ROBO CYLINDER

Solutions For the New Millennium

Electromechanical Alternative to Pneumatic Cylinders

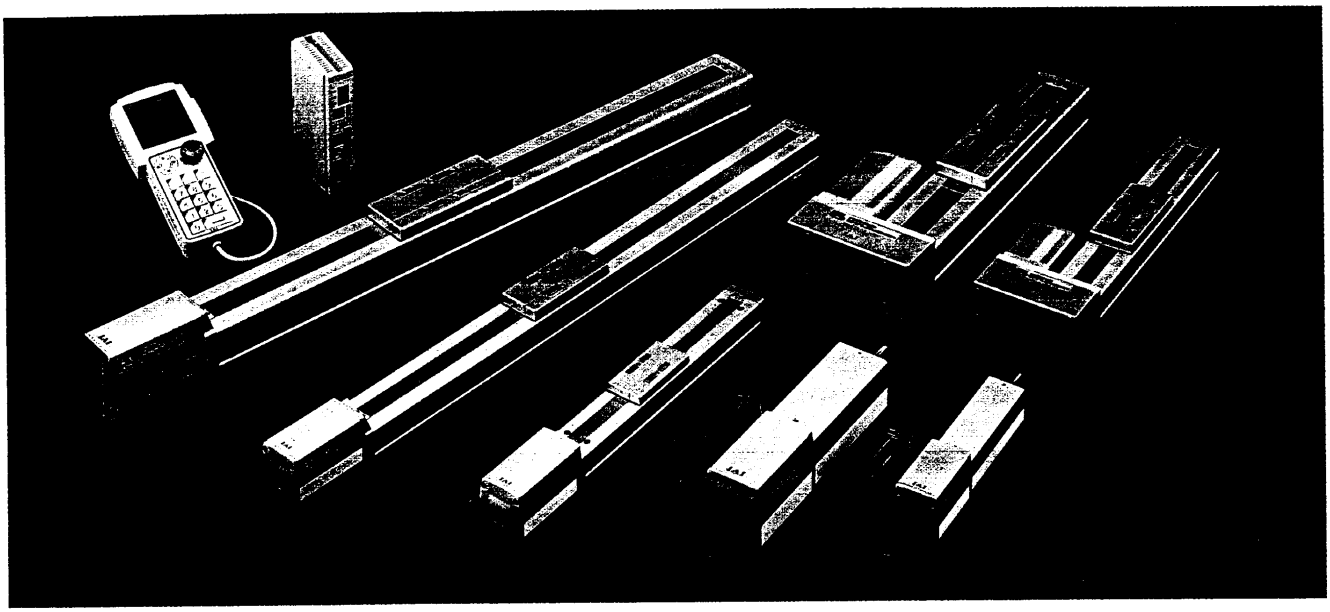
The Robo Cylinder™ is a new series of electric actuators that have been specifically designed to compete with pneumatic cylinders. In recent years, some air cylinder manufacturers have worked hard to provide air cylinders with intelligence. Yes, this can be done now, but at what cost?
The new Robo Cylinder™ provides an electromechanical solution that is capable of multiple positioning with excellent repeatability and programmable control over acceleration/deceleration as well as speed. The product is easy to use and is offered in both slider and rod-types.
Best of all is a *very* attractive price for all of these features.

- Positioning for up to 16 positions
- Repeatability: ±0.02mm
- Programmable Speed Control
- Programmable Control over Acceleration/Deceleration
- Speed: 1mm/sec - ~~686~~ 300mm/sec
- Linking via serial communications for up to 16 axes
- 24VDC Power Supply
- Service Life (5,000km of travel is possible)
- Slide and Rod Type available

Environmental Consciousness

Think air cylinders are cheap? Consider the amount of electricity required to run the compressors that drive the air cylinders that often run 24-hours a day. Because the new Robo Cylinder™ is an electric actuator, relative power consumption is roughly 1/3 compared to that needed to operate air cylinders. Reduced electrical consumption not only reduces operating costs but also contributes to global energy conservation, and that's good for everyone!

Compare the capabilities and functions of the new Robo Cylinder™ !

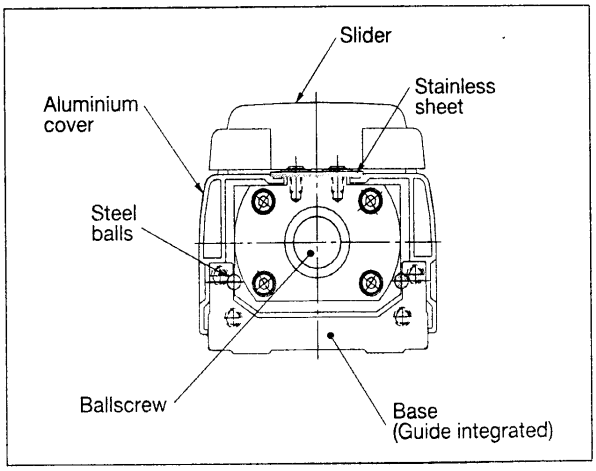


Simple Operation!

Easy programming.
Simply input the location and velocity using numerical values.

High Rigidity and Precision

The actuator base itself is the linear motion guide for the "slider type" model.



Environmentally Friendly

Low relative power consumption compared to power required for air compression systems to run air cylinders.

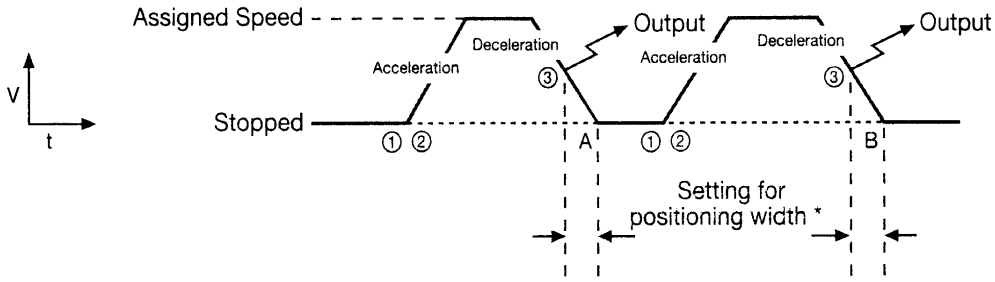
Attractive Price

The Robo Cylinder™ is an amazingly affordable product. Through serial communication, it is possible to link up to 16 axes! In addition, only 24VDC power supply is needed.

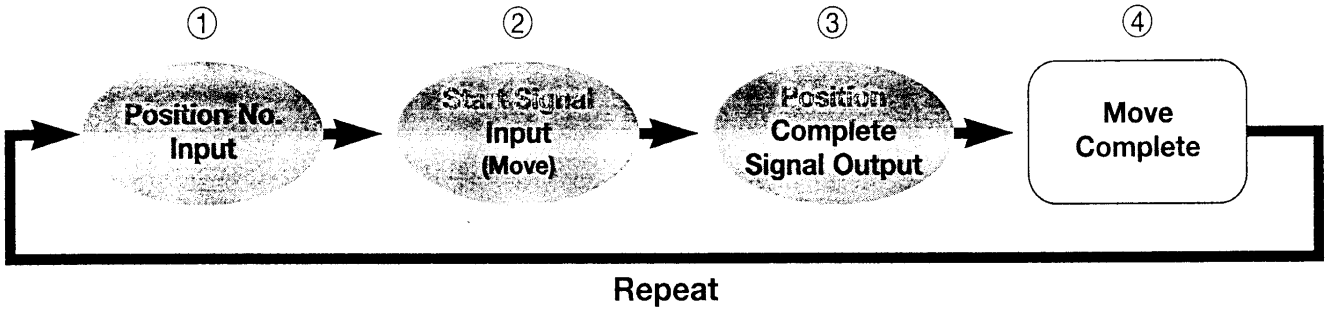
Motion Pattern 1 Positioning and Motion

You can program up to 16 positions with the Robo Cylinder™. For each of these positions, you may assign position, speed, acceleration/deceleration and positioning width in the position data table.

Application purpose: Work transfer and move



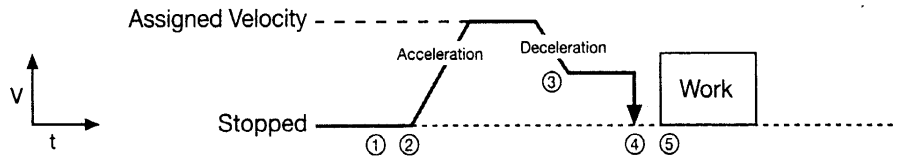
* It is possible to signal position complete before final position is reached. Although normally output signals are made at locations A and B, by setting the positioning width, these outputs turn ON at the above diagram location ③, thus effectively decreasing the tact time.

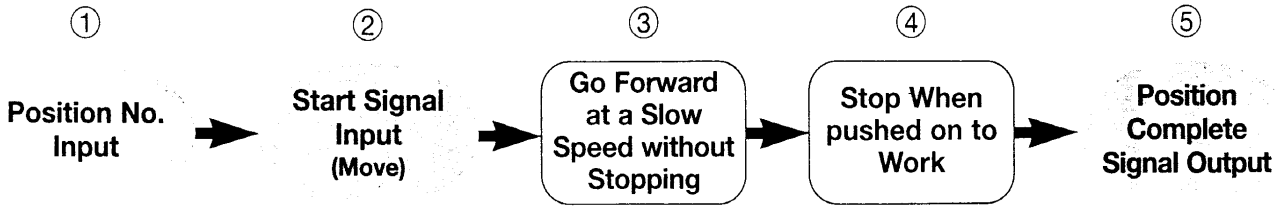


Motion Pattern 2 Push Motion

Aside from normal positioning, it is possible to insert a numerical value in the "push" portion of the position data table. This allows the motion to be executed at a lower speed after passing the goal position, and then the Position Complete Signal will turn ON after the force set point is met.

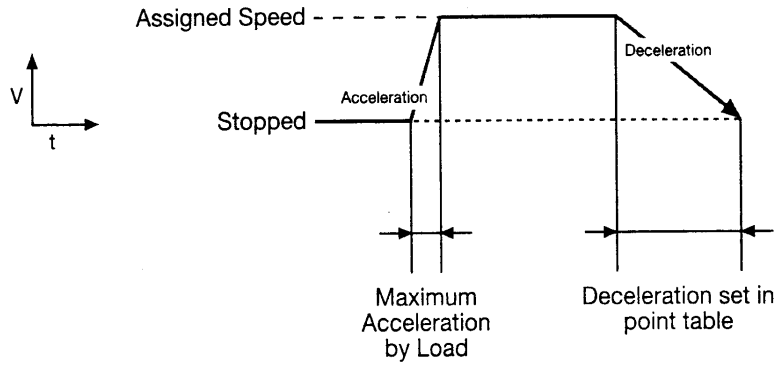
Application Purpose: Work Detection • Press Fit • Clamp





Acceleration/Deceleration — It is Possible to Set *Different* Acceleration and Deceleration Values.

The Robo Cylinder™ acceleration and deceleration values are set in the position table.
However, by inserting 1 as the value for "acceleration only MAX," the deceleration will still follow the value in the point table, but the acceleration will be as fast as possible for the system.



Note:
If the value of the "acceleration only MAX" is 0, then the value of both acceleration and deceleration is determined by acceleration (G).

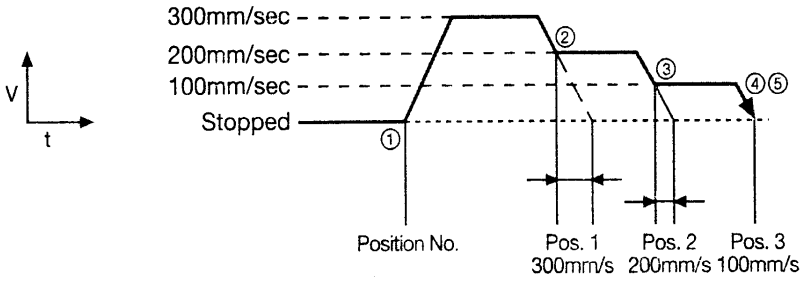
If the value of "acceleration only MAX" is 1, then the value of the deceleration is the same as above. However, the acceleration is maximised for the system.

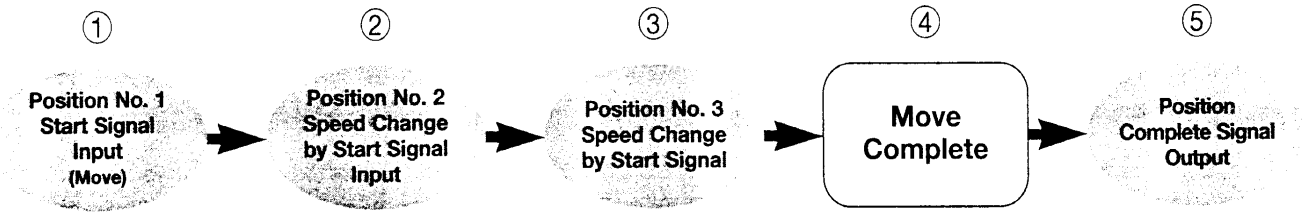
Position Data Table (Set by either Teaching Pendant or PC Software)

No	Position (mm)	Speed (mm/sec)	Acceleration (G)	Force (%)	Positioning Width (mm)	Acceleration Only MAX (0 or 1)
1	300	100	0.3	0	0.1	1
2						

Speed Changes — It is Possible to Change Speeds While In Motion Without Stopping.

It is possible to change speeds in mid-motion without first stopping.
This capability can effectively reduce tact times.





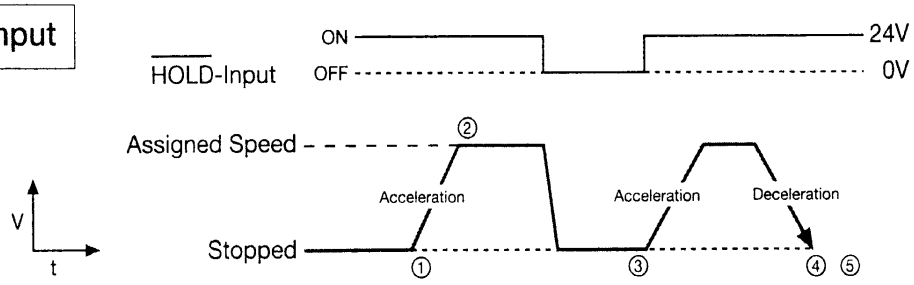
No Oscillation At Rest

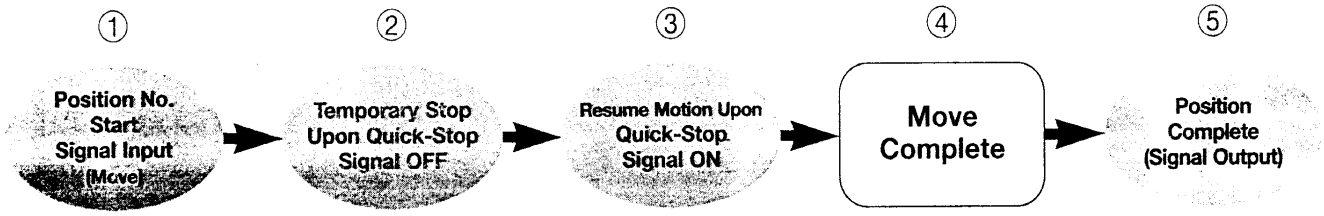
The Robo Cylinder™ experiences no differential vibration while at rest, thereby making it an ideal solution

Hold Input — During Movement, the Slider Can Stop quickly via an External Signal.

By setting an interlock with a peripheral device, once the quick stop input turns OFF, the Robo Cylinder™ will stop immediately. Movement will resume once the quick stop input is turned ON.

Quick-Stop Signal Input

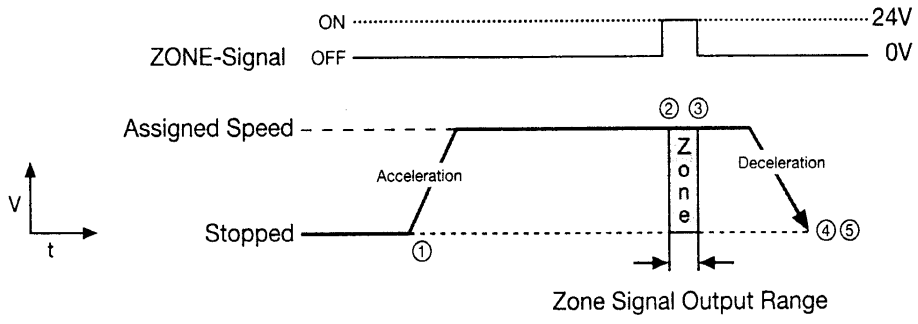


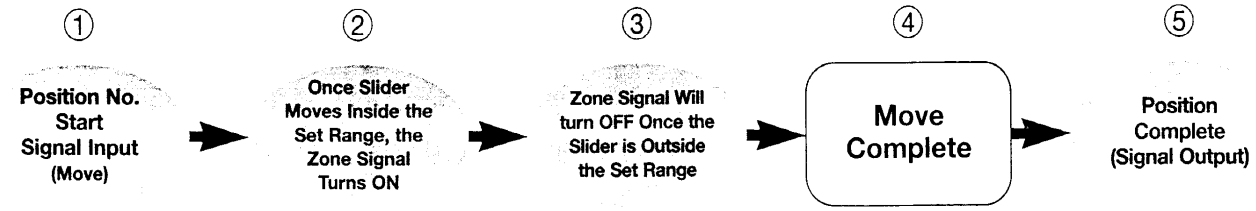


Zone Output — Output is ON While Slider is within a Set Range.

The zone output will turn ON whenever the slider is within the zone range set in the parameters. This function may be useful for designing a dangerous area or reducing cycle time.

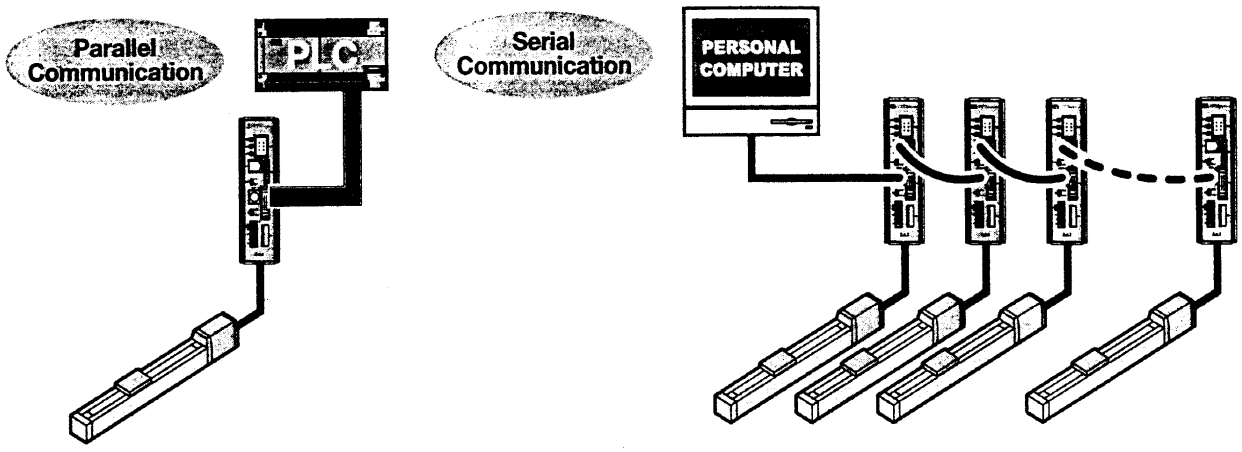
Zone Signal Output





Communication — Parallel I/O and Serial I/O are Standard.

Movement may be executed through parallel (digital) I/O by connecting the flat cable to a PLC, Super SEL Controller or any digital I/O device. Using the serial I/O port (RS485), the user may control up to 16 units from a separate device (i.e., PC, PLC).

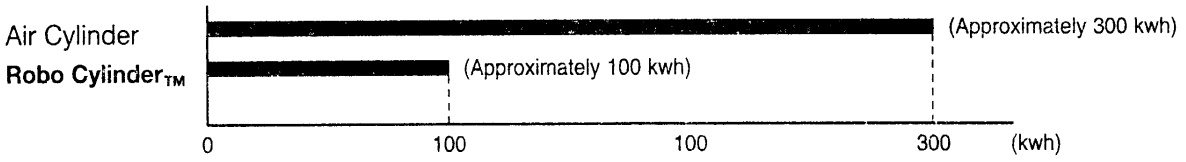


Electrical Consumption — Electrical Consumption about 1/3 that Required to Run Compressors to Drive Air Cylinders.

The Robo Cylinder™ is an electromechanical system that is very energy efficient.

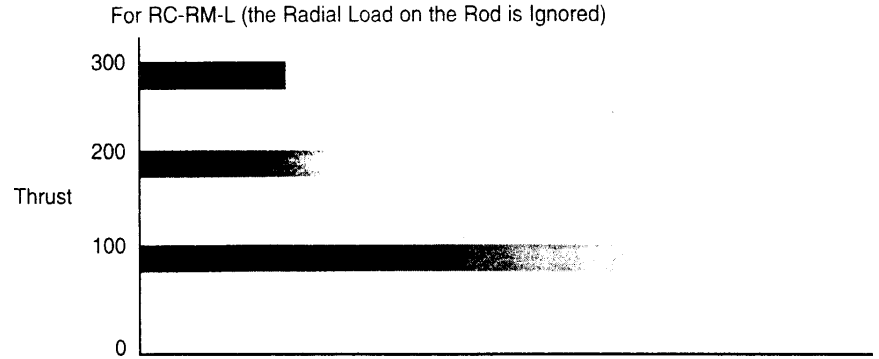
Product Comparison		Comparison Requirement	
Air Cylinder:	Inner diameter ø20mm (Application Pressure 4kg/cm²)	Stroke:	500mm
Robo Cylinder™:	RC-S6 (Slider Type)	Speed:	10 reciprocations per minute

Comparisons of Annual Electrical Consumption



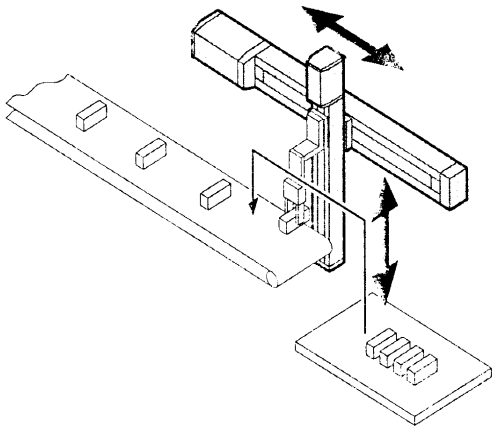
Rated Life — At Rated Specifications, 5000km of travel can be Expected.

Because the Robo Cylinder™ does not rely on hard stops to achieve position, it is possible to run the unit continuously at rated specifications for up to 5000km of travel without parts replacement. Operating the unit at less than rated specifications (lower thrust) will significantly increase the rated life of the unit.

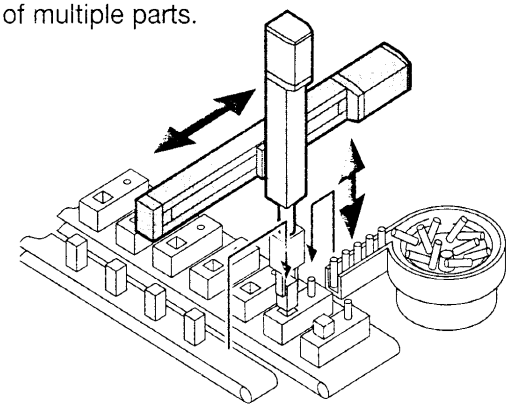


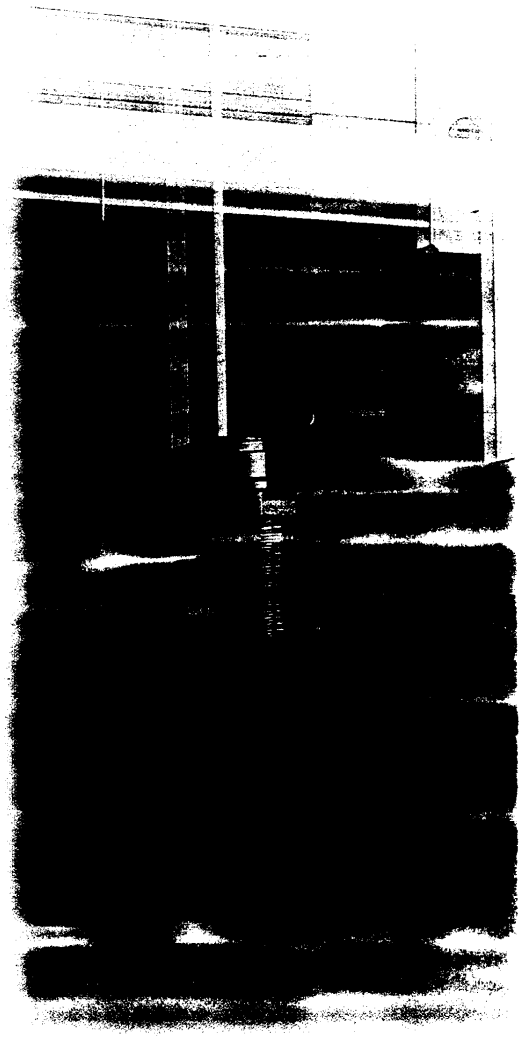
Application Examples

Application:
Pick & Place

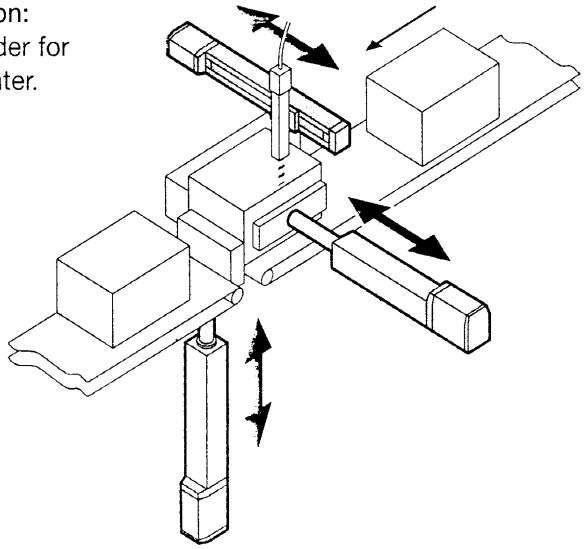


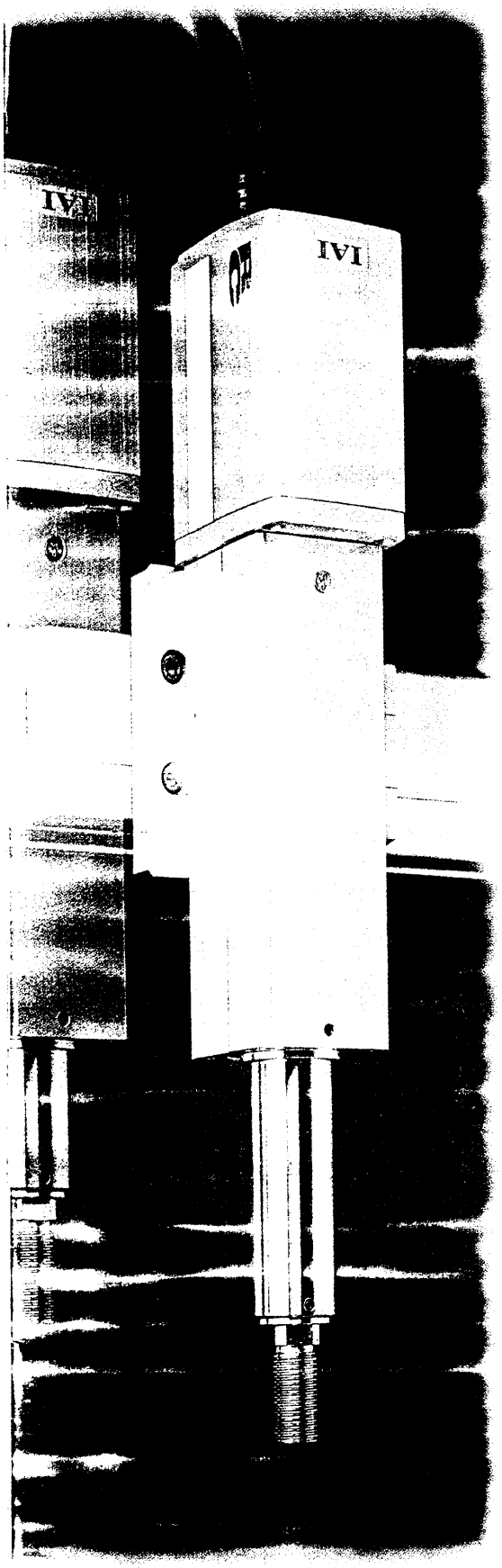
Application:
Distribution of multiple parts.



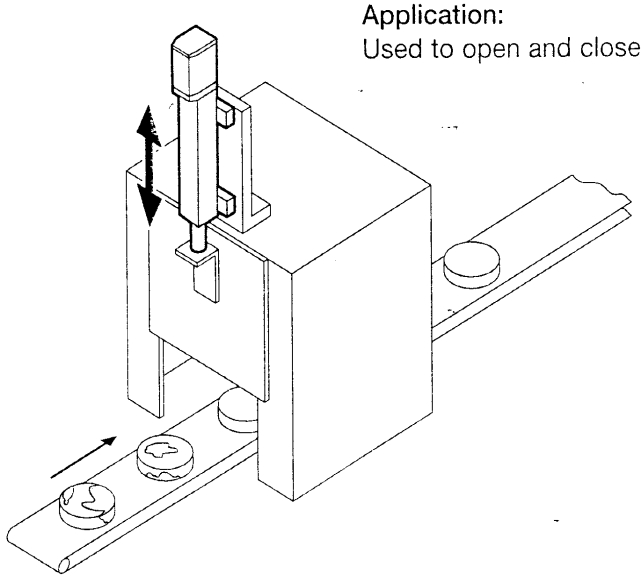


Application:
Head feeder for
Inkjet Printer.

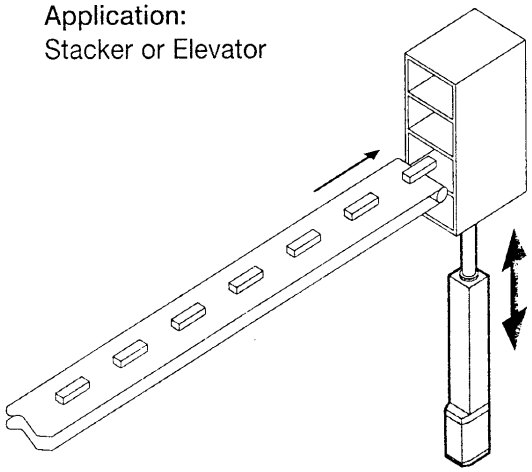




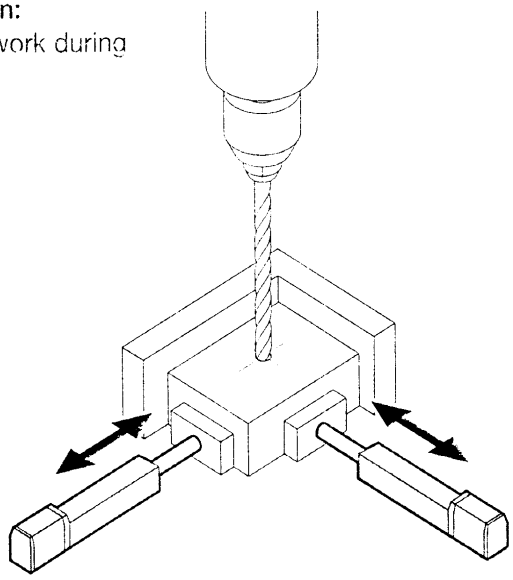
Application:
Used to open and close



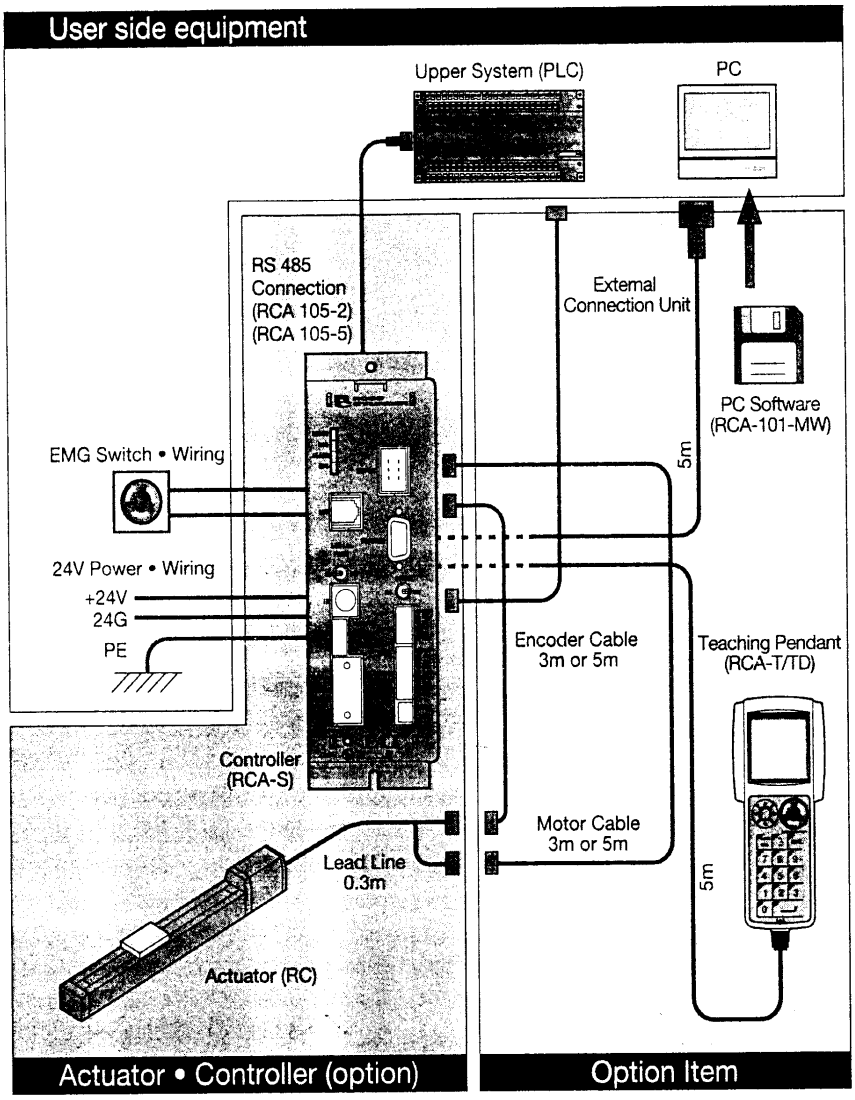
Application:
Stacker or Elevator



Application:
Securing work during operation.



System Components



Controller Model Type

RCA-S-S5

Controller Name — Actuator Type (S5,S6,SS,SM,SSR,SMR,RSA,RMA)

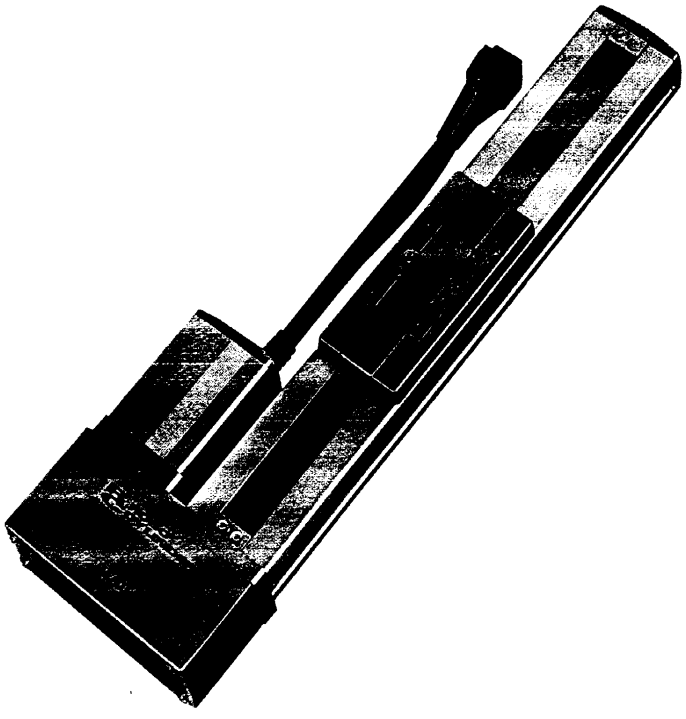
Controller Options

Produkt	Model Type	Content
Teaching Pendant	RCA-T	Cable 5m
	RCA-TD	With deadman switch
PC Software (Note 1)	RCA-101-MW	Software (3 floppy disks) Communication Cable (5m). Conversion Adapter
External Serial Connection Cable (Note 1, 2)	RCA-105-2 (Cable 2m) -5 (Cable 5m)	Communication Cable Conversion Adapter
Controller Serial Link Cable (Note 3)	C66-RCA-CTL002	Controller Connecting Cable (0.2m)

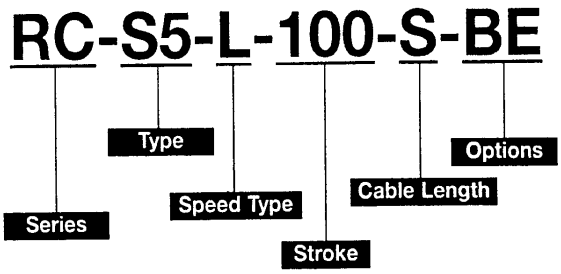
Note 1: The RS232/RS485 conversion is attached to the PC Software Kit.

Note 2: For the External Serial Connection Unit, cable 2m type (for PLC connection) and cable 5m type (for PC connection) are available.

Note 3: This is for connecting serially between the



Actuator Model Type



Order Example:

Order Example	Shipment Details
RC-RS-H-100- M B FT (1) (2) (3) (4)	(1) RC-RS-H-100 (main body) (2) Motor • Encoder Cable (5m) (3) Brake (built inside the main body) (4) Foot Tool (for mounting main body)
RCA-S	Controller
RCA-T	Teaching Pendant

Note: 1
The motor • encoder cable length must be specified (S, M or X).
Note: 2
Compliance up to 10m in length. After X, specify the length (example: for 8m cable, select X08).
Note: 3
For mounting details, please refer to pages 20~21.

Series	Type	Speed Type	Stroke (mm)	Option (separate cost involved)					
				Motor • Encoder Cable (Note 1)	Brake	Flange / Foot Tool	Others	Lubrication	IP 54
RC	S5	L • M • H	50~400	S: 3m M: 5m X: Special (Note 2)	BR • BL • BE				
	S6		50~600						
	SS		100~600						
	SM		100~1000						
	SSR		100~600				R:Motor position opposite side	AQ: Self-Lubrication Seal	
	SMR		100~1000		B: Brake				
	RS		100~300			FR: Specifications with flange FT: Fool tool Specifications (Note 3)			Only for ROD Type
	RM								

Specifications

		Specifications According to Machine Type							
		Slider Type				Motor Folded Type		Rod Type	
Type		S5	S6	SS	SM	SSR	SMR	RSA	RMA
Base Width (mm)		42	49	55	70	55	70	--	--
Total Width Slider (mm)		52	56	60	80	60	80	□45	□64
Motor Area Width (mm)		46	46	46	64	46	64	50	68
Stroke (mm)		50~400	50~600	100~600	100~1000	100~600	100~1000	50~300	50~300
Maximum Speed (mm/sec) (Note 1)	L	150	150	150	166	105	166 (150)	125 (Note 4)	133
	M	300	300	300	333	250	300 (250)	250 (Note 4)	266
	H	600	600	600	666 (600)	600	600 (500)	500 (Note 4)	533
Payload (Note 2) Horizontal	L	8	12	30~20	55~10	30~20	55~1.5	--	--
	M	8	12	30~20	50~4	20~2.5	28~4	--	--
	H	4	6	30~6	40~10	20~5.5	23~1	--	--
Payload (Note 2) Vertical	L	4.5	6~4	12~4	20~0.5	10~1.5	20~0.5	19~3	26~3
	M	2.5	3~2.5	8~2	12~1.5	5~0.5	9~0.5	12~1.5	20~2
	H	1	1.5~1	4~1	5~0.5	4~0.5	3~0.5	5.5~0.5	10~0.5
Maximum Push Power (N) (Note 2)	L	--	--	--	--	--	--	294	784
	M	--	--	--	--	--	--	236	360
	H	--	--	--	--	--	--	100	182
Moment (Nm)	Ma	4.9	8.8	14.7	36.3	14.7	36.3	--	--
	Mb	6.8	12.7	14.7	36.3	14.7	36.3	--	--
	Mc	11.7	18.6	33.3	77.4	33.3	77.4	--	--
Overhang Load Length (mm)	Ma Mb Mc	under 150	under 220	under 300	under 450	under 300	under 450	--	--
Base Material		Hardened Steel Alloy	Hardened Steel Alloy	Hardened Steel Alloy	Hardened Steel Alloy	Hardened Steel Alloy	Hardened Steel Alloy	Aluminium Extrusion	Aluminium Extrusion
Controller		Separate Model Type	Separate Model Type	Separate Model Type	Separate Model Type	Separate Model Type	Separate Model Type	Separate Model Type	Separate Model Type

Note 1: The maximum speed may not output depending on the requirements of load and stroke. The number in the ( ) indicates the value for vertical application.

Selection Method

Robo Cylinder™ Selection is based on the requirements of application, horizontal or vertical use, speed and possible payload (thrust for rod type), as indicated in the chart below, not requiring any complicated calculations.

Depending on the Application, Select Either the Slider Type or Rod Type

⇩

If Slider Type

⇩

Select Horizontal or Vertical

⇩

Select Speed Type From Cycle Time of Application

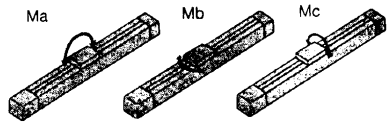
⇩

This is the Type That Satisfies Your Requirements

Note: (If Using the Slider Type):
When overhanging the slider mounting piece from the centre, please consider the load moment and overhang load length.

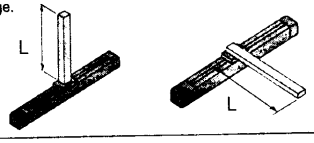
Load Moment:

Please Use Within Load Values of Ma, Mb and Mc.

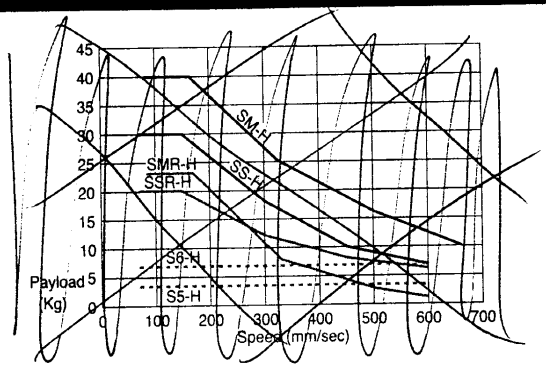
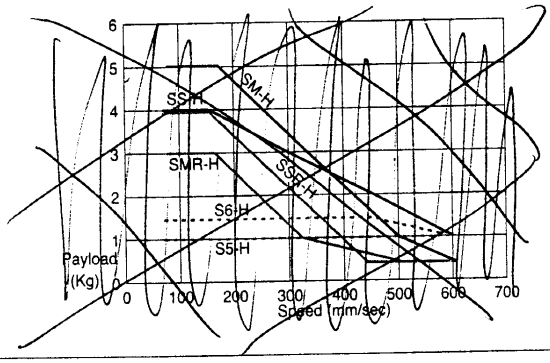
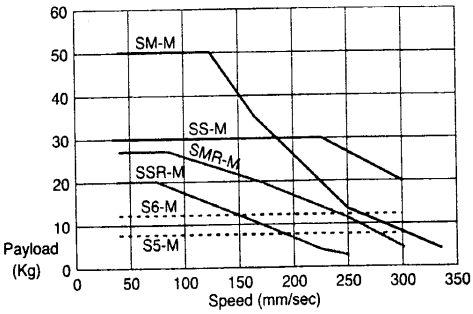
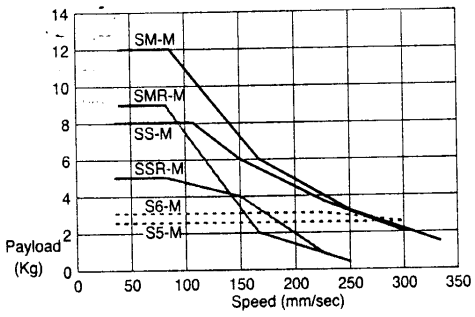
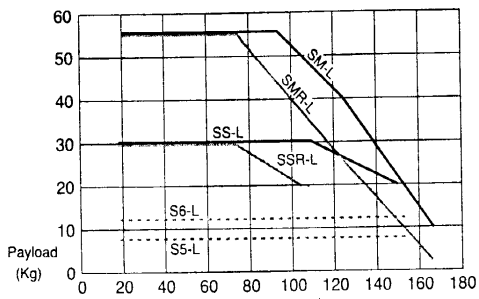
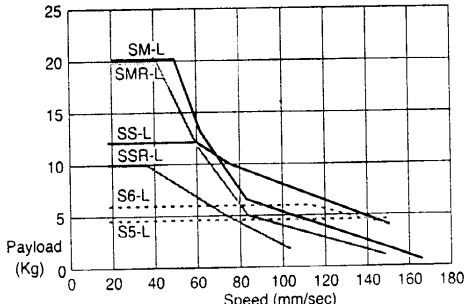


Overhang load length:

This is when the centre of the gravity for the attached object is 1/2 of the overhang length. When the attached object overhangs in the direction of either Ma, Mb and Mc, please use within this value range.



Max speed 600 mm/sec

	Horizontal	Vertical
High Speed (300 mm/sec)		
Medium Speed (150 mm/sec)		
Low Speed		

If Rod Type

⇩

Select Either Transfer or Force

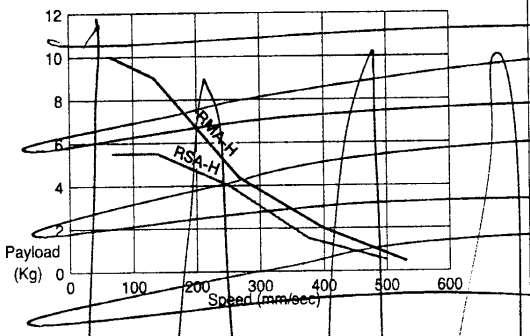
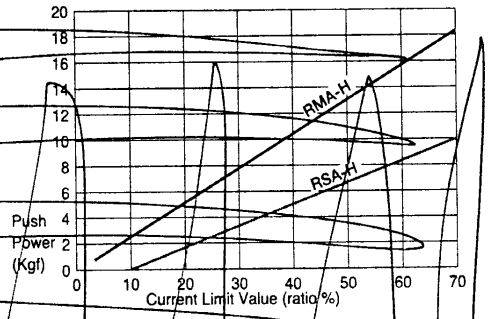
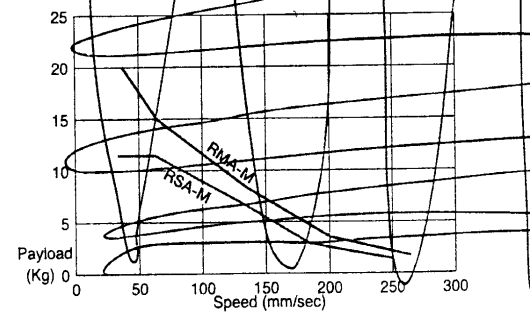
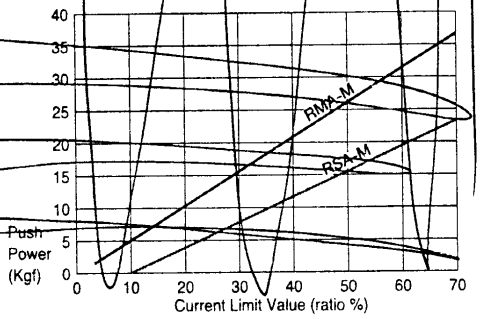
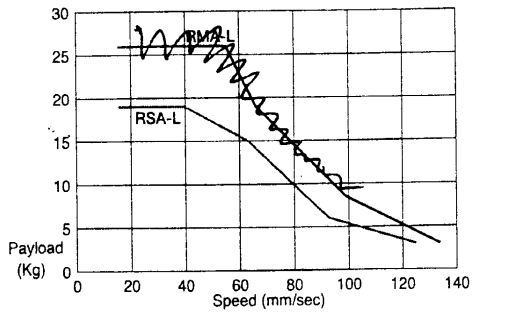
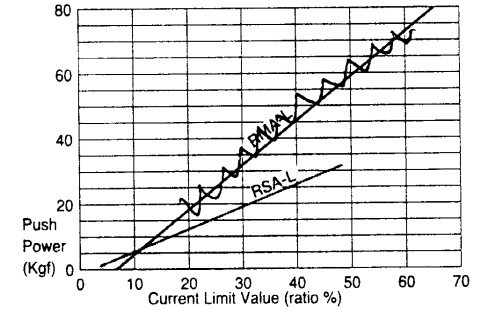
⇩

Select Speed Type From Cycle Time of Application

⇩

This is the Type That Satisfies Your Requirements

Note: As for the Rod Type, there is no consideration for external power other than the load put on from the Rod forward direction. Therefore, when an external power of vertical or rotational direction is placed against the rod, please use guide.

	Transfer	Force
Max speed 500 mm/sec **High Speed** 250 mm/sec		
Medium Speed 125 mm/sec		
Low Speed		

Note 1: (When using the Rod Type):
When using other than vertically, always make sure that the thrust is under the vertical payload specifications.

ROBO CYLINDER

S5 Type

Model Type

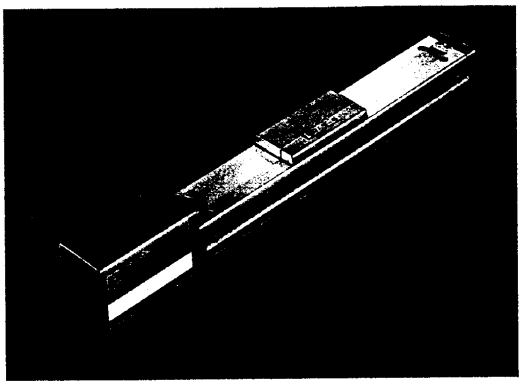
RC-S5-□-□□□-□-□

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
50~400mm

Cable Length
S: 3m M: 5m X: Custom

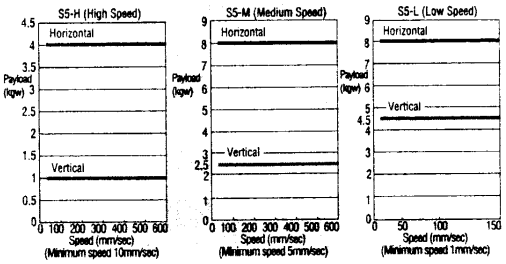
Options
Brake Options: BR,BL,BE
(see diagram below)
AQ: AQ Seal



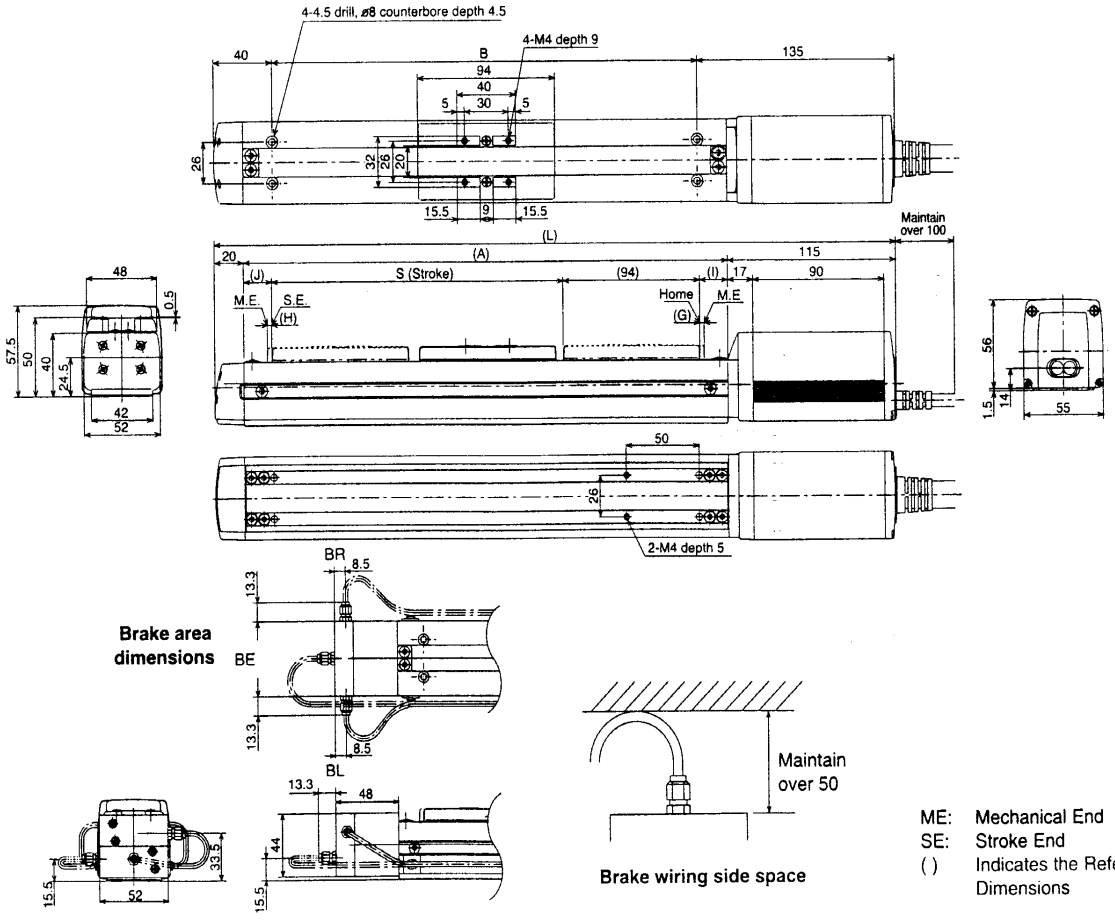
Specifications

Stroke	50~400mm (50mm Pitch)		
Motor	Stepping Motor (Encoder Single Unit)		
Ballscrew	ø10 mm		
Guide	S5 Exclusive Single Unit		
Base	Hardened Steel Alloy, IP 20		
Load Moment	MA: 4.9 Nm	Mb: 6.8 Nm	Mc: 11.7 Nm
Overhang Load Length	Ma, Mb, Mc: 150mm or less		
Weight	See Diagram		

Speed vs. Payload Diagram (when acc./dec. speed is 0.3G)



Dimensions



ME: Mechanical End
SE: Stroke End
( ) Indicates the Referenced Dimensions

Stroke	50	100	150	200	250	300	350	400
Weight (kg)	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.8
L	317	367	417	467	517	567	617	667
A	182	232	282	332	382	432	482	532

Dimensions according to speed type

Speed Type	G	H	I	J
L	0.75	5.25	16.75	21.25
M	1.5	4.5	17.5	20.5

S6 Type

Model Type

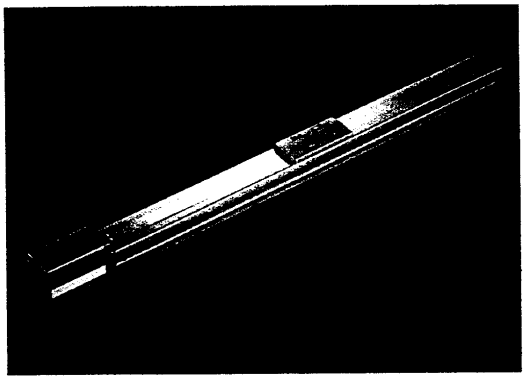
RC-S6-□-□□□-□-□

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
50~600mm

Cable Length
S: 3m M: 5m X: Custom

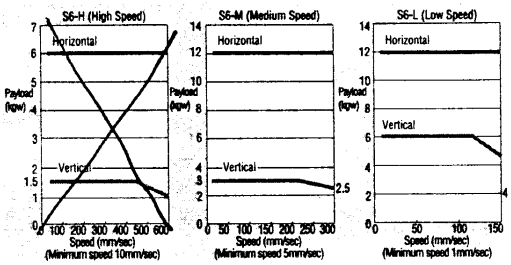
Options
Brake Options: BR,BL,BE
(see diagram below)
AQ: AQ Seal



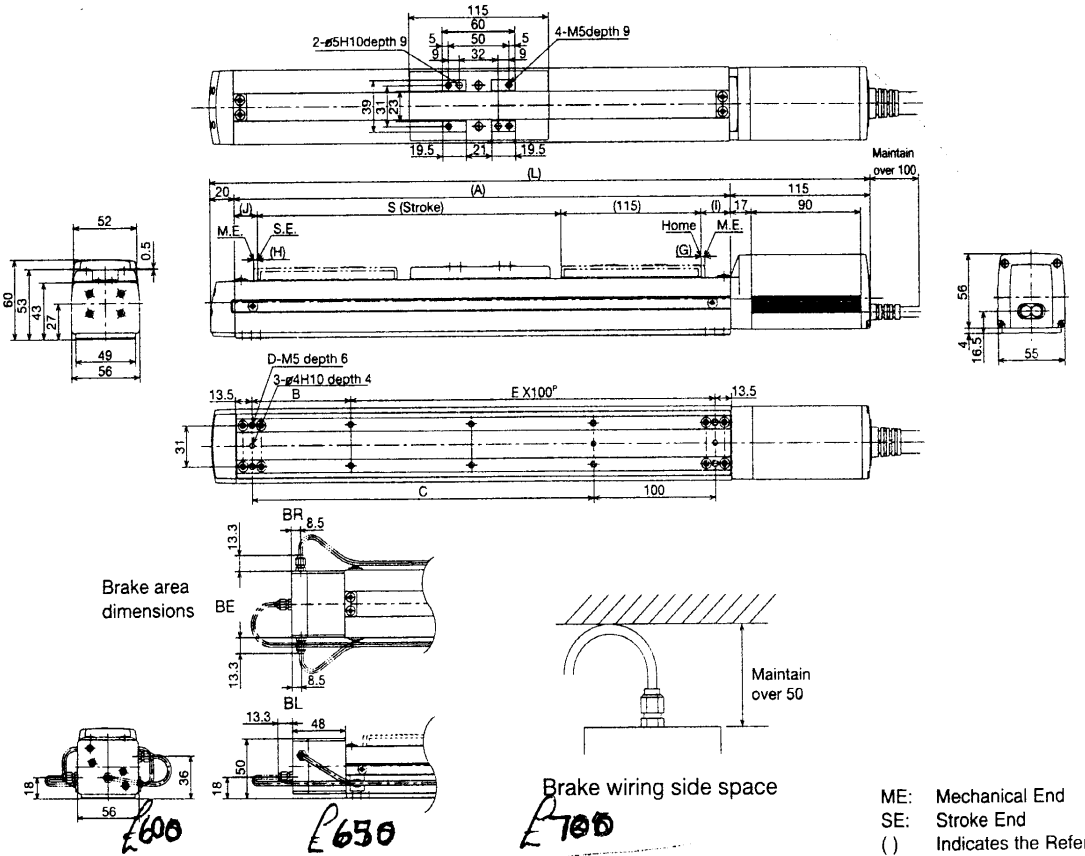
Specifications

Stroke	50~600mm (50mm Pitch)		
Motor	Stepping Motor (Encoder Single Unit)		
Ballscrew	ø10 mm		
Guide	S6 Exclusive Single Unit		
Base	Hardened Steel Alloy, IP 20		
Load Moment	Ma: 8.9 Nm	Mb: 12.7 Nm	Mc: 18.6 Nm
Overhang Load Length	Ma, Mb, Mc: 220mm or less		
Weight	See Diagram		

Speed vs. Payload Diagram (when acc./dec. speed is 0.3G)



Dimensions



Stroke	50	100	150	200	250	300	350	400	450	500	550	600
Weight (kg)	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7
L	343	393	443	493	543	593	643	693	743	793	843	893
A	208	258	308	358	408	458	508	558	608	658	708	758
B	81	131	81	131	81	131	81	131	81	131	81	131
C	81	131	181	231	281	331	381	431	481	531	581	631
D	6	6	8	8	10	10	12	12	14	14	16	16
E	4	6	4	6	4	6	4	6	4	6	4	6
F	0	1	0	1	0	1	0	1	0	1	0	1

Dimensions according to speed type

Speed Type	G	H	I	J
L	0.75	5.55	21.75	21.25
M	1.5	4.8	22.5	20.5
H	3	3.3	24	19

ROBO CYLINDER

SS Type

Model Type

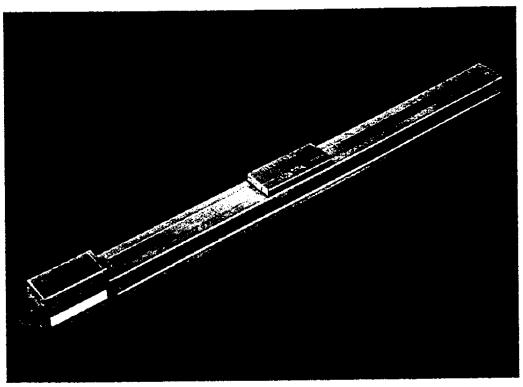
RC-SS-□-□□□-□-□

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
100~600mm

Cable Length
S: 3m M: 5m X: Custom

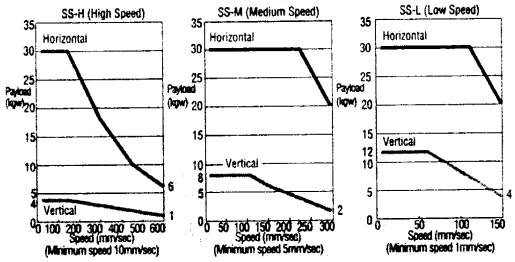
Options
B: With Brake
(see diagram below)
AQ: AQ Seal



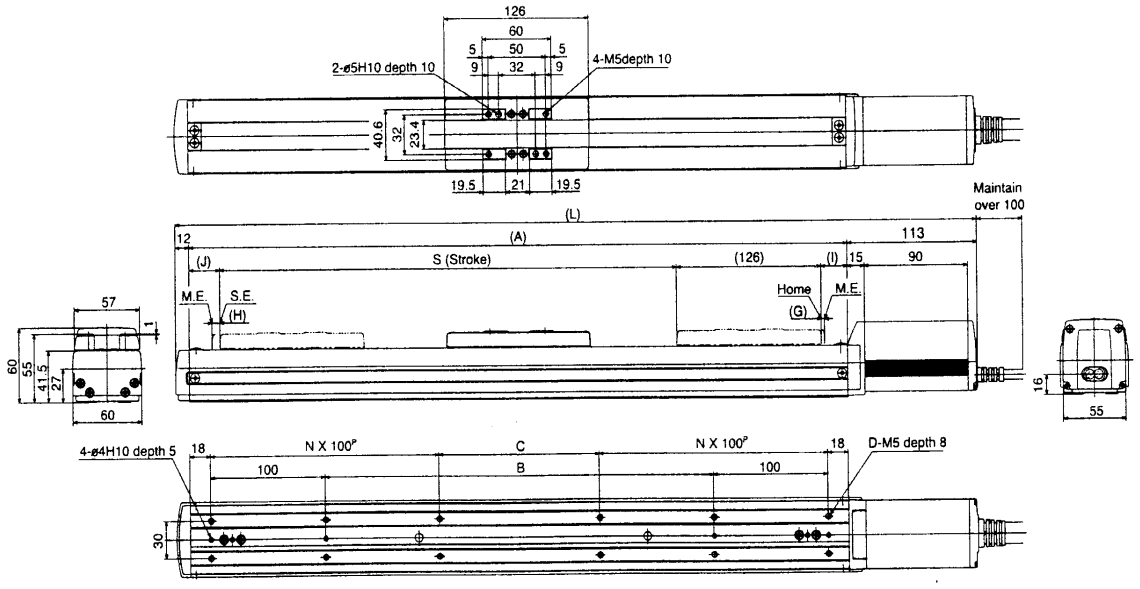
Specifications

Stroke	100~600mm (100mm Pitch)		
Motor	Stepping Motor (Encoder Single Unit)		
Ballscrew	ø10 mm		
Guide	SS Exclusive Single Unit		
Base	Hardened Steel Alloy, IP 40		
Load Moment	Ma: 14.7 Nm	Mb: 14.7 Nm	Mc: 33.3 Nm
Overhang Load Length	Ma, Mb, Mc: 300mm or less		
Weight	See Diagram		

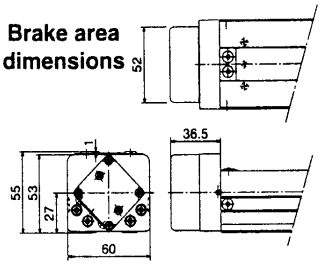
Speed vs. Payload Diagram (when acc./dec. speed is 0.3G horizontal and 0.2G vertical)



Dimensions



Brake area dimensions



* The brake cable passes through inside the main body and connects the wire cable to the controller.

ME: Mechanical End
SE: Stroke End
( ) Indicates the Referenced Dimensions

Stroke	100	200	300	400	500	600
Weight (kg)	3.4	4.0	4.7	5.4	6.1	6.7
L	401	501	601	701	801	901
A	276	376	476	576	676	776
B	40	140	240	340	440	540
C	40	140	40	140	40	140
D	8	8	12	12	16	16

Dimensions according to speed type

Speed Type	G	H	I	J
L	0.75	9.25	20.75	29.25
M	1.5	8.5	21.5	28.5

SM Type

Model Type

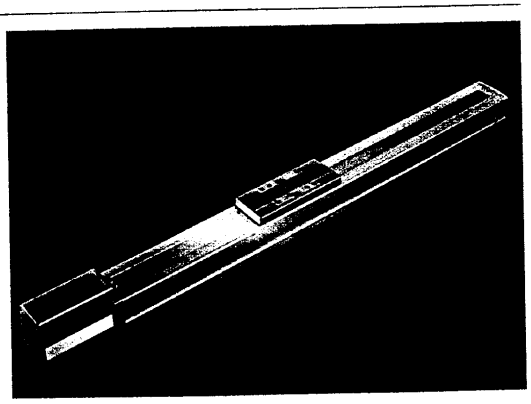
RC-SM-□-□□□-□-□

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
100~1000mm

Cable Length
S: 3m M: 5m X: Custom

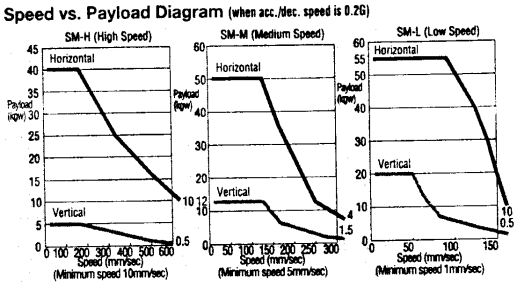
Options
B: With Brake
(see diagram below)
AQ: AQ Seal



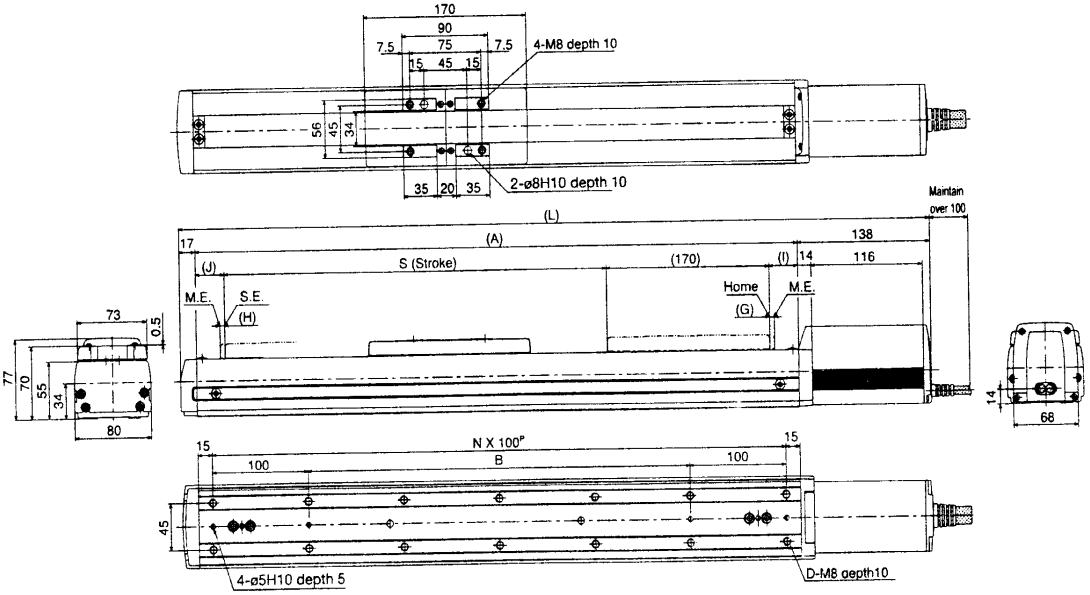
Specifications

Stroke	100~1000mm (100mm Pitch)		
Motor	Stepping Motor (Encoder Single Unit)		
Ballscrew	ø16 mm		
Guide	SM Exclusive Single Unit		
Base	Hardened Steel Alloy, IP 40		
Load Moment	Ma: 36.3 Nm	Mb: 36.3 Nm	Mc: 77.4 Nm
Overhang Load Length	Ma, Mb, Mc: 450mm or less		
Weight	See Diagram		

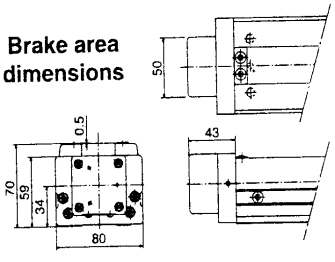
Speed vs. Payload Diagram (when acc./dec. speed is 0.2G)



Dimensions



Brake area dimensions



* The brake cable passes through inside the main body and connects the wire cable to the controller.

ME: Mechanical End
SE: Stroke End
( ) Indicates the Referenced Dimensions

Stroke	100	200	300	400	500	600	700	800	900	1000
Weight (kg)	7.1	8.1	9.2	10.2	11.3	12.3	13.4	14.5	15.5	16.6
L	485	585	685	785	885	985	1085	1185	1285	1385
A	330	430	530	630	730	830	930	1030	1130	1230
B	100	200	300	400	500	600	700	800	900	1000

Dimensions according to speed type

Speed Type	G	H	I	J
L	1.25	8.75	26.25	33.75
M	2.5	7.5	27.5	32.5

ROBO CYLINDER

SSR Type

Model Type

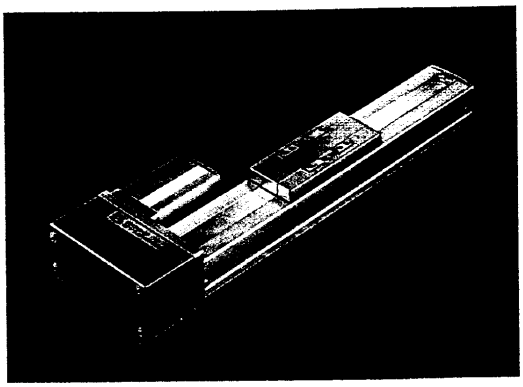
RC-SSR-□-□□□-□-□

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
100~600mm

Cable Length
S: 3m M: 5m X: Custom

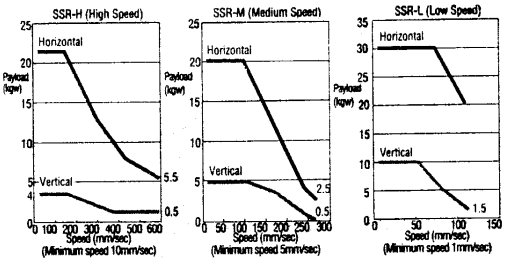
Options
B: With Brake
(see diagram below)
R: Motor Opposite
AQ: AQ Seal



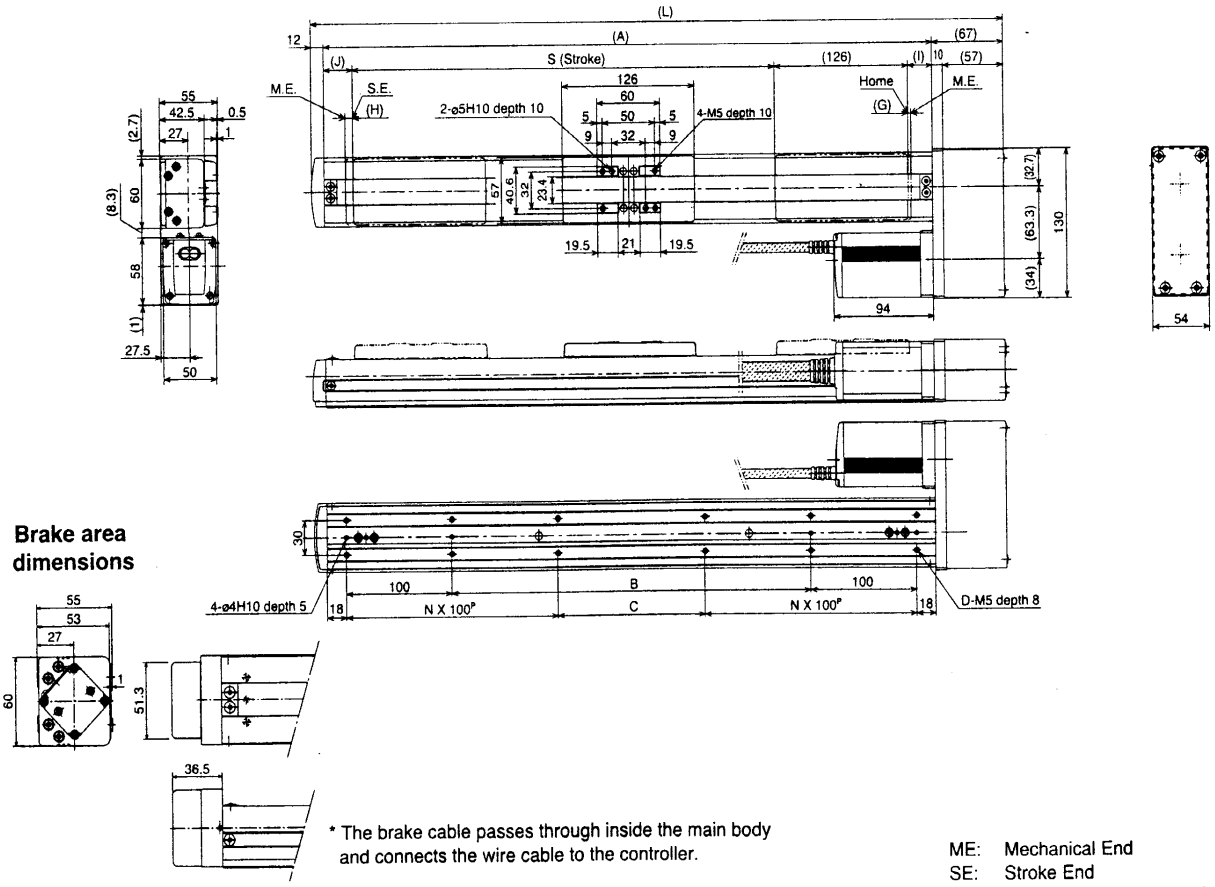
Specifications

Stroke	100~600mm (100mm Pitch)		
Motor	Stepping Motor (Encoder Single Unit)		
Ballscrew	ø10 mm		
Guide	SS Exclusive Single Unit		
Base	Hardened Steel Alloy, IP 40		
Load Moment	Ma: 14.7 Nm	Mb: 14.7 Nm	Mc: 33.3 Nm
Overhang Load Length	Ma, Mb, Mc: 300mm or less		
Weight	See Diagram Below		

Speed vs. Payload Diagram (when acc./dec. speed is 0.3G horizontal and 0.2G vertical)



Dimensions



* The brake cable passes through inside the main body and connects the wire cable to the controller.

ME: Mechanical End
SE: Stroke End
( ) Indicates the Referenced Dimensions

Stroke	100	200	300	400	500	600
Weight (kg)	4.1	4.7	5.4	6.1	6.7	7.4
L	355	455	555	655	755	855
A	276	376	476	576	676	766
B	40	140	240	340	440	540
C	40	140	40	140	40	140
D	8	8	12	12	16	16

Dimensions according to speed type

Speed Type	G	H	I	J
L	0.75	9.25	20.75	29.25
M	1.5	8.5	21.5	28.5

SMR Type

Model Type

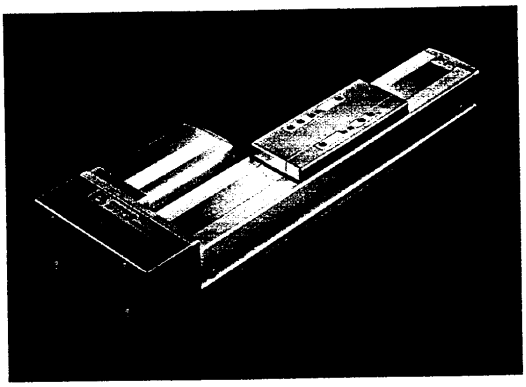
RC-SMR - □ - □ □ □ - □ - □

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
100~1000mm

Cable Length
S: 3m M: 5m X: Custom

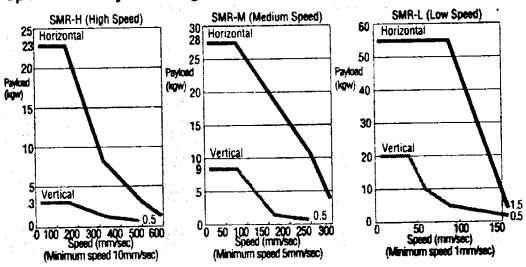
Options
B: With Brake
(see diagram below)
R: Motor Opposite
AQ: AQ Seal



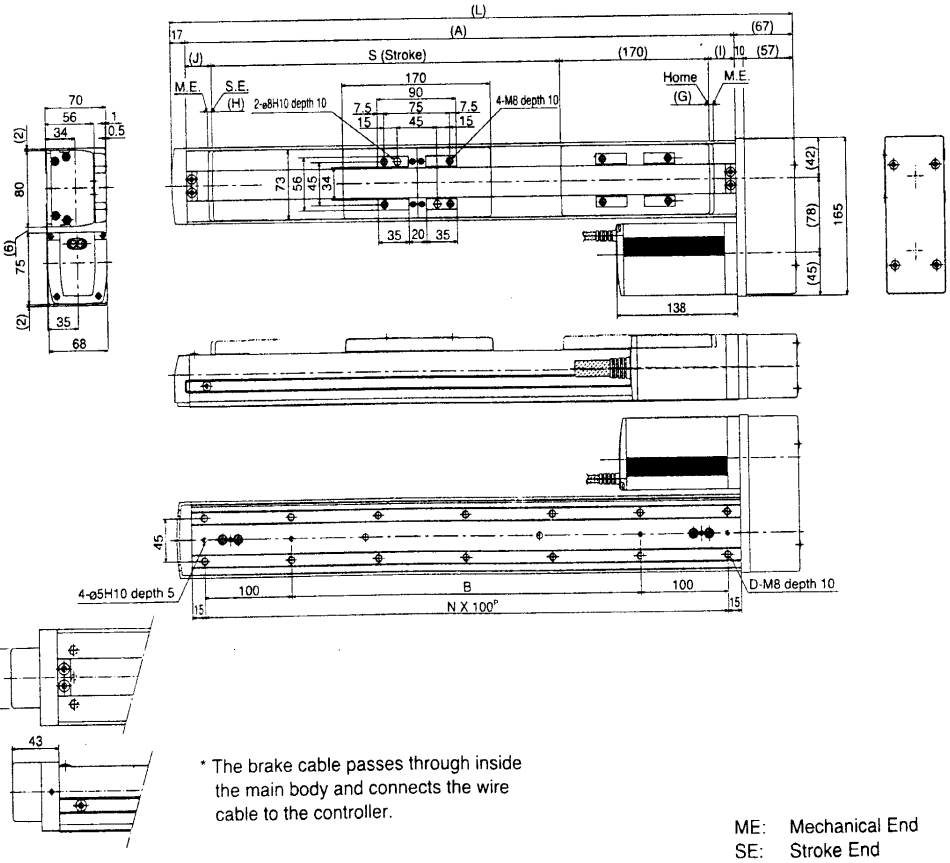
Specifications

Stroke	100~1000mm (100mm Pitch)		
Motor	Stepping Motor (Encoder Single Unit)		
Ballscrew	ø16 mm		
Guide	SM Exclusive Single Unit		
Base	Hardened Steel Alloy, IP 40		
Load Moment	Ma: 36.3 Nm	Mb: 36.3 Nm	Mc: 77.4 Nm
Overhang Load Length	Ma, Mb, Mc: 450mm or less		
Weight	See Diagram		

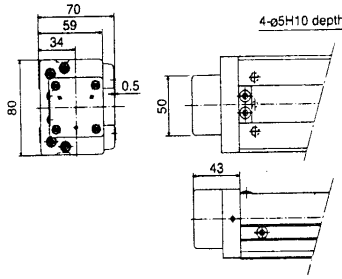
Speed and Payload Diagram (when acc./dec. speed is 0.3G horizontal and 0.2G vertical)



Dimensions



Brake area dimensions



* The brake cable passes through inside the main body and connects the wire cable to the controller.

ME: Mechanical End
SE: Stroke End
( ) Indicates the Referenced Dimensions

Stroke	100	200	300	400	500	600	700	800	900	1000
Weight (kg)	7.9	9	10	11.1	12.1	13.2	14.3	15.3	16.4	17.4
L	414	514	614	714	814	914	1014	1114	1214	1314
A	330	430	530	630	730	830	930	1030	1130	1230
B	100	200	300	400	500	600	700	800	900	1000

Dimensions according to speed type

Speed Type	G	H	I	J
L	1.25	8.75	26.25	33.75
M	2.5	7.5	27.5	32.5

ROBO CYLINDER

RSA Type

Model Type

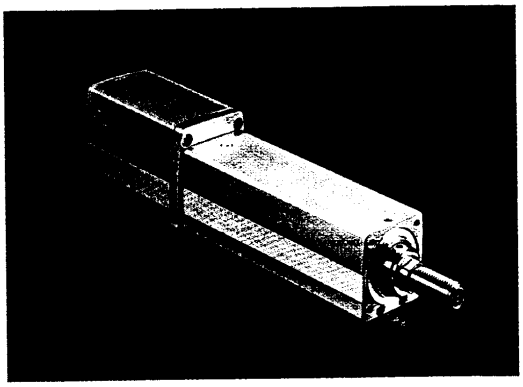
RC-RSA-□-□□□-□-□

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
50~300mm

Cable Length
S: 3m M: 5m X: Special

Options
B: With Brake
(see diagram below)
FL: With Flange (see Page 21)
FT: With Foot Tool
(see Page 21)
AQ: AQ Seal

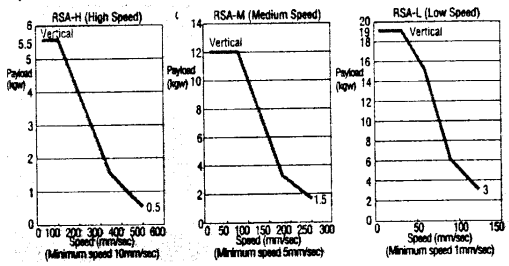


Specifications

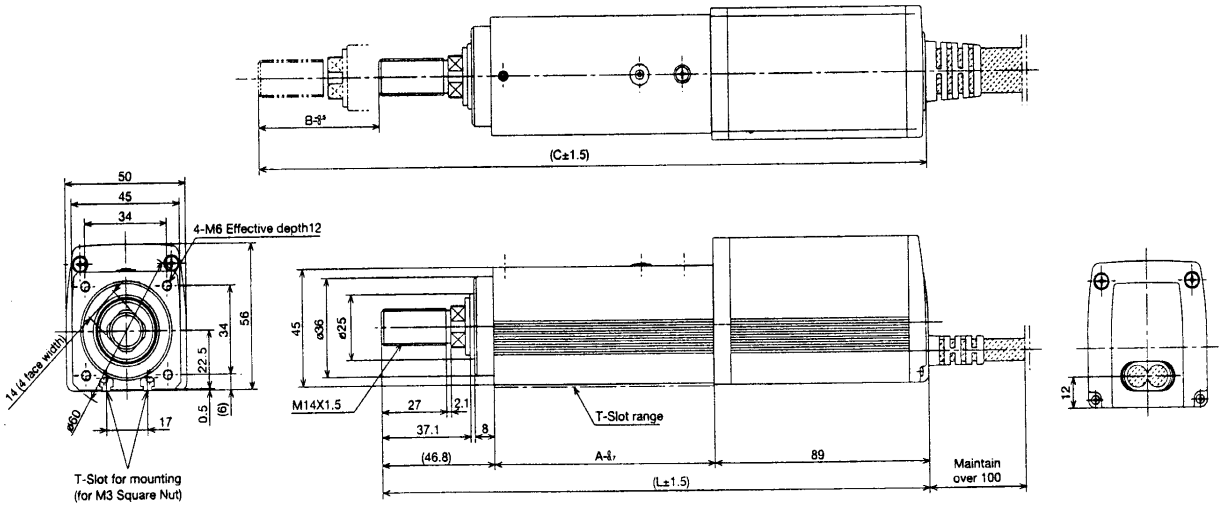
Stroke	50~300mm (50mm Pitch)
Motor	Stepping Motor (Encoder Single Unit)
Ballscrew	ø8 mm
Base	Aluminum Extruded Material, IP 40 (54), White Colour Alumite Treatment
Rod Diameter	ø 25 mm
Rod Tip Screw Diameter	M14 Pitch 1.5
Weight	See Diagram
Attachment	M3 Square Head Nut (4 pieces) + M18 Hexagonal Nut (1 piece)

Note: As for the Rod Type, there is no consideration for external power other than the load put on from the Rod forward direction. Therefore, when an external power of vertical or rotational direction is placed against the rod, please use guide.

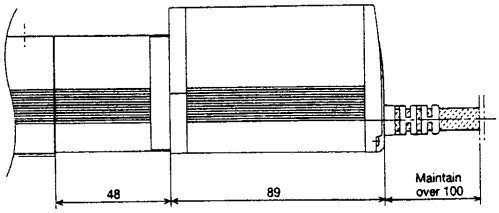
Speed and Payload Diagram (when acc./dec. speed is 0.2G)

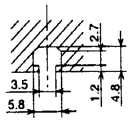


Dimensions

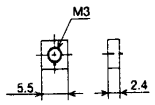


With brake





T-Slot Details



M3 Square Nut Details

£300 £315 £330

* Includes Brake

Stroke	50	100	150	200	250	300
Weight (kg)	1.6	1.9	2.2	2.5	2.7	3.0
L	246	296	346	396	446	496
A	110.2	160.2	210.2	260.2	310.2	360.2
B	50	100	150	200	250	300
C	296	396	496	596	696	796

Stroke	50	100	150	200	250	300
Weight (kg)	2.1	2.4	2.7	3.0	3.2	3.5
L	294	344	394	444	494	644
A	110.2	160.2	210.2	260.2	310.2	360.2
B	50	100	150	200	250	300
C	344	444	544	644	744	844

RMA Type

Model Type

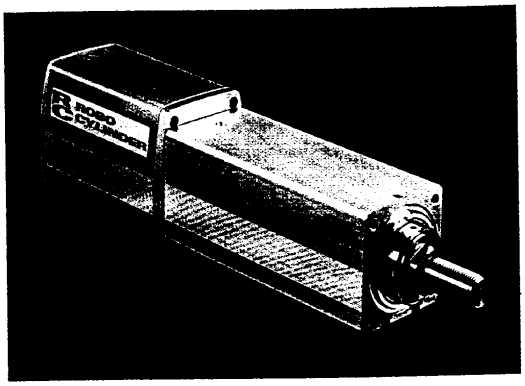
RC-RMA-□-□□□-□-□

Speed Type
L: Low Speed Type
M: Medium Type
H: High Speed Type

Stroke
50~300mm

Cable Length
S: 3m M: 5m X: Costum

Options
B: With Brake
(see diagram below)
R: With Flange (see Page 21)
FT: With Foot Tool
(see Page 21)
AQ: AQ Seal

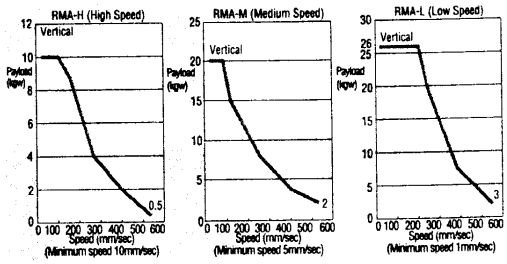


Specifications

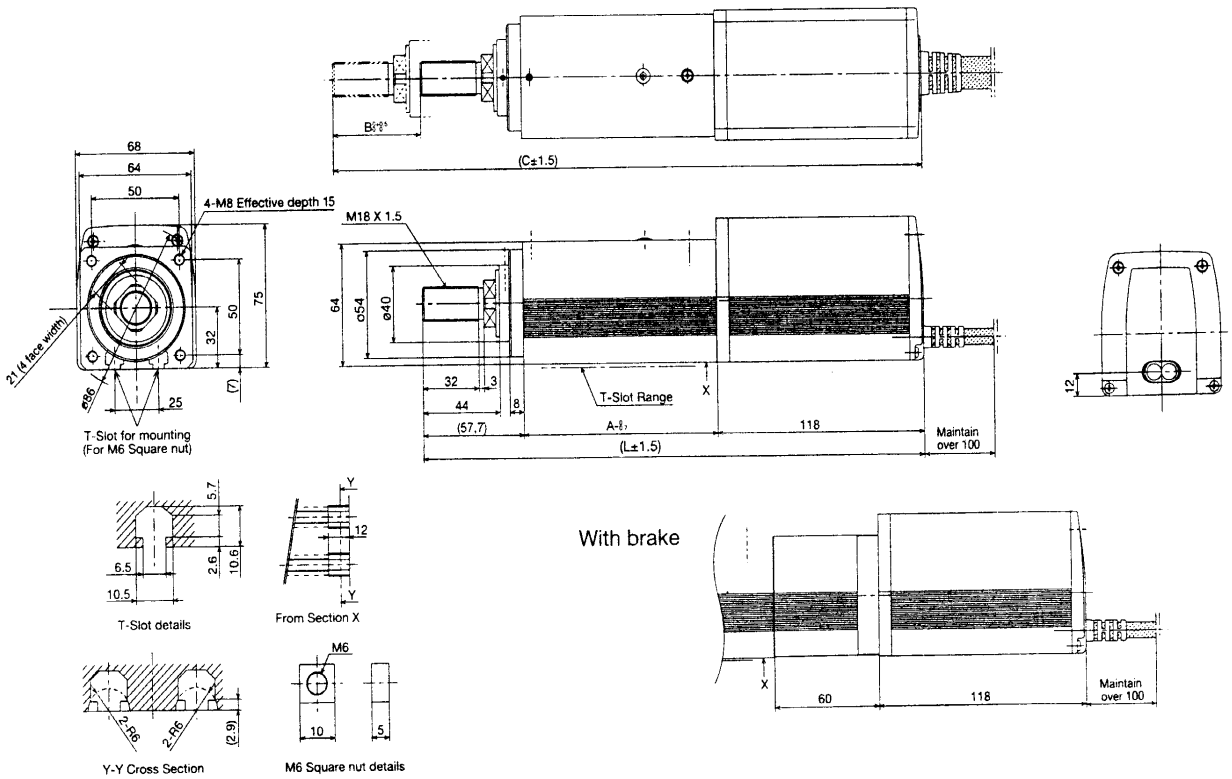
Stroke	50~300mm (50mm Pitch)
Motor	Stepping Motor (Encoder Single Unit)
Ballscrew	ø 12 mm
Base	Aluminum Extruded Material, IP 40 (54), White Colour Alumite Treatment
Rod Diameter	ø 40 mm
Rod Tip Screw Diameter	M18 Pitch 1.5
Weight	See Diagram
Attachment	M6 Square Head Nut (4 pieces) + M18 Hexagonal Nut (1 piece)

Note: As for the Rod Type, there is no consideration for external power other than the load put on from the Rod forward direction. Therefore, when an external power of vertical or rotational direction is placed against the rod, please use guide.

Speed vs. Payload Diagram (when acc./dec. speed is 0.2G)



Dimensions



* Includes Brake

Stroke	50	100	150	200	250	300
Weight (kg)	3.5	4.2	5.0	5.7	6.4	7.1
L	308	358	408	458	508	558
A	132.3	182.3	232.3	282.3	332.3	382.3

Stroke	50	100	150	200	250	300
Weight (kg)	4.3	5.0	5.8	6.5	7.2	7.9
L	368	418	468	518	568	618
A	132.3	182.3	232.3	282.3	332.3	382.3

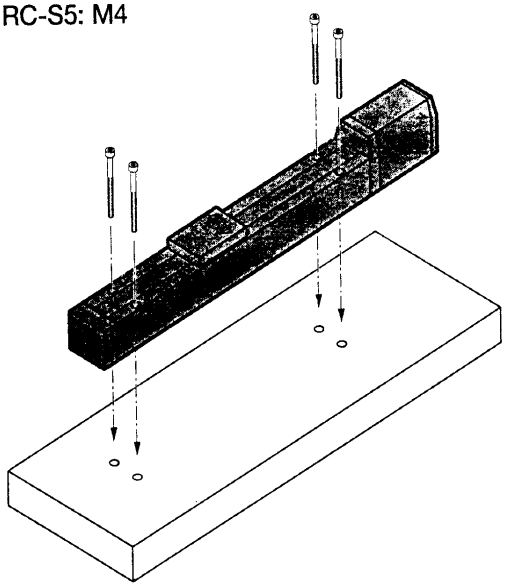
Mounting Method

Slider Type

S5

Attached from the front side using bolts with hexagonal hole.

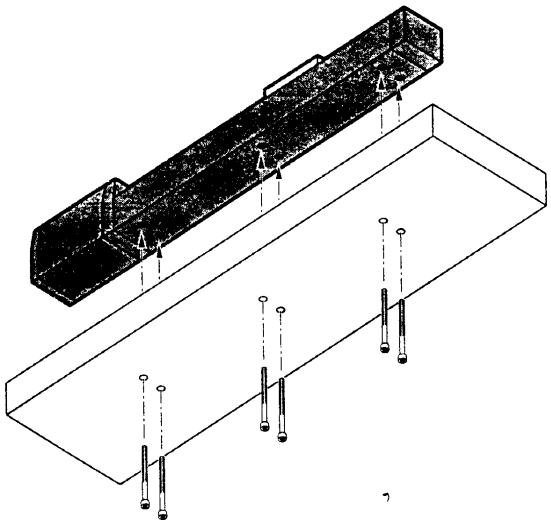
■ RC-S5: M4



S6, SS, SM

Attached from the back side using bolts.

■ RC-S6 Screw hole specifications: M5 Depth 6
■ RC-SS Screw hole specifications: M5 Depth 8
■ RC-SM Screw hole specifications: M8 Depth 10

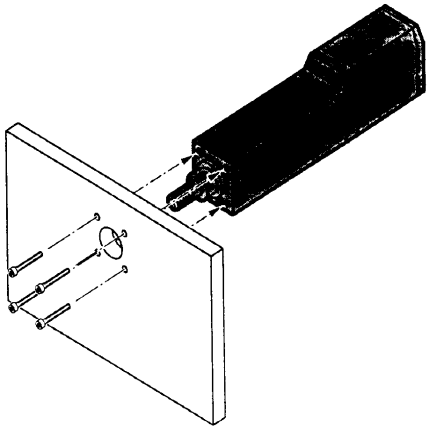


Rod Type

Standard Type

Attached from the Rod side using screw holes.

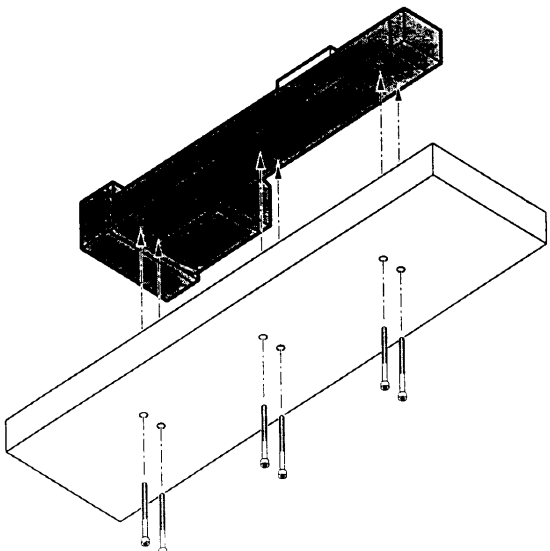
■ RC-RSA Screw hole specifications: M6 depth 12
■ RC-RMA Screw hole specifications: M8 depth 15



SSR, SMR

Attached from the back side using bolts.

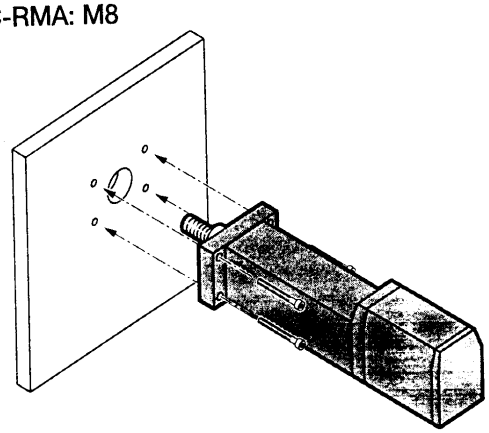
■ RC-SSR Screw hole specifications: M5 Depth 8
■ RC-SMR Screw hole specifications: M8 Depth 10



Flange Specifications
(FL Option)

Attached from the Main body side using bolts.

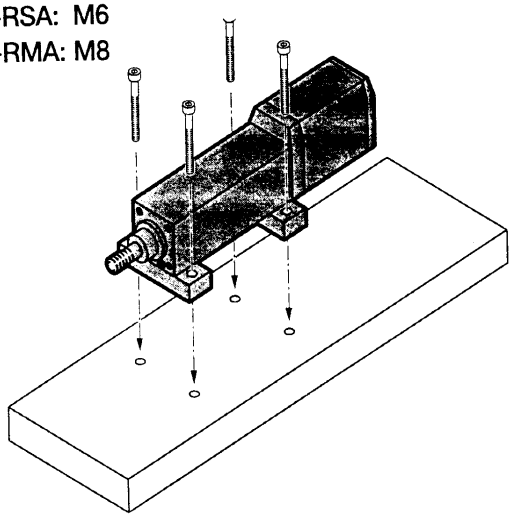
■ RC-RSA: M6
■ RC-RMA: M8



Foot Tool Specifications
(FT Option)

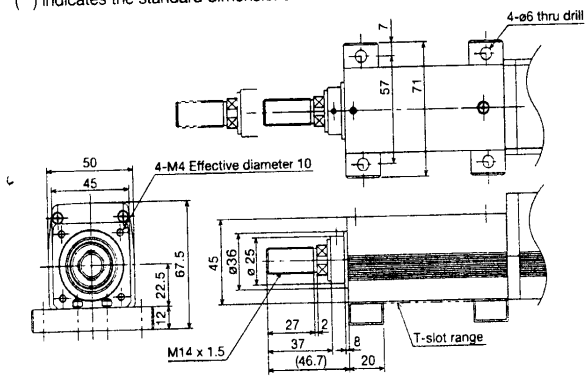
Attached from the Upper side using bolts.

■ RC-RSA: M6
■ RC-RMA: M8



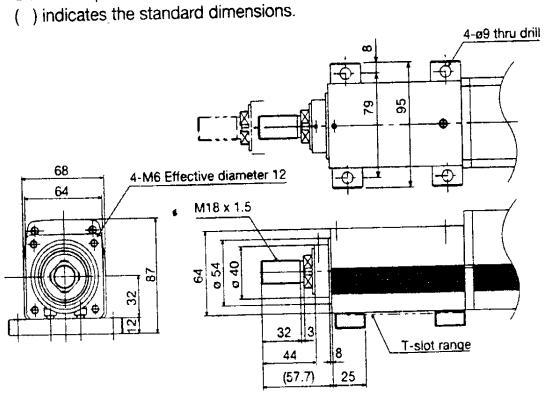
With RSA Foot Tool

The bolt used for mounting the foot tool is M3X12 bolt with hexanogal holes.
For mounting T-slot, SUS (equivalent) M3 Square is used.
( ) indicates the standard dimensions.



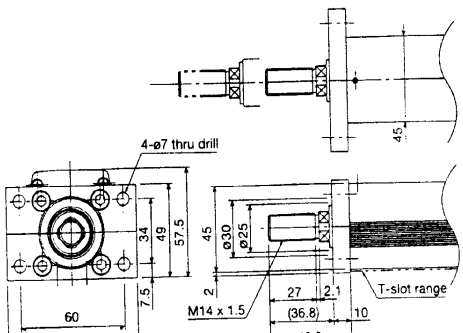
With RMA Foot Tool

The bolt used for mounting the foot tool is M6X15 bolt with hexagonal hole.
SUS M6 square head is used for the T-slot for mounting.
( ) indicates the standard dimensions.



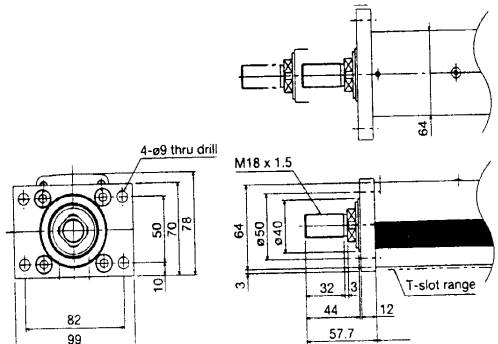
With RSA Flange

The bolt used to mount the flange on to the main body is M6X12 bolt with hexagonal hole.
( ) indicates the standard dimensions.



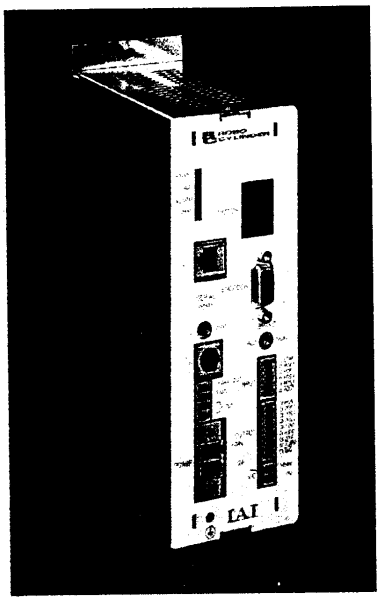
With RMA Flange

The bolt used to mount the flange on to the main body is M8X15 bolt with hexagonal hole.
( ) indicates the standard dimensions.



ROBO CYLINDER

Controller



Model Type

RCA-S-S5

Robo Cylinder™ Body Type

S5, S6, SS, SM,
SSR, SMR, RSA, RMA

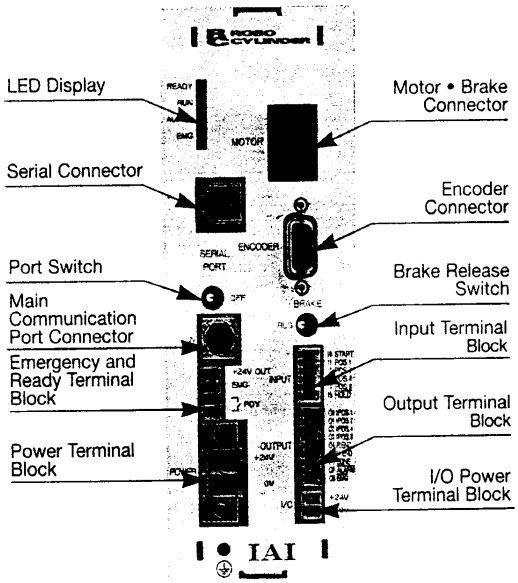
£450.

Features

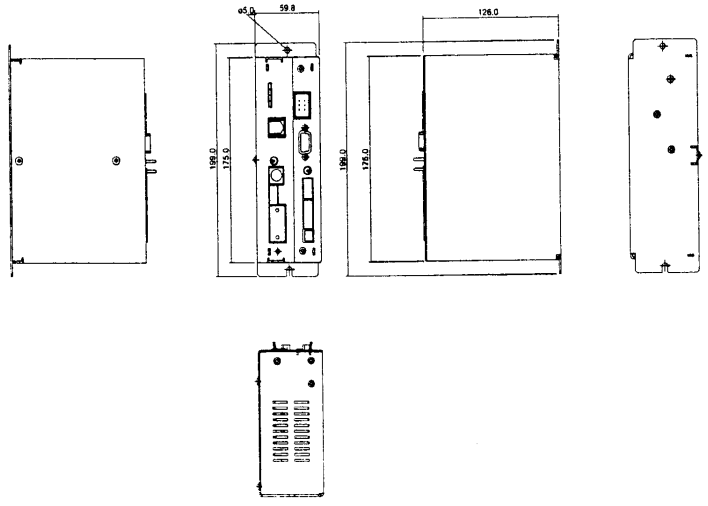
- Easy operation by simply assigning a position number from a PLC, then move.
- Up to 16 different positions may be assigned.
- Parallel I/O and Serial I/O are standard equipment.
- Link up to 16 units serially.
- Power supply is 24VDC.

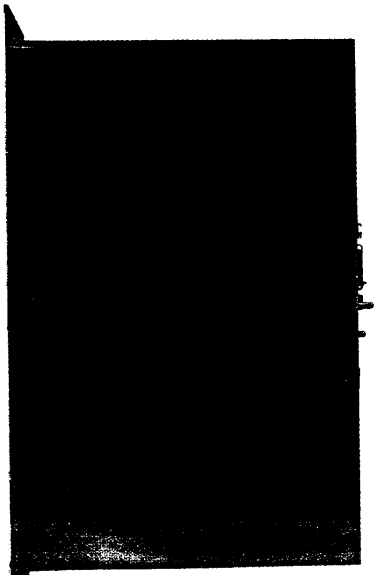
Item	Description
Power Voltage	DC 24V+10%, -15% (Maximum 2.5A)
Ambient Temperature & Humidity	Temperature: 0-50°C Humidity: 95% RH or less
Operating Environment	Free of Corrosive Gas, No Excessive Dust, IP 20
Isolation Resistance	500V 10MΩ or More
Immunity • Interface	In accordance with EN 50082-2
Unit Weight	1260 g
Safety Features	E2PROM Error Check, Memory Error, Deviation Counter Abnormality, Encoder Stoppage Determination Error, Encoder Counter Correction Abnormality, Encoder Breakage, Speed Abnormality, Overcurrent, Main Power • Voltage Abnormality, Circuit Power Abnormality, Overcurrent
Motor	80W, 130W Equivalent
LED Display	RDY (ready) / RUN / ALM (Alarm) / EMG
Memory Capacity	16 positons
Memory Device	CMOS RAM Battery Backup
Input/Output Signal	DC 24V Type DI/DO Interface (Input): Start Input, Assigned Position (4 bit binary), Hold Input (Output): Complete Position Number Output (4 bit binary), Positioning Complete Signal Output, Homing Complete Signal Output, Zone Signal Output, Alarm Output, Emergency Stop Output
	Serial Interface I/O
Ready	Ready Contact (Relay, 0.5A)
Outer Dimensions	59.8 (W) x 199 (H) x 126 (D) (mm)

Part Names



Dimensions (mm)





External I/O

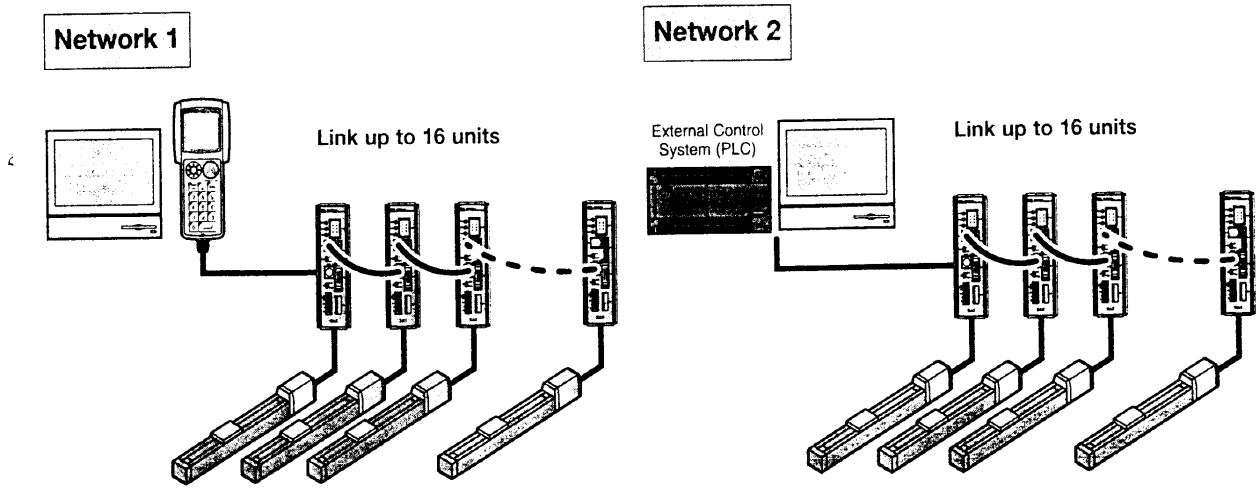
PIO (Parallel I/O):

Section	Signal Name	Content
Input	Start	Input Start Signal.
	Assigned Position 1	Input Selected Position No. (hexadecimal)
	Assigned Position 2	
	Assigned Position 4	
	Assigned Position 8	
	$\overline{\text{Hold}}$	Stops Moving Actuator.
Output	Complete Position 1	Outputs Move Complete Position No. (hexadecimal)
	Complete Position 2	
	Complete Position 4	
	Complete Position 8	
	Positioning Complete	Outputs When Movement Is Complete.
	Homing Complete	Outputs When Homing Is Complete.
	Zone	Outputs Within the Setting Range.
	$\overline{\text{Alarm}}$	Outputs During Controller Abnormality.
	$\overline{\text{Emergency Stop}}$	Outputs During Emergency Stop.
+24V	+24VDC	Connect Power 24V.
0V	0V	Connect Power 0V.

SIO (Serial I/O): The Robo Cylinder™ is equipped with a Serial I/O Port (RS-485) as a standard feature. With this Serial I/O circuit, you can link up to 16 units, making network formations possible.

Network 1:
By simply connecting the teaching pendant or PC to a controller, it is easy to edit data on several controllers without having to change wiring.

Network 2:
It is possible to control up to 16 controllers via serial communications from a single port on a PC or PLC.



Operation via ProfibusDP

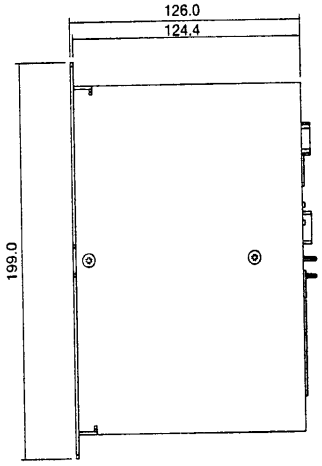
Movement may be executed via ProfibusDP using a specially designed Robo Cylinder™ Profibus type controller. Positions, velocity and acceleration, however, must be set by either PC Software or the Teaching Pendant.

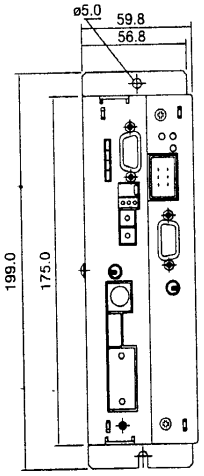
Two different types of Profibus controllers are available:

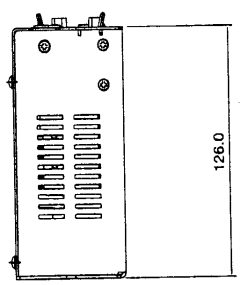
1. Single-Axis Type
   Only one axis can be connected. In other words, one Profibus address is assigned for each axis.

2. Multi-Axis Type
   Multiple axes (up to 7 axes) can be connected. The controller consists of a CPU/PS unit and up to 7 Driver units depending on requirement. One Profibus address is assigned for each controller, namely, up to 7 axes with one address. The power needs to be supplied only to CPU/PS unit.

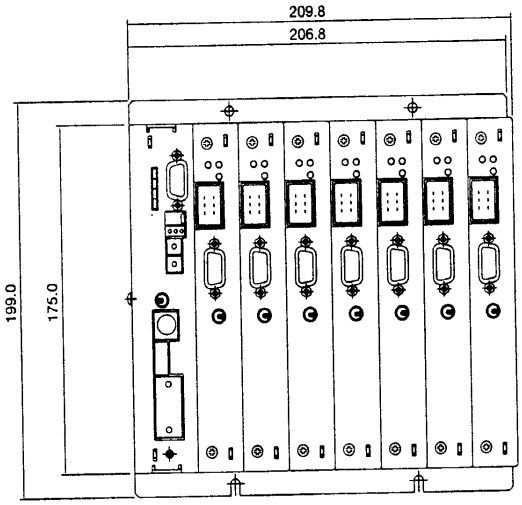
Single-Axis Type

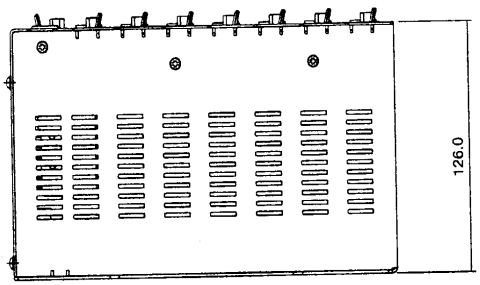






Multi-Axis Type





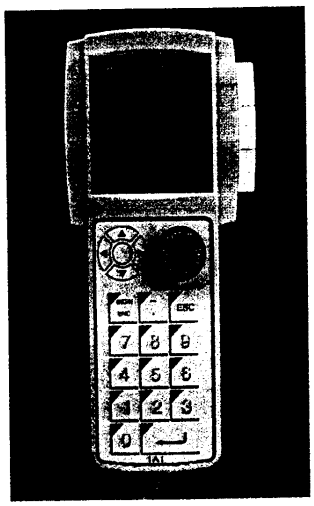
Options

Teaching Pendant

Model Type RCA-T (standard)
RCA-TD (With deadman switch)

Features

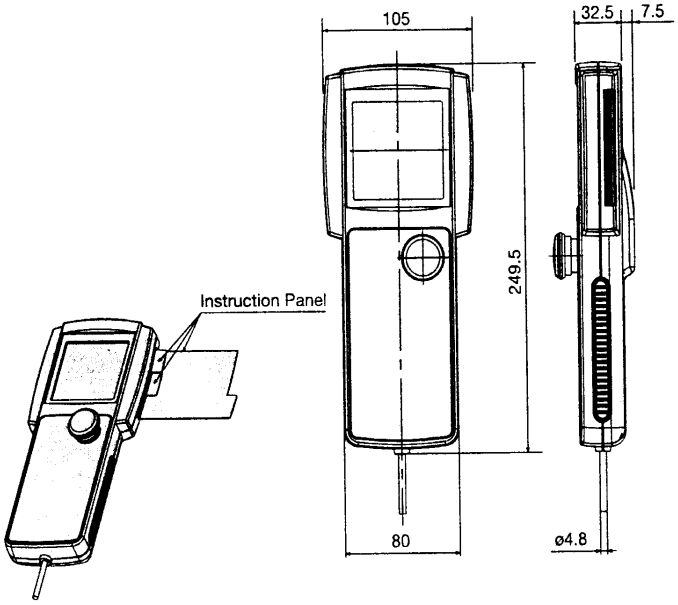
- Easy to use operation. Simply enter the numbers in the appropriate spot. Slide-out help panel is allowed for a quick, on the spot instruction.
- Lock-Type Emergency Stop Switch.
- Deadman Switch (optional).



Specifications

Item	Specifications
Operating Temperature • Humidity	Temperature 0~40°C Humidity: 85% RH or less
Operating Environment	Free of corrosive gas, no excessive dust, IP 40
Weight	Approximately 550G (includes cable)
Cable Length	5m
Display	21 Characters x 16 rows LCD Display

Dimensions



PC Software

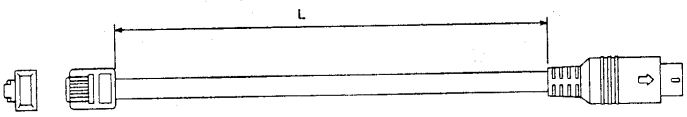
Model Type RCA-101-MW

Content
- 3 Floppy disks
- 1 PC connection cable (5m)
- 1 RS485 Conversion Adapter

Features
- By linking the controller it is possible to access and control up to 16-axis.
- Useful functions such as Jog function, incremental movement and step

Maintenance

External Device Communication Serial Cable



Model Type	Length	Reference
CB-RCA-SIO020	2m	RCA-105-2
CB-RCA-SIO050	5m	RCA-105-5/RCA-101-MW

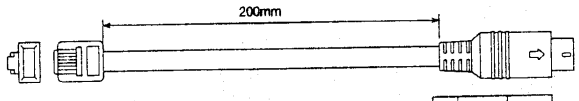
No.	Signal	Colour
1	5V	Brown
2	SGA	Yellow
3	GND	Red
4	SGB	Orange
5	GND	Blue
6	5V	Green

No.	Signal	Colour
1	SGA	Yellow
2	SGB	Orange
3	5V	Brown + Green
4	EMGS	
5	EMGA	Black
6	24V	
7	GND	Red + Blue
8	EMGB	Black
	FG	Shield

Short circuit electric conduit UL-1007 AWG28 (Black)

Shield Non-connect

Controller Serial Link Cable



No.	Signal	Colour
1	5V	
2	SGA	Brown
3	GND	Yellow
4	SGB	Red
5	GND	Orange
6	5V	

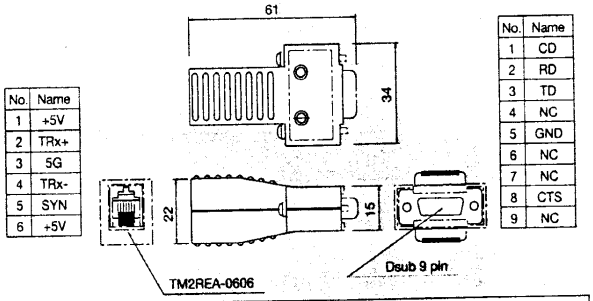
No.	Signal	Colour
1	SGA	Brown
2	SGB	Red
3	5V	
4	EMGS	
5	EMGA	Black
6	24V	
7	GND	Yellow
8	ENGB	Black
	FG	Shield

Short circuit conduit UL 1007AWG28 (Black)

Shield non-contact

Model Type	Length	Reference
CB-RCA-CTL002	0.2m	Connetion for C/T-C/T

RS485 Conversion Adapter

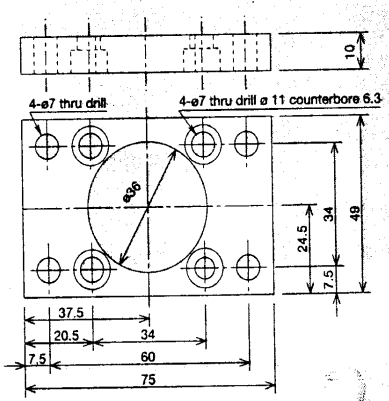


No.	Name
1	+5V
2	TRx+
3	5G
4	TRx-
5	SYN
6	+5V

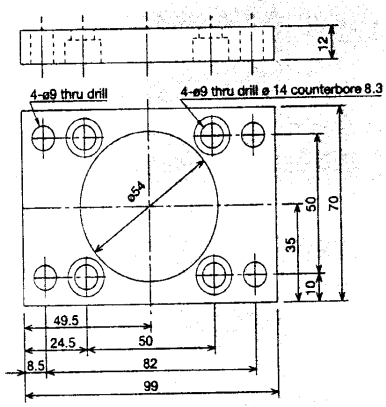
No.	Name
1	CD
2	RD
3	TD
4	NC
5	GND
6	NC
7	NC
8	CTS
9	NC

Model Type	Length	Reference
RC-ADP-MW	–	External Device connection side 9 pin

Flange for Rod Type Mounting

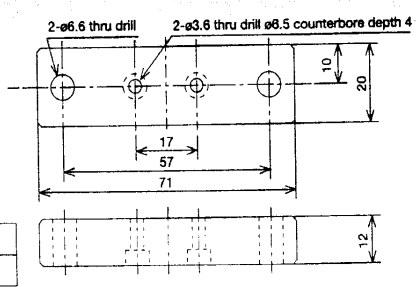


Model Type	Reference
RC-FL-RSA	RSA

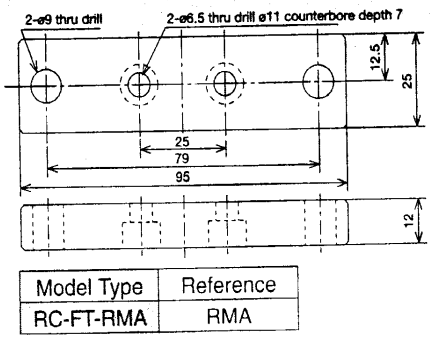


Model Type	Reference
RC-FL-RMA	RMA

Foot Tool for Rod Type Mounting



Model Type	Reference
RC-FT-RSA	RSA



Model Type	Reference
RC-FT-RMA	RMA

RC Series: AQ (Automatic Quantum) Lubrication Seal (Option)

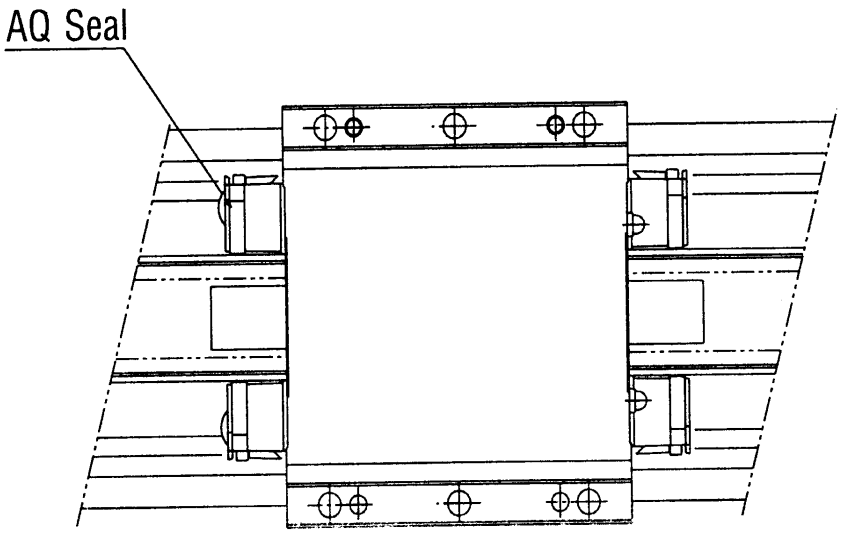
The AQ Seal option provides long term maintenance free operation and is available upon request from customer.

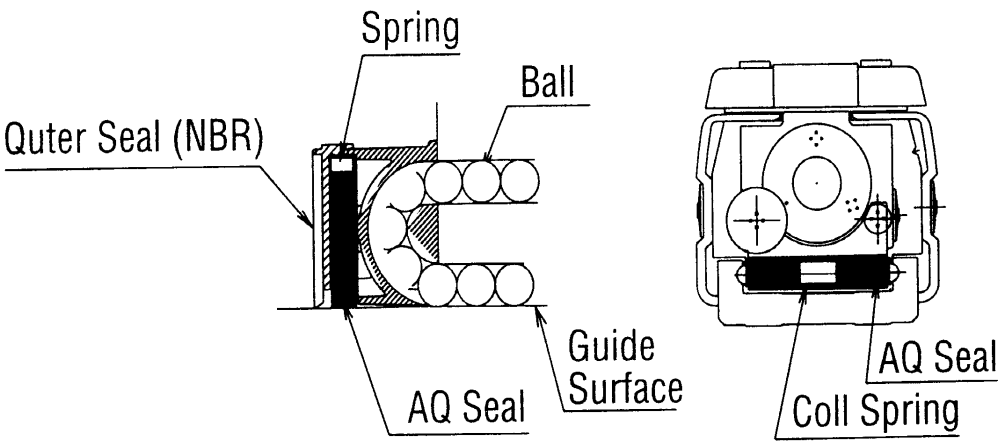
Characteristics of the AQ Seal

- The AQ Seal material contains lubrication oil that excretes through capillary action.
- The lubrication oil is released when the unit contacts the guide and the surface of the rolling steel balls. Thus, long term maintenance free operation is made possible.

Effect of the AQ Seal

- The AQ Seal ensures long term maintenance free operation of 5000km or 3 years. After this interval, the unit will need to be greased in the normal way.
- Practical for systems where greasing work is hard to perform.
- In areas where cleanliness is important, there are obvions advantages in this sealed system.

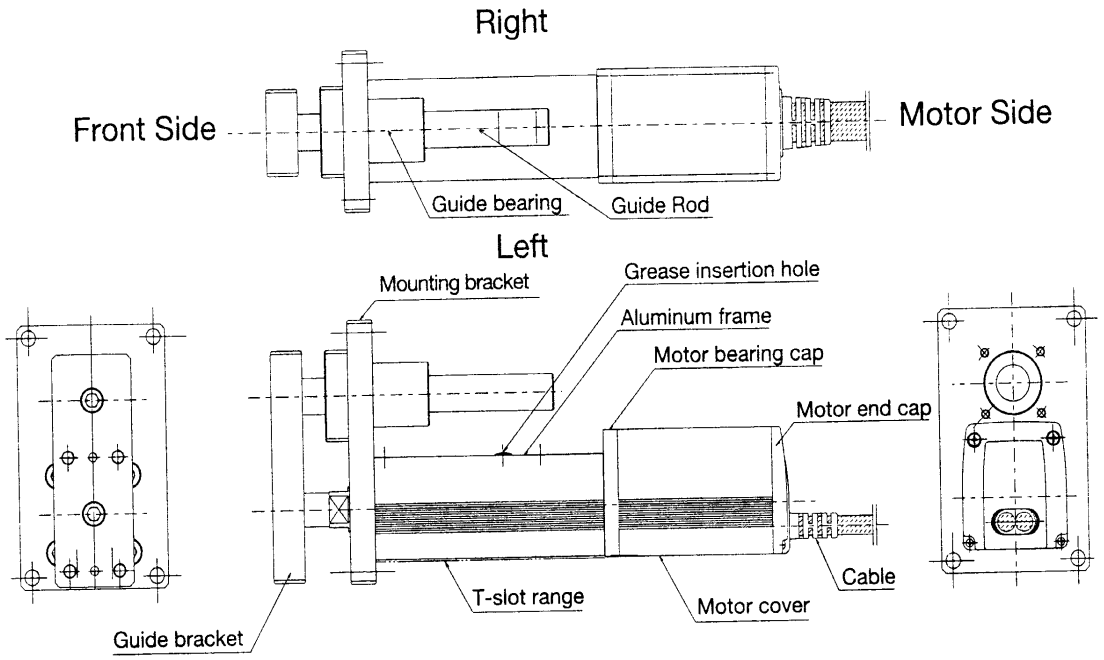




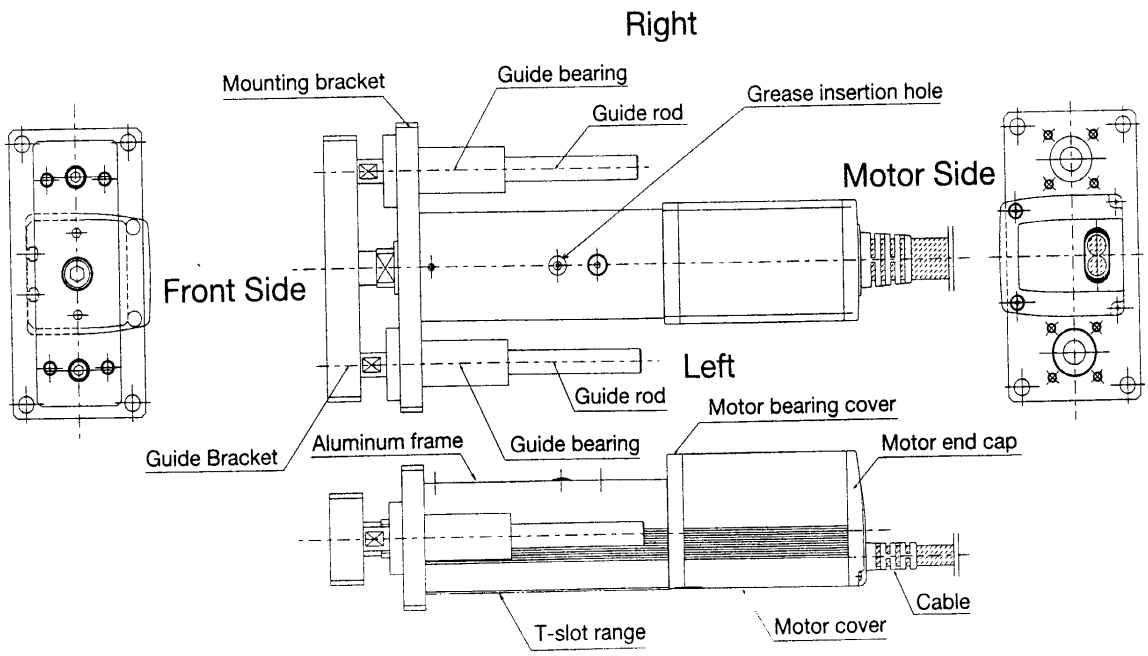
RC Option

ROD TYPE with Guide

RSGS Type
RMGS Type (Single Guide Type)



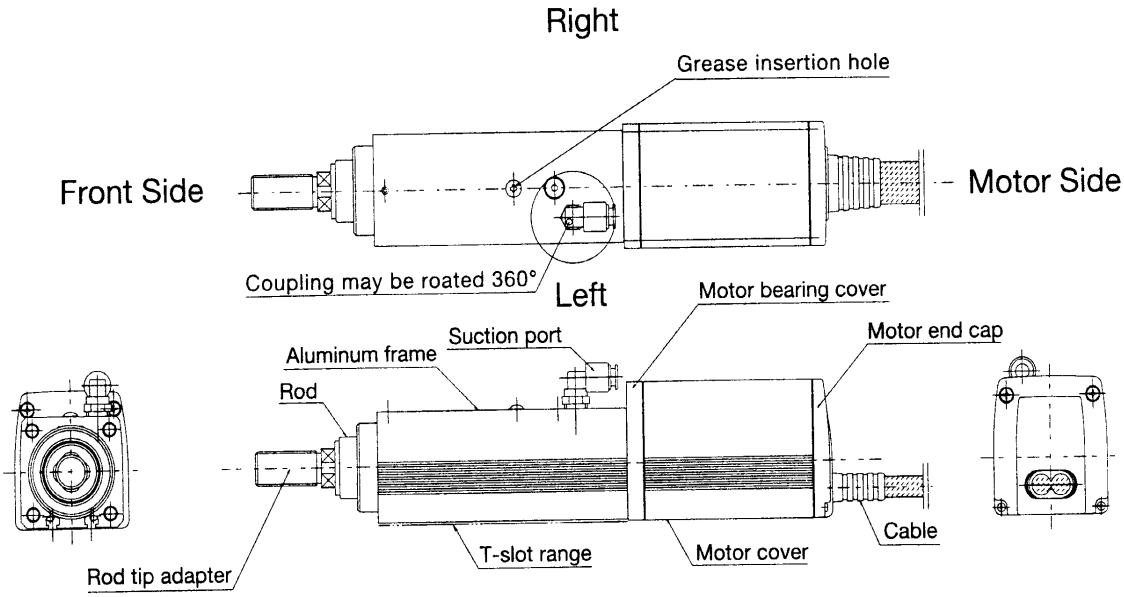
RSGD Type
RMGD Type (Double Guide Type)



RC Option

Dust Proof • Slash Proof Type • IP 54

RSW Type
RMW Type



• As for the exhaust port, insert a tube with an outer diameter of ø6 and extend it to a place where water will not reach.