SMC

High Performance Electric Actuator

New

RoHS CE cULus

Cycle time can be reduced.

Cycle time

Reduced by 33%
(**0.62s** ⟵ 0.93 s) **compared with the existing model**[*1]

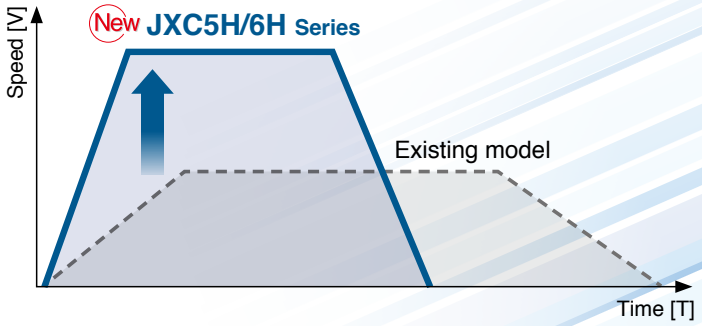
*1 When LEFS25FH-400 is operated from 0 to 400 mm.

Acceleration/ Deceleration

9800mm/s²
(**327**% increase compared with the existing model)

Max. speed

1500mm/s
(Improved by **25**% compared with the existing model)



High Performance Parallel I/O
Step Motor Controller
Higher acceleration and maximum speed can be set with the special controller (for LEFS□F Series).

JXC5H/6H Series p. 24

LEFS□F Series

NC492A
(CAT.ES100-138A)

Model Selection

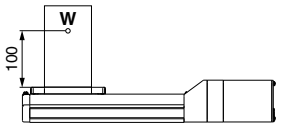
Selection Procedure

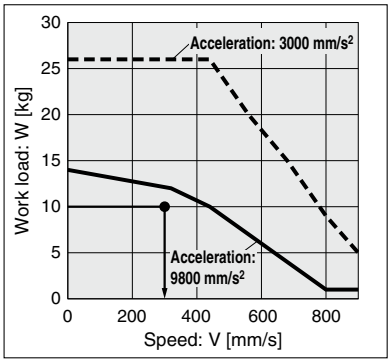
Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 10 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 9800 [mm/s^2]
- Stroke: 200 [mm]
- Mounting orientation: Horizontal upward
- Workpiece mounting condition:





<Speed–Work load graph> (LEFS25FA/Step motor)

Step 1 **Check the work load–speed. <Speed–Work load graph>** (pages 2 to 5)

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

Selection example) The **LEFS25FA-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.

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

- 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: 0.04 to 0.15 s
  [Conditions: Horizontal transfer, In position 0.5 mm (Initial value)]
  The following value is used for this calculation.

$$T4 = 0.04 \text{ [s]}$$

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

$T1 = V/a1 = 300/9800 = 0.03$ [s],

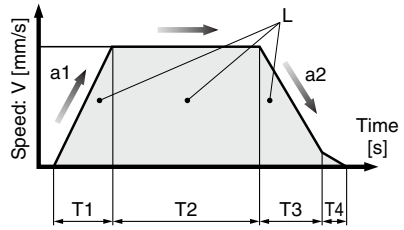
$T3 = V/a2 = 300/9800 = 0.03$ [s]

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

$T4 = 0.04$ [s]

The cycle time can be found as follows.

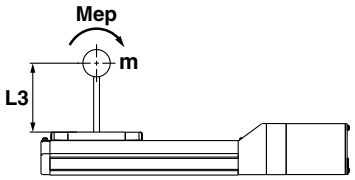
$T = T1 + T2 + T3 + T4$
$= 0.03 + 0.64 + 0.03 + 0.04$
$= \mathbf{0.74}$ **[s]**

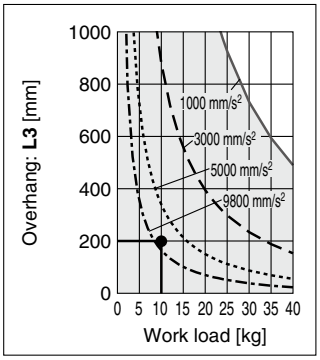


L : Stroke [mm]
••• (Operating condition)
V : Speed [mm/s]
••• (Operating condition)
a1: Acceleration [mm/s^2]
••• (Operating condition)
a2: Deceleration [mm/s^2]
••• (Operating condition)

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 guide moment.**





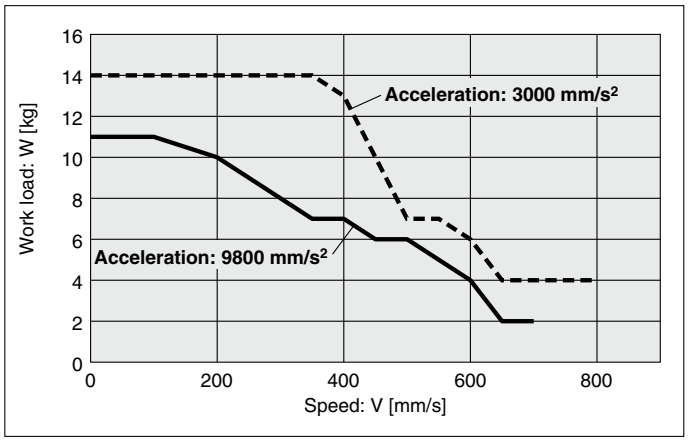
Based on the above calculation result, the LEFS25FA-200 should be selected.

Speed–Work Load Graph (Guide)

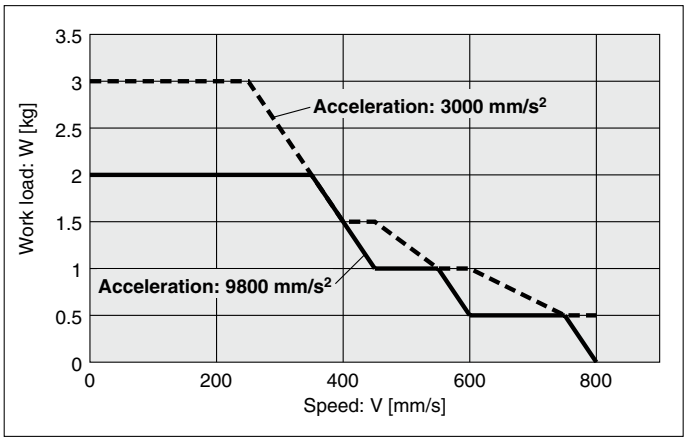
* The following graphs show the values when moving force is 100%.

LEFS16FA/Ball Screw Drive

Horizontal/Lead 10

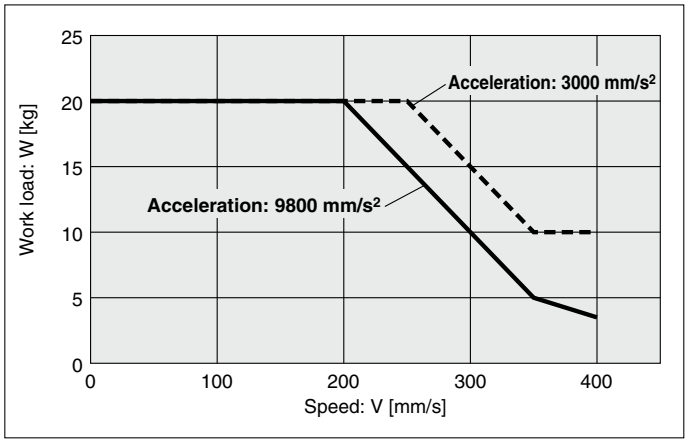


Vertical/Lead 10

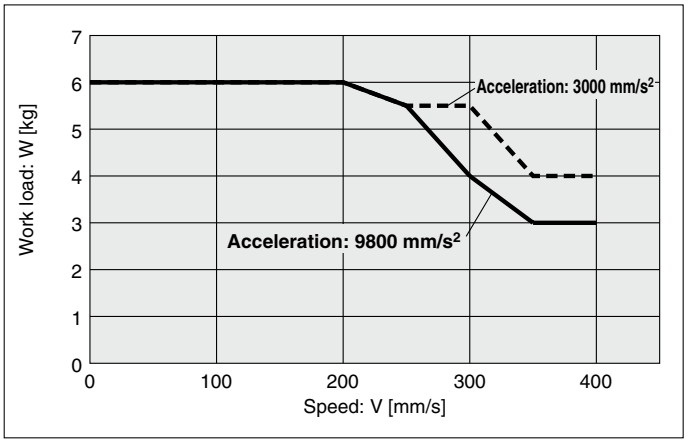


LEFS16FB/Ball Screw Drive

Horizontal/Lead 5



Vertical/Lead 5

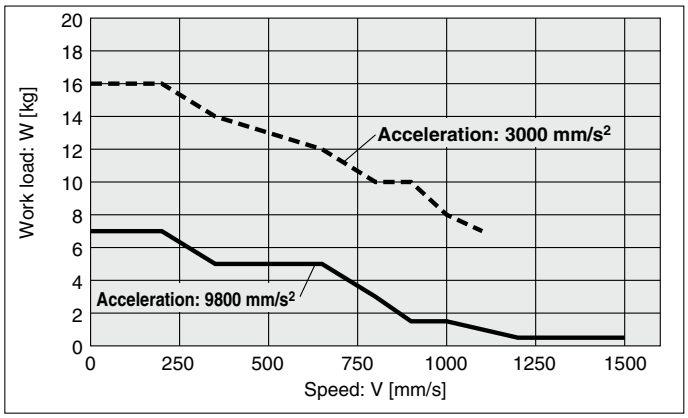


Speed–Work Load Graph (Guide)

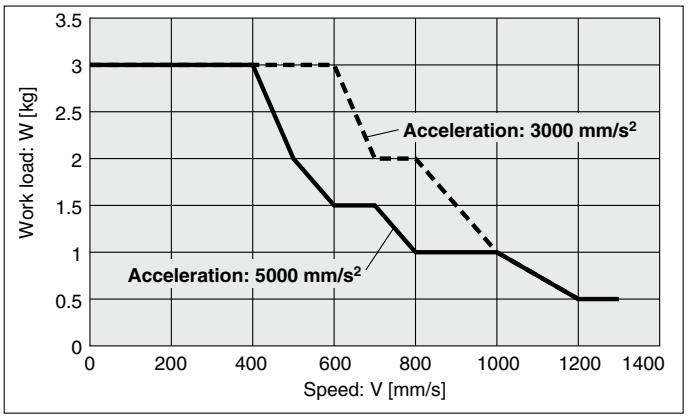
* The following graphs show the values when moving force is 100%.

LEFS25FH/Ball Screw Drive

Horizontal/Lead 20

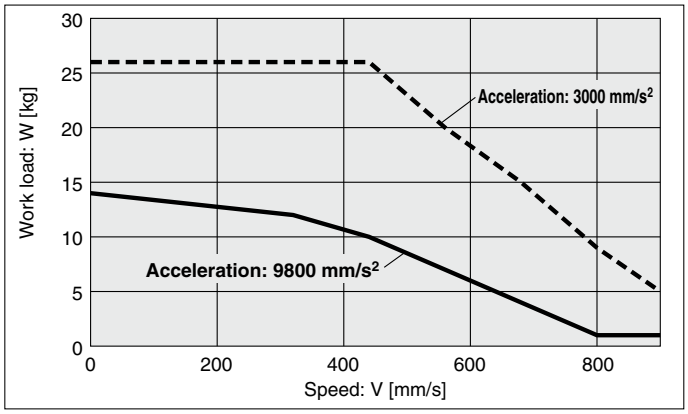


Vertical/Lead 20

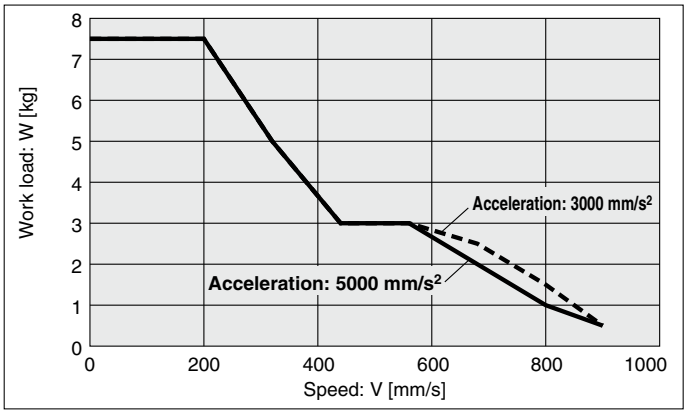


LEFS25FA/Ball Screw Drive

Horizontal/Lead 12

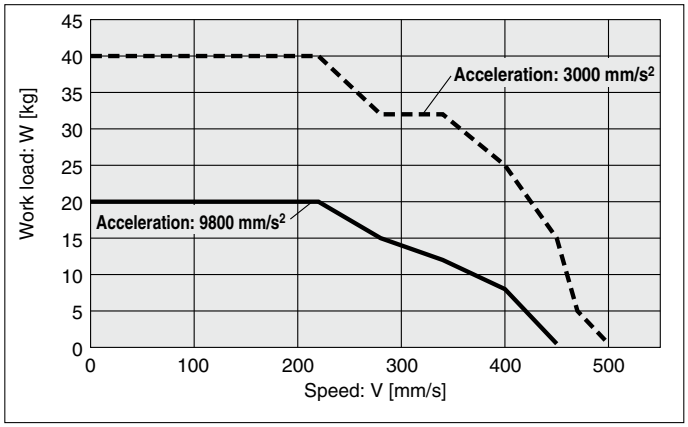


Vertical/Lead 12

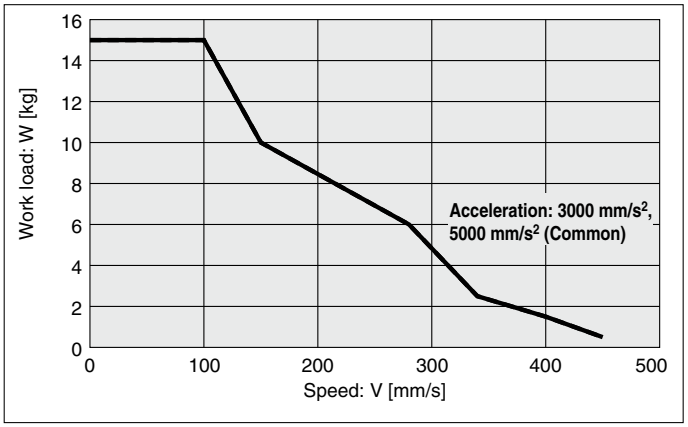


LEFS25FB/Ball Screw Drive

Horizontal/Lead 6



Vertical/Lead 6

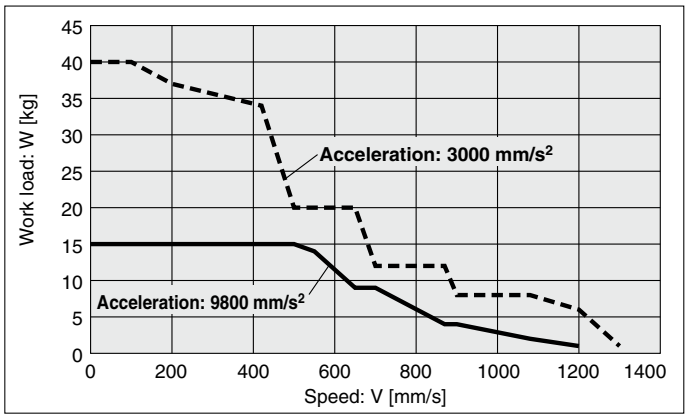


Speed–Work Load Graph (Guide)

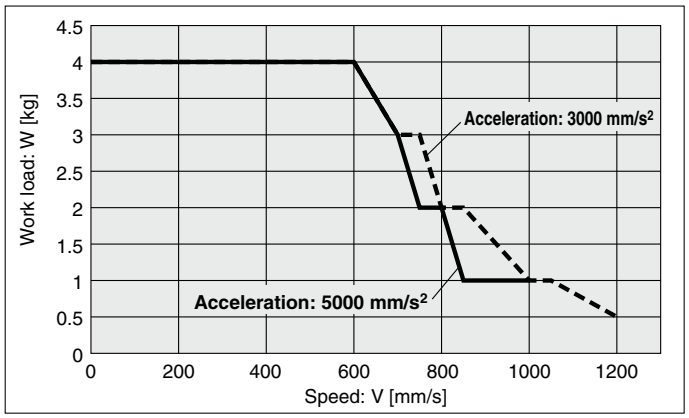
* The following graphs show the values when moving force is 100%.

LEFS32FH/Ball Screw Drive

Horizontal/Lead 24

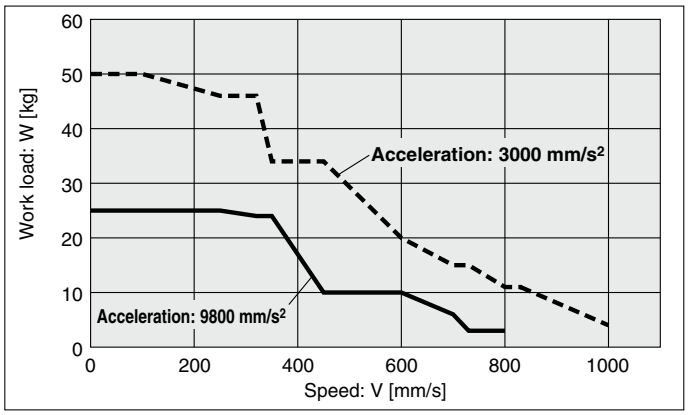


Vertical/Lead 24

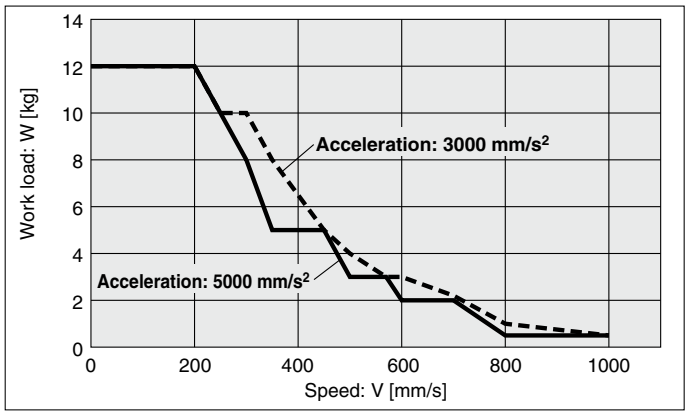


LEFS32FA/Ball Screw Drive

Horizontal/Lead 16

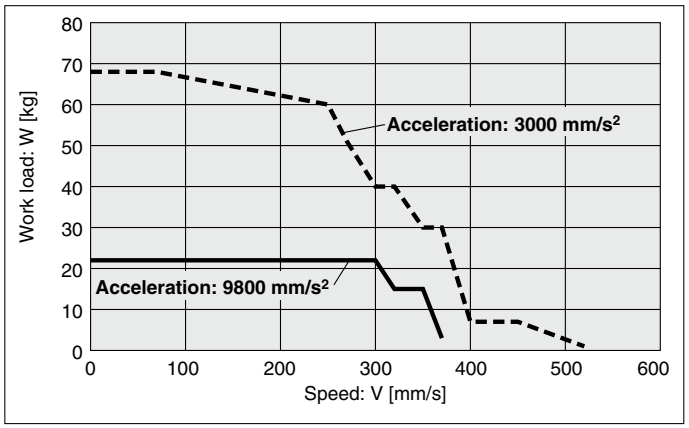


Vertical/Lead 16

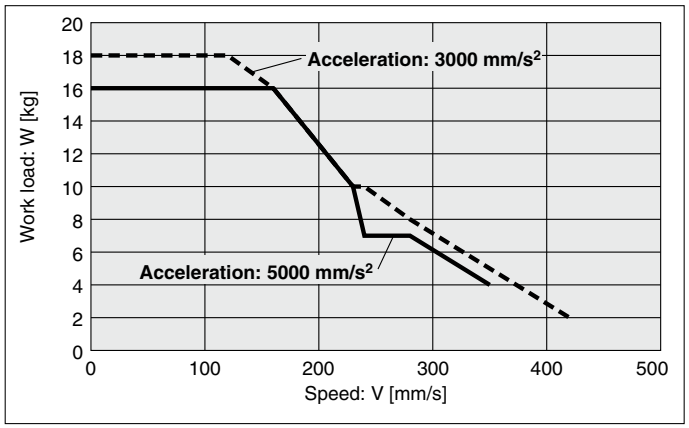


LEFS32FB/Ball Screw Drive

Horizontal/Lead 8



Vertical/Lead 8

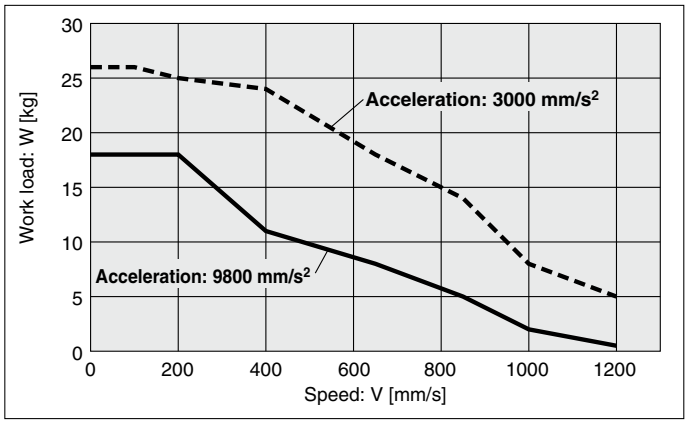


Speed–Work Load Graph (Guide)

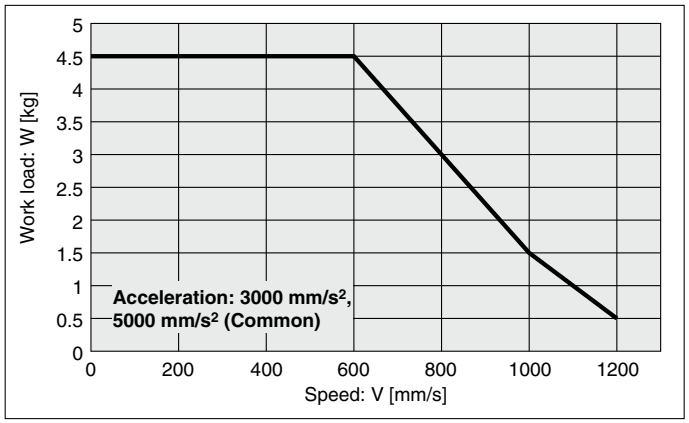
* The following graphs show the values when moving force is 100%.

LEFS40FH/Ball Screw Drive

Horizontal/Lead 30

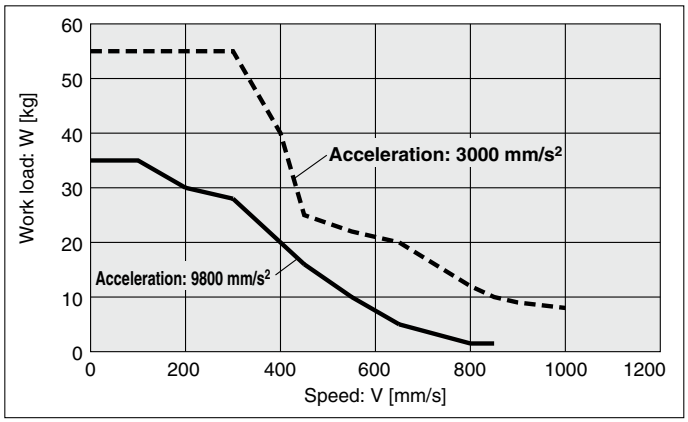


Vertical/Lead 30

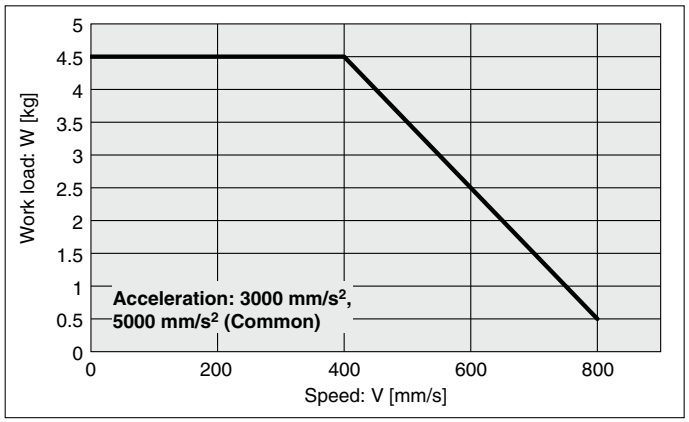


LEFS40FA/Ball Screw Drive

Horizontal/Lead 20

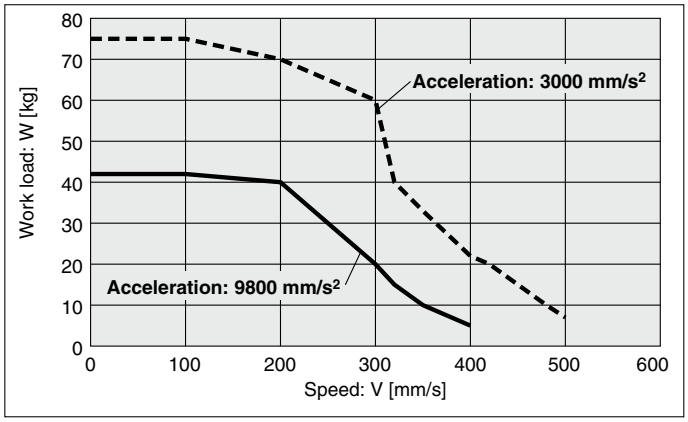


Vertical/Lead 20

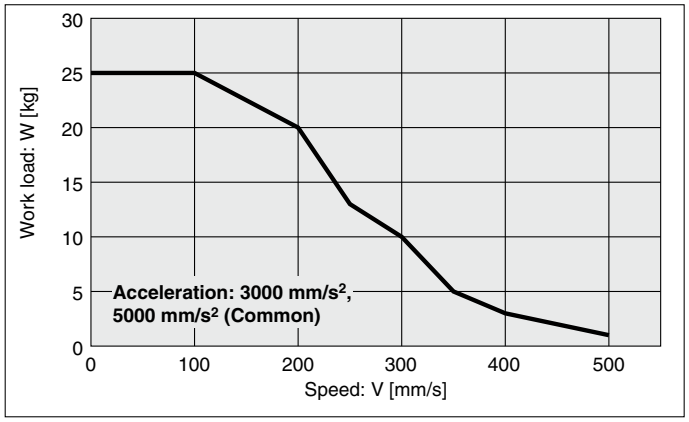


LEFS40FB/Ball Screw Drive

Horizontal/Lead 10



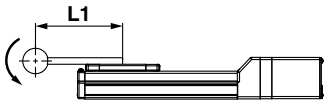
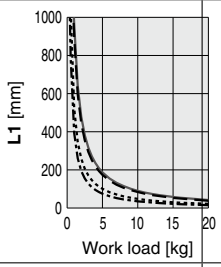
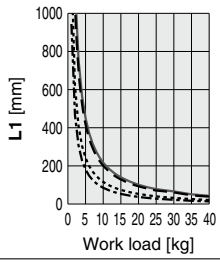
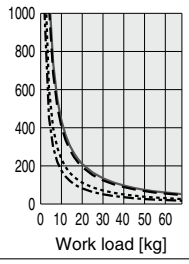
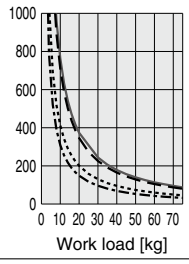
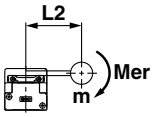
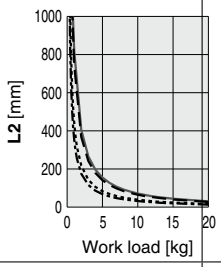
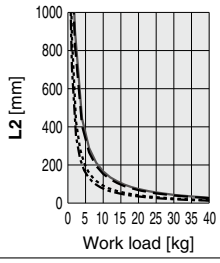
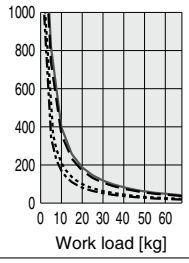
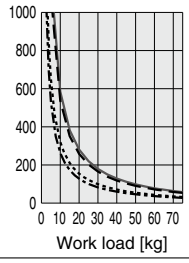
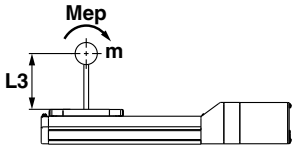
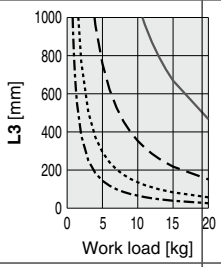
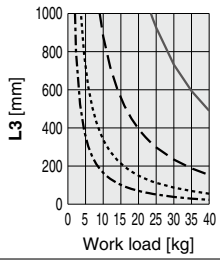
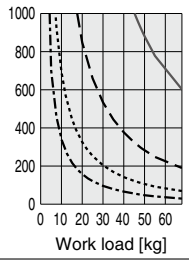
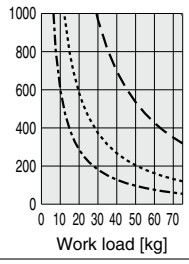
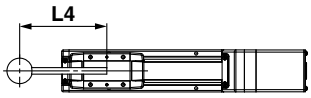
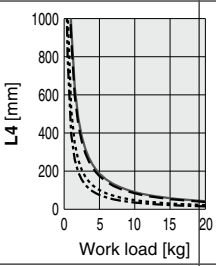
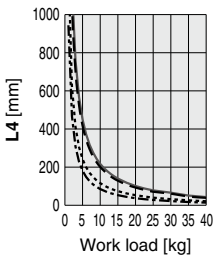
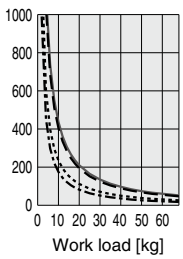
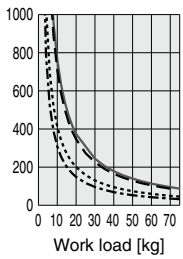
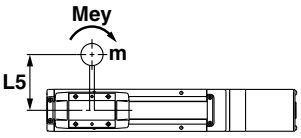
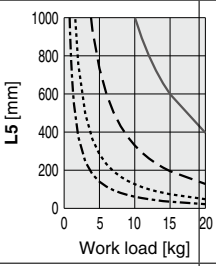
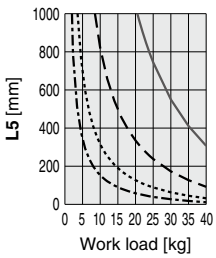
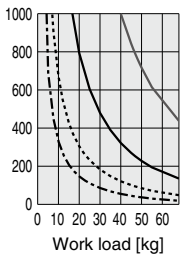
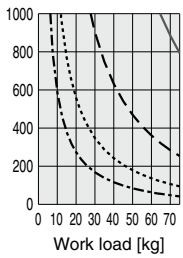
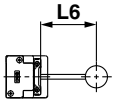
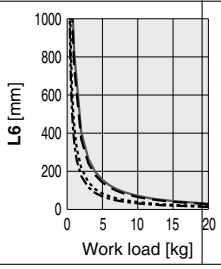
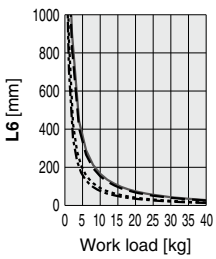
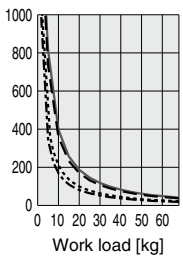
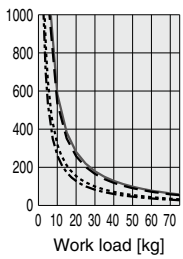
Vertical/Lead 10



Dynamic Allowable Moment

* This graph shows the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction.

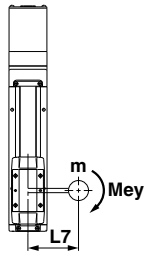
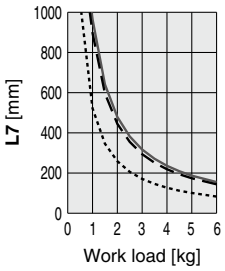
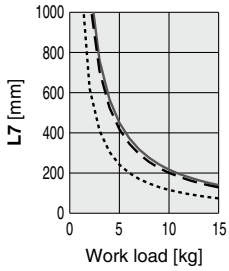
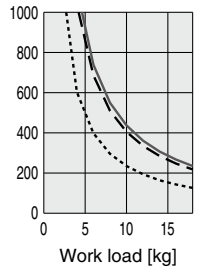
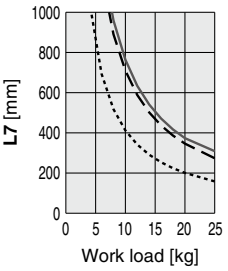
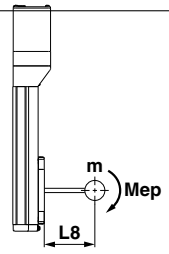
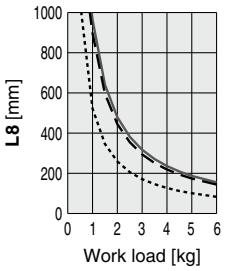
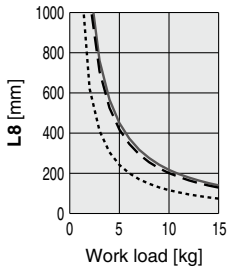
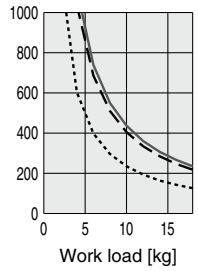
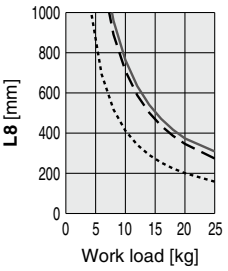
Acceleration —— 1000 mm/s² — — 3000 mm/s² ····· 5000 mm/s² —·—·— 9800 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load center of gravity [mm]		Model			
			LEFS16F	**LEFS25F**	**LEFS32F**	**LEFS40F**
Horizontal/Bottom		X				
		Y				
		Z				
Wall		X				
		Y				
		Z				

Dynamic Allowable Moment

* This graph shows the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction.

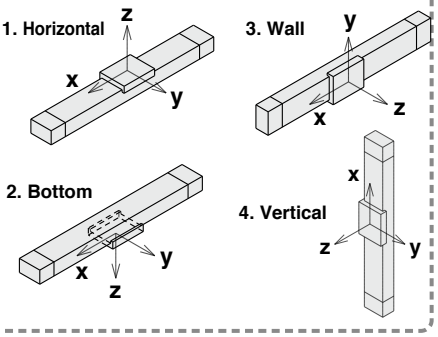
Acceleration ——— 1000 mm/s² — — — 3000 mm/s² ····· 5000 mm/s²

Orientation	Load overhanging direction **m** : Work load [kg] **Me**: Dynamic allowable moment [N·m] **L** : Overhang to the work load center of gravity [mm]		Model			
			LEFS16F	**LEFS25F**	**LEFS32F**	**LEFS40F**
Vertical		Y				
		Z				

Calculation of Guide Load Factor

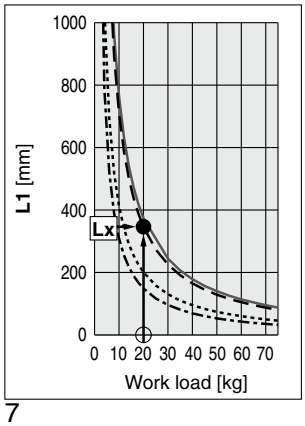
1. Decide operating conditions.
   Model: LEFS□F
   Size: 25/32/40
   Mounting orientation: Horizontal/Bottom/Wall/Vertical
   Acceleration [mm/s²]: **a**
   Work load [kg]: **m**
   Work load center position [mm]: **Xc/Yc/Zc**
2. Select the target graph while referencing the model, size, and mounting orientation.
3. Based on the acceleration and work load, find the overhang [mm]: **Lx/Ly/Lz** from the graph.
4. Calculate the load factor for each direction.
   αx = Xc/Lx, **αy = Yc/Ly**, **αz = Zc/Lz**
5. Confirm the total of **αx**, **αy**, and **αz** is 1 or less.
   αx + αy + αz ≤ 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.

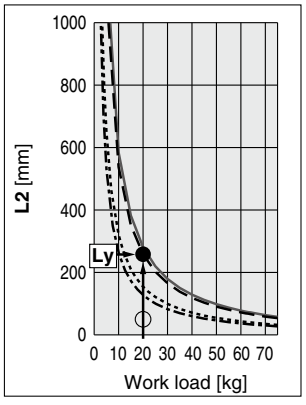
Mounting Orientation



Example

1. Operating conditions
   Model: LEFS40F
   Size: 40
   Mounting orientation: Horizontal
   Acceleration [mm/s²]: 3000
   Work load [kg]: 20
   Work load center position [mm]: **Xc = 0**, **Yc = 50**, **Zc = 200**
2. Select the graphs for horizontal of the LEFS40F on page 6.
3. **Lx = 350 mm**, **Ly = 250 mm**, **Lz = 1000 mm**
4. The load factor for each direction can be found as follows.
   αx = 0/350 = 0
   αy = 50/250 = 0.2
   αz = 200/1000 = 0.2
5. **αx + αy + αz = 0.4 ≤ 1**





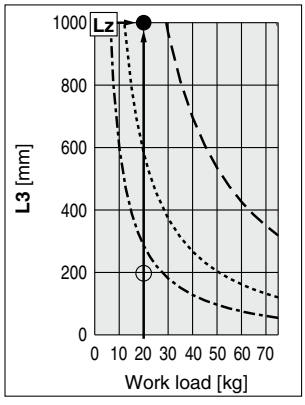
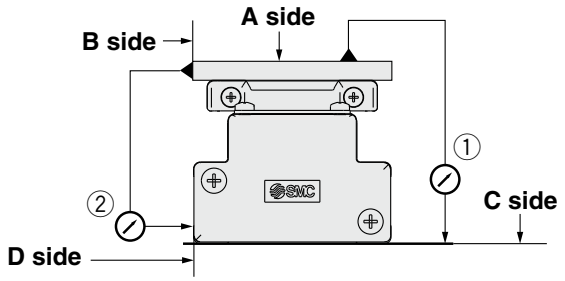


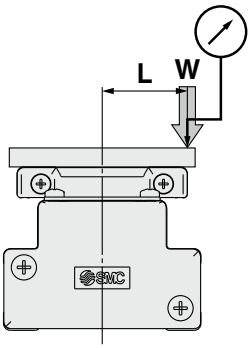
Table Accuracy (Reference Value)

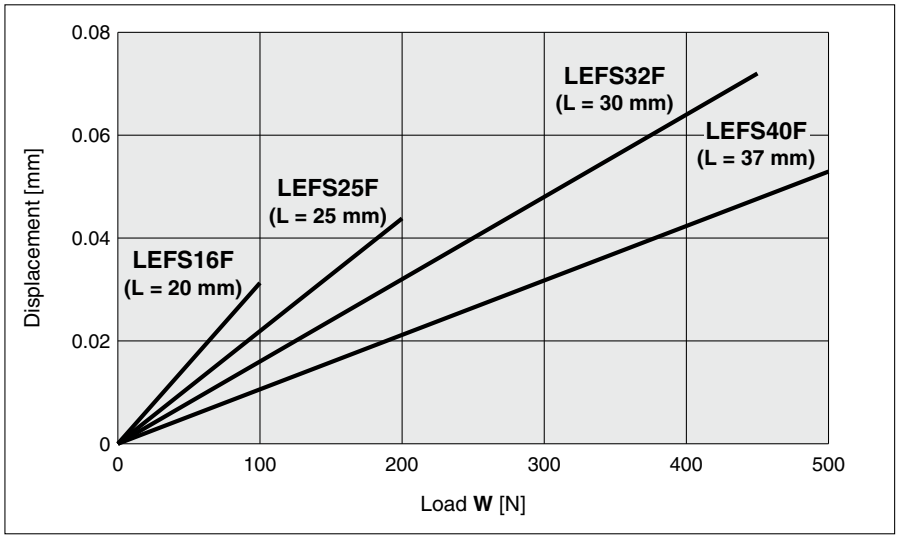


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEFS16F	0.05	0.03
LEFS25F	0.05	0.03
LEFS32F	0.05	0.03
LEFS40F	0.05	0.03

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

Table Displacement (Reference Value)

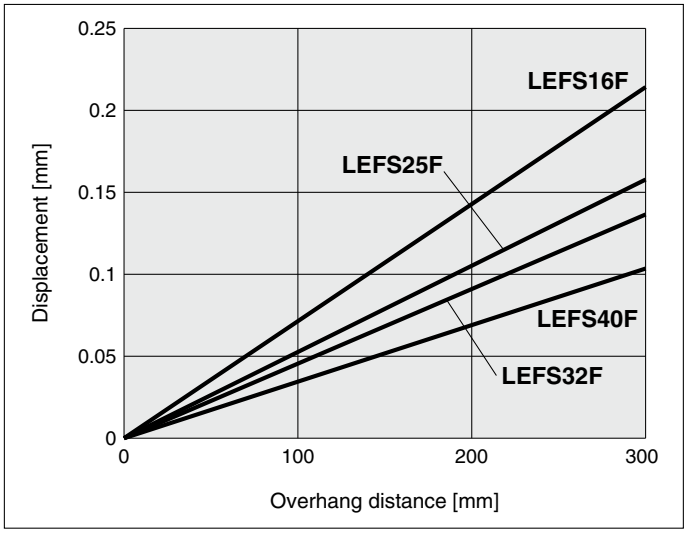




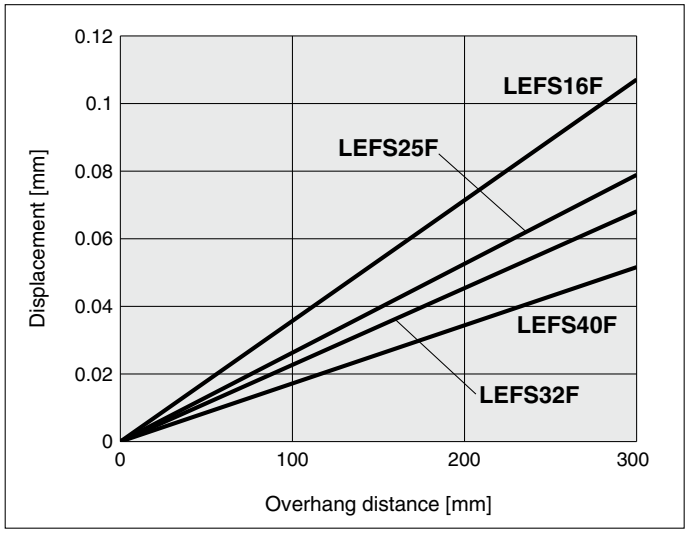
* This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.
* Check the clearance and play of the guide separately.

Overhang Displacement Due to Table Clearance (Reference Value)

Basic type



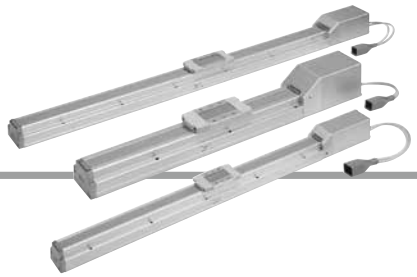
High-precision type



High Performance

Electric Actuator/Slider Type
Ball Screw Drive

LEFS□F Series LEFS16, 25, 32, 40



How to Order

LEFS H 25 □ F B – 200 □ C N K – S1 C5H73

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫ ⓬

For details on controllers, refer to page 24.

❶ Accuracy

Nil	Basic type
H	High-precision type

❷ Size

16
25
32
40

❸ Motor mounting position

Nil	In-line

❹ Motor type

Symbol	Type	Applicable size				Compatible controllers
		LEFS16	**LEFS25**	**LEFS32**	**LEFS40**	
F	High performance (Step motor 24 VDC)	●	●	●	●	JXC5H JXC6H

❺ Lead [mm]

Symbol	LEFS16	LEFS25	LEFS32	LEFS40
H	–	20	24	30
A	10	12	16	20
B	5	6	8	10

❻ Stroke[*1][mm]

Stroke	Note	
	Size	Applicable stroke
50 to 500	**16**	50, 100, 150, 200, 250, 300, 350, 400, 450, 500
50 to 800	**25**	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800
50 to 1000	**32**	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000
150 to 1200	**40**	150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000, 1100, 1200

❼ Motor option

Nil	Without option
B	With lock

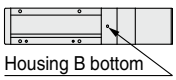
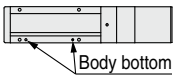
❽ Auto switch compatibility[*2 *3 *4 *5]

Nil	None
C	With (Includes 1 mounting bracket)

❾ Grease application (Seal band part)

Nil	With
N	Without (Roller specification)

❿ Positioning pin hole

Nil	Housing B bottom[*6]	 Housing B bottom
K	Body bottom 2 locations	 Body bottom

⓫ Actuator cable type/length[*8]

Standard cable [m]		Robotic cable [m]			
Nil	None	**R1**	1.5	**RA**	10[*7]
S1	1.5	**R3**	3	**RB**	15[*7]
S3	3	**R5**	5	**RC**	20[*7]
S5	5	**R8**	8[*7]		

For auto switches, refer to pages 20 to 23.

⓬ Controller

Nil	Without controller
C□H□□	With controller

C 5 H 7 3

Controller type

5	Parallel I/O (NPN) type
6	Parallel I/O (PNP) type

Mounting

7	Screw mounting
8*9	DIN rail

Number of axes/Special specification

H	1 axis/High performance type

I/O cable length

Nil	Without cable
1	1.5 m
3	3 m
5	5 m

*1 Please consult with SMC for non-standard strokes as they are produced as special orders.
*2 Excluding the LEFS16
*3 If 2 or more are required, please order them separately. (Part no.: LEF-D- 2 - 1 For details, refer to the **Web Catalog**.)
*4 The auto switches must be ordered separately. (For details, refer to the **Web Catalog**.)
*5 When "Nil" is selected, the product will not come with a built-in magnet for an auto switch, and so a mounting bracket cannot be secured. Be sure to select an appropriate model initially as the product cannot be changed to have auto switch compatibility after purchase.
*6 For details on the mounting method, refer to the **Web Catalog**.
*7 Produced upon receipt of order (Robotic cable only)
*8 The standard cable should only be used on fixed parts. For use on moving parts, select the robotic cable.
*9 The DIN rail is not included. It must be ordered separately.

⚠ Caution

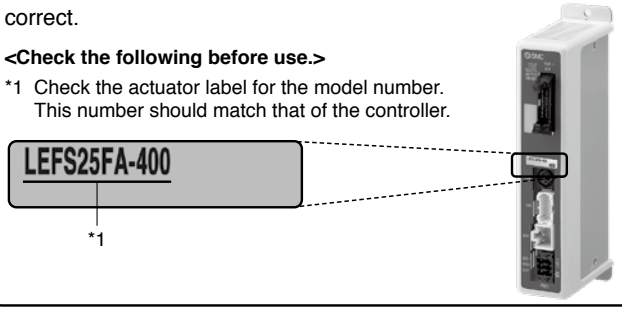
[CE-compliant products]
EMC compliance was tested by combining the electric actuator LEF series and the controller JXC series.
The EMC depends on the configuration of the customer's control panel and the relationship with other electrical equipment and wiring. Therefore, compliance with the EMC directive cannot be certified for SMC components incorporated into the customer's equipment under actual operating conditions. As a result, it is necessary for the customer to verify compliance with the EMC directive for the machinery and equipment as a whole.
[UL-compliant products]
The product with the controller which product number contains C□H□□ is UL approved. See ⓬ Controller above.

The actuator and controller are sold as a package.

Confirm that the combination of the controller and actuator is correct.

<Check the following before use.>

*1 Check the actuator label for the model number. This number should match that of the controller.



* Refer to the Operation Manual for using the products.

Type	**Step data input type** 
Series	**JXC5H JXC6H**
Features	Parallel I/O
Compatible motor	Step motor 24 VDC
Max. number of step data	64 points
Power supply voltage	24 VDC
Reference page	24

Specifications

Model				LEFS16F		LEFS25F			LEFS32F			LEFS40F		
Actuator specifications	Stroke [mm]*1			50 to 500		50 to 800			50 to 1000			150 to 1200		
	Work load [kg]*2	Horizontal		14	20	16	28*	40	40	50	68	26	60*	75
		Vertical		3	6	3	7.5	15	4	12	18	4.5	4.5	25
	Speed [mm/s]	Stroke range	Up to 400	10 to 800	5 to 400	20 to 1500	12 to 900	6 to 500	24 to 1300	16 to 1000	8 to 520	30 to 1200	20 to 1000	10 to 500
			401 to 500	10 to 700	5 to 360	20 to 1100	12 to 750	6 to 400	24 to 1300	16 to 950	8 to 520	30 to 1200	20 to 1000	10 to 500
			501 to 600	—	—	20 to 900	12 to 540	6 to 270	24 to 1200	16 to 800	8 to 400	30 to 1200	20 to 1000	10 to 500
			601 to 700	—	—	20 to 630	12 to 420	6 to 230	24 to 930	16 to 620	8 to 310	30 to 1200	20 to 900	10 to 440
			701 to 800	—	—	20 to 550	12 to 330	6 to 180	24 to 750	16 to 500	8 to 250	30 to 1140	20 to 760	10 to 350
			801 to 900	—	—	—	—	—	24 to 610	16 to 410	8 to 200	30 to 930	20 to 620	10 to 280
			901 to 1000	—	—	—	—	—	24 to 500	16 to 340	8 to 170	30 to 780	20 to 520	10 to 250
			1001 to 1100	—	—	—	—	—	—	—	—	30 to 660	20 to 440	10 to 220
			1101 to 1200	—	—	—	—	—	—	—	—	30 to 570	20 to 380	10 to 190
	Max. acceleration/deceleration [mm/s²]		Horizontal	9800										
			Vertical	5000										
	Positioning repeatability [mm]		Basic type	±0.02										
			High-precision type	±0.015 (Lead H: ±0.02)										
	Lost motion [mm]*3		Basic type	0.1 or less										
			High-precision type	0.05 or less										
	Lead [mm]			10	5	20	12	6	24	16	8	30	20	10
	Impact/Vibration resistance [m/s²]*4			50/20										
	Actuation type			Ball screw										
	Guide type			Linear guide										
	Operating temperature range [°C]			5 to 40										
	Operating humidity range [%RH]			90 or less (No condensation)										
Electric specifications	Motor size			□28		□42			□56.4			□56.4		
	Motor type			Step motor (Servo/24 VDC)										
	Encoder			Incremental A/B phase (800 pulse/rotation)										
	Rated voltage [V]			24 VDC ±10%										
	Standby power consumption when operating [W]*5			27		16			44			43		
	Max. power consumption [W]*6			102		132			158			202		
Lock unit specifications	Type*7			Non-magnetizing lock										
	Holding force [N]			20	39	47	78	157	72	108	216	75	113	225
	Power consumption [W]*8			2.9		5			5			5		
	Rated voltage [V]			24 VDC ±10%										

*1 Please consult with SMC for non-standard strokes as they are produced as special orders.

*2 The maximum work load at 3000 mm/s² acceleration and deceleration speed. (Values with * show the maximum work load at 1000 mm/s² acceleration and deceleration speed). Work load varies depending on the speed and acceleration. Check the "Speed–Work Load Graph" on pages 2 to 5.
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.

*3 A reference value for correcting an error in reciprocal operation

*4 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.)

*5 The standby power consumption when operating (including the controller) is for when the actuator is stopped in the set position during the operation.

*6 The maximum power consumption (including the controller) is for when the actuator is operating. This value can be used for the selection of the power supply. If the power supply capacity is not sufficient for the instantaneous power of the connected actuator, the expected performance at set acceleration and speed may not be realized depending on the operating conditions.

*7 With lock only

*8 For an actuator with lock, add the power consumption for the lock.

Weight

Series	LEFS16F									
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]	0.12									

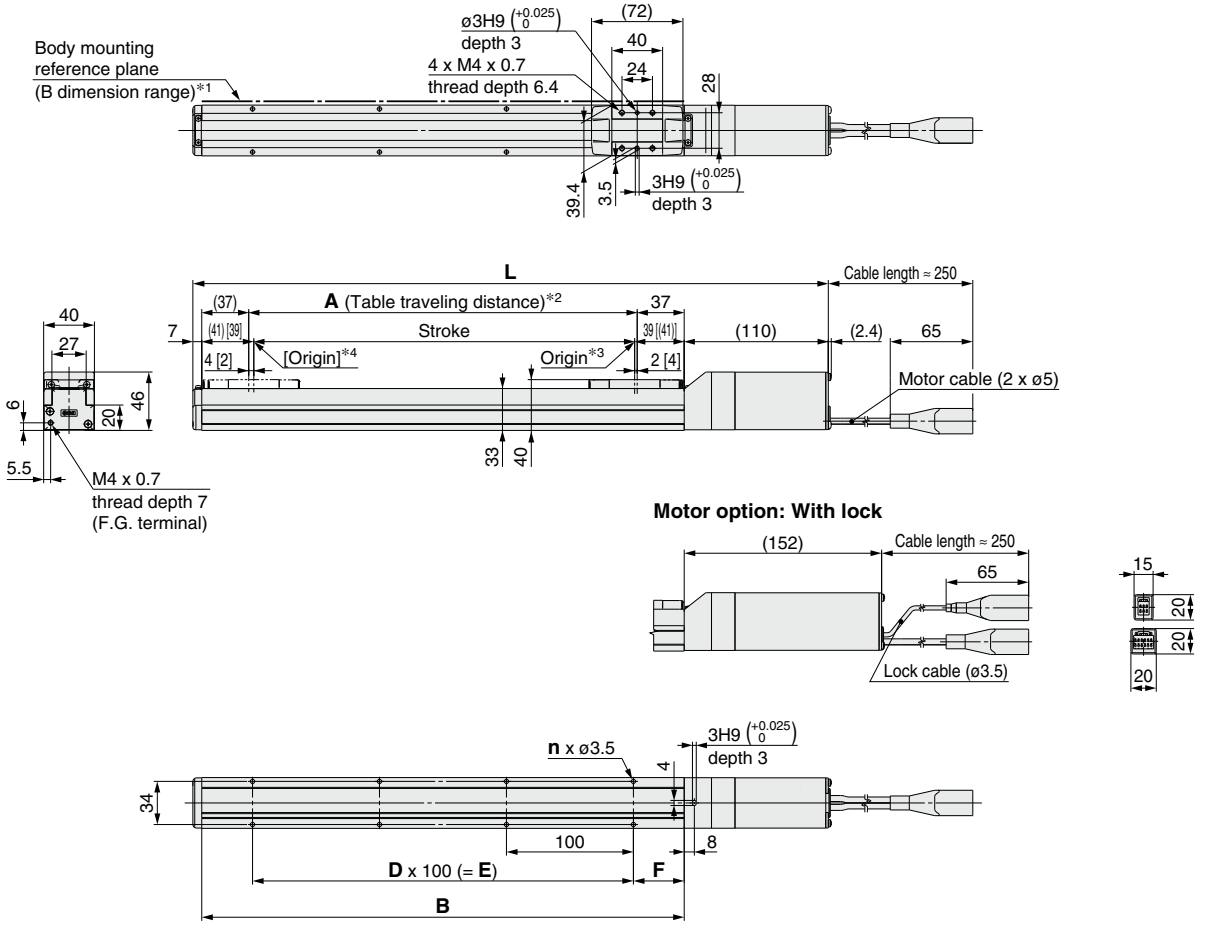
Series	LEFS25F															
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Product weight [kg]	1.70	1.84	1.98	2.12	2.26	2.40	2.54	2.68	2.82	2.96	3.10	3.24	3.38	3.52	3.66	3.80
Additional weight with lock [kg]	0.26															

Series	LEFS32F																			
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]	3.15	3.35	3.55	3.75	3.95	4.15	4.35	4.55	4.75	4.95	5.15	5.35	5.55	5.75	5.95	6.15	6.35	6.55	6.75	6.95
Additional weight with lock [kg]	0.53																			

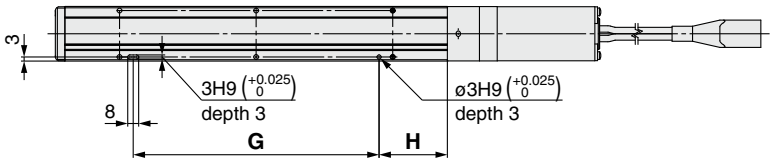
Series	LEFS40F																			
Stroke [mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1100	1200
Product weight [kg]	5.37	5.65	5.93	6.21	6.49	6.77	7.15	7.33	7.61	7.89	8.17	8.45	8.73	9.01	9.29	9.57	9.85	10.13	10.69	11.25
Additional weight with lock [kg]	0.53																			

Dimensions: In-line Motor

LEFS16F



Positioning pin hole*5 (Option): Body bottom



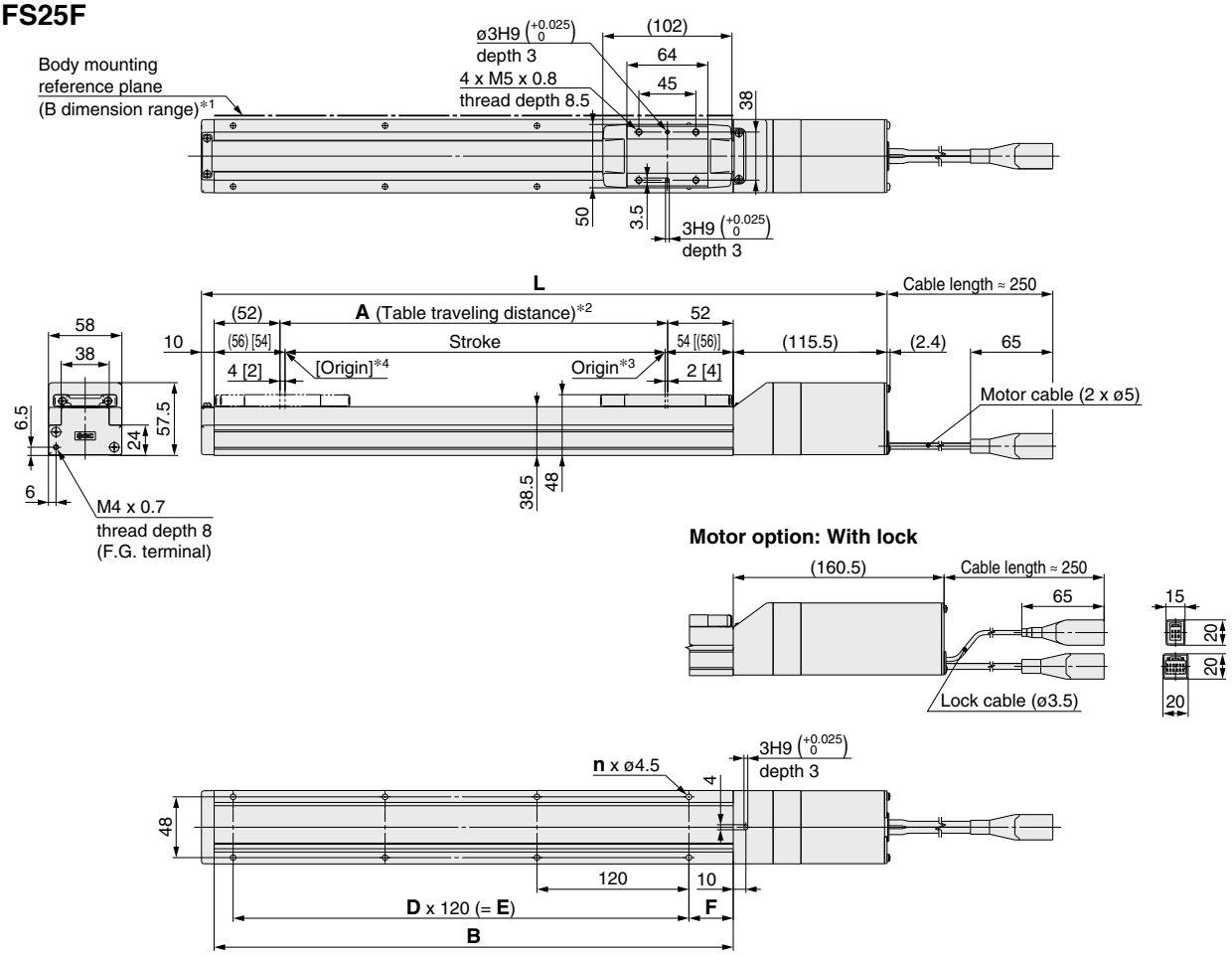
*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 2 mm or more because of round chamfering. (Recommended height 5 mm)
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly 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 This is the distance within which the table can move when it returns to origin.
Make sure workpieces mounted on the table do not interfere with the workpieces and facilities around the table.
*3 Position after returning to origin
*4 [ ] for when the direction of return to origin has changed
*5 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

Dimensions [mm]

Model	L		A	B	n	D	E	F	G	H
	Without lock	With lock								
LEFS16F□-50□	247	289	56	130	4	—	—	15	80	25
LEFS16F□-100□	297	339	106	180	4	—	—	40	80	50
LEFS16F□-150□	347	389	156	230	4	—	—		80	50
LEFS16F□-200□	397	439	206	280	6	2	200		180	50
LEFS16F□-250□	447	489	256	330	6	2	200		180	50
LEFS16F□-300□	497	539	306	380	8	3	300		280	50
LEFS16F□-350□	547	589	356	430	8	3	300		280	50
LEFS16F□-400□	597	639	406	480	10	4	400		380	50
LEFS16F□-450□	647	689	456	530	10	4	400		380	50
LEFS16F□-500□	697	739	506	580	12	5	500		480	50

Dimensions: In-line Motor

LEFS25F



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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 This is the distance within which the table can move when it returns to origin.
Make sure workpieces mounted on the table do not interfere with the workpieces and facilities around the table.

*3 Position after returning to origin

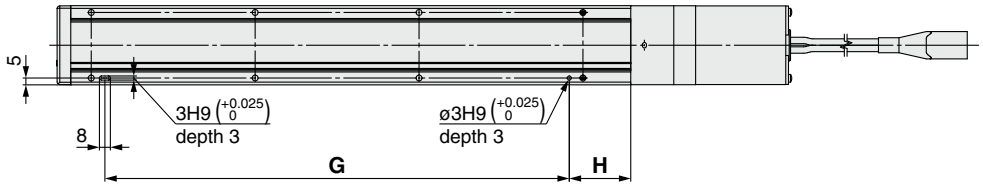
*4 [ ] for when the direction of return to origin has changed

Dimensions [mm]

Model	L		A	B	n	D	E	F
	Without lock	With lock						
LEFS25F□-50□	285.5	330.5	56	160	4	—	—	20
LEFS25F□-100□	335.5	380.5	106	210	4	—	—	35
LEFS25F□-150□	385.5	430.5	156	260	4	—	—	
LEFS25F□-200□	435.5	480.5	206	310	6	2	240	
LEFS25F□-250□	485.5	530.5	256	360	6	2	240	
LEFS25F□-300□	535.5	580.5	306	410	8	3	360	
LEFS25F□-350□	585.5	630.5	356	460	8	3	360	
LEFS25F□-400□	635.5	680.5	406	510	8	3	360	
LEFS25F□-450□	685.5	730.5	456	560	10	4	480	
LEFS25F□-500□	735.5	780.5	506	610	10	4	480	
LEFS25F□-550□	785.5	830.5	556	660	12	5	600	
LEFS25F□-600□	835.5	880.5	606	710	12	5	600	
LEFS25F□-650□	885.5	930.5	656	760	12	5	600	
LEFS25F□-700□	935.5	980.5	706	810	14	6	720	
LEFS25F□-750□	985.5	1030.5	756	860	14	6	720	
LEFS25F□-800□	1035.5	1080.5	806	910	16	7	840	

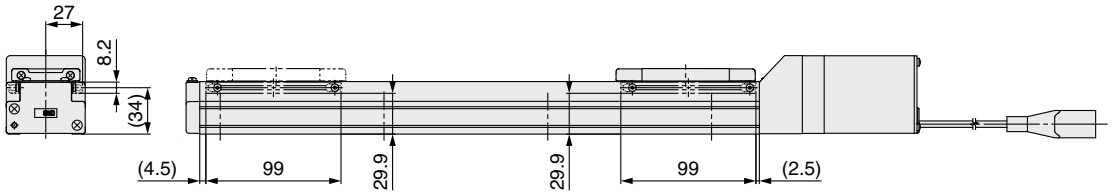
Dimensions: In-line Motor

LEFS25F



*1 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

With auto switch (Option)



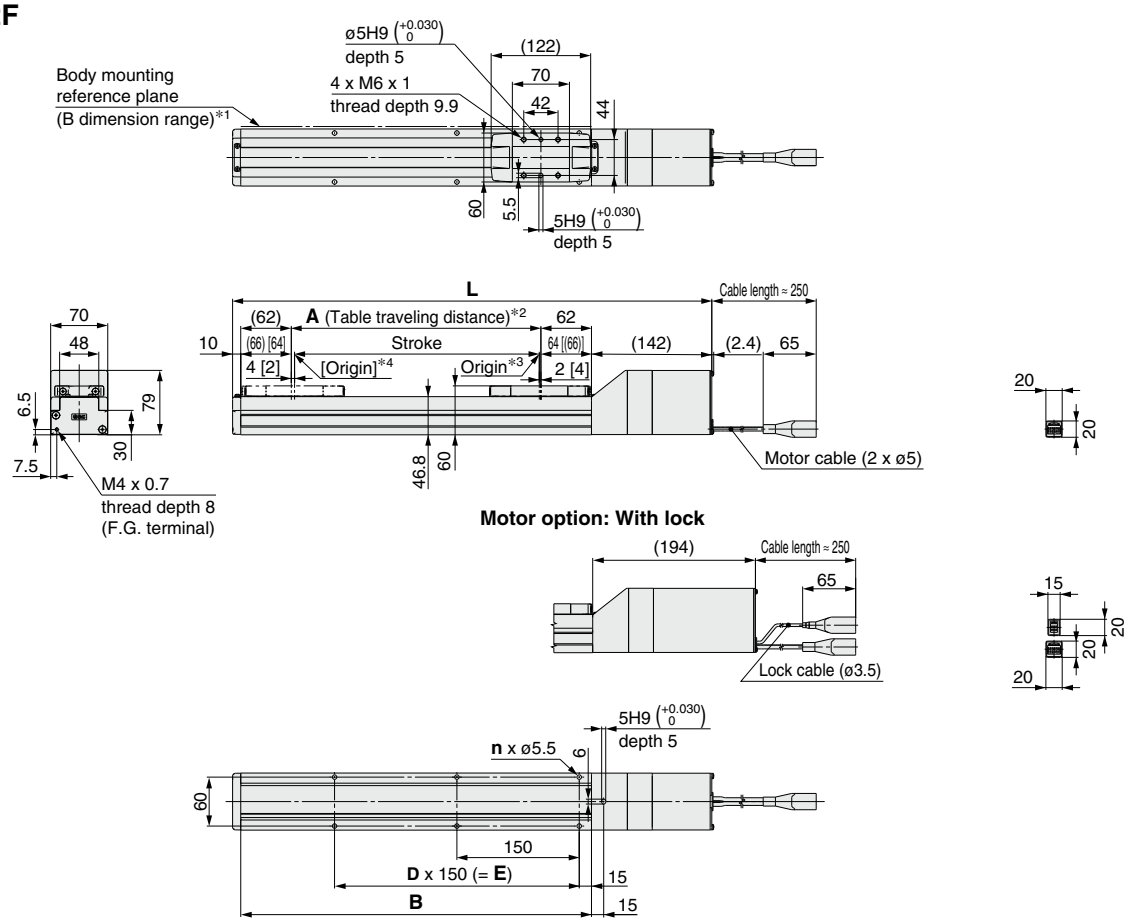
* For strokes of 99 mm or less, only 2 auto switch mounting brackets can be installed on the motor side.

Dimensions [mm]

Model	G	H
LEFS25F□-50□	100	30
LEFS25F□-100□	100	45
LEFS25F□-150□	100	45
LEFS25F□-200□	220	45
LEFS25F□-250□	220	45
LEFS25F□-300□	340	45
LEFS25F□-350□	340	45
LEFS25F□-400□	340	45
LEFS25F□-450□	460	45
LEFS25F□-500□	460	45
LEFS25F□-550□	580	45
LEFS25F□-600□	580	45
LEFS25F□-650□	580	45
LEFS25F□-700□	700	45
LEFS25F□-750□	700	45
LEFS25F□-800□	820	45

Dimensions: In-line Motor

LEFS32F



*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 because of round chamfering. (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.
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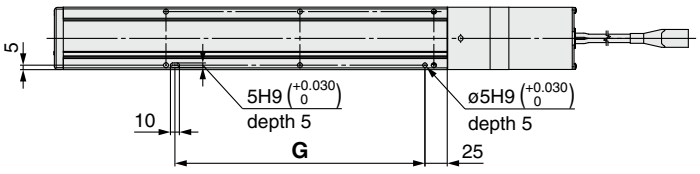
Make sure workpieces mounted on the table do not interfere with the workpieces and facilities around the table.
*3 Position after returning to origin
*4 [ ] for when the direction of return to origin has changed

Dimensions [mm]

Model	L		A	B	n	D	E
	Without lock	With lock					
LEFS32F□-50□	332	384	56	180	4	—	—
LEFS32F□-100□	382	434	106	230	4	—	—
LEFS32F□-150□	432	484	156	280	4	—	—
LEFS32F□-200□	482	534	206	330	6	2	300
LEFS32F□-250□	532	584	256	380	6	2	300
LEFS32F□-300□	582	634	306	430	6	2	300
LEFS32F□-350□	632	684	356	480	8	3	450
LEFS32F□-400□	682	734	406	530	8	3	450
LEFS32F□-450□	732	784	456	580	8	3	450
LEFS32F□-500□	782	834	506	630	10	4	600
LEFS32F□-550□	832	884	556	680	10	4	600
LEFS32F□-600□	882	934	606	730	10	4	600
LEFS32F□-650□	932	984	656	780	12	5	750
LEFS32F□-700□	982	1034	706	830	12	5	750
LEFS32F□-750□	1032	1084	756	880	12	5	750
LEFS32F□-800□	1082	1134	806	930	14	6	900
LEFS32F□-850□	1132	1184	856	980	14	6	900
LEFS32F□-900□	1182	1234	906	1030	14	6	900
LEFS32F□-950□	1232	1284	956	1080	16	7	1050
LEFS32F□-1000□	1282	1334	1006	1130	16	7	1050

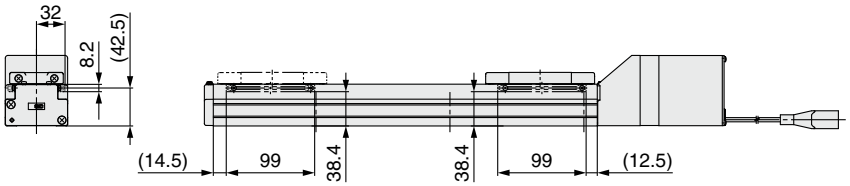
Dimensions: In-line Motor

LEFS32F



*1 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

With auto switch (Option)



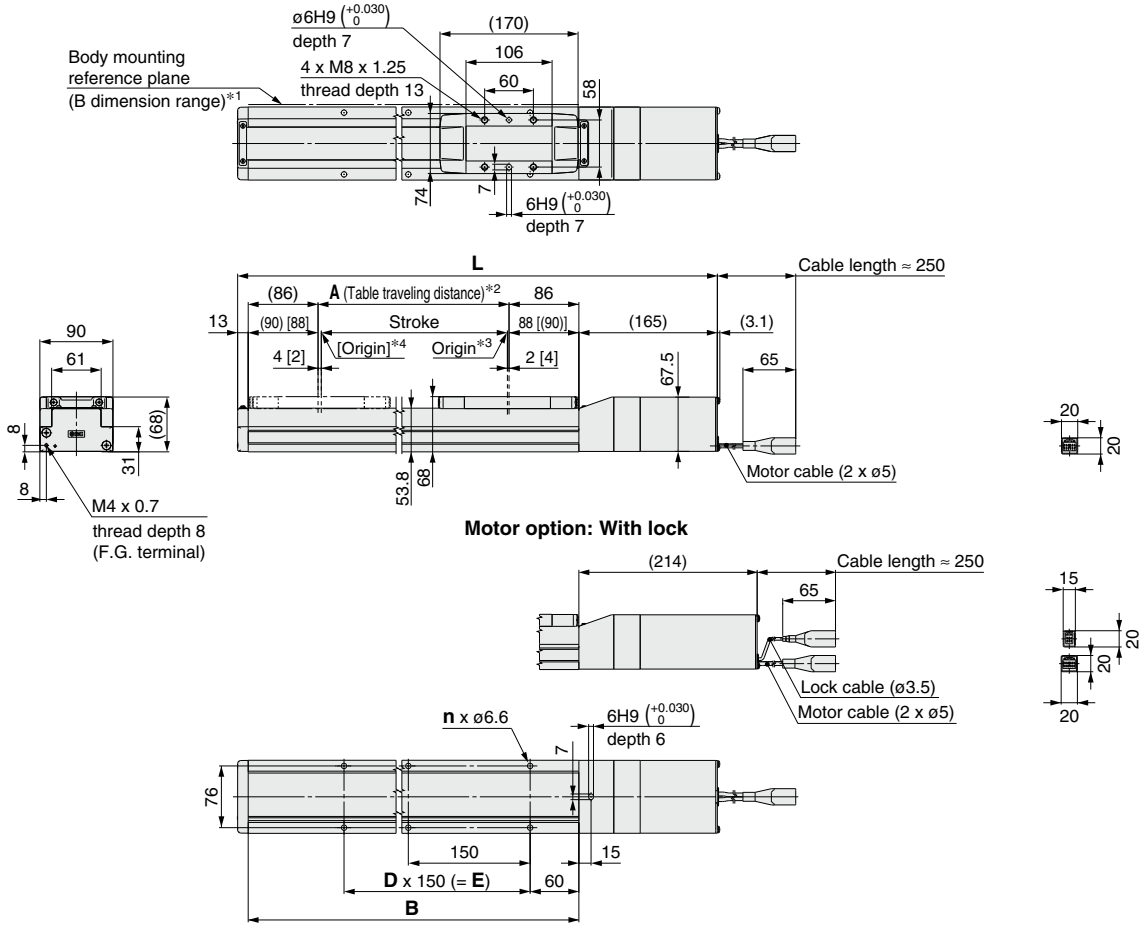
* For strokes of 99 mm or less, only 2 auto switch mounting brackets can be installed on the motor side.

Dimensions [mm]

Model	G
LEFS32F□-50□	130
LEFS32F□-100□	130
LEFS32F□-150□	130
LEFS32F□-200□	280
LEFS32F□-250□	280
LEFS32F□-300□	280
LEFS32F□-350□	430
LEFS32F□-400□	430
LEFS32F□-450□	430
LEFS32F□-500□	580
LEFS32F□-550□	580
LEFS32F□-600□	580
LEFS32F□-650□	730
LEFS32F□-700□	730
LEFS32F□-750□	730
LEFS32F□-800□	880
LEFS32F□-850□	880
LEFS32F□-900□	880
LEFS32F□-950□	1030
LEFS32F□-1000□	1030

Dimensions: In-line Motor

LEFS40F



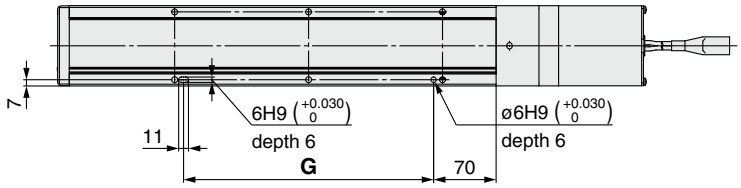
*1 When mounting the actuator using the body mounting reference plane, set the height of the opposite surface or pin to be 3 mm or more because of round chamfering. (Recommended height 5 mm)
In addition, be aware that surfaces other than the body mounting reference plane (B dimension range) may slightly 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 This is the distance within which the table can move when it returns to origin.
Make sure workpieces mounted on the table do not interfere with the workpieces and facilities around the table.
*3 Position after returning to origin
*4 [ ] for when the direction of return to origin has changed

Dimensions [mm]

Model	L		A	B	n	D	E
	Without lock	With lock					
LEFS40F□-150□	506	555	156	328	4	—	150
LEFS40F□-200□	556	605	206	378	6	2	300
LEFS40F□-250□	606	655	256	428	6	2	300
LEFS40F□-300□	656	705	306	478	6	2	300
LEFS40F□-350□	706	755	356	528	8	3	450
LEFS40F□-400□	756	805	406	578	8	3	450
LEFS40F□-450□	806	855	456	628	8	3	450
LEFS40F□-500□	856	905	506	678	10	4	600
LEFS40F□-550□	906	955	556	728	10	4	600
LEFS40F□-600□	956	1005	606	778	10	4	600
LEFS40F□-650□	1006	1055	656	828	12	5	750
LEFS40F□-700□	1056	1105	706	878	12	5	750
LEFS40F□-750□	1106	1155	756	928	12	5	750
LEFS40F□-800□	1156	1205	806	978	14	6	900
LEFS40F□-850□	1206	1255	856	1028	14	6	900
LEFS40F□-900□	1256	1305	906	1078	14	6	900
LEFS40F□-950□	1306	1355	956	1128	16	7	1050
LEFS40F□-1000□	1356	1405	1006	1178	16	7	1050
LEFS40F□-1100□	1456	1505	1106	1278	18	8	1200
LEFS40F□-1200□	1556	1605	1206	1378	18	8	1200

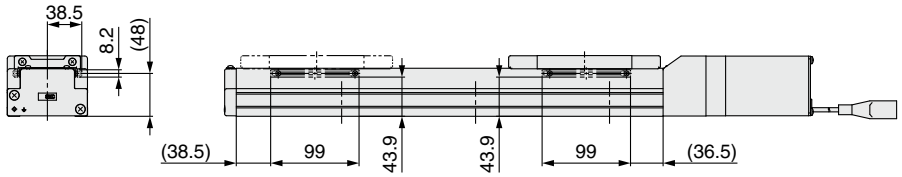
Dimensions: In-line Motor

LEFS40F



*1 When using the body bottom positioning pin holes, do not simultaneously use the housing B bottom pin hole.

With auto switch (Option)

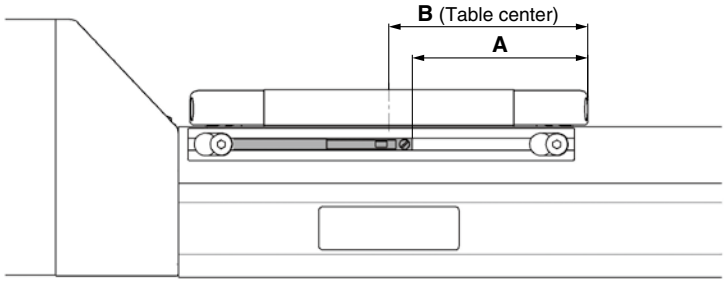


Dimensions [mm]

Model	G
LEFS40F□-150□	130
LEFS40F□-200□	280
LEFS40F□-250□	280
LEFS40F□-300□	280
LEFS40F□-350□	430
LEFS40F□-400□	430
LEFS40F□-450□	430
LEFS40F□-500□	580
LEFS40F□-550□	580
LEFS40F□-600□	580
LEFS40F□-650□	730
LEFS40F□-700□	730
LEFS40F□-750□	730
LEFS40F□-800□	880
LEFS40F□-850□	880
LEFS40F□-900□	880
LEFS40F□-950□	1030
LEFS40F□-1000□	1030
LEFS40F□-1100□	1180
LEFS40F□-1200□	1180

Auto Switch Mounting

Auto Switch Mounting Position



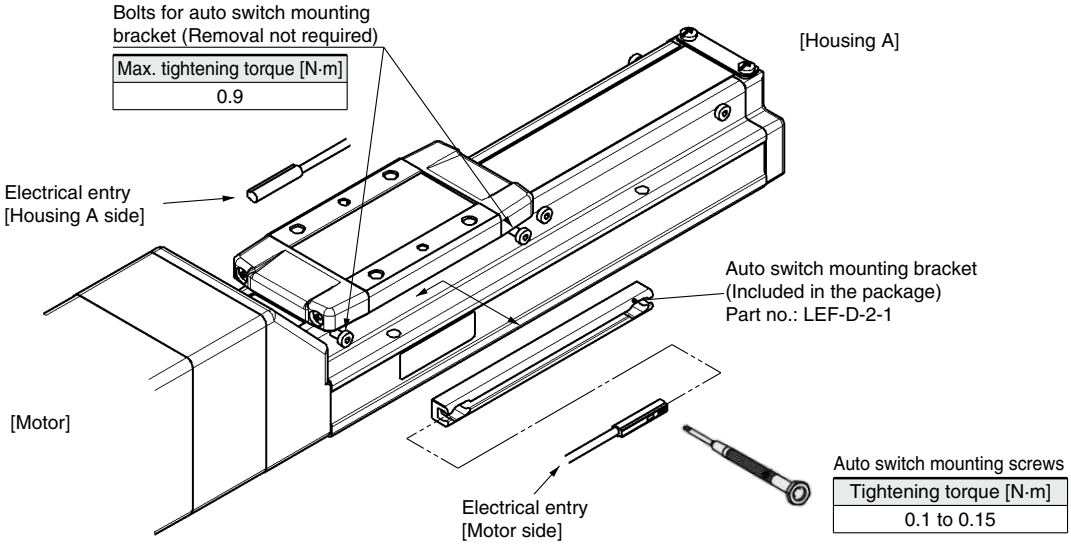
[mm]

Model	Size	A	B	Operating range
LEFS	25	45	51	4.9
	32	55	61	3.9
	40	79	85	5.3

* 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

Rotate the bolts for auto switch mounting bracket three to four times to loosen them (Removing them is not required), and slide and remove the auto switch mounting bracket. Then, insert a switch into the groove on the mounting bracket.
As the mounting bolts for installing the product body interfere with the auto switch mounting bracket, mount the auto switch mounting bracket after installing the product body. After installing product body, tighten the bolts for the auto switch mounting bracket.



* The applicable auto switch is D-M9 (N/P/B) (W) (M/L/Z).
* The direction of the lead wire entry is specified. If it is mounted in the opposite direction, the auto switch may malfunction.
* Tighten the auto switch mounting screws (provided together with the auto switch), using a precision screwdriver with a handle diameter of approximately 5 to 6 mm.
* If more than two auto switch mounting brackets are required, please order them separately. All eight bolts for attaching the auto switch mounting bracket at the stroke end are tightened into the body when the product is shipped.
For 50-mm stroke type, only four bolts are tightened on the motor side.

Solid State Auto Switch
Direct Mounting Type
D-M9N/D-M9P/D-M9B

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

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.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)			
Auto switch model	**D-M9N**	**D-M9P**	**D-M9B**
Electrical entry direction	In-line		
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 mA or less at 24 VDC		0.8 mA or less
Indicator light	Red LED illuminates when turned ON.		
Standard	CE marking, RoHS		

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		**D-M9N**	**D-M9P**	**D-M9B**
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	0.05		
Minimum 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

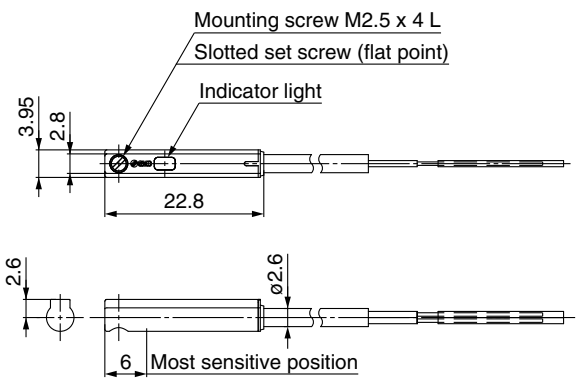
[g]

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

Dimensions

[mm]

D-M9□

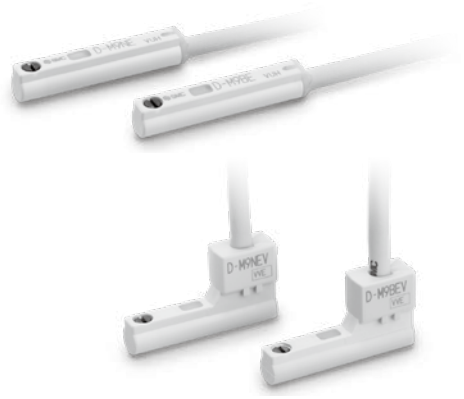


Normally Closed Solid State Auto Switch
Direct Mounting Type
D-M9NE(V)/D-M9PE(V)/D-M9BE(V)

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

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)**



⚠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.

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 mA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standard	CE marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	0.05		
Minimum 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]

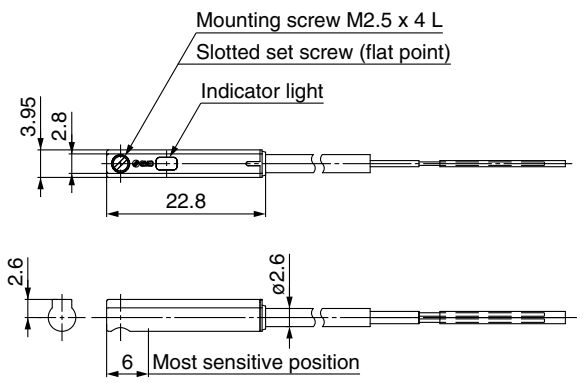
Auto switch model		D-M9NE(V)	D-M9PE(V)	D-M9BE(V)
Lead wire length	0.5 m (**Nil**)	8		7
	1 m (**M**)*1	14		13
	3 m (**L**)	41		38
	5 m (**Z**)*1	68		63

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

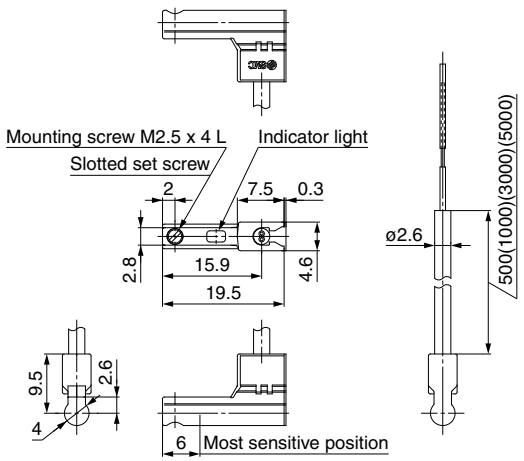
Dimensions

[mm]

D-M9□E



D-M9□EV



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

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

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.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□W, D-M9□WV (With indicator light)			
Auto switch model	**D-M9NW**	**D-M9PW**	**D-M9BW**
Electrical entry direction	In-line		
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 mA or less at 24 VDC		0.8 mA or less
Indicator light	Operating range ····· Red LED illuminates. Proper operating range ····· Green LED illuminates.		
Standard	CE marking, RoHS		

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		**D-M9NW**	**D-M9PW**	**D-M9BW**
Sheath	Outside diameter [mm]	2.6		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	0.88		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	0.05		
Minimum 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

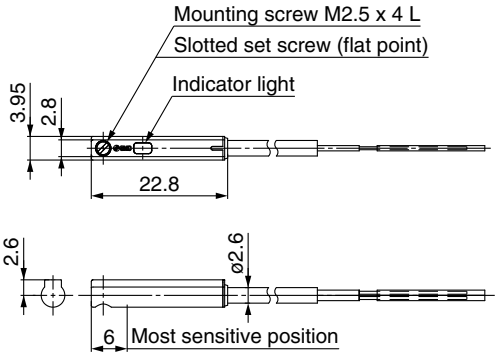
[g]

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

Dimensions

[mm]

D-M9□W



High Performance Controller (Step Data Input Type)

JXC5H/6H Series

How to Order

JXC 5 H 7 3 – ☐

❶ ❷ ❸ ❹ ❺

❶ Controller type

5	Parallel I/O (NPN) type
6	Parallel I/O (PNP) type

❷ Specification

H	High performance type

❸ Mounting

7	Screw mounting
8	DIN rail

❹ I/O cable length

Nil	None
1	1.5 m
3	3 m
5	5 m

❺ Actuator part number

Without cable specifications and actuator options Example: Enter "LEFS25FA-100" for the LEFS25FA-100B-R1☐.	
BC	Blank controller*1

*1 Requires dedicated software (JXC-BCW)

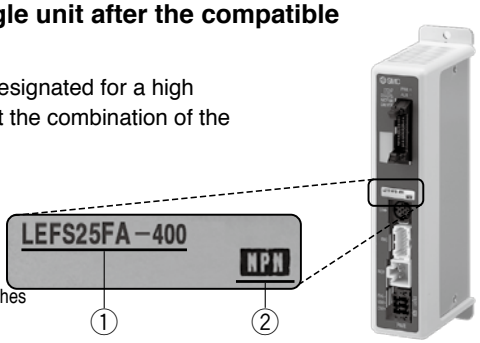
The controller is sold as single unit after the compatible actuator is set.

Connect to an actuator (LEFS☐F) designated for a high performance controller. Confirm that the combination of the controller and actuator is correct.

<Check the following before use.>

① Check the actuator label for the model number. This number should match that of the controller.

② Check that the Parallel I/O configuration matches (NPN or PNP).



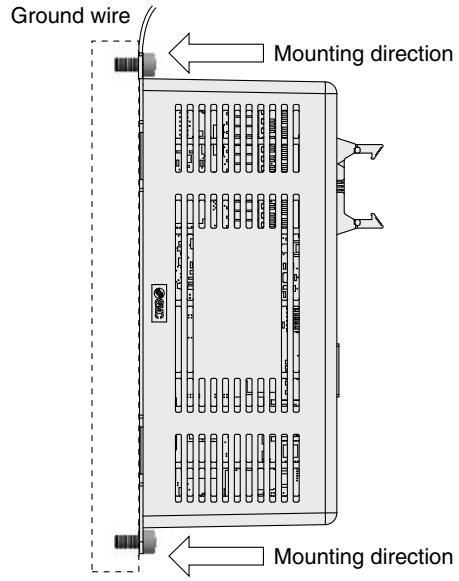
* Refer to the operation manual for using the products. Please download it via our website.

Specifications

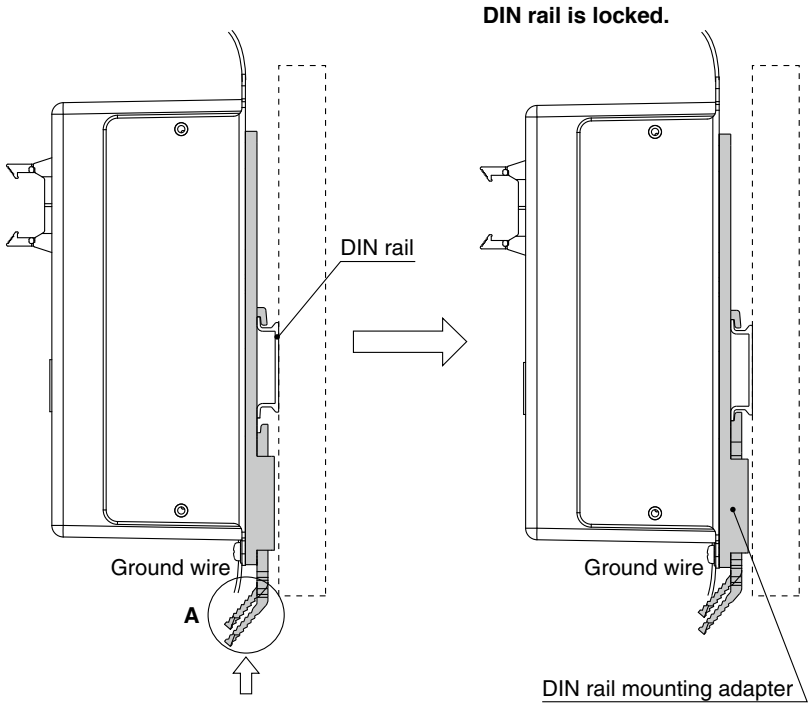
Model	JXC5H JXC6H
Compatible motor	Step motor (Servo/24 VDC)
Power supply	Power supply voltage: 24 VDC ±10%
Current consumption (Controller)	100 mA or less
Compatible encoder	Incremental A/B phase (800 pulse/rotation)
Parallel input	11 inputs (Photo-coupler isolation)
Parallel output	13 outputs (Photo-coupler isolation)
Serial communication	RS485 (Only for the LEC-T1 and JXC-W2)
Memory	EEPROM
LED indicator	PWR, ALM
Cable length [m]	Actuator cable: 20 or less
Cooling system	Natural air cooling
Operating temperature range [°C]	0 to 40
Operating humidity range [%RH]	90 or less (No condensation)
Insulation resistance [MΩ]	Between all external terminals and the case: 50 (500 VDC)
Weight [g]	180 (Screw mounting), 200 (DIN rail mounting)

How to Mount

a) Screw mounting (JXC□H7□)
(Installation with two M4 screws)



b) DIN rail mounting (JXC□H8□)
(Installation with the DIN rail)

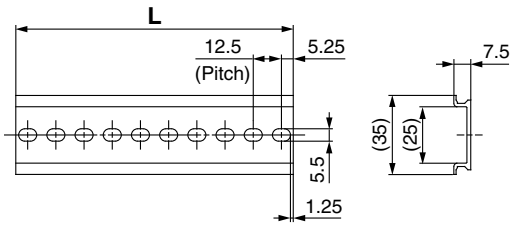


Hook the controller on the DIN rail and press
the lever of section **A** in the arrow direction to lock it.

* When size 25 or more of the LE series are used, the space between the controllers should be 10 mm or more.

DIN rail
AXT100-DR-□

* For □, enter a number from the No. line in the table below.
Refer to the dimension drawings on page 26 for the mounting dimensions.



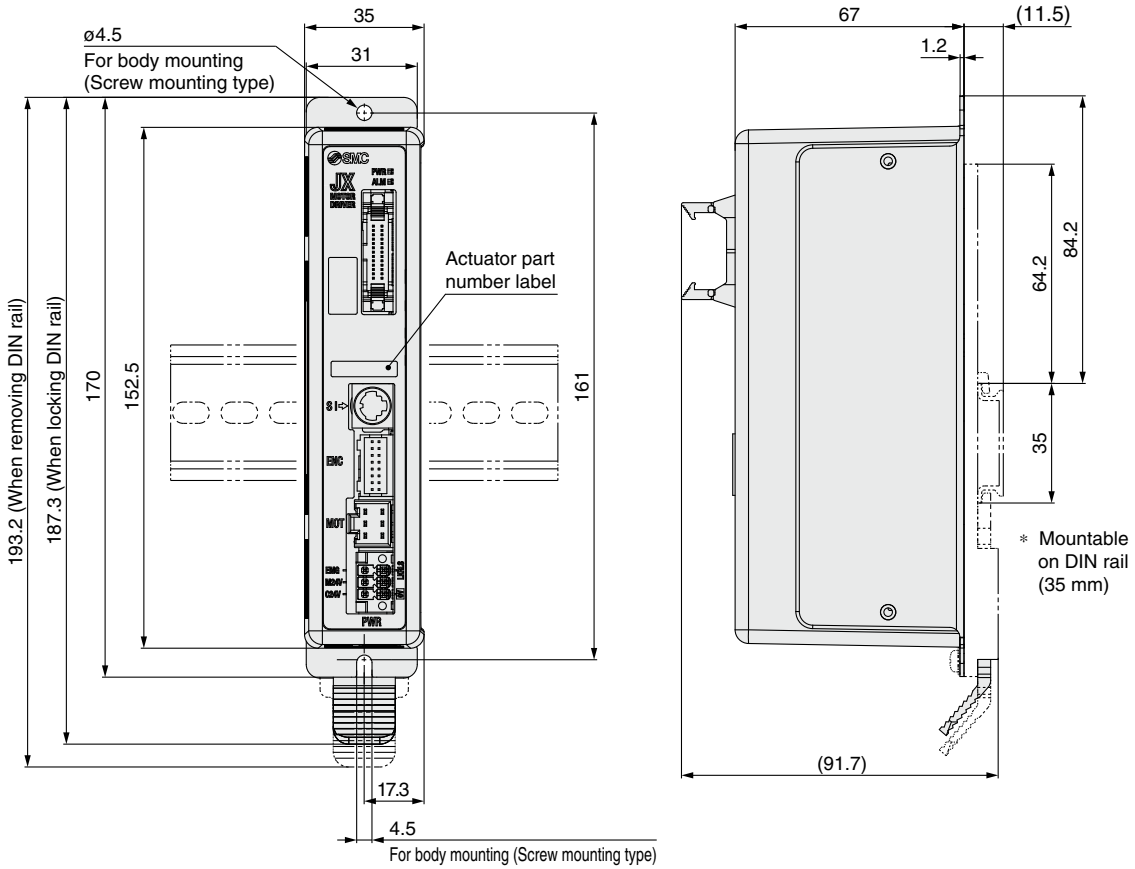
L Dimensions [mm]

No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L	23	35.5	48	60.5	73	85.5	98	110.5	123	135.5	148	160.5	173	185.5	198	210.5	223	235.5	248	260.5
No.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
L	273	285.5	298	310.5	323	335.5	348	360.5	373	385.5	398	410.5	423	435.5	448	460.5	473	485.5	498	510.5

DIN rail mounting adapter
LEC-D0 (with 2 mounting screws)

This should be used when the DIN rail mounting adapter is mounted onto a screw mounting type controller afterward.

Dimensions


35
31
ø4.5
For body mounting
(Screw mounting type)
Actuator part
number label
193.2 (When removing DIN rail)
187.3 (When locking DIN rail)
170
152.5
161
17.3
4.5
For body mounting (Screw mounting type)
67
(11.5)
1.2
64.2
84.2
35
* Mountable
on DIN rail
(35 mm)
(91.7)

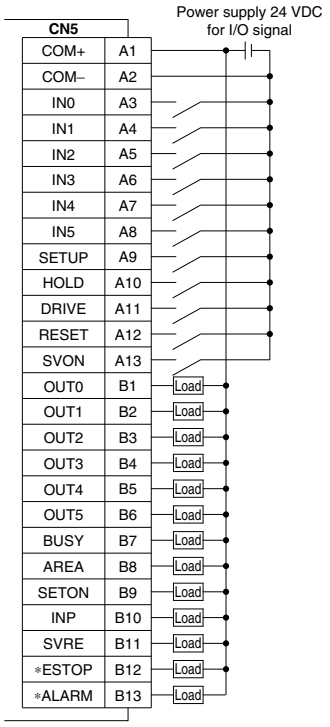
Wiring Example 1

Parallel I/O Connector

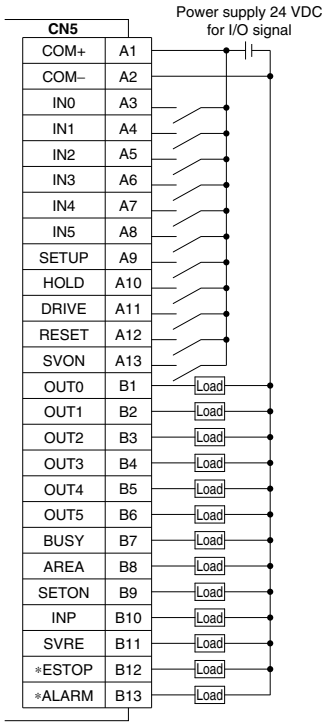
* When you connect a PLC to the parallel I/O connector, use the I/O cable (LEC-CN5-□).
* The wiring changes depending on the type of parallel I/O (NPN or PNP).

Wiring diagram

JXC5H□□ (NPN)



JXC6H□□ (PNP)



Input Signal

Name	Details
COM+	Connects the power supply 24 V for input/output signal
COM-	Connects the power supply 0 V for input/output signal
IN0 to IN5	Step data specified bit no. (Input is instructed by combining IN0 to 5.)
SETUP	Instruction to return to origin
HOLD	Temporarily stops operation
DRIVE	Instruction to drive
RESET	Resets alarm and interrupts operation
SVON	Servo ON instruction

Output Signal

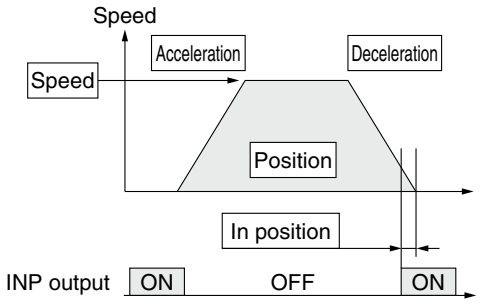
Name	Details
OUT0 to OUT5	Outputs the step data no. during operation
BUSY	Outputs when the actuator is moving
AREA	Outputs within the step data area output setting range
SETON	Outputs when returning to origin
INP	Outputs when target position or target force is reached (Turns on when the positioning or pushing is completed.)
SVRE	Outputs when servo is on
*ESTOP*1	OFF when EMG stop is instructed
*ALARM*1	OFF when alarm is generated

*1 Signal of negative-logic circuit (N.C.)

Step Data Setting

1. Step data setting for positioning

In this setting, the actuator moves toward and stops at the target position.
The following diagram shows the setting items and operation.
The setting items and set values for this operation are stated below.



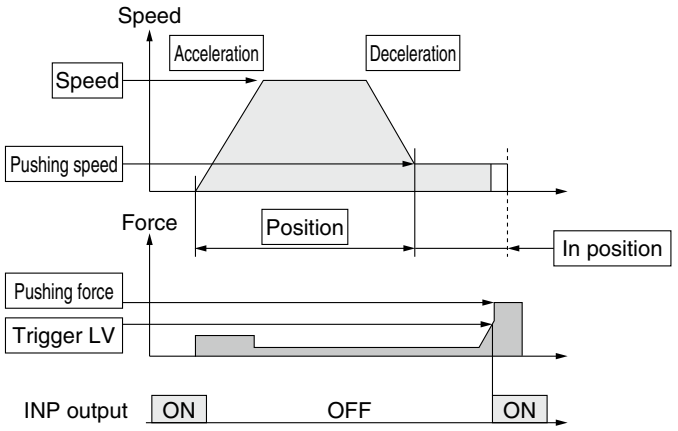
: Need to be set.
: Need to be adjusted as required.
—: Setting is not required.

Step Data (Positioning)

Necessity	Item	Details
◎	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
◎	Speed	Transfer speed to the target position
◎	Position	Target position
○	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
○	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
◎	Pushing force	Set 0. (If values 1 to 100 are set, the operation will be changed to the pushing operation.)
-	Trigger LV	Setting is not required.
-	Pushing speed	Setting is not required.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
○	In position	Condition that turns on the INP output signal. When the actuator enters the range of [in position], the INP output signal turns on. (It is unnecessary to change this from the initial value.) When it is necessary to output the arrival signal before the operation is completed, make the value larger.

2. Step data setting for pushing

The actuator moves toward the pushing start position, and when it reaches that position, it starts pushing with the set force or less.
The following diagram shows the setting items and operation.
The setting items and set values for this operation are stated below.



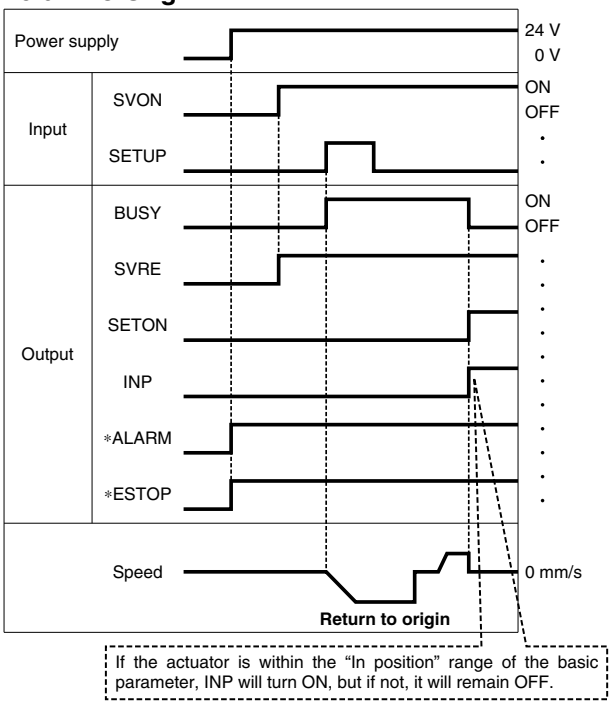
: Need to be set.
: Need to be adjusted as required.

Step Data (Pushing)

Necessity	Item	Details
◎	Movement MOD	When the absolute position is required, set Absolute. When the relative position is required, set Relative.
◎	Speed	Transfer speed to the pushing start position
◎	Position	Pushing start position
○	Acceleration	Parameter which defines how rapidly the actuator reaches the speed set. The higher the set value, the faster it reaches the speed set.
○	Deceleration	Parameter which defines how rapidly the actuator comes to stop. The higher the set value, the quicker it stops.
◎	Pushing force	Pushing force ratio is defined. The setting range differs depending on the electric actuator type. Refer to the operation manual for the electric actuator.
◎	Trigger LV	Condition that turns on the INP output signal. The INP output signal turns on when the generated force exceeds the value. Trigger level should be the pushing force or less.
○	Pushing speed	Pushing speed during pushing. When the speed is set fast, the electric actuator and workpieces might be damaged due to the impact when they hit the end, so this set value should be smaller. Refer to the operation manual for the electric actuator.
○	Moving force	Max. torque during the positioning operation (No specific change is required.)
○	Area 1, Area 2	Condition that turns on the AREA output signal.
◎	In position	Transfer distance during pushing. If the transferred distance exceeds the setting, it stops even if it is not pushing. If the transfer distance is exceeded, the INP output signal will not turn on.

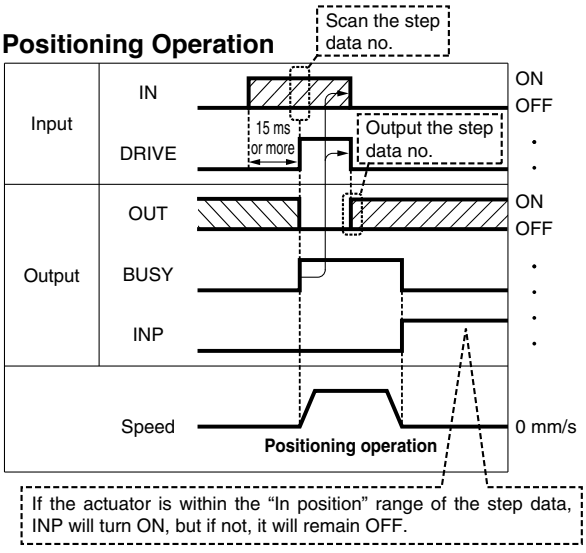
Signal Timing

Return to Origin



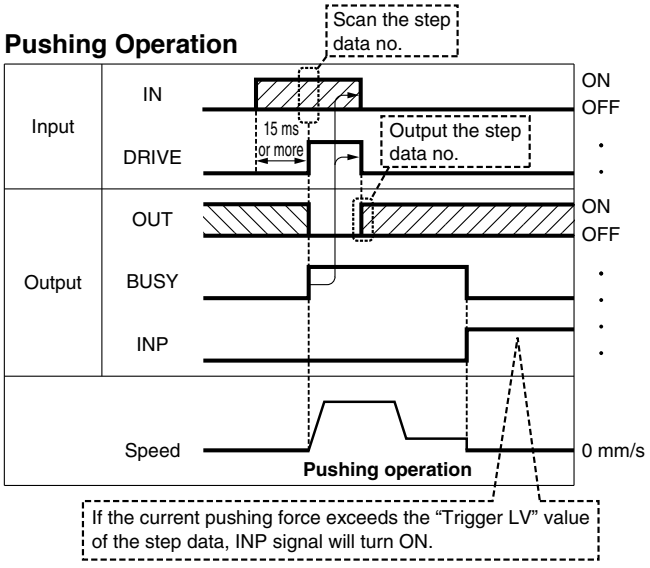
* "*ALARM" and "*ESTOP" are expressed as negative-logic circuits.

Positioning Operation

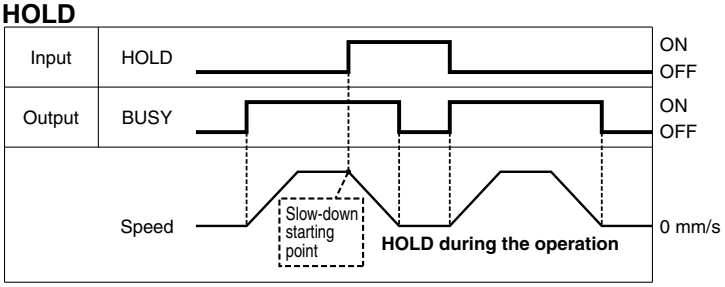


* "OUT" is output when "DRIVE" is changed from ON to OFF.
Refer to the operation manual for details on the controller for the LEM series.
(When power supply is applied, "DRIVE" or "RESET" is turned ON or "*ESTOP" is turned OFF, all of the "OUT" outputs are OFF.)

Pushing Operation

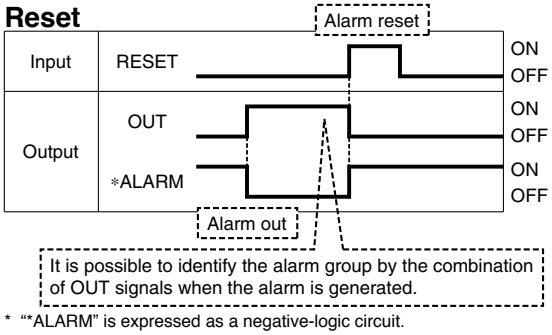


HOLD



* When the actuator is within the "In position" range in the pushing operation, it does not stop even if HOLD signal is input.

Reset

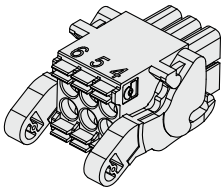


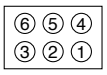
* "*ALARM" is expressed as a negative-logic circuit.

Options

■Power supply plug JXC-CPW

* The power supply plug is an accessory.
<Applicable cable size> AWG20 (0.5 mm²), cover diameter 2.0 mm or less





① C24V ④ 0V
② M24V ⑤ N.C.
③ EMG ⑥ LK RLS

Power supply plug terminal

Terminal name	Function	Details
0V	Common supply (–)	M24V terminal/C24V terminal/EMG terminal/ LK RLS terminal are common (–).
M24V	Motor power supply (+)	Motor power supply (+) of the controller
C24V	Control power supply (+)	Control power supply (+) of the controller
EMG	Stop (+)	Connection terminal of the external stop circuit
LK RLS	Lock release (+)	Connection terminal of the lock release switch

■Communication cable for controller setting

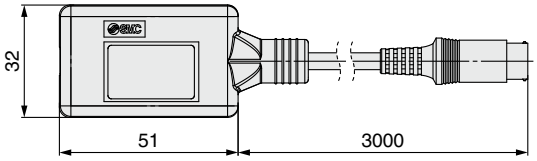
• Controller setting software
• USB driver
Download from SMC's website.

Hardware Requirements

OS	Windows®7, Windows®8.1, Windows®10
Communication interface	USB 1.1 or USB 2.0 ports
Display	1024 x 768 or more

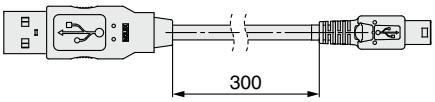
* Windows®7, Windows®8.1, and Windows®10 are registered trademarks of Microsoft Corporation in the United States.

① Communication cable JXC-W2A-C



* It can be connected to the controller directly.

② USB cable LEC-W2-U



■Teaching box

LEC – T1 – 3 J G □

Teaching box

Cable length [m]

3	3

Initial language

J	Japanese
E	English

* The displayed language can be changed to English or Japanese.

Stop switch

G	Equipped with stop switch

Enable switch

Nil	None
S	Equipped with enable switch

* Interlock switch for jog and test function

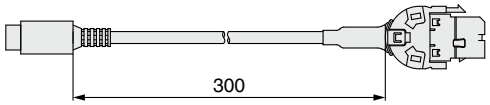
Specifications

Item	Description
Switch	Stop switch, Enable switch (Option)
Cable length [m]	3
Enclosure	IP64 (Except connector)
Operating temperature range [°C]	5 to 50
Operating humidity range [%RH]	90 or less (No condensation)
Weight [g]	350 (Except cable)

* To connect the teaching box (LEC-T1-3□G□) to the controller, a conversion cable (P5062-5) is required. (Refer to page 31.)

Options

■Conversion cable P5062-5 (Cable length: 300 mm)



* To connect the teaching box (LEC-T1-3□G□) to the controller, a conversion cable is required.

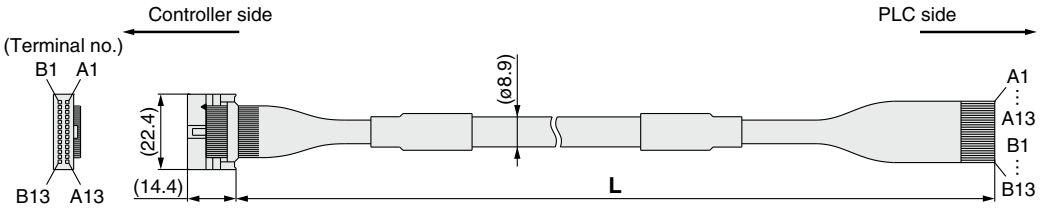
■I/O cable

LEC − CN5 − 1

Cable length (L) [m]

1	1.5
3	3
5	5

* Conductor size: AWG28



Connector pin no.	Insulation color	Dot mark	Dot color
A1	Light brown	■	Black
A2	Light brown	■	Red
A3	Yellow	■	Black
A4	Yellow	■	Red
A5	Light green	■	Black
A6	Light green	■	Red
A7	Gray	■	Black
A8	Gray	■	Red
A9	White	■	Black
A10	White	■	Red
A11	Light brown	■ ■	Black
A12	Light brown	■ ■	Red
A13	Yellow	..	Black

Connector pin no.	Insulation color	Dot mark	Dot color
B1	Yellow	■ ■	Red
B2	Light green	■ ■	Black
B3	Light green	■ ■	Red
B4	Gray	■ ■	Black
B5	Gray	■ ■	Red
B6	White	■ ■	Black
B7	White	■ ■	Red
B8	Light brown	■ ■ ■	Black
B9	Light brown	■ ■ ■	Red
B10	Yellow	■ ■ ■	Black
B11	Yellow	■ ■ ■	Red
B12	Light green	■ ■ ■	Black
B13	Light green	■ ■ ■	Red
—	Shield		

Weight

Product no.	Weight [g]
LEC-CN5-1	170
LEC-CN5-3	320
LEC-CN5-5	520

Options: Actuator Cable

[Robotic cable, standard cable for step motor (Servo/24 VDC)]

LE − CP − 1 − ☐

Cable length (L) [m]

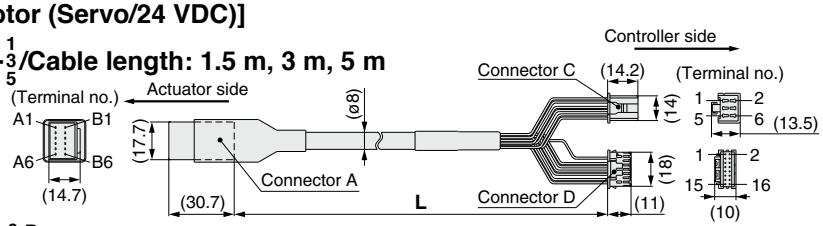
1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

*1 Produced upon receipt of order (Robotic cable only)

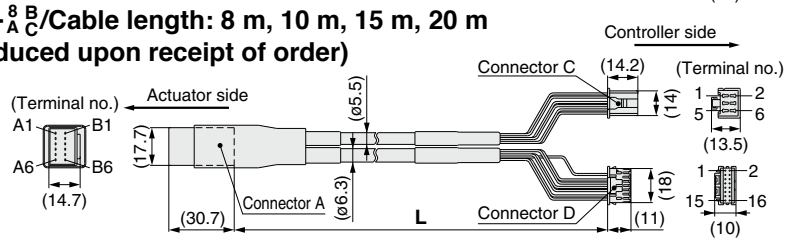
Cable type

Nil	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-1/3/5/Cable length: 1.5 m, 3 m, 5 m

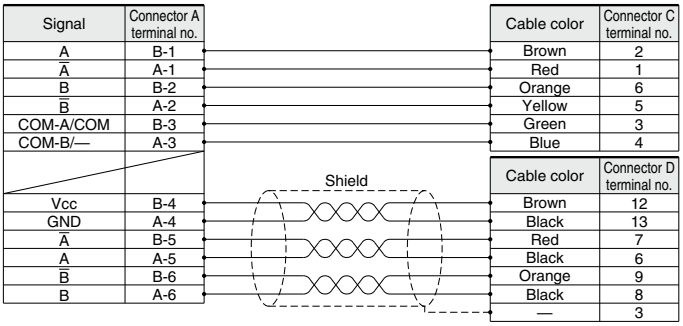


LE-CP-8/A/B/C/Cable length: 8 m, 10 m, 15 m, 20 m
(*1 Produced upon receipt of order)



Weight

Product no.	Weight [g]	Note
LE-CP-1-S	190	Standard cable
LE-CP-3-S	280	
LE-CP-5-S	460	
LE-CP-1	140	Robotic cable
LE-CP-3	260	
LE-CP-5	420	
LE-CP-8	790	
LE-CP-A	980	
LE-CP-B	1460	
LE-CP-C	1940	



[Robotic cable, standard cable with lock and sensor for step motor (Servo/24 VDC)]

LE − CP − 1 − B − ☐

Cable length (L) [m]

1	1.5
3	3
5	5
8	8*1
A	10*1
B	15*1
C	20*1

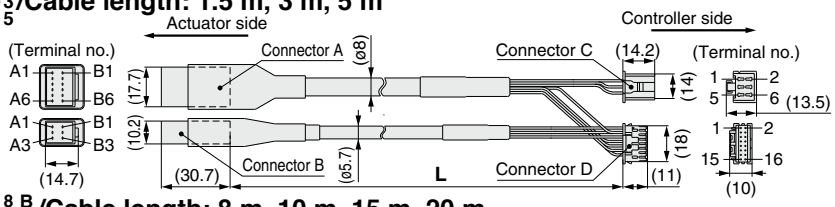
*1 Produced upon receipt of order (Robotic cable only)

With lock and sensor

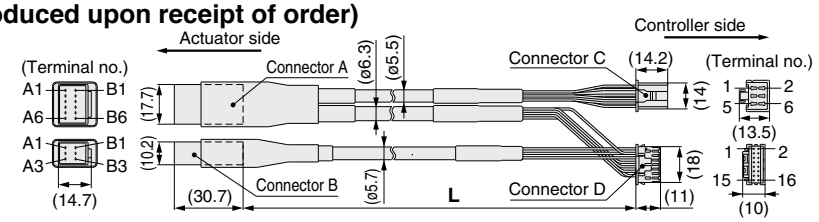
Cable type

Nil	Robotic cable (Flexible cable)
S	Standard cable

LE-CP-1/3/5/Cable length: 1.5 m, 3 m, 5 m

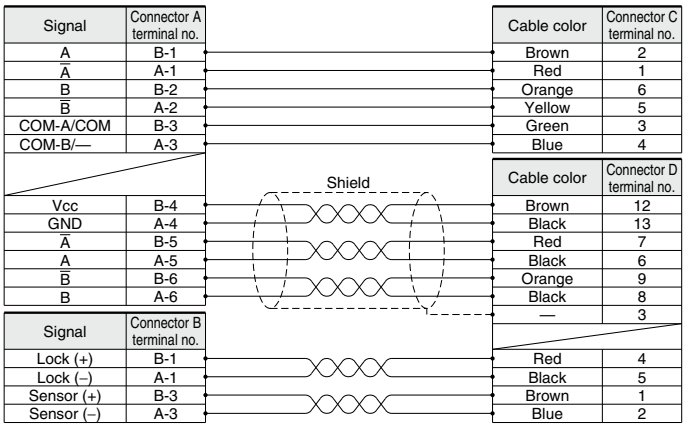


LE-CP-8/A/B/C/Cable length: 8 m, 10 m, 15 m, 20 m
(*1 Produced upon receipt of order)



Weight

Product no.	Weight [g]	Note
LE-CP-1-B-S	240	Standard cable
LE-CP-3-B-S	380	
LE-CP-5-B-S	630	
LE-CP-1-B	190	Robotic cable
LE-CP-3-B	360	
LE-CP-5-B	590	
LE-CP-8-B	1060	
LE-CP-A-B	1320	
LE-CP-B-B	1920	
LE-CP-C-B	2620	



UNIT CONVERSIONS

	unit	conversion	result
length	m	x 3.28	ft
	mm	x 0.04	in
mass	g	x 0.04	oz
volume	cm^3	÷ 16.387	in^3
	L	x 61.024	in^3
speed	mm/s	÷ 25.4	in/s
pressure	MPa	x 145	psi
	kPa	÷ 6.895	psi
temperature	°C	x1.8 then add 32	°F
torque	N·m	x 0.738	ft-lb
force	N	÷ 4.448	lbf
flow	L/min	÷ 28.317	cfm

⚠ 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.

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

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

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

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines.
(Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
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. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing industries.
If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
If anything is unclear, contact your nearest sales branch.

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.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

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