

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 <sup>2</sup>		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

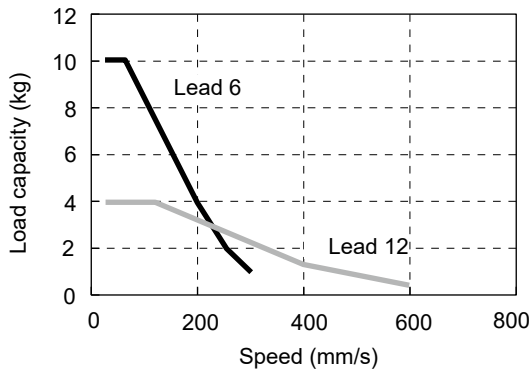
(kg)

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)

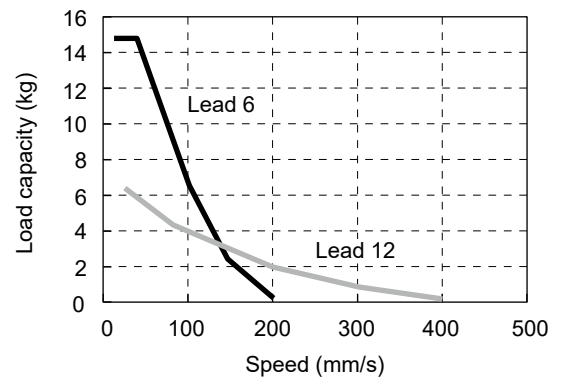
Note: the numbers in ( ) indicate the product weight with the brake

## Vertical load capacity

● ESD2-35, 45

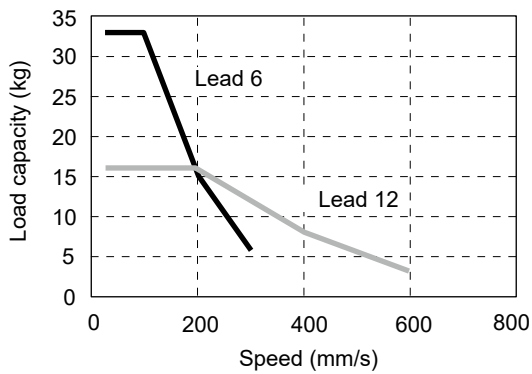


● ESD2-55

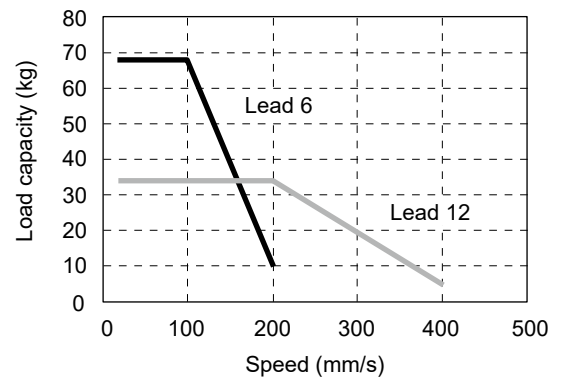


## Horizontal load capacity

● ESD2-35, 45

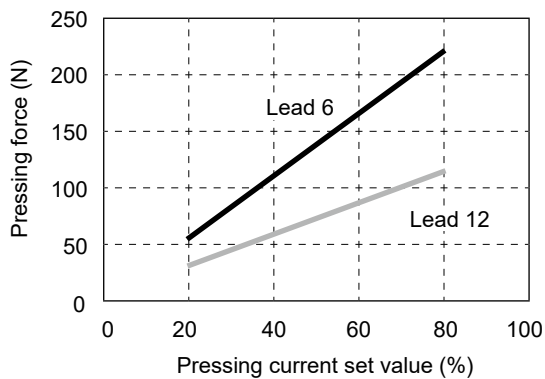


● ESD2-55

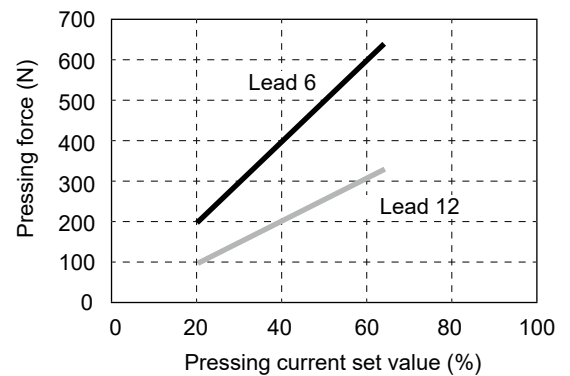


## Pressing force (guideline)

● ESD2-35, 45



● ESD2-55



# ESD2 Series

## How to order

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

**ESD2** - **55** **E** **12** - **05** **N** **F** - **S1** **A** **2** **F**

Model No.

**A** Body size

**B** Motor mounting direction

**C** Screw lead

**D** Stroke

**E** Brake

**F** Origin position

**G** Relay cable length

**H** Controller

**I** I/O Cable length

**J** Mounting bracket

[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.

**ESD2** - **55** **E** **12** - **05** **N** **F** - **N0** **N** **N** **N**

**B** Motor mounting direction

**C** Screw lead

**E** Brake

**F** Origin position

**A** Body size

**D** Stroke

● Controller individual model No.

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

Mounting method

Series

● Cable discrete model No.

· Relay cable

**EC-CBLME1** - **S** - **5**

Fixed/movable

Cable length

· I/O Cable

**EC-CBLIF1** - **07** - **5**

Cable length

Controlle Series

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

\*Refer to page 42 for details.

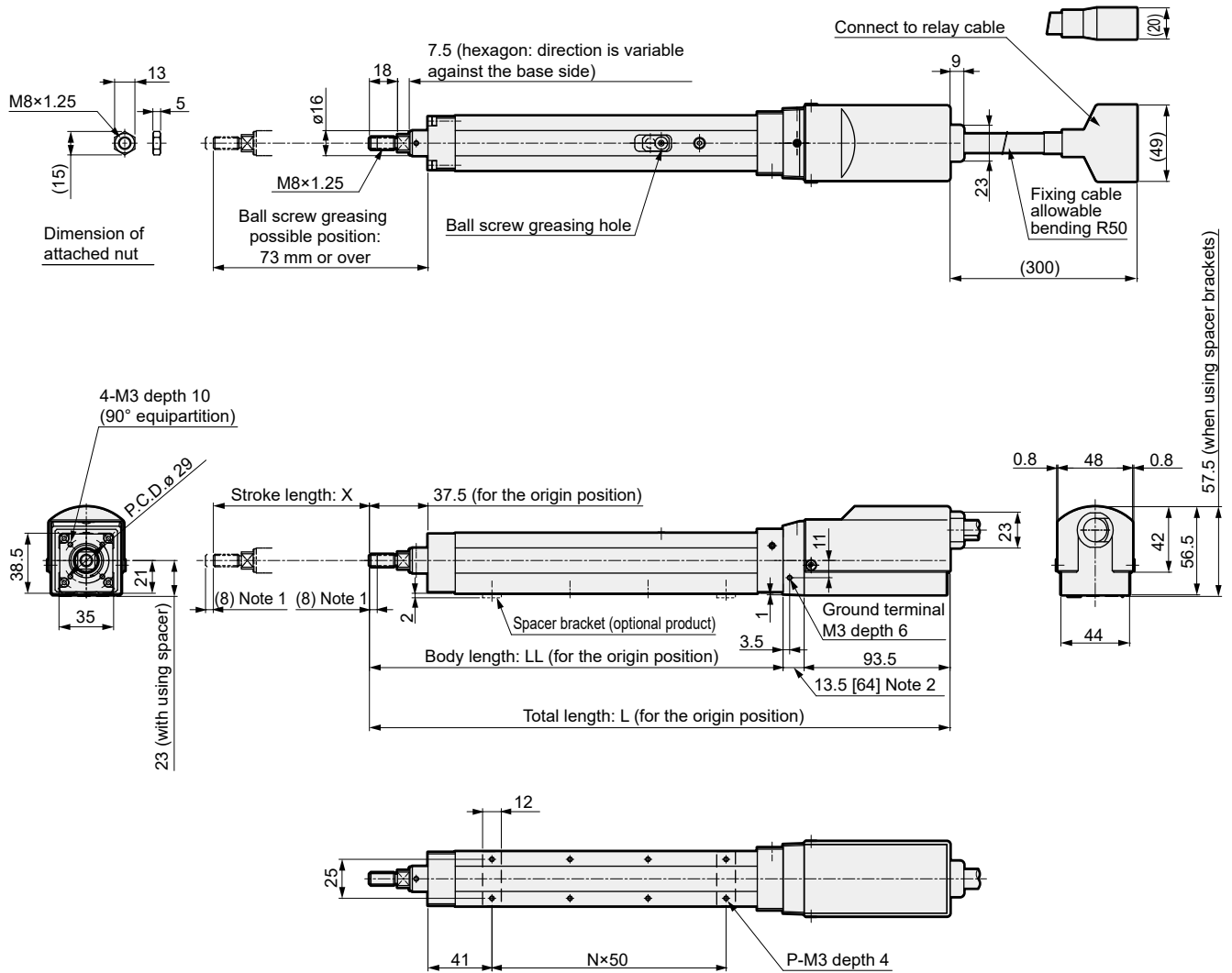
Code	Content			
<b>A Body size</b>				
<b>35</b>	Body size 35			
<b>45</b>	Body size 45			
<b>55</b>	Body size 55			
<b>B Motor mounting direction</b>				
<b>E</b>	Standard mounting (straight)			
<b>R</b>	Right-hand mounting			
<b>L</b>	Left-hand mounting			
<b>D</b>	Bottom mounting			
<b>C Screw lead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

## Dimensions

### ● ESD2-35E (standard mounting straight)



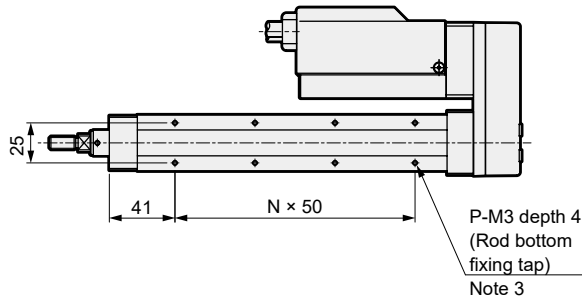
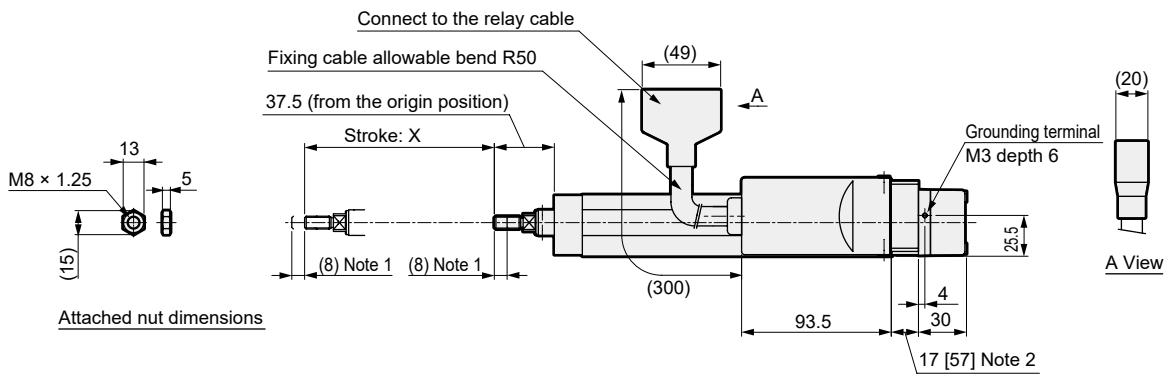
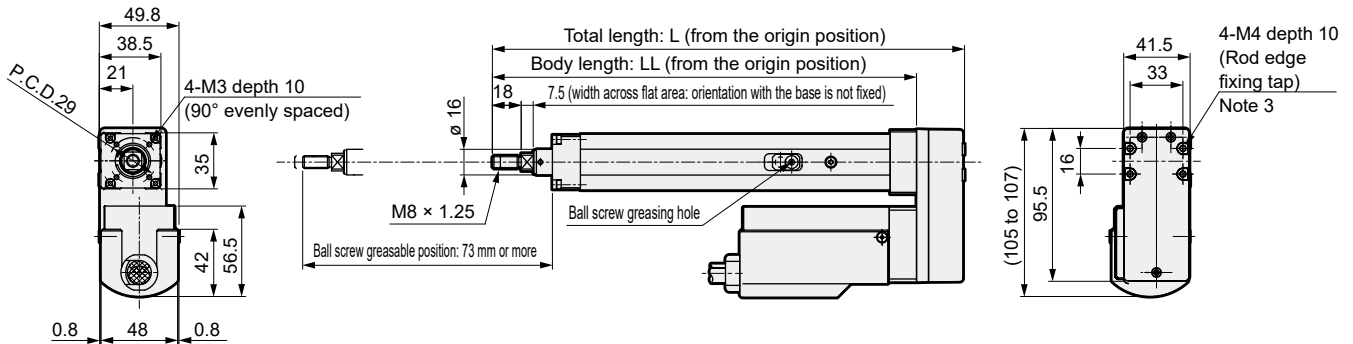
Note 1: Operating range during origin return

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

Stroke	Code	05	10	15
	X (mm)	50	100	150
Total length L (mm)	Without brake	322	372	422
	With brake	372.5	422.5	472.5
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	1.3	1.5	1.6
	With brake	1.7	1.9	2.0

## Dimensions

### ● ESD2-35R (right-hand mounting)



Note 1: Operating range during origin return

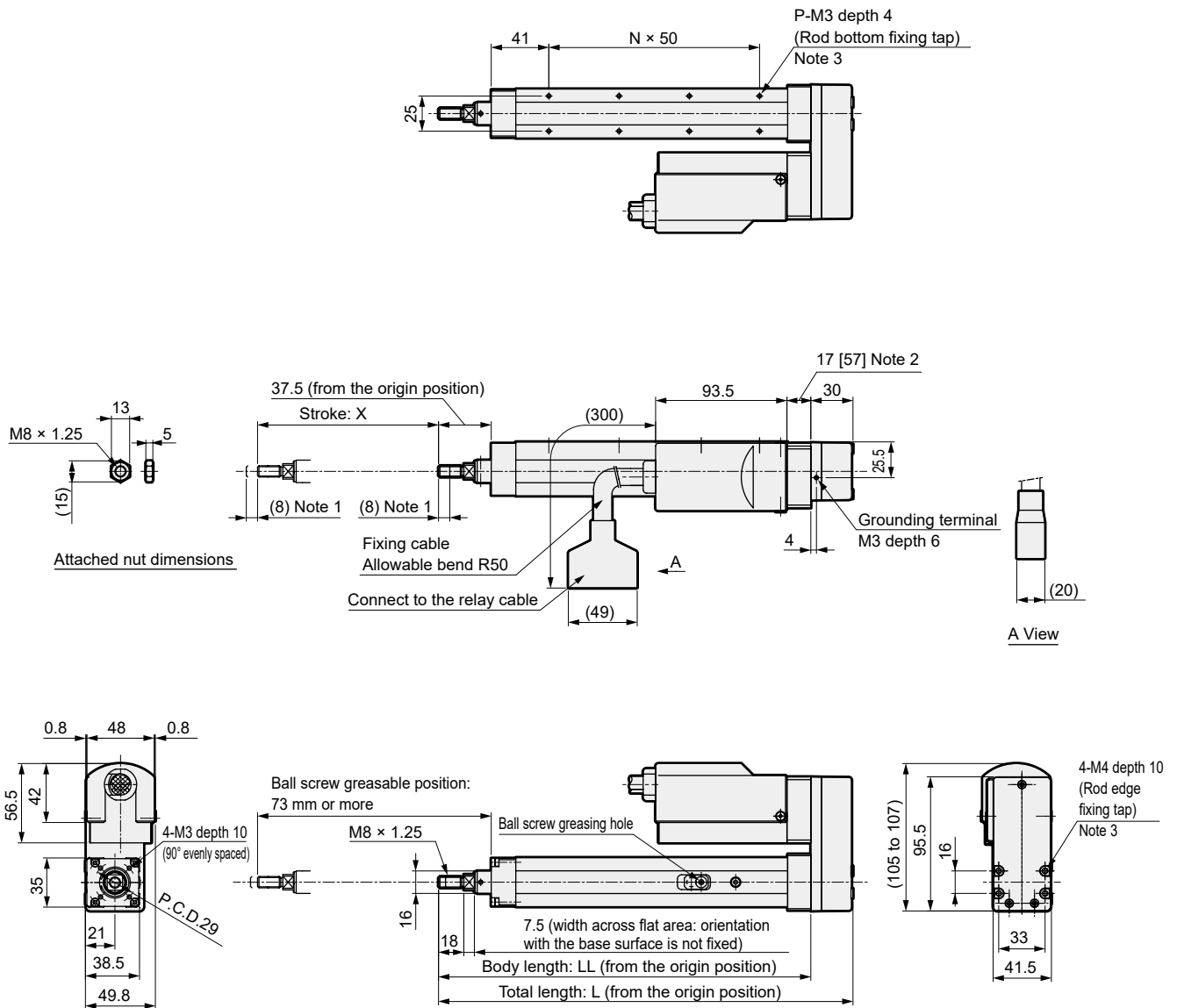
Note 2: The numbers within the [ ] are the dimensions with the brake

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

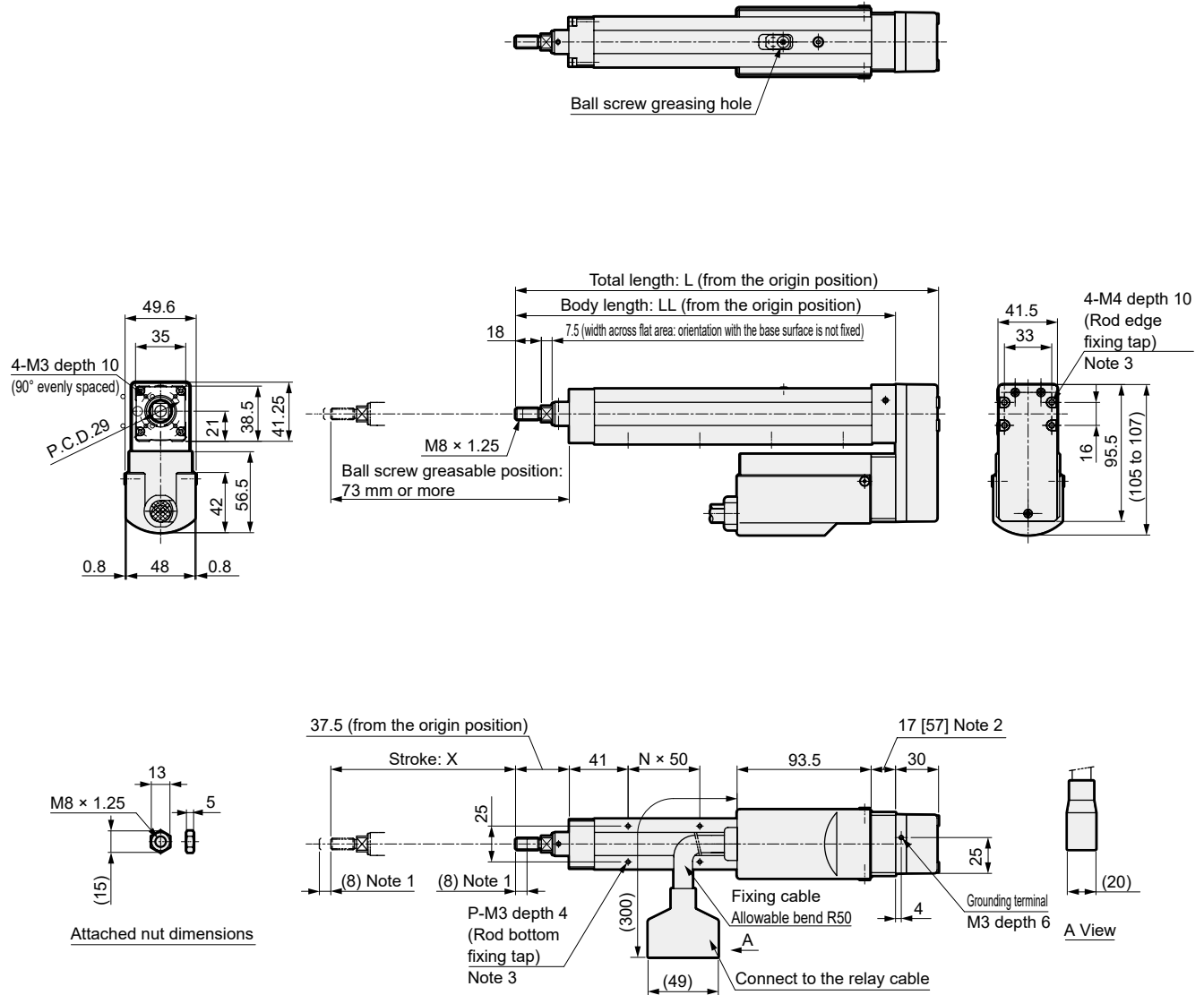
Note 2: The numbers within the [ ] are the dimensions with the brake

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

## 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.

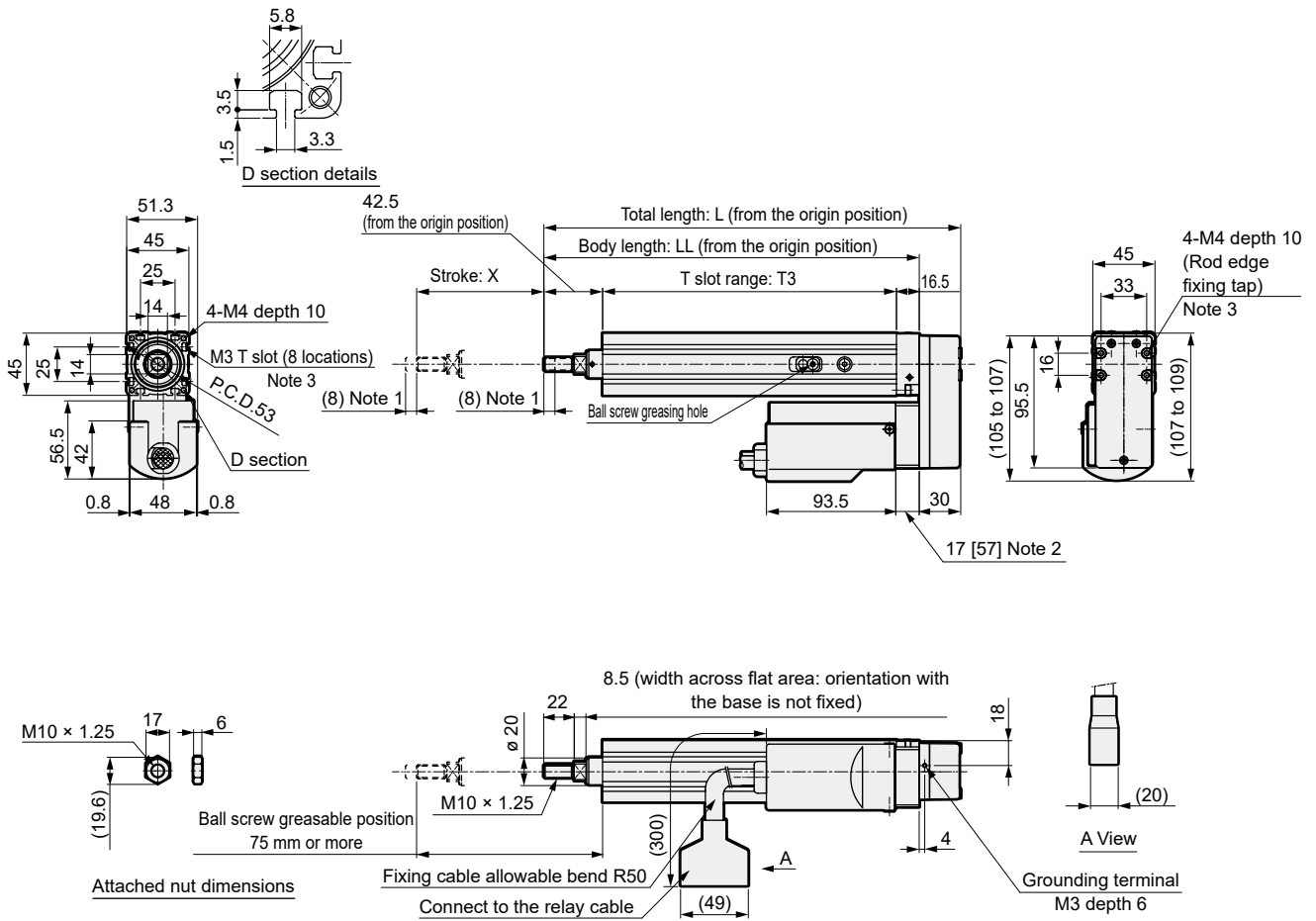
Stroke	Code	05	10	15
	X (mm)	50	100	150
Total length L (mm)		245	295	345
Body length LL (mm)		215	265	315
Number of mounting holes P	Without brake	2	4	6
	With brake	0	2	4
Number of mounting hole intervals N	Without brake	0	1	2
	With brake	0	0	1
Weight (kg)	Without brake	1.5	1.7	1.8
	With brake	1.8	2.0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





## Dimensions

### ● ESD2-45R (right-hand mounting)



Note 1: Operating range during origin return

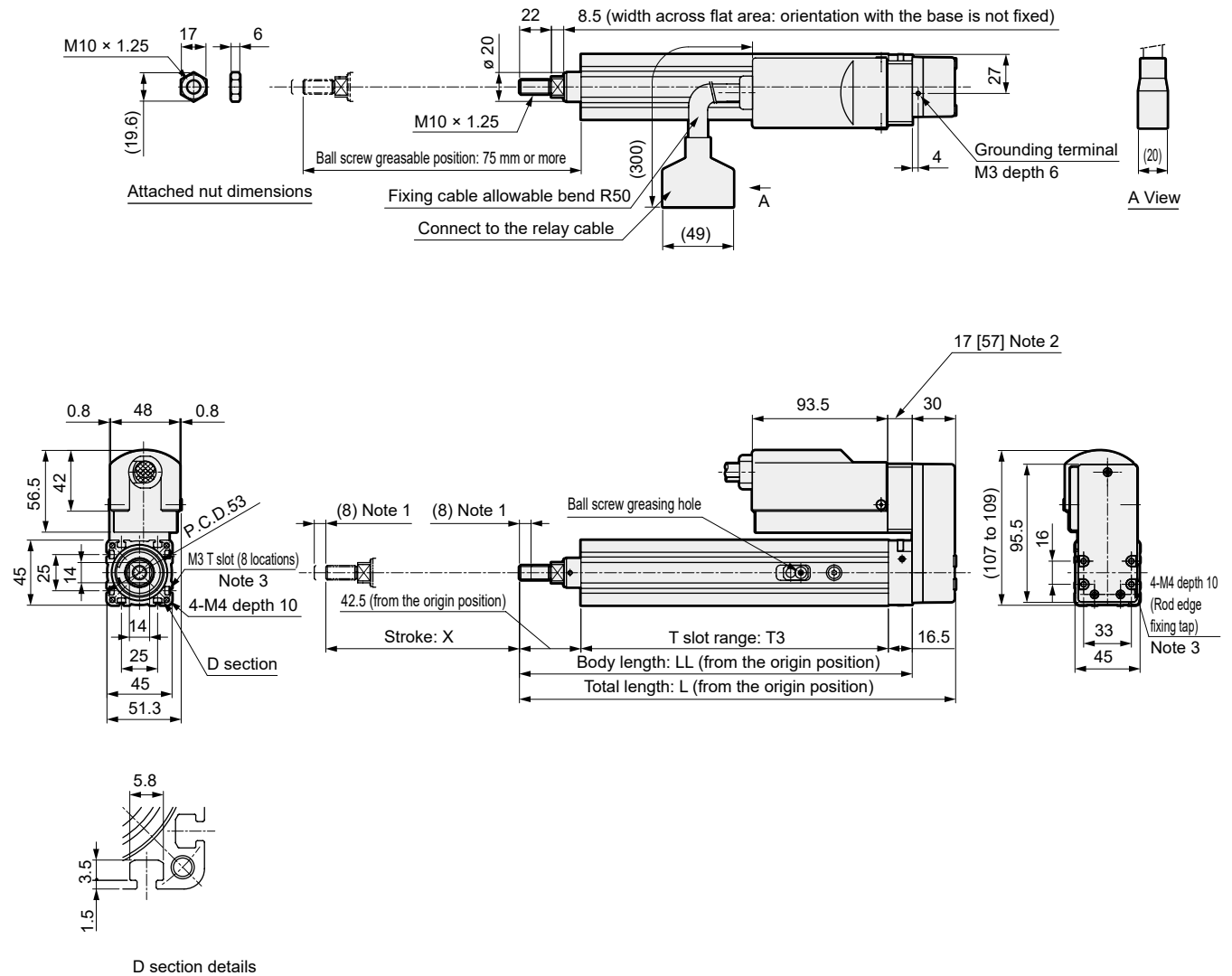
Note 2: The numbers within the [ ] are the dimensions with the brake

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

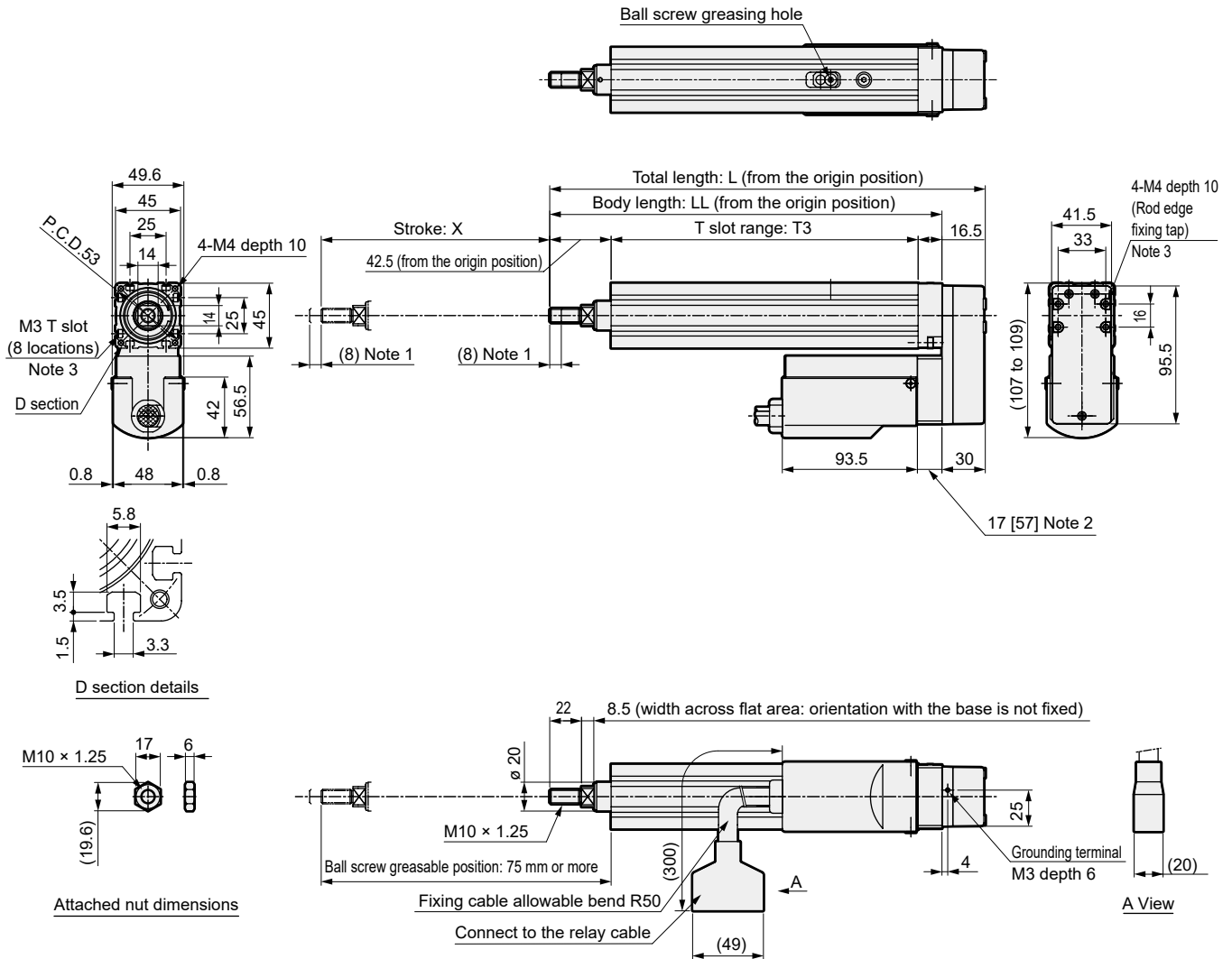
Note 2: The numbers within the [ ] are the dimensions with the brake

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

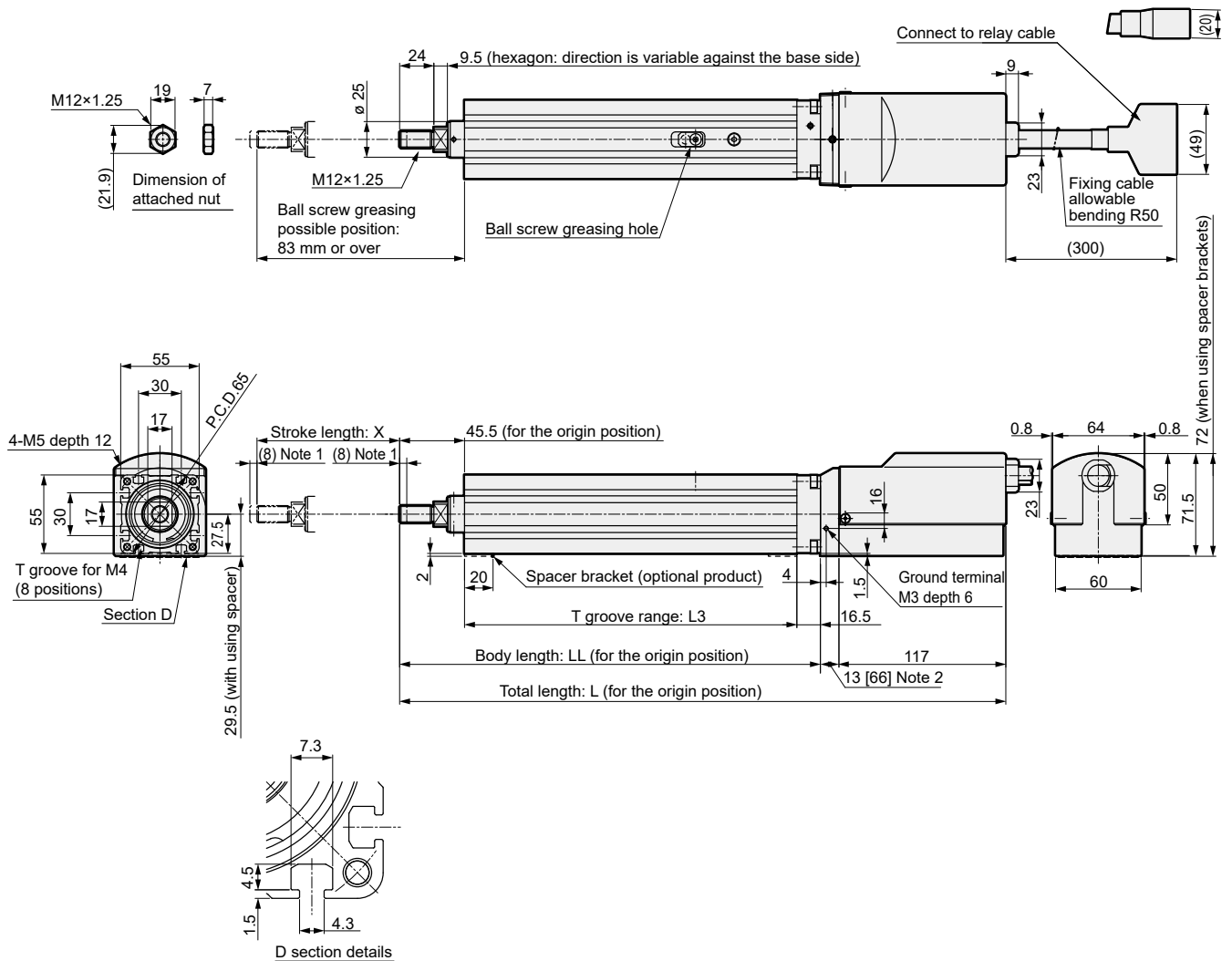
Note 2: The numbers within the [ ] are the dimensions with the brake

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

● ESD2-55E (standard mounting straight)



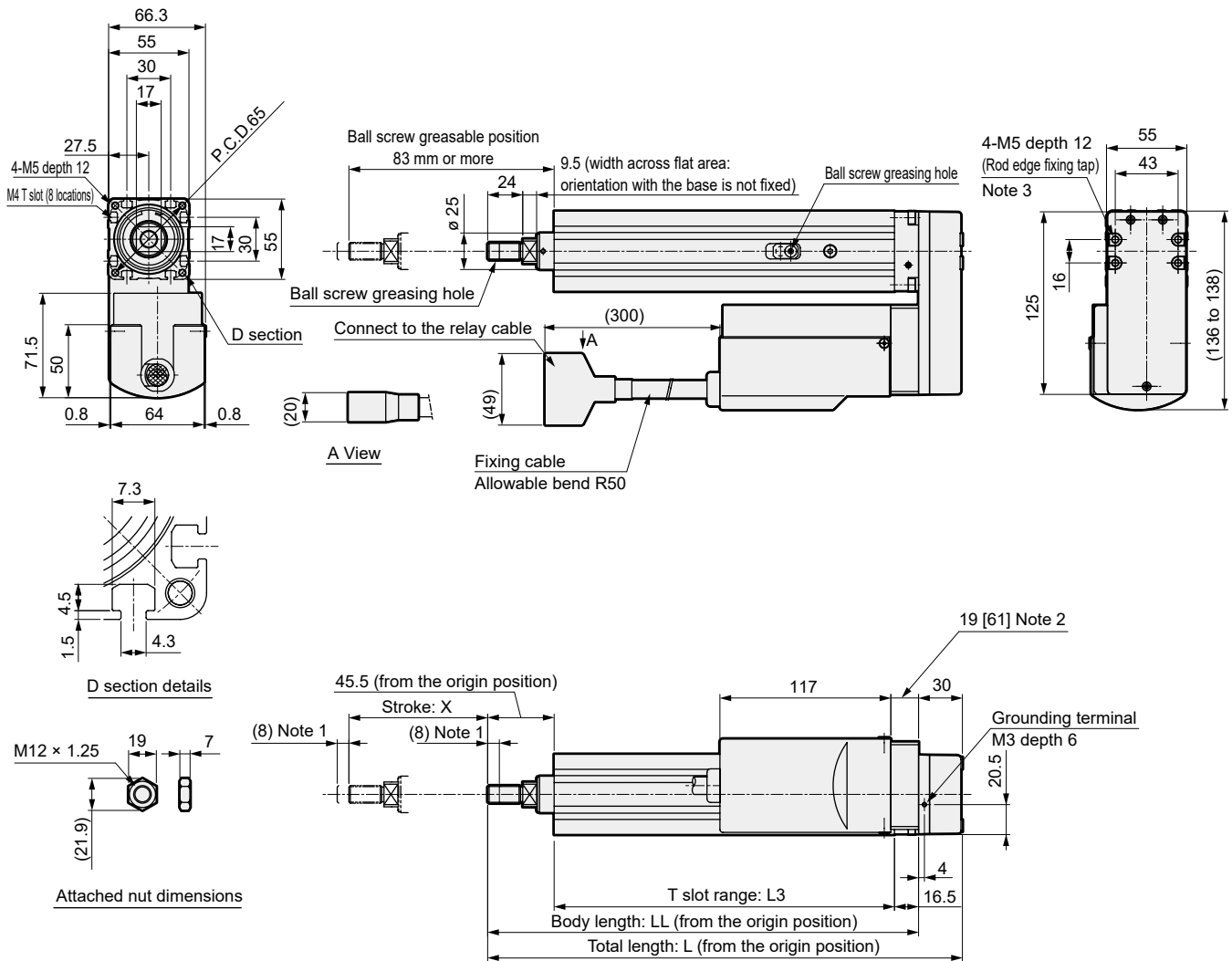
Note 1: Operating range during origin return

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

Stroke	Code	05	10	15	20	25	30
	X (mm)	50	100	150	200	250	300
Total length L (mm)	Without brake	375	425	475	525	575	625
	With brake	428	478	528	578	628	678
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	3.0	3.4	3.8	4.1	4.5	4.9
	With brake	3.7	4.1	4.5	4.8	5.2	5.6

## Dimensions

### ● ESD2-55R (right-hand mounting)



Note 1: Operating range during origin return

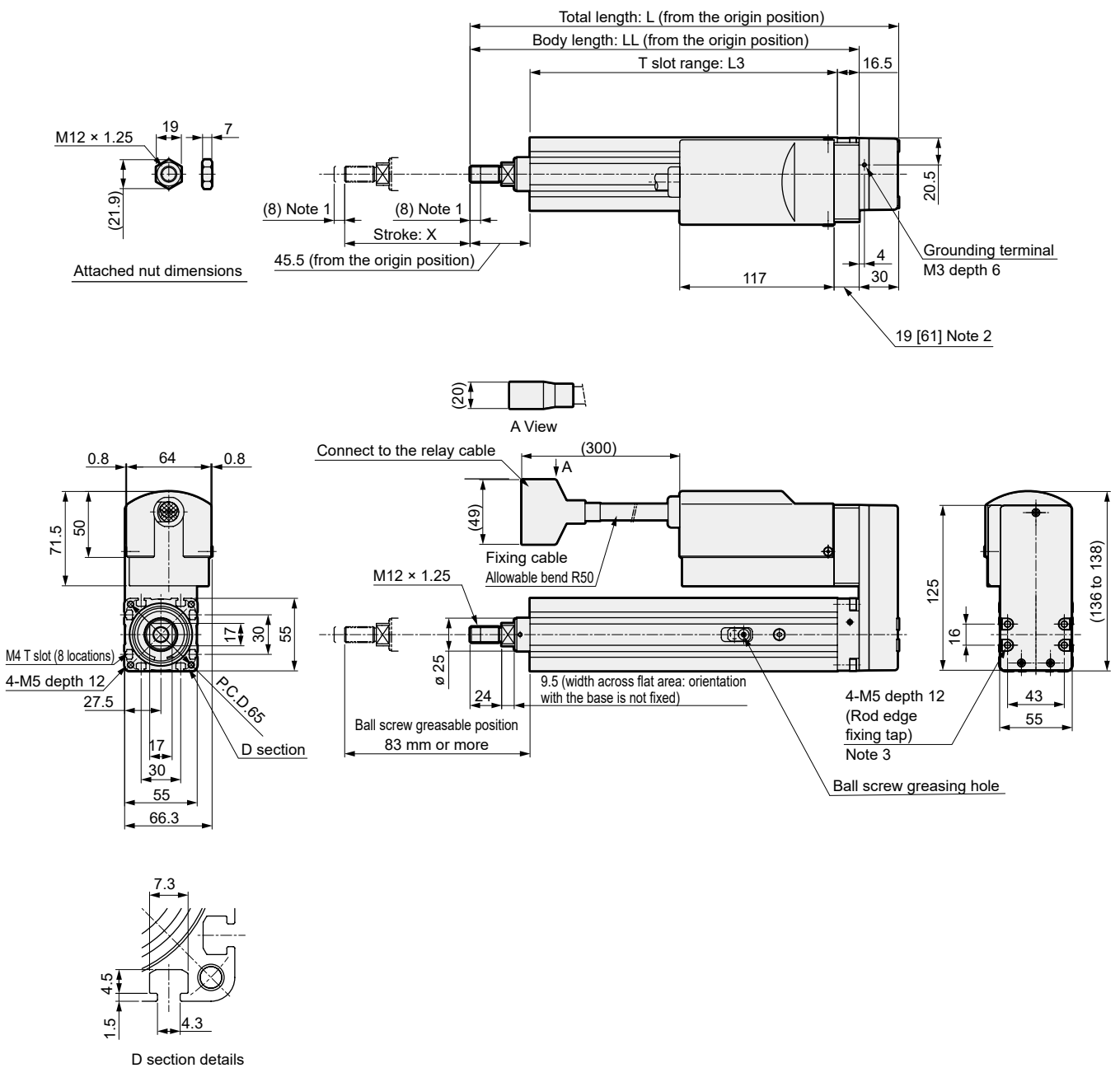
Note 2: The numbers within the [ ] are the dimensions with the brake

Note 3: Be sure to also mount and use the 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

## Dimensions

### ● ESD2-55L (left-hand mounting)



Note 1: Operating range during origin return

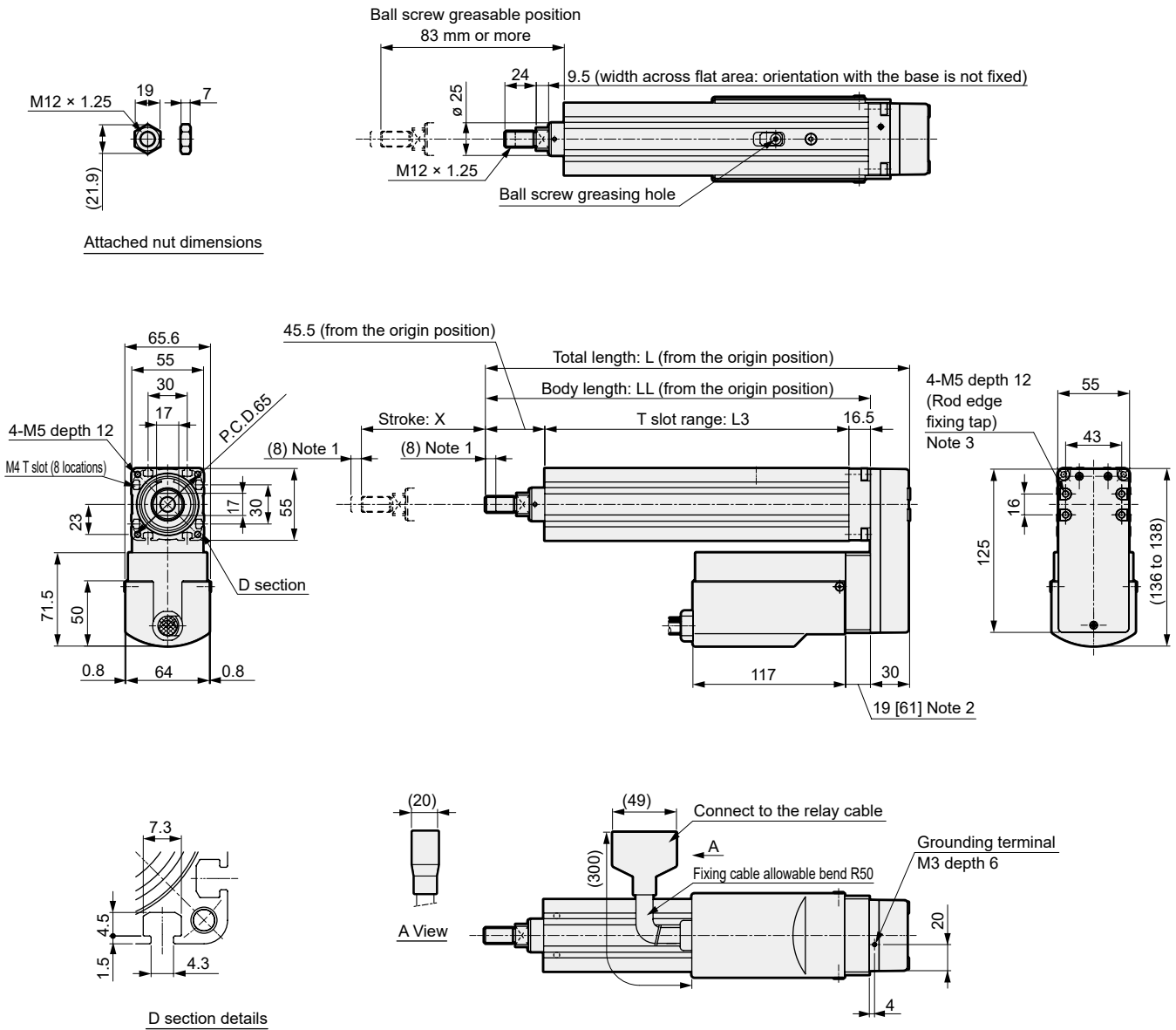
Note 2: The numbers within the [ ] are the dimensions with the brake

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
<b>Total length L (mm)</b>		275	325	375	425	475	525
<b>Body length LL (mm)</b>		245	295	345	395	445	495
<b>T slot range L3 (mm)</b>		183	233	283	333	383	433
<b>Weight (kg)</b>	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

## 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)

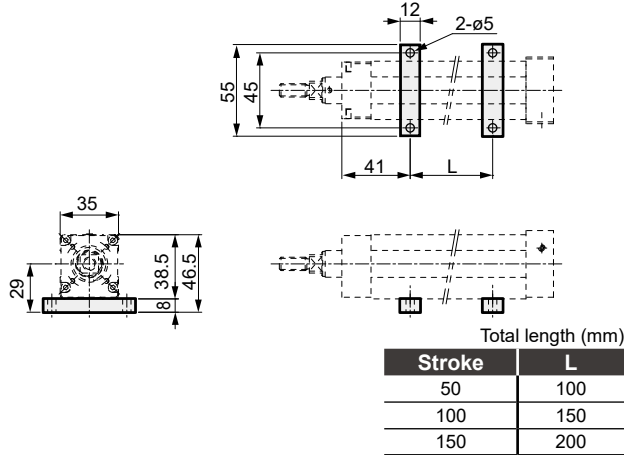
The following kits are included with the product with the mounting bracket option.

### ● Option : LB

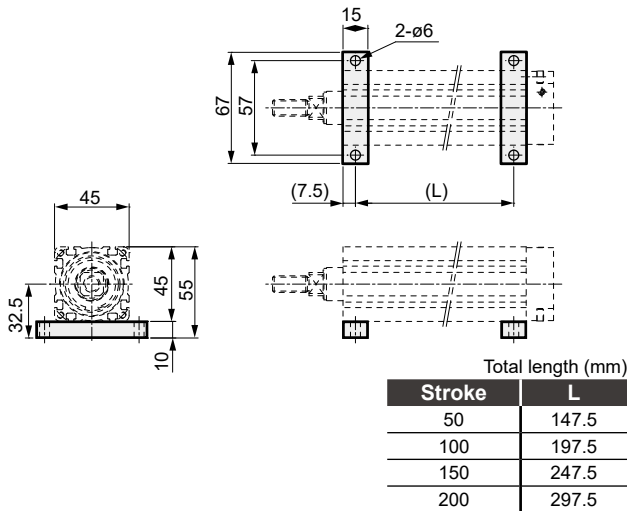
Foot kit model No.: ESD-[Body size]-LB

Foot bracket fitting dimensions

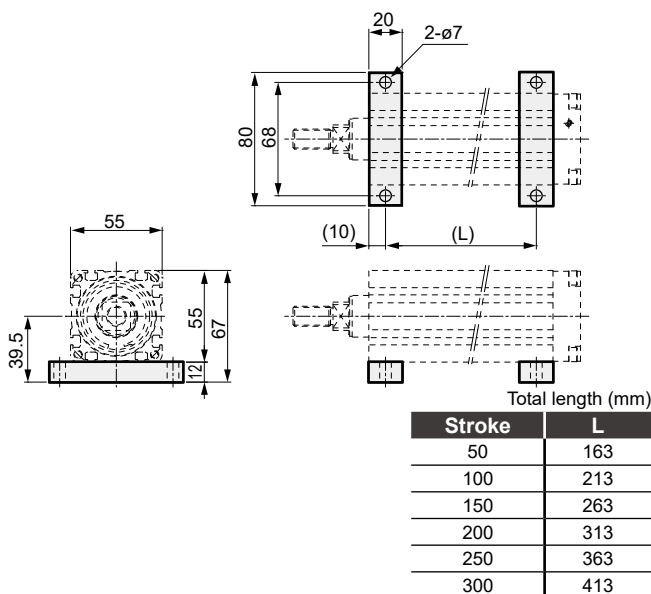
Set model No.: ESD2-35E □ - □□□ - □□□ L



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



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

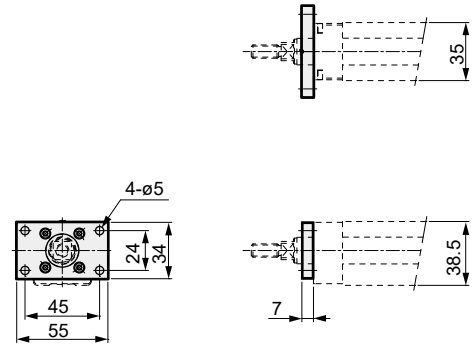


### ● Option : FA

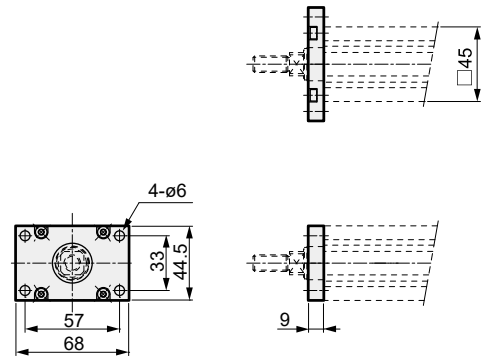
Flange kit model No.: ESD-[Body size]-FA

Flange bracket fitting dimensions

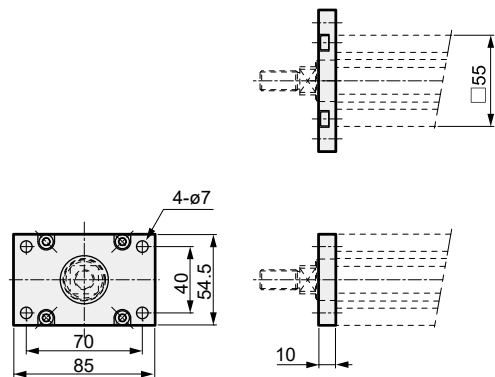
Set model No.: ESD2-35E □ - □□□ - □□□ F



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



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



### ● Option : SP

Spacer kit model No.: ESD-[<sup>35</sup>/<sub>55</sub>]-SP

Set model No.: ESD2-[<sup>35</sup>/<sub>55</sub>]E □ - □□□ - □□□ S

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