Slide Table/High Precision Type

In-line LESYH□D Series

Right/Left side parallel LESYH□$^{R}_{L}$ Series

Motorless Type

Slide Table/High Precision Type

LESYH Series

Model Selection 1

Selection Procedure

Positioning Control Selection Procedure

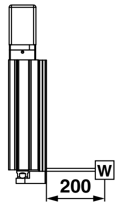
Step 1 **Check the work load–speed.** → **Step 2** **Check the cycle time.** → **Step 3** **Check the allowable moment.**

Selection Example

The model selection method shown below corresponds to SMC's standard motor. For use in combination with a motor from a different manufacturer, check the available product information of the motor to be used.

Operating conditions

- Workpiece mass: 1 [kg]
- Speed: 200 [mm/s]
- Mounting orientation: Vertical
- Stroke: 50 [mm]
- Acceleration/Deceleration: 3000 [mm/s^2]
- Cycle time: 0.5 s
- Workpiece mounting condition:



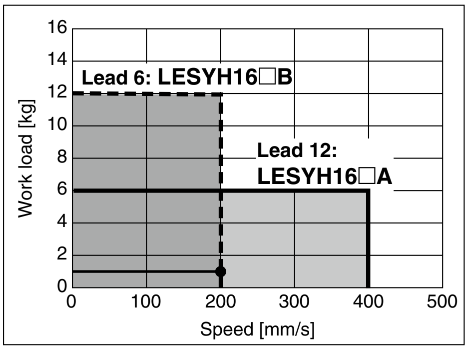
Step 1 **Check the work load–speed. <Speed–Work load graph>** (page 936-4)

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

Selection example) The **LESYH16□B-50** can be temporarily selected as a possible candidate based on the graph shown on the right side.

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

LESYH16□□/AC Servo Motor Vertical



<Speed–Work load graph>

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.

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

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

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

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

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

- T4: Settling time varies depending on the conditions such as motor types, load, and in position of the step data. Therefore, calculate the settling time while referencing the following value.

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

Calculation example)

T1 to T4 can be calculated as follows.

$T1 = V/a1 = 200/3000 = 0.07$ [s],

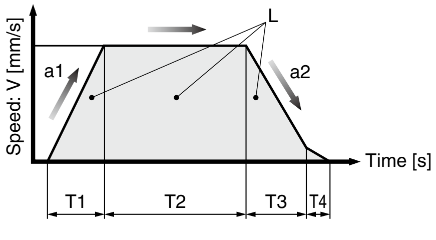
$T3 = V/a2 = 200/3000 = 0.07$ [s]

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{50 - 0.5 \cdot 200 \cdot (0.07 + 0.07)}{200} = 0.18 \text{ [s]}$$

$T4 = 0.15$ [s]

The cycle time can be found as follows.

$T = T1 + T2 + T3 + T4$
$= 0.07 + 0.18 + 0.07 + 0.15$
$= \mathbf{0.47}$ **[s]**



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

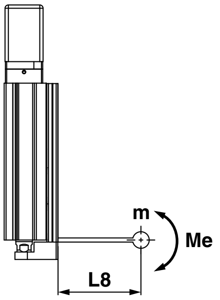
T1: Acceleration time [s] ··· Time until reaching the set speed
T2: Constant speed time [s] ··· Time while the actuator is operating at a constant speed
T3: Deceleration time [s] ··· Time from the beginning of the constant speed operation to stop
T4: Settling time [s] ··· Time until positioning is completed

Step 3 **Check the allowable moment.**

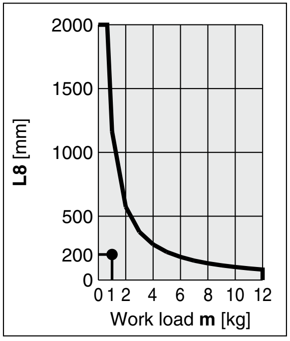
<Static allowable moment> (page 936-4)

<Dynamic allowable moment> (pages 936-5, 936-6)

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



LESYH16/Pitching



<Dynamic allowable moment>

Based on the above calculation result, the LESYH16□N□B-50 should be selected.

Selection Procedure

Force Control Selection Procedure

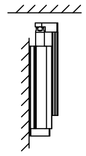
Step 1 **Check the required force.** → **Step 2** **Check the pushing force.** → **Step 3** **Check the allowable moment.**

Selection Example

The model selection method shown below corresponds to SMC's standard motor. For use in combination with a motor from a different manufacturer, check the available product information of the motor to be used.

Operating conditions

- Pushing force: 210 N
- Workpiece mass: 1 kg
- Speed: 100 mm/s
- Stroke: 100 mm
- Mounting position: Vertical upward
- Pushing time + Operation (A): 5 s
- Full cycle time (B): 10 s



Step 1 **Check the required force.**

Calculate the approximate required force for a pushing operation.
Selection example)
- Pushing force: 210 [N]
- Workpiece mass: 1 [kg]

The approximate required force can be found to be 210 + 10 = 220 [N].

Select a model based on the approximate required force while referencing the specifications (page 936-9).
Selection example based on the specifications)
- Approximate required force: 220 [N]
- Speed: 100 [mm/s]

The **LESYH16□B** can be temporarily selected as a possible candidate.

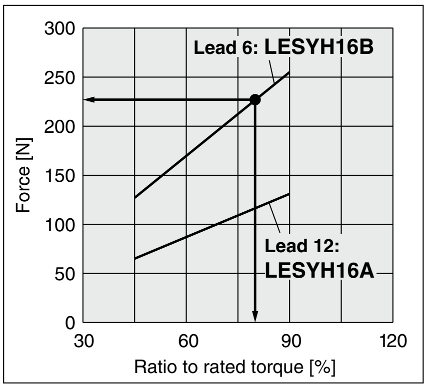
Then, calculate the required force for a pushing operation. If the mounting position is vertical upward, add the actuator table weight.
Selection example based on the table weight)
- **LESYH16□B** table weight: 0.7 [kg]

The required force can be found to be 220 + 7 = 227 [N].

Table Weight Unit [kg]

Model	Stroke [mm]		
	50	100	150
LESYH16	0.4	0.7	—
LESYH25	0.9	1.3	1.7

∗ If the mounting position is vertical upward, add the table weight.



<Force conversion graph>

Step 2 **Check the pushing force. <Force conversion graph>**

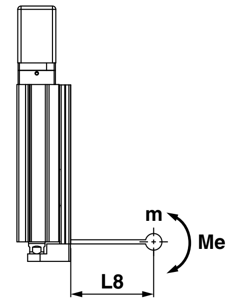
Select a model based on the ratio to rated torque and force while referencing the force conversion graph.

Selection example)
Based on the graph shown on the right side,
- Ratio to rated torque: 80 [%]
- Force: 227 [N]

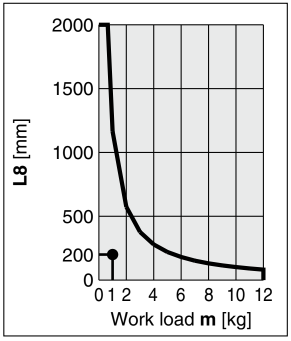
The **LESYH16B** can be temporarily selected as a possible candidate.

Step 3 **Check the allowable moment.**
<Static allowable moment> (page 936-4)
<Dynamic allowable moment> (pages 936-5, 936-6)

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



LESYH16/Pitching



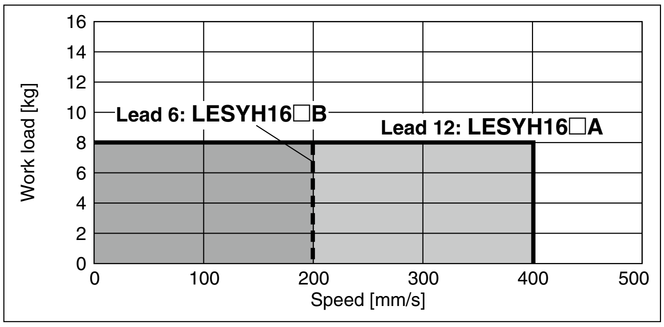
<Dynamic allowable moment>

Based on the above calculation result, the LESYH16B-100 should be selected.

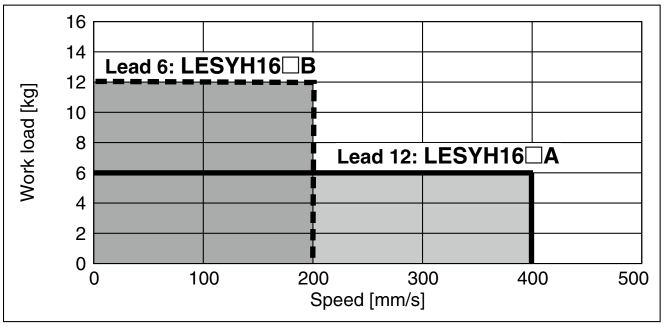
Speed–Work Load Graph (Guide)

LESYH16□

Horizontal

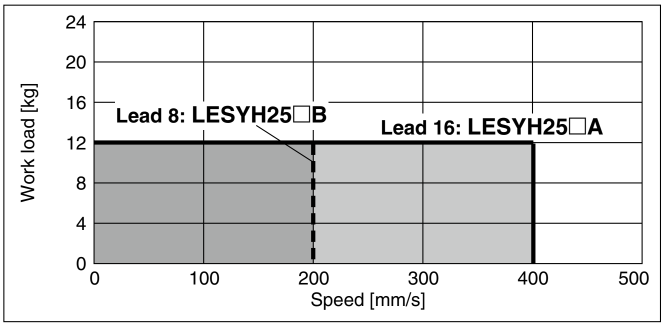


Vertical

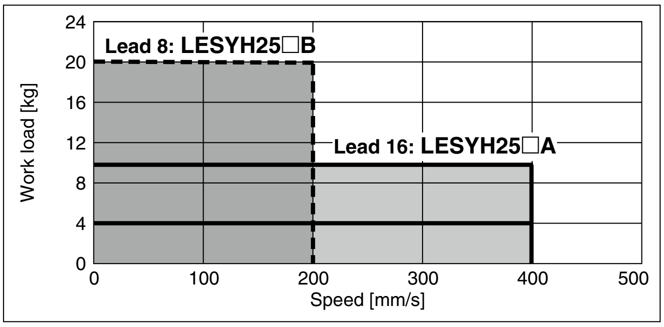


LESYH25□

Horizontal



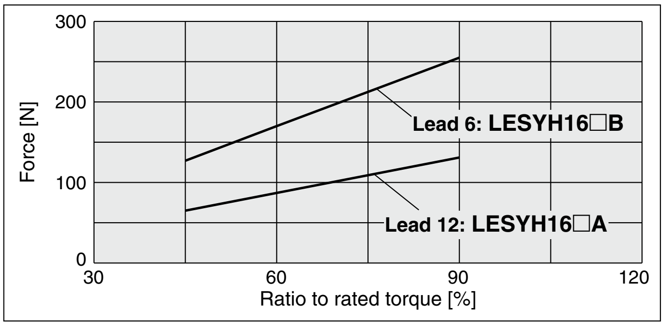
Vertical



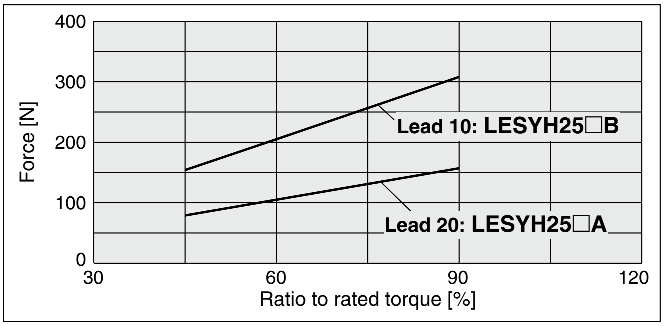
Force Conversion Graph (Guide)

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

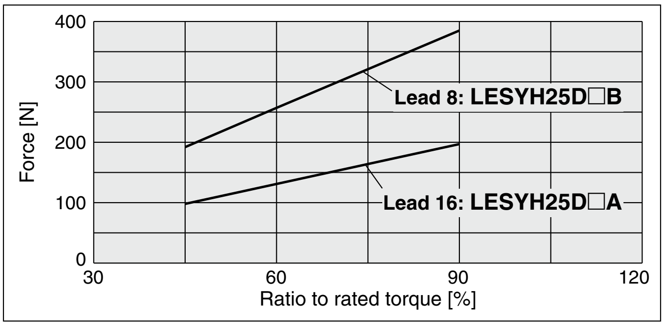
LESYH16□ (Motor mounting position: Parallel/In-line)



LESYH25□ (Motor mounting position: Parallel)



LESYH25D□ (Motor mounting position: In-line)



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

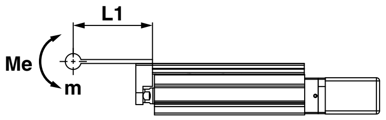
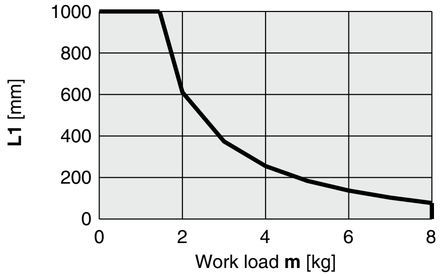
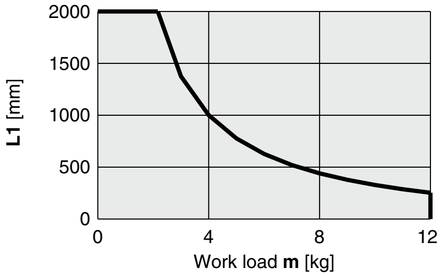
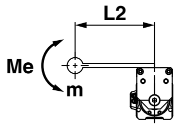
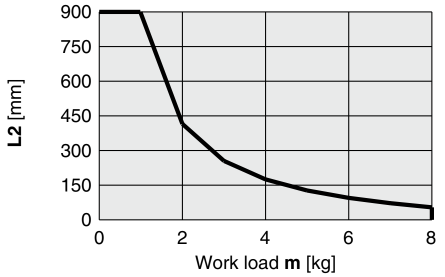
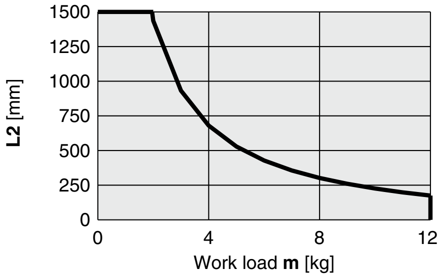
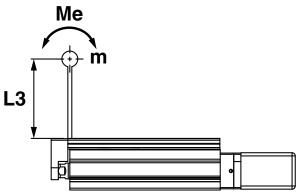
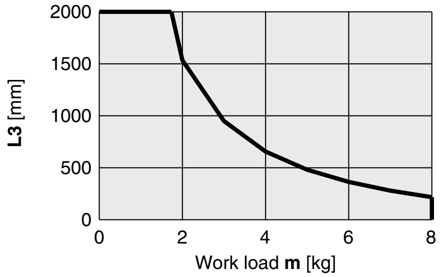
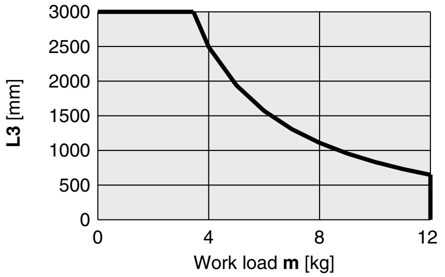
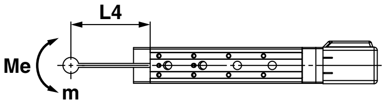
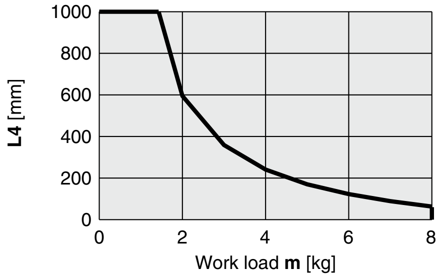
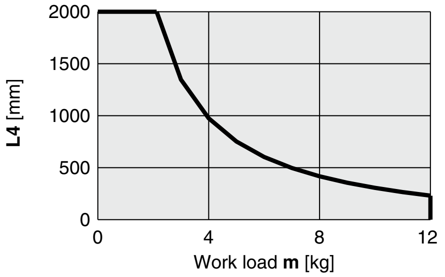
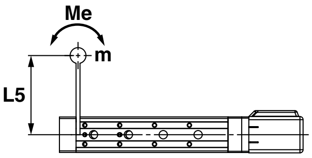
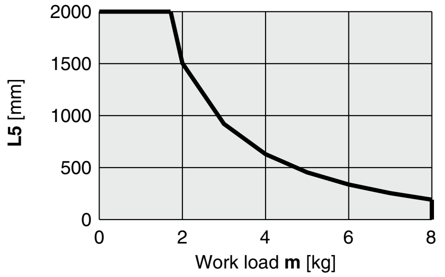
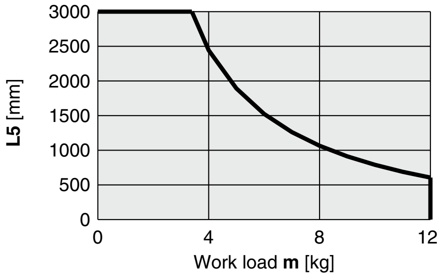
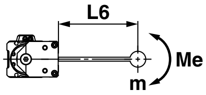
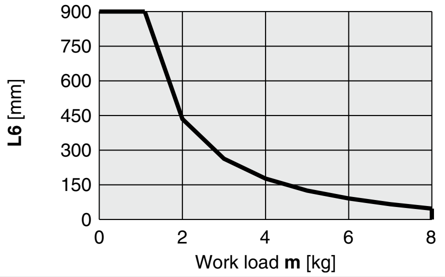
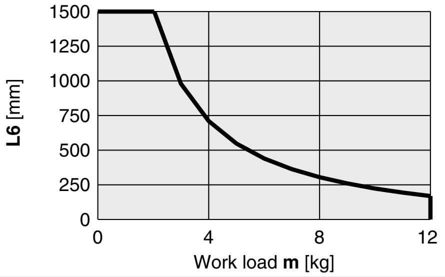
Static Allowable Moment

Model	LESYH16		LESYH25		
Stroke [mm]	**50**	**100**	**50**	**100**	**150**
Pitching [N·m]	26	43	77	112	155
Yawing [N·m]					
Rolling [N·m]	48		146	177	152

Dynamic Allowable Moment

＊ This graph shows the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the “Calculation of Guide Load Factor” or the Electric Actuator Model Selection Software for confirmation: https://www.smcworld.com

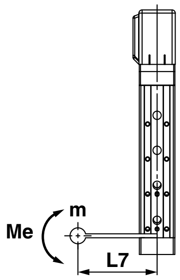
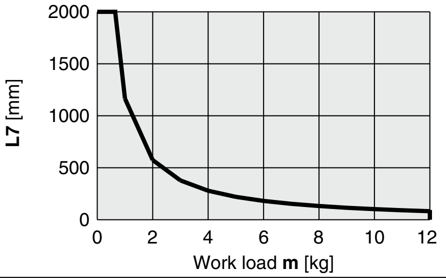
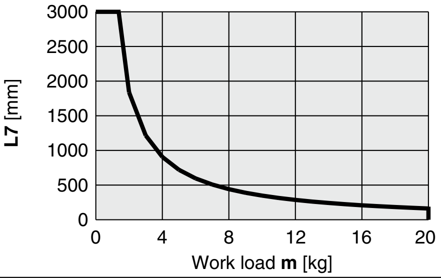
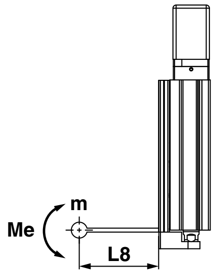
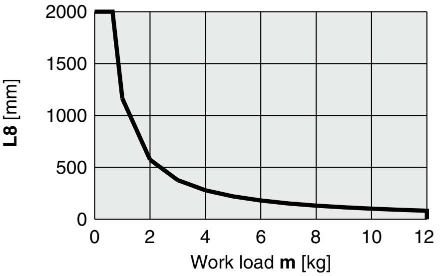
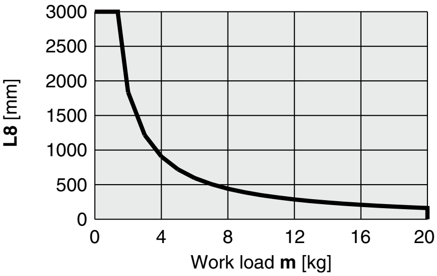
Acceleration/Deceleration ——5000 mm/s²

Orientation	**Load overhanging direction** **m**: Work load [kg] **Me**: Allowable moment [N·m] **L**: Overhang to the work load center of gravity [mm]		Model	
			LESYH16	**LESYH25**
Horizontal/Bottom		**X**		
		**Y**		
		**Z**		
Horizontal (Wall)		**X**		
		**Y**		
		**Z**		

Dynamic Allowable Moment

∗ This graph shows the amount of allowable overhang (guide unit) when the center of gravity of the workpiece overhangs in one direction. When selecting the overhang, refer to the “Calculation of Guide Load Factor” or the Electric Actuator Model Selection Software for confirmation: https://www.smcworld.com

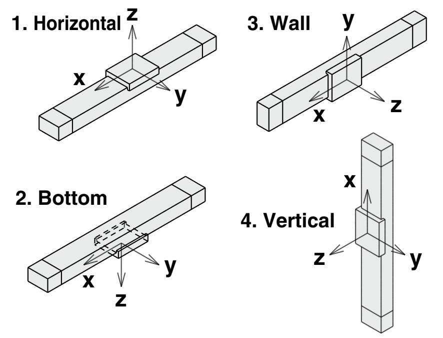
Acceleration/Deceleration —— 5000 mm/s^2

Orientation	**Load overhanging direction** **m**: Work load [kg] **Me**: Allowable moment [N·m] **L**: Overhang to the work load center of gravity [mm]		Model	
			LESYH16	**LESYH25**
Vertical		**Y**		
Vertical		**Z**		

Calculation of Guide Load Factor

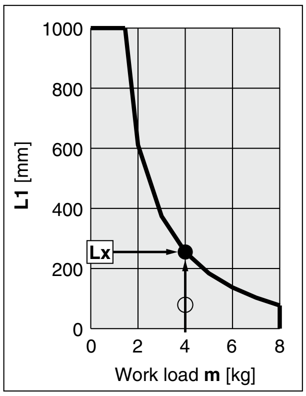
1. Decide operating conditions.
   Model: LESYH
   Size: 16
   Mounting orientation: Horizontal/Bottom/Wall/Vertical
   Acceleration [mm/s^2]: **a**
   Work load [kg]: **m**
   Work load center position [mm]: **Xc/Yc/Zc**
2. Select the target graph while referencing the model, size, and mounting orientation.
3. Based on the acceleration and work load, find the overhang [mm]: **Lx/Ly/Lz** from the graph.
4. Calculate the load factor for each direction.
   $\alpha x = Xc/Lx$, $\alpha y = Yc/Ly$, $\alpha z = Zc/Lz$
5. Confirm the total of αx, αy, and αz is 1 or less.
   $\alpha x + \alpha y + \alpha z \leq 1$
   When 1 is exceeded, consider a reduction of acceleration and work load, or a change of the work load center position and series.

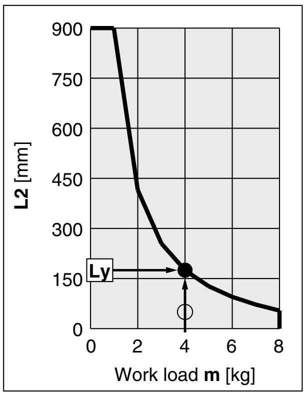
Mounting orientation



Example

1. Operating conditions
   Model: LESYH
   Size: 16
   Mounting orientation: Horizontal
   Acceleration [mm/s^2]: 5000
   Work load [kg]: 4.0
   Work load center position [mm]: **Xc = 80**, **Yc = 50**, **Zc = 60**
2. Select three graphs from the top of the first row on page 936-4.
3. **Lx = 250 mm**, **Ly = 160 mm**, **Lz = 700 mm**
4. The load factor for each direction can be found as follows.
   $\alpha x = 80/250 = 0.32$
   $\alpha y = 50/160 = 0.32$
   $\alpha z = 60/700 = 0.09$
5. $\alpha x + \alpha y + \alpha z = 0.73 \leq 1$





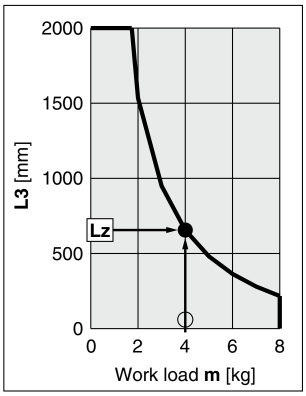
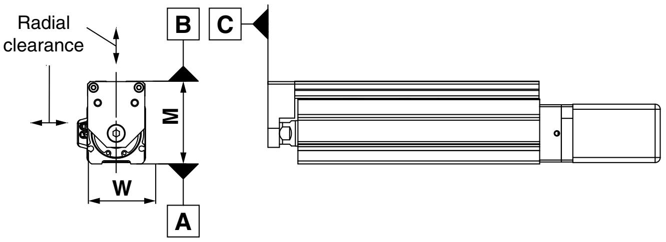


Table Accuracy

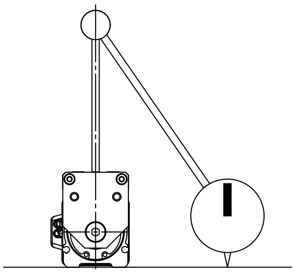
∗ These values are initial guideline values.



Model	LESYH16	LESYH25
B side parallelism to A side [mm]	Refer to Table 1.	
B side traveling parallelism to A side [mm]	Refer to Graph 1.	
C side perpendicularity to A side [mm]	0.05	
M dimension tolerance [mm]	±0.3	
W dimension tolerance [mm]	±0.2	
Radial clearance [µm]	−10 to 0	−14 to 0

Table 1 B side parallelism to A side

Model	Stroke [mm]		
	50	**100**	**150**
LESYH16	0.05	0.08	—
LESYH25	0.06	0.08	0.125



Traveling parallelism:
The amount of deflection on a dial gauge when the table travels a full stroke with the body secured on a reference base surface

Graph 1 B side traveling parallelism to A side

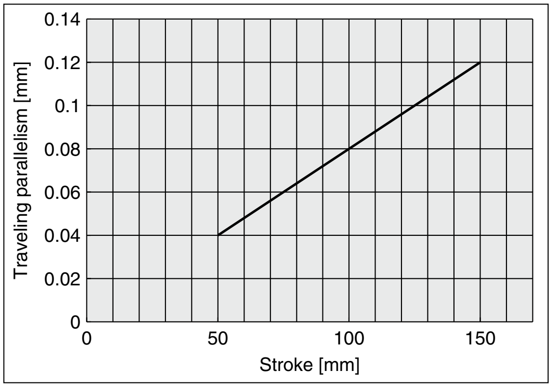
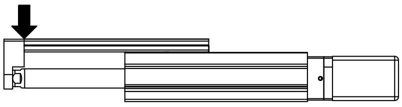


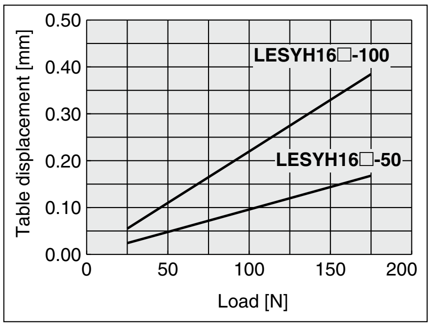
Table Deflection (Reference Value)

∗ These values are initial guideline values.

Table displacement due to pitch moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.



LESYH16



LESYH25

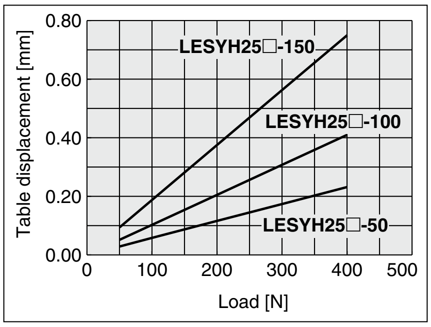
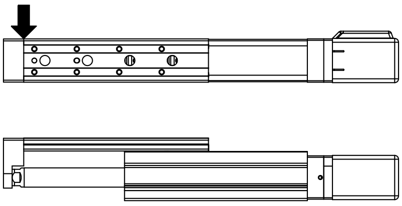
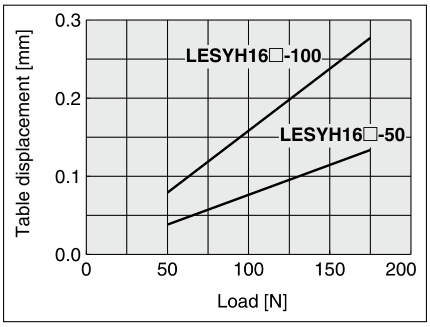


Table displacement due to yaw moment load
Table displacement when loads are applied to the section marked with the arrow with the slide table stuck out.



LESYH16



LESYH25

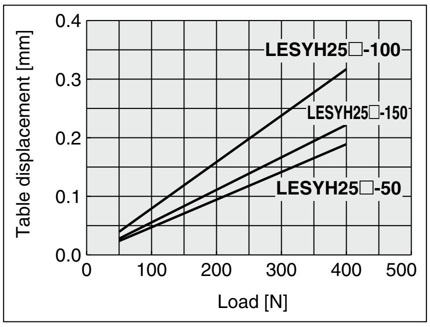
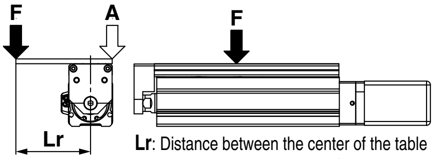


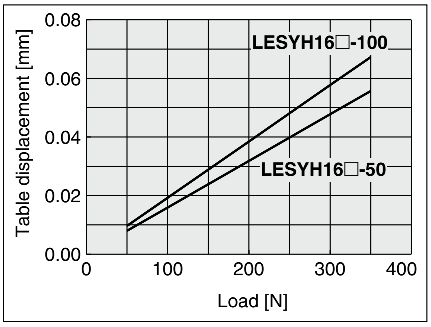
Table displacement due to roll moment load
Table displacement of section A when loads are applied to the section F with the slide table retracted.



Lr: Distance between the center of the table and the work load center of gravity

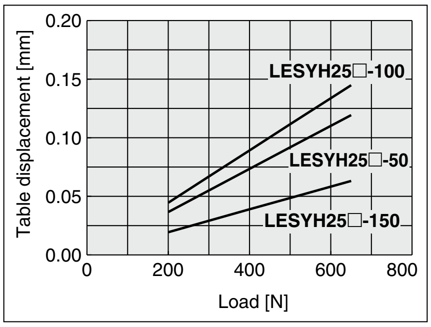
LESYH16

Lr = 120 mm



LESYH25

Lr = 200 mm



Motorless Type

Slide Table/ High Precision Type

LESYH Series LESYH16, 25

RoHS

How to Order

LESYH 16 D NZ A − 50

❶ ❷ ❸ ❹ ❺

❶ Size

16
25

❷ Motor mounting position

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

❸ Mounting type

NZ	NU
NY	NT
NX	NM1
NW	NM2
NV	NM3

❹ Lead [mm]

	Size	
	16	25[∗1]
A	12	16 (20)
B	6	8 (10)

∗1 The values shown in ( ) are the leads for the right/left side parallel types. Except mounting type NM1 (Equivalent leads which include the pulley ratio [1.25:1])

❺ Stroke [mm]

	Size	
	16	25
50	●	●
100	●	●
150	—	●

Compatible Motors and Mounting Types

Applicable motor model		Size/Mounting type														
Manufacturer	Series	16						25								
		NZ	NY	NX	NM1	NM2	NM3	NZ	NY	NX	NW	NV	NU	NT	NM1	NM2
Mitsubishi Electric Corporation	MELSERVO JN/J4/J5	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
YASKAWA Electric Corporation	Σ-V/7	●[∗3]	—	—	—	—	—	●	—	—	—	—	—	—	—	—
SANYO DENKI CO., LTD.	SANMOTION R	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
OMRON Corporation	OMNUC G5/1S	●	—	—	—	—	—	—	●	—	—	—	—	—	—	—
Panasonic Corporation	MINAS A5/A6	● (MHMF only)	●	—	—	—	—	—	●	—	—	—	—	—	—	—
FANUC CORPORATION	βis (-B)	●	—	—	—	—	—	● (β1 only)	—	—	●	—	—	—	—	—
NIDEC SANKYO CORPORATION	S-FLAG	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
KEYENCE CORPORATION	SV/SV2	●[∗3]	—	—	—	—	—	●	—	—	—	—	—	—	—	—
FUJI ELECTRIC CO., LTD.	ALPHA7	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
MinebeaMitsumi Inc.	Hybrid stepping motors	—	—	—	●[∗1]	—	●[∗2]	—	—	—	—	—	—	—	●	—
Shinano Kenshi Co., Ltd.	CSB-BZ	—	—	—	●[∗1]	—	●[∗2]	—	—	—	—	—	—	—	—	—
ORIENTAL MOTOR Co., Ltd.	α STEP AR/AZ	—	—	—	—	● (46 only)	—	—	—	—	—	—	—	—	—	●
FASTECH Co., Ltd.	Ezi-SERVO	—	—	—	●	—	—	—	—	—	—	—	—	—	●	—
Rockwell Automation, Inc. (Allen-Bradley)	Kinetix MP/VP/TL	● (TL only)	—	—	—	—	—	—	—	●[∗1] (MP/VP only)	—	—	—	● (TL only)	—	—
Beckhoff Automation GmbH	AM 30/31/80/81	●	—	—	—	—	—	—	—	●[∗1] (80/81 only)	—	●[∗1] (30 only)	● (31 only)	—	—	—
Siemens AG	SIMOTICS S-1FK7	—	—	●	—	—	—	—	—	●[∗1]	—	—	—	—	—	—
Delta Electronics, Inc.	ASDA-A2	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
ANCA Motion	AMD2000	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—

∗1 Motor mounting position: In-line only ∗2 Motor mounting position: Parallel only

∗3 For some motors, the connector may protrude from the motor body. Be sure to check for interreference with the mounting surface before selecting a motor.

Specifications

Model			LESYH16		LESYH25 (Parallel)		LESYH25 (In-line)	
Actuator specifications	**Stroke [mm]**		50, 100		50, 100, 150			
	Work load [kg]	**Horizontal**[1]	8		12		12	
		Vertical	6	12	10	20	10	20
	Force [N][2] **(Set value: Rated torque 45 to 90%)**		65 to 131	127 to 255	79 to 157	154 to 308	98 to 197	192 to 385
	Max. speed [mm/s]		400	200	400	200	400	200
	Pushing speed [mm/s][3]		35 or less		30 or less			
	Max. acceleration/deceleration [mm/s²]		5000					
	Positioning repeatability [mm]		±0.01					
	Lost motion [mm][4]		0.1 or less					
	Ball screw specifications	**Thread size [mm]**	ø10		ø12			
		Lead [mm] (including pulley ratio)	12	6	16 (20)	8 (10)	16	8
		Shaft length [mm]	Stroke + 93.5		Stroke + 104.5			
	Impact/Vibration resistance [m/s²][5]		50/20					
	Actuation type		Ball screw + Belt (Parallel) Ball screw (In-line)		Ball screw + Belt [Pulley ratio 1.25:1]		Ball screw	
	Guide type		Linear guide (Circulating type)					
	Operating temperature range [°C]		5 to 40					
	Operating humidity range [%RH]		90 or less (No condensation)					
Other specifications[6]	**Actuation unit weight [kg]**	**50 st**	0.585		1.21			
		100 st	0.919		1.68			
		150 st	—		2.19			
	Other inertia [kg·cm²]		0.012 (LESYH16) 0.015 (LESYH16D)		0.035 (LESYH25) 0.061 (LESYH25D)			
	Friction coefficient		0.05					
	Mechanical efficiency		0.8					
Reference motor specifications	**Motor shape**		□40		□60			
	Motor type		AC servo motor					
	Rated output capacity [W]		100		200			
	Rated torque [N·m]		0.32		0.64			
	Rated rotation [rpm]		3000					

[1] This is the max. value of the horizontal work load. An external guide is necessary to support the load (Friction coefficient of guide: 0.1 or less). The actual work load changes according to the condition of the external guide. Confirm the load using the actual device.

[2] The force setting range for the force control (Speed control mode, Torque control mode)
The force changes according to the set value. Set it with reference to the "Force Conversion Graph (Guide)" on page 936-4.

[3] The allowable collision speed for collision with the workpiece

[4] A reference value for correcting errors in reciprocal operation

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

[6] Each value is only to be used as a guide to select a motor of the appropriate capacity.

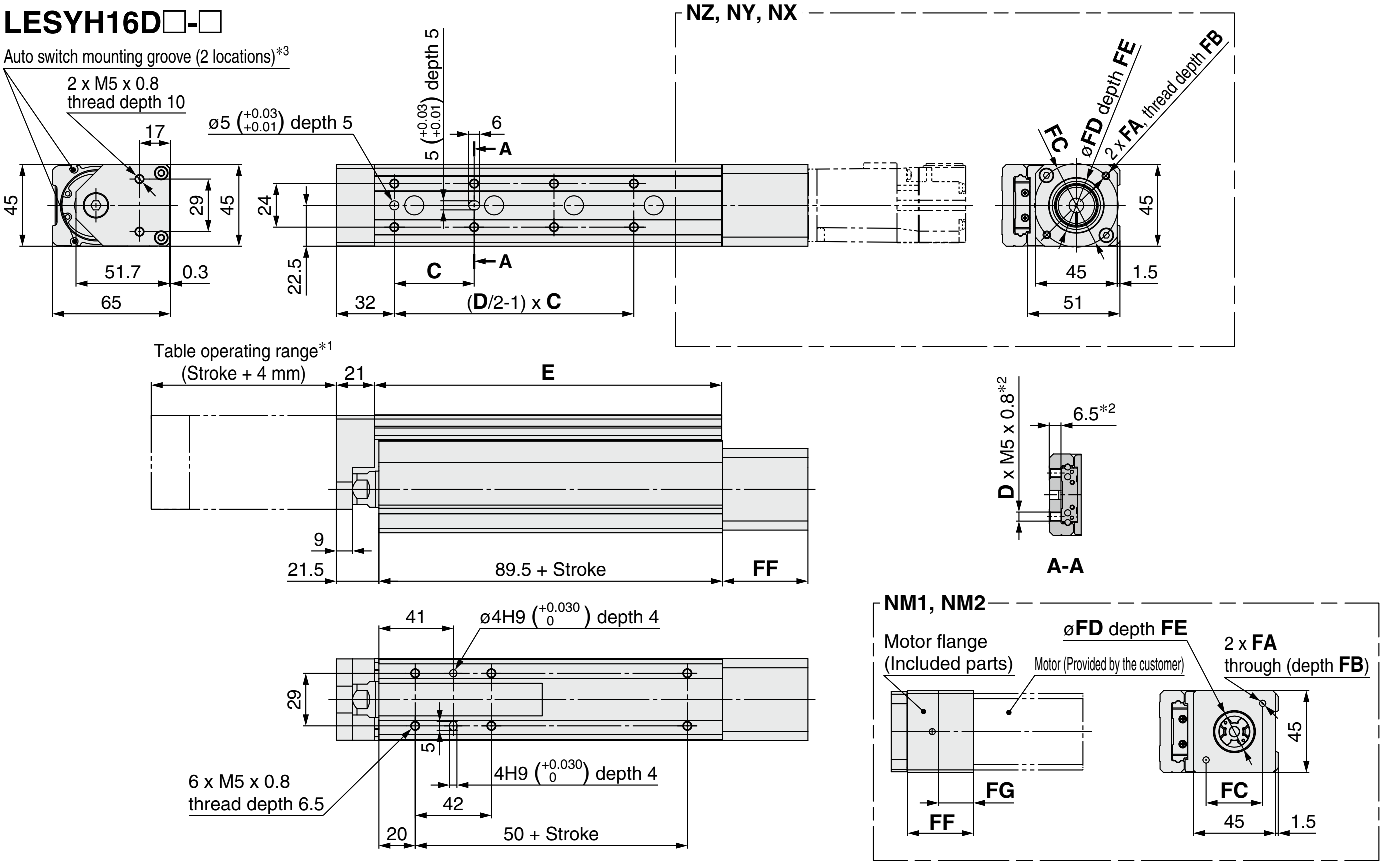
Weight

[kg]

Model	Stroke		
	50	**100**	**150**
LESYH16	1.48	1.87	—
LESYH25	2.77	3.37	4.77

Dimensions

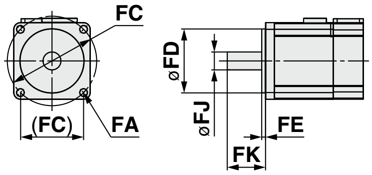
LESYH16D□-□



Dimensions [mm]

Model	Stroke	C	D	E
LESYH16□□-50	50	40	6	116.5
LESYH16□□-100	100	44	8	191.5

Applicable motor dimensions

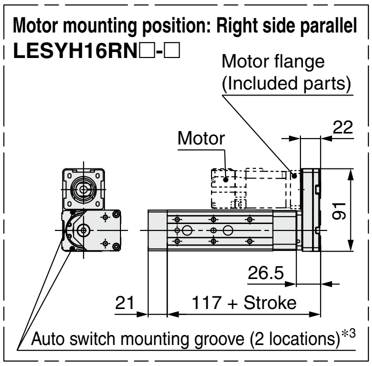


Motor Mounting Position: In-line/Motor Mounting, Applicable Motor Dimensions [mm]

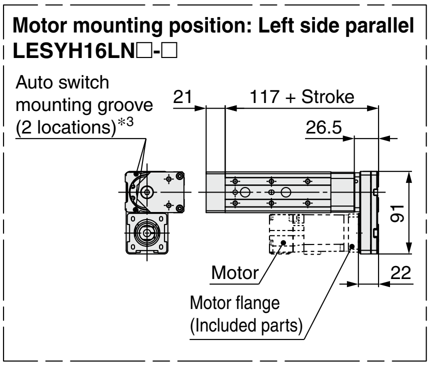
Size	Mounting type	FA		FB	FC	FD	FE (Max.)	FF	FG	FJ	FK
		Mounting type	Applicable motor								
LESYH16	NZ	M4 x 0.7	ø4.5	7.5	ø46	30	3.7	47	—	8	25 ±1
	NY	M3 x 0.5	ø3.4	6	ø45	30	4.2	47	—	8	25 ±1
	NX	M4 x 0.7	ø4.5	7.5	ø46	30	3.7	47	—	8	18 ±1
	NM1	ø3.4	M3	17	□31	22	2.5	36	19	5*2	18 to 25
	NM2	ø3.4	M3	28	□31	22*1	2.5*1	47	30	6*2	20 ±1

*1 Dimensions after mounting a ring spacer (Refer to page 936-13.) *2 Shaft type: D-cut shaft

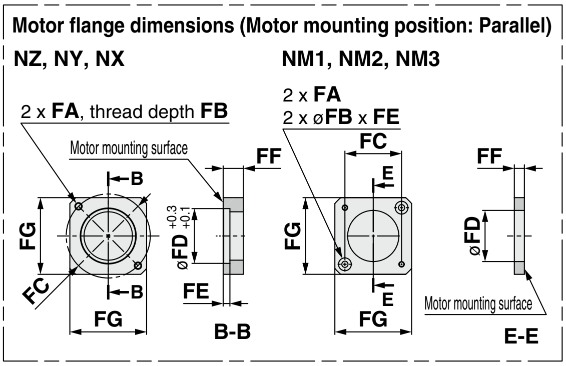
Motor mounting position: Right side parallel
LESYH16RN□-□



Motor mounting position: Left side parallel
LESYH16LN□-□



Motor flange dimensions (Motor mounting position: Parallel)



*1 Do not allow collisions at either end of the table operating range at a speed exceeding "pushing speed." Additionally, when running the positioning operation, do not set within 2 mm of both ends.
*2 If the workpiece retaining screws are too long, they may come in contact with the guide block, resulting in a malfunction. Use screws of a length equal to or shorter than the thread length.
*3 For checking the limit and the intermediate signal. Applicable to the D-M9□, D-M9□E, and D-M9□W (2-color indicator) The auto switches should be ordered separately.

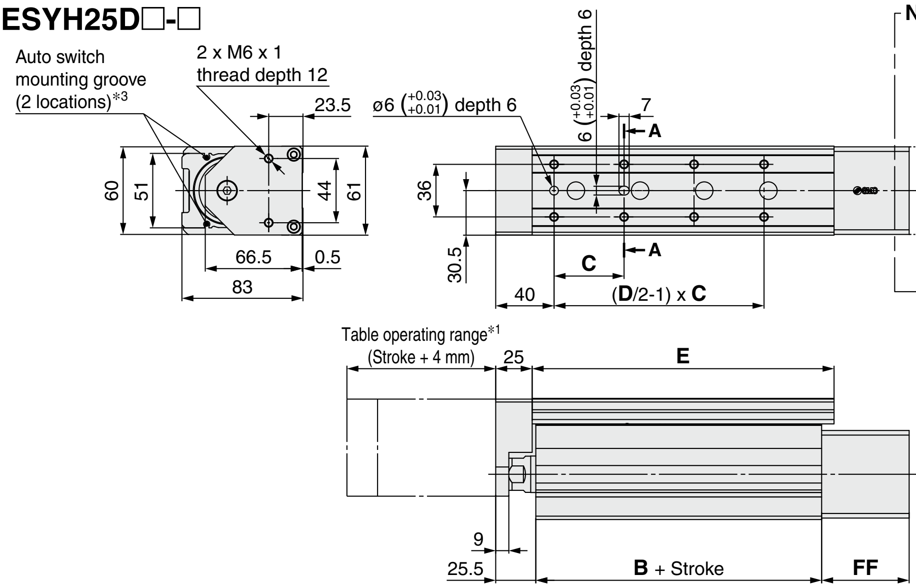
Motor Mounting Position: Parallel/Motor Mounting, Applicable Motor Dimensions [mm]

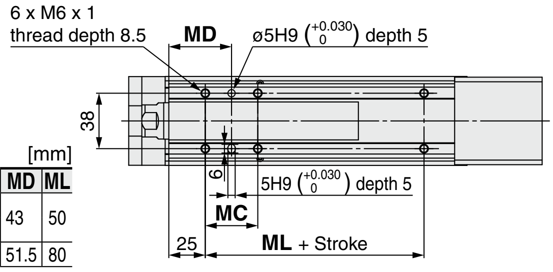
Size	Mounting type	FA		FB	FC	FD	FE (Max.)	FF	FG	FJ	FK
		Mounting type	Applicable motor								
LESYH16	NZ	M4 x 0.7	ø4.5	7.5	ø46	30	3.7	11	42	8	25 ±1
	NY	M3 x 0.5	ø3.4	5.5	ø45	30	5	11	38	8	25 ±1
	NX	M4 x 0.7	ø4.5	7	ø46	30	3.7	8	42	8	18 ±1
	NM1	ø3.4	M3	7	□31	28	3.5	8.5	42	5*1	18 to 25
	NM2	ø3.4	M3	7	□31	28	3.5	8.5	42	6	20 ±1
	NM3	ø3.4	M3	7	□31	28	3.5	5.5	42	5*1	20 ±1

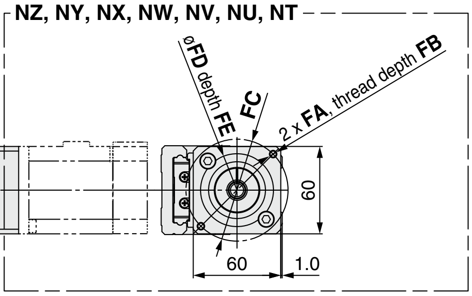
*1 Shaft type: D-cut shaft

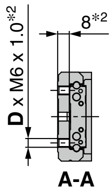
Dimensions

LESYH25D□-□

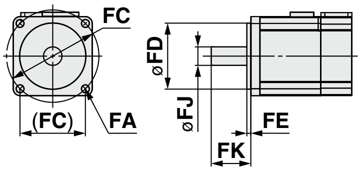




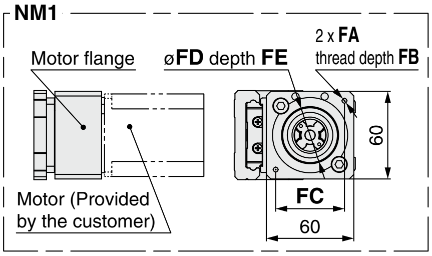




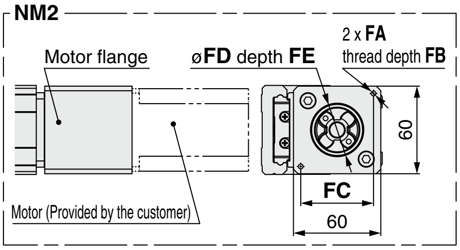
Applicable motor dimensions



NM1



NM2



Dimensions

[mm]

Model	Stroke	B	C	D	E	G	MC	MD	ML
LESYH25□□-50	50	96	75	4	143	131	36	43	50
LESYH25□□-100	100		48	8	207				
LESYH25□□-150	150	126	68		285	161	53	51.5	80

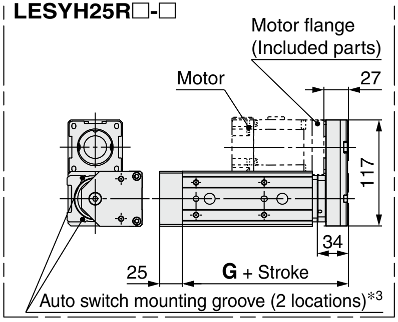
Motor Mounting Position: In-line/Motor Mounting, Applicable Motor Dimensions

[mm]

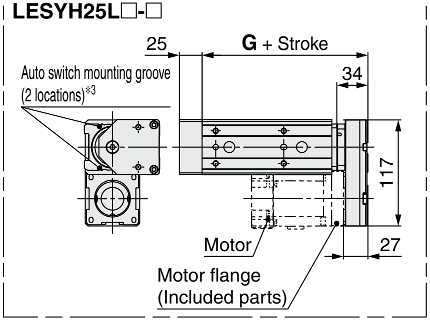
Size	Mounting type	FA		FB	FC	FD	FE (Max.)	FF	FJ	FK
		Mounting type	Applicable motor							
LESYH25	NZ	M5 x 0.8	ø5.8	8.5	ø70	50	3.3	60	14	30 ±1
	NY	M4 x 0.7	ø4.5	8	ø70	50	3.3	60	11	30 ±1
	NX	M5 x 0.8	ø5.8	8.5	ø63	40	3.5	63	9	20 ±1
	NW	M5 x 0.8	ø5.8	8.5	ø70	50	3.3	60	9	25 ±1
	NV	M4 x 0.7	ø4.5	8	ø63	40	3.3	63	9	20 ±1
	NU	M5 x 0.8	ø5.8	8.5	ø70	50	3.3	60	11	23 ±1
	NT	M5 x 0.8	ø5.8	8.5	ø70	50	3.3	60	12	30 ±1
	NM1	M4 x 0.7	ø4.5	9.5	□47.1	38.1	2	34	6.35*1	20 ±1
	NM2	M4 x 0.7	ø4.5	8	□50	36	3.3	60	10	24 ±1

*1 Shaft type: D-cut shaft

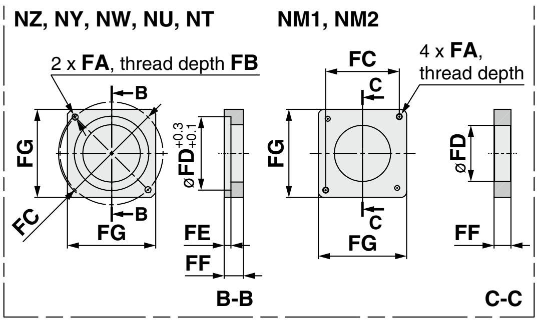
Motor mounting position: Right side parallel
LESYH25R□-□



Motor mounting position: Left side parallel
LESYH25L□-□



Motor flange dimensions (Motor mounting position: Parallel)



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*1 Do not allow collisions at either end of the table operating range at a speed exceeding “pushing speed.” Additionally, when running the positioning operation, do not set within 2 mm of both ends.

*2 If the workpiece retaining screws are too long, they may come in contact with the guide block, resulting in a malfunction. Use screws of a length equal to or shorter than the thread length.

*3 For checking the limit and the intermediate signal. Applicable to the D-M9□, D-M9□E, and D-M9□W (2-color indicator) The auto switches should be ordered separately. Refer to the **Web Catalog** for details.

Motor Mounting Position: Parallel/Motor Mounting, Applicable Motor Dimensions

[mm]

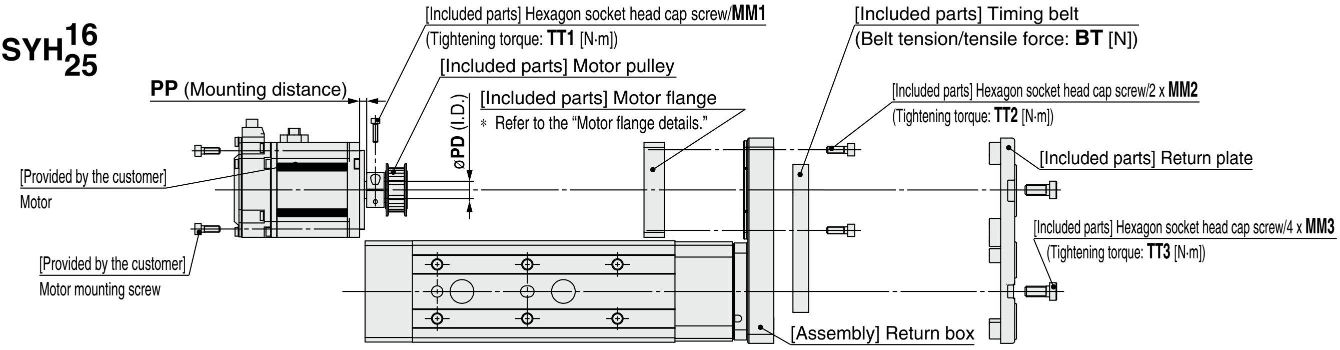
Size	Mounting type	FA		FB	FC	FD	FE (Max.)	FF	FJ	FK
		Mounting type	Applicable motor							
LESYH25	NZ	M5 x 0.8	ø5.8	8.5	ø70	50	4.6	13	14	30 ±1
	NY	M4 x 0.7	ø4.5	7	ø70	50	4.6	13	11	30 ±1
	NW	M5 x 0.8	ø5.8	8.5	ø70	50	4.6	13	9	25 ±1
	NU	M5 x 0.8	ø5.8	8.5	ø70	50	4.6	13	11	23 ±1
	NT	M5 x 0.8	ø5.8	8.5	ø70	50	4.6	17	12	30 ±1
	NM1	M4 x 0.7	ø4.5	(5)	□47.1	38.1	—	5	6.35*1	20 ±1
	NM2	M4 x 0.7	ø4.5	8	□50	38.1	—	11.5	10	24 ±1

*1 Shaft type: D-cut shaft

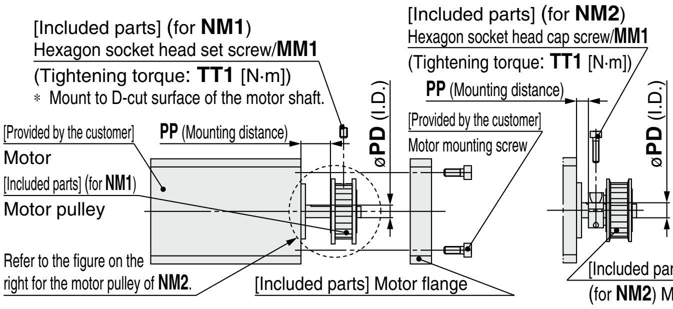
Motor Mounting: Parallel

- The motor and motor mounting screws should be provided by the customer.
- Motor shaft type should be cylindrical for the NZ, NY, NW, NM2 mounting types, and D-cut type for the NM1 and NM3 mounting type.
- When mounting a pulley, remove all oil content, dust, and dirt adhered to the shaft and the inside of the pulley.
- Take measures to prevent the loosening of the motor mounting screws and hexagon socket head set screws.

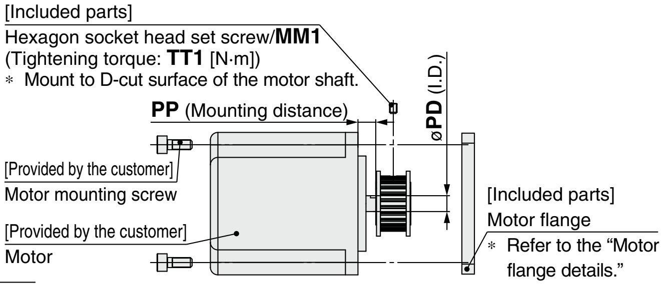
LESYH$^{16}_{25}$



LESYH16: NM1, NM2, NM3

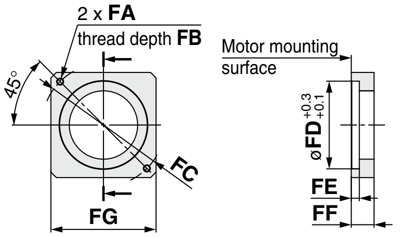


LESYH25: NM1

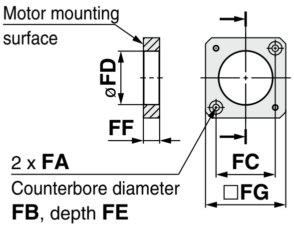


Motor flange details

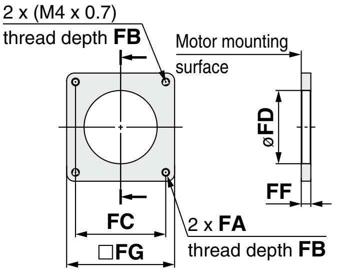
LESYH16: NZ, NY, NX
LESYH25: NZ, NY, NW, NU, NT



LESYH16: NM1, NM2, NM3



LESYH25: NM1, NM2



Dimensions

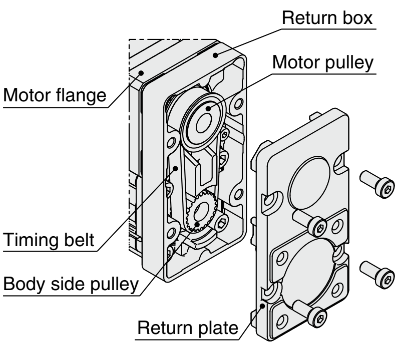
[mm]

Size	Mounting type	MM1	TT1	MM2	TT2	MM3	TT3	PD	PP	BT	FA	FB	FC	FD	FE	FF	FG
16	**NZ**	M2.5 x 10	1.0	M3 x 8	0.63	M4 x 10	1.5	8	7.5	19	M4 x 0.7	7.5	ø46	30	3.7	11	42
	NY	M2.5 x 10	1.0	M3 x 8	0.63	M4 x 10	1.5	8	7.5	19	M3 x 0.5	5.5	ø45	30	5	11	38
	NX	M2.5 x 10	1.0	M3 x 8	0.63	M4 x 10	1.5	8	4.5	19	M4 x 0.7	7	ø46	30	3.7	8	42
	NM1	M3 x 5	0.63	M3 x 8	0.63	M4 x 10	1.5	5	11.8	19	ø3.4	7	□31	28	3.5	8.5	42
	NM2	M2.5 x 10	1.0	M3 x 8	0.63	M4 x 10	1.5	6	4.8	19	ø3.4	7	□31	28	3.5	8.5	42
	NM3	M3 x 5	0.63	M3 x 8	0.63	M4 x 10	1.5	5	8.8	19	ø3.4	7	□31	28	3.5	5.5	42
25	**NZ**	M3 x 12	1.5	M4 x 12	1.5	M6 x 14	5.2	14	4.5	30	M5 x 0.8	8.5	ø70	50	4.6	13	60
	NY	M3 x 12	1.5	M4 x 12	1.5	M6 x 14	5.2	11	4.5	30	M4 x 0.7	7	ø70	50	4.6	13	60
	NW	M4 x 12	3.6	M4 x 12	1.5	M6 x 14	5.2	9	4.5	30	M5 x 0.8	8.5	ø70	50	4.6	13	60
	NU	M3 x 12	1.5	M4 x 12	1.5	M6 x 14	5.2	11	4.5	30	M5 x 0.8	8.5	ø70	50	4.6	13	60
	NT	M3 x 12	1.5	M4 x 12	1.5	M6 x 14	5.2	12	8.5	30	M5 x 0.8	8.5	ø70	50	4.6	17	60
	NM1	M3 x 5	0.63	M4 x 12	1.5	M6 x 14	5.2	6.35	8	30	M4 x 0.7	(5)	□47.1	38.2	—	5	56.4
	NM2	M3 x 12	1.5	M4 x 12	1.5	M6 x 14	5.2	10	3	30	M4 x 0.7	8	□50	38.2	—	11.5	60

Motor Mounting Diagram

Mounting procedure

1) Secure the motor pulley to the motor (provided by the customer) with the MM1 hexagon socket head cap screw or hexagon socket head set screw.
2) Secure the motor to the motor flange with the motor mounting screws (provided by the customer).
3) Put the timing belt on the motor pulley and body side pulley, and then secure 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) Secure the return plate with the MM3 hexagon socket head cap screws.



Included Parts List

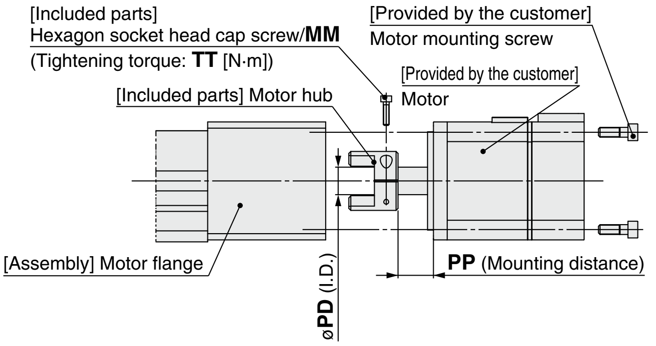
Size: 16, 25

Description	Quantity	
	Mounting type	
	NZ/NY/NW/NT/NM2	NM1/NM3
Motor flange	1	1
Motor pulley	1	1
Return plate	1	1
Timing belt	1	1
Hexagon socket head cap screw (to mount the return plate)	4	4
Hexagon socket head cap screw (to mount the motor flange)	2	2
Hexagon socket head cap screw (to secure the pulley)	1	—
Hexagon socket head set screw (to secure the pulley)	—	1

Motor Mounting: In-line

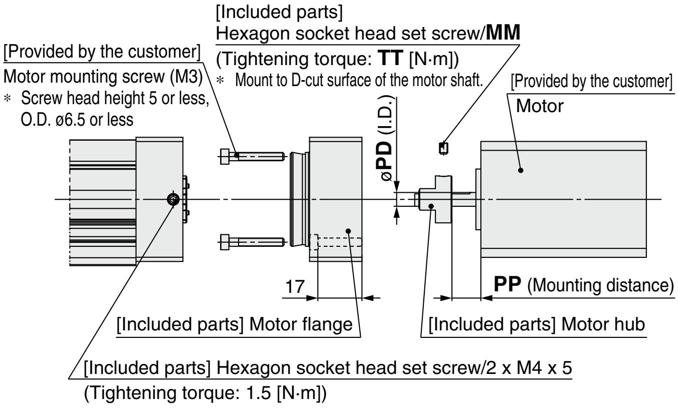
- The motor and motor mounting screws should be provided by the customer.
- Motor shaft type should be cylindrical for the NZ, NY, NX, NW, NM2 mounting types, and D-cut type for the NM1 mounting type.
- When mounting a hub, remove all oil content, dust, and dirt adhered to the shaft and the inside of the hub.
- Take measures to prevent the loosening of the motor mounting screws and hexagon socket head set screws.

LESYH$^{16}_{25}$D



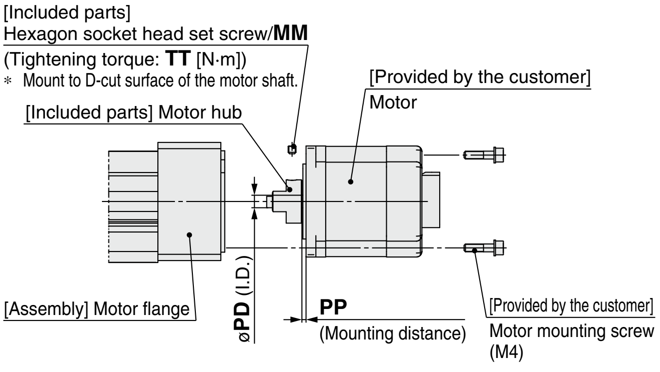
Mounting procedure
1) Secure the motor hub to the motor (provided by the customer) with the MM hexagon socket head cap screw.
2) Check the motor hub position, and then insert it. (Refer to the mounting diagram.)
3) Secure the motor to the motor flange with the motor mounting screws (provided by the customer).

LESYH16D: NM1



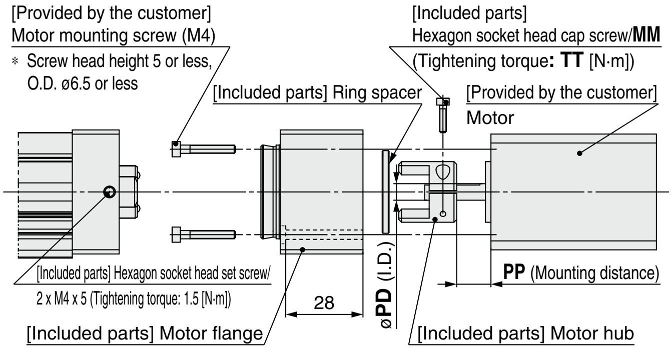
Mounting procedure
1) Secure the motor hub to the motor (provided by the customer) with the M3 x 4 hexagon socket head set screw.
2) Secure the motor to the motor flange with the motor mounting screws (provided by the customer).
3) Check the motor hub position, and then insert it. (Refer to the mounting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

LESYH25D: NM1



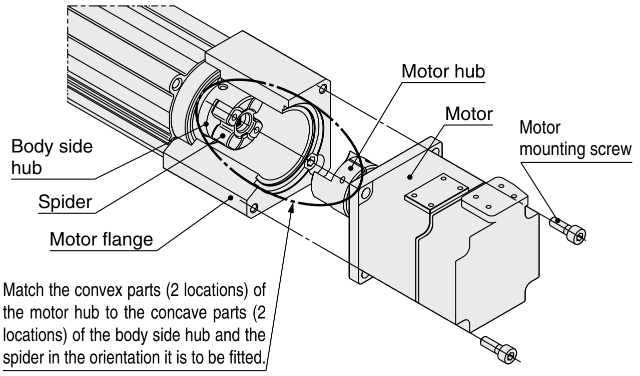
Mounting procedure
1) Secure the motor hub to the motor (provided by the customer) with the MM hexagon socket head set screw.
2) Check the motor hub position, and then insert it. (Refer to the mounting diagram.)
3) Secure the motor to the motor block with the motor mounting screws (provided by the customer).

LESYH16D: NM2



Mounting procedure
1) Insert the ring spacer into the motor (provided by the customer).
2) Secure the motor hub to the motor (provided by the customer) with the M2.5 x 10 hexagon socket head cap screw.
3) Secure the motor to the motor flange with the motor mounting screws (provided by the customer).
4) Check the motor hub position, and then insert it. (Refer to the mounting diagram.)
5) Secure the motor flange with the M4 x 5 hexagon socket head set screws.

Motor Mounting Diagram



Match the convex parts (2 locations) of the motor hub to the concave parts (2 locations) of the body side hub and the spider in the orientation it is to be fitted.

Dimensions

[mm]

Size	Mounting type	MM	TT	PD	PP
16	**NZ**	M2.5 x 10	1.0	8	12.5
	NY	M2.5 x 10	1.0	8	12.5
	NX	M2.5 x 10	1.0	8	7
	NM1	M3 x 5	0.63	5	10.5
	NM2	M2.5 x 10	1.0	6	12.4
25	**NZ**	M3 x 12	1.5	14	18
	NY	M4 x 12	3.6	11	18
	NX	M4 x 12	3.6	9	5
	NW	M4 x 12	3.6	9	12
	NV	M4 x 12	3.6	9	5
	NU	M4 x 12	3.6	11	12
	NT	M3 x 12	1.5	12	18
	NM1	M4 x 5	1.5	6.35	2.1
	NM2	M4 x 12	3.6	10	12

Included Parts List

Size: 16

Description	Quantity		
	Mounting type		
	NZ/NY/NX	NM1	NM2
Motor hub	1	1	1
Hexagon socket head cap screw (to secure the hub)	1	—	1
Motor flange	—	1	1
Hexagon socket head set screw (to secure the hub)	—	1	—
Hexagon socket head set screw (to secure the motor flange)		2	2
Ring spacer	—	—	1

Size: 25

Description	Quantity	
	Mounting type	
	NZ/NY/NX/NW/NV/NU/NT/NM2	NM1
Motor hub	1	1
Hexagon socket head cap screw (to secure the hub)	1	—
Hexagon socket head set screw (to secure the hub)	—	1

LESYH Series
Motor Mounting Parts

Motor Flange Option

A motor can be added to the motorless specification after purchase. The applicable mounting types are shown below. (Excludes options “NM1” and “NM3”)
Use the following part numbers to select a compatible motor flange option and place an order.

How to Order

LEY-MF 25 P - NZ

❶ ❷ ❸

❶ Size

25	For the LESYH16
32	For the LESYH25

∗ Please note that the size in the model number is different from the actuator size.

❷ Motor mounting position

P	Parallel
D	In-line

❸ Mounting type

NZ	**NV**
NY	**NU**
NX	**NT**
NW	**NM2**

Compatible Motors and Mounting Types

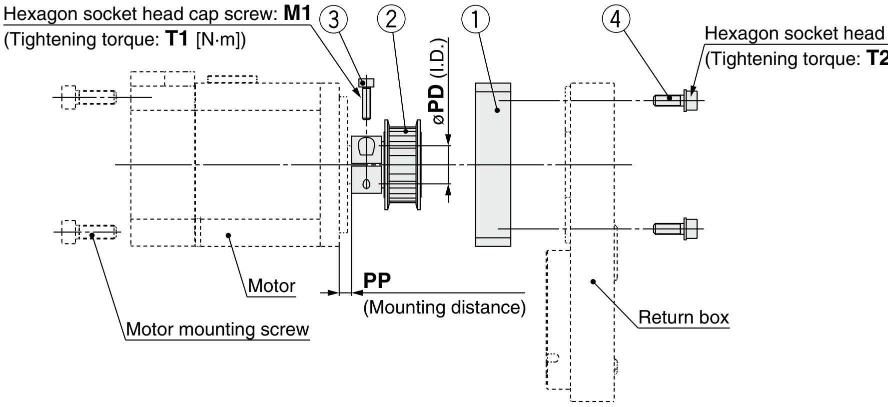
Applicable motor model		Actuator/Mounting type														
Manufacturer	Series	16						25								
		NZ	NY	NX	NM1	NM2	NM3	NZ	NY	NX	NW	NV	NU	NT	NM1	NM2
Mitsubishi Electric Corporation	MELSERVO JN/J4/J5	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
YASKAWA Electric Corporation	Σ-V/7	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
SANYO DENKI CO., LTD.	SANMOTION R	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
OMRON Corporation	OMNUC G5/1S	●	—	—	—	—	—	—	●	—	—	—	—	—	—	—
Panasonic Corporation	MINAS A5/A6	●	●	—	—	—	—	—	●	—	—	—	—	—	—	—
FANUC CORPORATION	βis (-B)	●	—	—	—	—	—	● (β1 only)	—	—	●	—	—	—	—	—
NIDEC SANKYO CORPORATION	S-FLAG	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
KEYENCE CORPORATION	SV/SV2	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
FUJI ELECTRIC CO., LTD.	ALPHA7	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
MinebeaMitsumi Inc.	Hybrid stepping motors	—	—	—	●	—	●	—	—	—	—	—	—	—	●	—
Shinano Kenshi Co., Ltd.	CSB-BZ	—	—	—	●	—	●	—	—	—	—	—	—	—	—	—
ORIENTAL MOTOR Co., Ltd.	α STEP AR/AZ	—	—	—	—	●	—	—	—	—	—	—	—	—	—	●
FASTECH Co., Ltd.	Ezi-SERVO	—	—	—	●	—	—	—	—	—	—	—	—	—	●	—
Rockwell Automation, Inc. (Allen-Bradley)	Kinetix MP/VP/TL	●	—	—	—	—	—	—	—	●∗1 (MP/VP only)	—	—	—	●	—	—
Beckhoff Automation GmbH	AM 30/31/80/81	●	—	—	—	—	—	—	—	●∗1 (80/81 only)	—	●∗1	●	—	—	—
Siemens AG	SIMOTICS S-1FK7	—	—	●	—	—	—	—	—	●∗1	—	—	—	—	—	—
Delta Electronics, Inc.	ASDA-A2	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—
ANCA Motion	AMD2000	●	—	—	—	—	—	●	—	—	—	—	—	—	—	—

∗ When the LESYH$_{25}^{16}$□$_{NM3}^{NM1}$□-□ is purchased, it is not possible to change to other mounting types.

∗1 Motor mounting position: In-line only

Dimensions: Motor Flange Option

Motor mounting position: Parallel

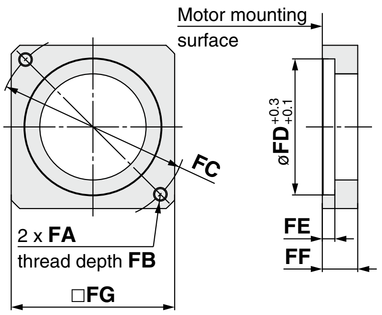


Component Parts

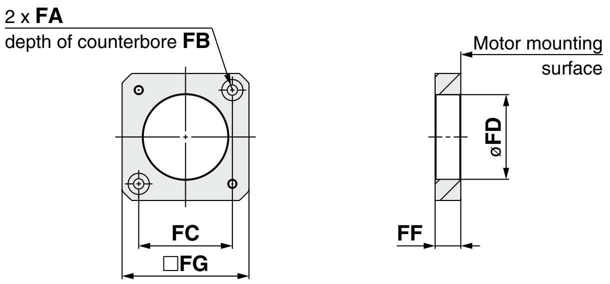
No.	Description	Quantity
1	**Motor flange**	1
2	**Motor pulley**	1
3	**Hexagon socket head cap screw (to secure the pulley)**	1
4	**Hexagon socket head cap screw (to mount the motor flange)**	2

Motor flange details

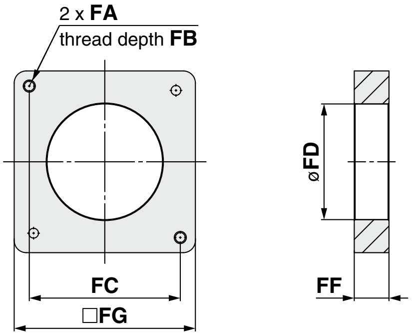
Size: 25, 32



Size 25: NM2



Size 32: NM2



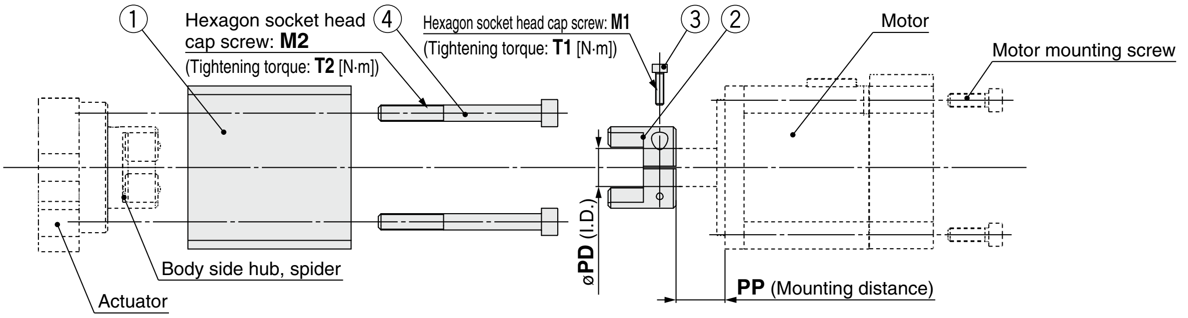
Dimensions

[mm]

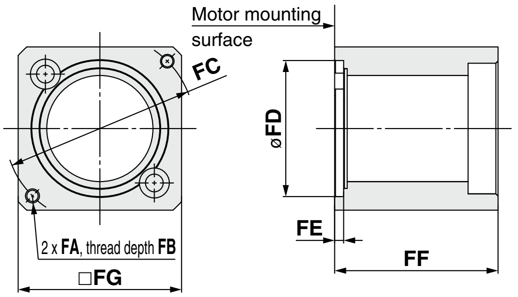
Size	Mounting type	FA	FB	FC	FD	FE	FF	FG	M1	T1	M2	T2	PD	PP
25 (LESYH16)	**NZ**	M4 x 0.7	7.5	ø46	30	3.7	11	42	M2.5 x 10	1.0	M3 x 8	0.63	8	7.5
	NY	M3 x 0.5	5.5	ø45	30	5	11	42	M2.5 x 10	1.0	M3 x 8	0.63	8	7.5
	NX	M4 x 0.7	7	ø46	30	3.7	8	42	M2.5 x 10	1.0	M3 x 8	0.63	8	4.5
	NM2	ø3.4	7	□31	30	3.7	8.5	42	M2.5 x 10	1.0	M3 x 8	0.63	6	4.8
32 (LESYH25)	**NZ**	M5 x 0.8	8.5	ø70	50	4.6	13	60	M3 x 12	1.5	M4 x 12	1.5	14	4.5
	NY	M4 x 0.7	7	ø70	50	4.6	13	60	M3 x 12	1.5	M4 x 12	1.5	11	4.5
	NW	M5 x 0.8	8.5	ø70	50	4.6	13	60	M4 x 12	3.6	M4 x 12	1.5	9	4.5
	NU	M5 x 0.8	8.5	ø70	50	4.6	13	60	M3 x 12	1.5	M4 x 12	1.5	11	4.5
	NT	M5 x 0.8	8.5	ø70	50	4.6	17	60	M3 x 12	1.5	M4 x 12	1.5	12	8.5
	NM2	M4 x 0.7	8	□50	38.2	—	11.5	60	M3 x 12	1.5	M4 x 12	1.5	10	3

Dimensions: Motor Flange Option

Motor mounting position: In-line



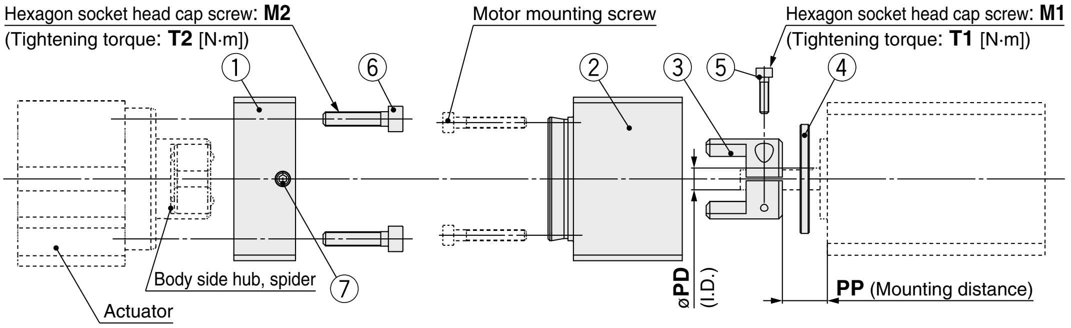
Motor flange details



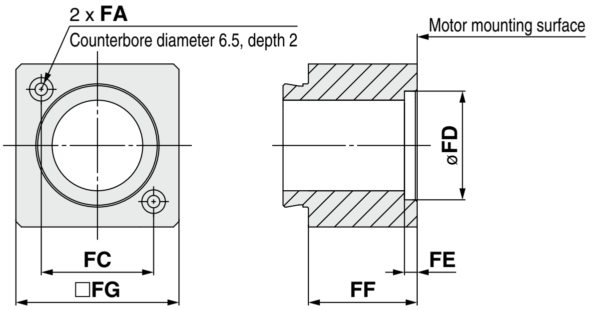
Component Parts

No.	Description	Quantity
1	**Motor flange**	1
2	**Motor hub**	1
3	**Hexagon socket head cap screw (to secure the hub)**	1
4	**Hexagon socket head cap screw (to mount the motor block)**	2

Size: 25, Mounting type: NM2



Motor flange B details



Component Parts

No.	Description	Quantity
1	**Motor flange A**	1
2	**Motor flange B**	1
3	**Motor hub**	1
4	**Ring spacer**	1
5	**Hexagon socket head cap screw (to secure the hub)**	1
6	**Hexagon socket head cap screw (to mount the motor flange A)**	2
7	**Hexagon socket head set screw (to secure the motor flange B)**	2

Dimensions

[mm]

Size	Mounting type	FA	FB	FC	FD	FE	FF	FG	M1	T1	M2	T2	PD	PP
25 (LESYH16)	**NZ**	M4 x 0.7	7.5	ø46	30	3.7	47	45	M2.5 x 10	1.0	M4 x 40	1.5	8	12.5
	NY	M3 x 0.5	6	ø45	30	4.2	47	45	M2.5 x 10	1.0	M4 x 40	1.5	8	12.5
	NX	M4 x 0.7	7.5	ø46	30	3.7	47	45	M2.5 x 10	1.0	M4 x 40	1.5	8	7
	NM2	ø3.4	28	□31	22	2.5	30	45	M2.5 x 10	1.0	M4 x 40	1.5	6	12.4
32 (LESYH25)	**NZ**	M5 x 0.8	8.5	ø70	50	3.3	60	60	M3 x 12	1.5	M6 x 60	5.2	14	18
	NY	M4 x 0.7	8	ø70	50	3.3	60	60	M4 x 12	3.6	M6 x 60	5.2	11	18
	NX	M5 x 0.8	8.5	ø63	40	3.5	63	60	M4 x 12	3.6	M6 x 60	5.2	9	5
	NW	M5 x 0.8	8.5	ø70	50	3.3	60	60	M4 x 12	3.6	M6 x 60	5.2	9	12
	NV	M4 x 0.7	8	ø63	40	3.3	63	60	M4 x 12	3.6	M6 x 60	5.2	9	5
	NU	M5 x 0.8	8.5	ø70	50	3.3	60	60	M4 x 12	3.6	M6 x 60	5.2	11	12
	NT	M5 x 0.8	8.5	ø70	50	3.3	60	60	M3 x 12	1.5	M6 x 60	5.2	12	18
	NM2	M4 x 0.7	8	□50	36	3.3	60	60	M4 x 12	3.6	M6 x 60	5.2	10	12