

IAI

Quality and Innovation

Simple-to-use ELECYLINDER with Built-in Controller
High Rigidity Radial Cylinder Standard Type

Simple-to-use ELECYLINDER with Built-in Controller
Long Stroke High Rigidity Radial Cylinder Support Type

EC RR6/7AH

EC RR6/7XAH



Battery-less Absolute Encoder

No Battery,
No Maintenance, No Homing,
No Going Back to Incremental.

EC ELECYLINDER



Simple & Wireless
Operation

2 Position Actuator

www.iai-automation.com

Electric cylinder with no external guide required



High Rigidity Radial Cylinder



POINT **1**

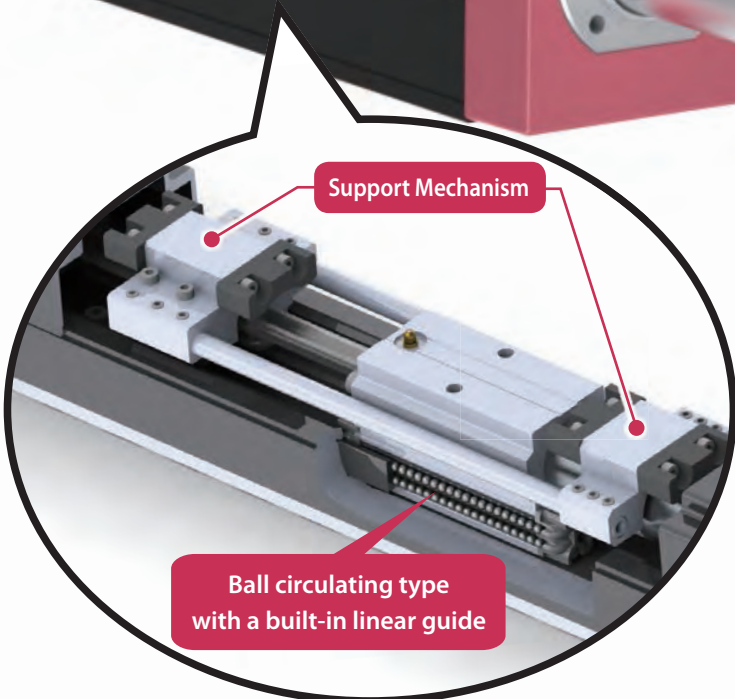
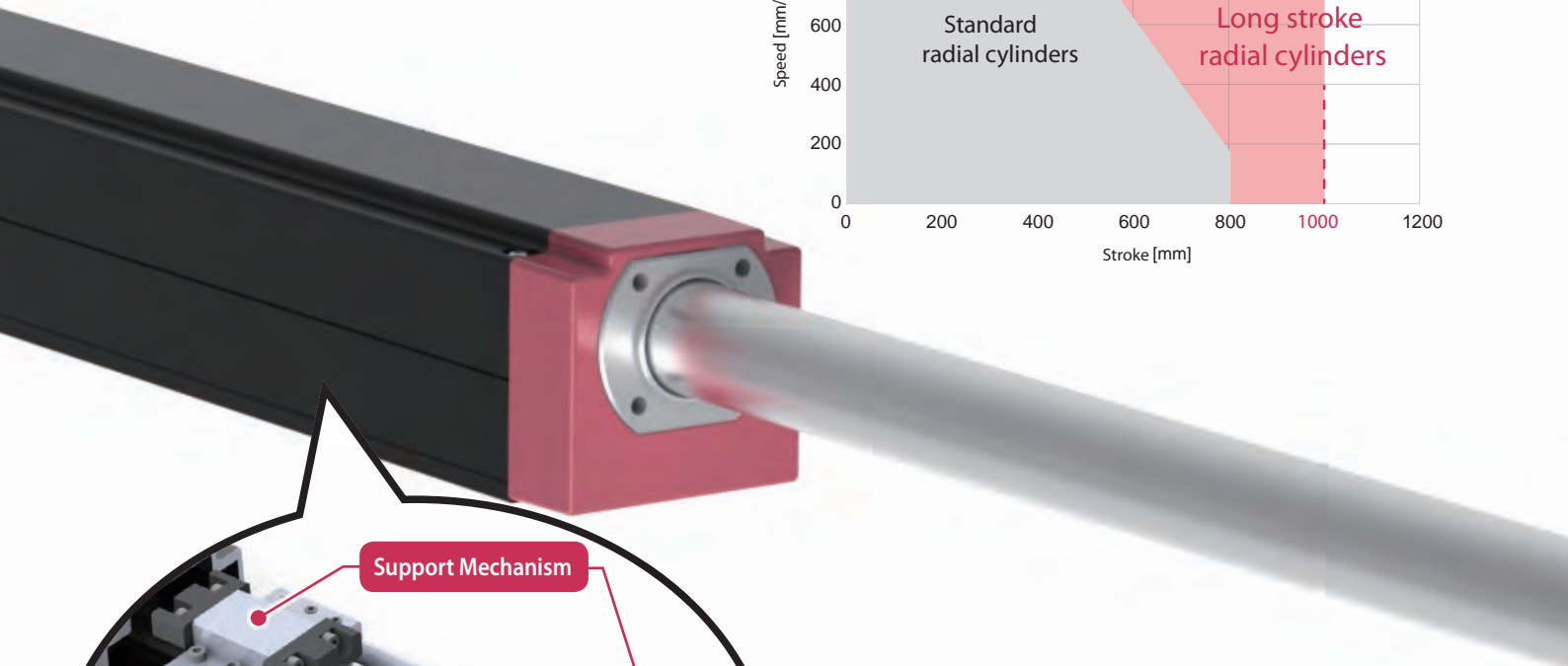
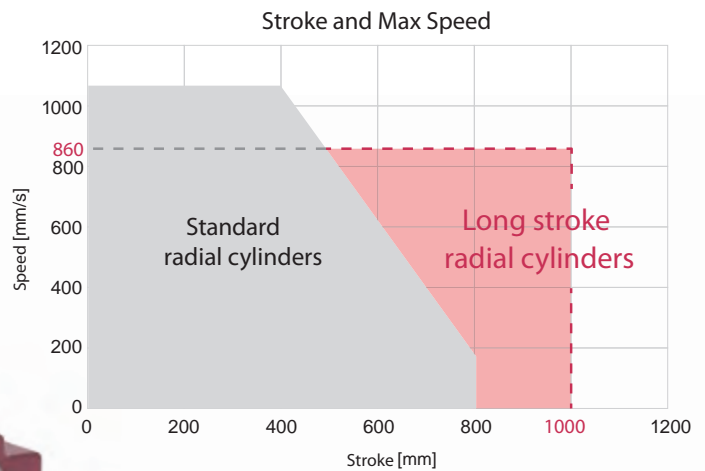
Maximum stroke

1000 mm

Maximum speed

860 mm/s

The support mechanism supports the ball screw, increasing the resonance range of the ball screw and greatly increasing the maximum speed.



POINT **2**

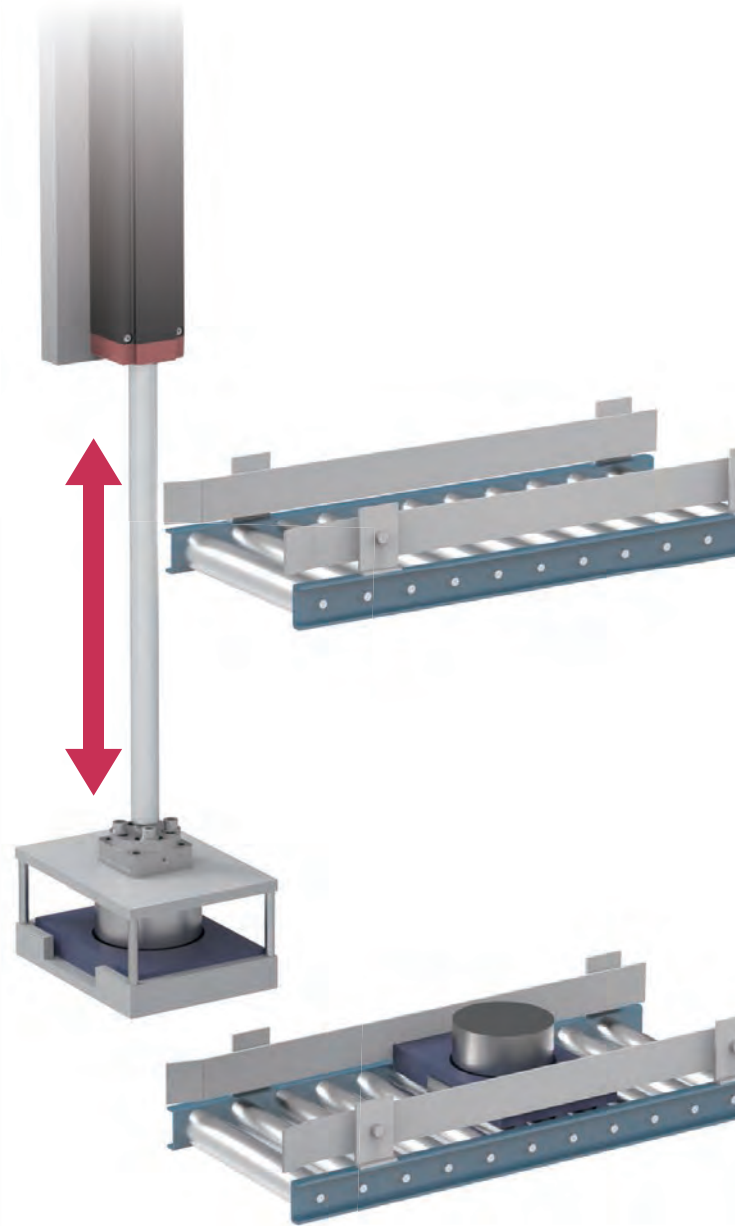
4-row linear guide built-in

Load is distributed over 4 rows of steel balls, allowing it to support a rod tip dynamic allowable radial load of up to 10N even at maximum stroke.

New product with a maximum stroke of **1000** mm!

POINT 3 Supports any installation position

Supports vertical mounting even at long strokes to support a range of applications.



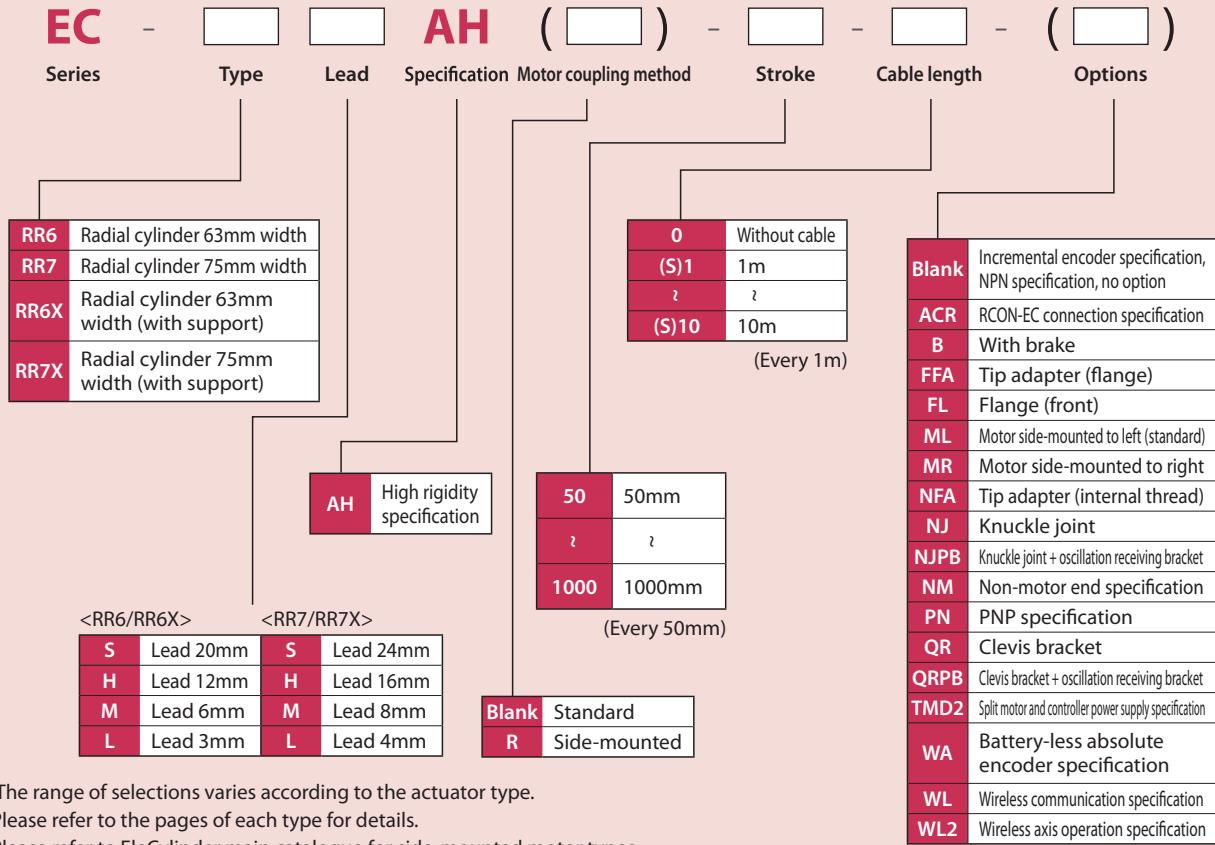
20N*

No problem even with radial load applied!

*Stroke of 750mm

Model Specification Items

ELECYLINDER

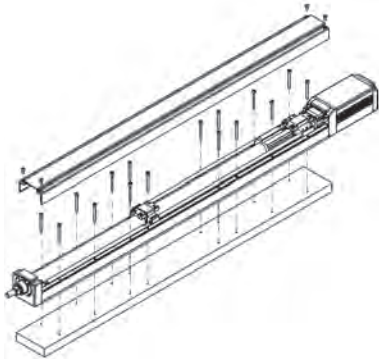


Specification Tables

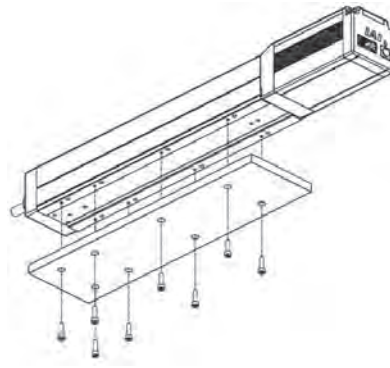
Type	Type	Lead Model	Stroke (mm) and max speed (mm/s)												Max. push force (N)	Max. payload (kg)		Reference page	
			mm	*Length of band = Stroke, * Numbers in band = Maximum speed by stroke, Numbers in <> are for vertical specification												Horizontal	Vertical		
				100	200	300	400	500	600	700	800	900	1000						
Straight motor	RR6□AH	S-	800												67	6	1.5	P.5	
		H-	700												112	25	4		
		M-	450												224	40	10		
		L-	225												449	60	20		
	RR6X□AH	S-	20	800												67	6	1.5	P.11
		H-	12	700												112	25	4	
		M-	6	330												224	40	10	
		L-	3	145												449	60	20	
Side-mounted motor	RR6□AHR	S-	800												67	6	1.5	Refer to EleCylinder main catalogue	
		H-	700												112	25	4		
		M-	450												224	40	10		
		L-	225												449	60	20		
Straight motor	RR7□AH	S-	860 <640>												182	20	3	P.8	
		H-	700 <560>												273	50	8		
		M-	350												547	60	18		
		L-	175												1094	80	28		
	RR7X□AH	S-	24	860 <640>												182	20	3	P.14
		H-	16	700 <560>												273	50	8	
		M-	8	350												547	60	18	
		L-	4	175												1094	80	28	
Side-mounted motor	RR7□AHR	S-	860 <640>												182	20	3	Refer to EleCylinder main catalogue	
		H-	640 <560>												273	50	8		
		M-	320 <280>												547	60	18		
		L-	150 <140>												1094	80	28		

Mounting method

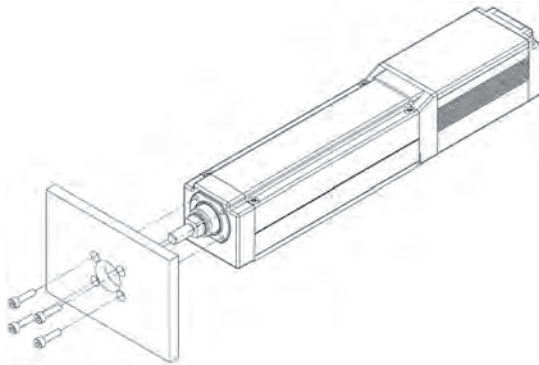
● Using the through hole on the body top



● Using the base bottom surface screw hole







● Using the front bracket screw hole



Mounting orientation

○: Can be mounted

			Mounting orientation			
						
Classification	Series	Type	Horizontal mounting on flat surface	Vertical mounting (*)	Side mounting	Ceiling mounting
Rod type	EC	RR6□AH	○	○	○	○
		RR7□AH	○	○	○	○
		RR6X□AH	○	○	○	○
		RR7X□AH	○	○	○	○

(*) When mounting vertically, make sure to install with the motor on top for straight motor types.

Installing with the motor on the bottom could cause grease to separate and base oil to leak into the motor, which could cause controller or motor encoder failure.

It is therefore not recommended to install the motor on the bottom side.

EC-RR6□AH

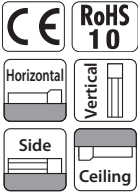


Body Width
63
mm

24v
Pulse
Motor

Model Specification Items

EC				AH						
Series	Type	Lead	Specification	Stroke	Power / I/O cable length	Options				
RR6	Standard	S 20mm H 12mm M 6mm L 3mm	AH High rigidity	50 ~ 550 50mm ~ 550mm (Every 50mm)	See power / I/O cable length below				See options below	



Radial Load Specification Radial Cylinder



- POINT Selection Notes**
- (1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.
 - (2) Radial cylinders are equipped with a built-in guide. Please refer to P. 20 for details on the radial load applied to rods.
 - (3) The value of the horizontal payload assumes that there is an external guide.
 - (4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 21 for applicable notes.
 - (5) Duty restriction is required, depending on the ambient operating temperature. Please refer to P. 21 for details.
 - (6) Special attention needs to be paid to the mounting orientation. Please refer to P. 4 for details.

Power / I/O cable length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 24 for details.
(Note) Robot cable.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	17
Brake	B	17
Tip adapter (flange)	FFA	17
Flange (front)	FL	17
Designated grease specification	G5	17
Tip adapter (internal thread)	NFA	18
Knuckle joint (Note 2)	NJ	18
Knuckle joint + oscillation receiving bracket (Note 2)	NJPB	18
Non-motor end specification	NM	18
PNP specification	PN	18
Clevis bracket (Note 2)	QR	19
Clevis bracket + oscillation receiving bracket (Note 2)	QRPB	19
split motor and controller power supply specification	TMD2	19
Battery-less absolute encoder specification	WA	19
Wireless communication specification	WL	19
Wireless axis operation specification	WL2	19

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Can be selected only for a stroke from 50 ~ 400mm. The clevis bracket (QR or QRPB) and knuckle joint (NJ or NJPB) are sold as a set. Assembly is required.

Main Specifications

Item		Description				
Lead	Ball screw lead (mm)	20	12	6	3	
	Max. payload (kg) (energy-saving disabled)	6	25	40	60	
Horizontal	Payload	Max. payload (kg) (energy-saving enabled)	6	25	40	40
		Max. speed (mm/s)	800	700	450	225
	Speed / acceleration / deceleration	Min. speed (mm/s)	25	15	8	4
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	1	1	1	1
		Max. payload (kg) (energy-saving disabled)	1.5	4	10	20
Vertical	Payload	Max. payload (kg) (energy-saving enabled)	1	4	10	20
		Max. speed (mm/s)	800	700	450	225
Vertical	Speed / acceleration / deceleration	Min. speed (mm/s)	25	15	8	4
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
		Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5
		Max. push force (N)	67	112	224	449
	Push	Max. push speed (mm/s)	20	20	20	20
		Brake specification	Non-excitation actuating solenoid brake			
Brake	Brake holding force (kgf)	1.5	4	10	20	
	Min. stroke (mm)	50	50	50	50	
Stroke	Max. stroke (mm)	550	550	550	550	
	Stroke pitch (mm)	50	50	50	50	

Item	Description
Drive system	Ball screw, ø10mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ø25mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 1)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s ²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 1) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

Energy-saving setting disabled The unit for payload is kg. If blank, operation is not possible.

Lead 20

Orientation	Horizontal Acceleration (G)						Vertical	
	Speed (mm/s)	0.3	0.5	0.7	1	0.3	0.5	
0	6	6	5	5	1.5	1.5		
160	6	6	5	5	1.5	1.5		
320	6	6	5	3	1.5	1.5		
480	6	6	5	3	1.5	1.5		
640	6	4	3	2	1.5	1.5		
800	4	3			1	1		

Lead 12

Orientation	Horizontal Acceleration (G)						Vertical	
	Speed (mm/s)	0.3	0.5	0.7	1	0.3	0.5	
0	25	18	16	12	4	4		
100	25	18	16	12	4	4		
200	25	18	16	10	4	4		
400	20	14	10	6	4	4		
500	15	8	6	4	3.5	3		
700	6	2			2	1		

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Horizontal Acceleration (G)						Vertical	
	Speed (mm/s)	0.3	0.5	0.7	1	0.3	0.5	
0	40	35	30	25	10	10		
50	40	35	30	25	10	10		
100	40	35	30	25	10	10		
200	40	30	25	20	10	10		
250	40	27.5	22.5	18	9	8		
350	30	14	12	10	5	5		
400	18	10	6	5	3	3		
450	8	3			2	1		

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Horizontal Acceleration (G)						Vertical	
	Speed (mm/s)	0.3	0.5	0.7	1	0.3	0.5	
0	60	50	45	40	20	20		
50	60	50	45	40	20	20		
100	60	50	45	40	20	20		
125	60	50	40	30	10	10		
175	40	35	25	20	6	5		
200	35	30	20	14	5	4.5		
225	16	16	10	6	5	4		

(Note) Refer to precautions when selecting "G5" option

Energy-saving setting enabled The unit for payload is kg.

Lead 20

Orientation	Horizontal Acceleration (G)			Vertical
	Speed (mm/s)	0.3	0.7	0.3
0	6	5	1	
160	6	5	1	
320	6	5	1	
480	4	3	1	
640	3	1	0.5	

Lead 12

Orientation	Horizontal Acceleration (G)			Vertical
	Speed (mm/s)	0.3	0.7	0.3
0	25	10	4	
100	25	10	4	
200	25	10	4	
300	20	8	3	
400	10	5	2	
500	5	2	1	

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Horizontal Acceleration (G)			Vertical
	Speed (mm/s)	0.3	0.7	0.3
0	40	20	10	
50	40	20	10	
100	40	20	10	
150	40	20	8	
200	35	18	5	
250	10	6	3	

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Horizontal Acceleration (G)			Vertical
	Speed (mm/s)	0.3	0.7	0.3
0	40	25	20	
25	40	25	20	
50	40	25	20	
75	40	25	12	
100	40	25	9	
125	40	25	5	

(Note) Refer to precautions when selecting "G5" option

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

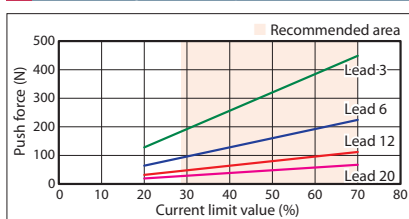
- Lead 12: 400mm/s or lower
- Lead 6: 200mm/s or lower
- Lead 3: 100mm/s or lower

Stroke and maximum speed

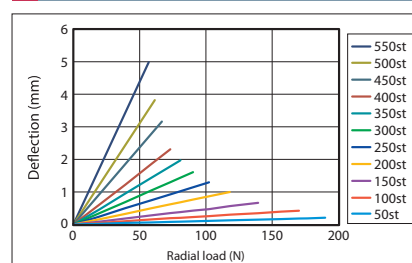
Lead (mm)	Energy-saving setting	50 ~ 550 (Every 50mm)
20	Disabled	800
	Enabled	640
12	Disabled	700
	Enabled	500
6	Disabled	450
	Enabled	250
3	Disabled	225
	Enabled	125

(Unit: mm/s)

Correlation diagrams between push force and current limit



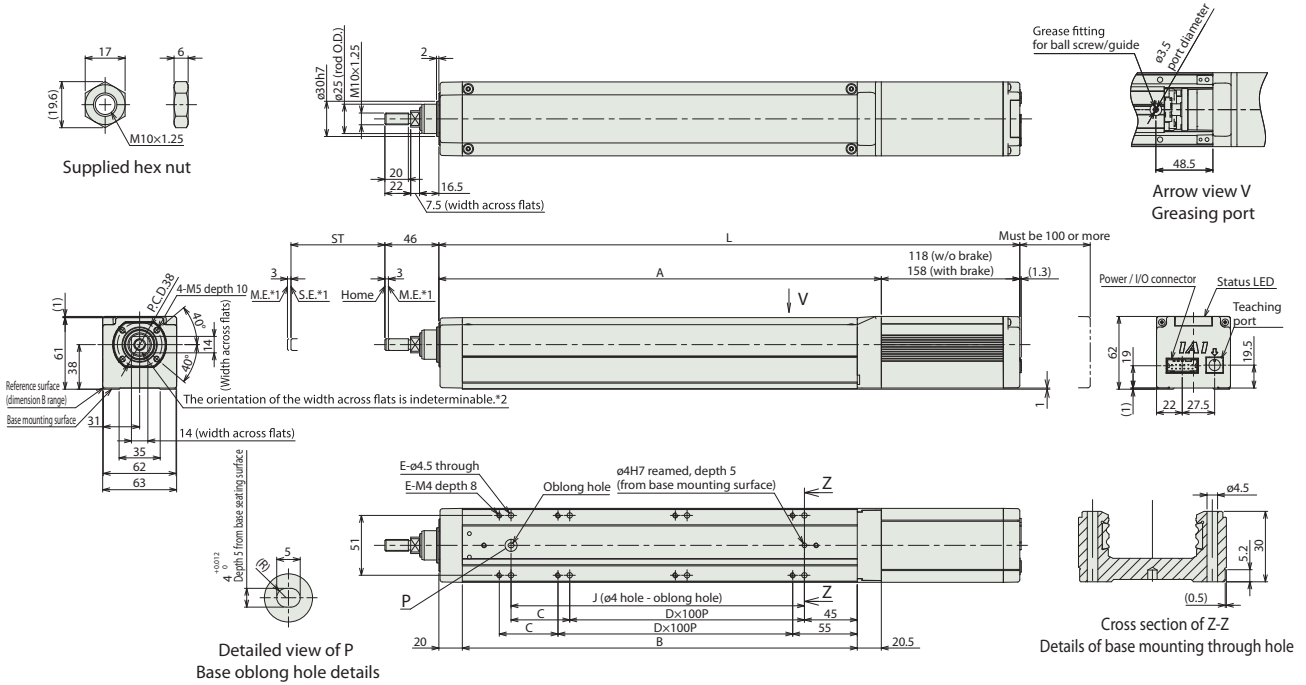
Rod deflection (reference values)



EC-RR6□AH

*1 When the rod is returning to its home position, please be mindful of possible interference from surrounding objects, as it will travel until it reaches the M.E.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



Dimensions by stroke

Stroke	50	100	150	200	250	300	350	400	450	500	550	
L	Without brake	345	395	445	495	545	595	645	695	745	795	845
	With brake	385	435	485	535	585	635	685	735	785	835	885
A	227	277	327	377	427	477	527	577	627	677	727	
B	186.5	236.5	286.5	336.5	386.5	436.5	486.5	536.5	586.5	636.5	686.5	
C	0	50	0	50	0	50	0	50	0	50	0	
D	1	1	2	2	3	3	4	4	5	5	6	
E	4	6	6	8	8	10	10	12	12	14	14	
J	100	150	200	250	300	350	400	450	500	550	600	

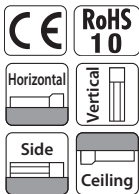
Mass by stroke

Stroke	50	100	150	200	250	300	350	400	450	500	550	
Mass (kg)	Without brake	2	2.2	2.5	2.8	3	3.3	3.6	3.8	4.1	4.4	4.7
	With brake	2.3	2.5	2.8	3.1	3.3	3.6	3.9	4.1	4.4	4.6	4.9

EC-RR7□AH

Coupled Motor	Body Width 75 mm	24v Pulse Motor
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Model Specification Items			
EC			AH
Series	Type	Lead	Specification
RR7	Standard	S 24mm H 16mm M 8mm L 4mm	AH High rigidity
		Stroke	Power / I/O cable length
		50 700	50mm 700mm (Every 50mm)
			Options
			See power / I/O cable length below
			See options below



Radial Load Specification
Radial Cylinder



- POINT Selection Notes**
- (1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.
 - (2) Radial cylinders are equipped with a built-in guide. Please refer to P. 20 for details on the radial load applied to rods.
 - (3) The value of the horizontal payload assumes that there is an external guide.
 - (4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 21 for applicable notes.
 - (5) Duty restriction is required, depending on the ambient operating temperature. Please refer to P. 21 for details.
 - (6) Special attention needs to be paid to the mounting orientation. Please refer to P. 4 for details.

Power / I/O cable length

Standard connector cable			
Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note 2) Only terminal block connector is included. Please refer to P. 24 for details.
(Note) Robot cable.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
(Note) Robot cable.

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	17
Brake	B	17
Tip adapter (flange)	FFA	17
Flange (front)	FL	17
Designated grease specification	G5	17
Tip adapter (internal thread)	NFA	18
Knuckle joint (Note 2)	NJ	18
Knuckle joint + oscillation receiving bracket (Note 2)	NJPB	18
Non-motor end specification	NM	18
PNP specification	PN	18
Clevis bracket (Note 2)	QR	19
Clevis bracket + oscillation receiving bracket (Note 2)	QRPB	19
split motor and controller power supply specification	TMD2	19
Battery-less absolute encoder specification	WA	19
Wireless communication specification	WL	19
Wireless axis operation specification	WL2	19

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.
(Note 2) Can be selected only for a stroke from 50 ~ 500mm. The clevis bracket (QR or QRPB) and knuckle joint (NJ or NJPB) are sold as a set. Assembly is required.

Main Specifications

Item		Description				
Lead	Ball screw lead (mm)	24	16	8	4	
	Horizontal	Max. payload (kg) (energy-saving disabled)	20	50	60	80
		Max. payload (kg) (energy-saving enabled)	18	40	50	55
		Max. speed (mm/s)	860	700	350	175
	Speed / acceleration / deceleration	Min. speed (mm/s)	30	20	10	5
Rated acceleration/deceleration (G)		0.3	0.3	0.3	0.3	
Max. acceleration/deceleration (G)		1	1	1	1	
Max. payload (kg) (energy-saving disabled)		3	8	18	28	
Vertical	Max. payload (kg) (energy-saving enabled)	3	5	17.5	26	
	Max. speed (mm/s)	640	560	350	175	
	Min. speed (mm/s)	30	20	10	5	
	Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3	
	Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5	
Push	Max. push force (N)	182	273	547	1094	
	Max. push speed (mm/s)	20	20	20	20	
Brake	Brake specification	Non-excitation actuating solenoid brake				
	Brake holding force (kgf)	3	8	18	28	
Stroke	Min. stroke (mm)	50	50	50	50	
	Max. stroke (mm)	700	700	700	700	
	Stroke pitch (mm)	50	50	50	50	

Item	Description
Drive system	Ball screw ø12mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ø30mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 1)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s ²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 1) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

■ **Energy-saving setting disabled** The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Speed (mm/s)	Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
Horizontal	0	20	18	15	12	3	3
Horizontal	200	20	18	15	12	3	3
Horizontal	400	20	14	12	8	3	3
Horizontal	420	17	12	10	6	3	3
Horizontal	600	14	6	5	4	3	2
Horizontal	640	5	3	2	1.5	2	1
Horizontal	800	5	1	1			
Horizontal	860	2	0.5				
Vertical	0						
Vertical	200						
Vertical	420						
Vertical	600						
Vertical	640						
Vertical	800						
Vertical	860						

Lead 16

Orientation	Speed (mm/s)	Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
Horizontal	0	50	40	35	30	8	8
Horizontal	140	50	40	35	30	8	8
Horizontal	280	50	35	25	20	7	7
Horizontal	420	25	18	14	10	4.5	4
Horizontal	560	10	5	3	2	2	1
Horizontal	700	2					
Vertical	0						
Vertical	140						
Vertical	280						
Vertical	420						
Vertical	560						
Vertical	700						

(Note) Refer to precautions when selecting "G5" option

Lead 8

Orientation	Speed (mm/s)	Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
Horizontal	0	60	50	45	40	18	18
Horizontal	70	60	50	45	40	18	18
Horizontal	140	60	50	45	40	16	12
Horizontal	210	60	40	31	26	10	9
Horizontal	280	34	20	15	11	5	4
Horizontal	350	12	4	1		2	1
Vertical	0						
Vertical	70						
Vertical	140						
Vertical	210						
Vertical	280						
Vertical	350						

(Note) Refer to precautions when selecting "G5" option

Lead 4

Orientation	Speed (mm/s)	Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
Horizontal	0	80	70	65	60	28	28
Horizontal	35	80	70	65	60	28	28
Horizontal	70	80	70	65	60	28	28
Horizontal	105	80	60	50	40	18	18
Horizontal	140	50	30	20	15	12	10
Horizontal	175	15				2	
Vertical	0						
Vertical	35						
Vertical	70						
Vertical	105						
Vertical	140						
Vertical	175						

(Note) Refer to precautions when selecting "G5" option

■ **Energy-saving setting enabled** The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Speed (mm/s)	Acceleration (G)		
		0.3	0.7	0.3
Horizontal	0	18	9.5	3
Horizontal	200	18	9.5	3
Horizontal	420	10	5	1.5
Horizontal	630	1		
Vertical	0			
Vertical	200			
Vertical	420			
Vertical	630			

Lead 16

Orientation	Speed (mm/s)	Acceleration (G)		
		0.3	0.7	0.3
Horizontal	0	40	25	5
Horizontal	140	40	25	5
Horizontal	280	18	12	2
Horizontal	420	1.5	1	
Vertical	0			
Vertical	140			
Vertical	280			
Vertical	420			

Lead 8

Orientation	Speed (mm/s)	Acceleration (G)		
		0.3	0.7	0.3
Horizontal	0	50	30	17.5
Horizontal	70	50	30	17.5
Horizontal	140	50	30	7
Horizontal	210	14	7	2
Vertical	0			
Vertical	70			
Vertical	140			
Vertical	210			

Lead 4

Orientation	Speed (mm/s)	Acceleration (G)		
		0.3	0.7	0.3
Horizontal	0	55	50	26
Horizontal	35	55	50	26
Horizontal	70	55	50	13
Horizontal	105	30	15	2
Vertical	0			
Vertical	35			
Vertical	70			
Vertical	105			

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

- Lead 16: 560mm/s or lower
- Lead 8: 280mm/s or lower
- Lead 4: 140mm/s or lower

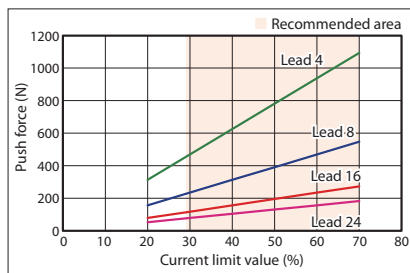
Stroke and maximum speed

Lead (mm)	Energy-saving setting	50 ~ 700 (Every 50mm)
24	Disabled	860 <640>
	Enabled	630 <420>
16	Disabled	700 <560>
	Enabled	420 <280>
8	Disabled	350
	Enabled	210
4	Disabled	175
	Enabled	105

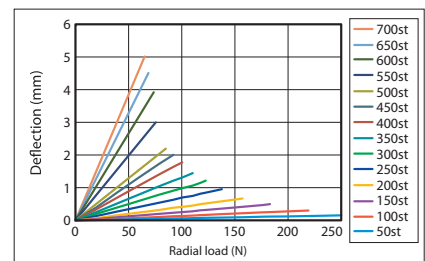
(Unit: mm/s)

(Note) Values in brackets < > are for vertical use.

Correlation diagrams between push force and current limit



Rod deflection (reference values)



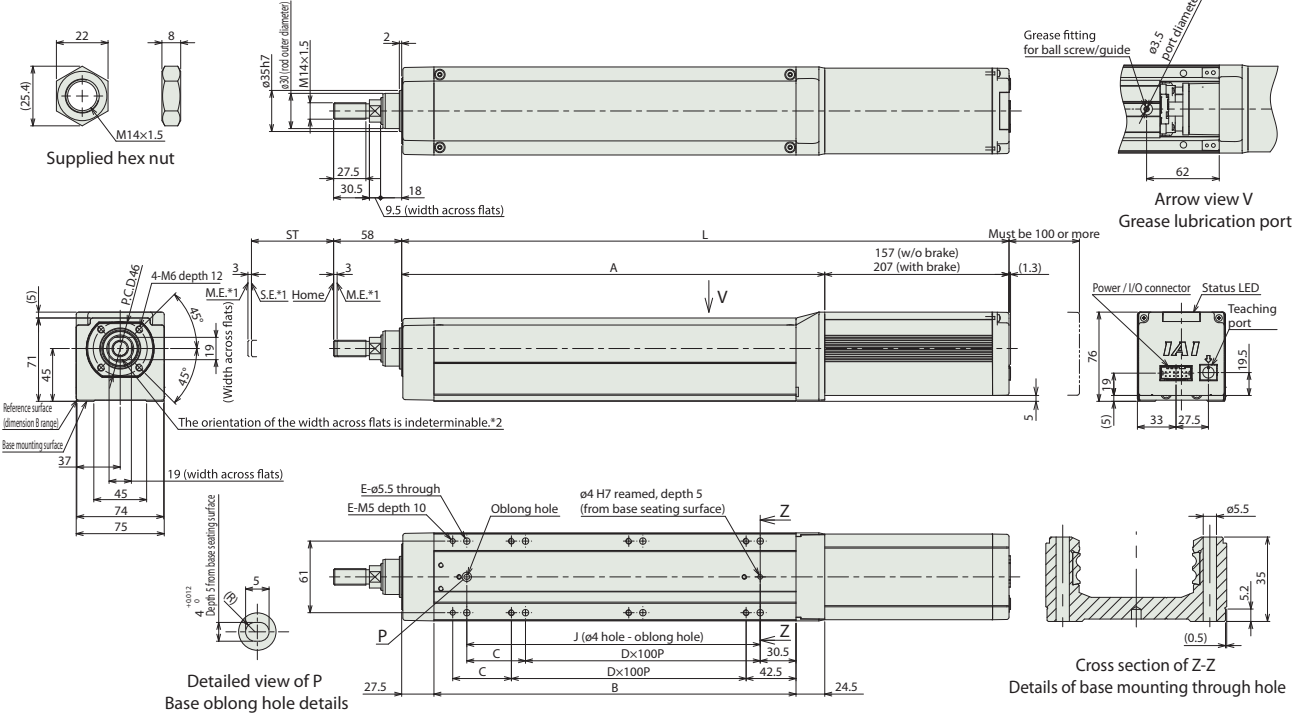
Dimensions

CAD drawings can be downloaded from our website.
www.elecylinder.de 2D CAD 3D CAD

■ EC-RR7□AH

*1 When the rod is returning to its home position, please be mindful of possible interference from surrounding objects, as it will travel until it reaches the M.E.
 *2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



■ Dimensions by stroke

Stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	
L	Without brake	417.5	467.5	517.5	567.5	617.5	667.5	717.5	767.5	817.5	867.5	917.5	967.5	1017.5	1067.5
	With brake	467.5	517.5	567.5	617.5	667.5	717.5	767.5	817.5	867.5	917.5	967.5	1017.5	1067.5	1117.5
A	260.5	310.5	360.5	410.5	460.5	510.5	560.5	610.5	660.5	710.5	760.5	810.5	860.5	910.5	
B	208.5	258.5	308.5	358.5	408.5	458.5	508.5	558.5	608.5	658.5	708.5	758.5	808.5	858.5	
C	50	0	50	0	50	0	50	0	50	0	50	0	50	0	
D	1	2	2	3	3	4	4	5	5	6	6	7	7	8	
E	6	6	8	8	10	10	12	12	14	14	16	16	18	18	
J	150	200	250	300	350	400	450	500	550	600	650	700	750	800	

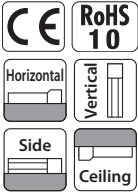
■ Mass by stroke

Stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	
Mass (kg)	Without brake	4	4.4	4.7	5	5.4	5.7	6	6.4	6.7	7	7.5	7.8	8.2	8.6
	With brake	4.5	4.9	5.2	5.5	5.9	6.2	6.5	6.9	7.2	7.5	8	8.3	8.7	9.1

EC-RR6X□AH



Model Specification Items			
EC			AH
Series	Type	Lead	Specification
RR6X	Support	S 20mm H 12mm M 6mm L 3mm	AH High rigidity
			Stroke
			600 ↑ 1000
			600mm ↑ 1000mm (Every 50mm)
			Power / I/O cable length
			See power / I/O cable length below
			Options
			See options below



Radial Load Specification
Radial Cylinder



	(1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.
	(2) Radial cylinders are equipped with a built-in guide. Please refer to P. 20 for details on the radial load applied to rods.
	(3) The value of the horizontal payload assumes that there is an external guide.
	(4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 21 for applicable notes. Pushing may vary depending on the deflection of the rod. If using for pushing, please mount an external guide.
	(5) Duty restriction is required, depending on the ambient operating temperature. Please refer to P. 21 for details.
	(6) Special attention needs to be paid to the mounting orientation. Please refer to P. 4 for details.
	(7) Cannot be used for oscillating motion.

Power / I/O cable length

Standard connector cable			
Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
 (Note 2) Only terminal block connector is included. Please refer to P. 24 for details.
 (Note) Robot cable.

4-way connector cable			
Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
 (Note) Robot cable.

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	17
Brake	B	17
Tip adapter (flange)	FFA	17
Flange (front)	FL	17
Designated grease specification	G5	17
Tip adapter (internal thread)	NFA	18
Non-motor end specification	NM	18
PNP specification	PN	18
split motor and controller power supply specification	TMD2	19
Battery-less absolute encoder specification	WA	19
Wireless communication specification	WL	19
Wireless axis operation specification	WL2	19

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.

Main Specifications

Item		Description			
Lead	Ball screw lead (mm)	20	12	6	3
	Max. payload (kg) (energy-saving disabled)	6	25	40	60
Horizontal Payload	Max. payload (kg) (energy-saving enabled)	6	25	40	40
	Max. speed (mm/s)	800	700	330	145
	Min. speed (mm/s)	25	15	8	4
	Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
	Max. acceleration/deceleration (G)	1	1	1	1
	Max. payload (kg) (energy-saving disabled)	1.5	4	10	20
Vertical Payload	Max. payload (kg) (energy-saving enabled)	1	4	10	20
	Max. speed (mm/s)	800	700	330	145
	Min. speed (mm/s)	25	15	8	4
	Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
	Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5
	Max. payload (kg) (energy-saving disabled)	1.5	4	10	20
Push	Max. push force (N)	67	112	224	449
	Max. push speed (mm/s)	20	20	20	20
Brake	Brake specification	Non-excitation actuating solenoid brake			
	Brake holding force (kgf)	1.5	4	10	20
Stroke	Min. stroke (mm)	600	600	600	600
	Max. stroke (mm)	1000	1000	1000	1000
	Stroke pitch (mm)	50	50	50	50

Item	Description
Drive system	Ball screw, ø10mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ø25mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 1)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s ²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 1) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

■ Energy-saving setting disabled The unit for payload is kg. If blank, operation is not possible.

Lead 20

Orientation	Speed (mm/s)	Horizontal Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
	0	6	6	5	5	1.5	1.5
	160	6	6	5	5	1.5	1.5
	320	6	6	5	3	1.5	1.5
	480	6	6	3	2	1.5	1.5
	640	6	4	2		1	1
	800	4	3			0.5	

Lead 12

Orientation	Speed (mm/s)	Horizontal Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
	0	25	18	16	12	4	4
	100	25	18	16	12	4	4
	200	23	18	16	10	4	4
	400	20	14	10	6	4	4
	500	15	8	6	2	3	2.5
	700	6	2			0.5	

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Speed (mm/s)	Horizontal Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
	0	40	35	30	25	10	10
	50	40	35	30	25	10	10
	100	40	35	30	25	10	10
	200	40	30	25	20	10	10
	250	40	27.5	22.5	18	9	8
	330	29	14	10	6	5	4

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Speed (mm/s)	Horizontal Acceleration (G)					
		0.3	0.5	0.7	1	0.3	0.5
	0	60	50	45	40	20	20
	50	60	50	45	40	20	20
	100	60	50	45	40	20	20
	125	60	50	40	30	10	10
	145	40	35	25	20	6	5

(Note) Refer to precautions when selecting "G5" option

■ Energy-saving setting enabled The unit for payload is kg.

Lead 20

Orientation	Speed (mm/s)	Horizontal Acceleration (G)		
		0.3	0.7	0.3
	0	6	5	1
	160	6	5	1
	320	6	5	1
	480	4	3	1
	640	3	1	0.5

Lead 12

Orientation	Speed (mm/s)	Horizontal Acceleration (G)		
		0.3	0.7	0.3
	0	25	10	4
	100	25	10	4
	200	25	10	4
	280	20	8	3
	400	10	5	2
	500	5	2	1

(Note) Refer to precautions when selecting "G5" option

Lead 6

Orientation	Speed (mm/s)	Horizontal Acceleration (G)		
		0.3	0.7	0.3
	0	40	20	10
	50	40	20	10
	100	40	20	10
	150	40	20	8
	200	35	18	5
	250	10	6	3

(Note) Refer to precautions when selecting "G5" option

Lead 3

Orientation	Speed (mm/s)	Horizontal Acceleration (G)		
		0.3	0.7	0.3
	0	40	25	20
	25	40	25	20
	50	40	25	20
	100	40	25	12
	125	40	25	5

(Note) Refer to precautions when selecting "G5" option

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

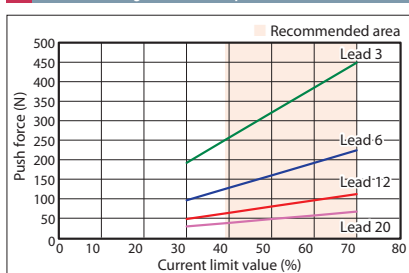
- Lead 12: 400mm/s or lower
- Lead 6: 200mm/s or lower
- Lead 3: 100mm/s or lower

Stroke and maximum speed

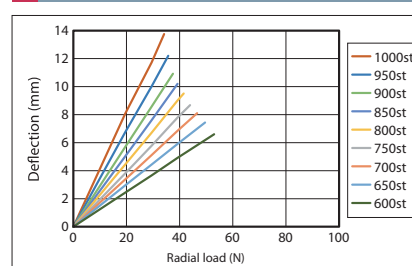
Lead (mm)	Energy-saving setting	600 ~ 1000 (Every 50mm)
20	Disabled	800
	Enabled	640
12	Disabled	700
	Enabled	500
6	Disabled	330
	Enabled	250
3	Disabled	145
	Enabled	125

(Unit: mm/s)

Correlation diagrams between push force and current limit



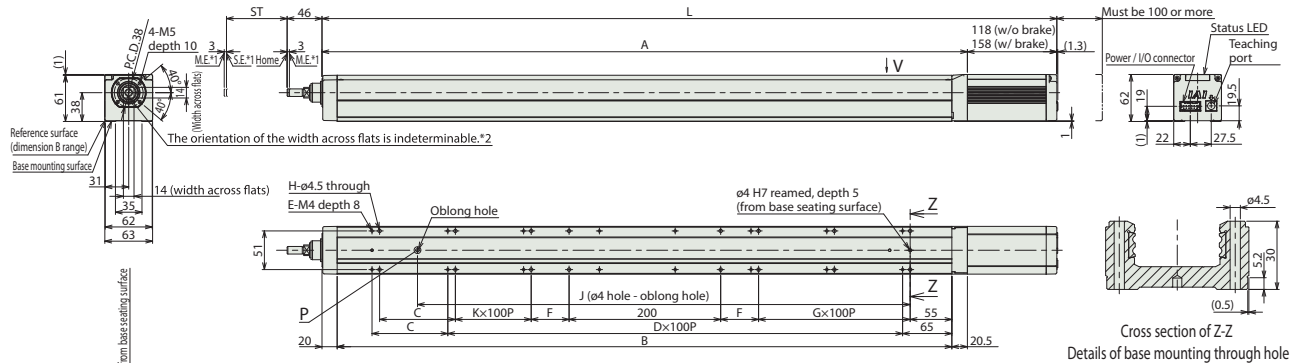
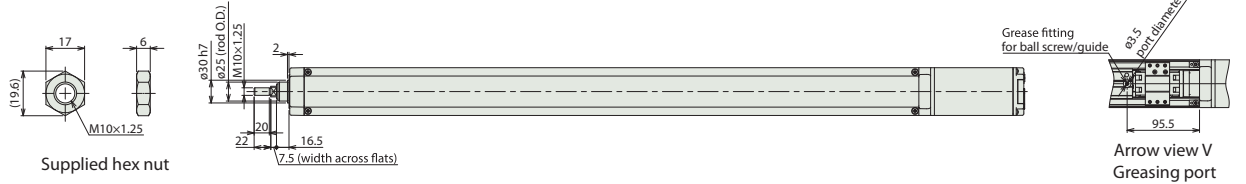
Rod deflection (reference values)



EC-RR6X□AH

*1 When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
*2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



Detailed view of P
Base oblong hole details

Dimensions by stroke

Stroke	600	650	700	750	800	850	900	950	1000	
L	Without brake	969.5	1019.5	1069.5	1119.5	1169.5	1219.5	1269.5	1319.5	1369.5
	With brake	1009.5	1059.5	1109.5	1159.5	1209.5	1259.5	1309.5	1359.5	1409.5
A	851.5	901.5	951.5	1001.5	1051.5	1101.5	1151.5	1201.5	1251.5	
B	811	861	911	961	1011	1061	1111	1161	1211	
C	100	50	100	50	100	50	100	50	100	
D	6	7	7	8	8	9	9	10	10	
E	16	18	18	20	20	22	22	24	24	
F	50	0	0	50	50	0	0	50	50	
G	2	3	3	3	3	4	4	4	4	
H	16	16	16	20	20	20	20	24	24	
J	650	700	750	800	850	900	950	1000	1050	
K	1	2	2	2	2	3	3	3	3	

Mass by stroke

Stroke	600	650	700	750	800	850	900	950	1000
Mass (kg)	Without brake	5.6	5.9	6.2	6.5	6.8	7	7.3	7.9
	With brake	5.9	6.2	6.5	6.8	7.1	7.3	7.6	8.2

EC-RR7X□AH

Coupled Motor

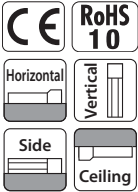
Support Mechanism

Body Width **75 mm**

24v Pulse Motor

Model Specification Items

EC		AH							
Series	Type	Lead	Specification	Stroke		Power / I/O cable length		Options	
RR7X	Support	S 24mm H 16mm M 8mm L 4mm	AH High rigidity	750 ↑ 1000	750mm ↑ 1000mm (Every 50mm)	See power / I/O cable length below		See options below	



Radial Load Specification Radial Cylinder



- (1) "Main Specifications" displays the payload's maximum value. If the energy-saving setting is enabled, the main specifications will change. Please refer to "Table of Payload by Speed/Acceleration" for details.
- (2) Radial cylinders are equipped with a built-in guide. Please refer to P. 20 for details on the radial load applied to rods.
- (3) The value of the horizontal payload assumes that there is an external guide.
- (4) If performing push-motion operations, refer to the "Correlation between Push Force and Current Limit" diagram. The push forces listed are only reference values. Please refer to P. 21 for applicable notes. Pushing may vary depending on the deflection of the rod. If using for pushing, please mount an external guide.
- (5) Duty restriction is required, depending on the ambient operating temperature. Please refer to P. 21 for details.
- (6) Special attention needs to be paid to the mounting orientation. Please refer to P. 4 for details.
- (7) Cannot be used for oscillating motion.

Power / I/O cable length

Standard connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
0	No cable	Terminal block supplied (Note 2)	CB-REC-PWBIO□□□-RB supplied
1 ~ 3	1 ~ 3m	CB-EC-PWBIO□□□-RB supplied	
4 ~ 5	4 ~ 5m		
6 ~ 7	6 ~ 7m		
8 ~ 10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
 (Note 2) Only terminal block connector is included. Please refer to P. 24 for details.
 (Note) Robot cable.

4-way connector cable

Cable code	Cable length	User wiring specification (flying leads)	RCON-EC connection specification (Note 1) (with connectors on both edges)
S1 ~ S3	1 ~ 3m	CB-EC2-PWBIO□□□-RB supplied	CB-REC2-PWBIO□□□-RB supplied
S4 ~ S5	4 ~ 5m		
S6 ~ S7	6 ~ 7m		
S8 ~ S10	8 ~ 10m		

(Note 1) If RCON-EC connection specification (ACR) is selected as an option.
 (Note) Robot cable.

Options

Name	Option code	Reference page
RCON-EC connection specification (Note 1)	ACR	17
Brake	B	17
Tip adapter (flange)	FFA	17
Flange (front)	FL	17
Designated grease specification	G5	17
Tip adapter (internal thread)	NFA	18
Non-motor end specification	NM	18
PNP specification	PN	18
split motor and controller power supply specification	TMD2	19
Battery-less absolute encoder specification	WA	19
Wireless communication specification	WL	19
Wireless axis operation specification	WL2	19

(Note 1) If the RCON-EC connection specification (ACR) is selected, the PNP specification (PN) and split motor and controller power supply specification (TMD2) cannot be selected.

Main Specifications

Item		Description				
Horizontal	Lead	Ball screw lead (mm)	24	16	8	4
		Max. payload (kg) (energy-saving disabled)	20	50	60	80
	Payload	Max. payload (kg) (energy-saving enabled)	18	40	50	55
		Max. speed (mm/s)	860	700	350	175
	Speed / acceleration / deceleration	Min. speed (mm/s)	30	20	10	5
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
Vertical	Payload	Max. acceleration/deceleration (G)	1	1	1	1
		Max. payload (kg) (energy-saving disabled)	3	8	18	28
	Speed / acceleration / deceleration	Max. payload (kg) (energy-saving enabled)	3	5	17.5	26
		Max. speed (mm/s)	640	560	350	175
	Speed / acceleration / deceleration	Min. speed (mm/s)	30	20	10	5
		Rated acceleration/deceleration (G)	0.3	0.3	0.3	0.3
Push	Max. acceleration/deceleration (G)	0.5	0.5	0.5	0.5	
	Max. push force (N)	182	273	547	1094	
Brake	Max. push speed (mm/s)	20	20	20	20	
	Brake specification	Non-excitation actuating solenoid brake				
Stroke	Brake holding force (kgf)	3	8	18	28	
	Min. stroke (mm)	750	750	750	750	
	Max. stroke (mm)	1000	1000	1000	1000	
	Stroke pitch (mm)	50	50	50	50	

Item	Description
Drive system	Ball screw ø12mm, rolled C10
Positioning repeatability	±0.05mm
Lost motion	- (two-point positioning function; cannot be represented)
Linear guide	Linear motion infinite circulating type
Rod	ø30mm, material: aluminum, hard alumite treatment
Rod non-rotation precision (Note 1)	0 degrees
Ambient operating temperature, humidity	0 ~ 40°C, 85%RH or less (no condensation)
Degree of protection	IP20
Vibration & shock resistance	4.9m/s ²
Overseas standards	CE marking, RoHS directive
Motor type	Pulse motor
Encoder type	Incremental/battery-less absolute
Number of encoder pulses	800 pulse/rev

(Note 1) Rod rotating direction displacement angle with no load.

Table of Payload by Speed/Acceleration

■ **Energy-saving setting disabled** The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Speed (mm/s)	Horizontal Acceleration (G)						Vertical Acceleration (G)						
		0.3	0.5	0.7	1	0.3	0.5	0.3	0.5	0.7	1	0.3	0.5	
0	20	18	15	12	3	3								
200	20	18	15	12	3	3								
400	20	14	12	8	3	3								
420	17	12	10	6	3	3								
560	14	6	4	3	2	1.5								
640	5	3	2	1	1	1								
800	4	1												
860	2													

Lead 16

Orientation	Speed (mm/s)	Horizontal Acceleration (G)				Vertical Acceleration (G)				
		0.3	0.5	0.7	1	0.3	0.5	0.7	1	
0	50	40	35	30	8	8				
140	50	40	35	30	8	8				
280	50	30	23	18	7	7				
420	25	17	12	8	4.5	3.5				
560	10	5	2	0.5	1	1				
700	2									

(Note) Refer to precautions when selecting "G5" option

Lead 8

Orientation	Speed (mm/s)	Horizontal Acceleration (G)				Vertical Acceleration (G)				
		0.3	0.5	0.7	1	0.3	0.5	0.7	1	
0	60	50	45	40	18	18				
70	60	50	45	40	18	18				
140	60	50	45	40	16	12				
210	60	40	31	26	10	9				
280	34	20	15	11	5	4				
350	12	2				0.5				

(Note) Refer to precautions when selecting "G5" option

Lead 4

Orientation	Speed (mm/s)	Horizontal Acceleration (G)				Vertical Acceleration (G)				
		0.3	0.5	0.7	1	0.3	0.5	0.7	1	
0	80	70	65	60	28	28				
35	80	70	65	60	28	28				
70	80	70	65	60	28	28				
105	80	60	50	40	18	18				
140	50	30	20	15	12	10				
175	15					2				

(Note) Refer to precautions when selecting "G5" option

■ **Energy-saving setting enabled** The unit for payload is kg. If blank, operation is not possible.

Lead 24

Orientation	Speed (mm/s)	Horizontal Acceleration (G)			Vertical Acceleration (G)		
		0.3	0.7	0.3	0.3	0.7	0.3
0	18	9.5	3				
200	18	9.5	3				
420	10	5	1.5				
630	1						

Lead 16

Orientation	Speed (mm/s)	Horizontal Acceleration (G)		Vertical Acceleration (G)	
		0.3	0.7	0.3	0.7
0	40	25	5		
140	40	25	5		
280	18	12	2		
420	1.5	1			

Lead 8

Orientation	Speed (mm/s)	Horizontal Acceleration (G)			Vertical Acceleration (G)		
		0.3	0.7	0.3	0.3	0.7	0.3
0	50	30	17.5				
70	50	30	17.5				
140	50	30	7				
210	14	7	2				

Lead 4

Orientation	Speed (mm/s)	Horizontal Acceleration (G)			Vertical Acceleration (G)		
		0.3	0.7	0.3	0.3	0.7	0.3
0	55	50	26				
35	55	50	26				
70	55	50	13				
105	30	15	2				

<Precautions when selecting "G5" (designated grease specification) option>

Use at the following speed or lower during use in an environmental temperature of 10°C or lower.

- Lead 16: 560mm/s or lower
- Lead 8: 280mm/s or lower
- Lead 4: 140mm/s or lower

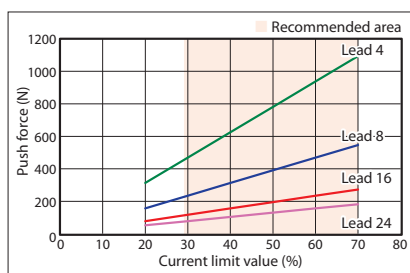
Stroke and maximum speed

Lead (mm)	Energy-saving setting	750 ~ 1000 (Every 50mm)
24	Disabled	860 <640>
	Enabled	630 <420>
16	Disabled	700 <560>
	Enabled	420 <280>
8	Disabled	350
	Enabled	210
4	Disabled	175
	Enabled	105

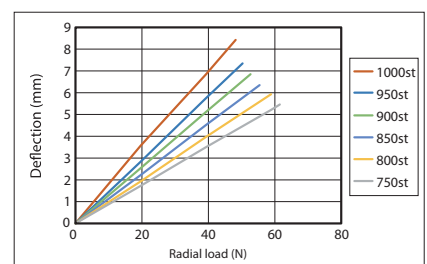
(Unit: mm/s)

(Note) Values in brackets < > are for vertical use.

Correlation diagrams between push force and current limit



Rod deflection (reference values)



Dimensions

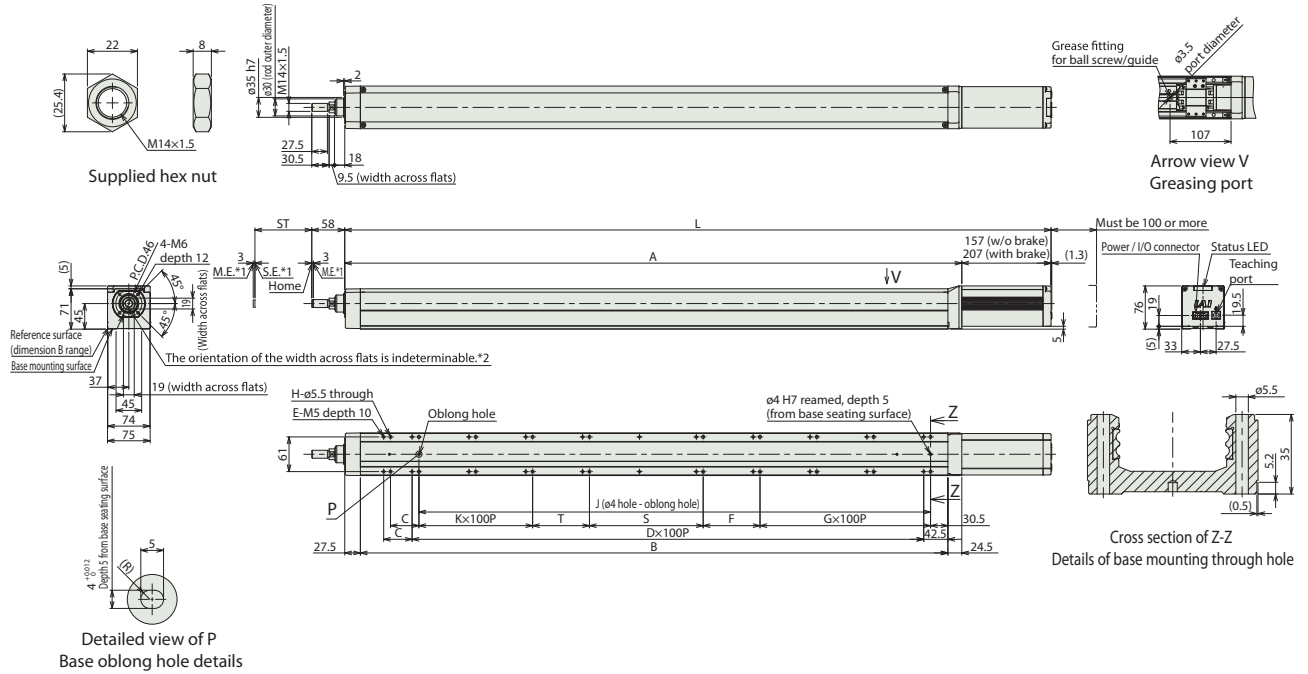
CAD drawings can be downloaded from our website.
www.elecylinder.de



■ EC-RR7X□AH

- *1 When returning to the home position, the rod will move to the M.E. Be careful of interference with surrounding objects.
- *2 The direction of width across flats varies depending on the product. Those flats cannot be used for reference plane.

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



■ Dimensions by stroke

Stroke	750	800	850	900	950	1000	
L	Without brake	1192.5	1242.5	1292.5	1342.5	1392.5	1442.5
	With brake	1242.5	1292.5	1342.5	1392.5	1442.5	1492.5
A	1035.5	1085.5	1135.5	1185.5	1235.5	1285.5	
B	983.5	1033.5	1083.5	1133.5	1183.5	1233.5	
C	0	50	0	50	0	50	
D	9	9	10	10	11	11	
E	20	22	22	24	24	26	
F	50	0	0	50	50	0	
G	3	4	4	4	4	5	
H	18	20	20	22	22	24	
J	850	900	950	1000	1050	1100	
K	3	3	3	3	4	4	
S	250	200	250	250	250	200	
T	0	0	50	0	0	0	

■ Mass by stroke

Stroke	750	800	850	900	950	1000	
Mass (kg)	Without brake	9.6	10	10.3	10.7	11	11.4
	With brake	10.1	10.5	10.8	11.2	11.5	11.9

EleCylinder Series Options

RCON-EC connection specification *Cannot be selected with the TMD2 and PN options (the ACR option includes the split motor and controller power supply specification)

Model **ACR**

Description This option should be selected to connect over an R-unit to a field network.
*If this option is selected, the power supply must be a twin power supply and the input/output specification must be NPN. It can therefore not be selected with the TMD2 or PN options.

Brake

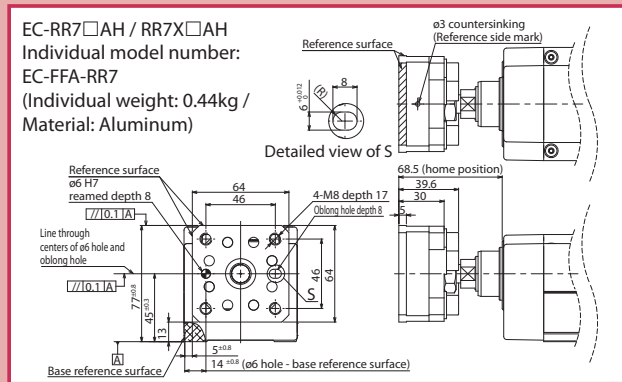
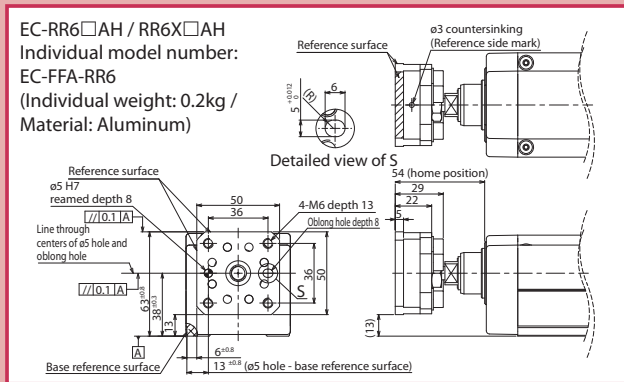
Model **B**

Description When the actuator is mounted vertically, this works as a holding mechanism that prevents the rod from falling and damaging any attachments when the power or servo is turned off. When using the rotary on its side or vertically, this holding mechanism also prevents the output shaft from accidentally rotating due to the weight of the attached object, and damaging the attached object when the power or servo is turned off.

Tip adapter (flange)

Model **FFA**

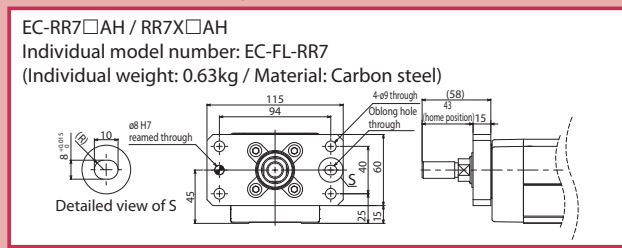
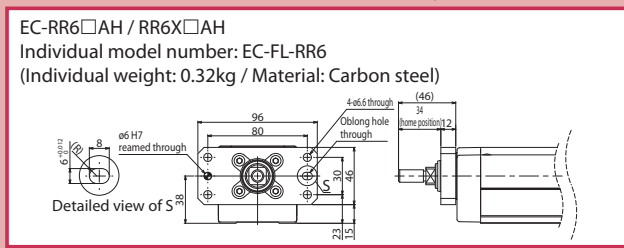
Description This adapter is used to mount jigs etc., on the rod tip with 4 bolts.



Flange (front)

Model **FL**

Description This bracket is used for fixing the actuator body side with bolts.
*Not shipped assembled. Refer to the drawing to mount.
However, it will be shipped with flange front "FL" assembled if selected with tip adapter (flange) "FFA."



Designated grease specification

Model **G5**

Description Replaces the grease applied to the actuator ball screw, linear guide, and sliding surface of the rod with food machine grease (White Alcom Grease).

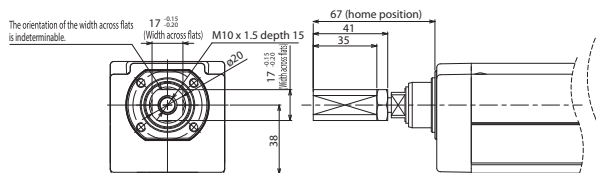
Tip adapter (internal thread)

Model NFA

Description This adapter is used to mount jigs etc., on the rod tip with 1 bolt.

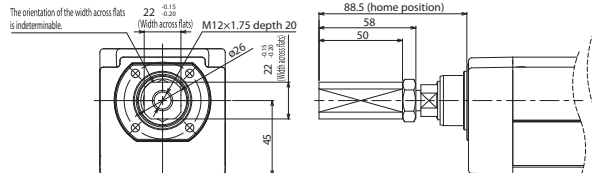
EC-RR6□AH / RR6X□AH

Individual model number: EC-NFA-R6
(Individual weight: 0.07kg / Material: Stainless steel)



EC-RR7□AH / RR7X□AH

Individual model number: EC-NFA-R7
(Individual weight: 0.16kg / Material: Stainless steel)



Knuckle joint

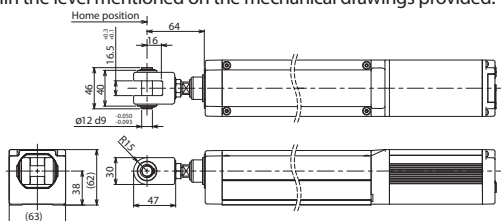
Model NJ

Description When using a clevis or trunnion bracket, this bracket is used to allow the actuator rod tip to move freely (rotate). It should be used as a set with a clevis bracket (QR or QRPB).

EC-RR6□AH

Individual model number: EC-NJ-RR6
(Material: Stainless cast steel)

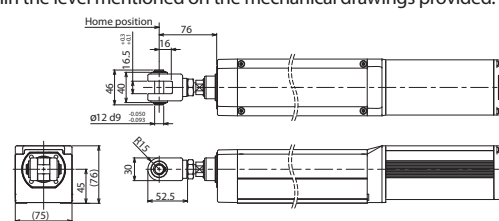
*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.



EC-RR7□AH

Individual model number: EC-NJ-RR7
(Material: Stainless cast steel)

*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.



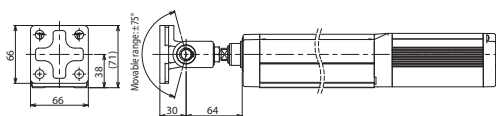
Knuckle joint + oscillation receiving bracket

Model NJPB

Description This is a knuckle joint and oscillation receiving bracket. It should be used as a set with a clevis bracket (QR or QRPB).

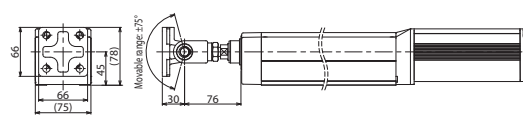
EC-RR6□AH

Individual model number: EC-NJPB-RR6 (Material: Stainless cast steel)

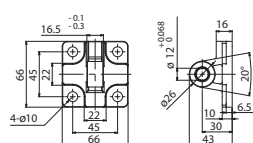


EC-RR7□AH

Individual model number: EC-NJPB-RR7 (Material: Stainless cast steel)



Oscillation receiving bracket mounting dimensions



Non-motor end specification

Model NM

Description The home position is normally set to the motor side. This option is for setting the home position on the other side in order to accommodate variations in equipment layout, etc.

PNP specification * Cannot be selected with ACR option, which is the NPN specification.

Model PN

Description EC Series products provide NPN specification input/output for connecting external devices as standard. Specifying this option changes input/output to the PNP specification.

Clevis bracket

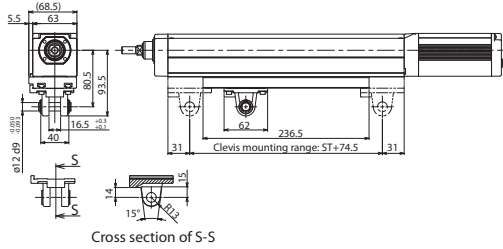
Model **QR**

Description When the motion of the object mounted on the rod tip differs from the rod operation direction, this bracket is used to make it track the actuator body. It should be used as a set with a knuckle joint (NJ or NJPB).

EC-RR6□AH

Individual model number: ECH-QR-RR6
(Material: Stainless cast steel)

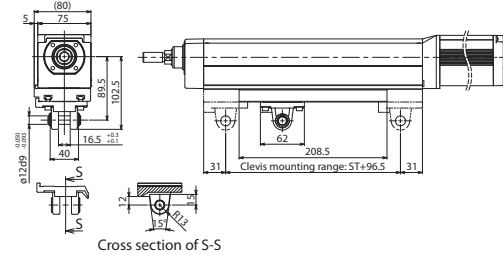
*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.



EC-RR7□AH

Individual model number: ECH-QR-RR7
(Material: Stainless cast steel)

*Not shipped assembled. Refer to the drawing to mount.
When making adjustments, it is recommended that the parallelism fall within the level mentioned on the mechanical drawings provided.



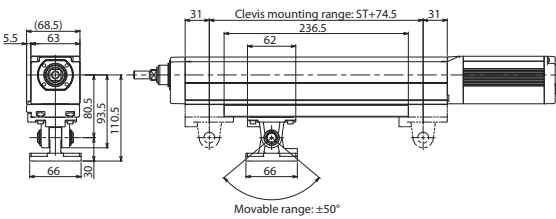
Clevis bracket + oscillation receiving bracket

Model **QRPB**

Description This is a clevis and oscillation receiving bracket. The method for mounting the oscillation receiving bracket is the same as for NJPB. It should be used as a set with a knuckle joint (NJ or NJPB).

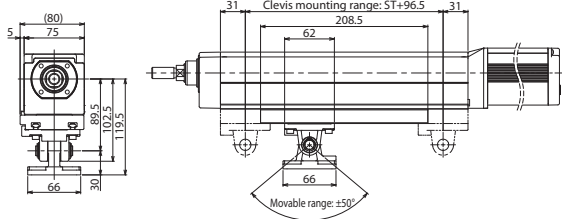
EC-RR6□AH

Individual model number: ECH-QRPB-RR6
(Material: Stainless cast steel)



EC-RR7□AH

Individual model number: ECH-QRPB-RR7
(Material: Stainless cast steel)



Split motor and controller power supply specification * Cannot be selected with the ACR option (the RCON-EC connection specification is a split motor and controller power supply specification)

Model **TMD2**

Description This option includes an actuator operation stop input. Select this option to allow shutting down the actuator drive power only. Please refer to P. 24 for more information on wiring.

Battery-less absolute encoder specification

Model **WA**

Description EC Series products use the incremental encoder specification as standard. Specify this option to have a built-in battery-less absolute encoder installed.

Wireless communication specification

Model **WL**

Description This option enables support for wireless communication. Specifying this option enables wireless communication with the TB-03 teaching pendant. The start point, end point, and AVD can be adjusted via wireless communication.

Wireless axis operation specification

Model **WL2**

Description Specifying WL2 allows for the product to operate wirelessly as with WL (start point, end point, and AVD adjustment), and to also perform axis travel operation tests (forward end/backward end movement, jog, and inching). However, this function is not meant to perform automatic operation. Please refer to P. 118 of the EC main catalogue V10 for precautions on axis operations using a wireless connection. (Note) WL cannot be changed to WL2, or WL2 to WL, by the customer. Please contact IAI for this.

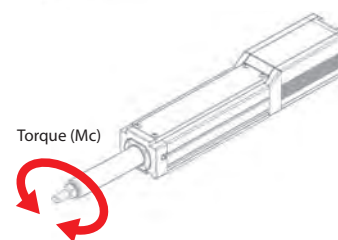
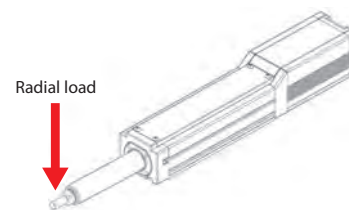
Radial loads acting on rods

Radial cylinders have a linear guide built into the body, so that radial and moment loads can be applied to the rod. The allowable radial and moment loads must meet the following three conditions.

1. The radial load acting on the rod must not exceed the allowable value.

	Rod tip static allowable radial load	Rod tip dynamic allowable radial load (*)							
		Stroke (mm)							
		50 ~ 250	300	350	400	450 ~ 500	550		
RR6□AH	190N	130N	40N	35N	25N	20N	15N		
RR6X□AH		600 ~ 750		800 ~ 900		950 ~ 1000			
		15N	10N		5N				
RR7□AH	250N	50 ~ 250	300	350	400	450	500 ~ 550	600 ~ 650	700
		170N	50N	45N	40N	35N	30N	25N	20N
RR7X□AH		750		800 ~ 850		900 ~ 1000			
		20N	15N		10N				

(*) Value at a standard rated service life of 5000km.



2. The torque (Mc) acting on the rod must not exceed the allowable value.

Type	Rod tip static allowable torque	Rod tip dynamic allowable torque (*)
RR6□AH / RR6X□AH	9N·m	5.5N·m
RR7□AH / RR7X□AH	17.6N·m	10.5N·m

(*) Value at a standard rated service life of 5000km.

3. The uniform load acting on the rod must not exceed the allowable value.

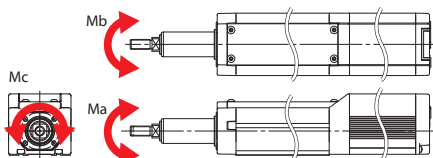
The uniform load is obtained by the following formula.

$$\text{Uniform load} = Ma \cdot Ka + Mb \cdot Kb + Mc \cdot Kc$$

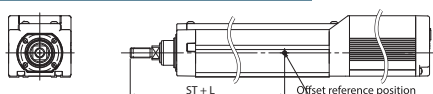
Type	Static allowable uniform load	Dynamic allowable uniform load (*)	Load uniform coefficient Ka	Load uniform coefficient Kb	Load uniform coefficient Kc
RR6□AH / RR6X□AH	6700N	2400N	104/m	87/m	62/m
RR7□AH / RR7X□AH	11400N	3000N	90/m	76/m	50/m

(*) Value at a standard rated service life of 5000km.

Ma, Mb, Mc: Moment load

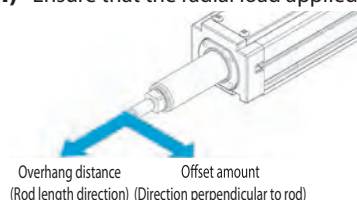


Moment offset reference position



Type	L
RR6□AH	126mm
RR6X□AH	153.5mm
RR7□AH	153.5mm
RR7X□AH	183mm

(Caution) •Ensure that the radial load applied to a rod does not exceed the allowable offset amount and allowable overhang distance.



Type	Allowable offset amount	Allowable overhang distance
RR6□AH / RR6X□AH	100mm	100mm
RR7□AH / RR7X□AH	150mm	150mm

- Operating conditions should be moderated if some abnormal vibration or noise is observed, even if the radial load and torque are within allowable values.
- The center mass location of the attached object should not exceed 1/2 the offset amount or overhang distance.

Duty Ratio

The duty ratio is the operating rate shown as the actuator's operating time during one cycle in, expressed as a percentage.

The duty ratio for each EleCylinder type is limited to the values below.

The data below is applicable even during operation at maximum speed and maximum acceleration/deceleration.

[Duty cycle]

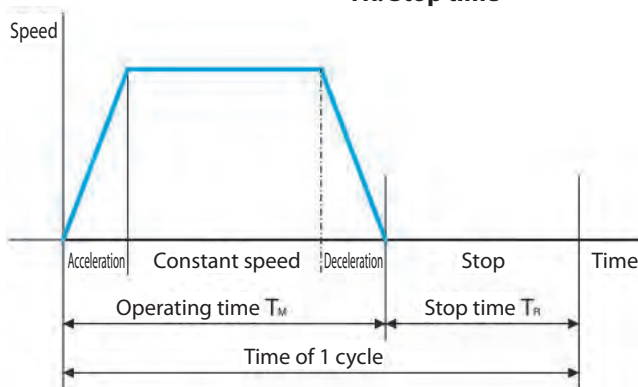
The duty ratio is the operating rate shown as the operating time of EleCylinder during one cycle, expressed as a percentage.

$$D = \frac{T_M}{T_M + T_R} \times 100 (\%)$$

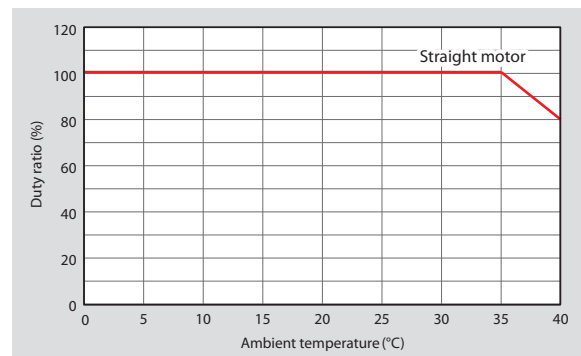
D: Duty ratio

T_M: Operating time (including push-motion operation)

T_R: Stop time



Ambient temperature and duty ratio



Push-motion operation

Push-motion operation is a function that keeps the rod pushed up against a workpiece, as with an air cylinder. Please check the usage instructions and precautions below prior to use.

[Push force adjustment]

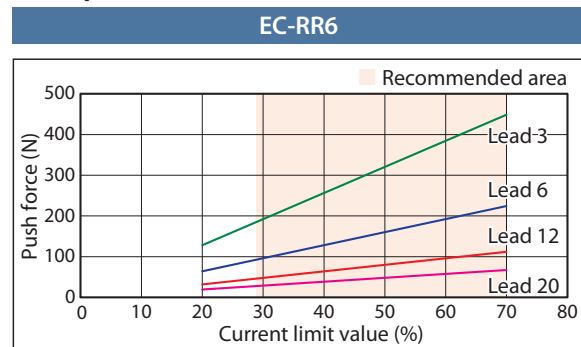
- The push force during a push-motion operation can be adjusted by changing the "push force (%)" on EleCylinder.
- Please check the push force for the applicable model in the "correlation diagrams between push force and current limit" on the production specification page, and select a model that matches your conditions.

[Lead selection method]

Select a lead with the desired push force in the recommended current limit value range (the colored area in the graph).

Lead 6 would be appropriate for the EC-RR6 type shown in the figure to the right if a push force of 150N is desired. Selecting lead 3 would limit the adjustment range.

(Example)



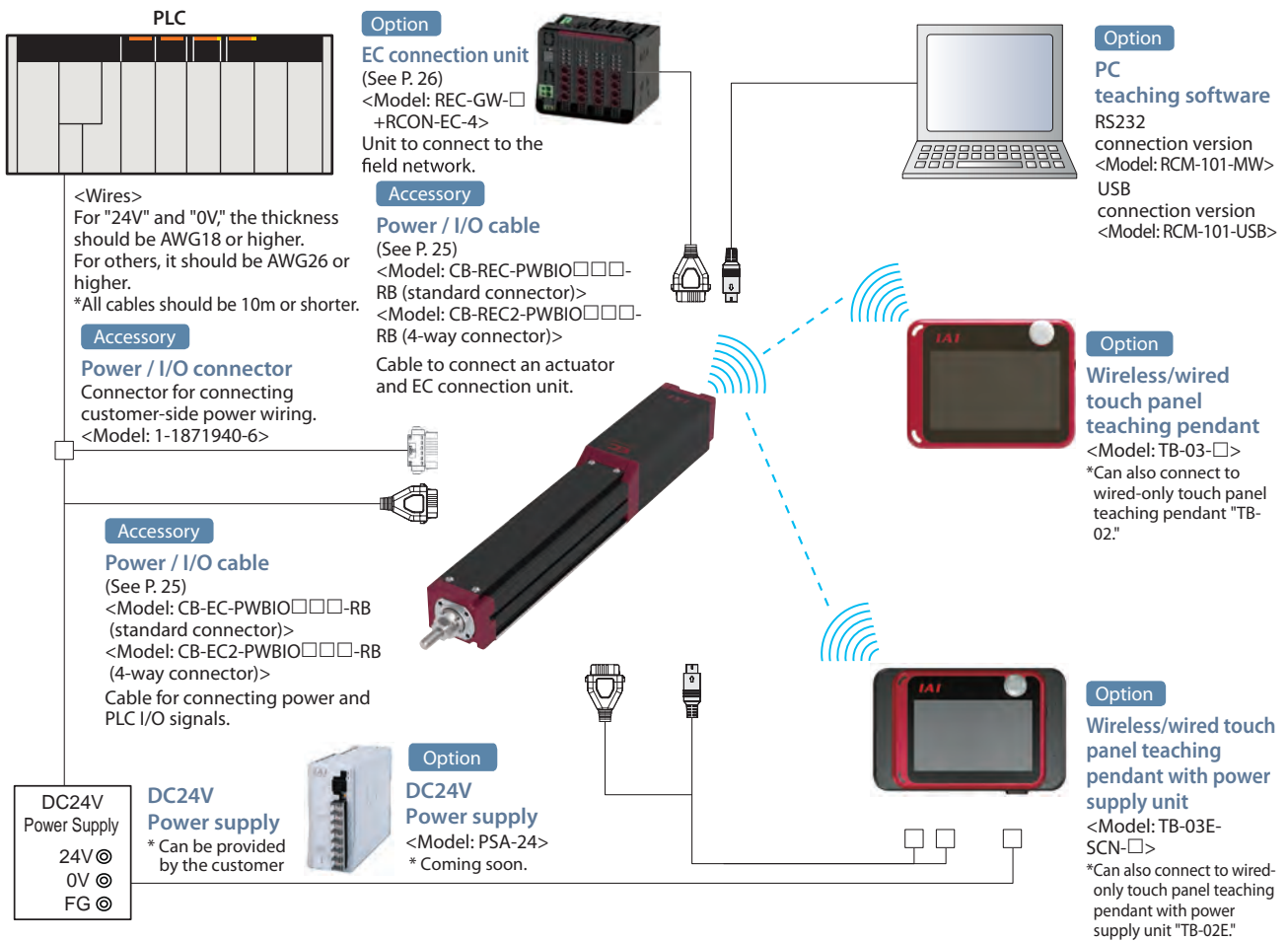
<Correlation between Push Force and Current Limit>



Caution

- The "correlation diagrams between push force and current limit" show lower guidelines for push force for each current limit value.
 - Individual differences in the motor and variations in machine operation may cause the push force lower limit to be exceeded by around 40%, even if the current limit value is the same.
- This is especially true when the current limit value is 30% or lower, and the push force lower limit could be exceeded by 40% or more.

System Configuration



List of accessories

■ Power / I/O cables, connectors

[Standard connector]

Product category		Accessory
Power / I/O cable length (selected with actuator model)	RCON-EC connection specification (ACR) selection	
0	No	Power / I/O connector (1-1871940-6)
	Yes	—
1 ~ 10	No	Power / I/O cable (CB-EC-PWBIO□□□-RB)
	Yes	Power / I/O cable (CB-REC-PWBIO□□□-RB)

[Four-way connector]

Product category		Accessory
Power / I/O cable length (selected with actuator model)	RCON-EC connection specification (ACR) selection	
S1 ~ S10	No	Power / I/O cable (CB-EC2-PWBIO□□□-RB)
	Yes	Power / I/O cable (CB-REC2-PWBIO□□□-RB)

Basic Controller Specifications

Specification item		Specification content	
Number of controlled axes		1 axis	
Power supply voltage		24VDC ±10%	
Power capacity	RR6□AH	With energy-saving setting disabled: Rated 3.5A, max. 4.2A With energy-saving setting enabled: Max. 2.2A	
	RR7□AH		
	RR6X□AH		
	RR7X□AH		
Brake release power supply		24VDC ±10%, 200mA (only for external brake release)	
Generated heat		8W (at 100% duty)	
Inrush current (Note 1)	RR6□AH	8.3A (with inrush current limit circuit)	
	RR7□AH		
	RR6X□AH		
	RR7X□AH		
Momentary power failure resistance		Max 500μs	
Motor size		□42, □56	
Motor rated current		1.2A	
Motor control system		Weak field-magnet vector control	
Supported encoders		Incremental (800 pulse/rev), battery-less absolute encoder (800 pulse/rev)	
SIO		RS485 1ch (Modbus protocol compliant)	
PIO	Input specification	No. of inputs	3 points (forward, backward, alarm clear)
		Input voltage	24VDC ±10%
		Input current	5mA per circuit
		Leakage current	Max. 1mA per point
		Isolation method	Non-isolated
	Output specification	No. of outputs	3 points (forward complete, backward complete, alarm)
		Output voltage	24VDC ±10%
		Output current	50mA per point
		Residual voltage	2V or less
		Isolation method	Non-isolated
Data setting, input method		PC teaching software, touch panel teaching pendant, digital speed controller	
Data retention memory		Position and parameters are saved in non-volatile memory (no limit to number of rewrites)	
LED display	Controller status display	Servo ON (green light ON) / Alarm (red light ON) / Initializing when power comes ON (orange light ON) / Minor failure alarm (green/red alternately blinking) / Operation from teaching: Stop from teaching (red light ON) / Servo OFF (light OFF)	
	Wireless status display	Initializing wireless hardware, without wireless connection, or connecting from TP board (light OFF) Connecting through wireless (green blinking) / Wireless hardware error (red blinking) / Initializing when power comes ON (orange light ON)	
Predictive maintenance/preventative maintenance		When the number of movements or operation distance has exceeded the set value and when the LED (right side) blinks alternately green and red at overload warning *Only when configured in advance	
Ambient operating temperature		0 ~ 40°C	
Ambient operating humidity		5%RH ~ 85%RH (no condensation or freezing)	
Operating ambience		No corrosive gas and excessive dust	
Insulation resistance		500 VDC 10MΩ	
Electric shock protection mechanism		Class 1 basic insulation	
Cooling method		Natural air cooling	

(Note 1) Inrush current flows for approximately 5ms after the power is input. (At 40°C.) Inrush current value differs depending on the impedance on the power line.

Solenoid valve method

EleCylinder products normally use a double solenoid method.

Change parameter No. 9 ("solenoid valve type selection") to use the single solenoid method.

<Caution>

Operation cannot be performed using the single solenoid method when operating connected to RCON-EC.

I/O (Input/Output) Specifications

I/O		Input		Output	
Specifications		Input voltage	24VDC ±10%	Load voltage	24VDC ±10%
		Input current	5mA per circuit	Maximum load current	50mA per point
		ON/OFF voltage	ON voltage: MIN. 18VDC OFF voltage: MAX. 6VDC	Residual voltage	2V or less
		Leakage current	Max. 1mA per point	Leakage current	Max. 0.1mA per point
Isolation method		Non-isolated from external circuit		Non-isolated from external circuit	
I/O logic	NPN				
	PNP				

(Note) Isolation method is non-isolated. When grounding an external device (such as a PLC) connected to EleCylinder, use the same ground as EleCylinder.

I/O Signal Wiring Diagram

I/O		Standard specification	Split motor and controller power supply specification (option model: TMD2)
Power / I/O connector		<p>0V A1 (Reserved) A2 (Note 1) Backward complete A3 (Note 1) Forward complete A4 Alarm output A5 (Reserved) A6</p> <p>B1 24V B2 Brake release B3 Backward command B4 Forward command B5 Alarm cancel B6 (reserved)</p>	<p>Drive power and control power are separate for the TMD2 specification.</p> <p>0V A1 24V (control) A2 (Note 1) Backward complete A3 (Note 1) Forward complete A4 Alarm output A5 (Reserved) A6</p> <p>B1 24V (drive) B2 Brake release B3 Backward command B4 Forward command B5 Alarm cancel B6 (reserved)</p>
I/O logic	NPN	<p>0V 24V</p>	<p>0V 24V</p>
	PNP	<p>24V 0V</p>	<p>24V 0V</p>

(Note 1) Switching to the single solenoid method will change B3 to "forward/backward command" and B4 to "unused."

Maintenance Parts

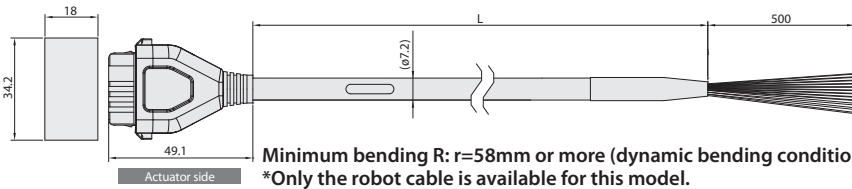
When placing an order for a replacement cable after purchasing a product, please use the model name shown below.

■ Table of compatible cables

Cable type	Cable model
Power / I/O cable (user-wired specification)	CB-EC-PWBIO□□□-RB
Power / I/O cable (user-wired specification, four-way connector)	CB-EC2-PWBIO□□□-RB
Power / I/O cable (RCON-EC connection specification)	CB-REC-PWBIO□□□-RB
Power / I/O cable (RCON-EC connection specification, four-way connector)	CB-REC2-PWBIO□□□-RB

Model **CB-EC-PWBIO□□□-RB**

*Please indicate the cable length (L) in □□□ (for example, 030 = 3m)

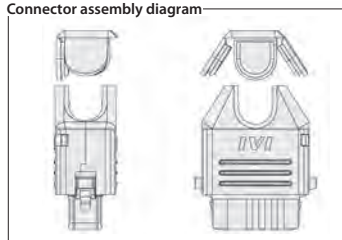
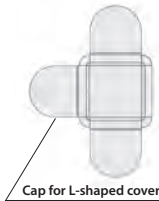
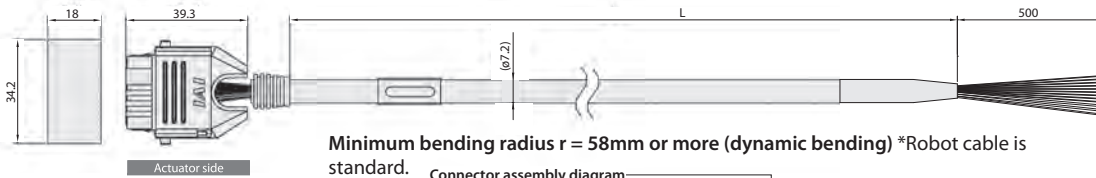


Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V	B1
Light blue (AWG22)	(Reserved) (Note 1)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Pink (AWG26)	(Reserved)	B6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
White (AWG26)	(Reserved)	A6
Brown (AWG26)	BKRLS	B2

(Note 1) 24V (control) when split motor and controller power supply specification (TMD2) selected.

Model **CB-EC2-PWBIO□□□-RB**

*Please indicate the cable length (L) in □□□ (for example, 030 = 3m)

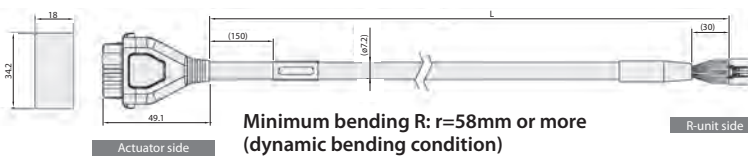


Color	Signal name	Pin No.
Black (AWG18)	0V	A1
Red (AWG18)	24V	B1
Light blue (AWG22)	(Reserved) (Note 1)	A2
Orange (AWG26)	IN0	B3
Yellow (AWG26)	IN1	B4
Green (AWG26)	IN2	B5
Pink (AWG26)	(Reserved)	B6
Blue (AWG26)	OUT0	A3
Purple (AWG26)	OUT1	A4
Gray (AWG26)	OUT2	A5
White (AWG26)	(Reserved)	A6
Brown (AWG26)	BKRLS	B2

(Note 1) 24V (control) when split motor and controller power supply specification (TMD2) selected.

Model **CB-REC-PWBIO□□□-RB**

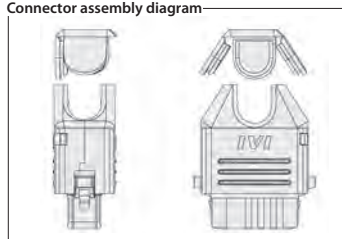
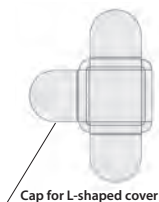
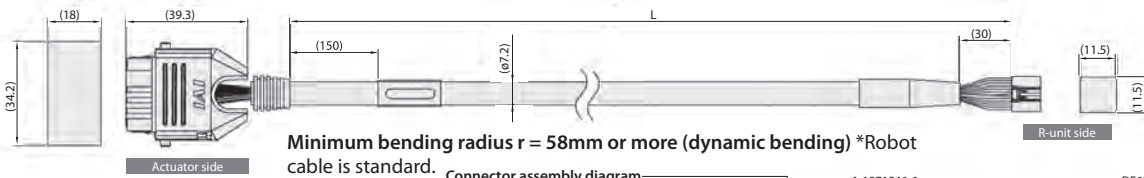
*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Color	Signal name	Pin No.	Pin No.	Signal name	Color
Black (AWG18)	0V	A1	2	0V	Black (AWG22)
Red (AWG18)	24V(IMP)	B1	1	24V(IMP)	Red (AWG22)
Light blue (AWG22)	24V(CP)	A2	12	24V(CP)	Light blue (AWG22)
Orange (AWG26)	IN0	B3	7	OUT0	Orange (AWG26)
Yellow (AWG26)	IN1	B4	8	OUT1	Yellow (AWG26)
Green (AWG26)	IN2	B5	9	OUT2	Green (AWG26)
Light green (AWG26)	SD+	B6	6	SD+	Light green (AWG26)
Light gray (AWG26)	SD-	A6	10	SD-	Light gray (AWG26)
Blue (AWG26)	OUT0	A3	3	INO	Blue (AWG26)
Purple (AWG26)	OUT1	A4	4	IN1	Purple (AWG26)
Gray (AWG26)	OUT2	A5	5	IN2	Gray (AWG26)
Brown (AWG26)	BKRLS	B2	11	BKRLS	Brown (AWG26)
			13	FG	Green (AWG26)

Model **CB-REC2-PWBIO□□□-RB**

*Please indicate the cable length (L) in □□□, maximum 10m (for example, 030 = 3m)



Color	Signal name	Pin No.	Pin No.	Signal name	Color
Black (AWG18)	0V	A1	2	0V	Black (AWG22)
Red (AWG18)	24V(IMP)	B1	1	24V(IMP)	Red (AWG22)
Light blue (AWG22)	24V(CP)	A2	12	24V(CP)	Light blue (AWG22)
Orange (AWG26)	IN0	B3	7	OUT0	Orange (AWG26)
Yellow (AWG26)	IN1	B4	8	OUT1	Yellow (AWG26)
Green (AWG26)	IN2	B5	9	OUT2	Green (AWG26)
Light green (AWG26)	SD+	B6	6	SD+	Light green (AWG26)
Light gray (AWG26)	SD-	A6	10	SD-	Light gray (AWG26)
Blue (AWG26)	OUT0	A3	3	INO	Blue (AWG26)
Purple (AWG26)	OUT1	A4	4	IN1	Purple (AWG26)
Gray (AWG26)	OUT2	A5	5	IN2	Gray (AWG26)
Brown (AWG26)	BKRLS	B2	11	BKRLS	Brown (AWG26)
			13	FG	Green (AWG26)

REC Introducing REC

Connect EleCylinder to a field network (*)

This field network connection unit is specifically for use with EleCylinder.

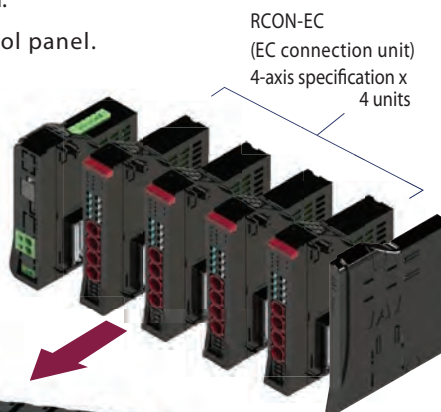
It allows up to 16 axes of EleCylinder to be connected.

It is ideal for saving wiring and space inside the control panel.

*Select the RCON-EC connection specification (ACR) option to connect to a field network.

Max. **16 axes**

Compatible networks



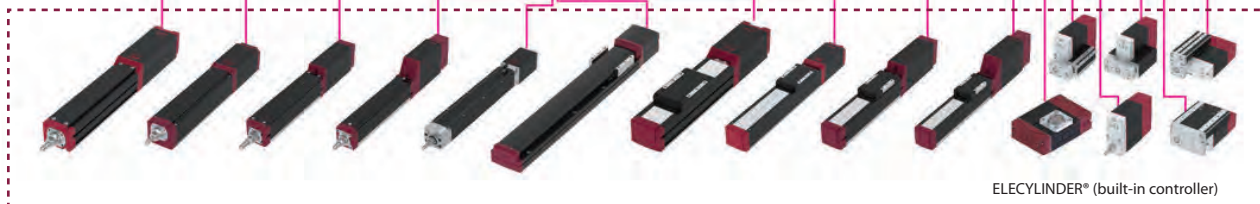
REC



Field network communication cable



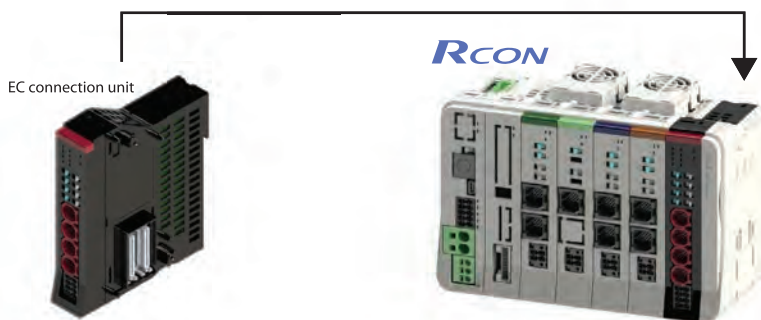
RCON-EC power / I/O cable



ELECYLINDER® (built-in controller)

EC connection unit can be connected mixed with other driver units connected to RCON

Connect to RCON to allow mixed connections with RoboCylinder and single axis robots .



➔ Refer to **R-unit** catalogue for details

**EC EleCylinder Series
High Rigidity Radial Cylinder
Catalogue No. 0621-E**

The information contained in this catalog
is subject to change without notice for the
purpose of product improvement



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