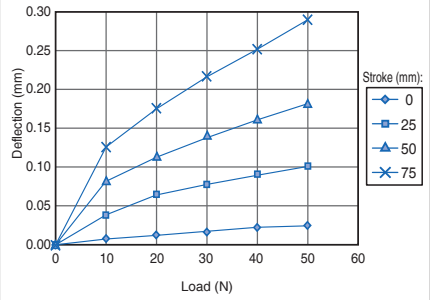
RCA2-GD4NA Type

■ Double-Guide <Vertical> Specification



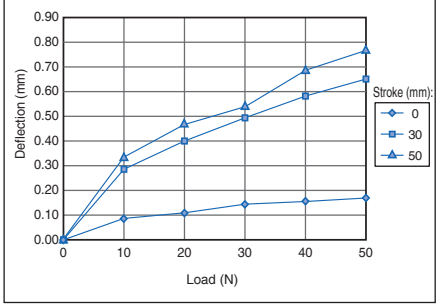
RCS2-GD5N Type

■ Double-Guide <Vertical> Specification



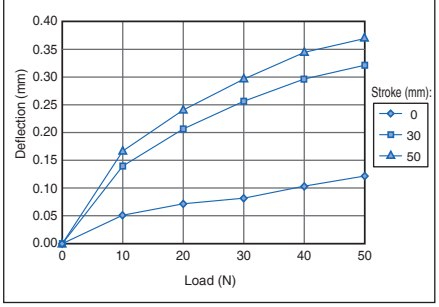
RCA2-GD3NA Type

■ Double-Guide <Horizontal> Specification



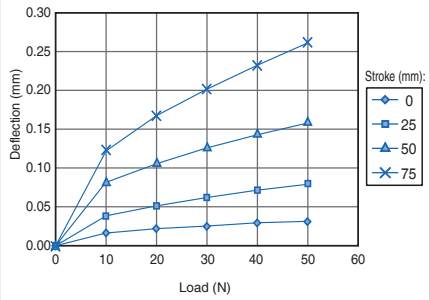
RCA2-GD4NA Type

■ Double-Guide <Horizontal> Specification



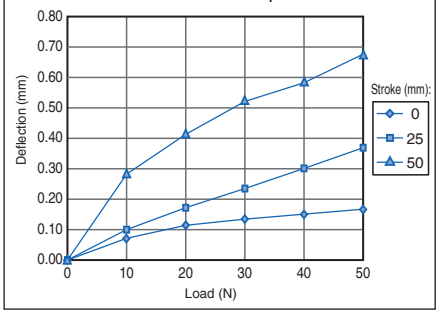
RCS2-GD5N Type

■ Double-Guide <Horizontal> Specification



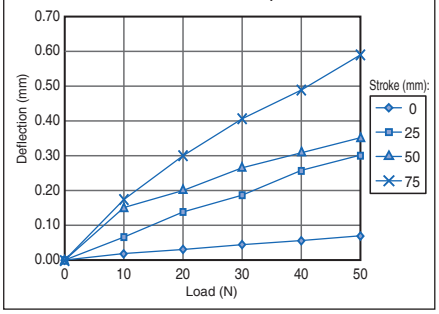
RCA2-SD3NA Type

■ Double-Guide <Vertical> Specification



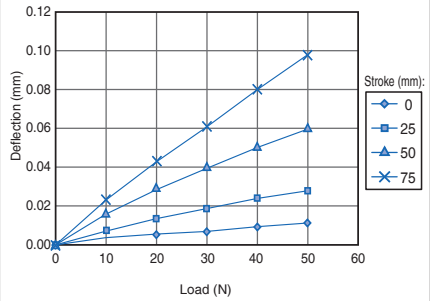
RCA2-SD4NA Type

■ Double-Guide <Vertical> Specification



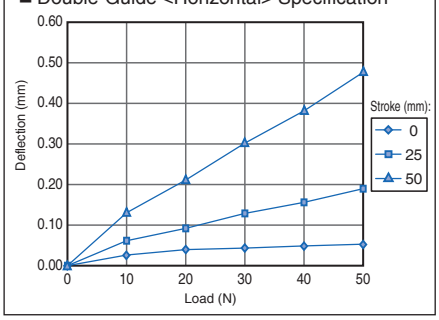
RCS2-SD5N Type

■ Double-Guide <Vertical> Specification



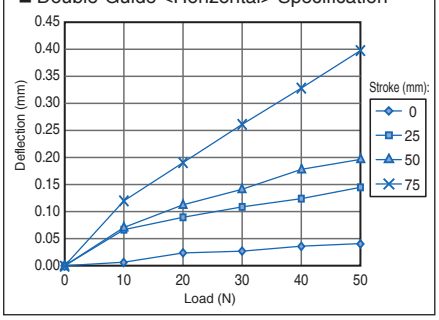
RCA2-SD3NA Type

■ Double-Guide <Horizontal> Specification



RCA2-SD4NA Type

■ Double-Guide <Horizontal> Specification



RCS2-SD5N Type

■ Double-Guide <Horizontal> Specification