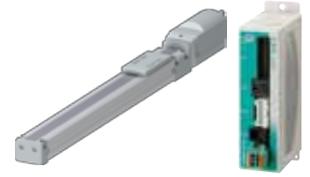


Electric Actuator ERL2/ESD2 Series



ELECTRIC ACTUATOR ERL2 / ESD2 SERIES

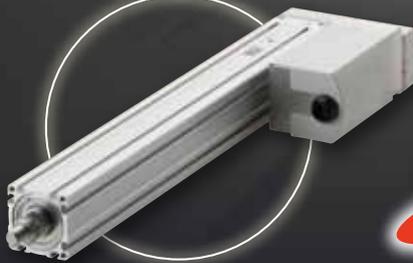
Simple & Smart

Flexible combination of actuator and controller



New

Flexible controls
Compatible with
pulse train input



New

Space-saving installation
Flexible motor mounting



Discontinue

Electric actuator

ERL2/ESD2 Series

Industry's smallest

63 points compatible!!

Pulse train input compatible



7 points positioning controller

EC07



63 points positioning controller

EC63



Controller compatible with pulse train input

ECPT



Automatic

Flexible

Easy!

Flexible combination

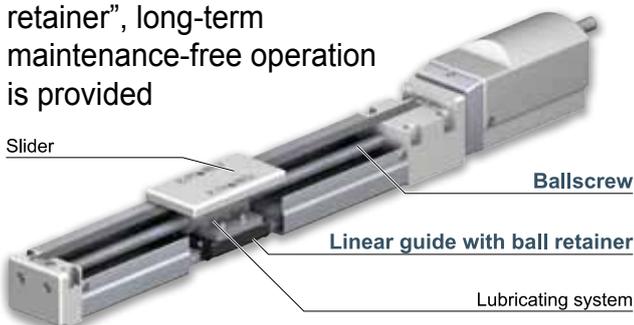
- Controller common to all models
- Automatic actuator recognition

Contributes to reduction of spare parts

Easy!

Maintenance

With the adoption of "ballscrew with lubrication equipment" and "liner guide with ball retainer", long-term maintenance-free operation is provided



Controller EC Series

- **ECPT**

Addition of new controller compatible with pulse trains

Free positioning and speed control

Enables current position confirmation with position output

- **EC63**

Allows 63 multi-point positioning

- **EC07**

Smallest controller class in the industry

120 × 35 × 68 mm (EC07)

7-point positioning with easy settings

Discontinue

ERL2 Series

Electric Slider Actuator



recognition

combination!



ESD2 Series

Electric Rod Actuator



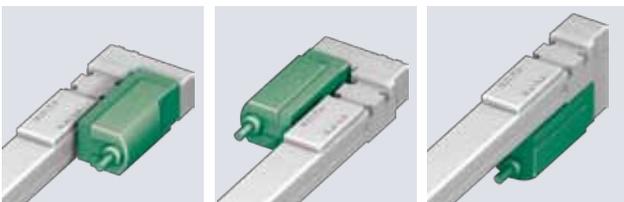
Flexible motor mounting

Space saving

Space savings from various motor mountings to fit your equipment

Rich selection of motor mounting orientations

In addition to the conventional straight type, a selection of right-hand, left-hand and bottom are available



Right-hand

Left-hand

Bottom



Selectable setting tools

Easy setting with "E Tools"

With the Handy Terminal, setting the PC software "E Tools" has never been easier

"Point data setting", "Motion Instructions", "Monitor"

Simple operation with Handy Terminal

Easy to press button



Easy, even for beginners

Light

shows which button to press next

System configuration

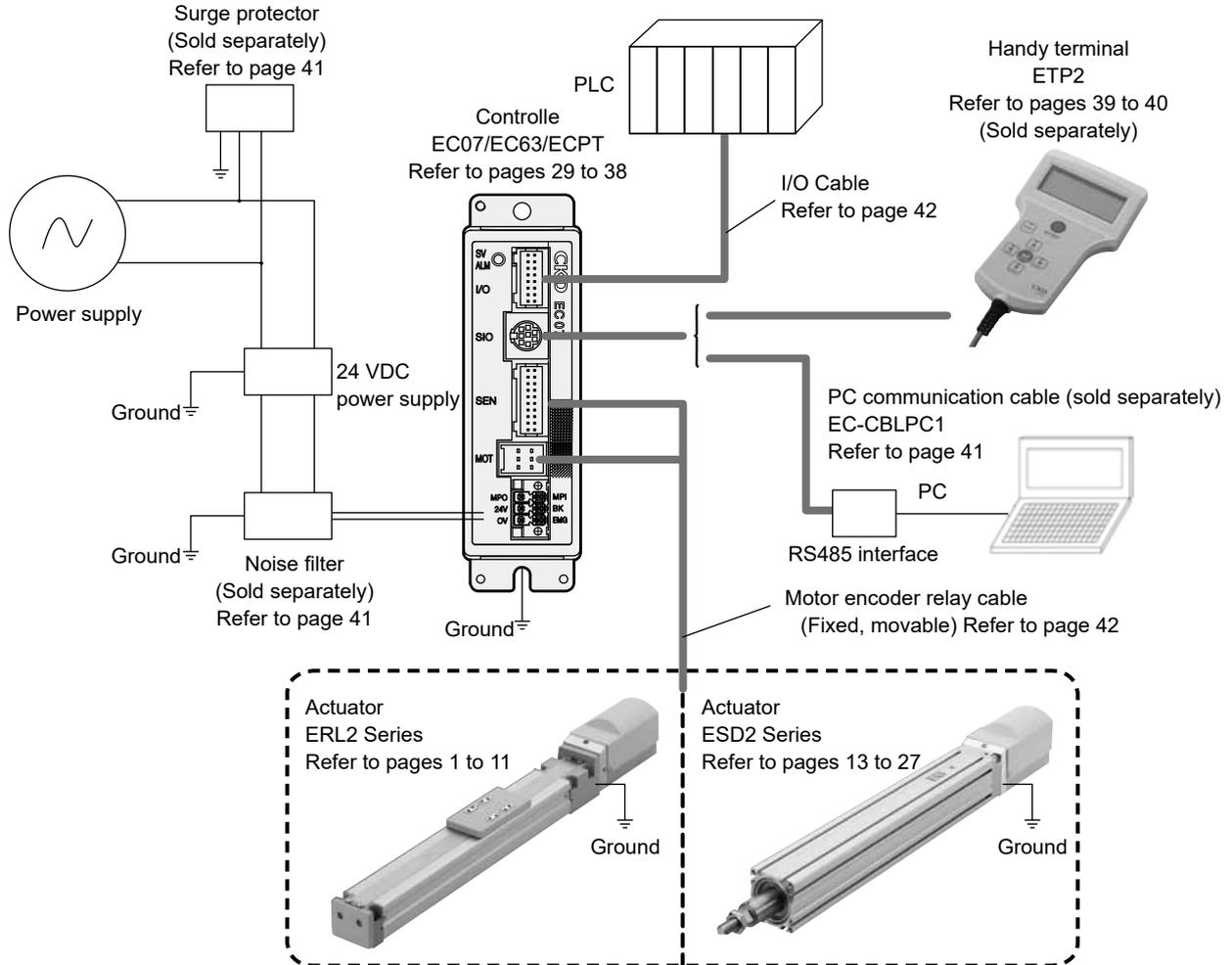
● Basic setting items

1. Set the necessary parameters from a PC or handy terminal
2. Set the point data in a similar manner

● Basic driving methods

1. Input a destination point signal from a PLC
2. Input a start signal from a PLC
3. After it is driving, output a "positioning complete" signal from the controller

The areas indicated by the thin lines should be prepared by the customer.



Configuration (When selecting the set model No.)

	Name	Quantity
Standard configuration	Actuator unit	1
	Controller unit	1
	I/O Cable	1
	Motor encoder relay cable	1

A surge protector is required to comply with the CE marking. Refer to the Instruction Manual for details about installation and wiring.

Part used	Model No.	Manufacturer
Surge protector	R/A/V-781BXZ-4	OKAYA ELECTRIC INDUSTRIES CO., LTD.
	R/A/V-781BWZ-4	
	RSPD-250-Q4	
	RSPD-250-U4	

Setting tools

- We offer the "ETP2" handy terminal.
- We offer the "E Tools" electric actuator setting software. (Windows version provided free of charge)
You can set the point data and parameters for the ERL2/ESD2 electric actuators and issue operation instructions from a PC. The point data and parameter data can be saved to the PC.
- An RS-485 interface and a PC communication cable (EC-CBLPC1) are required for a PC connection.
- Recommended RS-485 interface model numbers
MISUMI PCCM-COM-1PDUSBH-R
CONTEC COM-1PD (USB) H

Note 1: Because the PC communication cable is designed specifically for CKD's electric actuator, commercially available communication cables cannot be used. Accidentally using the wrong cable may damage the controller and PC.

Note 2: The handy terminal and PC are expected to only be connected when making adjustments. Remove the cable from the controller during normal operation.

Note 3: The PC may be unable to recognize the RS485 interface when recovering from sleep mode, and communication anomalies may occur.

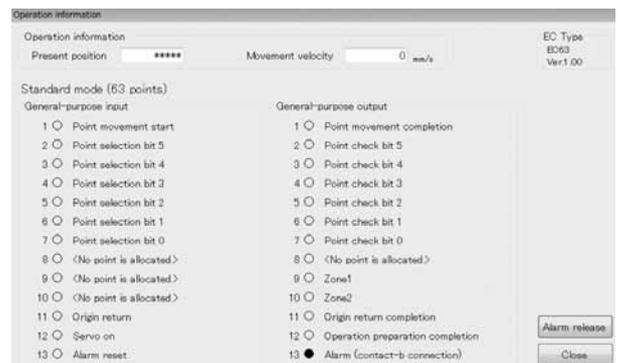
"E Tools" electric actuator setting software

Note: An RS-485 interface and a separate PC communication cable (page 41) are required to connect the PC and controller.

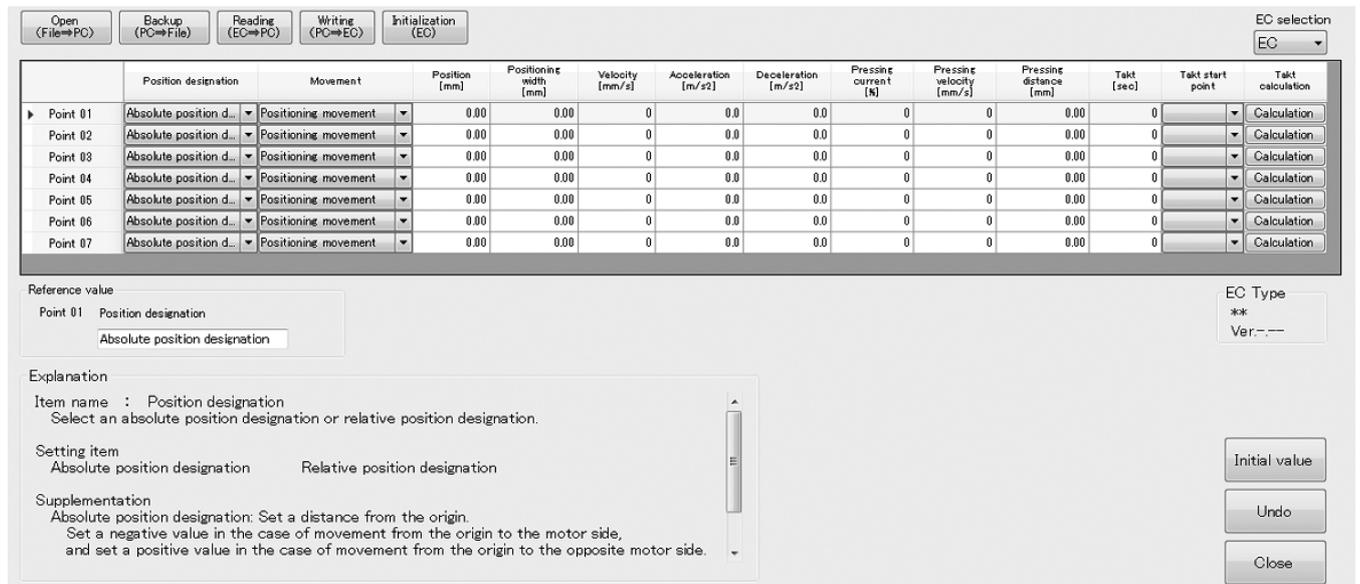
Download the "E Tools" electric actuator setting software and the Instruction Manual from the CKD website.
Website address: <http://www.ckd.co.jp>

Main functions

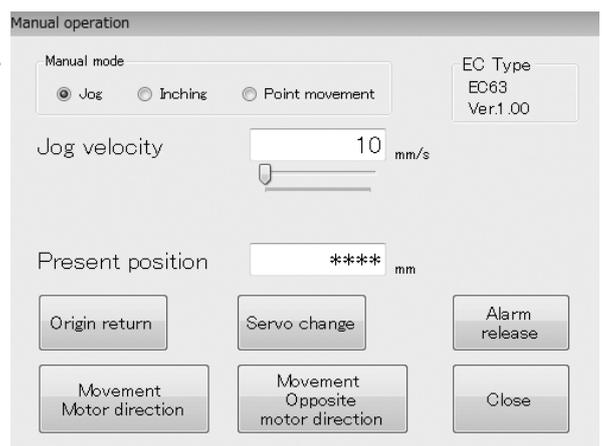
- You can easily set multiple point data settings.
- Monitor
 - Actuator operational status
 - Input and output status of the general purpose input and output
 - Check the alarm history stored on the controller



- Settings
 - Easy editing and setting of point data and parameters



- Operation instructions
 - You can perform the following manual operations from E Tools
 - Jog
 - Inching
 - Point movement
 - Forced output to the general purpose output



Selection guide

Type	Model No.	Stroke (mm)										
		50	100	150	200	250	300	350	400	450	500	
Slider		ERL2-45E06 ERL2-45R06 ERL2-45L06	▶									
		ERL2-45D06	▶									
		ERL2-45E12 ERL2-45R12 ERL2-45L12	▶									
		ERL2-45D12	▶									
		ERL2-60E06 ERL2-60R06 ERL2-60L06	▶									
		ERL2-60D06	▶									
		ERL2-60E12 ERL2-60R12 ERL2-60L12	▶									
		ERL2-60D12	▶									

Rod		ESD2-35E06 ESD2-35R06 ESD2-35L06 ESD2-35D06	▶									
		ESD2-35E12 ESD2-35R12 ESD2-35L12 ESD2-35D12	▶									
		ESD2-45E06 ESD2-45R06 ESD2-45L06 ESD2-45D06	▶									
		ESD2-45E12 ESD2-45R12 ESD2-45L12 ESD2-45D12	▶									
		ESD2-55E06 ESD2-55R06 ESD2-55L06 ESD2-55D06	▶									
		ESD2-55E12 ESD2-55R12 ESD2-55L12 ESD2-55D12	▶									

Discontinue

					Max. load capacity (kg)								Lead (mm)	Max. pressing force (N)	Max. speed (mm/s)	Listed page	
550	600	700	800														
				10	20	30	40	50	60	70	80						
				5		10							6	220 (*1)	300	1	
				2		5							12	110 (*1)	600		
						11		30						6	640 (*1)	200	1
						6.5		16								12	
						10		33 (*2)						6	220	300	13
				4		16 (*2)								12	110	600	
						10		33 (*2)						6	220	300	13
				4		16 (*2)								12	110	600	
						15		67 (*2)						6	640	200	13
						6.5		34 (*2)						12	320	400	

*1: Use within the allowable moment.

*2: The values for the rod horizontal load capacity are based on an actuator used in combination with an external guide.

Discontinue

Electric actuator Slider

ERL2 Series

Compatibility function allows the controller, actuator, and cable to be freely combined

The electric actuator that works like a pneumatic cylinder

● Motor sizes: □42 / □56



Actuator specifications

Descriptions		ERL2-45		ERL2-60		
Actuator		Slider				
Motor		Stepping motor				
Encoder		Incremental				
Drive system		Rolling ball screw Outer diameter 8 mm		Rolling ball screw Outer diameter 12 mm		
Motor size	mm	□42		□56		
Screw lead	mm	6	12	6	12	
Stroke	mm	50, 100, 150, 200 250, 300, 350, 400 450, 500		50, 100, 150, 200 250, 300, 350, 400 450, 500, 550, 600 700		
Operation speed range	mm/s	15 to 300	30 to 600	15 to 200	30 to 400	
Operation acceleration/deceleration speed range	m/s ²	1.0 to 3.0				
Repeatability	mm	±0.02				
Lost motion	mm	0.1 or less				
Max. load capacity	Horizontal	kg	10	5	30	16
	Vertical	kg	5	2	11	6.5
*1						
Maximum pressing force *2		N	220	110	640	320
Motor power supply voltage			24 VDC±10%			
Motor section maximum instantaneous current		A	2.7		4	
Brake	Type		Non-excitation operation			
	Power supply voltage		24 VDC±10%			
	Power consumption	W	6.1		7.2	
	Holding force	N	140	70	610	305
Insulation resistance			10 MΩ or higher 500 VDC			
Withstand voltage			500 VAC for 1 minute			
Operating ambient temperature			0 to 40°C (no freezing)			
Operating ambient humidity			35 to 80% RH (no condensation)			
Storage ambient temperature			-10 to 50°C (no freezing)			
Storage ambient humidity			35 to 80% RH (no condensation)			
Atmosphere			No corrosive gas, explosive gas, or dust			
Degree of protection			IP4X			

*1: The maximum load capacity decreases when the speed increases. For more details, refer to the vertical and horizontal load capacity charts and graphs in the next page.

*2: Use within the allowable moment. (Refer to page 46 for the allowable moment value.)

Weight

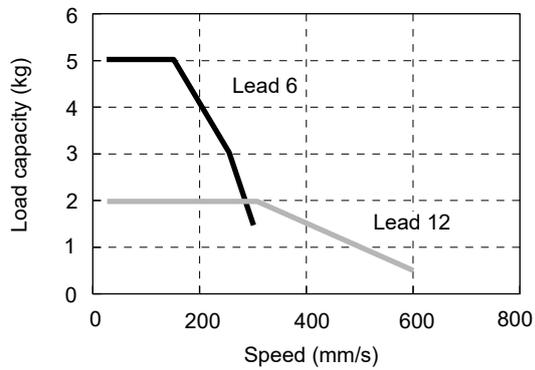
(kg)

Body size	Motor Mounting direction	50 st	100 st	150 st	200 st	250 st	300 st	350 st	400 st	450 st	500 st	550 st	600 st	700 st
ERL2-45	E	1.5 (1.8)	1.6 (1.9)	1.7 (2.0)	1.8 (2.1)	1.9 (2.2)	2.0 (2.3)	2.1 (2.4)	2.2 (2.5)	2.3 (2.6)	2.5 (2.8)	—	—	—
	R/L/D	1.7 (2.0)	1.8 (2.1)	1.9 (2.2)	2.0 (2.3)	2.1 (2.4)	2.2 (2.5)	2.3 (2.6)	2.4 (2.7)	2.5 (2.8)	2.7 (3.0)	—	—	—
ERL2-60	E	3.2 (3.8)	3.4 (4.0)	3.6 (4.2)	3.8 (4.4)	4.0 (4.6)	4.2 (4.8)	4.4 (5.0)	4.6 (5.2)	4.8 (5.4)	5.0 (5.6)	5.2 (5.8)	5.4 (6.0)	5.8 (6.4)
	R/L/D	3.7 (4.3)	3.9 (4.5)	4.1 (4.7)	4.3 (4.9)	4.5 (5.1)	4.7 (5.3)	4.9 (5.5)	5.1 (5.7)	5.3 (5.9)	5.5 (6.1)	5.7 (6.3)	5.9 (6.5)	6.3 (6.9)

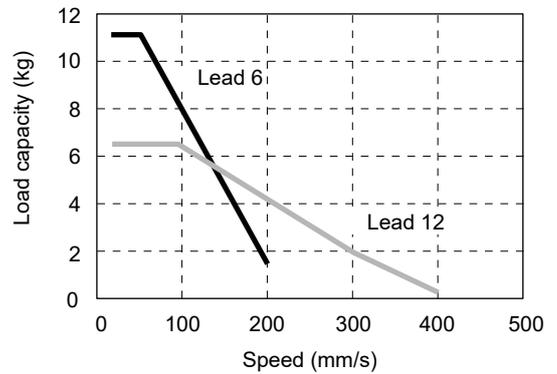
Note: the numbers in () indicate the product weight with the brake

Vertical load capacity

● ERL2-45

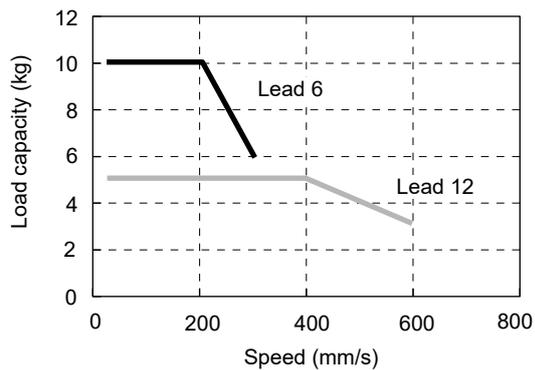


● ERL2-60

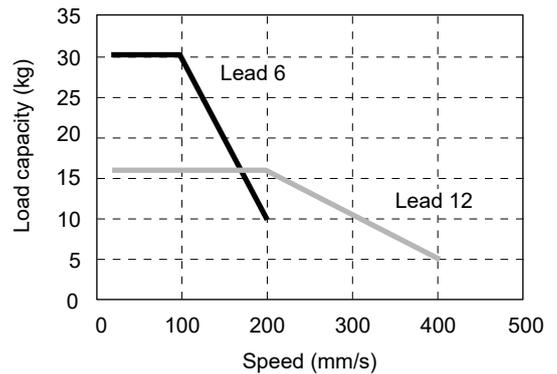


Horizontal load capacity

● ERL2-45

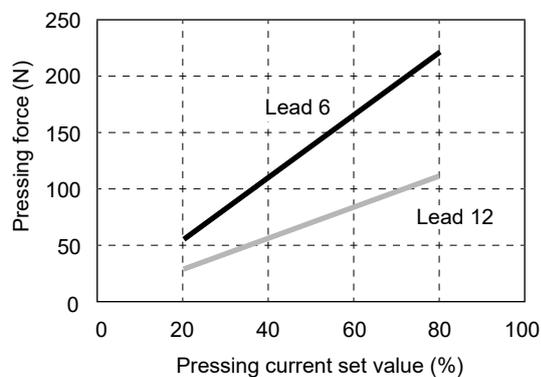


● ERL2-60



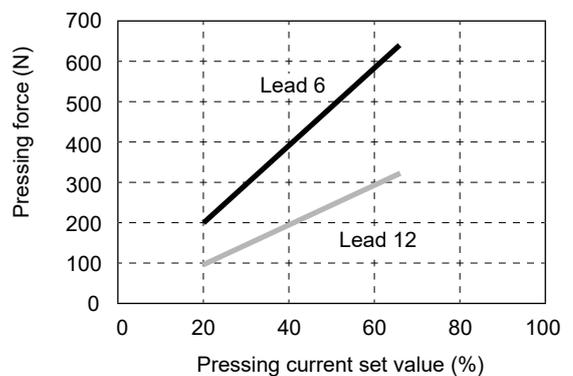
Pressing force (guideline)

● ERL2-45



Note: Use within the allowable moment.

● ERL2-60



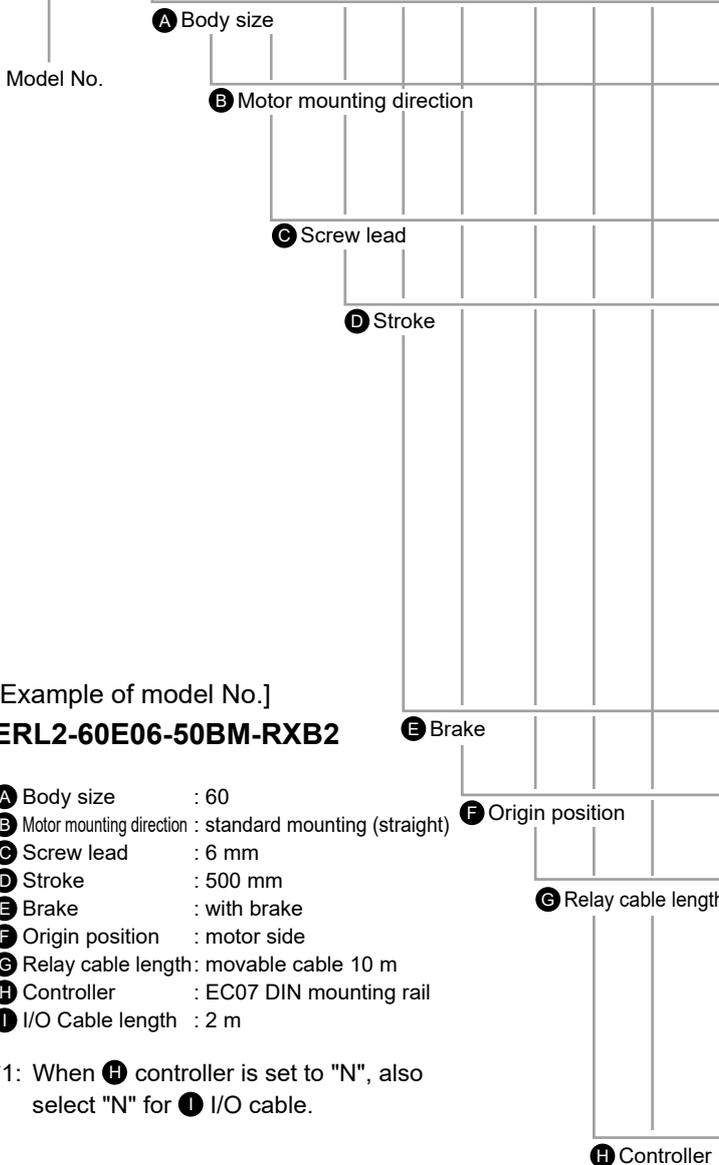
Note: Use within the allowable moment.

ERL2 Series

How to order

● Set model No. (actuator, controller, cable)

ERL2-60E06-50BM-RXB2



[Example of model No.]

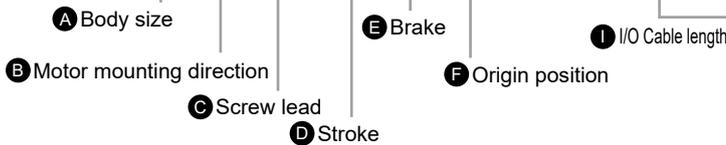
ERL2-60E06-50BM-RXB2

- A** Body size : 60
- B** Motor mounting direction : standard mounting (straight)
- C** Screw lead : 6 mm
- D** Stroke : 500 mm
- E** Brake : with brake
- F** Origin position : motor side
- G** Relay cable length : movable cable 10 m
- H** Controller : EC07 DIN mounting rail
- I** I/O Cable length : 2 m

*1: When **H** controller is set to "N", also select "N" for **I** I/O cable.

● Actuator body discrete model No.

ERL2-60E06-50BM-N0NN



● Controller individual model No.

EC07-B

Series | Mounting method

*For details, refer to "How to order" on page 29.

● Cable discrete model No.

EC-CBLME1-S-5

Fixed/movable | Cable length

EC-CBLIF1-07-5

I/O Cable | Controller Series

*Refer to page 42 for details.

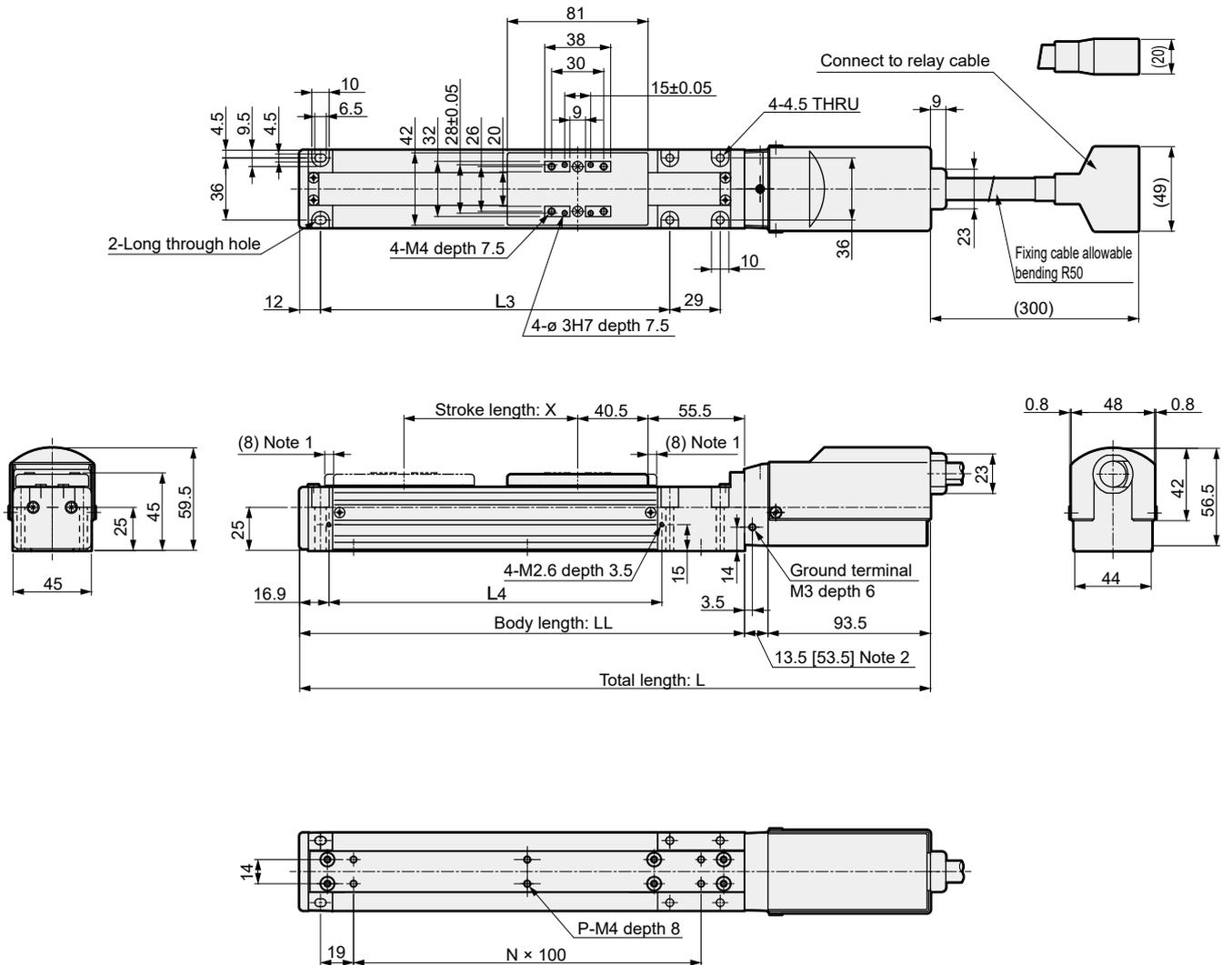
Code	Content				
A Body size					
45	Body size 45				
60	Body size 60				
B Motor mounting direction					
E	Standard mounting (straight)				
R	Right-hand mounting				
L	Left-hand mounting				
D	Bottom mounting				
C Screw lead					
06	6 mm				
12	12 mm				
D Stroke					
Code	Length	Body size/Motor mounting direction			
		45E/45R/45L	45D	60E/60R/60L	60D
05	50 mm	●		●	
10	100 mm	●		●	
15	150 mm	●	●	●	●
20	200 mm	●	●	●	●
25	250 mm	●	●	●	●
30	300 mm	●	●	●	●
35	350 mm	●	●	●	●
40	400 mm	●	●	●	●
45	450 mm	●	●	●	●
50	500 mm	●	●	●	●
55	550 mm			●	●
60	600 mm			●	●
70	700 mm			●	●
E Brake					
N	Without brake				
B	With brake				
F Origin position					
M	Motor side				
F	Opposite side of the motor				
G Relay cable length					
N0	None				
S1	Fixing cable	1 m			
S3	Fixing cable	3 m			
S5	Fixing cable	5 m			
SX	Fixing cable	10 m			
R1	Movable cable	1 m			
R3	Movable cable	3 m			
R5	Movable cable	5 m			
RX	Movable cable	10 m			
H Controller					
N	None	*1			
A	EC07	standard mounting			
B	EC07	DIN rail mount			
C	EC63	standard mounting			
D	EC63	DIN rail mount			
E	ECPT	standard mounting *2			
F	ECPT	DIN rail mount *2			
I I/O Cable length					
N	None				
2	2 m				
3	3 m	*3			
5	5 m	*3			

*2: Use a PLC unit which meets the ECPT pulse train signal input specifications (refer to page 34).

*3: If the code for the controller is E or F, these cables can be used only when the differential system is used as the pulse train signal system. Only a cable length of 2 m can be used with the open collector system.

Dimensions

- ERL2-45E (standard mounting straight)



Note 1: Operating range during origin return

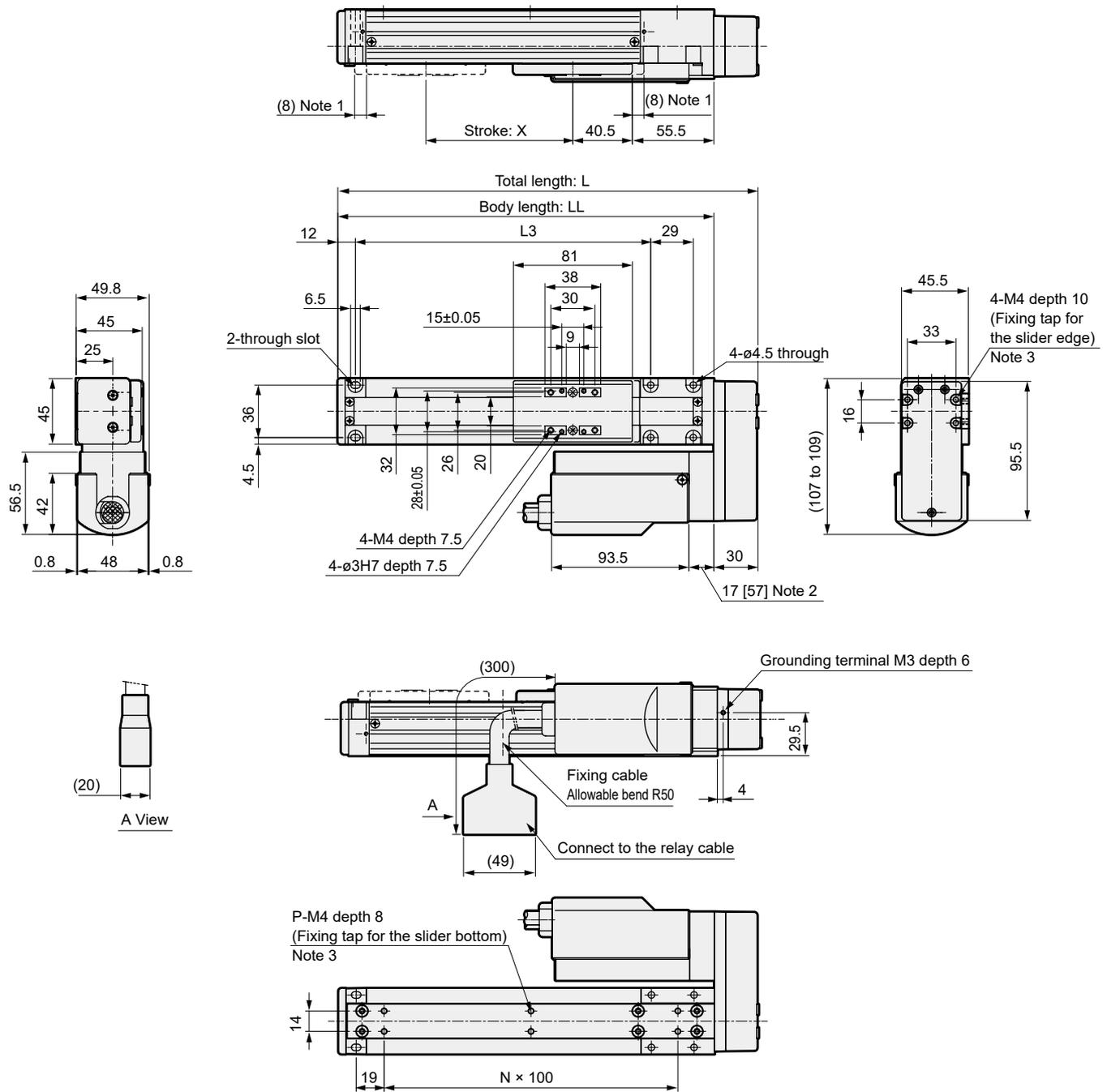
Note 2: The numbers within the [] are the dimensions with the brake

Stroke	Code	05	10	15	20	25	30	35	40	45	50
	X (mm)	50	100	150	200	250	300	350	400	450	500
Total length L (mm)	Without brake	313	363	413	463	513	563	613	663	713	763
	With brake	353	403	453	503	553	603	653	703	753	803
Body length LL (mm)		206	256	306	356	406	456	506	556	606	656
L3 (mm)		151	201	251	301	351	401	451	501	551	601
L4 (mm)		141.6	191.6	241.6	291.6	341.6	391.6	441.6	491.6	541.6	591.6
Number of mounting holes P		4	6	6	8	8	10	10	12	12	14
Number of mounting hole intervals N		1	2	2	3	3	4	4	5	5	6
Weight (kg)	Without brake	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.5
	With brake	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.8

ERL2 Series

Dimensions

● ERL2-45R (right-hand mounting)



Note 1: Operating range during origin return

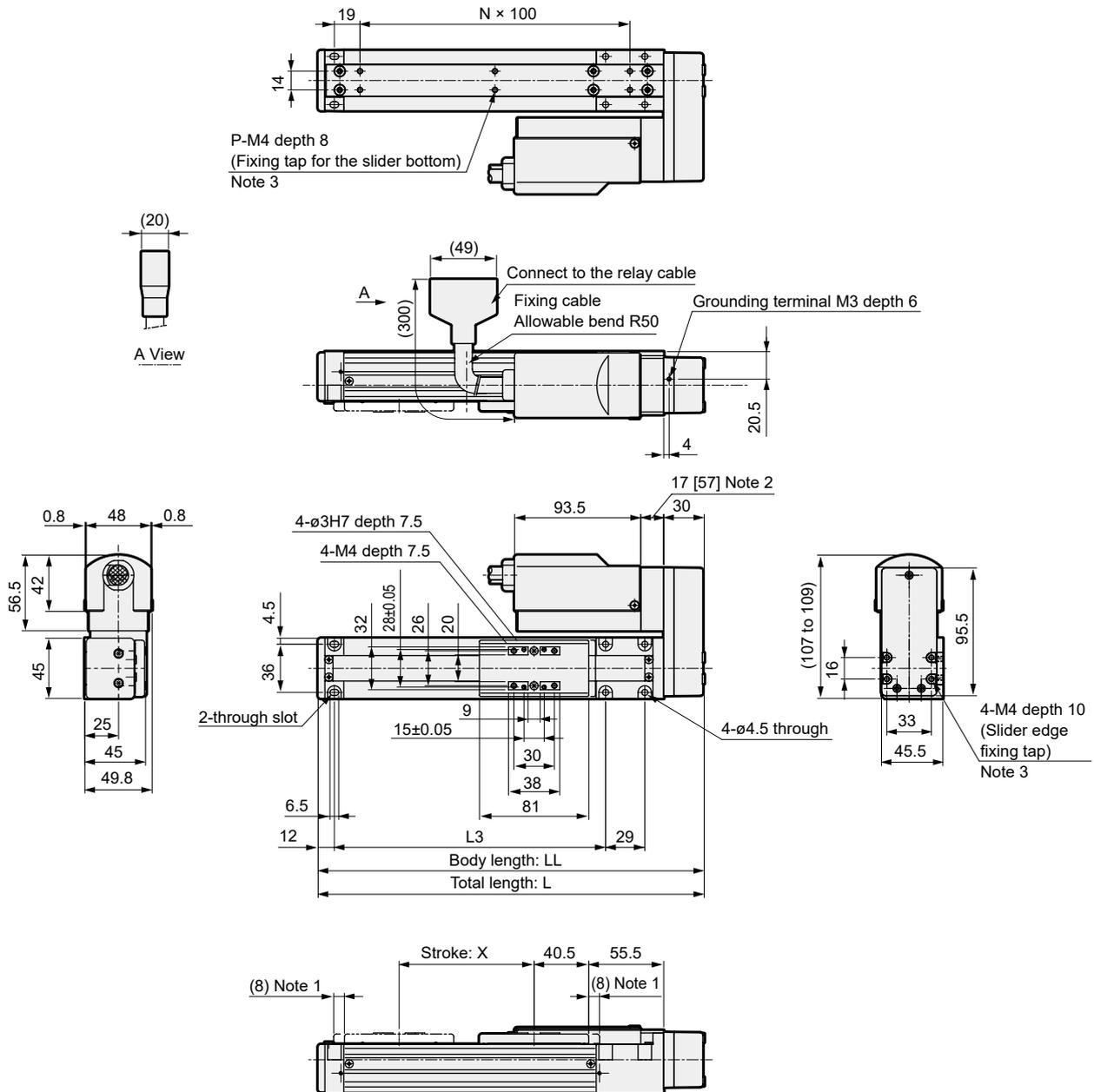
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the fixing tap for the slider bottom when using the fixing tap for the slider edge.

Stroke	Code	05	10	15	20	25	30	35	40	45	50
	X (mm)	50	100	150	200	250	300	350	400	450	500
Total length L (mm)		236	286	336	386	436	486	536	586	636	686
Body length LL (mm)		206	256	306	356	406	456	506	556	606	656
L3 (mm)		151	201	251	301	351	401	451	501	551	601
Number of mounting holes P		4	6	6	8	8	10	10	12	12	14
Number of mounting hole intervals N		1	2	2	3	3	4	4	5	5	6
Weight (kg)	Without brake	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.7
	With brake	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3.0

Dimensions

● ERL2-45L (left-hand mounting)



Note 1: Operating range during origin return

Note 2: The numbers within the [] are the dimensions with the brake

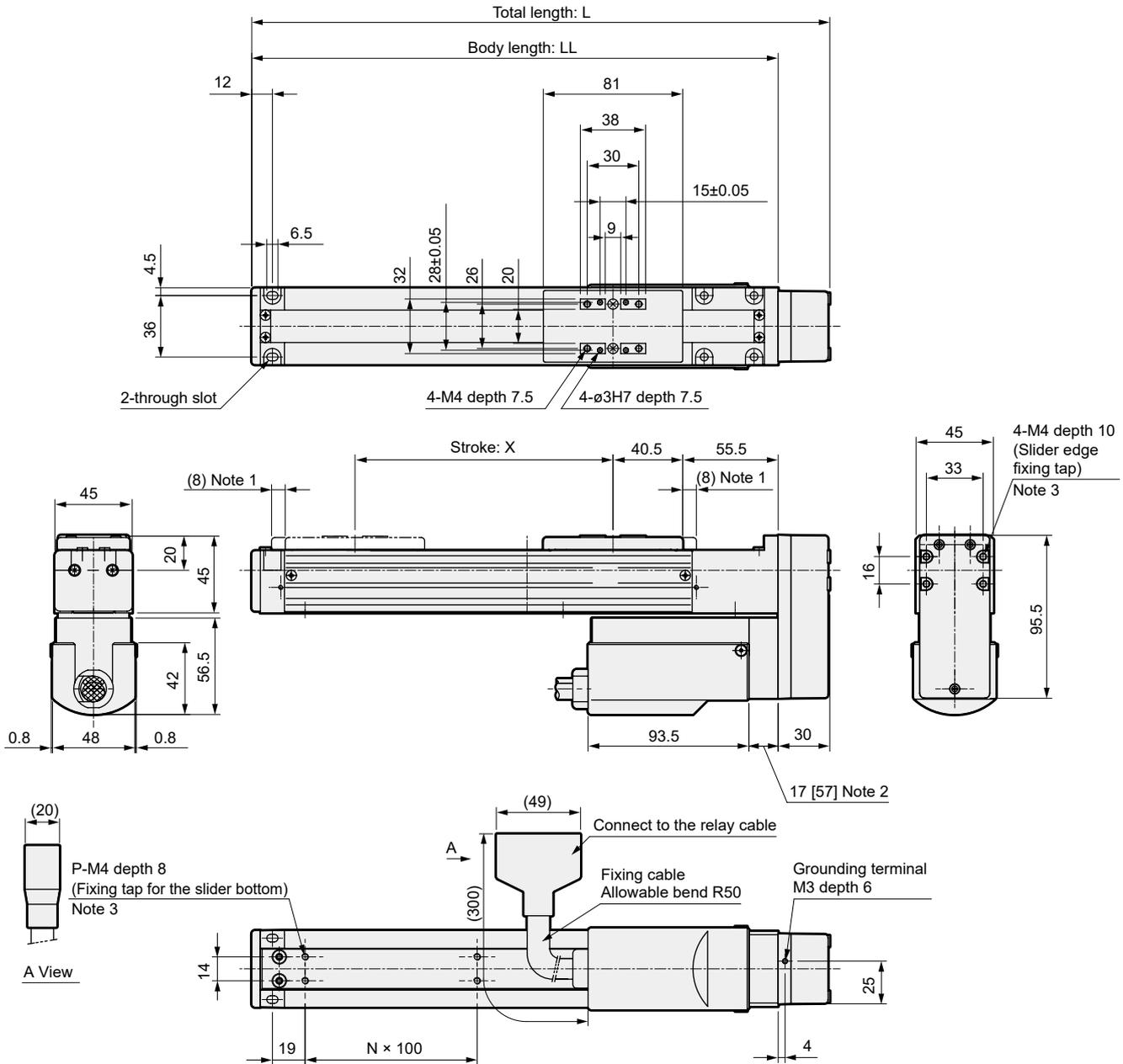
Note 3: Be sure to also mount and use the fixing tap for the slider bottom when using the fixing tap for the slider edge.

Stroke	Code	05	10	15	20	25	30	35	40	45	50
	X (mm)	50	100	150	200	250	300	350	400	450	500
Total length L (mm)		236	286	336	386	436	486	536	586	636	686
Body length LL (mm)		206	256	306	356	406	456	506	556	606	656
L3 (mm)		151	201	251	301	351	401	451	501	551	601
Number of mounting holes P		4	6	6	8	8	10	10	12	12	14
Number of mounting hole intervals N		1	2	2	3	3	4	4	5	5	6
Weight (kg)	Without brake	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.7
	With brake	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3.0

ERL2 Series

Dimensions

● ERL2-45D (bottom mounting)



Note 1: Operating range during origin return

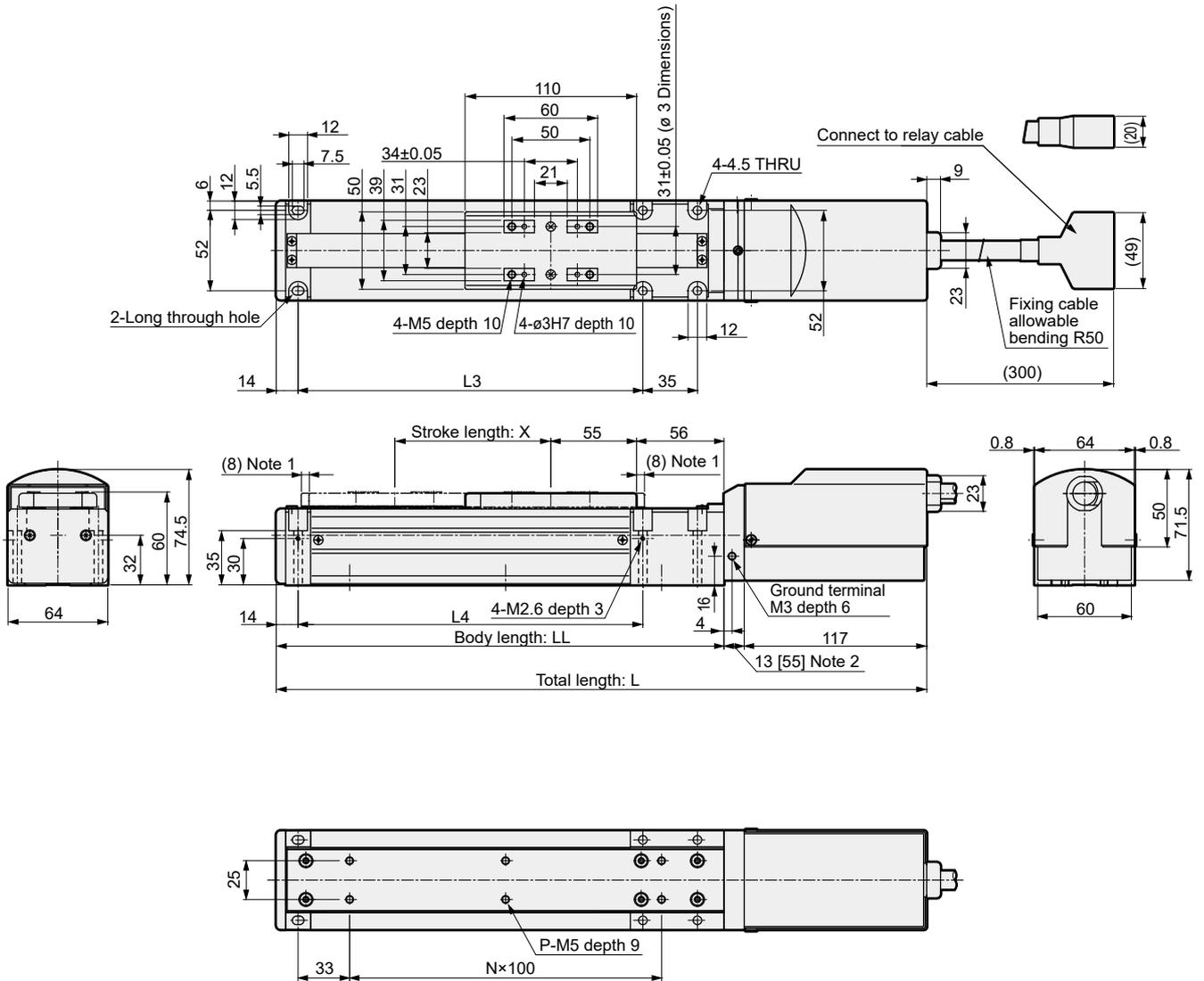
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the fixing tap for the slider bottom when using the fixing tap for the slider edge.

Stroke	Code	05	10	15	20	25	30	35	40	45	50
	X (mm)	50	100	150	200	250	300	350	400	450	500
Total length L (mm)		—	—	336	386	436	486	536	586	636	686
Body length LL (mm)		—	—	306	356	406	456	506	556	606	656
Number of mounting holes P		—	—	4	4	6	6	8	8	10	10
Number of mounting hole intervals N		—	—	1	1	2	2	3	3	4	4
Weight (kg)	Without brake	—	—	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.7
	With brake	—	—	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3.0

Dimensions

- ERL2-60E (standard mounting straight)



Note 1: Operating range during origin return

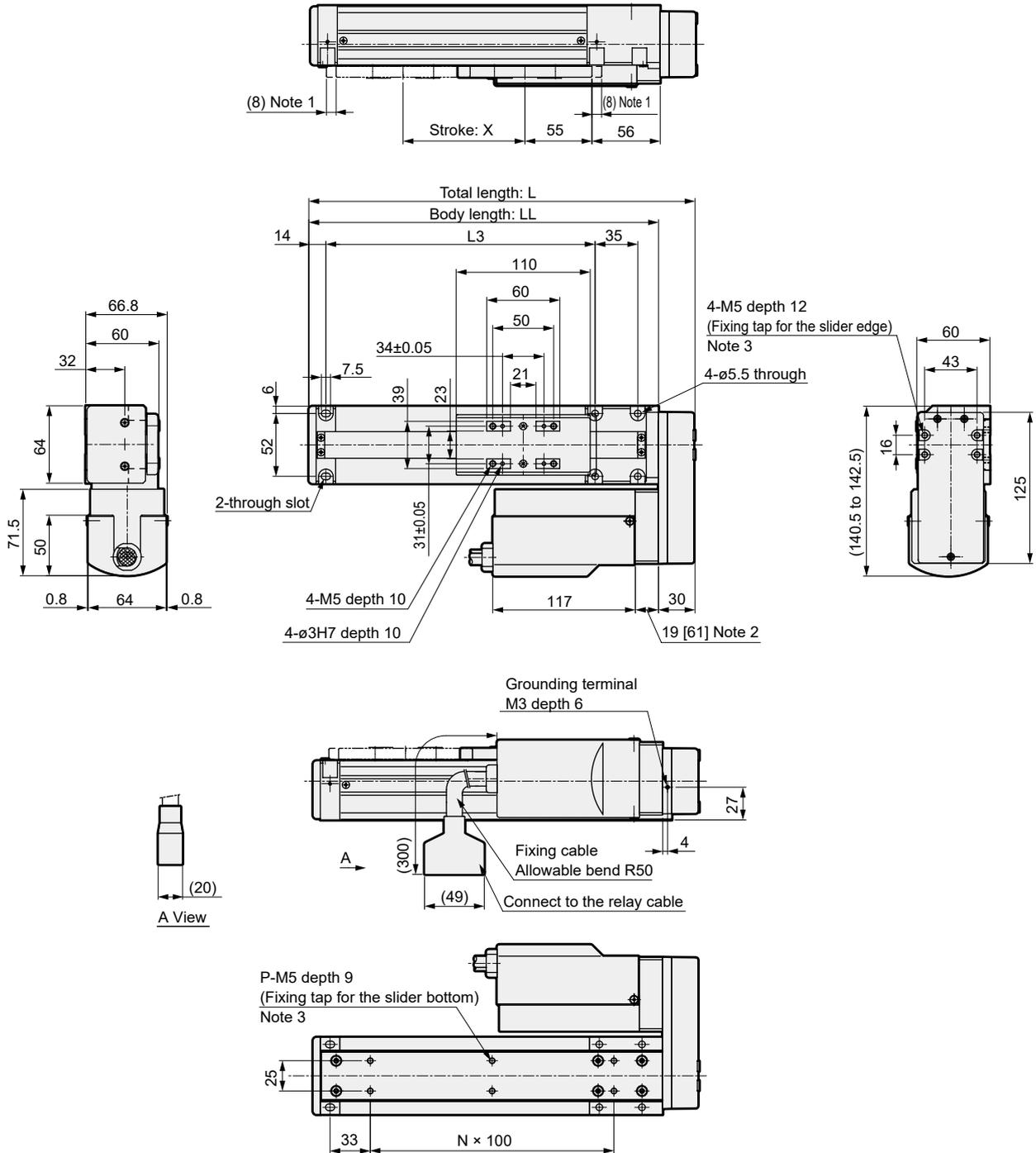
Note 2: The numbers within the [] are the dimensions with the brake

Stroke	Code	05	10	15	20	25	30	35	40	45	50	55	60	70
	X (mm)	50	100	150	200	250	300	350	400	450	500	550	600	700
Total length L (mm)	Without brake	367	417	467	517	567	617	667	717	767	817	867	917	1017
	With brake	409	459	509	559	609	659	709	759	809	859	909	959	1059
Body length LL (mm)		237	287	337	387	437	487	537	587	637	687	737	787	887
L3 (mm)		171	221	271	321	371	421	471	521	571	621	671	721	821
L4 (mm)		171	221	271	321	371	421	471	521	571	621	671	721	821
Number of mounting holes P		4	6	6	8	8	10	10	12	12	14	14	16	18
Number of mounting hole intervals N		1	2	2	3	3	4	4	5	5	6	6	7	8
Weight (kg)	Without brake	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.8
	With brake	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.4

ERL2 Series

Dimensions

● ERL2-60R (right-hand mounting)



Note 1: Operating range during origin return

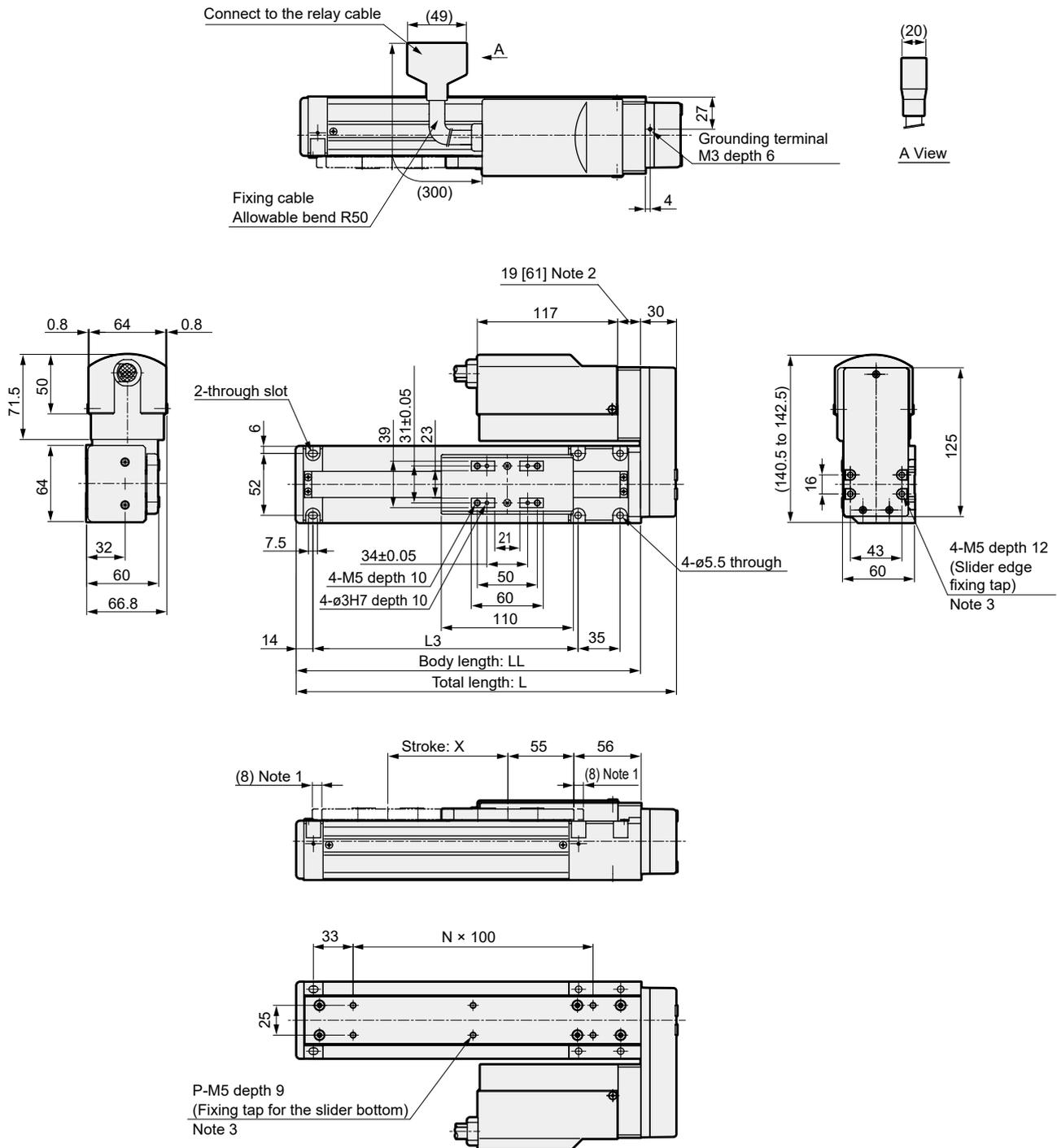
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the fixing tap for the slider bottom when using the fixing tap for the slider edge.

Stroke	Code	05	10	15	20	25	30	35	40	45	50	55	60	70
	X (mm)	50	100	150	200	250	300	350	400	450	500	550	600	700
Total length L (mm)		267	317	367	417	467	517	567	617	667	717	767	817	917
Body length LL (mm)		237	287	337	387	437	487	537	587	637	687	737	787	887
L3 (mm)		171	221	271	321	371	421	471	521	571	621	671	721	821
Number of mounting holes P		4	6	6	8	8	10	10	12	12	14	14	16	18
Number of mounting hole intervals N		1	2	2	3	3	4	4	5	5	6	6	7	8
Weight (kg)	Without brake	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.3
	With brake	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5	6.9

Dimensions

● ERL2-60L (left-hand mounting)



Note 1: Operating range during origin return

Note 2: The numbers within the [] are the dimensions with the brake

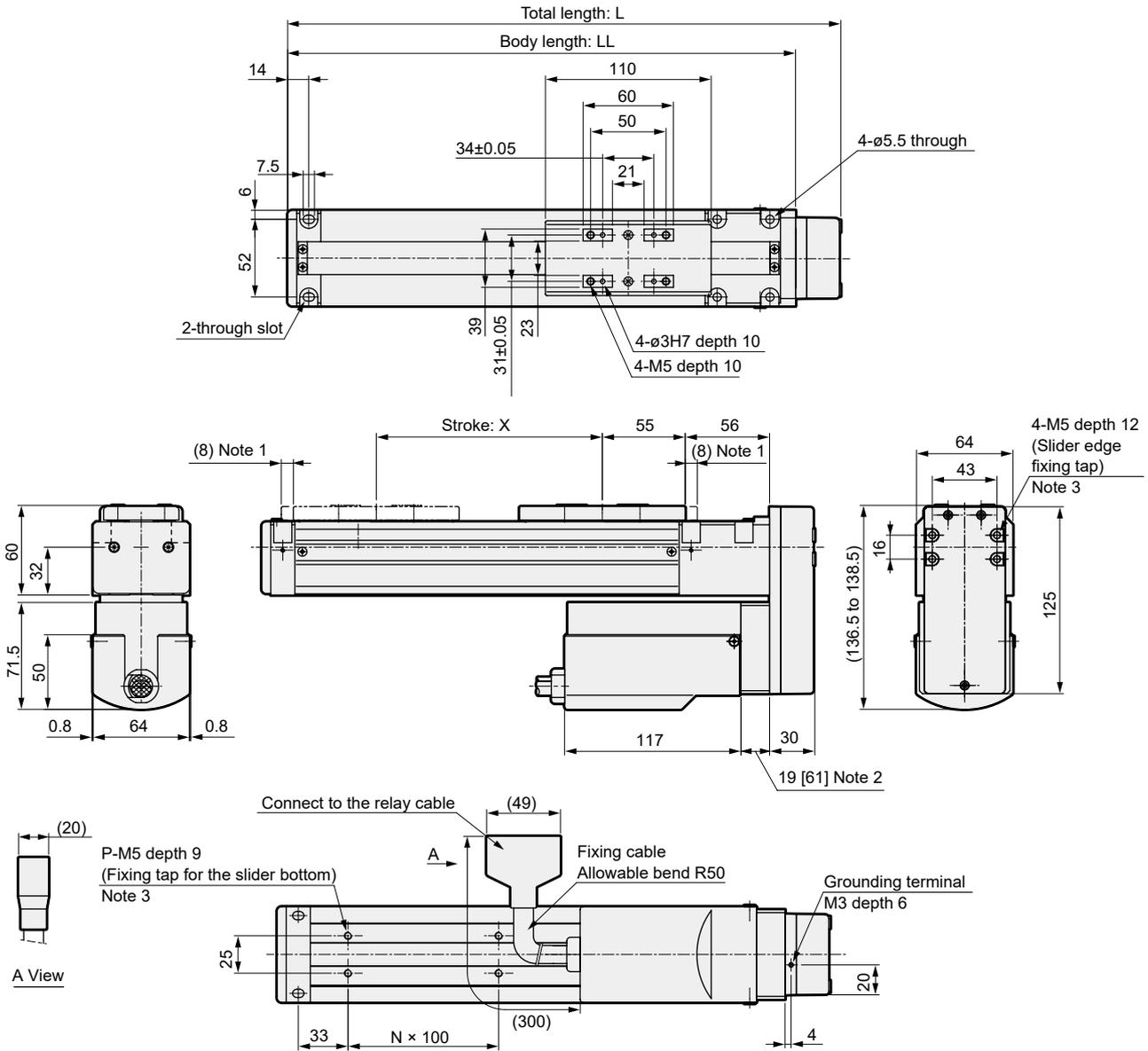
Note 3: Be sure to also mount and use the fixing tap for the slider bottom when using the fixing tap for the slider edge.

Stroke	Code	05	10	15	20	25	30	35	40	45	50	55	60	70
	X (mm)	50	100	150	200	250	300	350	400	450	500	550	600	700
Total length L (mm)		267	317	367	417	467	517	567	617	667	717	767	817	917
Body length LL (mm)		237	287	337	387	437	487	537	587	637	687	737	787	887
L3 (mm)		171	221	271	321	371	421	471	521	571	621	671	721	821
Number of mounting holes P		4	6	6	8	8	10	10	12	12	14	14	16	18
Number of mounting hole intervals N		1	2	2	3	3	4	4	5	5	6	6	7	8
Weight (kg)	Without brake	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.3
	With brake	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5	6.9

ERL2 Series

Dimensions

● ERL2-60D (bottom mounting)



Note 1: Operating range during origin return

Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the fixing tap for the slider bottom when using the fixing tap for the slider edge.

Stroke	Code	05	10	15	20	25	30	35	40	45	50	55	60	70
	X (mm)	50	100	150	200	250	300	350	400	450	500	550	600	700
Total length L (mm)		—	—	367	417	467	517	567	617	667	717	767	817	917
Body length LL (mm)		—	—	337	387	437	487	537	587	637	687	737	787	887
Number of mounting holes P		—	—	4	4	6	6	8	8	10	10	12	12	14
Number of mounting hole intervals N		—	—	1	1	2	2	3	3	4	4	5	5	6
Weight (kg)	Without brake	—	—	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.3
	With brake	—	—	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5	6.9

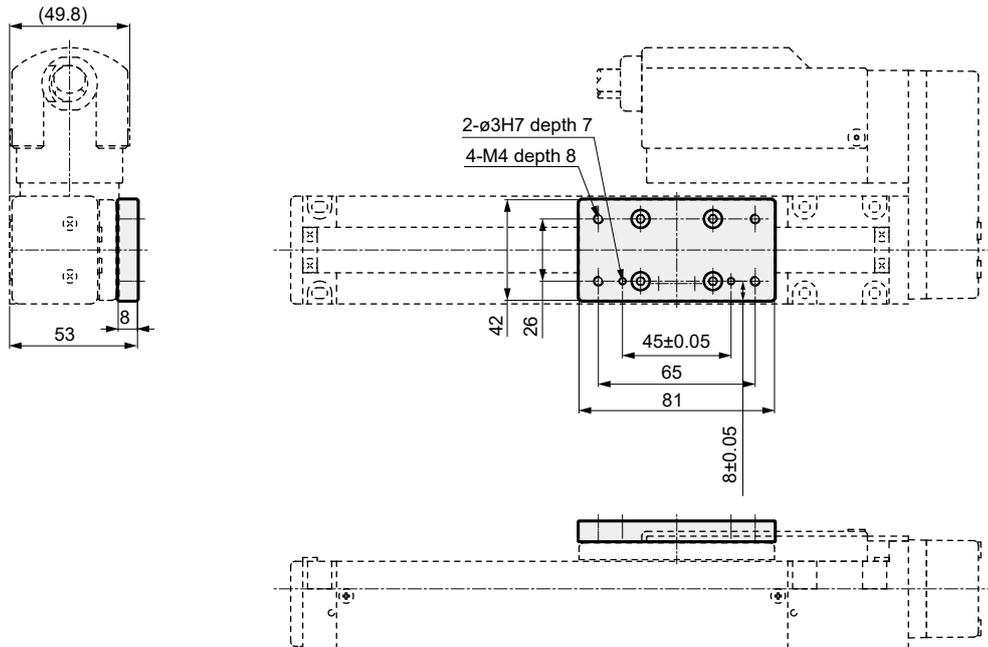
ERL2 Optional parts

Use the following slider spacer kit with the ERL2 if the workpiece mounted on the slider interferes with the motor.

● Slider spacer kit: SSP

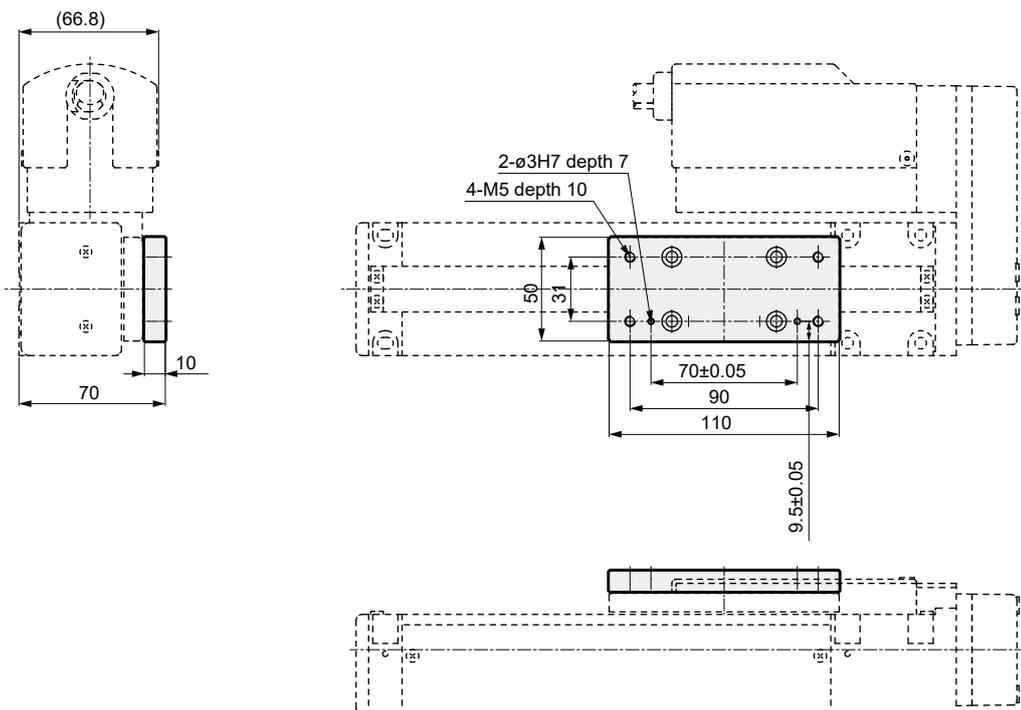
ERL2-45 model number: EA-45-SSP

Dimensions



ERL2-60 model number: EA-60-SSP

Dimensions



Discontinue

Electric actuator Rod

ESD2 Series

Compatibility function allows the controller, actuator and cable to be freely combined

The electric actuator that works like a pneumatic cylinder

● Motor sizes: □42 / □56



Actuator specifications

Descriptions		ESD2-35		ESD2-45		ESD2-55	
Actuator		Rod					
Motor		Stepping motor					
Encoder		Incremental					
Drive system		Rolling ball screw Outer diameter 8 mm				Rolling ball screw Outer diameter 12 mm	
Motor size		□42				□56	
Screw lead mm		6	12	6	12	6	12
Stroke mm		50, 100, 150		50, 100, 150, 200		50, 100, 150, 200 250, 300	
Operation speed range mm/s		15 to 300	30 to 600	15 to 300	30 to 600	15 to 200	30 to 400
Operation acceleration/deceleration speed range m/s ²		1.0 to 3.0					
Repeatability mm		±0.02					
Lost motion mm		0.1 or less					
Max. load capacity *1	Horizontal kg	33	16	33	16	67	34
	Vertical kg	10	4	10	4	15	6.5
Maximum pressing force N		220	110	220	110	640	320
Motor power supply voltage		24 VDC±10%					
Motor section maximum instantaneous current A		2.7		2.7		4	
Brake	Type	Non-excitation operation					
	Power supply voltage	24 VDC±10%					
	Power consumption W	6.1				7.2	
	Holding force N	140	70	140	70	610	305
Insulation resistance		10 MΩ or higher 500 VDC					
Withstand voltage		500 VAC for 1 minute					
Operating ambient temperature		0 to 40°C (no freezing)					
Operating ambient humidity		35 to 80% RH (no condensation)					
Storage ambient temperature		-10 to 50°C (no freezing)					
Storage ambient humidity		35 to 80% RH (no condensation)					
Atmosphere		No corrosive gas, explosive gas, or dust					
Degree of protection		IP4X					

*1: The maximum load capacity decreases when the speed increases. For more details, refer to the vertical and horizontal load capacity charts and graphs in the next page.

In addition, a static or dynamic load moment cannot be applied to the rod. Use a linear guide, etc., to prevent a radial load from being placed on the rod.

Weight

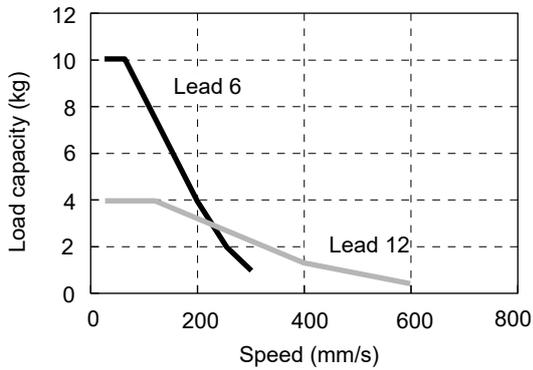
(kg)

Body size	Motor mounting direction	50 st	100 st	150 st	200 st	250 st	300 st
ESD2-35	E	1.3 (1.7)	1.5 (1.9)	1.6 (2.0)	-	-	-
	R/L/D	1.5 (1.8)	1.7 (2.0)	1.8 (2.1)			
ESD2-45	E	1.7 (2.1)	2.0 (2.4)	2.2 (2.6)	2.5 (2.9)	-	-
	R/L/D	1.9 (2.2)	2.2 (2.5)	2.4 (2.7)	2.7 (3.0)		
ESD2-55	E	3.0 (3.7)	3.4 (4.1)	3.8 (4.5)	4.1 (4.8)	4.5 (5.2)	4.9 (5.6)
	R/L/D	3.5 (4.1)	3.9 (4.5)	4.3 (4.9)	4.6 (5.2)	5.0 (5.6)	5.4 (6.0)

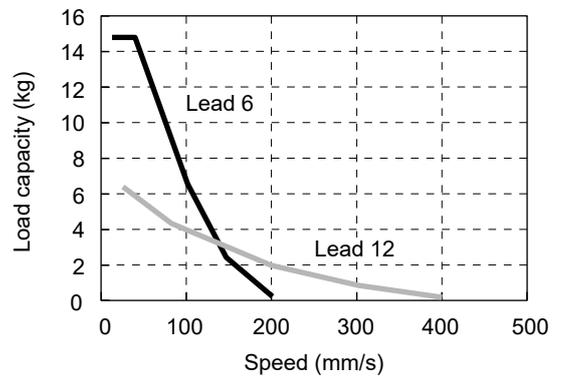
Note: the numbers in () indicate the product weight with the brake

Vertical load capacity

● ESD2-35, 45

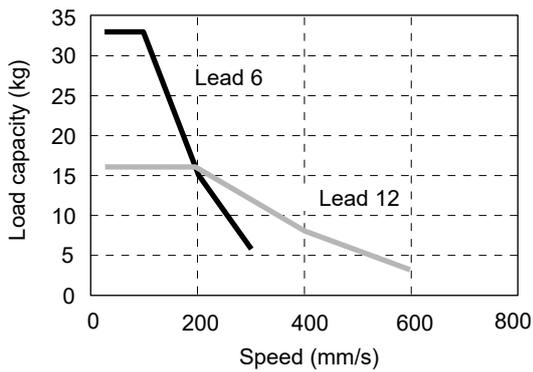


● ESD2-55

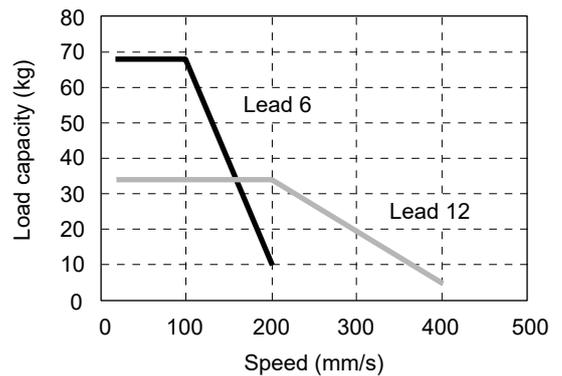


Horizontal load capacity

● ESD2-35, 45

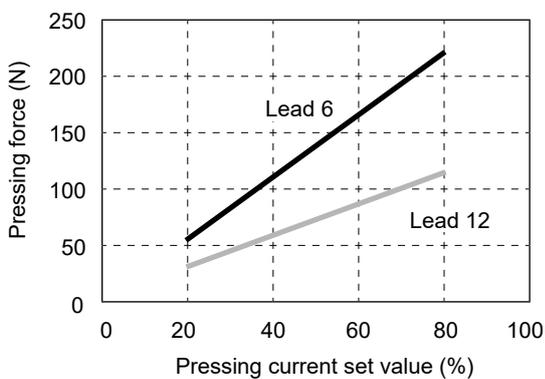


● ESD2-55

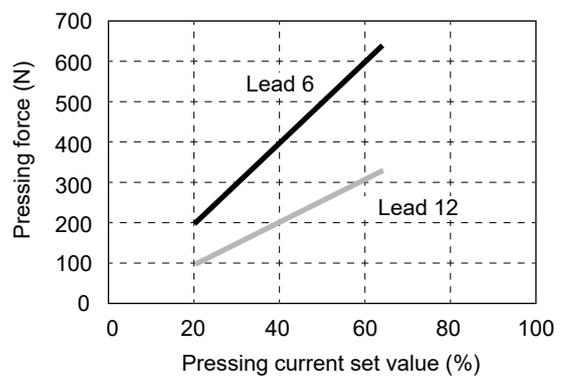


Pressing force (guideline)

● ESD2-35, 45



● ESD2-55

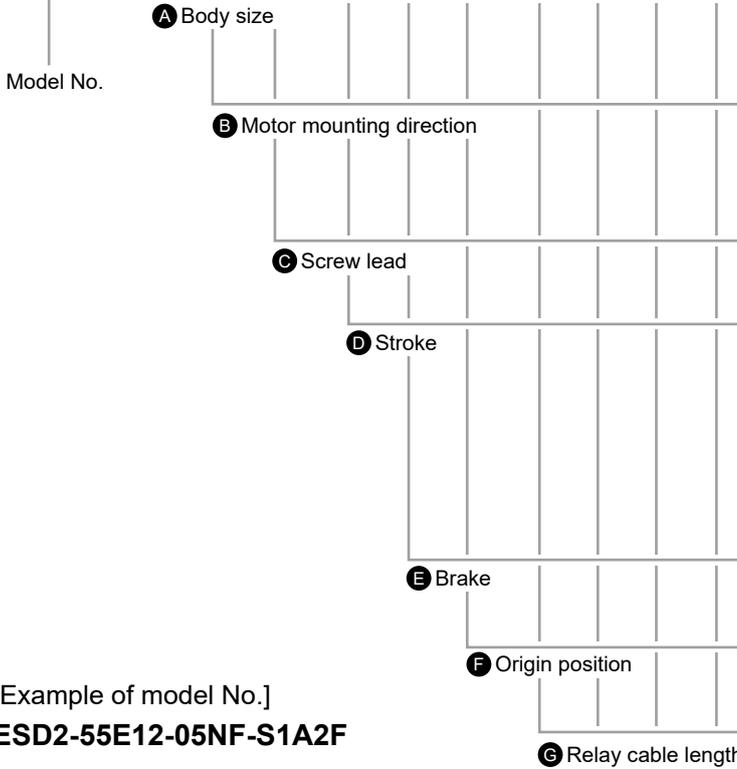


ESD2 Series

How to order

● Set model No. (actuator, controller, cable)

ESD2-55E12-05NF-S1A2F



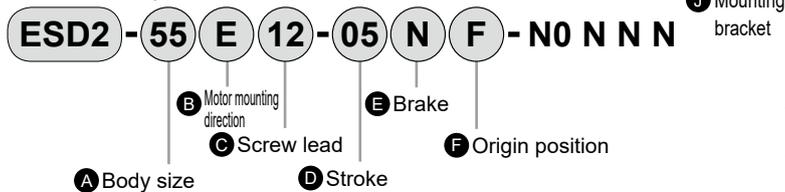
[Example of model No.]

ESD2-55E12-05NF-S1A2F

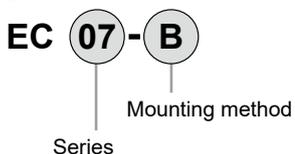
- A** Body size : 55
- B** Motor mounting direction : standard mounting (straight)
- C** Screw lead : 12 mm
- D** Stroke : 50 mm
- E** Brake : without brake
- F** Origin position : opposite side of the motor
- G** Relay cable length : fixed cable 1 m
- H** Controller : EC07 standard mounting
- I** I/O Cable length : 2 m
- J** Mounting bracket : flange bracket included

*1: When **G** controller is set to "N", also select "N" for **H** I/O cable.

● Actuator body discrete model No.

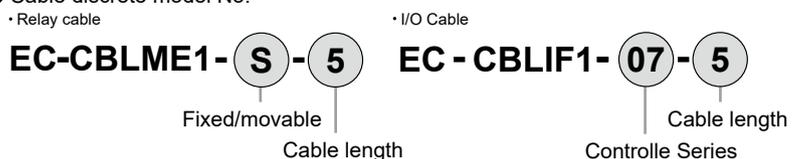


● Controller individual model No.



*For details, refer to "How to order" on page 29.

● Cable discrete model No.



*Refer to page 42 for details.

Code	Content			
A Body size				
35	Body size 35			
45	Body size 45			
55	Body size 55			
B Motor mounting direction				
E	Standard mounting (straight)			
R	Right-hand mounting			
L	Left-hand mounting			
D	Bottom mounting			
C Screw lead				
06	6 mm			
12	12 mm			
D Stroke				
Code	Length	Body size		
		35	45	55
05	50 mm	●	●	●
10	100 mm	●	●	●
15	150 mm	●	●	●
20	200 mm		●	●
25	250 mm			●
30	300 mm			●
E Brake				
N	Without brake			
B	With brake			
F Origin position				
M	Motor side			
F	Opposite side of the motor			
G Relay cable length				
N0	None			
S1	Fixed cable	1 m		
S3	Fixed cable	3 m		
S5	Fixed cable	5 m		
SX	Fixed cable	10 m		
R1	Movable cable	1 m		
R3	Movable cable	3 m		
R5	Movable cable	5 m		
RX	Movable cable	10 m		
H Controller				
N	None	*1		
A	EC07	standard mount		
B	EC07	DIN rail mount		
C	EC63	standard mount		
D	EC63	DIN rail mount		
E	ECPT	standard mount *2		
F	ECPT	DIN rail mount *2		
I I/O Cable length				
N	None			
2	2 m			
3	3 m	*3		
5	5 m	*3		
J Mounting bracket				
N	None			
L	Foot bracket included			
F	Flange bracket included			
S	Spacer (body size 35, 55 only)			

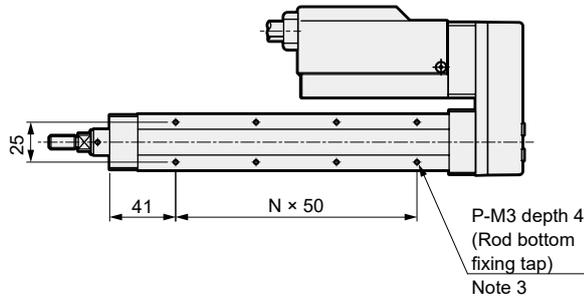
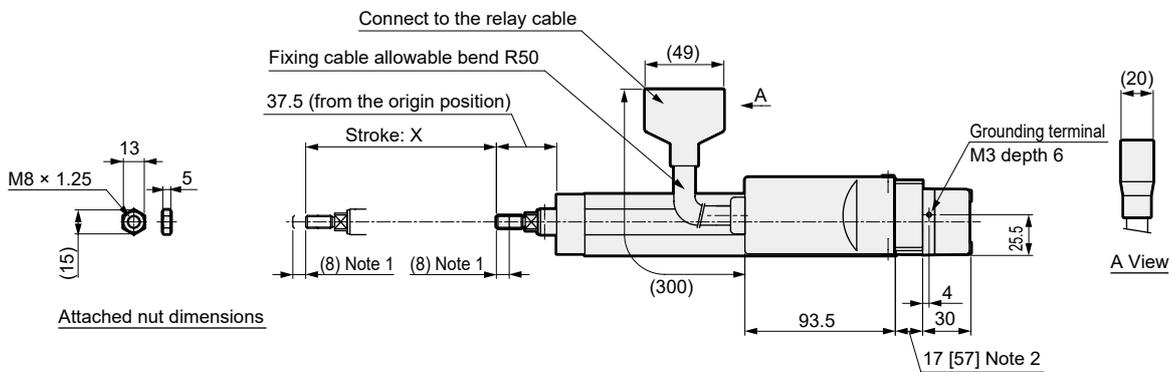
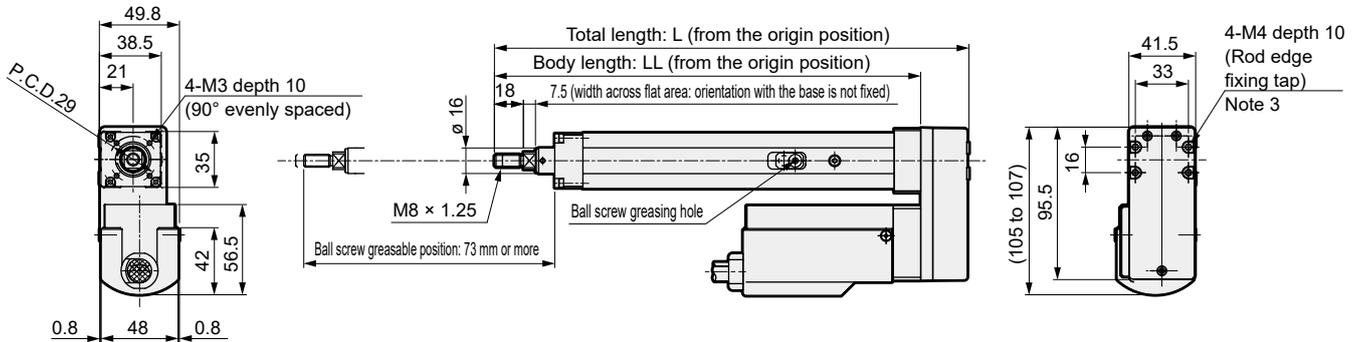
*2: Use a PLC unit which meets the ECPT pulse train signal input specifications (refer to page 34).

*3: If the code for the controller is E or F, these cables can be used only when the differential system is used as the pulse train signal system. Only a cable length of 2 m can be used with the open collector system.

ESD2 Series

Dimensions

● ESD2-35R (right-hand mounting)



Note 1: Operating range during origin return

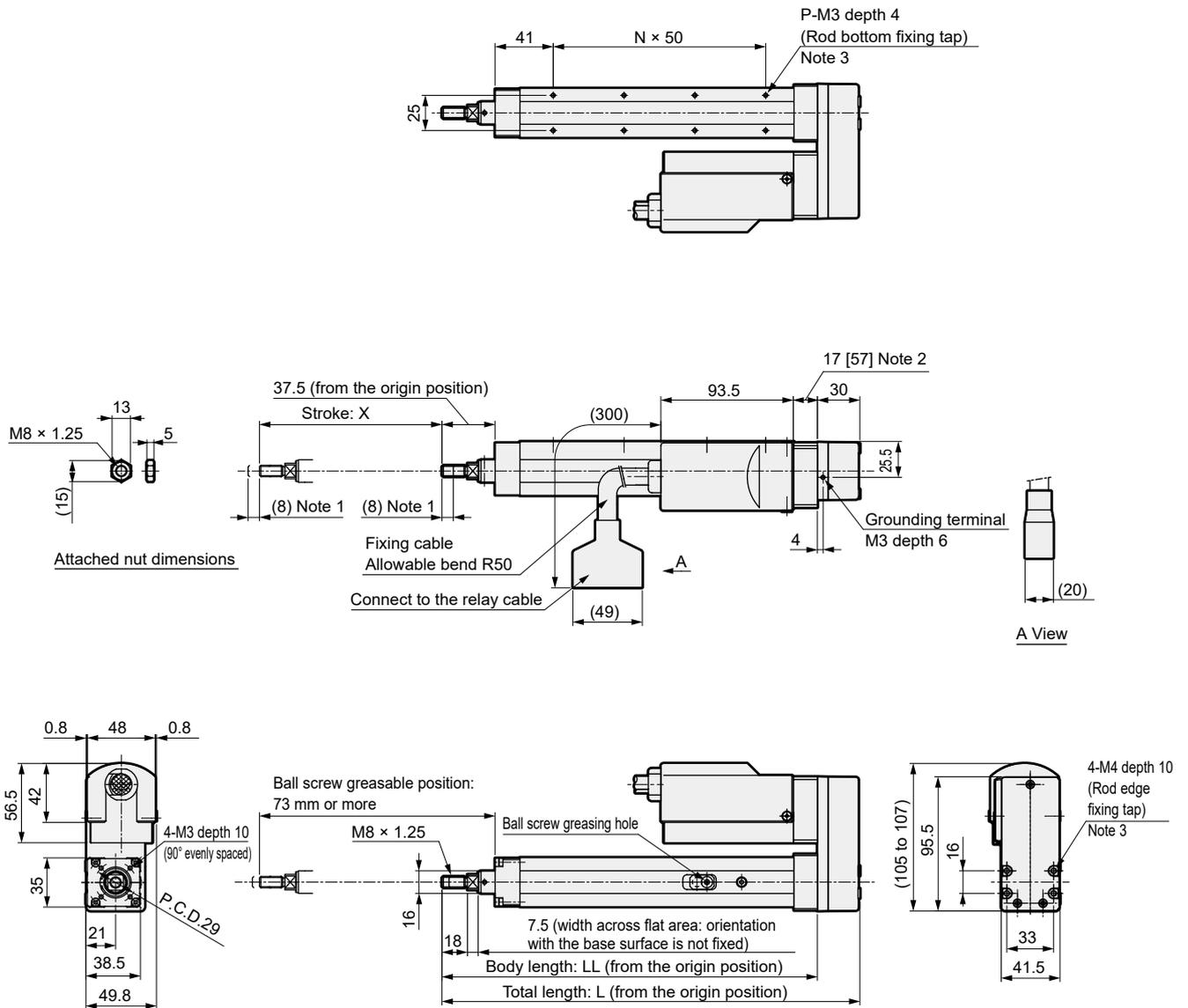
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the fixing tap for the rod bottom when using the fixing tap for the rod edge.

Stroke	Code	05	10	15
	X (mm)	50	100	150
Total length L (mm)		245	295	345
Body length LL (mm)		215	265	315
Number of mounting holes P		6	8	10
Number of mounting hole intervals N		2	3	4
Weight (kg)	Without brake	1.5	1.7	1.8
	With brake	1.8	2.0	2.1

Dimensions

● ESD2-35L (left-hand mounting)



Note 1: Operating range during origin return

Note 2: The numbers within the [] are the dimensions with the brake

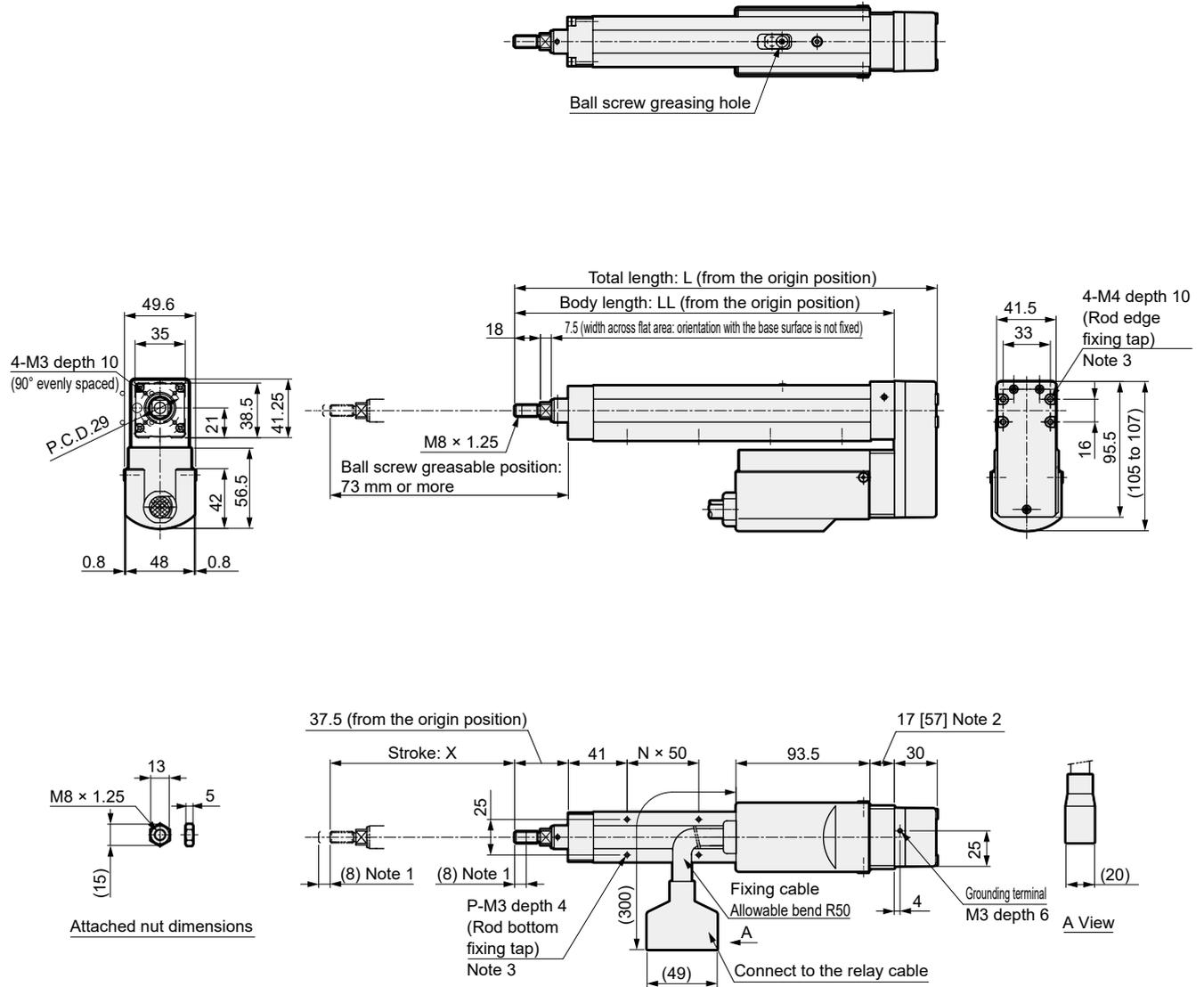
Note 3: Be sure to also mount and use the fixing tap for the rod bottom when using the fixing tap for the rod edge.

Stroke	Code	05	10	15
	X (mm)	50	100	150
Total length L (mm)		245	295	345
Body length LL (mm)		215	265	315
Number of mounting holes P		6	8	10
Number of mounting hole intervals N		2	3	4
Weight (kg)	Without brake	1.5	1.7	1.8
	With brake	1.8	2.0	2.1

ESD2 Series

Dimensions

● ESD2-35D (bottom mounting)



Note 1: Operating range during origin return

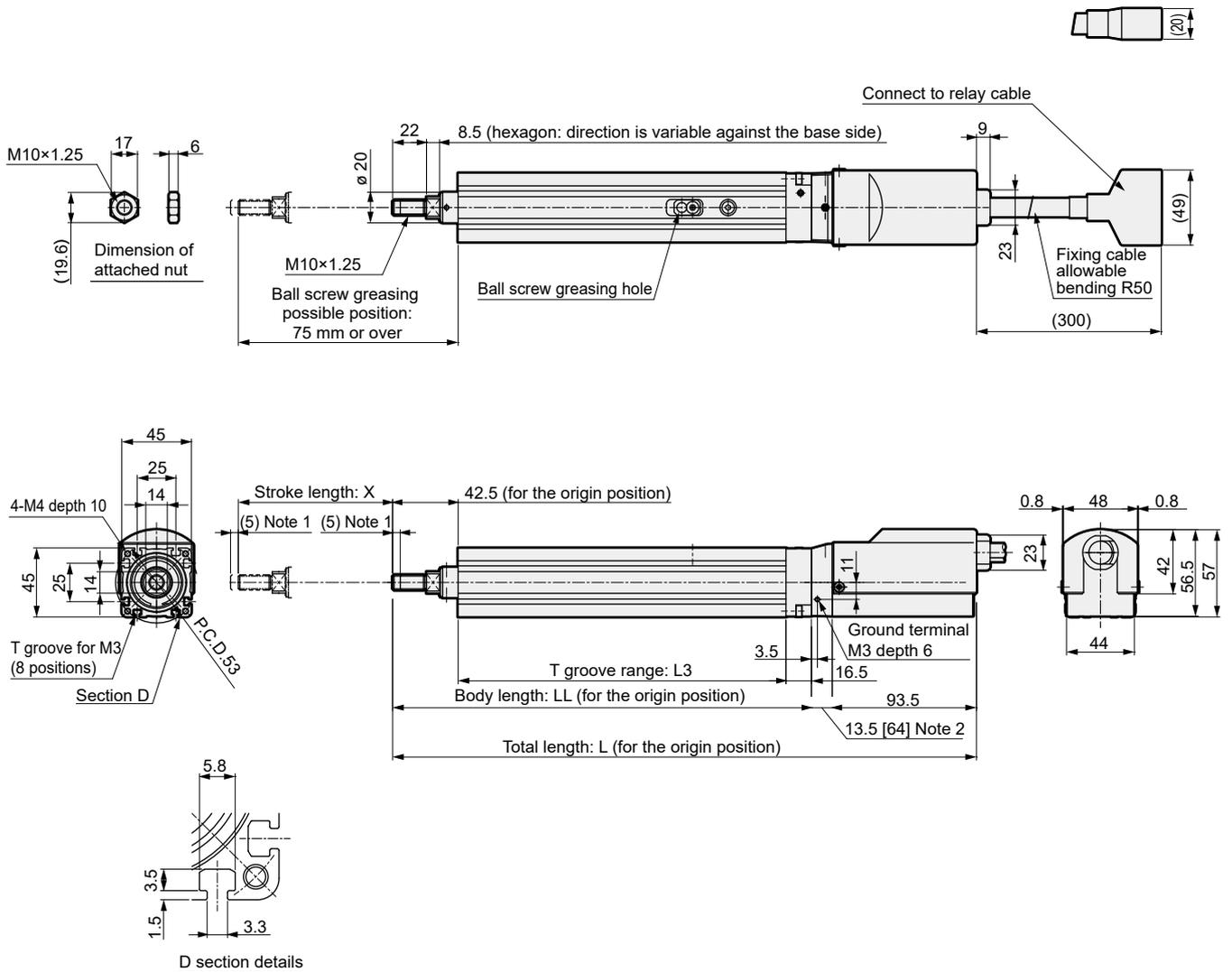
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the fixing tap for the rod bottom when using the fixing tap for the rod edge.

Stroke	Code	05	10	15
	X (mm)	50	100	150
Total length L (mm)		245	295	345
Body length LL (mm)		215	265	315
Number of mounting holes P	Without brake	2	4	6
	With brake	0	2	4
Number of mounting hole intervals N	Without brake	0	1	2
	With brake	0	0	1
Weight (kg)	Without brake	1.5	1.7	1.8
	With brake	1.8	2.0	2.1

Dimensions

- ESD2-45E (standard mounting straight)



Note 1: Operating range during origin return

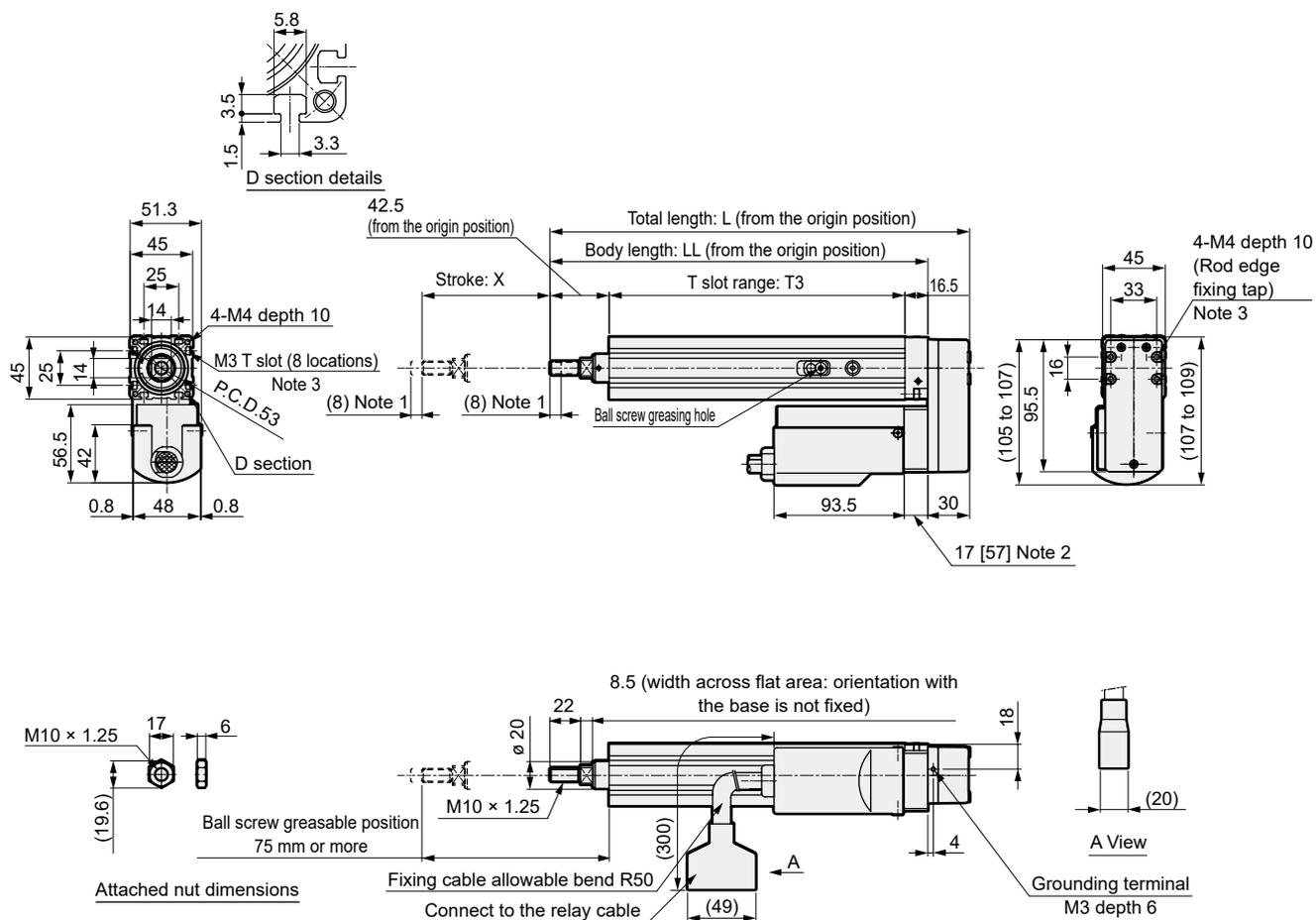
Note 2: The numbers within the [] are the dimensions with the brake

Stroke	Code	05	10	15	20
	X (mm)	50	100	150	200
Total length L (mm)	Without brake	328.5	378.5	428.5	478.5
	With brake	379	429	479	529
Body length LL (mm)		221.5	271.5	321.5	371.5
T slot range L3 (mm)		162.5	212.5	262.5	312.5
Weight (kg)	Without brake	1.7	2.0	2.2	2.5
	With brake	2.1	2.4	2.6	2.9

ESD2 Series

Dimensions

● ESD2-45R (right-hand mounting)



Note 1: Operating range during origin return

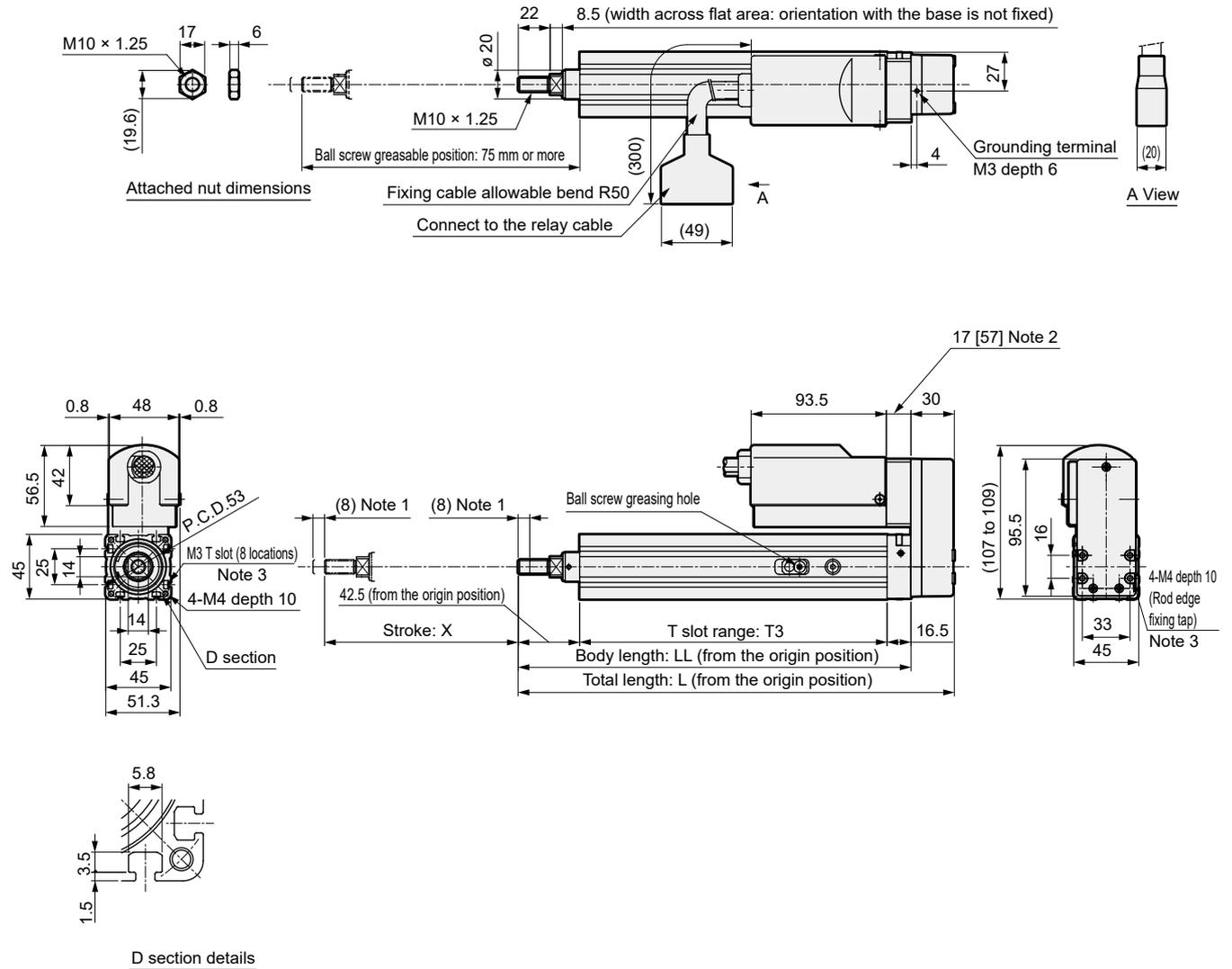
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the M3 T slot when using the fixing tap for the rod edge.

Stroke	Code	05	10	15	20
	X (mm)	50	100	150	200
Total length L (mm)		251.5	301.5	351.5	401.5
Body length LL (mm)		221.5	271.5	321.5	371.5
T slot range L3 (mm)		162.5	212.5	262.5	312.5
Weight (kg)	Without brake	1.9	2.2	2.4	2.7
	With brake	2.2	2.5	2.7	3.0

Dimensions

● ESD2-45L (left-hand mounting)



Note 1: Operating range during origin return

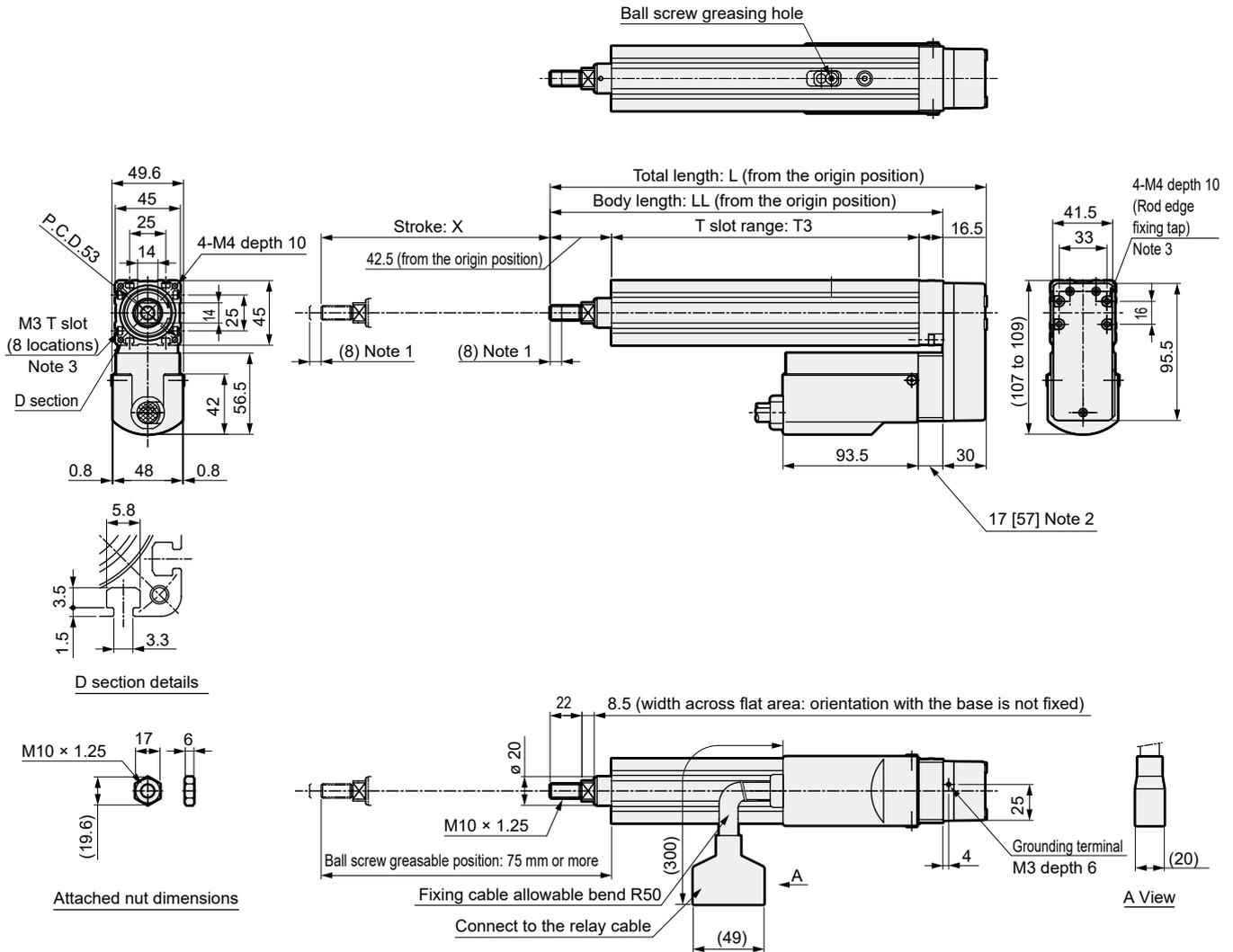
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the M3 T slot when using the fixing tap for the rod edge.

Stroke	Code	05	10	15	20
	X (mm)	50	100	150	200
Total length L (mm)		251.5	301.5	351.5	401.5
Body length LL (mm)		221.5	271.5	321.5	371.5
T slot range L3 (mm)		162.5	212.5	262.5	312.5
Weight (kg)	Without brake	1.9	2.2	2.4	2.7
	With brake	2.2	2.5	2.7	3.0

Dimensions

● ESD2-45D (bottom mounting)



Note 1: Operating range during origin return

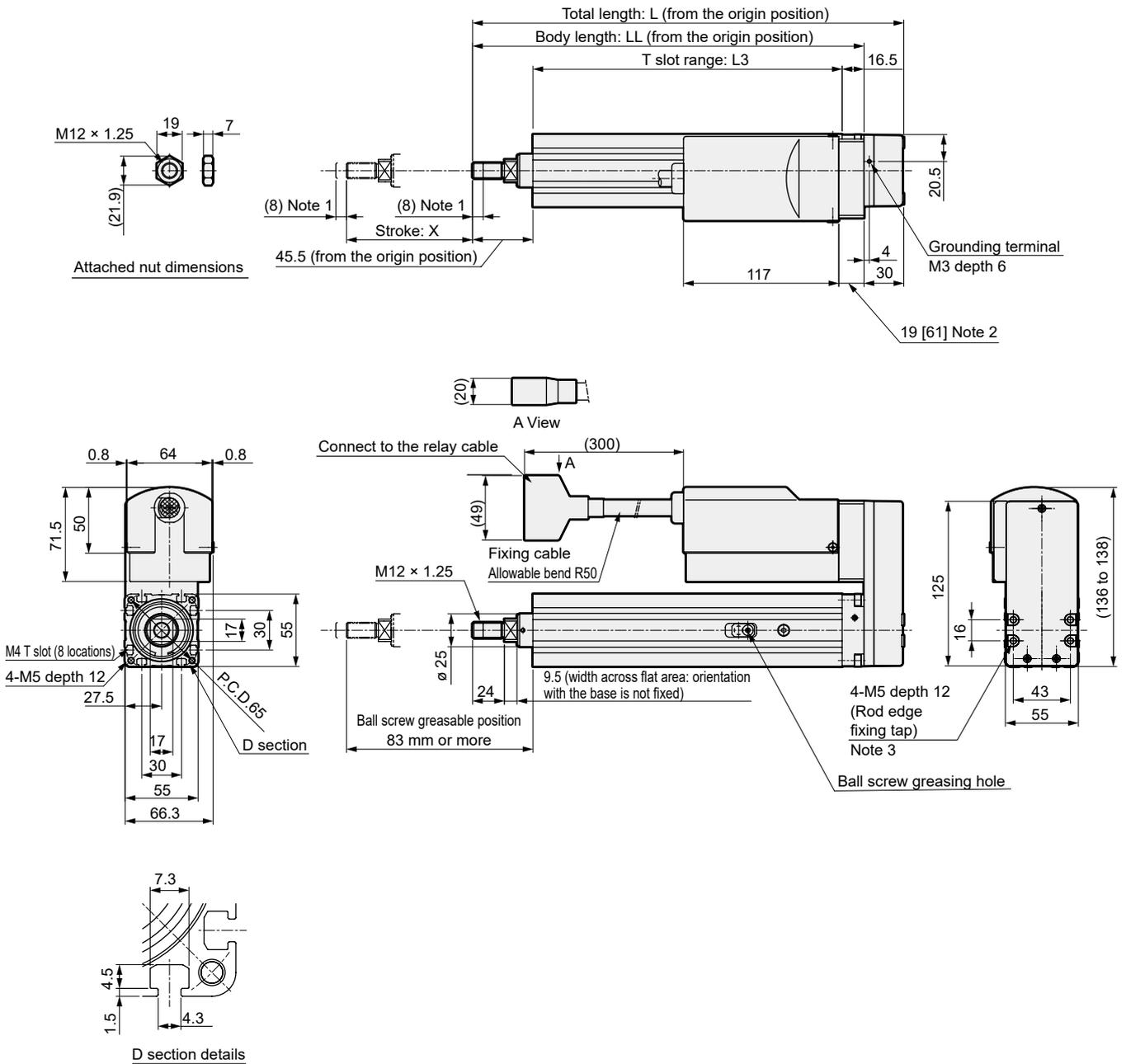
Note 2: The numbers within the [] are the dimensions with the brake

Note 3: Be sure to also mount and use the M3 T slot when using the fixing tap for the rod edge.

Stroke	Code	05	10	15	20
	X (mm)	50	100	150	200
Total length L (mm)		251.5	301.5	351.5	401.5
Body length LL (mm)		221.5	271.5	321.5	371.5
T slot range L3 (mm)		162.5	212.5	262.5	312.5
Weight (kg)	Without brake	1.9	2.2	2.4	2.7
	With brake	2.2	2.5	2.7	3.0

Dimensions

● ESD2-55L (left-hand mounting)



Note 1: Operating range during origin return

Note 2: The numbers within the [] are the dimensions with the brake

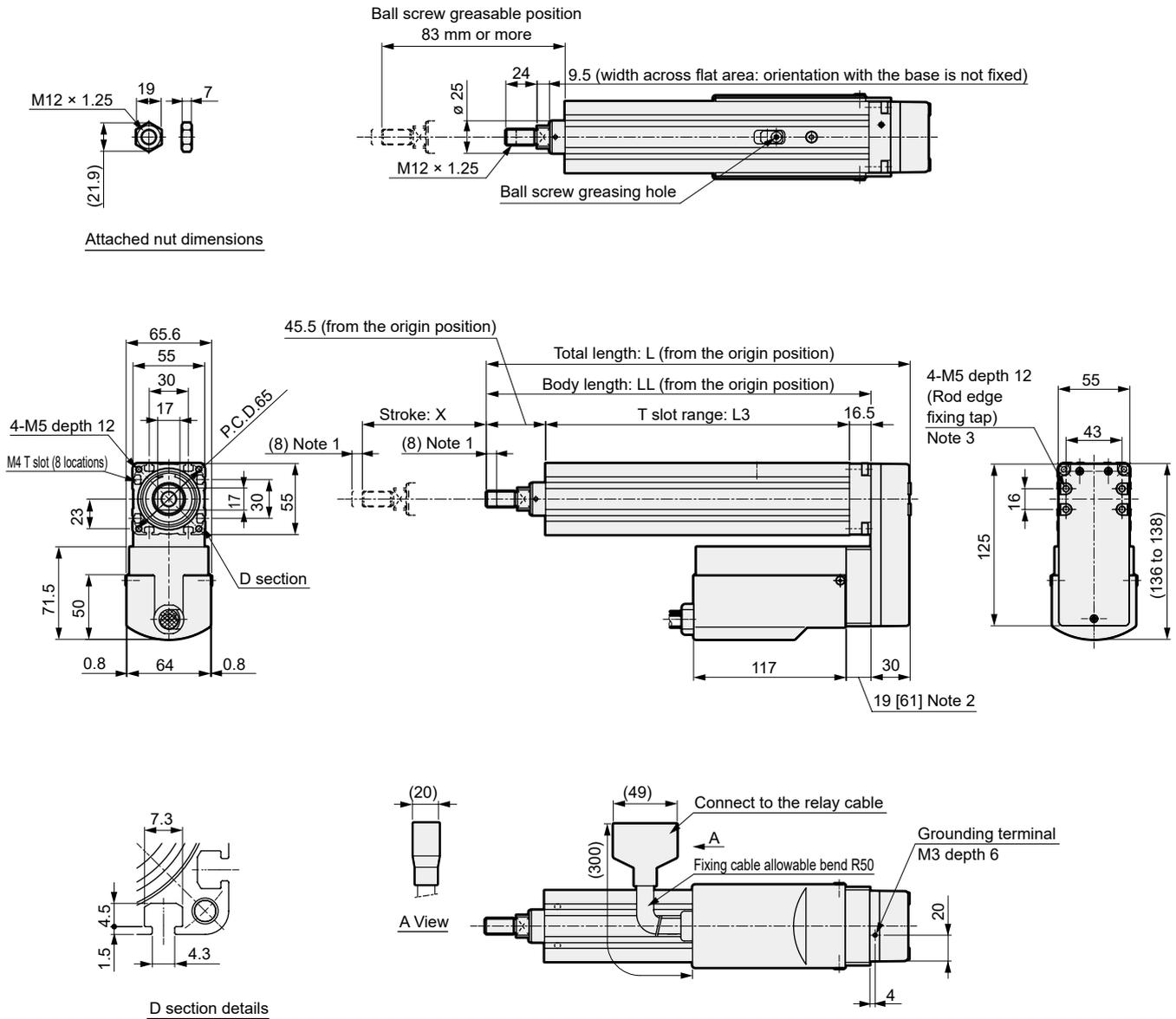
Note 3: Be sure to also mount and use the M4 T slot when using the fixing tap for the rod edge.

Stroke	Code	05	10	15	20	25	30
	X (mm)	50	100	150	200	250	300
Total length L (mm)		275	325	375	425	475	525
Body length LL (mm)		245	295	345	395	445	495
T slot range L3 (mm)		183	233	283	333	383	433
Weight (kg)	Without brake	3.5	3.9	4.3	4.6	5.0	5.4
	With brake	4.1	4.5	4.9	5.2	5.6	6.0

ESD2 Series

Dimensions

● ESD2-55D (bottom mounting)



Note 1: Operating range during origin return
 Note 2: The numbers within the [] are the dimensions with the brake
 Note 3: Be sure to also mount and use the M4 T slot when using the fixing tap for the rod edge.

Stroke	Code	05	10	15	20	25	30
	X (mm)	50	100	150	200	250	300
Total length L (mm)		275	325	375	425	475	525
Body length LL (mm)		245	295	345	395	445	495
T slot range L3 (mm)		183	233	283	333	383	433
Weight (kg)	Without brake	3.5	3.9	4.3	4.6	5.0	5.4
	With brake	4.1	4.5	4.9	5.2	5.6	6.0

Option (mounting bracket)

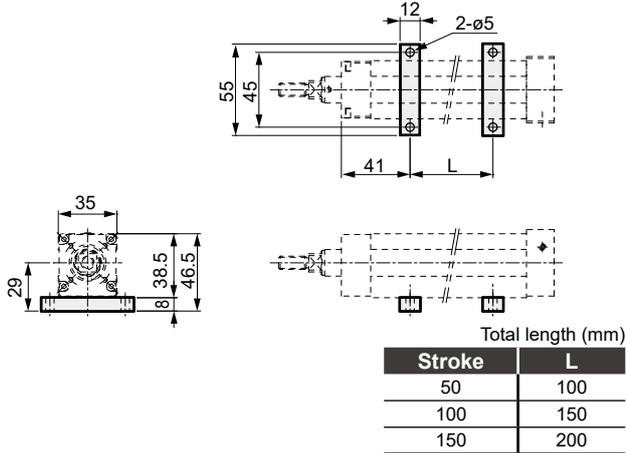
The following kits are included with the product with the mounting bracket option.

● Option : LB

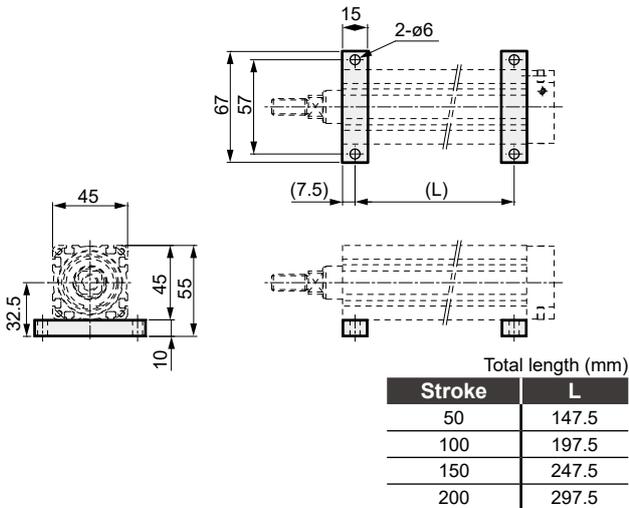
Foot kit model No.: ESD-[Body size]-LB

Foot bracket fitting dimensions

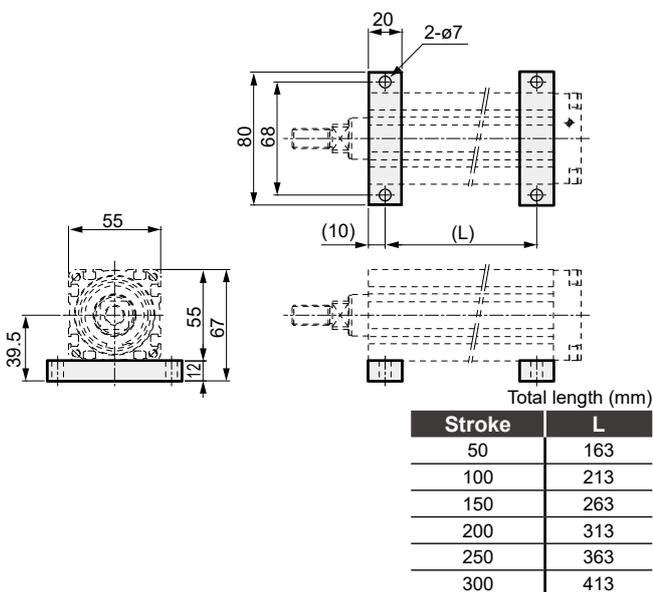
Set model No.: ESD2-35E □ - □□□ - □□□ L



Set model No.: ESD2-45E □ - □□□ - □□□ L



Set model No.: ESD2-55E □ - □□□ - □□□ L

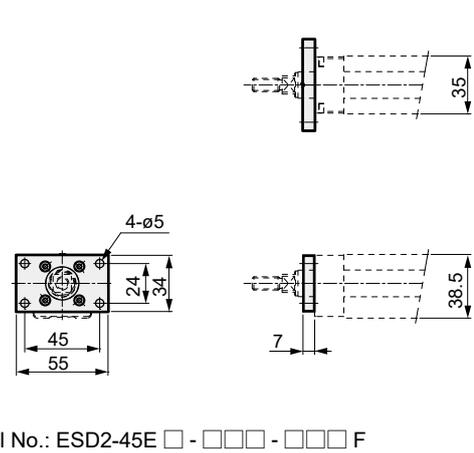


● Option : FA

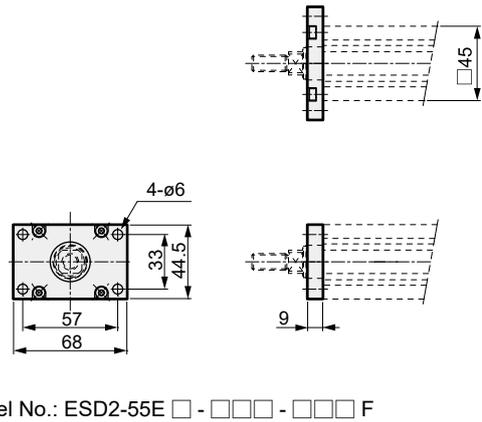
Flange kit model No.: ESD-[Body size]-FA

Flange bracket fitting dimensions

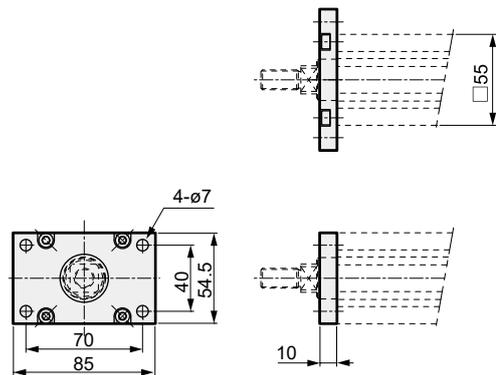
Set model No.: ESD2-35E □ - □□□ - □□□ F



Set model No.: ESD2-45E □ - □□□ - □□□ F



Set model No.: ESD2-55E □ - □□□ - □□□ F



● Option : SP

Spacer kit model No.: ESD-[³⁵/₅₅]-SP

Set model No.: ESD2-[³⁵/₅₅]E □ - □□□ - □□□ S

*Refer to the spacer bracket fitting dimensions on pages 16 and 24.

Discontinue



Controlle

EC Series

- Connectable actuator: ERL2 / ESD2



Features

- Compact, lightweight, thin (body width of 35 mm)
- Configurable without a manual
- Equipped with an automatic actuator recognition function
- PC software compatible
- Flexible control (ECPT)
 - Position, speed, acceleration and deceleration can be changed in real time
 - Unlimited number of positioning points
- Equipped with a position output function (ECPT)
 - Current position can be detected in real time

How to order

EC **07** - **B**

A Series

B Mounting method

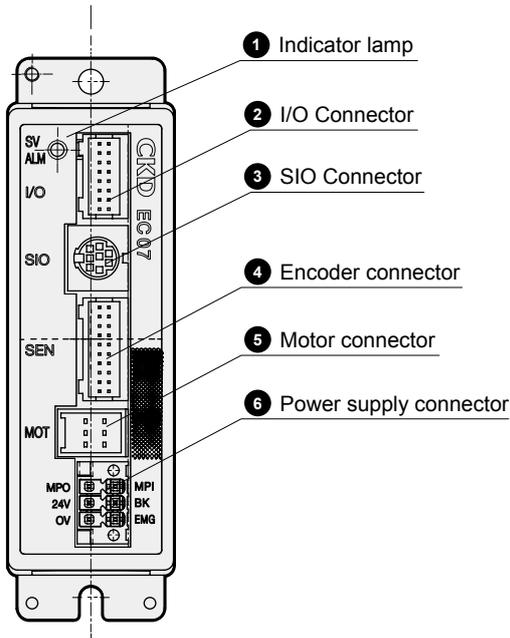
Code	Content
A Series	
07	7-point positioning
63	63-point positioning
PT	Pulse train input positioning
B Mounting method	
A	EC07 standard mount
B	EC07 DIN rail mount
C	EC63 standard mount
D	EC63 DIN rail mount
E	ECPT standard mount
F	ECPT DIN rail mount

Specifications

Descriptions	Series		
	EC07	EC63	ECPT
Applicable motor size	□42, □56		
Setting method	Configure with a handy terminal or PC software		
PIO Mode	Solenoid mode (Single/double 2-position, 3-position) Simplified mode (3 points) Standard mode (7 points)	Solenoid mode (Single/double 2-position, 3-position) Simplified mode (7 points) Standard mode (63 points)	Pulse train control mode [Pulse/direction UP/DOWN A/B phase (4× multiplier)]
Body lamps	Green: motor power (not powered when blinking)/red: alarm generated		
Number of inputs	7 points (photo coupler insulation)	10 points (photo coupler insulation)	7 points (Except for the photo coupler insulation, pulse train input terminal)
Output points	7 points (photo coupler insulation)	12 points (photo coupler insulation)	9 points (Except for the photo coupler insulation, current position output terminal)
Motor power supply voltage	24 VDC±10%		
Motor section maximum instantaneous current	□42: 2.7 A, □56: 4 A		
Control power supply voltage	24 VDC±10%		
Control section current consumption	300 mA or less (including the ETP2 current consumption)		
Brake	Power supply voltage	24 VDC±10%	
	Power consumption	Refer to the specifications for each actuator	
Insulation resistance	100 MΩ or higher 500 VDC		
Withstand voltage	1000 VAC for 1 minute		
Operating ambient temperature	0 to 40°C (no freezing)		
Operating ambient humidity	35 to 80% RH (no condensation)		
Storage ambient temperature	-10 to 50°C (no freezing)		
Storage ambient humidity	35 to 80% RH (no condensation)		
Atmosphere	No corrosive gas, explosive gas, or dust		
Degree of protection	IP3X		
Weight	Approx. 150 g (standard mount) Approx. 180 g (DIN rail mount)	Approx. 180 g (standard mount) Approx. 210 g (DIN rail mount)	

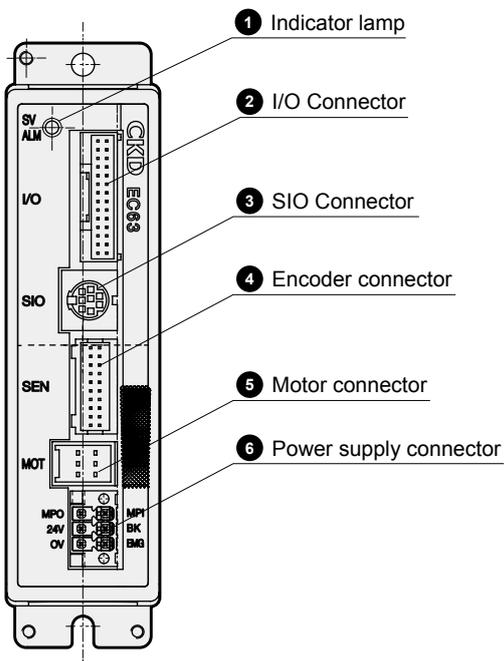
Panel description

● EC07

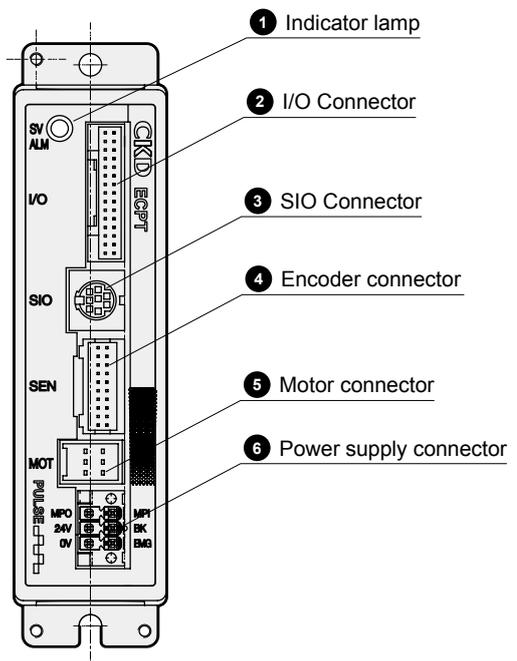


- ① Indicator lamp
Green: motor receiving power (not powered when blinking)
Red: alarm condition
- ② I/O Connector
Connect an external control device (PLC, etc.) to input and output the control signals.
- ③ SIO Connector
Connect a PC or handy terminal to set the parameters and perform manual operations.
- ④ Encoder connector
Connect a relay cable to input the encoder signals.
- ⑤ Motor connector
Connect a relay cable to output the power signal to the motor.
- ⑥ Power supply connector
Input a 24 VDC control power supply and motor power supply to the controller.

● EC63



● ECPT

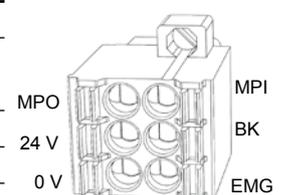


Power supply connector *Power supply plug is an accessory.

Power supply connector terminal

Terminal name	Function name	Function description
BK	Brake release	Apply 24 VDC when forcefully releasing the brake.
MPI	Motor power supply shutoff	MPI and MPO are connected to the jumper wires at the time of shipment. A shutoff turns off the motor power supply.
MPO	Motor power supply shutoff	
24 V	Common power supply (+)	Input common 24 VDC to the motor power supply and the control power supply.
0 V	Common power supply (-)	Connect common 0 VDC to the motor power supply, control power supply, brake release, and the emergency machine stop input.
EMG	Emergency machine stop input	Connect the b contact emergency machine stop switch and input 24 VDC.

Power supply plugs



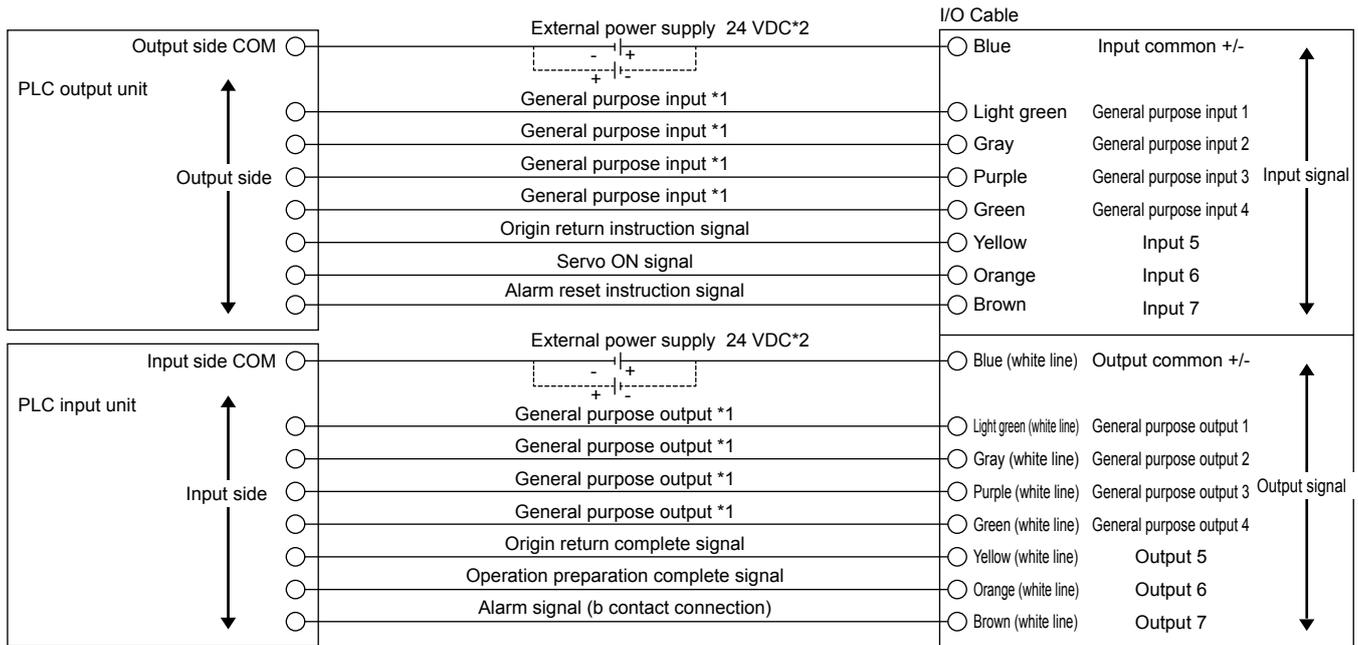
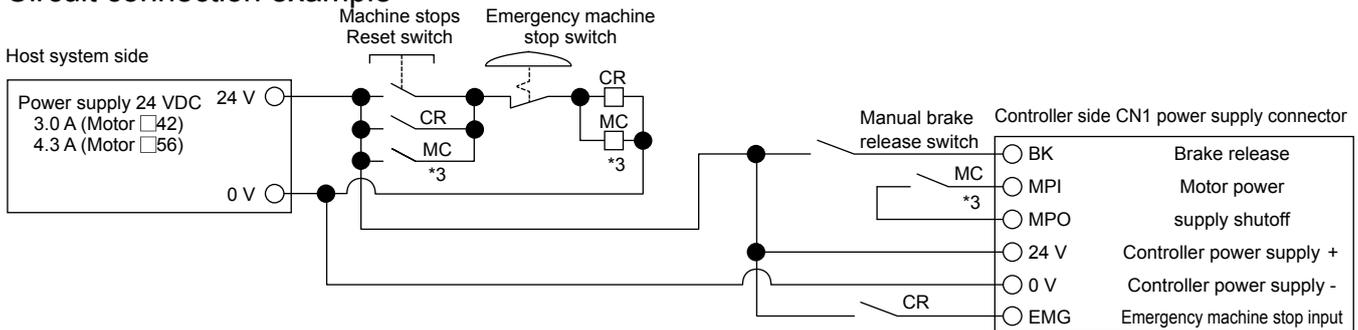
● EC07

Wiring

I/O cable specifications

Descriptions	Specifications
Type	20-conductor cable cord (UL94V-0)
Sheath material	Vinyl chloride
Sheath diameter	ø 8.4
Sheath color	Gray
Core wire	0.2 mm ² (AWG24) annealed copper wire
Lead wire exposure (ref.)	Approx. 7 mm from the tip of the lead wire

Circuit connection example



- ⚠ Note:**
 To prevent wiring mistakes, check before turning on the power.
 *1: Refer to the following table for the general purpose inputs/outputs.
 *2: The inputs and outputs both need an external power supply (24 VDC). The input and output COM can be used with either + or -.
 *3: For safety category support, connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals when externally shutting off the motor drive.

General purpose input/output assignments

Control mode	Standard mode 7 points	Simplified mode 3 points	Solenoid mode		
			Double 2-position	Double 3-position	Single
General purpose input 1	Point movement start	Point 1 movement start	Solenoid valve movement instruction 1	Solenoid valve movement instruction 1	
General purpose input 2	Point selection bit 2	Point 2 movement start	Solenoid valve movement instruction 2	Solenoid valve movement instruction 2	Solenoid valve movement instruction
General purpose input 3	Point selection bit 1	Point 3 movement start			
General purpose input 4	Point selection bit 0				
General purpose output 1	Point movement complete	Point 1 movement complete	Point 1 movement complete	Point 1 movement complete	Point 1 movement complete
General purpose output 2	Point confirmation bit 2	Point 2 movement complete	Point 2 movement complete	Point 2 movement complete	Point 2 movement complete
General purpose output 3	Point confirmation bit 1	Point 3 movement complete	Switch 1 output	Switch 1 output	Switch 1 output
General purpose output 4	Point confirmation bit 0		Switch 2 output	Switch 2 output	Switch 2 output

● EC63

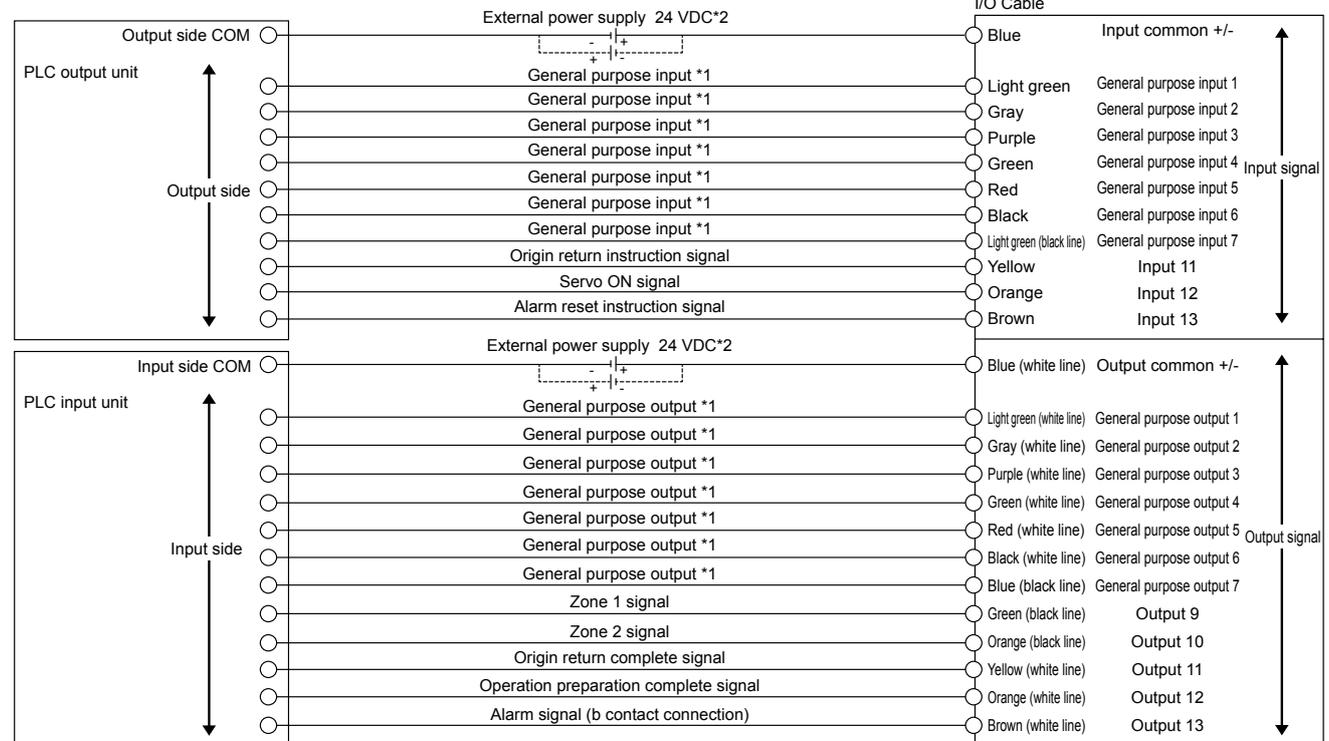
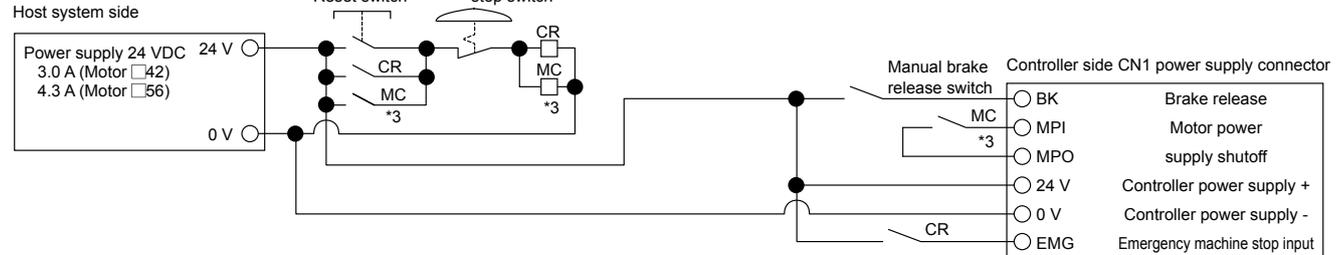
Wiring

I/O cable specifications

Descriptions	Specifications
Type	28-conductor cable cord (UL94V-0)
Sheath material	Vinyl chloride
Sheath diameter	ø 8.8

Descriptions	Specifications
Sheath color	Gray
Core wire	0.2 mm ² (AWG24) annealed copper wire
Lead wire exposure (ref.)	Approx. 7 mm from the tip of the lead wire

Circuit connection example



Note:
 To prevent wiring mistakes, check before turning on the power.
 *1: Refer to the following table for the general purpose inputs/outputs. *2: The inputs and outputs both need an external power supply (24 VDC). The input and output COM can be used with either + or -.
 *3: For safety category support, connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals when externally shutting off the motor drive.

General purpose input/output assignments

Control mode	Standard mode 63 points	Simplified mode 7 points	Solenoïd mode		
			Double 2-position	Double 3-position	Single
General purpose input 1	Point movement start	Point 1 movement start	Solenoid valve movement instruction 1	Solenoid valve movement instruction 1	
General purpose input 2	Point selection bit 5	Point 2 movement start	Solenoid valve movement instruction 2	Solenoid valve movement instruction 2	Solenoid valve movement instruction
General purpose input 3	Point selection bit 4	Point 3 movement start			
General purpose input 4	Point selection bit 3	Point 4 movement start			
General purpose input 5	Point selection bit 2	Point 5 movement start			
General purpose input 6	Point selection bit 1	Point 6 movement start			
General purpose input 7	Point selection bit 0	Point 7 movement start			
General purpose output 1	Point movement complete	Point 1 movement complete	Point 1 movement complete	Point 1 movement complete	Point 1 movement complete
General purpose output 2	Point confirmation bit 5	Point 2 movement complete	Point 2 movement complete	Point 2 movement complete	Point 2 movement complete
General purpose output 3	Point confirmation bit 4	Point 3 movement complete	Switch 1 output	Switch 1 output	Switch 1 output
General purpose output 4	Point confirmation bit 3	Point 4 movement complete	Switch 2 output	Switch 2 output	Switch 2 output
General purpose output 5	Point confirmation bit 2	Point 5 movement complete			
General purpose output 6	Point confirmation bit 1	Point 6 movement complete			
General purpose output 7	Point confirmation bit 0	Point 7 movement complete			

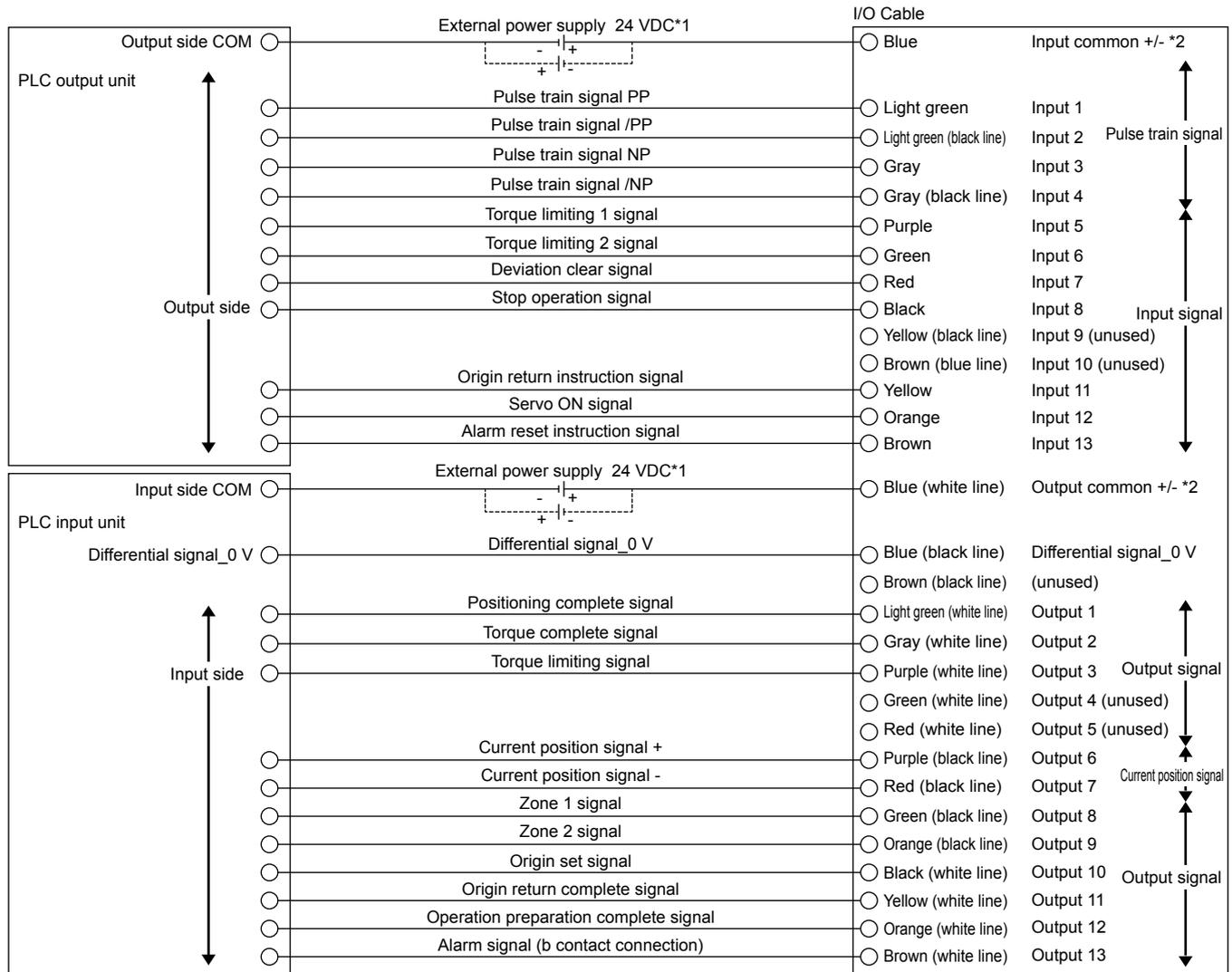
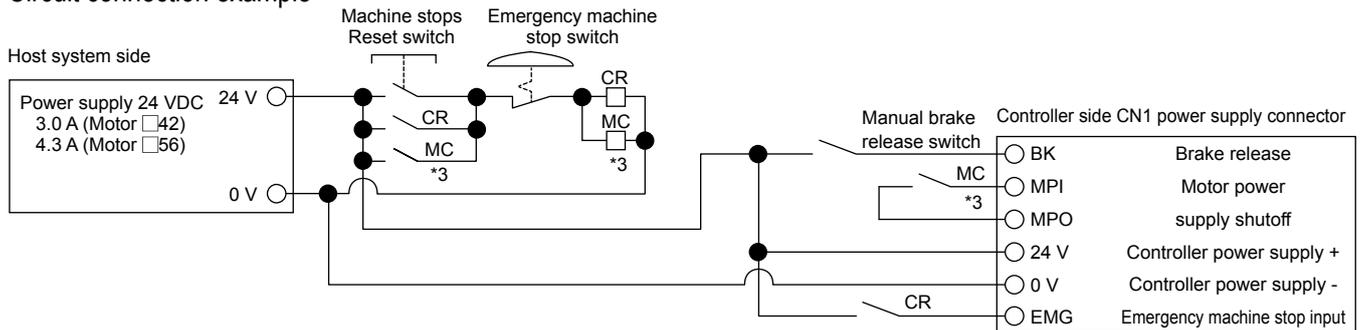
● ECPT

Wiring

I/O cable specifications

Descriptions	Specifications
Type	30-conductor cable cord (UL94V-0)
Sheath material	Vinyl chloride
Sheath diameter	ø 8.8
Sheath color	Gray
Core wire	0.2 mm ² (AWG24) annealed copper wire
Lead wire exposure (ref.)	Approx. 7 mm from the tip of the lead wire

Circuit connection example



*1: The inputs and outputs both need an external power supply (24 VDC). The inputs and outputs can be used with either + or -.

*2: The input common and output common are not connected within the controller.

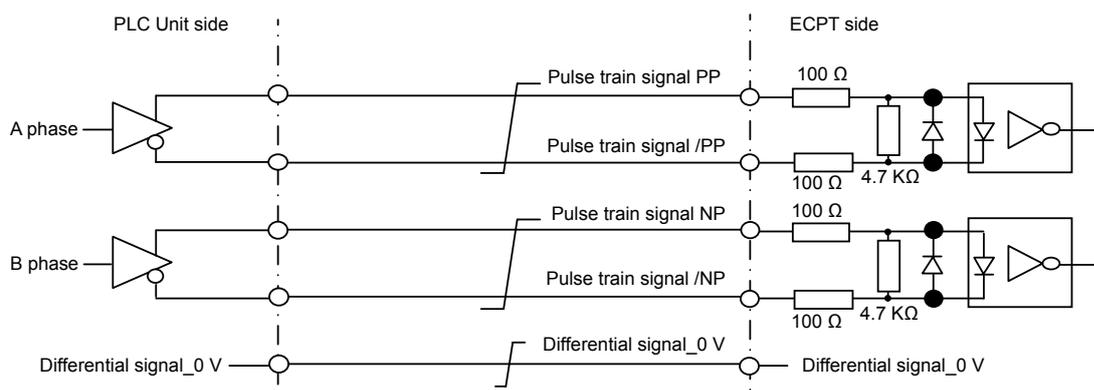
*3: For safety category support, connect the contact of an electromagnetic switch or other device to the MPI and MPO terminals when externally shutting off the motor drive.

Pulse train signal circuit

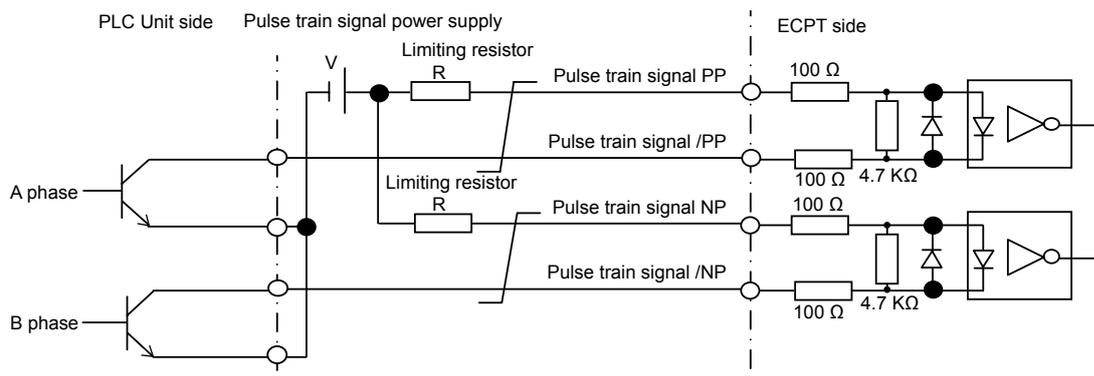
Descriptions	Specifications
Pulse train signal system	Open collector system (collector current MAX 12 mA), Differential system
Maximum input frequency	60 kpps (Open collector system), 100 kpps (Differential system)

Note: Set the signal wire length to 2 m or less when using the open collector system.

- If the PLC unit pulse train signal output uses the differential system



- If the PLC unit pulse train signal output uses the open collector system



The pulse train signal output specifications require a current limiting resistor when using the open collector output.

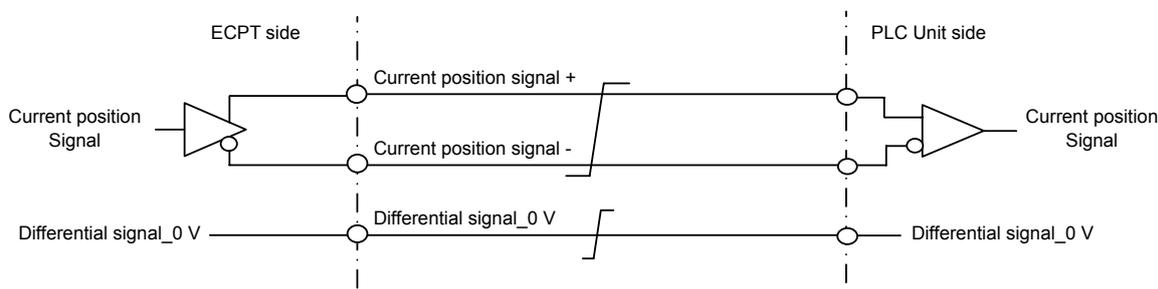
Pulse train signal power supply V	Recommended limiting resistor R
5 V±5%	1/4 W, 430 Ω±5%
12 V±5%	1/4 W, 1.5 KΩ±5%
24 V±10%	1/2 W, 3.3 KΩ±5%

Pulse train signal input specifications
Use a PLC unit which meets the following specifications.

Descriptions	Specifications
Differential system	Line driver IC (Am26C31 equivalent)
Open collector system	Rising/falling time: 3 μsec or less ON time/OFF time: 5 μsec or more

Current position output circuit

Descriptions	Specifications
Current position signaling system	Differential system
Maximum output frequency	10 kpps



Power supply

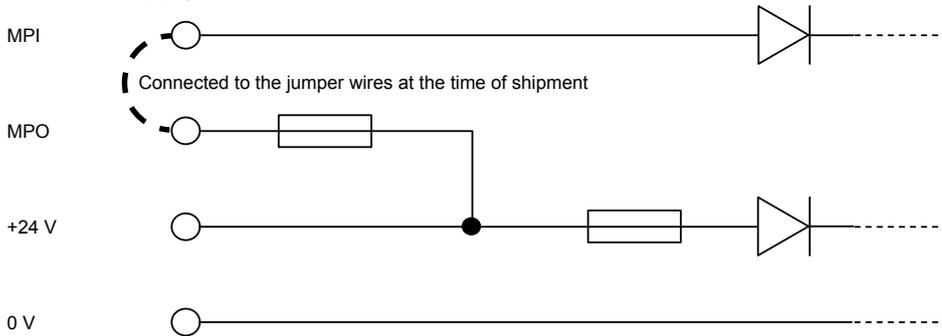
Common to EC07, EC63, ECPT

Power supply specifications

Descriptions	Specifications
Power supply voltage	24 VDC±10%
Maximum instantaneous current *	ERL2-45/ESD2-35, 45 : 3.0 A ERL2-60/ESD2-55 : 4.3 A

*: Also applies when equipped with a handy terminal.

Power supply circuit



Input-output circuit

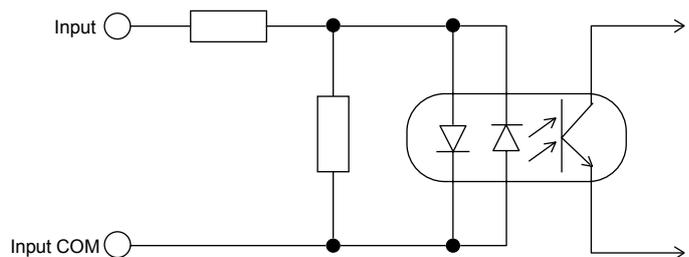
Common to EC07, EC63, ECPT

Input specification

Descriptions	Specifications
Number of inputs	7 points (EC07), 10 points (EC63), 7 points (ECPT)
Input voltage	24 VDC±10%
Input current	3 mA/1 point
Input current when ON	2 mA (MIN)
Input current when OFF	0.5 mA (MAX)

*Refer to the next page for the ECPT pulse train signal circuit.

Input circuit



The input is not polarized.
(The input COM can be used with either + or -)

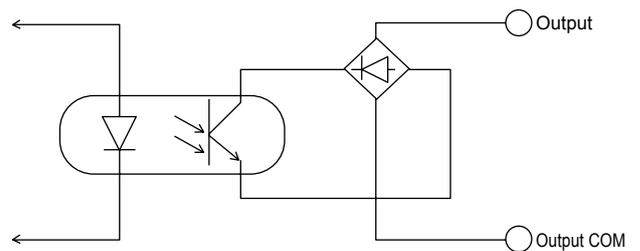
Output specifications

Descriptions	Specifications
Output points	7 points (EC07), 12 points (EC63), 9 points (ECPT)
Load voltage	24 VDC±10%
Load current	10 mA or less/1 point
Internal voltage drop	6 V or less (at 25°C or below)*1
Leakage current	10 µA
Output short-circuit protection circuit	Yes
Connecting load	PLC

*1: The load current is 9 mA and 6 V or less at 40°C.

*2: Refer to the next page for the ECPT current position output circuit.

Output circuit



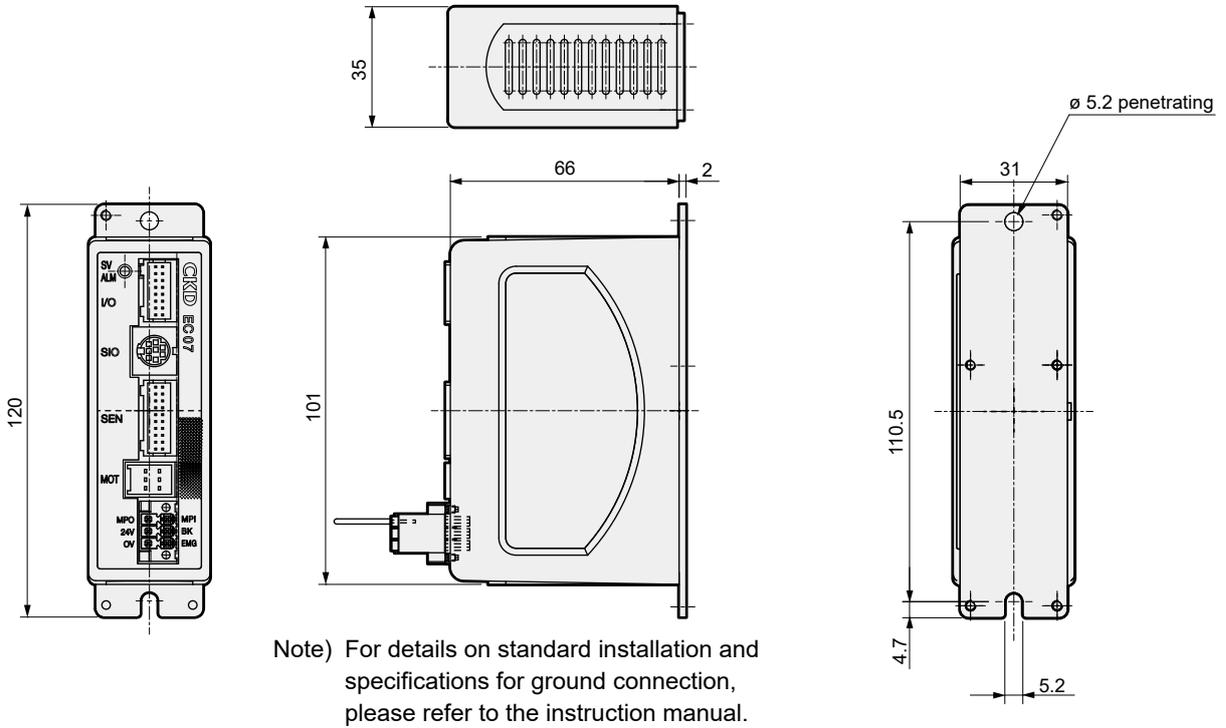
The output is not polarized.
(The output COM can be used with either + or -)

Discontinue

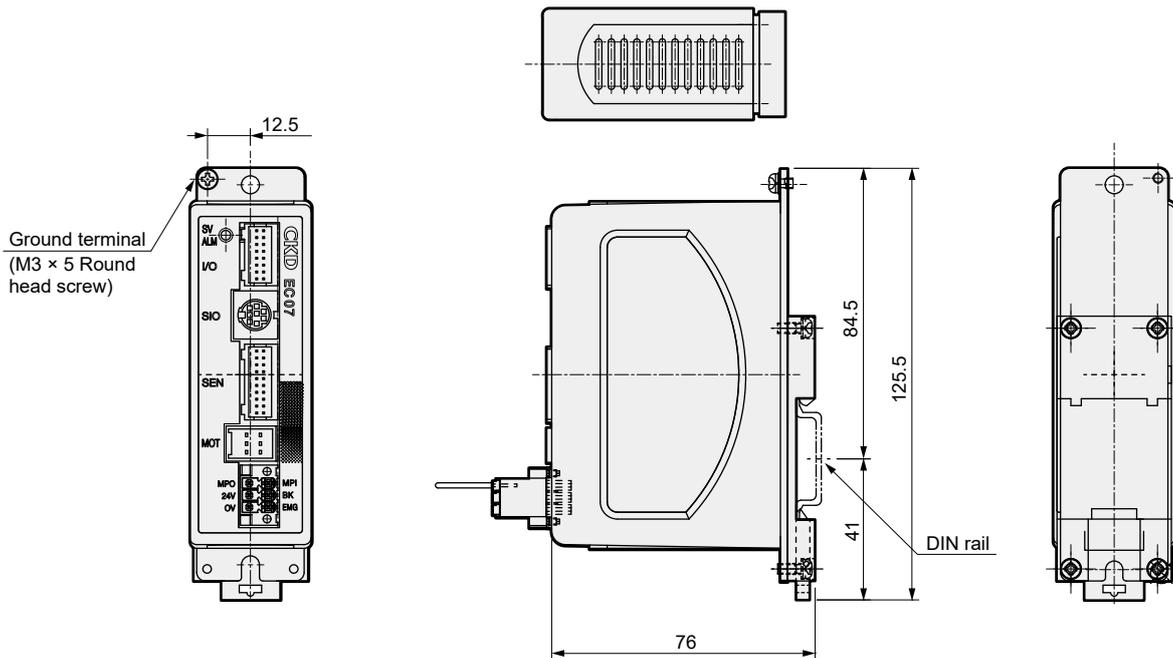
MEMO

Dimensions

● EC07-A (standard mount)



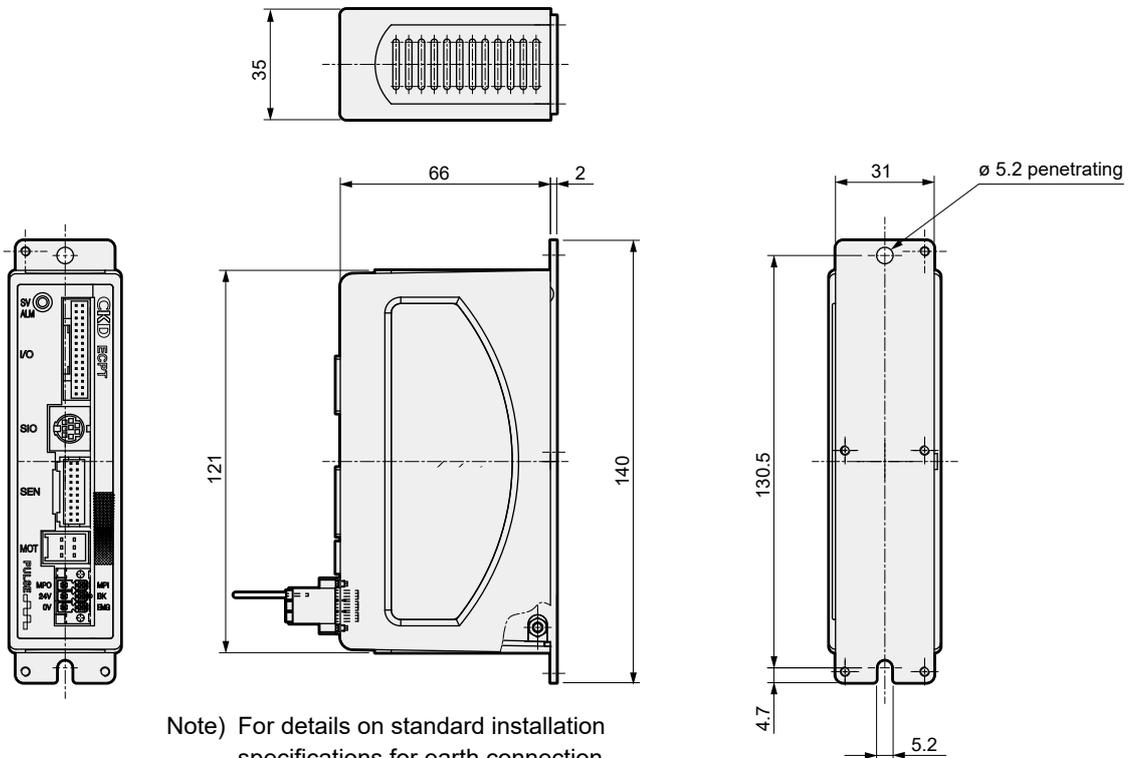
● EC07-B (DIN rail mount)



Controller accessories: Power supply connector (CN1) DMFCI-S/3-STF3.5 (Phoenix Contact)

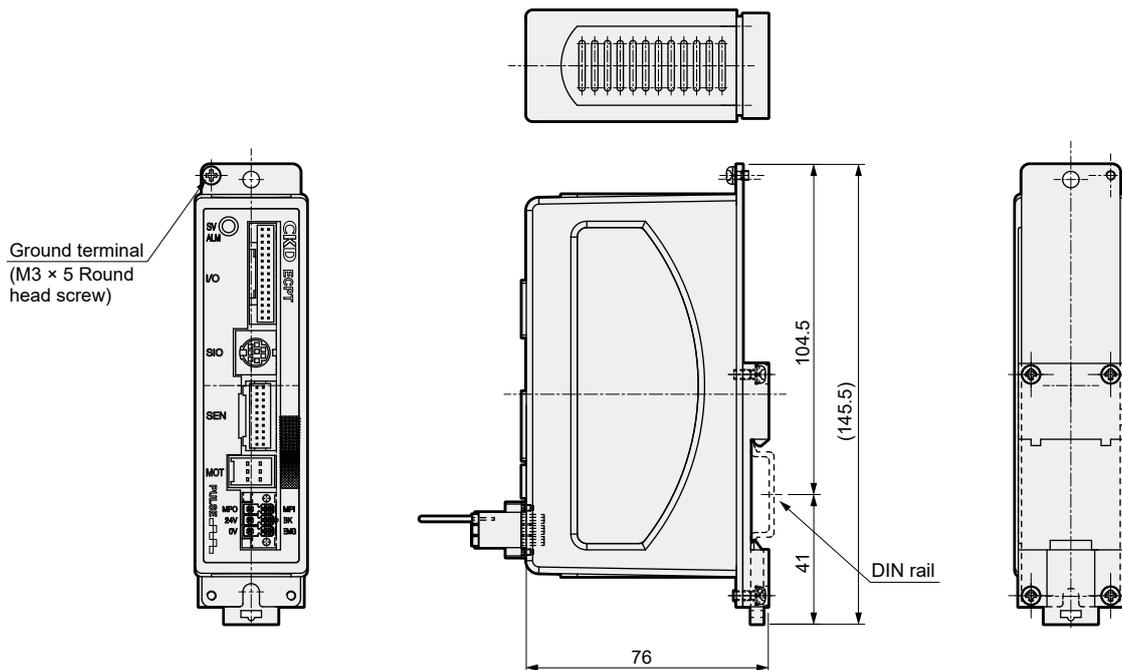
Dimensions

- EC63-C (standard mount)
- ECPT-E (standard mount)



Note) For details on standard installation specifications for earth connection, please refer to the instruction manual.

- EC63-D (DIN rail mount)
- ECPT-F (DIN rail mount)



Controller accessories: Power supply connector (CN1) DMFCI-S/3-STF3.5 (Phoenix Contact)

Note) The front panel designs of the EC63 and the ECPT are different.

Discontinue

Handy Terminal

ETP2

- Compatible with the EC07, EC63, ECPT controllers



Features

- Teaching is simple
- Dedicated power supply not required
- Can be used with conventional models
It can be used in the same manner for the EC controllers.

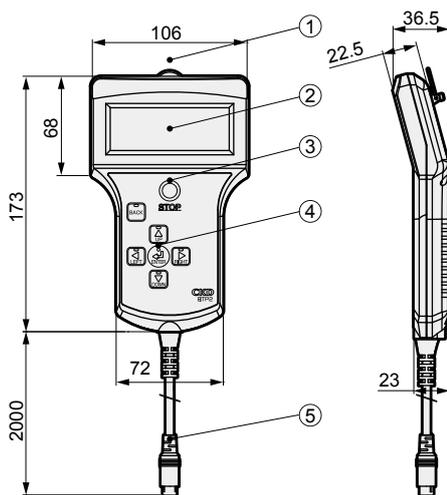
How to order

ETP2 - 2
Model No. Cable length

Specifications

Descriptions	ETP2
Display	20 characters × 4 lines (LCD)
Input keys	7 keys (Stop key: 1, Operation keys: 6)
Cable length	2 m
Supported controllers	EC07, EC63, ECPT
Supported actuators	ERL2/ESD2 Series
Operating ambient temperature	0 to 40°C (no freezing)
Operating ambient humidity	35 to 80% RH (no condensation)
Storage ambient temperature	-10 to 50°C (no freezing)
Storage ambient humidity	35 to 80% RH (no condensation)
Atmosphere	No corrosive gas, explosive gas, or dust
Degree of protection	IP4X
Weight	Approx. 140 g (except for the cable)

External dimensions and the names and functions of each part



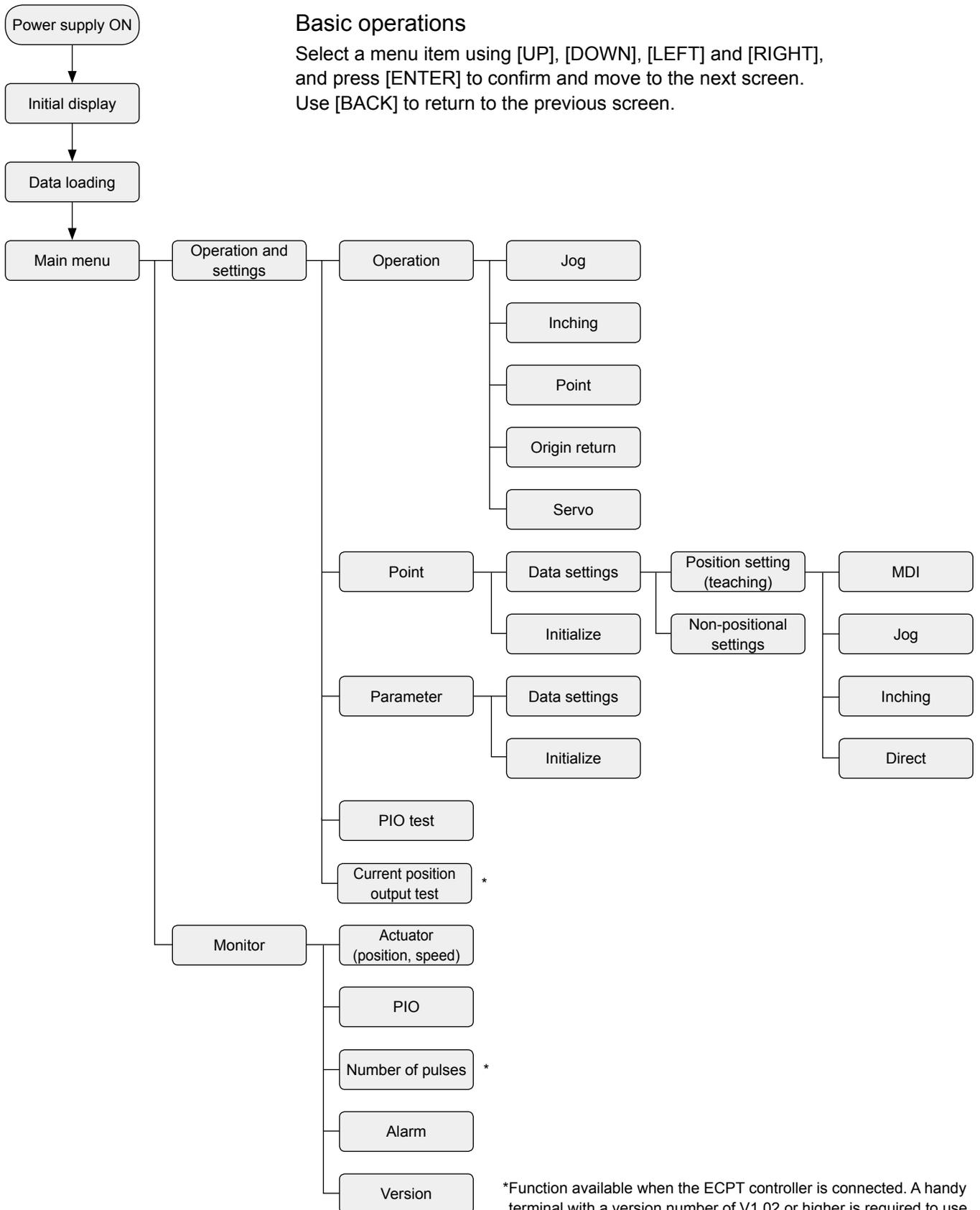
No	Name	Function
①	Hook	Hook for hanging the product.
②	LCD	20 characters × 4 lines display.
③	Stop key [STOP]	Use this key to stop the operation of the actuator.
④	[UP]	Use these keys for various operations. The LEDs light up when the operation keys can be used.
	[DOWN]	
	[LEFT]	
	[RIGHT]	
	[BACK]	
	[ENTER]	
⑤	Connector	Connect to the controller.

Function list

	Menu				Description
	Main	Sub 1	Sub 2	Sub 3	
Operation & setting	Operation	Jog			Set the speed and perform the jog movement.
		Inching			Set the speed and distance and perform the inching movement.
		Point			Select the point number and perform the point movement.
		Origin return			Perform the origin return.
		Servo			Turn the servo ON/OFF.
	Point	Data settings	Position setting (teaching)	MDI	Set the point data (position) via key input.
				Jog	Set the point data (position) via jog movement.
				Inching	Set the point data (position) via inching movement.
				Direct	Set the point data (position) using the position of the actual machinery.
	Non-positional settings			Set the point data (positioning width, mode, speed, acceleration, deceleration, pressing current, pressing speed, pressing distance).	
	Data initialization			Return the point data to the factory defaults.	
	Parameter	Data settings			Set the parameter data.
Data initialization			Return the parameter data to the factory defaults.		
PIO test			Forcefully turn the I/O connector input signal display and the output signal ON/OFF.		
Current position output test *			Forcefully output the current position output signal.		
Monitor	Actuator (position, speed)			Display the current position and speed.	
	PIO			Display the I/O connector's input and output signals.	
	Number of pulses *			Display the count for the number of input pulsetrains.	
	Alarm			Display the current and past ten alarms.	
	Version			Display the versions of the handy terminal and the controller.	

Operation structure

Operations performed using the handy terminal use the following structure.



Refer to the Instruction Manual for details.

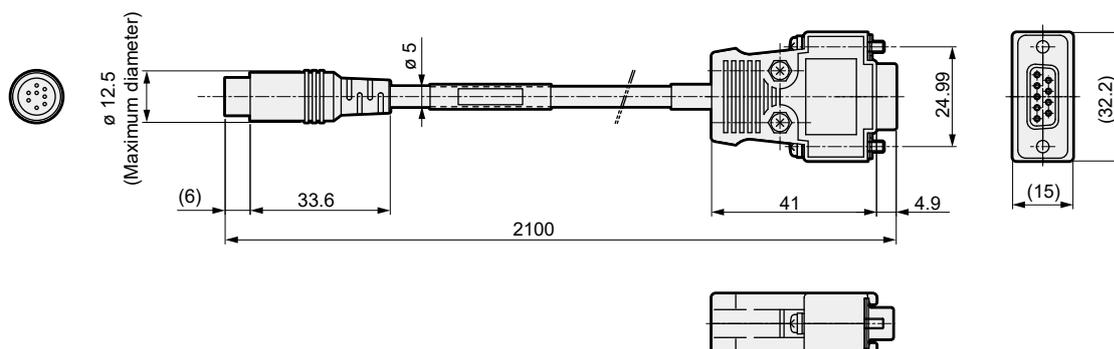
*Function available when the ECPT controller is connected. A handy terminal with a version number of V1.02 or higher is required to use it with an ECPT controller.

Table of model numbers for EC07, EC63, and ECPT related parts

● Related parts

Part name	Model No.
PC communication cable	EC-CBLPC1

PC communication cable
Model No.: EC-CBLPC1



● Noise filter

Part name	Model No.
Noise filter for power supply (single phase, 15 A)	AX-NSF-NF2015A-OD
Surge protector	AX-NSF-RAV-781BXZ-4

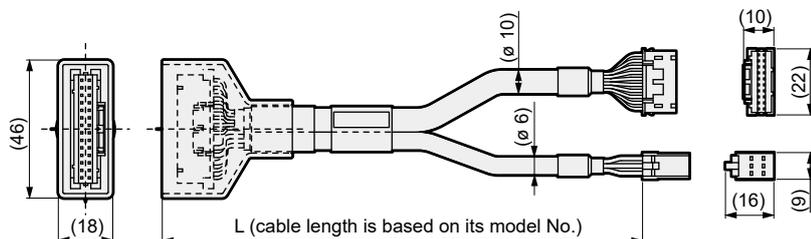
Note 1: The parts listed on this page are available for purchase from CKD.

Note 2: A surge protector is required to use these parts with products that comply with European standards (CE marking). Refer to the Instruction Manual for details.

Cable

● Motor encoder relay cable (fixed)

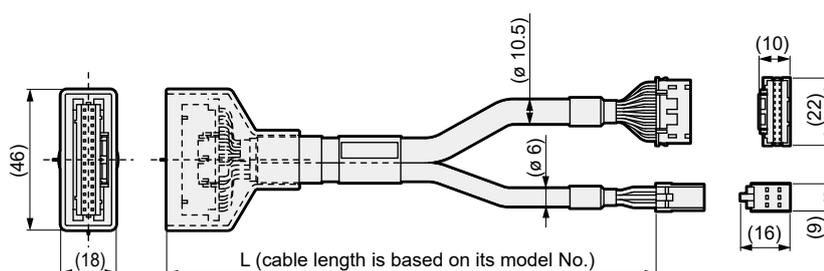
1 m, 3 m, 5 m, 10 m



Model No.	Cable length (L)
EC-CBLME1-S-1	1 m
EC-CBLME1-S-3	3 m
EC-CBLME1-S-5	5 m
EC-CBLME1-S-X	10 m

● Motor encoder relay cable (movable)

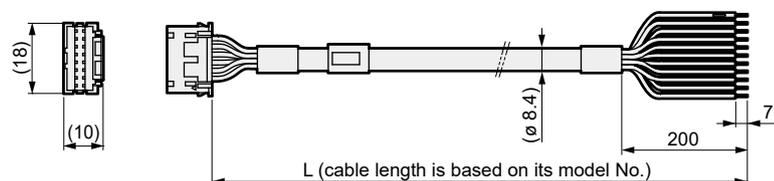
1 m, 3 m, 5 m, 10 m



Model No.	Cable length (L)
EC-CBLME1-R-1	1 m
EC-CBLME1-R-3	3 m
EC-CBLME1-R-5	5 m
EC-CBLME1-R-X	10 m

● I/O cable (for the EC07)

2 m, 3 m, 5 m

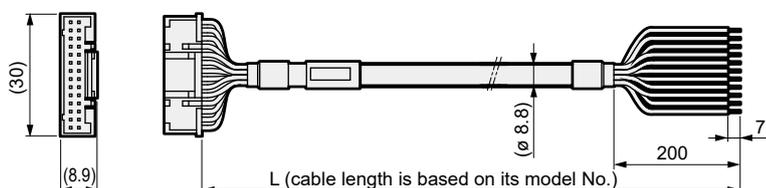


Model No.	Cable length (L)
EC-CBLIF1-07-2	2 m
EC-CBLIF1-07-3	3 m
EC-CBLIF1-07-5	5 m

Note 1: For information on the cable connection (wiring colors), refer to the EC07 I/O cable specifications (page 31).

● I/O cable (for the EC63)

2 m, 3 m, 5 m

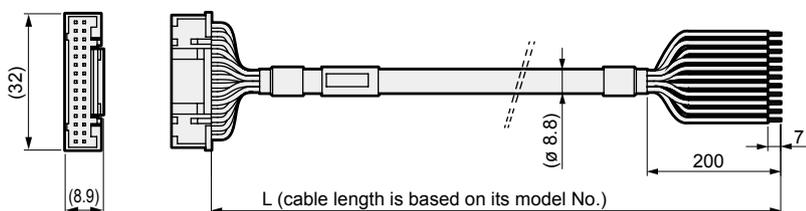


Model No.	Cable length (L)
EC-CBLIF1-63-2	2 m
EC-CBLIF1-63-3	3 m
EC-CBLIF1-63-5	5 m

Note 1: For information on the cable connection (wiring colors), refer to the EC63 I/O cable specifications (page 32).

● I/O cable (for the ECPT)

2 m, 3 m, 5 m



Model No.	Cable length (L)
EC-CBLIF1-PT-2	2 m
EC-CBLIF1-PT-3	3 m (*2)
EC-CBLIF1-PT-5	5 m (*2)

*1: For information on the cable connection (wiring colors), refer to the ECPT I/O cable specifications (page 33).

*2: These cables can be used only when the differential system is used as the pulse train signal system. Only a cable length of 2 m can be used with the open collector system.

Safety precautions

- If the cable is repeatedly bent during usage, fix the cable sheath section near the actuator connector.
- Be sure to firmly insert the cable all the way into the connector when connecting it. Also be sure to firmly tighten the connector mounting screws and the fixing screws.
- Do not cut, extend, or modify the cable in any way. Doing so may cause a failure or malfunction.
- Refer to the cable length under "How to order" for the cable length L.

Discontinue

MEMO

STEP-1 Check the load capacity

The load capacity differs depending on the mounting orientation and the transport speed. Refer to the selection chart (intro pages 3 and 4) and the specifications chart of each model (pages 1 and 13). The size and screws lead must be selected.

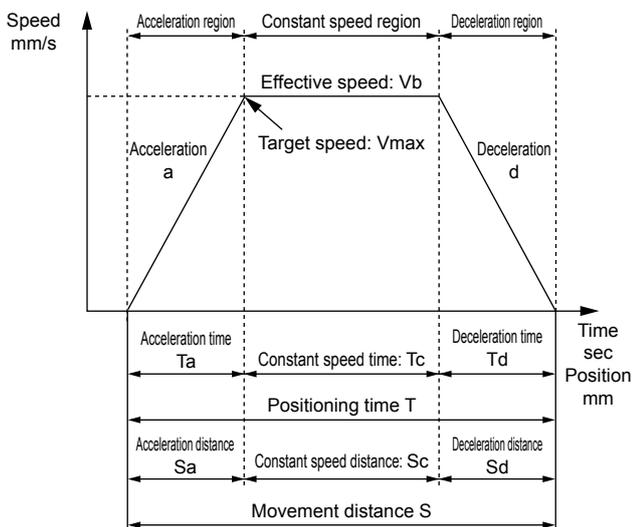
STEP-2 Check the tact time.

Follow the examples below for the selected product and check if it matches the required tact.

Speed, acceleration setting range

Motor size	Lead (mm)	Speed (mm/s)	Acceleration (m/s ²)
□42	6	15 to 300	1.0 to 3.0
	12	30 to 600	1.0 to 3.0
□56	6	15 to 200	1.0 to 3.0
	12	30 to 400	1.0 to 3.0

Tact setting for a general transport operation

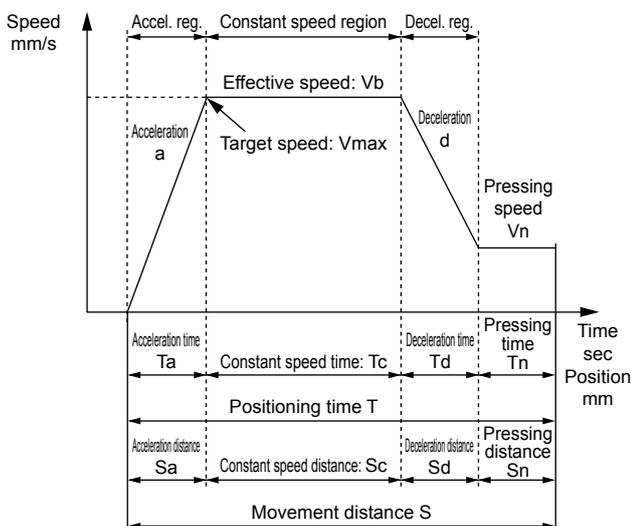


	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	*1
	Set acceleration	a	mm/s ²	*2
	Set deceleration	d	mm/s ²	*2
	Movement distance	S	mm	
Calculated value	Target speed	Vmax	mm/s	$= \{2 \times a \times d \times S / (a + d)\}^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	$= Vb/a$
	Deceleration time	Td	s	$= Vb/d$
	Constant speed time	Tc	s	$= Sc/Vb$
	Acceleration distance	Sa	mm	$= (a \times Ta^2)/2$
	Deceleration distance	Sd	mm	$= (d \times Td^2)/2$
	Constant speed distance	Sc	mm	$= S - (Sa + Sd)$
	Positioning time	T	s	$= Ta + Tc + Td$

*1 • Depending on the stroke and acceleration, it may not reach the set speed in some cases. Compare the Vmax and the set speed.

*2 • The units of acceleration and deceleration for the handy terminal are m/s². Take note of the settings.

Tact setting for a pressing operation



	Description	Code	Unit	Remarks
Set value	Set speed	V	mm/s	*1
	Set acceleration	a	mm/s ²	*2
	Set deceleration	d	mm/s ²	*2
	Movement distance	S	mm	
	Pressing distance	Sn	mm	
Calculated value	Target speed	Vmax	mm/s	$= \{2 \times a \times d \times (S - Sn + Vn^2/2d) / (a + d)\}^{1/2}$
	Effective speed	Vb	mm/s	The lesser value of V and Vmax
	Acceleration time	Ta	s	$= Vb/a$
	Deceleration time	Td	s	$= (Vb - Vn)/d$
	Constant speed time	Tc	s	$= Sc/Vb$
	Pressing time	Tn	s	$= Sn/Vn$
	Acceleration distance	Sa	mm	$= (a \times Ta^2)/2$
	Deceleration distance	Sd	mm	$= ((Vb + Vn) \times Td)/2$
	Constant speed distance	Sc	mm	$= S - (Sa + Sd + Sn)$
	Positioning time	T	s	$= Ta + Tc + Td + Tn$

*1: Depending on the stroke and acceleration, it may not reach the set speed in some cases. Compare the Vmax and the set speed.

*2: The units of acceleration and deceleration for the handy terminal are m/s². Take note of the settings.

STEP-3 Check the allowable moment

3-1 Checking the allowable static moment

Check that the moment is less than the allowable moment (satisfies the following equation) for the configured acceleration a and d (m/s^2).

$$M'_T = \frac{W'}{W'_{max}} + \frac{MR'}{MR'_{max}} + \frac{MP'}{MP'_{max}} + \frac{MY'}{MY'_{max}} < 1$$

M'_T : Resultant moment (must be smaller than 1)

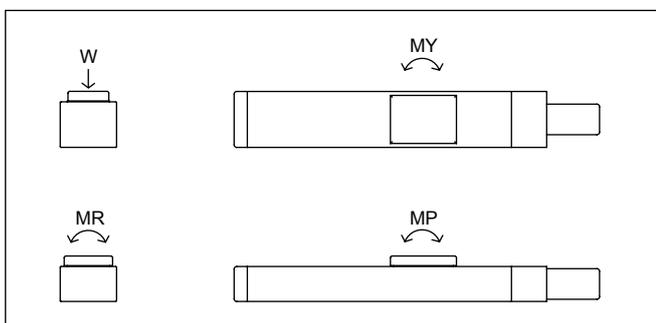
W' : Vertical load (N)

MR' : Rolling moment (N·m)

MP' : Pitching moment (N·m)

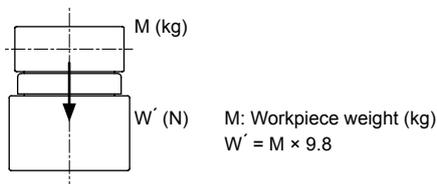
MY' : Yawing moment (N·m)

● Slider: center of the slider section



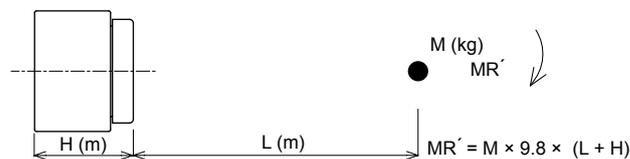
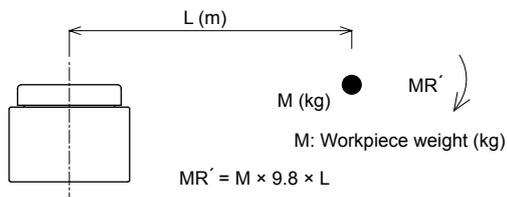
		W' max (N)	MR' max (N·m)	MP' max (N·m)	MY' max (N·m)
Allowable static load value	ERL2-45	1450	31	12	12
	ERL2-60	2000	58	25.7	25.7

● Vertical load W' (N)

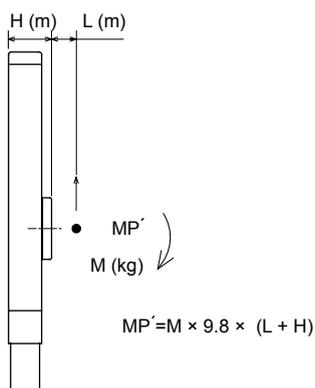


	H (m)
ERL2-45	0.045
ERL2-60	0.060

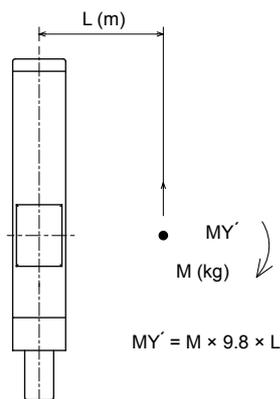
● Rolling moment MR' (N·m)



● Pitching moment MP' (N·m)



● Yawing moment MY' (N·m)



ERL2/ESD2 Series

3-2 Checking the allowable moment during operation

Check that the moment is less than the allowable moment during operation (satisfies the following equation).

$$M_T = \frac{W}{W_{max}} + \frac{MR_1 + MR_2}{MR_{max}} + \frac{MP_1 + MP_2 + MP_3}{MP_{max}} + \frac{MY_1 + MY_2 + MY_3}{MY_{max}} < 1$$

M_T : Resultant moment (must be smaller than 1)

W: Vertical weight (N)

MR: Rolling moment (N·m)

MP: Pitching moment (N·m)

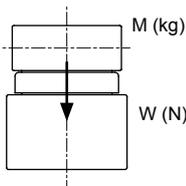
MY: Yawing moment (N·m)

*Please consider all moments which act based on the circumstances for the moment load during operation.

Allowable load value during operation

	Mounting orientation	Wmax (N)	MRmax (N·m)	MPmax (N·m)	MYmax (N·m)
ERL2-45	Horizontal	98	11.1	4.4	4.4
	Vertical	-	12.3	4.9	4.9
ERL2-60	Horizontal	294	27.5	8	8
	Vertical	-	33.7	9.8	9.8

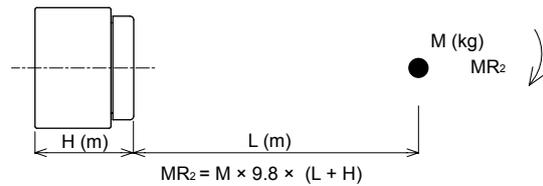
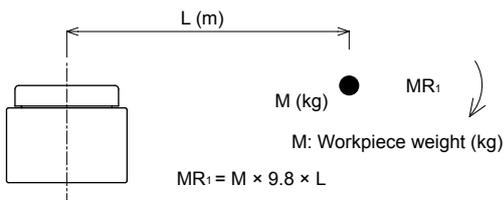
● Vertical load W (N)



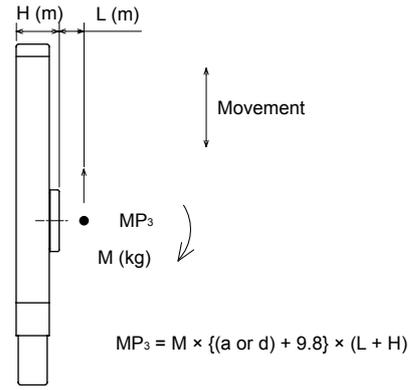
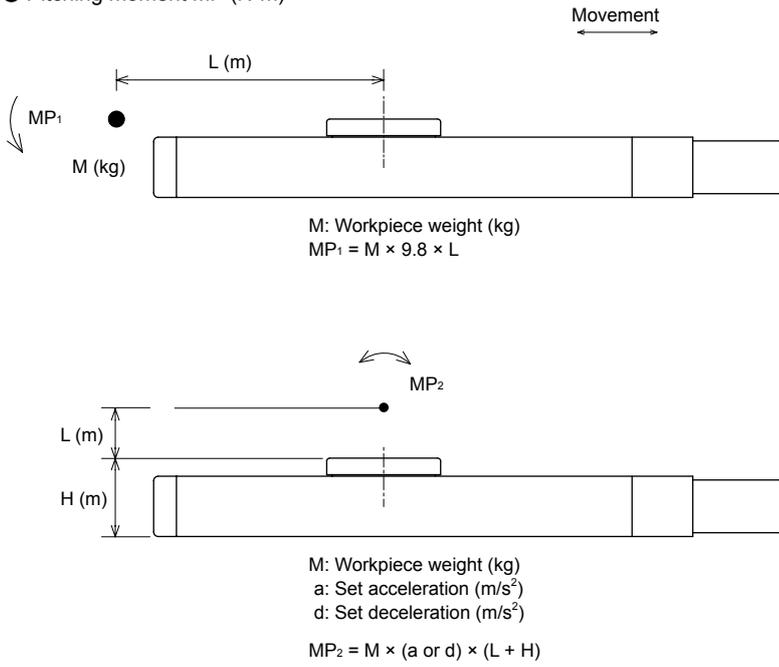
M: Workpiece weight (kg)
W = M × 9.8

	H (m)
ERL2-45	0.045
ERL2-60	0.060

● Rolling moment MR (N·m)

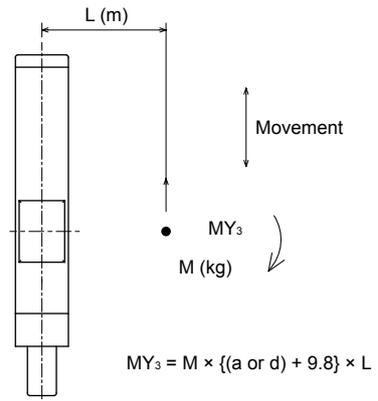
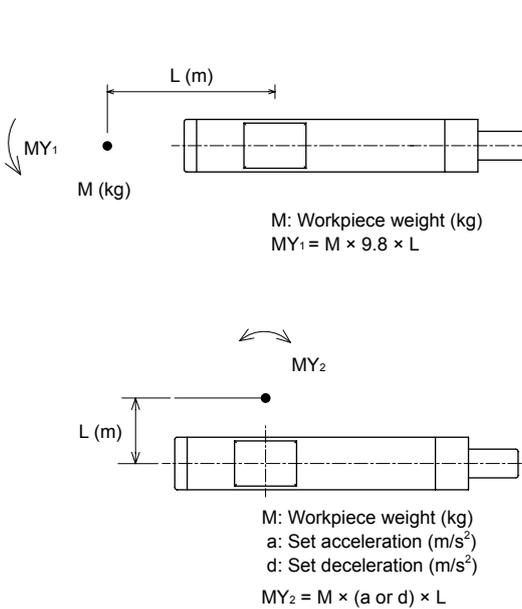


● Pitching moment MP (N·m)



	H (m)
ERL2-45	0.045
ERL2-60	0.060

● Yawing moment MY (N·m)



*Select and use the greater value of a or d.



Safety Precautions

Be sure to read this section before use.

When designing equipment using electric actuators, there is an obligation to check that the safety of the system, which is operated according to the equipment's machine mechanism and the electric control, can be ensured and to manufacture safe equipment.

It is important to select, use, handle, and maintain CKD products appropriately to ensure their safe usage.

Observe warnings and precautions to ensure device safety.

Check that device safety is ensured, and manufacture a safe device.

WARNING

- 1** This product is designed and manufactured as a general industrial machine part. Therefore, it must be handled by an operator with sufficient knowledge and experience.
- 2** Use the product within the specifications range.
This product must be used within its stated specifications. In addition, never modify or additionally machine this product.
This product is intended for use in general industrial machinery equipment or parts. It is not intended for use outdoors or for use under the following conditions or environments.
(Note that this product can be used when CKD is consulted prior to its usage and the customer consents to the CKD product specifications. The customer should provide safety measures to avoid danger in the event of problems.)
 - 1** Use in applications which require safety such as nuclear energy, railways, aircraft, marine vessels, vehicles, medicinal devices, devices or applications that come into contact with beverages or foodstuffs, amusement devices, emergency operation (shutoff, release, etc.) circuits, press machines, brake circuits, or other safety devices and applications.
 - 2** Use for applications where life or assets could be significantly affected, and special safety measures are required.
- 3** Observe organizational standards and legal regulations, etc., pertaining to the safety of equipment design.
- 4** Do not remove any devices before checking the safety.
 - 1** Inspect and service the machine and devices after confirming the safety of the entire system related to this product.
 - 2** Note that there may be hot or charged sections even after operation is stopped.
 - 3** When inspecting or servicing the device, shut off the equipment power supply and the power supply of the corresponding facility, discharge any compressed air from the system, and beware of electric shock.
- 5** Observe the warnings and cautions in the instruction manuals for each product to prevent accidents.
 - 1** Unexpected operations may occur during teaching work and test operation stage, so be sure not to touch the actuator. When operating from a position where the actual axis cannot be seen, be sure it is safe for the actuator move before operating.
- 6** Be sure to observe the warnings to prevent electric shock.
 - 1** Do not touch the heat sink, cement resistor, and motor inside the controller.
These parts are very hot and may cause burns. Perform inspection tasks after waiting a sufficient amount of time. Immediately after the power supply is turned off, a high voltage is applied to the internal capacitor until the built-up electrical charge is discharged, so do not touch it for about three minutes.
 - 2** Turn off the switch which provides the controller power supply before performing maintenance and inspection.
There is a risk of electric shock due to high voltage.
 - 3** Do not attach or remove any connectors with the power supply turned on. Doing so may risk malfunction, failure, and electric shock.
- 7** Install an overcurrent protection device.
The wiring to the controller should comply with the JIS B 9960-1:2008 Safety of Machinery - Electrical Equipment of Machines - Part 1: General Requirements. Install an upstream overcurrent protection device (a shutoff mechanism or circuit protector for wiring) for the drive (power supply connector, common power supply terminal block) and the control (input-output connectors) power supply.

(Excerpted from "JIS B 9960-1 7.2.1 General Information")

If there is a possibility that the circuit current within the machinery (electrical equipment) may exceed the smaller of the rated value of the components or the allowable current capacity, overcurrent protection must be installed. The rated value or the set value which must be selected is provided in 7.2.10.

- 8** Observe the following precautions to prevent accidents.

■ Precautions are ranked as "DANGER", "WARNING", and "CAUTION" in this section.

DANGER: In the case where the product operation is mishandled and/or when the urgency of a dangerous situation is high, it may lead to fatalities or serious injuries.

WARNING: A dangerous situation may occur due to incorrect handling, leading to fatal or serious injuries.

CAUTION: A dangerous situation may occur due to incorrect handling, leading to minor injuries or property damage.

Note that some items indicated with "CAUTION" may lead to serious results depending on the conditions. All items contain important information and must be observed.

Disclaimer regarding orders

1 Warranty period

This warranty is valid for one (1) year after delivery to the customer's designated site.

2 Scope of warranty

In case any defect clearly attributable to CKD is found during the warranty period, CKD shall, at its own discretion, repair the defect or replace the relevant product in whole or in part and at no cost, according to its own judgment.

Note that the following failures are excluded from the warranty scope:

- (1) Failures when the product is used outside of the conditions/environment described in the product specifications.
- (2) Failures attributable to careless handling or other incorrect usage and mismanagement.
- (3) Failures resulting from factors other than the delivered product.
- (4) Failures caused by improper use of the product.
- (5) Failures caused by alterations of structure, performance, and specifications performed after delivery that CKD was not involved in, and repairs that were not specified by CKD.
- (6) Failures caused by damage that could have been avoided if your machinery and devices met the accepted industry standards for function and structure, etc. when embedding and using this product in your machinery and devices.
- (7) Failures caused by matters that could not be predicted with the technologies in practice when the product was delivered.
- (8) Failures due to fire, earthquakes, flood damage, lightning, other natural disasters, earth shocks, pollution, salt damage, gas damage, abnormal voltages, and other external factors.

Furthermore, the warranty described here covers the actual delivered product as a single unit and does not cover any damage caused by failure of the delivered product.

3 Warranty for overseas export

- (1) Repairs shall be performed for products returned to CKD's factory or to companies and factories designated by CKD. Construction and expenses for returning products will be handled outside of compensation.
- (2) Reconditioned parts shall be delivered to a designated domestic location according to domestic packaging specifications.

These guarantee provisions prescribe the basic matters. In the event that the guarantees described in individual specification drawings or specifications differ from these guarantee provisions, the specification drawings or specifications shall take precedence.

4 Compatibility check

The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

5 Scope of service

The price of the delivered product does not include the service cost to dispatch a technician. Separate fees will be charged in the following cases.

- (1) Mounting adjustment guidance and observation of test operation runs
- (2) Maintenance inspection, adjustment, and repair
- (3) Technical guidance and training (operation, programs, wiring methods, safety training, etc.)

Precautions for export

Products and related technologies in this catalog

Those of the products and related technologies in this catalog which are subject to US Export Administration Regulations (EAR) are marked on the product page as "Product subject to the EAR (EAR99) or (EAR99 and 3A991)".

For export or provision of products or related technologies subject to EAR regulations, we request that the US Export Administration Regulations (EAR) be observed appropriately.



Safety Precautions

Always read this section before use.

Product-specific cautions: Electric actuators ERL2 and ESD2 Series/Controllers EC07, EC63, ECPT/Handy terminal ETP2

Design/selection

1. Common

DANGER

- Do not use this product in areas containing combustible, inflammable, explosive, or other dangerous substances.
Doing so may cause the product to ignite, catch fire, or explode.
- Ensure that the product is not exposed to water or oil droplets. Doing so may lead to fire or failure.
- When mounting the product, be sure to securely hold and fix it (including the workpiece). If the product tips over, falls, or malfunctions, personnel may be injured.
- Be sure to use a stable DC power supply (24 VDC $\pm 10\%$) for the motor power supply, control power supply, and the input-output circuit power supply. Direct connections to an AC power supply may lead to fire, rupture, or damage.

WARNING

- When performing an emergency stop, it may take several seconds until the machine stops depending on the movement speed and the equipped load.
- Design a safety circuit or device to avoid equipment damage and human injury when the machine stops due to system abnormality such as an emergency stop or power outage.
- Set up a safety fence to prevent anyone from entering the movable range of the electric actuator. In addition, install the emergency stop button switch as a device in a location which is easy to operate in an emergency situation. Configure and wire the emergency stop button so that it does not automatically reset or cannot be carelessly reset by personnel.
- Use a shaft that is equipped with a brake when the shaft body is not horizontally mounted. There is a risk that the actuator may fall and cause injury when the servo (including emergency machine stops and alarms) and brake are turned off.
- The brake on a brake-equipped shaft is not able to completely hold the actuator in every situation. The brake alone cannot reliably hold the actuator in cases where safety must be guaranteed such as when performing maintenance in an application where the slider moves with an unbalanced load or when stopping the machine for a long period of time. Be sure to place it in a balanced state or apply a mechanical locking mechanism.
- Install the product in an indoor location with low humidity. Installing the product in a location where it is exposed to rain water or high humidity (85% humidity or above, with condensation) may lead to short circuits or fire accidents. Oil droplets and oil mist are also strictly prohibited.

- Follow the precautions regarding the temperatures for usage and storage to use and store the product without condensation. Failure to do so may lead to malfunctions and shorten the product lifetime. Provide ventilation if heat builds up.
- Do not install the product near locations where it is exposed to direct sunlight, dust, and heating elements as well as corrosive gas, explosive gas, flammable gas, or combustible materials. In addition, this product was not designed for chemical resistance. Exposure to chemicals may lead to failure, explosion, or ignition.
- Do not use or install the product in a location where it is exposed to strong electromagnetic waves, ultraviolet light, or radiation. Doing so may lead to malfunction or failure.

CAUTION

- To avoid adding inductive noise when wiring the product, do not wire it in a location where it is exposed to large currents or strong magnetic fields, and do not use the same piping and wiring (multi-conductor cables, etc.) as large-scale motor power lines. Also exercise caution near the inverter power supplies and wiring sections (the same wiring and piping cannot be used) used in robots and other equipment. Be sure to frame ground the power supply and insert a filter in the output section.
- If the product's output section is shared with an inductive load and power supply that can cause a surge such as a solenoid valve or relay, the surge current may wrap around the output section and cause damage, so separate the product's output power supply from any outputs which may create an inductive load. If a separate power supply cannot be used, connect a surge absorption element directly in parallel with all inductive loads.
- Select a power supply which provides excess capacity based on the number of installed products. Malfunction may occur if there is no excess capacity. (Rough estimate: 42...3.0 A/unit, 56...4.3 A/unit)
- Do not disassemble the products.
- The fixed cable cannot be used in applications where it is repeatedly bent. Use a movable cable in places where it is repeatedly bent.
- Fix the movable cable so that it does not easily move. In addition, do not bend the cable at sharp angles (bend radius of 68 mm or less) when fixing the position.
- When turning on the power supply, it may recognize an unintended position as the origin position when an external stopper or holding mechanism (brake, etc.) are attached to recognize the origin position. Exercise caution regarding the placement of the external stopper or other mechanism so that the origin can be properly detected after the power supply is turned on.
- The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

Mounting, installation and adjustment**1. Common****⚠ DANGER**

- Do not enter the operating range of the product when it is in working condition. Injury may occur if the product moves unexpectedly.
- There is a risk that fingers and other extremities may get caught in between the motor and slider sections of the ERLS2 Series (slider) when it returns to the origin. Please be careful.

⚠ WARNING

- Because this product contains precision parts, subjecting it to vibrations, impacts, or laying it sideways during transport is strictly prohibited. Doing so may damage the product.
- Put it in a horizontal position when temporarily placing it.
- Do not climb on top of or place items on the packaging.
- Set the ambient temperature to between -10 to 50°C and the ambient humidity to between 35 to 80% to prevent condensation and freezing. Failure to do so may cause the product to fail.
- Mount the product to an incombustible object. Mounting the product on or near a combustible object may cause a fire.
- Be sure to install the product using D-class grounding (ground resistance of 100 Ω or less). A short circuit may lead to electric shock or malfunction.
- Carefully wire the product while checking this catalog to prevent incorrect wiring and loose connectors. Check the wiring insulation. Coming into contact with another circuit, the ground fault, or poor insulation between terminal points may cause overcurrent to flow into the product and damage the unit. This will lead to abnormal operation and fire.
- Be sure to perform a safety check of the device's operating range before supplying power to the product. If the product LEDs do not light up when the power supply is turned on, immediately turn the power supply off. Carelessly supplying power may lead to electric shock and injury.
- When restarting the machine, be careful to check for any restraints which prevent the payload from becoming loose.
- Do not touch or come into contact with the unit during operation or immediately after stopping. There is a risk of burn injury.
- Do not climb on the product, use it as a scaffold, or place items on top of it. Doing so may result in a falling accident, tipping the product over, injury due to falling, product damage, malfunction due to product damage, etc.

- Take measures to prevent human injury and equipment damage even when the power supply fails. Failure to do so may lead to unexpected accidents.

- Do not damage, apply excessively stress, pinch, or place heavy objects on the cable. Doing so may lead to electric shock.

- Check that the servo is turned OFF with the handy terminal when manually moving the movable parts of the product (direct teaching).

[EC07, EC63]

- The direct teaching functions are teaching operations which are performed with the servo turned OFF. The movable parts of the equipment may make unintended movements when the actuator servo is turned OFF. Be sure to pay sufficient attention to safety and take steps to prevent danger when switching the servo OFF.

[EC07, EC63]

- Before operating the actuator, check that the actuator can operate in a safe manner.

⚠ CAUTION

- Do not hold the product's movable parts or cables during transportation and installation. Doing so may lead to injury or disconnection.
- Do not install the product in a location where it will be subject to large vibrations or impacts. Doing so may result in malfunction.
- Do not operate the product's movable parts using external force or perform any rapid deceleration movements. Doing so may lead to malfunction or damage due to a regenerative current.
- Do not bump into a mechanical stopper except when performing a pressing operation when returning to the origin. Failure to do so may damage the feed screws and lead to malfunction.
- Do not apply external force to the actuator during an origin return movement. Doing so may cause the actuator to misrecognize the origin.
- Do not dent or damage the movable parts. Otherwise, malfunctions may result.
- The durability fluctuates according to factors such as the transport load and the environment. Set the transport load and other factors with sufficient margins. Furthermore, make sure that the movable parts are not subject to impact during use.
- Install the product in such a way that twisting and bending stresses are not applied. For more details, contact CKD.

ERL2/ESD2 Series

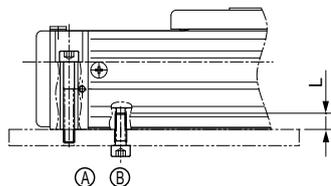
- When using the fixing tap for the slider edge to mount the actuator with the slider, be sure to also use the fixing tap for the bottom. When using the fixing tap for the rod edge to mount the actuator with the rod, be sure to also mount and use the rod bottom T-slot. Refer to the following torque table for screw tightening.

	Bolt used	Tightening torque (N·m)	Max. insertion depth L (mm)
ERL2-45 ESD2-35/45	M4 × 0.7	1.5	10
ERL2-60 ESD2-55	M5 × 0.8	3	12

2. ERL2 Series

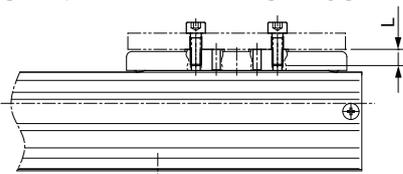
⚠ CAUTION

- Do not apply an excessive moment to the slider when using the slider. Doing so may damage the product or cause a malfunction.
- Set the flatness of the slider installation surface to 0.05 mm/200 mm or less.
- Set the flatness of the slider workpiece side attached to the slider to 0.02 mm or less, and do not apply any twisting and bending stresses to the product. Doing so may damage the product or cause a malfunction.
- To tighten the screws for mounting the main unit, use screws with the length indicated in the following table and tighten them with the appropriate amount of torque.



	A		B		Max. screw insertion depth L (mm)
	Bolt used	Tightening torque (N·m)	Bolt used	Tightening torque (N·m)	
ERL2-45	M4 × 0.7	1.5	M4 × 0.7	1.5	8
ERL2-60	M5 × 0.8	3	M5 × 0.8	3	9

- Observe the following bolt insertion lengths and tightening torque when installing the jig on the slider.



Mounting on the slider surface

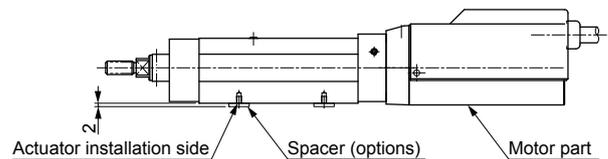
	Bolt used	Tightening torque (N·m)	Max. insertion depth L (mm)
ERL2-45	M4 × 0.7	1.5	7.5
ERL2-60	M5 × 0.8	3	10

- Consider the moment load when mounting on the slider surface. Refer to the model selection guide (pages 45 to 48).

3. ESD2 Series

⚠ CAUTION

- Be sure to connect it so that the center of the rod shaft matches the direction of the transport load movement. Failure to do so may lead to feed screw abrasion and damage.
- When using an external guide, check that it can operate smoothly in all positions of the product stroke before installing it.
- Under no circumstances should a load be applied to the rod tip in the direction of rotation. Doing so may damage the product.
- External force should only be applied to the rod in the axial direction.
- Install and concurrently use a guide which does not apply a lateral load.
- Use hexagonal socket head cap screws and such to securely fix the body during installation. When installing on the mounting surface of the actuator, insert the square nuts (JIS B 1163 (2001) compliant) included with the product into the dual slots provided in the actuator mounting surface and securely fasten them in four or more locations.



The motor section of the ESD2-35 and ESD2-55 juts out below the actuator mounting surface. Use the optional spacer product if the motor section interferes with the mounting surface.

4. Handy Terminal

⚠ CAUTION

- The handy terminal should only be connected to the controller when it is in use and disconnected when it is not being used.
- Do not apply great pressure or strike the product. Doing so may lead to damage.
- Do not apply excessive force to the cable or connector section.
- Do not forcefully press down on the LCD display screen or part of the operation keys.

During Use & maintenance**1. Common****⚠ CAUTION**

- Perform the wiring work and inspection using specialized technicians.
- Perform the wiring after the product installation.
Failure to do so may lead to electric shock.
- Do not perform any work with wet hands.
Doing so may lead to electric shock.
- When performing the wiring work and inspection, turn the power supply OFF and wait five minutes or more before checking the voltage with a tester or other equipment.
Failure to do so may lead to electric shock.
- Do not attach or remove any wiring or connectors with the power supply turned on.
Doing so may risk malfunction, failure, and electric shock.
- When extending the cable, use a lead wire with a diameter for maximum allowable current of 4 A.
A voltage drop may lead to malfunction and a decrease in thrust as well as heat buildup and a reduced product lifespan.
- Do not connect the product's communication connector to other devices.
Doing so may cause failure or damage.
- Perform a periodic inspection two to three times a year to check that the product is operating normally.
Refer to the Instruction Manual for details.
- Routinely resupply the grease at intervals of about 100 km. However, because the interval will differ depending on the use conditions, it is recommended that the resupply interval be decided during the initial inspection.
- If the product fails (anomalous heat buildup, smoke emission, strange odors, strange sounds, or vibrations, etc. occur), immediately shut off the power supply. Failure to do so may lead to fire due to product damage and the continuous flow of current.
- The servo will not immediately stop when it is turned OFF (including an emergency machine stop, alarms) due to the added gravity and inertia. Be sure to perform these operations in a balanced state without any gravity or inertia applied or check the safety before proceeding.

- Be sure to turn off the power supply to this product before performing maintenance, inspection, and repairs. Warn other third parties in the surrounding area so that they do not carelessly turn on the power supply or perform any operations.
- When disposing of the product, follow all laws concerning waste processing and cleaning, and be sure to consign the processing to a specialized waste management service company.
- The circuit board inside the product has capacitors connected in between the circuits and the metal body to prevent damage due to static electricity. For this reason, voltage endurance and insulation resistance tests should not be performed on the equipment that the product is mounted to. Performing such tests will damage the product. Disconnect the product first if such equipment testing is required.
- When performing electric welding on the equipment that the product is mounted to, remove all ground wire connections to this product. If the connections are not removed, the product may be damaged by the welding current, excessively high voltage during welding, or the surge voltage.
- Set the flatness of the installation surface for the rod to 0.1 mm or less and do not apply any twisting or bending stresses to the product.

2. ECPT Controller**⚠ CAUTION**

- An excessive deviation (accumulated pulse) may occur during pressing operations. If the torque limiting is released under these conditions, it may trigger sudden, uncontrolled movements. Be sure to turn the servo off or clear the deviation.
- Do not issue stop instructions while the product is accelerating or decelerating. Doing so may result in a dangerous change in speed (acceleration).

⚠ WARNING

- Do not issue instructions which are smaller than the minimum encoder resolution or the repeat positioning precision. Doing so may prevent proper positioning control in some cases.

Related products

Electric actuator Motorless general

Wide-ranging lineup of motorless electric actuators

■ Slider

For high speed transport	EBS-L Series
For high load transport	ETS/ECS Series
For long stroke transport	ETV/ECV Series
For fast tact transport	EKS-L Series

■ Rod

For press fitting and hoisting	EBR-L Series
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Electric actuator EBS-M/EBR-M Series

■ Slider EBS-M Series

High speed transport

■ Rod with built-in guide EBR-M Series

For press fitting and hoisting

■ Controller ECR Series

"One controller" that connects to any actuator

Electric actuator FLSH/FLCR/FGRC Series

■ 2-finger Gripper FLSH Series

For soft handling of multi-model workpieces

■ Table FLCR Series

For short-stroke workpiece transport and positioning

■ Rotary FGRC Series

For indexing operation and workpiece inversion

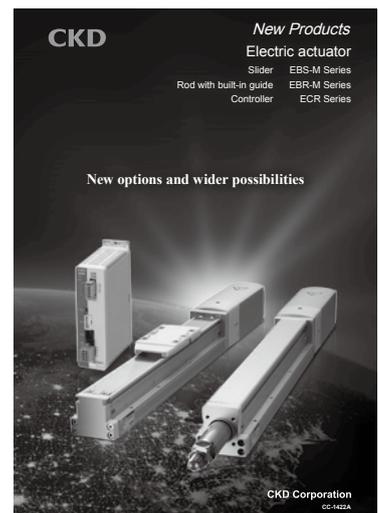
■ Controller ECR Series

"One controller" that connects to any actuator

Catalog No. CB-055A



Catalog No. CC-1422A



Catalog No. CC-1444A



Electric actuator KBX Series

■ **Short tact times**

Maximum of 2000 mm/s (timing belt drive)

■ **High precision**

Repeatability: ±0.01 mm (ball screw drive)

■ **All models are absolute types**

All models use a long-lasting lithium battery (lifetime of 50,000 hours) and are standard on all models that do not require to return to origin.

■ **High level processing using a high speed CPU**

Achieves high level processing capacity due to the adoption of a high speed CPU

■ **Extensive variations**

Ball screws: 8 types, timing belts: 7 types

Four directions on each shaft can be selected as the motor mounting position

Catalog No. CC-1287A



Electric Shuttle Mover ESM Series

■ **Uniaxial, 2D transport in a compact space with one motor**

Achieves two-dimensional operation without using multiple axes or a gantry robot. Use the space as desired. Ideal space-saving size.

■ **Long stroke with a maximum length of 20 m**

Unusually long stroke length that shatters the conventional notions about electric actuators.

The ESM Series will solve your worries before you even evaluate linear motors.

■ **Multi-point positioning, software start and stop**

Electric actuators are particularly adept at multi-point positioning, acceleration/deceleration settings, and operation speed changes.

Of course, the ESM Series is superior in these areas.

■ **Compatible with various motors**

Enables you to mount a motor that you are familiar with.

Includes brackets for motors from various companies, similar to the motorless series.

Catalog No. CC-1259A



Direct drive motor

■ **ABSODEX**

AX1000/2000/4000TS, TH
AX6000MU Series,
AX7000XS Series

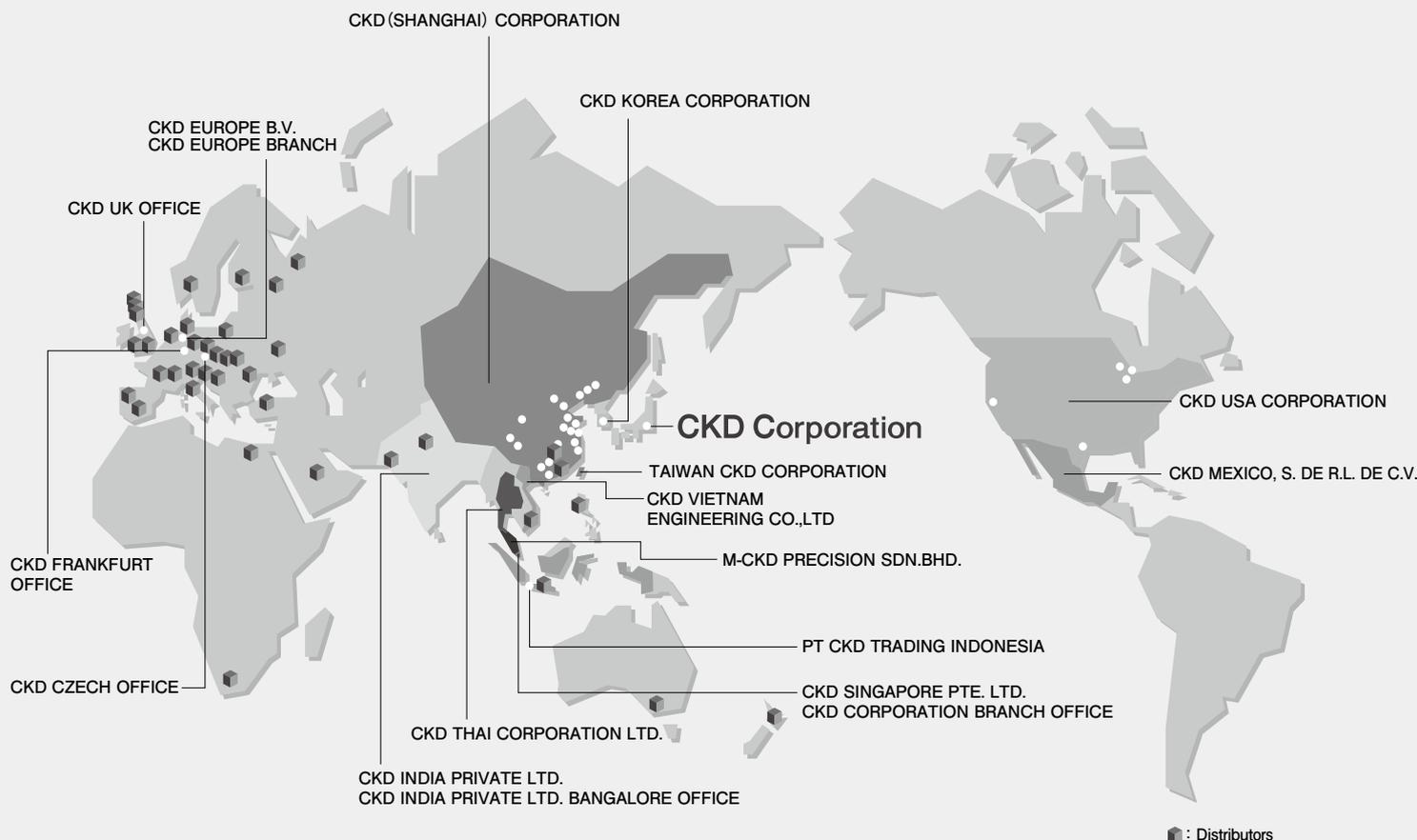
The Direct Drive Actuator designed for ease of use
From palm-size to high-torque.

Construction of devices for transport, positioning, etc., is simple

■ **T DISC Series**

- The Direct Drive Servo Motor boasting high performance. A varied lineup handling numerous demands for high precision, high speed, speed stability, etc. The next level of performance.





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