Motorless Type

Electric Actuators

New

RoHS

Your motor and driver can be used together!
Manufacturers of compatible motors: 8 companies

Mitsubishi Electric Corporation	YASKAWA Electric Corporation
SANYO DENKI CO., LTD.	OMRON Corporation
Panasonic Corporation	FANUC CORPORATION
FASTECH Co., Ltd.	Rockwell Automation, Inc. (Allen-Bradley)

Slider Type *Series* LEF

Ball Screw Drive/*Series* LEFS

Size	Stroke
25	50 to 600
32	50 to 800
40	150 to 1000

Belt Drive/*Series* LEFB

Size	Stroke
25	300 to 2000
32	300 to 2500
40	300 to 3000

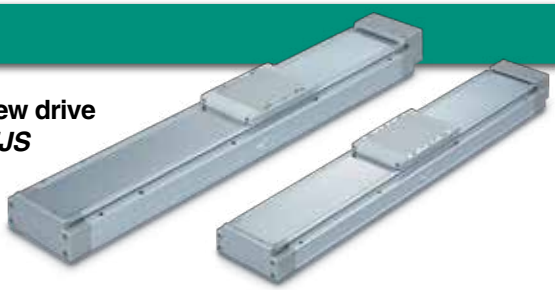
Belt drive
Series LEFB

Ball screw drive
Series LEFS

High Rigidity Slider Type *Series* LEJ

Ball Screw Drive/*Series* LEJS

Size	Stroke
40	200 to 1200
63	300 to 1500



Ball screw drive
Series LEJS

Rod Type *Series* LEY

Size	Stroke
25	30 to 400
32	30 to 500
63	100 to 800

Guide Rod Type *Series* LEYG

Size	Stroke
25	30 to 300
32	

***Series* LE□**

SMC

CAT.NAS100-111A

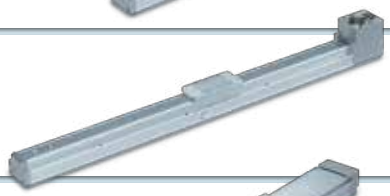
Motorless Type Electric Actuators

Compatible Motors by Manufacturer (100 W/200 W/400 W equivalent)

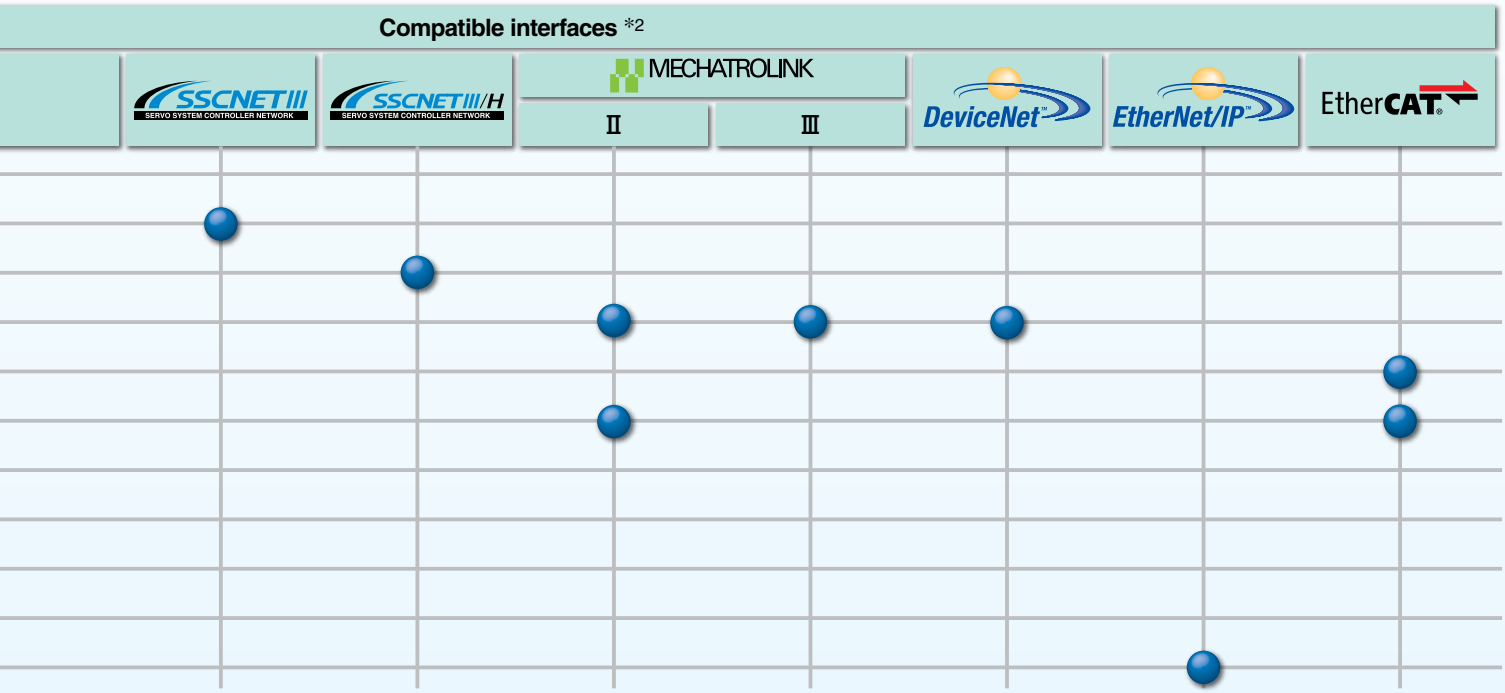
Manufacturer	Series	Type *1	Pulse input	CC-Link
Mitsubishi Electric Corporation	MELSERVO-JN	HF-KN	●	
	MELSERVO-J3	HF-KP	●	●
	MELSERVO-J4	HG-KR	●	
YASKAWA Electric Corporation	Σ-V	SGMJV	●	
SANYO DENKI CO., LTD.	SANMOTION R	R2	●	
OMRON Corporation	G5	R88M-K	●	
Panasonic Corporation	MINAS-A4	MSMD	●	
	MINAS-A5	MSMD/MHMD	●	
FANUC CORPORATION	β is	β	●	
FASTECH Co., Ltd.	Ezi-SERVO	EzM	●	
Rockwell Automation, Inc. (Allen-Bradley)	MP–	MPL/VPL		

*1 Motors should be applicable to the mounting dimensions and compatible motor types. Select a motor after checking the specifications of each model.
Additionally, when considering a motor other than those shown above, select a motor within the range of the specifications after checking the mounting dimensions.

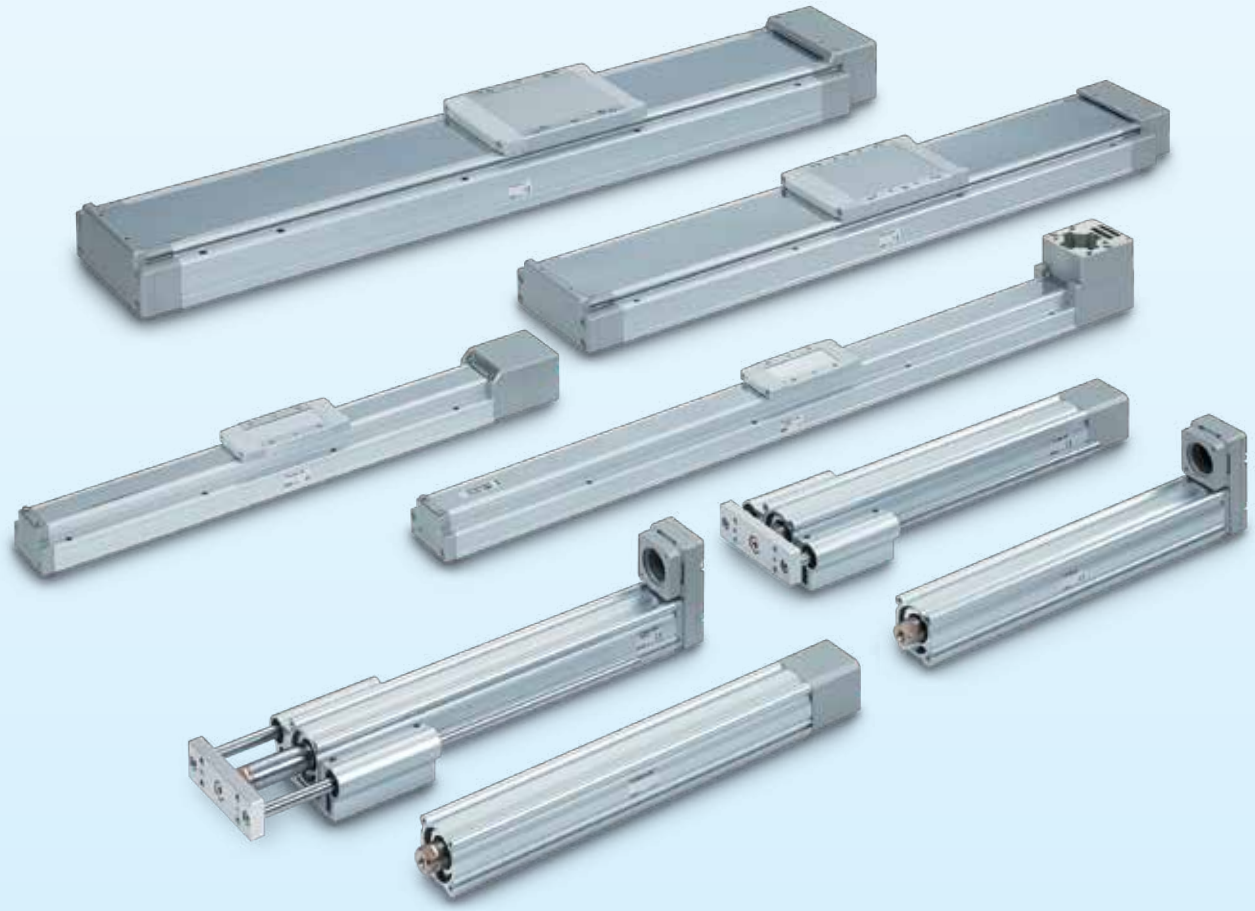
Series Variations

Series	Size 25	Size 32	Size 40	Size 63	Page
Slider Type **Ball screw drive** *Series* ***LEFS*** 	100 W	200 W	400 W		5
Slider Type **Belt drive** *Series* ***LEFB*** 	100 W	200 W	400 W		17
High Rigidity Slider Type **Ball screw drive** *Series* ***LEJS*** 			100 W	200 W	33
Rod Type *Series* ***LEY*** 	100 W	200 W		400 W	53
Guide Rod Type *Series* ***LEYG*** 	100 W	200 W			69

The values in ● shows the equivalent motor capacity.



*2 For details about compatible interfaces, refer to each manufacturer's catalog.



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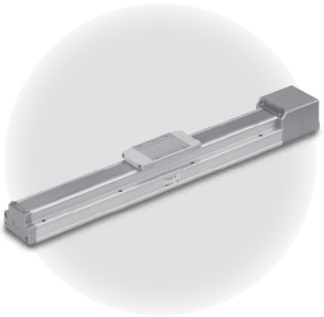
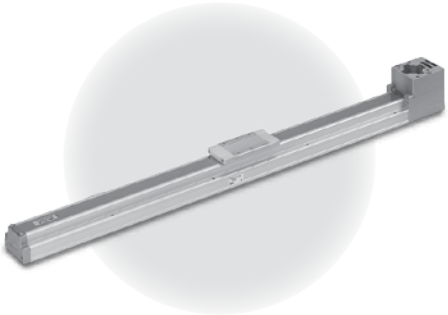
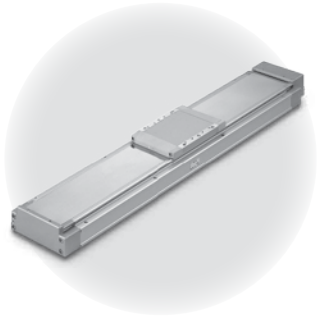
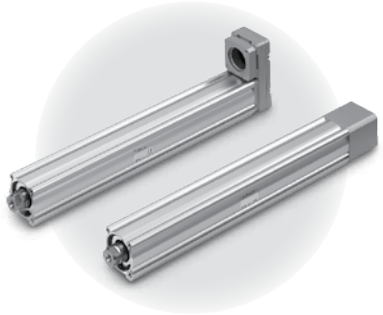
Motorless Type Electric Actuators

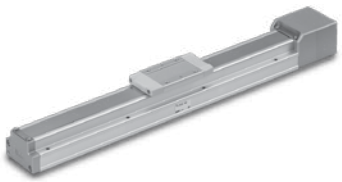








Model Selection



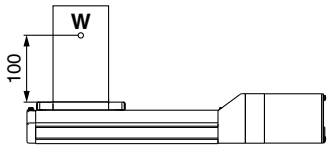
Selection Procedure

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

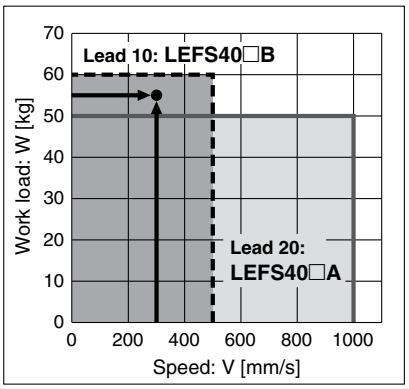
Selection Example

Operating conditions

- Workpiece mass: 55 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s^2]
- Stroke: 200 [mm]
- Mounting position: Horizontal upward
- Incremental encoder
- Workpiece mounting condition:



- Settling time



<Speed–Work Load Graph> (LEFS40)

Step 1 Check the work load–speed. <Speed–Work Load Graph>

Select a model based on the workpiece mass and speed which are within the range of the actuator body specifications with reference to the "Speed–Work Load Graph (Guide)" on page 6.

Selection example) The **LEFS40S4B-200** is temporarily selected based on the graph shown on the right side.

∗ Refer to the selection method of motor manufacturers for regeneration resistance.

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 obtained 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 motor types, load and in positioning of the step data. Therefore, calculate the settling time with reference to the following value.

$$T4 = 0.05 \text{ [s]}$$

∗ The conditions for the settling time vary depending on the motor or driver to be used.

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

$T1 = V/a1 = 300/3000 = 0.1$ [s],

$T3 = V/a2 = 300/3000 = 0.1$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{200 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.57 \text{ [s]}$$

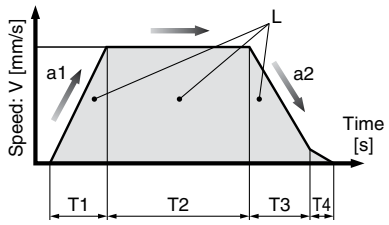
$T4 = 0.05$ [s]

Therefore, the cycle time can be obtained as follows.

$T = T1 + T2 + T3 + T4$

$= 0.1 + 0.57 + 0.1 + 0.05$

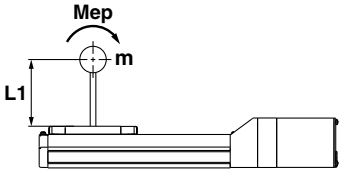
$=$ **0.82 [s]**

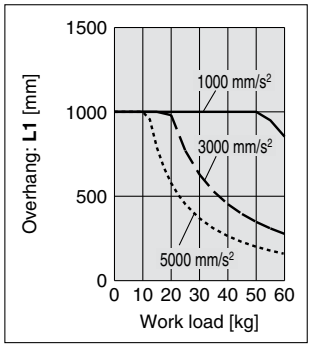


L : Stroke [mm]
··· (Operating condition)
V : Speed [mm/s]
··· (Operating condition)
a1: Acceleration [mm/s^2]
··· (Operating condition)
a2: Deceleration [mm/s^2]
··· (Operating condition)

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 in position is completed

Step 3 Check the guide moment.





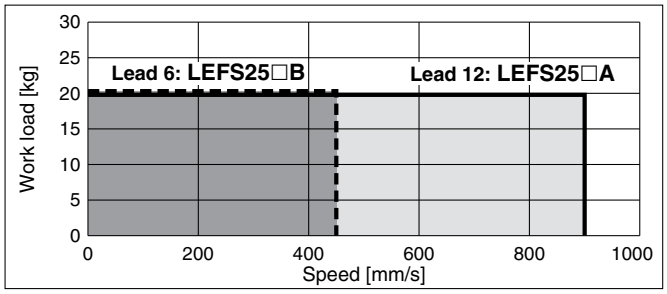
Based on the above calculation result, the LEFS40S4B-200 is selected.

Speed–Work Load Graph (Guide)

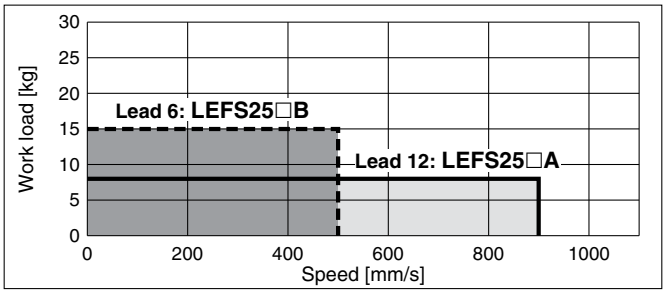
* The values shown below are allowable values of the actuator body. Do not use the actuator so that it exceeds these specification ranges.
* The allowable speed is restricted depending on the stroke. Select it by referring to the "Allowable Stroke Speed" below.

LEFS25/Ball Screw Drive

Horizontal

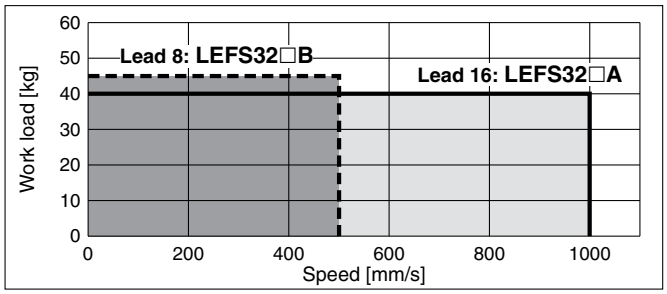


Vertical

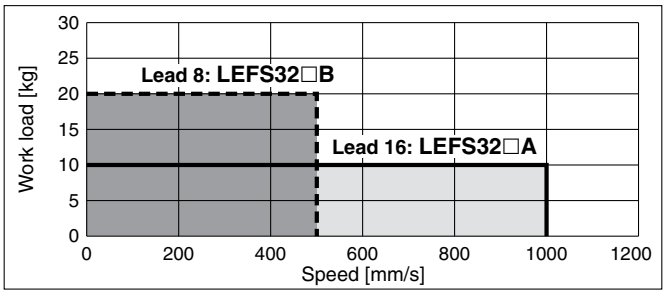


LEFS32/Ball Screw Drive

Horizontal

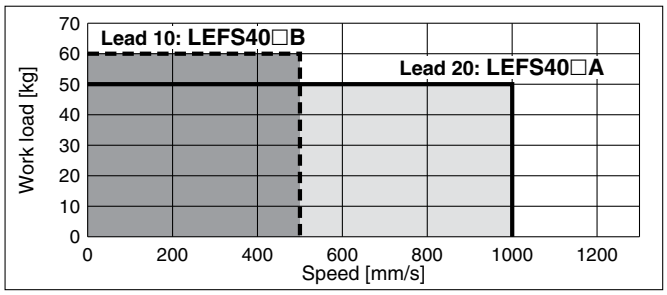


Vertical



LEFS40/Ball Screw Drive

Horizontal



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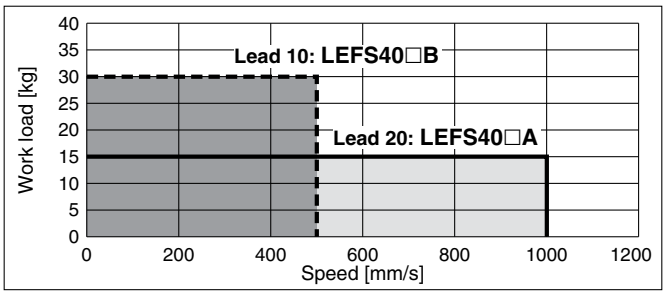


Allowable Stroke Speed

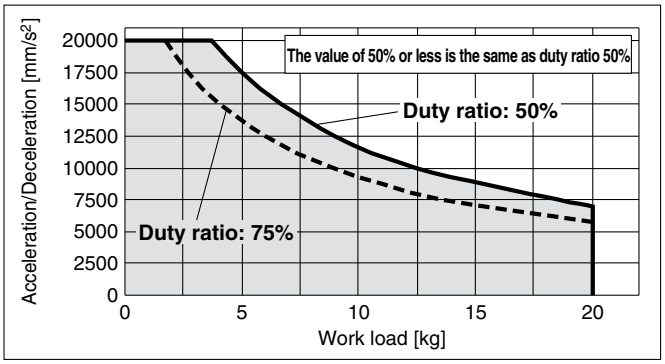
[mm/s]

Model	Motor	Lead		Stroke [mm]									
		Symbol	[mm]	Up to 100	Up to 200	Up to 300	Up to 400	Up to 500	Up to 600	Up to 700	Up to 800	Up to 900	Up to 1000
LEFS25	100 W equivalent	A	12	900				720	540	—	—	—	—
		B	6	450				360	270	—	—	—	—
		(Motor rotation speed)		(4500 rpm)				(3650 rpm)	(2700 rpm)	—	—	—	—
LEFS32	200 W equivalent	A	16	1000					800	620	500	—	—
		B	8	500					400	310	250	—	—
		(Motor rotation speed)		(3750 rpm)					(3000 rpm)	(2325 rpm)	(1875 rpm)	—	—
LEFS40	400 W equivalent	A	20	—	1000					940	760	620	520
		B	10	—	500					470	380	310	260
		(Motor rotation speed)		—	(3000 rpm)					(2820 rpm)	(2280 rpm)	(1860 rpm)	(1560 rpm)

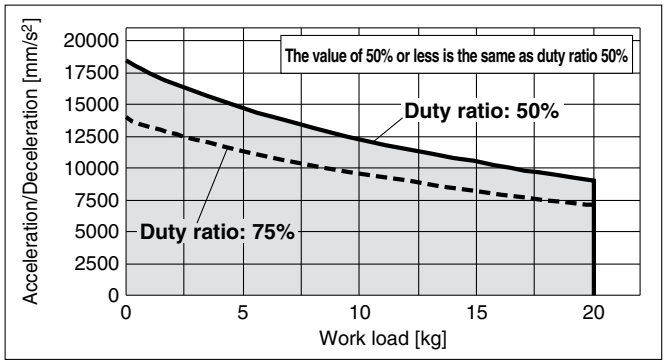
Work Load–Acceleration/Deceleration Graph (Guide)

LEFS25/Ball Screw Drive: Horizontal

LEFS25□A

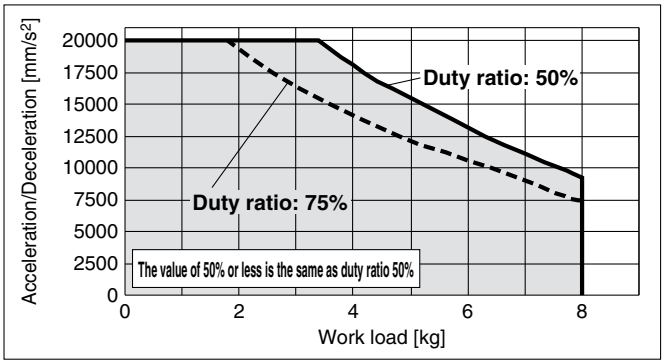


LEFS25□B

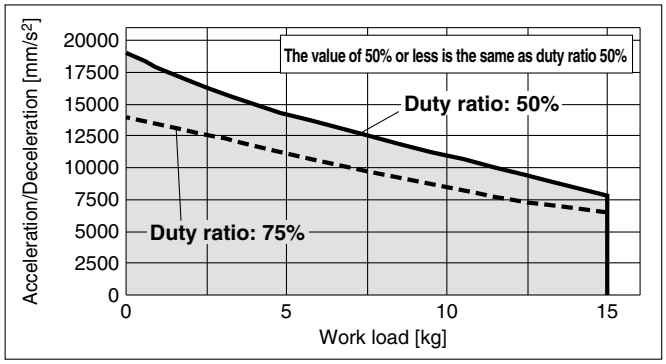


LEFS25/Ball Screw Drive: Vertical

LEFS25□A

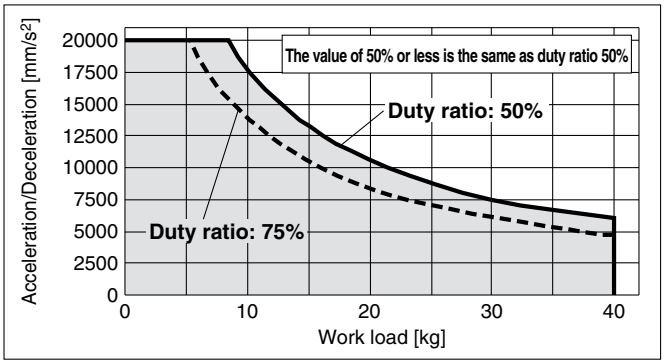


LEFS25□B

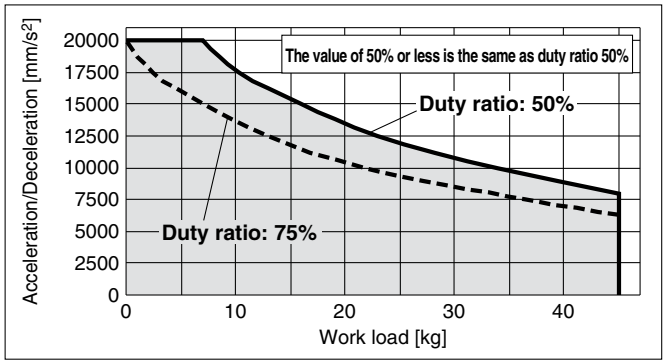


LEFS32/Ball Screw Drive: Horizontal

LEFS32□A

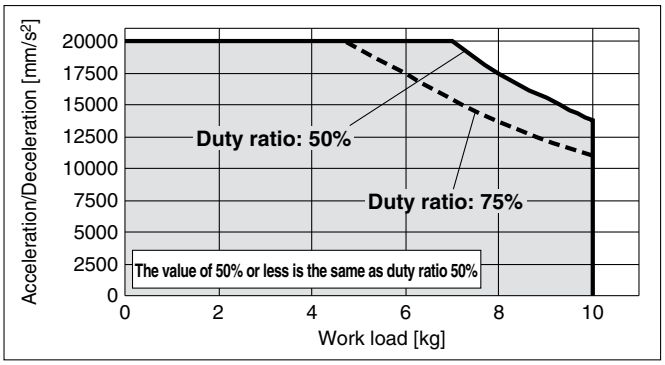


LEFS32□B

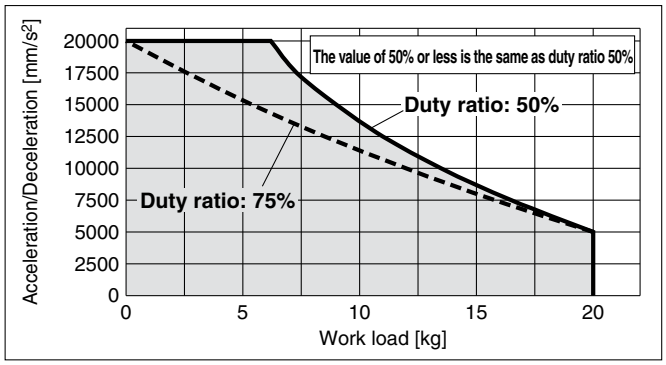


LEFS32/Ball Screw Drive: Vertical

LEFS32□A



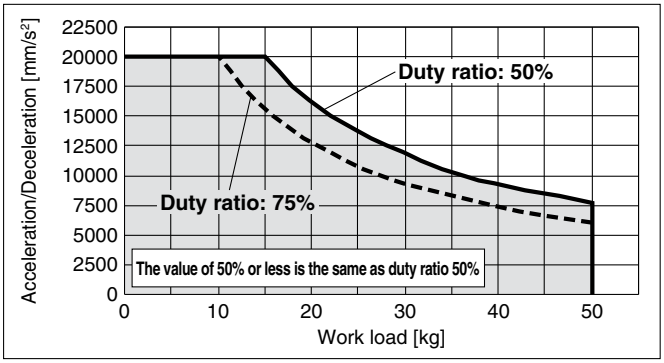
LEFS32□B



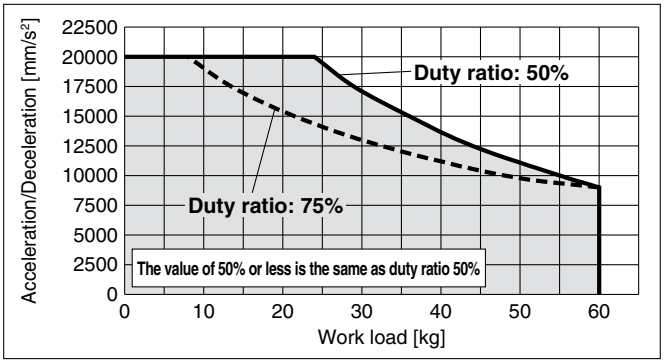
Work Load–Acceleration/Deceleration Graph (Guide)

LEFS40/Ball Screw Drive: Horizontal

LEFS40□A

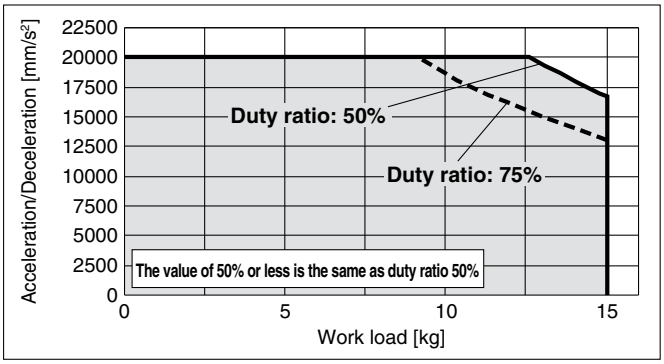


LEFS40□B

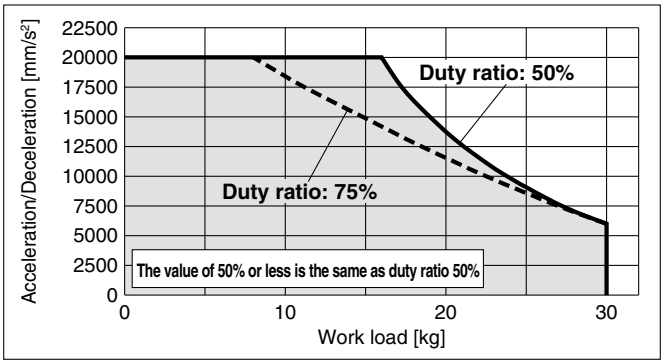


LEFS40/Ball Screw Drive: Vertical

LEFS40□A



LEFS40□B



These graphs are examples of when the standard motor is mounted.
Determine the duty ratio after taking into account the load factor of the motor or driver to be used.

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang when the center of gravity of the workpiece overhangs in one direction. When the center of gravity of the workpiece overhangs in two directions, refer to the Electric Actuator Selection Software for confirmation, http://www.smcworld.com

Acceleration/Deceleration ——1000 mm/s² – – –3000 mm/s² ·····5000 mm/s² –·–·–10000 mm/s² - - - -20000 mm/s²

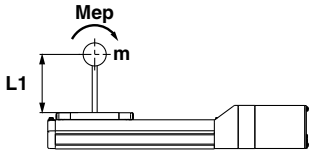
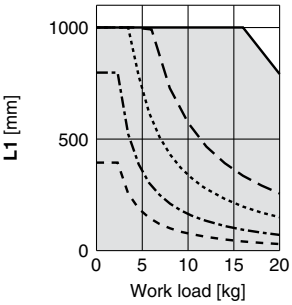
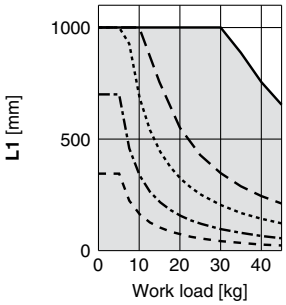
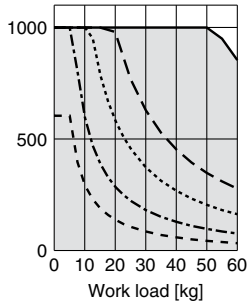
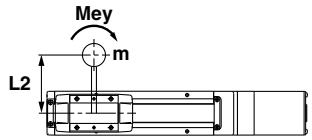
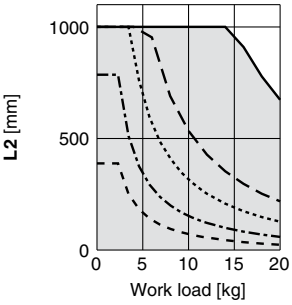
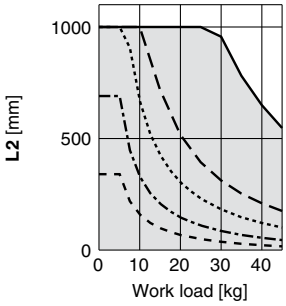
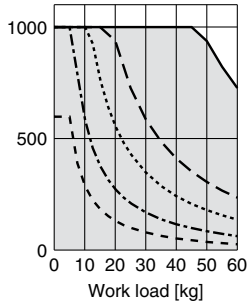
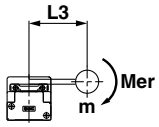
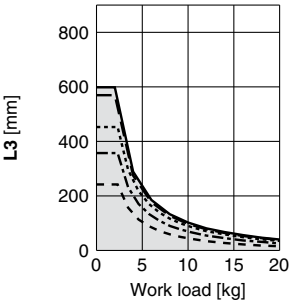
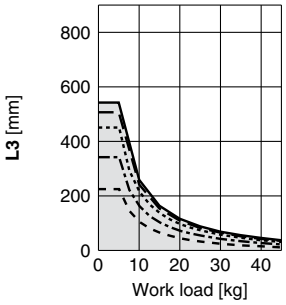
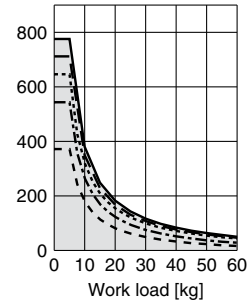
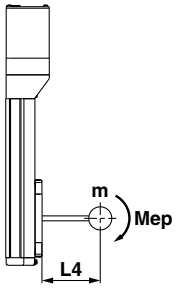
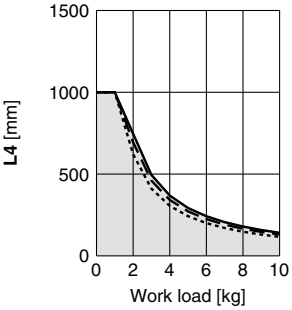
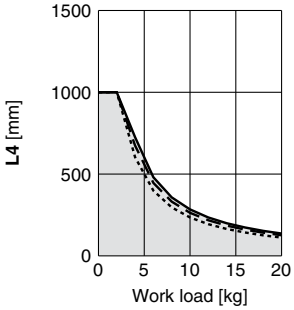
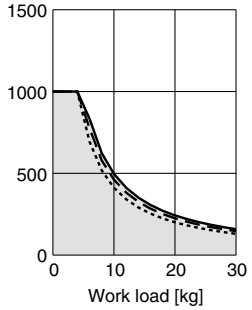
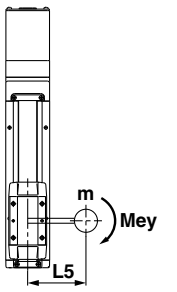
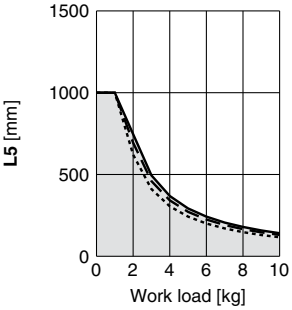
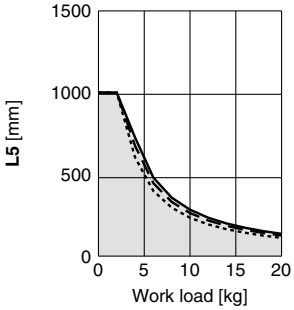
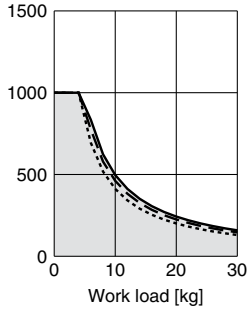
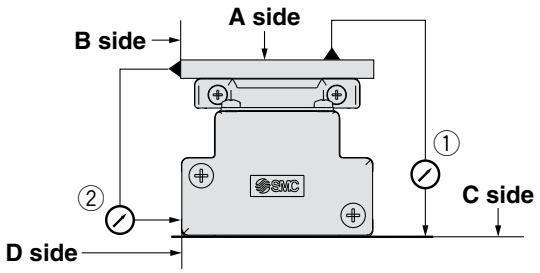
Orientation	Load overhanging direction **m**: Work load [kg] **Me**: Dynamic allowable moment [N·m] **L**: Overhang to the work load center of gravity [mm]		Model LEFS25□	Model LEFS32□	Model LEFS40□
Horizontal		Pitching			
		Yawing			
		Rolling			
Vertical		Pitching			
		Yawing			

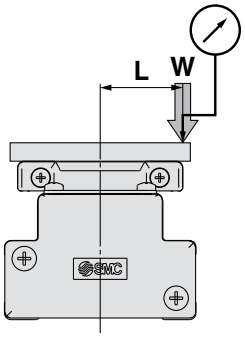
Table Accuracy

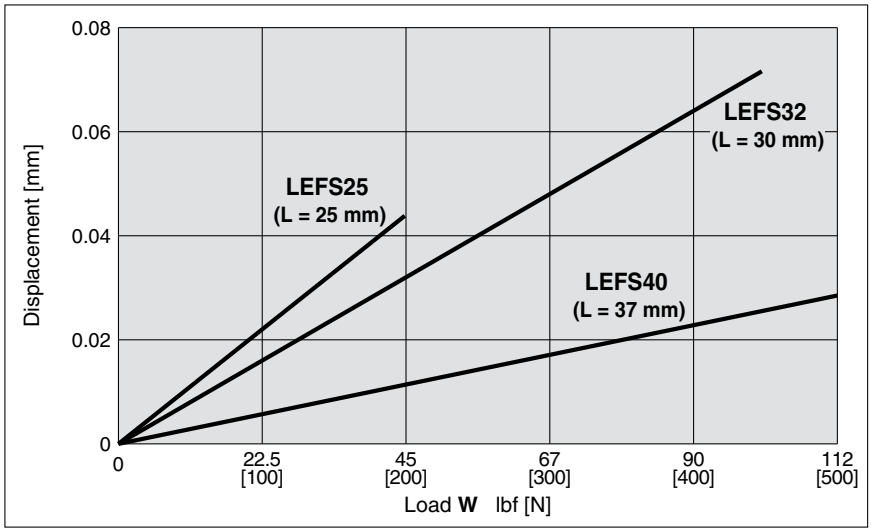


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEFS25	0.05	0.03
LEFS32	0.05	0.03
LEFS40	0.05	0.03

Note) Traveling parallelism does not include the mounting surface accuracy.

Table Displacement (Reference Value)





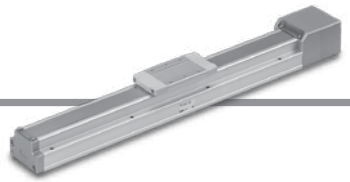
Note 1) This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.
Note 2) Check the clearance and play of the guide separately.

Electric Actuator/Slider Type
Ball Screw Drive

Motorless Type

Series LEFS
LEFS25, 32, 40

RoHS



How to Order

LEFS **25** **NZ** **A** – **100**

❶ ❷ ❸ ❹

❶ Size

25
32
40

❷ Motor type

Symbol	Type
NZ	Mounting type Z
NY	Mounting type Y
NX	Mounting type X
NW	Mounting type W
NM1	Mounting type M1

❸ Lead [mm]

Symbol	LEFS25	LEFS32	LEFS40
A	12	16	20
B	6	8	10

❹ Stroke [mm]

50	50
to	to
1000	1000

∗ Refer to the applicable stroke table.

Applicable Stroke Table

●Standard

Model \ Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	Manufacturable stroke range [mm]
LEFS25	●	●	●	●	●	●	●	●	●	●	●	●	—	—	—	—	—	—	—	—	50 to 600
LEFS32	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	—	—	—	—	50 to 800
LEFS40	—	—	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	150 to 1000

∗ Strokes are manufacturable in 1 mm increments. Refer to the manufacturable stroke range. However, please consult with SMC for strokes other than those shown above as they are produced as special orders.

Compatible Motors

Applicable motor model			Size/Motor type							
			25			32/40				
Manufacturer	Series	Type	"NZ" Mounting type Z	"NY" Mounting type Y	"NM1" Mounting type M1	"NZ" Mounting type Z	"NY" Mounting type Y	"NX" Mounting type X	"NW" Mounting type W	"NM1" Mounting type M1
Mitsubishi Electric Corporation	MELSERVO-JN	HF-KN	●	—	—	●	—	—	—	—
	MELSERVO-J3	HF-KP	●	—	—	●	—	—	—	—
	MELSERVO-J4	HG-KR	●	—	—	●	—	—	—	—
YASKAWA Electric Corporation	Σ-V	SGMJV	●	—	—	●	—	—	—	—
SANYO DENKI CO., LTD.	SANMOTION R	R2	●	—	—	●	—	—	—	—
OMRON Corporation	G5	R88M-K	●	—	—	—	●	—	—	—
Panasonic Corporation	MINAS-A4	MSMD	—	●	—	—	●	—	—	—
	MINAS-A5	MSMD/MHMD	—	●	—	—	●	—	—	—
FANUC CORPORATION	β is	β	●	—	—	● (β1 only)	—	—	●	—
FASTECH Co., Ltd.	Ezi-SERVO	EzM	—	—	●	—	—	—	—	●
Rockwell Automation, Inc. (Allen-Bradley)	MP–	MPL/VPL	—	—	—	—	—	●	—	—

Specifications Note 2)

- Values in this specification table are the allowable values of the actuator body with the standard motor mounted.
- Do not use the actuator so that it exceeds these values.

Model				LEFS25		LEFS32		LEFS40	
Actuator specifications	Stroke [mm] Note 1)			50, 100, 150, 200, 250, 300 350, 400, 450, 500, 550, 600		50, 100, 150, 200, 250, 300, 350, 400 450, 500, 550, 600, 650, 700, 750, 800		150, 200, 250, 300, 350, 400, 450, 500, 550 600, 650, 700, 750, 800, 850, 900, 950, 1000	
	Work load [kg]		Horizontal	20	20	40	45	50	60
			Vertical	8	15	10	20	15	30
	Speed [mm/s]	Stroke range	Up to 400	900	450	1000	500	1000	500
			401 to 500	720	360	1000	500	1000	500
			501 to 600	540	270	800	400	1000	500
			601 to 700	—	—	620	310	940	470
			701 to 800	—	—	500	250	760	380
			801 to 900	—	—	—	—	620	310
			901 to 1000	—	—	—	—	520	260
	Pushing return to origin speed [mm/s]			30 or less					
	Positioning repeatability [mm]			±0.02					
	Lost motion [mm] Note 3)			0.1 or less					
	Ball screw specifications		Thread size [mm]	ø10		ø12		ø15	
			Lead [mm]	12	6	16	8	20	10
			Shaft length [mm]	Stroke + 150		Stroke + 185		Stroke + 235	
	Max. acceleration/deceleration [mm/s²]			20000 Note 4)					
	Impact/Vibration resistance [m/s²]			50/20					
	Actuation type			Ball screw					
	Guide type			Linear guide					
	Operating temperature range			41 to 104°F (5 to 40°C)					
	Operating humidity range [%RH]			90 or less (No condensation)					
Other specifications Note 5)	Actuation unit weight [kg]			0.2		0.3		0.55	
	Other inertia [kg·cm²]			0.02		0.08		0.08	
	Friction coefficient			0.05					
	Mechanical efficiency			0.8					
Reference motor specifications	Motor shape			□40		□60			
	Motor type			AC servo motor (100 V/200 V)					
	Rated output capacity [W]			100		200		400	
	Rated torque lbf·ft [N·m]			0.23 [0.32]		0.47 [0.64]		0.96 [1.3]	
	Rated rotation [rpm]			3000					

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Do not allow collisions at either end of the table traveling distance at a speed exceeding "pushing return to origin speed."
Additionally, when running the positioning operation, do not set within 2 mm of both ends.
Note 3) A reference value for correcting an error in reciprocal operation.
Note 4) Maximum acceleration/deceleration changes according to the work load.
Refer to the "Work Load–Acceleration/Deceleration Graph (Guide)" for ball screw drive on pages 7 and 8.
Note 5) Each value is a guide. Use such value to select a motor capacity.

Weight

Model	LEFS25											
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600
Product weight [kg]	1.50	1.70	1.80	2.00	2.10	2.25	2.40	2.55	2.70	2.80	2.90	3.10

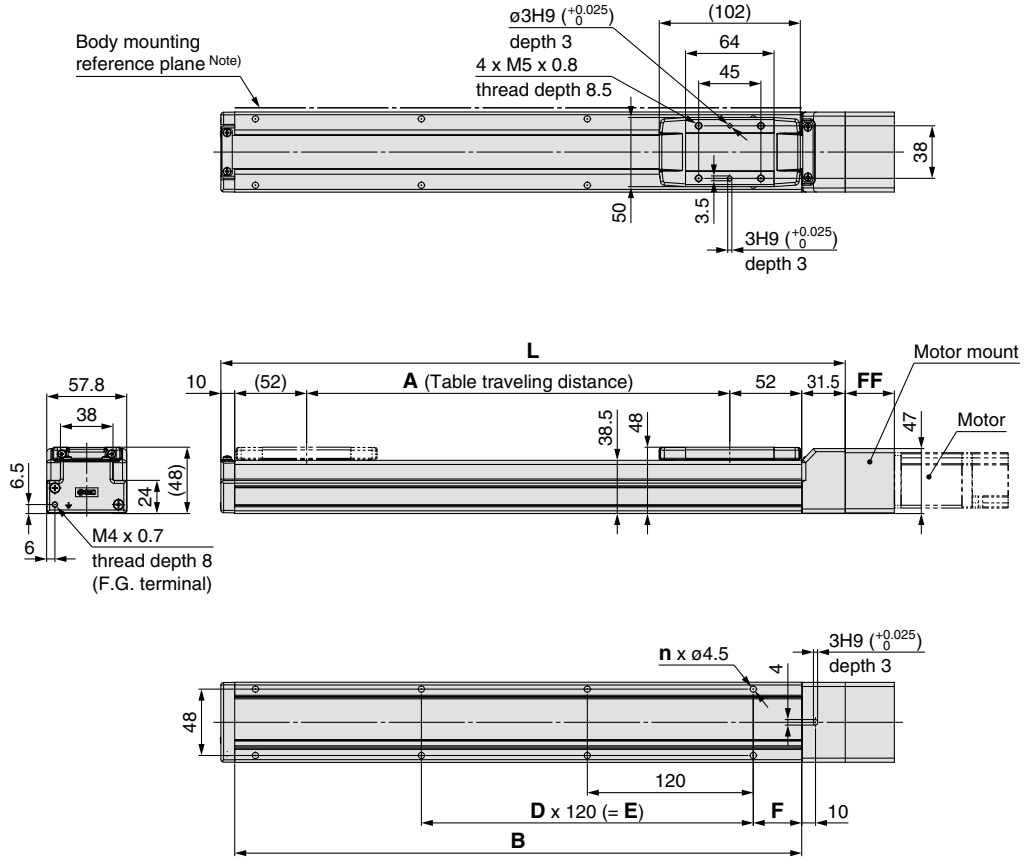
Model	LEFS32															
Stroke [mm]	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Product weight [kg]	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00	5.20	5.40

Model	LEFS40																		
Stroke [mm]	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Product weight [kg]	4.60	4.80	5.20	5.35	5.70	5.95	6.30	6.50	6.80	6.95	7.40	7.60	8.00	8.15	8.50	8.75	9.10	9.30

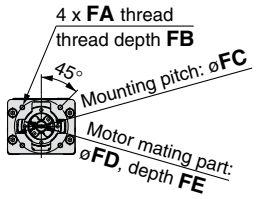
Refer to the "Motor Mounting" on page 16 for details about motor mounting and included parts.

Dimensions: Ball Screw Drive

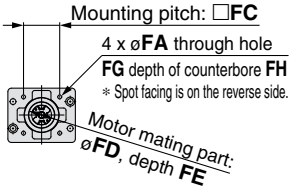
LEFS25



Motor type: NZ, NY



Motor type: NM1



Note) 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)

Dimensions [mm]

Stroke	L	A	B	n	D	E	F
50	201.5	56	160	4	—	—	20
100	251.5	106	210	4	—	—	35
150	301.5	156	260	4	—	—	35
200	351.5	206	310	6	2	240	35
250	401.5	256	360	6	2	240	35
300	451.5	306	410	8	3	360	35
350	501.5	356	460	8	3	360	35
400	551.5	406	510	8	3	360	35
450	601.5	456	560	10	4	480	35
500	651.5	506	610	10	4	480	35
550	701.5	556	660	12	5	600	35
600	751.5	606	710	12	5	600	35

Motor Mounting Dimensions [mm]

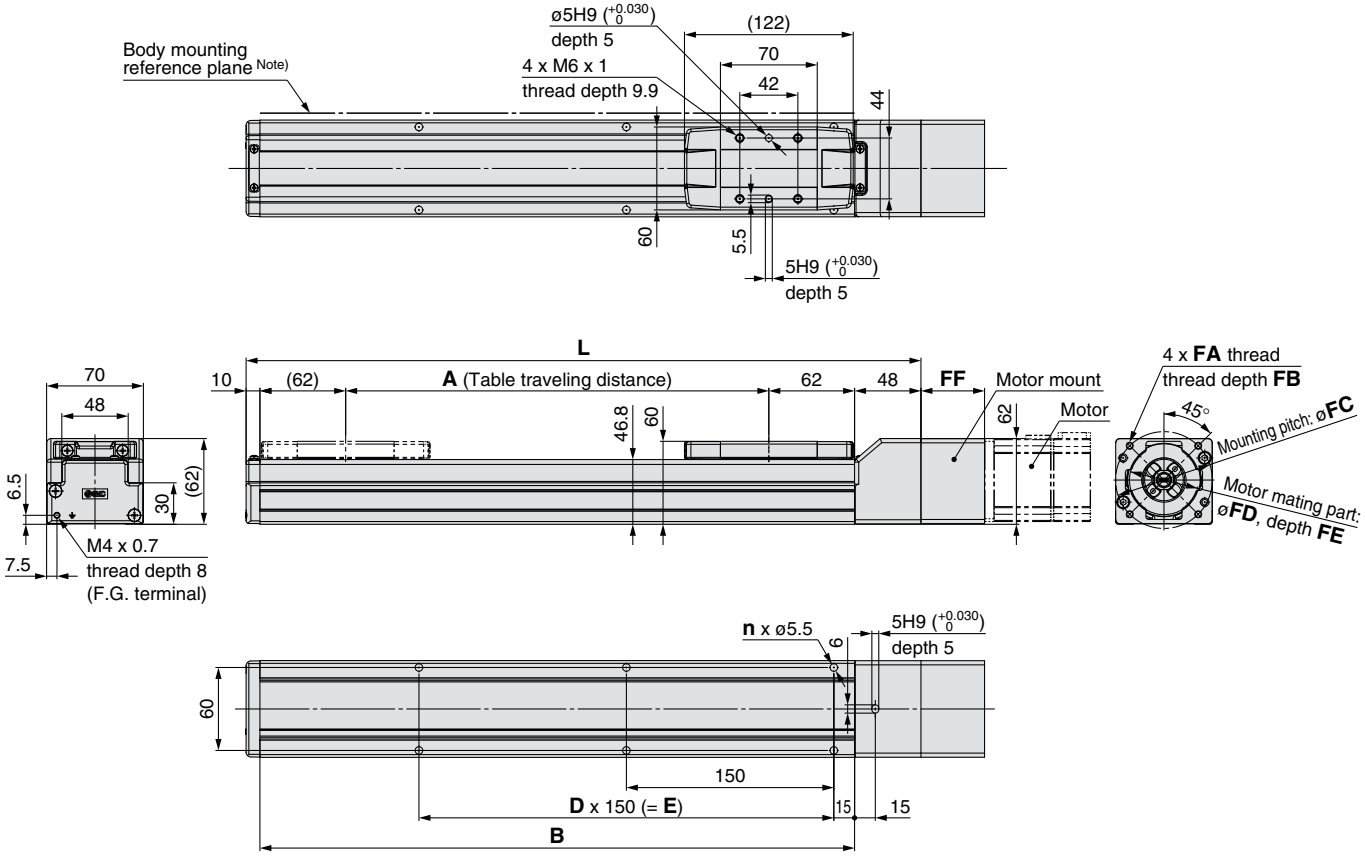
Motor type	FA	FB	FC	FD	FE	FF	FG	FH
NZ	M4 x 0.7	8	46	30	3.5	35.5	—	—
NY	M3 x 0.5	8	45	30	3.5	35.5	—	—
NM1	3.4	—	31	22∗	2.5∗	24	6.5	13.5

∗ Dimensions after mounting a ring spacer (Refer to page 16.)

Refer to the "Motor Mounting" on page 16 for details about motor mounting and included parts.

Dimensions: Ball Screw Drive

LEFS32



Note) 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)

Dimensions [mm]

Stroke	L	A	B	n	D	E
50	238	56	180	4	—	—
100	288	106	230	4	—	—
150	338	156	280	4	—	—
200	388	206	330	6	2	300
250	438	256	380	6	2	300
300	488	306	430	6	2	300
350	538	356	480	8	3	450
400	588	406	530	8	3	450
450	638	456	580	8	3	450
500	688	506	630	10	4	600
550	738	556	680	10	4	600
600	788	606	730	10	4	600
650	838	656	780	12	5	750
700	888	706	830	12	5	750
750	938	756	880	12	5	750
800	988	806	930	14	6	900

Motor Mounting Dimensions [mm]

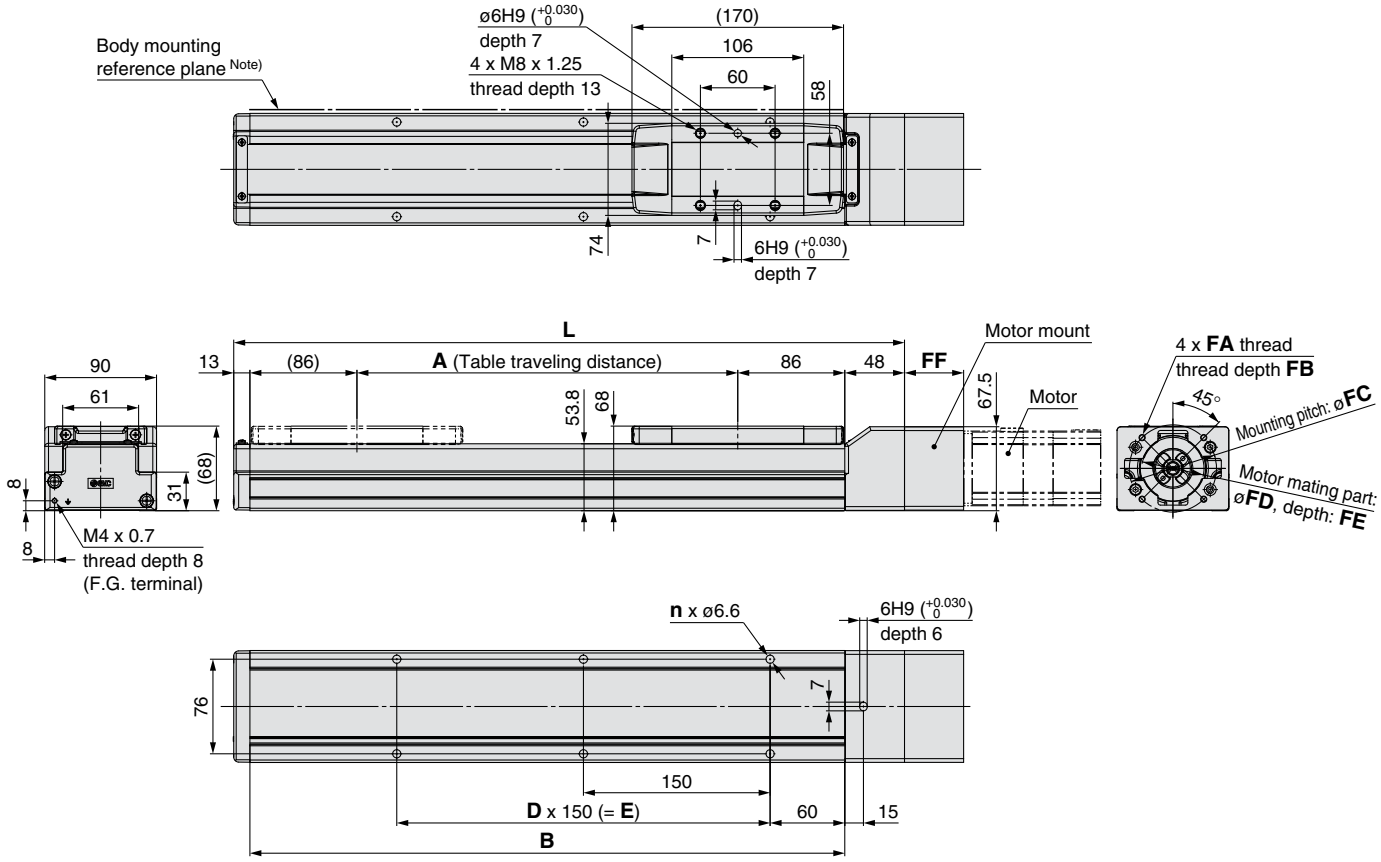
Motor type	FA	FB	FC	FD	FE	FF
NZ	M5 x 0.8	9	ø70	50	5	46
NY	M4 x 0.7	8	ø70	50	5	46
NX	M5 x 0.8	9	ø63	40*	4.5*	49.7
NW	M5 x 0.8	9	ø70	50	5	47.5
NM1	M4 x 0.7	8	□47.14	38.1*	4.5*	21

* Dimensions after mounting a ring spacer (Refer to page 16.)

Refer to the "Motor Mounting" on page 16 for details about motor mounting and included parts.

Dimensions: Ball Screw Drive

LEFS40



Note) 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)

Dimensions

[mm]

Stroke	L	A	B	n	D	E
150	389	156	328	4	—	150
200	439	206	378	6	2	300
250	489	256	428	6	2	300
300	539	306	478	6	2	300
350	589	356	528	8	3	450
400	639	406	578	8	3	450
450	689	456	628	8	3	450
500	739	506	678	10	4	600
550	789	556	728	10	4	600
600	839	606	778	10	4	600
650	889	656	828	12	5	750
700	939	706	878	12	5	750
750	989	756	928	12	5	750
800	1039	806	978	14	6	900
850	1089	856	1028	14	6	900
900	1139	906	1078	14	6	900
950	1189	956	1128	16	7	1050
1000	1239	1006	1178	16	7	1050

Motor Mounting Dimensions

[mm]

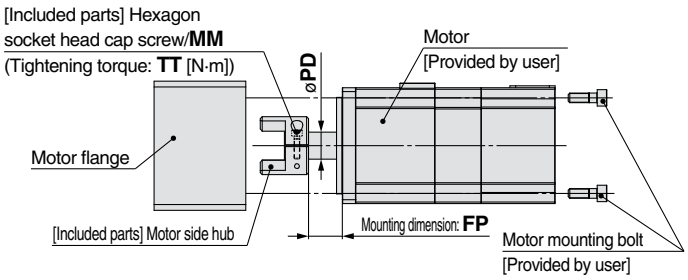
Motor type	FA	FB	FC	FD	FE	FF
NZ	M5 x 0.8	9	ø70	50	5	47.5
NY	M4 x 0.7	8	ø70	50	5	47.5
NX	M5 x 0.8	9	ø63	40*	4.5*	51
NW	M5 x 0.8	9	ø70	50	5	48.8
NM1	M4 x 0.7	8	□47.14	38.1*	4.5*	22

* Dimensions after mounting a ring spacer (Refer to page 16.)

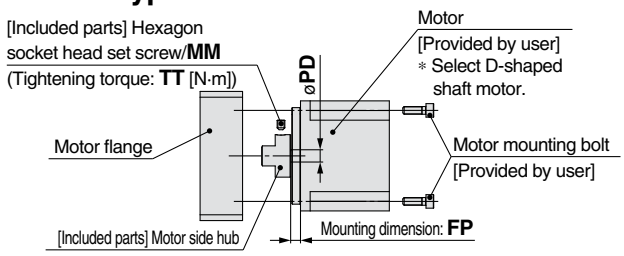
- When mounting a hub, remove the oil content, dust, or dirt sticking to the shaft and hub inside diameter.
- This product does not include the motor and motor mounting bolts. (Provided by user)
  For the shaft-end shape of the motor, prepare the round type.
- Take loose prevention measures for the motor mounting bolts.

Motor Mounting

Motor type: NZ, NY, NX, NW

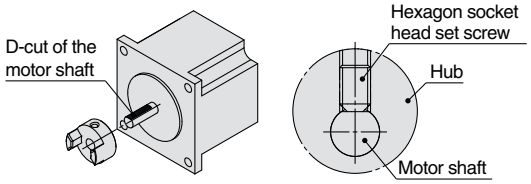


Motor type: NM1



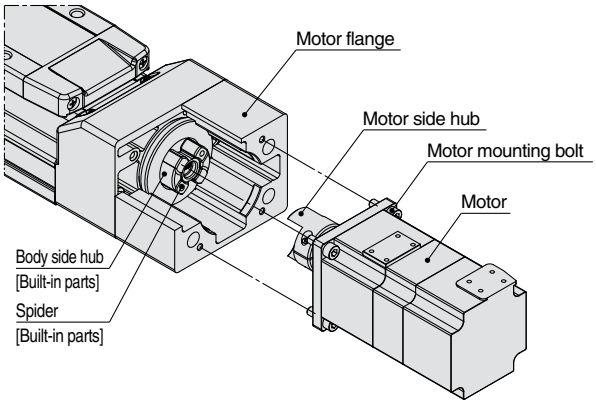
∗ Note for mounting a hub to the NM1 motor type
When mounting the hub to the motor, make sure to position the mounting screw vertical to the D-cut surface of the motor shaft. (Refer to the figure shown below.)

∗ Motor mounting screws for the LEFS25 are fixed starting from the motor flange side. (Opposite of the drawing)



Motor Mounting Diagram

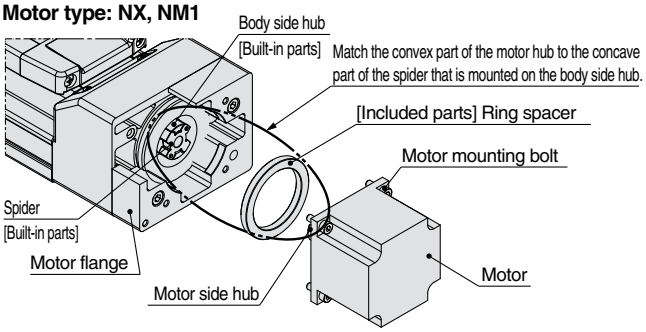
Motor type: NZ, NY, NW



Mounting procedure

1) Fix the motor (provided by user) and the "motor hub" with the "MM hexagon socket head cap screw."
2) Check the "motor hub position", and then insert it. (Refer to the mounting diagram.)
3) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).

Motor type: NX, NM1



Mounting procedure

1) Fix the motor (provided by user) and the "motor hub" with the "MM hexagon socket head cap screw (Motor type: NX)" or "MM hexagon socket head set screw (Motor type: NM1)."
2) Check the "motor hub position", and then insert it. (Refer to the mounting diagram.)
3) Mount the "ring spacer" to the motor.
4) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).
   ∗ For the LEFS25
4) Remove the "motor flange", which has been temporarily mounted, from the housing B, and secure the motor to the "motor flange" using the motor mounting screws (that are to be prepared by user).
5) Tighten the "motor flange" to the "housing B" using motor flange fixing screws (included parts).

Size: 25 Hub Mounting Dimensions [mm]

Motor type	MM	TT	PD	FP
NZ	M2.5 x 10	1.00	8	12.4
NY	M2.5 x 10	1.00	8	12.4
NM1	M3 x 4	0.63	5	11.9

Size: 32 Hub Mounting Dimensions [mm]

Motor type	MM	TT	PD	FP
NZ	M3 x 12	1.5	14	17.5
NY	M4 x 12	2.5	11	17.5
NX	M4 x 12	2.5	9	5.2
NW	M4 x 12	2.5	9	13
NM1	M4 x 6	1.5	6.35	5.4

Size: 40 Hub Mounting Dimensions [mm]

Motor type	MM	TT	PD	FP
NZ	M3 x 12	1.5	14	17.5
NY	M3 x 12	1.5	14	17.5
NX	M4 x 12	2.5	9	5.2
NW	M4 x 12	2.5	9	13
NM1	M4 x 5	1.5	6.35	5.1

Included Parts List

Size: 25

Description	Quantity		
	Motor type		
	NZ	NY	NM1
Motor side hub	1	1	1
Hexagon socket head cap screw/set screw (for hub fixing)∗	1	1	1
Hexagon socket head cap screw (for motor flange fixing)∗	—	—	2
Ring spacer	—	—	1

∗ For screw sizes, refer to the hub mounting dimensions.

Size: 32, 40

Description	Quantity				
	Motor type				
	NZ	NY	NX	NW	NM1
Motor side hub	1	1	1	1	1
Hexagon socket head cap screw/set screw (for hub fixing)∗	1	1	1	1	1
Ring spacer	—	—	1	—	1

∗ For screw sizes, refer to the hub mounting dimensions.

Model Selection

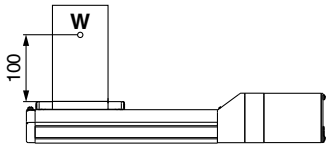
Selection Procedure

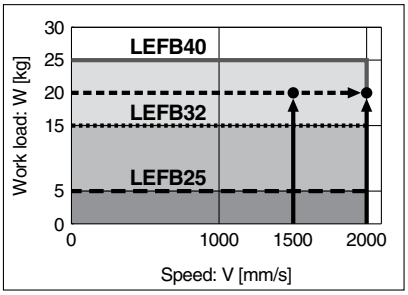
Step 1 Check the work load–speed. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Workpiece mass: 20 [kg]
- Speed: 1500 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s^2]
- Stroke: 2000 [mm]
- Mounting position: Horizontal upward
- Workpiece mounting condition:





<Speed–Work Load Graph>
(LEFB40)

Step 1 Check the work load–speed. <Speed–Work Load Graph>

Select a model based on the workpiece mass and speed which are within the range of the actuator body specifications with reference to the "Speed–Work Load Graph (Guide)" on page 18.

Selection example) The **LEFB40S4S-2000** is temporarily selected based on the graph shown on the right side.

∗ Refer to the selection method of motor manufacturers for regeneration resistance.

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.

$T = T1 + T2 + T3 + T4$ [s]

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

  $T1 = V/a1$ [s] $T3 = V/a2$ [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 motor types, load and in positioning of the step data. Therefore, calculate the settling time with reference to the following value.

  $T4 = 0.05$ [s]

∗ The conditions for the settling time vary depending on the motor or driver to be used.

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

$T1 = V/a1 = 1500/3000 = 0.5$ [s],

$T3 = V/a2 = 1500/3000 = 0.5$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{2000 - 0.5 \cdot 1500 \cdot (0.5 + 0.5)}{1500} = 0.83 \text{ [s]}$$

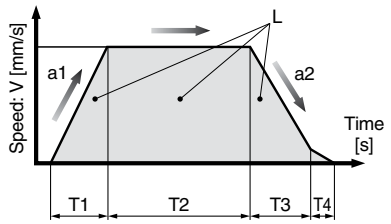
$T4 = 0.05$ [s]

Therefore, the cycle time can be obtained as follows.

$T = T1 + T2 + T3 + T4$

$= 0.5 + 0.83 + 0.5 + 0.05$

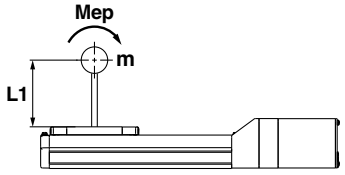
$=$ **1.88 [s]**

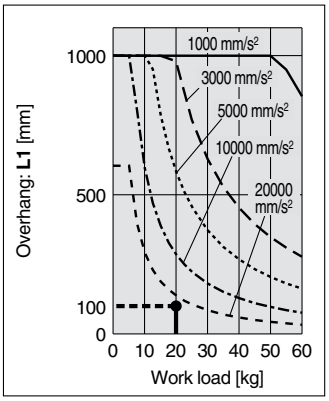


L : Stroke [mm]
··· (Operating condition)
V : Speed [mm/s]
··· (Operating condition)
a1: Acceleration [mm/s^2]
··· (Operating condition)
a2: Deceleration [mm/s^2]
··· (Operating condition)

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 in position is completed

Step 3 Check the guide moment.



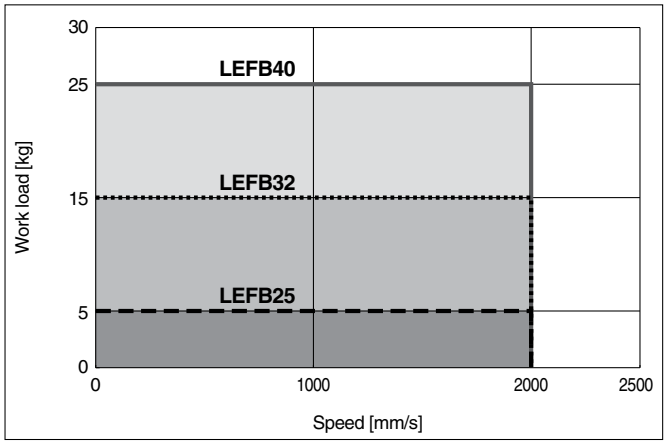


Based on the above calculation result, the LEFB40S4S-2000 is selected.

∗ The values shown below are allowable values of the actuator body.
Do not use the actuator so that it exceeds these specification ranges.

Speed–Work Load Graph (Guide)

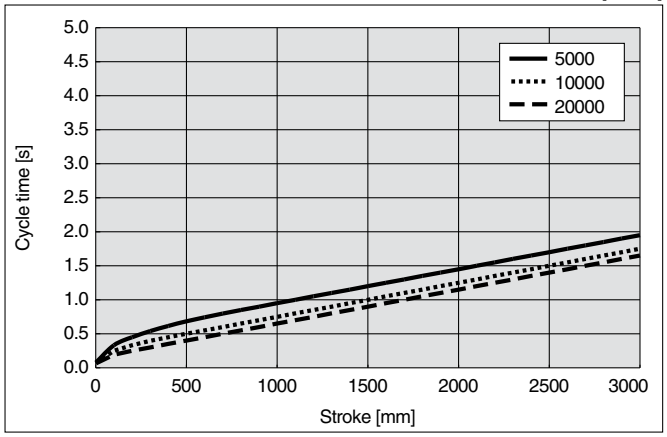
LEFB□/Belt Drive



Cycle Time Graph (Guide)

LEFB□/Belt Drive

LEFB25/32/40

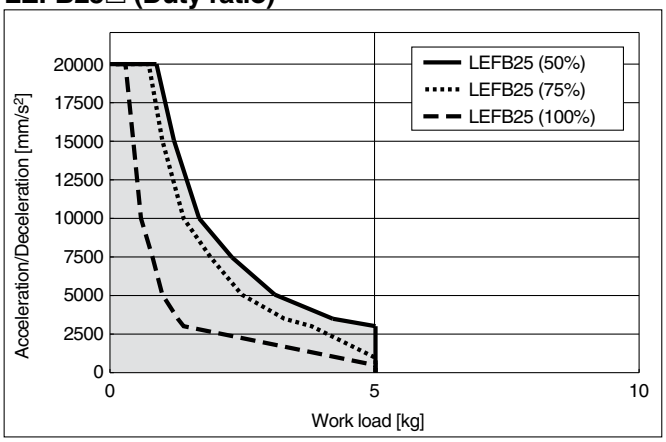


∗ Cycle time is for when maximum speed.
∗ Maximum stroke: LEFB25: 2000 mm
LEFB32: 2500 mm
LEFB40: 3000 mm

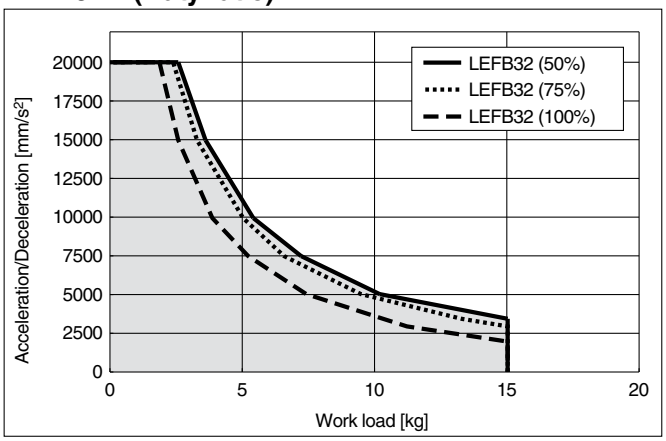
Work Load–Acceleration/Deceleration Graph (Guide)

LEFB□/Belt Drive

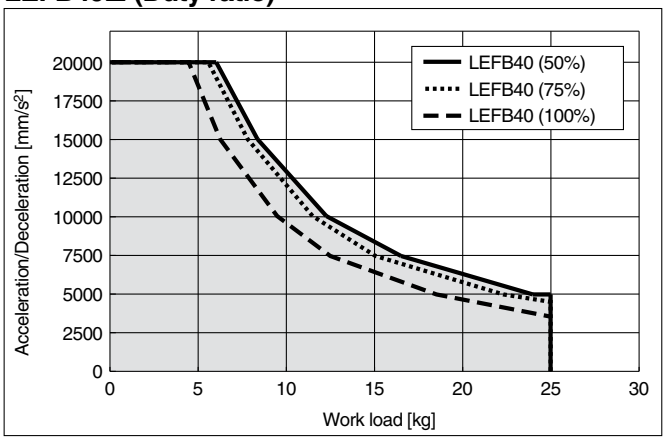
LEFB25□ (Duty ratio)



LEFB32□ (Duty ratio)



LEFB40□ (Duty ratio)



These graphs are examples of when the standard motor is mounted.
Determine the duty ratio after taking into account the load factor of the motor or driver to be used.

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang when the center of gravity of the workpiece overhangs in one direction. When the center of gravity of the workpiece overhangs in two directions, refer to the Electric Actuator Selection Software for confirmation, http://www.smcworld.com

Acceleration/Deceleration —— 1000 mm/s² – – – 3000 mm/s² ····· 5000 mm/s² –·–·– 10000 mm/s² - - - - 20000 mm/s²

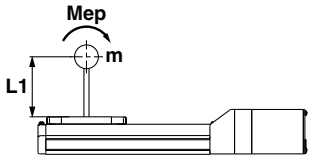
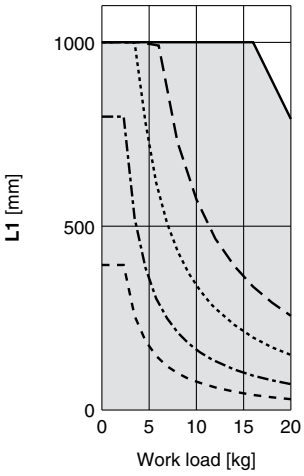
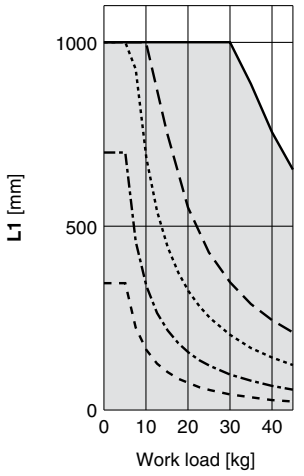
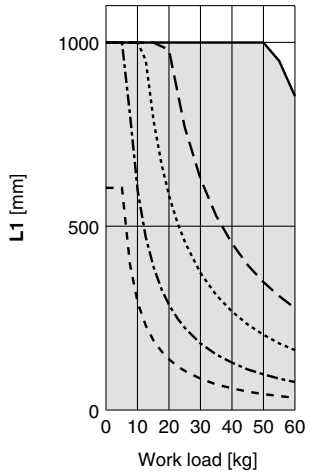
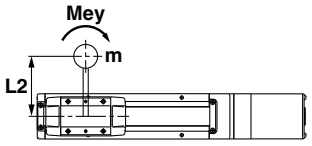
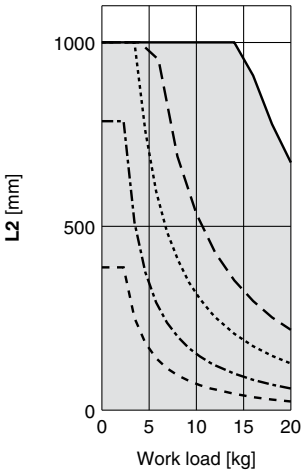
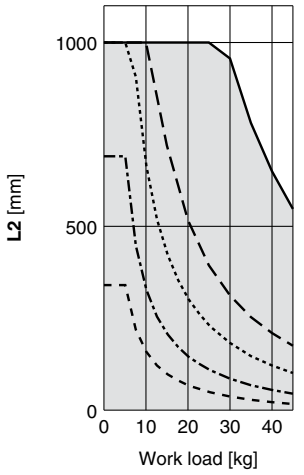
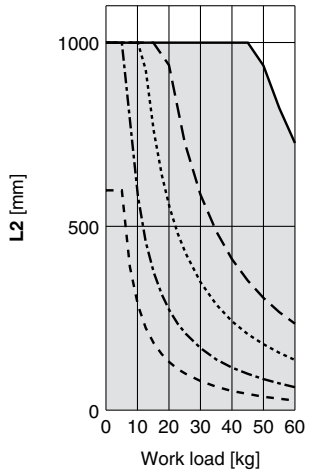
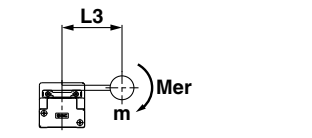
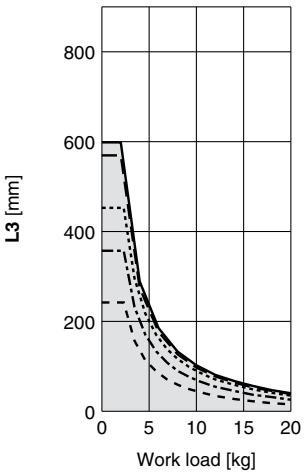
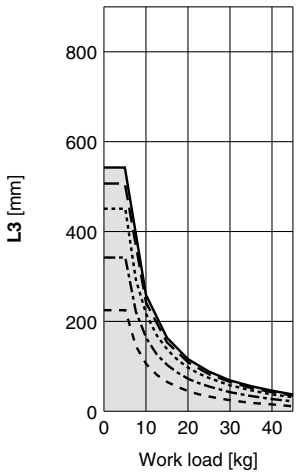
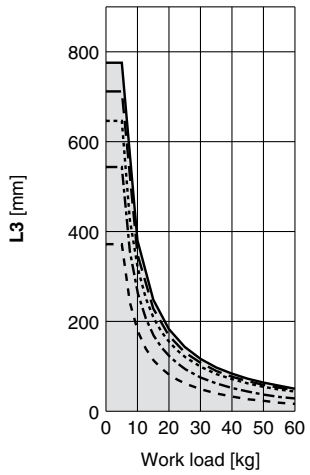
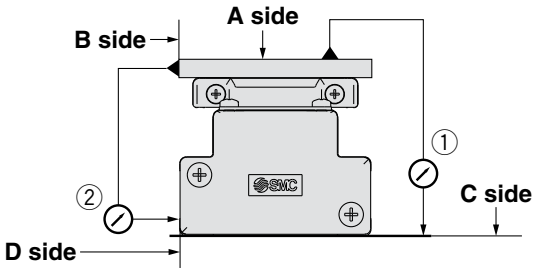
Orientation	Load overhanging direction **m**: Work load [kg] **Me**: Dynamic allowable moment [N·m] **L**: Overhang to the work load center of gravity [mm]		Model: LEFB25□	Model: LEFB32□	Model: LEFB40□
Horizontal		Pitching			
		Yawing			
		Rolling			

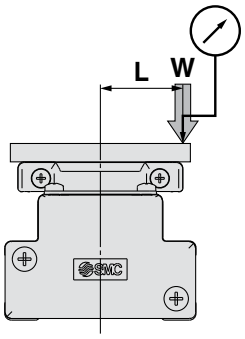
Table Accuracy

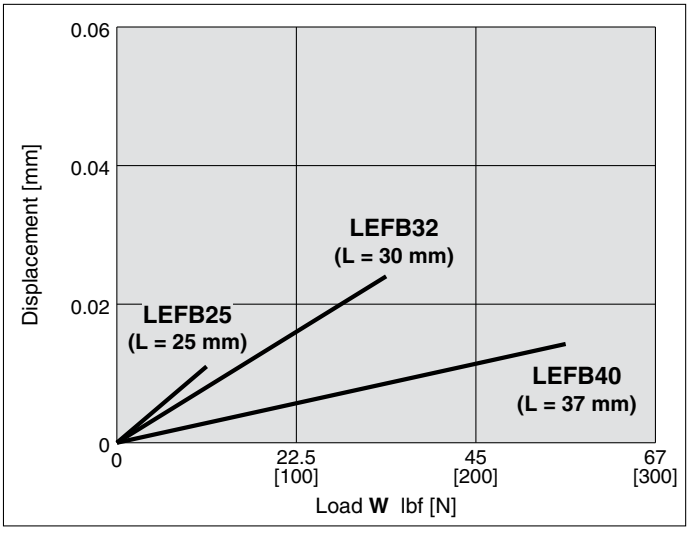


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEFB25	0.05	0.03
LEFB32	0.05	0.03
LEFB40	0.05	0.03

Note) Traveling parallelism does not include the mounting surface accuracy.

Table Displacement (Reference Value)

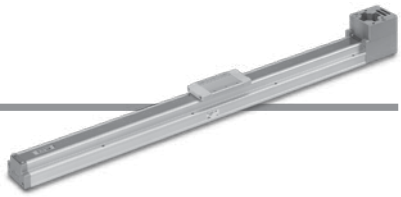




Note 1) This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table.
Note 2) Check the clearance and play of the guide separately.

Electric Actuator/Slider Type
Belt Drive Motorless Type
Series LEFB
LEFB25, 32, 40

RoHS



How to Order

LEFB **25** **[ ]** **NZ** **S** **–** **300**

❶ ❷ ❸ ❹ ❺

❶ Size

25
32
40

❷ Motor mounting position

Nil	Top mounting
U	Bottom mounting

❸ Motor type

Symbol	Type
NZ	Mounting type Z
NY	Mounting type Y
NX	Mounting type X
NW	Mounting type W
NM1	Mounting type M1

❹ Equivalent lead [mm]

S	54

❺ Stroke [mm]

300	300
to	to
3000	3000

∗ Refer to the applicable stroke table.

Applicable Stroke Table

● Standard/○ Produced upon receipt of order

	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500	3000
LEFB25	●	●	●	●	●	●	●	●	○	●	○	○	●	○	○	○	○	●	—	—
LEFB32	●	●	●	●	●	●	●	●	○	●	○	○	●	○	○	○	○	●	●	—
LEFB40	●	●	●	●	●	●	●	●	○	●	○	○	●	○	○	○	○	●	●	●

∗ Please consult with SMC for strokes other than those shown above as they are produced as special orders.

Compatible Motors

Applicable motor model			Size/Motor type							
			25			**32/40**				
Manufacturer	Series	Type	"NZ" Mounting type Z	"NY" Mounting type Y	"NM1" Mounting type M1	"NZ" Mounting type Z	"NY" Mounting type Y	"NX" Mounting type X	"NW" Mounting type W	"NM1" Mounting type M1
Mitsubishi Electric Corporation	MELSERVO-JN	HF-KN	●	—	—	●	—	—	—	—
	MELSERVO-J3	HF-KP	●	—	—	●	—	—	—	—
	MELSERVO-J4	HG-KR	●	—	—	●	—	—	—	—
YASKAWA Electric Corporation	Σ-V	SGMJV	●	—	—	●	—	—	—	—
SANYO DENKI CO., LTD.	SANMOTION R	R2	●	—	—	●	—	—	—	—
OMRON Corporation	G5	R88M-K	●	—	—	—	●	—	—	—
Panasonic Corporation	MINAS-A4	MSMD	—	●	—	—	●	—	—	—
	MINAS-A5	MSMD/MHMD	—	●	—	—	●	—	—	—
FANUC CORPORATION	β is	β	●	—	—	● (β1 only)	—	—	●	—
FASTECH Co., Ltd.	Ezi-SERVO	EzM	—	—	●	—	—	—	—	●
Rockwell Automation, Inc. (Allen-Bradley)	MP–	MPL/VPL	—	—	—	—	—	●	—	—

Specifications Note 2)

- Values in this specification table are the allowable values of the actuator body with the standard motor mounted.
- Do not use the actuator so that it exceeds these values.

Model			LEFB25	LEFB32	LEFB40
Actuator specifications	Stroke [mm] Note 1)		300, 400, 500 600, 700, 800 900, 1000, (1100) 1200, (1300, 1400) 1500, (1600, 1700) (1800, 1900), 2000	300, 400, 500 600, 700, 800 900, 1000, (1100) 1200, (1300, 1400) 1500, (1600, 1700) (1800, 1900), 2000 2500	300, 400, 500 600, 700, 800 900, 1000, (1100) 1200, (1300, 1400) 1500, (1600, 1700) (1800, 1900), 2000 2500, 3000
	Work load [kg]	Horizontal	5	15	25
	Speed [mm/s]		2000		
	Pushing return to origin speed [mm/s]		30 or less		
	Positioning repeatability [mm]		±0.06		
	Lost motion [mm] Note 3)		0.1 or less		
	Equivalent lead [mm]		54		
	Max. acceleration/deceleration [mm/s²]		20000 Note 4)		
	Impact/Vibration resistance [m/s²]		50/20		
	Actuation type		Belt		
	Guide type		Linear guide		
	Operating temperature range		41 to 140°F [5 to 40°C]		
	Operating humidity range [%RH]		90 or less (No condensation)		
Other specifications Note 5)	Actuation unit weight [kg]		0.2	0.3	0.55
	Other inertia [kg·cm²]		0.1	0.2	0.25
	Friction coefficient		0.05		
	Mechanical efficiency		0.8		
Reference motor specifications	Motor shape		□40	□60	
	Motor type		AC servo motor (100 V/200 V)		
	Rated output capacity [W]		100	200	400
	Rated torque lbf·ft [N·m]		0.23 [0.32]	0.47 [0.64]	0.96 [1.3]
	Rated rotation [rpm]		3000		

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

Note 2) Do not allow collisions at either end of the table traveling distance at a speed exceeding "pushing return to origin speed."
Additionally, when running the positioning operation, do not set within 3 mm of both ends.

Note 3) A reference value for correcting an error in reciprocal operation.

Note 4) Maximum acceleration/deceleration changes according to the work load.
Refer to the "Work Load–Acceleration/Deceleration Graph (Guide)" for belt drive on page 18.

Note 5) Each value is a guide. Use such value to select a motor capacity.

Weight

Model	LEFB25																	
Stroke [mm]	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Product weight [kg]	2.5	2.75	3	3.25	3.5	3.75	4	4.25	4.5	4.75	5	5.25	5.5	5.75	6	6.25	6.5	6.75

Model	LEFB32																		
Stroke [mm]	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500
Product weight [kg]	4.00	4.35	4.70	5.05	5.40	5.75	6.10	6.45	6.80	7.15	7.50	7.85	8.20	8.55	8.90	9.25	9.60	9.95	11.70

Model	LEFB40																			
Stroke [mm]	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2500	3000
Product weight [kg]	5.70	6.15	6.60	7.05	7.50	7.95	8.40	8.85	9.30	9.75	10.20	10.65	11.10	11.55	12.00	12.45	12.90	13.35	15.60	17.85

Handling

⚠Caution

1. The belt drive actuator cannot be used vertically for applications.

2. In the case of the belt drive actuator, vibration may occur during operation at speeds within the actuator specifications, this could be caused by the operating conditions. Change the speed setting to a speed that does not cause vibration.

Maintenance

⚠Warning

Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check	Belt check
Inspection before daily operation	○	—	—
Inspection every 6 months/1000 km/ 5 million cycles*	○	○	○

* Select whichever comes sooner.

● Items for visual appearance check

1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

Maintenance

⚠Warning

● Items for internal check

1. Lubricant condition on moving parts.
2. Loose or mechanical play in fixed parts or fixing screws.

● Items for belt check

Stop operation immediately and replace the belt when belt appear to be below. Further, ensure your operating environment and conditions satisfy the requirements specified for the product.

a. Tooth shape canvas is worn out.
Canvas fiber becomes fuzzy. Rubber is removed and the fiber becomes whitish. Lines of fibers become unclear.

b. Peeling off or wearing of the side of the belt
Belt corner becomes round and frayed thread sticks out.

c. Belt partially cut
Belt is partially cut. Foreign objects caught in teeth other than cut part causes flaw.

d. Vertical line of belt teeth
Flaw which is made when the belt runs on the flange.

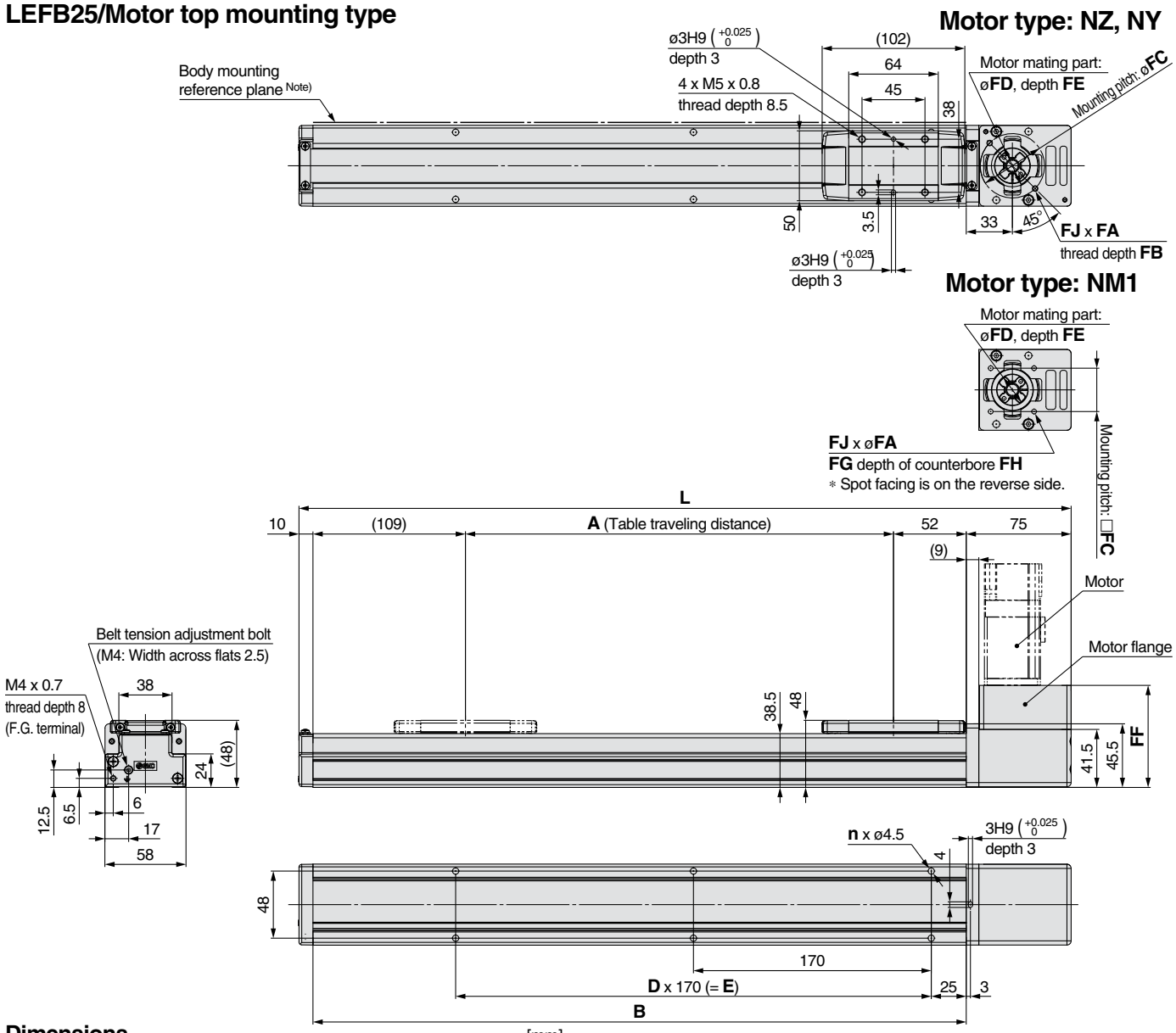
e. Rubber back of the belt is softened and sticky.

f. Crack on the back of the belt

Refer to the "Motor Mounting" on page 30 for details about motor mounting and included parts.

Dimensions: Belt Drive

LEFB25/Motor top mounting type



Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	552	306	467	6	2	340
400	652	406	567	8	3	510
500	752	506	667	8	3	510
600	852	606	767	10	4	680
700	952	706	867	10	4	680
800	1052	806	967	12	5	850
900	1152	906	1067	14	6	1020
1000	1252	1006	1167	14	6	1020
1100	1352	1106	1267	16	7	1190
1200	1452	1206	1367	16	7	1190
1300	1552	1306	1467	18	8	1360
1400	1652	1406	1567	20	9	1530
1500	1752	1506	1667	20	9	1530
1600	1852	1606	1767	22	10	1700
1700	1952	1706	1867	22	10	1700
1800	2052	1806	1967	24	11	1870
1900	2152	1906	2067	24	11	1870
2000	2252	2006	2167	26	12	2040

Note) 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)

Motor Mounting Dimensions

[mm]

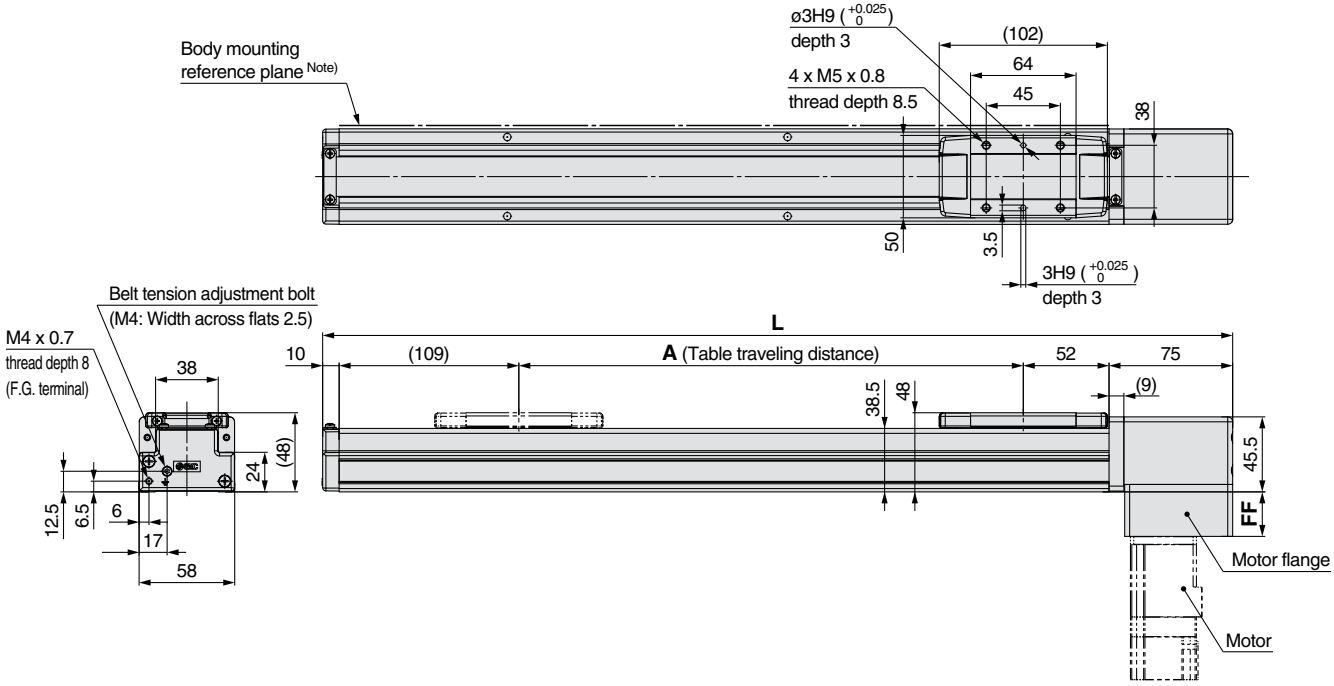
Motor type	FA	FB	FC	FD	FE	FF	FG	FH	FJ
NZ	M4 x 0.7	8	46	30	3.5	73	—	—	2
NY	M3 x 0.5	8	45	30	3.5	73	—	—	4
NM1	3.4	—	31	22*	2.5*	73	6	21	4

∗ Dimensions after mounting a ring spacer (Refer to page 30.)

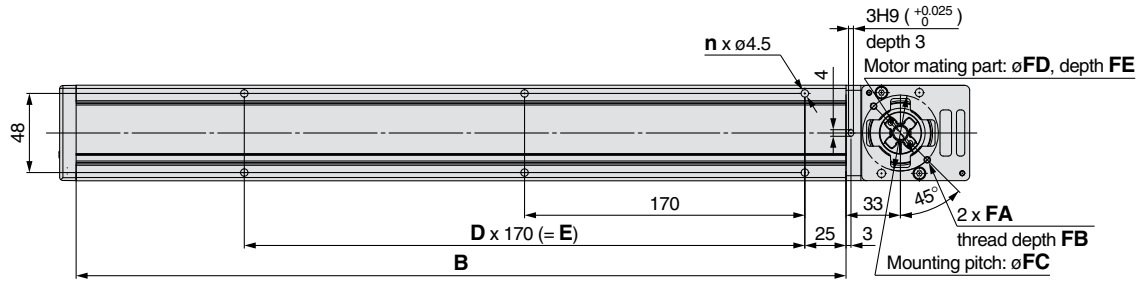
Refer to the "Motor Mounting" on page 30 for details about motor mounting and included parts.

Dimensions: Belt Drive

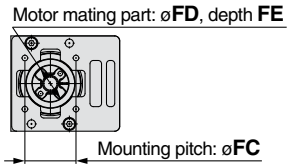
LEFB25U/Motor bottom mounting type



Motor type: NZ, NY



Motor type: NM1



Note) 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)

Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	552	306	467	6	2	340
400	652	406	567	8	3	510
500	752	506	667	8	3	510
600	852	606	767	10	4	680
700	952	706	867	10	4	680
800	1052	806	967	12	5	850
900	1152	906	1067	14	6	1020
1000	1252	1006	1167	14	6	1020
1100	1352	1106	1267	16	7	1190
1200	1452	1206	1367	16	7	1190
1300	1552	1306	1467	18	8	1360
1400	1652	1406	1567	20	9	1530
1500	1752	1506	1667	20	9	1530
1600	1852	1606	1767	22	10	1700
1700	1952	1706	1867	22	10	1700
1800	2052	1806	1967	24	11	1870
1900	2152	1906	2067	24	11	1870
2000	2252	2006	2167	26	12	2040

Motor Mounting Dimensions

[mm]

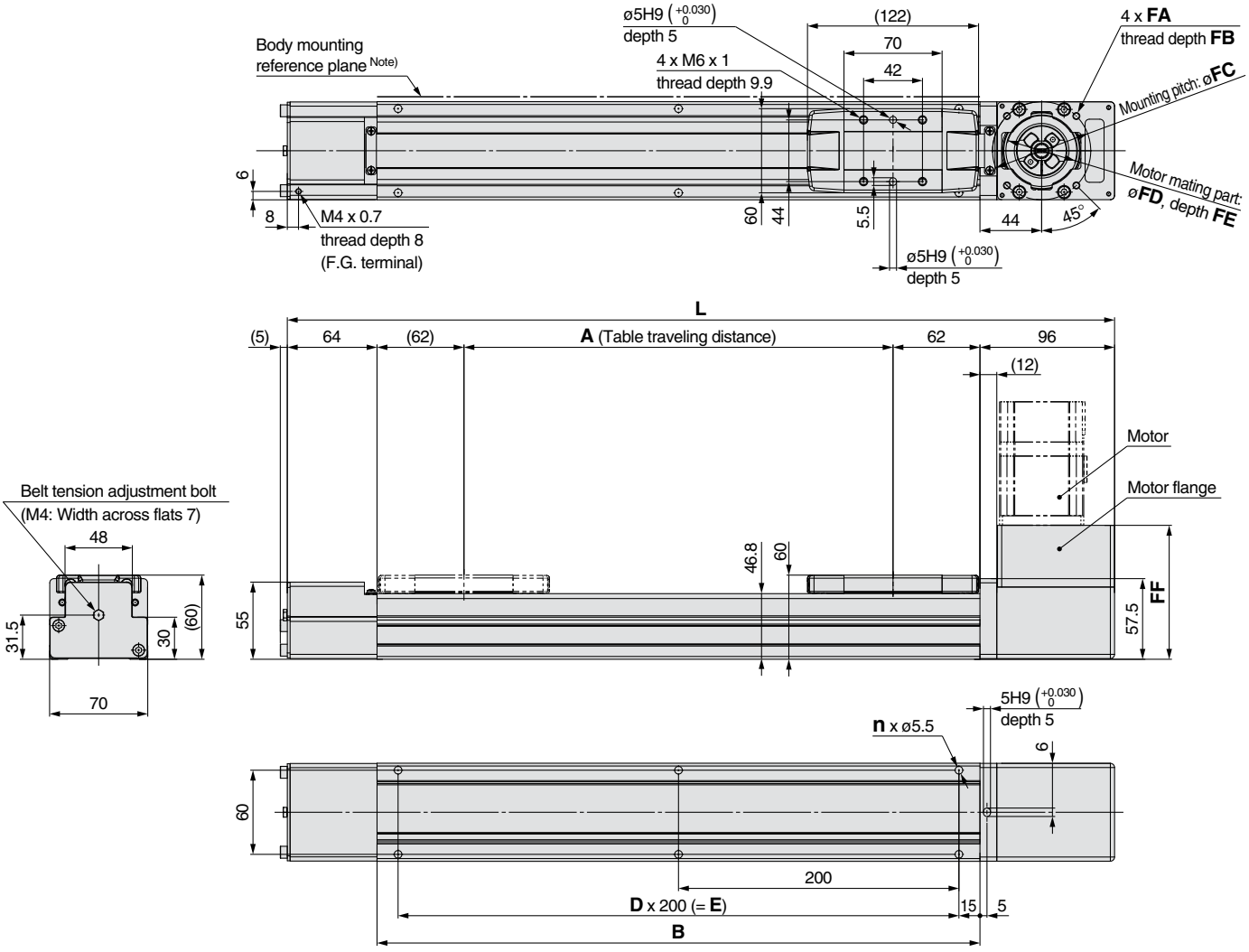
Motor type	FA	FB	FC	FD	FE	FF	FG	FH	FJ
NZ	M4 x 0.7	8	46	30	3.5	27	—	—	2
NY	M3 x 0.5	8	45	30	3.5	27	—	—	4
NM1	3.4	—	31	22*	2.5*	27	6	21	4

* Dimensions after mounting a ring spacer (Refer to page 30.)

Refer to the "Motor Mounting" on page 30 for details about motor mounting and included parts.

Dimensions: Belt Drive

LEFB32/Motor top mounting type



Note) 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)

Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	590	306	430	6	2	400
400	690	406	530	6	2	400
500	790	506	630	8	3	600
600	890	606	730	8	3	600
700	990	706	830	10	4	800
800	1090	806	930	10	4	800
900	1190	906	1030	12	5	1000
1000	1290	1006	1130	12	5	1000
1100	1390	1106	1230	14	6	1200
1200	1490	1206	1330	14	6	1200
1300	1590	1306	1430	16	7	1400
1400	1690	1406	1530	16	7	1400
1500	1790	1506	1630	18	8	1600
1600	1890	1606	1730	18	8	1600
1700	1990	1706	1830	20	9	1800
1800	2090	1806	1930	20	9	1800
1900	2190	1906	2030	22	10	2000
2000	2290	2006	2130	22	10	2000
2500	2790	2506	2630	28	13	2600

Motor Mounting Dimensions

[mm]

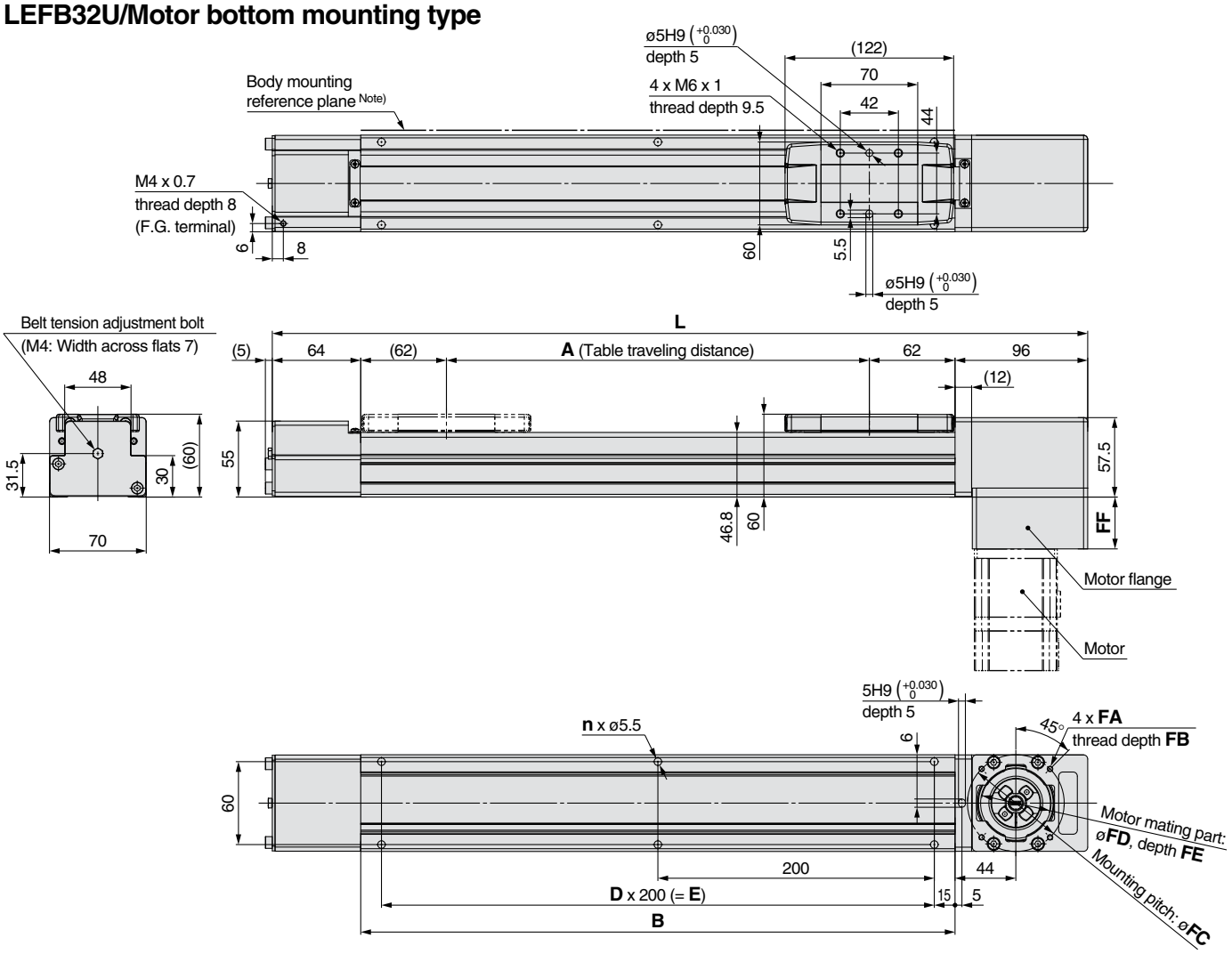
Motor type	FA	FB	FC	FD	FE	FF
NZ	M5 x 0.8	9	ø70	50	4	95.5
NY	M4 x 0.7	8	ø70	50	4	95.5
NX	M5 x 0.8	9	ø63	40*	4.5*	99.2
NW	M5 x 0.8	9	ø70	50	5	96.5
NM1	M4 x 0.7	8	□47.14	38.1*	4.5*	82.5

* Dimensions after mounting a ring spacer (Refer to page 30.)

Refer to the "Motor Mounting" on page 30 for details about motor mounting and included parts.

Dimensions: Belt Drive

LEFB32U/Motor bottom mounting type



Note) 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)

Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	590	306	430	6	2	400
400	690	406	530	6	2	400
500	790	506	630	8	3	600
600	890	606	730	8	3	600
700	990	706	830	10	4	800
800	1090	806	930	10	4	800
900	1190	906	1030	12	5	1000
1000	1290	1006	1130	12	5	1000
1100	1390	1106	1230	14	6	1200
1200	1490	1206	1330	14	6	1200
1300	1590	1306	1430	16	7	1400
1400	1690	1406	1530	16	7	1400
1500	1790	1506	1630	18	8	1600
1600	1890	1606	1730	18	8	1600
1700	1990	1706	1830	20	9	1800
1800	2090	1806	1930	20	9	1800
1900	2190	1906	2030	22	10	2000
2000	2290	2006	2130	22	10	2000
2500	2790	2506	2630	28	13	2600

Motor Mounting Dimensions

[mm]

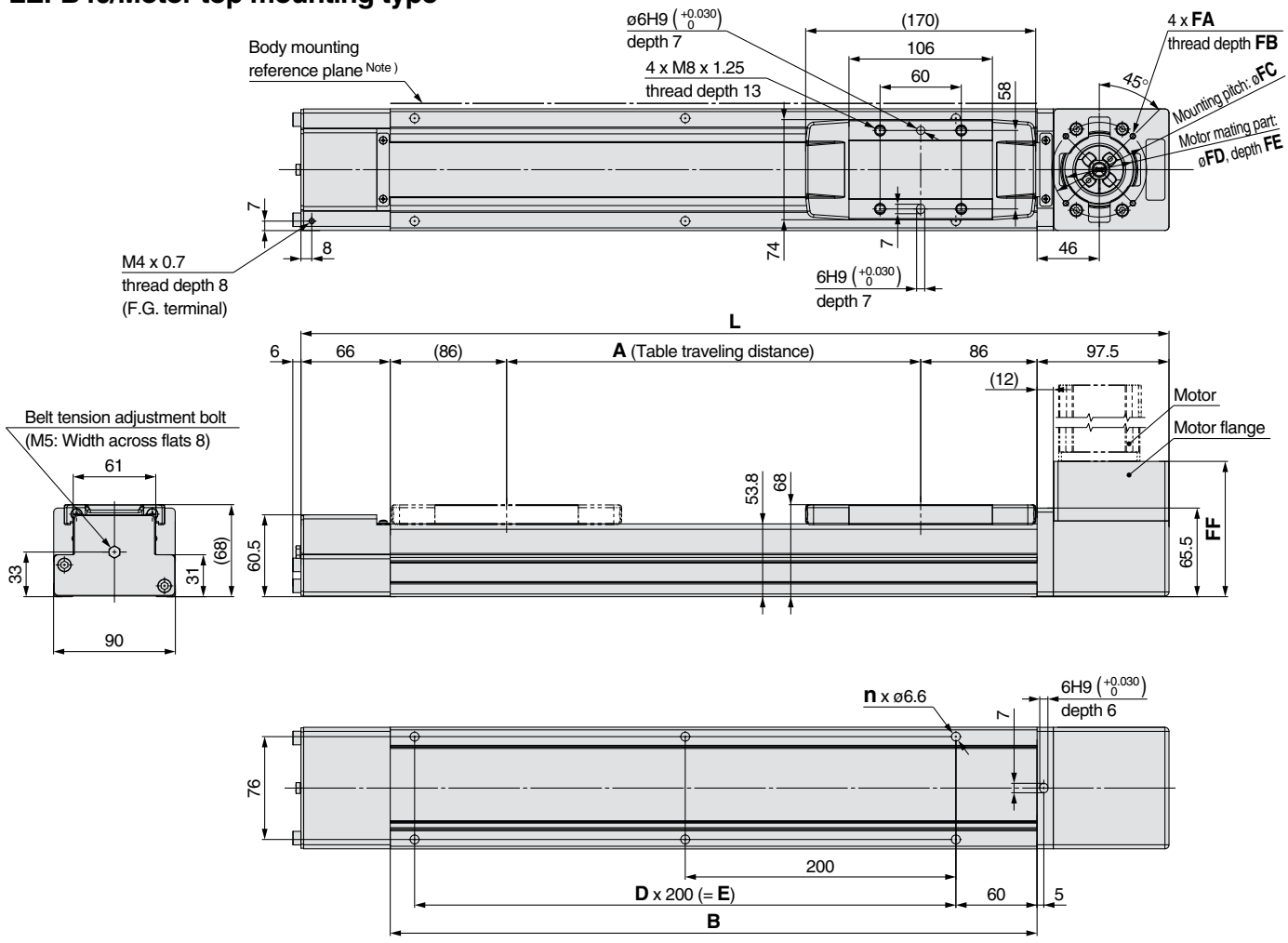
Motor type	FA	FB	FC	FD	FE	FF
NZ	M5 x 0.8	9	ø70	50	4	37.5
NY	M4 x 0.7	8	ø70	50	4	37.5
NX	M5 x 0.8	9	ø63	40*	4.5*	41.2
NW	M5 x 0.8	9	ø70	50	5	38.5
NM1	M4 x 0.7	8	□47.14	38.1*	4.5*	24.5

* Dimensions after mounting a ring spacer (Refer to page 30.)

Refer to the "Motor Mounting" on page 30 for details about motor mounting and included parts.

Dimensions: Belt Drive

LEFB40/Motor top mounting type



Note) 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)

Dimensions

[mm]

Stroke	L	A	B	n	D	E
300	641.5	306	478	6	2	400
400	741.5	406	578	6	2	400
500	841.5	506	678	8	3	600
600	941.5	606	778	8	3	600
700	1041.5	706	878	10	4	800
800	1141.5	806	978	10	4	800
900	1241.5	906	1078	12	5	1000
1000	1341.5	1006	1178	12	5	1000
1100	1441.5	1106	1278	14	6	1200
1200	1541.5	1206	1378	14	6	1200
1300	1641.5	1306	1478	16	7	1400
1400	1741.5	1406	1578	16	7	1400
1500	1841.5	1506	1678	18	8	1600
1600	1941.5	1606	1778	18	8	1600
1700	2041.5	1706	1878	20	9	1800
1800	2141.5	1806	1978	20	9	1800
1900	2241.5	1906	2078	22	10	2000
2000	2341.5	2006	2178	22	10	2000
2500	2841.5	2506	2678	28	13	2600
3000	3341.5	3006	3178	32	15	3000

Motor Mounting Dimensions

[mm]

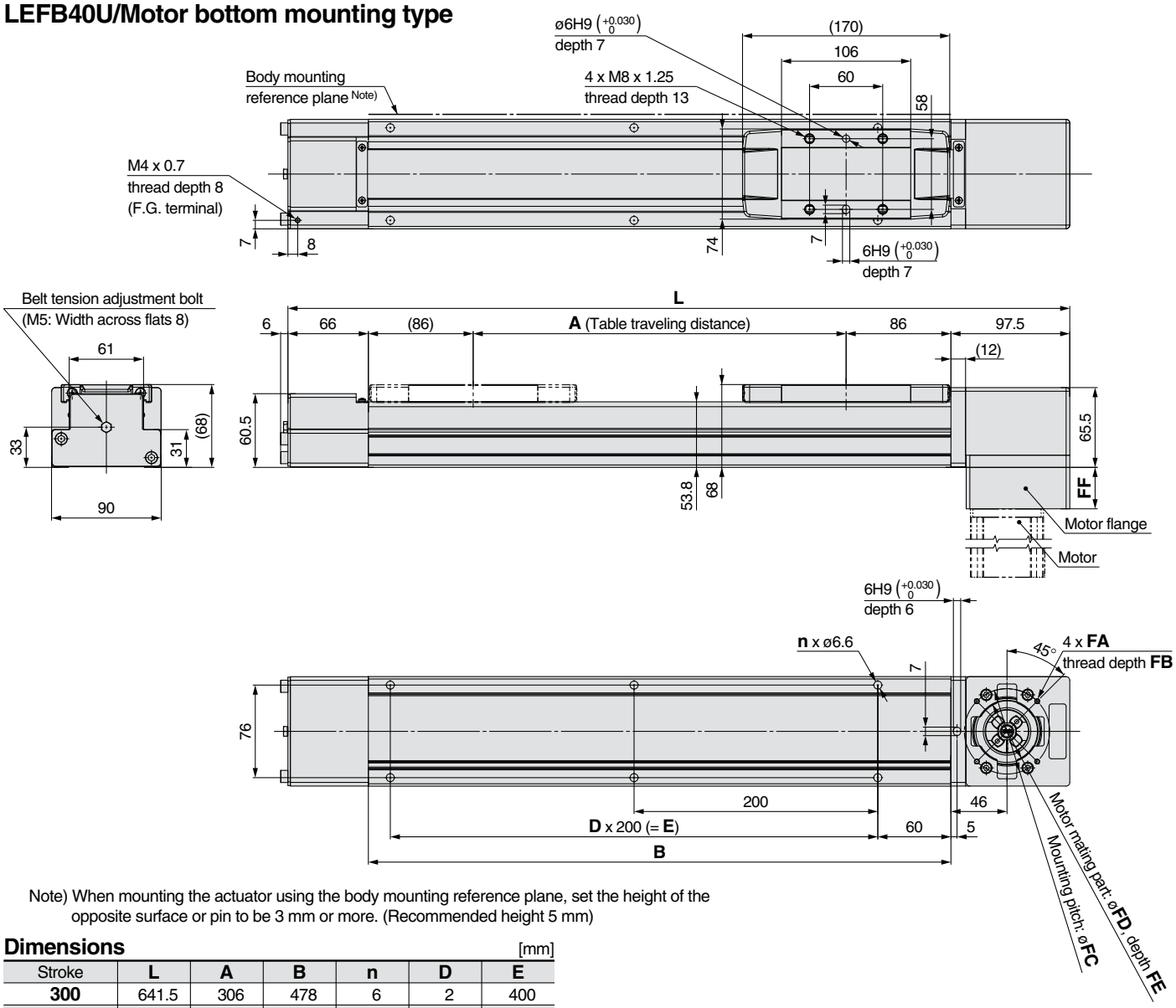
Motor type	FA	FB	FC	FD	FE	FF
NZ	M5 x 0.8	9	ø70	50	4	100
NY	M4 x 0.7	8	ø70	50	4	100
NX	M5 x 0.8	9	ø63	40*	4.5*	103.2
NW	M5 x 0.8	9	ø70	50	5	101
NM1	M4 x 0.7	8	□47.14	38.1*	4.5*	87

* Dimensions after mounting a ring spacer (Refer to page 30.)

Refer to the "Motor Mounting" on page 30 for details about motor mounting and included parts.

Dimensions: Belt Drive

LEFB40U/Motor bottom mounting type



Note) 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)

Dimensions [mm]

Stroke	L	A	B	n	D	E
300	641.5	306	478	6	2	400
400	741.5	406	578	6	2	400
500	841.5	506	678	8	3	600
600	941.5	606	778	8	3	600
700	1041.5	706	878	10	4	800
800	1141.5	806	978	10	4	800
900	1241.5	906	1078	12	5	1000
1000	1341.5	1006	1178	12	5	1000
1100	1441.5	1106	1278	14	6	1200
1200	1541.5	1206	1378	14	6	1200
1300	1641.5	1306	1478	16	7	1400
1400	1741.5	1406	1578	16	7	1400
1500	1841.5	1506	1678	18	8	1600
1600	1941.5	1606	1778	18	8	1600
1700	2041.5	1706	1878	20	9	1800
1800	2141.5	1806	1978	20	9	1800
1900	2241.5	1906	2078	22	10	2000
2000	2341.5	2006	2178	22	10	2000
2500	2841.5	2506	2678	28	13	2600
3000	3341.5	3006	3178	32	15	3000

Motor Mounting Dimensions [mm]

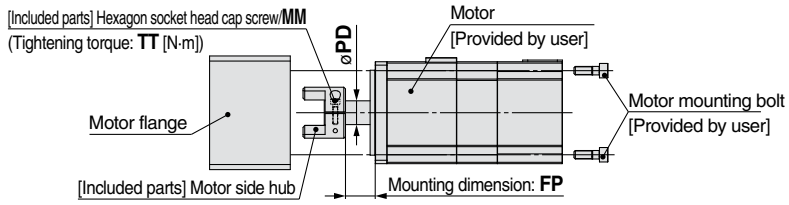
Motor type	FA	FB	FC	FD	FE	FF
NZ	M5 x 0.8	9	ø70	50	4	34
NY	M4 x 0.7	8	ø70	50	4	34
NX	M5 x 0.8	9	ø63	40*	4.5*	37.2
NW	M5 x 0.8	9	ø70	50	5	35
NM1	M4 x 0.7	8	□47.14	38.1*	4.5*	21

* Dimensions after mounting a ring spacer (Refer to page 30.)

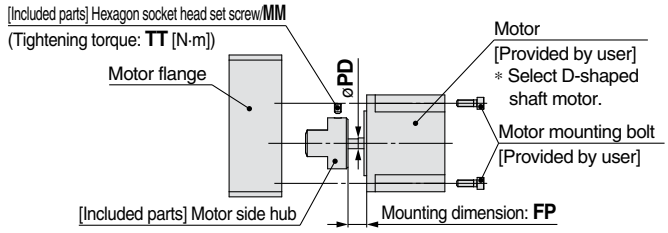
- When mounting a hub, remove the oil content, dust, or dirt sticking to the shaft and hub inside diameter.
- This product does not include the motor and motor mounting bolts. (Provided by user)
  For the shaft-end shape of the motor, prepare the round type.
- Take loose prevention measures for the motor mounting bolts.

Motor Mounting

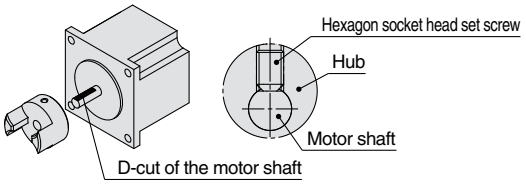
Motor type: NZ, NY, NX, NW



Motor type: NM1



* Note for mounting a hub to the NM1 motor type
  When mounting the hub to the motor, make sure to position the mounting screw vertical to the D-cut surface of the motor shaft. (Refer to the figure shown below)
* Motor mounting screws for the LEFB25 are fixed starting from the motor flange side. (Opposite of the drawing)

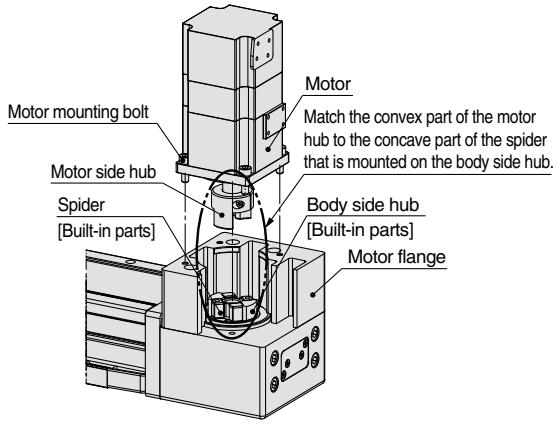


Motor Mounting Diagram

Motor type: NZ, NY, NW

Mounting procedure

1) Fix the motor (provided by user) and the motor hub with the "MM hexagon socket head cap screw."
2) Check the "motor hub position", and then insert it. (Refer to the mounting diagram.)
3) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).



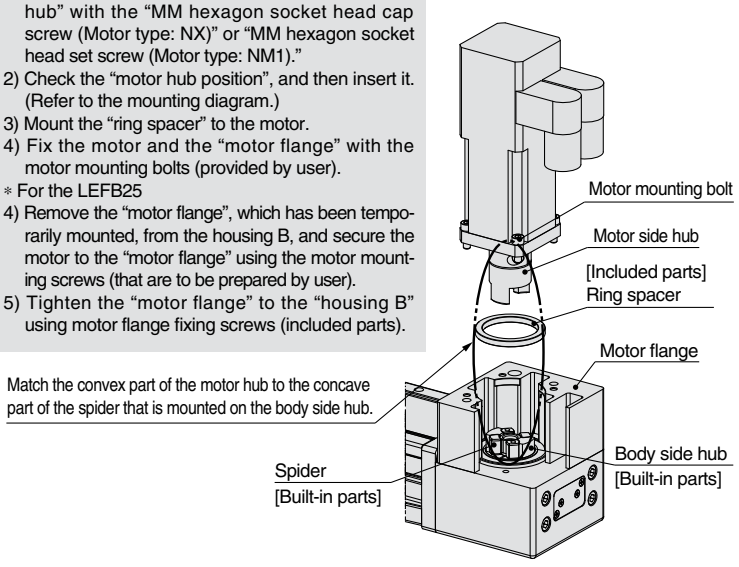
Motor type: NX, NM1

Mounting procedure

1) Fix the motor (provided by user) and the "motor hub" with the "MM hexagon socket head cap screw (Motor type: NX)" or "MM hexagon socket head set screw (Motor type: NM1)."
2) Check the "motor hub position", and then insert it. (Refer to the mounting diagram.)
3) Mount the "ring spacer" to the motor.
4) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).

* For the LEFB25

4) Remove the "motor flange", which has been temporarily mounted, from the housing B, and secure the motor to the "motor flange" using the motor mounting screws (that are to be prepared by user).
5) Tighten the "motor flange" to the "housing B" using motor flange fixing screws (included parts).



Size: 25 Hub Mounting Dimensions [mm]

Motor type	MM	TT	PD	FP
NZ	M2.5 x 10	1.00	8	11
NY	M2.5 x 10	1.00	8	11
NM1	M3 x 5	0.63	5	11

Size: 32 Hub Mounting Dimensions [mm]

Motor type	MM	TT	PD	FP
NZ	M3 x 12	1.5	14	17.5
NY	M4 x 12	2.5	11	17.5
NX	M4 x 12	2.5	9	5.2
NW	M4 x 12	2.5	9	12.5
NM1	M4 x 6	1.5	6.35	4.5

Size: 40 Hub Mounting Dimensions [mm]

Motor type	MM	TT	PD	FP
NZ	M3 x 12	1.5	14	17.5
NY	M3 x 12	1.5	14	17.5
NX	M4 x 12	2.5	9	5.2
NW	M4 x 12	2.5	9	13
NM1	M4 x 6	1.5	6.35	5

Included Parts List

Size: 25

Description	Quantity Motor type		
	NZ	**NY**	**NM1**
Motor side hub	1	1	1
Hexagon socket head cap screw/ set screw (for hub fixing)*	1	1	1
Hexagon socket head cap screw (for motor flange fixing)*	—	—	2
Ring spacer	—	—	1

* For screw sizes, refer to the hub mounting dimensions.

Size: 32, 40

Description	Quantity Motor type				
	NZ	**NY**	**NX**	**NW**	**NM1**
Motor side hub	1	1	1	1	1
Hexagon socket head cap screw/ set screw (for hub fixing)*	1	1	1	1	1
Ring spacer	—	—	1	—	1

* For screw sizes, refer to the hub mounting dimensions.

Series LEF
Electric Actuator
Specific Product Precautions 1

Be sure to read this before handling. Refer to the back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

Design

⚠Caution

1. Do not apply a load in excess of the operating limit.

Select a suitable actuator by work load and allowable moment. If the product is used outside of the operating limit, the eccentric load applied to the guide will be excessive and have adverse effects such as creating play on the guide, degrading accuracy and shortening the life of the product.

2. Do not use the product in applications where excessive external force or impact force is applied to it.

This can cause a failure.

Selection

⚠Warning

1. Do not increase the speed in excess of the operating limit.

Select a suitable actuator by the relationship of the allowable work load and speed, and the allowable speed of each stroke. If the product is used outside of the operating limit, it will have adverse effects such as creating noise, degrading accuracy and shortening the life of the product.

2. Do not use the product in applications where excessive external force or impact force is applied to it.

This can cause a failure.

3. When the product repeatedly cycles with partial strokes (see the table below), operate it at a full stroke at least once every dozens of cycles.

Otherwise, lubrication can run out.

Model	Partial stroke
LEF□25	65 mm or less
LEF□32	70 mm or less
LEF□40	105 mm or less

4. When external force is applied to the table, it is necessary to add external force to the work load as the total carried load for the sizing.

When a cable duct or flexible moving tube is attached to the actuator, the sliding resistance of the table increases and may lead to operational failure of the product.

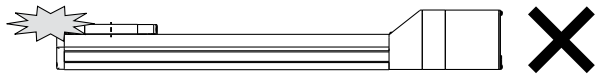
Handling

⚠Caution

1. Do not allow the table to hit the end of stroke.

When the driver parameters, origin or programs are set incorrectly, the table may collide against the stroke end of the actuator during operation. Check these points before use.

If the table collides against the stroke end of the actuator, the guide, ball screw, belt or internal stopper can be broken. This may lead to abnormal operation.



Handle the actuator with care when it is used in the vertical direction as the workpiece will fall freely from its own weight.

2. The actual speed of this actuator is affected by the work load and stroke.

Check the specifications with reference to the model selection section of the catalog.

3. Do not apply a load, impact or resistance in addition to the transferred load during return to origin.

4. Do not dent, scratch or cause other damage to the body and table mounting surfaces.

This may cause unevenness in the mounting surface, play in the guide or an increase in the sliding resistance.

5. Do not apply strong impact or an excessive moment while mounting a workpiece.

If an external force over the allowable moment is applied, it may cause play in the guide or an increase in the sliding resistance.

6. Keep the flatness of mounting surface 0.1 mm or less.

Unevenness of a workpiece or base mounted on the body of the product may cause play in the guide and an increase in the sliding resistance.

7. Do not hit the table with the workpiece in the positioning operation and positioning range.

Electric Actuator Specific Product Precautions 2

Be sure to read this before handling. Refer to the back cover for Safety Instructions. For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

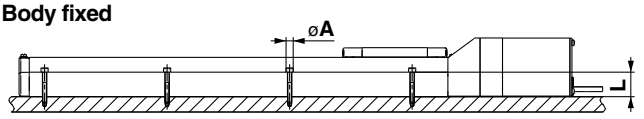
Handling

⚠ Caution

8. When mounting the product, use screws with adequate length and tighten them with adequate torque.

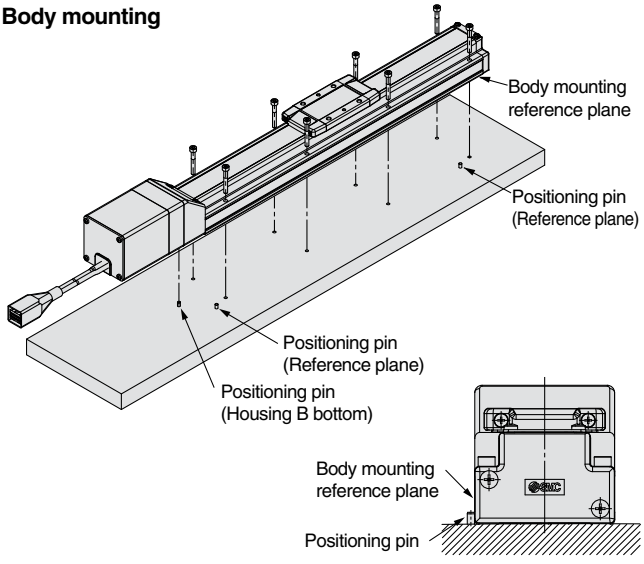
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

Body fixed



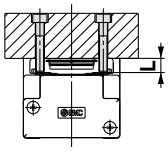
Model	Bolt	Max. tightening torque lbf·ft [N·m]	øA [mm]	L [mm]
LEF□25	M4	0.74 [1.0]	4.5	24
LEF□32	M5	1.48 [2.0]	5.5	30
LEF□40	M6	2.21 [3.0]	6.6	31

Body mounting



The traveling parallelism is the reference plane for the body mounting reference plane. If the traveling parallelism for a table is required, set the reference plane against parallel pins etc.

Workpiece fixed



Model	Bolt	Max. tightening torque lbf·ft [N·m]	L (Max. screw-in depth) [mm]
LEF□25	M5 x 0.8	2.21 [3.0]	8
LEF□32	M6 x 1	3.84 [5.2]	9
LEF□40	M8 x 1.25	9.22 [12.5]	13

To prevent the workpiece fixing bolts from touching the body, use bolts that are 0.5 mm or shorter than the maximum screw-in depth. If long bolts are used, they can touch the body and cause a malfunction etc.

9. Do not operate by fixing the table and moving the actuator body.

10. The belt drive actuator cannot be used vertically for applications.

11. Check the specifications for the minimum speed of each actuator.

Otherwise, unexpected malfunctions, such as knocking, may occur.

12. In the case of the belt drive actuator, vibration may occur during operation at speeds within the actuator specifications, this could be caused by the operating conditions. Change the speed setting to a speed that does not cause vibration.

Maintenance

⚠ Warning

Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check
Inspection before daily operation	○	—
Inspection every 6 months/1000 km/ 5 million cycles*	○	○

* Select whichever comes sooner.

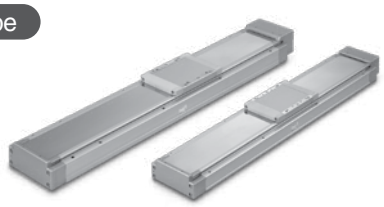
● Items for visual appearance check

1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

● Items for internal check

1. Lubricant condition on moving parts.
2. Loose or mechanical play in fixed parts or fixing screws.

Model Selection



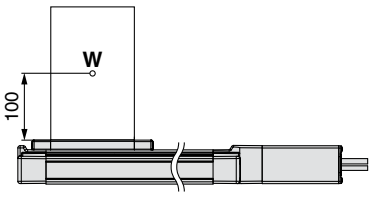
Selection Procedure

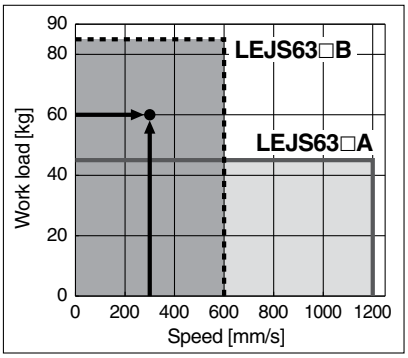
Step 1 Check the speed–work load. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Work load: 60 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s^2]
- Stroke: 300 [mm]
- Mounting orientation: Horizontal
- External force: 10 [N]
- Workpiece mounting condition:





<Speed–Work Load Graph> (LEJS63)

Step 1 Check the speed–work load.

Select a model based on the workpiece mass and speed which are within the range of the actuator body specifications with reference to the "Speed–Work Load Graph (Guide)" on page 34.

Selection example) The **LEJS63□B-300** is temporarily selected based on the graph shown on the right side.

∗ Refer to the selection method of motor manufacturers for regeneration resistance.

Step 2 Check the cycle time.

Refer to method 1 for a rough estimate, and method 2 for a more precise value.

Method 1: Check the cycle time graph. (Page 35)

The graph is based on the maximum speed of each size.

Method 2: Calculation

Cycle time T can be found from the following equation.

$T = T1 + T2 + T3 + T4$ [s]

- T1 and T3 can be obtained by the following equation.

$T1 = V/a1$ [s] $T3 = V/a2$ [s]

The acceleration and deceleration values have upper limits depending on the workpiece mass and the duty ratio.
Confirm that they do not exceed the upper limit, by referring to the "Work load–Acceleration/Deceleration Graph (Guide)" on pages 36 and 37.
For the ball screw type, there is an upper limit of the speed depending on the stroke. Confirm that it does not exceed the upper limit, by referring to the specifications on page 42.

- T2 can be found from the following equation.

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

- T4 varies depending on the motor type and load. The value below is recommended.

$T4 = 0.05$ [s]

∗ The conditions for the settling time vary depending on the motor or driver to be used.

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

$T1 = V/a1 = 300/3000 = 0.1$ [s],

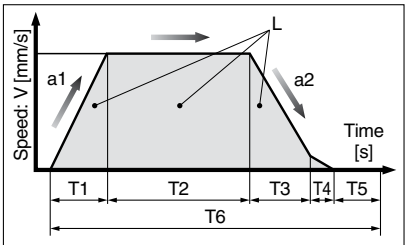
$T3 = V/a2 = 300/3000 = 0.1$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{300 - 0.5 \cdot 300 \cdot (0.1 + 0.1)}{300} = 0.90 \text{ [s]}$$

$T4 = 0.05$ [s]

Therefore, the cycle time can be obtained as follows.

$T = T1 + T2 + T3 + T4$
$= 0.1 + 0.90 + 0.1 + 0.05$
$=$ **1.15 [s]**



L : Stroke [mm]
V : Speed [mm/s]
a1: Acceleration [mm/s^2]
a2: Deceleration [mm/s^2]

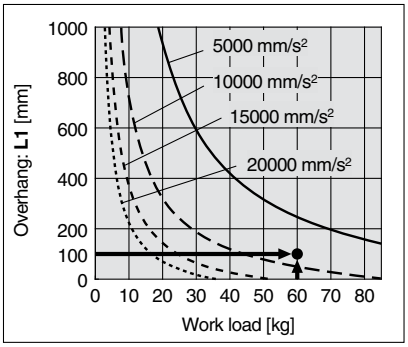
T1: Acceleration time [s]
Time until reaching the set speed
T2: Constant speed time [s]
Time while the actuator is operating at a constant speed
T3: Deceleration time [s]
Time from the beginning of the constant speed operation to stop
T4: Settling time [s]
Time until in position is completed
T5: Resting time [s]
Time the product is not running
T6: Total time [s]
Total time from T1 to T5

Duty ratio: Ratio of T to T6
T ÷ T6 x 100

Step 3 Check the allowable moment.

Refer to the "Dynamic Allowable Moment" graphs on pages 38 and 39.

Selection example) Select the **LEJS63□B-300** from the graph on the right side.
Confirm that the external force is within the allowable external force (20 [N]).
(The external force is the resistance due to cable duct, flexible trunking or air tubing.)



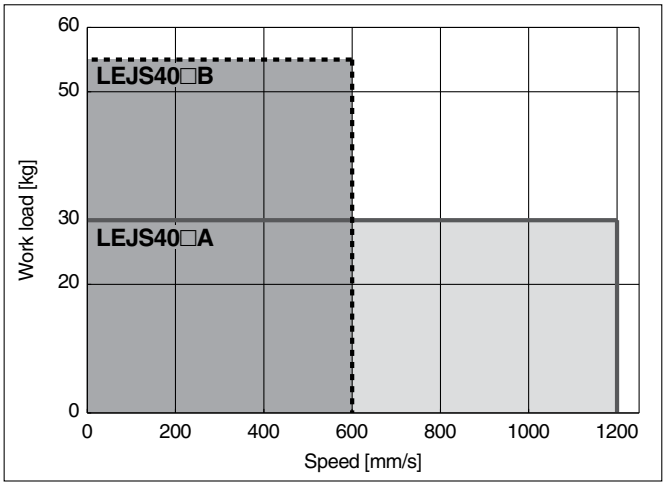
<Dynamic Allowable Moment> (LEJS63)

Speed–Work Load Graph (Guide)

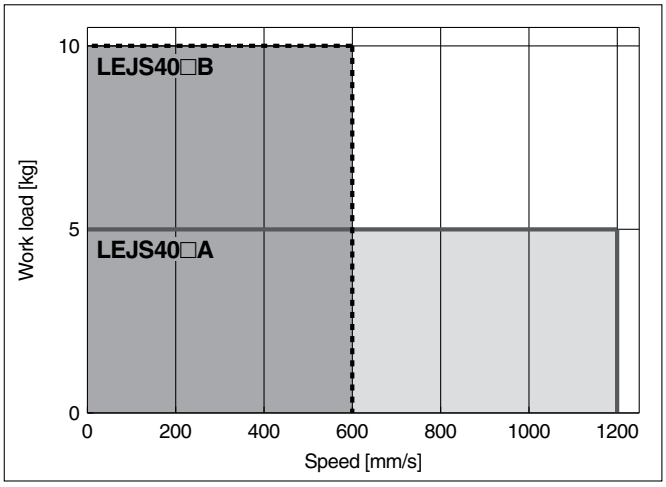
* The values shown below are allowable values of the actuator body. Do not use the actuator so that it exceeds these specification ranges.
* The allowable speed is restricted depending on the stroke. Select it by referring to the "Allowable Stroke Speed."

LEJS40/Ball Screw Drive

Horizontal

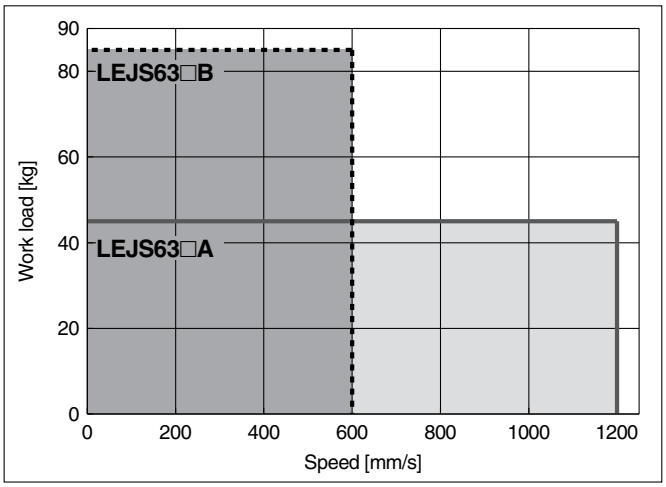


Vertical

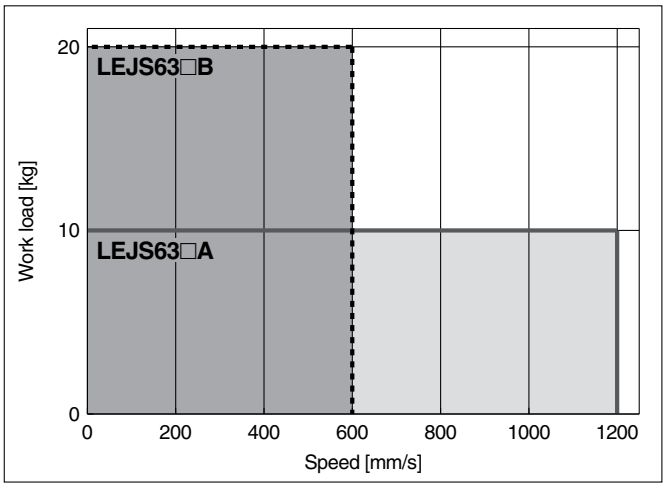


LEJS63/Ball Screw Drive

Horizontal



Vertical



Allowable Stroke Speed

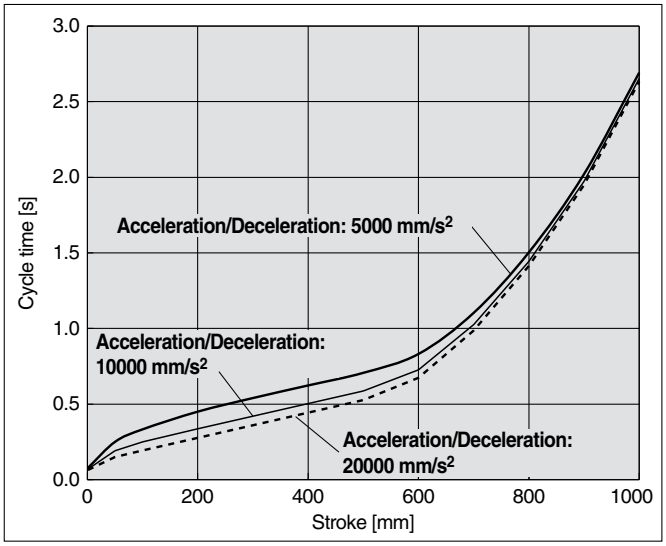
[mm/s]

Model	Motor	Lead		Stroke [mm]													
		Symbol	[mm]	Up to 200	Up to 300	Up to 400	Up to 500	Up to 600	Up to 700	Up to 800	Up to 900	Up to 1000	Up to 1100	Up to 1200	Up to 1300	Up to 1400	Up to 1500
LEJS40	100 W equivalent	A	16	1200				1050	780	600	480	390	320	270	—	—	—
		B	8	600				520	390	300	240	190	160	130	—	—	—
		(Motor rotation speed)		(4500 rpm)				(3938 rpm)	(2925 rpm)	(2250 rpm)	(1800 rpm)	(1463 rpm)	(1200 rpm)	(1013 rpm)	—	—	—
LEJS63	200 W equivalent	A	20	—	1200					930	740	600	500	420	360	310	270
		B	10	—	600					460	370	300	250	210	180	150	130
		(Motor rotation speed)		—	(3600 rpm)					(2790 rpm)	(2220 rpm)	(1800 rpm)	(1500 rpm)	(1260 rpm)	(1080 rpm)	(930 rpm)	(810 rpm)

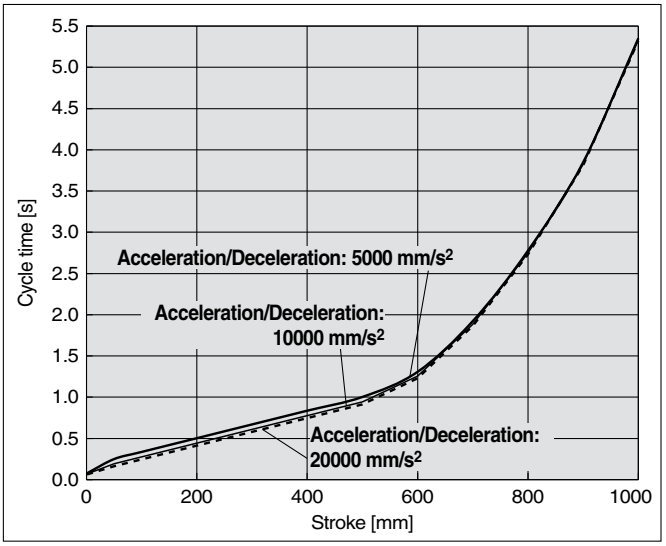
Cycle Time Graph (Guide)

LEJS40/Ball Screw Drive

LEJS40□A

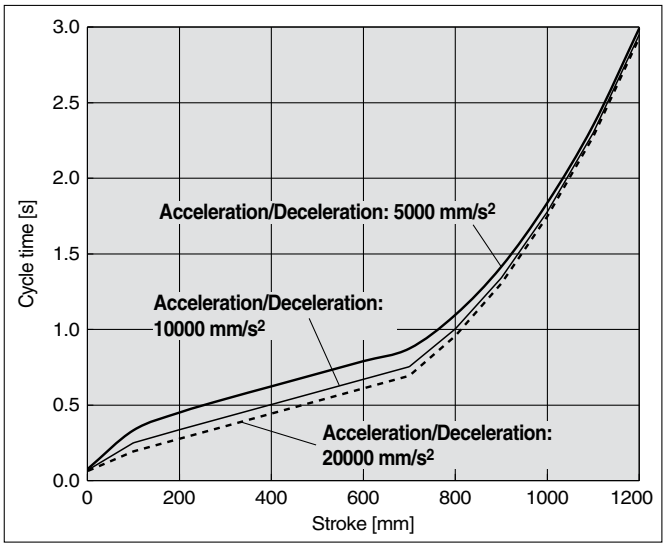


LEJS40□B

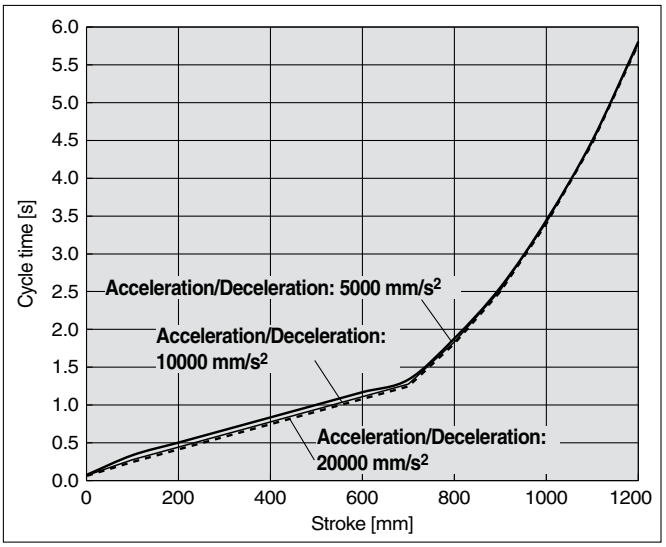


LEJS63/Ball Screw Drive

LEJS63□A



LEJS63□B

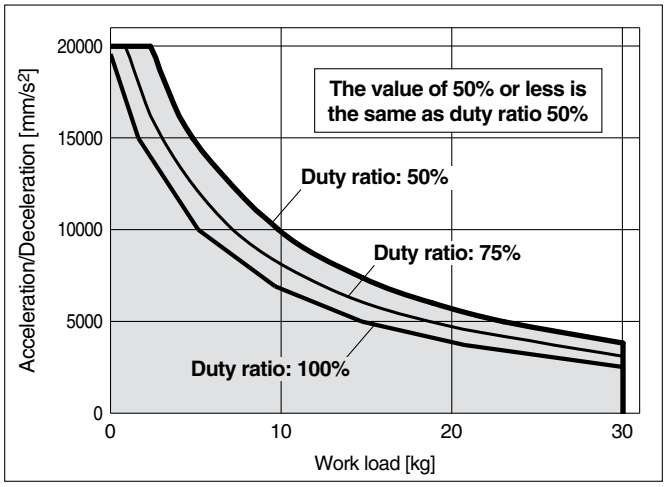


∗ These graphs show the cycle time for each acceleration/deceleration.
∗ These graphs show the cycle time for each stroke at the maximum speed.

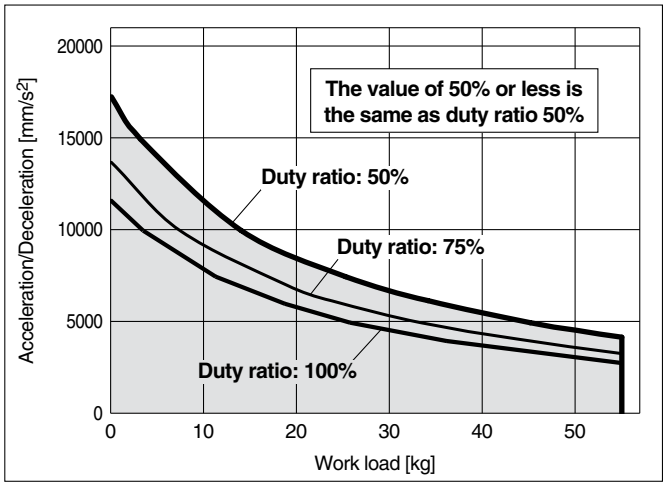
Work Load–Acceleration/Deceleration Graph (Guide)

LEJS40/Ball Screw Drive: Horizontal

LEJS40□A

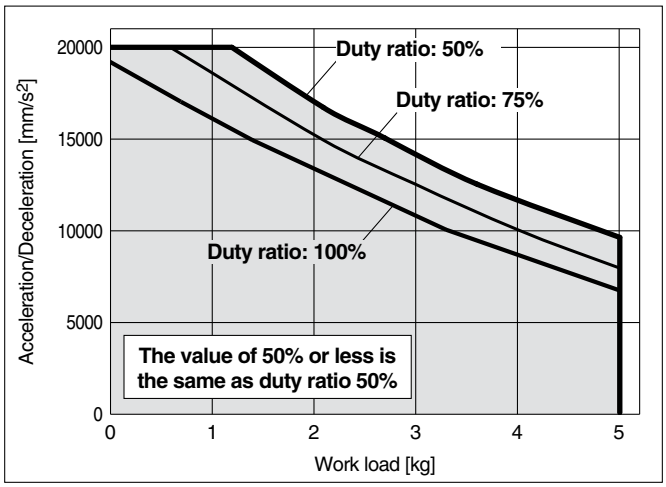


LEJS40□B

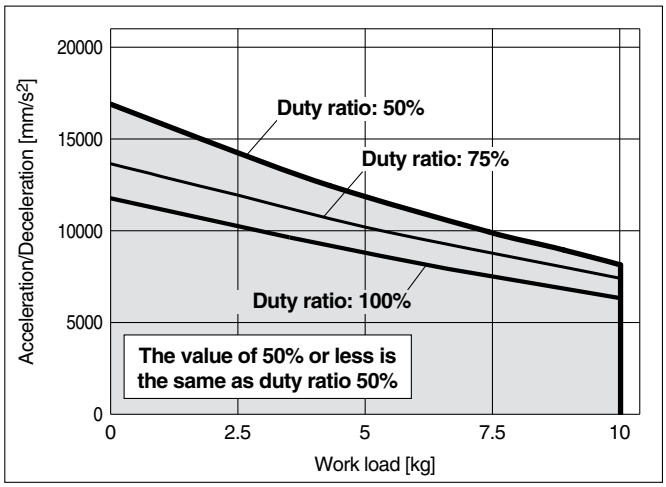


LEJS40/Ball Screw Drive: Vertical

LEJS40□A



LEJS40□B

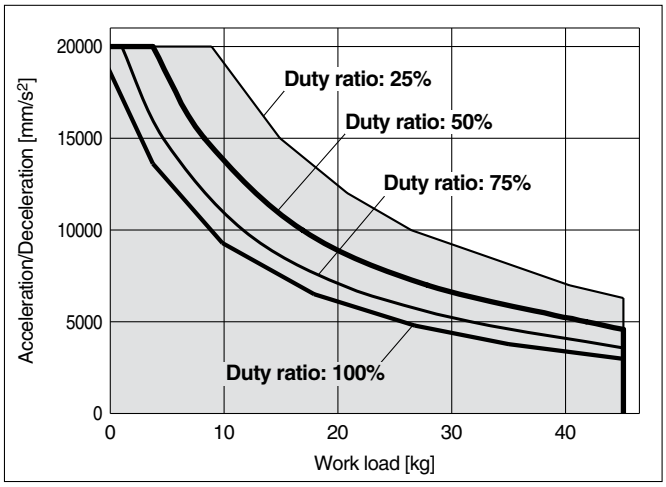


These graphs are examples of when the standard motor is mounted.
Determine the duty ratio after taking into account the load factor of the motor or driver to be used.

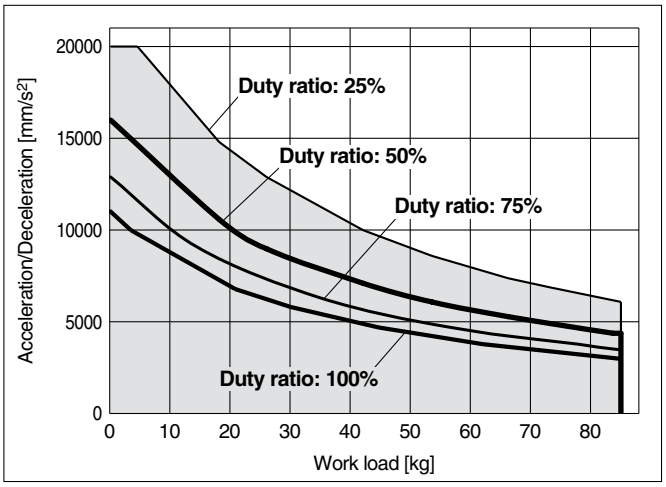
Work Load–Acceleration/Deceleration Graph (Guide)

LEJS63/Ball Screw Drive: Horizontal

LEJS63□A

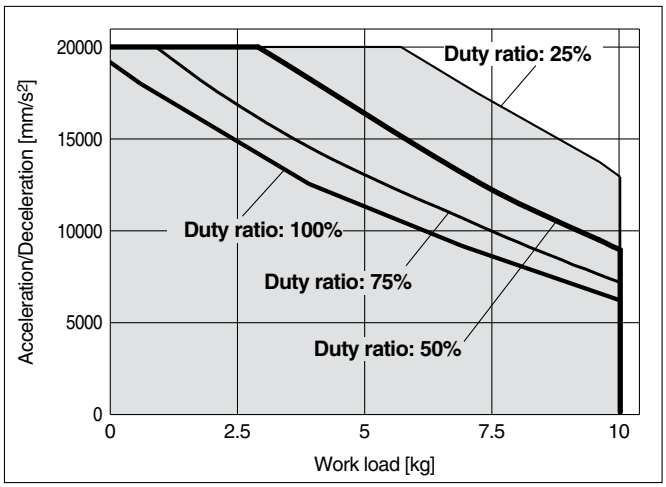


LEJS63□B

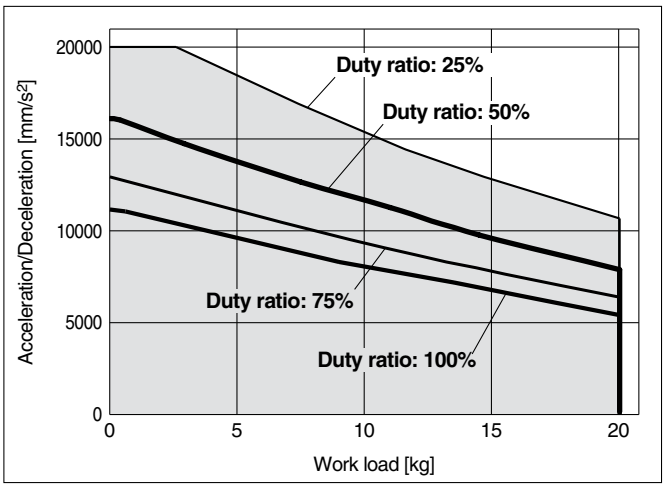


LEJS63/Ball Screw Drive: Vertical

LEJS63□A



LEJS63□B

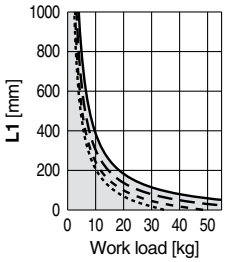
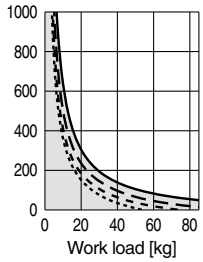
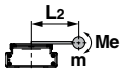
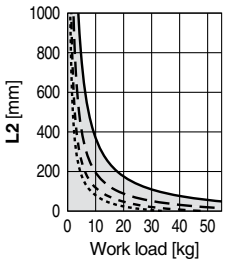
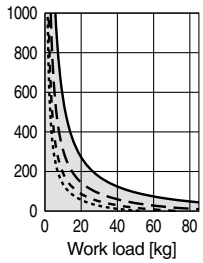
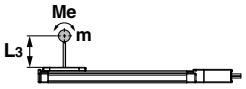
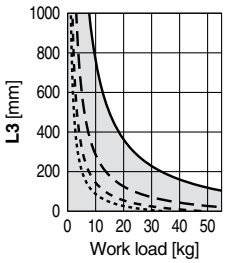
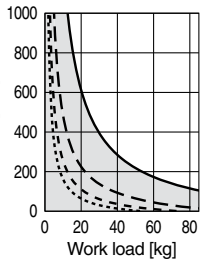
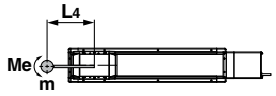
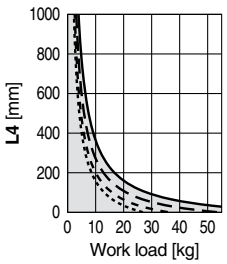
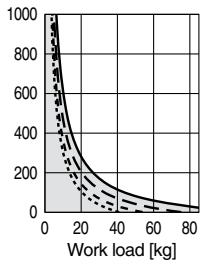
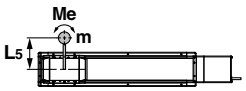
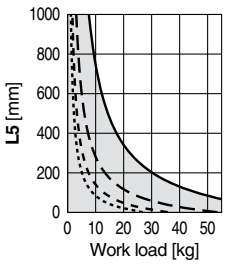
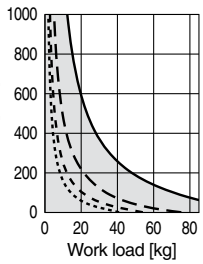
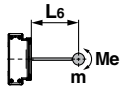
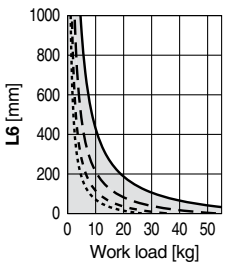
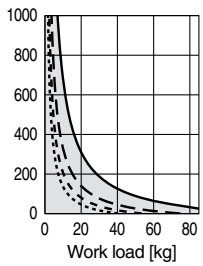


These graphs are examples of when the standard motor is mounted.
Determine the duty ratio after taking into account the load factor of the motor or driver to be used.

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang when the center of gravity of the workpiece overhangs in one direction. When the center of gravity of the workpiece overhangs in two directions, refer to the Electric Actuator Selection Software for confirmation, http://www.smcworld.com

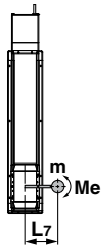
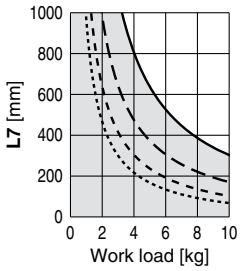
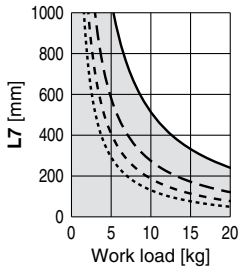
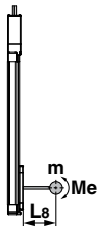
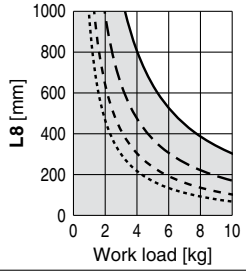
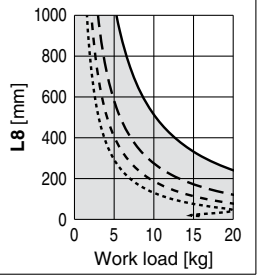
Acceleration/Deceleration —— 5000 mm/s² – – – 10000 mm/s² - - - - 15000 mm/s² ····· 20000 mm/s²

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 LEJS40	Model LEJS63
Horizontal/Bottom		X		
		Y		
		Z		
Wall		X		
		Y		
		Z		

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang when the center of gravity of the workpiece overhangs in one direction. When the center of gravity of the workpiece overhangs in two directions, refer to the Electric Actuator Selection Software for confirmation, http://www.smcworld.com

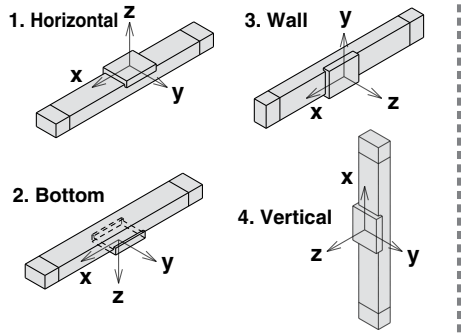
Acceleration/Deceleration —— 5000 mm/s² - - - 10000 mm/s² - - - - 15000 mm/s² ····· 20000 mm/s²

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 LEJS40	Model LEJS63
Vertical		Y		
		Z		

Calculation of Guide Load Factor

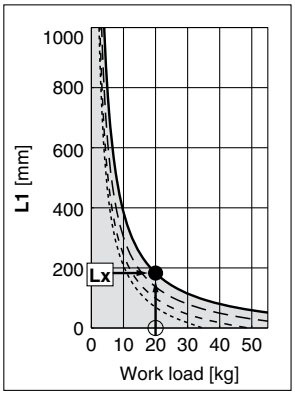
1. Decide operating conditions.
   Model: LEJS
   Size: 40/63
   Mounting orientation: Horizontal/Bottom/Wall/Vertical
   Acceleration [mm/s²]: **a**
   Work load [kg]: **m**
   Work load center position [mm]: **Xc/Yc/Zc**
2. Select the target graph with reference to the model, size and mounting orientation.
3. Based on the acceleration and work load, obtain the overhang [mm]: **Lx/Ly/Lz** from the graph.
4. Calculate the load factor for each direction.
   α**x = Xc/Lx**, α**y = Yc/Ly**, α**z = Zc/Lz**
5. Confirm the total of α**x**, α**y** and α**z** is 1 or less.
   α**x** + α**y** + α**z** ≤**1**
   When 1 is exceeded, consider a reduction of acceleration and work load, or a change of the work load center position and series.

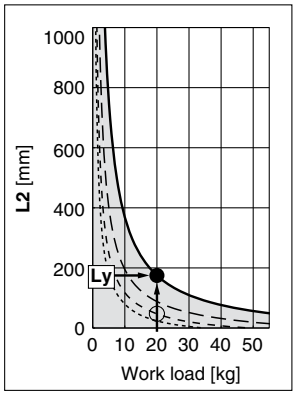
Mounting Orientation



Example

1. Operating conditions
   Model: LEJS
   Size: 40
   Mounting orientation: Horizontal
   Acceleration [mm/s²]: 5000
   Work load [kg]: 20
   Work load center position [mm]: **Xc = 0**, **Yc = 50**, **Zc = 200**
2. Select the graph on page 38, top and left side first row.
3. **Lx = 180 mm**, **Ly = 170 mm**, **Lz = 360 mm**
4. The load factor for each direction can be obtained as follows.
   α**x = 0/180 = 0**
   α**y = 50/170 = 0.29**
   α**z = 200/360 = 0.56**
5. α**x** + α**y** + α**z = 0.85** ≤**1**





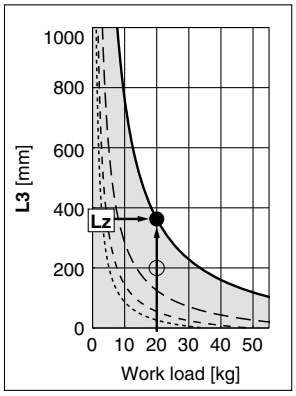
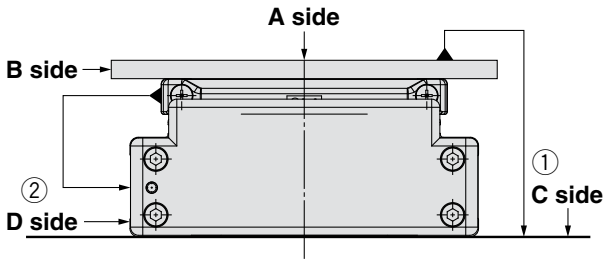


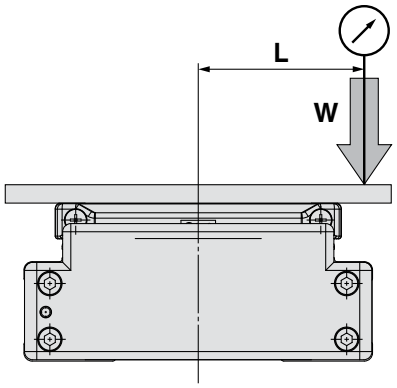
Table Accuracy (Reference Value)

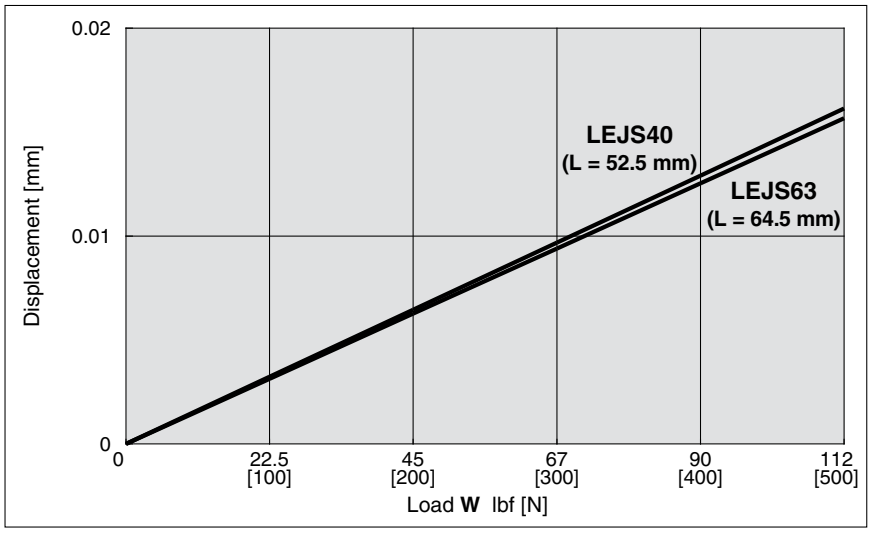


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEJS40	0.05	0.03
LEJS63	0.05	0.03

Note) Traveling parallelism does not include the mounting surface accuracy.

Table Displacement (Reference Value)





Note) This displacement is measured when a 15 mm aluminum plate is mounted and fixed on the table. (Table clearance is included.)

Electric Actuator/High Rigidity Slider Type
Ball Screw Drive

Motorless Type

Series LEJS

RoHS

How to Order

LEJS 40 NZ A – 500

❶ ❷ ❸ ❹

❶ Size

40
63

❷ Motor type

Symbol	Type
NZ	Mounting type Z
NY	Mounting type Y
NX*	Mounting type X
NW*	Mounting type W

* Size 63 only

❸ Lead [mm]

Symbol	LEJS40	LEJS63
A	16	20
B	8	10

❹ Stroke [mm]

200
to
1500

* For details, refer to the table below.

Applicable Stroke Table

●Standard

Model \ Stroke [mm]	200	300	400	500	600	700	800	900	1000	1200	1500
LEJS40	●	●	●	●	●	●	●	●	●	●	—
LEJS63	—	●	●	●	●	●	●	●	●	●	●

* Please consult with SMC for strokes other than those shown above as they are produced as special orders.

Compatible Motors

Applicable motor model			Size/Motor type					
			40		63			
Manufacturer	Series	Type	"NZ" Mounting type Z	"NY" Mounting type Y	"NZ" Mounting type Z	"NY" Mounting type Y	"NX" Mounting type X	"NW" Mounting type W
Mitsubishi Electric Corporation	MELSERVO-JN	HF-KN	●	—	●	—	—	—
	MELSERVO-J3	HF-KP	●	—	●	—	—	—
	MELSERVO-J4	HG-KR	●	—	●	—	—	—
YASKAWA Electric Corporation	Σ-V	SGMJV	●	—	●	—	—	—
SANYO DENKI CO., LTD.	SANMOTION R	R2	●	—	●	—	—	—
OMRON Corporation	G5	R88M-K	●	—	—	●	—	—
Panasonic Corporation	MINAS-A4	MSMD	—	●	—	●	—	—
	MINAS-A5	MSMD/MHMD	—	●	—	●	—	—
FANUC CORPORATION	β is	β	●	—	● (β1 only)	—	—	●
Rockwell Automation, Inc. (Allen-Bradley)	MP–	MPL/VPL	—	—	—	—	●	—

For auto switches, refer to pages 47 to 49.

Specifications

- Values in this specification table are the allowable values of the actuator body with the standard motor mounted.
- Do not use the actuator so that it exceeds these values.

Model				LEJS40		LEJS63	
Actuator specifications	Stroke [mm] Note 1)			200, 300, 400, 500, 600, 700, 800 900, 1000, 1200		300, 400, 500, 600, 700, 800, 900 1000, 1200, 1500	
	Work load [kg] Note 2)		Horizontal	30	55	45	85
			Vertical	5	10	10	20
	Speed [mm/s] Note 3)	Stroke range	Up to 500	1200	600	1200	600
			501 to 600	1050	520		
			601 to 700	780	390		
			701 to 800	600	300	930	460
			801 to 900	480	240	740	370
			901 to 1000	390	190	600	300
			1001 to 1100	320	160	500	250
			1101 to 1200	270	130	420	210
			1201 to 1300	—	—	360	180
			1301 to 1400	—	—	310	150
			1401 to 1500	—	—	270	130
	Max. acceleration/deceleration [mm/s²]			20000			
	Positioning repeatability [mm] Note 4)			±0.02			
	Lost motion [mm] Note 5)			0.1 or less			
	Ball screw specifications		Thread size [mm]	ø12		ø15	
			Lead [mm]	16	8	20	10
			Shaft length [mm]	Stroke + 118.5		Stroke + 126.5	
	Impact/Vibration resistance [m/s²] Note 6)			50/20			
	Actuation type			Ball screw			
	Guide type			Linear guide			
	Operating temperature range			41 to 104°F (5 to 40 °C)			
	Operating humidity range [%RH]			90 or less (No condensation)			
Other specifications Note 7)	Actuation unit weight [kg]			0.86		1.37	
	Other inertia [kg·cm²]			0.031		0.129	
	Friction coefficient			0.05			
	Mechanical efficiency			0.8			
Reference motor specifications	Motor shape			□40		□60	
	Motor type			AC servo motor (100 V/200 V)			
	Rated output capacity [W]			100		200	
	Rated torque lbf·ft [N·m]			0.24 [0.32]		0.47 [0.64]	
	Rated rotation [rpm]			3000		3000	

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Check the "Speed–Work Load Graph (Guide)" on page 34.
Note 3) The allowable speed changes according to the stroke.
Note 4) Conforming to JIS B 6191-1999
Note 5) A reference value for correcting an error in reciprocal operation.
Note 6) 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. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 7) Each value is a guide. Use such value to select a motor capacity.
Note 8) Sensor magnet position is located in the table center.
For detailed dimensions, refer to the "Auto Switch Mounting Position."
Note 9) Do not allow collisions at either end of the table traveling distance.
Additionally, when running the positioning operation, do not set within 2 mm of both ends.
Note 10) Please consult with SMC for the manufacture of intermediate strokes.
(LEJS40/Manufacturable stroke range: 200 to 1200 mm, LEJS63/Manufacturable stroke range: 300 to 1500 mm)

Weight

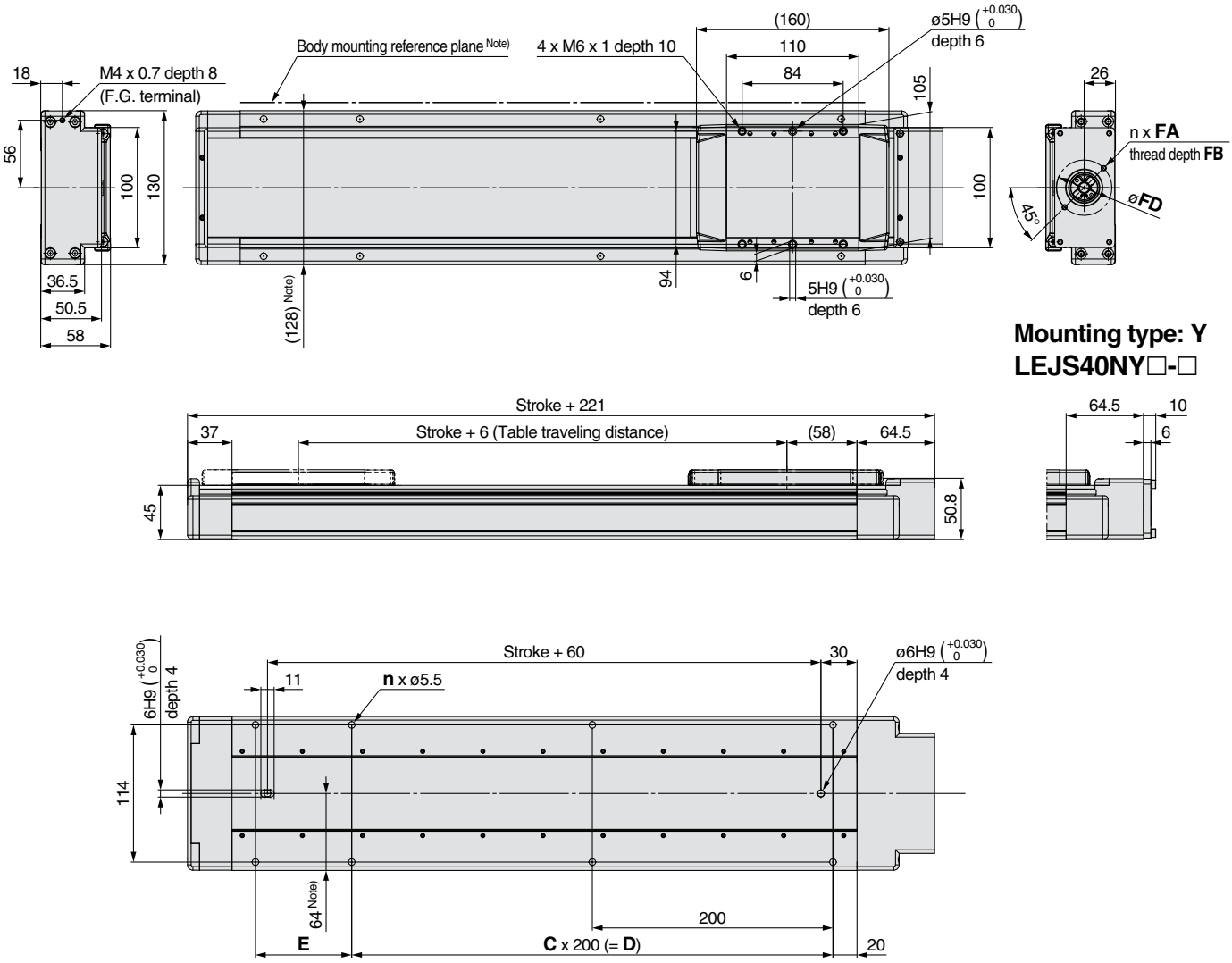
Model	LEJS40									
Stroke [mm]	200	300	400	500	600	700	800	900	1000	1200
Product weight [kg]	5.0	5.8	6.5	7.3	8.1	8.8	9.6	10.4	11.1	12.7

Model	LEJS63									
Stroke [mm]	300	400	500	600	700	800	900	1000	1200	1500
Product weight [kg]	10.4	11.7	12.9	14.2	15.4	16.7	17.9	19.1	21.6	25.4

Refer to the "Motor Mounting" on page 45 for details about motor mounting and included parts.

Dimensions: Ball Screw Drive

LEJS40



Note) When mounting the actuator using the body mounting reference plane, use a pin. Set the height of the pin to be 5 mm or more because of rounding. (Recommended height 6 mm)

Dimensions [mm]

Model	n	C	D	E
LEJS40N□□-200	6	1	200	80
LEJS40N□□-300	6	1	200	180
LEJS40N□□-400	8	2	400	80
LEJS40N□□-500	8	2	400	180
LEJS40N□□-600	10	3	600	80
LEJS40N□□-700	10	3	600	180
LEJS40N□□-800	12	4	800	80
LEJS40N□□-900	12	4	800	180
LEJS40N□□-1000	14	5	1000	80
LEJS40N□□-1200	16	6	1200	80

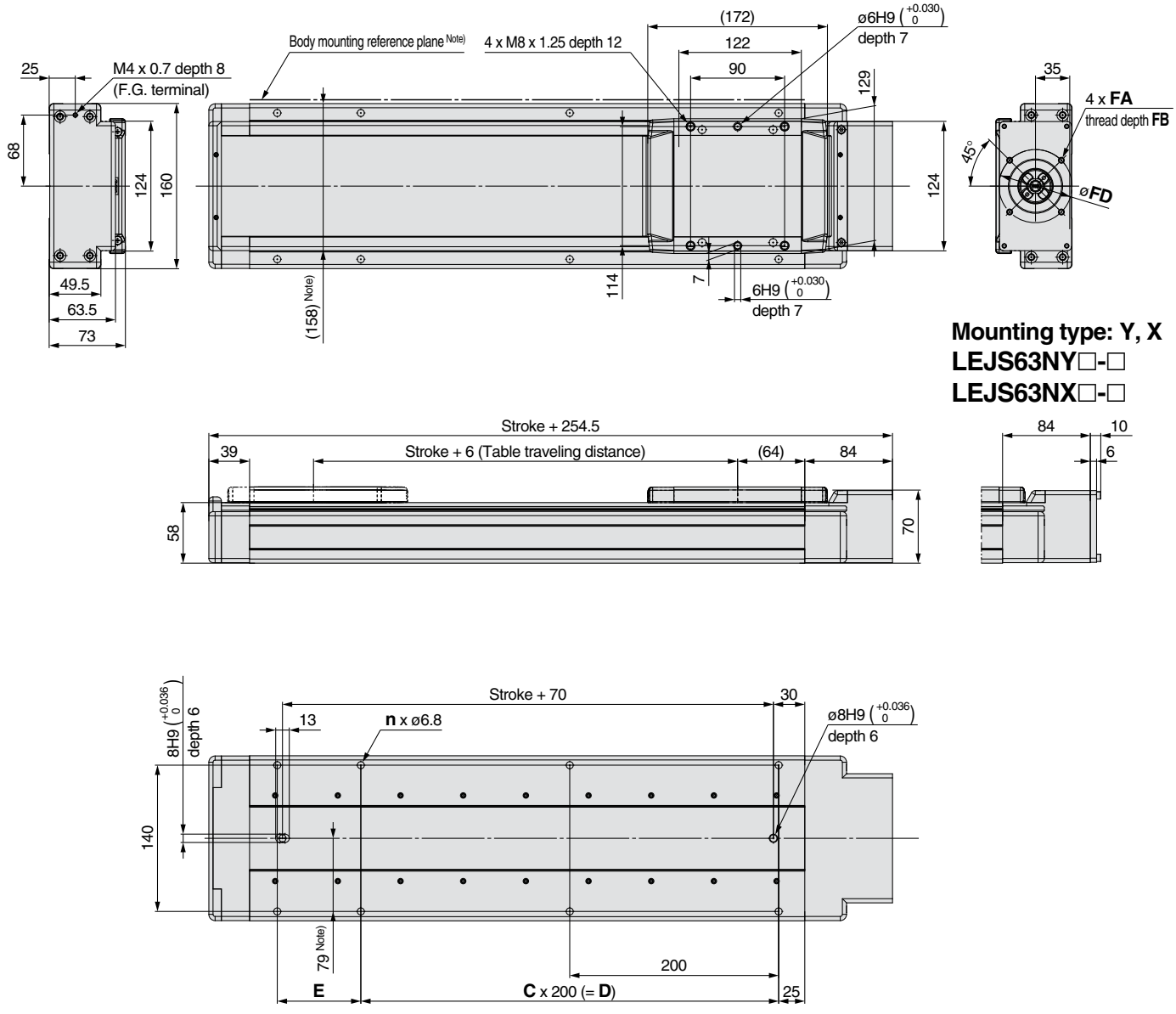
Motor Mounting Dimensions [mm]

Motor type	n	FA	FB	FD
NZ/Mounting type Z	2	M4 x 0.7	7	46
NY/Mounting type Y	4	M3 x 0.5	6	45

Refer to the "Motor Mounting" on page 45 for details about motor mounting and included parts.

Dimensions: Ball Screw Drive

LEJS63



Note) When mounting the actuator using the body mounting reference plane, use a pin. Set the height of the pin to be 5 mm or more because of rounding. (Recommended height 6 mm)

Dimensions [mm]

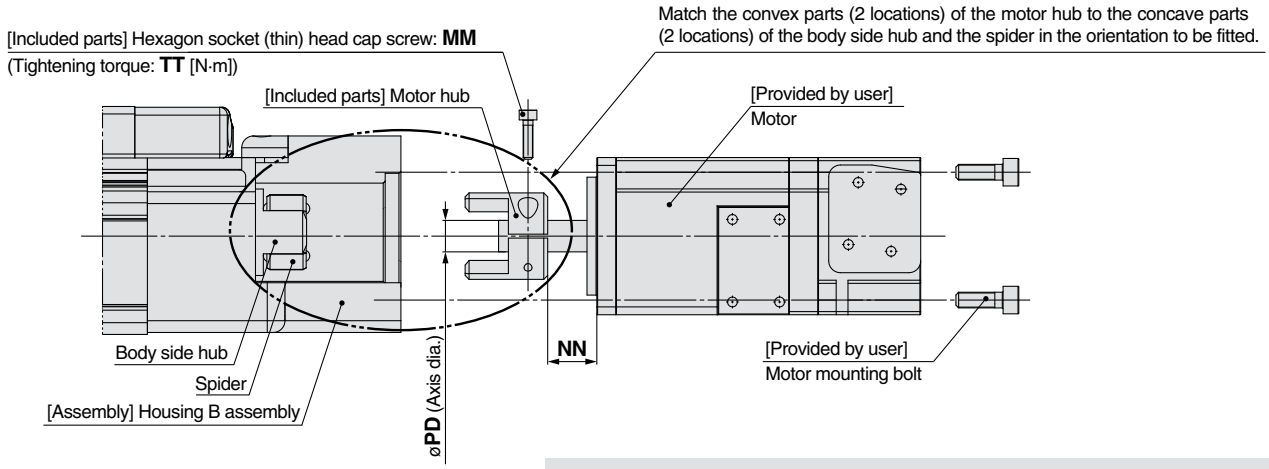
Model	n	C	D	E
LEJS63N□□-300	6	1	200	180
LEJS63N□□-400	8	2	400	80
LEJS63N□□-500	8	2	400	180
LEJS63N□□-600	10	3	600	80
LEJS63N□□-700	10	3	600	180
LEJS63N□□-800	12	4	800	80
LEJS63N□□-900	12	4	800	180
LEJS63N□□-1000	14	5	1000	80
LEJS63N□□-1200	16	6	1200	80
LEJS63N□□-1500	18	7	1400	180

Motor Mounting Dimensions [mm]

Motor type	FA	FB	FD
NZ/Mounting type Z	M5 x 0.8	7	70
NY/Mounting type Y	M4 x 0.7	6	70
NX/Mounting type X	M5 x 0.8	6	63
NW/Mounting type W	M5 x 0.8	7	70

Motor Mounting

- When mounting a hub, remove the oil content, dust, or dirt sticking to the shaft and hub inside diameter.
- This product does not include the motor and motor mounting bolts. (Provided by user)
  For the shaft-end shape of the motor, prepare the round type.
- Take loose prevention measures for the motor mounting bolts.



Mounting procedure

1) Fix the motor (provided by user) and the "motor hub" with the "MM hexagon socket head cap screw."
2) Check the "motor hub position", and then insert it.
3) Fix the motor and the "housing B assembly" with the motor mounting bolts (provided by user).

Dimensions

[mm]

Size	Motor type	MM	TT	NN	PD
40	**NZ/Mounting type Z**	M2.5 x 10	0.65	12.5	8
	NY/Mounting type Y	M2.5 x 10	0.65	12.5	8
63	**NZ/Mounting type Z**	M3 x 12	1.5	18	14
	NY/Mounting type Y	M4 x 12	2.7	18	11
	NX/Mounting type X	M4 x 12	2.7	8	9
	NW/Mounting type W	M4 x 12	2.7	12	9

Included Parts List

Size: 40

Description	Quantity	Note
Motor hub	1	—
Hexagon socket head cap screw (for hub fixing)	1	M2.5 x 10: Motor type "NZ", "NY"

Size: 63

Description	Quantity	Note
Motor hub	1	—
Hexagon socket head cap screw (for hub fixing)	1	M3 x 12: Motor type "NZ"
Hexagon socket thin head cap screw (for hub fixing)		M4 x 12: Motor type "NY", "NX", "NW"

Motor Mounting Parts

Motor Flange Option

As the motor type "NZ" is selected for the model and this option is mounted, the motor types that can be used are shown below.

How to Order

LEJ – MF 63 D – NY

❶ ❷

❶ Size

40	For LEJ40
63	For LEJ63

❷ Motor type

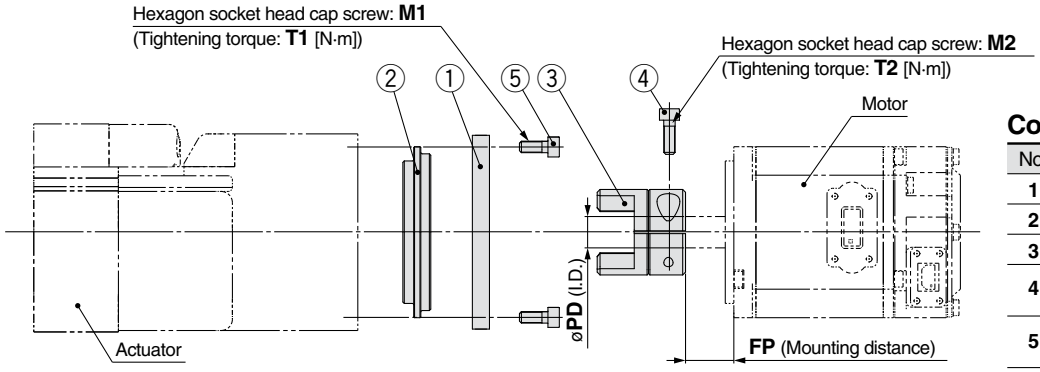
NY	Mounting type Y
NX∗1	Mounting type X
NW∗1∗2	Mounting type W

∗1 Size 63 only
∗2 ③ Hub (motor side) and ④ hexagon socket head cap screws are the only components of the NW motor type.

Compatible Motors

Applicable motor model			Size/Motor type			
Manufacturer	Series	Type	40	63		
			"NY" Mounting type Y	"NY" Mounting type Y	"NX" Mounting type X	"NW" Mounting type W
OMRON Corporation	G5	R88M-K	—	●	—	—
Panasonic Corporation	MINAS-A4	MSMD	●	●	—	—
	MINAS-A5	MSMD/MHMD	●	●	—	—
FANUC CORPORATION	β is	β	—	—	—	●
Rockwell Automation, Inc. (Allen-Bradley)	MP–	MPL	—	—	●	—

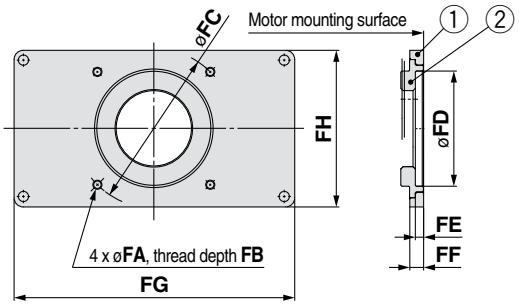
Dimensions: Motor Flange Option



Component Parts

No.	Description	Qty.
1	**Motor plate**	1
2	**Ring**	1
3	**Hub (Motor side)**	1
4	**Hexagon socket thin head cap screw**	1
5	**Hexagon socket head cap screw**	4

Motor plate details



Dimensions [mm]

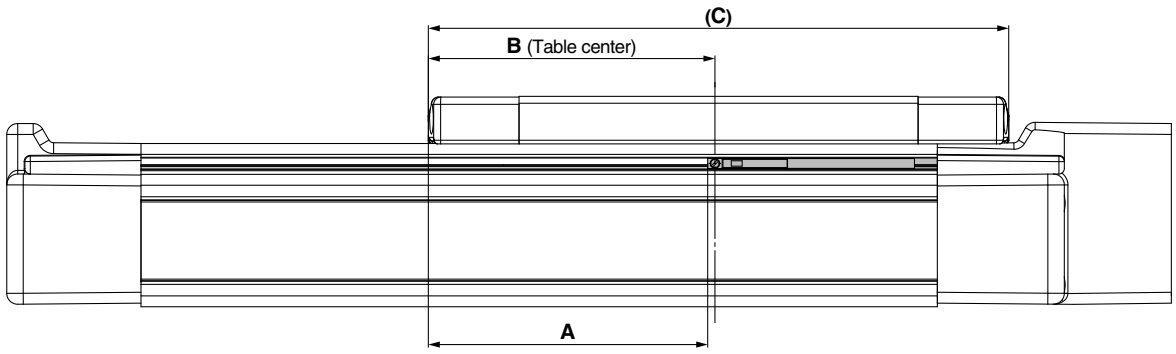
Size	Motor type	FA	FB	FC	FD	FE	FF	FG
40	NY	M3 x 0.5	6	45	30	3.5	6	99
63	NY	M4 x 0.7	6	70	50	3.5	6	123
	NX	M5 x 0.8	6	63	40	3.5	6	123
	NW∗	—	—	—	—	—	—	—

Size	Motor type	FH	M1	T1	M2	T2	PD	FP
40	NY	49	M4 x 12	2.7	M2.5 x 10	0.65	8	12.5
63	NY	68	M4 x 12	2.7	M4 x 12	2.7	11	18
	NX	68	M4 x 12	2.7	M4 x 12	2.7	9	8
	NW∗	—	—	—	M4 x 12	2.7	9	12

∗ Only ③ and ④ for the NW motor type.

Auto Switch Mounting

Auto Switch Mounting Position



[mm]

Model	Size	A	B	C	Operating range
LEJS	40	77	80	160	5.5
	63	83	86	172	7.0

Note) Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately ±30% dispersion). It may change substantially depending on the ambient environment.

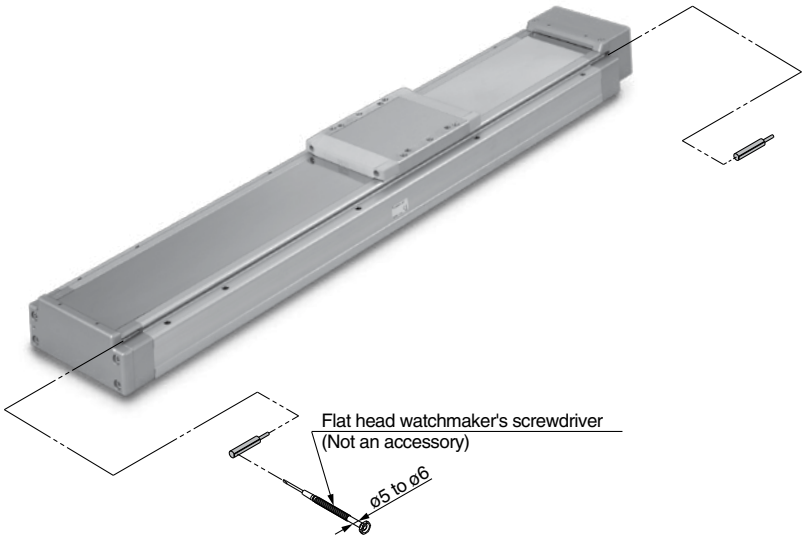
Auto Switch Mounting

When mounting the auto switches, they should be inserted into the actuator's auto switch mounting groove as shown in the drawing below. After setting in the mounting position, use a flat head watchmaker's screwdriver to tighten the auto switch mounting screw that is included.

Auto Switch Mounting Screw Tightening Torque

lbf·ft [N·m]

Auto switch model	Tightening torque
D-M9□(V) D-M9□W(V)	0.07 to 0.11 [0.10 to 0.15]



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

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

CE RoHS

Refer to SMC website for the details about products conforming to the international standards.

Grommet

- **2-wire load current is reduced (2.5 to 40 mA).**
- **Flexibility is 1.5 times greater than the conventional model (SMC comparison).**
- **Using flexible cable as standard.**

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	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 lights up when turned ON.					
Standards	CE marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N□	D-M9P□	D-M9B□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	ø0.05		
Minimum bending radius [mm] (Reference value)		20		

Note 1) Refer to the Best Pneumatics No. 2 catalog for solid state auto switch common specifications.
Note 2) Refer to the Best Pneumatics No. 2 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

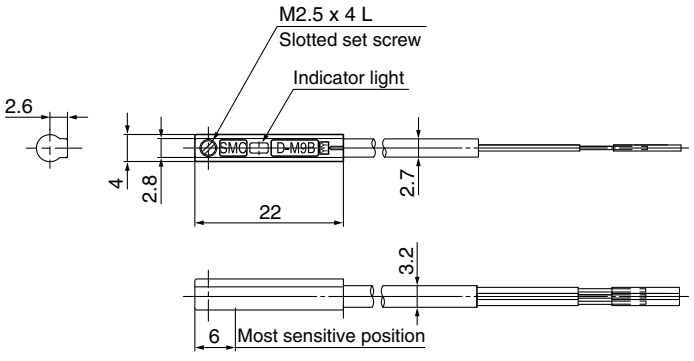
[g]

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

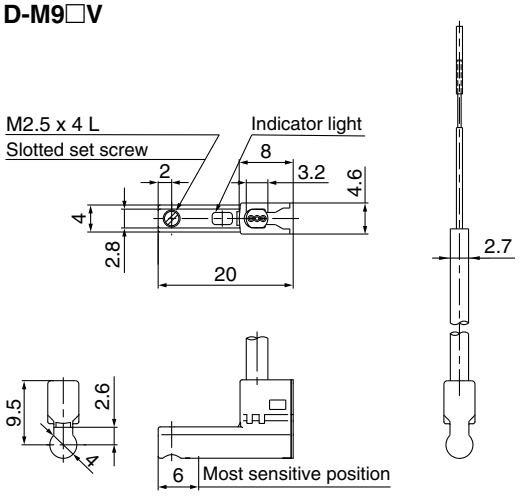
Dimensions

[mm]

D-M9□



D-M9□V



2-Color Indication Solid State Auto Switch Direct Mounting Style

D-M9NW(V)/D-M9PW(V)/D-M9BW(V)

Refer to SMC website for the details about products conforming to the international standards.

Grommet

- **2-wire load current is reduced (2.5 to 40 mA).**
- **Flexibility is 1.5 times greater than the conventional model (SMC comparison).**
- **Using flexible cable as standard.**
- **The optimum 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-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry	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 lights up. Optimum operating range ····· Green LED lights up.					
Standards	CE marking, RoHS					

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW□	D-M9PW□	D-M9BW□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	ø0.05		
Minimum bending radius [mm] (Reference value)		20		

Note 1) Refer to the Best Pneumatics No. 2 catalog for solid state auto switch common specifications.
Note 2) Refer to the Best Pneumatics No. 2 catalog for lead wire lengths.

Weight

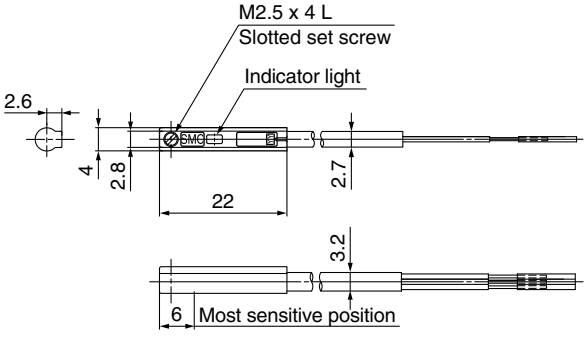
[g]

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

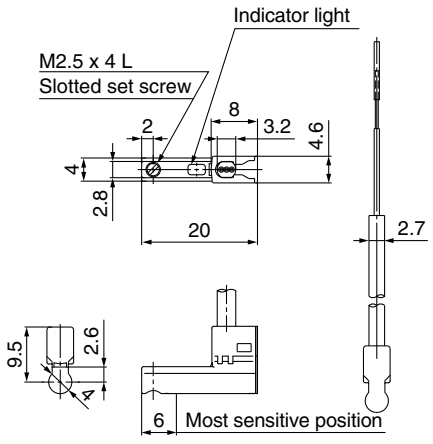
Dimensions

[mm]

D-M9□W



D-M9□WV



SMC

Series LEJS
Electric Actuator
Specific Product Precautions 1

Be sure to read this before handling. Refer to the back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

Design

⚠Caution

1. Do not apply a load in excess of the operating limit.

Select a suitable actuator by work load and allowable moment. If the product is used outside of the operating limit, the eccentric load applied to the guide will be excessive and have adverse effects such as creating play on the guide, degrading accuracy and shortening the life of the product.

2. Do not use the product in applications where excessive external force or impact force is applied to it.

The product can be damaged.
The components including the motor are manufactured to precise tolerances. So that even a slight deformation may cause a malfunction or seizure.

Selection

⚠Warning

1. Do not increase the speed in excess of the operating limit.

Select a suitable actuator by the relationship of the allowable work load and speed, and the allowable speed of each stroke. If the product is used outside of the operating limit, it will have adverse effects such as creating noise, degrading accuracy and shortening the life of the product.

2. When the product repeatedly cycles with partial strokes (100 mm or less), lubrication can run out. Operate it at a full stroke at least once a day or every a thousand cycles.

3. When external force is applied to the table, it is necessary to add external force to the work load as the total carried load for the sizing.

When a cable duct or flexible moving tube is attached to the actuator, the sliding resistance of the table increases and may lead to operational failure of the product.

Handling

⚠Caution

1. Do not allow the table to hit the end of stroke.

When the driver parameters, origin or programs are set incorrectly, the table may collide against the stroke end of the actuator during operation. Check these points before use.

If the table collides against the stroke end of the actuator, the guide, ball screw, belt or internal stopper can be broken. This may lead to abnormal operation.

Handle the actuator with care when it is used in the vertical direction as the workpiece will fall freely from its own weight.

2. The actual speed of this actuator is affected by the work load and stroke.

Check the specifications with reference to the model selection section of the catalog.

3. Do not apply a load, impact or resistance in addition to the transferred load during return to origin.

4. Do not dent, scratch or cause other damage to the body and table mounting surfaces.

This may cause unevenness in the mounting surface, play in the guide or an increase in the sliding resistance.

5. Do not apply strong impact or an excessive moment while mounting the product or a workpiece.

If an external force over the allowable moment is applied, it may cause play in the guide or an increase in the sliding resistance.

6. Keep the flatness of mounting surface 0.1 mm or less.

Unevenness of a workpiece or base mounted on the body of the product may cause play in the guide and an increase in the sliding resistance.
In the case of overhang mounting (including cantilever), use a support plate or support guide to avoid deflection of the actuator body.

7. When mounting the actuator, use all mounting holes.

If all mounting holes are not used, it influences the specifications, e.g., the amount of displacement of the table increases.

8. Do not hit the table with the workpiece in the positioning operation and positioning range.

9. Do not apply external force to the dust seal band.

Particularly during the transportation

Series LEJS
Electric Actuator
Specific Product Precautions 2

Be sure to read this before handling. Refer to the back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

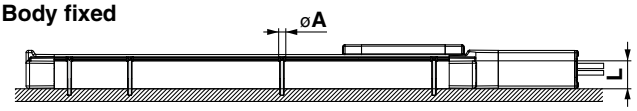
Handling

⚠Caution

10. When mounting the product, use screws with adequate length and tighten them with adequate torque.

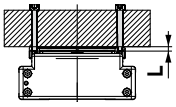
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

Body fixed



Model	Bolt	Max. tightening torque lbf·ft [N·m]	ø**A** [mm]	**L** [mm]
LEJS40	M5	2.2 [3.0]	5.5	36.5
LEJS63	M6	3.8 [5.2]	6.8	49.5

Workpiece fixed

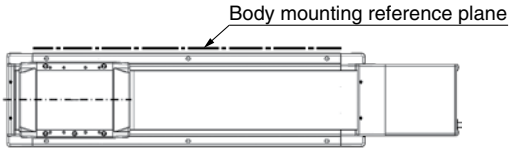


Model	Bolt	Max. tightening torque lbf·ft [N·m]	**L** (Max. screw-in depth) [mm]
LEJS40	M6 x 1	3.8 [5.2]	10
LEJS63	M8 x 1.25	9.2 [12.5]	12

To prevent the workpiece fixing bolts from touching the body, use bolts that are 0.5 mm or shorter than the maximum screw-in depth. If long bolts are used, they can touch the body and cause a malfunction etc.

11. Do not operate by fixing the table and moving the actuator body.

12. When mounting the actuator using the body mounting reference plane, use a pin. Set the height of the pin to be 5 mm or more because of rounding. (Recommended height 6 mm)



Maintenance

⚠Warning

Maintenance frequency

Perform maintenance according to the table below.

Frequency	Appearance check	Internal check
Inspection before daily operation	○	—
Inspection every 6 months/1000 km/5 million cycles*	○	○

* Select whichever comes sooner.

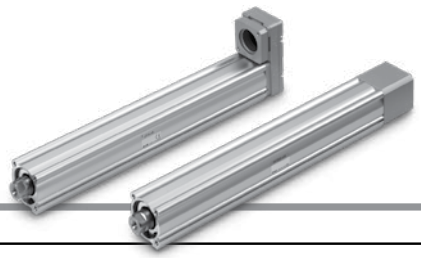
• Items for visual appearance check

1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

• Items for internal check

1. Lubricant condition on moving parts.
   * For lubrication, use lithium grease No. 2.
2. Loose or mechanical play in fixed parts or fixing screws.

Model Selection



Selection Procedure

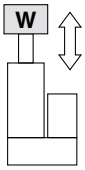
Positioning Control Selection Procedure

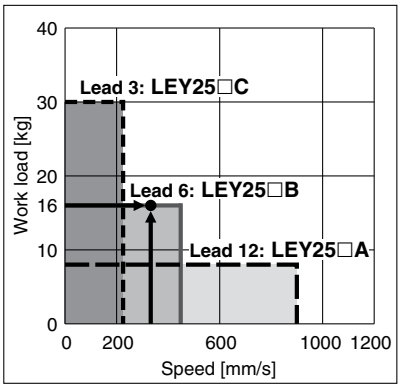
Step 1 Check the work load–speed. (Vertical transfer) → **Step 2** Check the cycle time.

Selection Example

Operating conditions

- Work load: 16 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 5000 [mm/s^2]
- Stroke: 300 [mm]
- Workpiece mounting condition: Vertical upward downward transfer





<Speed–Vertical Work Load Graph> (LEY25□)

Step 1 **Check the work load–speed. <Speed–Vertical Work Load Graph>**

Select a model based on the workpiece mass and speed which are within the range of the actuator body specifications with reference to the "Speed–Work Load Graph (Guide)" on page 55.

Selection example) The **LEY25□B** is temporarily selected 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 pages 60 and 61 for the horizontal work load in the specifications, and page 83 for the precautions.

∗ Refer to the selection method of motor manufacturers for regeneration resistance.

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 obtained by the following equation.

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

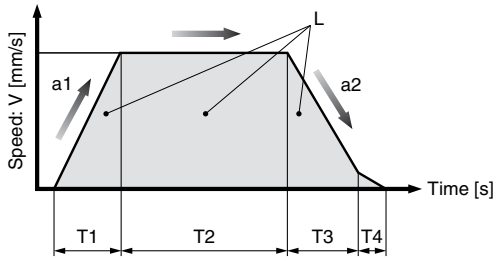
- T2: Constant speed time can be found from the following equation.

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

- T4: Settling time varies depending on the conditions such as motor types, load and in positioning of the step data. Therefore, calculate the settling time with reference to the following value.

$$T4 = 0.05 \text{ [s]}$$

∗ The conditions for the settling time vary depending on the motor or driver to be used.



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 in position is completed

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

$T1 = V/a1 = 300/5000 = 0.06$ [s], $T3 = V/a2 = 300/5000 = 0.06$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{300 - 0.5 \cdot 300 \cdot (0.06 + 0.06)}{300} = 0.94 \text{ [s]}$$

$T4 = 0.05$ [s]

Therefore, the cycle time can be obtained as follows.
$T = T1 + T2 + T3 + T4 = 0.06 + 0.94 + 0.06 + 0.05 =$ **1.11 [s]**

Based on the above calculation result, the LEY25□B-300 is selected.

Selection Procedure

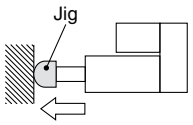
Pushing Control Selection Procedure

Step 1 Check the pushing force. → **Step 2** Check the lateral load on the rod end.

Selection Example

Operating conditions

- Mounting condition: Horizontal (pushing)
- Jig weight: 0.5 [kg]
- Pushing force: 200 [N]
- Speed: 100 [mm/s]
- Stroke: 300 [mm]



Step 1 **Check the pushing force. <Force Conversion Graph>**

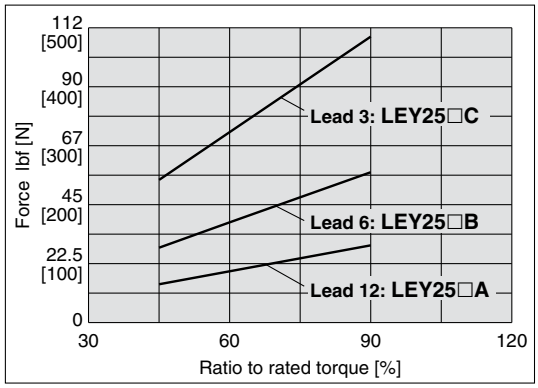
Select the target model based on the "Ratio to rated torque" and pushing force with reference to the "Force Conversion Graph."

Selection example)

Based on the graph shown on the right side,

- Ratio to rated torque: 72 [%]
- Pushing force: 200 [N]

Therefore, the **LEY25B** is temporarily selected.



<Force Conversion Graph>
(LEY25□)

Step 2 **Check the lateral load on the rod end.**
<Graph of Allowable Lateral Load on the Rod End>

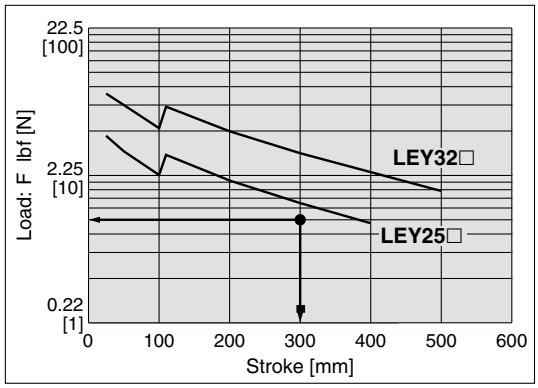
Confirm the allowable lateral load on the rod end of the actuator: LEY25B, which has been selected temporarily with reference to the "Graph of Allowable Lateral Load on the Rod End."

Selection example)

Based on the graph shown on the right side,

- Jig weight: 0.5 [kg] ≈ 5 [N]
- Product stroke: 300 [mm]

Therefore, the lateral load on the rod end is in the allowable range.



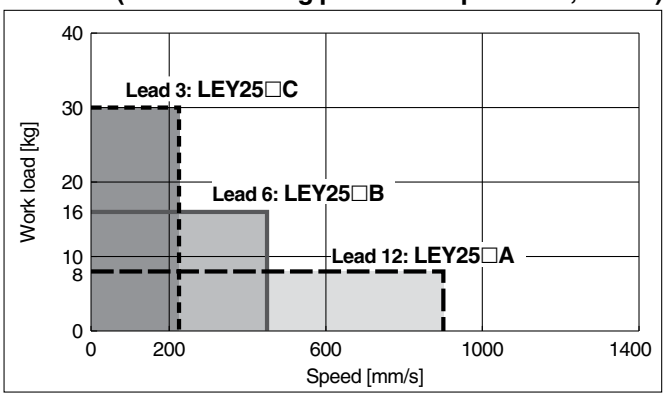
<Graph of Allowable Lateral Load on the Rod End>

Based on the above calculation result, the LEY25B-300 is selected.

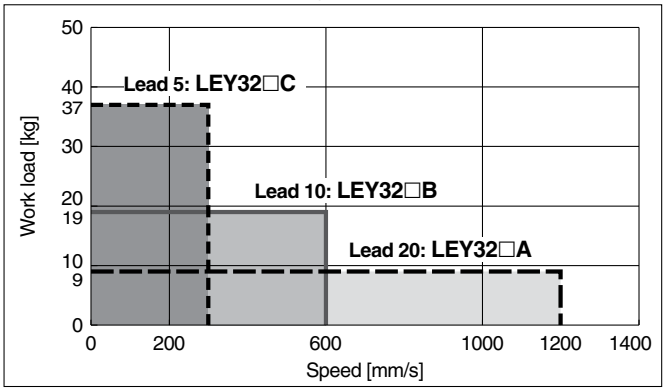
Speed–Vertical Work Load Graph

* The values shown below are allowable values of the actuator body. Do not use the actuator so that it exceeds these specification ranges.
* The allowable speed is restricted depending on the stroke. Select it by referring to the “Allowable Stroke Speed.”

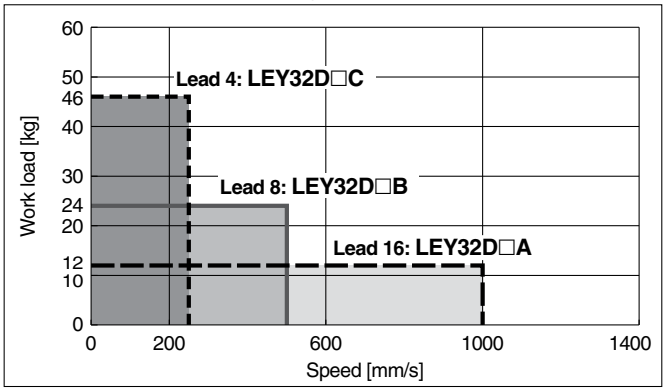
LEY25□ (Motor mounting position: Top/Parallel, In-line)



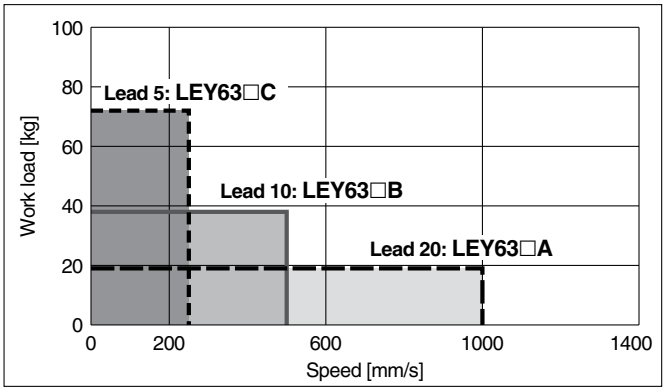
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



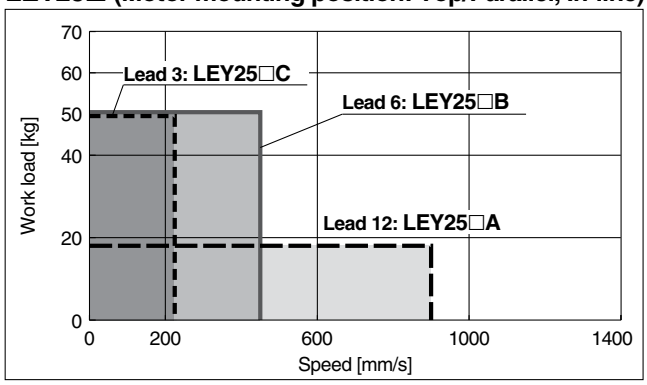
LEY63□



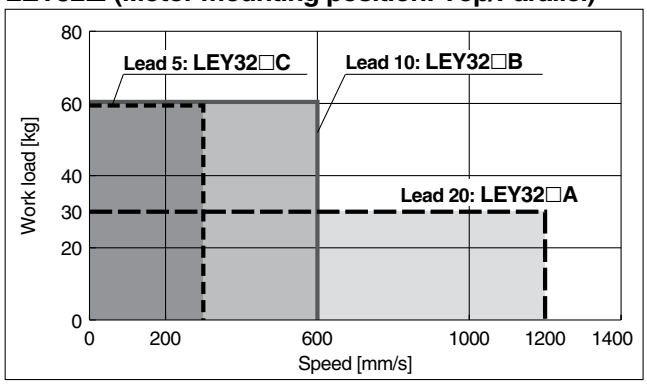
Speed–Horizontal Work Load Graph

* The values shown below are allowable values of the actuator body. Do not use the actuator so that it exceeds these specification ranges.
* The allowable speed is restricted depending on the stroke. Select it by referring to the "Allowable Stroke Speed."

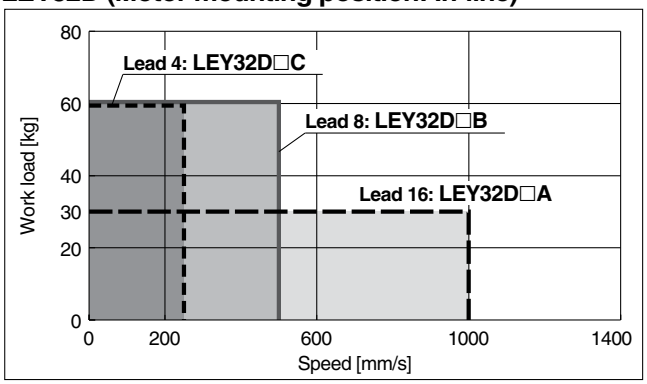
LEY25□ (Motor mounting position: Top/Parallel, In-line)



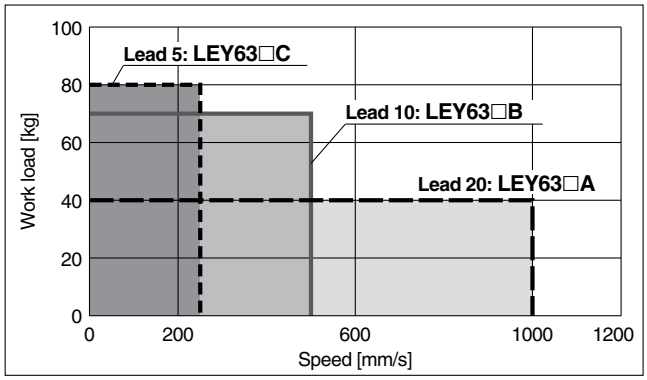
LEY32□ (Motor mounting position: Top/Parallel)



LEY32D (Motor mounting position: In-line)



LEY63□



Allowable Stroke Speed

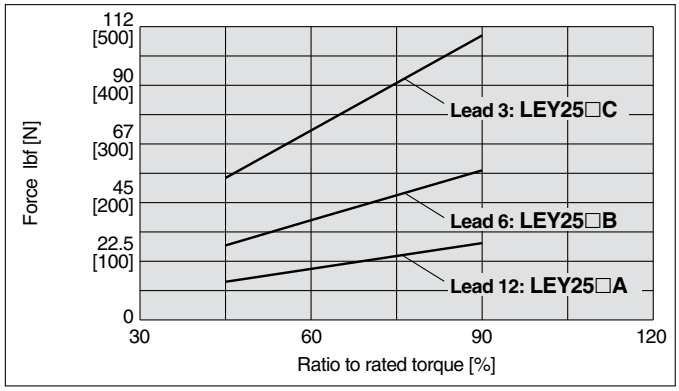
[mm/s]

Model	Motor	Lead		Stroke [mm]							
		Symbol	[mm]	Up to 100	Up to 200	Up to 300	Up to 400	Up to 500	Up to 600	Up to 700	Up to 800
LEY25□ (Motor mounting position: Top/Parallel, In-line)	100 W equivalent	**A**	12	900			600	—	—	—	—
		B	6	450			300	—	—	—	—
		C	3	225			150	—	—	—	—
		(Motor rotation speed)		(4500 rpm)			(3000 rpm)	—	—	—	—
LEY32□ (Motor mounting position: Top/Parallel	200 W equivalent	**A**	20	1200				800	—	—	—
		B	10	600				400	—	—	—
		C	5	300				200	—	—	—
		(Motor rotation speed)		(3600 rpm)				(2400 rpm)	—	—	—
LEY32D (Motor mounting position: In-line	200 W equivalent	**A**	16	1000				640	—	—	—
		B	8	500				320	—	—	—
		C	4	250				160	—	—	—
		(Motor rotation speed)		(3750 rpm)				(2400 rpm)	—	—	—
LEY63□	400 W equivalent	**A**	20	1000					800	600	500
		B	10	500					400	300	250
		C	5	250					200	150	125
		(Motor rotation speed)		(3000 rpm)					(2400 rpm)	(1800 rpm)	(1500 rpm)

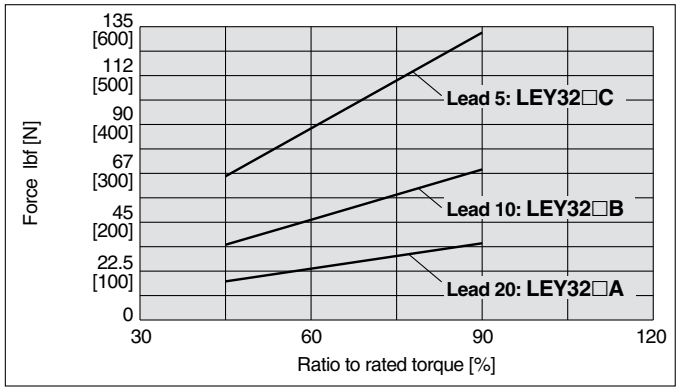
Force Conversion Graph (Guide)

∗ These graphs show an example of when the standard motor is mounted. Calculate the thrust based on used motor and driver.

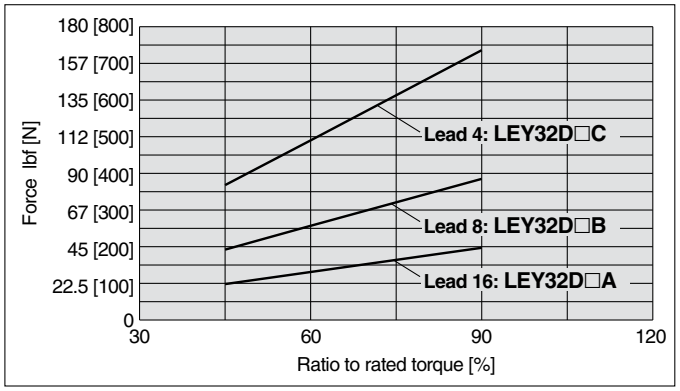
LEY25□ (Motor mounting position: Top/Parallel, In-line)



LEY32□ (Motor mounting position: Top/Parallel)

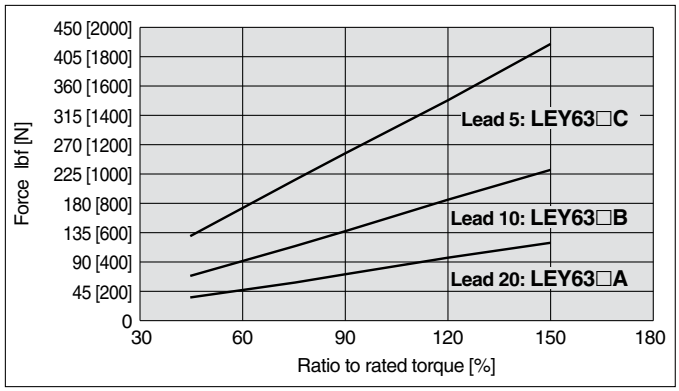


LEY32D□ (Motor mounting position: In-line)



∗ When using the force control or speed control, set the maximum value to be no more than 90% of the rated torque.

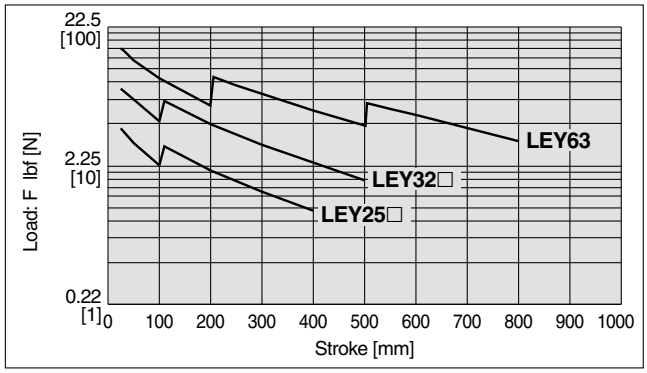
LEY63□ (Motor mounting position: In-line)



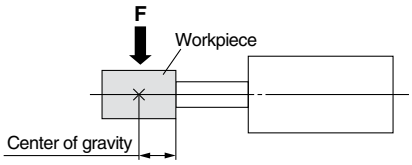
Ratio to rated torque [%]	Duty ratio [%]	Continuous pushing time [Minute]
75 or less	100	—
90	100 (60)	— (1.5)
120	50 (30)	1.5 (0.5)
150	30 (20)	0.5 (0.16)

∗1 The values in ( ) are for a closely-mounted driver.
∗2 When using the force control or speed control, set the maximum value to be no more than 150% of the rated torque.

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]



Electric Actuator/Rod Type

Motorless Type

Series LEY

LEY25, 32, 63

Size 25, 32, 63

RoHS

How to Order

LEY 25 ❶ ❷ NZ ❸ B ❹ – 500 ❺ ❻ ❼ ❽

❶ Size

25
32
63

❷ Motor mounting position

Nil	Top mounting
R	Right side parallel
L	Left side parallel
D	In-line

∗ Size 63: In-line type only

❸ Motor type

Symbol	Type
NZ	Mounting type Z
NY	Mounting type Y
NX	Mounting type X
NW	Mounting type W
NM1	Mounting type M1

❹ Lead [mm]

Symbol	LEY25	LEY32	LEY63
A	12	16 (20)	20
B	6	8 (10)	10
C	3	4 (5)	5

∗ The values shown in ( ) are the lead for top mounting, right/left side parallel types. (Equivalent lead which includes the pulley ratio [1.25 : 1])

❺ Stroke [mm]

30	30
to	to
800	800

∗ Refer to the applicable stroke table.

❻ Dust-tight/Water-jet-proof <Only available for LEY63>

Symbol	LEY25/32	LEY63
Nil	Without enclosure	IP5x (Dust protected)
P	—	IP65 (Dust-tight/Water-jet-proof)/ With vent hole tap

∗ When using the dust-tight/water-jet-proof (IP65), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water.

∗ The fitting and tubing should be provided separately by user.
Select [Applicable tubing O.D.: ø4 or more, Connection thread: Rc1/8].

❼ Rod end thread

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

❽ Mounting∗1

Symbol	Type	Motor mounting position	
		Top/Parallel	In-line
Nil	Ends tapped (Standard)∗2	●	●
U	Body bottom tapped	●	●
L	Foot	●	—
F	Rod flange∗2	●∗4	●
G	Head flange∗2	●∗5	—
D	Double clevis∗3	●	—

∗1 Mounting bracket is shipped together, (but not assembled).

∗2 For horizontal cantilever mounting with the ends tapped, rod flange and head flange, use the actuator within the following stroke range.
· LEY25: 200 or less, LEY32: 100 or less, LEY63: 400 or less

∗3 For mounting with the double clevis, use the actuator within the following stroke range.
· LEY25: 200 or less, LEY32: 200 or less

∗4 If the stroke of the LEY25 is "30 or less", the rod flange may interfere with the motor.

∗5 Head flange is not applicable to the LEY32.

Applicable Stroke Table

● Standard

Model \ Stroke [mm]	30	50	100	150	200	250	300	350	400	450	500	600	700	800
LEY25	●	●	●	●	●	●	●	●	●	—	—	—	—	—
LEY32	●	●	●	●	●	●	●	●	●	●	●	—	—	—
LEY63	—	—	●	—	●	—	●	—	●	—	●	●	●	●

∗ Please consult with SMC for strokes other than those shown above as they are produced as special orders.

For auto switches, refer to pages 80 to 82.

Compatible Motors

Applicable motor model			Size/Motor type												
Manufacturer	Series	Type	25			32					63				
			"NZ" Mounting type Z	"NY" Mounting type Y	"NM1" Mounting type M1	"NZ" Mounting type Z	"NY" Mounting type Y	"NX" Mounting type X	"NW" Mounting type W	"NM1" Mounting type M1	"NZ" Mounting type Z	"NY" Mounting type Y	"NX" Mounting type X	"NW" Mounting type W	"NM1" Mounting type 1
Mitsubishi Electric Corporation	MELSERVO-JN	HF-KN	●	—	—	●	—	—	—	—	●	—	—	—	—
	MELSERVO-J3	HF-KP	●	—	—	●	—	—	—	—	●	—	—	—	—
	MELSERVO-J4	HG-KR	●	—	—	●	—	—	—	—	●	—	—	—	—
YASKAWA Electric Corporation	Σ-V	SGMJV	●	—	—	●	—	—	—	—	●	—	—	—	—
SANYO DENKI CO., LTD.	SANMOTION R	R2	●	—	—	●	—	—	—	—	●	—	—	—	—
OMRON Corporation	G5	R88M-K	●	—	—	—	●	—	—	—	—	●	—	—	—
Panasonic Corporation	MINAS-A4	MSMD	—	●	—	—	●	—	—	—	—	●	—	—	—
	MINAS-A5	MSMD/MHMD	—	●	—	—	●	—	—	—	—	●	—	—	—
FANUC CORPORATION	β is	β	●	—	—	● (β1 only)	—	—	●	—	● (β1 only)	—	—	●	—
FASTECH Co., Ltd.	Ezi-SERVO	EzM	—	—	●	—	—	—	—	●	—	—	—	—	—
Rockwell Automation, Inc. (Allen-Bradley)	MP–	MPL/VPL	—	—	—	—	—	●∗	—	—	—	—	●	—	—

∗ Motor mounting position: In-line only

Specifications

- Values in this specification table are the allowable values of the actuator body with the standard motor mounted.
- Do not use the actuator so that it exceeds these values.

Model			LEY25 (Top/Parallel) LEY25D (In-line)			LEY32 (Top/Parallel)			LEY32D (In-line)		
Actuator specifications	Stroke [mm] Note 1)		30, 50, 100, 150, 200, 250 300, 350, 400			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500			30, 50, 100, 150, 200, 250 300, 350, 400, 450, 500		
	Work load [kg]	Horizontal Note 2)	18	50	50	30	60	60	30	60	60
		Vertical	8	16	30	9	19	37	12	24	46
	Pushing force lbf [N] Note 3) (Set value: Rated torque 45 to 90%)		14.6 to 29.4 [65 to 131]	28.6 to 57.3 [127 to 255]	54.4 to 109 [242 to 485]	17.8 to 35.3 [79 to 157]	34.6 to 69.2 [154 to 308]	66.1 to 132 [294 to 588]	22.0 to 44.3 [98 to 197]	43.1 to 86.6 [192 to 385]	82.7 to 165 [368 to 736]
	Max. speed [mm/s] Note 4)	Stroke range: Up to 300	900	450	225	1200	600	300	1000	500	250
		Stroke range: 305 to 400	600	300	150						
		Stroke range: 405 to 500				800	400	200	640	320	160
	Pushing speed [mm/s] Note 5)		35 or less			30 or less					
	Max. acceleration/deceleration [mm/s²]		5000								
	Positioning repeatability [mm]		±0.02								
	Lost motion [mm] Note 6)		0.1 or less								
	Ball screw specifications	Thread size [mm]	ø10			ø12					
		Lead [mm] (including pulley ratio)	12	6	3	16 (20)	8 (10)	4 (5)	16	8	4
		Shaft length [mm]	Stroke + 93.5			Stroke + 104.5					
	Impact/Vibration resistance [m/s²] Note 7)		50/20								
	Actuation type		Ball screw + Belt (Top/Parallel) Ball screw (In-line)			Ball screw + Belt [Pulley ratio 1.25 : 1]			Ball screw		
	Guide type		Sliding bushing (Piston rod)								
	Operating temperature range		41 to 104°F (5 to 40°C)								
	Operating humidity range [%RH]		90 or less (No condensation)								
Other specifications Note 8)	Actuation unit weight [kg] (∗[ST]: Stroke)		0.15 + (0.69 x 10⁻³) x [ST]: 100 st or less 0.16 + (0.69 x 10⁻³) x [ST]: Over 100 st			0.24 + (1.40 x 10⁻³) x [ST]: 100 st or less 0.28 + (1.40 x 10⁻³) x [ST]: Over 100 st					
	Other inertia [kg·cm²]		0.012 (LEY25) 0.015 (LEY25D)			0.035 (LEY32) 0.061 (LEY32D)					
	Mechanical efficiency		0.8								
Reference motor spec.	Motor shape		□40			□60					
	Motor type		AC servo motor								
	Rated output capacity [W]		100			200					
	Rated torque lbf·ft [N·m]		0.24 [0.32]			0.47 [0.64]					
	Rated rotation [rpm]		3000								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm using actual device.
Note 3) The force setting range for the pushing operation (Speed control mode, Torque control mode).
The pushing force changes according to the set value. Set it with reference to the "Force Conversion Graph (Guide)" on page 57.
Note 4) The allowable speed changes according to the stroke.
Note 5) The allowable collision speed for the pushing operation.
Note 6) A reference value for correcting an error in reciprocal operation.
Note 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. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) Each value is a guide. Use such value to select a motor capacity.

Weight

Product Weight

Series	LEY25 (Motor mounting position: Top/Parallel)									LEY32 (Motor mounting position: Top/Parallel)										
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]	0.8	0.9	1.1	1.3	1.5	1.7	1.8	2.0	2.2	1.4	1.5	1.8	2.3	2.6	2.9	3.1	3.4	3.7	4.0	4.3

Series	LEY25D (Motor mounting position: In-line)									LEY32D (Motor mounting position: In-line)										
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]	0.8	0.9	1.1	1.3	1.5	1.7	1.9	2.0	2.2	1.4	1.6	1.8	2.3	2.6	2.9	3.2	3.4	3.7	4.0	4.3

Additional Weight

[kg]

Size		25	32
Rod end male thread	Male thread	0.03	0.03
	Nut	0.02	0.02
Foot (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

Specifications

- Values in this specification table are the allowable values of the actuator body with the standard motor mounted.
- Do not use the actuator so that it exceeds these values.

Model				LEY63D (In-line)		
Actuator specifications	Stroke [mm] Note 1)			100, 200, 300, 400, 500, 600, 700, 800		
	Work load [kg]		Horizontal Note 2)	40	70	80
			Vertical	19	38	72
	Pushing force lbf [N] Note 3) (Set value: Rated torque 45 to 150%)			35.0 to 117 [156 to 521]	68.3 to 228 [304 to 1012]	129 to 429 [573 to 1910]
	Note 4) Max. speed [mm/s]	Stroke range	Up to 500	1000	500	250
			505 to 600	800	400	200
			605 to 700	600	300	150
			705 to 800	500	250	125
	Pushing speed [mm/s] Note 5)			30 or less		
	Max. acceleration/deceleration [mm/s²]			5000		
	Positioning repeatability [mm]			±0.02		
	Lost motion [mm] Note 6)			0.1 or less		
	Ball screw specifications		Thread size [mm]	ø20		
			Lead [mm]	20	10	5
			Shaft length [mm]	Stroke + 147		
	Impact/Vibration resistance [m/s²] Note 7)			50/20		
	Actuation type			Ball screw		
	Guide type			Sliding bushing (Piston rod)		
	Operating temperature range			41 to 104°F (5 to 40°C)		
	Operating humidity range [%RH]			90 or less (No condensation)		
Other specifications	Actuation unit weight [kg] (※[ST]: Stroke)			0.84 + (2.77 x 10^{-3}) x [ST]: 200 st or less 0.94 + (2.77 x 10^{-3}) x [ST]: Over 200 st, 500 st or less 1.03 + (2.77 x 10^{-3}) x [ST]: Over 500 st		
	Other inertia [kg·cm²]			0.056		
Note 8)	Mechanical efficiency			0.8		
Reference motor spec.	Motor shape			□60		
	Motor type			AC servo motor		
	Rated output capacity [W]			400		
	Rated torque lbf·ft [N·m]			0.94 [1.27]		
	Rated rotation [rpm]			3000		

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm using actual device.
Note 3) The force setting range for the pushing operation (Speed control mode, Torque control mode).
The pushing force changes according to the set value. Set it with reference to the "Force Conversion Graph (Guide)" on page 57.
Note 4) The allowable speed changes according to the stroke.
Note 5) The allowable collision speed for the pushing operation.
Note 6) A reference value for correcting an error in reciprocal operation.
Note 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. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 8) Each value is a guide. Use such value to select a motor capacity.

Weight

Product Weight

Model	LEY63D (Motor mounting position: In-line)							
Stroke [mm]	100	200	300	400	500	600	700	800
Product weight [kg]	4.2	5.3	7.0	8.2	9.3	11.0	12.1	13.3

Additional Weight

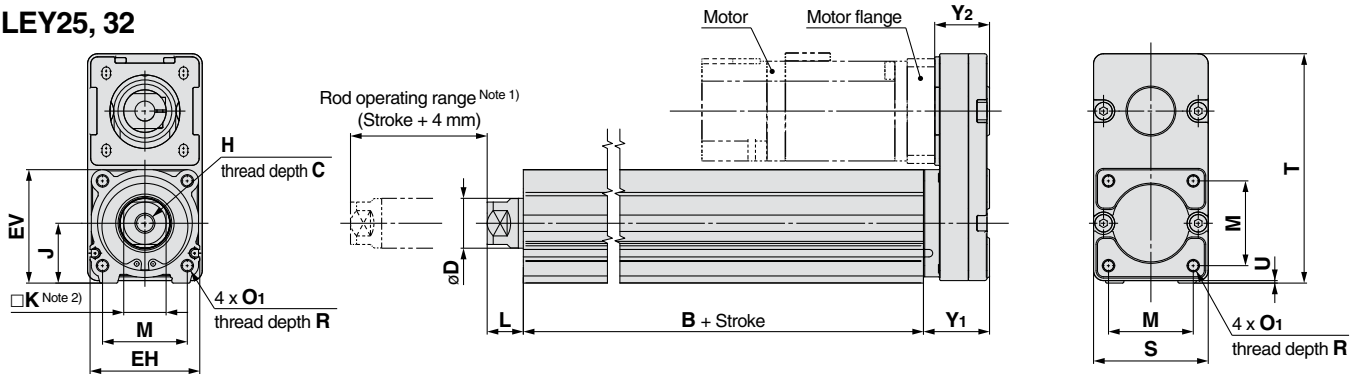
[kg]

Size		63
Rod end male thread	Male thread	0.12
	Nut	0.04
Rod flange (including mounting bolt)		0.51

Refer to the "Motor Mounting" on page 77 for details about motor mounting and included parts.

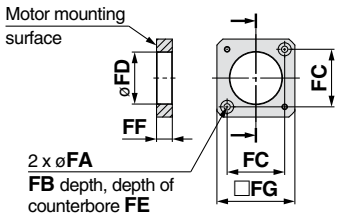
Dimensions: Motor Top/Parallel

LEY25, 32

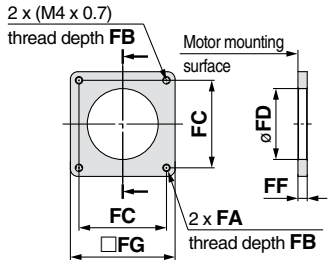


Note 1) Do not allow collisions at either end of the rod operating range at a speed exceeding "pushing speed." Additionally, when running the positioning operation, do not set within 2 mm of both ends.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

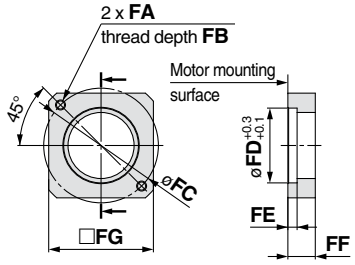
LEY25: NM1



LEY32: NM1



Motor flange dimensions
LEY25: NZ, NY
LEY32: NZ, NY, NW



Dimensions

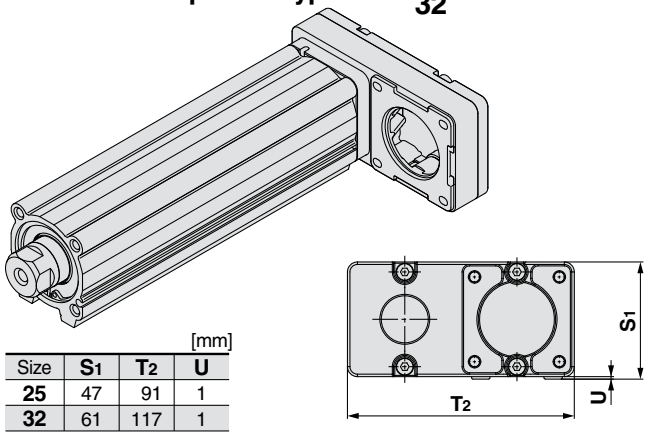
[mm]

Size	Stroke range [mm]	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U	Y1	Y2
25	15 to 100	89.5	13	20	44	45.5	M8 x 1.25	24	17	12.5	34	M5 x 0.8	8	46	92	1	26.5	22
	105 to 400	114.5																
32	20 to 100	96	13	25	51	56.5	M8 x 1.25	31	22	16.5	40	M6 x 1.0	10	60	118	1	34	27
	105 to 500	126																

∗ The L measurement is when the unit is at the retracted stroke end position.

Size	Motor type	FA	FB	FC	FD	FE	FF	FG
25	NZ	M4 x 0.7	7.5	46	30	3.7	11	42
	NY	M3 x 0.5	5.5	45	30	5	11	42
	NM1	ø3.4	7	31	28	3.5	8.5	42
32	NZ, NW	M5 x 0.8	8.5	70	50	4.6	13	60
	NY	M4 x 0.7	7	70	50	4.6	13	60
	NM1	M4 x 0.7	(5)	47.1	38.2	—	5	56.4

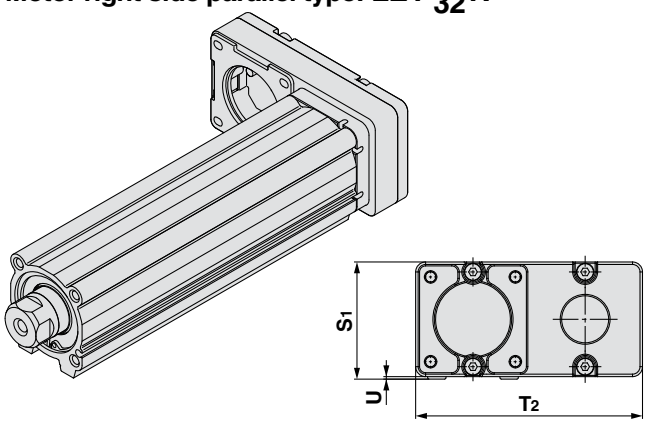
Motor left side parallel type: LEY $^{25}_{32}$L



[mm]

Size	S1	T2	U
25	47	91	1
32	61	117	1

Motor right side parallel type: LEY $^{25}_{32}$R

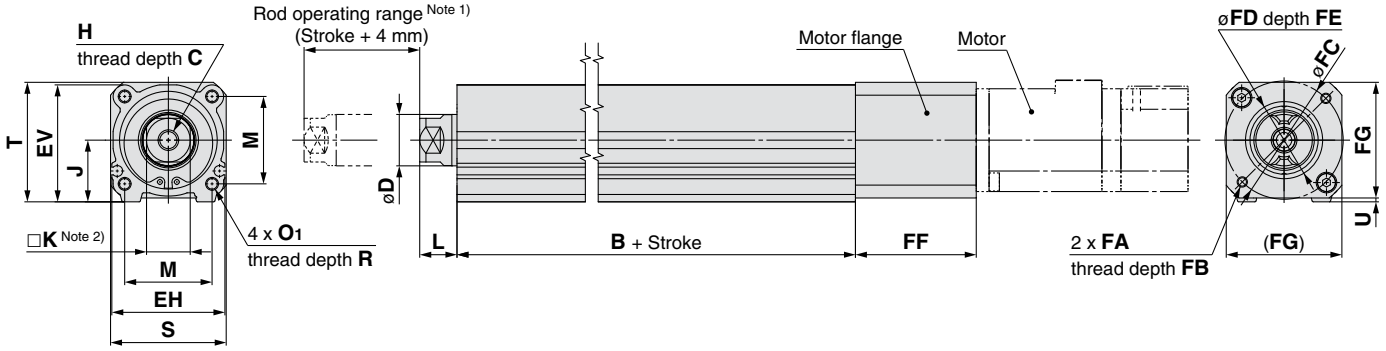


Note) When the motor is mounted on the left or right side in parallel, the groove for auto switch on the side to which the motor is mounted is hidden.

Refer to the "Motor Mounting" on page 78 for details about motor mounting and included parts.

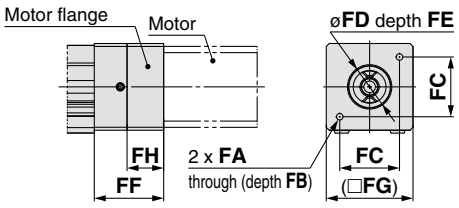
Dimensions: In-line Motor

LEY25, 32

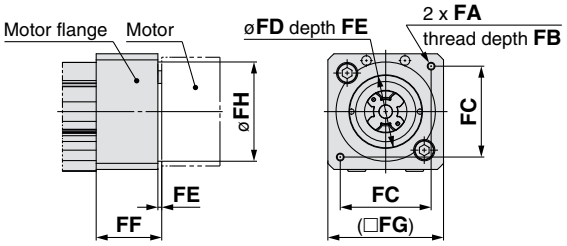


Note 1) Do not allow collisions at either end of the rod operating range at a speed exceeding "pushing speed."
Additionally, when running the positioning operation, do not set within 2 mm of both ends.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

LEY25: NM1



LEY32: NM1



Dimensions

[mm]

Size	Stroke range [mm]	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U
25	15 to 100	89.5	13	20	44	45.5	M8 x 1.25	24	17	12.5	34	M5 x 0.8	8	45	46.5	1.5
	105 to 400	114.5														
32	20 to 100	96	13	25	51	56.5	M8 x 1.25	31	22	16.5	40	M6 x 1.0	10	60	61	1
	105 to 500	126														

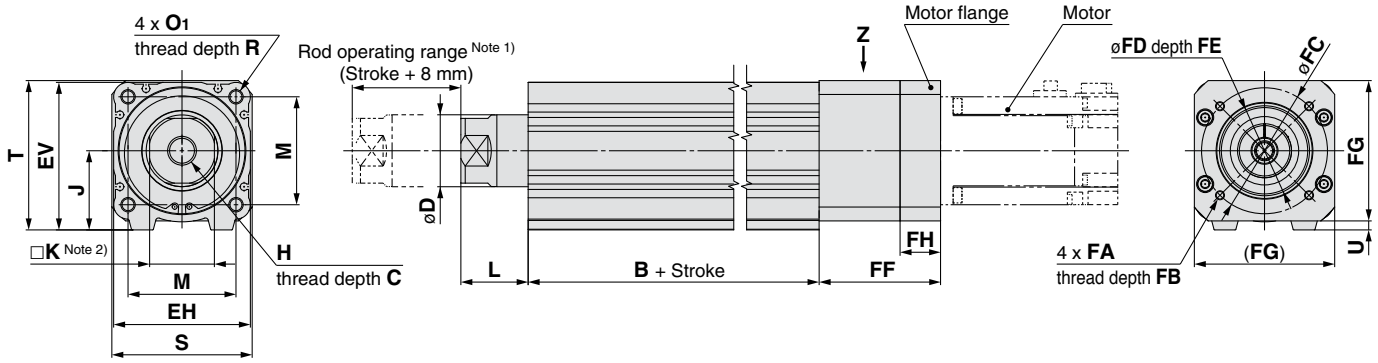
∗ The L measurement is when the unit is at the retracted stroke end position.

Size	Motor type	FA	FB	FC	FD	FE	FF	FG	FH
25	NZ	M4 x 0.7	7.5	46	30	3.7	47	45	—
	NY	M3 x 0.5	6	45	30	4.2	47	45	—
	NM1	ø3.4	17	31	22	2.5	36	45	19
32	NZ, NW	M5 x 0.8	8.5	70	50	3.3	60	60	—
	NY	M4 x 0.7	8	70	50	3.3	60	60	—
	NX	M5 x 0.8	8.5	63	40	3.5	63	60	—
	NM1	M4 x 0.7	8	47.14	38.1	2	34	60	51.5

Refer to the "Motor Mounting" on page 79 for details about motor mounting and included parts.

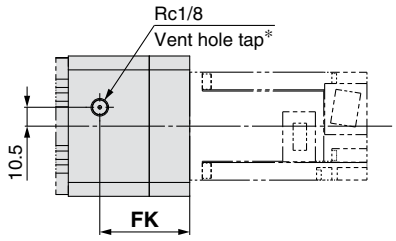
Dimensions: In-line Motor

LEY63



Note 1) Do not allow collisions at either end of the rod operating range at a speed exceeding "pushing speed." Additionally, when running the positioning operation, do not set within 4 mm of both ends.
Note 2) The direction of rod end width across flats (□K) differs depending on the products.

IP65 (Dust-tight/Water-jet-proof specification): LEY63DN□□-□P (View Z)



* When using the dust-tight/water-jet-proof (IP65), correctly mount the fitting and tubing to the vent hole tap, and then place the end of the tubing in an area not exposed to dust or water. The fitting and tubing should be provided separately by user.
Select [Applicable tubing O.D.: ø4 or more, Connection thread: Rc1/8].

Dimensions

[mm]

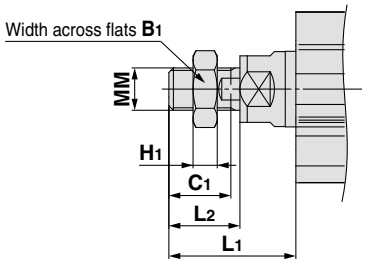
Size	Stroke range [mm]	B	C	D	EH	EV	H	J	K	L	M	O1	R	S	T	U
63	50 to 200	123	21	40	76	82	M16 x 2	44	36	33.4	60	M8 x 1.25	16	78	83	5
	205 to 500	158														
	505 to 800	193														

* The L measurement is when the unit is at the retracted stroke end position.

Size	Motor type	FA	FB	FC	FD	FE	FF	FG	FH
63	NZ, NW	M5 x 0.8	10	70	50	3.5	67.7	78	22.5
	NY	M4 x 0.7	8	70	50	3.5	67.7	78	22.5
	NX	M5 x 0.8	10	63	40	3.5	72.7	78	27.5

Dimensions

End male thread: LEY25/32/63□□A/B/C-□□M



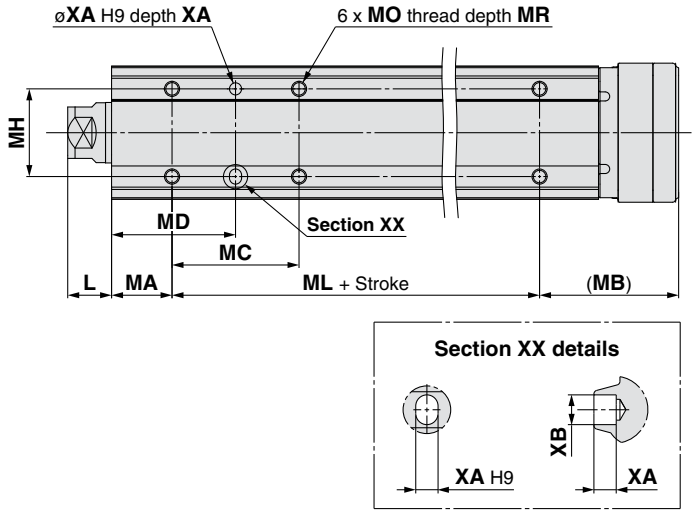
∗ Refer to the "Electric Actuators" catalog (CAT.E102) for details about the rod end nut and mounting bracket.
Note) Refer to the "Mounting" precautions on pages 84 and 85 when mounting end brackets such as knuckle joint or work pieces.

[mm]

Size	B1	C1	H1	L1	L2	MM
25	22	20.5	8	36	23.5	M14 x 1.5
32	22	20.5	8	40	23.5	M14 x 1.5
63	27	26	11	72.4	39	M18 x 1.5

∗ The L1 measurement is when the unit is at the retracted stroke end position.

Body bottom tapped, Motor top/parallel: LEY25/32□□A/B/C-□□□U

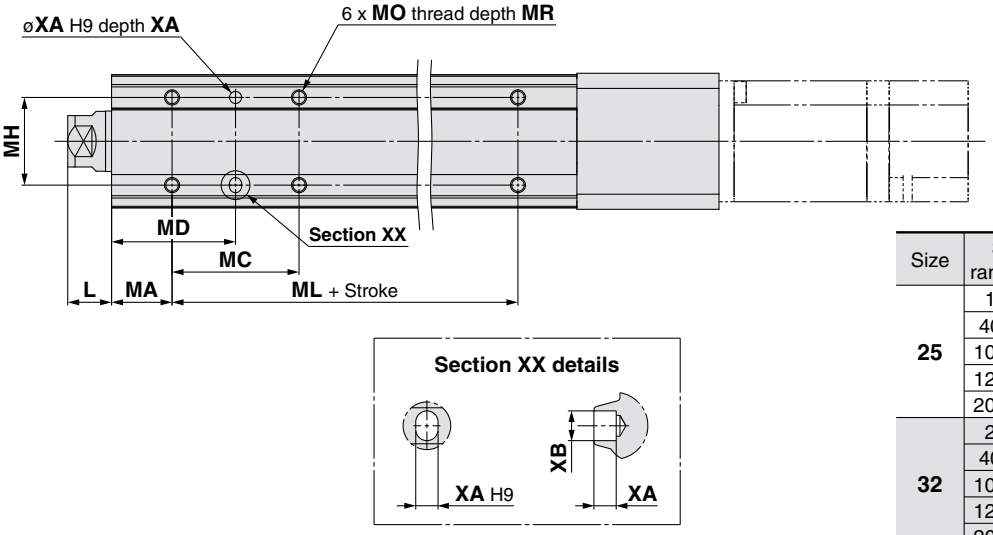


[mm]

Size	Stroke range [mm]	L	MA	MB	MC	MD	MH	ML
25	15 to 39	12.5	20	46	24	32	29	50
	40 to 100				42	41		
	101 to 124							75
	125 to 200				59	49.5		
	201 to 400				76	58		
32	20 to 39	16.5	25	55	22	36	30	50
	40 to 100				36	43		
	101 to 124							80
	125 to 200				53	51.5		
	201 to 500				70	60		
63	50 to 74	33.4	38	—	24	50	44	65
	75 to 124				45	60.5		
	125 to 200				58	67		
	201 to 500				86	81		100
	501 to 800							135

∗ The L measurement is when the unit is at the retracted stroke end position.

Body bottom tapped, In-line motor: LEY25/32/63□□A/B/C-□□□U



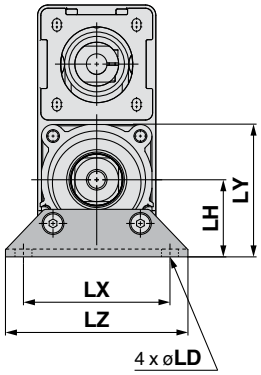
[mm]

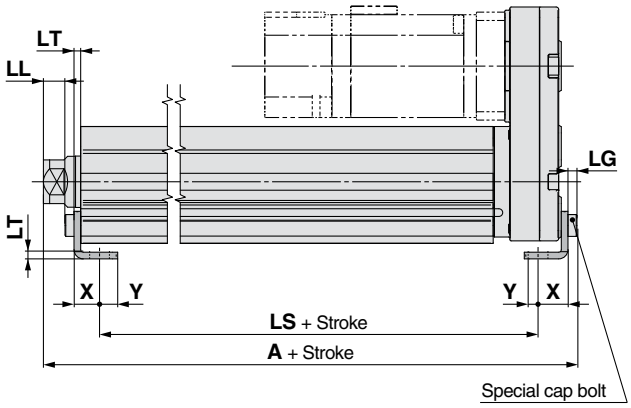
Size	Stroke range [mm]	MO	MR	XA	XB
25	15 to 39	M5 x 0.8	6.5	4	5
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 400				
32	20 to 39	M6 x 1.0	8.5	5	6
	40 to 100				
	101 to 124				
	125 to 200				
	201 to 500				
63	50 to 74	M8 x 1.25	10	6	7
	75 to 124				
	125 to 200				
	201 to 500				
	501 to 800				

Dimensions

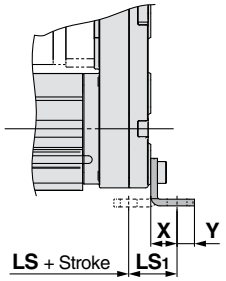
Foot: LEY 25/32 □□ A/B/C -□□□L

Included parts
· Foot
· Body mounting bolt





Outward mounting

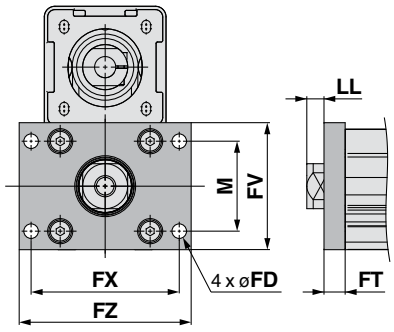


Foot [mm]

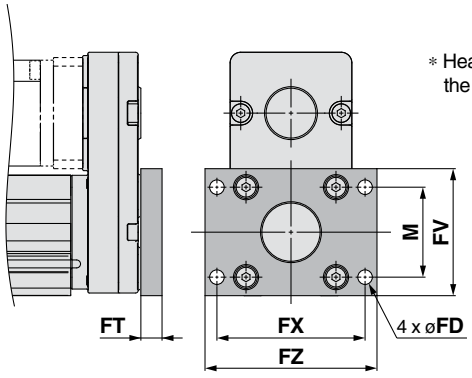
Size	Stroke range [mm]	A	LS	LS_1	LL	LD	LG	LH	LT	LX	LY	LZ	X	Y
25	15 to 100	134.6	98.8	19.8	6.4	6.6	3.5	30	2.6	57	51.5	71	11.2	5.8
	101 to 400	159.6	123.8											
32	20 to 100	153.7	114	19.2	9.3	6.6	4	36	3.2	76	61.5	90	11.2	7
	101 to 500	183.7	144											

Material: Carbon steel (Chromated)
∗ The A and LL measurements are when the unit is at the retracted stroke end position.
Note) When the motor mounting is the right or left side parallel type, the head side foot should be mounted outward.

Rod flange: LEY 25/32/63 □□ A/B/C -□□□F



Head flange: LEY25□□ A/B/C -□□□G



∗ Head flange is not applicable to the in-line type and the LEY32.

Included parts
· Flange
· Body mounting bolt

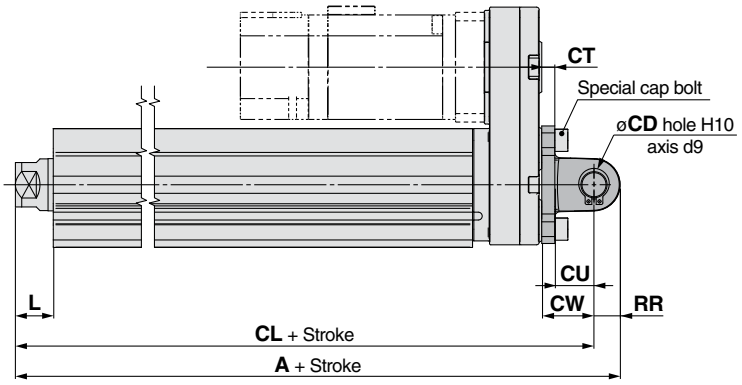
Rod/Head Flange [mm]

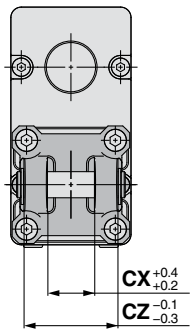
Size	FD	FT	FV	FX	FZ	LL	M
25	5.5	8	48	56	65	4.5	34
32	5.5	8	54	62	72	8.5	40
63	9	9	80	92	108	24.4	60

Material: Carbon steel (Nickel plating)
∗ The LL measurement is when the unit is at the retracted stroke end position.

Dimensions

Double clevis: LEY $\begin{matrix}25\\32\end{matrix}$□□$\begin{matrix}A\\B\\C\end{matrix}$-□□□D





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

∗ Refer to the "Electric Actuators" catalog (CAT.E102) for details about the rod end nut and mounting bracket.

Double Clevis

[mm]

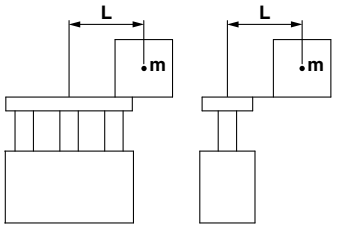
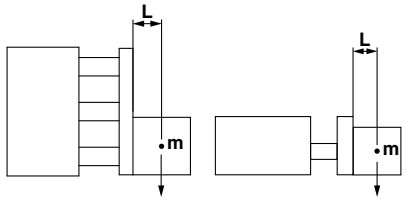
Size	Stroke range [mm]	A	CL	CD	CT	CU	CW	CX	CZ	L	RR
25	15 to 100	158.5	148.5	10	5	14	20	18	36	12.5	10
	101 to 200	183.5	173.5								
32	20 to 100	178.5	168.5	10	6	14	22	18	36	16.5	10
	101 to 200	208.5	198.5								

Material: Cast iron (Coating)
∗ The A, CL and L measurements are when the unit is at the retracted stroke end position.

Model Selection

Moment Load Graph

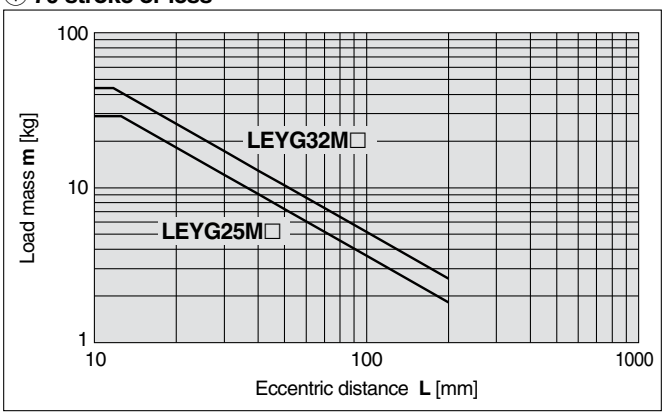
Selection Conditions

	Vertical	Horizontal	
Mounting orientation			
Max. speed [mm/s]	"Speed–Vertical Work Load Graph"	200 or less	Over 200
Graph (Sliding bearing type)	①, ②	⑤, ⑥*	⑦, ⑧
Graph (Ball bushing bearing type)	③, ④	⑨, ⑩	⑪, ⑫

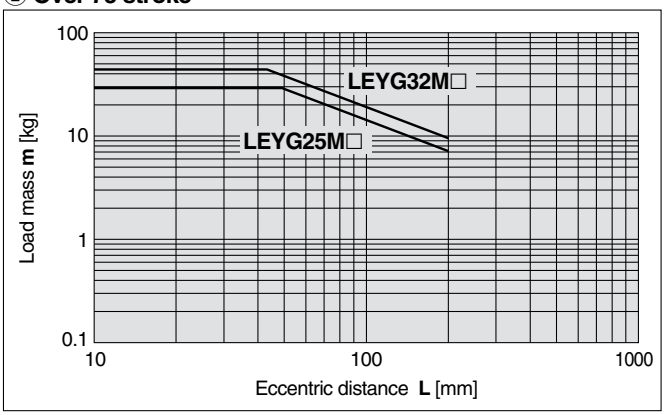
∗ For the sliding bearing type, the speed is restricted with a horizontal/moment load.

Vertical Mounting, Sliding Bearing

① **70 stroke or less**



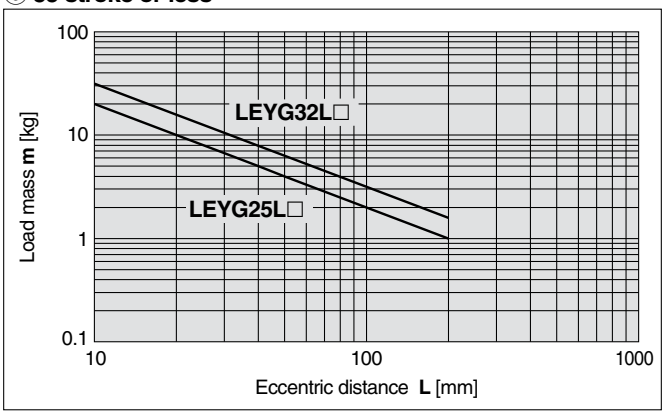
② **Over 75 stroke**



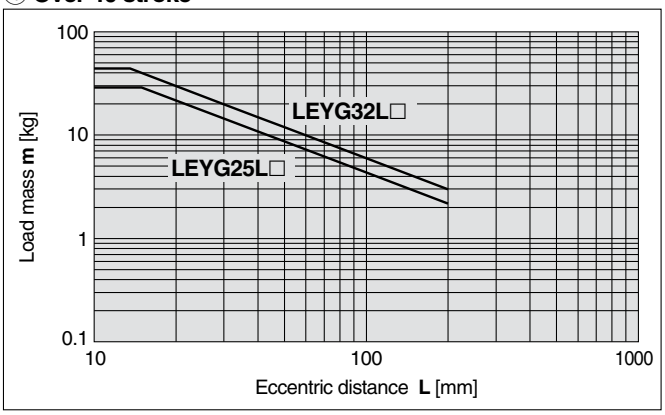
∗ The limit of vertical load mass varies depending on "lead" and "speed."
Check the "Speed–Vertical Work Load Graph" on page 71.

Vertical Mounting, Ball Bushing Bearing

③ **35 stroke or less**



④ **Over 40 stroke**

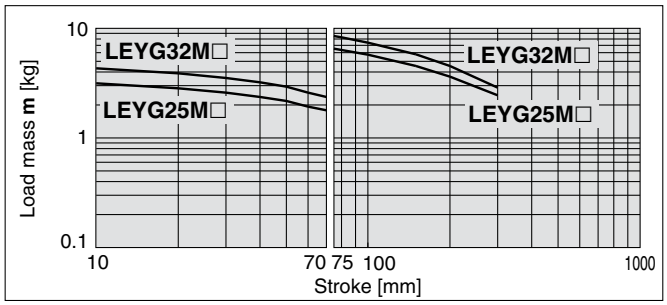


∗ The limit of vertical load mass varies depending on "lead" and "speed."
Check the "Speed–Vertical Work Load Graph" on page 71.

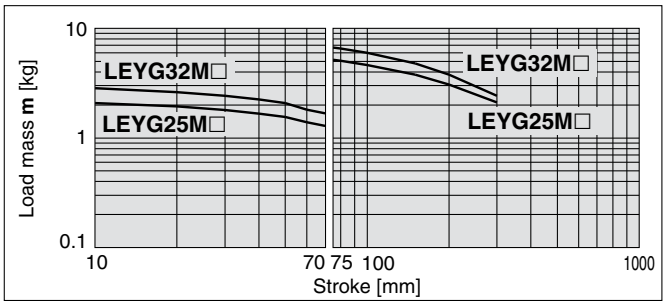
Moment Load Graph

Horizontal Mounting, Sliding Bearing

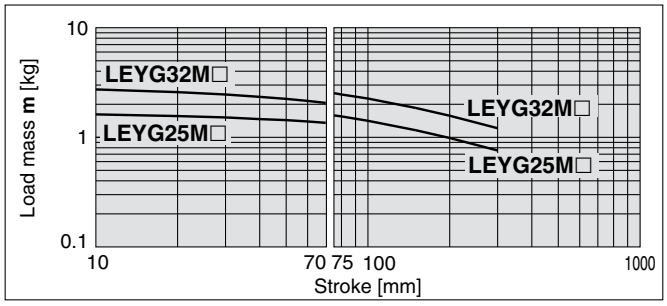
⑤ **L = 50 mm Max. speed = 200 mm/s or less**



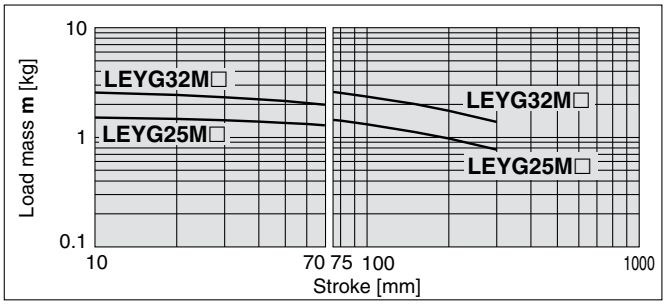
⑥ **L = 100 mm Max. speed = 200 mm/s or less**



⑦ **L = 50 mm Max. speed = Over 200 mm/s**

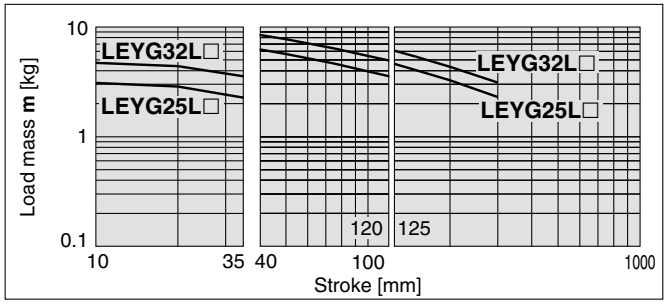


⑧ **L = 100 mm Max. speed = Over 200 mm/s**

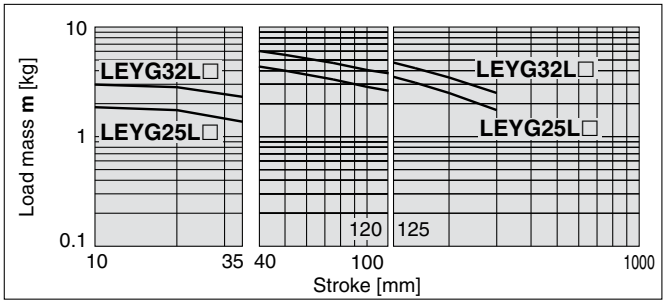


Horizontal Mounting, Ball Bushing Bearing

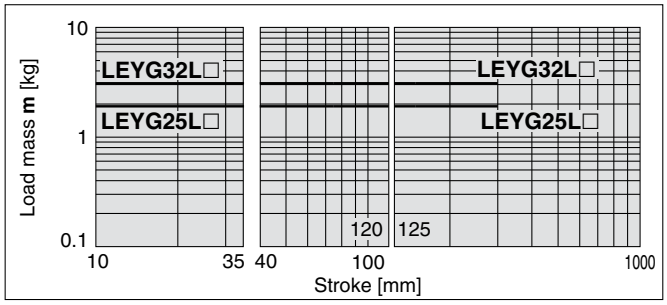
⑨ **L = 50 mm Max. speed = 200 mm/s or less**



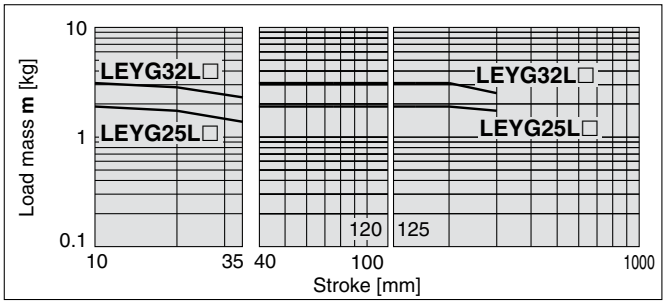
⑩ **L = 100 mm Max. speed = 200 mm/s or less**



⑪ **L = 50 mm Max. speed = Over 200 mm/s**

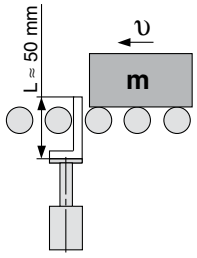


⑫ **L = 100 mm Max. speed = Over 200 mm/s**



Operating Range when Used as Stopper

LEYG□M (Sliding bearing)



⚠Caution

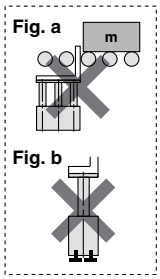
Handling Precautions

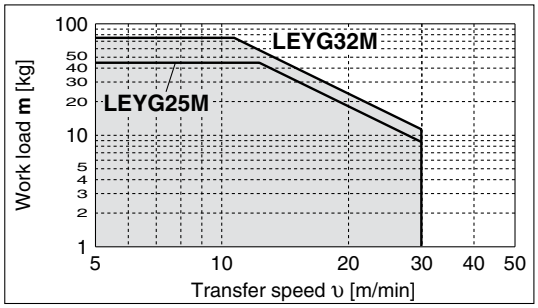
Note 1) When used as a stopper, select a model with 30 stroke or less.

Note 2) LEYG□L (ball bushing bearing) cannot be used as a stopper.

Note 3) Workpiece collision in series with guide rod cannot be permitted (**Fig. a**).

Note 4) The body should not be mounted on the end. It must be mounted on the top or bottom (**Fig. b**).

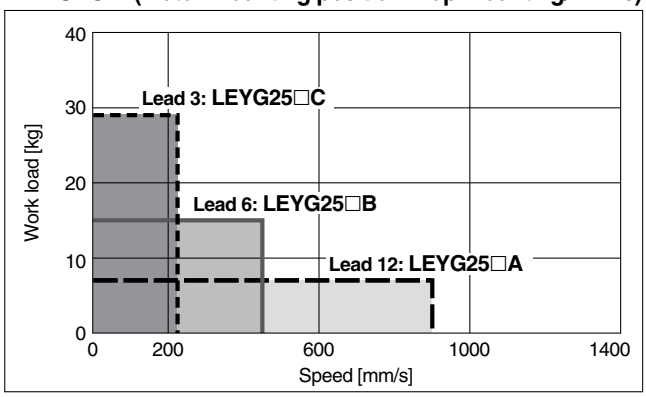




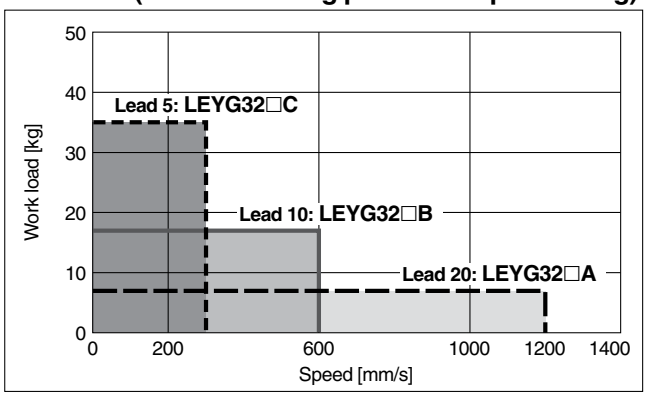
Speed–Vertical Work Load Graph

* The values shown below are allowable values of the actuator body. Do not use the actuator so that it exceeds these specification ranges.

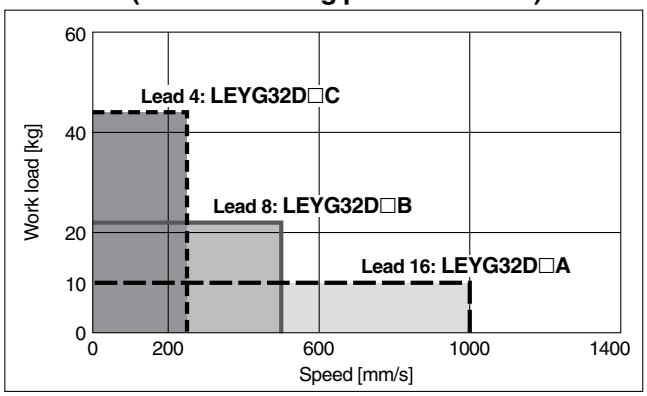
LEYG25□ (Motor mounting position: Top mounting/In-line)



LEYG32□ (Motor mounting position: Top mounting)

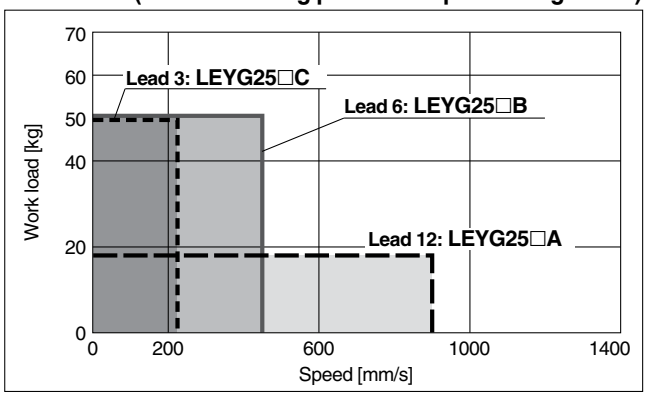


LEYG32D (Motor mounting position: In-line)

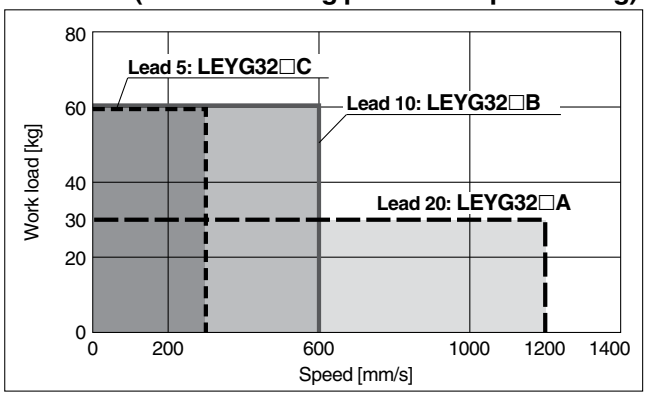


Speed–Horizontal Work Load Graph

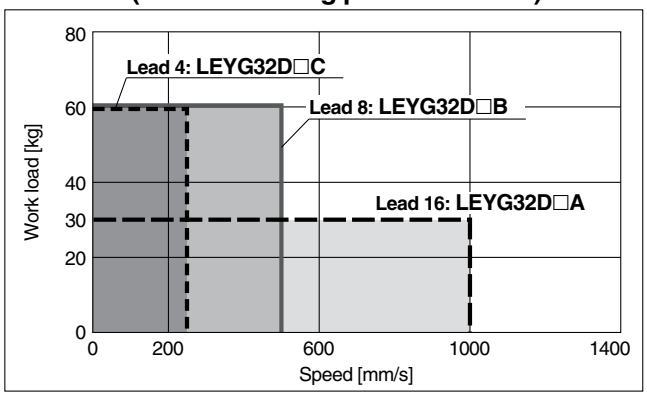
LEYG25□ (Motor mounting position: Top mounting/In-line)



LEYG32□ (Motor mounting position: Top mounting)



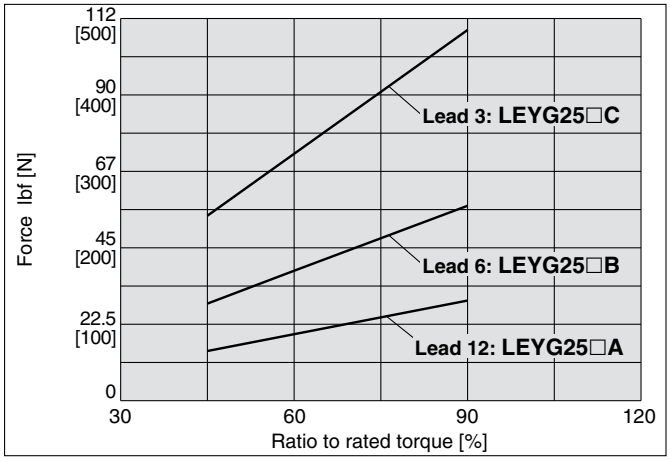
LEYG32D (Motor mounting position: In-line)



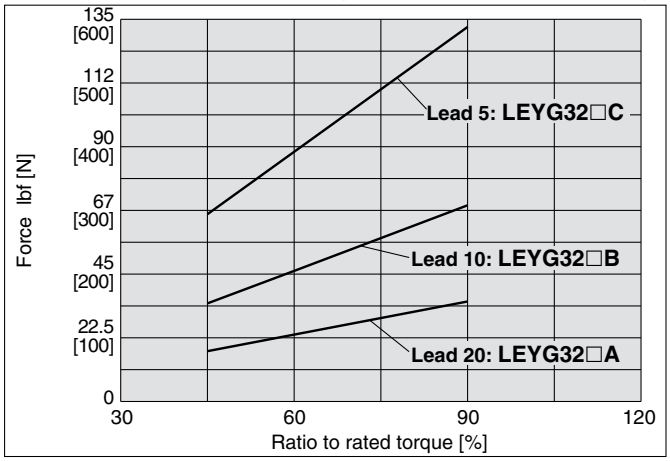
Force Conversion Graph

∗ These graphs show an example of when the standard motor is mounted. Calculate the thrust based on used motor and driver.

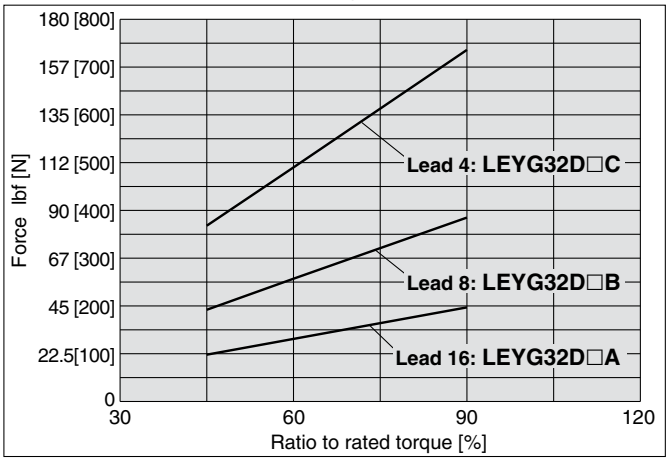
LEYG25□ (Motor mounting position: Top mounting/In-line)



LEYG32□ (Motor mounting position: Top mounting)



LEYG32D (Motor mounting position: In-line)



∗ When using the force control or speed control, set the maximum value to be no more than 90% of the rated torque.

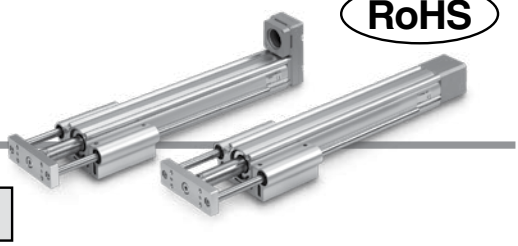
Electric Actuator/Guide Rod Type

Motorless Type

Series LEYG

LEYG25, 32

RoHS



How to Order

LEYG 25 M ❸ NZ B – 200 ❼

❶ ❷ ❸ ❹ ❺ ❻ ❼

❶ Size

25
32

❷ Bearing type

M	Sliding bearing
L	Ball bushing bearing

❸ Motor mounting position

Nil	Top mounting
D	In-line

❹ Motor type

Symbol	Type
NZ	Mounting type Z
NY	Mounting type Y
NX	Mounting type X
NW	Mounting type W
NM1	Mounting type M1

∗ Refer to the “Compatible Motors.”

❺ Lead [mm]

Symbol	LEYG25	LEYG32
A	12	16 (20)
B	6	8 (10)
C	3	4 (5)

❻ Stroke [mm]

30	30
to	to
300	300

∗ Refer to the applicable stroke table.

❼ Guide option

Nil	Without option
F	With grease retaining function

∗ Only available for sliding bearing.

Applicable Stroke Table

● Standard

Model \ Stroke (mm)	30	50	100	150	200	250	300
LEYG25	●	●	●	●	●	●	●
LEYG32	●	●	●	●	●	●	●

∗ Please consult with SMC for strokes other than those shown above as they are produced as special orders.

When using auto switch with the guide rod type LEYG series

- Insert the auto switch from the front side with rod (plate) sticking out.
- For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
- Please consult with SMC when using auto switch on the rod stick out side.

For auto switches, refer to pages 80 to 82.

Compatible Motors

Applicable motor model			Size/Motor type							
			25			32				
Manufacturer	Series	Type	"NZ" Mounting type Z	"NY" Mounting type Y	"NM1" Mounting type M1	"NZ" Mounting type Z	"NY" Mounting type Y	"NX" Mounting type X	"NW" Mounting type W	"NM1" Mounting type M1
Mitsubishi Electric Corporation	MELSERVO-JN	HF-KN	●	—	—	●	—	—	—	—
	MELSERVO-J3	HF-KP	●	—	—	●	—	—	—	—
	MELSERVO-J4	HG-KR	●	—	—	●	—	—	—	—
YASKAWA Electric Corporation	Σ-V	SGMJV	●	—	—	●	—	—	—	—
SANYO DENKI CO., LTD.	SANMOTION R	R2	●	—	—	●	—	—	—	—
OMRON Corporation	G5	R88M-K	●	—	—	—	●	—	—	—
Panasonic Corporation	MINAS-A4	MSMD	—	●	—	—	●	—	—	—
	MINAS-A5	MSMD/MHMD	—	●	—	—	●	—	—	—
FANUC CORPORATION	β is	β	●	—	—	● (β1 only)	—	—	●	—
FASTECH Co., Ltd.	Ezi-SERVO	EzM	—	—	●	—	—	—	—	●
Rockwell Automation, Inc. (Allen-Bradley)	MP–	MPL/VPL	—	—	—	—	—	●*	—	—

∗ Motor mounting position: In-line only

Specifications

- Values in this specification table are the allowable values of the actuator body with the standard motor mounted.
- Do not use the actuator so that it exceeds these values.

Model			LEYG25$^{M}_{L}$ (Top mounting) LEYG25$^{M}_{L}$D (In-line)			LEYG32$^{M}_{L}$ (Top mounting)			LEYG32$^{M}_{L}$D (In-line)		
Actuator specifications	Stroke [mm] Note 1)		30, 50, 100, 150 200, 250, 300			30, 50, 100, 150 200, 250, 300			30, 50, 100, 150 200, 250, 300		
	Work load [kg]	Horizontal Note 2)	18	50	50	30	60	60	30	60	60
		Vertical	7	15	29	7	17	35	10	22	44
	Pushing force lbf [N] Note 3) (Set value: Rated torque 30 to 90%)		14.6 to 29.4 [65 to 131]	28.6 to 57.3 [127 to 255]	54.4 to 109 [242 to 485]	17.8 to 35.3 [79 to 157]	34.6 to 69.2 [154 to 308]	66.1 to 132 [294 to 588]	22.0 to 44.3 [98 to 197]	43.1 to 86.6 [192 to 385]	82.7 to 165 [368 to 736]
	Max. speed [mm/s]		900	450	225	1200	600	300	1000	500	250
	Pushing speed [mm/s] Note 4)		35 or less			30 or less					
	Max. acceleration/deceleration [mm/s^2]		5000								
	Positioning repeatability [mm]		±0.02								
	Lost motion [mm] Note 5)		0.1 or less								
	Ball screw specifications	Thread size [mm]	ø10			ø12					
		Lead [mm] (including pulley ratio)	12	6	3	16 (20)	8 (10)	4 (5)	16	8	4
		Shaft length [mm]	Stroke + 93.5			Stroke + 104.5					
	Impact/Vibration resistance [m/s^2] Note 6)		50/20								
	Actuation type		Ball screw + Belt (LEY□) Ball screw (LEY□D)			Ball screw + Belt [Pulley ratio 1.25:1]			Ball screw		
	Guide type		Sliding bearing (LEYG□M), Ball bushing bearing (LEYG□L)								
	Operating temperature range		41 to 104°F (5 to 40°C)								
	Operating humidity range [%RH]		90 or less (No condensation)								
Other specifications	Actuation unit weight [kg] (*[ST]: Stroke)	Sliding bearing LEYG□M	0.29 + (2.20 x 10^{-3}) x [ST]: 185 st or less 0.34 + (1.92 x 10^{-3}) x [ST]: Over 185 st			0.48 + (2.91 x 10^{-3}) x [ST]: 180 st or less 0.55 + (2.62 x 10^{-3}) x [ST]: Over 180 st					
		Ball bushing bearing LEYG□L	0.33 + (1.69 x 10^{-3}) x [ST]: 110 st or less 0.36 + (1.80 x 10^{-3}) x [ST]: Over 110 st			0.50 + (2.40 x 10^{-3}) x [ST]: 110 st or less 0.55 + (2.51 x 10^{-3}) x [ST]: Over 110 st					
	Other inertia [kg·cm^2]		0.012 (LEYG25) 0.015 (LEYG25D)			0.035 (LEYG32)			0.061 (LEYG32D)		
Note 7)	Mechanical efficiency		0.8								
Reference motor spec.	Motor shape		□40			□60					
	Motor type		AC servo motor								
	Rated output capacity [W]		100			200					
	Rated torque lbf·ft [N·m]		0.24 [0.32]			0.47 [0.64]					
	Rated rotation [rpm]		3000								

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) The maximum value of the horizontal work load. An external guide is necessary to support the load. The actual work load changes according to the condition of the external guide. Confirm using actual device.
Note 3) The force setting range for the pushing operation (Speed control mode, Torque control mode).
The pushing force changes according to the set value. Set it with reference to the "Force Conversion Graph" on page 72.
Note 4) The allowable collision speed for the pushing operation.
Note 5) A reference value for correcting an error in reciprocal operation.
Note 6) 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. (Test was performed with the actuator in the initial state.)
Vibration resistance: No malfunction occurred in a test ranging between 45 to 2000 Hz. Test was performed in both an axial direction and a perpendicular direction to the lead screw. (Test was performed with the actuator in the initial state.)
Note 7) Each value is a guide. Use such value to select a motor capacity.

Weight

Product Weight

[kg]

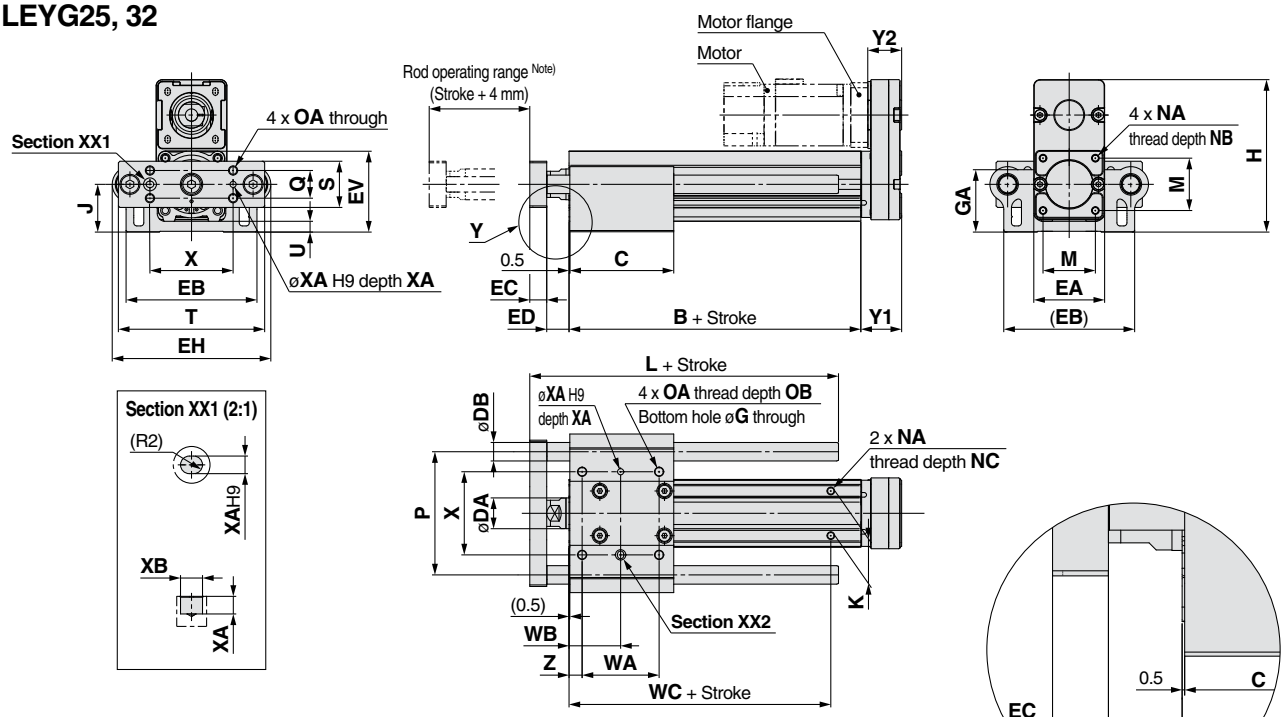
Model	LEYG25$^{M}_{L}$ (Motor mounting position: Top mounting)							LEYG32$^{M}_{L}$ (Motor mounting position: Top mounting)						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Sliding bearing LEYG□M	1.3	1.5	1.8	2.2	2.6	2.9	3.2	2.2	2.5	3.1	3.8	4.4	4.8	5.3
Ball bushing bearing LEYG□L	1.3	1.5	1.8	2.2	2.5	2.8	3.0	2.2	2.5	2.9	3.6	4.1	4.6	5.0

Model	LEYG25$^{M}_{L}$D (Motor mounting position: In-line)							LEYG32$^{M}_{L}$D (Motor mounting position: In-line)						
Stroke [mm]	30	50	100	150	200	250	300	30	50	100	150	200	250	300
Sliding bearing LEYG□M	1.3	1.5	1.8	2.3	2.6	2.9	3.2	2.3	2.5	3.1	3.8	4.4	4.9	5.3
Ball bushing bearing LEYG□L	1.3	1.6	1.8	2.2	2.5	2.8	3.0	2.3	2.5	2.9	3.7	4.1	4.6	5.0

Dimensions: Motor Top Mounting

Refer to the "Motor Mounting" on page 77 for details about motor mounting and included parts.

LEYG25, 32



Section Y details

Note) Do not allow collisions at either end of the rod operating range at a speed exceeding "pushing speed."
Additionally, when running the positioning operation, do not set within 2 mm of both ends.

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 114	91	10
	115 to 190	115	
	191 to 300	133	
32	Up to 114	97.5	13
	115 to 190	116.5	
	191 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 59	67.5	12
	60 to 185	100.5	
	186 to 300	138	
32	Up to 59	74	16
	60 to 185	107	
	186 to 300	144	

∗ Refer to page 62 for the dimensions of motor flange.

LEYG□M, LEYG□L Common [mm]

Size	Stroke range [mm]	B	C	DA	EA	EB	EH	EV	EC	ED	G	GA	H	J	K	M	NA	NB
25	Up to 39	89.5	50	20	46	85	103	52.3	11	12.5	5.4	40.3	98.8	30.8	29	34	M5 x 0.8	8
	40 to 100		67.5															
	101 to 124	114.5																
	125 to 200		84.5															
	201 to 300		102															
32	Up to 39	96	55	25	60	101	123	63.8	12	16.5	5.4	50.3	125.3	38.3	30	40	M6 x 1.0	10
	40 to 100		68															
	101 to 124	126																
	125 to 200		85															
	201 to 300		102															

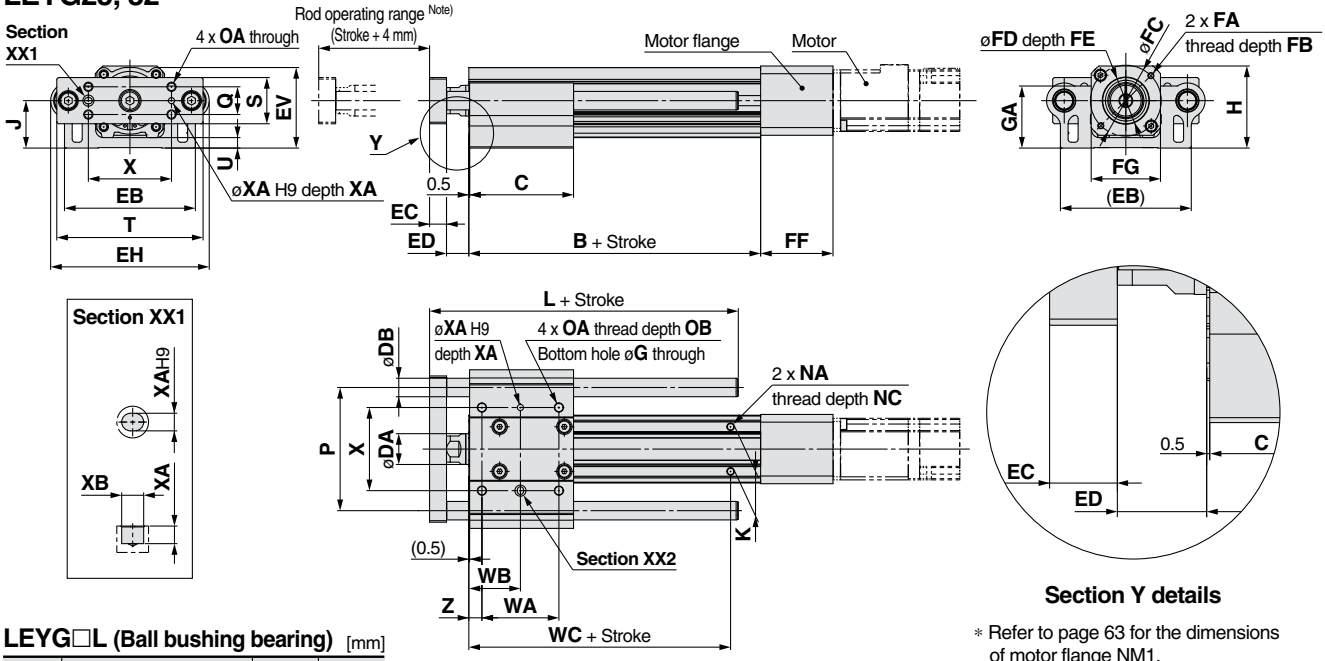
Size	Stroke range [mm]	NC	OA	OB	P	Q	S	T	U	WA	WB	WC	X	XA	XB	Y1	Y2	Z
25	Up to 39	6.5	M6 x 1.0	12	80	18	30	95	6.8	35	26	70	54	4	5	26.5	22	8.5
	40 to 100									50	33.5							
	101 to 124											95						
	125 to 200									70	43.5							
	201 to 300									85	51							
32	Up to 39	8.5	M6 x 1.0	12	95	28	40	117	7.3	40	28.5	75	64	5	6	34	27	8.5
	40 to 100									50	33.5							
	101 to 124											105						
	125 to 200									70	43.5							
	201 to 300									85	51							

∗ The FB measurement is when the unit is at the retracted stroke end position.

Refer to the "Motor Mounting" on page 78 for details about motor mounting and included parts.

Dimensions: In-line Motor

LEYG25, 32



∗ Refer to page 63 for the dimensions of motor flange NM1.

LEYG□L (Ball bushing bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 114	91	10
	115 to 190	115	
	191 to 300	133	
32	Up to 114	97.5	13
	115 to 190	116.5	
	191 to 300	134	

LEYG□M (Sliding bearing) [mm]

Size	Stroke range [mm]	L	DB
25	Up to 59	67.5	12
	60 to 185	100.5	
	186 to 300	138	
32	Up to 59	74	16
	60 to 185	107	
	186 to 300	144	

Note) Do not allow collisions at either end of the rod operating range at a speed exceeding "pushing speed." Additionally, when running the positioning operation, do not set within 2 mm of both ends.

[mm]

Size	Motor type	FA	FB	FC	FD	FE	FF	FG	FH
25	NZ	M4 x 0.7	7.5	46	30	3.7	47	45	—
	NY	M3 x 0.5	6	45	30	4.2	47	45	—
	NM1	ø3.4	17	31	22	2.5	36	45	19
32	NZ, NW	M5 x 0.8	8.5	70	50	3.3	60	60	—
	NY	M4 x 0.7	8	70	50	3.3	60	60	—
	NX	M5 x 0.8	8.5	63	40	3.5	63	60	—
	NM1	M4 x 0.7	8	47.14	38.1	2	34	60	51.5

LEYG□M, LEYG□L Common [mm]

Size	Stroke range [mm]	B	C	DA	EB	EH	EV	EC	ED	G	GA	H	J	K	NA
25	Up to 39	89.5	50	20	85	103	52.3	11	12.5	5.4	40.3	53.3	30.8	29	M5 x 0.8
	40 to 100		67.5												
	101 to 124	114.5													
	125 to 200		84.5												
	201 to 300		102												
32	Up to 39	96	55	25	101	123	63.8	12	16.5	5.4	50.3	68.3	38.3	30	M6 x 1.0
	40 to 100		68												
	101 to 124	126													
	125 to 200		85												
	201 to 300		102												

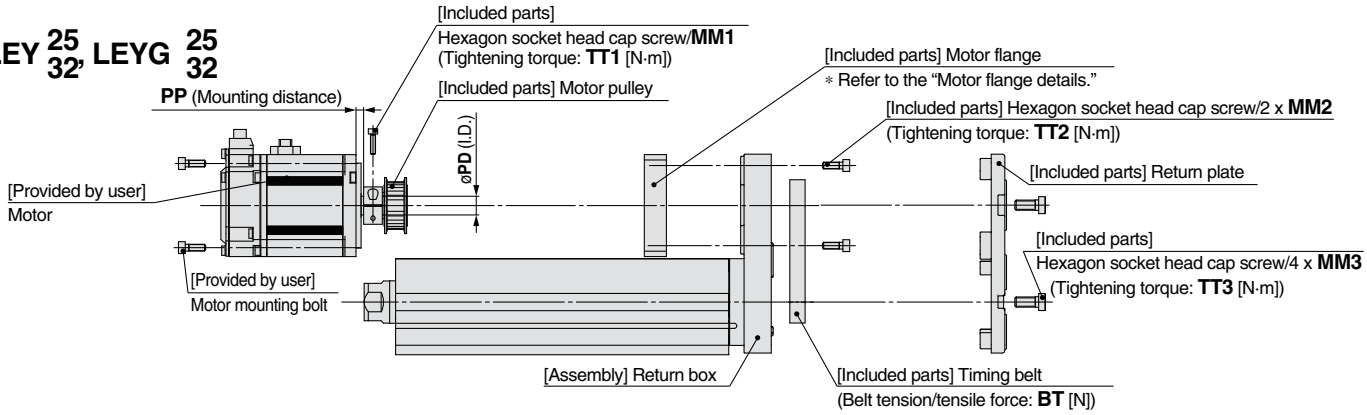
Size	Stroke range [mm]	NC	OA	OB	P	Q	S	T	U	WA	WB	WC	X	XA	XB	Z
25	Up to 39	6.5	M6 x 1.0	12	80	18	30	95	6.8	35	26	70	54	4	5	8.5
	40 to 100									50	33.5					
	101 to 124											95				
	125 to 200									70	43.5					
	201 to 300									85	51					
32	Up to 39	8.5	M6 x 1.0	12	95	28	40	117	7.3	40	28.5	75	64	5	6	8.5
	40 to 100									50	33.5					
	101 to 124											105				
	125 to 200									70	43.5					
	201 to 300									85	51					

∗ The FB measurement is when the unit is at the retracted stroke end position.

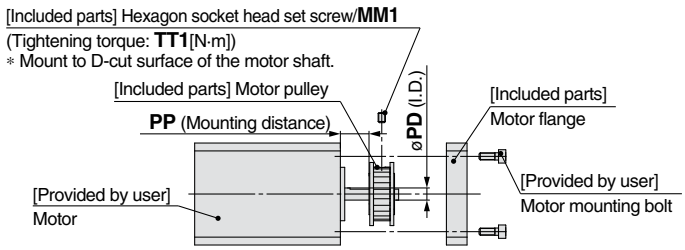
Motor Mounting: Top Mounting

- The motor and motor mounting bolts should be provided by user.
- Motor shaft style should be cylindrical for the NZ, NY, NW motor types, and D-cut style for the NM1 motor type.
- When mounting a pulley, remove the oil content, dust, or dirt sticking to the shaft and pulley inside diameter.
- Take loose prevention measures for the motor mounting bolts and hexagon socket head set screws.

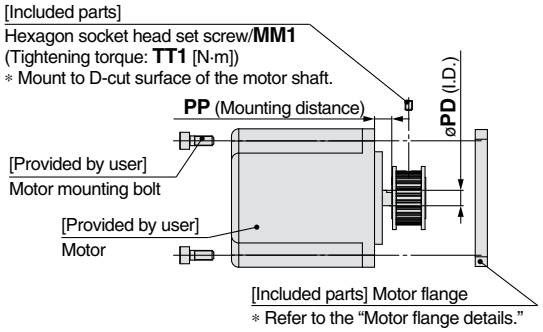
LEY 25/32, LEYG 25/32



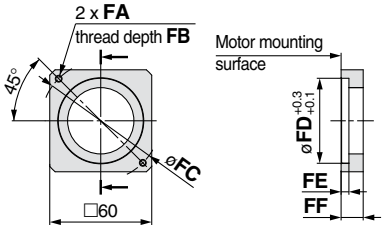
LEY25, LEYG25: NM1



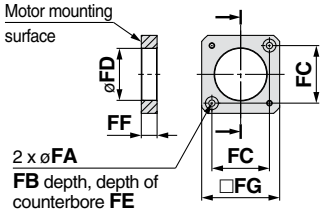
LEY32, LEYG32: NM1



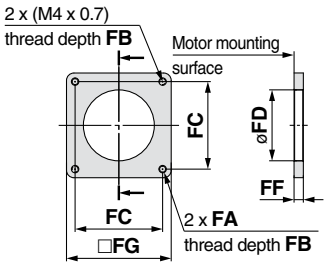
Motor flange details LEY25: NZ, NY
LEY32: NZ, NY, NW



LEY25: NM1



LEY32: NM1



Dimensions

[mm]

Size	Motor type	MM1	TT1	MM2	TT2
25	NZ	M2.5 x 10	1.0	M3 x 8	0.63
	NY				
	NM1	M3 x 4	0.63		
32	NZ	M3 x 12	1.5	M4 x 12	1.5
	NY				
	NW	M4 x 12	2.5		
	NM1	M3 x 4	0.63		

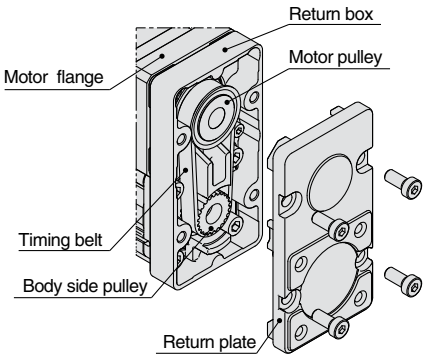
Size	Motor type	MM3	TT3	PD	PP	BT
25	NZ	M4 x 10	1.5	8	7.5	19
	NY					
	NM1			5	11.8	
32	NZ	M6 x 14	5.2	14	4.5	30
	NY			11		
	NW			9		
	NM1			6.35	7.1	

Size	Motor type	FA	FB	FC	FD	FE	FF	FG
25	NZ	M4 x 0.7	7.5	46	30	3.7	11	42
	NY	M3 x 0.5	5.5	45	30	5	11	42
	NM1	ø3.4	7	31	28	3.5	8.5	42
32	NZ	M5 x 0.8	8.5	70	50	4.6	13	60
	NY	M4 x 0.7	7	70	50	4.6	13	60
	NM1	M4 x 0.7	(5)	47.1	38.2	—	5	56.4

Motor Mounting Diagram

Mounting procedure

1) Fix the motor (provided by user) and the "motor pulley" with the "MM1 hexagon socket head cap screw or hexagon socket head set screw."
2) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).
3) Put the "timing belt" on the "motor pulley" and "body side pulley", and then fix it temporarily with the "MM2 hexagon socket head cap screws." (Refer to the mounting diagram.)
4) Apply the belt tension and tighten the timing belt with the "MM2 hexagon socket head cap screws." (The reference level is the elimination of the belt deflection.)
5) Fix the "return plate" with the "MM3 hexagon socket head cap screws."



Included Parts List

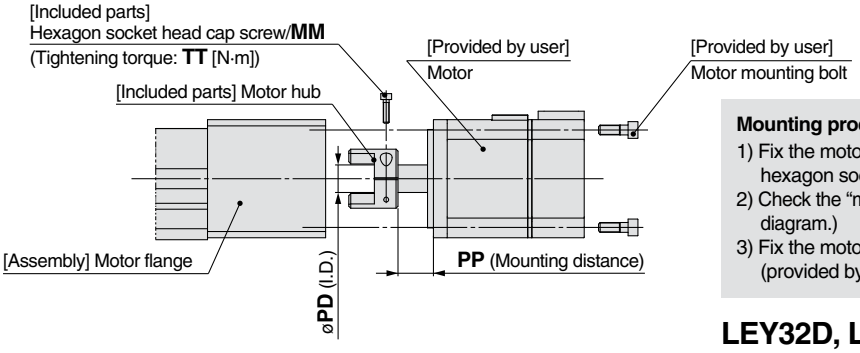
Size: 25, 32

Description	Quantity Motor type	
	NZ, NY, NW	NM1
Motor flange	1	1
Motor pulley	1	1
Return plate	1	1
Timing belt	1	1
Hexagon socket head cap screw (for return plate mounting)	4	4
Hexagon socket head cap screw (for motor flange mounting)	2	2
Hexagon socket head cap screw (for pulley fixing)	1	—
Hexagon socket head set screw (for pulley fixing)	—	1

- The motor and motor mounting bolts should be provided by user.
- Motor shaft style should be cylindrical for the NZ, NY, NX, NW motor types, and D-cut style for the NM1 motor type.
- When mounting a hub, remove the oil content, dust, or dirt sticking to the shaft and hub inside diameter.
- Take loose prevention measures for the motor mounting bolts and hexagon socket head set screws.

Motor Mounting: In-line

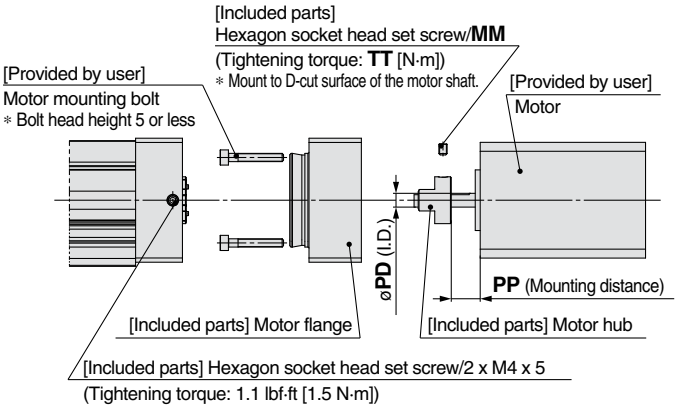
LEY $^{25}_{32}$D, LEYG $^{25}_{32}$□D



Mounting procedure

1) Fix the motor (provided by user) and the "motor hub" with the "MM hexagon socket head cap screw."
2) Check the "motor hub" position, and then insert it. (Refer to the mounting diagram.)
3) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).

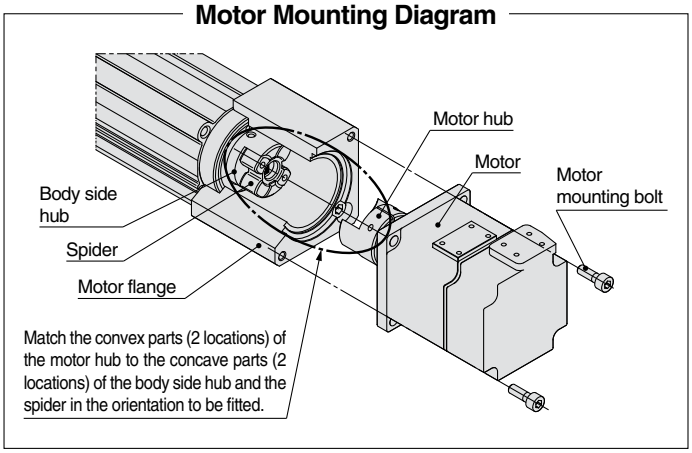
LEY25D, LEYG25□D: NM1



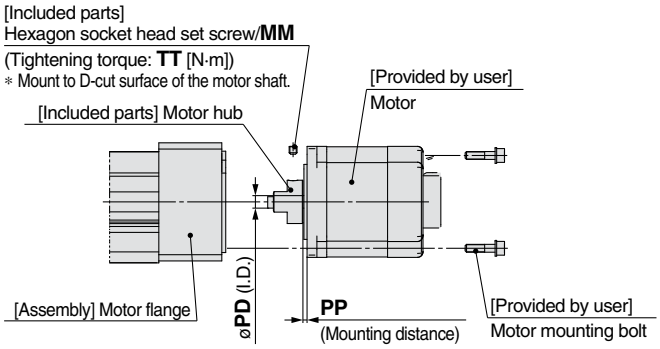
Mounting procedure

1) Fix the motor (provided by user) and the "motor hub" with the M3 x 4 hexagon socket head set screw.
2) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).
3) Check the "motor hub position", and then insert it. (Refer to the mounting diagram.)
4) Fix the "motor flange" with the "M4 x 5 hexagon socket head set screws."

Motor Mounting Diagram



LEY32D, LEYG32□D: NM1



Mounting procedure

1) Fix the motor (provided by user) and the motor hub with the "MM hexagon socket head set screw."
2) Check the "motor hub" position, and then insert it. (Refer to the mounting diagram.)
3) Fix the motor and the "motor block" with the motor mounting bolts (provided by user).

Dimensions

[mm]

Size	Motor type	MM	TT	PD	PP
25	NZ	M2.5 x 10	1.0	8	12.5
	NY				
	NM1	M3 x 4	0.63	5	10.5
32	NZ	M3 x 12	1.5	14	18
	NY	M4 x 12	2.5	11	
	NX			9	5
	NW			9	12
	NM1	M4 x 5	1.5	6.35	2.1

Included Parts List

Size: 25

Description	Quantity	
	Motor type	
	NZ, NY	NM1
Motor hub	1	1
Hexagon socket head cap screw (for hub fixing)	1	—
Motor flange	—	1
Hexagon socket head set screw (for hub fixing)	—	1
Hexagon socket head set screw (for motor flange fixing)		2

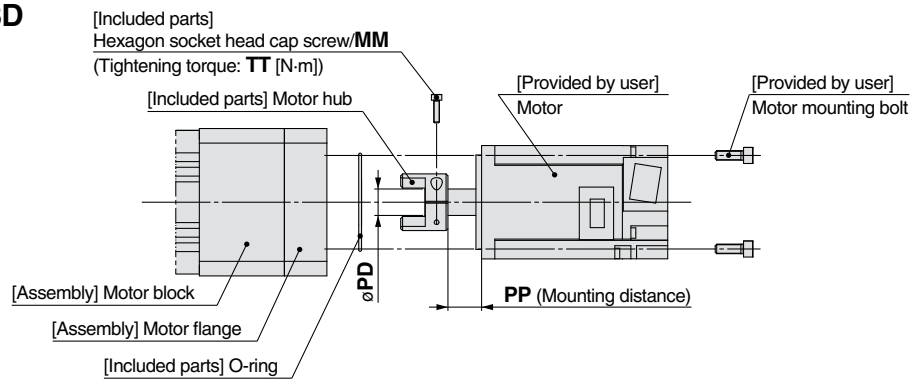
Size: 32

Description	Quantity	
	Motor type	
	NZ, NY, NX, NW	NM1
Motor hub	1	1
Hexagon socket head cap screw (for hub fixing)	1	—
Hexagon socket head set screw (for hub fixing)	—	1

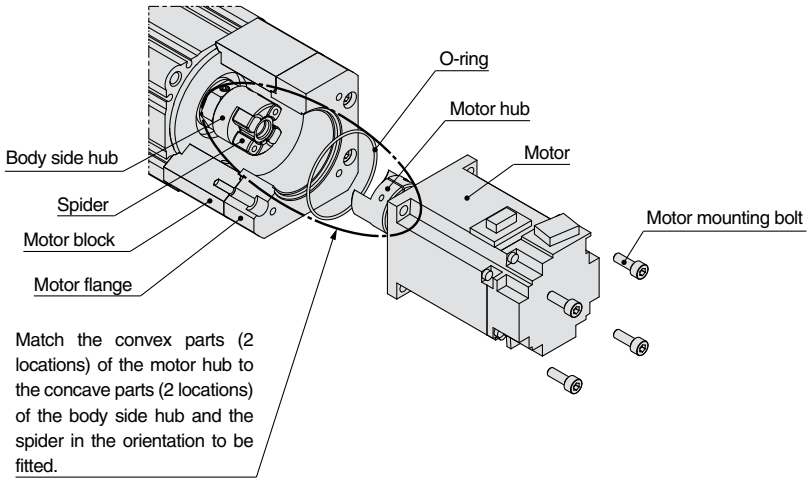
Motor Mounting: In-line

- The motor and motor mounting bolts should be provided by user.
- For the shaft-end shape of the motor, prepare the round type.
- When mounting a hub, remove the oil content, dust, or dirt sticking to the shaft and hub inside diameter.
- Take loose prevention measures for the motor mounting bolts.

LEY63D



Motor Mounting Diagram



Mounting procedure

1) Fix the motor (provided by user) and the "motor hub" with the "MM hexagon socket head cap screw."
2) Put the "O-ring" on the mating part of the motor, and check the "motor hub position" and then insert it. (Refer to the mounting diagram.)
3) Fix the motor and the "motor flange" with the motor mounting bolts (provided by user).

Dimensions

[mm]

Size	Motor type	MM	TT	PD	PP
63	NZ	M3 x 12	1.5	14	17.8
	NY				
	NX	M4 x 12	2.5	9	10.2
	NW				5.2

Included Parts List

Size: 63

Description	Quantity
	Motor type
	NZ, NY, NX, NW
Motor hub	1
Hexagon socket head cap screw (for hub fixing)	1
O-ring	1

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

Refer to SMC website for the details about products conforming to the international standards.

Grommet

- **2-wire load current is reduced (2.5 to 40 mA).**
- **Flexibility is 1.5 times greater than the conventional model (SMC comparison).**
- **Using flexible cable as standard.**

⚠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-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry	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 lights up when turned ON.					
Standards	CE marking, RoHS					

Oilproof Heavy-duty Lead Wire Specifications

Auto switch model		D-M9N□	D-M9P□	D-M9B□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	ø0.05		
Minimum bending radius [mm] (Reference value)		20		

Note 1) Refer to the Best Pneumatics No. 2 catalog for solid state auto switch common specifications.
Note 2) Refer to the Best Pneumatics No. 2 catalog for lead wire lengths.

Weight

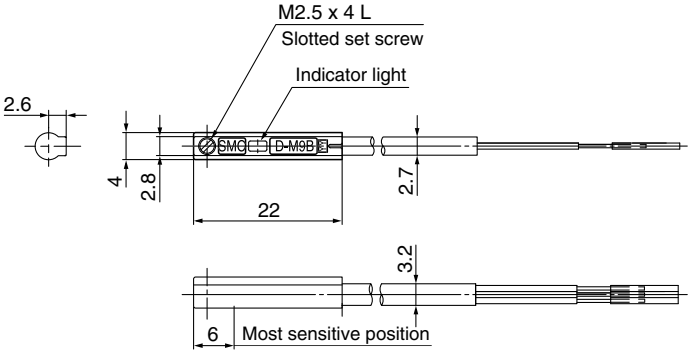
[g]

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

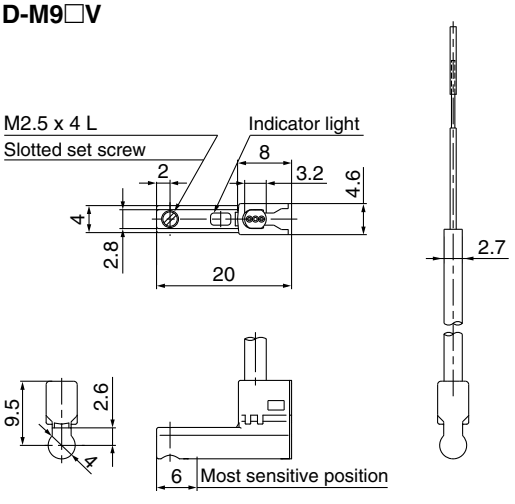
Dimensions

[mm]

D-M9□



D-M9□V



2-Color Indication Solid State Auto Switch Direct Mounting Style
D-M9NW(V)/D-M9PW(V)/D-M9BW(V)

Refer to SMC website for the details about products conforming to the international standards.

Grommet

- **2-wire load current is reduced (2.5 to 40 mA).**
- **Flexibility is 1.5 times greater than the conventional model (SMC comparison).**
- **Using flexible cable as standard.**
- **The optimum 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-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry	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 lights up. Optimum operating range ····· Green LED lights up.					
Standards	CE marking, RoHS					

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW□	D-M9PW□	D-M9BW□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	ø0.05		
Minimum bending radius [mm] (Reference value)		20		

Note 1) Refer to the Best Pneumatics No. 2 catalog for solid state auto switch common specifications.
Note 2) Refer to the Best Pneumatics No. 2 catalog for lead wire lengths.

Weight

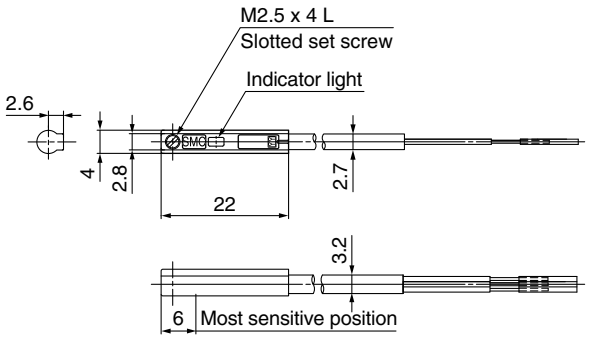
[g]

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

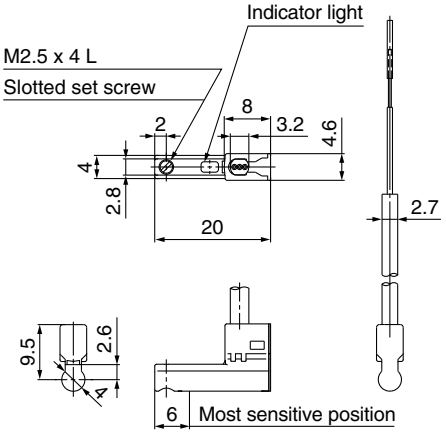
Dimensions

[mm]

D-M9□W



D-M9□WV



SMC

Water Resistant 2-Color Indication Solid State Auto Switch: Direct Mounting Style

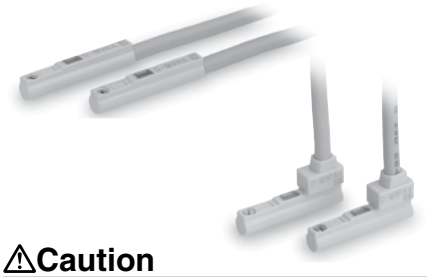
D-M9NA(V)/D-M9PA(V)/D-M9BA(V)

CE RoHS

Refer to SMC website for the details about products conforming to the international standards.

Grommet

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



⚠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.
Please consult with SMC if using coolant liquid other than water based solution.

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□A, D-M9□AV (With indicator light)						
Auto switch model	D-M9NA	D-M9NAV	D-M9PA	D-M9PAV	D-M9BA	D-M9BAV
Electrical entry	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 lights up. Optimum operating range ····· Green LED lights up.					
Standards	CE marking, RoHS					

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NA□	D-M9PA□	D-M9BA□
Sheath	Outside diameter [mm]	2.7 x 3.2 (ellipse)		
Insulator	Number of cores	3 cores (Brown/Blue/Black)		2 cores (Brown/Blue)
	Outside diameter [mm]	ø0.9		
Conductor	Effective area [mm²]	0.15		
	Strand diameter [mm]	ø0.05		
Minimum bending radius [mm] (Reference value)		20		

Note 1) Refer to the Best Pneumatics No. 2 catalog for solid state auto switch common specifications.
Note 2) Refer to the Best Pneumatics No. 2 catalog for lead wire lengths.

Weight

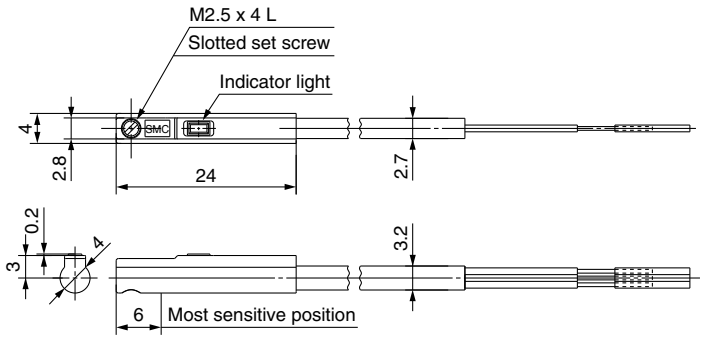
[g]

Auto switch model		D-M9NA(V)	D-M9PA(V)	D-M9BA(V)
Lead wire length	0.5 m (**Nil**)	8		7
	1 m (**M**)	14		13
	3 m (**L**)	41		38
	5 m (**Z**)	68		63

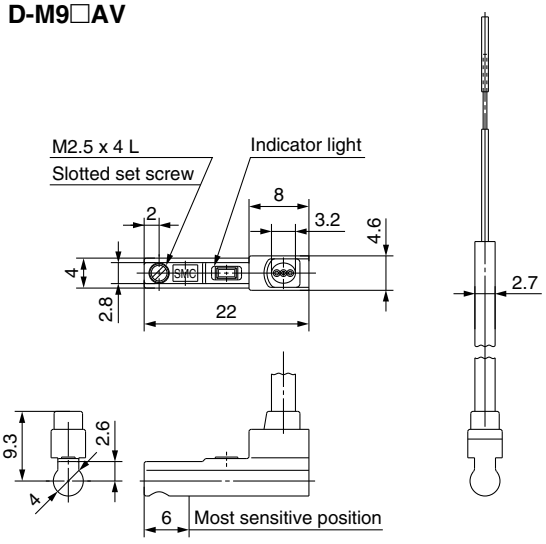
Dimensions

[mm]

D-M9□A



D-M9□AV



Series LEY/LEYG – Electric Actuators
Specific Product Precautions 1

Be sure to read this before handling. Refer to the back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

Design/Selection

⚠Warning

1. Do not apply a load in excess of the operating limit.

Select a suitable actuator by work load and allowable lateral load on the rod end. If the product is used outside of the operating limit, the eccentric load applied to the piston rod will be excessive and have adverse effects such as creating play on the sliding parts of the piston rod, degrading accuracy and shortening the life of the product.

2. Do not use the product in applications where excessive external force or impact force is applied to it.

This can cause a failure.

3. When used as a stopper, select the LEYG series "Sliding bearing" for a stroke of 30 mm or less.

4. When used as a stopper, fix the main body with a guide attachment ("Top mounting" or "Bottom mounting").

If the end of the actuator is used to fix the main body (end mounting), the excessive load acts on the actuator, which adversely affects the operation and life of the product.

Handling

⚠Caution

1. When using the pushing operation, be sure to set to force/speed control, and use within the specified pushing speed range for each series.

Do not allow the piston rod to hit the workpiece and end of the stroke in the position control. The lead screw, bearing and internal stopper may be damaged and lead to malfunction.

2. For pushing operation, the maximum value of the reference motor torque should be 90% or less of the rated torque. For the LEY63, 150% or less.

It may lead to damage and malfunction.

3. The maximum speed of this actuator is affected by the product stroke.

Check the model selection section of the catalog.

4. Do not apply a load, impact or resistance in addition to the transferred load during return to origin.

Additional force will cause the displacement of the origin position.

5. Do not scratch or dent the sliding parts of the piston rod, by striking or attaching objects.

The piston rod and guide rod are manufactured to precise tolerances, even a slight deformation may cause a malfunction.

6. When an external guide is used, connect it in such a way that no impact or load is applied to it.

Use a freely moving connector (such as a floating joint).

7. Do not operate by fixing the piston rod and moving the actuator body.

Excessive load will be applied to the piston rod, leading to damage to the actuator and reduced the life of the product.

Handling

⚠Caution

8. When an actuator is operated with one end fixed and the other free (ends tapped (standard), flange type), a bending moment may act on the actuator due to vibration generated at the stroke end, which can damage the actuator. In such a case, install a mounting bracket to suppress the vibration of the actuator body or reduce the speed so that the actuator does not vibrate.

Also, use a mounting bracket when moving the actuator body or when a long stroke actuator is mounted horizontally and fixed at one end.

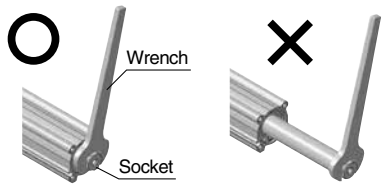
9. Avoid using the electric actuator in such a way that rotational torque would be applied to the piston rod.

This may cause deformation of the non-rotating guide, abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.

Refer to the table below for the approximate values of the allowable range of rotational torque.

Allowable rotational torque lbf·ft [N·m] or less	LEY25□	LEY32	LEY63
	0.81 [1.1]	1.03 [1.4]	2.06 [2.8]

When screwing in a bracket or nut to the piston rod end, hold the flats of the end of the "socket" with a wrench (the piston rod should be fully retracted). Do not apply tightening torque to the non-rotating mechanism.



10. When using auto switch with the guide rod type LEYG series, the following limits will be in effect.
Please select the product while paying attention to this.

- Insert the auto switch from the front side with rod (plate) sticking out.
- The auto switches with perpendicular electrical entry cannot be used.
- For the parts hidden behind the guide attachment (Rod stick out side), the auto switch cannot be fixed.
- Please consult with SMC when using auto switch on the rod stick out side.

Enclosure

IP – □□

First characteristic numeral **Second characteristic numeral**

● First Characteristics: Degrees of protection against solid foreign objects

0	Non-protected
1	Protected against solid foreign objects of 50 mmø and greater
2	Protected against solid foreign objects of 12 mmø and greater
3	Protected against solid foreign objects of 2.5 mmø and greater
4	Protected against solid foreign objects of 1.0 mmø and greater
5	Dust-protected
6	Dust-tight

Specific Product Precautions 2

Be sure to read this before handling. Refer to the back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

Enclosure

● **Second Characteristics: Degrees of protection against water**

0	Non-protected	—
1	Protected against vertically falling water drops	Dripproof type 1
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Dripproof type 2
3	Protected against rainfall when enclosure tilted up to 60°	Rainproof type
4	Protected against splashing water	Splashproof type
5	Protected against water jets	Water-jet-proof type
6	Protected against powerful water jets	Powerful water-jet-proof type
7	Protected against the effects of temporary immersion in water	Immersible type
8	Protected against the effects of continuous immersion in water	Submersible type

Example) IP65: Dust-tight, Water-jet-proof type
"Water-jet-proof type" means that no water intrudes inside an equipment that could hinder from operating normally by means of applying water for 3 minutes in the prescribed manner. Take appropriate protection measures, since a device is not usable in an environment where a droplet of water is splashed constantly.

Mounting

⚠Caution

1. When mounting work pieces or jigs to the piston rod end "socket," hold the flats of the "socket" with a wrench so that the piston rod does not rotate. The bolt should be tightened within the specified torque range.

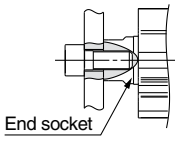
This may cause abnormal responses of the auto switch, play in the internal guide or an increase in the sliding resistance.

2. When mounting the product and/or a workpiece, tighten the mounting screws within the specified torque range.

Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

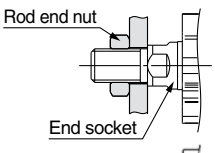
<Series LEY>

Workpiece fixed/Rod end female thread

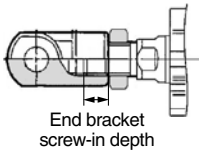


Model	Bolt	Max. tightening torque lbf-ft [N·m]	Max. screw-in depth [mm]	End socket width across flats [mm]
LEY25	M8 x 1.25	9.22 [12.5]	13	17
LEY32	M8 x 1.25	9.22 [12.5]	13	22
LEY63	M16 x 2	78.2 [106]	21	36

Workpiece fixed/Rod end male thread (When "Rod end male thread" is selected.)



Model	Thread size	Max. tightening torque lbf-ft [N·m]	Effective thread length [mm]	End socket width across flats [mm]
LEY25	M14 x 1.5	47.9 [65.0]	20.5	17
LEY32	M14 x 1.5	47.9 [65.0]	20.5	22
LEY63	M18 x 1.5	71.5 [97.0]	26	36



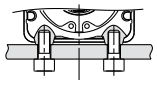
Model	Rod end nut		End bracket screw-in depth [mm]
	Width across flats [mm]	Length [mm]	
LEY25	22	8	8 or more
LEY32	22	8	8 or more
LEY63	27	11	11 or more

∗ Rod end nut is an accessory.

Mounting

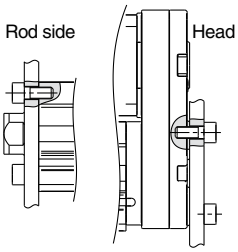
⚠Caution

Body fixed/Body bottom tapped style (When "Body bottom tapped" is selected.)



Model	Bolt	Max. tightening torque lbf-ft [N·m]	Max. screw-in depth [mm]
LEY25	M5 x 0.8	2.2 [3.0]	6.5
LEY32	M6 x 1.0	3.8 [5.2]	8.8
LEY63	M8 x 1.25	9.2 [12.5]	10

Body fixed/Rod side/Head side tapped style

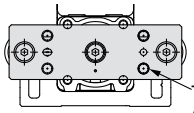


Model	Bolt	Max. tightening torque lbf-ft [N·m]	Max. screw-in depth [mm]
LEY25	M5 x 0.8	2.2 [3.0]	8
LEY32	M6 x 1.0	3.8 [5.2]	10
LEY63	M8 x 1.25	9.2 [12.5]	14

∗ Except the LEY□D

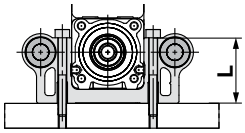
<Series LEYG>

Workpiece fixed/Plate tapped style



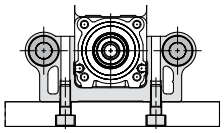
Model	Bolt	Max. tightening torque lbf-ft [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M6 x 1.0	3.8 [5.2]	11
LEYG32$^{M}_{L}$	M6 x 1.0	3.8 [5.2]	12

Body fixed/Top mounting



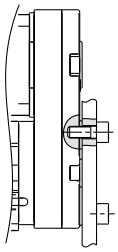
Model	Bolt	Max. tightening torque lbf-ft [N·m]	Length: L [mm]
LEYG25$^{M}_{L}$	M5 x 0.8	2.2 [3.0]	40.5
LEYG32$^{M}_{L}$	M5 x 0.8	2.2 [3.0]	50.5

Body fixed/Bottom mounting



Model	Bolt	Max. tightening torque lbf-ft [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M6 x 1.0	3.8 [5.2]	12
LEYG32$^{M}_{L}$	M6 x 1.0	3.8 [5.2]	12

Body fixed/Head side tapped style



Model	Bolt	Max. tightening torque lbf-ft [N·m]	Max. screw-in depth [mm]
LEYG25$^{M}_{L}$	M5 x 0.8	2.2 [3.0]	8
LEYG32$^{M}_{L}$	M6 x 1.0	3.8 [5.2]	10

Series *LEY/LEYG* – Electric Actuators
Specific Product Precautions 3

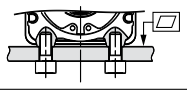
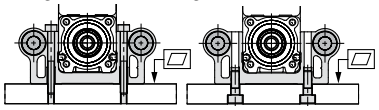
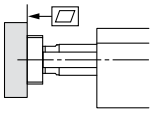
Be sure to read this before handling. Refer to the back cover for Safety Instructions.
For Electric Actuator Precautions, refer to "Handling Precautions for SMC Products" and the Operation Manual on SMC website, http://www.smcworld.com

Mounting

⚠Caution

3. Keep the flatness of the mounting surface within the following ranges when mounting the actuator body and workpiece.

Unevenness of a workpiece or base mounted on the body of the product may cause an increase in the sliding resistance.

Model	Mounting position	Flatness
LEY□	Body/Body bottom 	0.1 mm or less
LEYG□	Top mounting/Bottom mounting 	0.05 mm or less
	Workpiece/Plate mounting 	0.05 mm or less

Maintenance

⚠Warning

1. Ensure that the power supply is stopped and the workpiece is removed before starting maintenance work or replacement of the product.

- **Maintenance frequency**

Perform maintenance according to the table below.

Frequency	Appearance check	Belt check
Inspection before daily operation	○	—
Inspection every 6 months/ 250 km/5 million cycles*	○	○

* Select whichever comes sooner.

- **Items for visual appearance check**

1. Loose set screws, Abnormal dirt
2. Check of flaw and cable joint
3. Vibration, Noise

- **Items for belt check**

Stop operation immediately and replace the belt when belt appear to be below. Further, ensure your operating environment and conditions satisfy the requirements specified for the product.

a. Tooth shape canvas is worn out.
Canvas fiber becomes fuzzy. Rubber is removed and the fiber becomes whitish. Lines of fibers become unclear.

b. Peeling off or wearing of the side of the belt
Belt corner becomes round and frayed thread sticks out.

c. Belt partially cut
Belt is partially cut. Foreign objects caught in teeth other than cut part causes flaw.

d. Vertical line of belt teeth
Flaw which is made when the belt runs on the flange.

e. Rubber back of the belt is softened and sticky.

f. Crack on the back of the belt

⚠ 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.

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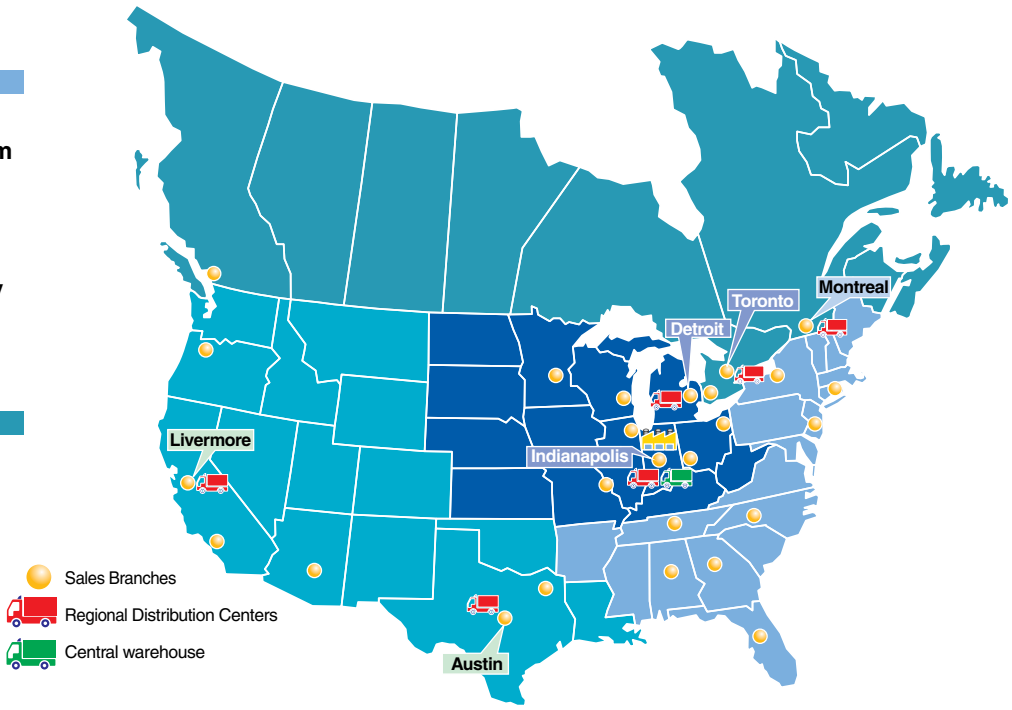

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