●ISO Class 4*1 (ISO14644-1)

- Built-in vacuum piping
- Possible to mount the main body without removing the external cover etc.
- Body-integrated linear guide specification

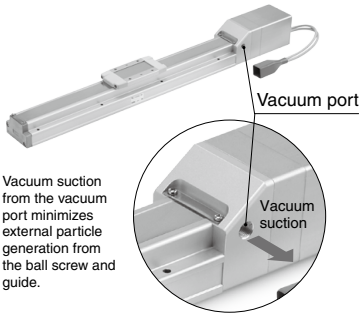
*1 Changes depending on the suction flow rate.

Slider Type Ball Screw Drive/*11-LEFS Series*

Step Motor (Servo/24 VDC) Servo Motor (24 VDC) **Type**

Page 514

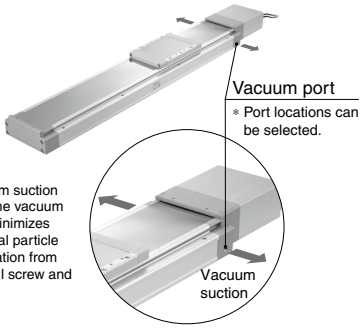
AC Servo Motor **Type** Page 522



Vacuum suction from the vacuum port minimizes external particle generation from the ball screw and guide.

High Rigidity Slider Type Ball Screw Drive/*11-LEJS Series*

AC Servo Motor **Type** Page 533



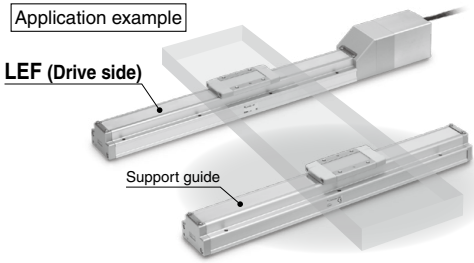
Vacuum suction from the vacuum port minimizes external particle generation from the ball screw and guide.

Support Guide/*11-LEFG Series* Page 527

A support guide is designed to support workpieces with significant overhang.

- As the dimensions are the same as the LEF series body, installation is simple and contributes to a reduction in installation and assembly labor.
- The standard equipped seal bands prevent grease from splashing and external foreign matter from entering.

Application example



⚠Caution

After installing the actuator on the drive side, perform the alignment of the support guide. However, when the mounting flatness exceeds 0.1, install a floating mechanism separately on the workpiece installation surface (table).

Model Selection

LEJS Series ▶ Page 132 LEJB Series ▶ Page 137 11-LEJS Series ▶ Page 533

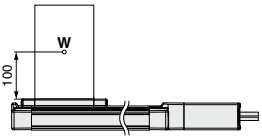
Selection Procedure

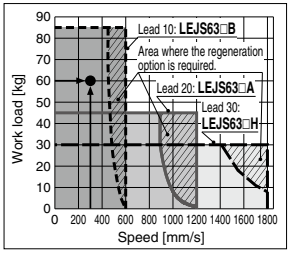
Step 1 Check the speed–work load. → **Step 2** Check the cycle time. → **Step 3** Check the allowable moment.

Selection Example

Operating conditions

- Work load: 60 [kg]
- Speed: 300 [mm/s]
- Acceleration/Deceleration: 3000 [mm/s²]
- Stroke: 300 [mm]
- Mounting orientation: Horizontal
- Motor type: Incremental encoder
- External force: 10 [N]
- Workpiece mounting condition:





<Speed–Work load graph> (LEJS63)

Step 1 Check the speed–work load.

Select the product by referring to "Speed-Work Load Graph" (Page 121).
Selection example) The **LEJS63S3B-300** is temporarily selected based on the graph shown on the right side.

The regeneration option may be necessary.
Refer to page 121 for "Required Conditions for Regeneration Option".

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 122)

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. Check that they do not exceed the upper limit, by referring to "Work load–Acceleration/Deceleration Graph (Guide)" (Pages 124 to 126).
For the ball screw type, there is an upper limit of the speed depending on the stroke. Check that if it does not exceed the upper limit, by referring to the specifications (Page 133).

- 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]

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

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

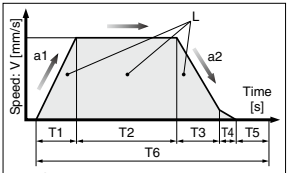
$T3 = V/a2 = 300/3000 = 0.1$ [s]

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

$T4 = 0.05$ [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/s²]
a2: Deceleration [mm/s²]

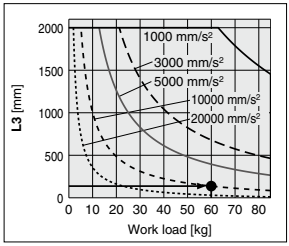
T1: Acceleration time [s]
Time until reaching the set speed
T2: Constant speed time [s]
Time while the actuator is operating at a constant speed
T3: Deceleration time [s]
Time from the beginning of the constant speed operation to stop
T4: Settling time [s]
Time until positioning is completed
T5: Resting 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 "Dynamic Allowable Moment" graphs (Pages 127 and 128).

Selection example) Select the **LEJS63S3B-300** from the graph on the right side.
Confirm that the external force is 20 [N] or less.
(The external force is the resistance due to cable duct, flexible trunking or air tubing.)

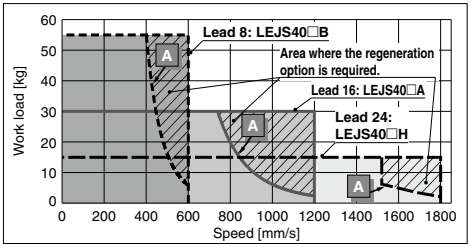


<Dynamic allowable moment> (LEJS63)

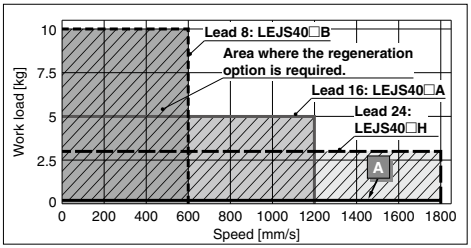
Speed–Work Load Graph/Required Conditions for "Regeneration Option"(Guide)

LEJS40/Ball Screw Drive

Horizontal

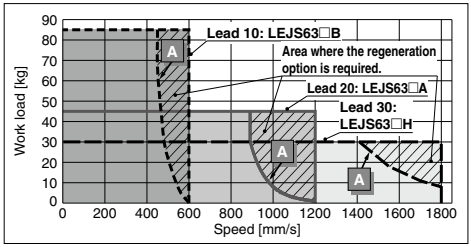


Vertical

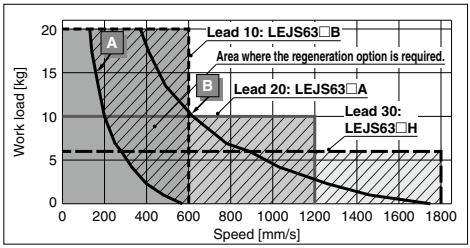


LEJS63/Ball Screw Drive

Horizontal

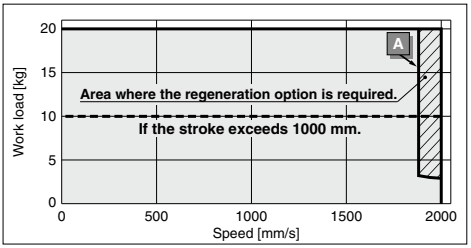


Vertical



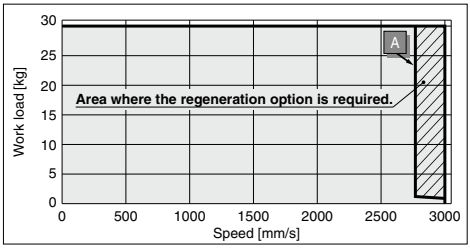
LEJB40/Belt Drive

Horizontal



LEJB63/Belt Drive

Horizontal



∗ When the stroke of the LEJB40 series exceeds 1000 mm, the work load is 10 kg.

Required conditions for "Regeneration option"

∗ Regeneration option is required when using product above regeneration line in graph. (Order separately.)

"Regeneration Option" Models

Operating condition	Regenerative condition	Regeneration option
A	Duty ratio 100%	LEC-MR-RB-032
B		LEC-MR-RB-12

Allowable Stroke Speed

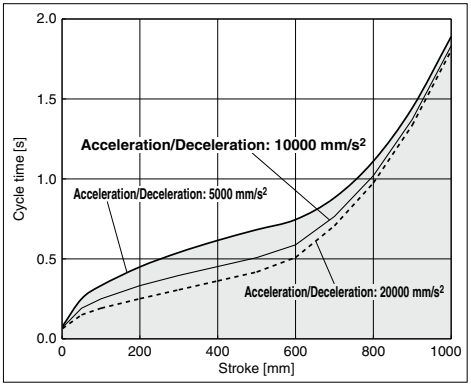
[mm/s]

Model	AC servo 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/ □40	H	24	1800				1580	1170	910	720	580	480	410	—	—	—
		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/ □60	H	30	—	1800					1390	1110	900	750	630	540	470	410
		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)

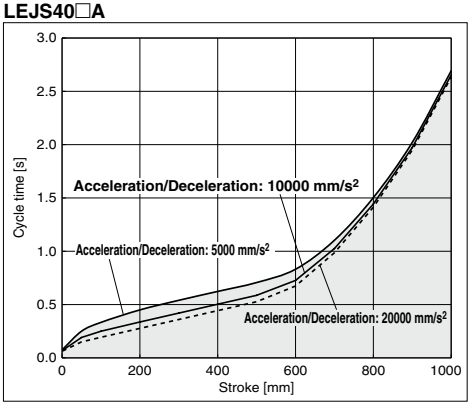
Cycle Time Graph (Guide)

LEJS40/Ball Screw Drive

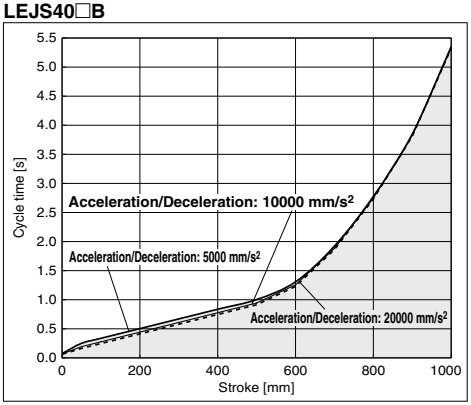
LEJS40□H



LEJS40□A

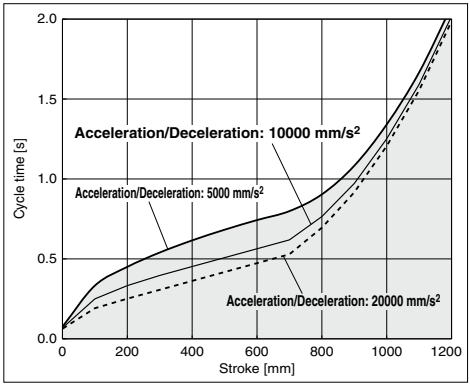


LEJS40□B

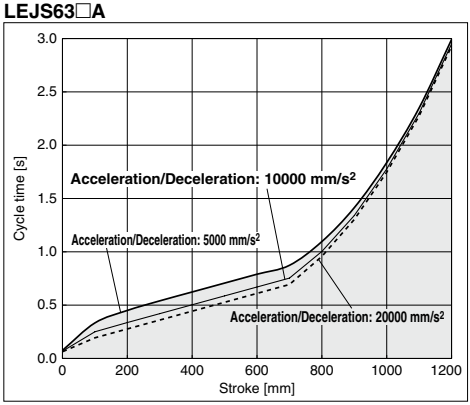


LEJS63/Ball Screw Drive

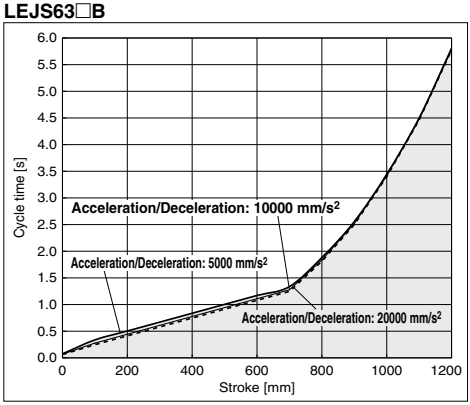
LEJS63□H



LEJS63□A



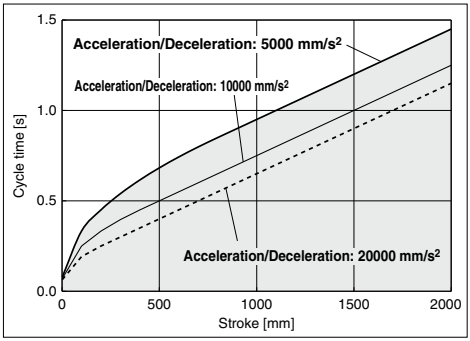
LEJS63□B



∗ Maximum speed/acceleration/deceleration values graph for each stroke

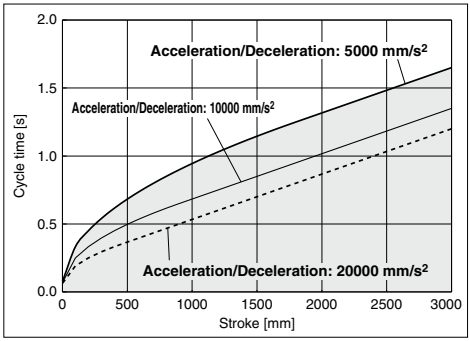
Cycle Time Graph (Guide)

LEJB40/Belt Drive



∗ Maximum speed/acceleration/deceleration values graph for each stroke

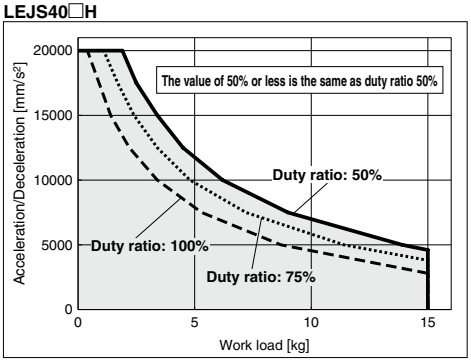
LEJB63/Belt Drive



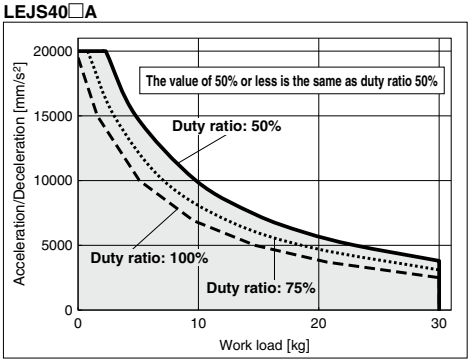
Work Load–Acceleration/Deceleration Graph (Guide)

LEJS40/Ball Screw Drive: Horizontal

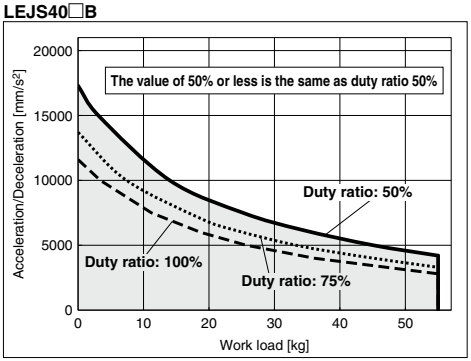
LEJS40□H



LEJS40□A

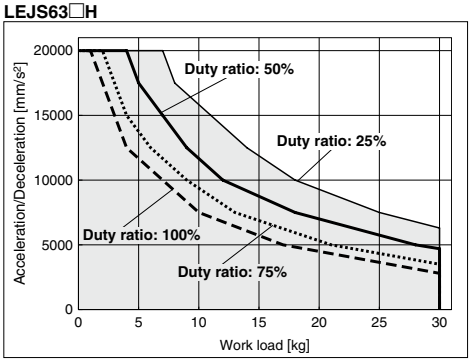


LEJS40□B

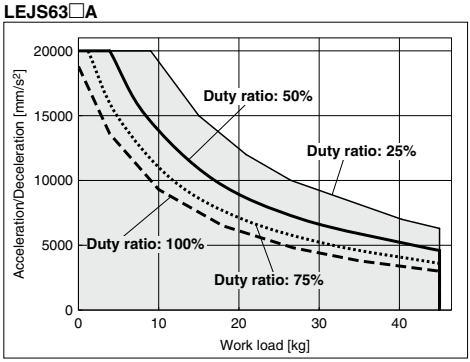


LEJS63/Ball Screw Drive: Horizontal

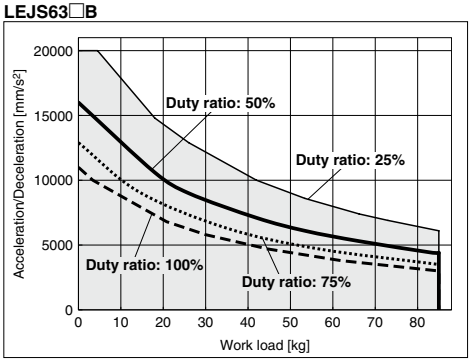
LEJS63□H



LEJS63□A



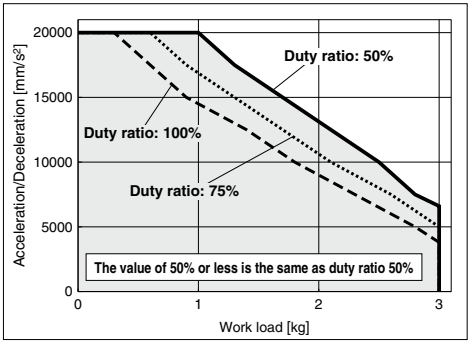
LEJS63□B



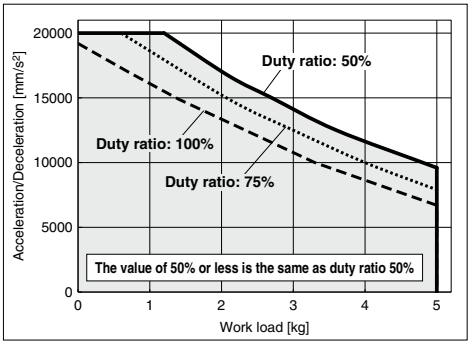
Work Load–Acceleration/Deceleration Graph (Guide)

LEJS40/Ball Screw Drive: Vertical

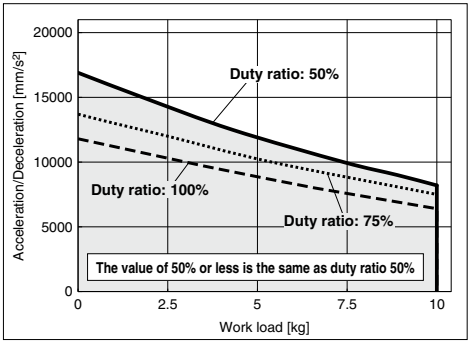
LEJS40□H



LEJS40□A

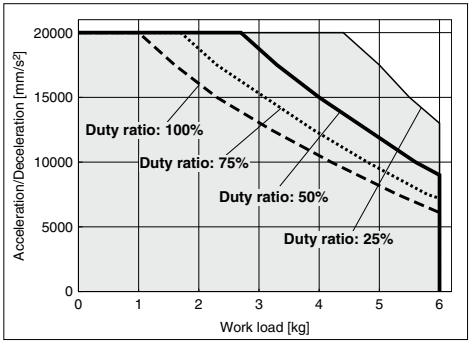


LEJS40□B

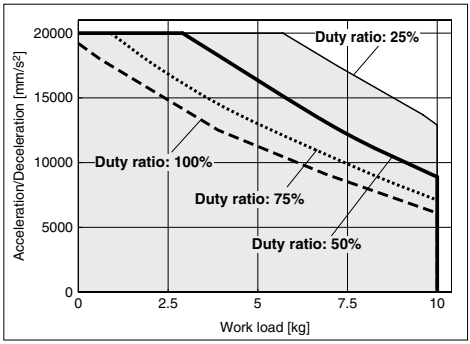


LEJS63/Ball Screw Drive: Vertical

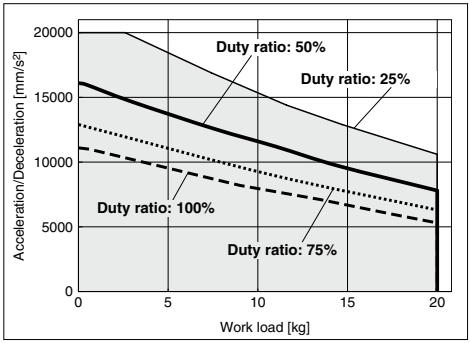
LEJS63□H



LEJS63□A

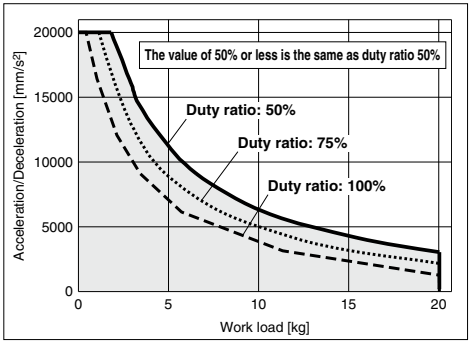


LEJS63□B

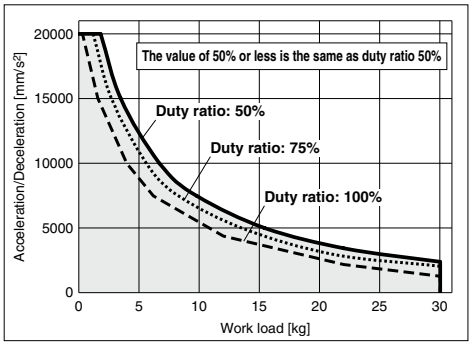


Work Load–Acceleration/Deceleration Graph (Guide)

LEJB40/Belt Drive: Horizontal



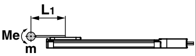
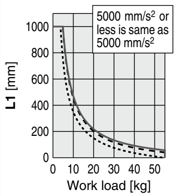
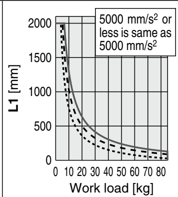
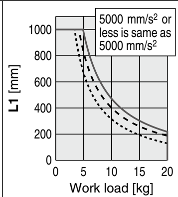
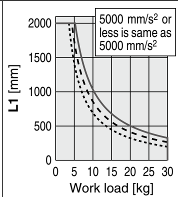
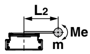
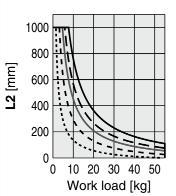
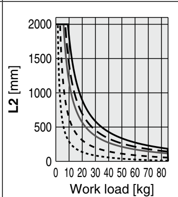
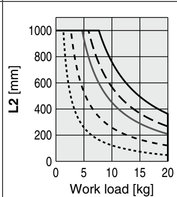
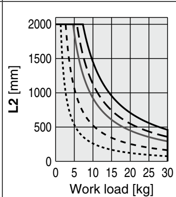
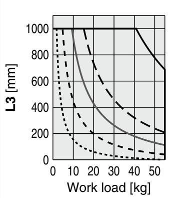
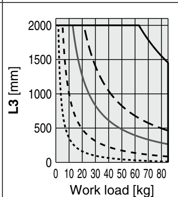
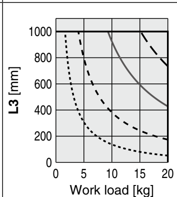
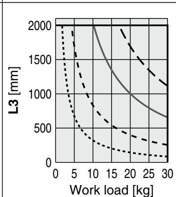
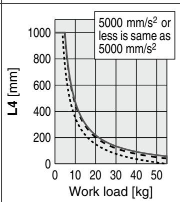
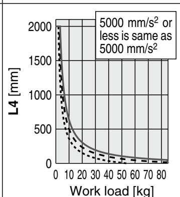
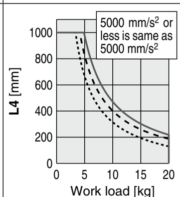
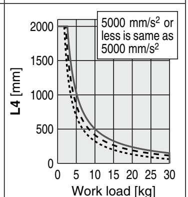
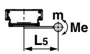
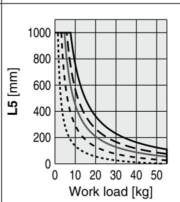
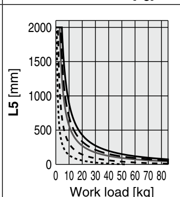
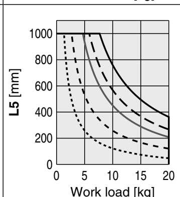
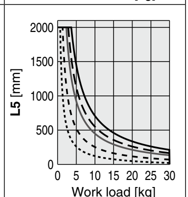
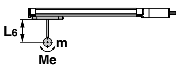
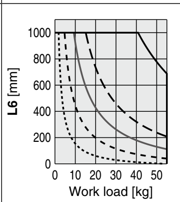
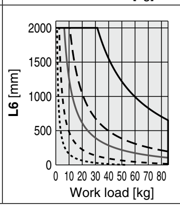
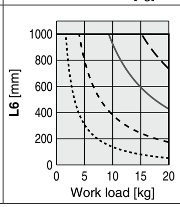
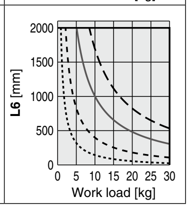
LEJB63/Belt Drive: Horizontal



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 “Calculation of Guide Load Factor” or the Electric Actuator Selection Software for confirmation, http://www.smcworld.com

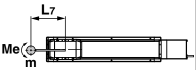
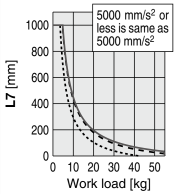
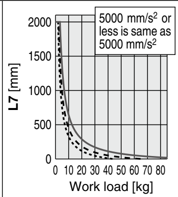
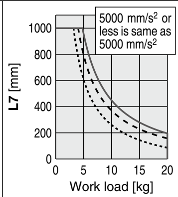
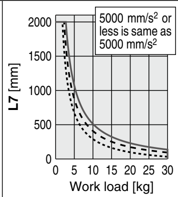
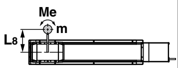
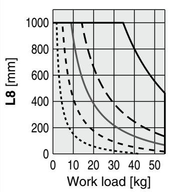
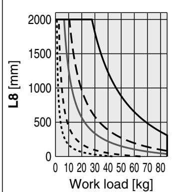
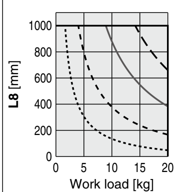
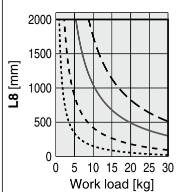
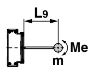
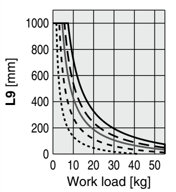
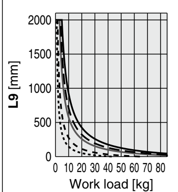
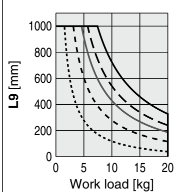
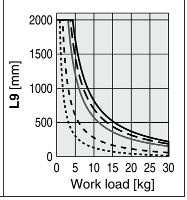
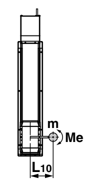
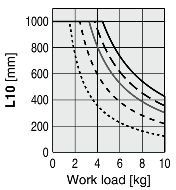
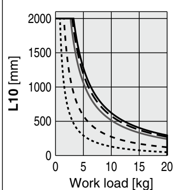
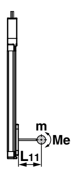
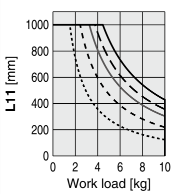
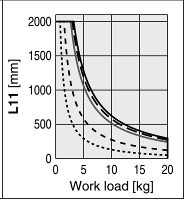
Acceleration/Deceleration —— 1000 mm/s² – – – 3000 mm/s² —— 5000 mm/s² - - - - 10000 mm/s² ········ 20000 mm/s²

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			
			LEJS40	LEJS63	LEJB40	LEJB63
Horizontal		X				
Horizontal		Y				
Horizontal		Z				
Bottom		X				
Bottom		Y				
Bottom		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 "Calculation of Guide Load Factor" or 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

<table>
<tr><th rowspan="2">Orientation</th><th rowspan="2" colspan="2">Load overhanging direction
m : Work load [kg]
Me: Dynamic allowable moment [N·m]
L : Overhang to the work load center of gravity [mm]</th><th colspan="4">Model</th></tr>
<tr><th>LEJS40</th><th>LEJS63</th><th>LEJB40</th><th>LEJB63</th></tr>
<tr><td rowspan="3">Wall</td><td>  </td><td>X</td>
<td>  </td>
<td>  </td>
<td>  </td>
<td>  </td></tr>
<tr><td>  </td><td>Y</td>
<td>  </td>
<td>  </td>
<td>  </td>
<td>  </td></tr>
<tr><td>  </td><td>Z</td>
<td>  </td>
<td>  </td>
<td>  </td>
<td>  </td></tr>
<tr><td rowspan="2">Vertical</td><td>  </td><td>Y</td>
<td>  </td>
<td>  </td><td></td><td></td></tr>
<tr><td>  </td><td>Z</td>
<td>  </td>
<td>  </td><td></td><td></td></tr>
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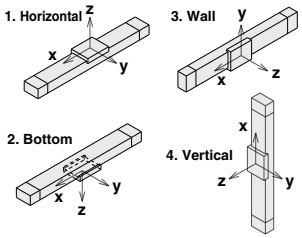
Calculation of Guide Load Factor

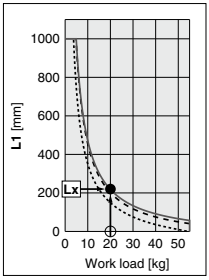
1. Decide operating conditions.
   Model: LEJS/LEJB
   Size: 40/63
   Mounting orientation: Horizontal/Bottom/Wall/Vertical
   Acceleration [mm/s²]: **a**
   Work load [kg]: **m**
   Work load center position [mm]: **Xc/Yc/Zc**
2. Select the target graph with reference to the model, size and mounting 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 + αy + αz ≤ 1**
   When 1 is exceeded, please consider a reduction of acceleration and work load, or a change of the work load center position and series.

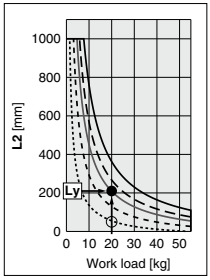
Mounting orientation



Example

1. Operating conditions
   Model: 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 127, top and left side first row.
3. **Lx = 220 mm**, **Ly = 210 mm**, **Lz = 430 mm**
4. The load factor for each direction can be obtained as follows.
   α**x = 0/220 = 0**
   α**y = 50/210 = 0.24**
   α**z = 200/430 = 0.47**
5. α**x + αy + αz = 0.71 ≤ 1**





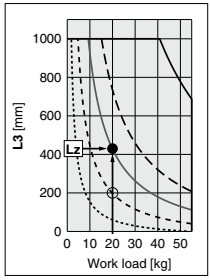
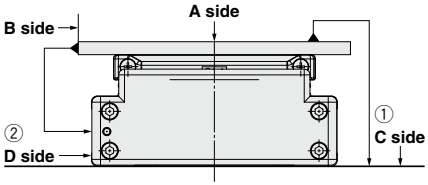


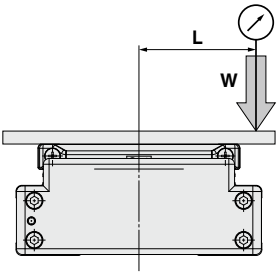
Table Accuracy (Reference Value)

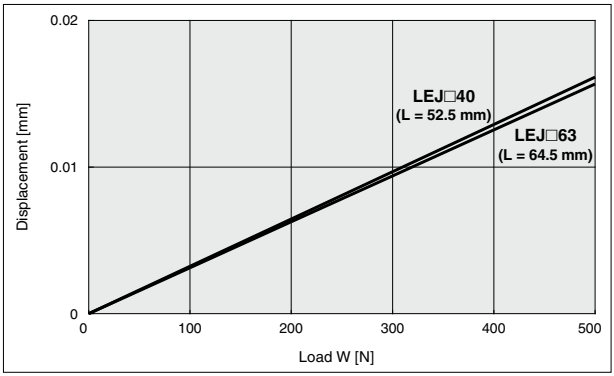


Model	Traveling parallelism [mm] (Every 300 mm)	
	① C side traveling parallelism to A side	② D side traveling parallelism to B side
LEJ□40	0.05	0.03
LEJ□63	0.05	0.03

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.)

Particle Generation Characteristics

11-LEJS Series ▶ Page 533

Particle Generation Measuring Method

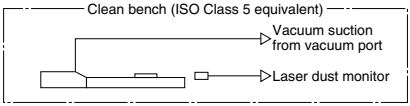
The particle generation data for 11-LEJS series are measured in the following test method.

■Test Method (Example)

Operate the specimen that is placed in an ISO Class 5 equivalent clean bench, and measure the changes of the particle concentration over time until the number of cycles reaches the specified point.

■Measuring Conditions

Measuring instrument	Description	Laser dust monitor (Automatic particle counter by lightscattering method)
	Minimum measurable particle diameter	0.1 μm
	Suction flow rate	28.3 L/min (ANR)
Setting conditions	Sampling time	5 min
	Interval time	55 min
	Sampling air flow	141.5 L (ANR)



Particle generation measuring circuit

■Test Conditions

Size	Speed [mm/s]	Model	Workpiece mass [kg]	Acceleration [mm/s²]	Duty ratio [%]
40	1200	**11-LEJS40□A-200**	4	13000	100
	600	**11-LEJS40□B-200**		10000	
63	1200	**11-LEJS63□A-300**		13000	
	600	**11-LEJS63□B-300**		10000	

∗ Mounting position: Horizontal

■Evaluation Method

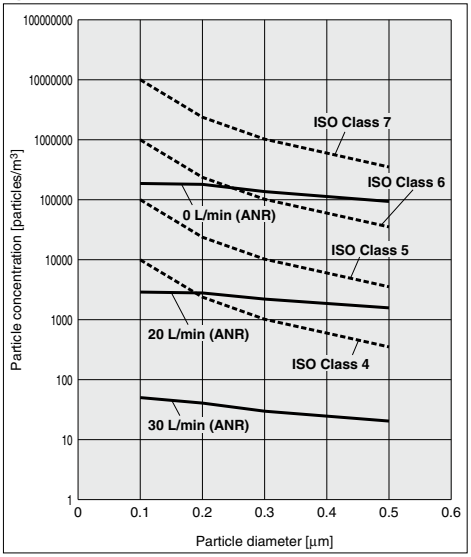
To obtain the measured values of particle concentration, the accumulated value Note 1) of particles captured every 5 minutes, by the laser dust monitor, is converted into the particle concentration in every 1 m^3.
When determining particle generation grades, the 95% upper confidence limit of the average particle concentration (average value), when each specimen is operated at a specified number of cycles Note 2) is considered.
The plots in the graphs indicate the 95% upper confidence limit of the average particle concentration of particles with a diameter within the horizontal axis range.

Note 1) Sampling air flow rate: Number of particles contained in 141.5 L (ANR) of air
Note 2) Actuator: 1 million cycles
Note 3) The particle generation characteristics (Page 532) provide a guide for selection but is not guaranteed.

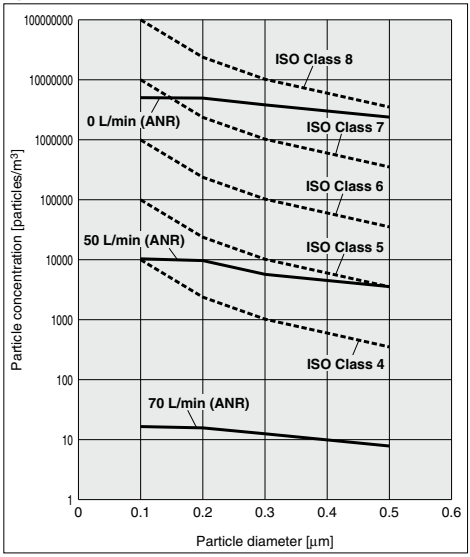
Particle Generation Characteristics

11-LEJS40/Ball Screw Drive

Speed 600 mm/s

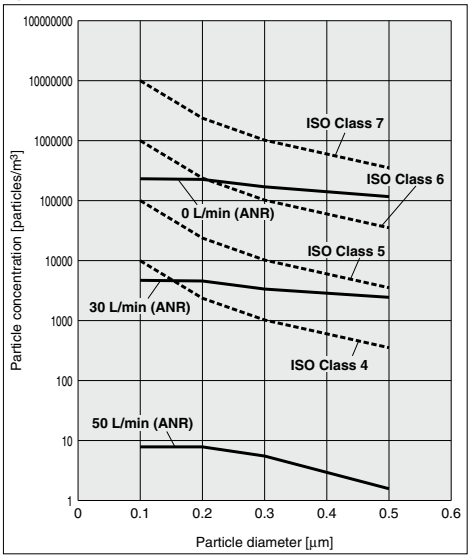


Speed 1200 mm/s

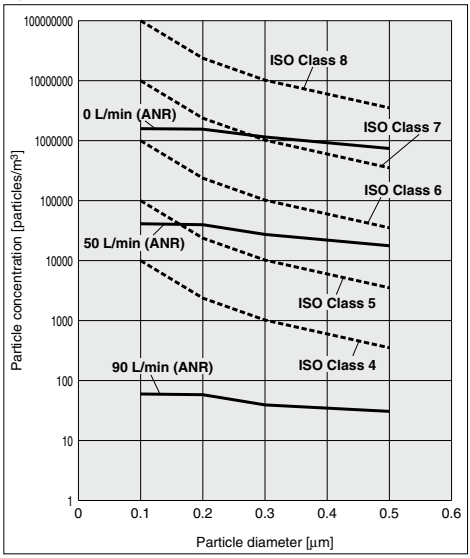


11-LEJS63/Ball Screw Drive

Speed 600 mm/s



Speed 1200 mm/s



Electric Actuator/High Rigidity Slider Type
Ball Screw Drive Clean Room Specification

11-LEJS Series LEJS40, 63

Refer to page 120 for model selection and page 531 for particle generation characteristics.

How to Order

11 – LEJS H 40 S2 A – 500 [ ][ ] – [ ][ ][ ][ ]

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫

Clean series

11	Vacuum type

❶ Accuracy

Nil	Basic type
H	High precision type

❷ Size

40
63

❸ Motor type∗1

Symbol	Type	Output [W]	Actuator size	Compatible driver∗2
S2	AC servo motor (Incremental encoder)	100	40	LECSA□-S1
S3	AC servo motor (Incremental encoder)	200	63	LECSA□-S3
S6	AC servo motor (Absolute encoder)	100	40	LECSB□-S5 LECSC□-S5 LECSS□-S5
S7	AC servo motor (Absolute encoder)	200	63	LECSB□-S7 LECSC□-S7 LECSS□-S7

∗1 For motor type S2 and S6, the compatible driver part number suffixes are S1 and S5 respectively.
∗2 For details of the driver, refer to page 607.

❹ Lead [mm]

Symbol	LEJS40	LEJS63
A	16	20
B	8	10

❺ Stroke [mm]∗3

200
to
1500

∗3 Refer to the applicable stroke table for details.

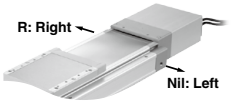
❻ Motor option

Nil	Without option
B	With lock

❼ Vacuum port∗5

Nil	Left
R	Right
D	Both left and right

∗5 Select "D" for the vacuum port for suction of 50 L/min (ANR) or more.



❽ Cable type∗6, ∗7, ∗8

Nil	Without cable
S	Standard cable
R	Robotic cable (Flexible cable)

∗6 When the driver type is selected, the cable is included. Select cable type and cable length.
Example)
S2S2: Standard cable (2 m) + Driver (LECSS2)
S2: Standard cable (2 m)
Nil: Without cable and driver
∗7 The motor and encoder cables are included. (The lock cable is also included when the motor with lock option is selected.)
∗8 Standard cable entry direction is "(A) Axis side".

❾ Cable length [m]∗6, ∗9

Nil	Without cable
2	2 m
5	5 m
A	10 m

∗9 The length of the encoder, motor and lock cables are the same.

❿ Driver type∗6

	Compatible driver	Power supply voltage [V]
Nil	Without driver	—
A1	LECSA1-S□	100 to 120
A2	LECSA2-S□	200 to 230
B1	LECSB1-S□	100 to 120
B2	LECSB2-S□	200 to 230
C1	LECSC1-S□	100 to 120
C2	LECSC2-S□	200 to 230
S1	LECSS1-S□	100 to 120
S2	LECSS2-S□	200 to 230

⓫ I/O cable length [m]∗10

Nil	Without cable
H	Without cable (Connector only)
1	1.5

∗10 When "Without driver" is selected for driver type, only "Nil: Without cable" can be selected.
Refer to page 624 if I/O cable is required.
(Options are shown on page 624.)

Applicable Stroke Table∗4

●: Standard

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

∗4 Please consult with SMC for non-standard strokes as they are produced as special orders.

For auto switches, refer to pages 142 to 144.

Compatible Driver

Driver type	Pulse input type/ Positioning type	Pulse input type	CC-Link direct input type	SSCNET Ⅲ type
Series	LECSA	LECSB	LECSC	LECSS
Number of point tables	Up to 7	—	Up to 255	—
Pulse input	○	○	—	—
Applicable network	—	—	CC-Link	SSCNET Ⅲ
Control encoder	Incremental 17-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder	Absolute 18-bit encoder
Communication function	USB communication	USB communication, RS422 communication	USB communication, RS422 communication	USB communication
Power supply voltage [V]	100 to 120 VAC (50/60 Hz), 200 to 230 VAC (50/60 Hz)			
Reference page	Page 607			

Specifications

11-LEJS40, 63 AC Servo Motor

Model				11-LEJS40S[8]		11-LEJS63S[7]	
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 Note 3) [mm/s]	Stroke range	Up to 500	1200	600	1200	600
			501 to 600	1050	520	1200	600
			601 to 700	780	390	1200	600
			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 (Refer to pages 124 and 125 for limit according to work load and duty ratio.)			
	Positioning repeatability [mm]		Basic type	±0.02			
			High precision type	±0.01			
	Lost motion [mm] Note 4)		Basic type	0.1 or less			
			High precision type	0.05 or less			
	Lead [mm]			16	8	20	10
	Impact/Vibration resistance [m/s²] Note 5)			50/20			
	Actuation type			Ball screw			
	Guide type			Linear guide			
	Grease	Ball screw/Linear guide portion		Low particle generation grease			
	Cleanliness class Note 6)			ISO Class 4 (ISO14644-1)			
	Allowable external force [N]			20			
	Operating temperature range [°C]			5 to 40			
	Operating humidity range [%RH]			90 or less (No condensation)			
	Regeneration option			May be required depending on speed and work load. (Refer to page 121.)			
Electric specifications	Motor output [W]/Size [mm]			100/□40		200/□60	
	Motor type			AC servo motor (100/200 VAC)			
	Encoder			Motor type S2, S3: Incremental 17-bit encoder (Resolution: 131072 p/rev) Motor type S6, S7: Absolute 18-bit encoder (Resolution: 262144 p/rev)			
	Power consumption [W] Note 7)		Horizontal	65		80	
			Vertical	165		235	
	Standby power consumption when operating [W] Note 8)		Horizontal	2		2	
			Vertical	10		12	
	Max. instantaneous power consumption [W] Note 9)			445		725	
Lock unit specifications	Type Note 10)			Non-magnetizing lock			
	Holding force [N]			101	203	330	660
	Power consumption [W] at 20°C Note 11)			6.3		7.9	
	Rated voltage [V]			24 VDC $^{0}_{-10\%}$			

Note 1) Please consult with SMC for non-standard strokes as they are produced as special orders.
Note 2) Refer to "Speed–Work Load Graph (Guide)" on page 121 for details.
Note 3) The allowable speed changes according to the stroke.
Note 4) A reference value for correcting an error in reciprocal operation.
Note 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. (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 6) The amount of particle generation changes according to the operating conditions and suction flow rate. Refer to the particle generation characteristics for details.
Note 7) The power consumption (including the driver) is for when the actuator is operating.
Note 8) The standby power consumption when operating (including the driver) is for when the actuator is stopped in the set position during the operation.
Note 9) The maximum instantaneous power consumption (including the driver) is for when the actuator is operating. This value can be used for the selection of the power supply.
Note 10) Only when motor option "With lock" is selected.
Note 11) For an actuator with lock, add the power consumption for the lock.
Note 12) Sensor magnet position is located in the table center. For detailed dimensions, refer to "Auto Switch Mounting Position" on page 142.
Note 13) 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 14) For the manufacture of intermediate strokes, please contact SMC. (LEJS40/Manufacturable stroke range: 200 to 1200 mm, LEJS63/ Manufacturable stroke range: 300 to 1500 mm)

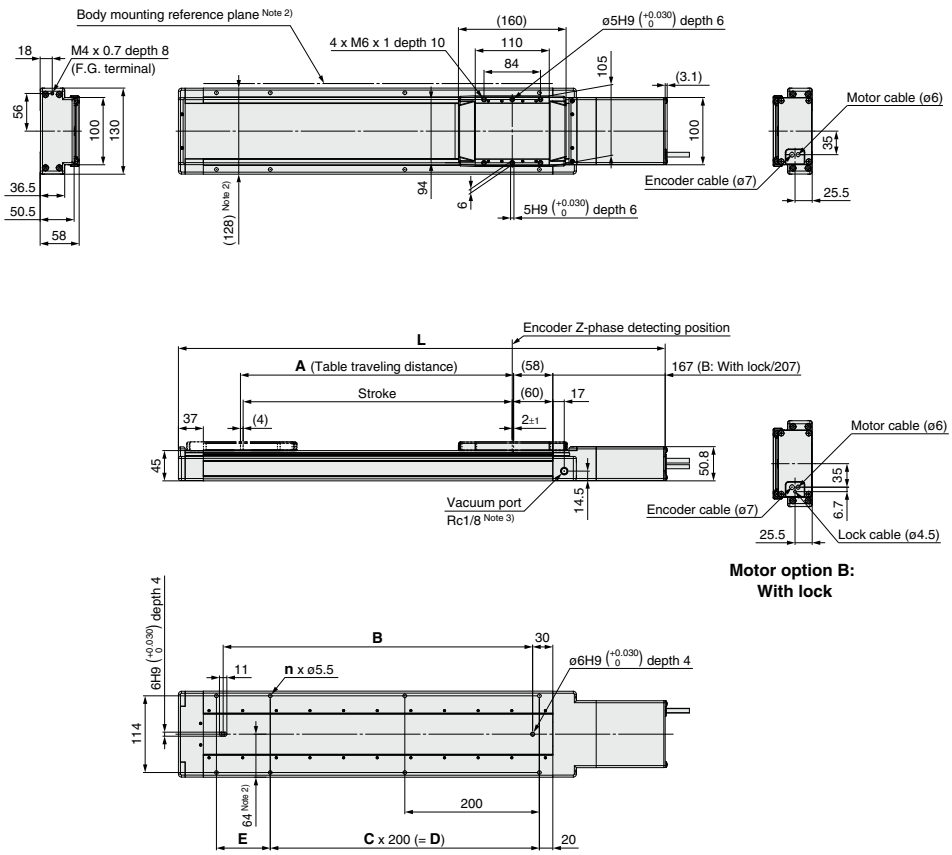
Weight

Model	11-LEJS40									
Stroke [mm]	200	300	400	500	600	700	800	900	1000	1200
Product weight [kg]	5.6	6.4	7.1	7.9	8.7	9.4	10.2	11.0	11.7	13.3
Additional weight with lock [kg]	0.2 (Incremental encoder)/0.3 (Absolute encoder)									

Model	11-LEJS63									
Stroke [mm]	300	400	500	600	700	800	900	1000	1200	1500
Product weight [kg]	11.4	12.7	13.9	15.2	16.4	17.7	18.9	20.1	22.6	26.4
Additional weight with lock [kg]	0.4 (Incremental encoder)/0.7 (Absolute encoder)									

Dimensions: Ball Screw Drive

11-LEJS40



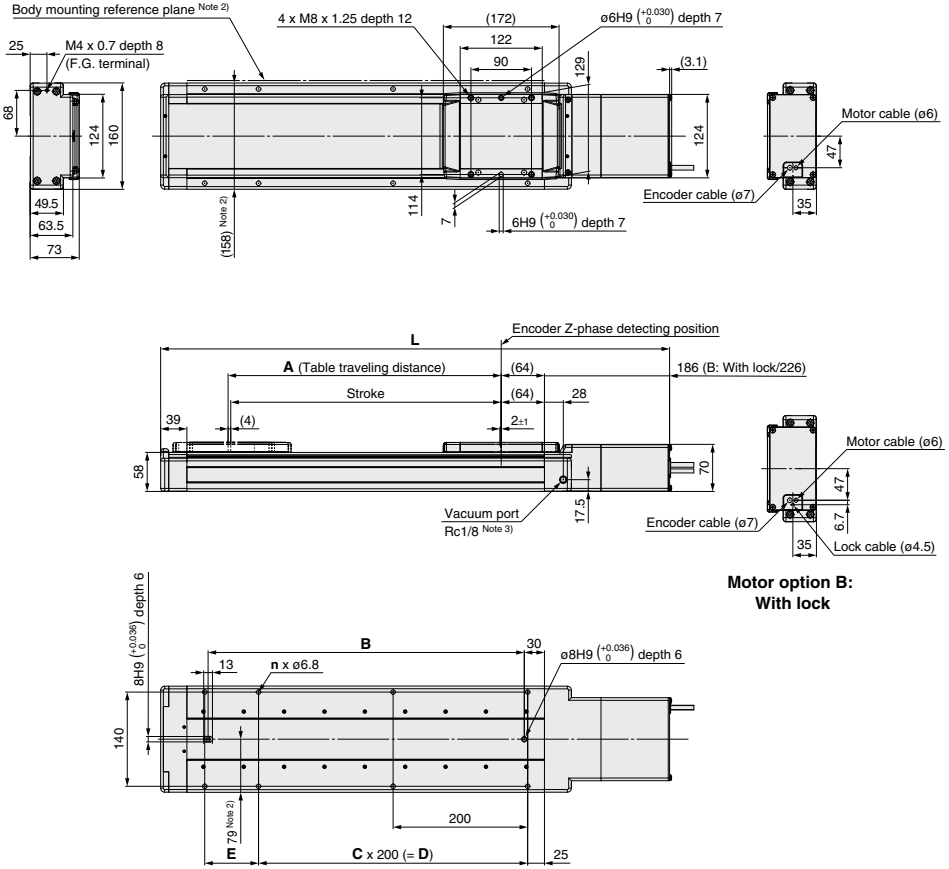
Note 1) Please consult with SMC for adjusting the Z-phase detecting position at the stroke end of the end side.
Note 2) When mounting the actuator using the body mounting reference plane, use a pin. Set the height of the pin to be 5 mm or more because of round chamfering. (Recommended height 6 mm)
Note 3) This drawing shows the left type.
Note 4) The amount of particle generation changes according to the operating conditions and suction flow rate.

[mm]

Model	L		A	B	n	C	D	E
	Without lock	With lock						
11-LEJS40S□□-200□□-□□□□	523.5	563.5	206	260	6	1	200	80
11-LEJS40S□□-300□□-□□□□	623.5	663.5	306	360	6	1	200	180
11-LEJS40S□□-400□□-□□□□	723.5	763.5	406	460	8	2	400	80
11-LEJS40S□□-500□□-□□□□	823.5	863.5	506	560	8	2	400	180
11-LEJS40S□□-600□□-□□□□	923.5	963.5	606	660	10	3	600	80
11-LEJS40S□□-700□□-□□□□	1023.5	1063.5	706	760	10	3	600	180
11-LEJS40S□□-800□□-□□□□	1123.5	1163.5	806	860	12	4	800	80
11-LEJS40S□□-900□□-□□□□	1223.5	1263.5	906	960	12	4	800	180
11-LEJS40S□□-1000□□-□□□□	1323.5	1363.5	1006	1060	14	5	1000	80
11-LEJS40S□□-1200□□-□□□□	1523.5	1563.5	1206	1260	16	6	1200	80

Dimensions: Ball Screw Drive

11-LEJS63



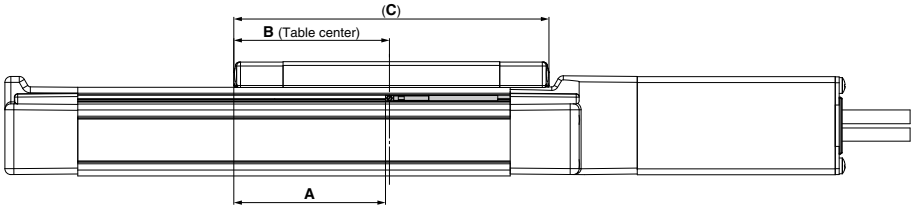
Note 1) Please consult with SMC for adjusting the Z-phase detecting position at the stroke end of the end side.
Note 2) When mounting the actuator using the body mounting reference plane, use a pin. Set the height of the pin to be 5 mm or more because of round chamfering. (Recommended height 6 mm)
Note 3) This drawing shows the left type.
Note 4) The amount of particle generation changes according to the operating conditions and suction flow rate.

[mm]

Model	L		A	B	n	C	D	E
	Without lock	With lock						
11-LEJS63S□□-300□□-□□□□	656.5	696.5	306	370	6	1	200	180
11-LEJS63S□□-400□□-□□□□	756.5	796.5	406	470	8	2	400	80
11-LEJS63S□□-500□□-□□□□	856.5	896.5	506	570	8	2	400	180
11-LEJS63S□□-600□□-□□□□	956.5	996.5	606	670	10	3	600	80
11-LEJS63S□□-700□□-□□□□	1056.5	1096.5	706	770	10	3	600	180
11-LEJS63S□□-800□□-□□□□	1156.5	1196.5	806	870	12	4	800	80
11-LEJS63S□□-900□□-□□□□	1256.5	1296.5	906	970	12	4	800	180
11-LEJS63S□□-1000□□-□□□□	1356.5	1396.5	1006	1070	14	5	1000	80
11-LEJS63S□□-1200□□-□□□□	1556.5	1596.5	1206	1270	16	6	1200	80
11-LEJS63S□□-1500□□-□□□□	1856.5	1896.5	1506	1570	18	7	1400	180

Auto Switch Mounting

Auto Switch Mounting Position



[mm]

Model	Size	A	B	C	Operating range
LEJS	40	77	80	160	5.5
LEJB					5.0
LEJS	63	83	86	172	7.0
LEJB					6.5

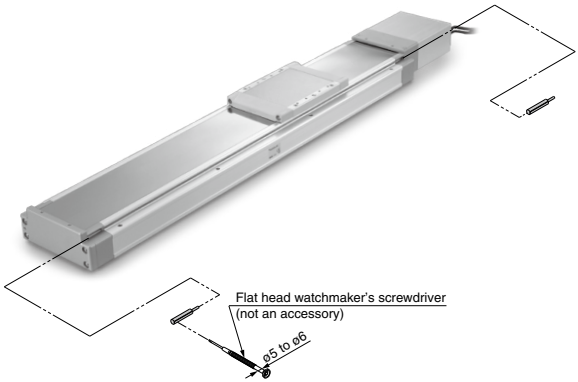
Note) The operating range is a guideline including hysteresis, not meant to be guaranteed. There may be large variations (as much as ±30%) depending on the ambient environment.

Auto Switch Mounting

When mounting the auto switches, they should be inserted into the actuator's auto switches mounting groove from the direction shown in the drawing on the below. Once in the mounting position, use a flat head watchmaker's screwdriver to tighten the included auto switch mounting screw.

Auto Switch Mounting Screw Tightening Torque [N·m]

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



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

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

RoHS

Refer to SMC website for the details of the 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 current model (SMC comparison).**
- **Using flexible cable as standard spec.**

Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)						
Auto switch model	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED illuminates when turned ON.					
Standard	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 values)		20		

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

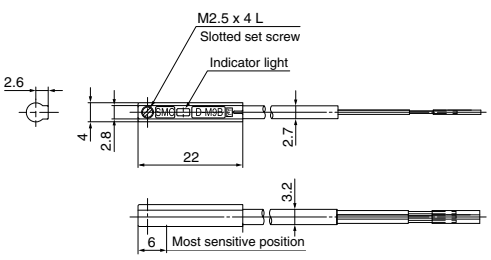
(g)

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

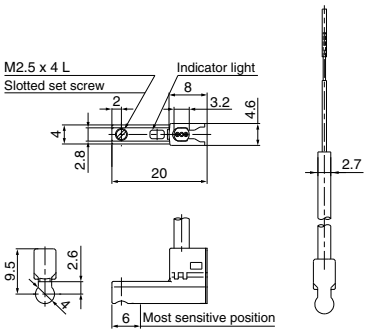
Dimensions

(mm)

D-M9□



D-M9□V



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

RoHS

Refer to SMC website for the details of the 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 current model (SMC comparison).**
- **Using flexible cable as standard spec.**
- **The proper operating range can be determined by the color of the light. (Red → Green ← Red)**

⚠Caution

Precautions

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

Auto Switch Specifications

PLC: Programmable Logic Controller

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

Oilproof Flexible Heavy-duty Lead Wire Specifications

Auto switch model		D-M9NW□	D-M9PW□	D-M9BW□
Sheath	Outside diameter [mm]	2.7 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 values)		20		

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

Weight

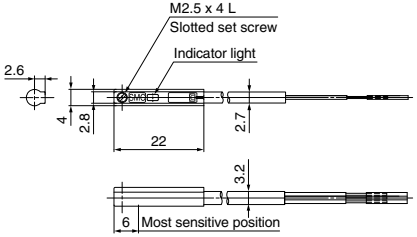
(g)

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

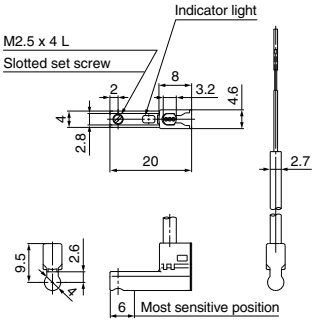
Dimensions

(mm)

D-M9□W



D-M9□WV



SMC

Electric Actuator/ Specific Product Precautions 1

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 8 for Electric Actuator Precautions.

Design

⚠Caution

1. Do not apply a load in excess of the specification limits.

Select a suitable actuator by work load and allowable moment. If the product is used outside of the specification limits, 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 specification limits.

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 specification limits, 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 incorrect instructions are inputted, such as using the product outside of the specification limits or operation outside of actual stroke through changes in the controller/driver setting and/or origin position, the table may collide against the stroke end of the actuator. Check these points before use.

If the table collides against the stroke end of the actuator, the guide, 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 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), to avoid deflection of the actuator body, use a support plate or support guide.

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

Electric Actuator/ Specific Product Precautions 2

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 3 to 8 for Electric Actuator Precautions.

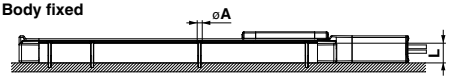
Handling

⚠Caution

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

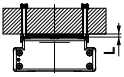
Tightening the screws with a higher torque than recommended may cause a malfunction, whilst the tightening with a lower torque can cause the displacement of the mounting position or in extreme conditions the actuator could become detached from its mounting position.

Body fixed



Model	Screw size	Max. tightening torque [N·m]	ø**A** [mm]	**L** [mm]
LEJ□40	M5	3.0	5.5	36.5
LEJ□63	M6	5.2	6.8	49.5

Workpiece fixed



Model	Screw size	Max. tightening torque [N·m]	**L** (Max. screw-in depth) [mm]
LEJ□40	M6 x 1	5.2	10
LEJ□63	M8 x 1.25	12.5	12

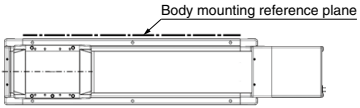
To prevent the workpiece retaining screws from touching the body, use screws that are 0.5 mm or shorter than the maximum screw-in depth. If long screws are used, they can touch the body and cause a malfunction.

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

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

13. Vibration may occur during operation, this could be caused by the operating conditions.
If it occurs, adjust response value of auto tuning of driver to be lower.
During the first auto tuning noise may occur, the noise will stop when the tuning is complete.

14. 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 round chamfering. (Recommended height 6 mm)



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 first.

• 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.

• 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 matter 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