

# Single Axis Actuator LX Maximum Travel Speed / Accuracy Standards

# Notes for Using Single Axis Actuator LX / Low Dust Generation Grease Specifications

## Maximum Travel Speed

### Max. Velocity (mm/sec)

Type	Lead (mm)	Rail Length L (mm)															
		75	80	100	125	150	175	200	250	300	350	400	450	500	550	600	
LX15	2	330	-	330	330	330	330	330	-	-	-	-	-	-	-	-	
LX20	1	-	190	190	-	190	-	190	-	-	-	-	-	-	-	-	
	5	-	-	694	-	694	-	694	694	633	-	-	-	-	-	-	
LX26	2	-	-	290	-	290	-	290	290	290	-	-	-	-	-	-	
	5	-	-	-	-	521	-	521	521	521	521	446	-	-	-	-	
LX30	10	-	-	-	-	1040	-	1040	1040	1040	1040	890	-	-	-	-	
	5	-	-	-	410	410	-	410	410	410	410	410	410	370	300	250	
LX30	10	-	-	-	-	830	-	830	830	830	830	830	830	740	600	500	
	Type	Lead (mm)	Rail Length L (mm)														
LX45	10	20	340	390	440	490	540	590									
			1110	1110	1110	1110	1110	1110	1110								

\* Values in the table are calculated on basis of critical speed and DN value of ball screws.  
Note that these are not guaranteed data considering motor rotational speed, operating conditions, etc.

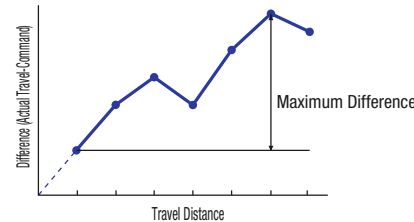
## Accuracy Standards Table

Accuracy Standard Items	LX15		LX20		LX26		LX30(L<400)		LX30(L≥450)		LX45	
	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade	High Grade	Precision Grade
Positioning (mm)	0.04	0.02	0.06	0.02	0.06	0.02	0.06	0.02	0.1	0.025	0.1	0.025
Positioning Repeatability (mm)	±0.004	±0.003	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003	±0.005	±0.003
Backlash (mm)	0.01	0.002	0.01	0.003	0.01	0.003	0.02	0.003	0.02	0.003	0.02	0.003
Parallelism (mm)	0.02	0.01	0.025	0.01	0.025	0.01	0.025	0.01	0.035	0.015	0.035	0.015
Starting Torque (N · cm)	0.8		1.2		2		4		4		10	

## Accuracy Standards

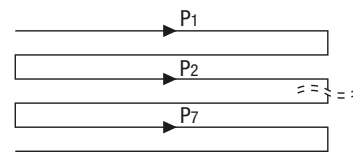
### Positioning Accuracy

Positioning is performed from a reference position incrementally in one direction, and measured. Measurement values are the maximum difference between actual travel distance and commanded distance. See Accuracy Standards Table for design values.



### Repeatability

Repeat positioning and measurement seven times at the same point in a specified direction. 1/2 of the maximum difference with "±" in front is defined as the measurement value. See Accuracy Standards Table for design values.



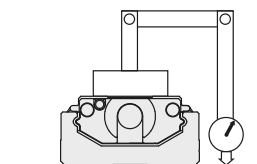
### Backlash

Loads are applied to the block from the reference position, and then released. The difference between the reference position and returned value is the measurement value. See Accuracy Standards Table for design values.



### Running Parallelism

A dial indicator is installed from the block to the reference surface. Measurements are taken while traveling with the rail mounted to a standard reference surface base. The maximum difference taken by the measurement is the measurement value. See Accuracy Standards Table for design values.



## Maintenance

### Routine Inspections:

Perform inspection once per 3 to 6 months. Check for proper lubrication conditions, clean-up and grease refill. Check on mounting screws for looseness.

### Lubrication:

The recommended lubricants are shown as below.  
LX15, LX20, LX26 Series ↑ Showa Shell Sekiyu-made Alvania Grease S No.2  
LX30, LX45 Series ↑ Showa Shell Sekiyu-made Cartridge Grease EP2  
Low Dust Generation Grease Type ↑ NSK LG2  
Recommended greasing cycle is per 6 months or 1,000km under normal operating conditions.  
\* Lubrication intervals, however, depend on usage conditions and environments.

### Cautions for Operating Environments:

Ensure that it is used at an ambient temperature of 50°C or less. It is recommended to provide mechanical stoppers to prevent overrun.

### Allowable Rotational Speed

Size-specific allowable rotational speed is indicated below.

Part Number	Lead	Rail Length	Allowable Rotational Speed (min <sup>-1</sup> )
LX15	2	75~200	6000
LX20	1	80~200	6000
	5	100~300	
LX26	2	100~300	6000
	5/10	150~350	6000
LX45	10	340~590	3300
	20	340~590	3330

Part Number	Lead	Rail Length	Allowable Rotational Speed (min <sup>-1</sup> )
LX30	5	125~450	4920
		500	4440
		550	3600
	10	600	3000
		150~450	4980
		500	4440
		550	3600
		600	3000

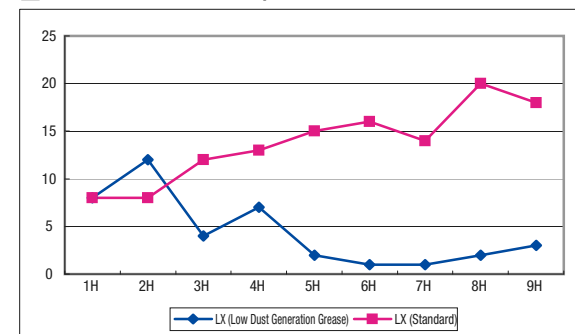
## About Single Axis Actuator LX Low Dust Generation Grease

The products are shipped with low particle generation grease applied for high cleanliness environments. LG2 (Made by NSK Ltd.) generates less particles and exhibits excellent corrosion resistance. For part number selections, please see each product page.

### Low Dust Generation Grease Performance Table

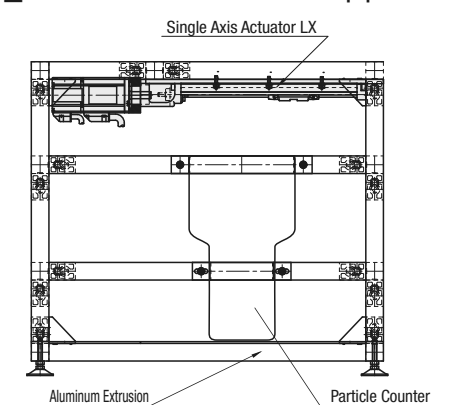
Item	Conditions	Unit	Measurement Method	LG2 (Made by NSK Ltd.)
Thickener	-	-	-	Lithium Type
Base Oil	-	-	-	Mineral Oil + Synthetic Hydrocarbon Oil
Base Oil Kinetic Viscosity	40°C	mm <sup>2</sup> /s	JIS K2220 5.19	30
Worked Penetration	-	-	JIS K2220 5.3	207
Dropping Point	-	°C	JIS K2220 5.4	200
Evaporation	99°Cx22hr	wt%	-	1.40%
Oil Separation	100°Cx24hr	wt%	JIS K2220 5.14	0.80%
Operating Temp.	In Air	°C	-	-10~80

### Particle Generation Comparison



Measuring Time	1H	2H	3H	4H	5H	6H	7H	8H	9H
LX (Low Dust Generation Grease)	8	12	4	7	2	1	1	2	3
LX (Standard)	8	8	12	13	15	16	14	20	18

### Particle Generation Test Evaluation Equipment - Overview



<Evaluation Conditions>  
Clean Room Class 100 (in a clean room)  
Room Temperature: 24°C±2°C, Humidity: 45%±5%  
(Particle Counter Name)  
Hand-held Particle Counter KR-12A (Rion Co., Ltd.)  
Tested Actuator: LX2001-B1-A2040-200  
Motor Speed: 3000rpm

Clean Room Class 100/ISO Class 5  
The measurement results meet the conditions above.  
\* These are not guaranteed values but reference values.  
Values considerably vary depending on operating environment.