

# LINEAR MOTION

## Precision Linear Slides

LWL, CLWL & CLWFF Type (L, CL & F Series)

T  
E  
C  
H  
N  
I  
C  
A  
L

### LOAD RATING

**Basic dynamic load rating** is defined as a load whose direction and magnitude are constant and under which 90% of a group of the same slide units of Linear Way L series Ball Retained Type can travel  $50 \times 10^3$  m without suffering from material damage due to rolling contact fatigue, when they are individually operated.

**Basic static load rating** is defined as a static load which gives a prescribed contact stress at the centre of contact area between the rolling element and the raceway which are receiving maximum load.

**Static rated moment** is defined as a static moment which gives a prescribed contact stress at the centre of contact area between the rolling element and raceway which are receiving maximum load under moment load.

1 kgf = 9.807N = 2.2046 lbs    1mm = 0.03937 inch.

### LUBRICATION

A good quality No. 2 lithium-soap base grease is supplied in Linear Way L series Ball Retained Type on delivery. However, the quality of any grease will gradually deteriorate as operating time passes. Therefore, periodic relubrication is necessary. It is generally recommended that the grease is re-applied every six months under general usage and every three months for the daily operation consisting of many cycles and long strokes. Use of lithium-soap base grease is recommended for general use. Relubrication will be made by applying grease to the grease nipple or oil hole prepared in the slide unit. Lubricating oil, such as turbine oil and spindle oil, can also be used.

### MOUNTING

To mount the Linear Way L series Ball Retained Type, correctly fit the reference mounting surfaces of the slide units and track rails onto the mating reference mounting surfaces of the table and the bed, and then fix them tightly.

#### Reference mounting surface

The slide unit reference mounting surface is always the side surface opposite to the IKO mark.

The trade rail reference mounting surface is identified by locating the IKO mark etched on the top surface of the track rail. The rail reference mounting surface is always the side surface above the IKO mark indicated by the arrow. See figs.1 & 2.

#### Assembling

Balls in the Linear Way L series Ball Retained Type are retained in the slide unit. Thus, the slide unit can be separated from the track rail. As the slide unit and the track rail are matched to ensure the accuracies do not mix with other slide units and track rails when they are separated. Balls of LWL 5 are not retained, so do not separate the slide unit from the track rail.

Steel ball holders which prevent falling out of balls and offer easy assembling are prepared. When the steel ball holder is required, please consult us.

### CAUTION IN USING

**1. When two or more slide units are mounted close to each other on a same mounting surface or in a same structure:**

An excessive load greater than the theoretically calculated load may act on the rolling guide according to the accuracy of the mounting surface and reference mounting surface of the machine. In such cases, select a rolling guide that can withstand a larger load than the calculated load.

**2. General mounting example**

Fig.2 shows the general method of mounting the Linear Way L series. The reference mounting surfaces B and D and the mounting surface A and C of the Linear Way L series are finely finished by grinding. Therefore, by mounting surfaces of the machine accurately and by fitting the Linear Way L series to these surfaces correctly, stable and smooth linear motion can be achieved.

Fig.1

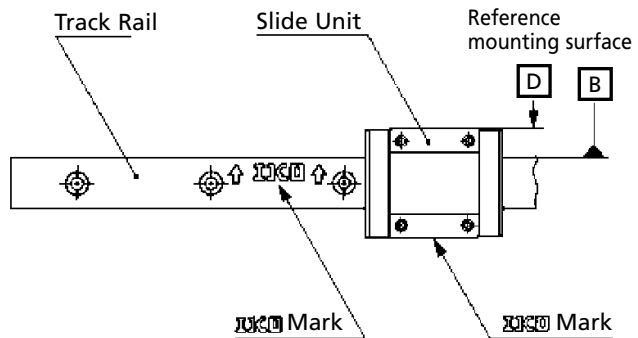
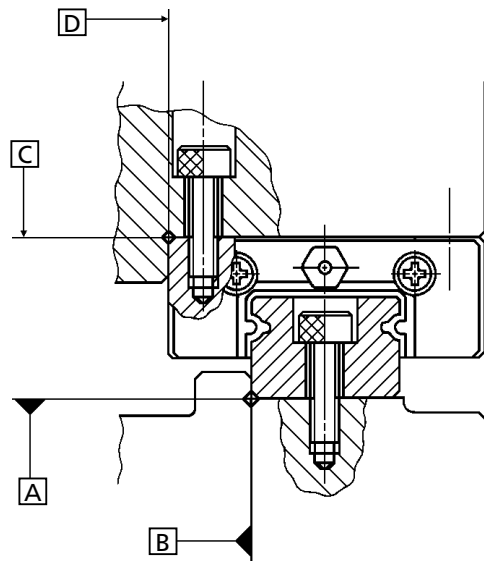


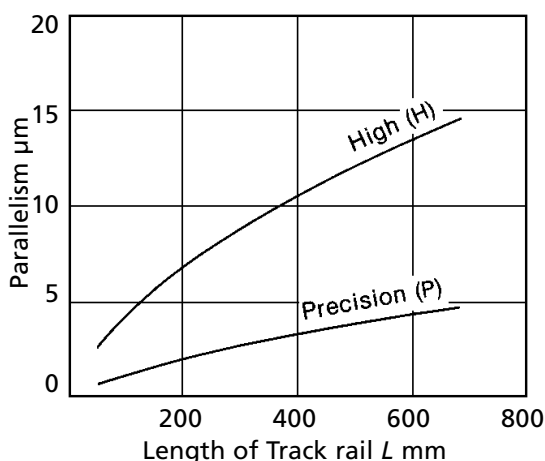
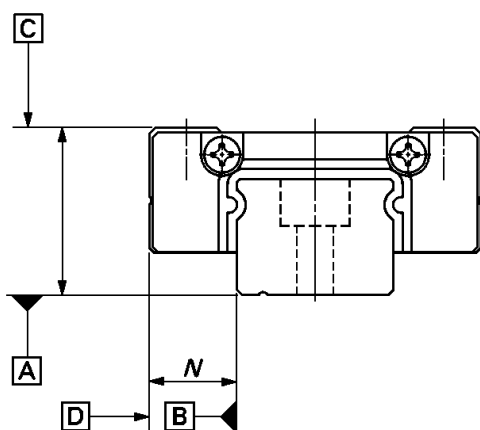
Fig.2



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### ACCURACY

Accuracies for Linear Ways L series are shown in the above graph and the table below.

Item	Classification (Symbol)	
	High (H) Standard	Precision (P) Special
Dim. <i>H</i> tolerance	±0.020	±0.010
Dim. <i>N</i> tolerance <sup>(3)</sup>	±0.025	±0.015
Dim. variation of <i>H</i> <sup>(1)</sup>	0.015	0.007
Dim. variation of <i>N</i> <sup>(2)</sup> <sup>(3)</sup>	0.020	0.010
Parallelism in operation of C to A	See Preload table below	
Parallelism in operation of D to B	See Preload table below	

**Notes:** (1) Dimensional variation of dimension *H* means the size variation between slide units mounted on the same track rail or on matched track rails.

(2) Dimensional variation of dimension *N* means the size variation between slide units mounted on the same track rail.

(3) These values also apply to Linear Way L series which have opposite reference surface arrangements.

### PRELOAD

Average amount of preload for Linear Way L series are shown below.

Preload Class	Symbol	Preload amount (kgf)	Application
Clearance	To	0 (1)	• Extremely smooth motion
Standard Preload	(no symbol)	0 (2)	• Smooth and precise motion
Light Preload	T1	0.02 <i>C</i> <sub>0</sub>	• Minimum vibration • Load is equally balanced.

**Notes:** (1) Zero or minimal amount of clearance. **Remarks:** *C*<sub>0</sub> means basic static load rating.

(2) Zero or minimal amount of preload.

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