

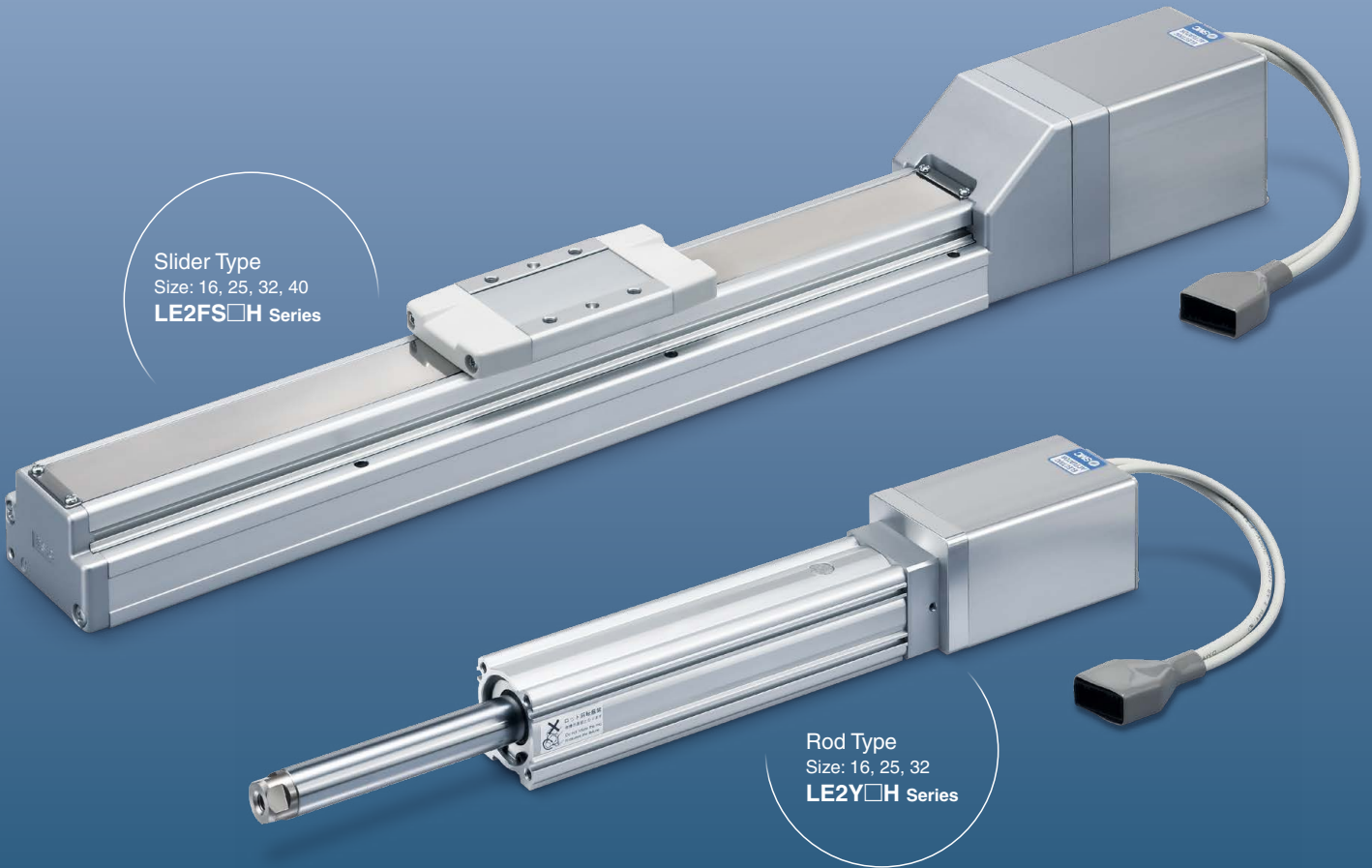
Compatible with Manifold Controller

New



# Electric Actuators Slider Type/Rod Type

Battery-less Absolute (Step Motor 24 VDC)



Slider Type  
Size: 16, 25, 32, 40  
LE2FS□H Series

Rod Type  
Size: 16, 25, 32  
LE2Y□H Series

## Series Variations

Series	Size	Max. work load [kg]	Max. pushing force [N]	Max. speed [mm/s]	Positioning repeatability [mm]
Slider Type p. 4	16	18	154	1200	±0.015 (Lead H for size 25/32/40: ±0.02)
	25	40	511		
	32	68	796		
	40	80	637		
Rod Type p. 28	16	40	154	900	±0.02
	25	70	511		
	32	100	796		

Annual CO<sub>2</sub> emissions:  
Max. **38%** reduction  
(SMC comparison) p. 1

**8.7** kg-CO<sub>2</sub>e/year (14.1)

\* The numerical values vary depending on the operating conditions.

## Manifold Controller

Up to **16 axes** can be connected



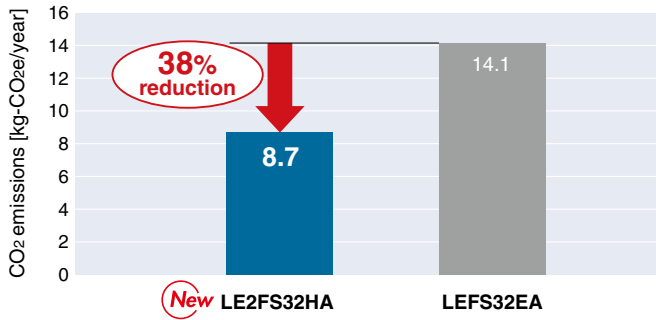
More information can be viewed here.

**LE2FS□H/LE2Y□H Series**



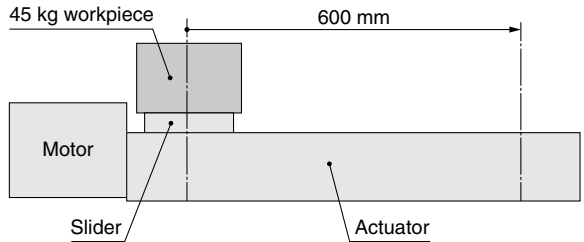
CAT.ES100-170A

## Annual CO<sub>2</sub> emissions reduced by up to 38% through motor control optimization (SMC comparison)



**Operating conditions**

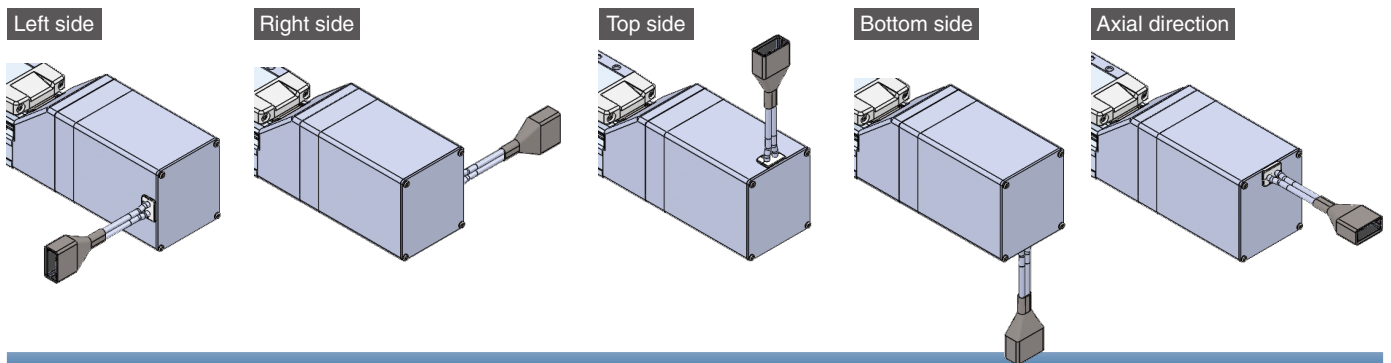
- Slider type, Size 32
- Acceleration/Deceleration: 3000 mm/s<sup>2</sup>
- Speed: 50 mm/s
- Duty ratio: 20%



\* The numerical values vary depending on the operating conditions.

## Select from 5 cable entry directions

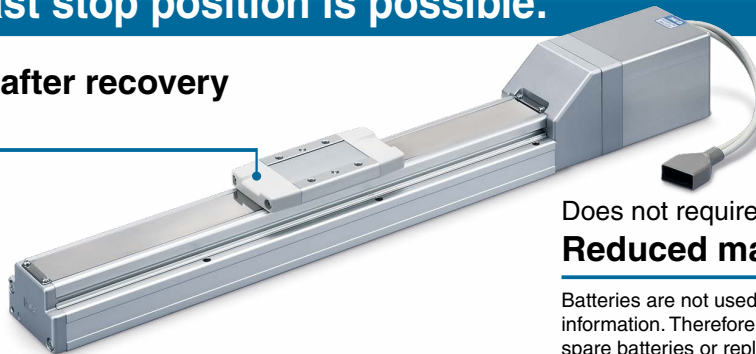
p. 16, 36



## Restart from the last stop position is possible.

### Easy operation restart after recovery of the power supply

The position information is held by the encoder even when the power supply is turned off. A return to origin operation is not necessary when the power supply is recovered.



Does not require the use of batteries.

### Reduced maintenance

Batteries are not used to store the position information. Therefore, there is no need to store spare batteries or replace dead batteries.

## Detection of table stop position by means of an auto switch is possible. p. 27

For the slider type

Allows for position detection of the table throughout the stroke



For the rod type

For checking the limit and the intermediate signal





### 2-color indicator solid state auto switch (D-M9□ series)

Accurate setting of the mounting position can be performed without mistakes.

A **green** light lights up when within the optimum operating range.

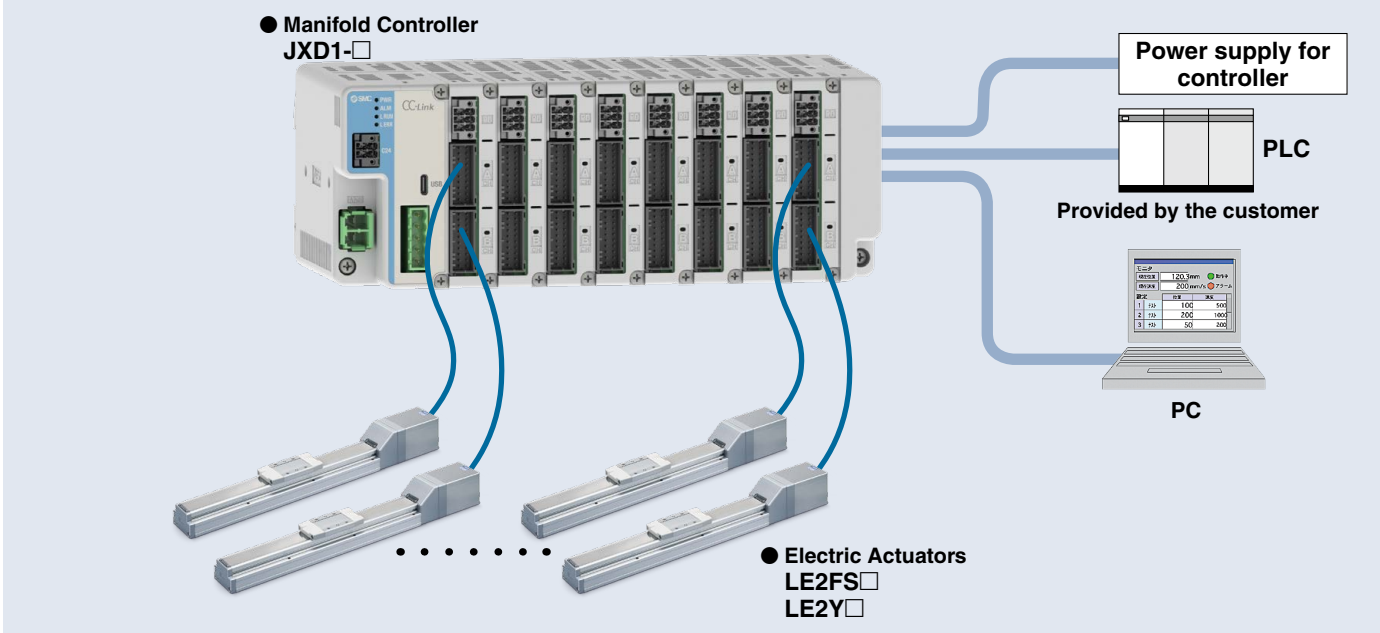


# Variations

Type		Slider type	Rod type	
Series		<b>LE2FS□H</b>  <p>p. 4</p>	<b>LE2Y□H</b>  <p>p. 28</p>	
	Actuation type	In-line: Ball screw Parallel: Ball screw + Belt		
Max. speed*1 [mm/s]		1200	900	
Positioning repeatability [mm]		±0.015 (Lead H for size 25/32/40: ±0.02)	±0.02	
Drive motor	Battery-less absolute (Step motor 24 VDC)	●	●	
	Power supply	24 VDC ±10%		
Operation mode		Positioning operation Pushing		
Size	16	●	●	
	25	●	●	
	32	●	●	
	40	●	—	
Max. work load [kg] The values in parentheses are for when mounted vertically.	Size	16	18 (12)	40 (10)
		25	40 (15)	70 (30)
		32	68 (20)	100 (46)
		40	80 (40)	—
Max. pushing force [N]	Size	16	154	154
		25	511	511
		32	796	796
		40	637	—
Max. stroke [mm]		1200	500	
Auto switch mounting		●	●	

\*1 The numerical values vary depending on the actuator type, work load, speed, and specifications. Please contact SMC for further details.

## System Construction



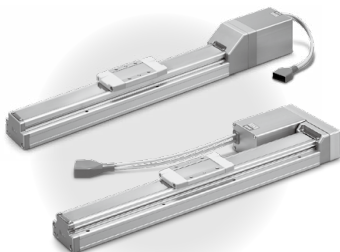
**Compatible with Manifold Controller**

## Electric Actuators

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### Slider Type LE2FS□H Series **p. 4**

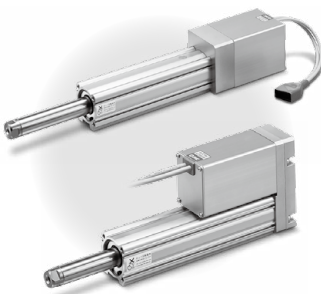
Battery-less Absolute (Step Motor 24 VDC)



Model Selection .....	p. 5
How to Order .....	p. 16
Specifications .....	p. 17
Dimensions .....	p. 19

### Rod Type LE2Y□H Series **p. 28**

Battery-less Absolute (Step Motor 24 VDC)



Model Selection .....	p. 29
How to Order .....	p. 36
Specifications .....	p. 37
Dimensions .....	p. 39

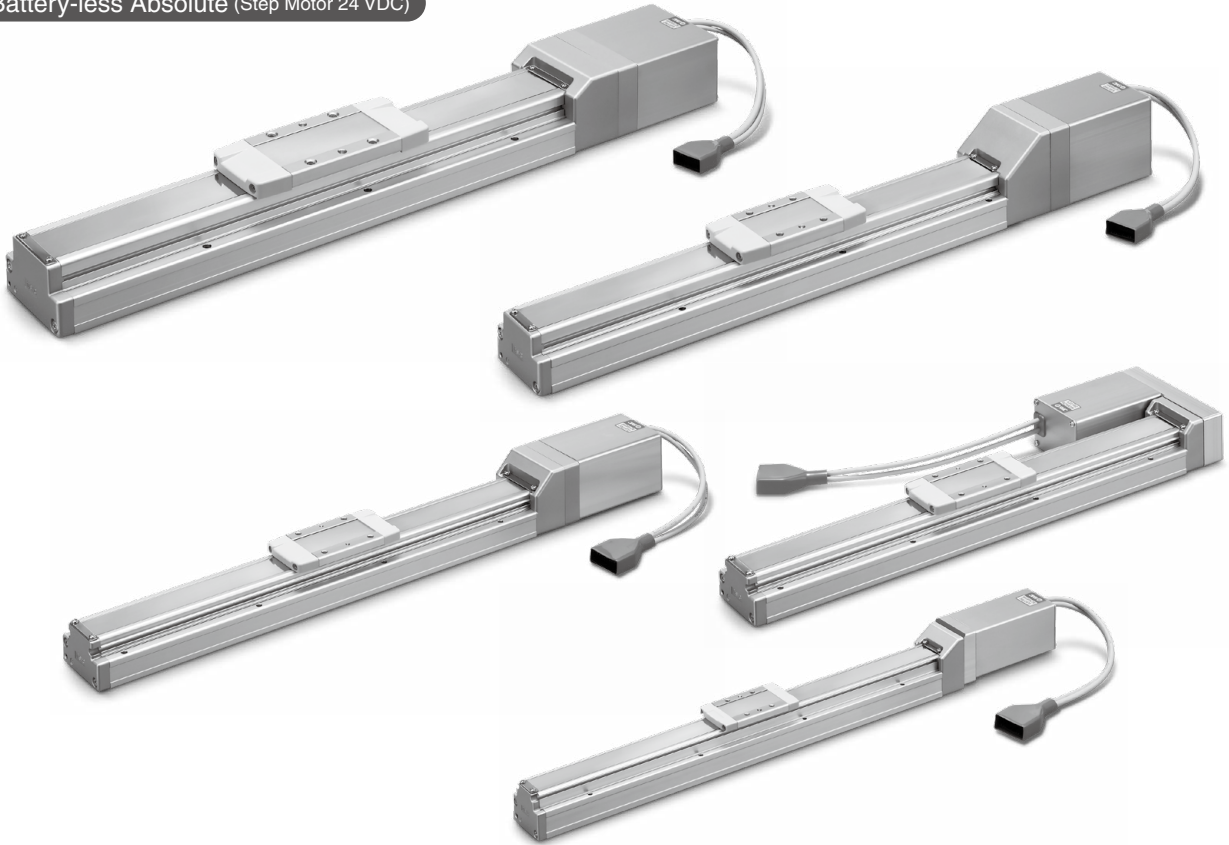
Auto Switch Mounting .....	p. 27, 47
Solid State Auto Switch, Normally Closed Solid State Auto Switch, 2-Color Indicator Solid State Auto Switch .....	p. 48

# Slider Type

LE2FS□H Series

p. 5

Battery-less Absolute (Step Motor 24 VDC)



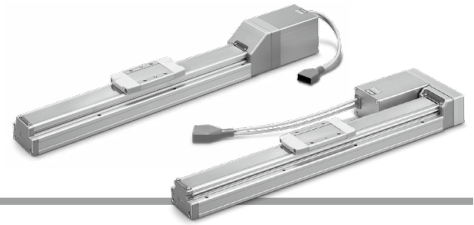
Model Selection

LE2FS□H Series

LE2Y□H Series

Auto Switch

# Model Selection



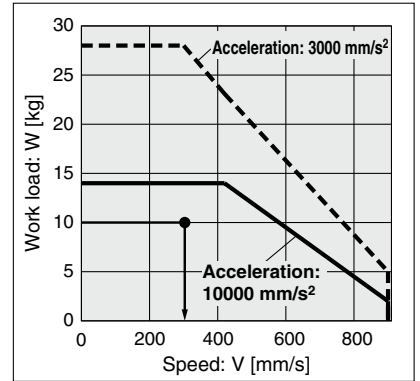
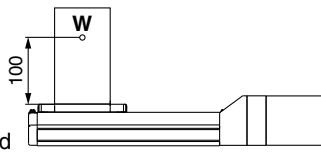
## Selection Procedure



## Selection Example

### Operating conditions

- Workpiece mass: 10 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 10000 [mm/s<sup>2</sup>]
- Stroke: 200 [mm]
- Mounting orientation: Horizontal upward
- Workpiece mounting condition:



<Speed-Work load graph>  
(LE2FS25H/Battery-less absolute)

**Step 1 Check the work load-speed. <Speed-Work load graph>** (pages 8 to 11)  
Select a model based on the workpiece mass and speed while referencing the speed-work load graph.  
Selection example) The **LE2FS25H-200** can be temporarily selected as a possible candidate based on the graph shown on the right side.

**Step 2 Check the cycle time.**  
Calculate the **cycle time** using the following calculation method.  
**Cycle time:**  
T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be found by the following equation.

$$T1 = V/a1 \text{ [s]} \quad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as actuator types, load, and in position of the step data. Reference value for settling time: 0.15 s or less  
The following value is used for this calculation.

$$T4 = 0.15 \text{ [s]}$$

Calculation example)  
T1 to T4 can be calculated as follows.

$$T1 = V/a1 = 300/10000 = 0.03 \text{ [s]}$$

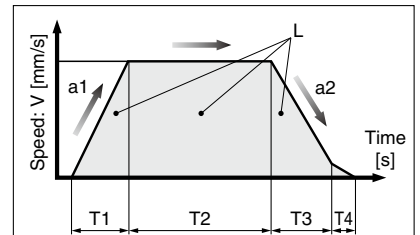
$$T3 = V/a2 = 300/10000 = 0.03 \text{ [s]}$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.03 + 0.03)}{300} = 0.64 \text{ [s]}$$

$$T4 = 0.15 \text{ [s]}$$

The **cycle time** can be found as follows.

$$T = T1 + T2 + T3 + T4 = 0.03 + 0.64 + 0.03 + 0.15 = 0.85 \text{ [s]}$$

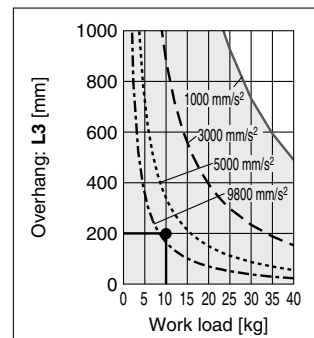
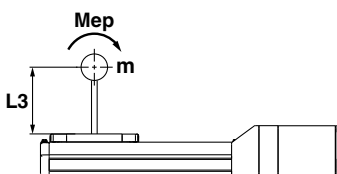


- L : Stroke [mm] ... (Operating condition)
- V : Speed [mm/s] ... (Operating condition)
- a1: Acceleration [mm/s<sup>2</sup>] ... (Operating condition)
- a2: Deceleration [mm/s<sup>2</sup>] ... (Operating condition)

- T1: Acceleration time [s]  
Time until reaching the set speed
- T2: Constant speed time [s]  
Time while the actuator is operating at a constant speed
- T3: Deceleration time [s]  
Time from the beginning of the constant speed operation to stop
- T4: Settling time [s]  
Time until positioning is completed

**Step 3 Check the allowable moment. <Static allowable moment>** (page 11)  
<Dynamic allowable moment> (pages 12, 13)

Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.



Based on the above calculation result, the **LE2FS25H-200** should be selected.

## Selection Procedure

### Pushing Control Selection Procedure

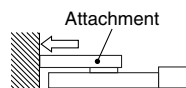


\* The duty ratio is a ratio of the operation time in one cycle.

### Selection Example

#### Operating conditions

- Mounting condition: Horizontal (pushing)
- Attachment height: 50 [mm]
- Pushing force: 40 [N]
- Duty ratio: 15 [%]
- Speed: 100 [mm/s]
- Stroke: 200 [mm]



#### Step 1 Check the duty ratio.

##### <Conversion table of pushing force–duty ratio>

Select the [Pushing force] from the duty ratio while referencing the conversion table of pushing force–duty ratio.

Selection example)

Based on the table below,

- Duty ratio: 100 [%]

The pushing force set value will be 45 [%].

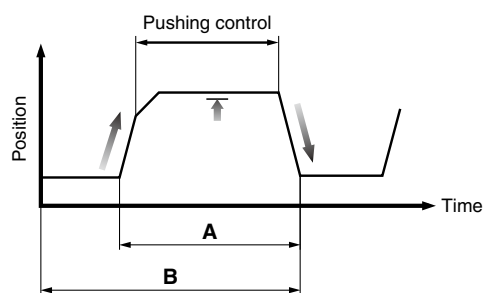
##### <Conversion table of pushing force–duty ratio>

(LE2FS16H/Battery-less absolute)

Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	45 or less	100	No restriction

\* [Pushing force set value] is one of the step data input to the controller.

\* [Continuous pushing time] is the time that the actuator can continuously keep pushing.



$$\text{Duty ratio} = A/B \times 100 [\%]$$

#### Step 2 Check the pushing force.

##### <Force conversion graph>

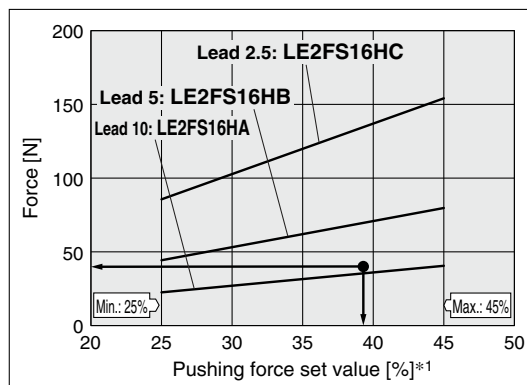
Select a model based on the pushing force set value and force while referencing the force conversion graph.

Selection example)

Based on the graph shown on the right side,

- Pushing force: 40 [N]
- Pushing force set value: 39 [%]

The **LE2FS16HA** can be temporarily selected as a possible candidate.



<Force conversion graph>  
(LE2FS16□H/Step motor)

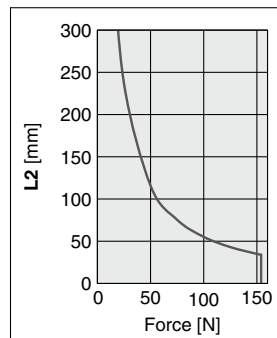
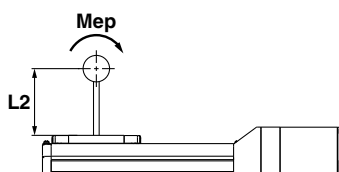
\*1 Set values for the controller

#### Step 3 Check the dynamic allowable moment during a pushing operation.

<Static allowable moment> (page 11)

<Dynamic allowable moment> (page 7)

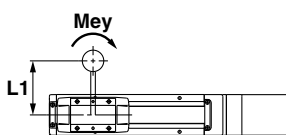
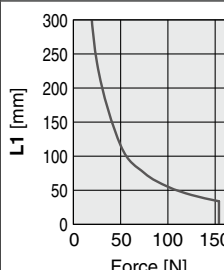
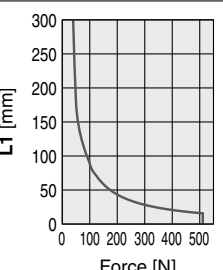
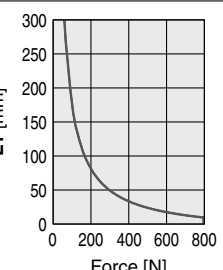
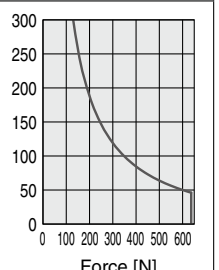
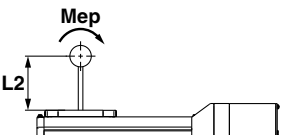
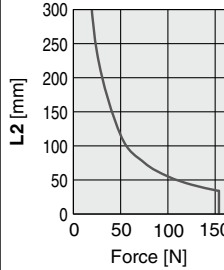
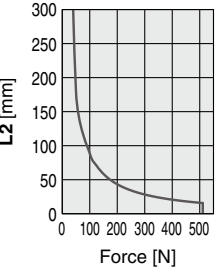
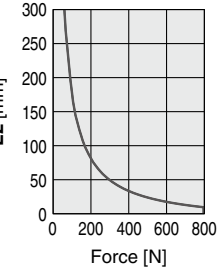
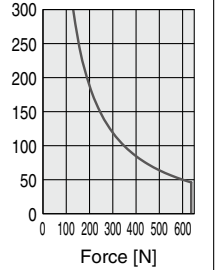
Confirm the moment that applies to the actuator is within the allowable range for both static and dynamic conditions.



Based on the above calculation result, the **LE2FS16HA-200** should be selected.

## Dynamic Allowable Moment for Pushing

\* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction.

Orientation	Load overhanging direction F: Force Me: Allowable moment [N·m] L: Overhang to the work load center of gravity [mm]	Model			
		LE2FS16	LE2FS25	LE2FS32	LE2FS40
Horizontal/Bottom/Wall/Vertical	 Y				
	 Z				

## Calculation of Guide Load Factor

1. Decide operating conditions.

Model: LE2FS□H

The position applied the pushing force [mm]: **Yc/Zc**

Size: 16/25/32/40

Pushing force: **F**

2. Select the target graph while referencing the model, size, and mounting orientation.

3. Based on the acceleration and work load, find the overhang [mm]: **Ly/Lz** from the graph.

4. Calculate the load factor for each direction.

$$\alpha_y = Yc/Ly, \alpha_z = Zc/Lz$$

5. Confirm the total of  $\alpha_y$  and  $\alpha_z$  is 1 or less.

$$\alpha_y + \alpha_z \leq 1$$

When 1 is exceeded, please consider a reduction of acceleration and work load, or a change of the work load center position and series.

### Example

1. Operating conditions

Model: LE2FS40H

Size: 40

Work load center position [mm]: **Yc = 100, Zc = 200**

2. Determine the **fw = 1.5**

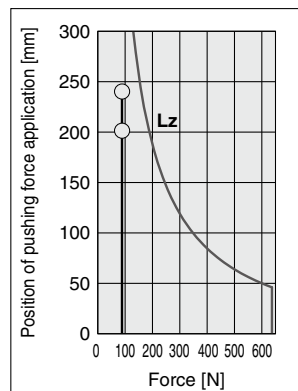
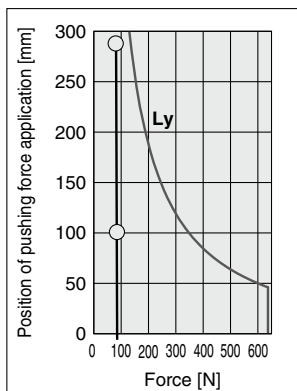
3. **Ly = 950 mm, Lz = 800 mm**

4. The load factor for each direction can be found as follows.

$$\alpha_y = 100/950 = 0.11$$

$$\alpha_z = 200/800 = 0.25$$

$$\alpha_y + \alpha_z = 0.36 \leq 1$$



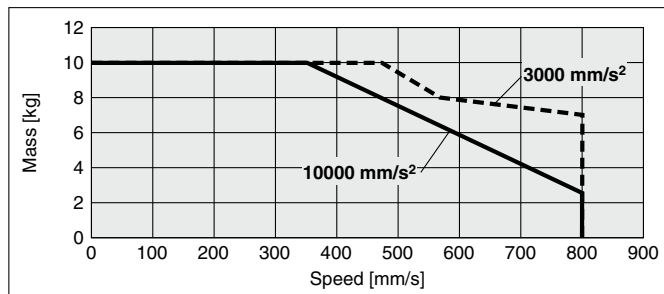
\* When the product repeatedly cycles with partial strokes, operate it at a full stroke at least once every few dozen cycles.



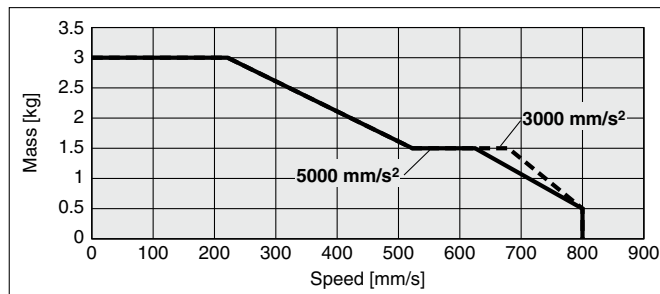
**Speed-Work Load Graph (Guide)**

**LE2FS16/Ball Screw Drive**

**Horizontal/Lead 10**

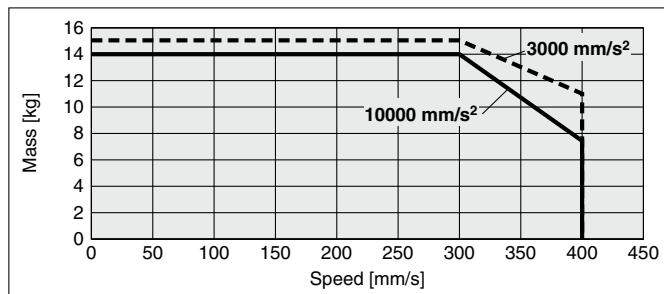


**Vertical/Lead 10**

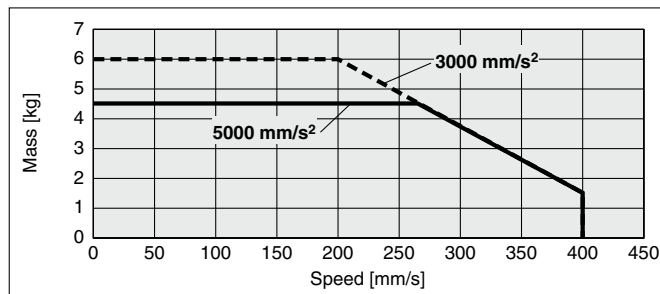


**LE2FS16/Ball Screw Drive**

**Horizontal/Lead 5**

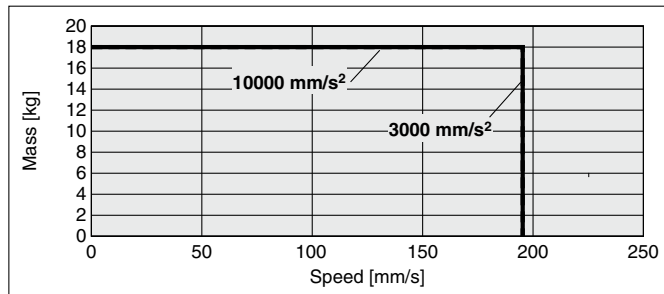


**Vertical/Lead 5**

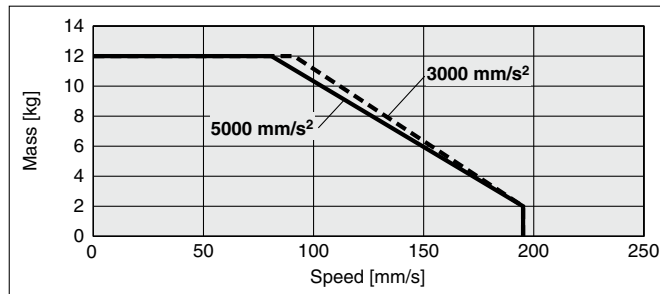


**LE2FS16/Ball Screw Drive**

**Horizontal/Lead 2.5**



**Vertical/Lead 2.5**



Model Selection

LE2FS□H Series

LE2Y□H Series

Auto Switch

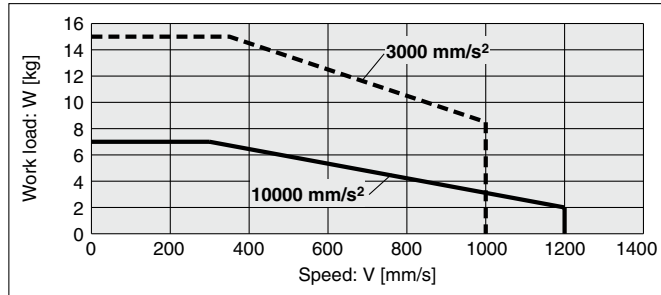
# LE2FS□H Series

Battery-less Absolute (Step Motor 24 VDC)

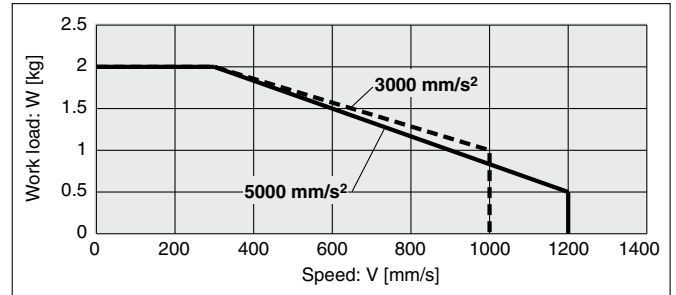
## Speed-Work Load Graph (Guide)

### LE2FS25/Ball Screw Drive

#### Horizontal/Lead 20

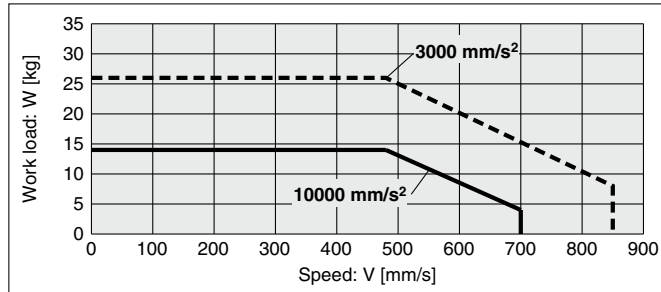


#### Vertical/Lead 20

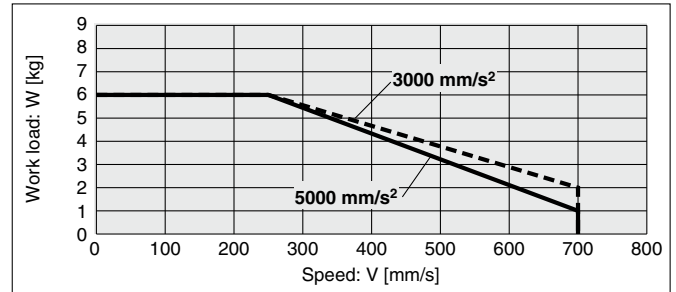


### LE2FS25/Ball Screw Drive

#### Horizontal/Lead 12

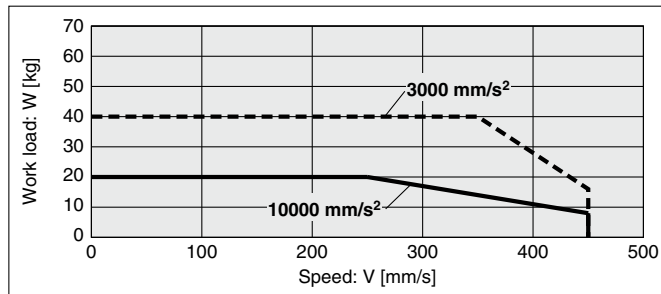


#### Vertical/Lead 12

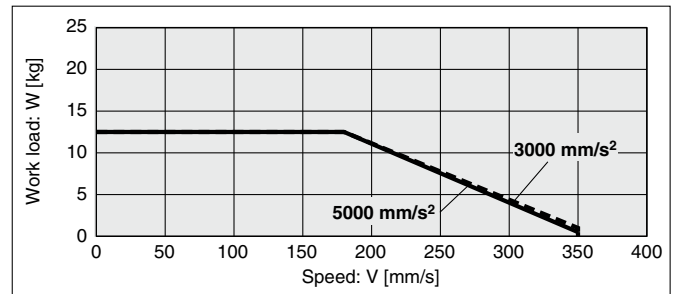


### LE2FS25/Ball Screw Drive

#### Horizontal/Lead 6

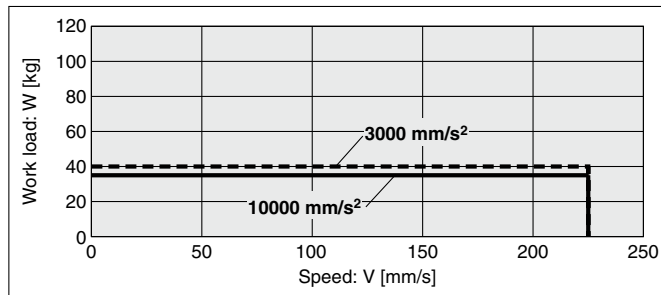


#### Vertical/Lead 6

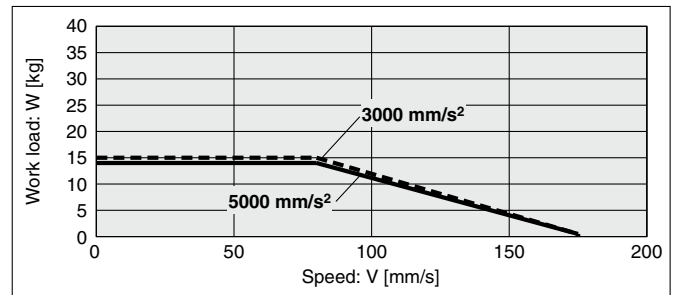


### LE2FS25/Ball Screw Drive

#### Horizontal/Lead 3



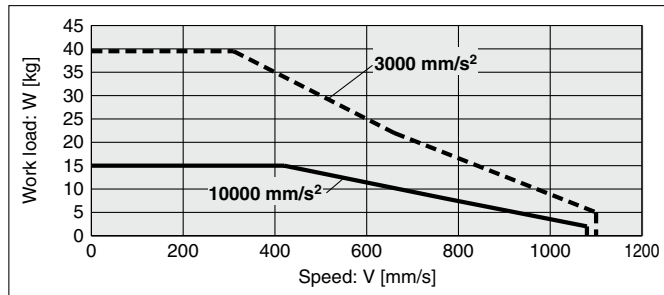
#### Vertical/Lead 3



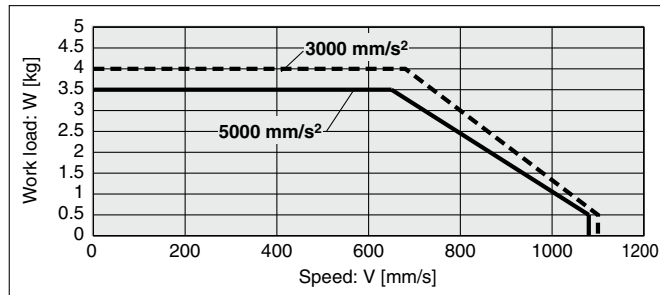
**Speed-Work Load Graph (Guide)**

**LE2FS32/Ball Screw Drive**

**Horizontal/Lead 24**

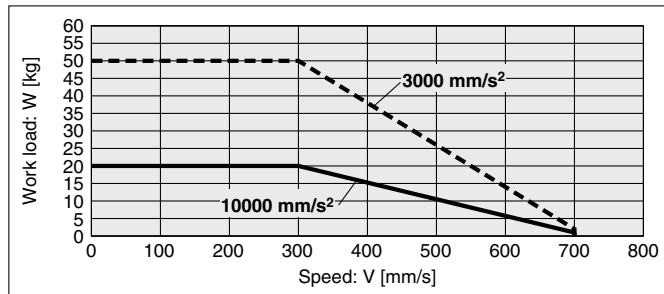


**Vertical/Lead 24**

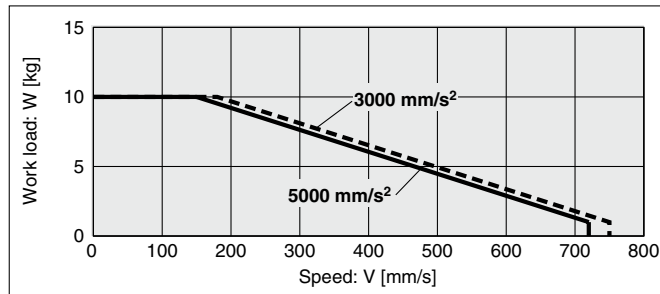


**LE2FS32/Ball Screw Drive**

**Horizontal/Lead 16**

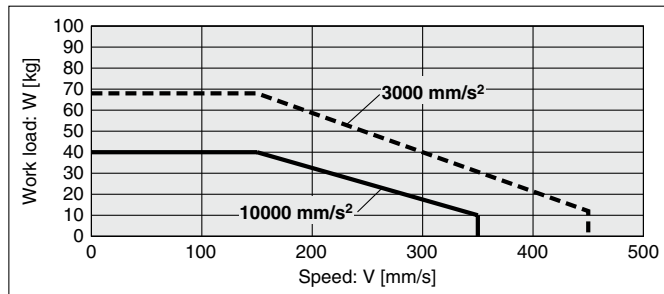


**Vertical/Lead 16**

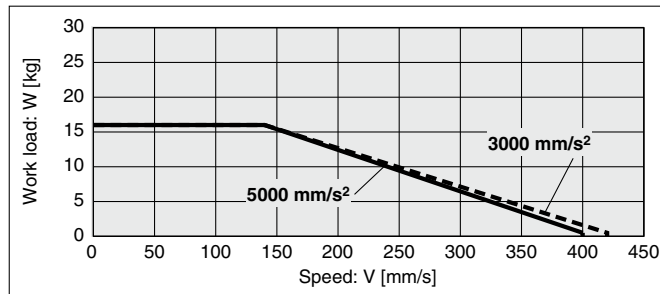


**LE2FS32/Ball Screw Drive**

**Horizontal/Lead 8**

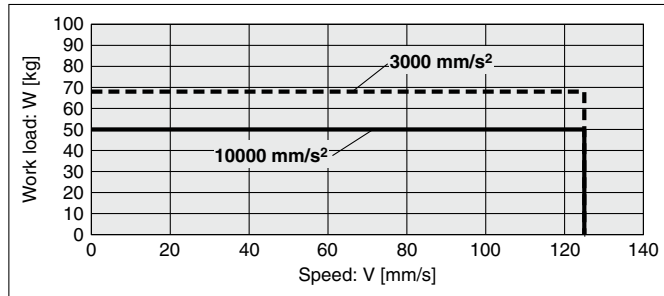


**Vertical/Lead 8**

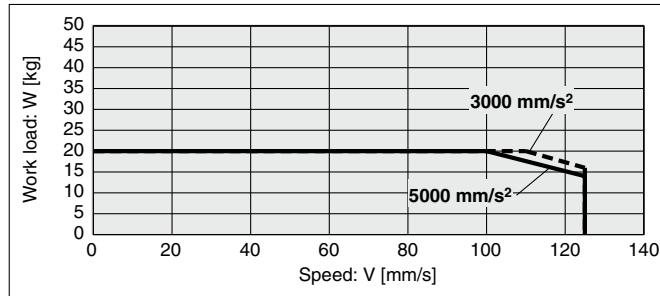


**LE2FS32/Ball Screw Drive**

**Horizontal/Lead 4**



**Vertical/Lead 4**



Model Selection  
LE2FS□H Series  
LE2Y□H Series  
Auto Switch

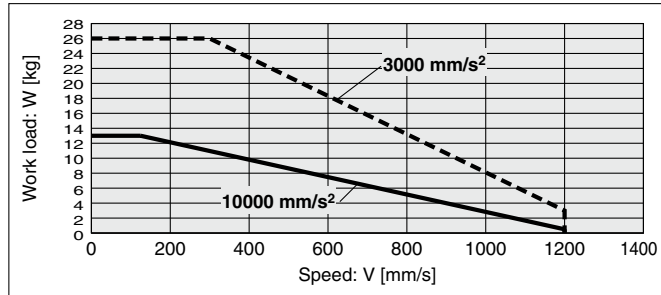
# LE2FS□H Series

Battery-less Absolute (Step Motor 24 VDC)

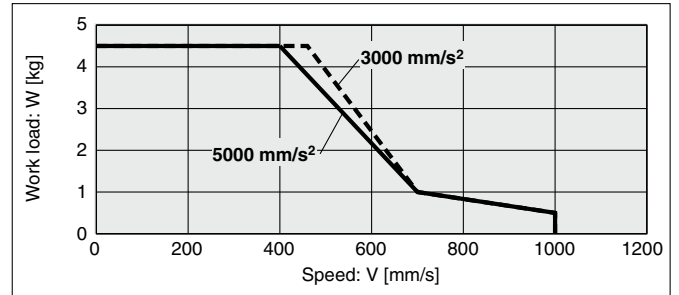
## Speed-Work Load Graph (Guide)

### LE2FS40/Ball Screw Drive

#### Horizontal/Lead 30

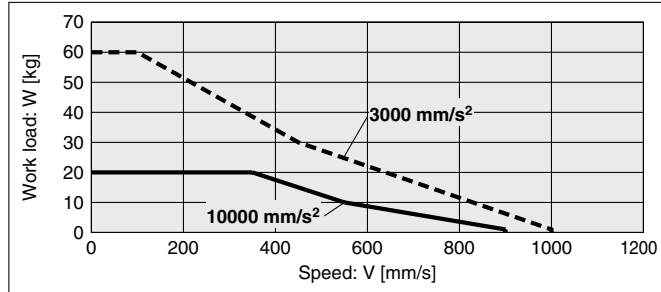


#### Vertical/Lead 30

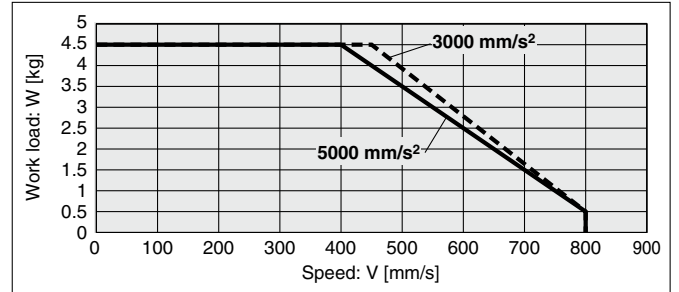


### LE2FS40/Ball Screw Drive

#### Horizontal/Lead 20

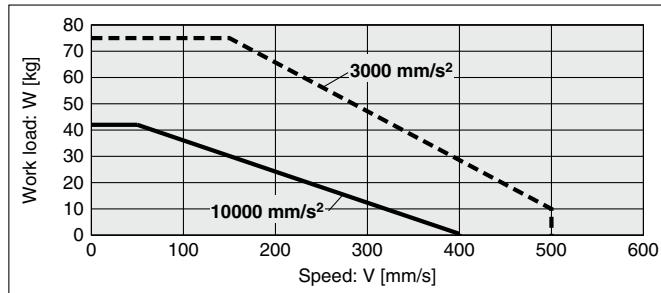


#### Vertical/Lead 20

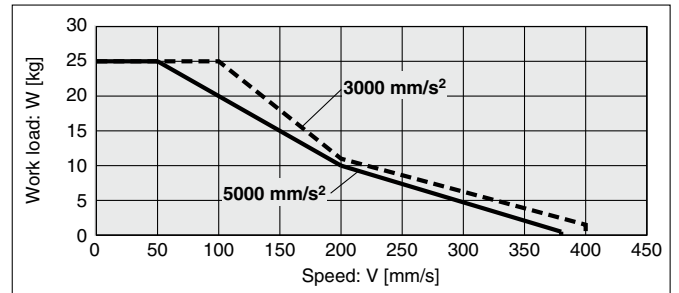


### LE2FS40/Ball Screw Drive

#### Horizontal/Lead 10

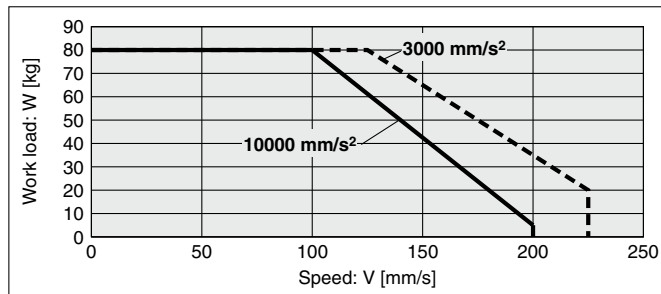


#### Vertical/Lead 10

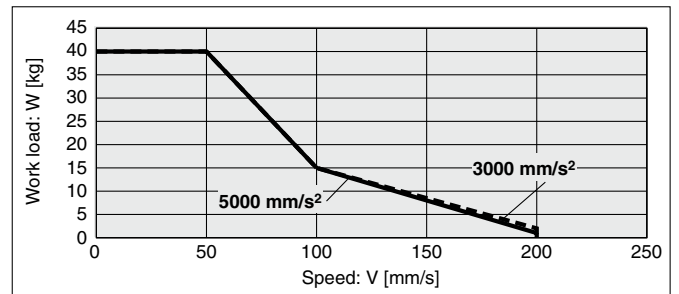


### LE2FS40/Ball Screw Drive

#### Horizontal/Lead 5



#### Vertical/Lead 5



## Static Allowable Moment\*1

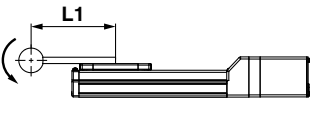
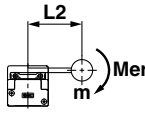
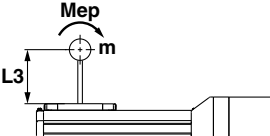
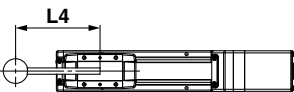
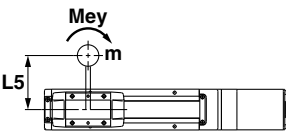
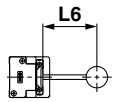
					[N·m]
Model	Size	Pitching	Yawing	Rolling	
LE2FS□H	16	10.0	10.0	20.0	
	25	27.0	27.0	52.0	
	32	46.0	46.0	101.0	
	40	110.0	110.0	207.0	

\*1 The static allowable moment is the amount of static moment which can be applied to the actuator when it is stopped. If the product is exposed to impact or repeated load, be sure to take adequate safety measures when using the product.

## Dynamic Allowable Moment

\* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction.

Acceleration ——— 1000 mm/s<sup>2</sup>    - - - 3000 mm/s<sup>2</sup>    ..... 5000 mm/s<sup>2</sup>    - - - - 10000 mm/s<sup>2</sup>

Orientation	Load overhanging direction m : Work load [kg] Me: Allowable moment [N·m] L : Overhang to the work load center of gravity [mm]	Model			
		LE2FS16H	LE2FS25H	LE2FS32H	LE2FS40H
Horizontal/Bottom	 X L1 [mm]				
	 Y L2 [mm]				
	 Z L3 [mm]				
Wall	 X L4 [mm]				
	 Y L5 [mm]				
	 Z L6 [mm]				

Model Selection

LE2FS□H Series

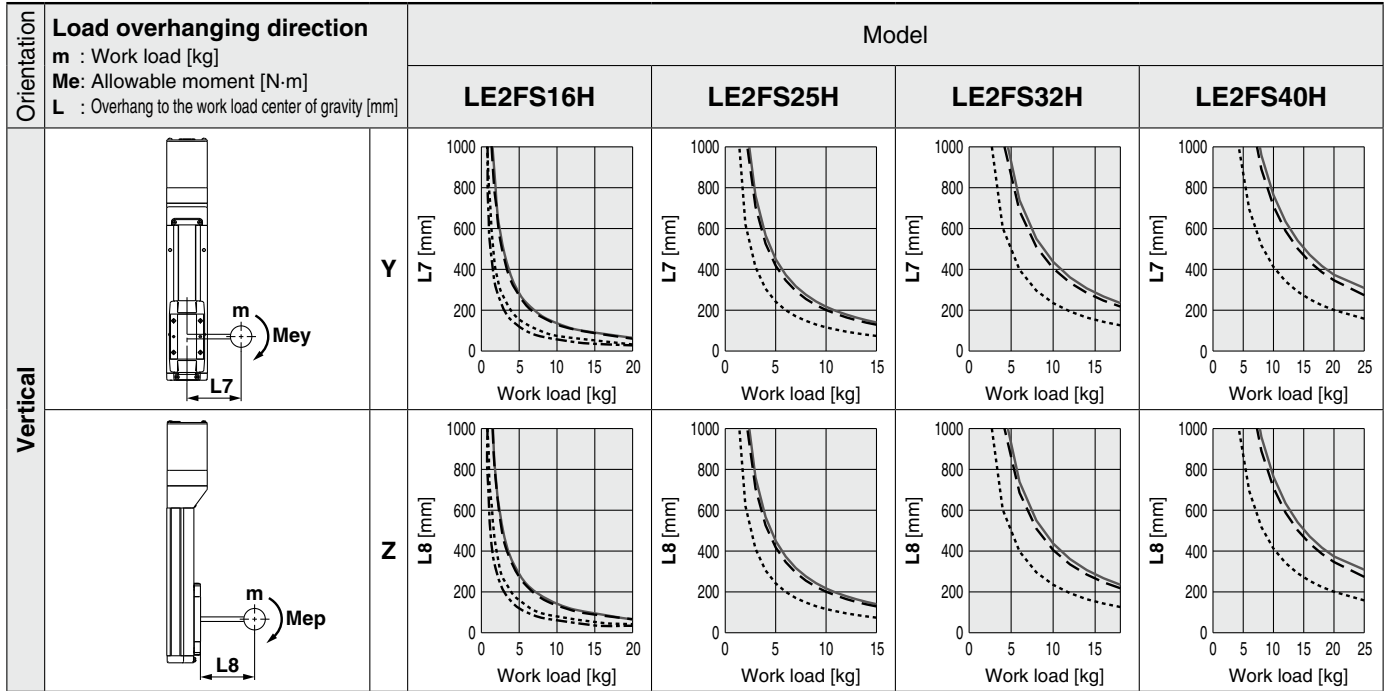
LE2Y□H Series

Auto Switch

## Dynamic Allowable Moment

\* These graphs show the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction.

Acceleration ——— 1000 mm/s<sup>2</sup>    - - - 3000 mm/s<sup>2</sup>    ······ 5000 mm/s<sup>2</sup>



## Calculation of Guide Load Factor

- Decide operating conditions.

Model: LE2FS□H

Size: 16/25/32/40

Mounting orientation: Horizontal/Bottom/Wall/Vertical

Acceleration [mm/s<sup>2</sup>]: a

Work load [kg]: m

Work load center position [mm]: Xc/Yc/Zc

- Select the target graph while referencing the model, size, and mounting orientation.

- Based on the acceleration and work load, find the overhang [mm]: Lx/Ly/Lz from the graph.

- Calculate the load factor for each direction.

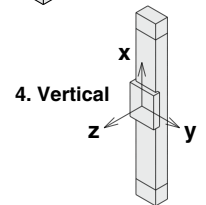
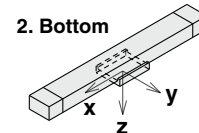
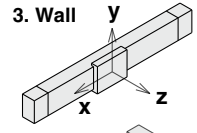
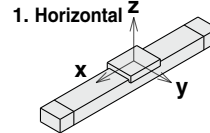
$$\alpha_x = X_c/L_x, \alpha_y = Y_c/L_y, \alpha_z = Z_c/L_z$$

- Confirm the total of  $\alpha_x$ ,  $\alpha_y$ , and  $\alpha_z$  is 1 or less.

$$\alpha_x + \alpha_y + \alpha_z \leq 1$$

When 1 is exceeded, please consider a reduction of acceleration and work load, or a change of the work load center position and series.

### Mounting orientation



### Example

- Operating conditions

Model: LE2FS40H

Size: 40

Mounting orientation: Horizontal

Acceleration [mm/s<sup>2</sup>]: 3000

Work load [kg]: 20

Work load center position [mm]: Xc = 0, Yc = 50, Zc = 200

- Select the graphs for horizontal of the LE2FS40H on page 12.

- Lx = 350 mm, Ly = 250 mm, Lz = 1000 mm

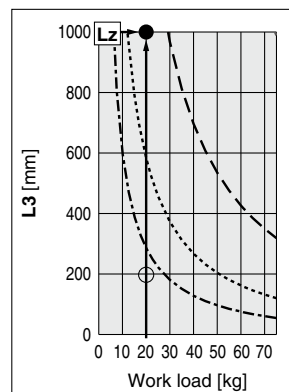
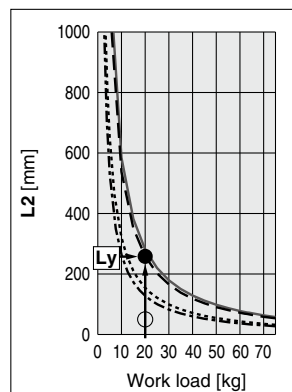
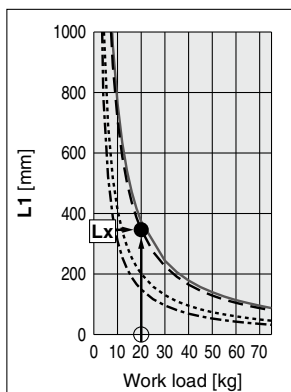
- The load factor for each direction can be found as follows.

$$\alpha_x = 0/350 = 0$$

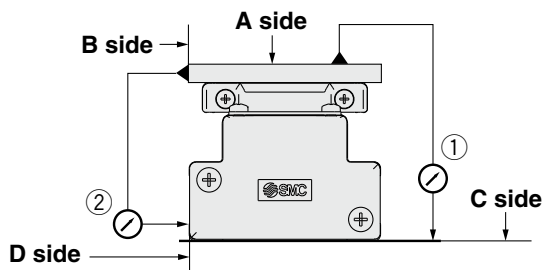
$$\alpha_y = 50/250 = 0.2$$

$$\alpha_z = 200/1000 = 0.2$$

- $\alpha_x + \alpha_y + \alpha_z = 0.4 \leq 1$



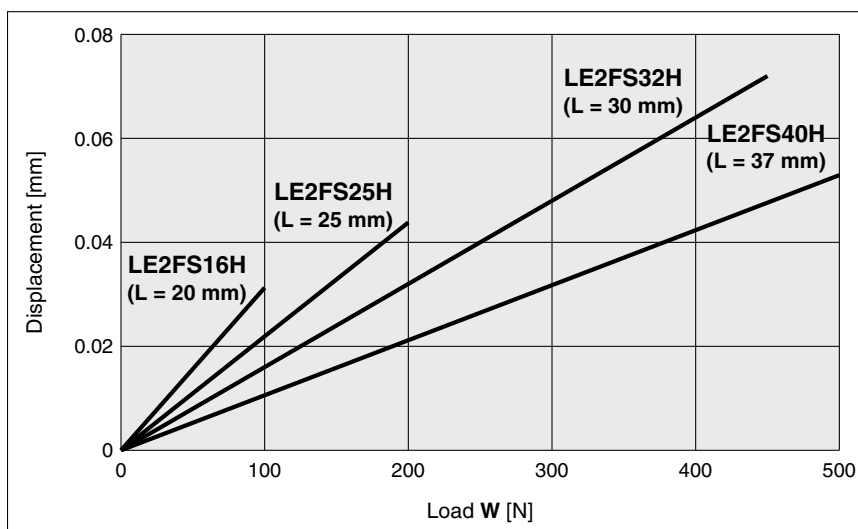
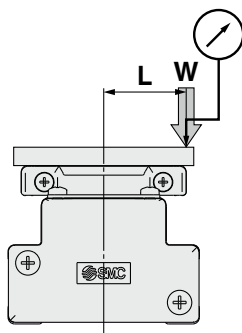
## Table Accuracy (Reference Value)



Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LE2FS16H	0.05	0.03
LE2FS25H	0.05	0.03
LE2FS32H	0.05	0.03
LE2FS40H	0.05	0.03

\* Traveling parallelism does not include the mounting surface accuracy. (Excludes when the stroke exceeds 2000 mm)

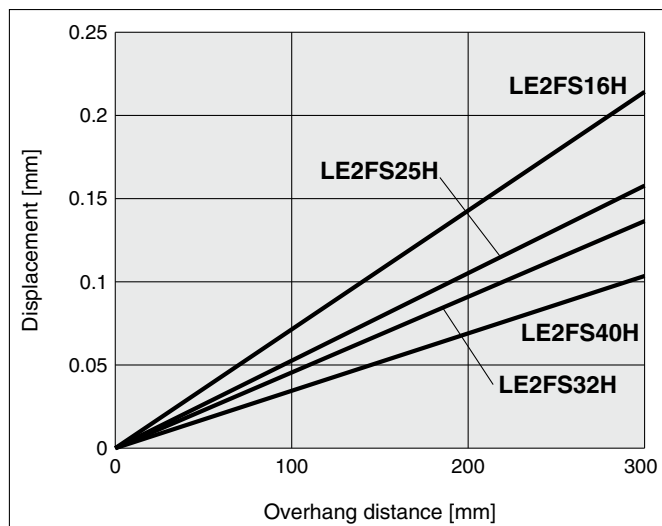
## Table Displacement (Reference Value)



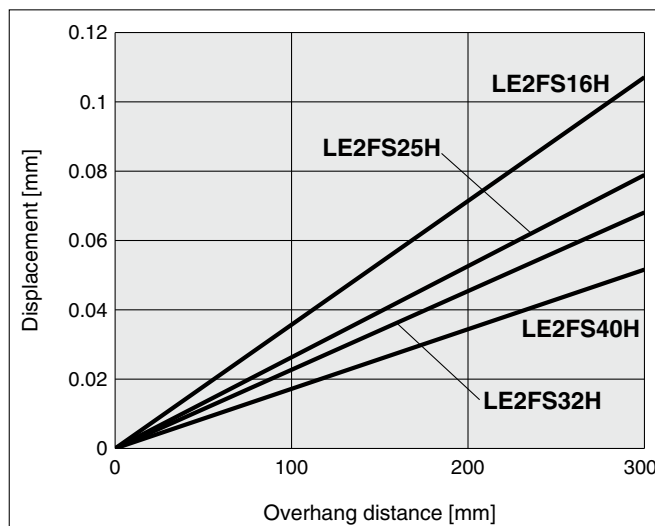
\* This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.  
 \* Check the clearance and play of the guide separately.

## Overhang Displacement Due to Table Clearance (Initial Reference Value)

### Basic type



### High-precision type

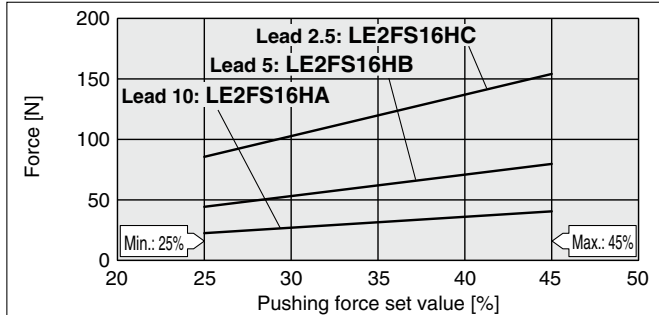


# LE2FS□H Series

Battery-less Absolute (Step Motor 24 VDC)

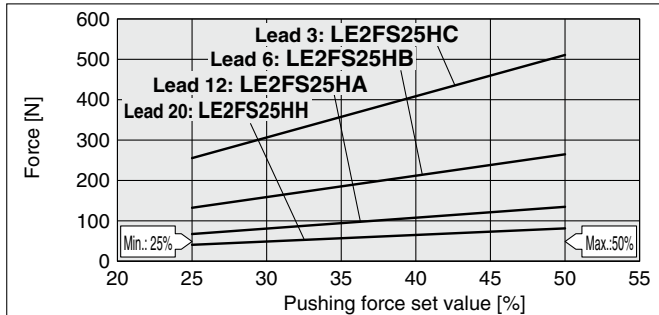
## Force Conversion Graph (Guide)

### LE2FS16□H



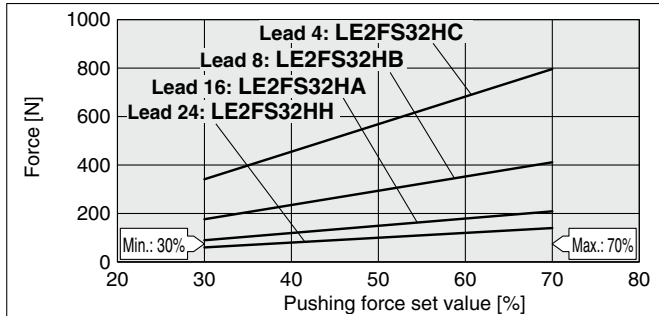
Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	45 or less	100	No restriction

### LE2FS25□H



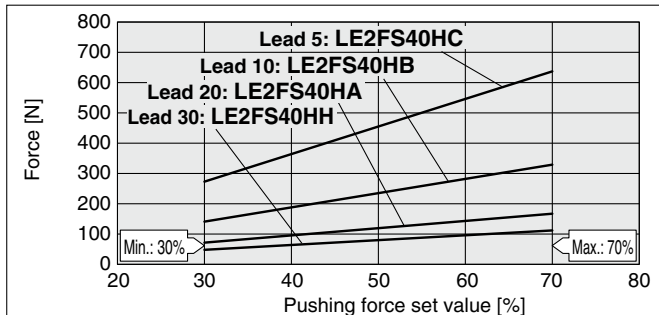
Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	50 or less	100	No restriction

### LE2FS32□H



Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	70 or less	100	No restriction

### LE2FS40□H



Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	70 or less	100	No restriction

### <Limit Values for Pushing Force and Trigger Level in Relation to Pushing Speed>

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LE2FS16□H	A/B/C	1 to 50	25 to 45%
LE2FS25□H	H/A/B/C	1 to 35	25 to 50%
LE2FS32□H	H/A/B/C	1 to 30	30 to 70%
LE2FS40□H	H/A/B/C	1 to 30	30 to 70%

There is a limit to the pushing force in relation to the pushing speed. If the product is operated outside of the range (low pushing force), the completion signal [INP] may be output before the pushing operation has been completed (during the moving operation).

If operating with the pushing speed below the min. speed, please check for operating problems before using the product.

### <Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

Model	LE2FS16□H			LE2FS25□H			LE2FS32□H			LE2FS40□H					
	Lead	A	B	C	H	A	B	C	H	A	B	C			
Work load [kg]	1	1.5	3	1	2.5	5	10	2	4.5	9	18	1.5	3	7	14
Pushing force	45%			50%			70%			70%					

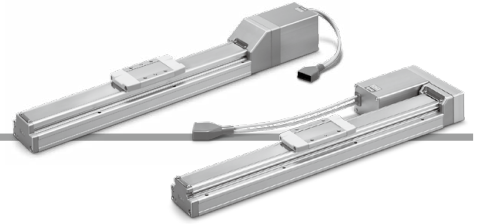


Battery-less Absolute (Step Motor 24 VDC)

Compatible with Manifold Controller

Slider Type

LE2FS□H Series LE2FS16, 25, 32, 40



How to Order

LE2FS **32** **R** **1** **H** **A** - **300** **A** **G**

1 2 3 4 5 6 7 8

1 Size

16
25
32
40

2 Motor mounting position

D	In-line
R	Right side parallel
L	Left side parallel

3 Motor cable entry direction

1	Axial
2	Right
3	Left
4	Top
5	Bottom

4 Motor type

Symbol	Type	Compatible controller
H	Battery-less absolute (Step motor 24 VDC)	JXD1

5 Lead [mm]

Symbol	LE2FS16	LE2FS25	LE2FS32	LE2FS40
H	—	20	24	30
A	10	12	16	20
B	5	6	8	10
C	2.5	3	4	5

6 Stroke

50	50
to	to
1200	1200

\* For details, refer to the applicable stroke table below.

7 Motor option

A	Without option
B	With lock

8 Grease application (Seal band part)

G	With
N	Without (Roller specification)

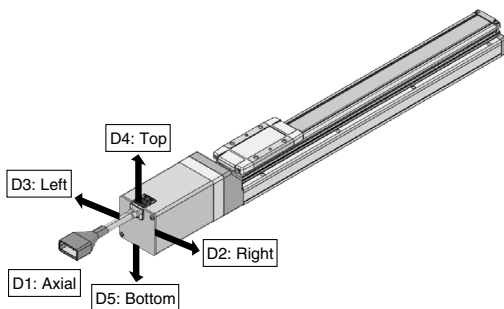
The auto switches should be ordered separately. For details, refer to pages 27 and 48 to 50.

Applicable Stroke Table

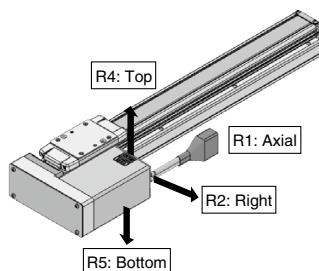
Size	Stroke																						
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200	
16	●	●	●	●	●	●	●	●	●	●	—	—	—	—	—	—	—	—	—	—	—	—	—
25	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	—	—	—	—	—	—
32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	—
40	—	—	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Motor Mounting Position

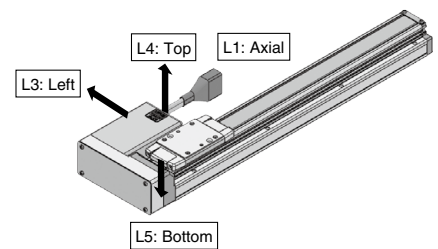
D: In-line



R: Right side parallel  
→ R3 is not selectable.



L: Left side parallel  
→ L2 is not selectable.



Model Selection

LE2FS□H Series

LE2Y□H Series

Auto Switch

# LE2FS□H Series

Battery-less Absolute (Step Motor 24 VDC)

## Specifications

Model		LE2FS16□H			LE2FS25□H				LE2FS32□H				LE2FS40□H							
Stroke [mm]*1		50 to 500							50 to 800				50 to 1000				150 to 1200			
Work load [kg]*6	Horizontal	10	15	18	15	26	40	40	39.5	50	68	68	26	60	75	80				
	Vertical	3	6	12	2	6	12.5	15	4	10	16	20	4.5	4.5	25	40				
Pushing force [N]*2 *3 *4		23 to 41	44 to 80	86 to 154	41 to 81	67 to 135	132 to 265	255 to 511	60 to 140	90 to 209	176 to 411	341 to 796	48 to 112	72 to 167	141 to 329	273 to 637				
Speed [mm/s]	Stroke range	Up to 400	10 to 800	5 to 400	3 to 195	20 to 1200	12 to 850	6 to 450	3 to 225	24 to 1100	16 to 750	8 to 450	4 to 125	30 to 1200	20 to 1000	10 to 500	5 to 225			
		401 to 450	10 to 700	5 to 360	3 to 170	20 to 1100	12 to 750	6 to 400	3 to 225	24 to 1100	16 to 750	8 to 450	4 to 125	30 to 1200	20 to 1000	10 to 500	5 to 225			
		401 to 500	10 to 600	5 to 300	3 to 140	20 to 1100	12 to 750	6 to 400	3 to 225	24 to 1100	16 to 750	8 to 450	4 to 125	30 to 1200	20 to 1000	10 to 500	5 to 225			
		501 to 600	—	—	—	20 to 900	12 to 540	6 to 270	3 to 135	24 to 1100	16 to 750	8 to 400	4 to 125	30 to 1200	20 to 1000	10 to 500	5 to 225			
		601 to 700	—	—	—	20 to 630	12 to 420	6 to 230	3 to 115	24 to 930	16 to 620	8 to 310	4 to 125	30 to 1200	20 to 900	10 to 440	5 to 220			
		701 to 800	—	—	—	20 to 550	12 to 330	6 to 180	3 to 90	24 to 750	16 to 500	8 to 250	4 to 125	30 to 1140	20 to 760	10 to 350	5 to 175			
		801 to 900	—	—	—	—	—	—	—	24 to 610	16 to 410	8 to 200	4 to 100	30 to 930	20 to 620	10 to 280	5 to 140			
		901 to 1000	—	—	—	—	—	—	—	24 to 500	16 to 340	8 to 170	4 to 85	30 to 780	20 to 520	10 to 250	5 to 125			
		1001 to 1100	—	—	—	—	—	—	—	—	—	—	—	30 to 660	20 to 440	10 to 220	5 to 110			
		1101 to 1200	—	—	—	—	—	—	—	—	—	—	—	30 to 570	20 to 380	10 to 190	5 to 95			
Max. acceleration/deceleration [mm/s <sup>2</sup> ]	Horizontal	10000																		
	Vertical	5000																		
Pushing speed [mm/s]*5		1 to 50			1 to 35				1 to 30				1 to 30							
Positioning repeatability [mm]		±0.015 (Lead H: ±0.02)																		
Lost motion [mm]*7		0.1 or less																		
Lead [mm]		10	5	2.5	20	12	6	3	24	16	8	4	30	20	10	5				
Impact/Vibration resistance [m/s <sup>2</sup> ]*8		50/20																		
Actuation type		Ball screw (LE2FS□H), Ball screw + Belt (LE2FS□RH)																		
Guide type		Linear guide																		
Operating temperature range [°C]		5 to 40																		
Operating humidity range [%RH]		90 or less (No condensation)																		
Motor specifications	Motor size	□28			□42				□56.4											
	Motor type	Battery-less absolute (Step motor 24 VDC)																		
	Encoder	Battery-less absolute																		
	Power supply voltage [V]	24 VDC ±10%																		
Lock unit specifications	Power [W]*9 *11	Max. power 58			Max. power 72				Max. power 93				Max. power 93							
	Type*10	Non-magnetizing lock																		
	Holding force [N]	29	59	118	47	78	157	294	72	108	216	421	75	113	225	421				
	Power [W]*11	4			8				8				8							
Power supply voltage [V]		24 VDC ±10%																		

- \*1 Please contact SMC for non-standard strokes as they are produced as special orders.
- \*2 Pushing force accuracy is ±20% (F.S.).
- \*3 The pushing force set values for LE2FS16□H are 25% to 45%, for LE2FS25□H are 25% to 50%, for LE2FS32□H are 30% to 70%, and for LE2FS40□H are 30% to 70%. The pushing force values change according to the duty ratio and pushing speed. Check the "Force Conversion Graph" in the catalog.
- \*4 The speed and force may change depending on the cable length, load, and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)
- \*5 The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.
- \*6 The max. work load at 3000 mm/s<sup>2</sup> acceleration and deceleration speed  
Work load varies depending on the speed and acceleration. Check the "Speed-Work Load Graph" in the catalog.  
Furthermore, if the cable length exceeds 5 m, the speed and work load specified in the "Speed-Work Load Graph" may decrease by up to 10% for each 5 m increase.
- \*7 A reference value for correcting errors in reciprocal operation
- \*8 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)  
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)
- \*9 Indicates the max. power during operation (excluding the controller). This value can be used for the selection of the power supply.
- \*10 With lock only
- \*11 For an actuator with lock, add the power for the lock.

## Weight

### In-line Motor

Series	LE2FS16									
Stroke [mm]	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	0.85	0.92	1.00	1.07	1.15	1.22	1.30	1.37	1.45	1.52
Additional weight with lock [kg]	0.16									

Series	LE2FS25															
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Product weight [kg]	1.77	1.91	2.05	2.19	2.33	2.47	2.61	2.75	2.89	3.03	3.17	3.31	3.45	3.59	3.73	3.87
Additional weight with lock [kg]	0.31															

Series	LE2FS32																			
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Product weight [kg]	3.12	3.32	3.52	3.72	3.92	4.12	4.32	4.52	4.72	4.92	5.12	5.32	5.52	5.72	5.92	6.12	6.32	6.52	6.72	6.92
Additional weight with lock [kg]	0.58																			

Series	LE2FS40																			
Stroke [mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
Product weight [kg]	4.99	5.27	5.55	5.83	6.11	6.39	6.77	6.95	7.23	7.51	7.79	8.07	8.35	8.63	8.91	9.19	9.47	9.75	10.31	10.87
Additional weight with lock [kg]	0.60																			

### Right/Left Side Parallel Motor

Series	LE2FS16 <sup>R/L</sup>									
Stroke [mm]	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	0.85	0.92	1.00	1.07	1.15	1.22	1.30	1.37	1.45	1.52
Additional weight with lock [kg]	0.16									

Series	LE2FS25 <sup>R/L</sup>															
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Product weight [kg]	1.75	1.89	2.03	2.17	2.31	2.45	2.59	2.73	2.87	3.01	3.15	3.29	3.43	3.57	3.71	3.85
Additional weight with lock [kg]	0.31															

Series	LE2FS32 <sup>R/L</sup>																			
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Product weight [kg]	3.09	3.29	3.49	3.69	3.89	4.09	4.29	4.49	4.69	4.89	5.09	5.29	5.49	5.69	5.89	6.09	6.29	6.49	6.69	6.89
Additional weight with lock [kg]	0.58																			

Series	LE2FS40 <sup>R/L</sup>																			
Stroke [mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
Product weight [kg]	5.15	5.43	5.71	5.99	6.27	6.55	6.93	7.11	7.39	7.67	7.95	8.23	8.51	8.79	9.07	9.35	9.63	9.91	10.47	11.03
Additional weight with lock [kg]	0.60																			

Model Selection

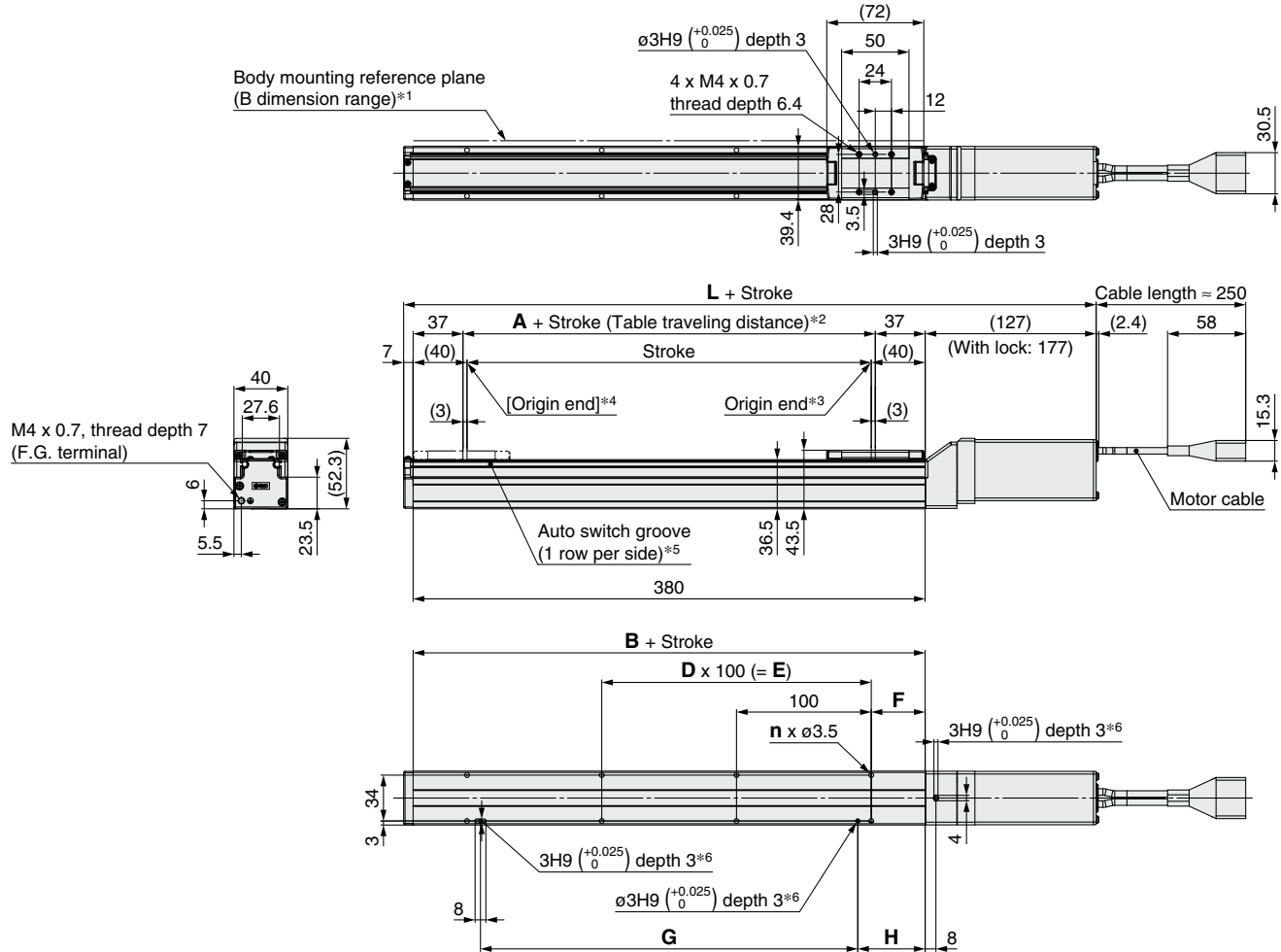
LE2FS□H Series

LE2Y□H Series

Auto Switch

## Dimensions: In-line Motor

### LE2FS16H



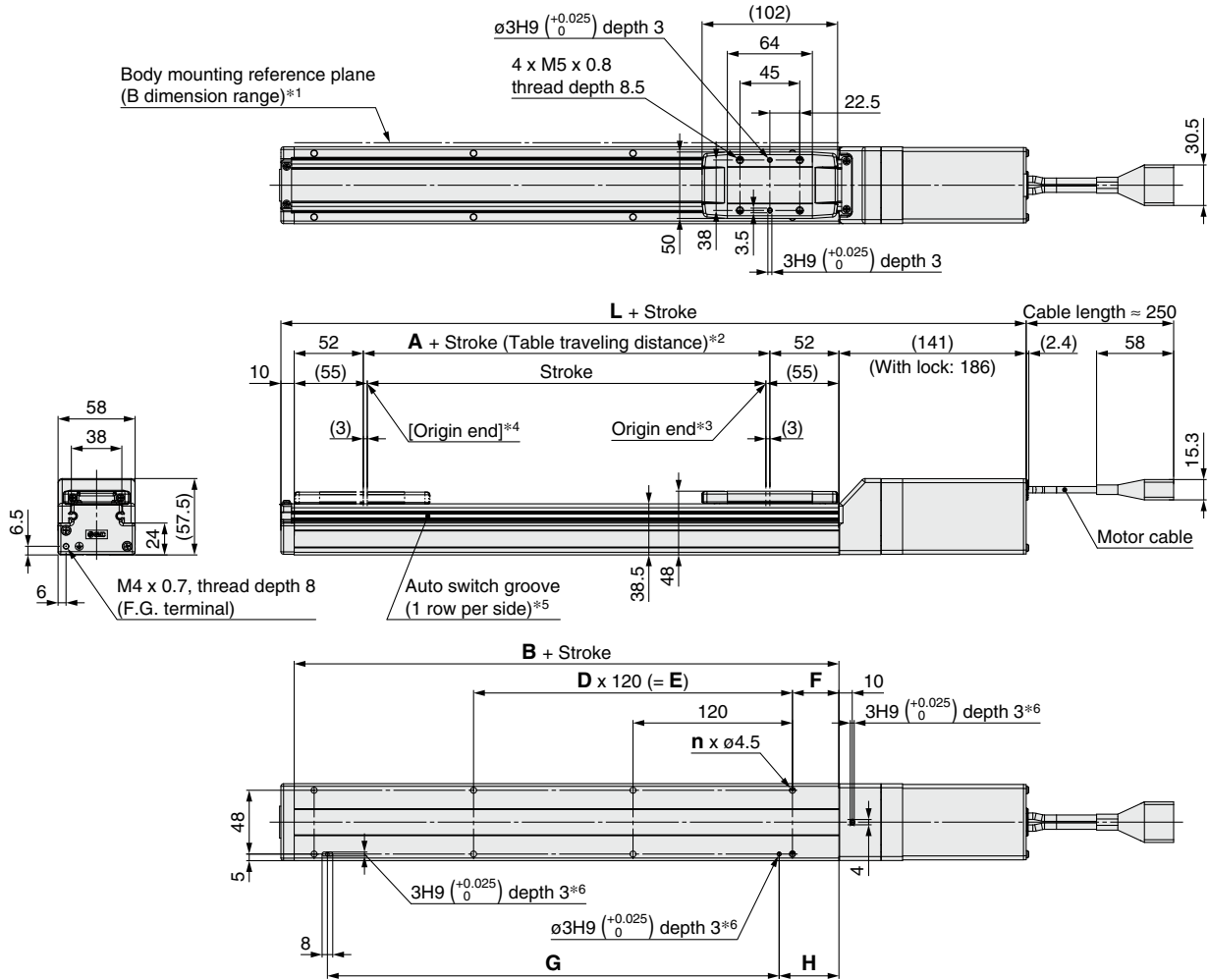
- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 The distance the table moves according to movement instructions  
Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Indicates the factory default origin position (0 mm)
- \*4 [ ] refers to when the rotation direction reference is changed.
- \*5 The applicable auto switch (D-M9□) should be ordered separately.
- \*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \* The axial cable entry direction is shown.

### Dimensions

Stroke	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
50	214	264	6	80	4	—	—	15	80	25
100, 150					6	2	200	40		
200, 250					8	3	300		280	
300, 350					10	4	400		380	
400, 450					12	5	500	480		

**Dimensions: In-line Motor**

**LE2FS25H**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 The distance the table moves according to movement instructions  
Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Indicates the factory default origin position (0 mm)
- \*4 [ ] refers to when the rotation direction reference is changed.
- \*5 The applicable auto switch (D-M9□) should be ordered separately.
- \*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \* The axial cable entry direction is shown.

**Dimensions**

Stroke	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
50	261	306	6	110	4	—	—	20	100	30
100, 150					6	2	240		220	
200, 250					8	3	360		340	
300, 350, 400					35	10	4	480	460	
450, 500						12	5	600	580	
550, 600, 650						14	6	720	700	
700, 750						16	7	840	820	
800										

Model Selection

LE2FS□H Series

LE2Y□H Series

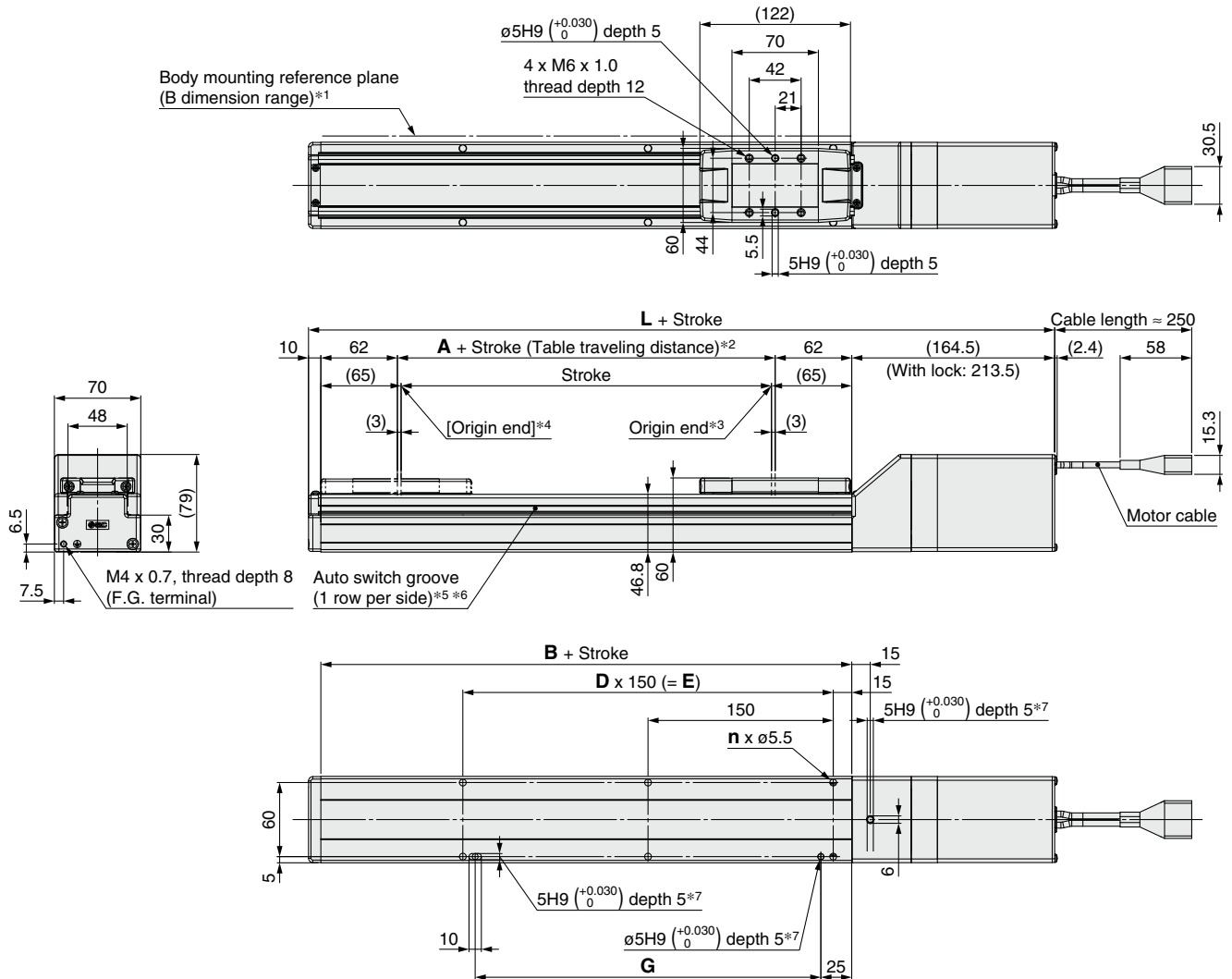
Auto Switch

# LE2FS□H Series

Battery-less Absolute (Step Motor 24 VDC)

## Dimensions: In-line Motor

### LE2FS32H



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 The distance the table moves according to movement instructions  
Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Indicates the factory default origin position (0 mm)
- \*4 [ ] refers to when the rotation direction reference is changed.
- \*5 The applicable auto switch (D-M9□) should be ordered separately.
- \*6 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.
- \*7 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \* The axial cable entry direction is shown.

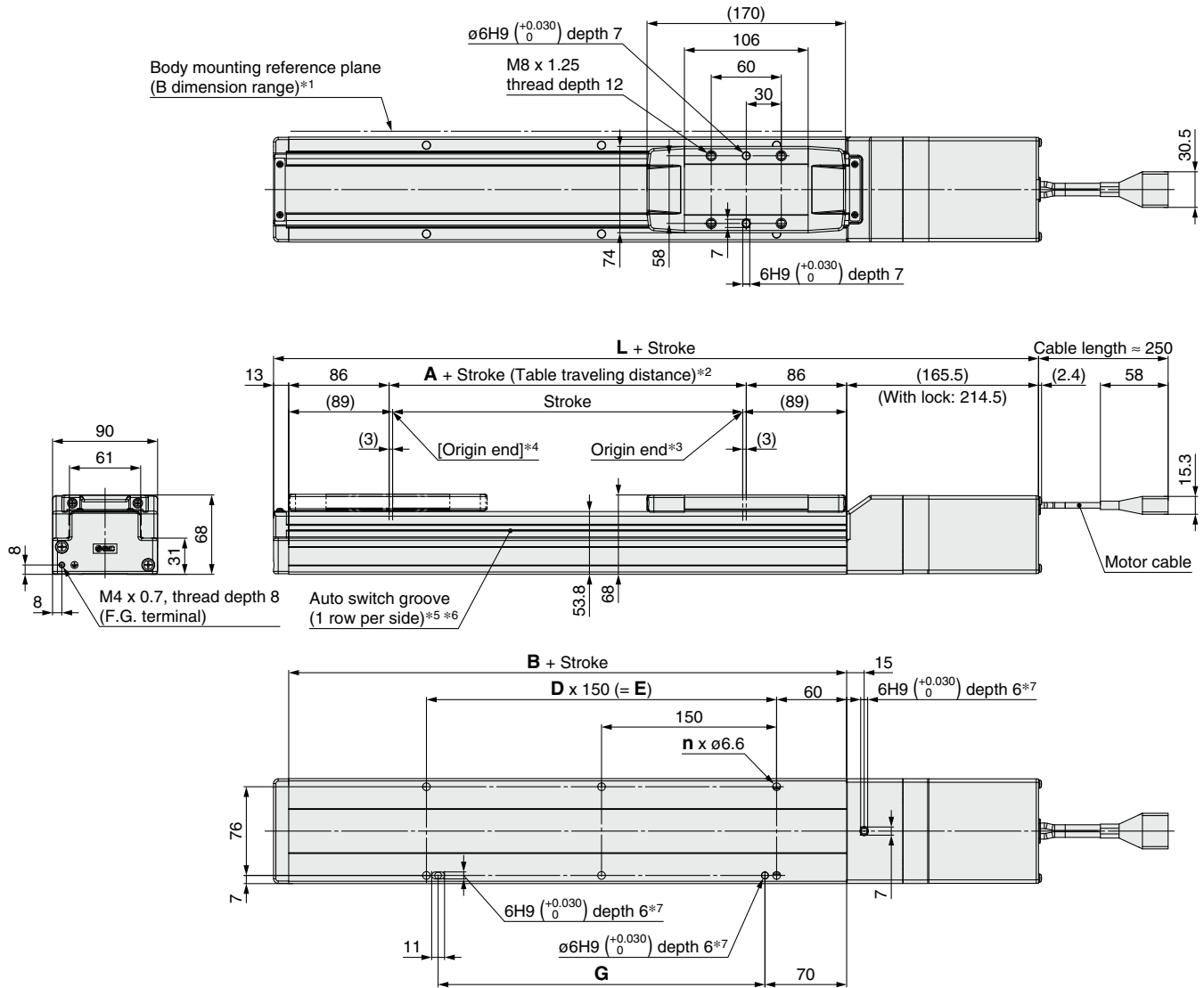
### Dimensions

[mm]

Stroke	L		A	B	n	D	E	G
	Without lock	With lock						
50, 100, 150	304.5	353.5	6	130	4	—	—	130
200, 250, 300					6	2	300	280
350, 400, 450					8	3	450	430
500, 550, 600					10	4	600	580
650, 700, 750					12	5	750	730
800, 850, 900					14	6	900	880
950, 1000					16	7	1050	1030

**Dimensions: In-line Motor**

**LE2FS40H**



\*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
 In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.  
 \*2 The distance the table moves according to movement instructions. Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.  
 \*3 Indicates the factory default origin position (0 mm)  
 \*4 [ ] refers to when the rotation direction reference is changed.  
 \*5 The applicable auto switch (D-M9□) should be ordered separately.  
 \*6 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.  
 \*7 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.  
 \* The axial cable entry direction is shown.

**Dimensions**

Stroke	L		A	B	n	D	E	G
	Without lock	With lock						
150	356.5	405.5	6	178	4	—	—	130
200, 250, 300					6	2	300	280
350, 400, 450					8	3	450	430
500, 550, 600					10	4	600	580
650, 700, 750					12	5	750	730
800, 850, 900					14	6	900	880
950, 1000					16	7	1050	1030
1100, 1200					18	8	1200	1180

Model Selection

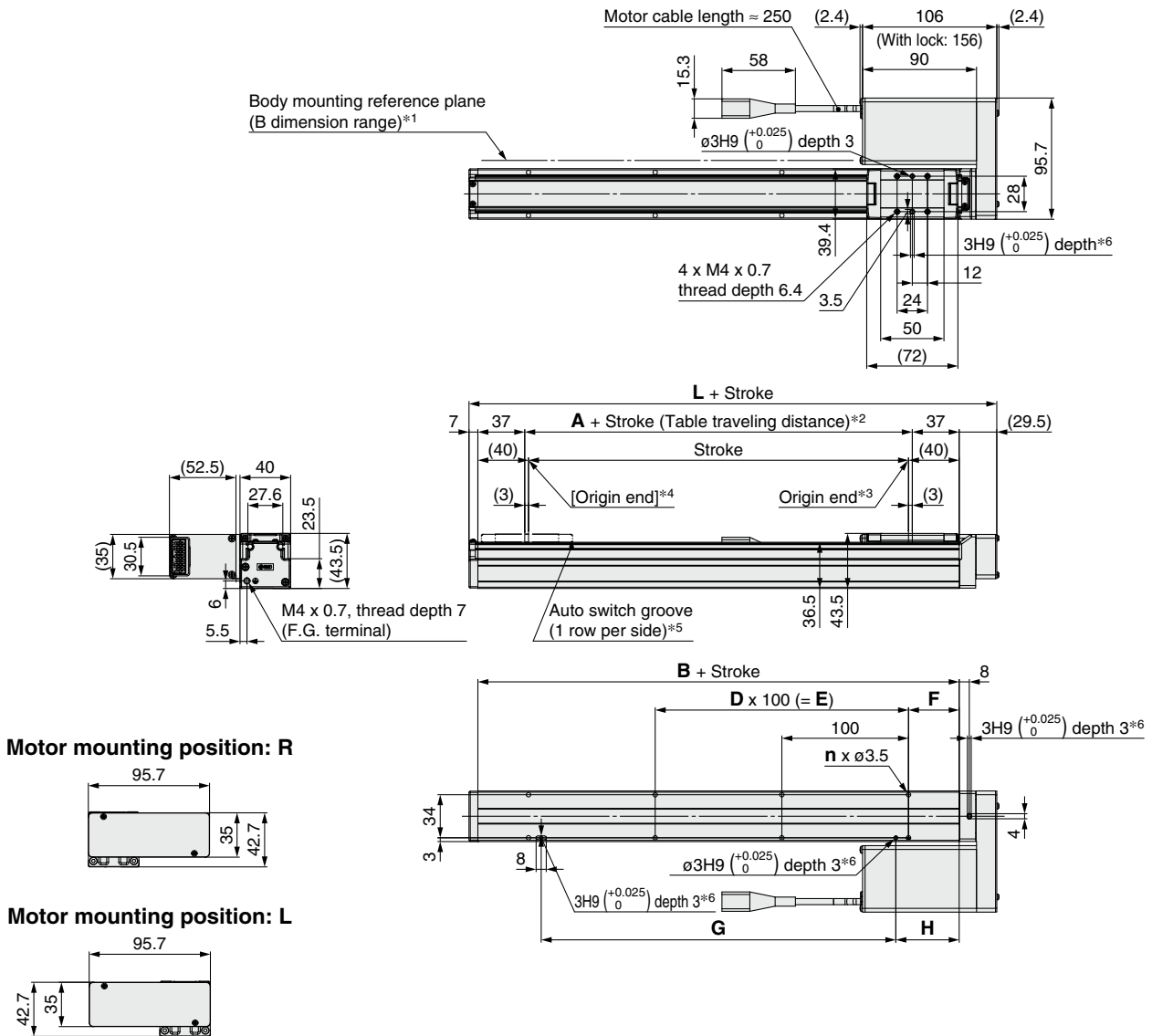
LE2FS□H Series

LE2Y□H Series

Auto Switch

## Dimensions: Right/Left Side Parallel Motor

### LE2FS16(L/R)H



\*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)

In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.

\*2 The distance the table moves according to movement instructions

Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.

\*3 Indicates the factory default origin position (0 mm)

\*4 [ ] refers to when the rotation direction reference is changed.

\*5 The applicable auto switch (D-M9□) should be ordered separately.

\*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.

\* This illustration shows the motor mounting position for the right side parallel type. Refer to the catalog for detailed dimensions of the left side parallel type.

\* The axial cable entry direction is shown.

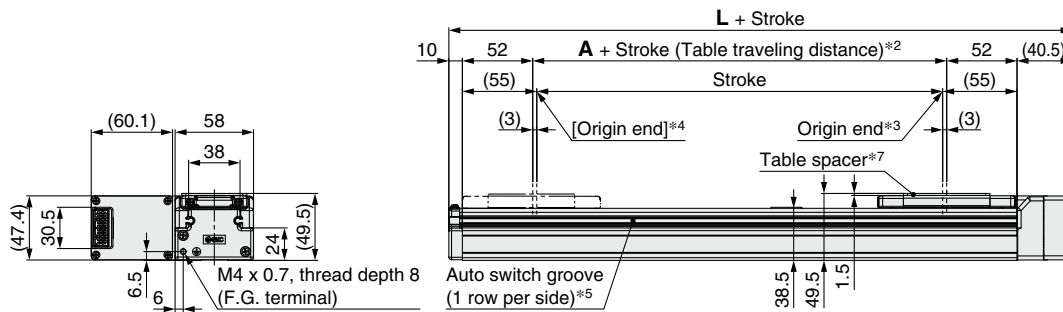
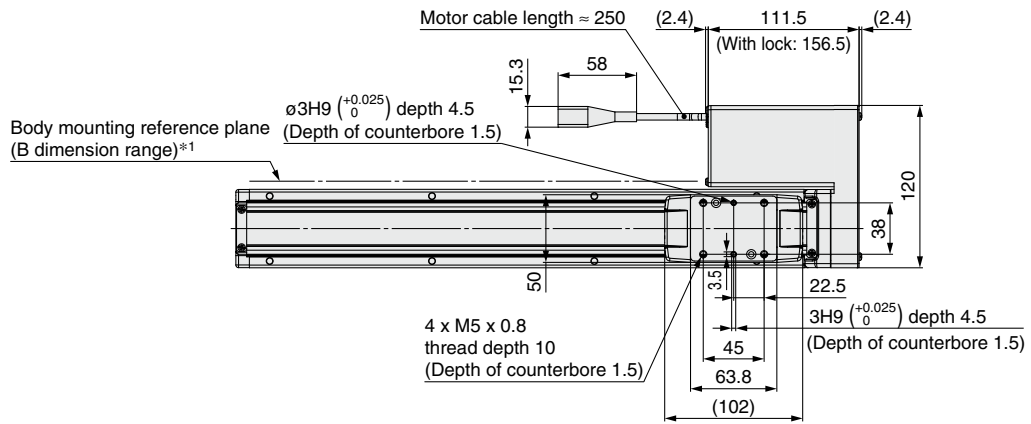
### Dimensions

Stroke	L	A	B	n	D	E	F	G	H
50	116.5	6	80	4	—	—	15	80	25
100, 150				6	2	200	40	180	50
200, 250				8	3	300		280	
300, 350				10	4	400		380	
400, 450				12	5	500		480	
500									

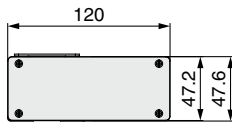


**Dimensions: Right/Left Side Parallel Motor**

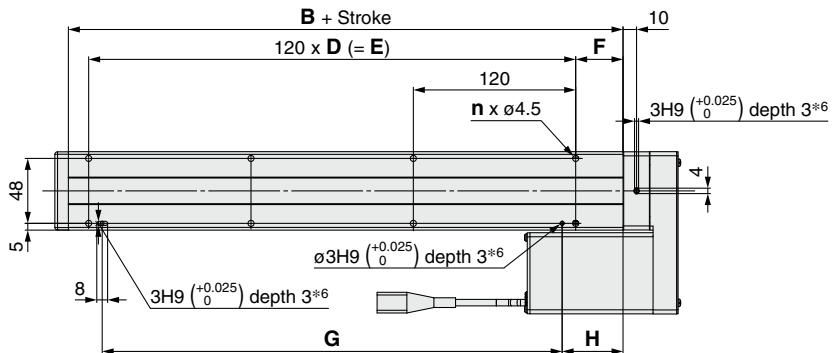
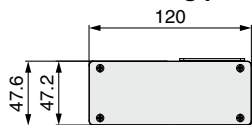
**LE2FS25(L/R)H**



**Motor mounting position: R**



**Motor mounting position: L**



- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 The distance the table moves according to movement instructions  
Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Indicates the factory default origin position (0 mm)
- \*4 [ ] refers to when the rotation direction reference is changed.
- \*5 The applicable auto switch (D-M9□) should be ordered separately.
- \*6 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \*7 The table spacer is shipped together with the product but does not come assembled.
- \* This illustration shows the motor mounting position for the right side parallel type. Refer to the catalog for detailed dimensions of the left side parallel type.
- \* The axial cable entry direction is shown.

**Dimensions**

Stroke	L	A	B	n	D	E	F	G	H
50	160.5	6	110	4	—	—	20	100	30
100, 150				6	2	240	35	220	45
200, 250				8	3	360		340	
300, 350, 400				10	4	480		460	
450, 500				12	5	600		580	
550, 600, 650				14	6	720		700	
700, 750				16	7	840		820	
800									

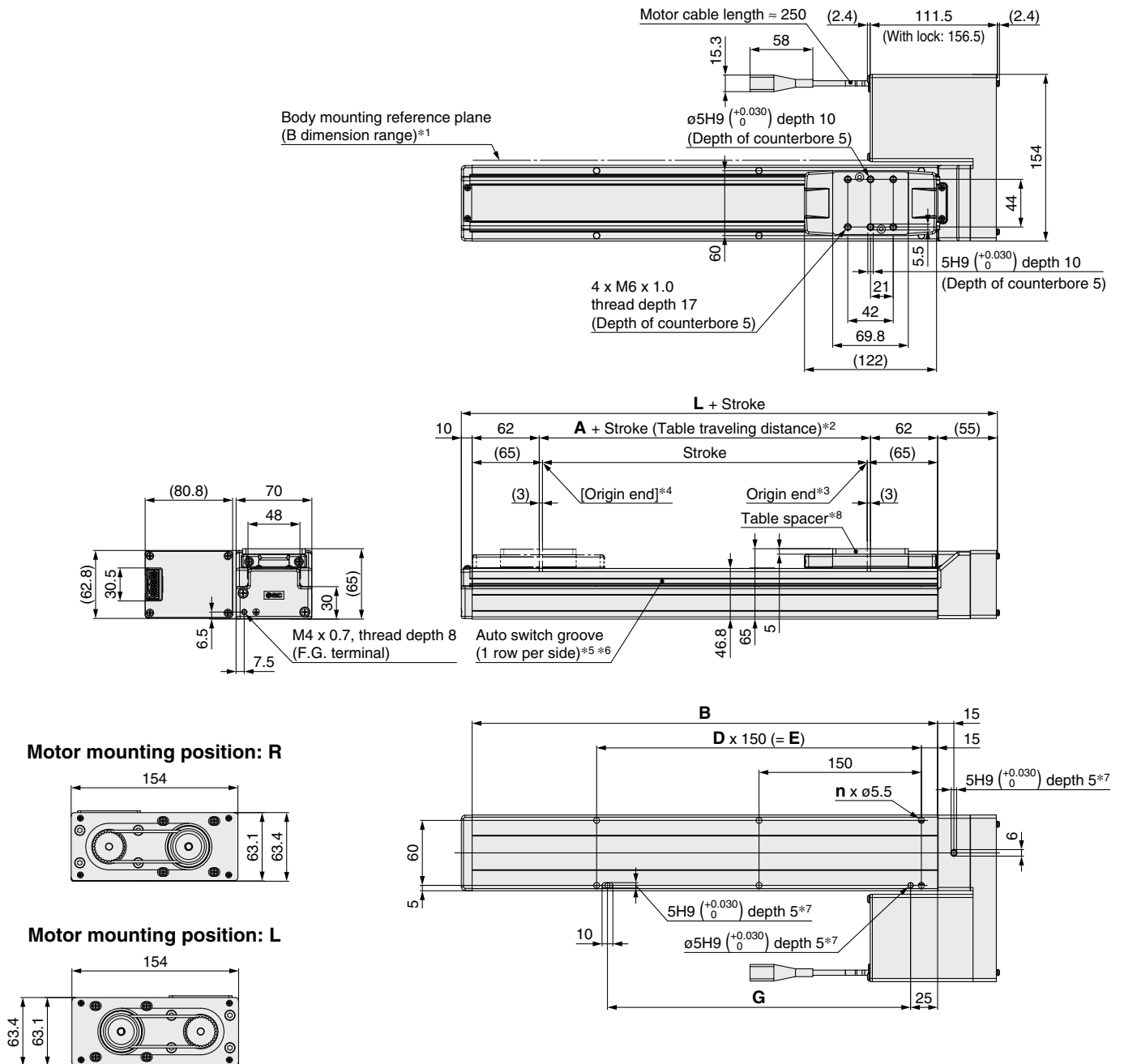
Model Selection  
LE2FS□H Series  
LE2Y□H Series  
Auto Switch

# LE2FS□H Series

Battery-less Absolute (Step Motor 24 VDC)

## Dimensions: Right/Left Side Parallel Motor

### LE2FS32(L/R)H



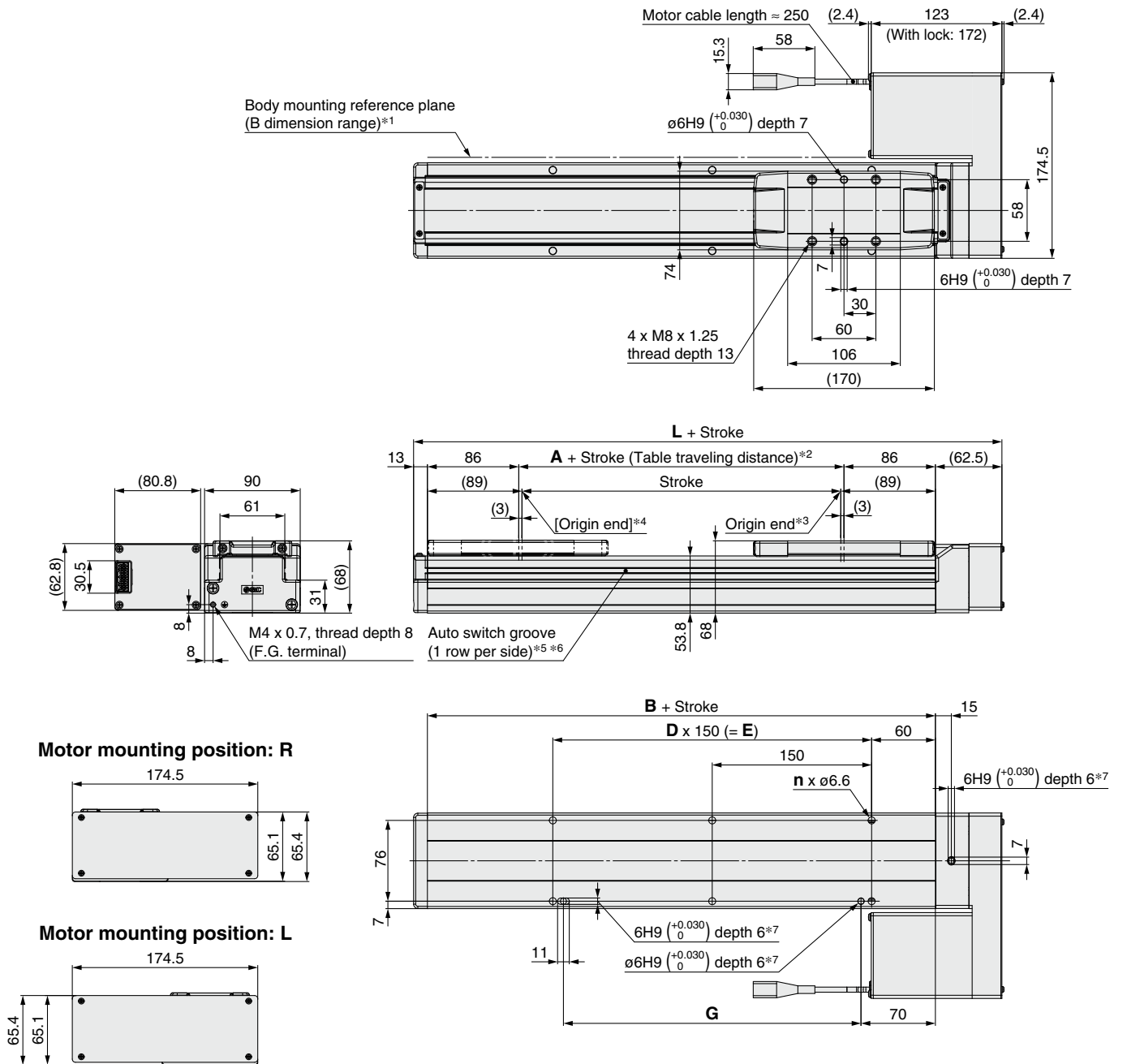
- \*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.
- \*2 The distance the table moves according to movement instructions  
Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.
- \*3 Indicates the factory default origin position (0 mm)
- \*4 [ ] refers to when the rotation direction reference is changed.
- \*5 The applicable auto switch (D-M9□) should be ordered separately.
- \*6 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.
- \*7 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.
- \*8 The table spacer is shipped together with the product but does not come assembled.
- \* This illustration shows the motor mounting position for the right side parallel type. Refer to the catalog for detailed dimensions of the left side parallel type.
- \* The axial cable entry direction is shown.

### Dimensions

Stroke	L	A	B	n	D	E	G
50, 100, 150	195	6	130	4	—	—	130
200, 250, 300				6	2	300	280
350, 400, 450				8	3	450	430
500, 550, 600				10	4	600	580
650, 700, 750				12	5	750	730
800, 850, 900				14	6	900	880
950, 1000				16	7	1050	1030

**Dimensions: Right/Left Side Parallel Motor**

**LE2FS40(L/R)H**



\*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more. (Recommended height: 5 mm)  
 In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly protrude from the body mounting reference plane. Be sure to provide a clearance of 1 mm or more to avoid interference with workpieces, facilities, etc.  
 \*2 The distance the table moves according to movement instructions  
 Make sure that workpieces mounted on the table do not interfere with other workpieces or the facilities around the table.  
 \*3 Indicates the factory default origin position (0 mm)  
 \*4 [ ] refers to when the rotation direction reference is changed.  
 \*5 The applicable auto switch (D-M9□) should be ordered separately.  
 \*6 A switch spacer (BMY3-016) is required to secure auto switches. Please order it separately.  
 \*7 When using the positioning pin holes on the bottom, use either the one on the body side or the one on the housing side.  
 \* This illustration shows the motor mounting position for the right side parallel type. Refer to the catalog for detailed dimensions of the left side parallel type.  
 \* The axial cable entry direction is shown.

**Dimensions**

Stroke	L	A	B	n	D	E	G
150	253.5	6	178	4	—	—	130
200, 250, 300				6	2	300	280
350, 400, 450				8	3	450	430
500, 550, 600				10	4	600	580
650, 700, 750				12	5	750	730
800, 850, 900				14	6	900	880
950, 1000				16	7	1050	1030
1100, 1200				18	8	1200	1180

Model Selection

LE2FS□H Series

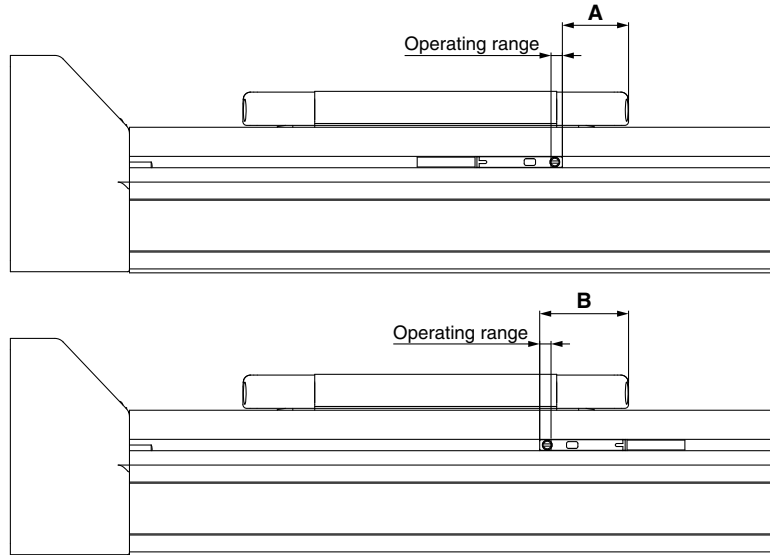
LE2Y□H Series

Auto Switch

# LE2FS□H Series Auto Switch Mounting

Detailed specifications: From p. 48

## Auto Switch Mounting Position



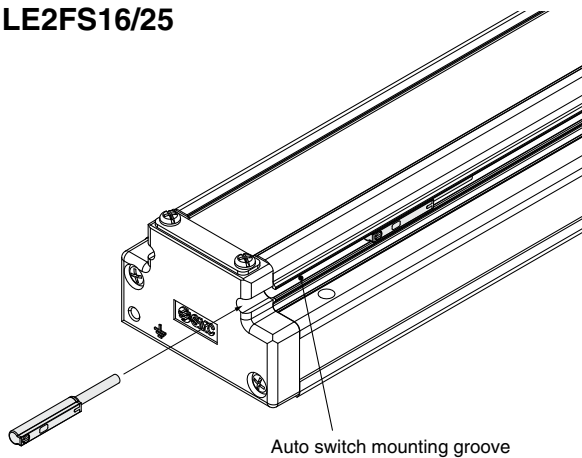
**Table 1 Auto Switch Mounting Dimensions** [mm]

Model	Size	A	B	Operating range
LE2FS	16	12.5	24.5	3.0
	25	17.5	29.5	3.0
	32	26.3	39.1	3.4
	40	32.2	45.4	3.6

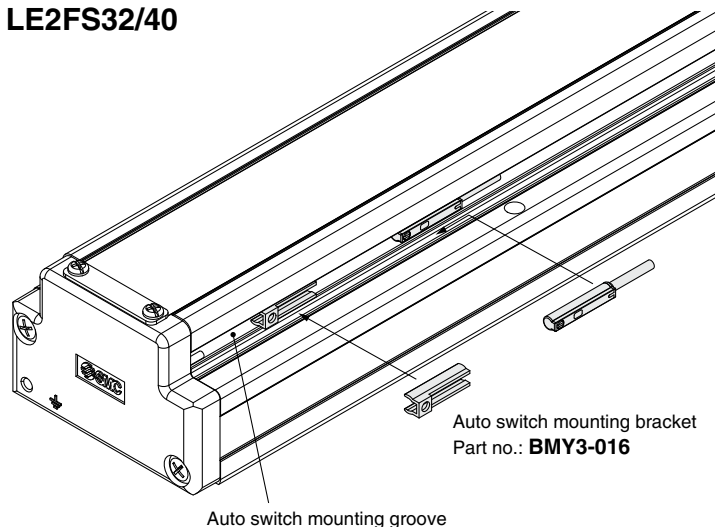
- \* The applicable auto switch is D-M9 (N/P/B) (W) (M/L/Z).
- \* The operating range is a guideline including hysteresis, not meant to be guaranteed. There may be large variations depending on the ambient environment.
- \* Adjust the auto switch after confirming the operating conditions in the actual setting.

## Auto Switch Mounting

### LE2FS16/25



### LE2FS32/40



Auto Switch Mounting Screw

Tightening torque [N·m]
0.1 to 0.15

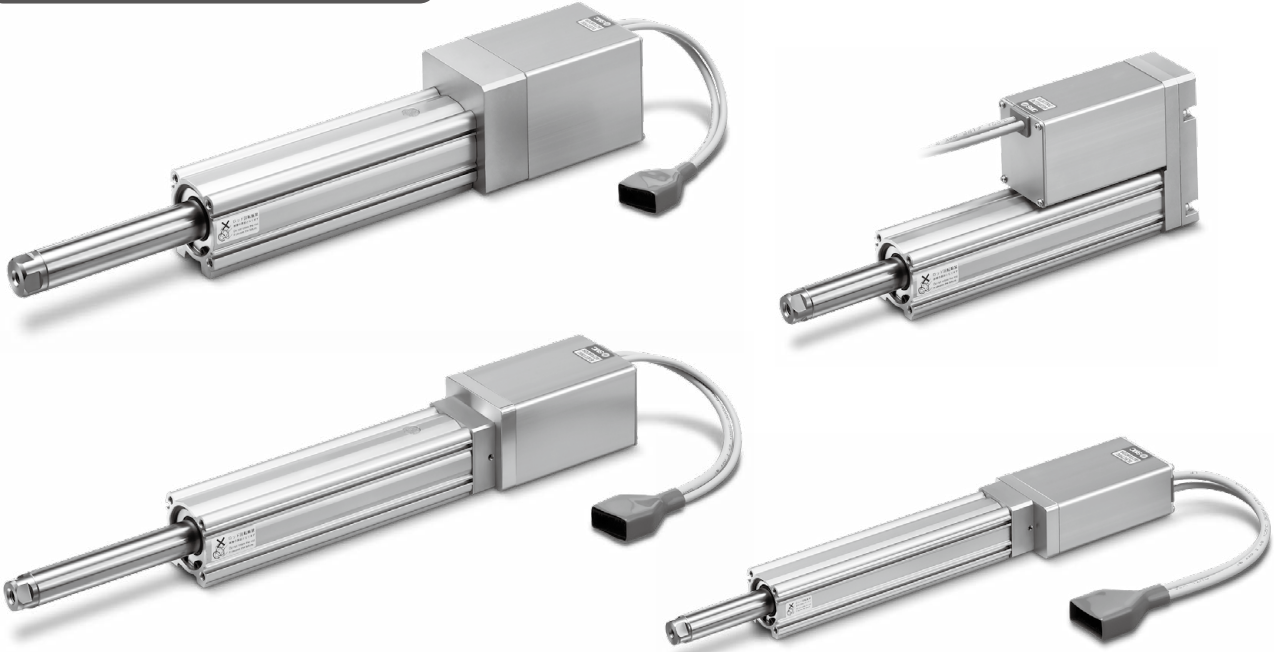
- \* The applicable auto switch is D-M9 (N/P/B) (W) (M/L/Z).
- \* When tightening the auto switch mounting screw (included with the auto switch), use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm.
- \* Prepare an auto switch mounting bracket (BMY3-016) when mounting the auto switch on to the LE2FS32/40.

## Rod Type

LE2Y□H Series

p. 29

Battery-less Absolute (Step Motor 24 VDC)



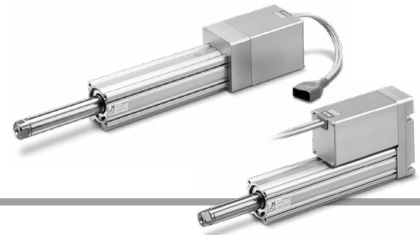
Model Selection

LE2FS□H Series

LE2Y□H Series

Auto Switch

# Model Selection



## Selection Procedure

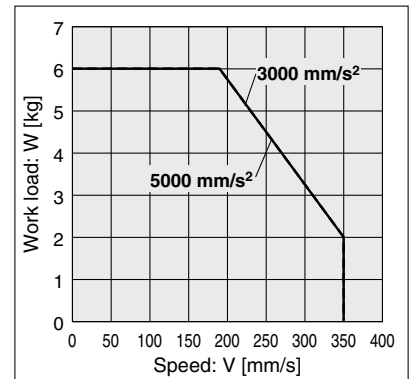
### Positioning Control Selection Procedure

- Step 1** Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

### Selection Example

#### Operating conditions

- Workpiece mass: 2 [kg]
- Speed: 100 [mm/s]
- Acceleration/Deceleration: 5000 [mm/s<sup>2</sup>]
- Stroke: 200 [mm]
- Workpiece mounting condition: Vertical upward  
downward transfer



<Speed-Vertical work load graph>  
(LE2Y16□HB/Step motor)

#### Step 1 Check the work load–speed. <Speed-Vertical work load graph>

Select a model based on the workpiece mass and speed while referencing the speed–vertical work load graph.

Selection example) The LE2Y16THB-200 can be temporarily selected as a possible candidate based on the graph shown on the right side.

\* It is necessary to mount a guide outside the actuator when used for horizontal transfer. When selecting the target model, refer to the horizontal work load in the specifications on page 37 and the precautions.

#### Step 2 Check the cycle time.

Calculate the cycle time using the following calculation method.

##### Cycle time:

T can be found from the following equation.

$$T = T1 + T2 + T3 + T4 \text{ [s]}$$

- T1: Acceleration time and T3: Deceleration time can be found by the following equation.

$$T1 = V/a1 \text{ [s]} \quad T3 = V/a2 \text{ [s]}$$

- T2: Constant speed time can be found from the following equation.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \text{ [s]}$$

- T4: Settling time varies depending on the conditions such as actuator types, load, and in position of the step data.  
Reference value for settling time: 0.15 s or less  
The following value is used for this calculation.

$$T4 = 0.15 \text{ [s]}$$

Calculation example)

T1 to T4 can be calculated as follows.

$$T1 = V/a1 = 100/5000 = 0.02 \text{ [s]}, \quad T3 = V/a2 = 100/5000 = 0.02 \text{ [s]}$$

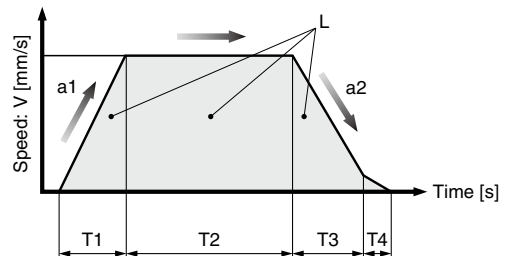
$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 100 \cdot (0.02 + 0.02)}{100} = 1.98 \text{ [s]}$$

$$T4 = 0.15 \text{ [s]}$$

The cycle time can be found as follows.

$$T = T1 + T2 + T3 + T4 = 0.02 + 1.98 + 0.02 + 0.15 = 2.17 \text{ [s]}$$

Based on the above calculation result, the LE2Y16THB-200 should be selected.



- L : Stroke [mm] ... (Operating condition)
- V : Speed [mm/s] ... (Operating condition)
- a1: Acceleration [mm/s<sup>2</sup>] ... (Operating condition)
- a2: Deceleration [mm/s<sup>2</sup>] ... (Operating condition)

- T1: Acceleration time [s] ... Time until reaching the set speed
- T2: Constant speed time [s] ... Time while the actuator is operating at a constant speed
- T3: Deceleration time [s] ... Time from the beginning of the constant speed operation to stop
- T4: Settling time [s] ... Time until positioning is completed

**Selection Procedure**

**Pushing Control Selection Procedure**

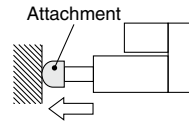


\* The duty ratio is a ratio of the operation time in one cycle.

**Selection Example**

**Operating conditions**

- Mounting condition: Horizontal (pushing)
- Attachment weight: 0.2 [kg]
- Pushing force: 40 [N]
- Duty ratio: 15 [%]
- Speed: 100 [mm/s]
- Stroke: 200 [mm]



**Step 1 Check the duty ratio.**

**<Conversion table of pushing force–duty ratio>**

Select the [Pushing force] from the duty ratio while referencing the conversion table of pushing force–duty ratio.

Selection example)

Based on the table below,

- Duty ratio: 15 [%]

The pushing force set value will be 45 [%].

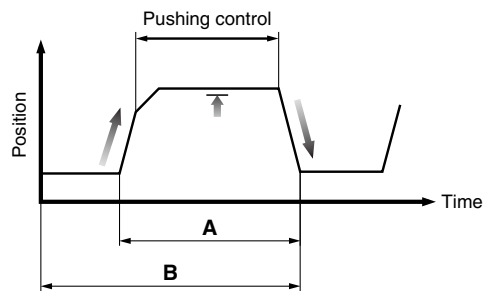
**<Conversion table of pushing force–duty ratio>**

**(LE2Y16□H/Battery-less absolute)**

Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	45 or less	100	No restriction

\* [Pushing force set value] is one of the step data input to the controller.

\* [Continuous pushing time] is the time that the actuator can continuously keep pushing.



**Duty ratio = A/B x 100 [%]**

**Step 2 Check the pushing force.**

**<Force conversion graph>**

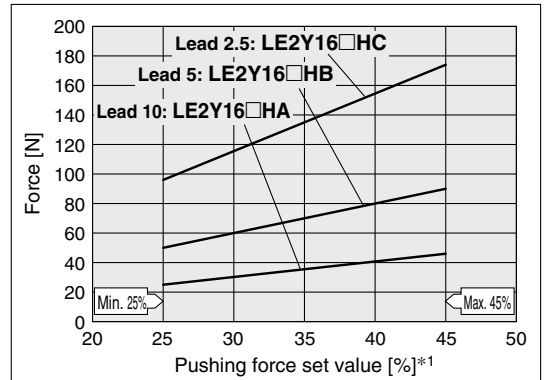
Select a model based on the pushing force set value and force while referencing the force conversion graph.

Selection example)

Based on the graph shown on the right side,

- Pushing force: 40 [N]
- Pushing force set value: 33 [%]

The **LE2Y16□HB** can be temporarily selected as a possible candidate.



**<Force conversion graph>**  
**(LE2Y16□H/Step motor)**

\*1 Set values for the controller

**Step 3 Check the lateral load on the rod end.**

**<Graph of allowable lateral load on the rod end>**

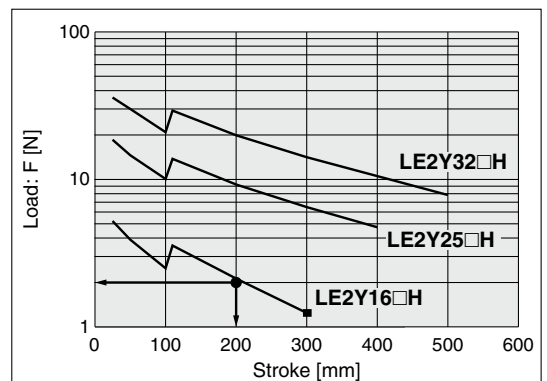
Confirm the allowable lateral load on the rod end of the actuator: LEY16□, which has been selected temporarily while referencing the graph of allowable lateral load on the rod end.

Selection example)

Based on the graph shown on the right side,

- Attachment weight: 0.2 [kg] ≈ 2 [N]
- Product stroke: 200 [mm]

The lateral load on the rod end is in the allowable range.



**<Graph of allowable lateral load on the rod end>**

**Based on the above calculation result, the LE2Y16□HB-200 should be selected.**

# LE2Y□H Series

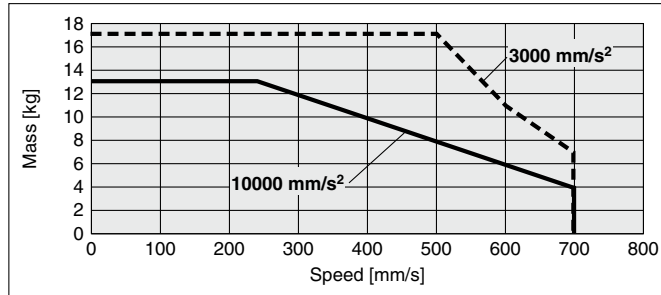
Battery-less Absolute (Step Motor 24 VDC)

## Speed-Work Load Graph (Guide)

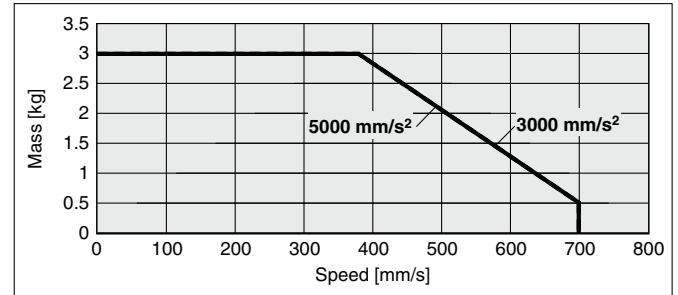
\* The following graphs show the values when the external guide is used together.

### LE2Y16□HA

#### Horizontal/Lead 10

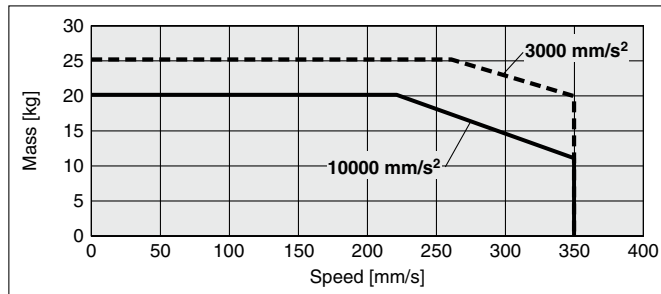


#### Vertical/Lead 10

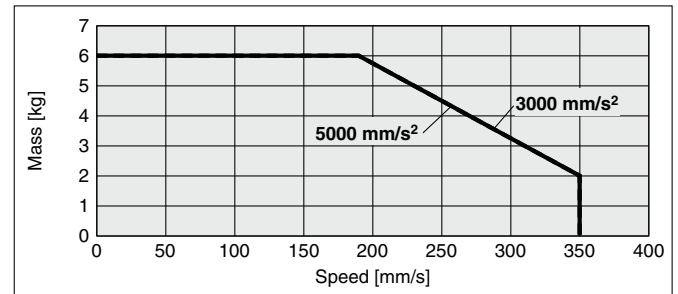


### LE2Y16□HB

#### Horizontal/Lead 5

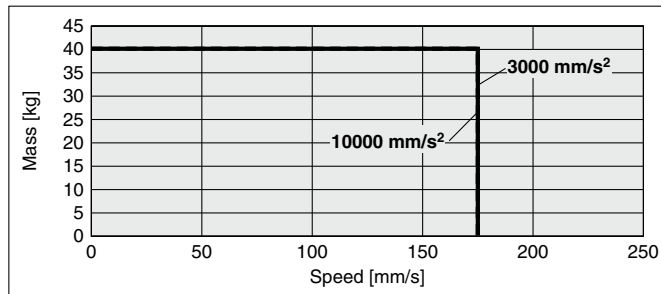


#### Vertical/Lead 5

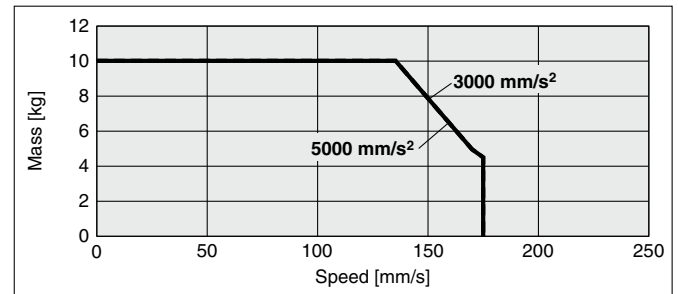


### LE2Y16□HC

#### Horizontal/Lead 2.5



#### Vertical/Lead 2.5



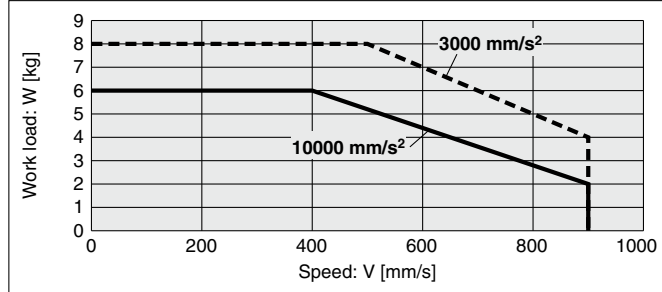


**Speed-Work Load Graph (Guide)**

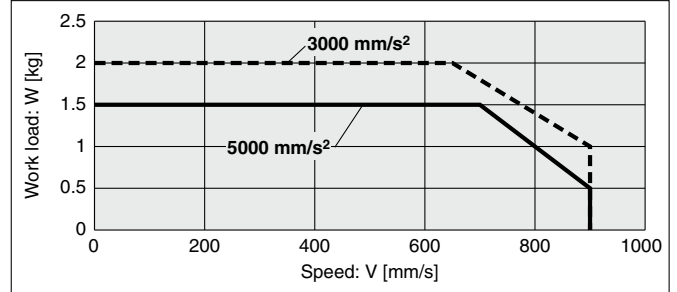
\* The following graphs show the values when the external guide is used together.

**LE2Y25□HH**

**Horizontal/Lead 20**

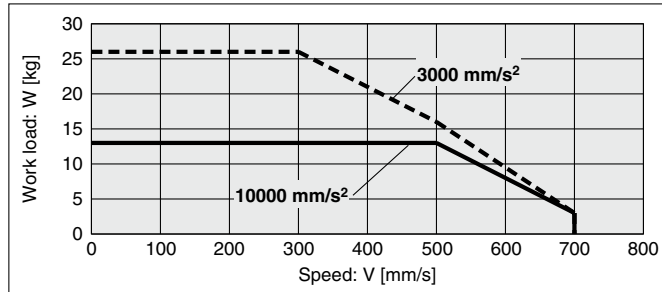


**Vertical/Lead 20**

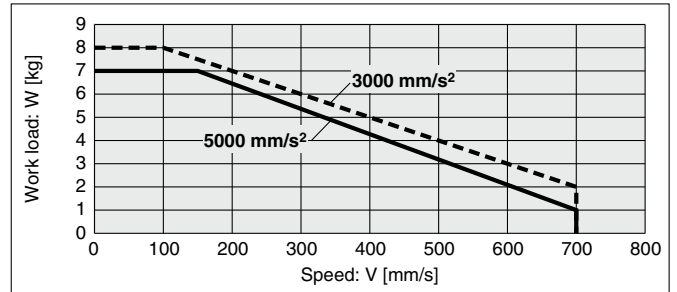


**LE2Y25□HA**

**Horizontal/Lead 12**

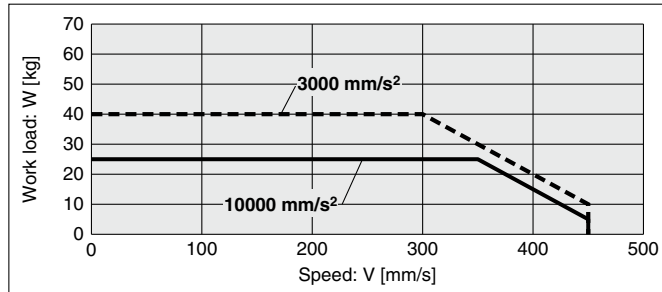


**Vertical/Lead 12**

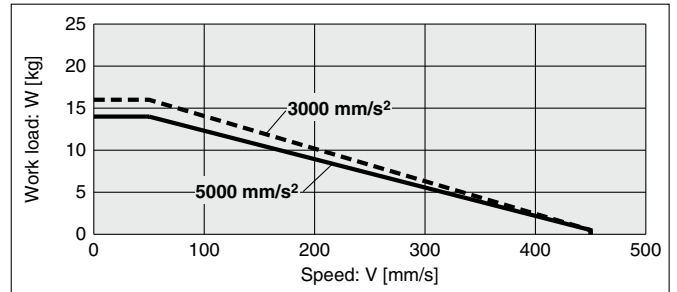


**LE2Y25□HB**

**Horizontal/Lead 6**

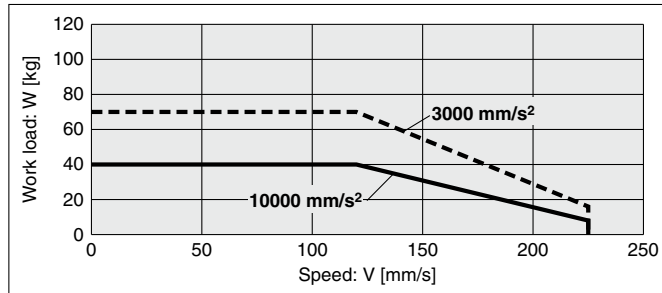


**Vertical/Lead 6**

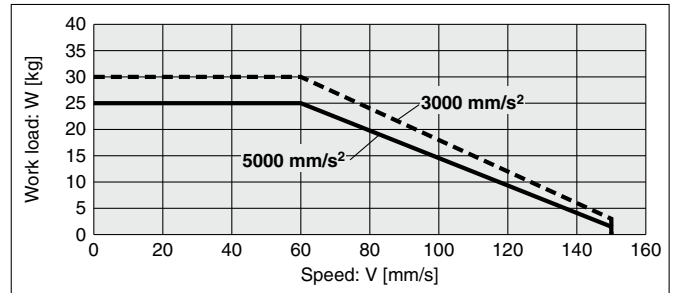


**LE2Y25□HC**

**Horizontal/Lead 3**



**Vertical/Lead 3**



Model Selection

LE2FS□H Series

LE2Y□H Series

Auto Switch

# LE2Y□H Series

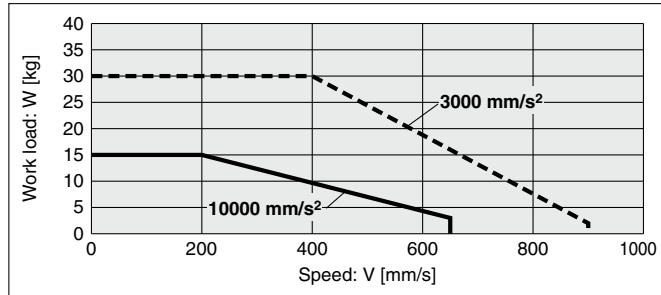
Battery-less Absolute (Step Motor 24 VDC)

## Speed-Work Load Graph (Guide)

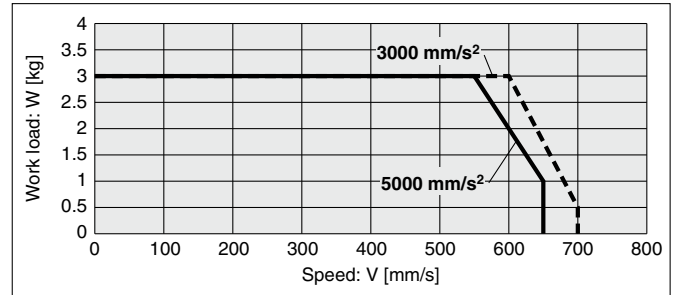
\* The following graphs show the values when the external guide is used together.

### LE2Y32□HH

#### Horizontal/Lead 24

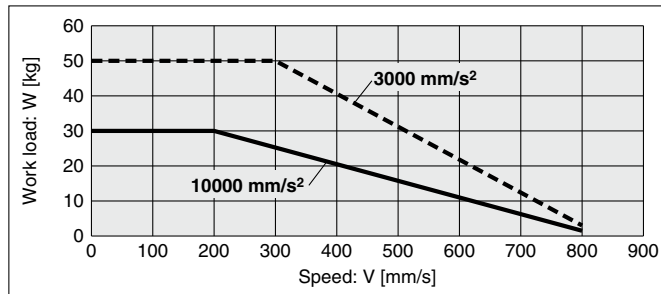


#### Vertical/Lead 24

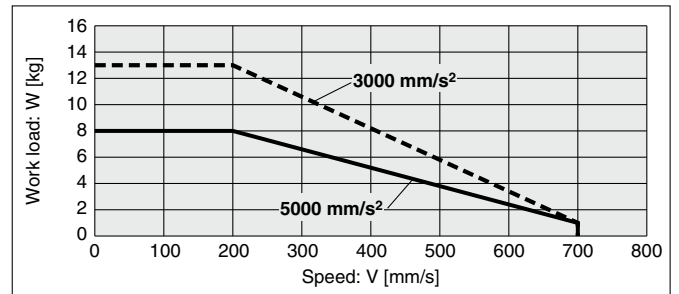


### LE2Y32□HA

#### Horizontal/Lead 16

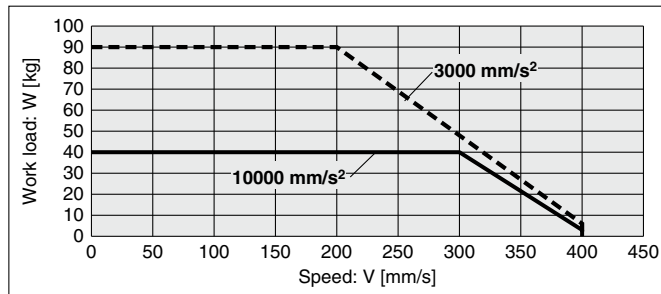


#### Vertical/Lead 16

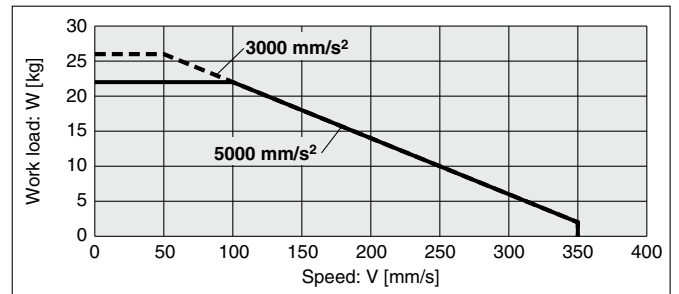


### LE2Y32□HB

#### Horizontal/Lead 8

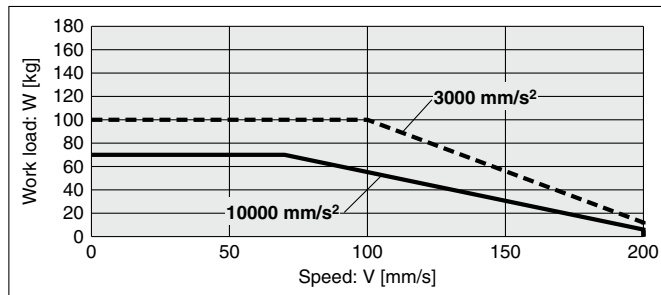


#### Vertical/Lead 8

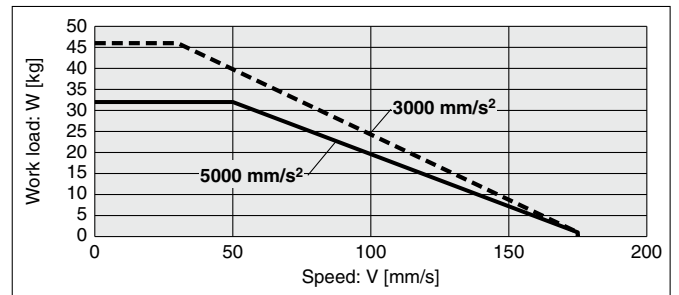


### LE2Y32□HC

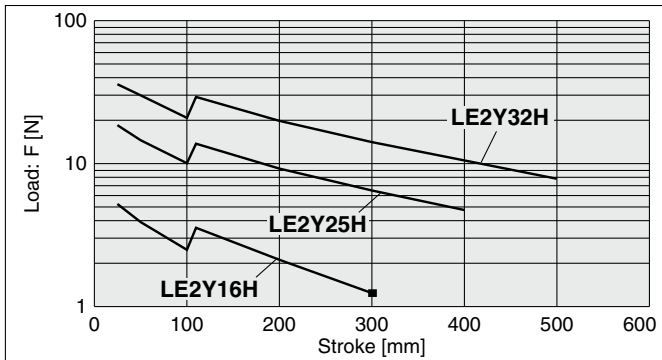
#### Horizontal/Lead 4



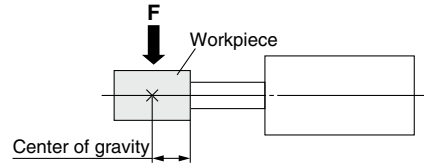
#### Vertical/Lead 4



### Graph of Allowable Lateral Load on the Rod End (Guide)



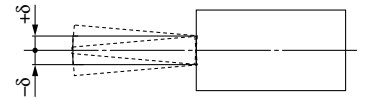
[Stroke] = [Product stroke] + [Distance from the rod end to the center of gravity of the workpiece]



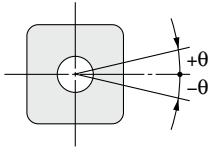
### Rod Displacement: $\delta$ [mm]

Stroke	30	50	100	150	200	250	300	350	400	450	500
Size 16	±0.4	±0.5	±0.9	±0.8	±1.1	±1.3	±1.5	—	—	—	—
Size 25	±0.3	±0.4	±0.7	±0.7	±0.9	±1.1	±1.3	±1.5	±1.7	—	—
Size 32	±0.3	±0.4	±0.7	±0.6	±0.8	±1.0	±1.1	±1.3	±1.5	±1.7	±1.8

\* The values without a load are shown.



### Non-rotating Accuracy of Rod



Size	Non-rotating accuracy $\theta$
16	±1.1°
25	±0.8°
32	±0.7°

\* Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

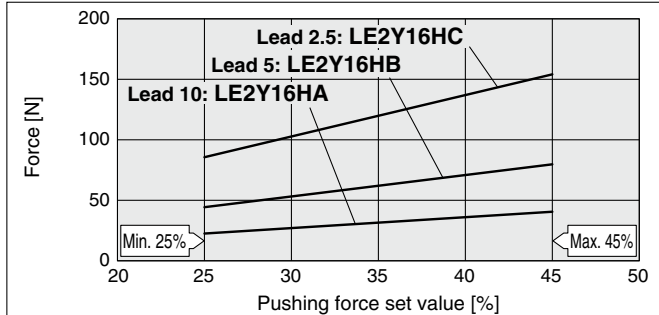
Failure to do so may result in the deformation of the non-rotating guide, abnormal auto switch responses, play in the internal guide, or an increase in the sliding resistance.

# LE2Y□H Series

Battery-less Absolute (Step Motor 24 VDC)

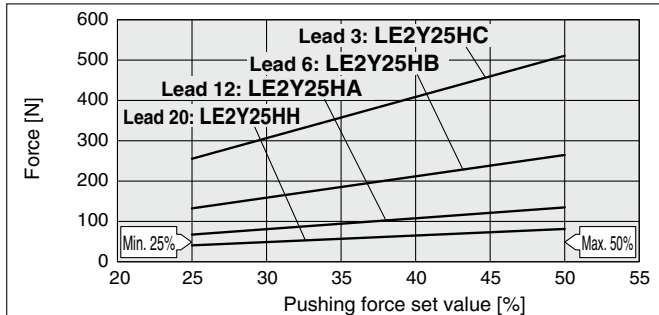
## Force Conversion Graph (Guide)

### LE2Y16□H



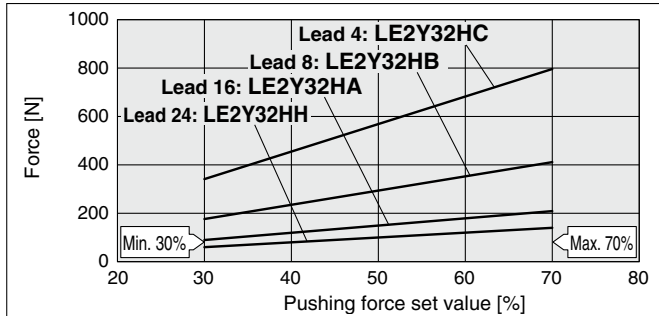
Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	45 or less	100	No restriction

### LE2Y25□H



Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	50 or less	100	No restriction

### LE2Y32□H



Ambient temperature	Pushing force set value [%]	Duty ratio [%]	Continuous pushing time [min]
40°C or less	70 or less	100	No restriction

### <Limit Values for Pushing Force and Trigger Level in Relation to Pushing Speed>

Model	Lead	Pushing speed [mm/s]	Pushing force (Setting input value)
LE2Y16□H	A/B/C	1 to 50	25 to 45%
LE2Y25□H	H/A/B/C	1 to 35	25 to 50%
LE2Y32□H	H/A/B/C	1 to 30	30 to 70%

There is a limit to the pushing force in relation to the pushing speed. If the product is operated outside of the range (low pushing force), the completion signal [INP] may be output before the pushing operation has been completed (during the moving operation).

If operating with the pushing speed below the min. speed, please check for operating problems before using the product.

### <Set Values for Vertical Upward Transfer Pushing Operations>

For vertical loads (upward), set the pushing force to the max. value shown below and operate at the work load or less.

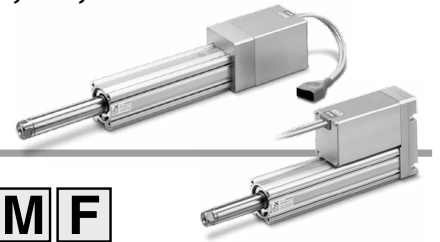
Model	LE2Y16□H			LE2Y25□H				LE2Y32□H				
	Lead	A	B	C	H	A	B	C	H	A	B	C
Work load [kg]	1	1.5	3	1	2.5	5	10	2	4.5	9	18	
Pushing force	45%			50%				70%				

Battery-less Absolute (Step Motor 24 VDC)

Compatible with Manifold Controller

Rod Type

LE2Y□H Series LE2Y16, 25, 32



How to Order

LE2Y 25 T 1 H B - 50 A M F

1 2 3 4 5 6 7 8 9

1 Size

16
25
32

2 Motor mounting position

T	Top side parallel
R	Right side parallel
L	Left side parallel
D	In-line

3 Motor cable entry direction

1	Axial
2	Right
3	Left
4	Top
5	Bottom

4 Motor type

Symbol	Type	Compatible controller
H	Battery-less absolute (Step motor 24 VDC)	JXD1

5 Lead [mm]

Symbol	LE2Y16	LE2Y25	LE2Y32
H	—	20	24
A	10	12	16
B	5	6	8
C	2.5	3	4

6 Stroke [mm]

30	30
to	to
500	500

7 Motor option

A	Without option
B	With lock

8 Rod end thread

F	Rod end female thread
M	Rod end male thread (1 rod end nut is included.)

9 Mounting

Symbol	Type	Motor mounting position	
		Parallel	In-line
S	Ends tapped Body bottom tapped	●*1	●
L	Foot bracket	●	—
F	Rod flange	●*1, *3	●
G	Head flange	●*4	—
D	Double clevis	●*2	—

- \*1 For the horizontal cantilever mounting of the rod flange or ends tapped types, use the actuator within the following stroke range.
- \*2 For the mounting of the double clevis type, use the actuator within the following stroke range.  
- LE2Y16: 50 mm or less -LE2Y25: 150 mm or less -LE2Y32: 200 mm or less
- \*3 The rod flange type is not available for the LE2Y16 when the stroke is 50 mm or less and the "With lock" motor option is selected. It is also not available for the LE2Y25/32 when the stroke is 30 mm or less and the "With lock" motor option is selected.
- \*4 The head flange type is not available for the LE2Y32.
- \* The mounting bracket is shipped together with the product but does not come assembled.

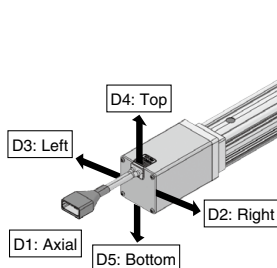
Applicable Stroke Table

Size	Stroke [mm]											Manufacturable stroke range
	30	50	100	150	200	250	300	350	400	450	500	
16	●	●	●	●	●	●	●	—	—	—	—	15 to 300
25	●	●	●	●	●	●	●	●	●	—	—	15 to 400
32	●	●	●	●	●	●	●	●	●	●	●	20 to 500

The auto switches should be ordered separately. For details, refer to pages 47 to 50.

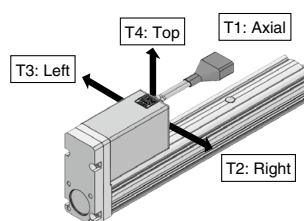
Motor Mounting Position

D: In-line



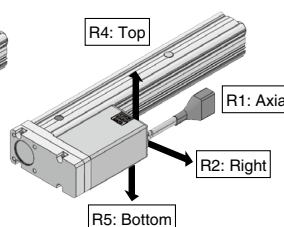
T: Top side parallel

→ T5 is not selectable.



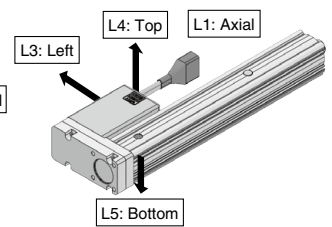
R: Right side parallel

→ R3 is not selectable.



L: Left side parallel

→ L2 is not selectable.



# LE2Y□H Series

Battery-less Absolute (Step Motor 24 VDC)

## Specifications

Model		LE2Y16□H			LE2Y25□H				LE2Y32□H					
Actuator specifications	Stroke [mm]	30 to 300			30 to 400				30 to 500					
	Work load [kg]*1	Horizontal	17	25	40	8	26	40	70	30	50	90	100	
		Vertical	3	6	10	2	8	16	30	3	13	26	46	
	Pushing force [N]**2 *3 *4		23 to 41	44 to 80	86 to 154	41 to 81	67 to 135	132 to 265	255 to 511	60 to 140	90 to 209	176 to 411	341 to 796	
	Speed [mm/s]	Stroke range	Up to 300	15 to 700	8 to 350	4 to 175	30 to 900	18 to 700	9 to 450	5 to 225	30 to 900	24 to 800	12 to 400	6 to 200
			350 to 400	—	—	—	30 to 900	18 to 600	9 to 300	5 to 150	30 to 900	24 to 640	12 to 320	6 to 160
			450 to 500	—	—	—	—	—	—	—	30 to 900	24 to 640	12 to 320	6 to 160
	Max. acceleration/ deceleration [mm/s <sup>2</sup> ]	Horizontal	10000											
		Vertical	5000											
	Pushing speed [mm/s]**5		1 to 50			1 to 35				1 to 30				
	Positioning repeatability [mm]		±0.02											
	Lost motion [mm]**6		0.1 or less											
	Lead [mm]		10	5	2.5	20	12	6	3	24	16	8	4	
	Impact/Vibration resistance [m/s <sup>2</sup> ]**7		50/20											
Actuation type		Ball screw + Belt (LE2Y□ (T/L/R), /Ball screw (LE2Y□D□H)												
Guide type		Sliding bushing (Piston rod)												
Operating temperature range [°C]		5 to 40												
Operating humidity range [%RH]		90 or less (No condensation)												
Electric specifications	Motor size	□28			□42				□56.4					
	Motor type	Battery-less absolute (Step motor 24 VDC)												
	Encoder	Battery-less absolute												
	Power supply voltage [V]	24 VDC ±10%												
Lock unit specifications	Power [W]**8 *9	Max. power 74			Max. power 71				Max. power 93					
	Type**10	Non-magnetizing lock												
	Holding force [N]	29	59	118	47	78	157	294	75	108	216	421		
	Power [W]**9	4			8				8					
Power supply voltage [V]		24 VDC ±10%												

\*1 Horizontal: Please use an external guide (friction coefficient: 0.1 or less). The work load shows the maximum value. The actual work load and transfer speed change according to the condition of the external guide.

For the speed, acceleration, and duty ratio according to the work load, check the "Speed-Work Load Graph" in the catalog.

Vertical: If the rod orientation is vertical or radial load is applied to the rod, please use an external guide (friction coefficient: 0.1 or less). The work load represents the maximum value. The actual work load and transfer speed change according to the condition of the external guide.

For the speed, acceleration, and duty ratio according to the work load, check the "Speed-Work Load Graph" in the catalog.

The values shown in ( ) are the max. acceleration/deceleration.

Set the acceleration/deceleration speed to 10000 [mm/s<sup>2</sup>] or less for the horizontal direction and 5000 [mm/s<sup>2</sup>] or less for the vertical direction.

\*2 Pushing force accuracy is ±20% (F.S.).

\*3 The pushing force set values for LE2Y16□H are 25% to 45%, for LE2Y25□H are 25% to 50%, and for LE2Y32□H are 30% to 70%.

The pushing force values change according to the duty ratio and pushing speed. Check the "Force Conversion Graph" in the catalog.

\*4 The speed and force may change depending on the cable length, load, and mounting conditions. Furthermore, if the cable length exceeds 5 m, then it will decrease by up to 10% for each 5 m. (At 15 m: Reduced by up to 20%)

\*5 The allowable speed for pushing operation. When push conveying a workpiece, operate at the vertical work load or less.

\*6 A reference value for correcting errors in reciprocal operation

\*7 Impact resistance: No malfunction occurred when the actuator was tested with a drop tester in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. The test was performed in both an axial direction and a perpendicular direction to the lead screw. (The test was performed with the actuator in the initial state.)

\*8 Indicates the max. power during operation (excluding the controller). This value can be used for the selection of the power supply.

\*9 For an actuator with lock, add the power for the lock.

\*10 With lock only

## Weight

### Top/Right/Left Side Parallel Motor

Series	LE2Y16						
Stroke [mm]	30	50	100	150	200	250	300
Product weight [kg]	0.75	0.79	0.90	1.04	1.15	1.26	1.37

Series	LE2Y25										LE2Y32									
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	1.74	1.81	1.98	2.24	2.42	2.59	2.77	2.94	3.12	2.74	2.85	3.14	3.42	3.82	4.11	4.39	4.68	4.97	5.25	5.54

### In-line Motor

Series	LE2Y16D						
Stroke [mm]	30	50	100	150	200	250	300
Product weight [kg]	0.72	0.76	0.87	1.01	1.12	1.23	1.34

Series	LE2Y25D										LE2Y32D									
Stroke [mm]	30	50	100	150	200	250	300	350	400	30	50	100	150	200	250	300	350	400	450	500
Product weight [kg]	1.60	1.67	1.84	2.10	2.28	2.45	2.63	2.80	2.98	2.55	2.66	2.95	3.23	3.63	3.92	4.20	4.49	4.78	5.06	5.35

### Additional Weight

Size		25	32
Lock/Motor cover		0.33	0.65
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot bracket (2 sets including mounting bolt)		0.08	0.14
Rod flange (including mounting bolt)		0.17	0.20
Head flange (including mounting bolt)			
Double clevis (including pin, retaining ring, and mounting bolt)		0.16	0.22

Model Selection

LE2FS□H Series

LE2Y□H Series

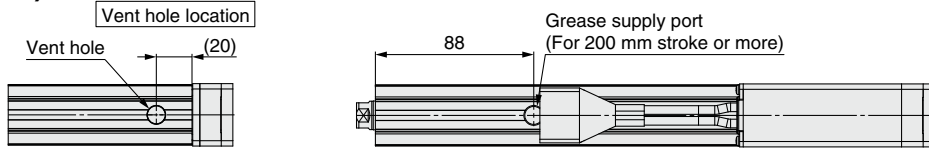
Auto Switch

# LE2Y□H Series

Battery-less Absolute (Step Motor 24 VDC)

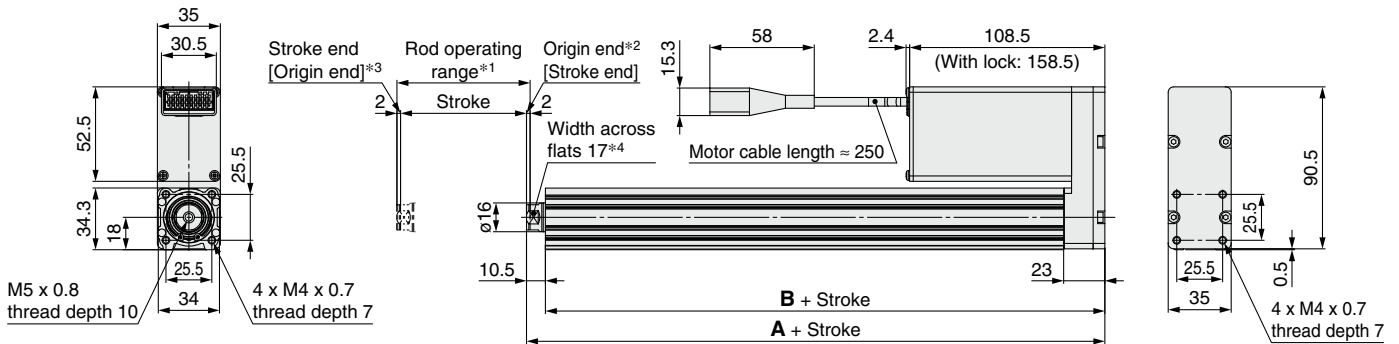
## Dimensions: Top Side Parallel Motor

### LE2Y16(T/R/L)H

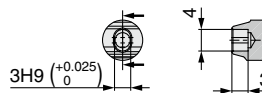
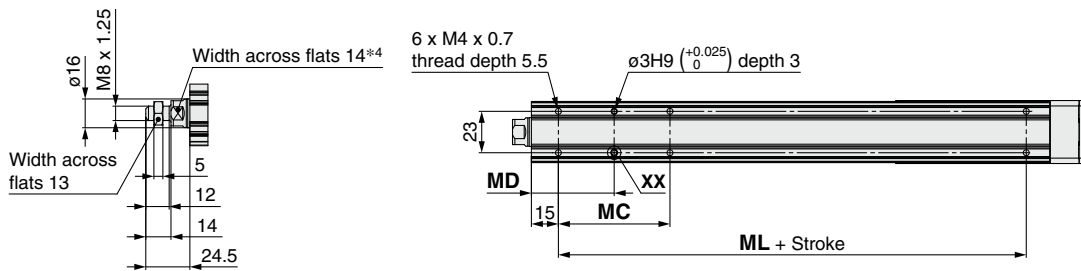


#### <Rod operating range>

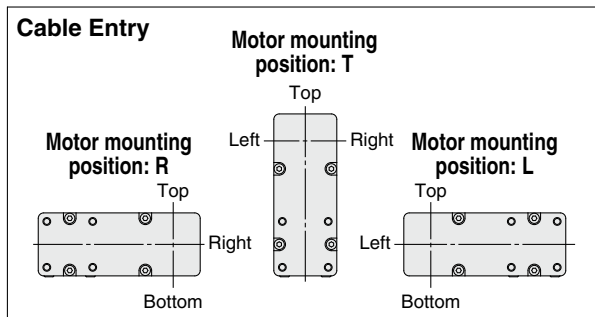
- \*1 The range of movement of the rod according to the movement instructions.  
Make sure that workpieces mounted on the rod do not interfere with other workpieces or the facilities around the rod.
- \*2 Indicates the factory default origin position (0 mm)
- \*3 [ ] refers to when the rotation direction reference is changed.



#### Rod end male thread



#### XX (2: 1)



- \*4 The direction of the rod end width across flats is different for each single unit, so it is not always the same as the direction in the drawing.
- \* For details on the mounting bracket dimensions, refer to the catalog.
- \* This illustration shows the motor mounting position for the top side parallel type. Refer to the catalog for detailed dimensions of the right/left side parallel type.
- \* The axial cable entry direction is shown.

#### Dimensions

	[mm]				
Stroke	A	B	MC	MD	ML
30	101.5	91	17	23.5	40
50, 100			32	31	
150, 200, 250, 300	121.4	111	62	46	60

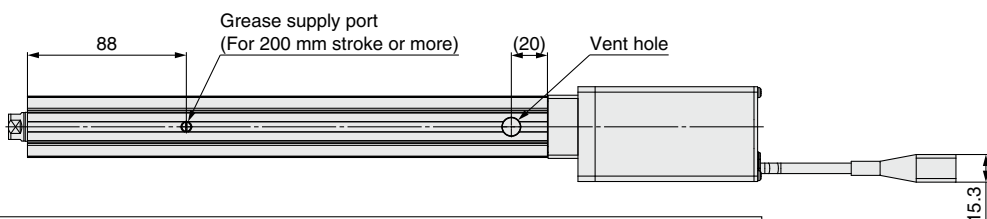




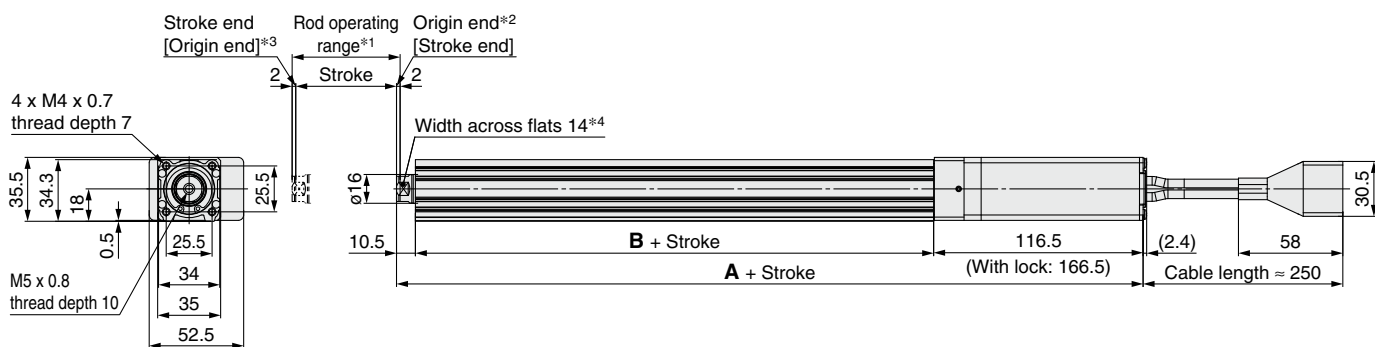


**Dimensions: In-line Motor**

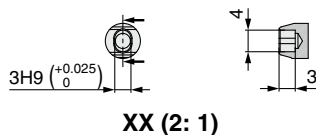
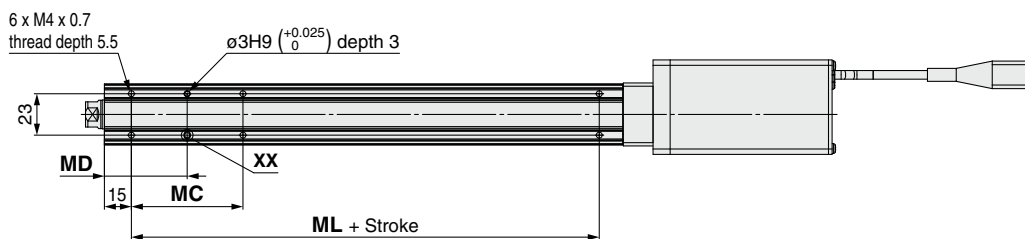
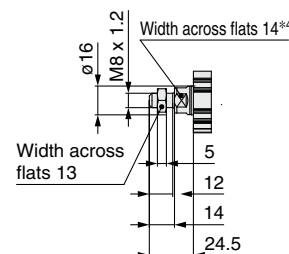
**LE2Y16DH**



**<Rod operating range>**  
 \*1 The range of movement of the rod according to the movement instructions.  
 Make sure that workpieces mounted on the rod do not interfere with other workpieces or the facilities around the rod.  
 \*2 Indicates the factory default origin position (0 mm)  
 \*3 [ ] refers to when the rotation direction reference is changed.



**Rod end male thread**



\*4 The direction of the rod end width across flats is different for each single unit, so it is not always the same as the direction in the drawing.  
 \* For details on the mounting bracket dimensions, refer to the catalog.  
 \* The axial cable entry direction is shown.

**Dimensions**

Stroke	A		B	MC	MD	ML
	Without lock	With lock				
30	195	245	68	17	23.5	40
50, 100	215	265	88	62	46	60
150, 200, 250, 300	215	265	88	62	46	60

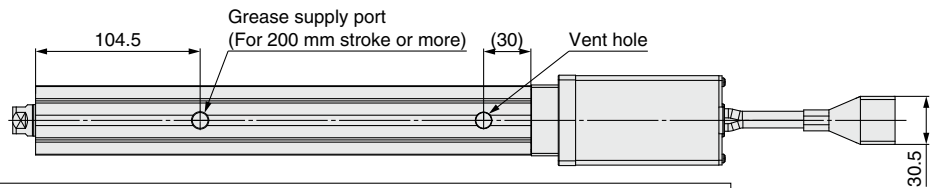
Model Selection  
LE2FS□H Series  
LE2Y□H Series  
Auto Switch

# LE2Y□H Series

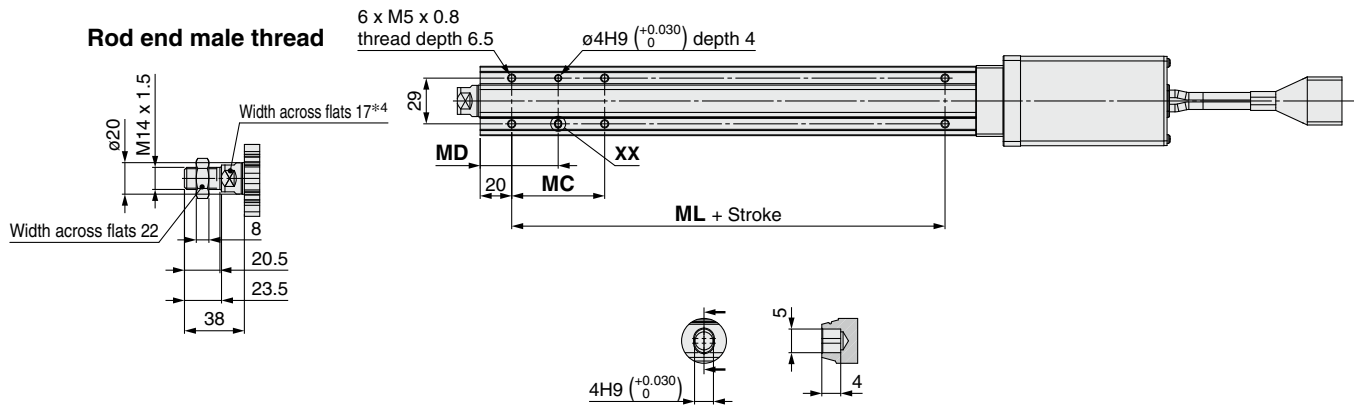
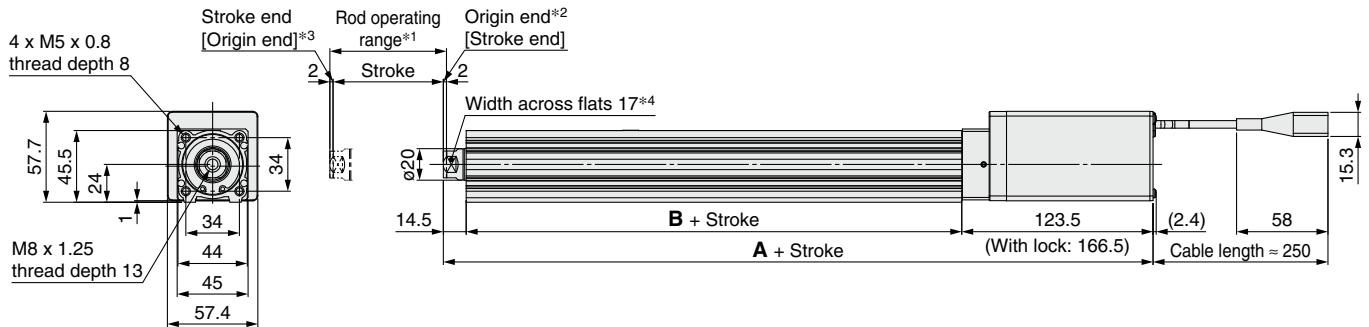
Battery-less Absolute (Step Motor 24 VDC)

## Dimensions: In-line Motor

### LE2Y25DH



**<Rod operating range>**  
 \*1 The range of movement of the rod according to the movement instructions.  
 Make sure that workpieces mounted on the rod do not interfere with other workpieces or the facilities around the rod.  
 \*2 Indicates the factory default origin position (0 mm)  
 \*3 [ ] refers to when the rotation direction reference is changed.



XX (2: 1)

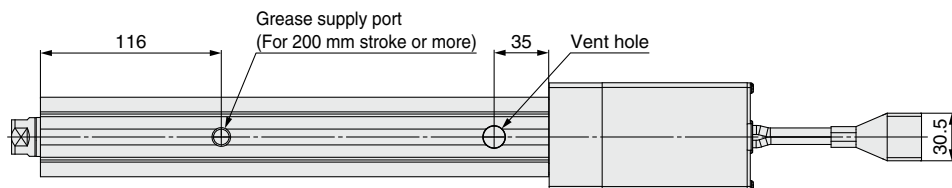
- \*4 The direction of the rod end width across flats is different for each single unit, so it is not always the same as the direction in the drawing.
- \* For details on the mounting bracket dimensions, refer to the catalog.
- \* The axial cable entry direction is shown.

### Dimensions

Stroke	A		B	MC	MD	ML
	Without lock	With lock				
30	225.5	270.5	89.5	24	32	50
50, 100	225.5	270.5	89.5	42	41	
150, 200	250.5	295.5	114.5	59	49.5	75
250, 300, 350, 400	250.5	295.5	114.5	76	58	

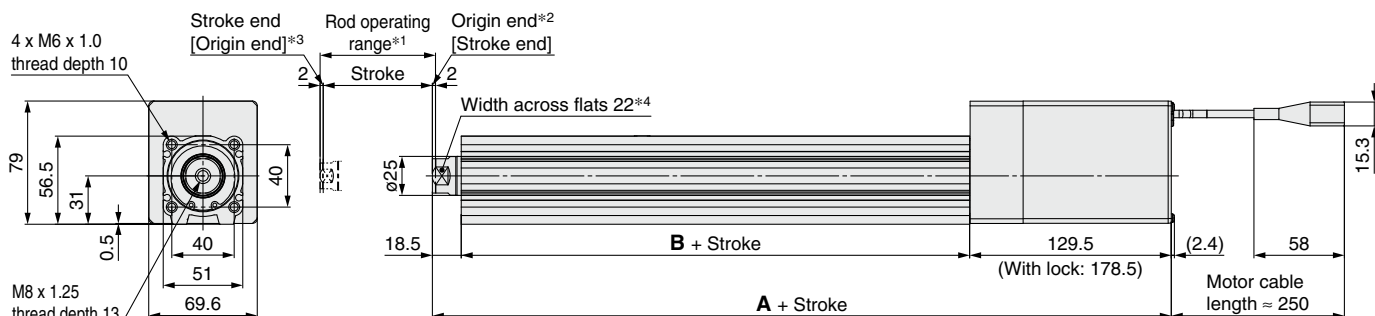
**Dimensions: In-line Motor**

**LE2Y32DH**

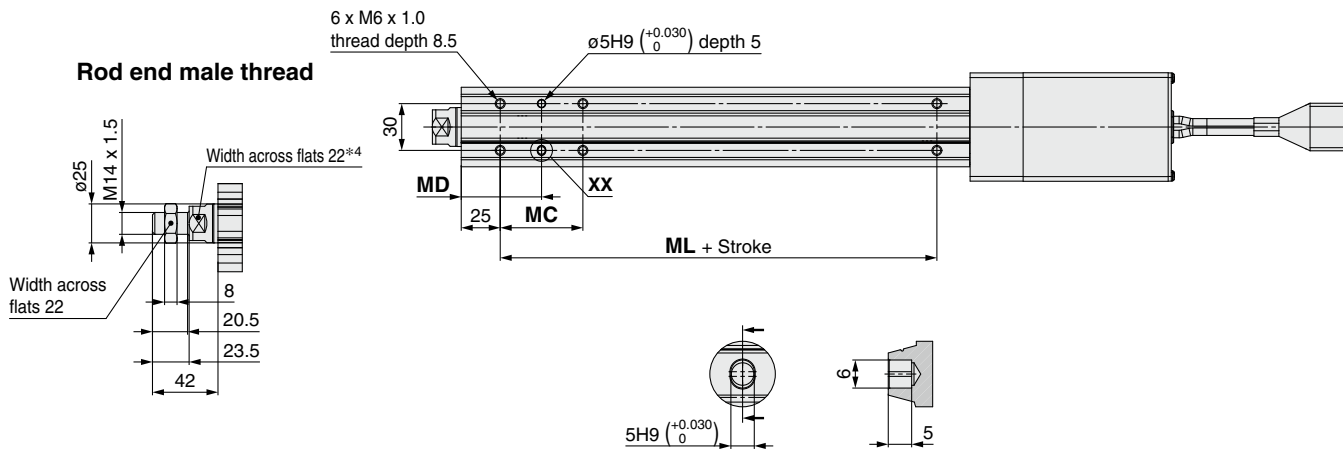


**<Rod operating range>**

- \*1 The range of movement of the rod according to the movement instructions.  
Make sure that workpieces mounted on the rod do not interfere with other workpieces or the facilities around the rod.
- \*2 Indicates the factory default origin position (0 mm)
- \*3 [ ] refers to when the rotation direction reference is changed.



**Rod end male thread**



**XX (2: 1)**

- \*4 The direction of the rod end width across flats is different for each single unit, so it is not always the same as the direction in the drawing.
- \* For details on the mounting bracket dimensions, refer to the catalog.
- \* The axial cable entry direction is shown.

**Dimensions**

Stroke	A		B	MC	MD	ML
	Without lock	With lock				
30	244	293	96	22	36	50
50, 100				36	43	
150, 200	274	323	126	53	51.5	80
250, 300, 350, 400				70	60	

Model Selection

LE2FS□H Series

LE2Y□H Series

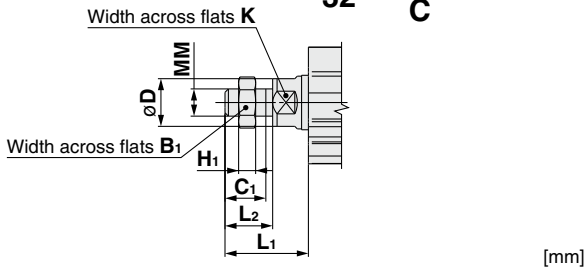
Auto Switch

# LE2Y□H Series

Battery-less Absolute (Step Motor 24 VDC)

## Dimensions

End male thread: LE2Y25□H□A□□M□  
 16 H  
 32 A  
 B  
 C

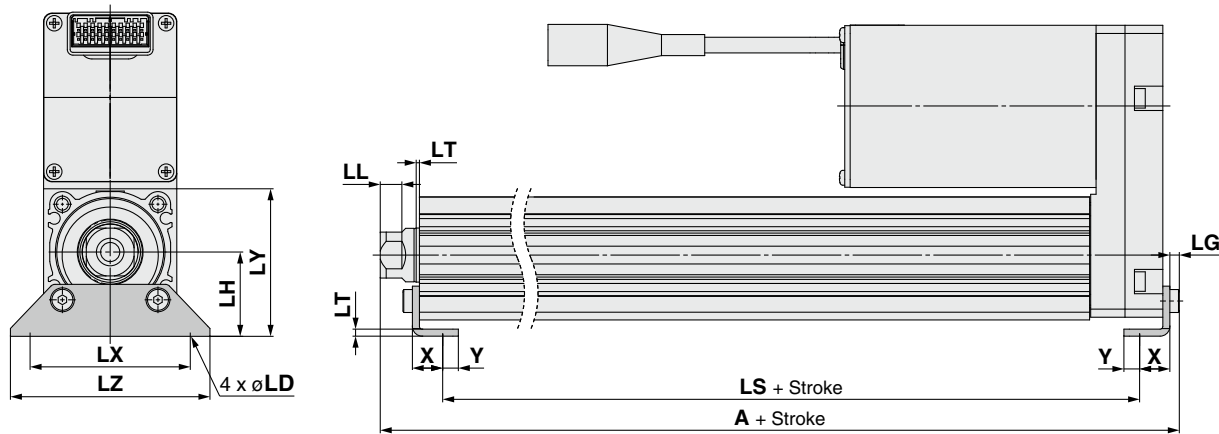


Size	B <sub>1</sub>	C <sub>1</sub>	øD	H <sub>1</sub>	K	L <sub>1</sub>	L <sub>2</sub>	MM
16	13	12	16	5	14	24.5	14	M8 x 1.25
25	22	20.5	20	8	17	38	23.5	M14 x 1.5
32	22	20.5	25	8	22	42	23.5	M14 x 1.5

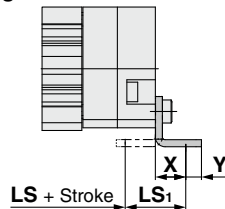
\* The L<sub>1</sub> measurement is when the unit is in the original position.  
 At this position, 2 mm at the end.

- \* Refer to the **Web Catalog** for details on the rod end nut and mounting bracket.
- \* Refer to the specific product precautions ("Handling") in the **Web Catalog** when mounting end brackets such as knuckle joint or workpieces.

Foot bracket: LE2Y25□H□A□□□L  
 16 H  
 32 A  
 B  
 C



### Outward mounting



Included parts  
 · Foot bracket  
 · Body mounting bolt

### Foot Bracket

Size	Stroke range [mm]	A	LS	LS <sub>1</sub>	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
16	30 to 100	106.1	76.7	16.1	5.4	6.6	2.8	24	2.3	48	40.3	62	9.2	5.8
	101 to 300	126.1	96.7											
25	30 to 100	136.6	98.8	19.8	8.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	161.6	123.8											
32	30 to 100	155.7	114	19.2	11.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	185.7	144											

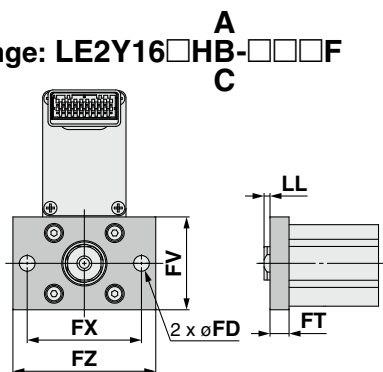
Material: Carbon steel (Chromating)

\* The A measurement is when the unit is in the original position. At this position, 2 mm at the end.

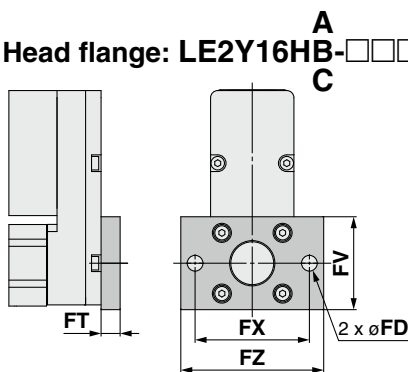
\* When the motor mounting is the right or left side parallel type, the head side foot bracket should be mounted outward.

**Dimensions**

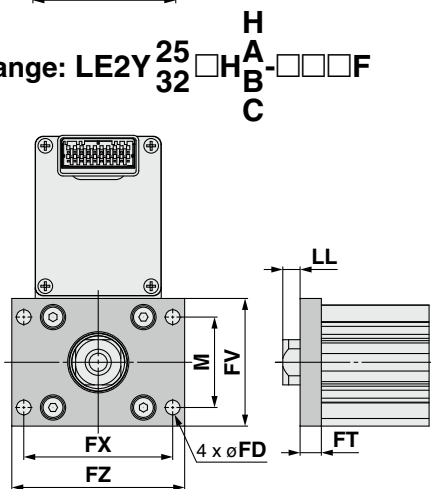
Rod flange: LE2Y16□HB-□□□F



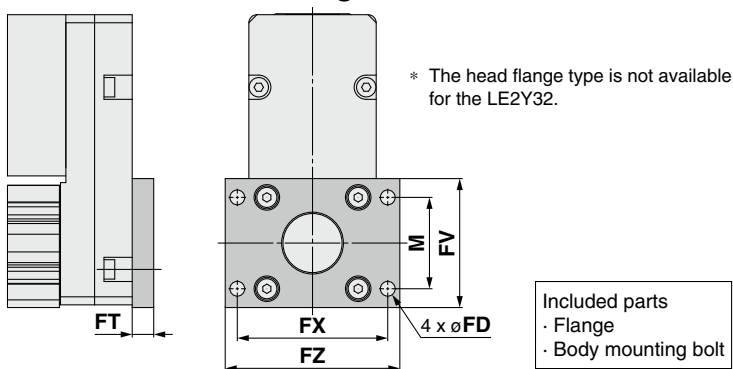
Head flange: LE2Y16HB-□□□G



Rod flange: LE2Y<sup>25</sup>/<sub>32</sub>□HB-□□□F

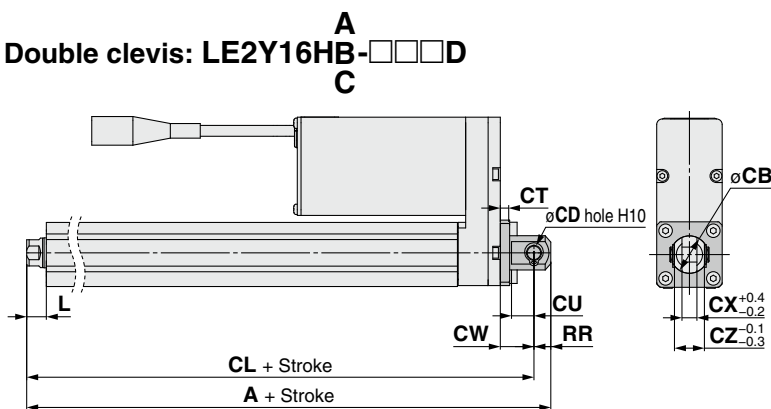


Head flange: LE2Y<sup>25</sup>/<sub>32</sub>□HB-□□□G

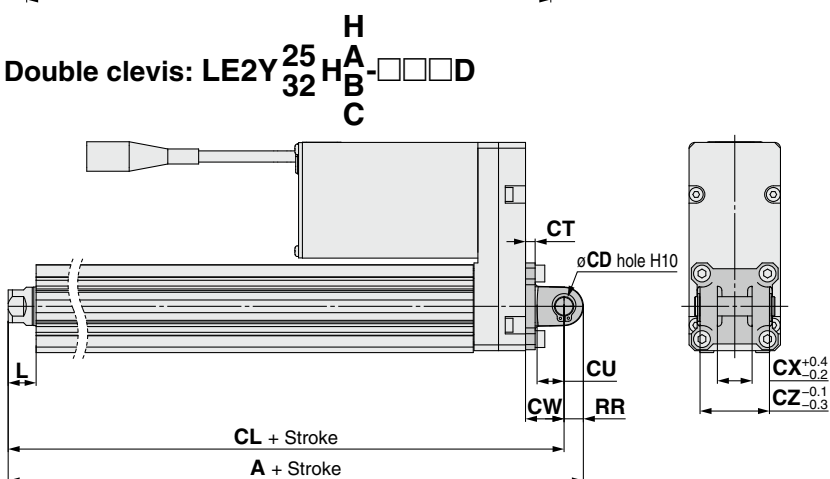


Included parts  
· Flange  
· Body mounting bolt

Double clevis: LE2Y16HB-□□□D



Double clevis: LE2Y<sup>25</sup>/<sub>32</sub>□HB-□□□D



**Rod/Head Flange** [mm]

Size	FD	FT	FV	FX	FZ	LL	M
16	6.6	8	39	48	60	2.5	—
25	5.5	8	48	56	65	6.5	34
32	5.5	8	54	62	72	10.5	40

Material: Carbon steel (Nickel plating)

Included parts  
· Double clevis  
· Body mounting bolt  
· Clevis pin  
· Retaining ring

\* Refer to the **Web Catalog** for details on the rod end nut and mounting bracket.

**Double Clevis** [mm]

Size	Stroke range [mm]	A	CL	CB	CD	CT
16	30 to 100	128	119	20	8	5
	101 to 200	160.5	150.5	—	10	5
25	30 to 100	180.5	170.5	—	10	6
	101 to 200	210.5	200.5	—	10	6

Size	Stroke range [mm]	CU	CW	CX	CZ	L	RR
16	30 to 100	12	18	8	16	10.5	9
	101 to 200	14	20	18	36	14.5	10
25	30 to 100	14	22	18	36	18.5	10
	101 to 200	14	22	18	36	18.5	10

Material: Cast iron (Coating)

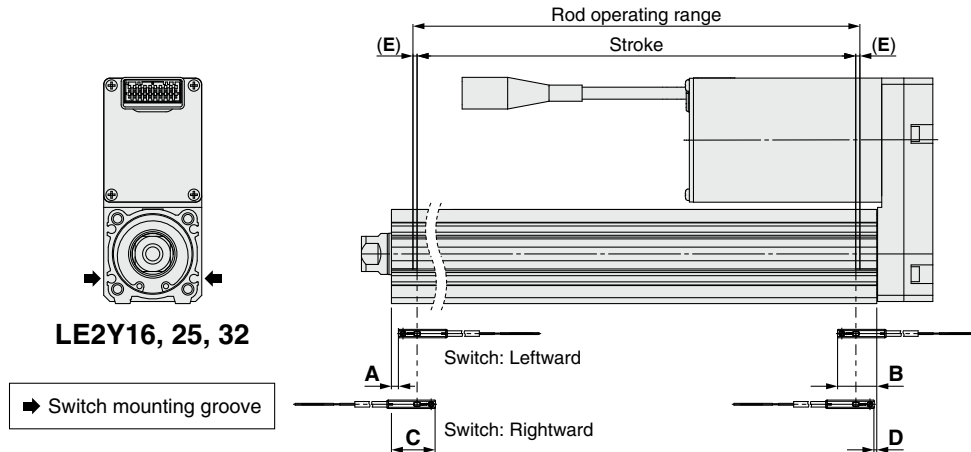
\* The A and CL measurements are when the unit is in the original position. At this position, 2 mm at the end.

For the models and dimensions of the mounting bracket and simple joint bracket, refer to the **Web Catalog** for the LEY series.

# LE2Y□H Series Auto Switch Mounting

## Auto Switch Proper Mounting Position

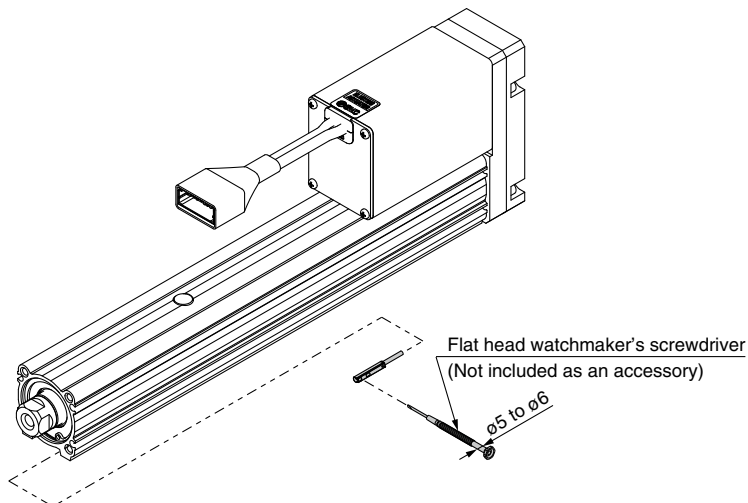
Applicable auto switch: D-M9□(V), D-M9□E(V), D-M9□W(V), D-M9□A(V)



Size	Stroke range	Auto switch position				Return to origin distance	Operating range
		Leftward mounting		Rightward mounting			
		A	B	C	D		
16	30 to 100	21.5	46.5	33.5	34.5	(2)	2.9
	105 to 300	41.5		53.5			
25	30 to 100	27	62.5	39	50.5	(2)	4.2
	105 to 400	52		64			
32	30 to 100	30.5	65.5	42.5	53.5	(2)	4.9
	105 to 500	60.5		72.5			

- \* The values in the table above are to be used as a reference when mounting auto switches for stroke end detection. Adjust the auto switch after confirming the operating conditions in the actual setting.
- \* An auto switch cannot be mounted on the same side as a motor.
- \* For LEYG series models (with a guide), an auto switch cannot be mounted on the guide attachment side (rod side).
- \* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approx.  $\pm 30\%$  dispersion). It may change substantially depending on the ambient environment.

## Auto Switch Mounting



### Tightening Torque for Auto Switch Mounting Screw [N·m]

Auto switch model	Tightening torque
D-M9□(V) D-M9□E(V) D-M9□W(V)	0.05 to 0.15
D-M9□A(V)	0.05 to 0.10

- \* When tightening the auto switch mounting screw (included with the auto switch), use a watchmaker's screwdriver with a handle diameter of 5 to 6 mm.



# Solid State Auto Switch Direct Mounting Type D-M9N(V)/D-M9P(V)/D-M9B(V)



Refer to the SMC website for details on products that are compliant with international standards.

## Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)						
Auto switch model	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standards	CE/UKCA marking					

## Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N(V)	D-M9P(V)	D-M9B(V)
Sheath	Outside diameter [mm]	ø2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.88		
Conductor	Effective area [mm <sup>2</sup> ]	0.15		
	Strand diameter [mm]	ø0.05		
Min. bending radius [mm] (Reference values)		17		

- \* Refer to the **Web Catalog** for solid state auto switch common specifications.
- \* Refer to the **Web Catalog** for lead wire lengths.

## Weight

[g]

Auto switch model		D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length	0.5 m (Nil)	8	7	7
	1 m (M)	14	13	13
	3 m (L)	41	38	38
	5 m (Z)	68	63	63

## Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.



## Caution

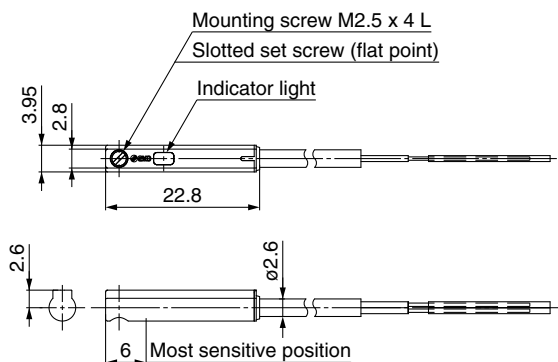
### Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

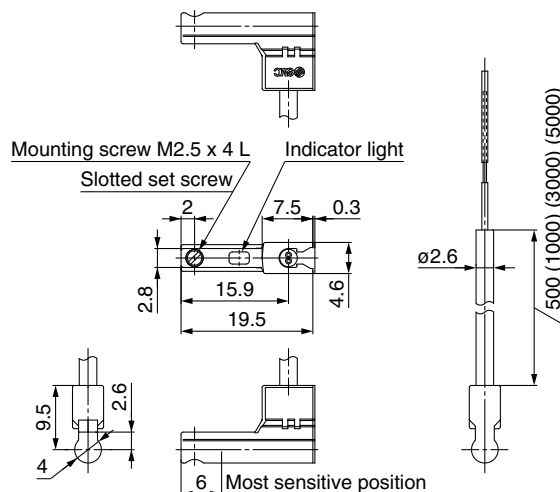
## Dimensions

[mm]

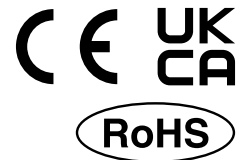
### D-M9□



### D-M9□V



# Normally Closed Solid State Auto Switch Direct Mounting Type D-M9NE(V)/D-M9PE(V)/D-M9BE(V)



Refer to the SMC website for details on products that are compliant with international standards.

## Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□E, D-M9□EV (With indicator light)						
Auto switch model	D-M9NE	D-M9NEV	D-M9PE	D-M9PEV	D-M9BE	D-M9BEV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standards	CE/UKCA marking					

### Grommet

- Output signal turns on when no magnetic force is detected.
- Can be used for the actuator adopted by the solid state auto switch D-M9 series (excluding special order products)



## Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Sheath	Outside diameter [mm]	ø2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.88		
Conductor	Effective area [mm <sup>2</sup> ]	0.15		
	Strand diameter [mm]	ø0.05		
Min. bending radius [mm] (Reference values)		17		

- \* Refer to the **Web Catalog** for solid state auto switch common specifications.
- \* Refer to the **Web Catalog** for lead wire lengths.

### Caution

#### Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

## Weight

[g]

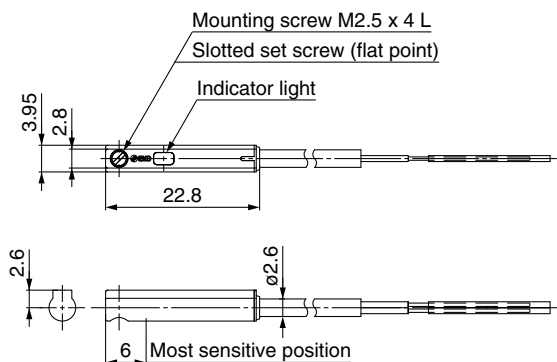
Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Lead wire length	0.5 m (Nil)	8	7	7
	1 m (M)*1	14	13	13
	3 m (L)	41	38	38
	5 m (Z)*1	68	63	63

\*1 The 1 m and 5 m options are produced upon receipt of order.

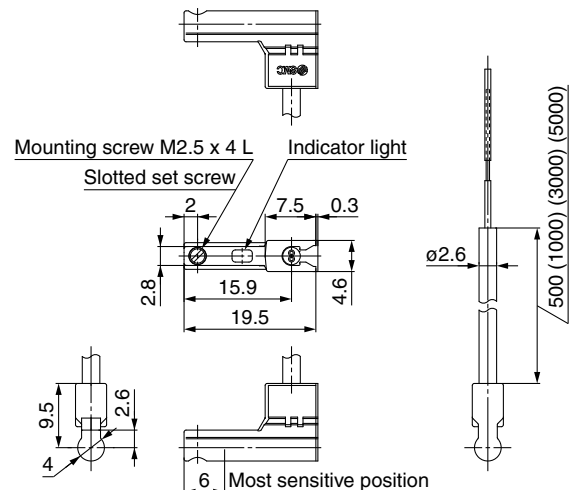
## Dimensions

[mm]

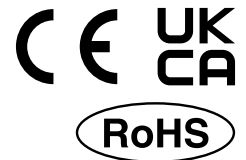
### D-M9□E



### D-M9□EV



# 2-Color Indicator Solid State Auto Switch Direct Mounting Type D-M9NW(V)/D-M9PW(V)/D-M9BW(V)



Refer to the SMC website for details on products that are compliant with international standards.

## Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)						
Auto switch model	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire			2-wire		
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating range ..... Red LED illuminates. Proper operating range ..... Green LED illuminates.					
Standards	CE/UKCA marking					

### Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- Using flexible cable as standard spec.
- The proper operating range can be determined by the color of the light. (Red → Green ← Red)



### Caution

#### Precautions

Fix the auto switch with the existing screw installed on the auto switch body. The auto switch may be damaged if a screw other than the one supplied is used.

## Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Sheath	Outside diameter [mm]	ø2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.88		
Conductor	Effective area [mm <sup>2</sup> ]	0.15		
	Strand diameter [mm]	ø0.05		
Min. bending radius [mm] (Reference values)		17		

- \* Refer to the **Web Catalog** for solid state auto switch common specifications.
- \* Refer to the **Web Catalog** for lead wire lengths.

## Weight

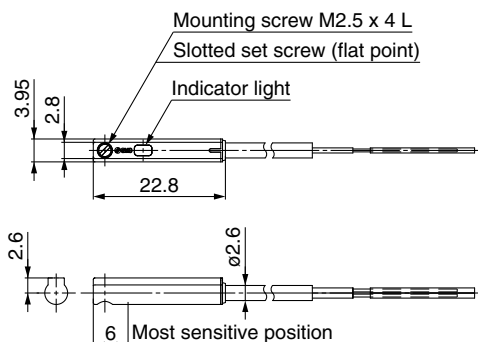
[g]

Auto switch model		D-M9NW(V)	D-M9PW(V)	D-M9BW(V)
Lead wire length	0.5 m (Nil)	8	7	7
	1 m (M)	14	13	13
	3 m (L)	41	38	38
	5 m (Z)	68	63	63

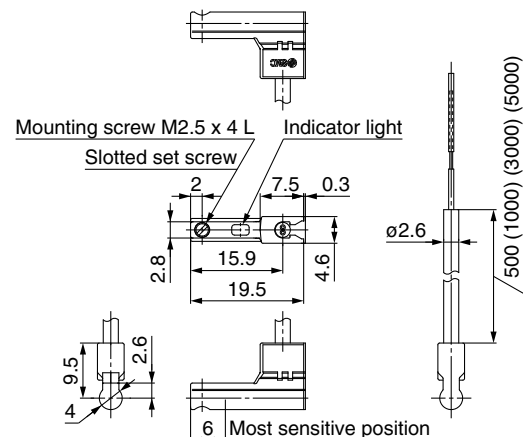
## Dimensions

[mm]

### D-M9□W





### D-M9□WV




## Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of “**Caution**,” “**Warning**” or “**Danger**.” They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)\*1), and other safety regulations.

 **Danger** : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

 **Warning**: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

 **Caution**: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

\*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components  
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components  
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements  
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1: Robots etc.

### Warning

#### 1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

#### 2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

#### 3. Do not service or attempt to remove product and machinery/equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

#### 4. Our products cannot be used beyond their specifications. Our products are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not covered.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, fuel equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

### Caution

**We develop, design, and manufacture our products to be used for automatic control equipment, and provide them for peaceful use in manufacturing industries.**

**Use in non-manufacturing industries is not covered.**

Products we manufacture and sell cannot be used for the purpose of transactions or certification specified in the Measurement Act.

The new Measurement Act prohibits use of any unit other than SI units in Japan.

### Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following “Limited warranty and Disclaimer” and “Compliance Requirements”.

Read and accept them before using the product.

#### Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.\*2)  
Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.  
This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

\*2) **Vacuum pads are excluded from this 1 year warranty.**

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

#### Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

## Safety Instructions

Be sure to read the “Handling Precautions for SMC Products” (M-E03-3) and “Operation Manual” before use.

## SMC Corporation

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Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.

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