

# IKO

Linear Way U

# LWU

**U.S. PATENTED**

*The ball retained type is newly released !*



CAT-57110C

Linear Way U has been further evolved.

# The safety-assured structure [*ball retained type*] is newly released.

When the slide unit is separated from the track rail, the steel balls are held in place without falling out. So, this type is very easy to handle.



The stainless steel made miniature type series with a rail width of 25 mm and 30 mm is newly released.



Adopting the U-shaped track rail increases the rigidity greatly.

New concept



# IKO Linear Way U that creates new applications

## Expanded variations of Linear Way U !

### New ball retained type

The ball retained type incorporating steel ball retaining bands is newly released. When the slide unit is separated from the track rail, the steel balls are held in place without falling out. So, this type is easy to assemble in machines and equipment.

### Lined-up stainless steel made miniature type

The miniature type with a track rail width of 25 mm and 30 mm is additionally lined up. This type using stainless steel for steel parts is excellent in corrosion resistance and can be used for portions that should be kept free from oil and in an environment that is exposed to water splashes. The type is most suitable as a Linear Motion Rolling Guide in machines and equipment in clean rooms.



## Features of Linear Way U

### The U-shaped track rail of Linear Way U can be used as a structural member; it is a new design concept !

Rigidity of track rail under moment and torsion is very much increased by adopting the U-shaped design. The track rails can, therefore, be mounted on machines and equipment as structural members, either in a cantilever position or supported at both ends, so they can be combined and assembled freely.

### Low cross sectional height and compact shape!

Slide units and track rails have compact shapes, with cross sectional height made as low as possible. As the result, design of drive mechanisms and other peripheral devices can be made more freely, and machine size and weight can be reduced.

### High precision and rigidity!

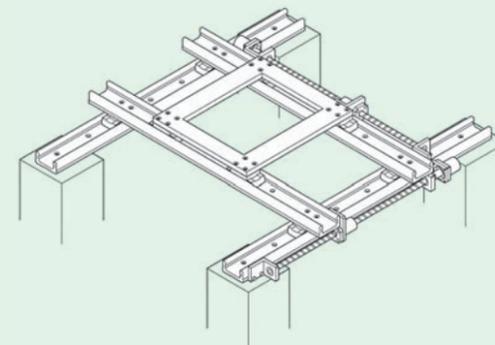
Large diameter steel balls in the slide unit are arranged in two rows, and makes contact with the raceways at four points. Stable high precision and rigidity are thus obtained even under fluctuating or complex load.

### Additional work on track rail is possible!

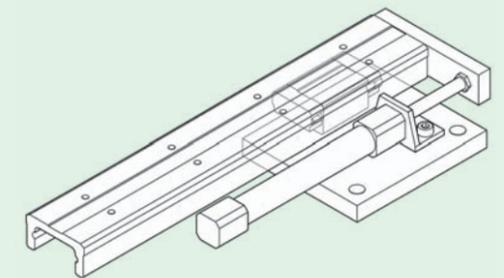
Additional work can be made on track rails, so that drive mechanisms and other peripheral devices can be fixed directly to the track rails.  
 (\*Note that additional work cannot be made near the raceways of track rail. For details, please consult IKO.)

## Wide variations of assembly configurations contribute to increase design flexibility!

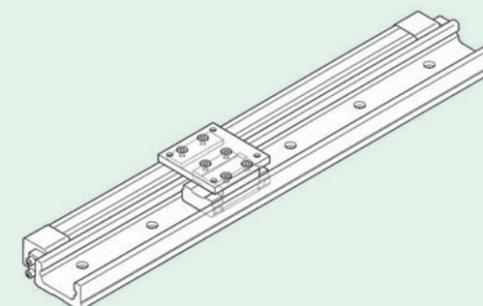
### A construction of open frame table assembly



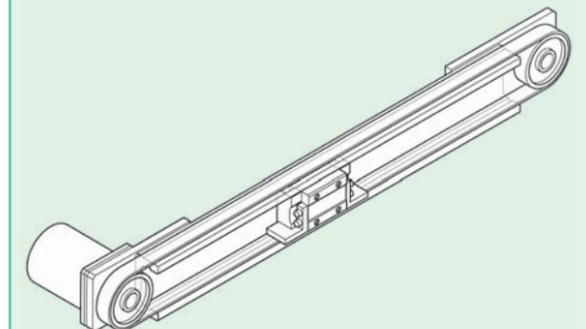
### Table with air cylinder



### High speed slide table with rod-less cylinder



### Compact design with belt drive



## Product series of Linear Way U

Series	Structure	Material	Model code	Size									
				25	30	40	50	60	86	100	130		
Linear Way U	Miniature type	Ball retained type	Stainless steel made	LWUL...B	NEW	NEW							
	Standard type	Ball retained type	High carbon steel made	LWU...B			NEW	NEW	NEW	NEW			
		Ball non-retained type	High carbon steel made	LWU									

# IJKO Linear Way U

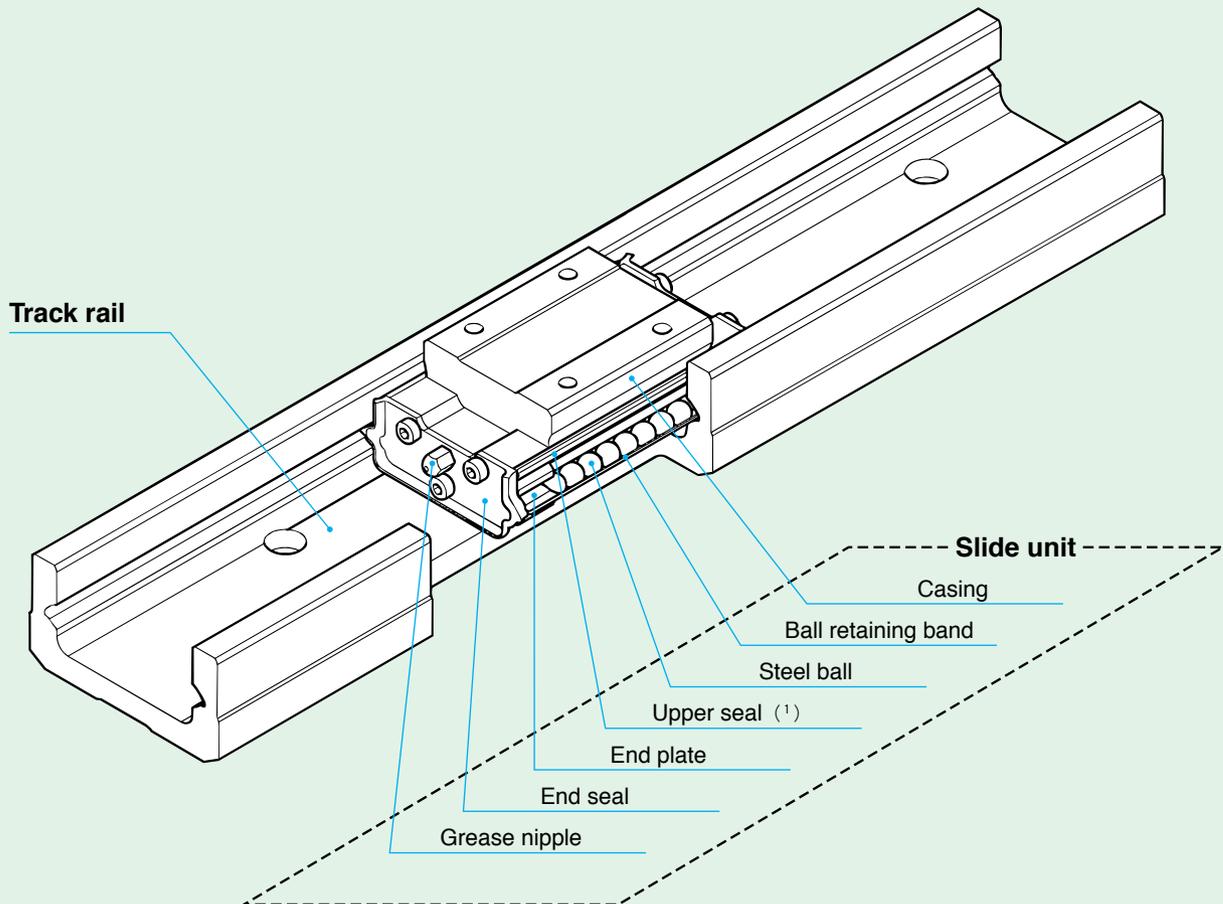
## LWU

IJKO Linear Way U is a linear motion rolling guide featuring a track rail with a U-shaped cross section. Raceways are provided on the inside surface of the track rail, and a slide unit mounted inside the track rail travels along the raceways.

The U-shaped track rail of Linear Way U has much higher rigidity as compared with the track rail with a rectangular cross section, especially under moment and torsion. Therefore, in addition to the conventional

way of fastening a track rail on a mounting base, it can be used by itself as a structural member of machines and equipment, in a cantilever position or being supported at both ends.

Number of slide units, preload, accuracy, etc. can also be specified in the same way as in other Linear Way series, so that the optimal specification can be selected meeting the requirements in the application.



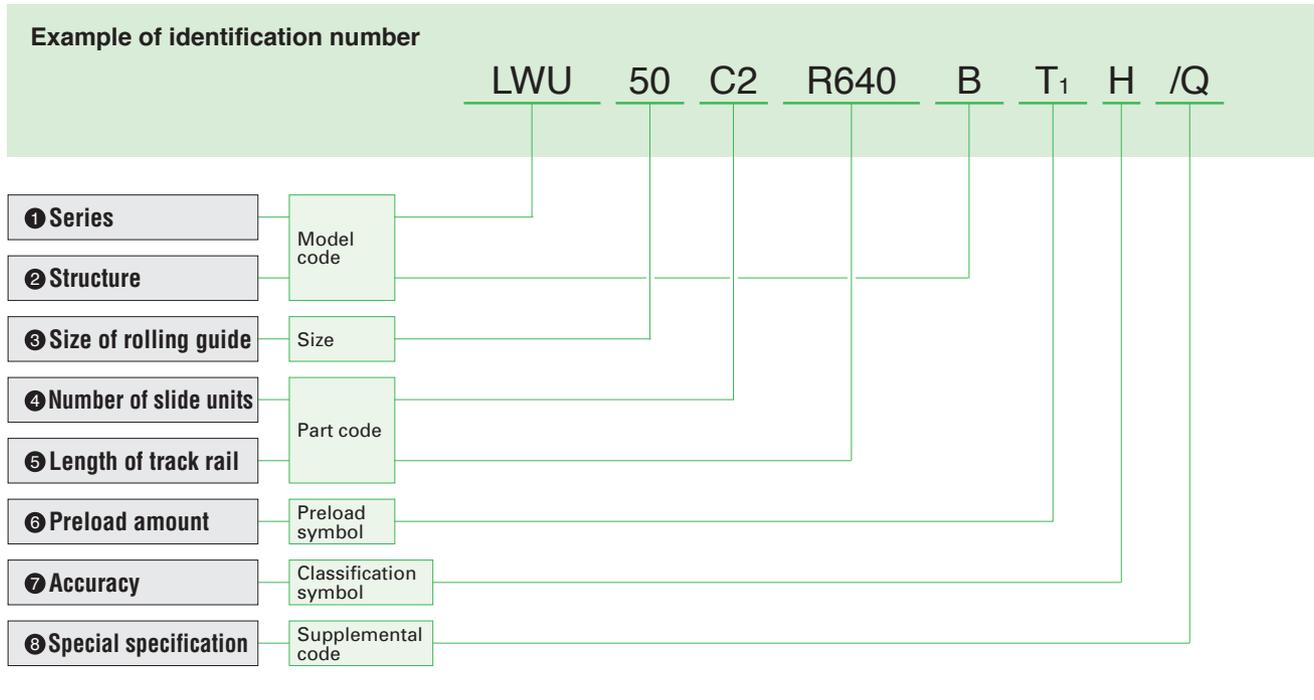
**Structure of Linear Way U**

U.S. PATENT No. 6,309,107  
 No. 6,176,617  
 No. 6,082,899  
 No. 5,967,667

Note (1) : The upper seal is optional on Miniature type 25 and 30.

# Identification Number

The specification of Linear Way U is indicated by the identification number, consisting of a model code, a size, a part code, a preload symbol, a classification symbol, and any supplemental codes.



<b>1 Series</b>	Miniature type : LWUL Standard type : LWU	See Table1 for applicable series and sizes.
<b>2 Structure</b>	Ball retained type : B Ball non-retained type : No symbol	See Table1 for applicable series and sizes.
<b>3 Size of rolling guide</b>		See Table1 for applicable series and sizes.

**Table 1 Linear Way U specification and size**

Model code	Structure	Material	Size							
			25	30	40	50	60	86	100	130
LWUL ... B	Ball retained type	Stainless steel made	○	○	—	—	—	—	—	—
LWU ... B		High carbon steel made	—	—	○	○	○	○	—	—
LWU	Ball non-retained type	High carbon steel made	—	—	○	○	○	○	○	○

<b>4 Number of slide units</b>	C○	The number of slide units mounted on one track rail is indicated.
<b>5 Length of track rail</b>	R○	The length of track rail is indicated in the unit of mm. See Table 18 on page 14 for the standard length and maximum length.
<b>6 Preload amount</b>	Standard : No symbol Light preload : T <sub>1</sub>	See Table 8 on page 10 for the details of preload amount.
<b>7 Accuracy</b>	Ordinary class : No symbol High class : H	See Table 7 on page 9 for the details of accuracy.
<b>8 Special specification</b>	/L○、/Q、/U、/W○	See Table 10 on page 10 for applicable special specifications.

# Load Rating and Life

## Basic dynamic load rating $C$

The basic dynamic load rating is defined as a constant load both in direction and magnitude under which a group of identical Linear Way U are individually operated and 90% of the units in the group can travel over the distance of  $50 \times 10^3$  m without material damage due to rolling contact fatigue.

## Basic static load rating $C_0$

The basic static load rating is defined as a static load that gives a prescribed constant contact stress at the center of the contact area between rolling elements and raceways receiving the maximum load. It is the maximum allowable load under which a rolling element rolls normally. It is generally used in combination with a static safety factor.

## Static moment ratings $T_0, T_x, T_y$

The static moment rating is defined as a static moment load (See Fig. 2) that gives a prescribed contact stress at the center of the contact area between rolling elements and raceways receiving the maximum load when a moment is applied. It is the maximum allowable moment under which a rolling element rolls normally. It is generally used in combination with a static safety factor.

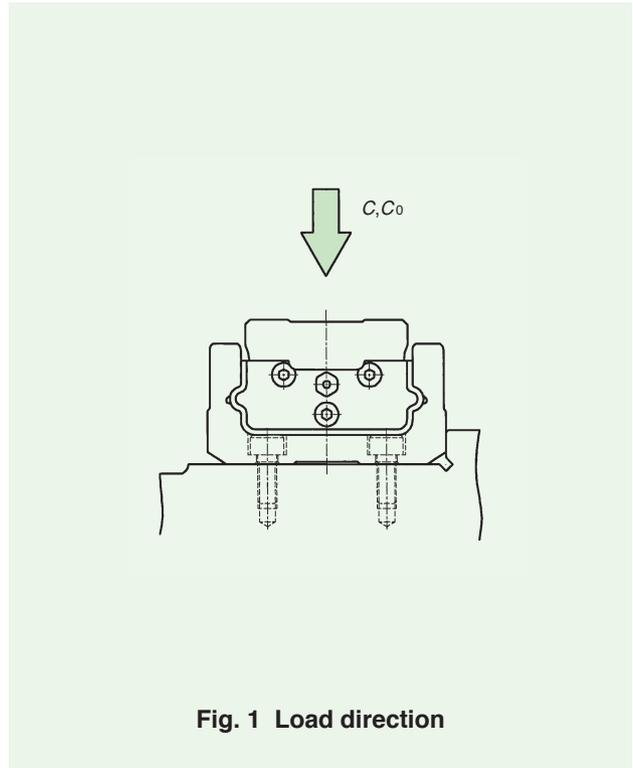


Fig. 1 Load direction

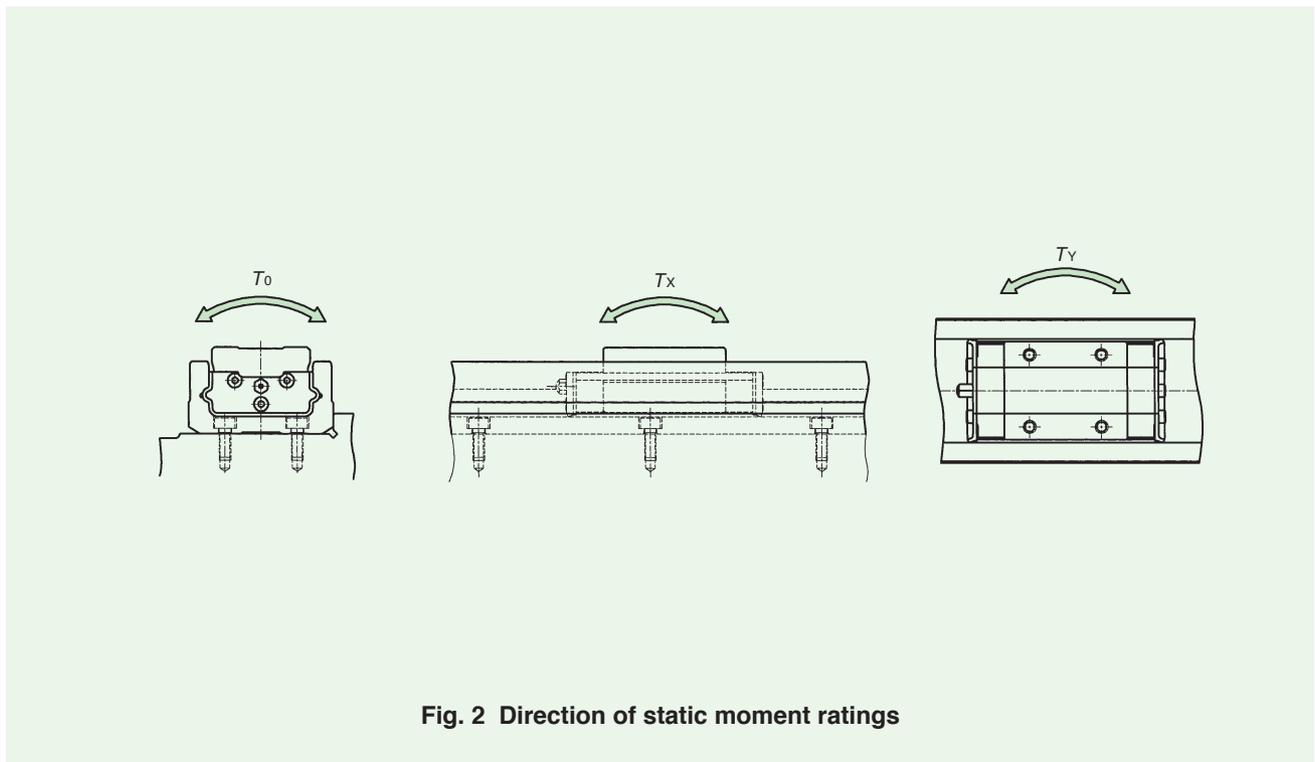


Fig. 2 Direction of static moment ratings

## Life

The basic rating life of **IKK** Linear Way U is obtained from the following formula.

$$L = 50 \left( \frac{C}{P} \right)^3 \dots\dots\dots(1)$$

where,  $L$  : Rating life,  $10^6$  meters  
 $C$  : Basic dynamic load rating, N  
 $P$  : Equivalent load, N

If the stroke length and the number of strokes per minute are known, the life in hours can be obtained from the following formula.

$$L_h = \frac{10^6 L}{2S n_1 \times 60} \dots\dots\dots(2)$$

where,  $L_h$  : Rating life in hours, h  
 $S$  : Stroke length, mm  
 $n_1$  : Number of strokes per minute, cpm

## Static safety factor

The static safety factor  $f_s$  of **IKK** Linear Way U is given in the following formula.

$$f_s = \frac{C_0}{P_0} \dots\dots\dots(3)$$

where,  $f_s$  : Static safety factor  
 $C_0$  : Basic static load rating, N  
 $P_0$  : Static load (maximum load), N

**Table 2 Static safety factor**

Conditions	$f_s$
Operation with vibration and shocks	3 ~ 5
Operation requiring high running performance	2 ~ 4
Normal operation	1 ~ 3

## Load factor

Actual loads applied on the linear motion rolling guide sometimes exceed the theoretically calculated loads due to vibration, shocks and other factors caused by machine operation. The load for life calculation is generally determined by multiplying the theoretically calculated load by a load factor shown in Table 3.

**Table 3 Load factor**

Conditions	$f_w$
Smooth operation free from vibration and/or shocks	1 ~ 1.2
Normal operation	1.2 ~ 1.5
Operation with shock loads	1.5 ~ 3

## Dynamic equivalent load

When a load is applied in a different direction from the direction of the basic dynamic load rating of Linear Way U or a complex load is applied, obtain the dynamic equivalent load to calculate the service life rating.

Obtain the downward and lateral conversion loads from the load of each direction.

$$F_{re} = k_r |F_r| + \frac{C_0}{T_0} |M_0| + \frac{C_0}{T_X} |M_X| \dots\dots\dots(4)$$

$$F_{ae} = k_a |F_a| + \frac{C_0}{T_Y} |M_Y| \dots\dots\dots(5)$$

where,  $F_{re}$  : Downward conversion load, N  
 $F_{ae}$  : Lateral conversion load, N  
 $F_r$  : Downward load, N  
 $F_a$  : Lateral load, N  
 $M_0$  : Moment in  $T_0$  direction, N-m  
 $M_X$  : Moment in  $T_X$  direction, N-m  
 $M_Y$  : Moment in  $T_Y$  direction, N-m  
 $k_r, k_a$  : Conversion factor in the load direction (See Table 5.)  
 $C_0$  : Basic static load rating, N  
 $T_0$  : Static moment rating in  $T_0$  direction, N-m  
 $T_X$  : Static moment rating in  $T_X$  direction, N-m  
 $T_Y$  : Static moment rating in  $T_Y$  direction, N-m

Obtain the dynamic equivalent load from the downward and lateral conversion loads.

$$P = X F_{re} + Y F_{ae} \dots\dots\dots(6)$$

where,  $P$  : Dynamic equivalent load, N  
 $X, Y$  : Dynamic equivalent load factor (See Table 4.)  
 $F_{re}$  : Downward conversion load, N  
 $F_{ae}$  : Lateral conversion load, N

**Table 4 Dynamic equivalent load factor**

Condition	X	Y
$ F_{re}  \geq  F_{ae} $	1	0.6
$ F_{re}  <  F_{ae} $	0.6	1

**Table 5 Conversion factor by load direction**

Size	Conversion factor		
	$k_r$		$k_a$
	$F_r \geq 0$	$F_r < 0$	
25, 30	1	1	1.13
40 ~ 130	1	1	1

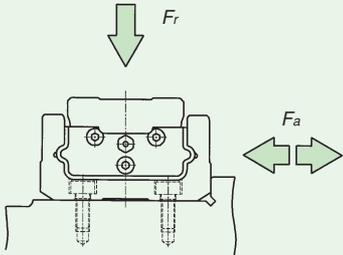
## Static equivalent load

When a load is applied in a different direction from the direction of the basic static load rating of Linear Way U or a complex load is applied, obtain the static equivalent load to calculate the static safety factor.

$$P_0 = k_{0r} |F_r| + k_{0a} |F_a| + \frac{C_0}{T_0} |M_0| + \frac{C_0}{T_X} |M_X| + \frac{C_0}{T_Y} |M_Y| \quad \dots(7)$$

- where,  $P_0$  : Static equivalent load, N-m  
 $F_r$  : Downward load, N  
 $F_a$  : Lateral load, N  
 $M_0$  : Moment in  $T_0$  direction, N-m  
 $M_X$  : Moment in  $T_X$  direction, N-m  
 $M_Y$  : Moment in  $T_Y$  direction, N-m  
 $k_{0r}, k_{0a}$  : Conversion factor in the load direction (See Table 6.)  
 $C_0$  : Basic static load rating, N  
 $T_0$  : Static moment rating in  $T_0$  direction, N-m  
 $T_X$  : Static moment rating in  $T_X$  direction, N-m  
 $T_Y$  : Static moment rating in  $T_Y$  direction, N-m

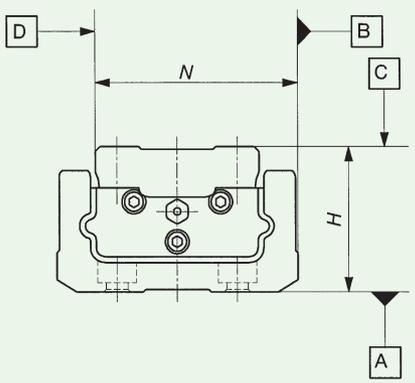
**Table 6 Conversion factor by load direction**



Size	Conversion factor		
	$k_{0r}$		$k_{0a}$
	$F_r \geq 0$	$F_r < 0$	
25, 30	1	1	1.19
40 ~ 130	1	1	1

Accuracy for  Linear Way U is shown in Table 7.

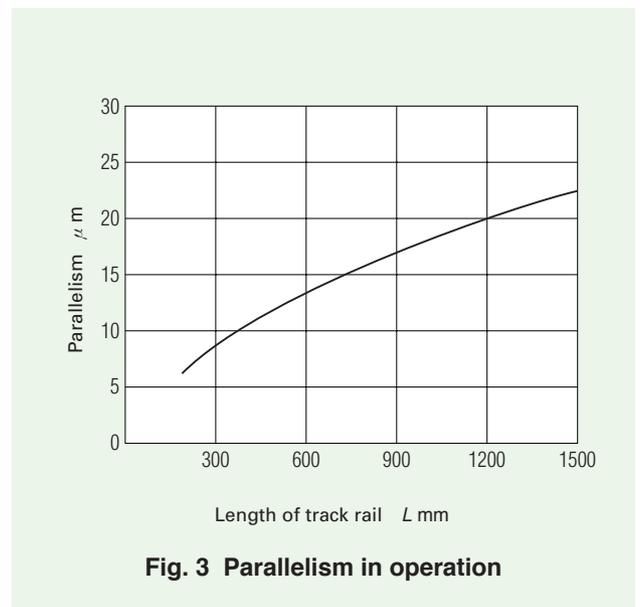
**Table 7 Accuracy**



unit: mm

Classification (Symbol)	Ordinary (No symbol)	High (H)
Item		
Dim. $H$ tolerance	$\pm 0.100$	$\pm 0.050$
Dim. $N$ tolerance	$\pm 0.100$	$\pm 0.050$
Dim. variation of $H$ (1)	0.050	0.040
Dim. variation of $N$ (1)	0.050	0.040
Parallelism in operation of C to A	See Fig. 3	
Parallelism in operation of D to B	See Fig. 3	

Note(1): The size variation between slide units mounted on the same track rail is indicated.



# Preload

The average amount of preload for IKO Linear Way U is shown in Table 8.

**Table 8 Preload amount**

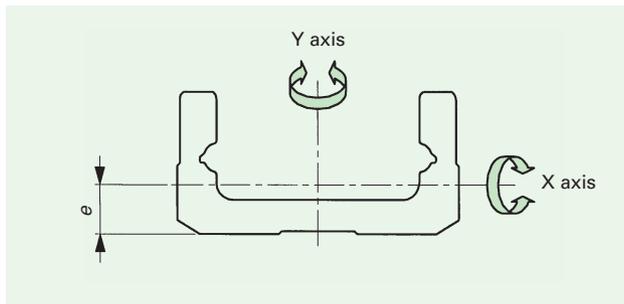
Preload type \ Item	Symbol	Preload amount (N)	Application
Standard preload	(No symbol)	0 <sup>(1)</sup>	• Smooth and precise motion
Light preload	T <sub>1</sub>	0.02C <sub>0</sub>	• Minimum vibration • Evenly balanced load • Smooth and precise motion

Note<sup>(1)</sup>: Zero or minimal amount of preload  
Remark: C<sub>0</sub> means the basic static load rating.

# Moment of inertia of sectional area

High rigidity design of IKO Linear Way U is achieved by adopting a U-shaped track rail. Table 9 shows the moment of inertia of sectional area of track rails.

**Table 9 Moment of inertia of sectional area of track rails**



Model number	Moment of inertia of sectional area mm <sup>4</sup>		Center of gravity e mm
	I <sub>x</sub>	I <sub>y</sub>	
LWUL 25...B	3.7 × 10 <sup>2</sup>	7.5 × 10 <sup>3</sup>	2.6
LWUL 30...B	9.3 × 10 <sup>2</sup>	1.7 × 10 <sup>4</sup>	3.3
LWU 40...B	1.0 × 10 <sup>4</sup>	6.8 × 10 <sup>4</sup>	6.6
LWU 40	1.0 × 10 <sup>4</sup>	6.9 × 10 <sup>4</sup>	6.6
LWU 50...B	2.8 × 10 <sup>4</sup>	1.7 × 10 <sup>5</sup>	8.7
LWU 50	2.8 × 10 <sup>4</sup>	1.7 × 10 <sup>5</sup>	8.7
LWU 60...B	6.3 × 10 <sup>4</sup>	3.9 × 10 <sup>5</sup>	10.7
LWU 60	6.3 × 10 <sup>4</sup>	3.9 × 10 <sup>5</sup>	10.8
LWU 86...B	2.4 × 10 <sup>5</sup>	1.6 × 10 <sup>6</sup>	14.6
LWU 86	2.4 × 10 <sup>5</sup>	1.6 × 10 <sup>6</sup>	14.6
LWU 100	5.9 × 10 <sup>5</sup>	3.3 × 10 <sup>6</sup>	18.8
LWU 130	1.4 × 10 <sup>6</sup>	8.8 × 10 <sup>6</sup>	23.0

# Special specifications

Linear Way U with the special specifications shown in Table 10 are optionally available.

When ordering, add any supplemental code at the end of the identification number. If a combination of special specifications is required, indicate the supplemental codes in the alphabetical order.

**Table 10 Special specifications**

Special specification	Supplemental code
Black chrome surface treatment <sup>(1)</sup>	/L○
Capillary plate <sup>(2)</sup>	/Q
Upper seal <sup>(3)</sup>	/U
Matched sets to be used as an assembled group	/W○

Note<sup>(1)</sup>: Only LR is applicable to size 25 and 30.  
<sup>(2)</sup>: Not applicable to sizes 25 and 30  
<sup>(3)</sup>: Applicable to sizes 25 and 30.

**Table 11 Combination of special specifications**

Q	○		
U	○	—	
W	○	○	○
	L	Q	U

### Black chrome surface treatment

**/LC /LR /LCR**

After a black chrome permeable film is formed, the acrylic resin coating on top of a black chrome film is formed for further improvement in corrosion resistance.

① **/LC**

The casing is treated.

② **/LR**

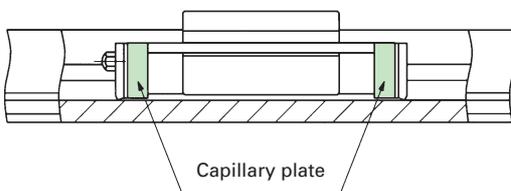
The track rail is treated.

③ **/LCR**

The casing and track rail are treated.

**Coding example : LWU 50 C2 R640 H /LCR**

### With capillary plates **/Q**



The capillary plate is assembled inside of the end seal in the slide unit. It is impregnated with lubricant so that the re-lubrication interval can be made longer. For the overall length of a slide unit with capillary plates, refer to Table 12.

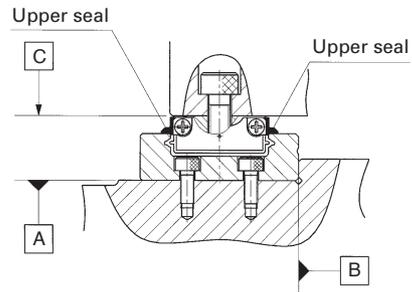
**Coding example : LWU 50 C2 R640 H /Q**

**Table 12 Dimensions of slide unit with capillary plates (Supplemental code /Q)**

Model number	$L_1$	$L_4$
LWU 40	67	68
LWU 50	82	83
LWU 60	95	102
LWU 86	142	148
LWU 100	166	172
LWU 130	190	196

Remark: The above table shows representative model numbers but is applicable to all models of the same size.

### Upper seal **/U**



Seals are attached to the upper end surfaces of the slide unit to prevent foreign materials from entering from the upper side, so that the mounting reference surface D cannot be used. Table 13 shows sizes of the slide unit when upper seals are attached.

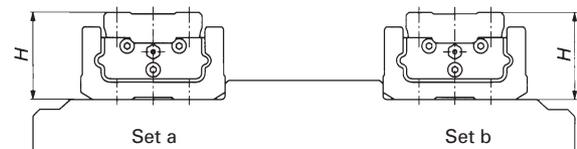
**Coding example : LWUL 25 C2 R420 B H /U**

**Table 13 Dimensions of the slide unit with upper seals (Supplemental code /U)**

Model number	$N$	$W_2$
LWUL 25 ... B	21.4	18
LWUL 30 ... B	25.9	22

unit: mm

### Matched sets to be used as an assembled group **/W**



When two or more sets of Linear Way U are used on the same plane as an assembled group requiring a uniform height variation among the sets, indicate the supplemental code "/W" with the number of sets to be used as a group. The dimensional variation of H among the matched sets is the same as that in a single set. Place an order by quantity of sets instead of the number of complete assembled groups.

**Coding example** (In this example, one assembled group consists of two matched sets.)

**LWU 50 C2 R640 H /W2**

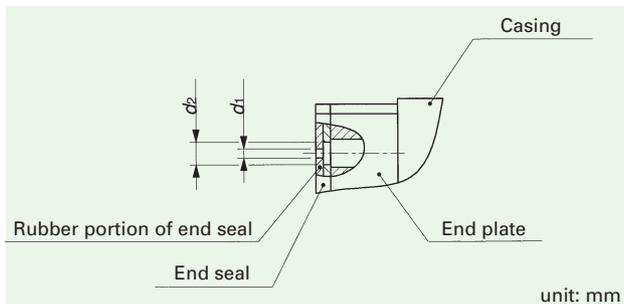
# Lubrication and Dust Protection

A quality lithium-soap base grease (Kyodo Yushi MULTEMP PS No.2) is supplied in the size 25 and 30 series of Linear Way U, and a quality lithium-soap base grease containing extreme-pressure additives (Shell Albania EP Grease 2) is supplied in the size 40 to 130 series of Linear Way U, respectively on delivery. However, the quality of any grease will gradually deteriorate as operating time passes. Therefore, periodic re-lubrication is necessary. The re-lubrication interval varies depending on the operating conditions of the rolling guides. A six-month interval is generally recommended and if the machine operation consists of reciprocation motion with many cycles and long strokes, re-lubrication at an interval of 3 months is recommended.

Linear Way U is available in two types, namely, one with oil hole shown in Table 14 and the other with grease nipple shown in Table 15. A lubrication nozzle fit for each grease nipple and a special lubrication device (mini grease injector) fit for each oil hole are also prepared. If any is required, consult  for further information.

Re-lubrication interval can be extended by using the special re-specification Capillary Plate (supplemental code "/Q"). This

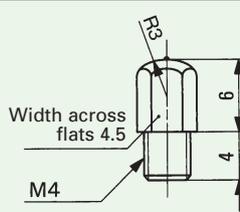
**Table 14 Oil hole**



Model number	Oil hole size	
	$d_1$	$d_2$
LWUL 25...B	0.5	1.2
LWUL 30...B		1.5

unit: mm

**Table 15 Grease nipple**

Model number	Grease nipple	
	Model number	Dimensions
LWU 40...B LWU 50...B	A - M4	
LWU 60...B LWU 86...B LWU 100 LWU 130	JIS A - M6F	

Remark: The above table shows representative model numbers but is applicable to all models of the same size.

can greatly reduce the maintenance work including grease-up.

 Linear Way U is dust-protected with special rubber seals. However, if a large amount of fine contaminants are present or if large particles of foreign matter such as dust and chips may fall on the track rail, it is recommended to provide protective covers for the entire linear motion mechanism.

## Precautions for Use

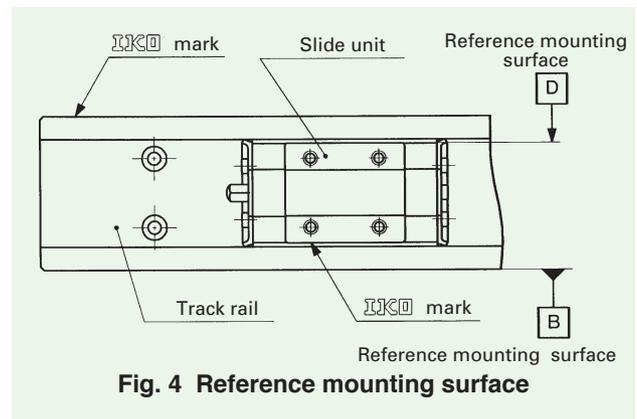
### ① Assembly of a slide unit and a track unit

Steel balls are held in the ball retained type. This type allows you to mount and remove the slide unit freely. Using the dummy rails facilitates the assembly of the slide unit on the track rail. The dummy rails are attached to the size 25 and 30 series as an accessory. Dummy rails for the other models are also prepared. If any of them is required, consult  for further information.

In the ball non-retained type, the steel balls are not held. If the slide unit is separated from the track rail, these steel balls will drop off. Therefore, do not separate the slide unit from the track rail. If the slide unit must be separated for handling, dummy plastic rails can be used and available upon request. Please consult  for further information.

### ② Reference mounting surface

The reference mounting surfaces of the slide unit and track rail of  Linear Way U are the side surfaces opposite to the  mark. (See Fig. 4.)

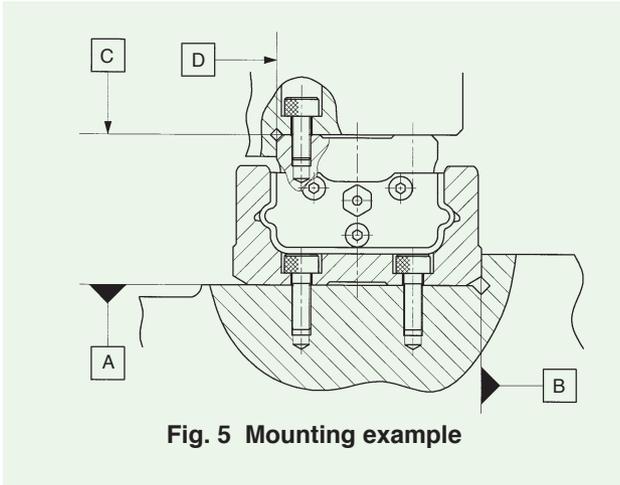


### ③ Screws for mounting the slide unit

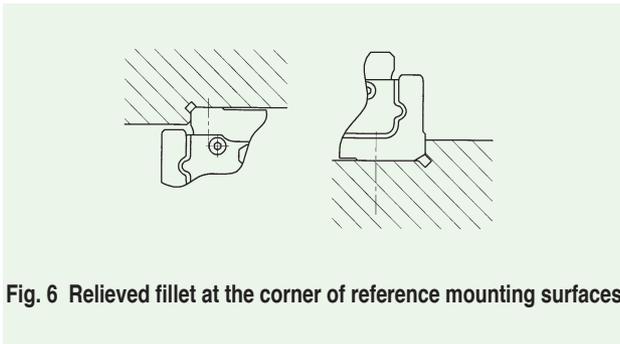
The size 25 and 30 series are provided with female screws in through form. A too long tapped thread of the screw gives a bad effect on the travel accuracy and service life due to interference with the track rail. The length of the thread should be controlled within the thread depth shown in the dimension table.

### ④ Standard mounting example

The reference mounting surfaces B and D and the mounting surfaces A and C of  Linear Way U are precisely finished by grinding. Therefore, a stable and accurate linear motion can be achieved by finishing the mating reference mounting surfaces and the mating mounting surfaces of the



**Fig. 5 Mounting example**



**Fig. 6 Relieved fillet at the corner of reference mounting surfaces**

**Table 16 Shoulder height and corner radius for the mating reference mounting surface**

Model number	Slide unit		Track rail	
	Shoulder height $h_1$	Corner radius $R_1$ (maximum)	Shoulder height $h_2$	Corner radius $R_2$ (maximum) <sup>(1)</sup>
LWUL 25...B	1.5	0.2	2.5	—
LWUL 30...B	2.5	0.2	3	—
LWU 40...B	3	0.5	5	1
LWU 50...B	3	0.5	7	2
LWU 60...B	3	0.5	9	2
LWU 86...B	4	0.5	11	2
LWU 100	4	0.5	13	1
LWU 130	5	1	14	2

unit: mm

Note (1): Model 25 and 30 are required relieved fillets shown on Fig. 6.

machine or equipment accurately and by fitting Linear Way U to these surfaces correctly.

It is recommended to make a relieved fillet at the corner of the mating reference mounting surface of the machine or equipment as shown in Fig. 6. Round corners such as  $R_1$  and  $R_2$  shown in Table 16 can be also be used. Table 16 shows recommended values for shoulder height and corner radius of the mating reference mounting surface.

### ⑤ Rigidity of mounting surface

The accuracy and performance of Linear Way U are affected by the rigidity and material of the mating mounting surfaces. It is recommended to mount Linear Way U on a bed with sufficiently high rigidity in applications where high running accuracy is required.

### ⑥ Multiple slide units mounted in close distance

When using multiple slide units in close distance to each other, the actual load may be greater than the calculated load depending on the accuracy of the mounting surface and the reference mounting surface of the machine. It is suggested in such cases to assume a greater actual load than the calculated load.

### ⑦ Tightening torque of fastening screws

Table 17 shows the tightening torque for mounting Linear Way U on a steel part in general application. The torque values 1.2 to 1.5 times higher than the ones in the table are recommended, when the machine or equipment is subjected to large vibration, impact, fluctuating load or moment load. If the mating part is made of cast iron or aluminum, reduce the tightening torque considering the strength properties of the material.

**Table 17 Mounting bolt tightening torque**

Bolt size	Tightening torque N·m	
	Stainless steel made bolt (Property division A2-70)	Carbon steel made bolt (Strength division 12.9)
M 2.5 × 0.45	0.62	—
M 3 × 0.5	1.1	1.7
M 4 × 0.7	2.5	4.0
M 5 × 0.8	—	7.9
M 6 × 1	—	13.3
M 8 × 1.25	—	32.0
M10 × 1.5	—	62.7

### ⑧ Operating temperature

The maximum operating temperature is 120°C and a continuous operation is possible at temperatures up to 100°C. If the temperature in operation is higher than 100°C, please consult .

Maximum allowable temperature for the "with capillary plates (supplemental code /Q)" specification is 80°C.

# Track Rail Length

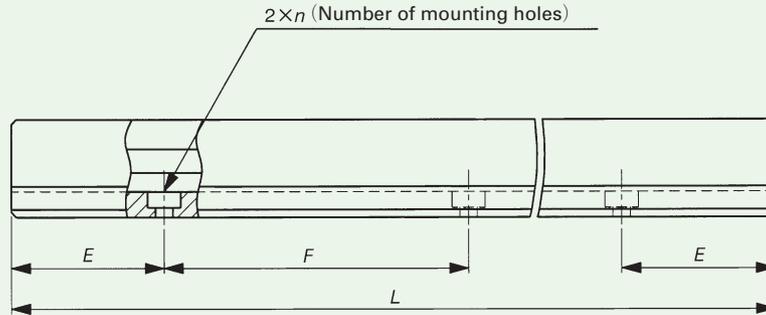
Table 18 shows the standard length and maximum length of the track rail of Linear Way U and recommended mounting bolt. Prepare the necessary quantities of mounting bolts for the length of track rail.

If a track rail having a length different from the standard

length, consult .

In non-ball retained type, if a track rail having a butt-joint track rails specification longer than table 18 maximum length is required, consult .

**Table 18 Track rail length and recommended mounting bolt**



unit: mm

Model number	LWUL 25...B	LWUL 30...B	LWU 40...B LWU 40	LWU 50...B LWU 50
Standard length $L(n)$	105(3) 140(4) 175(5) 210(6) 245(7) 280(8)	120(3) 160(4) 200(5) 240(6) 280(7) 320(8)	180(3) 240(4) 300(5) 360(6) 420(7) 480(8)	240(3) 320(4) 400(5) 480(6) 560(7) 640(8)
Pitch of mounting holes $F$	35	40	60	80
$E$	17.5	20	30	40
Maximum length <sup>(1)</sup>	420(840)	480(960)	720	800
Recommended mounting bolt <sup>(2)(3)</sup>	—	—	M3 × 8	M4 × 10
Model number	LWU 60...B LWU 60	LWU 86...B LWU 86	LWU 100	LWU 130
Standard length $L(n)$	300(3) 400(4) 500(5) 600(6) 700(7) 800(8)	300(3) 400(4) 500(5) 600(6) 700(7) 800(8)	450(3) 600(4) 750(5) 900(6) 1 050(7) 1 200(8)	450(3) 600(4) 750(5) 900(6) 1 050(7) 1 200(8)
Pitch of mounting holes $F$	100	100	150	150
$E$	50	50	75	75
Maximum length	1 000	1 200	1 500	1 500
Recommended mounting bolt <sup>(3)</sup>	M5 × 12	M6 × 16	M8 × 20	M10 × 25

Note<sup>(1)</sup>: The track rails can be manufactured up to the maximum lengths shown in parentheses. If required, consult  for further information.

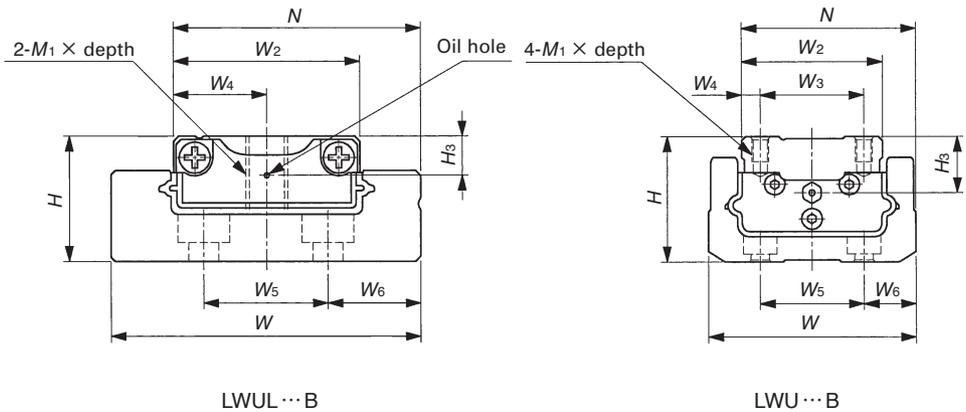
<sup>(2)</sup>: Stainless steel made screws of track rail mounting bolt are appended for the size 25 and 30 models.

<sup>(3)</sup>: The track rail mounting bolts for the size 40 to 130 models are not appended. It is recommended to use hexagon socket head cap bolts of strength division 12.9 according to JIS B 1176.

Remark : M8 female threads for hanging bolt are provided on track rail of size 100. And M10 female threads for hanging bolt are provided on track rail of size 130.

# IKO Linear Way U Ball Retained type

Miniature type  
: LWUL ... B  
Standard type  
: LWU ... B



Model number	Mass (Ref.) g		Dimensions of assembly mm		Dimensions of slide unit mm													
	Slide unit kg	Track rail kg/m	H	N	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	M <sub>1</sub> × depth	H <sub>3</sub>	W	H <sub>4</sub>	H <sub>5</sub>	W <sub>5</sub>	
LWUL 25 ... B	0.013	0.87	9	19.4	14	—	7	31	12	22	—	M3 × 5	2.9	24.9	6.7	3.2	9	
LWUL 30 ... B	0.029	1.39	12	23.9	18	—	9	38	14	28.6	—	M4 × 7	3.75	29.9	8.7	4.5	12	
LWU 40 ... B	0.12	2.65	24	33	26	18	4	55	18	31.5	59	M3 × 5	10.5	40	19	4	18	
LWU 50 ... B	0.27	4.06	30	42	34	25	4.5	70	25	42.8	73	M4 × 6	13.5	50	25	6	25	
LWU 60 ... B	0.40	6.66	35	49	38	28	5	83	28	52.4	90	M5 × 8	14.5	60	30	8	28	
LWU 86 ... B	1.32	14.1	48	71	56	46	5	130	46	93	136	M6 × 12	25.5	86	42	13	46	

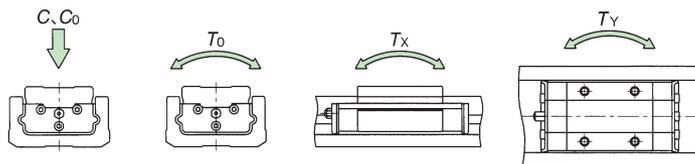
Note(1): Track rail length L is shown in Table 18.

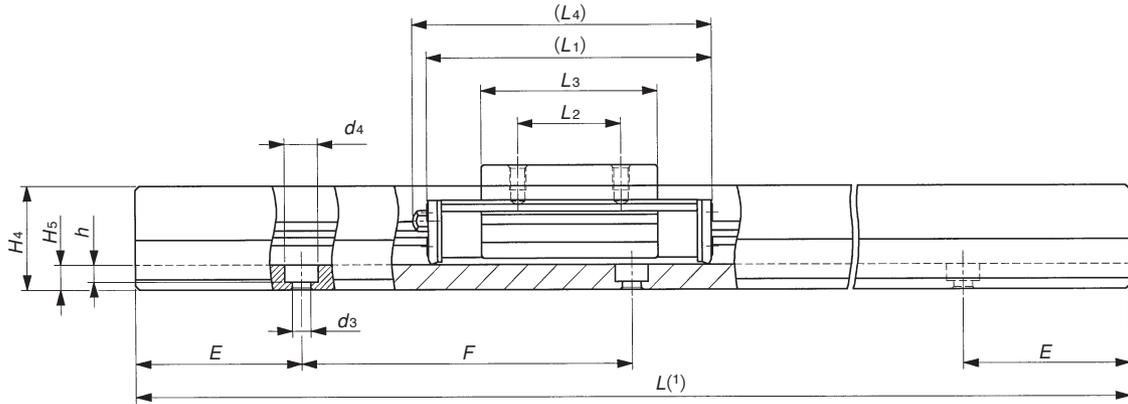
(2): The basic dynamic load rating (C), basic static load rating (C<sub>0</sub>), and static moment rating (T<sub>0</sub>, T<sub>x</sub> and T<sub>y</sub>) are the values in the directions indicated in the sketches below.

The upper figures in "T<sub>x</sub>" and "T<sub>y</sub>" column are the figures for one slide unit. The lower values are for two slide in close contact.

Remark 1: For the specifications of oil holes and grease nipples, see Table 14 and 15.

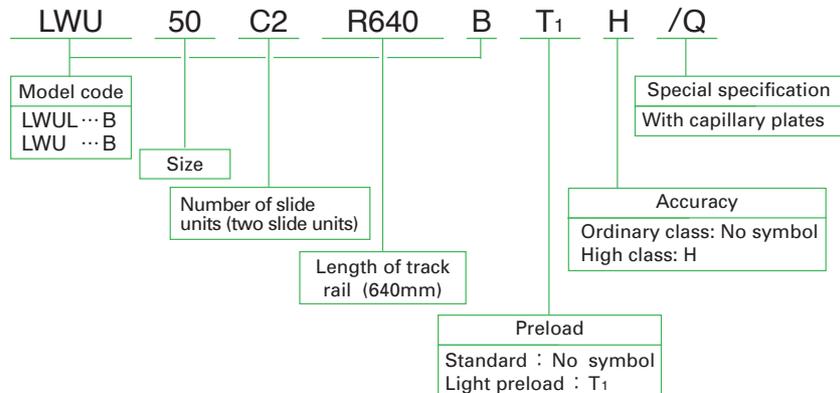
2: The bolts for mounting track rails are hexagon socket head bolts of JIS B 1176 or equivalent, or cross recessed head screws for precision equipment. Stainless steel bolts or screws are appended for the size 25 and 30.





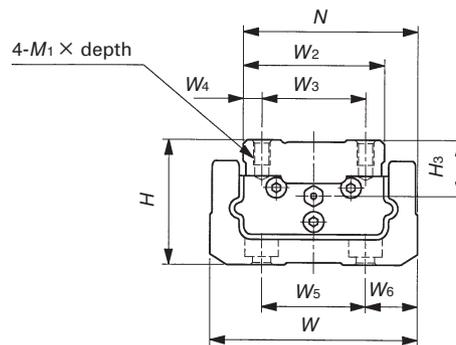
Dimensions of track rail mm						Mounting bolt for track rail mm Bolt size × ℓ	Basic dynamic load rating <sup>(2)</sup> C N	Basic static load rating <sup>(2)</sup> C <sub>0</sub> N	Static moment rating <sup>(2)</sup>			Model number
W <sub>6</sub>	d <sub>3</sub>	d <sub>4</sub>	h	E	F				T <sub>0</sub> N-m	T <sub>X</sub> N-m	T <sub>Y</sub> N-m	
8	2.9	4.8	1.6	17.5	35	Cross recessed head screw for precision equipment M2.5 × 6	1 580	2 940	21.0	10.4 55.7	8.7 46.7	LWUL 25...B
9	2.9	5	2.7	20	40	Hexagon socket head bolt M2.5 × 6	2 010	3 960	36.2	17.5 90.7	14.7 76.1	LWUL 30...B
11	3.4	6.5	3.1	30	60	(not appended)	7 570	10 100	139	54.9 364	54.9 364	LWU 40...B
12.5	4.5	8	4.1	40	80	(not appended)	12 000	16 400	291	118 738	118 738	LWU 50...B
16	5.5	9.5	5.4	50	100	(not appended)	16 600	22 400	441	187 1 190	187 1 190	LWU 60...B
20	7	11	7	50	100	(not appended)	35 900	53 400	1 520	792 4 270	792 4 270	LWU 86...B

### Example of identification number



# IKO Linear Way U Ball Non-retained type

## Standard type : LWU



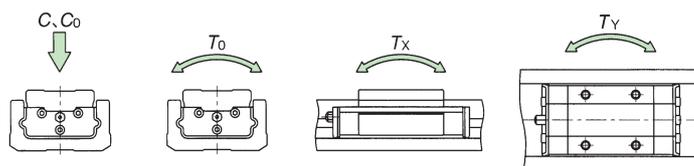
Model number	Mass (Ref.) g		Dimensions of assembly mm		Dimensions of slide unit mm									
	Slide unit kg	Track rail kg/m	$H$	$N$	$W_2$	$W_3$	$W_4$	$L_1$	$L_2$	$L_3$	$L_4$	$M_1 \times \text{depth}$	$H_3$	$W$
<b>LWU 40</b>	0.12	2.66	24	33	26	18	4	55	18	31.5	59	M 3 × 5	10.5	40
<b>LWU 50</b>	0.27	4.08	30	42	34	25	4.5	70	25	42.8	73	M 4 × 6	13.5	50
<b>LWU 60</b>	0.40	6.69	35	49	38	28	5	83	28	52.4	90	M 5 × 8	14.5	60
<b>LWU 86</b>	1.32	14.1	48	71	56	46	5	130	46	93	136	M 6 × 12	25.5	86
<b>LWU 100</b>	2.20	21.5	58	82	65	50	7.5	154	50	111	158	M 8 × 15	29	99.5
<b>LWU 130</b>	4.49	33.0	72	109	88	70	9	178	70	132	182	M10 × 20	35.5	130

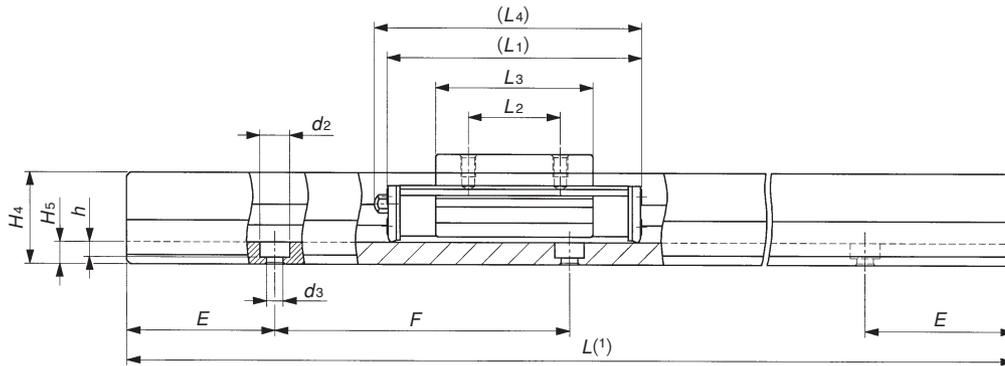
Note<sup>(1)</sup>: Track rail length L is shown in Table 18.

Note<sup>(2)</sup>: The basic dynamic load rating ( $C$ ), basic static load rating ( $C_0$ ), and static moment rating ( $T_0$ ,  $T_x$  and  $T_y$ ) are the values in the directions indicated in the sketches below.

The upper figures in " $T_x$ " and " $T_y$ " column are the figures for one slide unit. The lower values are for two slide in close contact.

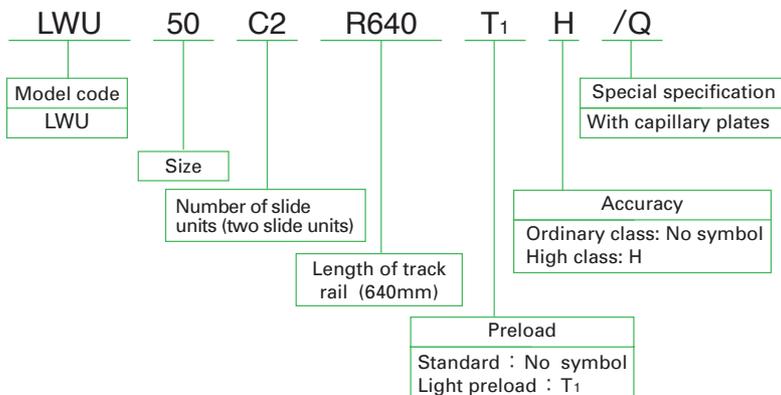
Remark : For the specifications of grease nipples, see Table 15.

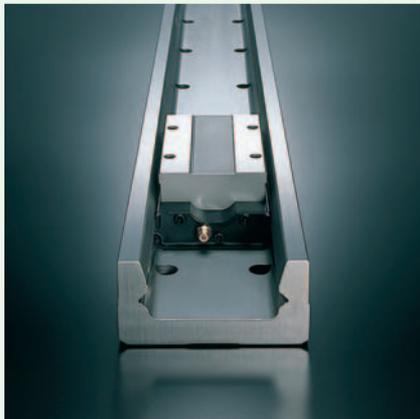




Dimensions of track rail mm									Basic dynamic load rating <sup>(2)</sup> C N	Basic static load rating <sup>(2)</sup> C <sub>0</sub> N	Static moment rating <sup>(2)</sup>			Model number
H <sub>4</sub>	H <sub>5</sub>	W <sub>5</sub>	W <sub>6</sub>	d <sub>3</sub>	d <sub>4</sub>	h	E	F			T <sub>0</sub> N-m	T <sub>X</sub> N-m	T <sub>Y</sub> N-m	
19	5	18	11	3.4	6.5	3.1	30	60	7 570	10 100	139	54.9 364	54.9 364	<b>LWU 40</b>
25	6	25	12.5	4.5	8	4.1	40	80	12 000	16 400	291	118 738	118 738	<b>LWU 50</b>
30	8	28	16	5.5	9.5	5.4	50	100	16 600	22 400	441	187 1 190	187 1 190	<b>LWU 60</b>
42	13	46	20	7	11	7	50	100	35 900	53 400	1 520	792 4 270	792 4 270	<b>LWU 86</b>
52	17	50	24.5	9	14	9	75	150	47 100	71 000	2 310	1 250 6 700	1 250 6 700	<b>LWU 100</b>
65	20	70	30	11	17.5	10.6	75	150	60 200	92 100	4 070	1 900 9 980	1 900 9 980	<b>LWU 130</b>

**Example of identification number**





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