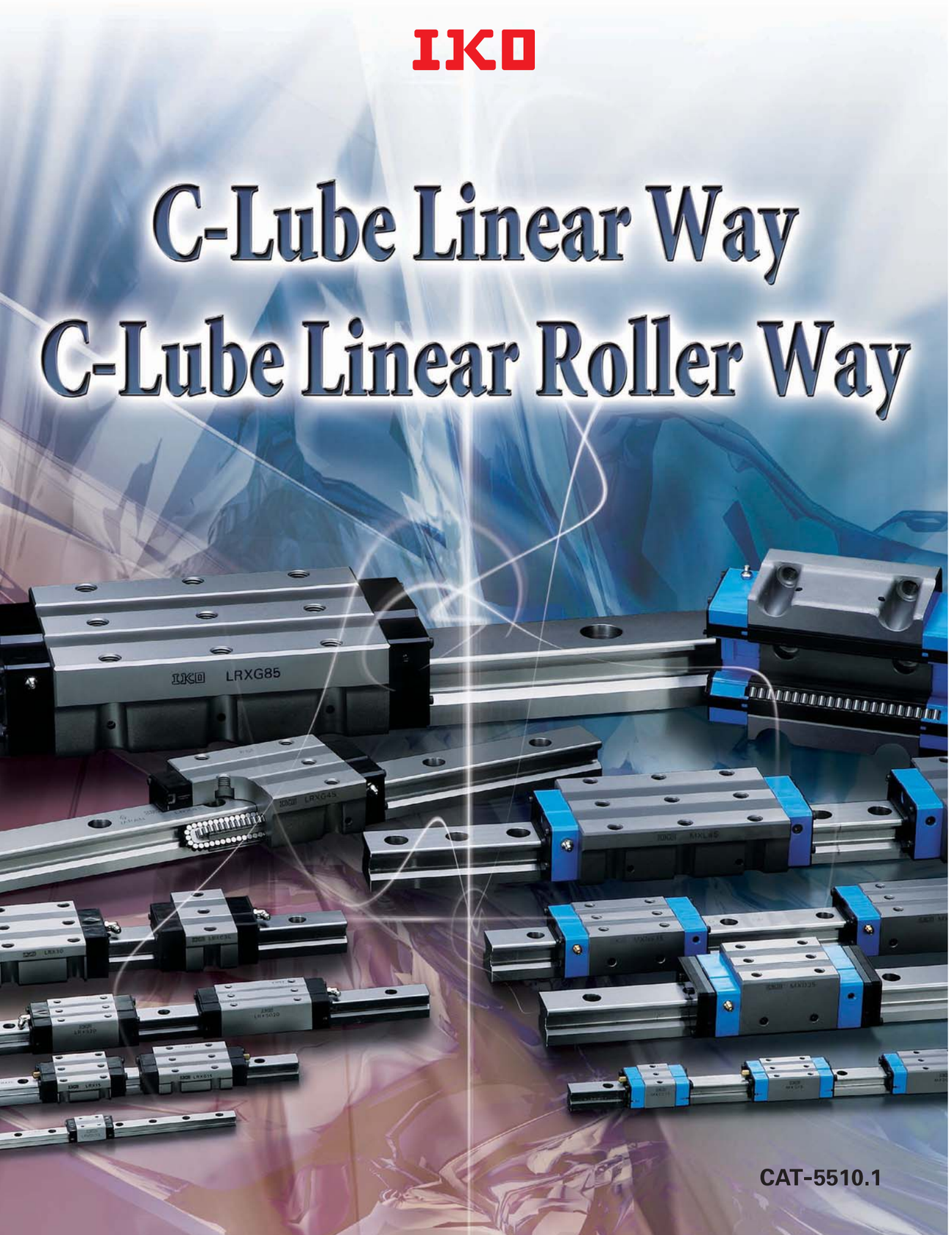
U.S. PATENTED

IKO

C-Lube Linear Way
C-Lube Linear Roller Way



CAT-5510.1

See you again at
IKO Website
http://www.ikont.co.jp/eg/

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Recognizing that conservation of the global environment is the top-priority challenge for the world's population, Nippon Thompson will conduct its activities with consideration of the environment as a corporate social responsibility, reduce its negative impact on the environment, and help foster a rich global environment.

ISO 9001 & 14001 Quality system registration certificate

ISO 9001 Certified
ISO 14001 Certified

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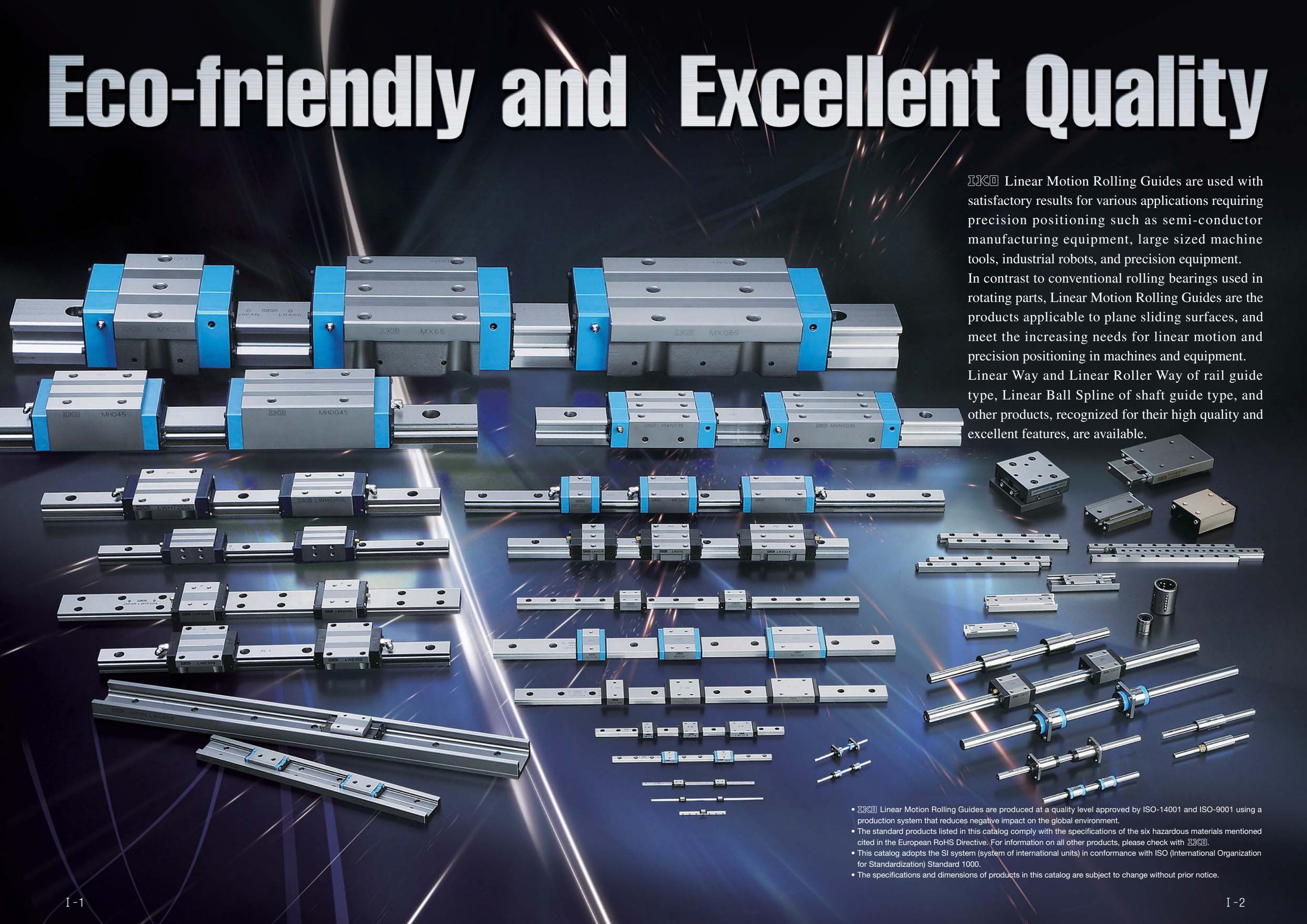
June 2011 IKO Overseas Dept.(OKU)

Eco-friendly and Excellent Quality

IKO Linear Motion Rolling Guides are used with satisfactory results for various applications requiring precision positioning such as semi-conductor manufacturing equipment, large sized machine tools, industrial robots, and precision equipment.
In contrast to conventional rolling bearings used in rotating parts, Linear Motion Rolling Guides are the products applicable to plane sliding surfaces, and meet the increasing needs for linear motion and precision positioning in machines and equipment.
Linear Way and Linear Roller Way of rail guide type, Linear Ball Spline of shaft guide type, and other products, recognized for their high quality and excellent features, are available.



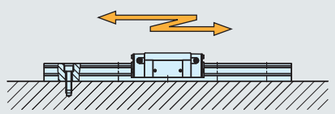
- IKO Linear Motion Rolling Guides are produced at a quality level approved by ISO-14001 and ISO-9001 using a production system that reduces negative impact on the global environment.
- The standard products listed in this catalog comply with the specifications of the six hazardous materials mentioned cited in the European RoHS Directive. For information on all other products, please check with IKO.
- This catalog adopts the SI system (system of international units) in conformance with ISO (International Organization for Standardization) Standard 1000.
- The specifications and dimensions of products in this catalog are subject to change without prior notice.

Types and Specifications of IKO Linear Motion Rolling Guides

Types of Linear Motion Rolling Guides

Rail guide type

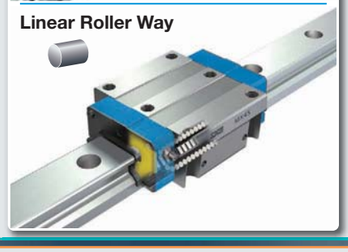
The rail guide type achieves linear motion along a rail. This product can receive a complex load and features high performance, excellent total balance and easy handling.



Endless linear motion

Linear Way

Linear Roller Way



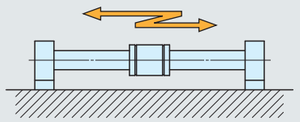
Limited linear motion

Crossed Roller Way

Linear Ball Spline

Shaft guide type

The shaft guide type achieves linear motion along a shaft. This product is easy to handle and suitable for relatively low load conditions. Some shaft guide products can achieve both rotation and reciprocating linear motion.



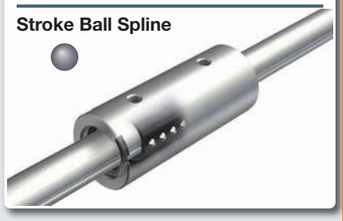
Endless linear motion

Linear Ball Spline

Linear Bushing

Limited linear motion

Stroke Ball Spline

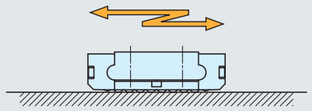


Limited linear motion + rotation

Stroke Rotary Bushing

Flat guide type

Flat guide type linear motion rolling guides can receive only a uni-directional load but feature high rigidity in the load direction.

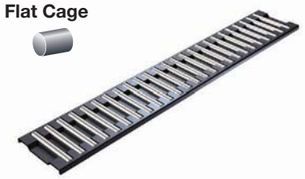


Endless linear motion

Roller Way

Limited linear motion

Flat Cage



Specificatons of Linear Motion Rolling Guides

			Type of rolling element	Type of motion	Load direction and load carrying capacity	Rigidity	Frictional characteristic	Ease of mounting	General applications
Rail guide type	Endless linear motion	Linear Way	Ball	Endless linear motion	Complex load, medium to heavy load	○	○	◎	•NC machine tool •Precision working machine •Robot •Material transfer machine
Rail guide type	Endless linear motion	Linear Roller Way	Roller	Endless linear motion	Complex load, heavy to extra-heavy load	◎	○	◎	•Heavy duty machine tool •Large working machine •High-rigidity robot
Rail guide type	Limited linear motion	Crossed Roller Way	Roller	Limited linear motion	Complex load, medium load	○	◎	◎	•Precision working machine •Electronic parts assembling machine •Precision measuring instrument
Rail guide type	Limited linear motion	Precision Linear Slide	Ball	Limited linear motion	Complex load, light to medium load	△	◎	◎	•Electronic parts assembling machine
Shaft guide type	Endless linear motion	Linear Ball Spline	Ball	Endless linear motion	Complex load, medium to heavy load	○	○	○	•Robot •Testing and inspection equipment •Material transfer machine
Shaft guide type	Endless linear motion	Linear Bushing	Ball	Endless linear motion	Radial load, light load	△	○	○	•Packaging machine •Measuring instrument •Medical equipment
Shaft guide type	Limited linear motion	Stroke Ball Spline	Ball	Limited linear motion	Complex load, medium to heavy load	○	◎	○	•Robot •Testing and inspection equipment
Shaft guide type	Limited linear motion + rotation	Stroke Rotary Bushing	Ball	Limited linear motion + rotation	Radial load, light load	△	◎	○	•Printing press •Press die set •Precision measuring instrument
Flat guide type	Endless linear motion	Roller Way	Roller	Endless linear motion	One-directional load, extra-heavy load	◎	○	△	•NC machine tool •Precision working machine
Flat guide type	Limited linear motion	Flat Cage	Roller	Limited linear motion	One-directional load, extra-heavy load	◎	◎	○	•Precision working machine •Optical measuring instrument

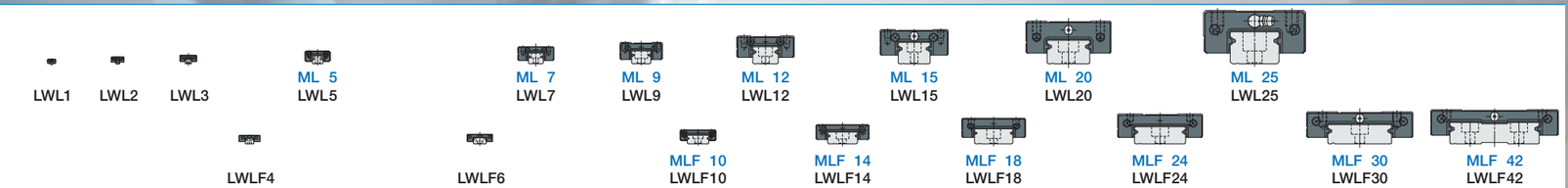
Remarks: ◎Excellent, ○Good, △Fair

IKO's Proud Line-up of Linear Ways and Linear Roller Ways

Ball Type Miniature Series

C-Lube Linear Way ML
Linear Way L
Micro Linear Way L

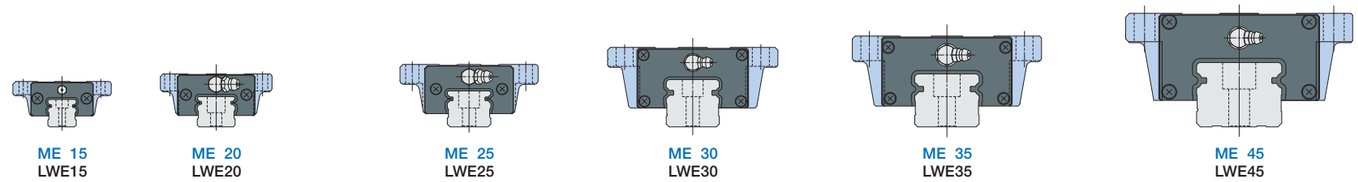
Miniature linear motion rolling guides produced by IKO's unique downsizing technology



Ball Type Compact Series

C-Lube Linear Way ME
Linear Way E
Low Decibel Linear Way E

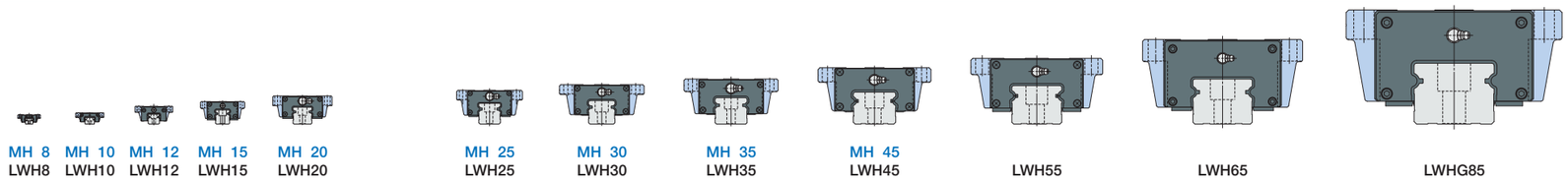
High versatility universal linear motion rolling guides seeking out to be lower, narrower, and shorter for downsizing



Ball Type High Rigidity Series

C-Lube Linear Way MH
Linear Way H

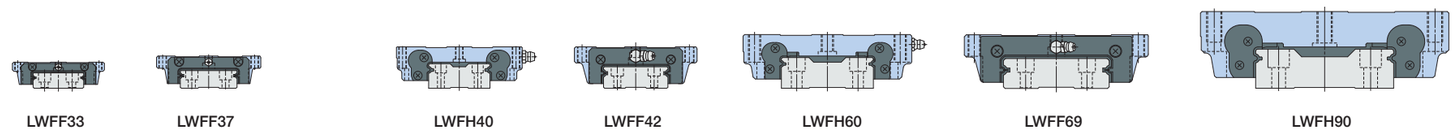
High rigidity linear motion rolling guides having the greatest load ratings among ball type linear guide units thanks to steel balls of large diameters



Ball Type Wide Rail Series

Linear Way F

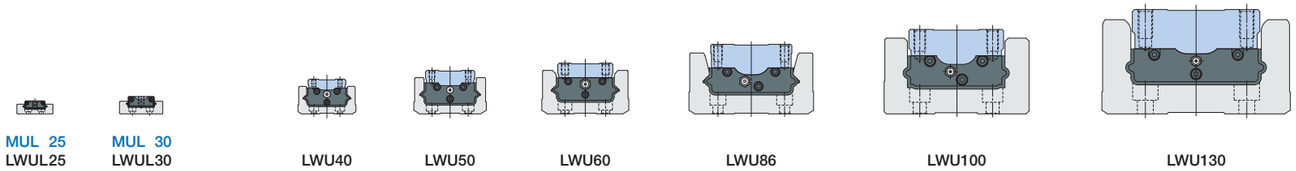
Linear motion rolling guides using a wide track rail, resistant to rolling moment, and fit for single row rail arrangement



Ball Type U-shaped Track Rail Series

C-Lube Linear Way MUL
Linear Way U

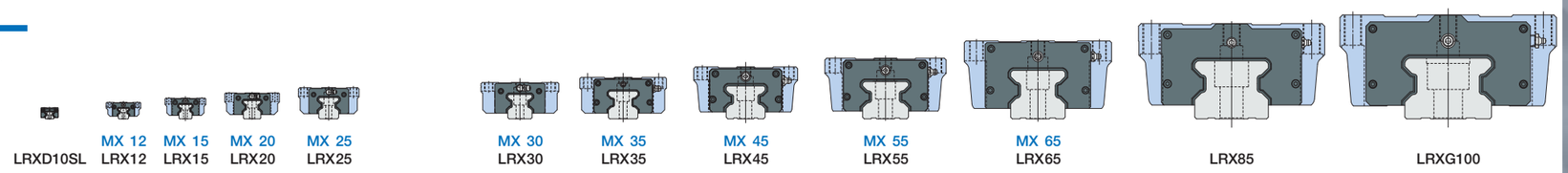
Linear motion rolling guides of high track rail rigidity, adopting U-shaped track rail



Roller Type

C-Lube Linear Roller Way Super MX
Linear Roller Way Super X

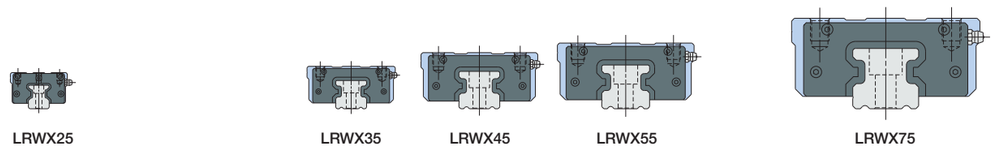
Linear motion rolling guides having highest performance levels in every characteristic, maximizing excellent characteristics of rollers



Roller Type

Linear Roller Way X

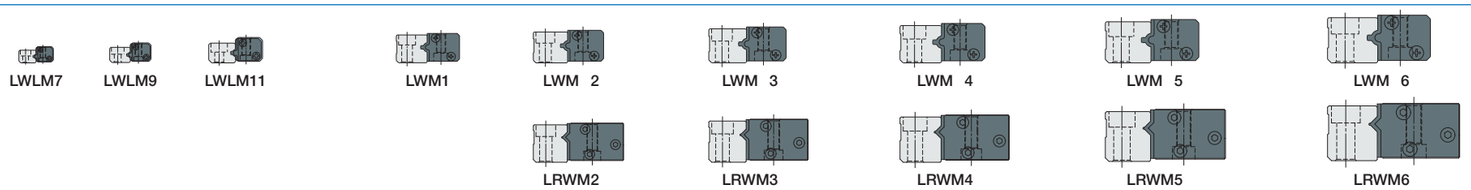
Linear motion rolling guides with rollers in four rows



Module Type

Linear Way Module

Compact linear motion rolling guides consisting of a set of track rail and slide member which forms the smallest unit of linear motion mechanism



Environment

IKO Contributes to Preserving The Global Environment

Nippon Thompson Co., Ltd. is working to develop global environment-friendly products. It is committed to developing products that make its customers' machinery and equipment more reliable, thereby contributing to preserving the global environment.
This development stance manifests well in the keyword "Oil Minimum."

Oil Minimum
IKO Gentle to The Earth

Our Pursuit of Oil Minimum has Led to The Creation of IKO's Proprietary Family of Lubricating Parts as "C-Lube."

The C-Lube Series not only keeps products maintenance-free for long by giving them an optimal and minimal amount of a lubricant for an extended period of time but also contributes greatly to preserving the global environment.

IKO C-Lube Maintenance-free®

Environmentally Conscious "Interchangeable" Concept Removes Material and Stock Inefficiencies Completely.

"Interchangeable" is a generic term covering user-centric product selection systems that allow slide units and track rails to be freely reorganized and interchanged while maintaining their accuracies and preloads completely.

The Merger of The Benefits of Being Maintenance-Free Thanks to the Built-in C-Lube with an Advanced Interchangeable System is "Free & Interchangeable."

Suppressing oil consumption

Ecology specifications

Oil Minimum
IKO Gentle to The Earth

Ecology

Minimizes the precious oil resources!
Requirs no oiling device and pipes.
These can reduce the initial cost.

Contributes to reduce total costs and environmental loads.

Maintenance free

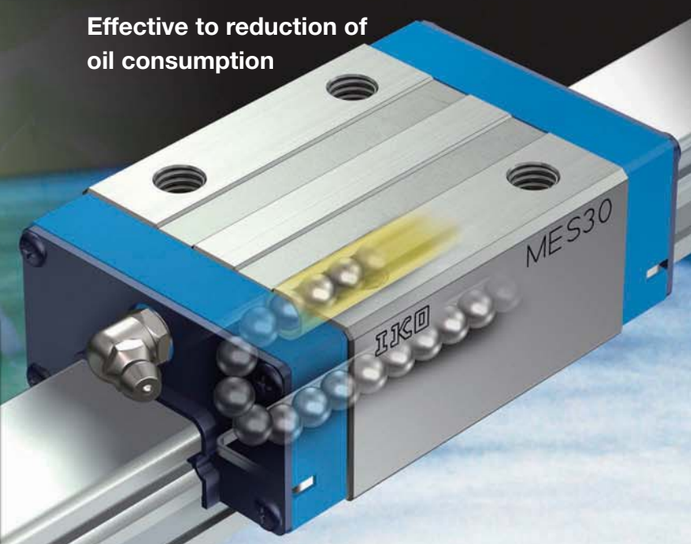
Endurance running test of 20,000 km or more accomplished without additional oil

Improvement of time-consuming lubrication management works

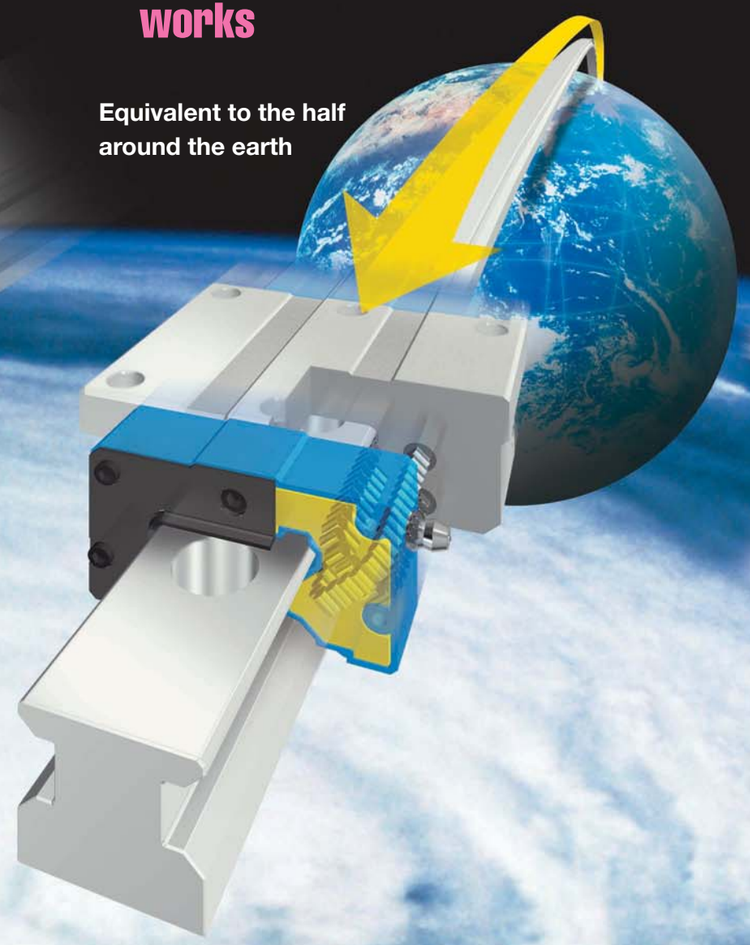
Space saving

Without any oiling device that occupies your space, you can use the work space effectively

Widens the degree of freedom of machine designing



Effective to reduction of oil consumption



Equivalent to the half around the earth

Effective use of space

IKO C-Lube Maintenance-free®

U.S. PATENTED

C-Lube Linear Way ML	C-Lube Linear Way ME
No. 7677804	No. 7748905
7252435	7677804
6729761	6729761
6712511	6712511
5435649	5564188
5289779	5374126
5250126	5356223
	5324116

C-Lube Linear Way MH	C-Lube Linear Way MUL
No. 7832929	No. 7677804
7762723	6729761
7748905	6712511
7677804	6309107
6729761	5435649
6712511	5289779
5622433	5250126
5564188	
5374126	

C-Lube Linear Roller Way Super MX

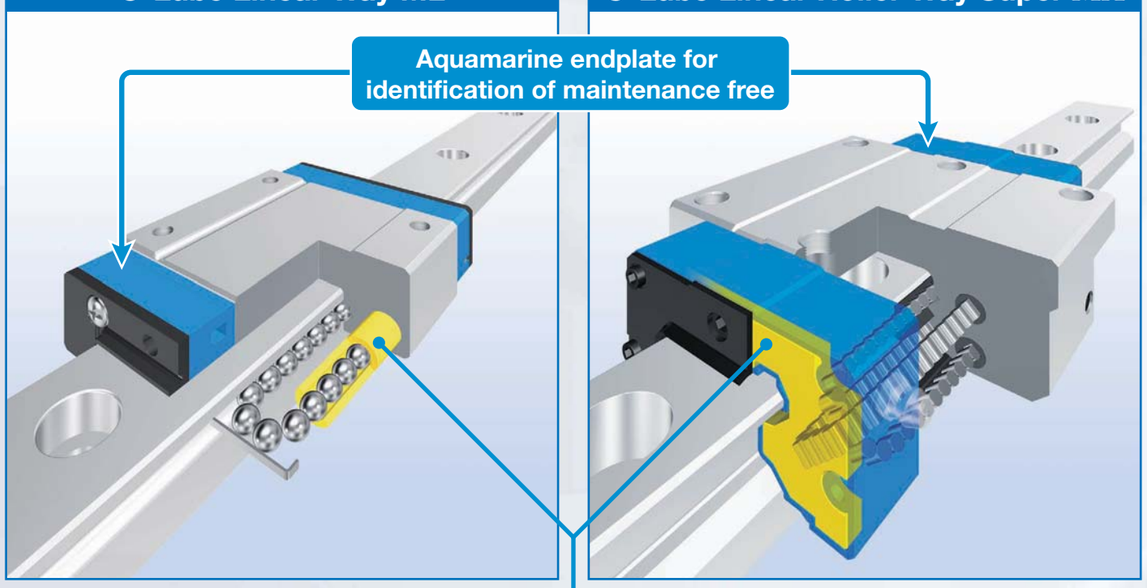
No. 7862234	7534042	7341378
5800064	5622433	5564188
5464288	5374126	5193914

Features of C-Lube Linear Way, Linear Roller Way

Innovative world first structures incorporating C-Lube

C-Lube Linear Way ML

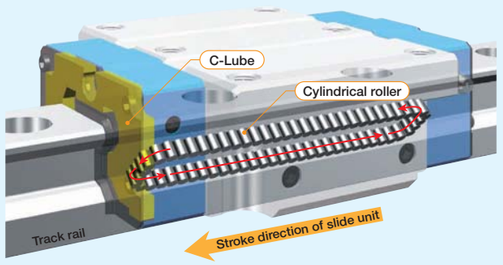
C-Lube Linear Roller Way Super MX



Built-in C-Lube

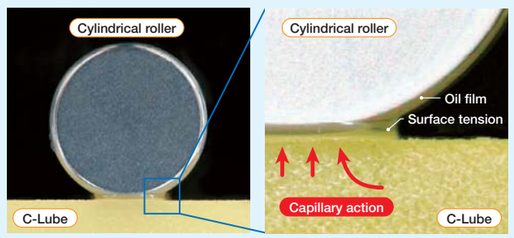
Lubricant is distributed by the circulation of the steel balls.

Lubricant is supplied directly to the steel balls. As the steel balls circulate, the lubricant is distributed to the loading area along the track rail. This results in adequate lubrication being properly maintained in the loading area for a long time.



Lubricant is deposited directly to the surface of the steel balls.

The surface of C-Lube is always covered with the lubricant. Lubricant is continuously supplied to the surface of steel ball by surface tension in the contact of C-Lube surface and steel balls. New oil permeates automatically from the core of C-Lube to the internal surface that comes in contact with steel balls.



"Long-Term Maintenance-Free"

Realized Singly by Oil Impregnated in C-Lube

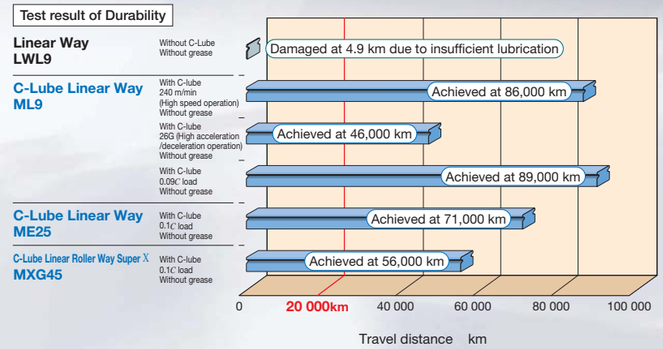
Maintenance free

Endurance running test of 20,000 km or more accomplished singly by oil in the C-Lube
Additional grease in the slide unit assures the long-term maintenance free service.

Enables "maintenance free" till the end of machine life.

This assumes a general machine life.
Additional lubricant may be required under a certain condition.

Test result of Durability

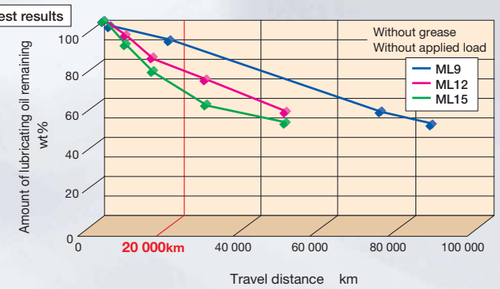


Ecology

To accomplish this effect, C-Lube applies only the minimal amount of lubricant required to property lubricate the rolling parts. Since the oil consumption is small, C-Lube is able to maintain proper lubrication even in long-term operation.

Ecology specification suppressing the consumption of lubricant

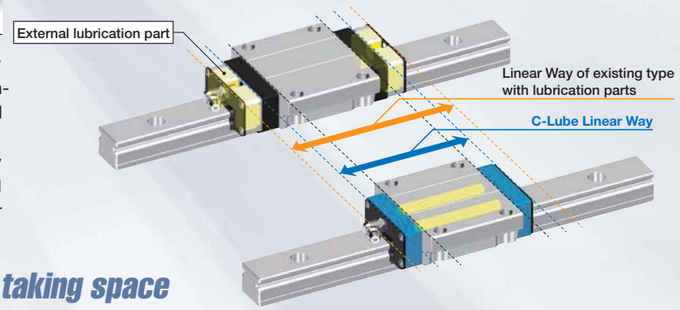
C-Lube oil supplying test results



Compact

C-Lube Linear way and C-Lube Linear Roller Way respectively incorporates a C-Lube lubricating part without making their slide units longer unlike those equipped external lubrication parts.
So, the conventional Linear Way and Linear Roller Way can be directly substituted by C-Lube Linear Way and C-Lube Linear Roller Way without any restriction in their installation spaces and strokes.

Compact design taking space saving into consideration



Smooth

C-Lube Linear Way and C-Lube Linear Roller Way do not cause any sliding resistance unlike those equipped with lubrication parts that are mounted outside a slide unit and in contact with a track rail.
Compatibility of quick response is superior and it contributes to energy saving thanks to accuracy improvement of an equipment, and reduction of frictional loss.

Realizes light and smooth operation!

Frictional resistance test result

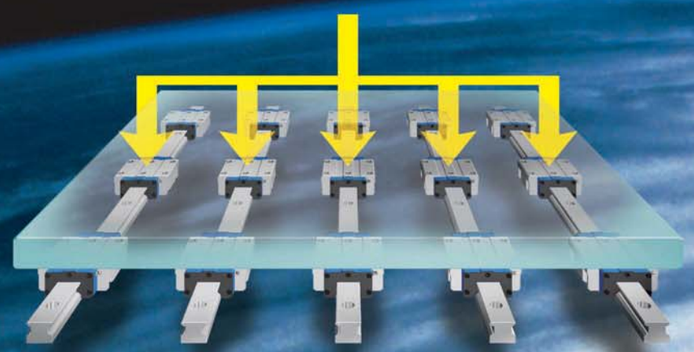
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Ultimate Interchangeable system obtained by thorough seeking to reduce every kind of wastes "Interchangeable"

Interchangeability in accuracy

Sets of three accuracy classes!
Furthermore, the height variation among multiple sets is also controlled with high level of accuracy!

Assures high machine accuracy in a combination of two or more units!!



Interchangeability among types of slide unit

Various types of slide units with different sectional shapes and lengths are prepared.
All of these slide units can be mounted on the same track rail freely as required.

Easy addition and replacement of units!!

Short delivery products

Individual delivery of units and rails

You can order any quantity of any part at any time you want.

You can select a desired combination of types, accuracies, and preloads

Ultimate interchangeable system Interchangeable specification is newly available

Requirements of ;

- Extending machine life and increase rigidity
- Improving machine accuracy
- Replace only the slide unit
- Increase number of slide unit
- Replace the track rail
- Extend length of the track rail
- Stock slide unit only as spare

Help

Interchangeable specification realizes ;

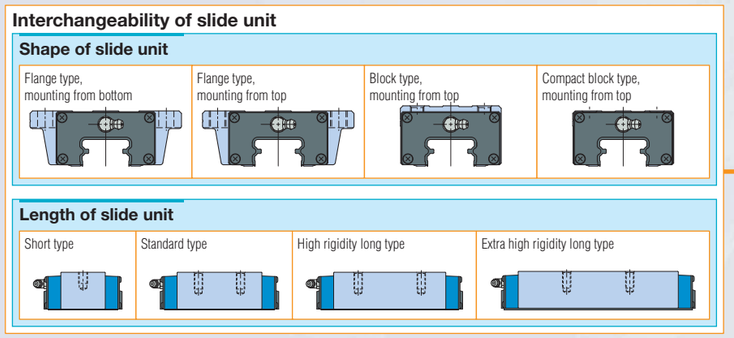
- Quick design change
- Giving higher accuracy and changing preload class
- Slide unit and track rail can be assembled to other mechanical part individually
- Any shape, accuracy and preload class of slide unit and track rail can be assembled
- Slide unit and track rail can be stocked separately and it contributes minimum storage space

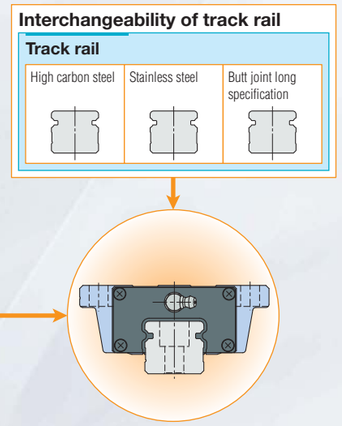
Solved out

The interchangeable specification is produced by IKO original precision manufacturing technology and the dimensional accuracy of both slide unit and track rail is strictly controlled to achieve the interchangeability of higher standard.

Interchangeability among types of slide unit

Various types of slide units with different sectional shapes and lengths are prepared. Any of these entire slide units can be mounted on the same track rails when required.





You can select a desired combination of slide unit and track rail.

The interchangeability of higher standard.

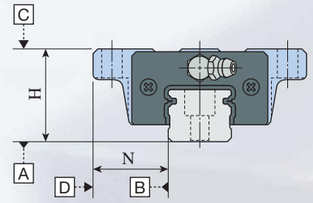
By this system, you can individually handle slide units and track rails or select their desired combinations. You can order any quantity of any products at any time.

Interchangeability in accuracy class

These accuracy classes, Ordinary, High and Precision class are prepared and they can be used for application requiring high running accuracy. Furthermore, height variation among multiple sets is controlled as well with high level of accuracy, ensuring that these products can be used for parallel track rail arrangement.

Standard accuracy specifications : up to Precision class

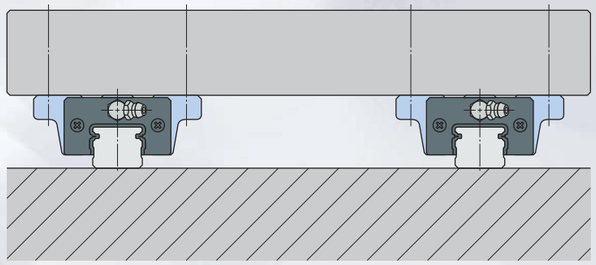
- Tolerances of Dimensions H and N
- Tolerances of Dimensions H and N in one set
- Parallelism in operation of plane C to plane A
- Parallelism in operation of plane D to plane B



You can increase the machine accuracy without redesigning!

Parallel arrangement of multiple sets using standard specification products

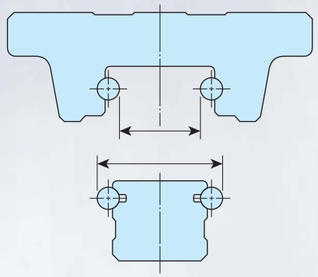
- The dimensional variation of H among multiple sets is specified.



Interchangeability in preload classes

High accuracy dimensional control owing to a simple structure has made it possible to realize the interchangeability in preloaded slide units. You can select slide units for services that require higher rigidity.

Enables setting of high preload by high accuracy dimensional control.



The rigidity is required as was expected

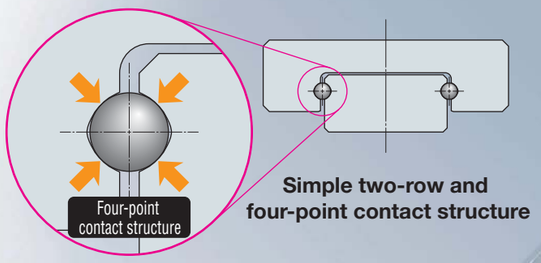
You can increase the machine rigidity without redesigning!

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Excellent features enabled by IKO's proud simple two-row and four-points contact

Simple structure of two-row and four-points contact

IKO adopts a two-row and four-point contact for every Linear Way Series. This structure can realize high-precision smooth movement also in the Micro Linear Way Series by design knowhow and production technology IKO has acquired.
This structure can receive a load in every direction in a well-balanced manner and assure high stable precision and rigidity even when the load changes its direction and size or when complex loads are applied.



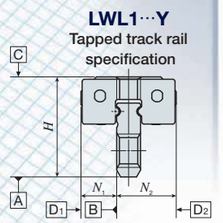
Simple two-row and four-point contact structure is necessary for micro sizing!

Micro Linear Way L cannot be realized without the simple structure

Micro Linear Way L produced by IKO's unique downsizing technology to satisfy downsizing needs
Wide variations of track rail widths (1 mm to 6 mm) are available. These are essential to assure the high precision of the micro positioning mechanisms.

Accuracy is as high as larger size Linear Ways.

All dimensional tolerances are strictly controlled with the original precision manufacturing technology.
This is the smallest linear motion rolling guide for the places where compactness and high accuracy are required.

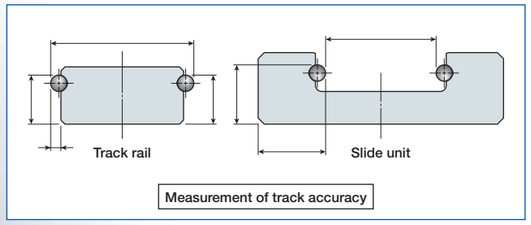


LWL1 can be used most effectively for downsizing of machines and equipment.

Interchangeable

Thanks to a two-row and four-point contact simple structure, each track rails can assure high dimensional accuracies with-high machining and meagurement accuracy.

This technology realizes interchangeable specifications and the advanced interchangeable system.



The balls are secured when the track groove is measured. This enables high-precision measurement and accurate preload management.

Wide variety of products

A lineup of linear ways of various sizes and types, from miniature size (1 mm wide) to large size (85 mm). You can select as usage.

Series		Types	Models	Track rail width Min		Max
C-Lube Linear Way ML	ML	6 types	13 models	5	to	42 mm
Linear Way L	LWL	21 types	18 models	1	to	42 mm
C-Lube Linear Way ME	ME	18 types	6 models	15	to	45 mm
Linear Way E	LWE	21 types	6 models	15	to	45 mm
C-Lube Linear Way MH	MH	12 types	9 models	8	to	45 mm
Linear Way H	LWH	46 types	12 models	8	to	85 mm
Linear Way F	LWF	5 types	7 models	33	to	90 mm
C-Lube Linear Way MUL	MUL	1 types	2 models	25	to	30 mm
Linear Way U	LWU	3 types	8 models	25	to	130 mm

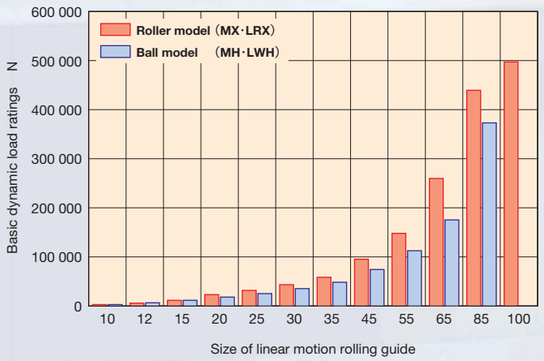
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Ultimate high performance produced from IKO's world's leading unique roller guide structure

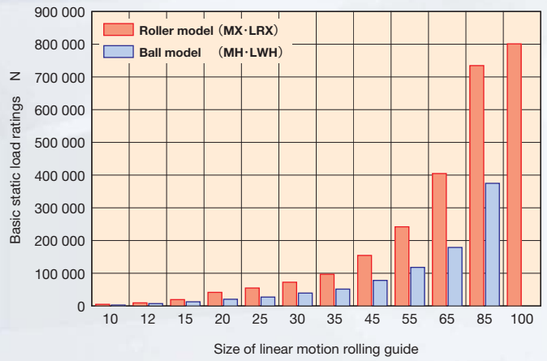
Super high load capacity

Cylindrical rollers give a larger contact area compared to steel balls, and higher load capacity is attainable. Incorporating a large number of cylindrical rollers, C-Lube Linear Roller Way Super MX has very high load ratings.

Comparison of basic dynamic load ratings



Comparison of basic static load ratings



You can substitute your unit by a unit smaller by one size than the ball model.

Long life

[Roller type] **MXG45** | [Ball type] **MHG45**

Roller type	Ball type
C = 124 000 N	C = 95 200 N
C_0 = 223 000 N	C_0 = 114 000 N

C : Basic static load ratings N
C_0 : Basic dynamic load ratings N
L : Rating life km
P : Equivalent load N

Roller type has longer life due to higher exponent even if its basic dynamic load rating is smaller.

【Life calculation formula】

In case of the load 10,000 N

Roller type

$$L = 50\left(\frac{C}{P}\right)^{10/3}$$

$$L \fallingdotseq 220\,000 \text{ km}$$

Ball type

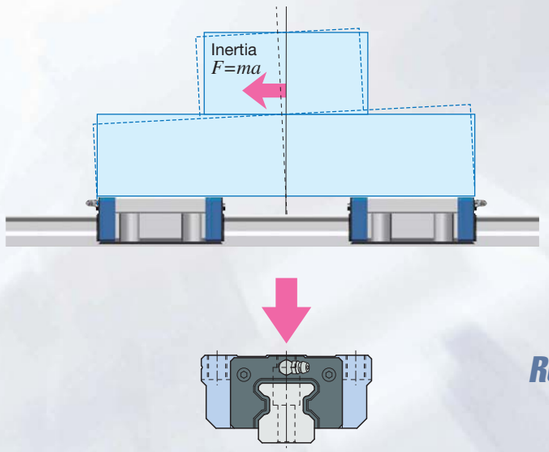
$$L = 50\left(\frac{C}{P}\right)^{3}$$

$$L \fallingdotseq 43\,000 \text{ km}$$

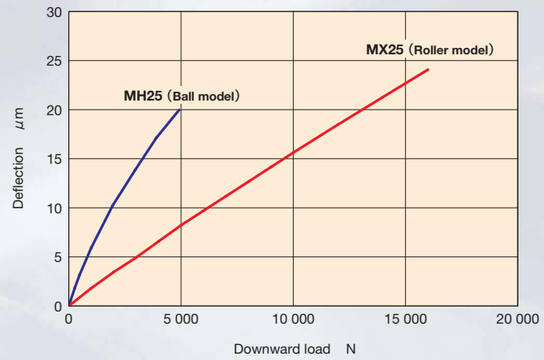
Greatly increased

Super high rigidity

Rigidity of linear motion rolling guide has a large influence to the performance of machines or equipment in which they are assembled. Very high rigidity of C-Lube Linear Roller Way Super MX is achieved owing to the excellent elastic deformation characteristics of cylindrical rollers which give smaller elastic deformation under load as compared with steel balls. In addition, large number of cylindrical rollers are incorporated in the slide unit.



Elastic deformation characteristics

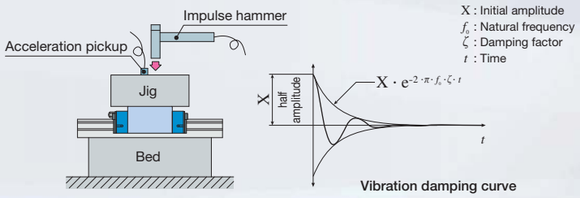


Realizes well-balanced high rigidity against any directional load!

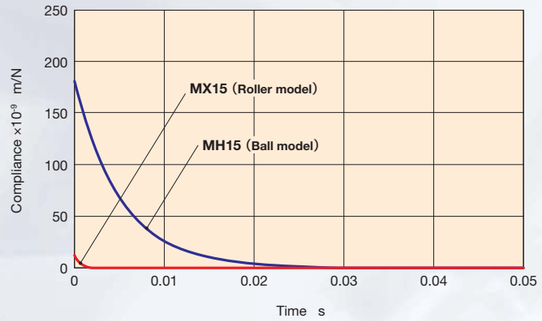
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Excellent vibration damping characteristics

As compared with ball types in the same size, C-Lube Linear Roller Way Super MX has higher rigidity and gives much smaller deformation value under repeated fluctuating load. The natural frequency is high, and the vibration damping time can be very short.



Vibration damping curve under excitation (half amplitude)



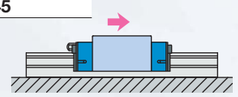
Quick positioning for the minimum tact time

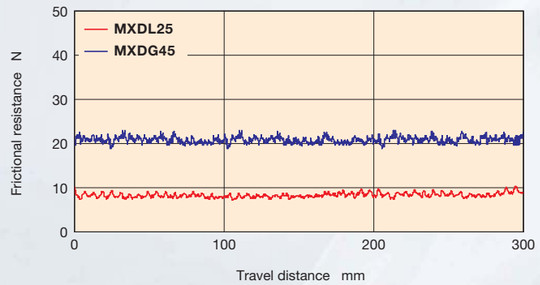
Accurate positioning with excellent friction characteristics

A unique roller retaining method is adopted, in which the end faces of cylindrical rollers are guided accurately by the retaining plate, so the skewing of cylindrical rollers is prevented and smooth motion is achieved.
As compared with the slide guides and ball type linear motion rolling guides, roller type has superior frictional characteristics and gives lower frictional resistance under preload. Good response to micro feeding and high positioning accuracy can be provided.

Frictional resistance of MXDL25 and MXDG45 with T_3 preload

Product	Extra high rigidity long **MXDL25** High rigidity long **MXDG45**
Preload	T_3 (Heavy preload)
Speed	0.6 m/min
Lubrication	C-Lube and grease





Accurate positioning in micro feeding operation

High running performance with low noise

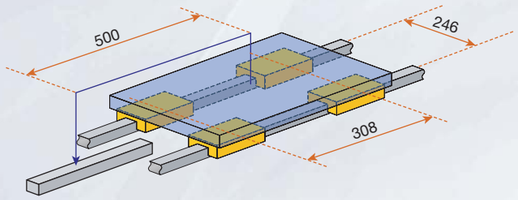
Smooth and quiet motion is achieved by adopting the optimum design based on the analysis of roller re-circulation behavior. Furthermore, as the number of load-carrying cylindrical rollers is large, the minute fluctuating deflection during travel is minimized.
Extra high accuracy and extra high rigidity long type is more excellent for higher running accuracy. (For more information, see Page I-25.)

Runout in the operation

unit: μm

MXDG35 T_3 Preload	0.12
Other company's ultra high accuracy long type	0.12

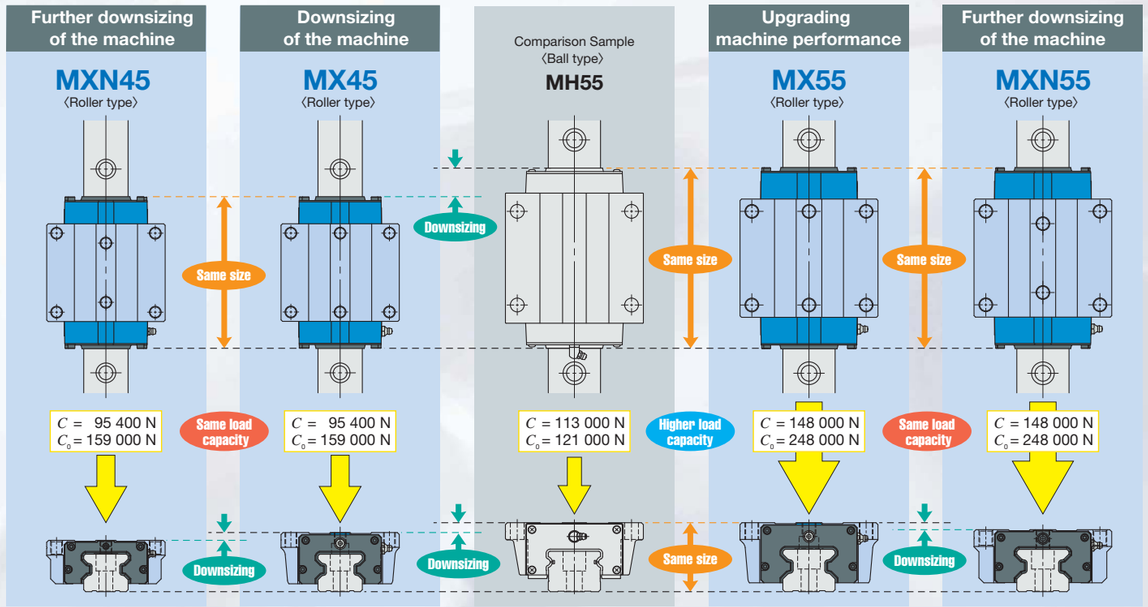
MXDG30 is equivalent to a ultra high accuracy long type of the other company.



Superior accuracy in the operation!

Downsizing

Due to the great load capacity of the roller type compared with the ball type, C-Lube Linear Roller Way Super MX enable downsizing of the linear motion rolling guide with its abundant variations. It also enables downsizing of the machines and devices.

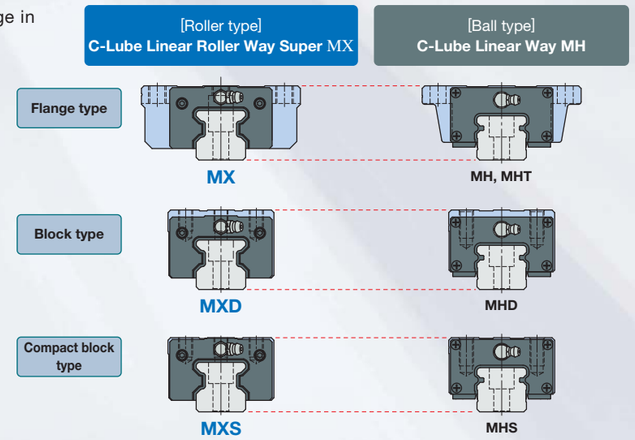


Downsizing, but load capacity up!

Great load capacity up because of a roller type

Dimensional interchangeability to the ball type

The mounting dimensions are the same as those of ball type Linear Way H.
So this guide can replace the roller type without any change in mounting dimensions in the existing machines or equipment.



"Downsizing" and "load capacity up" can be expected.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

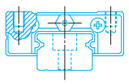
Wide type and size variation

Miniature type

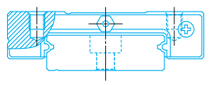
C-Lube Linear Way ML
Linear Way L

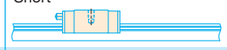
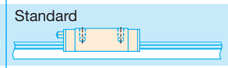
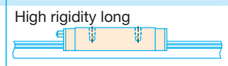
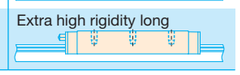
IKO Linear Way L is a miniature type linear motion rolling guide, incorporating two rows of steel balls arranged in four point contact with the raceways. Although it is small in size, it provides stable accuracy and rigidity owing to its simple design even in operations under fluctuating loads with changing direction and magnitude or complex loads.

Standard type
ML
LWL



Wide rail type
MLF
LWLF

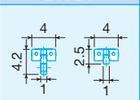
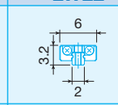
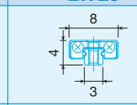
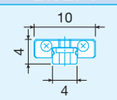
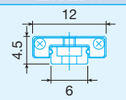
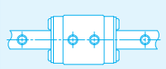
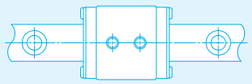
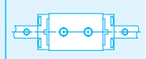


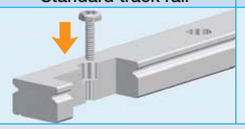
Length of slide unit	
C	Short 
No symbol	Standard 
G	High rigidity long 
L	Extra high rigidity long 

Size	
Standard type	1, 2, 3, 5, 7, 9, 12, 15, 20, 25
Wide rail type	4, 6, 10, 14, 18, 24, 30, 42

Micro Linear Way L

A wide variation of sizes is also available to Micro Linear Way L.
Track rail width can be chosen from 1mm to 6mm and that suites to precise positioning in your micro machine.
LWL1 is the smallest size of Linear Way in the world, which has 1mm of track rail width, 4mm of slide unit width, and 2.5mm of height.

	Standard type			Wide type	
	LWL1	**LWL2**	**LWL3**	**LWLF4**	**LWLF6**
Cross section (Full-scale) unit: mm					
Length of slide unit (Full-scale) Short	—	—		—	
Length of slide unit (Full-scale) Standard					

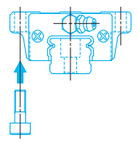
	Standard track rail	Tapped track rail	Tapped track rail (Lateral)	Non-mounting hole type track rail
Shape of track rail				

Compact type

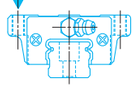
C-Lube Linear Way ME
Linear Way E
Low Decibel Linear Way E

IKO Linear Way E is a linear motion rolling guide, featuring a compact slide unit which performs endless linear motion along a track rail. Two rows of steel balls are arranged in four point contact with the raceways. This design ensures stable high accuracy and rigidity in operations even under fluctuating loads with changing direction and magnitude or complex loads. A wide range of variations in shapes and sizes are available. This series is a compact type suitable for general applications.

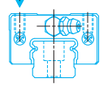
Flange type mounting from bottom
ME
LWE

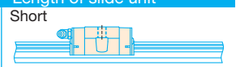
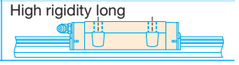


Flange type mounting from top
MET
LWET

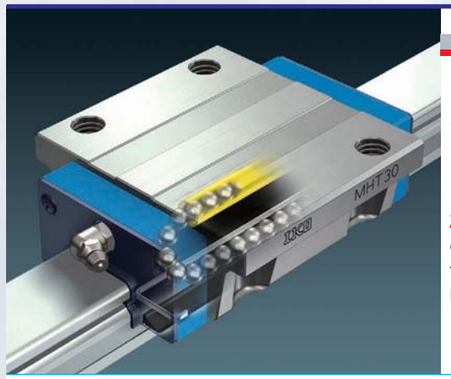


Block type mounting from top
MES
LWES



Length of slide unit	
C	Short 
No symbol	Standard
G	High rigidity long 

Size
15, 20, 25, 30, 35, 45

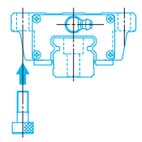


High rigidity type

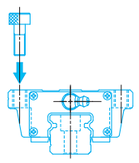
C-Lube Linear Way MH
Linear Way H

IKO Linear Way H incorporates two rows of large diameter steel balls in four point contact with the raceways and provides stable high accuracy and rigidity in operations even under fluctuating loads with changing direction and magnitude or complex loads. This series features the largest load ratings and rigidity among all ball types.

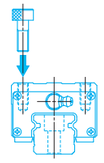
Flange type mounting from bottom
MH
LWH



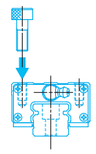
Flange type mounting from top
MHT
LWHT

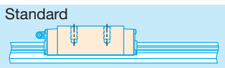
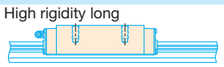
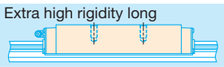


Block type mounting from top
MHD
LWHD



Compact block type mounting from top
MHS
LWHS

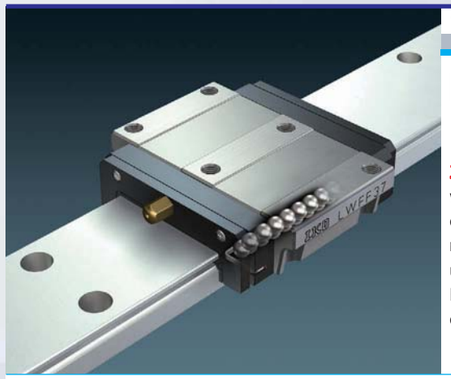


Length of slide unit	
C	Short
No symbol	Standard 
G	High rigidity long 
L	Extra high rigidity long 

Size
8, 10, 12, 15, 20, 25, 30, 35, 45, 55, 65, 85

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Wide type and size variation

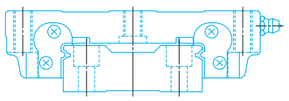


Wide rail type

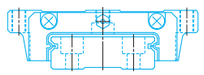
Linear Way F

IKO Linear Way F is a linear motion rolling guide, featuring a wide track rail along which a highly rigid slide unit performs endless linear motion. A large number of large diameter steel balls are incorporated in two rows and in four point contact with the raceways, so stable high accuracy and rigidity can be obtained in operations even under fluctuating loads with changing direction and magnitude or complex loads. Being a wide rail type, it can be support a large moment load acting around the axial direction, and it is also suitable for single row rail arrangement.

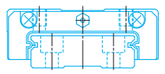
Flange type
mounting from top/bottom
LWFH

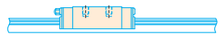


Flange type
mounting from top/bottom
LWFF

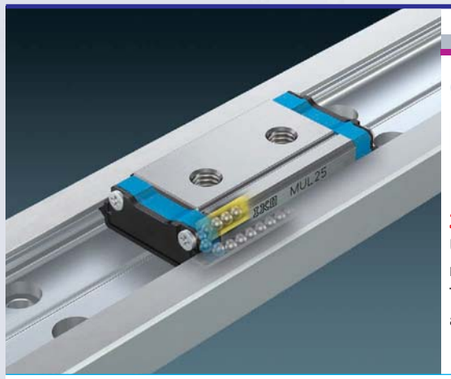


Block type
mounting from top
LWFS



Length of slide unit	
No symbol	Standard 

Size	
LWFH	40, 60, 90
LWFF	33, 37, 42, 69
LWFS	33, 37, 42

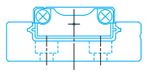


U-shaped track rail

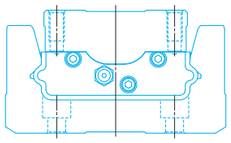
C-Lube Linear Way MUL
Linear Way U

IKO 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 has much higher rigidity as compared with the track rail with a rectangular cross section, especially under moment and torsion.

Miniature type
MUL
LWUL



Standard type
LWU



Length of slide unit	
No symbol	Standard

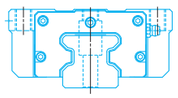
Size	
MUL	25, 30
LWUL	25, 30
LWU	40, 50, 60, 86, 100, 130

Roller type

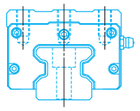
C-Lube Linear Roller Way Super MX
Linear Roller Way Super X

IKO Linear Roller Way Super X is a high performance roller type linear motion rolling guide, featuring high reliability, high rigidity, high load capacity, high running accuracy, and vibration damping characteristics.

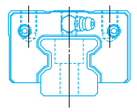
Flange type
mounting from top/bottom
MX(1)
LRX



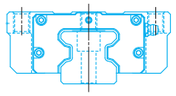
Block type
mounting from top
MXD
LRXD



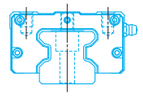
Compact block type
mounting from top
MXS
LRXS



Low section flange type
mounting from top
MXN

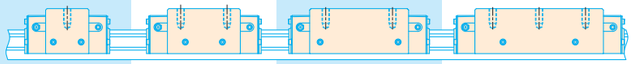


Low section block type
mounting from top
MXNS

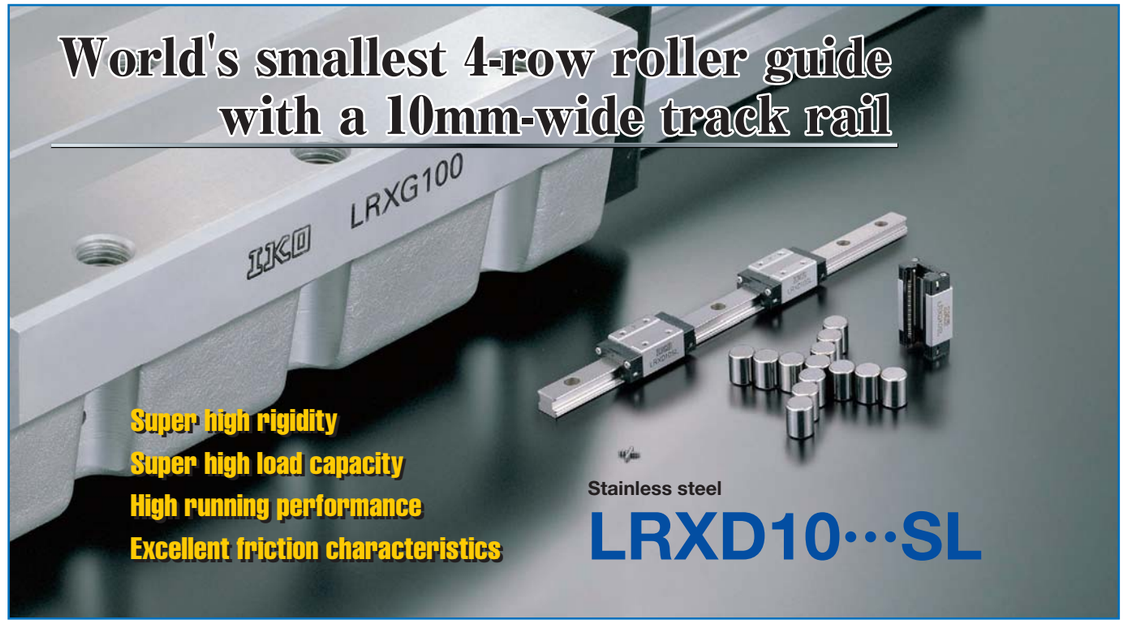


Note(1) Size 20 series can be mounted from upper side only.
For mounting from bottom, MXH can be used.

Length of slide unit			
C	No symbol	G	L
Short	Standard	High rigidity long	Extra high rigidity long



Size
10, 12, 15, 20, 25, 30, 35, 45, 55, 65, 85, 100



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

New product guide NEW

Ball-type miniature series

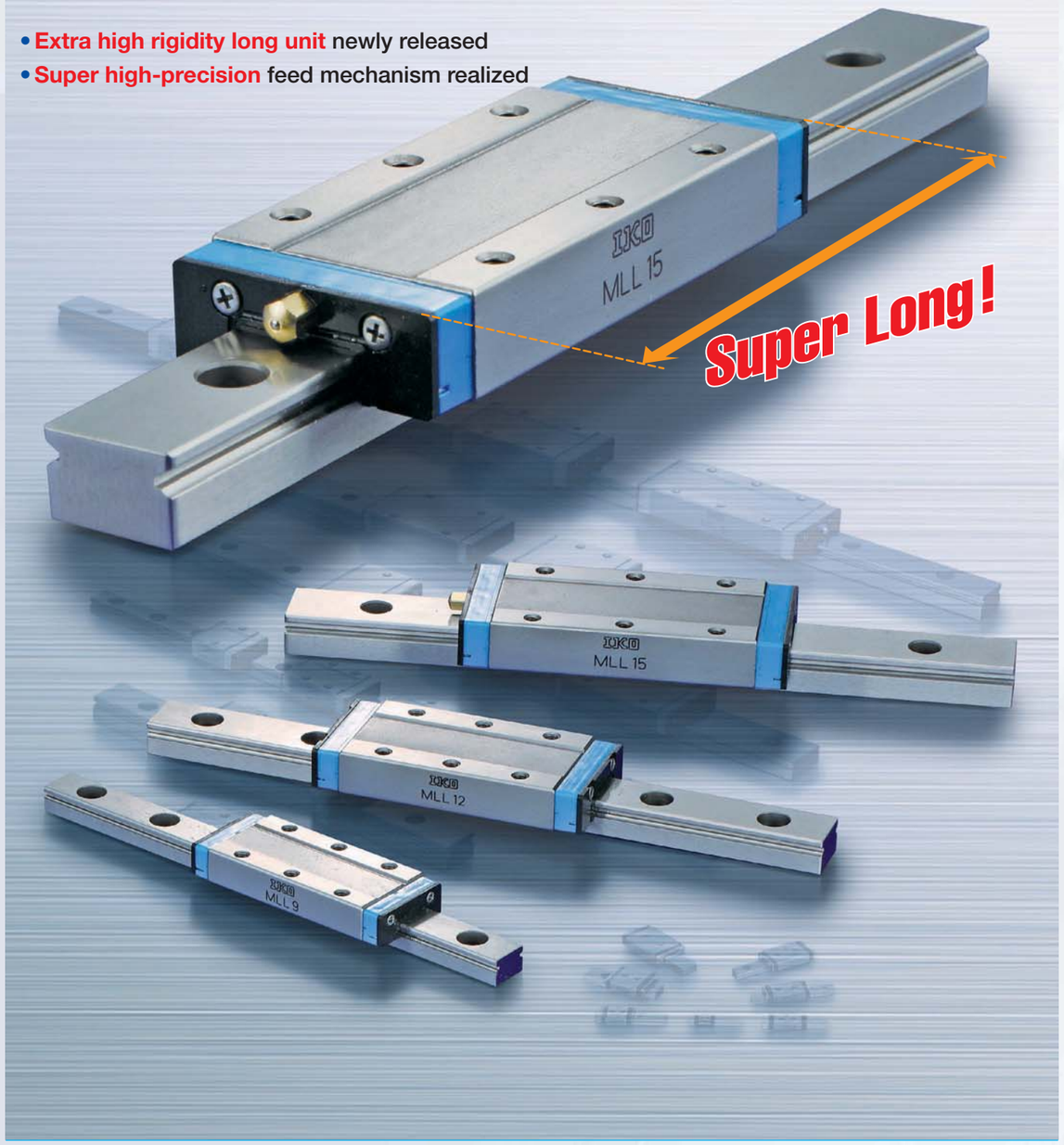
IKO C-Lube Maintenance-Free Series

C-Lube Linear Way ML

MLL9, 12, 15

Patented

- **Extra high rigidity long unit** newly released
- **Super high-precision** feed mechanism realized



Ball-type high-rigidity series

IKO C-Lube Maintenance-Free Series

C-Lube Linear Way MH

MHTG15, MHSG15

Patented

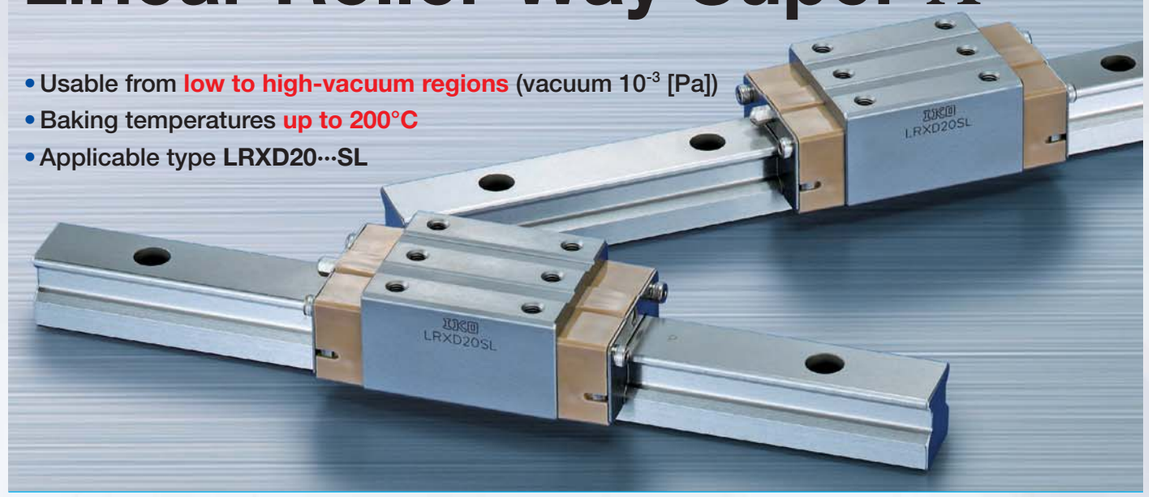
- **High rigidity long unit** additions to the flange type and compact block type

Made to special environment specifications

Vacuum Environment Linear Roller Way Super X

Patented

- Usable from **low to high-vacuum regions** (vacuum 10^{-3} [Pa])
- Baking temperatures **up to 200°C**
- Applicable type **LRXD20…SL**



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

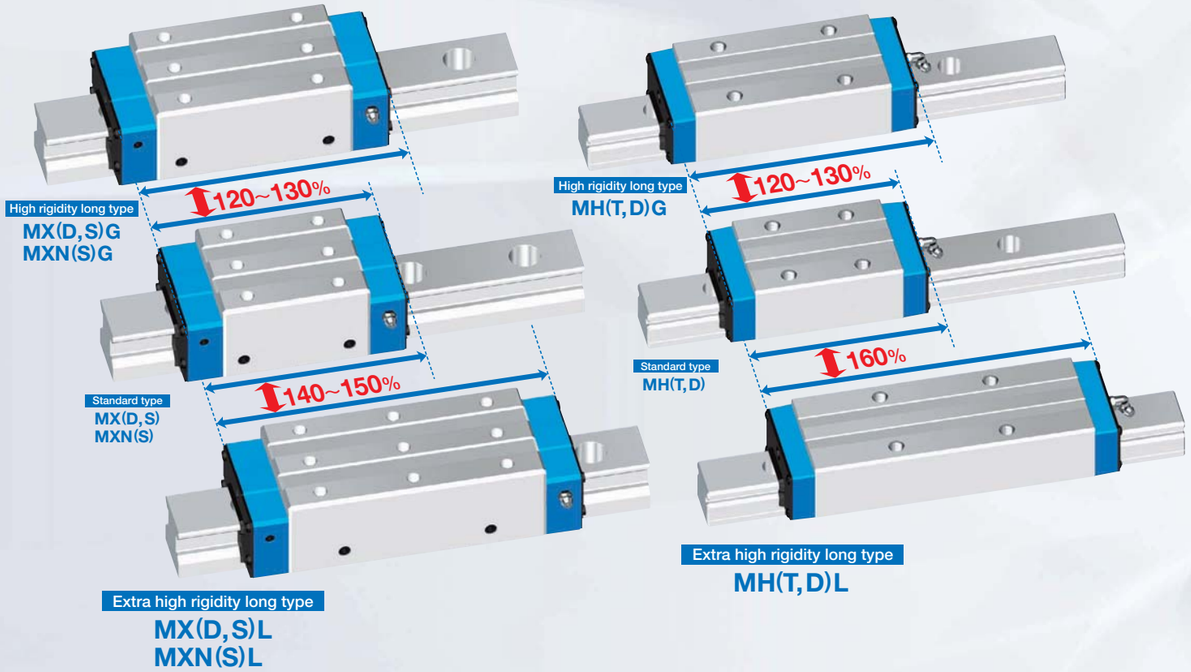
Feature of extra high rigidity long type slide unit

C-Lube Linear Roller Way Super MX

New longer slide unit having the length
***1.4 to 1.6 times** of standard type is available*

C-Lube Linear Way MH

New longer slide unit having the length
***1.6 times** of standard type is available*



Higher traveling accuracy

Greatly increases load capacities and rigidities

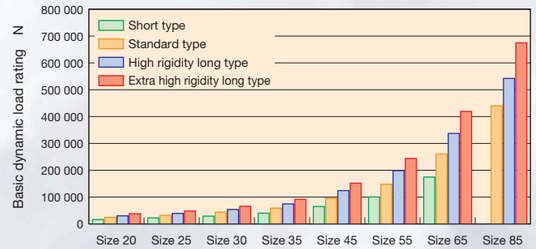
Upgrading of your machine ----- Load capacity

Basic dynamic load rating could be 22% higher and basic static load rating could be 30% higher. Longer machine life and increasing reliability of the machine are possible.

Basic dynamic load rating

***58% higher** than standard type*
***22% higher** than high rigidity long type*

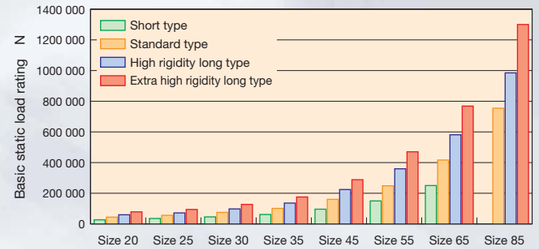
(In case size 45)



Basic static load rating

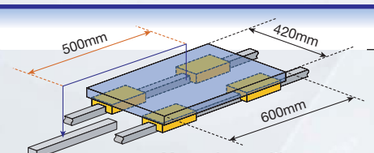
***81% higher** than standard type*
***29% higher** than high rigidity long type*

(In case size 45)



For higher running accuracy

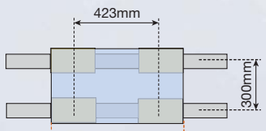
Runout in the operation could be a half of high rigidity long type. Accurately and super fine positioning can be realized in your machine.

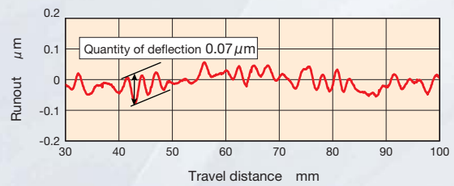


Measuring position

Test condition

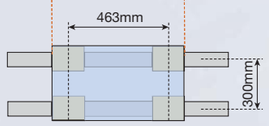
Product	Extra high rigidity long type **MXDL45**
Preload	T3

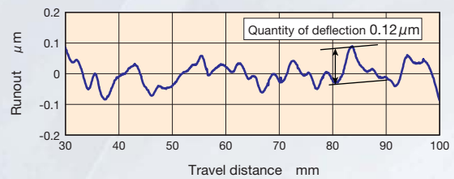




Test condition

Product	High rigidity long type **MXDG45**
Preload	T3





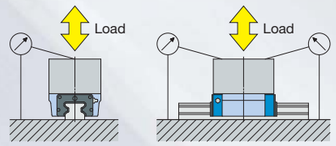
Realizes high traveling accuracy without redesigning any of machine and equipment.

Note: Mounting holes of the slide units are relocated.

Upgrading of your machine ----- Rigidity

It makes machine' s rigidity higher and improvement in accuracy, also allows avoiding resonance with comparing to High rigidity long type.

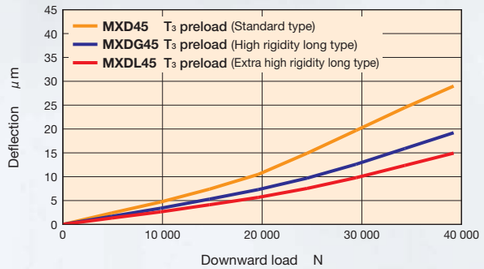
Test method



Elastic deformation for downward load

***55% higher** than standard type*
***17% higher** than high rigidity long type*

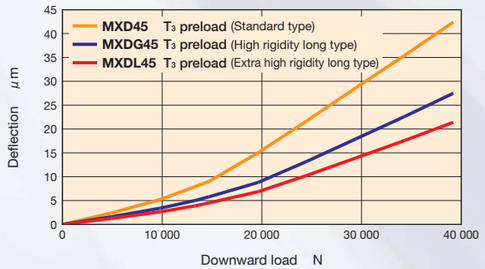
(When 20,000 N applied)



Elastic deformation for upward load

***52% higher** than standard type*
***13% higher** than high rigidity long type*

(When 20,000 N applied)



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO pioneers a new linear motion world with making good use of innovative products for use in special environments, ideas and experiences that only IKO has.

To meet requirement in various environmental conditions, IKO Linear Way and Linear Roller Way must be modified in terms of their material, lubricating grease, surface treatment, dust protection methods, etc.
General fields of application and principal methods in special environments are shown below.

Clean Environment

When Linear Way and Linear Roller Way are used in clean environments such as a clean room, the environment must not be polluted by the dust generated from them, and also superior corrosion resistance is required for them, since rust preventive oil cannot be used.

Vacuum Environment

When Linear Way and Linear Roller Way are used in vacuum environments, the environment must not be polluted and the degree of vacuum must not be lowered by the gas emitted from them, and also superior corrosion resistance is required for them, since rust preventive oil cannot be used.

High Temperature

When Linear Way is used at high temperature, heat resistance of synthetic resin components and steel components must be examined.

Dust Protection

If foreign matter such as metal or wooden chips fall onto the raceways of Linear Way and Linear Roller Way, the life or accuracy of these guides may be affected adversely. Therefore, measures must be taken to prevent intrusion of foreign matter.

Spatter Protection

Hot welding spatters adhering firmly on track rails cannot be removed by ordinary dust protection measures. Special measures for preventing adhesion and removing adhered spatters are necessary.

Clean

- ○ Hybrid Lubrication Linear Way L
- ○ Stainless Linear Way and Linear Roller Way
- ● Black chrome surface treatment
- ● Grease specification (CG2 or CGL grease)
- ◇ Fluorine grease

Corrosion prevention

- ○ Non-Magnetic Hard Alloy Linear Way L
- ○ Stainless Linear Way and Linear Roller Way
- ● Black chrome surface treatment

Vacuum

- ○ Linear Roller Way Super X Vacuum Specification
- ○ Hybrid Lubrication Linear Way L
- ● Without seal
- ● Stainless steel end plate
- ◇ Fluorine grease

Heat resistance

- ● Stainless steel end plate
- ● Seal for special environment
- ● Grease specification (CG2 or CGL grease)
- ◇ High temperature grease

Dust protection (wood chips, metal dust, etc.)

- ○ Linear Way H Ultra Sealed Type
- ○ Track rail mounting from bottom
- ● Double end seals
- ● Scrapers
- ● C-Wiper
- ● Rail cover sheet
- ● Caps for rail mounting holes
- ● Seal plate for track rail
- ● Female threads for bellows
- ● Specially prepared bellows

Spatter

- ● Scrapers
- ● Caps for rail mounting holes (aluminum caps)
- ● Rail cover sheet
- ● Fluorine black chrome surface treatment
- ● Stainless steel end plate

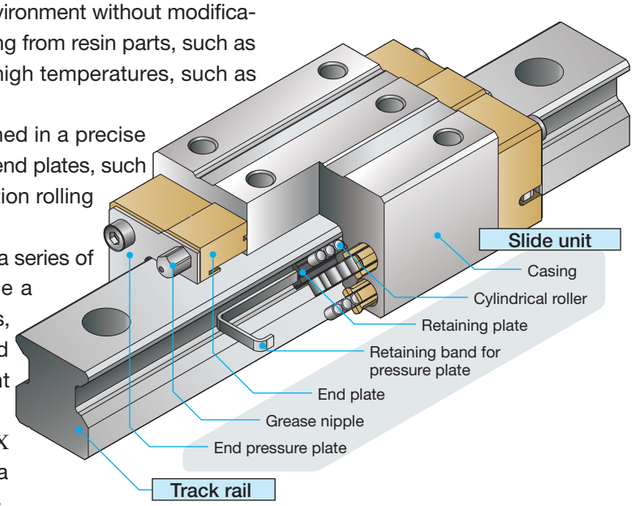
○ ***Linear motion series for special environment:***
Generic name of linear motion series units for special environments
● ***Special specification for special environment:***
Special specification for special environments to be used in combination with the linear motion series
◇ ***Lubricant:***
Selectable lubricant fit for special environment

NEW

Vacuum Environment

Linear Roller Way Super X

If linear motion rolling guides were used in a vacuum environment without modification, they would be subject to the problems of outgassing from resin parts, such as end plates. They must also be designed to withstand high temperatures, such as those encountered during baking.
Previous roller-type linear motion rolling guides, designed in a precise roller circulating structure, were unable to support steel end plates, such as those commonly used to date in ball-type linear motion rolling guides designed for use in special environments.
New Vacuum Environment Linear Roller Way Super X is a series of roller-type linear motion rolling guides that combine a corrosion-resistant stainless-steel casing with resin parts, such as a super-engineering plastic (PEEK resin) end plate, to solve this problem, thereby achieving excellent low outgassing characteristics.
New Vacuum Environment Linear Roller Way Super X consistently exhibits the superb characteristics of a roller-type linear motion rolling guides, such as high load-carrying capacity, high rigidity and smooth and low-friction sliding characteristics, in a vacuum environment.



Features

Newly developed!
Roller-type Linear Motion Rolling Guides That Work in a Vacuum Environment

1 Usable from low to high-vacuum regions (vacuum 10^{-3} [Pa])

2 Excellent low outgassing characteristics

3 Baking temperatures up to 200°C

- Temperature in a static state.
- At baking temperatures above 150 degree C, multiply the basic load rating by a temperature coefficient.

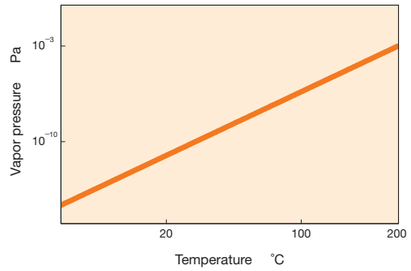
4 Superb corrosion resistance

- Corrosion-resistant stainless steel is used on all steel parts.

Lubricant selection

Fluorine-based grease is recommended. Please pay attention to the relation also between vapor pressure and temperature of fluorine-based as shown in following graph grease when selection. For detail information, please refer to catalog of grease manufacture.

Relationship example between vapor pressure and temperature of fluorine-based grease



Typical brands of fluorine greases

Name of lubricant	Manufacturer
BARRIERTA SUPER IS/V	NOK Kluber Co., Ltd.
DEMNUM™ GREASE L-200	Daikin Industries, Ltd.
FLUOTRIBO VAC	KYODO YUSHI CO., LTD.
FOMBLIN® VAC3	Solvay Solexis
KRYTOX® LVP	DuPont

Remarks 1. FOMBLIN® is a registered trademark of Solvay Solexis.
2. KRYTOX® is a registered trademark of DuPont.

Specifications

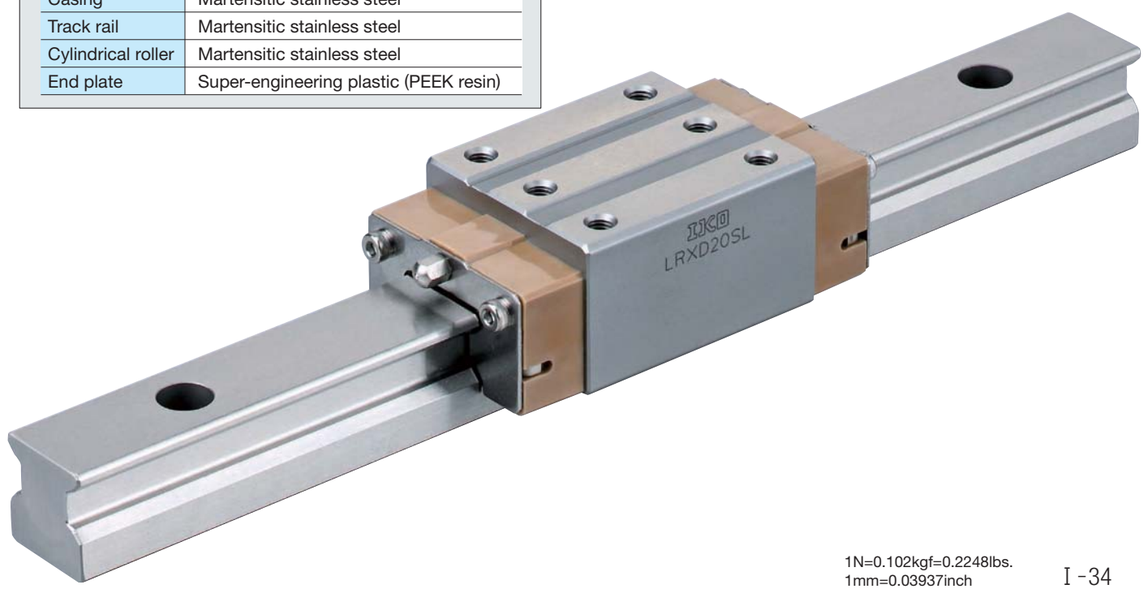
Please contact to IKO for a choice of optimal specifications customised for your using conditions.

Customization

Series	Linear Roller Way Super X
Applicable type	LRXD20···SL

Materials of main components

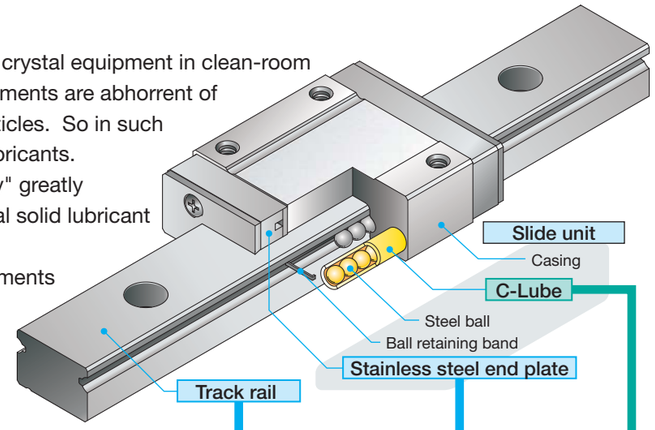
Casing	Martensitic stainless steel
Track rail	Martensitic stainless steel
Cylindrical roller	Martensitic stainless steel
End plate	Super-engineering plastic (PEEK resin)



1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Hybrid Lubrication Linear Way L

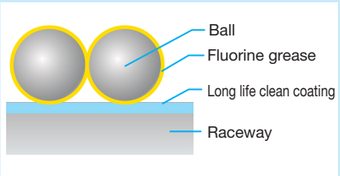
Semiconductor manufacturing equipment and liquid crystal equipment in clean-room environment, vacuum, and high-temperature environments are abhorrent of environmental contamination by outgassing and particles. So in such environments, solid lubricants have been used as lubricants.
IKO has developed "Hybrid Lubrication Linear Way" greatly exceeding the dust generation life of the conventional solid lubricant and load-resistance.
This series is best suited for uses in vacuum environments and other environments that reject general greases and oils.



What is "Hybrid lubrication?"

Hybrid Lubrication Linear Way combines IKO's epoch-making lubrication method "C-Lube" and newly-developed "Low dust-generation coating" and gives low dust-generation performance, low outgas characteristic, long life, and excellent load resistance to the linear ways.

Low dust-generation coating

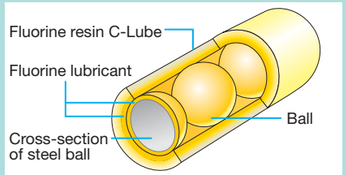


"Low dust-generation coating" is a gel lubricant film made by strongly bonding thin-film particular polymer fluorine lubricant of sub-micron sizes to the surface of metal.

Hybrid lubrication

The lubricant applied to the surfaces of steel balls from the C-Lube and the low dust-generation coating assure excellent adhesiveness and low dust generation.

Fluorine lubricant + Fluorine resin C-Lube



C-Lube incorporated in the ball circulation path adopts a porous fluorine loop that has been newly developed. In this structure, the fluorine lubricant impregnated there in advance comes out through fine holes by means of capillary phenomenon to continuously apply a very small amount of the lubricant to the surfaces of the balls and form a stable lubricant film on the ball surfaces.

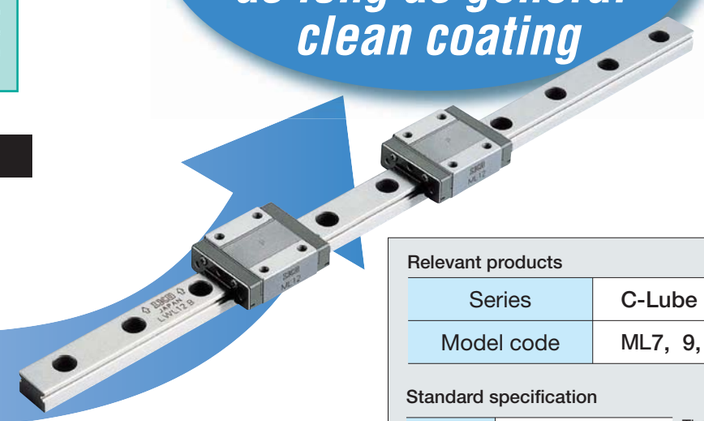
Features

Clean
(Low dust generation)
Satisfying ISO Cleanliness Class 4
(Particle size: 0.5 μm, 325 particles or less /m³)

Vacuum
Can be used in low to high vacuum environments.

High temperature characteristics
Can be used at temperature of up to 200 ℃ (when the fluorine lubricant and fluorine resin C-Lube are used)
Up to 150 to use the linear way continuously

Load resistance
Twice or more as resistant to load as general clean coating

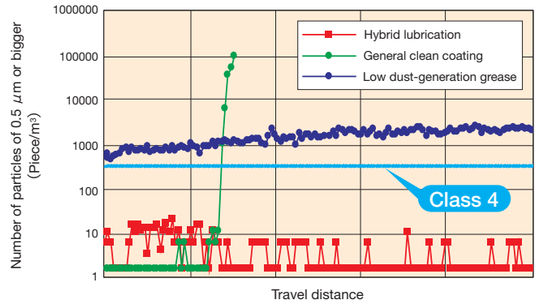


Long coating life 10 times as long as general clean coating

Performance

Low dust-generation performance of ISO Cleanliness Class 4

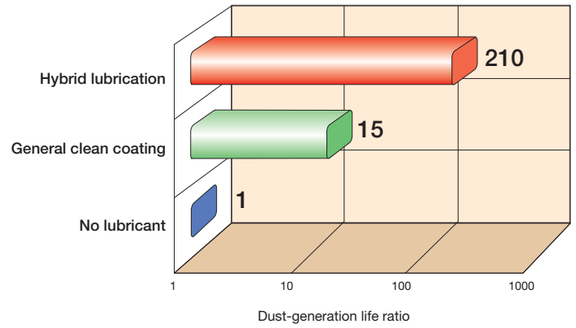
Dust-generation characteristic



Test condition: Model: ML9 or equivalent ; Load: 80N ; Stroke: 50 mm

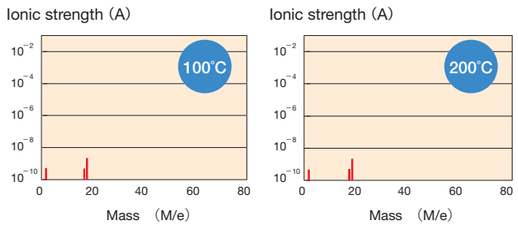
Long coating life 10 times as long as general clean coating

Dust-generation life ratio



Excellent low outgas characteristic

Low outgas characteristic



Outgas characteristic of Hybrid Lubrication Linear Way

Test condition: Model: ML9 ; Vacuum degree: 10^{-5}Pa ; Temperature: 100℃, 200℃

Relevant products

Series	C-Lube Linear Way ML
Model code	ML7, 9, 12, 15

Standard specification

Casing	Stainless steel
Track rail	Stainless steel
Steel ball	Stainless steel
End plate	Stainless steel
C-Lube	Porous fluorine resin

These products are available on request. For ordering, consult IKO.
Products of nonmagnetic stainless steel are also available. For more information, consult IKO.

• Precautions for use

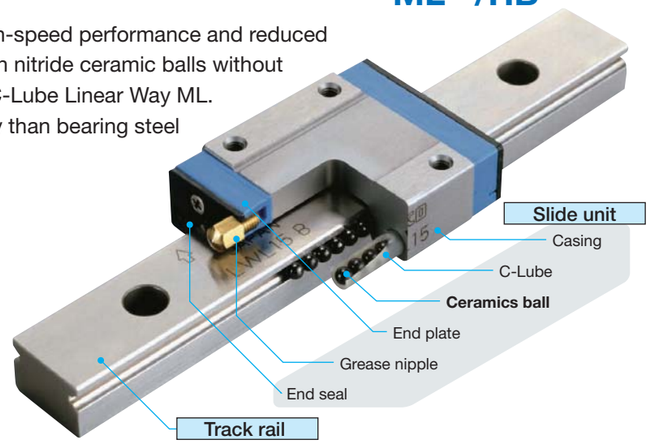
1. Although the linear ways use fluorine lubricant and parts that have excellent high temperature characteristics, the operating temperature should be up to 200℃. It should be up to 150℃ to use the linear ways continuously.
   Keep the linear way products in a dry clean place.
2. Unpack their cartons in the place just before using it.
   Do not handle the product by bare hands.
3. The products need not be cleaned after unpacking since they were packed clean.
   Do not wipe the coated film on the track. If done, the lubrication and dust-generation performance of the track surface will be deteriorated.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Hybrid C-Lube Linear Way ML

ML…/HB

Hybrid C-Lube Linear Way ML has improved the high-speed performance and reduced the running noises simultaneously by adopting silicon nitride ceramic balls without changing the maintenance free performance of the C-Lube Linear Way ML. Ceramics feature less deformation and higher rigidity than bearing steel and stainless steel.



Standard specification

Casing	Stainless steel
Track rail	Stainless steel
Ball	Silicon nitride ceramic
C-Lube	Capillary lubricating element (communicating porosity sintered resin)

Features

1 Excellent high speed performance
3 times or more in durability

2 Noise reduction
Made lower by approx. 4.5 dB

3 High rigidity
Reduces displacement by approx. 10%

4 Excellent abrasion resistance
Reduces preload by approx. 1/4

Compared by those of IKO C-Lube Linear Way ML

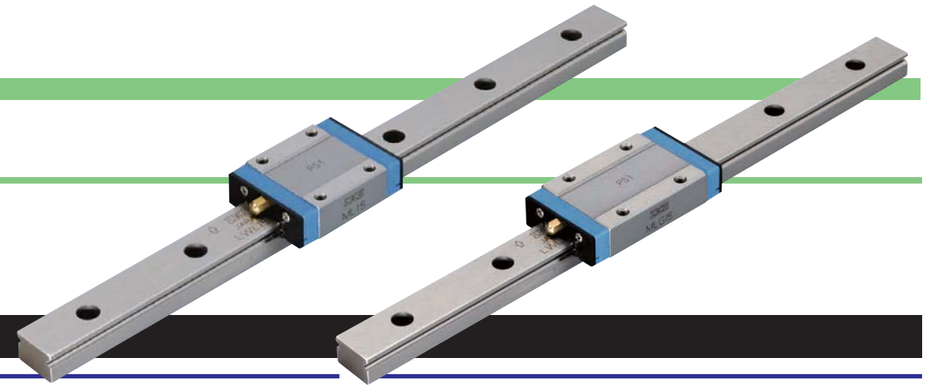
+

Maintenance free
5 years or 20,000km of maintenance free

Ecology
Minimum lubricant required

Compact
Incorporated lubricating elements

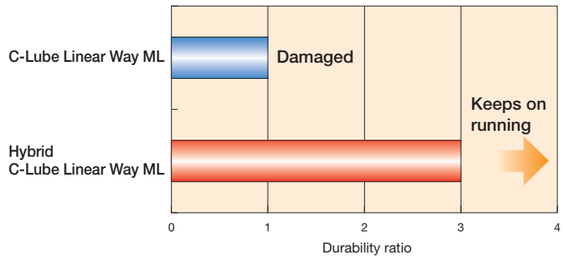
Smooth
Excellent sliding characteristics



Performance

Durability (3 times or more than conventional)

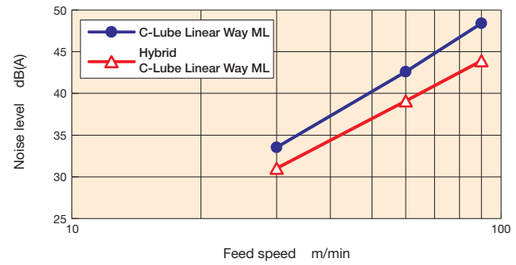
High-speed performance



Test condition: Model: ML12 ; Speed: 300m/min ; Acceleration: 40G

Noise reduction of approx. 4.5 dB

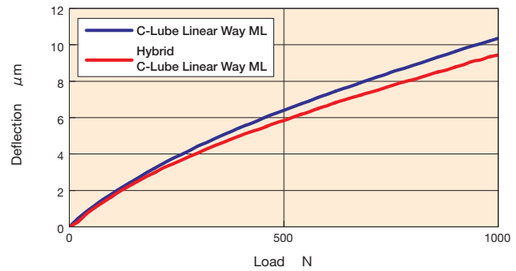
Noise reduction



Test condition: Model: ML12 ; Measuring speed: 30, 60, 90m/min

Low deformation of rolling element and excellent rigidity

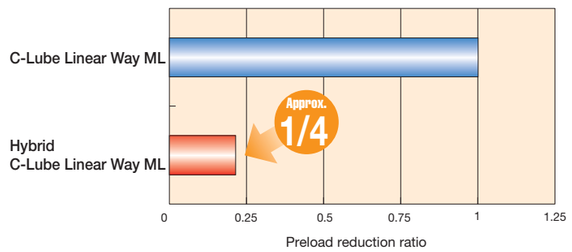
High rigidity



Test condition: Model: ML12 ; Preload: Standard preload ; Load direction: Downward

Low preload reduction after running and assurance of high precision

Abrasion resistance

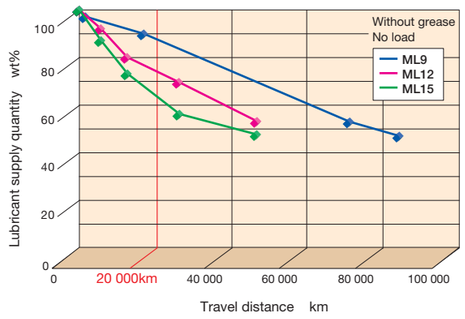


Test condition: Model: ML12 ; Speed: 300m/min
Acceleration: 40G ; Travel distance: 13,000km

Basic performances of C-Lube Linear Way

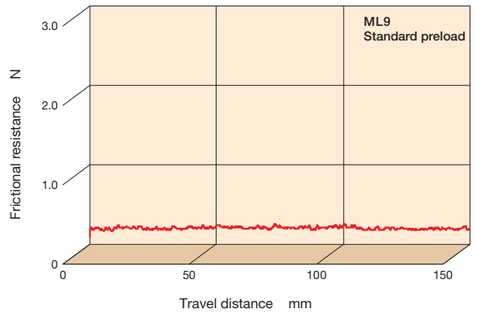
Realizes long-term maintenance free operation

Maintenance free



Smooth and light operation

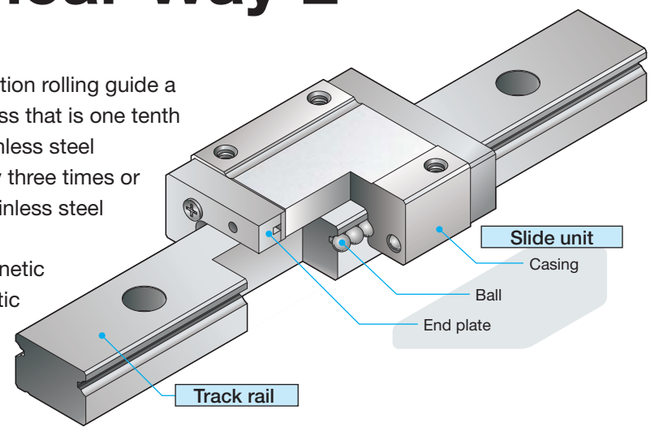
Sliding characteristic

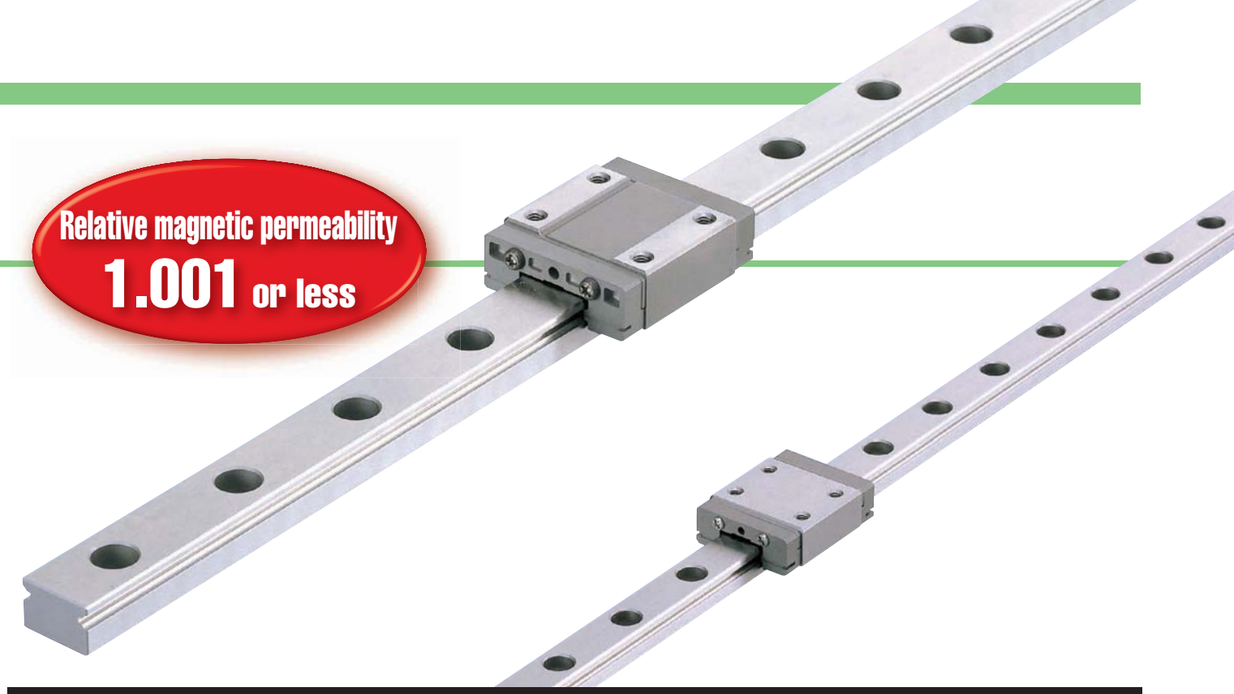


1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Non-Magnetic Hard Alloy
Linear Way L

Non-magnetic Hard Alloy Linear Way L is a linear motion rolling guide a realizing relative magnetic permeability of 1.001 or less that is one tenth or less of that of the conventional non-magnetic stainless steel product. Moreover, its durability is more excellent by three times or more than that of the conventional non-magnetic stainless steel product.
Non-magnetic Hard Alloy Linear Way L is a non-magnetic linear motion rolling guide best fit for use in a magnetic environment having a great magnetic influence.





Features

Specific conductivity of 1.001 or less
One tenth or less of that of non-magnetic stainless steel product

Durability of three times or more
1.5 times as hard as and 3 times or more as durable as the non-magnetic stainless steel product

High corrosion resistance
Best fit for use in clean environments because of the use of high corrosion resistance alloy

Easy to handle
The casing and the track rail are made of metal and very tough.
Its coefficient of linear expansion is very approximate to that of general metal

Characteristics of non-magnetic hard alloy

Materials / Characteristics	Non-magnetic hard alloy	Silicon nitride ceramic	Non-magnetic stainless steel
Relative magnetic permeability (1)	1.001 or less	1 (0.999991)	1.01 or less (1.005)
Electric conductivity	○	×	○
Hardness (HV)	610～700	1400～1600	380～450
Coefficient of linear expansion ($\times 10^{-6}$/°C)	11.5 (30～200°C)	3.2 (20～400°C)	19.0 (20～400°C)
Specific gravity (g/cm)	7.7	3.2	7.9
Main ingredients	Ni、Cr	Si_3N_4	Fe、Mn、Cr
Cost	○	△	○
Remarks	Good corrosion resistance	Good corrosion resistance	—

(1) ( ) Example of measure value

Selection of lubricant

Applicable to every environment by selecting adequate lubricant (vacuum grease, low dust-generation grease, etc.)

Relevant products

Series	Linear Way L
Model code	LWL5…B ～ LWL15…B

Remarks: No ball retaining band is provided.

Materials of main components

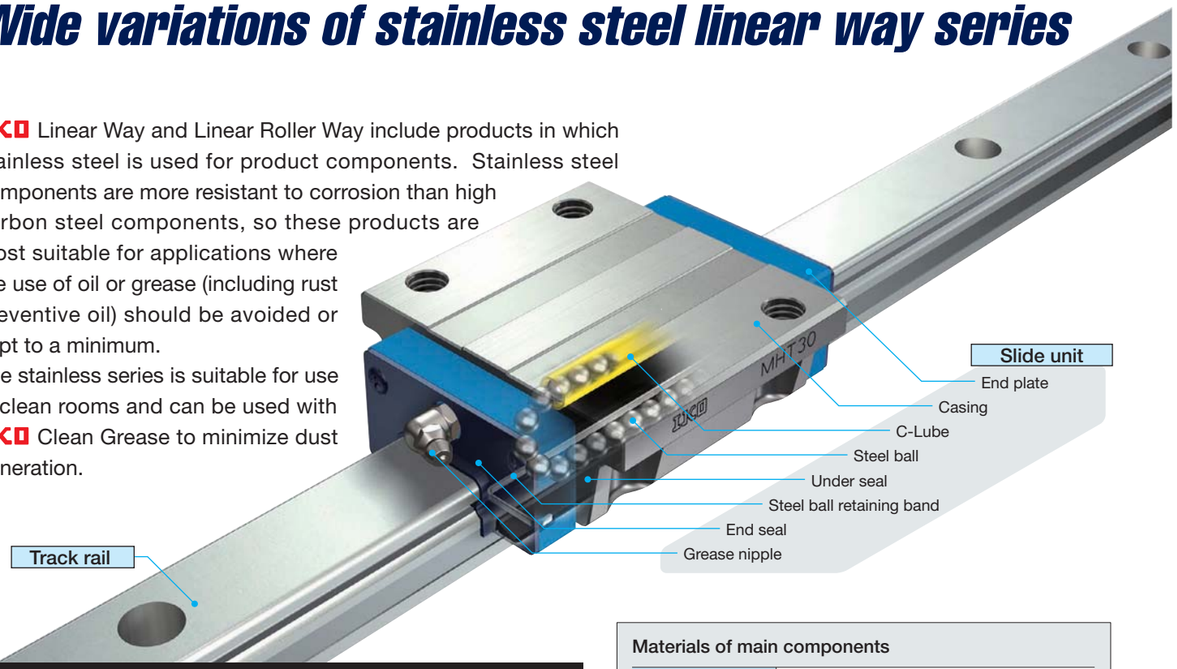
Casing	Non-magnetic hard alloy
Track rail	Non-magnetic hard alloy
Ball	Silicon nitride ceramic
End plate	Non-magnetic alloy steel

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Stainless Steel Linear Way and Linear Roller Way

Wide variations of stainless steel linear way series

IKO Linear Way and Linear Roller Way include products in which stainless steel is used for product components. Stainless steel components are more resistant to corrosion than high carbon steel components, so these products are most suitable for applications where the use of oil or grease (including rust preventive oil) should be avoided or kept to a minimum.
The stainless series is suitable for use in clean rooms and can be used with IKO Clean Grease to minimize dust generation.



Materials of main components

Track rail	Martensitic stainless steel
Casing	Martensitic stainless steel
Steel ball	Martensitic stainless steel
Steel ball retaining band	Austenitic stainless steel
End plate	Engineering resin
End seal	Austenitic stainless steel + Synthetic rubber
Grease nipple	Brass

Stainless Series

Linear Way

Ball Type Miniature Series

C-Lube Linear Way ML
Linear Way L
Micro Linear Way L

Ball Type Compact Series

C-Lube Linear Way ME
Linear Way E

Ball Type High Rigidity Series

C-Lube Linear Way MH
Linear Way H

Ball Type Wide Rail Series

Linear Way F

Ball Type U-shaped Track Rail Series

C-Lube Linear Way MUL
Linear Way U

Linear Roller Way

Roller Type

C-Lube Linear Roller Way Super MX
Linear Roller Way Super X

Widely applicable to uses in special environments when combined with products of special specifications

Corrosion prevention

Black chrome surface treatment /L

A black chrome permeable film is formed on the track rail or slide unit surface to improve corrosion resistance.

Fluorine black chrome surface treatment /LF

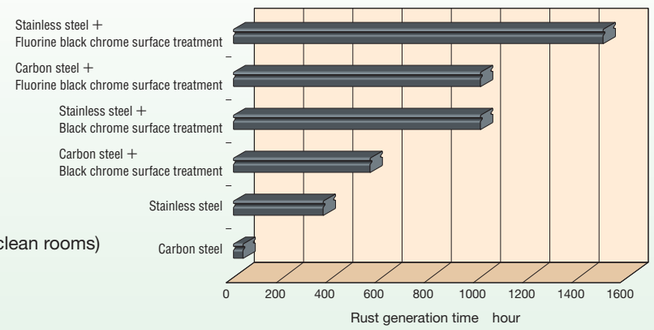
Fluorine resin coating is performed on top of the black chrome permeable film for further improvement in corrosion resistance. This treatment also effectively prevents foreign matter from adhering to the surface.

Black chrome surface treatment

Features

1. Thin film
2. Uniform film
3. Strong adhesive force
4. Excellent corrosion resistance
5. Cold machining without distortion
6. No scale separation
(giving no influence to product life and clean rooms)

Comparison of corrosion resistances by humidity cabinet tests



Test condition: Temperature: 50˚C ; Relative humidity: 95%

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

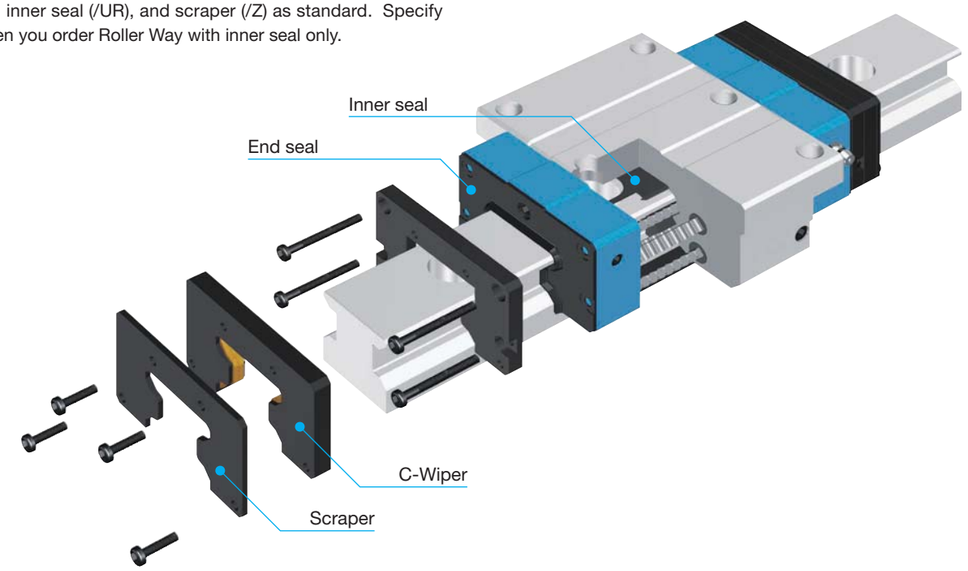
Special specifications for special environments

IKO prepares various kinds of IKO Linear Way and Linear Roller Way of special specifications for special environments.

Dust protection

C-Wiper／RC

The C-Wiper is mounted on the outer side of the end seal to protect the product against floating metal powders to enable long-term services in good conditions.
Roller Way of special specification with C-Wiper (RC) comes with end seal, inner seal (/UR), and scraper (/Z) as standard. Specify "/UR" when you order Roller Way with inner seal only.



Available product sizes for C-Wiper

Shapes of slide units	Length of slide units	Model number	Size								
			12	15	20	25	30	35	45	55	65
Flanged type, mounting from top and bottom	Short type	MXC	–	–	○	○	○	○	○	○	○
	Standard type	MX	–	–	○	○	○	○	○	○	○
	High rigidity long type	MXG	–	–	○	○	○	○	○	○	○
	Extra high rigidity long type	MXL	–	–	○	○	○	○	○	○	○
Blocked type, mounting from top	Short type	MXDC	–	–	○	○	○	○	○	○	○
	Standard type	MXD	–	–	○	○	○	○	○	○	○
	High rigidity long type	MXDG	–	–	○	○	○	○	○	○	○
	Extra high rigidity long type	MXDL	–	–	○	○	○	○	○	○	○
Compact blocked type, mounting from top	Short type	MXSC	–	–	○	○	○	–	–	–	–
	Standard type	MXS	–	–	○	○	○	○	○	○	–
	High rigidity long type	MXSG	–	–	○	○	○	○	○	○	–
	Extra high rigidity long type	MXSL	–	–	○	○	○	–	–	–	–
Low section flange type, mounting from top	Standard type	MXN	–	–	–	–	○	○	○	○	–
	High rigidity long type	MXNG	–	–	–	–	○	○	○	○	–
	Extra high rigidity long type	MXNL	–	–	–	–	○	○	○	○	–
Low section block type, mounting from top	Standard type	MXNS	–	–	–	–	○	○	○	○	–
	High rigidity long type	MXNSG	–	–	–	–	○	○	○	○	–
	Extra high rigidity long type	MXNSL	–	–	–	–	○	○	○	○	–

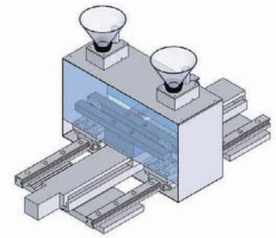
Dust protection

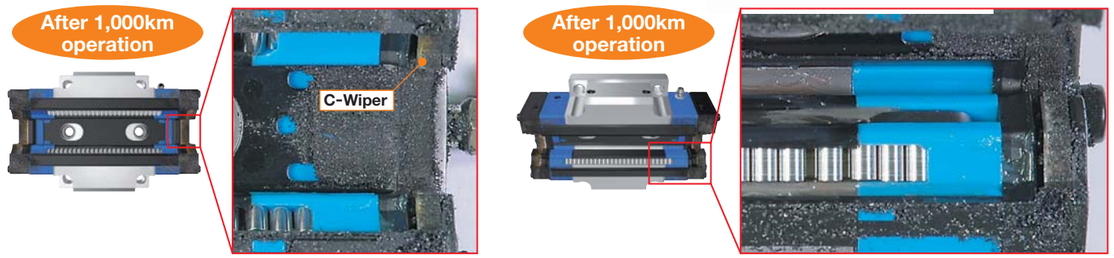
Durability test result supporting the excellent dust protection effect of "C-Wiper"

Durability test result under fine particles

Test condition

Product	**MX35** T3 preload / Caps for rail mounting holes: with C-Wiper
Operating speed	18 m/min
Travel length	500 mm
Dust condition	Fine metal particles Diameter of particle : 125 μm or less Hardness of particle : HRC40 to 50 Application amount : 10 g/hr (Total volume: 1 kg)





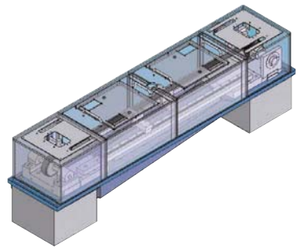
Steel particles inside of slide unit could be minimized

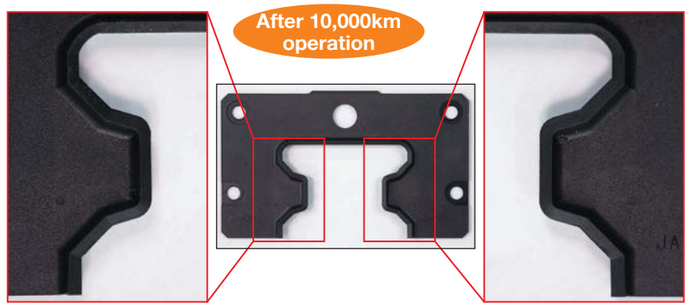
Almost no steel particles is found on the raceway!

Durability test result under coolant mist

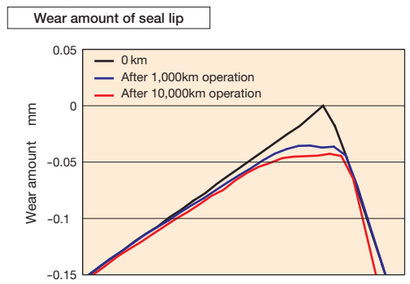
Test condition

Product	**MX35** T3 preload / Caps for rail mounting holes: with C-Wiper
Operating speed	115.2 m/min
Travel length	300 mm
Coolant	Soluble type Diluting rate : ×20 Spraying amount : 5 cc/hr





No damage of End seal was found.



Wear of end seal could be minimized!

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Special specifications for special environments

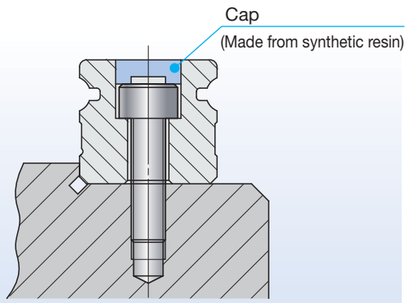
Dust protection

Rail cover sheet

A rail cover sheet is a steel sheet backed up with an adhesive tape and attached to a dedicated track rail having a groove on its surface. This sheet can prevent foreign matter from going into the slide unit.

With caps for rail mounting holes ／F

Specially prepared caps for track rail mounting holes are appended. These caps cover the track rail mounting holes to improve the sealing performance in the linear motion direction. Aluminum caps are also available.
Consult IKO for further information.

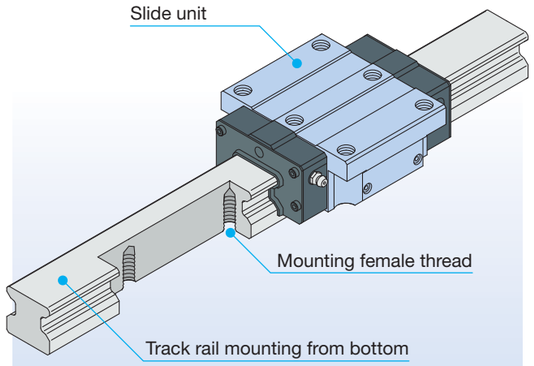


Rail cover plate ／PS

After mounting the track rail, the top surface of track rail is covered with a U-shaped thin stainless steel plate for further improvement in sealing performance. The rail cover plate is delivered as assembled on the track rail. Standard end seals must be replaced with the special end seals.
When mounting the cover plate, refer to the attached instruction manual for rail cover plate.

Track rail mounting from bottom

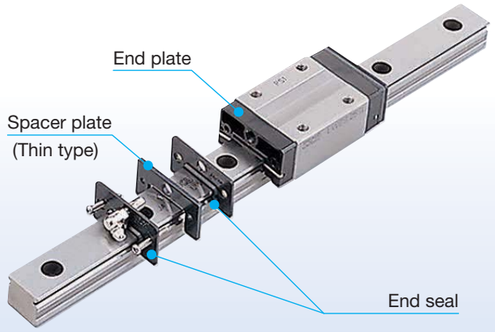
In this specification, the track rail is secured from the mounting side. The lips of end seals can be close contact with the top surface of the track rail since the track rail has no mounting hole on its top surface. This can assure high dust protection effect.



Dust protection

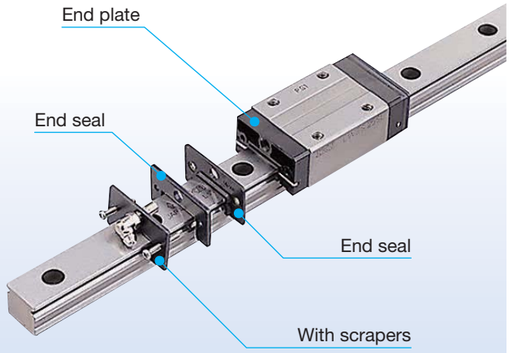
With double end seals ／V

The double end seals improve the dust protection performance.



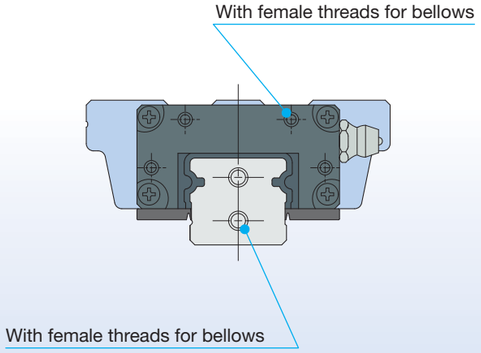
With scrapers ／Z

Scrapers are mounted on the outside of end seals to remove large particles of dust or foreign matter that deposit on the track rail.



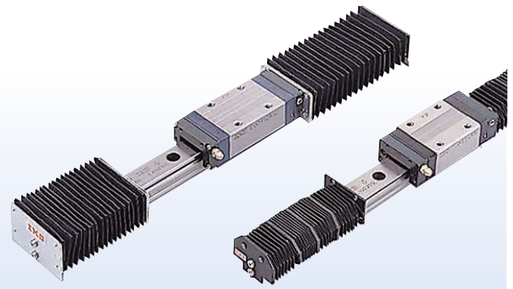
With female threads for bellows ／J

Female threads for attaching bellows are provided at the ends of the slide unit and track rail.



Bellows (available product)

This is a covering for dust protection to cover the exposed part of the track rail.



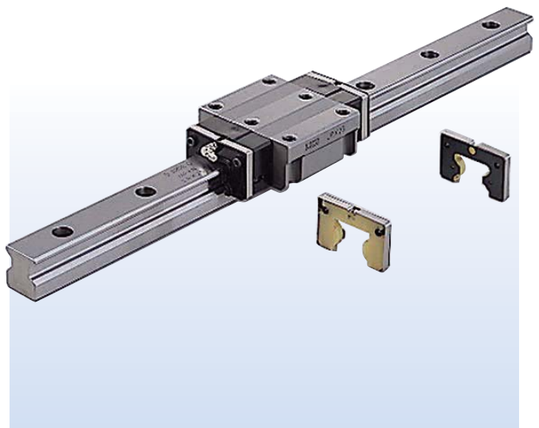
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Special specifications for special environments

Lubrication

C-Lube plate ／Q

This lubrication part can greatly reduce grease-up and other lubrication maintenance.

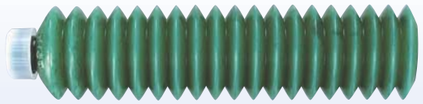


IKO Low-Dust Generation Grease for Clean Environment CGL ／YCL

This grease is made of a mixed soap as a viscosity improver and a mixture of synthetic oil and low-boiling-point mineral oil as the base oil. This grease is excellent in low dust-generation property, rolling resistance, lubrication, and corrosion-resistance.

Bellow type container (80g)

JG80/CGL



Miniature grease injector type (2.5ml)

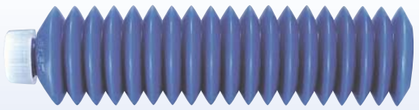
MG2.5/CGL

IKO Low-Dust Generation Grease for Clean Environment CG2 ／YCG

This grease is made of urea as a viscosity improver and synthetic oil as the base oil. This grease is excellent in low dust-generation property, wide operating temperature range, lubrication, corrosion-resistance, and oxidation stability.

Bellow type container (80g)

JG80/CG2



Miniature grease injector type (2.5ml)

MG2.5/CG2

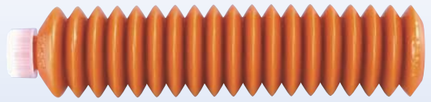
10ml packs (MG10/CG2) are also available.

IKO Anti-Fretting Corrosion Grease AF2 ／YAF

This grease is excellent in anti-fretting corrosion resistance.

Bellow type container (80g)

JG80/AF2



Miniature grease injector type (2.5ml)

MG2.5/AF2

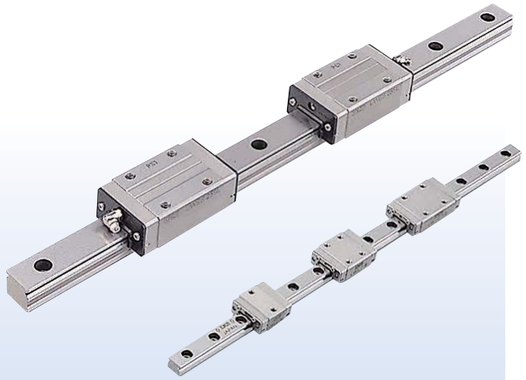
Other special greases

Consult IKO when you need other special greases for vacuum and high-temperature uses.

Others

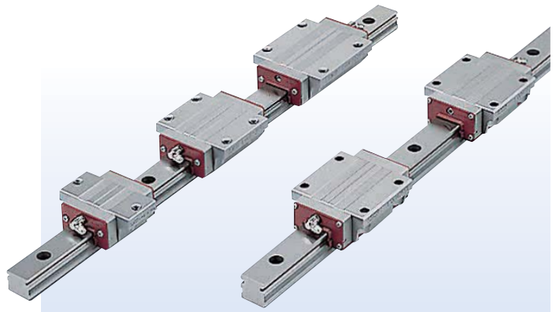
With stainless steel end plates ／BS

The end plates are replaced with stainless steel end plates.



With seals for special environment ／RE

The end seals and under seals are changed to end seals for special environment that can be used at high temperatures. For use at high temperatures, this specification is combined with the specification " with stainless steel end plates" (/BS) and/or "specified grease (/YCG).



The photo shows a combined specification of " with seals for special environment " (/RE) and " with stainless steel end plates " (/BS).

You also need Linear Way for special environments?

Leave them to IKO.

For more information, call IKO.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

C-Lube Linear Way
C-Lube Linear Roller Way

IKO C-Lube Maintenance-free®

Products descriptions and dimension tables

- C-Lube Linear Way ML
  Linear Way L
  - Description ····· Ⅱ-5
  - Dimension Table ····· Ⅱ-23
- C-Lube Linear Way ME
  Linear Way E
  - Description ····· Ⅱ-41
  - Dimension Table ····· Ⅱ-53
- C-Lube Linear Way MH
  Linear Way H
  - Description ····· Ⅱ-67
  - Dimension Table ····· Ⅱ-85
- Linear Way F
  - Description ····· Ⅱ-113
  - Dimension Table ····· Ⅱ-127
- C-Lube Linear Way MUL
  Linear Way U
  - Description ····· Ⅱ-135
  - Dimension Table ····· Ⅱ-145
- C-Lube Linear Roller Way Super MX
  Linear Roller Way Super X
  - Description ····· Ⅱ-149
  - Dimension Table ····· Ⅱ-169
- Linear Roller Way X
  - Description ····· Ⅱ-197
  - Dimension Table ····· Ⅱ-205
- Linear Way Module
  - Description ····· Ⅱ-211
  - Dimension Table ····· Ⅱ-219

General Description

- General Description ····· Ⅲ-2

Application Examples

- Application Examples ····· Ⅳ-2

C-Lube Linear Way ML
Linear Way L

C-Lube Linear Way ML

Features

Simple structure of smallest size

A micro miniature linear motion rolling guide is produced by the simple structure of two-row and four-point contact and original small sizing technology. The smallest size, LWL1 is truck rail width of only 1mm.

Wide variation corresponding to needs

Two shapes of track rail, standard type and wide type are lined up with four variations in length of slide unit. Wide type track rail is suitable for use of mono rail. Moreover, tapped type track rail, which has machined female threads, are available for optimal products to fit for requirement of machine and equipment.

Stainless Steel

The metal components are manufactured from corrosion resistant stainless steel. So this series is most suitable for use in clean rooms and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Ball retained type

The slide unit incorporates ball retaining bands, which prevent steel balls from dropping when the slide unit is separated from the track rail. So handling is easy.

Variety specification for special environment

Special Environment C-Lube Linear Way ML is serialized. High speed and low noise specification with silicon nitrified ceramic ball.

Identification number and specification

The specifications of ML(F) series and LWL(F) series are 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.

Interchangeable pecification	1	2	4	5	6	3	7	8	9	10	11
Slide unit only	ML	C	12	C1				T1	P	S1	/U
Track rail only(1)	LWL		12		R200	B			P	S1	
Assembled set	ML	C	12	C1	R200			T1	P	S1	/U
Non interchangeable specification											
Assembled set	ML	C	12	C1	R200	B		T1	P		/U

1 Series
2 Length of slide unit
3 Ball Retaining
Model code On page Ⅱ-7

4 Size
Size On page Ⅱ-7

5 Number of slide units
6 Length of track rail
Part code On page Ⅱ-7

7 Material
Material symbol On page Ⅱ-7

8 Preload amount
Preload symbol On page Ⅱ-13

9 Accuracy class
Classification symbol On page Ⅱ-14

10 Interchangeable
Interchangeable code On page Ⅱ-15

11 Special specification
Supplemental code On page Ⅱ-15

Note(1) : For the model code of track rail of interchangeable specification, indicate "LWL…B" or "LWLF…B" regardless of the slide unit type to be combined.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification

—Series・Length of slide unit・Ball Retaining・Size—

1 Series

C-Lube Linear Way L (ML(F) Series) — Standard type : ML; Wide type : MLF

Linear Way L[1] (LWL(F) Series) — Standard type : LWL; Wide type : LWLF

Applicable size and shape of slide unit are shown in Table 2.1 and 2.2.
The specification of C-Lube Linear Way ML 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. For details of each specification, see page 78.

Note[1] : For the model code of a single track rail of interchangeable specification, indicate "LWL…B" or "LWLF…B" regardless of the slide unit type to be combined.

2 Length of slide unit

Short	: C	Applicable size and shape of slide unit are shown in Table 2.1 and 2.2.
Standard	: No symbol	
High rigidity long	: G	
Extra high rigidity long	: L	

3 Ball Retaining

Table 1.1 Structure of ML and LWL

Series	Shape and size of track rail			Ball Retaining
ML	Standard track rail			Ball retained type : No symbol
LWL	Standard track rail			Ball retained type : B
	Tapped track rail	Mounting from bottom	Size 2, 3	Ball non-retained type : No symbol
			Size 5, 7, 9	Ball retained type : N
		Mounting from lateral	Size 1	Ball non-retained type : Y
	Non-mounting hole type track rail		Size 1	Ball non-retained type : No symbol

Table 1.1 Structure of MLF and LWLF

Series	Shape of track rail		Ball Retaining
MLF	Standard track rail		Ball retained type : No symbol
LWLF	Standard track rail	Size 4, 6	Ball non-retained type : No symbol
		Size 10 to 42	Ball retained type : B
	Tapped track rail	Size 6	Ball non-retained type : N
		Size 10 to 18	Ball retained type : N

Applicable size and shape of slide unit are shown in Table 2.1 and 2.2.

4 Size

Standard type	1, 2, 3, 5, 7, 9, 12, 15, 20, 25	Applicable size and shape of slide unit are shown in Table 2.1 and 2.2.
Wide type	4, 6, 10, 14, 18, 24, 30, 42	

5 Number of slide unit

: C○

For an assembled set, indicate the number of slide units assembled on one track rail. For a slide unit, only "C1" can be indicated.

6 Length of track rail

: R○

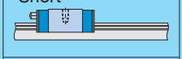
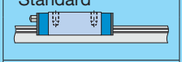
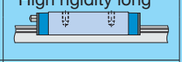
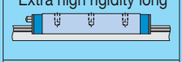
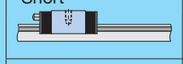
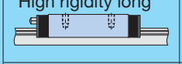
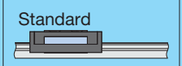
Indicate the length of track rail in mm. For standard and maximum lengths, see "Track rail length" in Table 3.1, Table 3.2 and Table 3.3.

7 Material

Stainless steel	: No symbol	Applicable size and shape of slide unit are shown in Table 2.1 and 2.2.
High carbon steel	: CS	

—Number of slide unit・Length of track rail・Material—

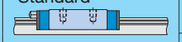
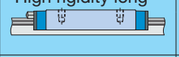
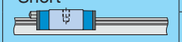
Table 2.1 Models and sizes of ML(F) and LWL(F) series

Shape of track rail	Material	Length of slide unit	Ball Retaining	Series	Size 1	2	3	5	7	9	12	15	20	25
Standard track rail	Stainless steel made	Short 	Ball retained type	MLC	–	–	–	○	○	○	○	○	○	○
				LWLC…B	–	–	–	○	○	○	○	○	○	○
		Standard 		ML	–	–	–	○	○	○	○	○	○	○
				LWL…B	–	–	–	○	○	○	○	○	○	○
		High rigidity long 		MLG	–	–	–	–	○	○	○	○	○	○
				LWLG…B	–	–	–	–	○	○	○	○	○	○
	High carbon steel made	Extra high rigidity long 		MLL	–	–	–	–	–	○	○	○	–	–
		Standard		LWL…BCS	–	–	–	–	–	○	○	○	○	–
Tapped track rail	Stainless steel made	Short 	Ball non-retained type	LWLC	–	–	○	–	–	–	–	–	–	–
			Ball retained type	LWLC…N	–	–	–	○	○	○	–	–	–	–
		Standard	Ball non-retained type	LWL	–	○	○	–	–	–	–	–	–	–
			Ball retained type	LWL…N	–	–	–	○	○	○	–	–	–	–
		High rigidity long 	Ball retained type	LWLG…N	–	–	–	–	○	○	–	–	–	–
Tapped track rail (Lateral)		Standard	Ball non-retained type	LWL…Y	○	–	–	–	–	–	–	–	–	–
Non-mounting hole type track rail		Standard 	Ball non-retained type	LWL	○	–	–	–	–	–	–	–	–	–

Remark : The mark ▭ indicates that interchangeable specification is available.

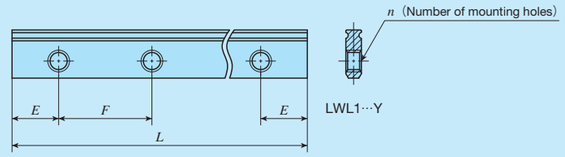
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

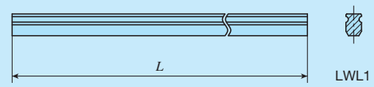
Table 2.2 Models and sizes of wide type

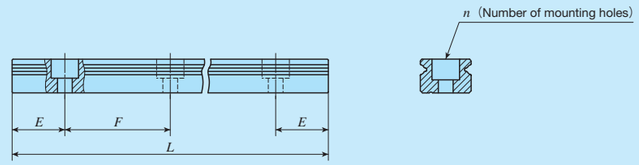
Shape of track rail	Material	Length of slide unit	Ball Retaining	Series	Size 4	6	10	14	18	24	30	42
Standard track rail	Stainless steel made	Short	Ball retained type	MLFC	–	–	○	○	○	○	○	○
				LWLFC…B	–	–	○	○	○	○	○	○
			Ball non-retained type	LWLFC	–	○	–	–	–	–	–	–
		Standard 	Ball retained type	MLF	–	–	○	○	○	○	○	○
				LWLF…B	–	–	○	○	○	○	○	○
			Ball non-retained type	LWLF	○	○	–	–	–	–	–	–
		High rigidity long 	Ball retained type	MLFG	–	–	–	○	○	○	○	○
				LWLFG…B	–	–	–	○	○	○	○	○
	High carbon steel made	Standard	Ball retained type	LWLF…BCS	–	–	–	–	○	○	○	○
Tapped track rail	Stainless steel made	Short 	Ball retained type	LWLFC…N	–	–	○	○	○	–	–	–
			Ball non-retained type		–	○	–	–	–	–	–	–
		Standard	Ball retained type	LWLF…N	–	–	○	○	○	–	–	–
			Ball non-retained type		–	○	–	–	–	–	–	–
		High rigidity long	Ball retained type	LWLFG…N	–	–	–	○	○	–	–	–

Remark : The mark ▭ indicates that interchangeable specification products are available.

Table 3.1 Standard and maximum lengths of stainless steel track rails (Standard type)







unit : mm

Item \ Model number	LWL1…Y	LWL1	LWL2	LWL3	ML 5 LWL5…B	ML 7 LWL7…B
Standard length $L(n)$	18 (3) 30 (5) 42 (7)	18 (–) 30 (–) 42 (–)	32 (4) 40 (5) 56 (7) 80 (10)	30 (3) 40 (4) 60 (6) 80 (8) 100 (10)	60 (4) 90 (6) 105 (7) 120 (8) 150 (10)	60 (4) 90 (6) 120 (8) 150 (10) 180 (12) 240 (16)
Pitch of mounting holes F	6	–	8	10	15	15
E	3	–	4	5	7.5	7.5
Standard range of E(1) incl.	2.5	–	2.5	3	4	4.5
Standard range of E(1) under	5.5	–	6.5	8	11.5	12
Maximum length(2)	102	102	104 (200)	150 (300)	210 (510)	300 (990)
Maximum number of butt-jointing track rails(3)	–	–	–	–	5	7
Maximum length of butt-jointing track rails(3)	–	–	–	–	915	1 905

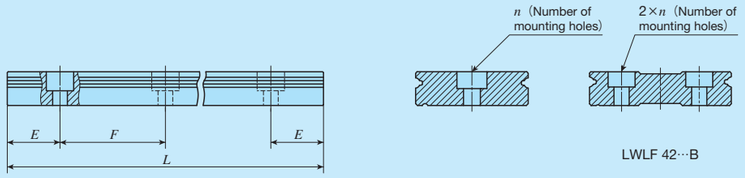
Item \ Model number	ML 9 LWL9…B	ML 12 LWL12…B	ML 15 LWL15…B	ML 20 LWL20…B	ML 25 LWL25…B
Standard length $L(n)$	60 (3) 80 (4) 120 (6) 160 (8) 220 (11) 280 (14)	100 (4) 150 (6) 200 (8) 275 (11) 350 (14) 475 (19)	160 (4) 240 (6) 320 (8) 440 (11) 560 (14) 680 (17)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11) 840 (14)	240 (4) 300 (5) 360 (6) 480 (8) 660 (11) 900 (15)
Pitch of mounting holes F	20	25	40	60	60
E	10	12.5	20	30	30
Standard range of E(1) incl.	4.5	5	5.5	8	9
Standard range of E(1) under	14.5	17.5	25.5	38	39
Maximum length(2)	860 (1 200)	1 000 (1 450)	1 000 (1 480)	960 (1 800)	960 (1 800)
Maximum number of butt-jointing track rails(3)	2	2	2	2	2
Maximum length of butt-jointing track rails(3)	1 660	1 925	1 880	1 740	1 740

Notes(1) : Not applied to optional specification "track rail stopper pins" (supplemental code "/S").
(2) : The track rails can be manufactured up to the maximum length shown in parentheses. If required, please consult IKO. Not applicable for tapped track rail specification.
(3) : Not applicable to interchangeable aul/or tapped track rail specification.

Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : For the model code of a single track rail of interchangeable specification, indicate "LWL…B" regardless of the slide unit type to be combined.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 3.2 Standard and maximum lengths of stainless steel track rails (Wide rail type)



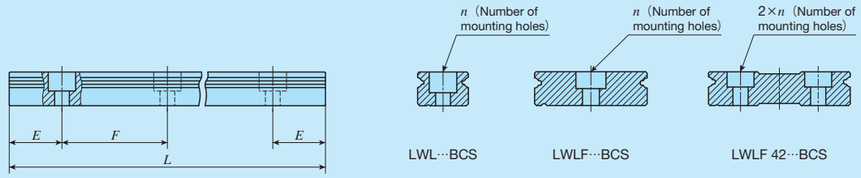
unit : mm

Item \ Model number	LWLF4	LWLF6	MLF 10 LWLF10···B	MLF 14 LWLF14···B
Standard length $L(n)$	40 (4) 60 (6) 70 (7) 80 (8) 100 (10)	60 (4) 90 (6) 105 (7) 120 (8) 150 (10)	60 (3) 80 (4) 120 (6) 160 (8) 220 (11) 280 (14)	90 (3) 120 (4) 150 (5) 180 (6) 240 (8) 300 (10)
Pitch of mounting holes F	10	15	20	30
E	5	7.5	10	15
Standard range of E(1) incl.	3.5	4.5	4.5	5.5
Standard range of E(1) under	8.5	12	14.5	20.5
Maximum length(2)	180 (300)	240 (300)	300 (500)	300 (990)
Maximum number of butt-jointing track rails(3)	–	–	7	8
Maximum length of butt-jointing track rails(3)	–	–	1 840	1 950

Item \ Model number	MLF 18 LWLF18···B	MLF 24 LWLF24···B	MLF 30 LWLF30···B	MLF 42 LWLF42···B
Standard length $L(n)$	90 (3) 120 (4) 150 (5) 180 (6) 240 (8) 300 (10)	120 (3) 160 (4) 240 (6) 320 (8) 400 (10) 480 (12)	160 (4) 240 (6) 320 (8) 440 (11) 560 (14) 680 (17)	160 (4) 240 (6) 320 (8) 440 (11) 560 (14) 680 (17)
Pitch of mounting holes F	30	40	40	40
E	15	20	20	20
Standard range of E(1) incl.	5.5	6.5	6.5	6.5
Standard range of E(1) under	20.5	26.5	26.5	26.5
Maximum length(2)	690 (1 860)	680 (1 960)	680 (2 000)	680 (2 000)
Maximum number of butt-jointing track rails(3)	3	3	3	3
Maximum length of butt-jointing track rails(3)	1 920	1 840	1 840	1 840

Notes(1) : Not applied to optional specification "track rail stopper pins" (supplemental code "/S").
(2) : The track rails can be manufactured up to the maximum length shown in parentheses. If required, please consult IKO. Not applicable for tapped track rail specification.
(3) : Not applicable to interchangeable aul/or tapped track rail specification.
Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : For the model code of track rail of interchangeable specification, indicate "LWL···B" regardless of the slide unit type to be combined.

Table 3.3 Standard and maximum lengths of high carbon steel track rails (Standard type, Wide rail type)



unit : mm

Item \ Model number	LWL 9···BCS	LWL12···BCS	LWL15···BCS	LWL20···BCS
Standard length $L(n)$	80 (4) 160 (8) 220 (11) 280 (14) 380 (19) 500 (25) 600 (30)	100 (4) 200 (8) 275 (11) 350 (14) 475 (19) 600 (24) 700 (28)	160 (4) 320 (8) 440 (11) 560 (14) 680 (17) 800 (20) 920 (23)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11) 900 (15) 1 020 (17)
Pitch of mounting holes F	20	25	40	60
E	10	12.5	20	30
Standard range of E(1) incl.	4.5	5	5.5	8
Standard range of E(1) under	14.5	17.5	25.5	38
Maximum length	1 000	1 500	1 520	1 560

Item \ Model number	LWLF18···BCS	LWLF24···BCS	LWLF30···BCS	LWLF42···BCS
Standard length $L(n)$	90 (3) 180 (6) 240 (8) 300 (10) 420 (14) 510 (17) 600 (20)	120 (3) 240 (6) 320 (8) 400 (10) 600 (15) 720 (18) 800 (20)	160 (4) 320 (8) 440 (11) 560 (14) 680 (17) 800 (20) 920 (23)	160 (4) 320 (8) 440 (11) 560 (14) 680 (17) 800 (20) 920 (23)
Pitch of mounting holes F	30	40	40	40
E	15	20	20	20
Standard range of E(1) incl.	5.5	6.5	6.5	6.5
Standard range of E(1) under	20.5	26.5	26.5	26.5
Maximum length	1 500	1 520	1 600	1 600

Note(1) : Not applied to optional specification "track rail stopper pins" (supplemental code "/S").
Remark : The above table shows representative model numbers but is applicable to all models of the same size.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

—Preload amount—

8 Preload amount

Clearance	: T_0	Specify this items for an assembled set or an interchangeable single slide unit.
Standard	: No symbol	Applicable preload and size are shown in Table 4. For detail of preload amount, see Table 5.1 and 5.2.
Light preload	: T_1	

Table 4 Preload amount

Item / Preload type	Symbol	Preload amount N	Application
Clearance	T_0	0 (1)	· Very smooth motion
Standard	(No symbol)	0 (2)	· Smooth and precise motion
Light preload	T_1	0.02 C_0	· Minimum vibration · Load is evenly balanced · Smooth and precise motion

Notes (1) : Zero or minimal amount of clearance.
(2) : Zero or minimal amount of preload.
Remark : C_0 means the basic static load rating.

Table 5.1 Applicable preload (standard type)

Size	Preload and symbol		
	Clearance (T_0)	Standard (No symbol)	Light preload (T_1)
1	○	–	–
2	○	–	–
3	○	–	–
5	○	○	–
7	○(1)	○	○(1)
9	○(1)	○	○(1)
12	○(1)	○	○(1)
15	○(1)	○	○(1)
20	○	○	○
25	○	○	○

Note (1) : Not applicable to /HB (ceramic ball) specification.
Remark : The mark ▭ indicates that interchangeable specification products are available.

Table 5.2 Applicable preload (Wide type)

Size	Preload and symbol		
	Clearance (T_0)	Standard (No symbol)	Light preload (T_1)
4	○	–	–
6	○	–	–
10	○	○	–
14	○	○	○
18	○	○	○
24	○	○	○
30	○	○	○
42	○	○	○

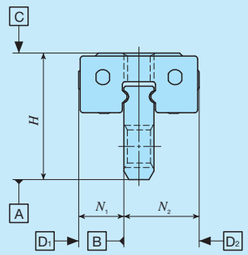
Remark : The mark ▭ indicates that interchangeable specification products are available.

—Accuracy—

9 Accuracy class

High class	: H	In interchangeable specification, please combine same accuracy codes on both slide unit and track rail. For detail of accuracy, see Table 6.1 and 6.2. Accuracy class is not applicable to size 1.
Precision class	: P	

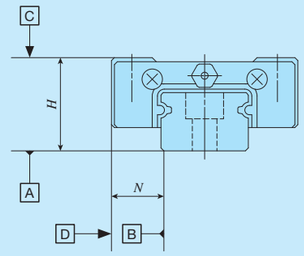
Table 6.1 Accuracy for LWL 1



unit : mm

Item	Tolerance
Dim. H tolerance	±0.020
Dim. N_1 and N_2 tolerance	±0.025

Table 6.2 Accuracy for size 2 or larger



unit : mm

Item / Classification (Symbol)	High (H)	Precision (P)
Dim. H tolerance	±0.020	±0.010
Dim. N tolerance	±0.025	±0.015
Dim. variation of H (1)	0.015	0.007
Dim. variation of N (1)	0.020	0.010
Dim. variation of H for multiple assembled sets (2)	0.030	0.020
Parallelism in operation of C to A	See Fig. 1	
Parallelism in operation of D to B	See Fig. 1	

Notes (1) : It means the size variation between slide units mounted on the same track rail.
(2) : It applies to the interchangeable specification.

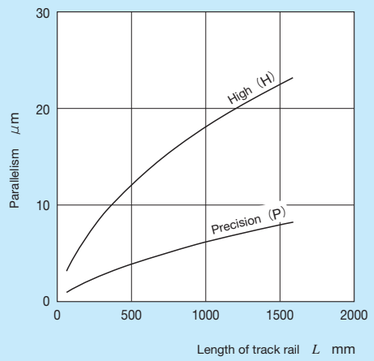


Fig. 1 Parallelism in operation for Size 2 or larger

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

10 Interchangeable

Interchangeable	: S1 : S2	Specity this code for the interchangeable specification products. Assemble track rails and slide units with the same interchangeable code. For applicalble models and sizes, see Table 2.1 and 2.2.
Non-interchangeable	: No symbol	

11 Special specifications

For applicable special specifications, see Table 7.1, 7.2, 7.3 and 7.4. When several special specifications are required, see Table 8. Special specifications are not applicable to size 1.
For details of special specifications, see page Ⅲ-28.

Table 7.1 Applicable specifications (Interchangeable specification, single slide unit)

Specifications	Supplemental code	Size									
		1	2	3	5	7	9	12	15	20	25
		–	4	6	10	14	18	24	30	42	–
No rubber end seals	/N	–	–	–	○	○	○	○	○	○	○
C-Lube plates(1)	/Q	–	–	–	○	○	○	○	○	○	○
Under seals	/U	–	–	–	×	×	○	○	○	○	○

Note(1) : Applicable to LWL(F) series.

Table 7.2 Applicable specifications (Interchangeable specification, track rail)

Specifications	Supplemental code	Size									
		1	2	3	5	7	9	12	15	20	25
		–	4	6	10	14	18	24	30	42	–
Specified rail mounting hole positions	/E	–	–	–	○	○	○	○	○	○	○
Without track rail mounting bolts	/MN	–	–	–	○	○	○	○	○	○	○

Table 7.3 Applicable specifications (Interchangeable specification, assembled set)

Specifications	Supplemental code	Size									
		1	2	3	5	7	9	12	15	20	25
		–	4	6	10	14	18	24	30	42	–
Opposite reference surfaces arrangement	/D	–	–	–	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	–	–	–	○	○	○	○	○	○	○
Without track rail mounting bolts(1)	/MN	–	–	–	○	○	○	○	○	○	○
No rubber end seals	/N	–	–	–	○	○	○	○	○	○	○
C-Lube plates(2)	/Q	–	–	–	○	○	○	○	○	○	○
Under seals	/U	–	–	–	×	×	○	○	○	○	○

Notes(1) : Not applicable to tapped track rail specification.
(2) : Applicable to LWL(F) series.

Table 7.4 Applicable specifications (Non-interchangeable specification)

Specifications	Supplemental code	Size									
		1	2	3	5	7	9	12	15	20	25
		–	4	6	10	14	18	24	30	42	–
Butt jointing track rail(1)(2)	/A	×	×	×	○	○	○	○	○	○	○
Stainless steel end plates(3)	/BS	×	○(4)	○(4)	○	○	○	○	○	○	×
Opposite reference surfaces arrangement	/D	×	○	○	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	×	○	○	○	○	○	○	○	○	○
Ceramic ball specification(5)	/HB	×	×	×	×	○(5)	○(5)	○(5)	○(5)	×	×
Appending inspection sheet	/I	×	○	○	○	○	○	○	○	○	○
Black chrome surface treatment (track rail)	/LR	×	×	×	×	○	○	○	○	○	○
Without track rail mounting bolts(2)	/MN	×	○(6)	○(6)	○	○	○	○	○	○	○
No rubber end seals	/N	×	×	×	○	○	○	○	○	○	○
C-Lube plates(3)	/Q	×	×	×	○	○	○	○	○	○	○
Seals for special environment(3)	/RE	×	×	×	○	○	○	○	○	○	×
Track rail with stopper pins	/S	×	×	×	○	○	○	○	○	○	○
Under seals	/U	×	×	×	×	×	○	○	○	○	○
Matched sets to be used as an assembled group	/W○	×	○	○	○	○	○	○	○	○	○
Specified grease(3)	/Y○	×	○(7)	○	○	○	○	○	○	○	○

Notes(1) : Not applicable to high carbon steel type.
(2) : Not applicable to tapped rail specification products.
(3) : Applicable to LWL(F) series.
(4) : Not applicable to size 4 and 6 models.
(5) : Applicable to size 7, 9, 12 and 15 of ML series.
(6) : Not applicable to size 2 and 3 models.
(7) : Only applicable to / YNG.

Table 8 Combination of special specifications

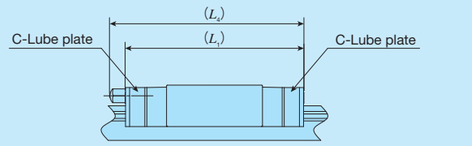
	A	BS	D	E	HB	I	LR	MN	N	Q	RE	S	U	W
BS	○													
D	○	○												
E	–	○	–											
HB	○	–	○	○										
I	○	○	○	○	○									
LR	–	○	○	○	○	○								
MN	○	○	○	○	○	○	○							
N	○	○	○	○	○	○	○	○						
Q	○	○	○	○	–	○	○	○	○					
RE	○	○	○	○	–	○	○	○	–	○				
S	○	○	○	○	○	○	○	○	○	○	○			
U	○	○	○	○	○	○	○	○	–	○	–	○		
W	○	○	○	–	○	○	○	○	○	○	○	○	○	
Y	○	○	○	○	–	○	○	○	○	–	○	○	○	○

Remarks 1 : In the table, the mark ○ indicates that this combination can be made.
2 : When a combination of several special specifications is required, arrange their supplemental codes in alphabetical order.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

—Special specifications—

Table 9 Slide unit with C-Lube plates (Supplemental code /Q)



unit : mm

Model number	L_1	L_4	Model number	L_1	L_4
LWLC 5…B	22	–	LWLFC 10…B	26.5	–
LWL 5…B	25	–	LWLF 10…B	30.5	–
LWLC 7…B	27	–	LWLFC 14…B	30.5	–
LWL 7…B	31.5	–	LWLF 14…B	39.5	–
LWLG 7…B	39	–	LWLFG 14…B	50	–
LWLC 9…B	30	–	LWLFC 18…B	34.5	–
LWL 9…B	39	–	LWLF 18…B	46.5	–
LWLG 9…B	49	–	LWLFG 18…B	58.5	–
LWLC 12…B	33	–	LWLFC 24…B	38.5	–
LWL 12…B	42	–	LWLF 24…B	52	–
LWLG 12…B	52	–	LWLFG 24…B	67	–
LWLC 15…B	42	47	LWLFC 30…B	45.5	50
LWL 15…B	52	57	LWLF 30…B	59.5	64
LWLG 15…B	67	72	LWLFG 30…B	78.5	83
LWLC 20…B	48	53	LWLFC 42…B	51.5	56
LWL 20…B	60	65	LWLF 42…B	65	70
LWLG 20…B	78	83	LWLFG 42…B	84.5	89
LWLC 25…B	63.5	74			
LWL 25…B	87.5	98			
LWLG 25…B	107.5	117			

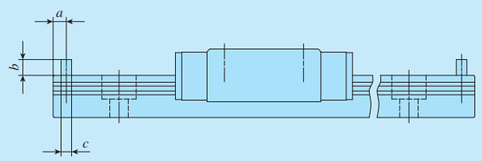
Remarks 1 : The values are the slide unit lengths with C-Lube plates at both ends.
2 : The above table shows representative model numbers but is applicable to all models.

Table 10 Rated load and moment for C-Lube Linear Way Ceramic Ball Specification (Supplemental code /HB)

Model number	C N	C_0 N	T_0 N・m	T_X(1) N・m	T_Y(1) N・m
MLC 7…/HB	937	965	3.5	1.6 12.6	1.3 10.6
ML 7…/HB	1 330	1 610	5.9	4.0 23.9	3.3 20.1
MLG 7…/HB	1 690	2 250	8.2	7.5 43.1	6.3 36.2
MLC 9…/HB	1 180	1 260	5.9	2.4 18.2	2.1 15.3
ML 9…/HB	1 810	2 340	10.9	7.7 43.4	6.5 36.4
MLG 9…/HB	2 370	3 420	15.9	15.9 83.6	13.4 70.1
MLL 9…/HB	2 870	4 500	20.9	27.1 134	22.7 112
MLC 12…/HB	2 210	2 030	12.6	4.5 35.5	3.8 29.8
ML 12…/HB	3 330	3 650	22.6	13.1 79.2	11.0 66.4
MLG 12…/HB	4 310	5 270	32.7	26.0 143	21.9 120
MLL 12…/HB	5 820	8 110	50.3	59.3 288	49.8 242
MLC 15…/HB	3 490	3 310	25.5	9.9 71.8	8.3 60.3
ML 15…/HB	4 980	5 520	42.5	25.3 146	21.2 122
MLG 15…/HB	6 620	8 280	63.7	54.3 288	45.5 241
MLL 15…/HB	8 370	11 600	89.2	104 497	86.9 417

Note(1) : The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

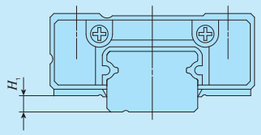
Table 11 Track rail with stopper pins (Supplemental code /S)



unit : mm

Size		a	b	c
5	–	2	2	1.6
7	–	2.5	2.5	2
9	–		3	
–	10		2	1.6
12	–		3	2
–	14			
15	–		4	
–	18		3	
20	–		5	
–	24		3	
25	–	3.5	5	
–	30	2.5	4	
–	42		5	

Table 12 H_1 dimension of slide unit with under seals (Supplemental code /U)



unit : mm

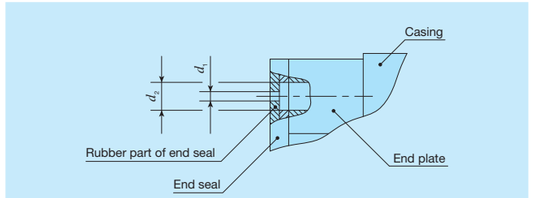
Size		H_1
9	–	1
12	–	2
15	–	3
–	18	2
20	–	4
–	24	2
25	–	5(1)
–	30	2
–	42	3

Note(1) : This dimension is the same as that without under seals.

Lubrication

In ML(F) and LWL(F) series, lithium soap base grease (MULTEMP PS No.2, KYODO YUSHI) is pre-packed. Addition to ML(F) series, self lubrication system C-Lube is assembled and it extends to re-lubrication interval longer.
In ML(F) and LWL(F) series, grease nipple and oil holes are prepared as shown in Table 13 and Table 14. Supply nozzles fit to each shapes of grease nipple and miniature greasers fit to oil holes are also available. For these parts for lubrication, refer to Table 14 and Table 15.1 on page Ⅲ-22, and Table 16 on page 23 if required. In models of size 1 to 6, put grease directly to their raceway of track rail because oil hole is not prepared.

Table 13 Oil hole



unit : mm

Size		d_1	d_2
5	10	0.5	1.1
7	14		1.2
9	18		1.5
12	24		2

Table 14 Parts for lubrication

Size		Grease nipple(1)	Applicable supply nozzle type	Nominal size of female threads for piping
5, 7, 9, 12	10, 14, 18, 24	Oil hole	Miniature greaser	–
15, 20	30, 42	A-M3	A-5120V A-5240V B-5120V B-5240V	
25	–	B-M4	A-8120V B-8120V	M4

Note(1) : In grease nipple specification please see Table 15.1 on page Ⅲ-22.

Dust protection

The slide units of ML(F) and LWL(F) series are provided with special rubber seals for dust protection. However, if a large amount of file contaminants are present, or if large particles of foreign matter may fall on the track rail, it is recommended to provide bellows and other protective covers by customer. Especially in models of size 1 to 6, end seals are not prepared.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Precautions for Use

❶Mounting surface, reference mounting surface, and general mounting structure

To mount ML(F) and LWL(F) series, correctly fit the reference mounting surfaces B and D (D_1 or D_2) of the slide unit and track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig.2)
In size 1, reference surfaces are available to both side of slide unit. (D_1 and D_2)
Track rail of LWL1···Y can be mounted in lateral direction.
Two kinds of mounting methods can be chosen. (See Fig.3.1 and 3.2)
The reference mounting surfaces B and D (D_1 and D_2) and the mounting surfaces A and C of ML(F) and LWL(F) series are accurately finished by grinding. Stable and high accuracy liner motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.
Reference mounting surfaces of slide unit and track rail are shown in Fig. 5.2.

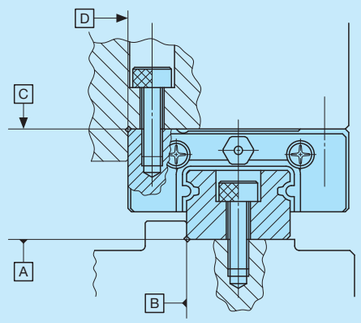


Fig. 2 Reference mounting surface and general mounting structure

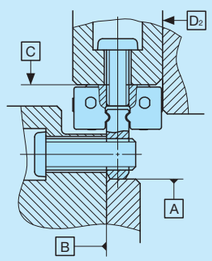


Fig. 3.1 Reference mounting surface and general mounting structure ① of LWL1··· Y

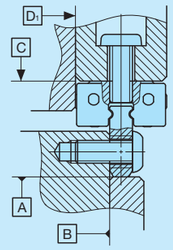


Fig. 3.2 Reference mounting surface and general mounting structure ② of LWL1··· Y

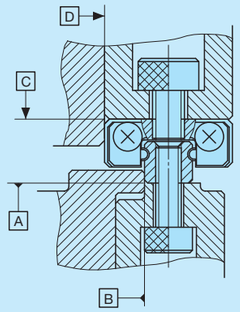


Fig. 4 Reference mounting surface and general mounting structure of LWL 2, 3, 4 and 6.

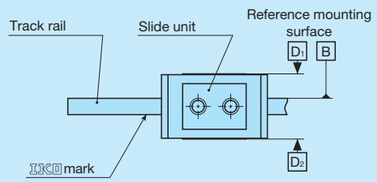


Fig. 5.1 Reference mounting surface of LWL1

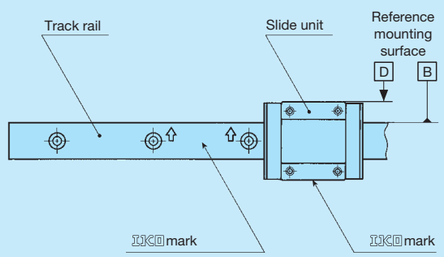


Fig. 5.2 Reference mounting surface and general mounting structure of LWL2 or larger

❷Female threads for mounting the slide unit and track rail are through holes

In the slide unit, mounting holes are through the slide unit. For mounting slide unit, insertion depth shown in dimension table must be kept. Too deep insertion depth causes interference to the track rail and it leads trouble for running accuracy, frictional resistance and lifetime.
In the size of 1, crossed recessed head screw for precision equipment (head diameter 1.8mm or smaller) is recommended.

❸The mounting bolts for track rail are not appended

In the size of 2 and 3 of lateral mounting type, track rail mounting bolts are not appended. Prepare mounting bolts which insertion depth must be less than H_4 in dimension when mounting.

❹Corner radius and shoulder height of reference mounting surfaces

It is recommended to make relieved fillet at the corner of mating reference mounting surfaces as shown in Fig.6. Table 16 shows recommended shoulder heights corner radii of the mating surfaces.

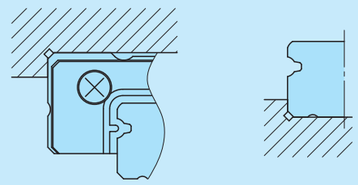


Fig. 6 Relieved fillet at the corner of the mating reference mounting surfaces

❺Tightening torque of mounting bolts

The standard torque values for ML(F) and LWL(F) series mounting bolts are shown in Table 15. When machines or equipment are subjected to serve vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown. When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with strength characteristics of the material.

Table 15 Tightening torque of mounting bolts

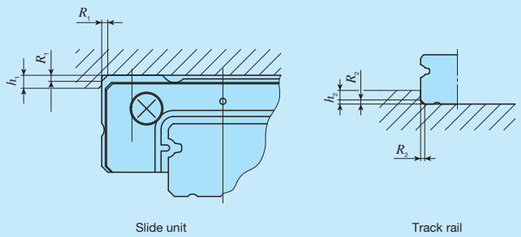
Bolt size	Tightening torque N·m	
	Stainless steel bolt	Carbon steel bolt
M1 ×0.25	0.04	–
M1.4×0.3	0.10	–
M1.6×0.35	0.15	–
M2 ×0.4	0.31	–
M2.5×0.45	0.62	–
M3 ×0.5	1.1	1.2
M4 ×0.7	2.5	2.8
M5 ×0.8	5.0	5.6
M6 ×1	8.5	–

Remarks 1 : The values are calculated by bolt strength division 8.8. as a basis.
2 : In the size of 1, it is recommended to be 70 to 80% of the values in the table.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Precautions for Use

Table 16 Shoulder heights and corner of the mating reference mounting



unit : mm

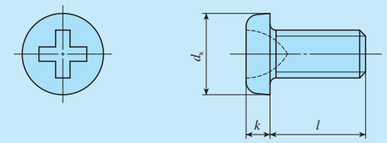
Model number		Slide unit		Track rail	
		Shoulder height h_1	Comer radius R_1 (max.)	Shoulder height(1) h_2	Comer radius R_2 (max.)
–	LWL 1…Y	1.3	–	2	–
–	LWL 1			–	
–	LWL 2	1	0.1	0.5	0.05
–	LWL 3	1.2	0.15	0.8	0.1
ML 5	LWL 5…B	2	0.3	0.8	0.2
ML 7	LWL 7…B	2.5	0.2	1.2	0.2
ML 9	LWL 9…B	3	0.2	1.5	0.2
–	LWL 9…BCS		0.4		
ML 12	LWL 12…B	4	0.2	2.5	0.2
–	LWL 12…BCS		0.4		
ML 15	LWL 15…B	4.5	0.2	3	0.2
–	LWL 15…BCS		0.4		
ML 20	LWL 20…B	5	0.2	4	0.2
–	LWL 20…BCS		0.4		
ML 25	LWL 25…B	6.5	0.7	4	0.7
–	LWLF 4	1.5	0.1	0.8	0.1
–	LWLF 6	2	0.1	0.8	0.1
MLF 10	LWLF 10…B	2	0.3	1.2	0.2
MLF 14	LWLF 14…B	2.5	0.2	1.2	0.2
MLF 18	LWLF 18…B	3	0.2	2.5	0.2
–	LWLF 18…BCS		0.4		
MLF 24	LWLF 24…B	4	0.2	2.5	0.2
–	LWLF 24…BCS		0.4		
MLF 30	LWLF 30…B	4.5	0.2	2.5	0.2
–	LWLF 30…BCS		0.4		
MLF 42	LWLF 42…B	5	0.2	3	0.2
–	LWLF 42…BCS		0.4		

Note(1) : For models with under seals (/U), it is use h2 values 1mm smaller than the values in the table. However, for "with under seals" of the size 9 models, 0.8mm is recommended.
Remark : The above table shows representative model numbers but is applicable to all models.

Mounting bolt

Mounting bolts for the slide unit and the track rail of tapped rail specification are available as shown in Table 17 and 18. Consult IKO for further information.

Table 17 Cross recessed head screw for precision equipment

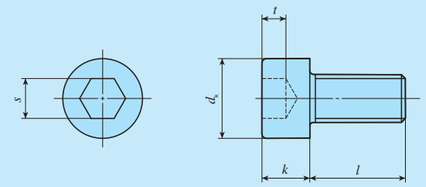


unit : mm

Bolt size (d)	Pitch of screw P	d_k	k	l
M1	0.25	1.8	0.45	3, 4, 5
M1.4(1)	0.3	2.5	0.8	2.5, 3, 4
M1.6(1)	0.35	2.8	0.85	4, 5, 6
M2(1)	0.4	3.5	1	3, 4, 5

Note(1) : Based on "Cross recessed head screw (#0) for precision equipment" of Japanese Standard (JCIS)10-70.
Remark : Dimensions of the screws shown in the above table are different from those of the appended mounting bolts for track rail.

Table 18 Hexagon socket head bolt



unit : mm

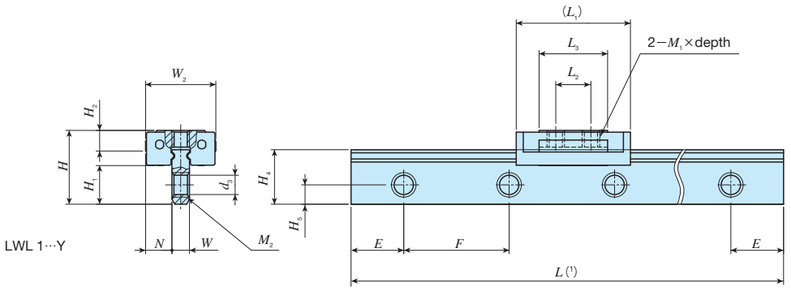
Bolt size (d)	Pitch of screw P	d_k	k	s	t	l
M1.4	0.3	2.6	1.4	1.3	0.6	2.5, 3, 4
M1.6(1)	0.35	3	1.6	1.5	0.7	4, 5, 6
M2(1)	0.4	3.8	2	1.5	1	3, 4, 5

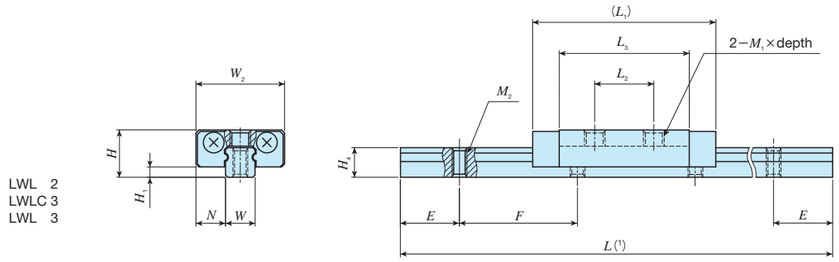
Note(1) : Based on JIS B 1176.

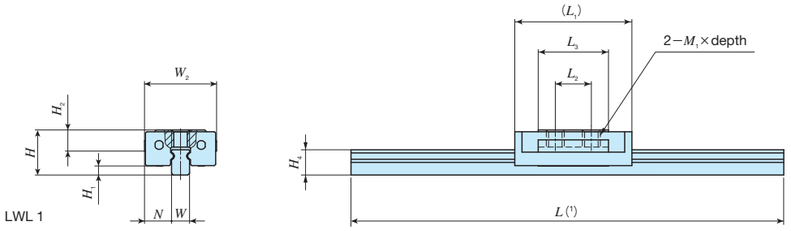
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ML

Standard type					
Shape	LWL				
Size	1	2	3	5	7
	9	12	15	20	25



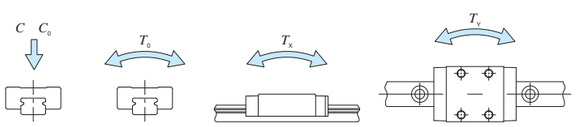




Model number ML	Model number LWL (Non C-Lube)	Interchangeable	Mass (Reference) g: Slide unit	Mass (Reference) g: Track rail (per 100mm)	Dimension of assembly mm: H	H_1	N	Dimension of slide unit mm: W_2	L_1	L_2	L_3	M_1×depth	H_2	Dimension of track rail mm: W	H_4	H_5	M_2	d_3	E	F	Appended mounting bolt for track rail (2) mm: Bolt size x length	Basic dynamic load rating (5) C N	Basic static load rating (5) C_0 N	Static moment rating (5) T_0 N·m	T_X N·m	T_Y N·m
–	LWL 1···Y	–	0.16	2.1	4.2	2.2	1.5	4	6.5	2	3.9	M1 ×0.9	1.2	1	3.1	1.1	M1.4 Through	1.1	3	6	M1× ℓ or M1.4× ℓ (3)	66.8	113	0.06	0.07 0.47	0.09 0.56
–	LWL 1	–		1.0	2.5	0.5									1.4	–	–	–	–	–	–					
–	LWL 2	–	0.9	2.8	3.2	0.7	2	6	12.5	4	8.8	M1.4×1.1	–	2	2	–	M1 Through	–	4	8	M1 × ℓ (4)	211	381	0.42	0.54 2.9	0.64 3.4
–	LWLC 3	–	1.0	5.3	4	1	2.5	8	11.5	3.5	6.7	M1.6×1.3	–	3	2.6	–	M1.6 Through	–	5	10	M1.6× ℓ (4)	251	361	0.58	0.39 2.9	0.47 3.4
–	LWL 3	–	1.6						15.5	5.5	10.7	M2 ×1.3										353	587	0.94	0.98 5.9	1.2 7.0

Notes (1) : Track rail lengths are shown in Table 3.1 on page Ⅱ-10.
(2) : Track rail mounting bolts are not appended.
(3) : Prepare track rail mounting bolts according to mounting structure.
(4) : Fixing thread depth of bolt ℓ must be less than H_4.
(5) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

Remarks 1 : Metal parts are made of stainless steel.
2 : Do not disassemble a slide unit from the track rail because steel balls are not retained. No end seal is attached.
3 : The specification of small size mounting bolts (M2 and less) are show on page Ⅱ-22. Consult IKO if required.



Example of identification number for assembled set

Model code		Size	Part code		Model code	Preload amount	Class symbol	Supplemental code
LWL		2	C2	R80		T0	P	/S
①	②	③	④	⑤	①	⑥	⑦	⑧

① Series

LWL	Standard type
LWL···Y	

② Length of slide unit

C	Short
No symbol	Standard

③ Size: 1, 2, 3

④ Number of slide unit (two units)

⑤ Length of track rail (80mm)

⑥ Preload amount

T0	Clearance

⑦ Accuracy class

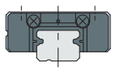
No symbol	Ordinary
H	High
P	Precision

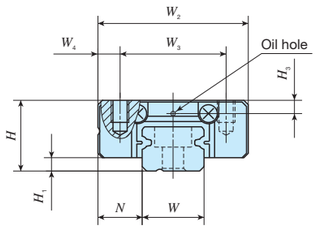
⑧ Special specification: BS, D, E, I, MN, W, Y

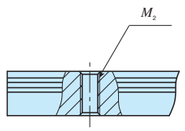
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ML

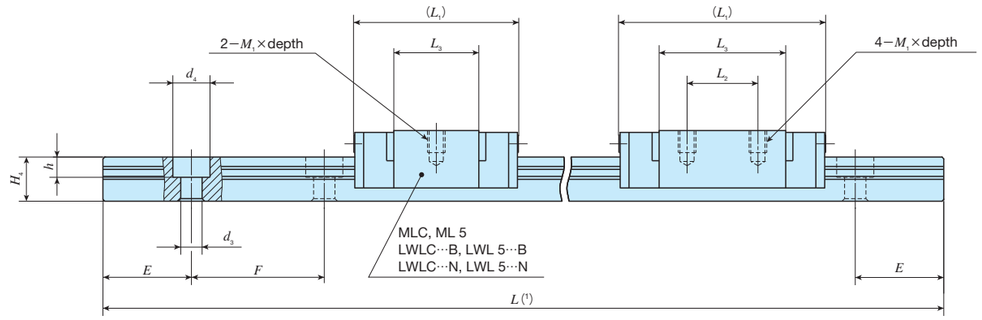
Standard type					
Shape	ML • LWL				
Size	1	2	3	5	7
	9	12	15	20	25





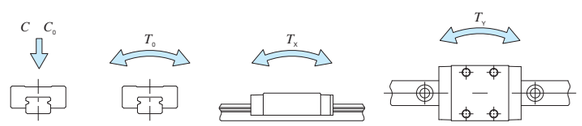


Tapped rail specification
LWL…N



Model number ML	Model number LWL (Non C-Lube)	Interchangeable	Mass (Reference) g Slide unit	Mass (Reference) g Track rail (per 100mm)	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	$M_1\times$depth	H_3	Dimension of track rail mm W	H_4	M_2	d_3	d_4	h	E	F	Appended mounting bolt for track rail (2) mm Bolt size x length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MLC 5	LWLC 5…B	○	3.4	12	6	1	3.5	12	8	2	16	–	9.6	M2×1.5	1.2	5	3.7	–	2.4	3.6	0.8	7.5	15	Cross-recessed head cap screw for precision equipment M2×6	562	841	2.2	1.4 8.5	1.2 7.2
–	LWLC 5…N*	–		13														M2.5 Through	–	–	–			M2.5× ℓ (3) (Not appended)					
ML 5		○	4.3	12							19		12.6					–	2.4	3.6	0.8			Cross-recessed head cap screw for precision equipment M2×6	676	1 090	2.9	2.3 12.8	1.9 10.8
	LWL 5…B	○	4.4																										
–	LWL 5…N*	–		13														M2.5 Through	–	–	–			M2.5× ℓ (3) (Not appended)					
MLC 7		○	6.7	22	8	1.5	5	17	12	2.5	19	–	9.6	M2×2.5	1.5	7	5	–	2.4	4.2	2.3	7.5	15	Hexagon socket head bolt M2×6	937	1 140	4.1	1.8 14.9	1.5 12.5
	LWLC 7…B	○	7.1																										
–	LWLC 7…N*	–		24														M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
ML 7		○	9.1	22							23.5	8	14.3					–	2.4	4.2	2.3			Hexagon socket head bolt M2×6	1 330	1 890	6.9	4.7 28.2	3.9 23.6
	LWL 7…B	○	10																										
–	LWL 7…N*	–		24														M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
MLG 7		○	13	22							31	12	21.6					–	2.4	4.2	2.3			Hexagon socket head bolt M2×6	1 690	2 650	9.7	8.8 50.7	7.4 42.5
	LWLG 7…B	○	14																										
–	LWLG 7…N*	–		24														M3 Through	–	–	–			M3× ℓ (3) (Not appended)					

Notes (1) : Track rail lengths are shown in Table 3.1 on page Ⅱ-10.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appemded.
(3) : Fixing thread depth of bolt ℓ must be less than H_4
(4) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
In MLC7, ML7, and MLG7 of ceramic ball specification ("/HB"), see Table 12 on page Ⅱ-17.
Remarks 1 : The specification of oil hole is shown in Table13 on page Ⅱ-18.
2 : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Preload amount	Preload amount	Interchangeable	Supplemental code
ML	C	7	C2	R120		T1	P	S1	/S
①	②	④	⑤	⑥	①	⑦	⑧	⑨	⑩

① Series	
ML	Standard type
LWL…B	
LWL…N	

② Length of slide unit	
C	Short
No symbol	Standard
G	High rigidity long

④ Size
5, 7

⑤ Number of slide unit (two units)

⑥ Length of track rail (120mm)

⑦ Preload amount	
T_0	Clearance
No symbol	Standard
T_1	Light preload

⑧ Accuracy class	
H	High
P	Precision

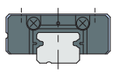
⑨ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

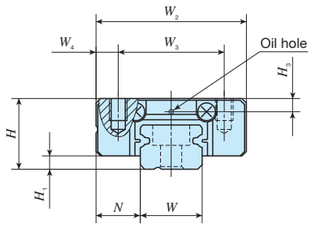
⑩ Special specification
A, BS, D, E, HB, I, LR MN, N, Q, RE, S, W, Y

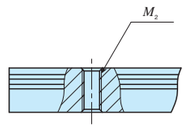
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ML

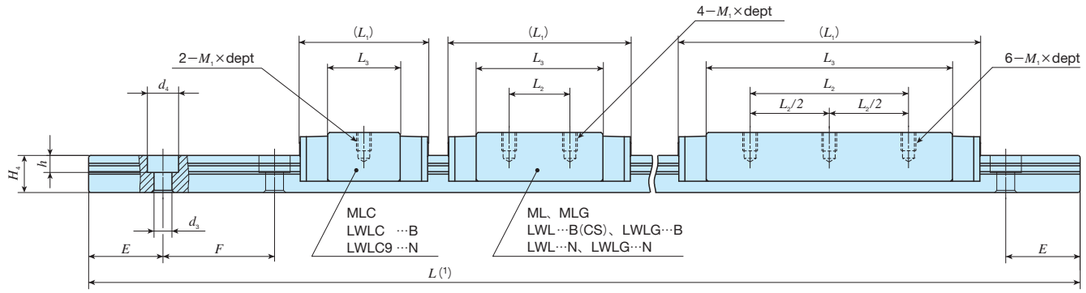
Standard type					
Shape	ML • LWL				
Size	1	2	3	5	7
	9	12	15	20	25







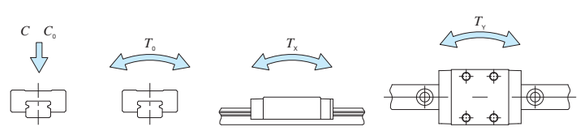
Tapped rail specification
LWL···N



Model number ML	Model number LWL (Non C-Lube)	Interchangeable	Mass (Reference) g Slide unit	Mass (Reference) g Track rail (per 100mm)	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3	Dimension of track rail mm W	H_4	M_2	d_3	d_4	h	E	F	Appended mounting bolt for track rail (2) mm Bolt size x length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MLC 9	LWLC 9···B	○	11	35	10	2	5.5	20	15	2.5	21.5	–	11.9	M3×3	2.2	9	6	–	3.5	6	3.5	10	20	M3×8	1 180	1 480	6.9	2.9 21.4	2.4 18.0
–	LWLC 9···N*	–		37														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
ML 9		○	18	35							30	10	20.8					–	3.5	6	3.5			M3×8	1 810	2 760	12.8	9.1 51.1	7.6 42.9
	LWL 9···B	○	19																										
–	LWL 9···BCS	○																											
–	LWL 9···N*	–		37														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLG 9		○	26	35							40.5	15	30.9					–	3.5	6	3.5			M3×8	2 370	4 030	18.7	18.7 98.3	15.7 82.5
	LWLG 9···B	○	28																										
–	LWLG 9···N*	–		37														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLL 9		○	34	35							50	26	40.4					–	3.5	6	3.5			M3×8	2 870	5 300	24.6	31.9 157	26.7 132
MLC 12	LWLC 12···B	○	22	65	13	3	7.5	27	20	3.5	25	–	13	M3×3.5	2.7	12	8	–	3.5	6.5	4.5	12.5	25	M3×8	2 210	2 380	14.8	5.3 41.7	4.5 35.0
ML 12		○	34								34	15	21.6												3 330	4 290	26.6	15.4 93.1	12.9 78.2
	LWL 12···B	○	35																										
–	LWL 12···BCS	○																											
MLG 12		○	48								44	20	32												4 310	6 200	38.4	30.6 168	25.7 141
	LWLG 12···B	○	51																										
MLL 12		○	70								59.5	30	47.3												5 820	9 540	59.1	69.8 339	58.6 285

Notes (1) : Track rail lengths are shown in Table 3.1 on page Ⅱ-10, Table 3.3 on page Ⅱ-12.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appemded.
(3) : Fixing thread depth of bolt ℓ must be less than H_4
(4) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
In ML series of ceramic ball specification ("/HB"), see Table 10 on page Ⅱ-17.

Remarks 1 : The specification of oil hole is shown in Table13 on page Ⅱ-18.
2 : Model numbers marked ∗ are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
ML	G	9	C2	R160			T1	P	S1	/S
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series	
ML	Standard type
LWL···B	
LWL···N	

② Length of slide unit	
C	Short
No symbol	Standard
G	High rigidity long
L	Extra High rigidity long

③ Size
9, 12

④ Number of slide unit (two units)

⑤ Length of track rail (160mm)

⑥ Material	
No symbol	Stainless steel
CS	High carbon steel

⑦ Preload amount	
T0	Clearance
No symbol	Standard
T1	Light preload

⑧ Accuracy class	
H	High
P	Precision

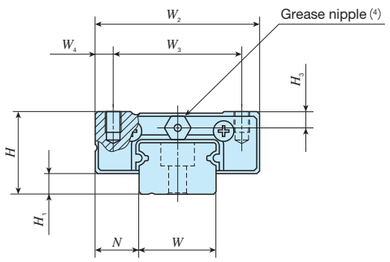
⑨ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

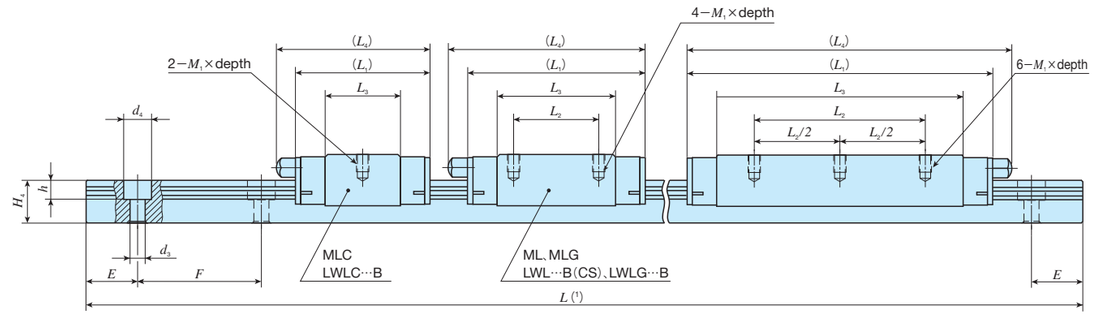
⑩ Special specification
A, BS, D, E, HB, I, LR, MN N, Q, RE, S, U, W, Y

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ML

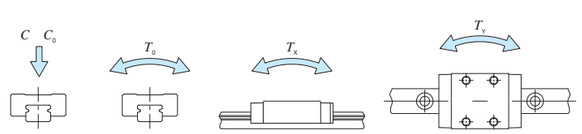
Standard type					
Shape	ML • LWL				
Size	1	2	3	5	7
	9	12	15	20	25





Model number ML	Model number LWL (Non C-Lube)	Interchangeable	Mass (Reference) g Slide unit	Mass (Reference) g Track rail (per 100mm)	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Appended mounting bolt for track rail (2) mm Bolt size x length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MLC 15		○	43	107	16	4	8.5	32	25	3.5	32	–	17.8	37	M3×4	3.1	15	10	3.5	6.5	4.5	20	40	M3×10	3 490	3 890	30.0	11.7 84.5	9.8 70.9
	LWLC 15···B	○	42										17.7																
ML 15		○	63								42	20	27.9	47											4 980	6 490	50.0	29.7 172	24.9 144
	LWL 15···B	○	64										27.8																
–	LWL 15···BCS	○																											
MLG 15		○	93								57	25	42.8	62											6 620	9 740	75.0	63.9 338	53.6 284
	LWLG 15···B	○	95										42.7																
MLL 15		○	122								72	40	57.7	76											8 370	13 600	105	122 585	102 491
MLC 20	LWLC 20···B	○	89	156	20	5	10	40	30	5	38	–	22.3	43	M4×6	4.2	20	11	6	9.5	5.5	30	60	M5×14	4 580	5 300	54.0	19.4 134	16.3 112
ML 20		○	130								50	25	34.6	55											6 650	9 080	92.6	52.7 280	44.2 235
	LWL 20···B	○	133																										
–	LWL 20···BCS	○																											
MLG 20		○	189								68	30	52.3	73											8 510	12 900	131	102 529	85.7 444
	LWLG 20···B	○	196																										
MLC 25		○	189	243	25	5	12.5	48	35	6.5	54.5	–	31.9	64	M6×7	5	23	15	7	11.0	9.0	30	60	M6×16	9 120	10 600	128	57.4 380	48.1 319
	LWLC 25···B	○	190																										
ML 25		○	305								78	35	55.7	88											13 500	18 500	223	163 887	137 744
	LWL 25···B	○	310																										
MLG 25		○	405								98	40	75.5	108											16 700	25 200	303	293 1 480	246 1 240
	LWLG 25···B	○	413																										

Notes (1) : Track rail lengths are shown in Table 3.1 on page Ⅱ-10, Table 3.3 on page Ⅱ-12.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appemded.
(3) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
In MLC15, ML15, MLG15, and MLL15 of ceramic ball specification ("/HB"), see Table 10 on page Ⅱ-17.
(4) : The specifications of grease nipple are shown in Table 14 on page Ⅱ-18.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
ML	G	15	C2	R320	—	—	T1	P	S1	/S
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series

ML	Standard type
LWL···B	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra High rigidity long

③ Size: 15, 20, 25

④ Number of slide unit (two units)

⑤ Length of track rail (320mm)

⑥ Length of track rail

No symbol	Stainless steel
CS	High carbon steel

⑦ Preload amount

T_0	Clearance
No symbol	Standard
T_1	Light preload

⑧ Accuracy class

H	High
P	Precision

⑨ Interchangeable code

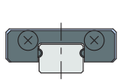
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

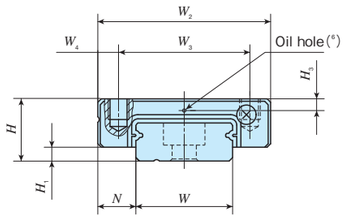
⑩ Special specification
A, BS, D, E, HB, Ⅰ, LR, MN
N, Q, RE, S, U, W, Y

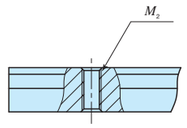
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ML

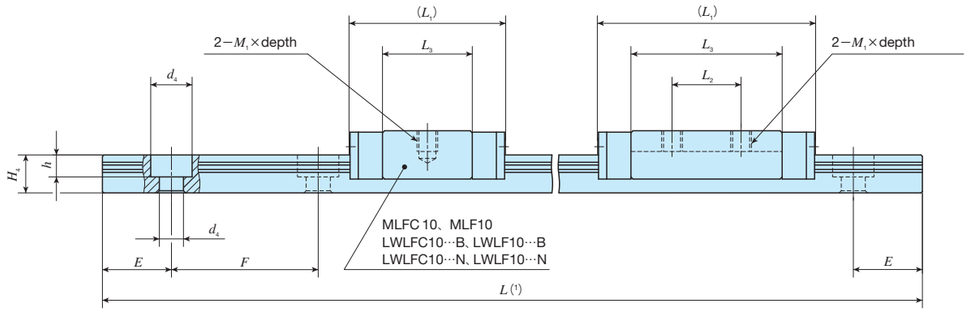
Wide type				
Shape	MLF • LWLF			
Size	4	6	10	14
	18	24	30	42





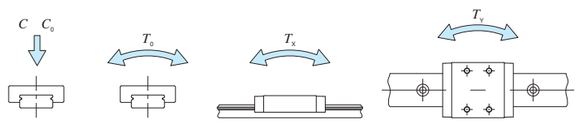


Tapped rail specification
LWLF···N



Model number MLF	Model number LWLF (Non C-Lube)	Interchangeable	Mass (Reference) g Slide unit	Mass (Reference) g Track rail (per 100mm)	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3	Dimension of track rail mm W	H_4	M_2	d_3	d_4	h	E	F	Appended mounting bolt for track rail (3) mm Bolt size x length	Basic dynamic load rating (5) C N	Basic static load rating (5) C_0 N	Static moment rating (5) T_0 N·m	T_X N·m	T_Y N·m
–	LWLF 4 (2)	–	2.1	6.8	4	1	3	10	–	5	17	6.5	11.9	M2 × 1.3	–	4	2.6	–	1.8	2.8	0.75	5	10	Cross-recessed head cap screw for precision equipment M1.6×5	390	677	1.4	1.3 7.1	1.5 8.4
–	LWLFC 6 (2)	–	2.4	13	4.5	1	3	12	–	6	15	4.5	9.8	M2 × 1.6	–	6	2.8	–	2.4	4	1.5	7.5	15	Cross-recessed head cap screw for precision equipment M2×4	334	542	1.7	0.84 5.1	1.0 6.1
–	LWLFC 6···N (2)*	–		12														M3 Through	–	–	–			M3× ℓ (4) (Not appended)					
–	LWLF 6 (2)	–	3.4	13							20	8	14.6					–	2.4	4	1.5			Cross-recessed head cap screw for precision equipment M2×4	443	813	2.5	1.8 9.9	2.2 11.8
–	LWLF 6···N (2)*	–		12														M3 Through	–	–	–			M3× ℓ (4) (Not appended)					
MLFC 10		○	6.1	28	6.5	1.5	3.5	17	13	2	20.5	–	13.6	M2.5×1.5	1.3	10	4	–	2.9	4.8	1.6	10	20	Cross-recessed head cap screw for precision equipment M2.5×7	712	1 180	6.1	2.6 14.9	2.2 12.5
	LWLFC 10···B	○	5.9																										
–	LWLFC 10···N*	–		29														M3 Through	–	–	–			M3× ℓ (4) (Not appended)					
MLF 10		○	7.6	28							24.5		17.6					–	2.9	4.8	1.6			Cross-recessed head cap screw for precision equipment M2.5×7	849	1 510	7.8	4.2 22.4	3.5 18.8
	LWLF 10···B	○	7.5																										
–	LWLF 10···N*	–		29														M3 Through	–	–	–			M3× ℓ (4) (Not appended)					

Notes (1) : Track rail lengths are shown in Table 3.2 on page Ⅱ-11.
(2) : Size 4 and 6 are ball non-retained type. They are provided without end seals.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appemded.
(4) : Fixing thread depth of bolt ℓ must be less than H_4
(5) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(6) : No oil hole is prepared for size 4 and 6.
The specification of oil hole size 10 is shown in Table13 on page Ⅱ-18.
Remark : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code		Size	Part code		Model code	Preload amount	Class symbol	Interchangeable code	Supplemental code
MLF	C	10	C2	R120		T0	P	S1	/S
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨

① Series	
MLF	Wide type
LWLF(···B)	
LWLF···N	

② Length of slide unit	
C	Short
No symbol	Standard

③ Size
4, 6, 10

④ Number of slide unit(two units)

⑤ Length of track rail(120mm)

⑥ Preload amount	
T0	Clearance
No symbol	Standard

⑦ Accuracy class	
H	High
P	Precision

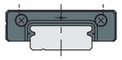
⑧ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

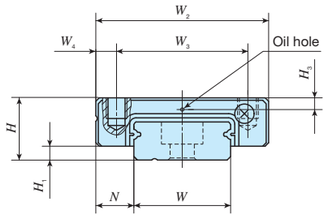
⑨ Special specification
A, BS, D, E, I, MN, N, Q RE, S, W, Y

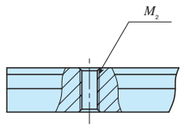
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ML

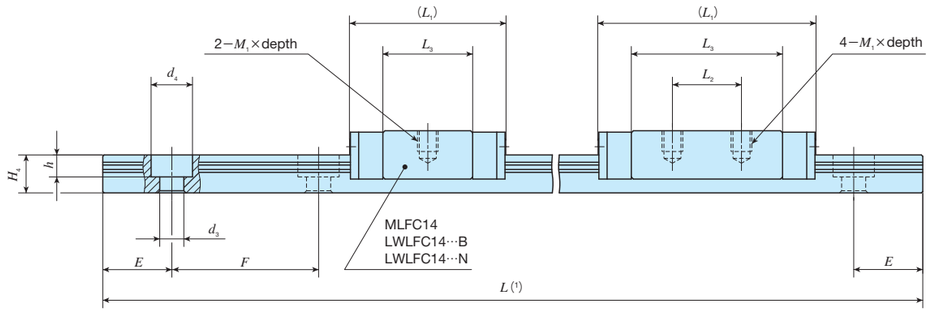
Wide type				
Shape	MLF • LWLF			
Size	4	6	10	14
	18	24	30	42







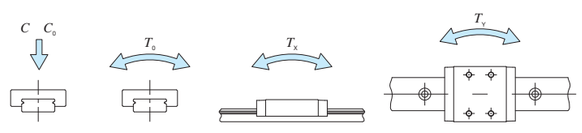
Tapped rail specification
LWLF…N



Model number MLF	Model number LWLF (Non C-Lube)	Interchangeable	Mass (Reference) g Slide unit	Mass (Reference) g Track rail (per 100mm)	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	$M_1\times$depth	H_3	Dimension of track rail mm W	H_4	M_2	d_3	d_4	h	E	F	Appended mounting bolt for track rail (2) mm Bolt size x length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MLFC 14	LWLFC 14…B	○	13	54	9	2	5.5	25	19	3	22.5	–	13	M3×3	1.7	14	5.5	–	3.5	6	3.2	15	30	M3×8	1 240	1 700	12.2	3.8 24.6	3.2 20.7
–	LWLFC 14…N*	–		56														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLF 14		○	20	54							31.5	10	22					–	3.5	6	3.2			M3×8	1 770	2 840	20.3	10.1 54.7	8.4 45.9
	LWLF 14…B	○	21																										
–	LWLF 14…N*	–		56														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLFG 14		○	29	54							42	19	32.5					–	3.5	6	3.2			M3×8	2 320	4 160	29.8	21.0 104	17.6 87.6
	LWLFG 14…B	○	31																										
–	LWLFG 14…N*	–		56														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					

Notes (1) : Track rail lengths are shown in Table 3.2 on page Ⅱ-11.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appemded.
(3) : Fixing thread depth of bolt ℓ must be less than H_4
(4) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

Remarks 1 : The specification of oil hole is shown in Table13 on page Ⅱ-18.
2 : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code		Size	Part code		Model code	Preload amount	Class symbol	Interchangeable code	Supplemental code
MLF	G	14	C2	R240		T1	P	S1	/S
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨

① Series	
MLF	Wide type
LWLF…B	
LWLF…N	

② Length of slide unit	
C	Short
No symbol	Standard
G	High rigidity long

③ Size
14

④ Number of slide unit (two units)

⑤ Length of track rail (240mm)

⑥ Preload amount	
T0	Clearance
No symbol	Standard
T1	Light preload

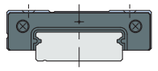
⑦ Accuracy class	
H	High
P	Precision

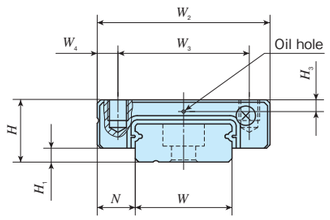
⑧ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

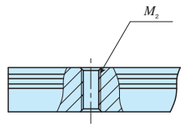
⑨ Special specification
A, BS, D, E, I, LR, MN
N, Q, RE, S, W, Y

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

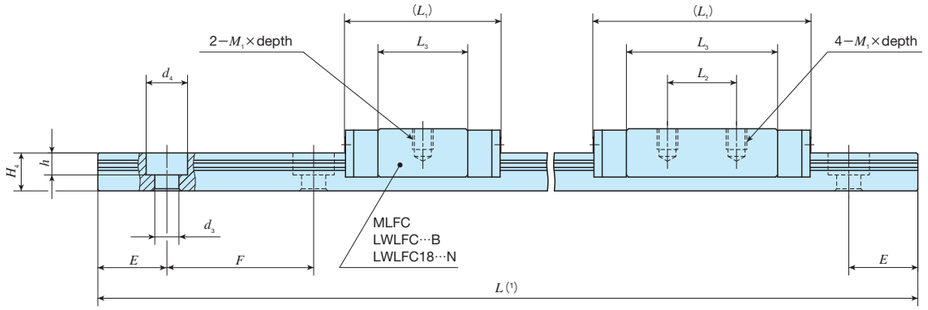
IKO C-Lube Linear Way ML

Wide type				
Shape	MLF • LWLF 			
Size	4	6	10	14
	18	24	30	42





Tapped rail specification
LWLF···N

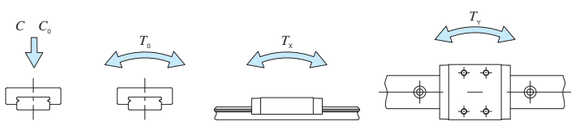


Model number MLF	Model number LWLF (Non C-Lube)	Interchangeable	Mass (Reference) g Slide unit	Mass (Reference) g Track rail (per 100mm)	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3
MLFC 18	LWLFC 18···B	○	26	90	12	3	6	30	21	4.5	26.5	–	16.6	M3×3	2.5
–	LWLFC 18···N*	–		92											
MLF 18		○	42	90							38.5	12	28.6		
	LWLF 18···B	○	44												
–	LWLF 18···BCS	○													
–	LWLF 18···N*	–		92											
MLFG 18		○	59	90					23	3.5	50.5	24	40.4		
	LWLFG 18···B	○	61												
–	LWLFG 18···N*	–		92											
MLFC 24		○	46	139	14	3	8	40	28	6	30.5	_	17.7	M3×3.5	3.2
	LWLFC 24···B	○	45												
MLF 24		○	74								44	15	31		
	LWLF 24···B	○	76												
–	LWLF 24···BCS	○													
MLFG 24		○	108								59	28	46.3		
	LWLFG 24···B	○	111												

Model number MLF	Model number LWLF (Non C-Lube)	Dimension of track rail mm W	H_4	M_2	d_3	d_4	h	E	F	Appended mounting bolt for track rail (2) mm Bolt size x length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MLFC 18	LWLFC 18···B	18	7	–	3.5	6.5	4.5	15	30	M3×8	1 510	2 120	19.4	5.5 35.9	4.7 30.1
–	LWLFC 18···N*			M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLF 18				–	3.5	6.5	4.5			M3×8	2 280	3 810	34.9	16.9 90.1	14.2 75.6
	LWLF 18···B														
–	LWLF 18···BCS														
–	LWLF 18···N*			M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLFG 18				–	3.5	6.5	4.5			M3×8	2 870	5 300	48.5	31.9 159	26.7 134
	LWLFG 18···B														
–	LWLFG 18···N*			M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLFC 24		24	8	–	4.5	8	4.5	20	40	M4×10	2 800	3 340	40.7	9.7 67.6	8.2 56.8
	LWLFC 24···B														
MLF 24											4 310	6 200	75.6	30.6 168	25.7 141
	LWLF 24···B														
–	LWLF 24···BCS														
MLFG 24											5 620	9 060	111	63.3 321	53.1 270
	LWLFG 24···B														

Notes (1) : Track rail lengths are shown in Table 3.2 on page Ⅱ-11, Table 3.3 on page Ⅱ-12.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appemded.
(3) : Fixing thread depth of bolt ℓ must be less than H_4
(4) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

Remarks 1 : The specification of oil hole is shown in Table13 on page Ⅱ-18.
2 : Model numbers marked ∗ are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MLF	G	18	C2	R300			T1	P	S1	/S
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series	
MLF	Wide type
LWLF···B	
LWLF···N	

② Length of slide unit	
C	Short
No symbol	Standard
G	High rigidity long

③ Size
18, 24

④ Number of slide unit (two units)

⑤ Length of track rail (300mm)

⑥ Length of track rail	
No symbol	Stainless steel
CS	High carbon steel

⑦ Preload amount	
T0	Clearance
No symbol	Standard
T1	Light preload

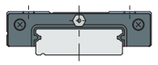
⑧ Accuracy class	
H	High
P	Precision

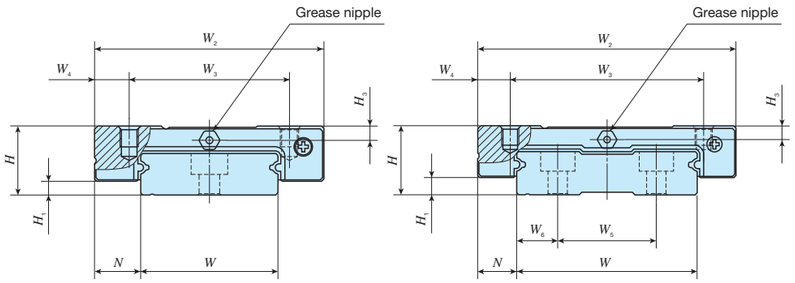
⑨ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑩ Special specification
A, BS, D, E, I, LR, MN N, Q, RE, S, U, W, Y

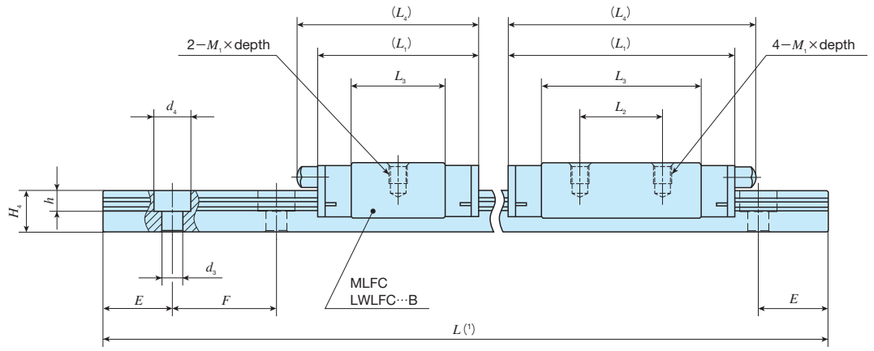
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ML

Wide type				
Shape	MLF • LWLF 			
Size	4	6	10	14
	18	24	30	42

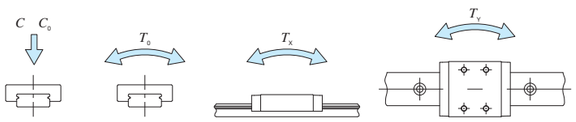


MLFC 42, LWLFC 42···B
MLF 42, LWLF 42···B (CS)
MLFG 42, LWLFG 42···B



Model number MLF	Model number LWLF (Non C-Lube)	Interchangeable	Mass (Reference) g Slide unit	Mass (Reference) g Track rail (per 100mm)	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	$M_1\times$depth	H_3	Dimension of track rail mm W	H_4	W_5	W_6	d_3	d_4	h	E	F	Appended mounting bolt for track rail (2) mm Bolt size x length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MLFC 30	LWLFC 30···B	○	70	198	15	3	10	50	35	7.5	35.5	–	20.5	40	M4×4.5	3.1	30	9	–	–	4.5	8	4.5	20	40	M4×12	3 890	4 540	69.1	15.4 107	13.0 89.9
MLF 30		○	111								49.5	18	34.8	54													5 970	8 440	128	48.7 259	40.8 217
	LWLF 30···B	○	112																												
–	LWLF 30···BCS	○																													
MLFG 30		○	167								68.5	35	53.8	73													7 810	12 300	187	100 508	84.3 426
	LWLFG 30···B	○	170																												
MLFC 42		○	95	294	16	4	9	60	45	7.5	41.5	–	25.7	46	M4×4.5	3.2	42	10	23	9.5	4.5	8	4.5	20	40	M4×12	5 440	6 810	144	30.8 180	25.8 151
	LWLFC 42···B	○											25.3														5 030	6 050	128	24.8 164	20.8 137
MLF 42		○	138								55	20	39.4	60													7 050	9 840	209	61.3 333	51.4 280
	LWLF 42···B	○	140										39																		
–	LWLF 42···BCS	○																													
MLFG 42		○	200								74.5	35	58.7	79													9 520	15 100	321	140 674	117 565
	LWLFG 42···B	○	204										58.3														9 200	14 400	305	126 644	106 541

Notes (1) : Track rail lengths are shown in Table 3.2 on page Ⅱ-11, Table 3.3 on page Ⅱ-12.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appemded.
(3) : The direction of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
Remark : The specifications of grease nipple are shown in Table14 on page Ⅱ-18.



Example of identification number for assembled set

Model code		Size	Part code		Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MLF	G	42	C2	R320	—	—	T1	P	S1	/S
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series

MLF	Wide type
LWLF···B	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long

③ Size

30, 42

④ Number of slide unit (two units)

⑤ Length of track rail (320mm)

⑥ Length of track rail

No symbol	Stainless steel
CS	High carbon steel

⑦ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload

⑧ Accuracy class

H	High
P	Precision

⑨ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑩ Special specification

A, BS, D, E, I, LR, MN
N, Q, RE, S, U, W, Y

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

C-Lube Linear Way ME
Linear Way E

C-Lube Linear Way ME

Features

Compact utility series

Pursuit making lower, slimmer, and shorter to compact in all respects achieve a general and versatile linear motion rolling guide.

Wide variation corresponding to needs

Two shapes of slide unit, flanged type and block type are lined up with three variations in length of slide unit with same section. They are available for optimal products to fit for requirement of machine and equipment.

Stainless Steel

The metal components are manufactured from corrosion resistant stainless steel. So this series is most suitable for use in clean rooms and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Low Decibel type Linear Way E

Achieving smooth and quiet motion

Due to resin separator built-in balls, smooth and quiet motion is achieved by eliminating of direct contact of balls each other. This feature reduces noise level in factory and contributes eco-friendly.

Identification number and specification

The specifications of ME series and LWE(...Q) series are indicated by the identification number, consisting of a model code, a size, a part code, a material symbol, a preload symbol, a classification symbol, an interchangeable code and any supplemental codes.

	1	2	3	4	5	1	6	7	8	9	10
Interchangeable pecification											
Slide unit only	ME	C	20	C1				T_1	P	S1	/U
Track rail only(1)	LWE		20		R1000				P	S1	/F
Assembled set	ME	C	20	C1	R1000			T_1	P	S1	/FU
Non interchangeable specification											
Assembled set	ME	C	20	C1	R1000			T_1	P		/FU

1. Series — Model code on page Ⅱ-43
2. Length of slide unit — Model code on page Ⅱ-43
3. Size — Size on page Ⅱ-43
4. Number of slide units — Part code on page Ⅱ-43
5. Length of track rail — Part code on page Ⅱ-43
6. Material — Meterial code on page Ⅱ-43
7. Preload amount — Preload symbol on page Ⅱ-46
8. Accuracy class — Classification symbol on page Ⅱ-46
9. Interchangeable — Interchangeable code on page Ⅱ-47
10. Special specification — Supplemental code on page Ⅱ-47

Note(1) : For the model code of track rail of interchangeable specification, indicate "LWE" regardless of the slide unit type to be combined.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification —Series・Length of slide unit・Size—

1 Series

C-Lube Linear Way ME (ME series)	Flange type, mounting from bottom	: ME
	Flange type, mounting from top	: MET
	Block type, mounting from top	: MES
Linear Way E(1) (LWE serise)	Flange type mounting from bottom	: LWE
	Flange type mounting from top	: LWET
	Block type mounting from top	: LWES
Low Decibel Type Linear Way E(1) (LWE…Q serise)	Flange type mounting from bottom	: LWE...Q
	Flange type mounting from top	: LWET...Q
	Block type mounting from top	: LWES...Q

Applicable size and shape of slide unit are shown in Table 1.
For the model code of a single track rail of interchangeable specification, indicate "LWE" regardless of the slide unit type to be combined.

Note(1) : Linear Way without C-Lube

2 Length of slide unit

Short	: C	Applicable size and shape of slide unit are shown in Table 1 below.
Standard	: No symbol	
High rigidity long	: G	

3 Size

15, 20, 25, 30, 35, 45

Applicable size and shape of slide unit are shown in Table 1 below.

4 Number of slide unit

: C○

For an assembled set, indicate the number of slide units assembled on one track rail. For an interchangeable slide unit only, "C1" can be indicated.

5 Length of track rail

: R○

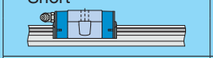
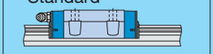
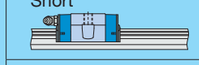
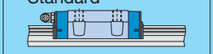
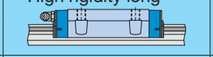
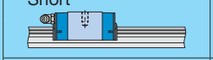
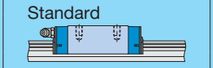
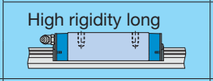
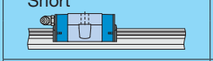
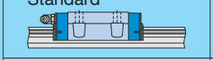
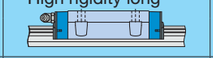
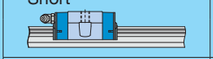
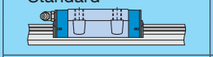
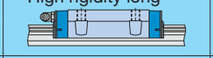
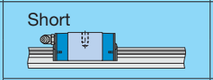
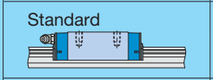
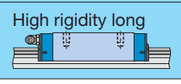
Indicate the length of track rail in mm. For standard and maximum lengths, see "Track rail length" in Table 2.1 and 2.2 on page Ⅱ-45.

6 Material

High carbon steel	: No symbol	Applicable size and shape of slide unit are shown in Table 1.
Stainless steel	: SL	

—Number of slide unit・Length of slide unit・Material—

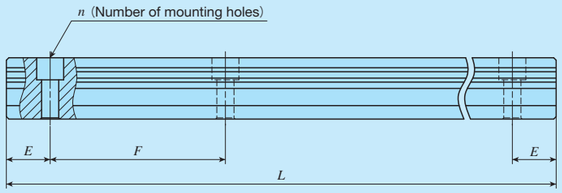
Table 1 Models and Size of ME and LWE (...Q)

Material	Shape	Length of slide unit	Series	Size 15	20	25	30	35	45
High carbon steel	Flange type, mounting from bottom	Short 	MEC	○	○	○	○	○	–
			LWEC	○	○	○	○	○	–
		Standard 	ME	○	○	○	○	○	○
			LWE	○	○	○	○	○	○
			LWE…Q	○	○	○	○	○	–
		High rigidity long	MEG	○	○	○	○	–	–
			LWEG	○	○	○	○	–	–
	Flange type, mounting from top	Short 	METC	○	○	○	○	○	–
			LWETC	○	○	○	○	○	–
		Standard 	MET	○	○	○	○	○	○
			LWET	○	○	○	○	○	○
			LWET…Q	○	○	○	○	○	–
		High rigidity long 	METG	○	○	○	○	–	–
			LWETG	○	○	○	○	–	–
	Block type, mounting from top	Short 	MESC	○	○	○	○	○	–
			LWESC	○	○	○	○	○	–
		Standard 	MES	○	○	○	○	○	○
			LWES	○	○	○	○	○	○
			LWES…Q	○	○	○	○	○	–
		High rigidity long 	MESG	○	○	○	○	–	–
			LWESG	○	○	○	○	–	–
Stainless steel	Flange type, mounting from bottom	Short 	MEC…SL	○	○	○	○	–	–
			LWEC…SL	○	○	○	○	–	–
		Standard 	ME…SL	○	○	○	○	–	–
			LWE…SL	○	○	○	○	–	–
		High rigidity long 	MEG…SL	○	○	○	○	–	–
			LWEG…SL	○	○	○	○	–	–
	Flange type, mounting from top	Short 	METC…SL	○	○	○	○	–	–
			LWETC…SL	○	○	○	○	–	–
		Standard 	MET…SL	○	○	○	○	–	–
			LWET…SL	○	○	○	○	–	–
		High rigidity long 	METG…SL	○	○	○	○	–	–
			LWETG…SL	○	○	○	○	–	–
	Block type, mounting from top	Short 	MESC…SL	○	○	○	○	–	–
			LWESC…SL	○	○	○	○	–	–
		Standard 	MES…SL	○	○	○	○	–	–
			LWES…SL	○	○	○	○	–	–
		High rigidity long 	MESG…SL	○	○	○	○	–	–
			LWESG…SL	○	○	○	○	–	–

Remark : The mark ▭ indicates that interchangeable specification is available.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 2.1 Standard and maximum lengths of high carbon steel track rails



unit : mm

Item \ Model number	ME 15 LWE 15 LWE 15···Q	ME 20 LWE 20 LWE 20···Q	ME 25 LWE 25 LWE 25···Q	ME 30 LWE 30 LWE 30···Q	ME 35 LWE 35 LWE 35···Q	ME 45 LWE 45
Standard length $L(n)$	160 (3) 220 (4) 280 (5) 340 (6) 460 (8) 640 (11) 820 (14)	220 (4) 280 (5) 340 (6) 460 (8) 640 (11) 820 (14) 1 000 (17) 1 240 (21)	220 (4) 280 (5) 340 (6) 460 (8) 640 (11) 820 (14) 1 000 (17) 1 240 (21) 1 600 (27)	280 (4) 440 (6) 600 (8) 760 (10) 1 000 (13) 1 240 (16) 1 640 (21) 2 040 (26) 2 520 (32) 3 000 (38)	280 (4) 440 (6) 600 (8) 760 (10) 1 000 (13) 1 240 (16) 1 640 (21) 2 040 (26) 2 520 (32) 3 000 (38)	570 (6) 885 (9) 1 200 (12) 1 620 (16) 2 040 (20) 2 460 (24) 2 985 (29)
Pitch of mounting holes F	60	60	60	80	80	105
E (1)	20	20	20	20	20	22.5
Standard range of E (2) incl.	6	8	9	9	10	12
Standard range of E (2) under	36	38	39	49	50	64.5
Maximum length (3)	1 600 (2 980)	2 200 (2 980)	2 980 (4 000)	3 000 (3 960)	3 000 (3 960)	2 985 (3 930)

Notes (1) : When specifying a butt-jointing interchangeable track rail (supplemental code "/T"), pay attention to the E dimension at the butt-jointing part.
(2) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(3) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
In LWE···Q, valves in ( ) is not applicable.
Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : For the model code of track rail of interchangeable specification, indicate "LWE" regardless of the slide unit type to be combined.

Table 2.2 Standard and maximum lengths of stainless steel track rails

unit : mm

Item \ Model number	ME 15···SL LWE 15···SL	ME 20···SL LWE 20···SL	ME 25···SL LWE 25···SL	ME 30···SL LWE 30···SL
Standard length $L(n)$	160 (3) 220 (4) 280 (5) 340 (6) 460 (8) 640 (11) 820 (14)	220 (4) 280 (5) 340 (6) 460 (8) 640 (11) 820 (14) 1 000 (17)	220 (4) 280 (5) 340 (6) 460 (8) 640 (11) 820 (14) 1 000 (17)	280 (4) 440 (6) 600 (8) 760 (10) 1 000 (13)
Pitch of mounting holes F	60	60	60	80
E (1)	20	20	20	20
Standard range of E (2) incl.	6	8	9	9
Standard range of E (2) under	36	38	39	49
Maximum length (3)	1 200 (1 600)	1 200 (1 960)	1 200 (1 960)	1 200 (1 960)

Notes (1) : When specifying a butt-jointing interchangeable track rail (supplemental code "/T"), pay attention to the E dimension at the butt-jointing part.
(2) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(3) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : For the model code of track rail of interchangeable specification, indicate "LWE" regardless of the slide unit type to be combined.

7 Preload amount

Clearance	: Tc	Specify this item for an assembled set or a single slide unit. For applicable combinations of accuracy and preload amount, see Table 3. For details of preload amount, see Table 4.
Standard	: No symbol	
Light preload	: T1	
Medium preload	: T2	

8 Accuracy class

Ordinary	: No symbol	For applicable combinations of accuracy and preload amount, see Table 5. In case of interchangeable specification products, assemble slide units and track rails of the same class. For details of accuracy, see Table 4.
High class	: H	
Precision class	: P	
Super precision	: SP	

Table 3 Preload amount

Preload type \ Item	Symbol	Preload amount N	Application
Clearance	Tc	0 (1)	· Very smooth motion · To absorb slight misalignment
Standard	(No symbol)	0 (2)	· Very smooth motion
Light preload	T1	$0.02C_0$	· Minimum vibration · Load is evenly balanced. · Smooth and precise motion
Medium preload	T2	$0.05C_0$	· Medium vibration · Medium overhung load

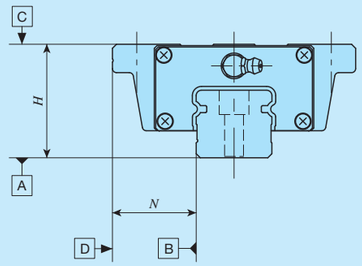
Notes (1) : Clearance of about 10 μm
(2) : Zero or minimal amount of preload
Remark : C_0 means the basic static load rating.

Table 4 Accuracy class and preload

Preload (Symbol) \ Accuracy class (Symbol)	Ordinary (No symbol)	High (H)	Precision (P)	Super precision (SP)
Clearance (Tc) (1)	○	–	–	–
Standard (No symbol)	○	○	○	○
Light preload (T1)	–	○	○	○
Medium preload (T2) (1)	–	○	○	○

Note (1) : Not applicable to LWE···Q.
Remark : The mark ▭ indicates that interchangeable specification products are available.

Table 5 Accuracy



unit : mm

Item \ Classification (symbol)	Ordinary (No symbol)	High (H)	Precision (P)	Super precision (SP)
Dim. H tolerance	±0.080	±0.040	±0.020	±0.010
Dim. N tolerance	±0.100	±0.050	±0.025	±0.015
Dim. variation of H (1)	0.025	0.015	0.007	0.005
Dim. variation of N (1)	0.030	0.020	0.010	0.007
Dim. variation of H for multiple assembled sets (2)	0.045	0.035	0.025	–
Parallelism in operation of C to A	See Fig. 1.			
Parallelism in operation of D to B	See Fig. 1.			

Notes (1) : It means the size variation between slide units mounted on the same track rail.
(2) : It applies to the interchangeable specification.

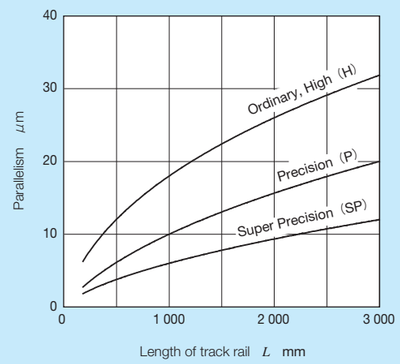


Fig. 1 Parallelism in operation

ME · LWE

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

9 Interchangeable code

Interchangeable	: S1 : S2	Specify this code for the interchangeable specification products. Assemble track rails and slide units with the same interchangeable code. For applicable models and sizes, see Table 1.
Non-interchangeable	: No symbol	

10 Special specification

/A, /BS, /D, /E, /F, /I, /J○, /L○, /LF○, /MA, /M4, /N, /Q, /RE, /T, /U, /V○, /W○, /Y○, /Z○	For applicable special specifications, see Table 6.1, 6.2, 6.3 and 6.4. When several special specifications are required, see Table 7. For details of special specifications, see page Ⅲ-28.

Table 6.1 Special specifications (Interchangeable specification, single slide unit)

Special specification	Supplemental code	Size					
		15	20	25	30	35	45
Female threads for bellows(1)	/J○	○	○	○	○	○	○
No end seal	/N	○	○	○	○	○	○
C-Lube plates(2)	/Q	○	○	○	○	○	○
Seals for special environment(2)	/RE	○	○	○	○	×	×
Under seals	/U	○	○	○	○	○	○
Double end seals	/V○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○

Notes (1) : Not applicable to stainless steel made products.
(2) : Applicable to LWE (Non C-Lube) series.

Table 6.2 Special specifications (Interchangeable specification, track rail)

Special specification	Supplemental code	Size					
		15	20	25	30	35	45
Specified rail mounting hole positions	/E	○	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○	○
Female threads for bellows(1)	/J○	○	○	○	○	○	○
Black chrome surface treatment	/LR	○	○	○	○	○	○
Supplied with track rail mounting bolt	/MA	○	○	○	○	○	○
Changed size of mounting holes	/M4	○	×	×	×	×	×
Butt-jointing interchangeable track rail	/T	○	○	○	○	○	○

Note (1) : Not applicable to stainless steel made products.

Table 6.3 Special specifications (Interchangeable specification, assembled set)

Special specification	Supplemental code	Size					
		15	20	25	30	35	45
Stainless steel end plates(1)	/BS	○	○	○	○	×	×
Opposite reference surfaces arrangement	/D	○	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○	○
Female threads for bellows(2)	/J○	○	○	○	○	○	○
Black chrome surface treatment	/L○	○	○	○	○	○	○
Fluorine black chrome surface treatment	/LF○	○	○	○	○	○	○
Supplied with track rail mounting bolt	/MA	○	○	○	○	○	○
Changed size of mounting holes	/M4	○	×	×	×	×	×
No end seal	/N	○	○	○	○	○	○
C-Lube plates(1)	/Q	○	○	○	○	○	○
Seals for special environment(1)	/RE	○	○	○	○	×	×
Butt-jointing interchangeable track rail	/T	○	○	○	○	○	○
Under seals	/U	○	○	○	○	○	○
Double end seals	/V○	○	○	○	○	○	○
Specified grease(1)	/Y○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○

Notes (1) : Applicable to LWE (Non C-Lube) series.
(2) : Not applicable to stainless steel made products.

Table 6.4 Special specifications (Non-interchangeable specification)

Special specification	Supplemental code	Size					
		15	20	25	30	35	45
Butt-jointing track rail(1)	/A	○	○	○	○	○	○
Stainless steel end plates(2)	/BS	○	○	○	○	×	×
Opposite reference surfaces arrangement	/D	○	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○	○
Inspection sheet	/I	○	○	○	○	○	○
Female threads for bellows	/J○	○	○	○	○	○	○
Black chrome surface treatment	/L○	○	○	○	○	○	○
Fluorine black chrome surface treatment	/LF○	○	○	○	○	○	○
Supplied with track rail mounting bolt	/MA	○	○	○	○	○	○
Changed size of mounting holes	/M4	○	×	×	×	×	×
No end seal(1)	/N	○	○	○	○	○	○
C-Lube plates(3)	/Q	○	○	○	○	○	○
Seals for special environment(2)	/RE	○	○	○	○	×	×
Under seals(1)	/U	○	○	○	○	○	○
Double end seals	/V○	○	○	○	○	○	○
Matched sets to be used as an assembled group	/W○	○	○	○	○	○	○
Specified grease(3)	/Y○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○

Notes (1) : Not applicable to LWE…Q
(2) : Applicable to LWE (Non C-Lube) series.
(3) : Applicable to LWE…Q (Low decible non C-Lube) series.

Table 7 Combination of special specifications

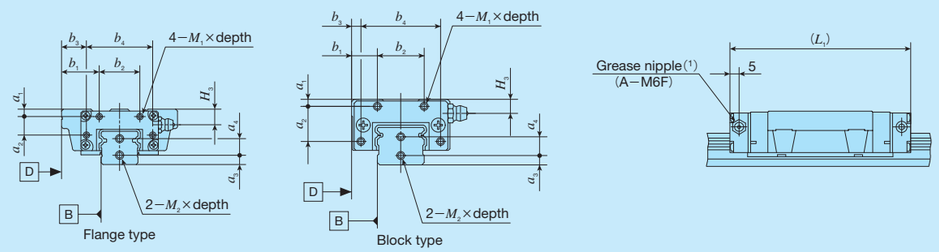
	A	BS	D	E	F	I	J	L	LF	MA	M4	N	Q	RE	T	U	V	W	Y
BS	○																		
D	○	○																	
E	–	○	–																
F	○	○	○	○															
I	○	○	○	○	○														
J	○	○	○	○	○	○													
L	○	○	○	○	○	○	○												
LF	○	○	○	○	○	○	○	–											
MA	○	○	○	○	○	○	○	○	○										
M4	○	○	○	○	○	○	○	○	○	○(1)									
N	○	○	○	○	–	○	–	○	○	○	○								
Q	○	○	○	○	○	○	–	○	○	○	○	○							
RE	○	○	○	○	○	○	○	○	○	○	○	–	○						
T	–	○	○	○	○	–	–	○	○	○	○	○	○	○					
U	○	○	○	○	○	○	○	○	○	○	○	–	○	○	○				
V	○	○	○	○	○	○	●	○	○	○	○	–	–	○	○	○			
W	○	○	○	–	○	○	○	○	○	○	○	○	○	○	–	○	○		
Y	○	○	○	○	○	○	○	○	○	○	○	○	–	○	○	○	○	○	
Z	○	○	○	○	○	○	●	○	○	○	○	–	–	○	○	○	●	○	○

Note (1) : When combine "/MA" and "/M4", indicate "/MA4".
Remarks 1 : In the table, the mark – indicates that this combination cannot be made.
2 : When several special specifications are required, arrange the supplemental codes alphabetically.
3 : For combinations marked ●, consult IKO for further information.

ME・LWE

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 8 Female threads for bellows (Supplemental code /JJ)



unit : mm

Model number			Slide unit									Track rail		
			a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(2)	H_3	a_3	a_4	M_2×depth
ME(T)C 15	LWE(T)C 15	–	3	12	18	16	12	28	M3×6	58	5.7	4	7	M3× 6
ME(T) 15	LWE(T) 15	LWE(T)15···Q								74				
ME(T)G 15	LWE(T)G 15	–								87				
MESC 15	LWESC 15	–			9		3			58				
MES 15	LWES 15	LWES 15···Q								74				
MESG 15	LWESG 15	–								87				
ME(T)C 20	LWE(T)C 20	–	3	15	19.5	20	12.5	34	M3×6	64	6	4	8	M3× 6
ME(T) 20	LWE(T) 20	LWE(T)20···Q								83				
ME(T)G 20	LWE(T)G 20	–								99				
MESC 20	LWESC 20	–			11		4			64				
MES 20	LWES 20	LWES 20···Q								83				
MESG 20	LWESG 20	–								99				
ME(T)C 25	LWE(T)C 25	–	3.5	17	23.5	26	16.5	40	M3×6	76	7	5	9	M4× 8
ME(T) 25	LWE(T) 25	LWE(T)25···Q								100				
ME(T)G 25	LWE(T)G 25	–								119				
MESC 25	LWESC 25	–			11		4			76				
MES 25	LWES 25	LWES 25···Q								100				
MESG 25	LWESG 25	–								119				
ME(T)C 30	LWE(T)C 30	–	5	17	28	34	20	50	M3×6	83	11	6	14	M4× 8
ME(T) 30	LWE(T) 30	–								112				
–	–	LWE(T)30···Q		20	25	40				111	10			
ME(T)G 30	LWE(T)G 30	–		17	28	34				144	11			
MESC 30	LWESC 30	–		17	13	34	5			83	11			
MES 30	LWES 30	–								112				
–	–	LWES 30···Q		20	10	40				111	10			
MESG 30	LWESG 30	–		17	13	34				144	11			
ME(T)C 35	LWE(T)C 35	–	6	20	30	40	20	60	M3×6	93	13	7	15	M4× 8
ME(T) 35	LWE(T) 35	–								126				
–	–	LWE(T)35···Q								125	11			
MESC 35	LWESC 35	–			15		5			93	13			
MES 35	LWES 35	–								126				
–	–	LWES 35···Q								125	11			
ME(T) 45	LWE(T) 45	–	7	26	35	50	23	74	M4×8	138	15	8	19	M5×10
MES 45	LWES 45	–			18		6							

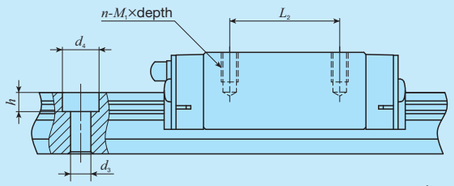
Notes (1) : The specification and mounting positions of grease nipple are different from those of the standard specification product. Size 15 models are provided with a special specification grease nipple (NPB2 type). For detail of dimensions, consult IKO for further information.
(2) : The values are for the slide unit with female threads for bellows at both ends.
Remark : The table shows representative model numbers but is applicable to stainless steel type models of the same size.

Table 9 Track rail mounting bolt size (Supplemental code /MA)

Size	Bolt size for track rail
15	M 3×16 M 4×16(1)
20	M 5×16
25	M 6×20
30	M 6×25
35	M 8×30
45	M10×35

Note (1) : Applicable to the track rail of supplemental code "/M4" of special specification.
Remarks 1 : Stainless steel bolts are appended for stainless steel mode track rail.
2 : Hexagon socket bolts of JIS B 1176 or equivalent.

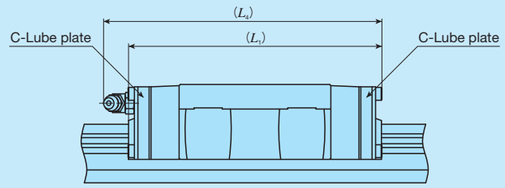
Table 10 Changed size of mounting holes (Supplemental code /M4)



unit : mm

Size	d_3	d_4	h
15	4.5	8	6

Table 11 Slide unit with C-Lube plates (Supplemental code /Q)

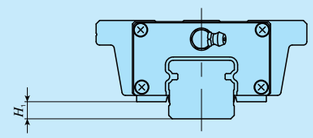


unit : mm

Model number		L_1	L_4
LWEC 15	–	52	55
LWE 15	–	68	71
–	LWE15···Q		70
LWEG 15	–	81	83
LWEC 20	–	58	70
LWE 20	LWE20···Q	78	90
LWEG 20	–	94	105
LWEC 25	–	70	82
LWE 25	LWE25···Q	94	106
LWEG 25	–	113	125
LWEC 30	–	80	91
LWE 30	LWE30···Q	109	119
LWEG 30	–	141	151
LWEC 35	–	90	102
LWE 35	–	123	135
–	LWE35···Q	124	
LWE 45	–	138	148

Remarks 1 : The values for a slide unit with C-Lube plates at both ends are shown.
2 : The above table shows representative model numbers but is applicable to all models of the same size.

Table 12 H1 dimension of slide unit with under seals (Supplemental code /U)

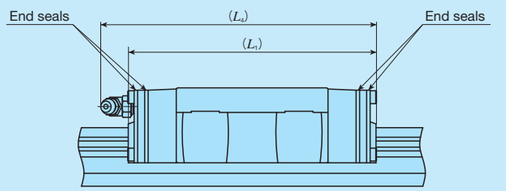


unit : mm

Size	H_1
15	5
20	5
25	6
30	9
35	10
45	13

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 13 Slide unit with double end seals (Supplemental code /V, /VV)

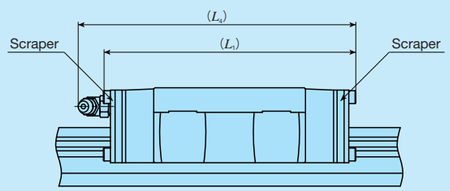


unit : mm

Model number			L_1	L_4
MEC 15	LWEC 15	–	48	50
ME 15	LWE 15	LWE15···Q	64	66
MEG 15	LWEG 15	–	76	78
MEC 20	LWEC 20	–	54	68
ME 20	LWE 20	LWE20···Q	73	87
MEG 20	LWEG 20	–	89	103
MEC 25	LWEC 25	–	67	80
ME 25	LWE 25	LWE25···Q	91	104
MEG 25	LWEG 25	–	110	123
MEC 30	LWEC 30	–	78	89
ME 30	LWE 30	LWE30···Q	107	118
MEG 30	LWEG 30	–	138	150
MEC 35	LWEC 35	–	88	101
ME 35	LWE 35	LWE35···Q	121	134
ME 45	LWE 45	–	137	148

Remarks 1 : The total lengths of slide unit with double end seals at both ends are shown.
2 : The table shows representative model numbers but is applicable to all models of the same size.

Table 14 Slide unit with scrapers (Supplemental code /Z, /ZZ)



unit : mm

Model number			L_1	L_4
MEC 15	LWEC 15	–	48	50
ME 15	LWE 15	LWE15···Q	64	66
MEG 15	LWEG 15	–	77	79
MEC 20	LWEC 20	–	55	69
ME 20	LWE 20	LWE20···Q	75	88
MEG 20	LWEG 20	–	91	104
MEC 25	LWEC 25	–	69	81
ME 25	LWE 25	LWE25···Q	93	105
MEG 25	LWEG 25	–	112	124
MEC 30	LWEC 30	–	79	90
ME 30	LWE 30	–	108	119
–	–	LWE30···Q	109	
MEG 30	LWEG 30	–	140	151
MEC 35	LWEC 35	–	89	101
ME 35	LWE 35	–	122	134
–	–	LWE35···Q	123	135
ME 45	LWE 45	–	138	148

Remarks 1 : The total lengths of slide unit with scrapers at both ends are shown.
2 : The table shows representative model numbers but is applicable to all models of the same size.

Lubrication

Lithium-soap base grease (ALVANIA grease EP 2: SHELL) is pre-packed in ME and LWE(...Q) series slide units. In ME, C-Lube (Capillary sleeve) a component part is placed in the ball recirculation path, thereby extending the re-lubrication (greasing) interval time and reducing maintenance work for a long period. ME and LWE series are provided with grease nipple shown in Table 15. Supply nozzles matching the size of grease nipple are also available. For these parts for lubrication, refer to Table 15.1 on page Ⅲ-22 and Table 16 on page Ⅲ-23 and consult IKO for further information.

Dust Protection

The ME and LWE(...Q) series of slide units are equipped with end seals as standard for protection against dust. If Linear way will be used in a working environment that contains lots of dust, contaminants, or comparatively large particles such as chips and sands that may cover its track rail, IKO recommend protecting the linear motion parts against them with a protective cover or the like. Bellows to match the dimension of ME and LWE(...Q) are optionally available. Please refer to page Ⅲ-25 for ordering.

Table 15 Parts for lubrication

Size	Grease nipple(1)	Applicable supply nozzle type	Nominal size of female threals for piping
15	A-M4	A-5120V A-5240V B-5120V B-5240V	M4
20	B-M6	Grease gun available on the market	M6
25			
30			
35	JIS type 4		PT1/8
45			

Note(1) : In grease nipple specification please see Table 15.1 and 15.2 on page Ⅲ-22.

Precautions for Use

❶ Mounting surface, reference mounting surface, and general mounting structure

To mount ME series or LWE (...Q) series, correctly fit the reference mounting surfaces B and D of the slide unit and the track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig. 2)
The reference mounting surfaces B and D and mounting surfaces A and C of ME series or LWE (...Q) series, are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.
The slide unit reference mounting surface is always the side surface opposite to the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. The track rail reference mounting surface is the side surface above the IKO mark (in the direction of the arrow). (See Fig. 3)

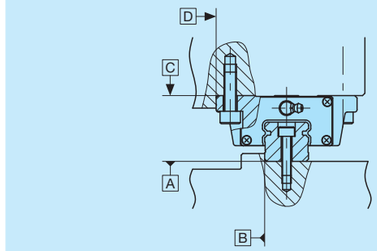


Fig. 2 Reference mounting surfaces and general mounting structure of Linear Way

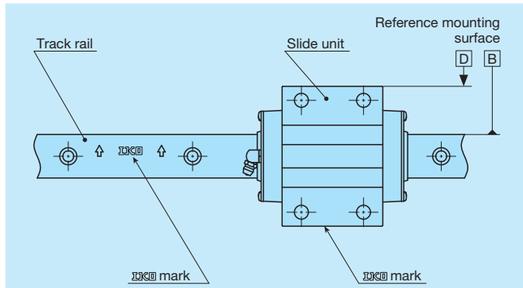


Fig. 3 Reference mounting surfaces of Linear Way

❷Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surfaces as shown in Fig. 4. However, in some series, corner radii R1 and R2 shown in Fig. 4 can also be used. Table 17 show recommended shoulder heights and corner radii of the mating reference mounting surfaces.

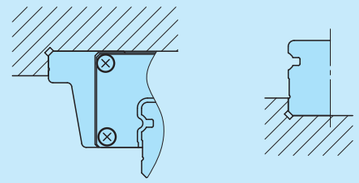


Fig. 4 Relieved fillet at the corner of the mating reference mounting surfaces

❸Tightening torque of mounting bolts

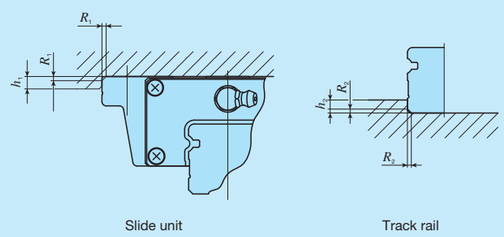
The standard torque values for ME and LWE(...Q) series mounting bolts are shown in Tables 16. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown.
When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 16 Tightening torque of mounting bolts of Linear Way

Bolt size	Tightening torque N·m	
	Carbon steel bolt	Stainless steel bolt
M 3×0.5	1.7	1.1
M 4×0.7	4.0	2.5
M 5×0.8	7.9	5.0
M 6×1	13.3	8.5
M 8×1.25	32.0	20.4
M10×1.5	62.7	–
M12×1.75	108	–

Remark : The values show recommended tightening torque for strength division 12.9 (for carbon steel bolt) and property division A2-70 (for stainless steel bolt).

Table 17 Shoulder heights and corner of the mating reference mounting



unit : mm

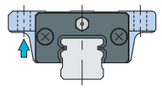
Model number	Slide unit		Track rail	
	Shoulder height h_1	Comer radius R_1 (max.)	Shoulder height h_2	Comer radius R_2 (max.)
15	4	1 (0.5)(1)	3	0.5
20	5	1 (0.5)(1)	3	0.5
25	6	1	4	1
30	8	1	5	1
35	8	1	6	1
45	8	1.5	7	1.5

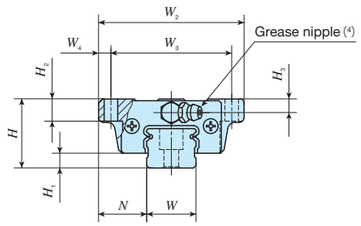
Note(1) : In MES and LWES(···Q), valves in ( ) are applicable.

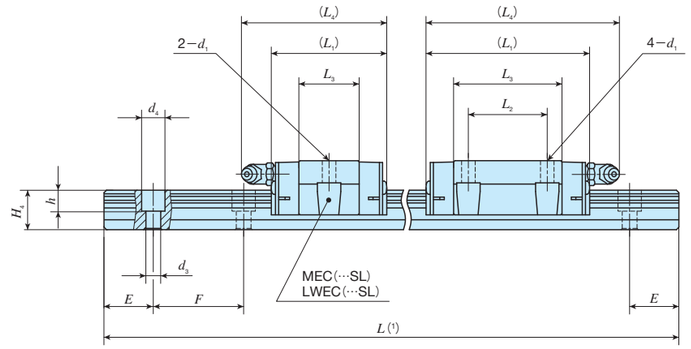
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ME

Flange type, mounting from bottom

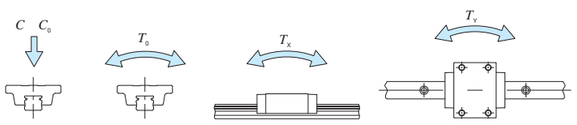
Shape	ME • LWE 		
Size	15	20	25
	30	35	45





Model number ME	Model number LWE (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1		H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MEC 15	LWEC 15	○	0.11	1.57	24	5.8	18.5	52	41	5.5	41	–	22.4	45	4.5		7	4.5	15	14.5	3.6 (4.5)	6.5 (8)	4.5 (6)	20	60	M3×16 (M4×16)	5 240	5 480	43.8	21.3 / 149	21.3 / 149
MEC 15…SL	LWEC 15…SL	○																													
ME 15	LWE 15	○	0.18								57	26	38.4	61													7 640	9 390	75.1	57.6 / 333	57.6 / 333
ME 15…SL	LWE 15…SL	○																													
–	LWE 15…Q	–				5							38.3														6 550	8 610	68.9	53.0 / 307	53.0 / 307
MEG 15	LWEG 15	○	0.24			5.8					70	36	51.1	73													9 340	12 500	100	99.5 / 533	99.5 / 533
MEG 15…SL	LWEG 15…SL	○																													
MEC 20		○	0.18	2.28	28	6	19.5	59	49	5	47	–	24.7	58	5.5		9	5.5	20	16	6	9.5	8.5	20	60	M5×16	7 580	7 340	78.9	31.5 / 235	31.5 / 235
	LWEC 20	○											24.5														7 570				
MEC 20…SL		○											24.7														7 580				
	LWEC 20…SL	○											24.5														7 570				
ME 20		○	0.30								67	32	44.2	78													11 600	13 400	145	95.6 / 561	95.6 / 561
	LWE 20	○											44																		
ME 20…SL		○											44.2																		
	LWE 20…SL	○											44																		
–	LWE 20…Q	–				5																					10 500			100 / 557	100 / 557
MEG 20		○	0.40			6					83	45	60.1	94													14 400	18 300	197	172 / 918	172 / 918
	LWEG 20	○											59.9																		
MEG 20…SL		○											60.1																		
	LWEG 20…SL	○											59.9																		

Notes (1) : Track rail lengths L are shown in Table 2.1 and 2.2 on page Ⅱ-45.
(2) : Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 or equivalent are recommended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-51.
Remark : Values in parentheses are applicable to the track rail of supplemental code "/M4" of special specification.



Example of identification number of assembled set

Model code	Size	Part code			Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
ME	G	15	C2	R340	__	__	T1	P	S1	/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series

ME	Flange type, mounting from bottom
LWE	
LWE…Q	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long

③ Size: 15, 20

④ Number of slide unit (two slide units)

⑤ Length of track rail (340mm)

⑥ Material

No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount

T_0	Clearance
No symbol	Standard
T_1	Light preload
T_2	Medium preload

⑧ Accuracy class

No symbol	Ordinary
H	High
P	Precision
SP	Super precision

⑨ Interchangeable code

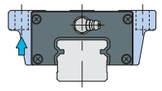
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

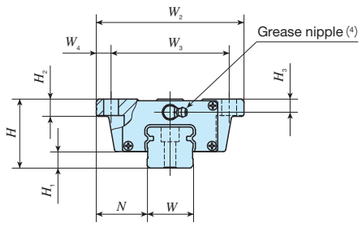
⑩ Special specification: A, BS, D, E, F, I, J, L, LF, MA, M4 N, Q, RE, T, U, V, W, Y, Z

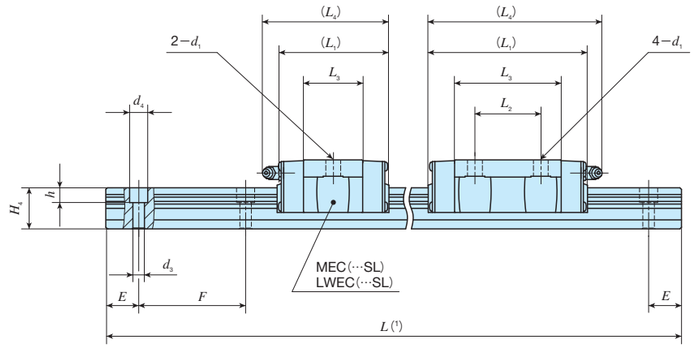
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ME

Flange type, mounting from bottom

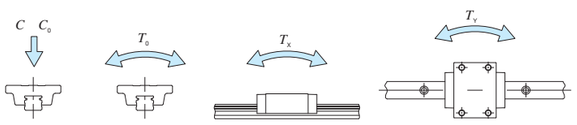
Shape	ME • LWE 		
Size	15	20	25
	30	35	45





Model number ME	Model number LWE (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MEC 25	LWEC 25	○	0.33	3.09	33	7	25	73	60	6.5	59	–	32	70	7	10	6.5	23	19	7	11	9	20	60	M 6×20	12 400	12 300	153	71.8 480	71.8 480
MEC 25…SL	LWEC 25…SL	○																												
ME 25	LWE 25	○	0.56								83	35	56	94												18 100	21 100	262	195 1 090	195 1 090
ME 25…SL	LWE 25…SL	○																												
–	LWE 25…Q	–				6																				15 500	19 400	240	175 1 010	175 1 010
MEG 25	LWEG 25	○	0.73			7					102	50	75	113												22 200	28 200	349	336 1 740	336 1 740
MEG 25…SL	LWEG 25…SL	○																												
MEC 30	LWEC 30	○	0.58	5.09	42	10	31	90	72	9	68	–	36	78	9	10	8	28	25	7	11	9	20	80	M 6×25	20 600	18 800	287	129 855	129 855
MEC 30…SL	LWEC 30…SL	○																												
ME 30	LWE 30	○	0.99								97	40	64.8	107												29 500	31 300	479	328 1 920	328 1 920
ME 30…SL	LWE 30…SL	○																												
–	LWE 30…Q	–	0.97	5.04							96			106												21 600	26 400	398	278 1 570	278 1 570
MEG 30	LWEG 30	○	1.50	5.09							129	60	96.5	139												39 200	47 000	718	704 3 670	704 3 670
MEG 30…SL	LWEG 30…SL	○																												
MEC 35	LWEC 35	○	0.84	6.85	48	11	33	100	82	9	78	–	41.6	90	9	13	10	34	28	9	14	12	20	80	M 8×30	29 900	26 800	412	176 1 190	162 1 100
ME 35	LWE 35	○	1.52								111	50	74.6	123												42 900	44 700	686	448 2 660	412 2 450
–	LWE 35…Q	–	1.53	6.84							110		76.6	122												30 500	37 600	687	482 2 530	482 2 530
ME 45	LWE 45	○	2.46	11.2	60	14	37.5	120	100	10	125	60	81.4	136	11	15	13	45	34	11	17.5	14	22.5	105	M10×35	61 100	60 200	1 210	672 4 070	618 3 750

Notes (1) : Track rail lengths L are shown in Table 2.1 and 2.2 on page Ⅱ-45.
(2) : Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 or equivalent are recommended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-51.



Example of identification number of assembled set

Model code	Size	Part code			Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
ME	G	30	C2	R440	—	—	T_1	P	S1	/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series

ME	Flange type, mounting from bottom
LWE	
LWE…Q	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long

③ Size

25, 30, 35, 45

④ Number of slide unit (two slide units)

⑤ Length of track rail (440mm)

⑥ Material

No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount

T_0	Clearance
No symbol	Standard
T_1	Light preload
T_2	Medium preload

⑧ Accuracy class

No symbol	Ordinary
H	High
P	Precision
SP	Super precision

⑨ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

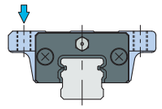
⑩ Special specification

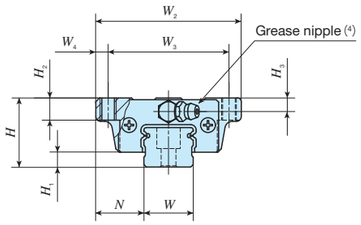
A, BS, D, E, F, I, J, L, LF, MA, N
Q, RE, T, U, V, W, Y, Z

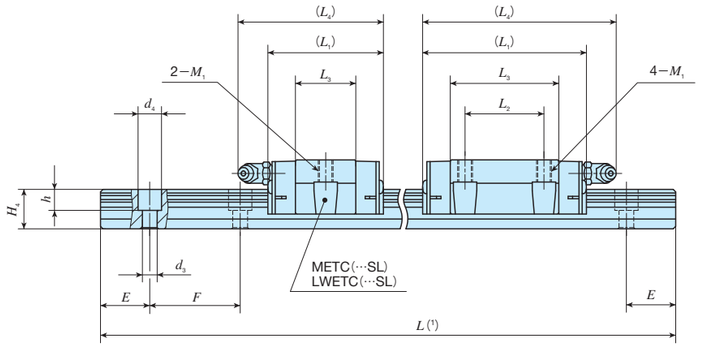
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ME

Flange type, mounting from top

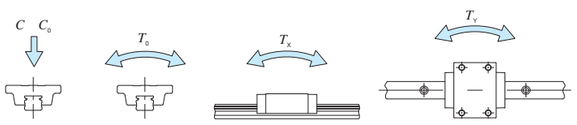
Shape	MET • LWET 		
Size	15	20	25
	30	35	45





Model number ME	Model number LWE (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1	H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
METC 15	LWETC 15	○	0.11	1.57	24	5.8	18.5	52	41	5.5	41	–	22.4	45	M5	7	4.5	15	14.5	3.6 (4.5)	6.5 (8)	4.5 (6)	20	60	M3×16 (M4×16)	5 240	5 480	43.8	21.3 / 149	21.3 / 149
METC 15…SL	LWETC 15…SL	○																												
MET 15	LWET 15	○	0.18								57	26	38.4	61												7 640	9 390	75.1	57.6 / 333	57.6 / 333
MET 15…SL	LWET 15…SL	○																												
–	LWET 15…Q	–				5							38.3													6 550	8 610	68.9	53.0 / 307	53.0 / 307
METG 15	LWETG 15	○	0.24			5.8					70	36	51.1	73												9 340	12 500	100	99.5 / 533	99.5 / 533
METG 15…SL	LWETG 15…SL	○																												
METC 20		○	0.18	2.28	28	6	19.5	59	49	5	47	–	24.7	58	M6	9	5.5	20	16	6	9.5	8.5	20	60	M5×16	7 580	7 340	78.9	31.5 / 235	31.5 / 235
	LWETC 20	○											24.5													7 570				
METC 20…SL		○											24.7													7 580				
	LWETC 20…SL	○											24.5													7 570				
MET 20		○	0.30								67	32	44.2	78												11 600	13 400	145	95.6 / 561	95.6 / 561
	LWET 20	○											44																	
MET 20…SL		○											44.2																	
	LWET 20…SL	○											44																	
–	LWET 20…Q	–				5																				10 500			100 / 557	100 / 557
METG 20		○	0.40			6					83	45	60.1	94												14 400	18 300	197	172 / 918	172 / 918
	LWETG 20	○											59.9																	
METG 20…SL		○											60.1																	
	LWETG 20…SL	○											59.9																	

Notes (1) : Track rail lengths L are shown in Table 2.1 and 2.2 on page Ⅱ-45.
(2) : Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 or equivalent are recommended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-51.
Remark : Values in parentheses are applicable to the track rail of supplemental code "/M4" of special specification.



Example of identification number of assembled set

Model code	Size	Part code			Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MET	G	15	C2	R340	—	—	T1	P	S1	/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series

MET	Flange type, mounting from top
LWET	
LWET…Q	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long

③ Size: 15, 20

④ Number of slide unit (two slide units)

⑤ Length of track rail (340mm)

⑥ Material

No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload
T2	Medium preload

⑧ Accuracy class

No symbol	Ordinary
H	High
P	Precision
SP	Super precision

⑨ Interchangeable code

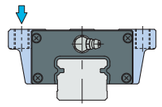
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

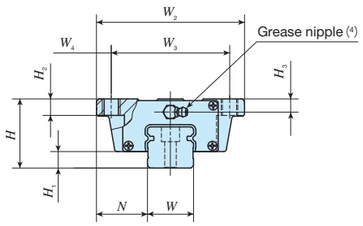
⑩ Special specification: A, BS, D, E, F, I, J, L, LF, MA, M4 N, Q, RE, T, U, V, W, Y, Z

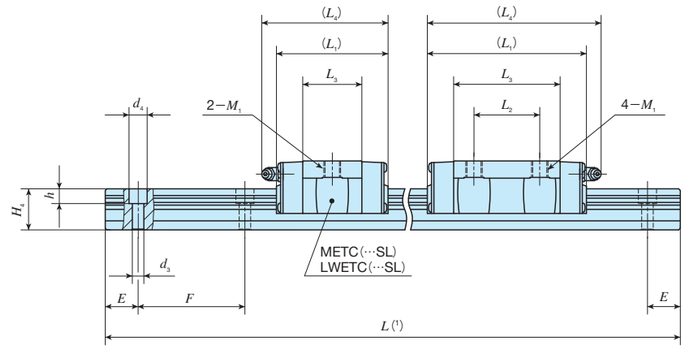
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ME

Flange type, mounting from top

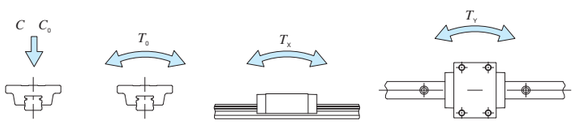
Shape	MET • LWET 		
Size	15	20	25
	30	35	45





Model number ME	Model number LWE (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1	H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
METC 25	LWETC 25	○	0.33	3.09	33	7	25	73	60	6.5	59	–	32	70	M 8	10	6.5	23	19	7	11	9	20	60	M 6×20	12 400	12 300	153	71.8 480	71.8 480
METC 25…SL	LWETC 25…SL	○																												
MET 25	LWET 25	○	0.56								83	35	56	94												18 100	21 100	262	195 1 090	195 1 090
MET 25…SL	LWET 25…SL	○																												
–	LWET 25…Q	–				6																				15 500	19 400	240	175 1 010	175 1 010
METG 25	LWETG 25	○	0.73			7					102	50	75	113												22 200	28 200	349	336 1 740	336 1 740
METG 25…SL	LWETG 25…SL	○																												
METC 30	LWETC 30	○	0.58	5.09	42	10	31	90	72	9	68	–	36	78	M10	10	8	28	25	7	11	9	20	80	M 6×25	20 600	18 800	287	129 855	129 855
METC 30…SL	LWETC 30…SL	○																												
MET 30	LWET 30	○	0.99								97	40	64.8	107												29 500	31 300	479	328 1 920	328 1 920
MET 30…SL	LWET 30…SL	○																												
–	LWET 30…Q	–	0.97	5.04							96			106												21 600	26 400	398	278 1 570	278 1 570
METG 30	LWETG 30	○	1.50	5.09							129	60	96.5	139												39 200	47 000	718	704 3 670	704 3 670
METG 30…SL	LWETG 30…SL	○																												
METC 35	LWETC 35	○	0.84	6.85	48	11	33	100	82	9	78	–	41.6	90	M10	13	10	34	28	9	14	12	20	80	M 8×30	29 900	26 800	412	176 1 190	162 1 100
MET 35	LWET 35	○	1.52								111	50	74.6	123												42 900	44 700	686	448 2 660	412 2 450
–	LWET 35…Q	–	1.53	6.84							110		76.6	122												30 500	37 600	687	482 2 530	482 2 530
MET 45	LWET 45	○	2.46	11.2	60	14	37.5	120	100	10	125	60	81.4	136	M12	15	13	45	34	11	17.5	14	22.5	105	M10×35	61 100	60 200	1 210	672 4 070	618 3 750

Notes (1) : Track rail lengths L are shown in Table 2.1 and 2.2 on page Ⅱ-45.
(2) : Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 or equivalent are recommended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : For grease nipple specifications, see Table 151 on page Ⅱ-51.



Example of identification number of assembled set

Model code	Size	Part code			Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MET	G	30	C2	R440	—	—	T1	P	S1	/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series	
MET	Flange type, mounting from top
LWET	
LWET…Q	

② Length of slide unit	
C	Short
No symbol	Standard
G	High rigidity long

③ Size
25, 30, 35, 45

④ Number of slide unit (two slide units)

⑤ Length of track rail (440mm)

⑥ Material	
No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount	
T0	Clearance
No symbol	Standard
T1	Light preload
T2	Medium preload

⑧ Accuracy class	
No symbol	Ordinary
H	High
P	Precision
SP	Super precision

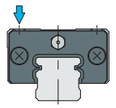
⑨ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

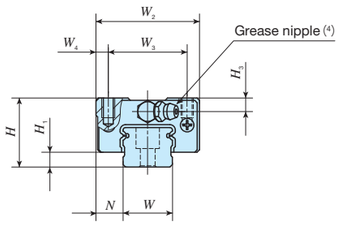
⑩ Special specification
A, BS, D, E, F, I, J, L, LF, MA, N Q, RE, T, U, V, W, Y, Z

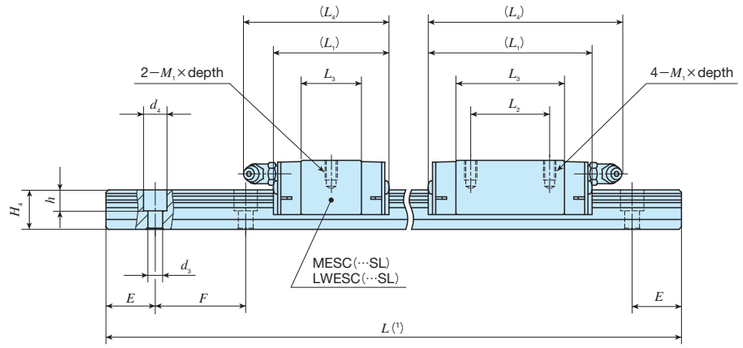
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ME

Block type, mounting from top

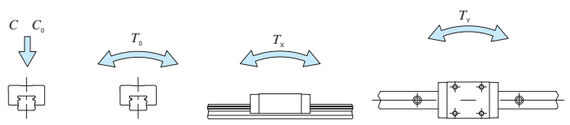
Shape	MES • LWES 		
Size	15	20	25
	30	35	45





Model number ME	Model number LWE (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth		H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MESC 15	LWESC 15	○	0.09	1.57	24	5.8	9.5	34	26	4	41	–	22.4	45	M4×7		4.5	15	14.5	3.6 (4.5)	6.5 (8)	4.5 (6)	20	60	M3×16 (M4×16)	5 240	5 480	43.8	21.3 / 149	21.3 / 149
MESC 15…SL	LWESC 15…SL	○																												
MES 15	LWES 15	○	0.14								57	26	38.4	61												7 640	9 390	75.1	57.6 / 333	57.6 / 333
MES 15…SL	LWES 15…SL	○																												
–	LWES 15…Q	–				5							38.3													6 550	8 610	68.9	53.0 / 307	53.0 / 307
MESG 15	LWESG 15	○	0.18			5.8					70	36	51.1	73												9 340	12 500	100	99.5 / 533	99.5 / 533
MESG 15…SL	LWESG 15…SL	○																												
MESC 20		○	0.15	2.28	28	6	11	42	32	5	47	–	24.7	58	M5×8		5.5	20	16	6	9.5	8.5	20	60	M5×16	7 580	7 340	78.9	31.5 / 235	31.5 / 235
	LWESC 20	○											24.5													7 570				
MESC 20…SL		○											24.7													7 580				
	LWESC 20…SL	○											24.5													7 570				
MES 20		○	0.25								67	32	44.2	78												11 600	13 400	145	95.6 / 561	95.6 / 561
	LWES 20	○											44																	
MES 20…SL		○											44.2																	
	LWES 20…SL	○											44																	
–	LWES 20…Q	–				5																				10 500			100 / 557	100 / 557
MESG 20		○	0.33			6					83	45	60.1	94												14 400	18 300	197	172 / 918	172 / 918
	LWESG 20	○											59.9																	
MESG 20…SL		○											60.1																	
	LWESG 20…SL	○											59.9																	

Notes (1) : Track rail lengths L are shown in Table 2.1 and 2.2 on page Ⅱ-45.
(2) : Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 or equivalent are recommended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-51.
Remark : Values in parentheses are applicable to the track rail of supplemental code "/M4" of special specification.



Example of identification number of assembled set

Model code	Size	Part code			Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MES	G	15	C2	R340	—	—	T1	P	S1	/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series	
MES	Block type, mounting from top
LWES	
LWES…Q	

② Length of slide unit	
C	Short
No symbol	Standard
G	High rigidity long

③ Size
15, 20

④ Number of slide unit (two slide units)

⑤ Length of track rail (340mm)

⑥ Material	
No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount	
T0	Clearance
No symbol	Standard
T1	Light preload
T2	Medium preload

⑧ Accuracy class	
No symbol	Ordinary
H	High
P	Precision
SP	Super precision

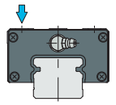
⑨ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

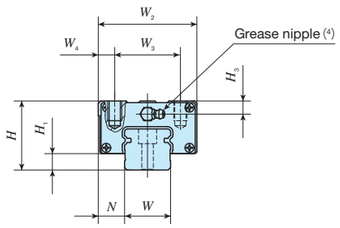
⑩ Special specification
A, BS, D, E, F, I, J, L, LF, MA, M4 N, Q, RE, T, U, V, W, Y, Z

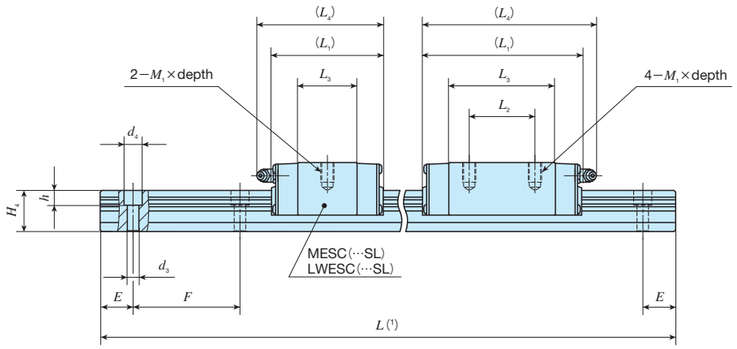
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way ME

Block type, mounting from top

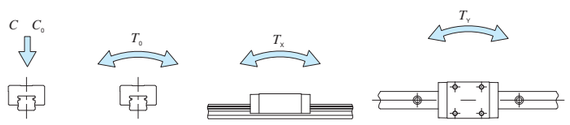
Shape	MES • LWES 		
Size	15	20	25
	30	35	45





Model number ME	Model number LWE (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	$M_1\times$depth		H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MESC 25	LWESC 25	○	0.26	3.09	33	7	12.5	48	35	6.5	59	–	32	70	M 6×9		6.5	23	19	7	11	9	20	60	M 6×20	12 400	12 300	153	71.8 480	71.8 480
MESC 25…SL	LWESC 25…SL	○																												
MES 25	LWES 25	○	0.43								83	35	56	94												18 100	21 100	262	195 1 090	195 1 090
MES 25…SL	LWES 25…SL	○																												
–	LWES 25…Q	–				6																				15 500	19 400	240	175 1 010	175 1 010
MESG 25	LWESG 25	○	0.55			7					102	50	75	113												22 200	28 200	349	336 1 740	336 1 740
MESG 25…SL	LWESG 25…SL	○																												
MESC 30	LWESC 30	○	0.46	5.09	42	10	16	60	40	10	68	–	36	78	M 8×12		8	28	25	7	11	9	20	80	M 6×25	20 600	18 800	287	129 855	129 855
MESC 30…SL	LWESC 30…SL	○																												
MES 30	LWES 30	○	0.78								97	40	64.8	107												29 500	31 300	479	328 1 920	328 1920
MES 30…SL	LWES 30…SL	○																												
–	LWES 30…Q	–	0.75	5.04							96			106												21 600	26 400	398	278 1 570	278 1 570
MESG 30	LWESG 30	○	1.13	5.09							129	60	96.5	139												39 200	47 000	718	704 3 670	704 3 670
MESG 30…SL	LWESG 30…SL	○																												
MESC 35	LWESC 35	○	0.67	6.85	48	11	18	70	50	10	78	–	41.6	90	M 8×12		10	34	28	9	14	12	20	80	M 8×30	29 900	26 800	412	176 1 190	162 1 100
MES 35	LWES 35	○	1.21								111	50	74.6	123												42 900	44 700	686	448 2 660	412 2 450
–	LWES 35…Q	–	1.20	6.84							110		76.6	122												30 500	37 600	687	482 2 530	482 2 530
MES 45	LWES 45	○	2.05	11.2	60	14	20.5	86	60	13	125	60	81.4	136	M10×15		13	45	34	11	17.5	14	22.5	105	M10×35	61 100	60 200	1 210	672 4 070	618 3 750

Notes (1) : Track rail lengths L are shown in Table 2.1 and 2.2 on page Ⅱ-45.
(2) : Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 or equivalent are recommended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-51.



Example of identification number of assembled set

Model code	Size	Part code			Model code	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MES	G	30	C2	R440	—	—	T1	P	S1	/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series

MES	Block type, mounting from top
LWES	
LWES…Q	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long

③ Size

25, 30, 35, 45

④ Number of slide unit (two slide units)

⑤ Length of track rail (440mm)

⑥ Material

No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount

T_0	Clearance
No symbol	Standard
T_1	Light preload
T_2	Medium preload

⑧ Accuracy class

No symbol	Ordinary
H	High
P	Precision
SP	Super precision

⑨ Interchangeable code

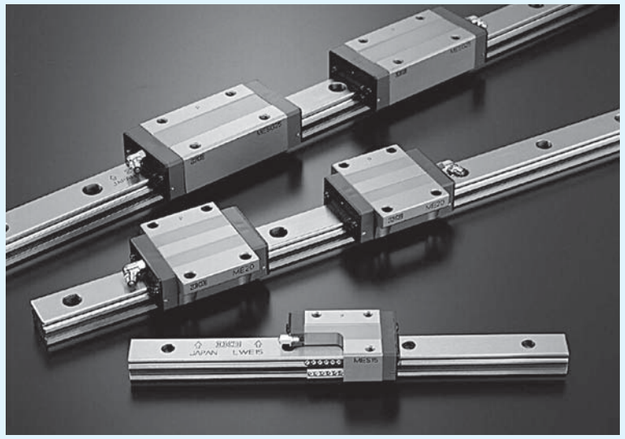
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑩ Special specification

A, BS, D, E, F, I, J, L, LF, MA, N
Q, RE, T, U, V, W, Y, Z

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

C-Lube Linear Way MH
Linear Way H



C-Lube Linear Way MH

Features

High rigidity series having the maximum load capacity among Ball type.

High rigidity linear motion rolling guide, which has the maximum load rating among ball type with assembling large diameter balls in.

Wide variation corresponding to needs

Five shapes of slide unit, flanged type, block type, side mounting type and etc. are lined up with three variations in length of slide unit with same section. They are available for optimal products to fit for requirement of machine and equipment.

Stainless steel type is lined up

The main metal components made of corrosion resistant stainless steel are most suitable for use in cleanroom environment and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Serialized Ultra sealed specification performing superior dust protection

Linear Way H with Ultra sealed specification performs superior dust protection due to combination of finished surface of track rail and slide unit with special lip structure on both end seals and under seals.

Identification number and specification

The specifications of MH series and LWH series are indicated by the identification number, consisting of a model code, a size, a part code, a seal code, a material symbol, a preload symbol, a classification symbol, an interchangeable code and any supplemental codes.

	1	2	3	4	5	1	6	7	8	9	10	11
Interchangeable specification												
Slide unit only	MHT	G	20	C1					T_1	P	S1	/V
Track rail only(1)	LWH		20		R840	B				P	S1	/F
Assembled set	MHT	G	20	C1	R840				T_1	P	S1	/FV
Non-interchangeable specification												
Assembled set	MHT	G	20	C1	R840				T_1	P		/FV

1. **Series** — Model code on page Ⅱ-69 / on page Ⅱ-70
2. **Length of slide unit**
3. **Size** — Size on page Ⅱ-70
4. **Number of slide units** — Part code on page Ⅱ-70 / on page Ⅱ-71
5. **Length of track rail**
6. **Sealing specification** — Seal code on page Ⅱ-72
7. **Material** — Material symbol on page Ⅱ-74
8. **Preload amount** — Preload symbol on page Ⅱ-74
9. **Accuracy class** — Classification symbol on page Ⅱ-75
10. **Interchangeable** — Interchangeable code on page Ⅱ-76
11. **Special specification** — Supplemental code on page Ⅱ-76

Note(1) : For the model code of track rail of interchangeable specification, indicate "LWH…B" or "LWH" regardless of the slide unit type to be combined.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification —Series—

1 Series

C-Lube Linear Way (MH Series)	Flange type, mounting from bottom	: MH
	Flange type, mounting from top(2)	: MHT
	Block type, mounting from top	: MHD
	Compact block type, mounting from top	: MHS
Linear Way(1) (LWH Series)	Flange type mounting from bottom	: LWH (…B)
	Flange type mounting from top(2)	: LWHT (…B)
	Block type mounting from top	: LWHD (…B)
	Compact block type mounting from top	: LWHS (…B)
	Side mounting type	: LWHY

Applicable size and shape of slide unit are shown in Table 1.1 and 1.2.
For the model code of a single track rail of interchangeable specification, indicate "LWH…B" or "LWH" regardless of the slide unit type to be combined.

Note(1) : Linear Way without C-Lube.
(2) : Mounting from bottom is also possible in some type.

Table 1.1 Models and size of MH and LWH

Material	Shape	Length of slide unit	Model code	Size 8	10	12	15	20	25	30	35	45	55	65	85
High carbon steel	Flange type, mounting from bottom	Standard	MH	–	–	–	○	○	○	○	○	○	–	–	–
			LWH…B	–	–	–	○	○	○	○	○	○	○	○	–
			LWH…M (U)	–	–	–	○	○	○	○	○	○	–	–	–
		High rigidity long	MHG	–	–	–	–	○	○	○	○	○	–	–	–
			LWHG	–	–	–	–	○	○	○	○	○	○	○	○(3)
	Flange type, mounting from top	Standard	MHT	–	–	○(1)	○	○	○	○	○	○	–	–	–
			LWHT…B	–	–	○(1)(2)	○	○	○	○	○	○	○	○	–
			LWHT…M (U)	–	–	–	○	○	○	○	○	○	–	–	–
		High rigidity long	MHTG	–	–	–	○(1)	○	○	○	○	○	–	–	–
			LWHTG	–	–	–	–	○	○	○	○	○	○	○	○(3)
		Extra high rigidity long	MHTL	–	–	–	–	–	–	○	○	○	–	–	–
	Block type, mounting from top	Standard	MHD	–		○	○	–	○	○	○	○	–	–	–
			LWHD…B	–		○(2)	○	–	○	○	○	○	○	○	
			LWHD…M (U)	–	–	–	○	–	○	○	○	○	–	–	–
		High rigidity long	MHDG	–	–	–	–	–	○	○	○	○	–	–	–
			LWHDG	–	–	–	–	–	○	○	○	○	○	○	–
		Extra high rigidity long	MHDL	–	–	–	–	–	–	○	○	○	–	–	–
	Compact block type, mounting from top	Standard	MHS	–	–	–	○	○	○	○	–	–	–	–	–
			LWHS…B	–	–	–	○	○	○	○	–	–	–	–	–
			LWHS…M (U)	–	–	–	○	○	○	○	–	–	–	–	–
		High rigidity long	MHSG	–	–	–	○	○	○	○	–	–	–	–	–
			LWHSG	–	–	–	–	○	○	○	–	–	–	–	–
	Side mounting type	Standard	LWHY	–	–	–	○	○	○	○	○	○	○	○	–

Notes(1) : Mounting from bottom is also possible.
(2) : "…B" is not necessary.
(3) : Customised item.
Remark : The mark ▭ indicates that interchangeable specification is available.

—Length of slide unit · Size · Number of slide unit—

2 Length of slide unit

Short	: C	Applicable size and shape of slide unit are shown in Table 1.1 to 1.2.
Standard	: No symbol	
High rigidity long	: G	
Extra high rigidity long	: L	

3 Size

8, 10, 12, 15, 20, 25, 30, 35, 45, 55, 65, 85

Applicable size and shape of slide unit are shown in Table 1.1 to 1.2.

4 Number of slide unit

: C○

For an assembled set, indicate the number of slide units assembled on one track rail. For an interchangeable slid unit only, "C1" can be indicated.

Table 1.2 Models and size of MH...SL and LWH...SL

Material	Shape	Length of slide unit	Model code	Size 8	10	12	15	20	25	30	35	45	55	65	85
Stainless steel	Flange type, mounting from bottom	Standard	LWH…SL	–	–	–	○	○	○	○	–	–	–	–	–
	Flange type, mounting from top	Standard	MHT…SL	○(1)	○(1)	○(1)	○	○	○	○	–	–	–	–	–
			LWHT…SL	○(1)	○(1)	○(1)	○	○	○	○	–	–	–	–	–
	Block type, mounting from top	Short	MHDC…SL	○	○	○	–	–	–	–	–	–	–	–	–
			LWHDC…SL	○	○	○	–	–	–	–	–	–	–	–	–
		Standard	MHD…SL	○	○	○	–	–	–	–	–	–	–	–	–
			LWHD…SL	○	○	○	–	–	–	–	–	–	–	–	–
		High rigidity long	MHDG…SL	○	○	○	–	–	–	–	–	–	–	–	–
			LWHDG…SL	○	○	○	–	–	–	–	–	–	–	–	–
	Compact block type, mounting from top	Standard	MHS…SL	–	–	–	○	○	○	○	–	–	–	–	–
			LWHS…SL	–	–	–	○	○	○	○	–	–	–	–	–

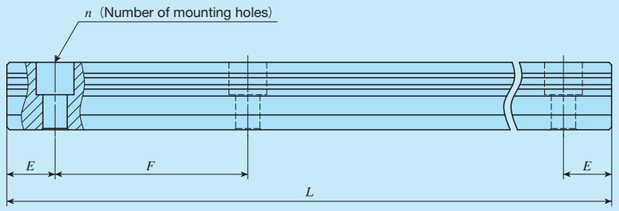
Note(1) : Mounting from bottom is also possible.
Remark : The mark ▭ indicates that interchangeable specification is available.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

5 Length of track rail

: R○ Indicate the length of track rail in mm. For standard and maximum lengths, see Table 2.1 and 2.2.

Table 2.1 Standard and maximum lengths of high carbon steel track rails



unit : mm

Item \ Model number	MH 12 LWH12	MH 15 LWH15…B	MH 20 LWH20…B	MH 25 LWH25…B	MH 30 LWH30…B
Standard length $L(n)$	80 (2) 160 (4) 240 (6) 320 (8) 400 (10) 480 (12) 560 (14) 640 (16) 720 (18)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11) 900 (15) 1 200 (20)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25) 1 980 (33)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19) 2 000 (25)
Pitch of mounting holes F	40	60	60	60	80
E	20	30	30	30	40
Standard range of E(1) incl.	5.5	7	8	9	10
Standard range of E(1) under	25.5	37	38	39	50
Maximum length(2)	1 480	1 500 (3 000)	1 980 (3 000)	3 000 (3 960)	2 960 (4 000)

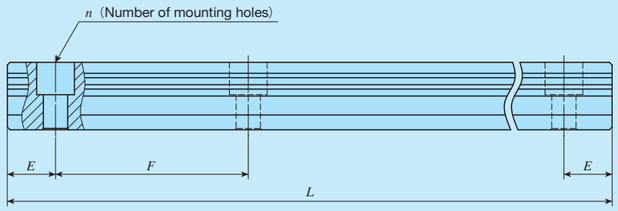
Item \ Model number	MH 35 LWH35…B	MH 45 LWH45…B	LWH55…B	LWH65…B	LWH85(3)
Standard length $L(n)$	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)	840 (8) 1 050 (10) 1 260 (12) 1 470 (14) 1 995 (19)	840 (7) 1 200 (10) 1 560 (13) 1 920 (16) 3 000 (25)	1 500 (10) 1 950 (13) 3 000 (20)	—
Pitch of mounting holes F	80	105	120	150	180
E	40	52.5	60	75	90
Standard range of E(1) incl.	10	12.5	15	17	23
Standard range of E(1) under	50	65	75	92	113
Maximum length(2)	2 960 (4 000)	2 940 (3 990)	3 000 (3 960)	3 000 (3 900)	2 880

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(2) : Track rails with the maximum lengths in parentheses can be manufactured. Consult IKO for further information.
(3) : Customized item.
Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : For the model code of track rail of interchangeable specification, indicate "LWH" for size 12 and "LWH...B" for size 15 or larger regardless of slide unit type to be combined.
3 : In Ultra sealed type, see Table 2.3 and 2.4.

6 Sealing specification

Standard specification	: No symbol	Applicable size and shape of slide unit are shown in Table 1.1and 1.2.
Ultra sealed specification	: M	For the specifications of ultra sealed track rail mounted from bottom MU, the slide unit of the ultra sealed specification M is applicable.
Ultra sealed track rail mounting from bottom	: MU	Table 2.3 and 2.4 show the specification of track rail.

Table 2.2 Standard and maximum length of Stainless steel track rails



unit : mm

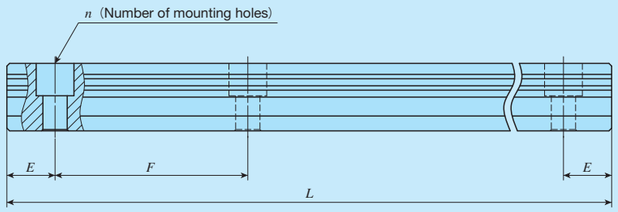
Item \ Model number	MH 8…SL LWH8…SL	MH 10…SL LWH10…SL	MH 12…SL LWH12…SL	MH 15…SL LWH15…SL	MH 20…SL LWH20…SL	MH 25…SL LWH25…SL	MH 30…SL LWH30…SL
Standard length $L(n)$	40 (2) 80 (4) 120 (6) 160 (8) 200 (10) 240 (12) 280 (14)	50 (2) 100 (4) 150 (6) 200 (8) 250 (10) 300 (12) 350 (14) 400 (16) 450 (18) 500 (20)	80 (2) 160 (4) 240 (6) 320 (8) 400 (10) 480 (12) 560 (14) 640 (16) 720 (18)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11)	240 (4) 480 (8) 660 (11) 840 (14)	240 (4) 480 (8) 660 (11) 840 (14)	480 (6) 640 (8) 800 (10) 1 040 (13)
Mounting hole pitch F	20	25	40	60	60	60	80
E	10	12.5	20	30	30	30	40
Reference dimension E(1) Over (Incl.)	4.5	5	5.5	7	8	9	10
Reference dimension E(1) Under	14.5	17.5	25.5	37	38	39	50
Maximum length(2)	480 (1 000)	850 (1 000)	1 000 (1 480)	1 200 (1 500)	1 200 (3 000)	1 200 (3 000)	1 200 (2 960)

Notes(1) : Not applied to optional specification "female threads for bellows" (supplemental code "/J", "/JJ")
(2) : The track rails can be manufactured up to the maximum length shown in parentheses. If required, please consult IKO.
Remarks 1 : The above table shows representative model number but is applicable to all models of the same size.
2 : For the model code of track rail of interchangeable specification, indicate "LWH...SL" regardless of slide unit type to be combined.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

—Length of track rail—

Table 2.3 Standard and maximum lengths of Ultra sealed specification high carbon steel track rails

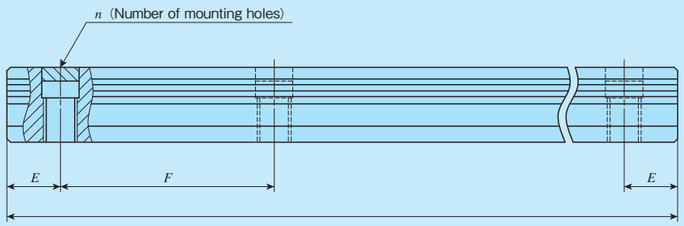


unit : mm

Item \ Model number	LWH15…M	LWH20…M	LWH25…M	LWH30…M	LWH35…M	LWH45…M
Standard length $L(n)$	180 (3) 240 (4) 360 (6) 480 (8) 660 (11)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)	840 (8) 1 050 (10) 1 260 (12) 1 470 (14) 1 995 (19)
Pitch of mounting holes F	60	60	60	80	80	105
E	30	30	30	40	40	52.5
Standard range of E(1) incl.	7	8	9	10	10	12.5
Standard range of E(1) under	37	38	39	50	50	65
Maximum length	1 500	1 980	3 000	2 960	2 960	2 940
Maximum number of butt-jointing rails	3	3	3	3	3	3
Maximum length of butt-jointing rails	4 200	5 640	8 700	8 480	8 480	8 295

Note(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
Remark : The above table shows representative model numbers but is applicable to all models of the same size.

Table 2.4 Standard and maximum lengths of Ultra sealed track rail mounting from bottom



unit : mm

Item \ Model number	LWH15…MU	LWH20…MU	LWH25…MU	LWH30…MU	LWH35…MU	LWH45…MU
Standard length $L(n)$	180 (3) 240 (4) 360 (6) 480 (8) 660 (11)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)	840 (8) 1 050 (10) 1 260 (12) 1 470 (14) 1 995 (19)
Pitch of mounting holes F	60	60	60	80	80	105
E	30	30	30	40	40	52.5
Standard range of E(1) incl.	7	8	9	10	10	12.5
Standard range of E(1) under	37	38	39	50	50	65
Maximum length	1 500	1 980	3 000	2 960	2 960	2 940
Maximum number of butt-jointing rails	3	3	3	3	3	3
Maximum length of butt-jointing rails	4 200	5 640	8 700	8 480	8 480	8 295

Note(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : The track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength 12.9 or equivalent is recommended

—Material · Preload amount—

7 Material

High carbon steel	: No symbol	Applicable sizes are shown in Table 1.1 to 1.2.
Stainless steel	: SL	

8 Preload amount

Clearance	: T_0	Specify this items for an assembled set or an interchangeable single slide unit.
Standard	: No symbol	
Light preload	: T_1	Applicable preload and size are shown in Table 3 to 4.
Medium preload	: T_2	
Heavy preload	: T_3	

Table 3 Preload amount

Preload type \ Item	Symbol	Preload amount N	Applicatin
Clearance	T_0	0(1)	· Very smooth motion
Standard	(No symbol)	0(2)	· Smooth and precise motion
Light preload	T_1	$0.02C_0$	· Medium vibration · Load is evenly balanced. · Smooth and precise motion
Medium preload	T_2	$0.05C_0$	· Medium vibration · Medium overhung load
Heavy preload	T_3	$0.08C_0$	· Vibration and/or shocks · Large overhung load · Heavy cutting

Notes(1) : Zero or minimal amount of clearance
(2) : Zero or minimal amount of preload
Remark : C_0 means the basic static load rating.

Table 4 Applicable preload

Size	Preload class and symbol				
	Clearance (T_0)	Standard (No symbol)	Light preload (T_1)	Medium preload (T_2)	Heavy preload (T_3)
8	○	○	○	–	–
10	○	○	○	–	–
12	○	○	○	–	–
15	–	○	○	○	○
20	–	○	○	○	○
25	–	○	○	○	○
30	–	○	○	○	○
35	–	○	○	○	○
45	–	○	○	○	○
55	–	○	○	○	○
65	–	○	○	○	○
85	–	○	○	○	○

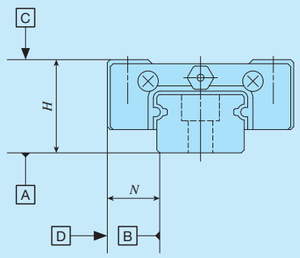
Remark : The mark indicates that it is also applicable to interchangeable specification.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

9 Accuracy class

High	: H	For the interchangeable specification, combine slide units and track rails of the same class. For details of accuracy, see Table 5.1 and 5.2. Applicable sizes are shown in Table 6.
Precision	: P	
Super precision	: SP	

Table 5.1 Accuracy (Size 8 to 12)

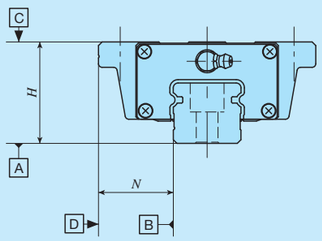


unit : mm

Item \ Classification (Symbol)	High (H)	Precision (P)
Dim. H tolerance	±0.020	±0.010
Dim. N tolerance	±0.025	±0.015
Dim. variation of H(1)	0.015	0.007
Dim. variation of N(1)	0.020	0.010
Dim. variation of H for multiple assembled sets(2)	0.030	0.020
Parallelism in operation of C to A	See Fig. 1.1	
Parallelism in operation of D to B	See Fig. 1.1	

Notes(1) : It means the size variation between slide units mounted on the same track rail.
(2) : It applies to the interchangeable specification.

Table 5.2 Accuracy (Size 15 or over)



unit : mm

Item \ Classification (symbol)	High (H)	Precision (P)	Super Precision (SP)
Dim. H tolerance	±0.040	±0.020	±0.010
Dim. N tolerance	±0.050	±0.025	±0.015
Dim. variation of H(1)	0.015	0.007	0.005
Dim. variation of N(1)	0.020	0.010	0.007
Dim. variation of H for multiple assembled sets(2)	0.035	0.025	–
Parallelism in operation of C to A	See Fig. 1.2		
Parallelism in operation of D to B	See Fig. 1.2		

Notes(1) : It means the size variation between slide units mounted on the same track rail.
(2) : It applies to the interchangeable specification.

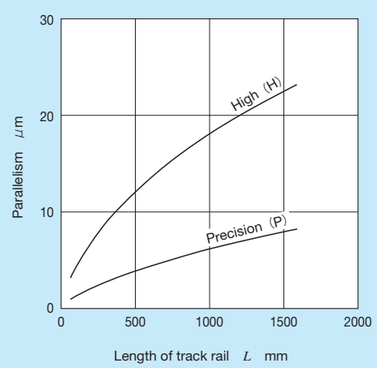


Fig. 1.1 Parallelism in operation (Size 8 to 12)

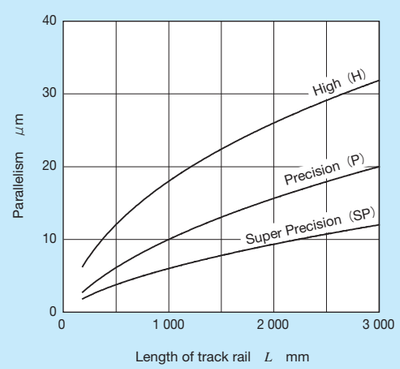


Fig. 1.2 Parallelism in operation (Size 15 or over)

Table 6 Accuracy class and size

Size	Accuracy class		
	High class (H)	Precision class (P)	Super precision (SP)
8	○	○	–
10	○	○	–
12	○	○	–
15	○	○	○
20	○	○	○
25	○	○	○
30	○	○	○
35	○	○	○
45	○	○	○
55	○	○	○
65	○	○	○
85(1)	○	○	○

Note(1) : Customised item.
Remark : The mark ▭ indicates that it is also applicable to interchangeable specification.

10 Interchangeable code

Interchangeable	: S1	Specify this code for the interchangeable specification products. Assemble track rails and slide units with the same interchangeable code. For applicable models and sizes, see Table 1.1 and 1.2.
	: S2	
Non-interchangeable	: No symbol	

11 Special specification

/A, /BS, /D, /E, /F, /I, /J○, /L○, /LF○, /MA, /MN, /N, /PS, /Q, /RE, /T, /U, /V○, /W○, /Y○, /Z○	For applicable special specifications, see Table 7.1, 7.2, 7.3, and 7.4. When several special specifications are required, see Table 8. For details of special specifications, see page Ⅲ-17.

Table 7.1 Special specifications (Interchangeable specificaton, single slise unit)

Special specification	Supplemental code	Size											
		8	10	12	15	20	25	30	35	45	55	65	85
Stainless steel end plates(1)	/BS	×	×	×	○	○	○	○	×	×	×	×	–
Female threads for bellows(2)	/J○	×	×	×	○	○	○	○	○	○	○	○	–
No end seal	/N	○	○	○	○	○	○	○	○	○	○	○	–
C-Lube plates(1)	/Q	○	○	○	○	○	○	○	○	○	○	○	–
Seals for special environment(1)	/RE	×	×	×	○	○	○	○	×	×	×	×	–
Under seals	/U	○	○	○	×	×	×	×	×	×	×	×	–
Double end seals	/V○	×	×	×	○	○	○	○	○	○	○	○	–
Scrapers	/Z○	×	×	×	○	○	○	○	○	○	○	○	–

Notes(1) : Applicable to LWH series.
(2) : Not applicable to stainless steel model.

Table 7.2 Special specifications (Interchangeable specificaton, track rail)

Special specification	Supplemental code	Size											
		8	10	12	15	20	25	30	35	45	55	65	85
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○	○	○	○	○	–
Caps for rail mounting holes	/F	×	×	○	○	○	○	○	○	○	○	○	–
Female threads for bellows(1)	/J○	×	×	×	○	○	○	○	○	○	○	○	–
Black chrome surface treatment	/LR	×	×	×	○	○	○	○	○	○	○	○	–
Supplied without track rail mounting bolt	/MN	○	○	○	○	○	○	○	○	○	○	○	–
Butt-jointing interchangeable track rail	/T	×	×	×	○	○	○	○	○	○	○	○	–

Note(1) : Not applicable to stainless steel model.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 7.3 Special specifications (Interchangeable specificaton, Assembled set)

Special specification	Supplemental code	Size											
		8	10	12	15	20	25	30	35	45	55	65	85
Stainless steel end plates(1)	/BS	×	×	×	○	○	○	○	×	×	×	×	–
Opposite reference surfaces arrangement	/D	○	○	○	○	○	○	○	○	○	○	○	–
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○	○	○	○	○	–
Caps for rail mounting holes	/F	×	×	○	○	○	○	○	○	○	○	○	–
Female threads for bellows(2)	/J○	×	×	×	○	○	○	○	○	○	○	○	–
Black chrome surface treatment	/L○	×	×	×	○	○	○	○	○	○	○	○	–
Fluorine black chrome surface treatment	/LF○	×	×	×	○	○	○	○	○	○	○	○	–
With track rail mounting bolts (Applicable to set order)(3)	/MA	○	○	○	○	○	○	○	○	○	×	×	–
Supplied without track rail mounting bolt(1)	/MN	○	○	○	○	○	○	○	○	○	○	○	–
No end seal	/N	○	○	○	○	○	○	○	○	○	○	○	–
C-Lube plates(1)	/Q	○	○	○	○	○	○	○	○	○	○	○	–
Seals for special environment(1)	/RE	×	×	×	○	○	○	○	×	×	×	×	–
Butt-jointing interchangeable track rail	/T	×	×	×	○	○	○	○	○	○	○	○	–
Under seals	/U	○	○	○	×	×	×	×	×	×	×	×	–
Double end seals	/V○	×	×	×	○	○	○	○	○	○	○	○	–
Specified grease(1)	/Y○	×	×	×	○	○	○	○	○	○	○	○	–
Scrapers	/Z○	×	×	×	○	○	○	○	○	○	○	○	–

Notes(1) : Applicable to LWH series.
(2) : Not applicable to stainless steel model.
(3) : Applicable to MH series.

Table 7.4 Special specifications (non-interchangeable specification)

Special specification	Supplemental code	Size											
		8	10	12	15	20	25	30	35	45	55	65	85
Butt-jointing track rail	/A	○	○	○(1)	○	○	○	○	○	○	○	○	×
Stainless steel end plates(2)(3)	/BS	×	×	×	○	○	○	○	×	×	×	×	×
Opposite reference surfaces arrangement(3)	/D	○	○	○	○	○	○	○	○	○	○	○	×
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○	○	○	○	○	×
Caps for rail mounting holes(4)	/F	×	×	○	○	○	○	○	○	○	○	○	×
Inspection sheet	/I	○	○	○	○	○	○	○	○	○	○	○	×
Female threads for bellows(3)	/J○	×	×	×	○	○	○	○	○	○	○	○	×
Black chrome surface treatment	/L○	○(4)	○(4)	○(4)	○	○	○	○	○	○	○	○	×
Fluorine black chrome surface treatment	/LF○	×	×	×	○	○	○	○	○	○	○	○	×
With track rail mounting bolts (Applicable to set order)(6)	/MA	○	○	○	○	○	○	○	○	○	×	×	×
Supplied without track rail mounting bolt(2)(4)	/MN	○	○	○	○	○	○	○	○	○	○	○	×
No end seal(7)	/N	○	○	○	○	○	○	○	○	○	○	○	×
Rail cover plate(7)(8)	/PS	×	×	×	×	×	○	○	○	○	○	○	×
C-Lube plates(2)(3)(7)	/Q	○	○	○	○	○	○	○	○	○	○	○	×
Seals for special environment(2)(7)	/RE	×	×	×	○	○	○	○	×	×	×	×	×
Under seals	/U	○	○	○	×	×	×	×	×	×	×	×	×
Double end seals	/V○	×	×	×	○	○	○	○	○	○	○	○	×
Matched sets to be used as an assembled group(3)	/W○	○	○	○	○	○	○	○	○	○	○	○	×
Specified grease(2)	/Y○	○	○	○	○	○	○	○	○	○	○	○	×
Scrapers	/Z○	×	×	×	○	○	○	○	○	○	○	○	×

Notes(1) : Not applicable to carbon steel models.
(2) : Applicable to LWH series.
(3) : Not applicable to the side mounting type (model code : LWHY).
(4) : Not applicable to Ultra sealed track rail mounting from bottom.
(5) : Only "LR" is applicable.
(6) : Applicable to MH series.
(7) : Not applicable to Ultra sealed specification and Ultra sealed track rail mounting from bottom.
(8) : Not applicable to stainless steel model.

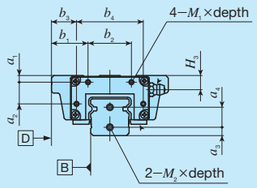
Table 8 Combination of special specifications

	A	BS	D	E	F	I	J	L	LF	MA	MN	N	PS	Q	RE	T	U	V	W	Y
BS	○																			
D	○	○																		
E	–	○	–																	
F	○	○	○	○																
I	○	○	○	○	○															
J	○	○	○	○	○	○														
L	○	○	○	○	○	○	○													
LF	○	○	○	○	○	○	○	–												
MA	○	–	○	○	○	○	○	○	○											
MN	○	○	○	○	○	○	○	○	○	–										
N	○	○	○	○	–	○	–	○	○	○	○									
PS	–	○	○	○	–	○	–	–	–	○	○	–								
Q	○	○	○	○	○	○	–	○	○	–	○	○	○							
RE	○	○	○	○	○	○	○	○	○	–	○	–	–	○						
T	–	○	○	○	○	–	–	○	○	○	○	○	–	○	○					
U	○	–	○	○	○	○	–	○	–	○	○	–	–	○	–	–				
V	○	○	○	○	○	○	●	○	○	○	○	–	○	–	○	○	–			
W	○	○	○	–	○	○	○	○	○	○	○	○	○	○	○	–	○	○		
Y	○	○	○	○	○	○	○	○	○	–	○	○	○	–	○	○	○	○	○	
Z	○	○	○	○	○	○	●	○	○	○	○	–	–	–	○	○	–	●	○	○

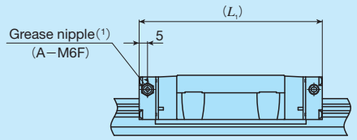
Remarks 1 : In the table, the mark "–" indicates that this combination cannot be made.
2 : The combinations marked ● are applicable to non-interchangeable specification products.
For combinations of interchangeable specification products, consult IKO for further information.
3 : When several special specifications are required, arrange the supplemental codes alphabetically.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 9.1 Female threads for bellows for flange type (Supplemental code /J, /JJ)



Flange type

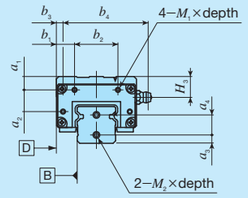


unit : mm

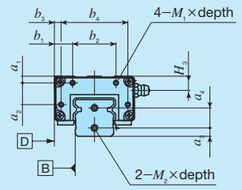
Model number		Slide unit									Track rail		
		a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(2)	H_3	a_3	a_4	M_2×depth
MH(T) 15	LWH(T) 15…B	3	7	15.5	16	9.5	28	M3× 6	83	6.5	4	8	M3× 6
–	LWH(T) 15…M								86				
MHTG 15	–								99				
MH(T) 20	LWH(T) 20…B	4	10	20.5	22	13.5	36	M3× 6	99	8.5	5	9	M4× 8
–	LWH(T) 20…M(U)								103				
MH(T)G 20	LWH(T)G 20								128				
MH(T) 25	LWH(T) 25…B	4	13	22	26	15	40	M3× 6	110	8.5	5	12	M4× 8
–	LWH(T) 25…M(U)								115				
MH(T)G 25	LWH(T)G 25								133				
MH(T) 30	LWH(T) 30…B	5	17	28	34	20	50	M3× 6	128	11	6	14	M4× 8
–	LWH(T) 30…M(U)								133				
MH(T)G 30	LWH(T)G 30								154				
MHTL 30	–								200				
MH(T) 35	LWH(T) 35…B	6	20	30	40	20	60	M3× 6	137	13	7	15	M4× 8
–	LWH(T) 35…M(U)								143				
MH(T)G 35	LWH(T)G 35								165				
MHTL 35	–								213				
MH(T) 45	LWH(T) 45…B	7	26	35	50	23	74	M4× 8	160	15	8	19	M5×10
–	LWH(T) 45…M(U)								167				
MH(T)G 45	LWH(T)G 45								203				
MHTL 45	–								251				
–	LWH(T) 55…B	7	32	40	60	27	86	M4× 8	196	17	8	25	M5×10
–	LWH(T)G 55								248				
–	LWH(T) 65…B	10	46	50	70	32	106	M5×10	240	20	10	28	M6×12
–	LWH(T)G 65								314				

Notes(1) : The specification and mounting positions of grease nipple are different from those of the standard specification product. Size 15 models are provided with a special specification grease nipple (NPB2 type). For detail of dimensions, consult IKO for further information.
(2) : The values are for the slide unit with female threads for bellows at both ends.
Remark : Also applicable to stainless models.

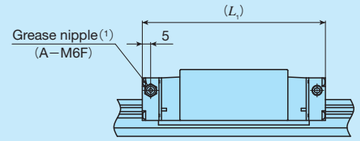
Table 9.2 Female threads for bellows for block type (Supplemental code /J, /JJ)



Block type



Compact block type



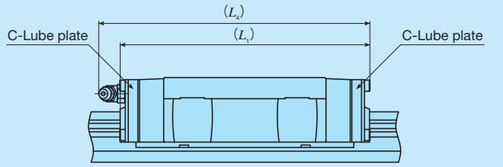
unit : mm

Model number		Slide unit									Track rail		
		a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(2)	H_3	a_3	a_4	M_2×depth
MHD 15	LWHD 15…B	7	7	9	16	3	28	M3× 6	83	10.5	4	8	M3× 6
–	LWHD 15…M								86				
MHS 15	LWHS 15…B	3	7	9	16	3	28	M3× 6	83	6.5	4	8	M3× 6
–	LWHS 15…M(U)								86				
MHSG 15	–								99				
MHS 20	LWHS 20…B	4	10	11	22	4	36	M3× 6	99	8.5	5	9	M4× 8
–	LWHS 20…M(U)								103				
MHSG 20	LWHSG 20								128				
MHD 25	LWHD 25…B	8	13	11	26	4	40	M3× 6	110	12.5	5	12	M4× 8
–	LWHD 25…M(U)								115				
MHDG 25	LWHDG 25								133				
MHS 25	LWHS 25…B	4	13	11	26	4	40	M3× 6	110	8.5	5	12	M4× 8
–	LWHS 25…M(U)								115				
MHSG 25	LWHSG 25								133				
MHD 30	LWHD 30…B	8	17	13	34	5	50	M3× 6	128	14	6	14	M4× 8
–	LWHD 30…M(U)								133				
MHDG 30	LWHDG 30								154				
MHDL 30	–								200				
MHS 30	LWHS 30…B	5	17	13	34	5	50	M3× 6	128	11	6	14	M4× 8
–	LWHS 30…M(U)								133				
MHSG 30	LWHSG 30								154				
MHD 35	LWHD 35…B	13	20	15	40	5	60	M3× 6	137	20	7	15	M4× 8
–	LWHD 35…M(U)								143				
MHDG 35	LWHDG 35								165				
MHDL 35	–								213				
MHD 45	LWHD 45…B	17	26	18	50	6	74	M4× 8	160	25	8	19	M5×10
–	LWHD 45…M(U)								167				
MHDG 45	LWHDG 45								203				
MHDL 45	–								251				
–	LWHD 55…B	17	32	20	60	7	86	M4× 8	196	27	8	25	M5×10
–	LWHDG 55								248				
–	LWHD 65…B	10	46	28	70	10	106	M5×10	240	20	10	28	M6×12
–	LWHDG 65								314				

Notes(1) : The specification and mounting positions of grease nipple are different from those of the standard specification product. Size 15 models are provided with a special specification grease nipple (NPB2 type). For details of dimensions, consult IKO for further information.
(2) : The values are for the slide unit with female threads for bellows at both ends.
Remark : Also applicable to stainless models.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 10 Slide unit with C-Lube plates (Supplemental code /Q)

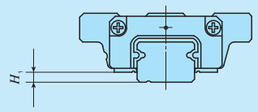


unit : mm

Model number	L_1	L_4
LWHDC 8…SL	26	–
LWHT 8…SL	32	–
LWHD 8…SL		
LWHDG 8…SL	38.5	–
LWHDC 10…SL	34	–
LWHT 10…SL	42	–
LWHD 10…SL		
LWHDG 10…SL	50	–
LWHDC 12…SL	44	48
LWHT 12	56	60
LWHD 12		
LWHDG 12…SL	68	72
LWH 15…B	75	78
LWH 20…B	92	105
LWHG 20	121	134
LWH 25…B	105	116
LWHG 25	127	139
LWH 30…B	125	135
LWHG 30	151	161
LWH 35…B	134	146
LWHG 35	162	174
LWH 45…B	160	170
LWHG 45	203	214
LWH 55…B	196	207
LWHG 55	248	258
LWH 65…B	246	253
LWHG 65	321	328

Remarks 1 : The ralves for a slide unit with C-Lube plates at both ends are shown.
2 : The above table shows representative model numbers but is applicable to all models of the same size.

Table 11 H_1 dimension of slide unit with under seals (Supplemental code /U)

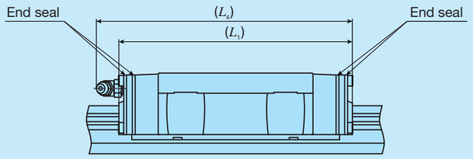


unit : mm

Size	H_1
8	1.5
10	1.8
12	3.2(1)

Note(1) : The above table shows representative model numbers but is applicable to all models of the same size.

Table 12 Slide unit with double end seals (Supplemental code /V, /VV)

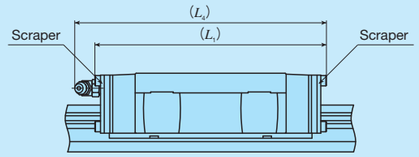


unit : mm

Model number		L_1	L_4
MH 15	LWH 15…B	72	77
–	LWH 15…M(U)	71	76
MHTG 15	–	88	93
MH 20	LWH 20…B	91	104
–	LWH 20…M(U)	90	103
MHG 20	LWHG 20	119	133
MH 25	LWH 25…B	104	116
–	LWH 25…M(U)	103	115
MHG 25	LWHG 25	127	139
MH 30	LWH 30…B	122	134
–	LWH 30…M(U)	121	
MHG 30	LWHG 30	148	160
MHL 30	–	194	206
MH 35	LWH 35…B	133	146
–	LWH 35…M(U)		
MHG 35	LWHG 35	161	173
MHL 35	–	209	222
MH 45	LWH 45…B	159	170
–	LWH 45…M(U)	158	
MHG 45	LWHG 45	202	213
MHL 45	–	251	261
–	LWH 55…B	195	206
–	LWHG 55	247	258
–	LWH 65…B	241	251
–	LWHG 65	316	325

Remarks 1 : The values are for the slide unit with double end seals at both ends.
2 : The above table shows representative model numbers but is applicable to all models of the same size.

Table 13 Slide unit with scrapers (Supplemental code /ZZ)



unit : mm

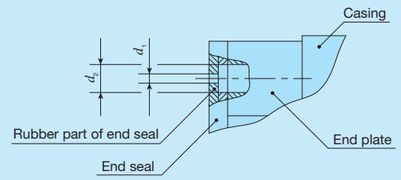
Model number		L_1	L_4
MH 15	LWH 15…B	73	75
–	LWH 15…M(U)	72	74
MHTG 15	–	89	91
MH 20	LWH 20…B	91	104
–	LWH 20…M(U)	90	100
MHG 20	LWHG 20	119	133
MH 25	LWH 25…B	104	116
–	LWH 25…M(U)	103	112
MHG 25	LWHG 25	126	138
MH 30	LWH 30…B	124	135
–	LWH 30…M(U)	123	131
MHG 30	LWHG 30	150	161
MHL 30	–	196	206
MH 35	LWH 35…B	133	146
–	LWH 35…M(U)		
MHG 35	LWHG 35	161	174
MHL 35	–	209	222
MH 45	LWH 45…B	160	170
–	LWH 45…M(U)	159	
MHG 45	LWHG 45	203	214
MHL 45	–	251	262
–	LWH 55…B	196	207
–	LWHG 55	248	258
–	LWH 65…B	242	251
–	LWHG 65	317	326

Remarks 1 : The total lengths of slide unit with scrapers at both ends are shown.
2 : The table shows representative model numbers but is applicable to all models of the same size.

Lubrication

Lithium-soap base grease (ALVANIA grease EP 2 : SHELL, and Multemp PS No.2:Kyodo for Size 8 to 12) is pre-packed in MH and LWH series slide units. In MH, C-Lube (Capillary sleeve) a component part is built in the ball recirculation path, thereby extending the re-lubrication (greasing) interval time and reducing maintenance work for a long period. MH and LWH series are provided with grease nipple or oil hole shown in Table 15. Supply nozzles or grease injectors fit to each shapes of grease nipple and oil holes are also available. For these parts for lubrication, refer to Table 14 and Table 15.1 on page Ⅲ-22 and Table 16 on page Ⅲ-23, and consult IKO for further information.

Table 14 Oil hole



unit : mm

Size	d_1	d_2
8	0.5	1.5
10		

Table 15 Parts for lubrication

Size	Grease nipple type(1)	Applicable supply nozzle type	Nominal size of female threads for piping
8	Oil hole	Mini-grease injector	–
10			
12	A-M3	A-5120V A-5240V B-5120V B-5240V	–
15	A-M4		M4
20	B-M6	Grease gun available on the market	M6
25			
30			
35	JIS type 4		PT1/8
45			
55			
65			
85(2)			

Notes(1) : In grease nipple specification please see Table 15.1 and 15.2 on page Ⅲ-22.
(2) : Customised item.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Dust Protection

The MH and LWH series of slide units are equipped with end seals as standard for protection against dust. Linear way will be used in a working environment that contains lots of dust, contaminants, or comparatively large particles such as chips and sands that may cover its track rail, IKO recommend protecting the linear motion parts against them with a bellows, protective cover or the like. Bellows to match the dimension of MH and LWH are optionally available. Please refer to page Ⅲ-25 for ordering. Track rail mounting from bottom (see Fig. 2) is also available. consult IKO if required.

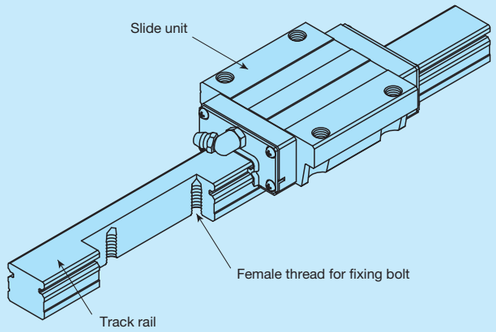


Fig. 2 Track rail mounting from bottom

Precautions for Use

①Mounting surface, reference mounting surface, and general mounting structure

To mount MH or LWH series, correctly fit the reference mounting surfaces B and D of the slide unit and the track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig. 3.)

The reference mounting surfaces B and D and mounting surfaces A and C of MH and LWH series are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.

The slide unit reference mounting surface is always the side surface opposite to the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. The track rail reference mounting surface is the side surface above the IKO mark (in the direction of the arrow). (See Fig. 4.)

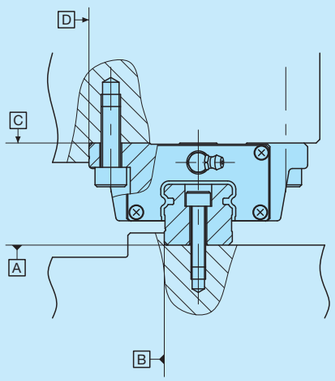


Fig. 3 Reference mounting surfaces and general mounting structure of Linear Way and Linear Roller Way

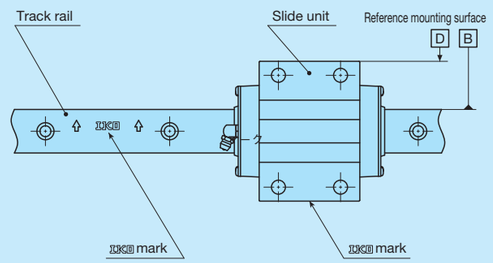


Fig. 4 Reference mounting surface

②Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surfaces as shown in Fig. 5. Tables 16 shows the recommended shoulder heights and corner radii of the mating reference mounting surfaces.

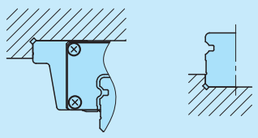
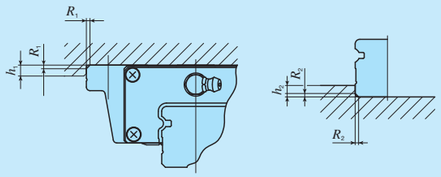


Fig. 5 Relieved fillet at the corner of the mating reference mounting surfaces

Table 16 Shoulder heights and corner of the mating reference mounting



unit : mm

Size	Slide unit		Track rail	
	Shoulder height h_1	Comer radius R_1 (max.)	Shoulder height h_2	Comer radius R_2 (max.)
8	3.5(4)(1)	0.5	1.6(2)	0.2
10	4.5(5)(1)	0.5	1.9(2)	0.2
12	6	0.5	2.7(2)	0.7
15	4	0.5	3	0.5
20	5	0.5	3	0.5
25	6	1	4	1
30	8	1	5	1
35	8	1	6	1
45	8	1.5	7	1.5
55	10	1.5	8	1.5
65	10	1.5	10	1.5

Notes(1) : In MHD and LWHD, valves in ( ) are applicable.
(2) : For models with under seals (/U), it is recommended to use h2 values 0.6mm smaller than the values in the table.

③Tightening torque of mounting bolts

The standard torque values for MH and LWH series mounting bolts are shown in Table 17. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown.

When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 17 Tightening torque of mounting bolts

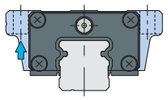
Bolt size	Tightening torque N·m		
	Carbon steel bolt		Stainless steel bolt
	Size 12	Size 15 or larger	
M 1.6×0.35	–	–	0.15
M 2 ×0.4	–	–	0.31
M 2.3×0.4	–	–	0.48
M 2.6×0.45	–	–	0.70
M 3 ×0.5	1.2	–	1.1
M 4 ×0.7	2.8	4.0	2.5
M 5 ×0.8	–	7.9	5.0
M 6 ×1	–	13.3	8.5
M 8 ×1.25	–	32.0	20.4
M10 ×1.5	–	62.7	39.7
M12 ×1.75	–	108	–
M14 ×2	–	172	–
M16 ×2	–	263	–
M20 ×2.5	–	512	–
M24 ×3	–	882	–

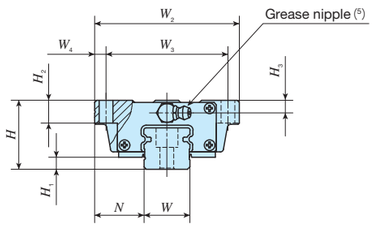
Remark : The recommended tightening torque is for strength division 8.8 for carbon steel bolts in product size 12.
In product size 15 or larger, values are based on strength division 12.9 for carbon steel bolt and property division A2-70 for stainless steel bolt.

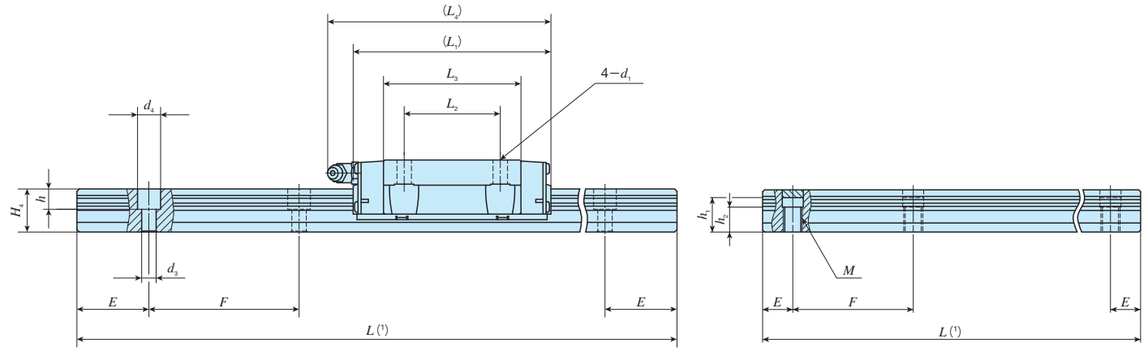
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Flange type, mounting from bottom

Shape	MH • LWH 				
Size	15	20	25	30	35
	45	55	65	85	

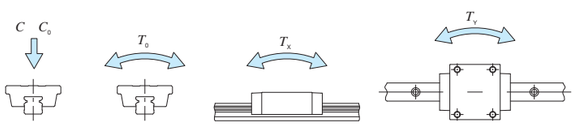




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Recommended (3) mounting bolt for track rail mm Bolt size×length	Basic (4) dynamic load rating C N	Basic (4) static load rating C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MH 15		○	0.22	1.47	24	4.5	16	47	38	4.5	66	30	44.2	69	4.5	7	4.5	15	15	4.5	8	6	–	–	–	30	60	M4×16	11 600	13 400	112	95.6 / 556	95.6 / 556
	LWH 15…B	○																															
–	LWH 15…SL	○											44.6																				
–	LWH 15…M*	–																															
–	LWH 15…MU*	–																		–	–	–	M 6	12	9			–					
MH 20		○	0.48	2.56	30	5	21.5	63	53	5	83	40	56	94	6	10	5.5	20	18	6	9.5	8.5	–	–	–	30	60	M5×18	18 100	21 100	232	195 / 1 090	195 / 1 090
	LWH 20…B	○																															
–	LWH 20…SL	○											57.2																				
–	LWH 20…M*	–																															
–	LWH 20…MU*	–																		–	–	–	M 8	13.5	9.5			–					
MHG 20		○	0.71								112		84.8	122						6	9.5	8.5	–	–	–			M5×18	24 100	31 700	349	421 / 2 140	421 / 2 140
	LWHG 20	○											86																				
MH 25		○	0.70	3.50	36	6.5	23.5	70	57	6.5	95	45	63.9	105	7	10	6.5	23	22	7	11	9	–	–	–	30	60	M6×22	25 200	28 800	362	309 / 1 690	309 / 1 690
	LWH 25…B	○																															
–	LWH 25…SL	○											64.7																				
–	LWH 25…M*	–																															
–	LWH 25…MU*	–																		–	–	–	M10	18	13			–					
MHG 25		○	0.93								118		86.6	128						7	11	9	–	–	–			M6×22	30 800	38 300	483	533 / 2 740	533 / 2 740
	LWHG 25	○											87.4																				

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, Table 2.2 on page Ⅱ-72, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : Tightning depth should not be exceeded h_1 dimension.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled set of MH and LWH…MU, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(5) : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked ＊ are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code			Model code	Sealing type	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MH	G	20	C2	R480				T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Series

MH	Flange type, mounting from bottom
LWH(…B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size

15, 20, 25

④ Number of slide unit (two slide units)

⑤ Length of track rail (480mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Material

No symbol	High carbon steel
SL	Stainless steel

⑧ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑨ Accuracy class

H	High
P	Precision
SP	Super precision

⑩ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

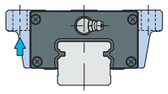
⑪ Special specification

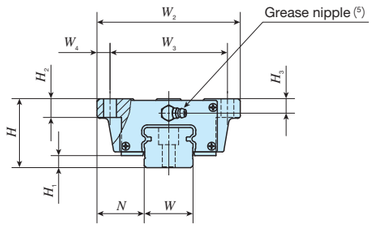
A, BS, D, E, F, I, J, L, LF, MA
MN, N, PS, Q, RE, T, V, W, Y, Z

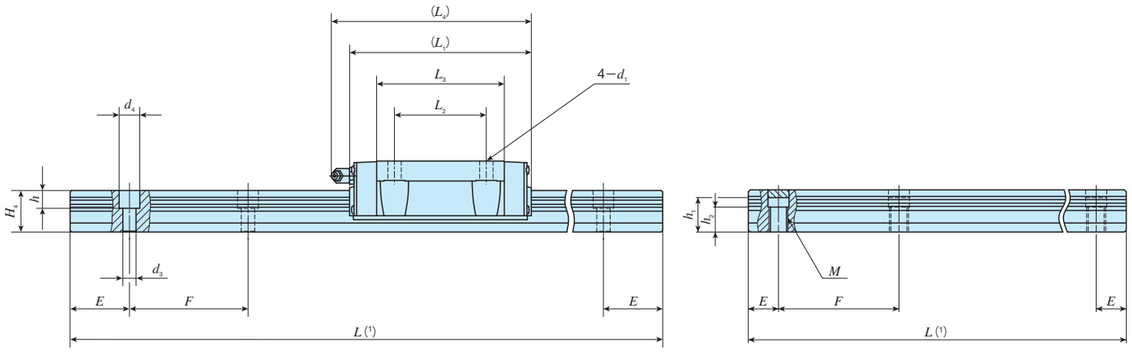
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Flange type, mounting from bottom

Shape	MH • LWH 				
Size	15	20	25	30	35
	45	55	65	85	

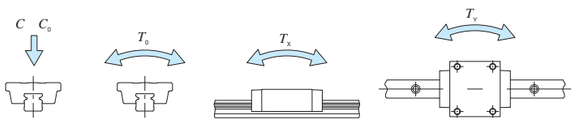




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Recommended (3) mounting bolt for track rail mm Bolt size×length	Basic (4) dynamic load rating C N	Basic (4) static load rating C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MH 30		○	1.28	4.82	42	9	31	90	72	9	113	52	80.6	123	9	10	8	28	25	9	14	12	–	–	–	40	80	M 8×28	35 400	40 700	623	536 2 820	536 2 820
	LWH 30…B	○																															
–	LWH 30…SL	○				7																											
–	LWH 30…M*	–																															
–	LWH 30…MU*	–																		–	–	–	M12	20	13			–					
MHG 30		○	1.69			9					139		106.6	149						9	14	12	–	–	–			M 8×28	42 700	53 200	814	894 4 460	894 4 460
	LWHG 30	○				7																											
MH 35		○	1.79	6.85	48	10	33	100	82	9	123	62	86.2	135	9	13	10	34	28	9	14	12	–	–	–	40	80	M 8×28	48 700	53 700	823	631 3 480	579 3 190
	LWH 35…B	○				8																											
–	LWH 35…M*	–																															
–	LWH 35…MU*	–																		–	–	–	M12	23	16			–					
MHG 35		○	2.35			10					151		114	163						9	14	12	–	–	–			M 8×28	59 500	71 600	1 100	1 090 5 570	1 000 5 110
	LWHG 35	○				8																											
MH 45		○	3.17	10.7	60	13	37.5	120	100	10	147	80	103.4	158	11	15	13	45	34	14	20	17	–	–	–	52.5	105	M12×35	74 600	80 200	1 610	1 150 6 190	1 060 5 690
	LWH 45…B	○				10																											
–	LWH 45…M*	–																															
–	LWH 45…MU*	–																		–	–	–	M16	29	17			–					
MHG 45		○	4.34			13					190		146.6	201						14	20	17	–	–	–			M12×35	95 200	114 000	2 280	2 240 11 100	2 050 10 200
	LWHG 45	○				14																											

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, Table 2.2 on page Ⅱ-72, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : Tightning depth should not be exceeded h_1 dimension.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled set of MH and LWH…MU, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(5) : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code			Model code	Sealing type	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MH	G	35	C2	R800				T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Series

MH	Flange type, mounting from bottom
LWH(…B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size
30, 35, 45

④ Number of slide unit (two slide units)

⑤ Length of track rail (800mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Material

No symbol	High carbon steel
SL	Stainless steel

⑧ Preload amount

No symbol	Standard
T_1	Light preload
T_2	Medium preload
T_3	Heavy preload

⑨ Accuracy class

H	High
P	Precision
SP	Super precision

⑩ Interchangeable code

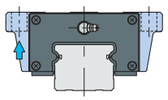
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

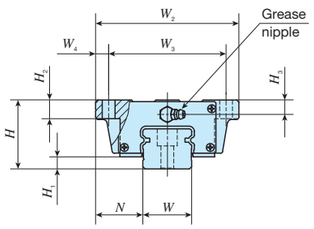
⑪ Special specification
A, BS, D, E, F, I, J, L, LF, MA
MN, N, PS, Q, RE, T, V, W, Y, Z

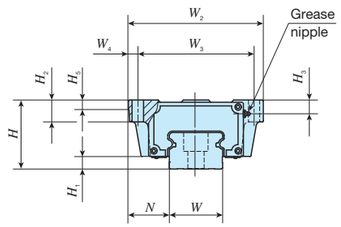
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

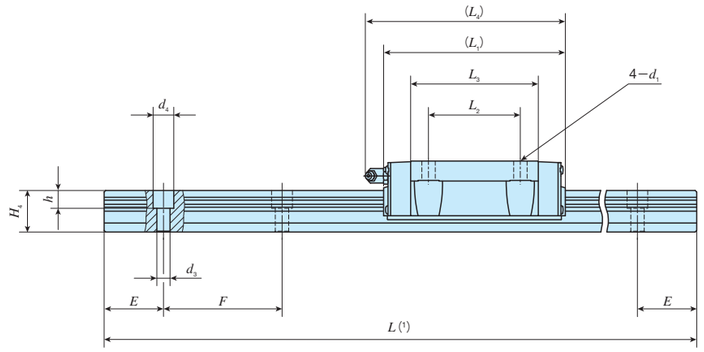
Flange type, mounting from bottom

Shape	LWH 				
Size	15	20	25	30	35
	45	55	65	85	



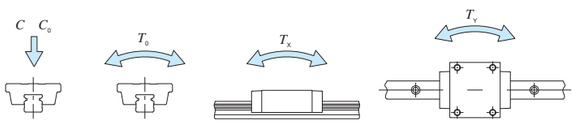


LWHG85



Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	H_2	H_3	H_5	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
–	LWH 55…B	○	5.30	15.5	70	13	43.5	140	116	12	183	95	132	194	14	17	14	–	53	41	16	23	20	60	120	M14×45	113 000	121 000	2 870	2 210 11 600	2 030 10 600
–	LWHG 55	○	7.40								235		183.6	246													142 000	168 000	3 970	4 120 20 200	3 780 18 500
–	LWH 65…B	○	12.3	22.2	90	14	53.5	170	142	14	229	110	164	239	16	23	20	–	63	48	18	26	22	75	150	M16×50	176 000	184 000	5 180	4 130 22 000	3 790 20 200
–	LWHG 65	○	17.6								303		238.8	313													229 000	269 000	7 560	8 530 41 500	7 810 38 100
–	LWHG 85 (4)	–	25.9	34.6	110	16	65	215	185	15	318	140	240	–	18	30	22	15	85	58	26	39	30	90	180	M24×60	374 000	384 000	11 900	11 100 55 100	11 100 55 300

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : Customised item.
Remark : For the specification of grease nipple, see Table 15 on page Ⅱ-82.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Preload amount	Class symbol	Interchangeable code	Supplemental code
LWH	G	55	C2	R1200		T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨

① Series

LWH(…B)	Flange type, mounting from bottom

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size

55, 65, 85

④ Number of slide unit (two slide units)

⑤ Length of track rail (1200mm)

⑥ Preload amount

No symbol	Standard
T_1	Light preload
T_2	Medium preload
T_3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑨ Special specification

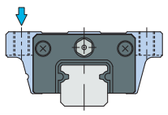
A, D, E, F, I, J, L, LF, MN
N, PS, Q, T, V, W, Y, Z

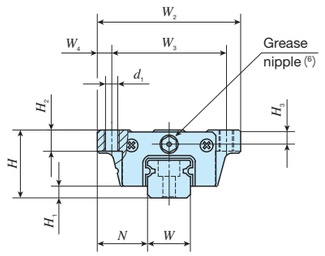
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

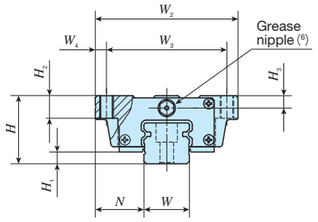
IKO C-Lube Linear Way MH

Flange type, mounting from top

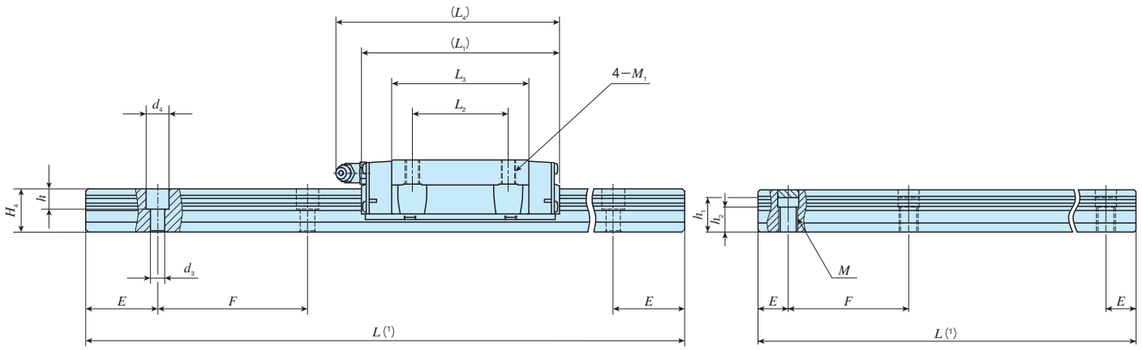
Shape	MHT • LWHT					
Size	8	10	12	15	20	25
	30	35	45	55	65	85







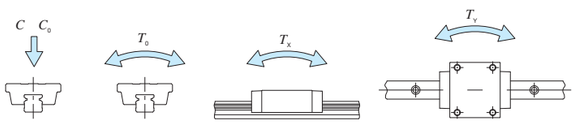
MHT 8 ···SL, LWHT 8 ···SL
MHT 10 ···SL, LWHT 10 ···SL
MHT 12 (···SL), LWHT 12 (···SL)
MHTG 15



Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H1	N	Dimension of slide unit mm W2	W3	W4	L1	L2	L3	L4	d1 (2)	M1	H2	H3	Dimension of track rail mm W	H4	d3	d4	h	M	h1 (3)	h2	E	F	Recommended (4) mounting bolt for track rail mm Bolt size×length	Basic (5) dynamic load rating C N	Basic (5) static load rating C0 N	Static moment rating (5) T0 N·m	TX N·m	TY N·m
MHT 8···SL	LWHT 8···SL	○	0.015	0.32	10	2.1	8	24	19	2.5	24	10	15.3	–	1.9	M2.3	3.5	2	8	6	2.4	4.2	2.3	–	–	–	10	20	M2× 8	1 510	2 120	8.8	5.5 32.0	4.7 26.9
MHT 10···SL		○	0.031	0.47	12	2.4	10	30	24	3	32	12	21.4	–	2.6	M3	4.5	2.5	10	7	3.5	6	3.5	–	–	–	12.5	25	M3× 8	2 640	3 700	19.2	13.3 73.8	11.1 61.9
	LWHT 10···SL	○	0.032																															
MHT 12		○	0.108	0.86	19	3.2	14	40	32	4	46	15	31.6	50	3.4	M4	6	4	12	10.5	3.5	6	4.5	–	–	–	20	40	M3×12	6 260	8 330	51.6	44.7 237	37.5 199
	LWHT 12	○	0.11																															
MHT 12···SL		○	0.108																															
	LWHT 12···SL	○	0.11																															
MHT 15		○	0.22	1.47	24	4.5	16	47	38	4.5	66	30	44.2	69	–	M5	7	4.5	15	15	4.5	8	6	–	–	–	30	60	M4×16	11 600	13 400	112	95.6 556	95.6 556
	LWHT 15···B	○											44.6																					
MHT 15···SL		○											44.2																					
	LWHT 15···SL	○											44.6																					
–	LWHT 15···M*	–																			–	–	–	M6	12	9			–					
–	LWHT 15···MU*	–																																
MHTG 15		○	0.29								82		60.1	85	4.4						4.5	8	6	–	–	–			M4×16	14 400	18 300	153	172 918	172 918

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, Table 2.2 on page Ⅱ-72, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : In sizes 8 to 12 and MHTG15, they can be also mounted from the lower side.
(3) : Tightning depth should not be exceeded h_1 dimension.
(4) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled set of MHT and LWHT···MU, track rail mounting bolt is not appended.
(5) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(6) : In sizes 8 and 10, they are provided with an oil hole. For specification, see Table 14 on page Ⅱ-82.
For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code			Model code	Sealing type	Preload amount	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHT	G	15	C2	R900				T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Series

MHT	Flange type, mounting from top
LWHT (···B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size
8, 10, 12, 15

④ Number of slide unit (two slide units)

⑤ Length of track rail (900mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Material

No symbol	High carbon steel
SL	Stainless steel

⑧ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑨ Accuracy class

H	High
P	Precision
SP	Super precision

⑩ Interchangeable code

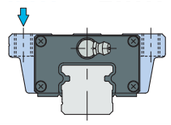
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

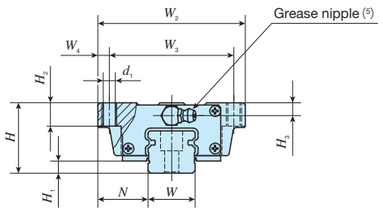
⑪ Special specification
A, BS, D, E, F, I, J, L, LF, MA
MN, N, Q, RE, T, U, V, W, Y, Z

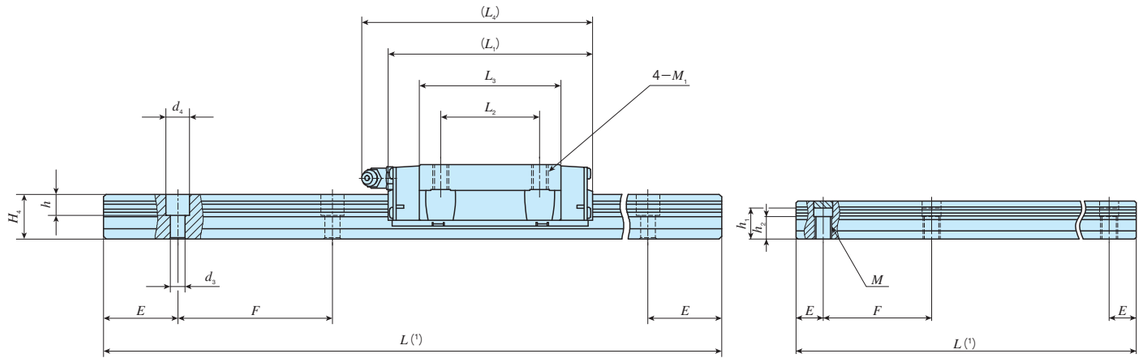
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Flange type, mounting from top

Shape	MHT • LWHT 					
Size	8	10	12	15	20	25
	30	35	45	55	65	85

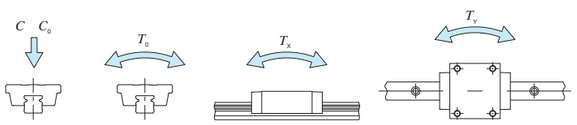




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	M_1	H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Recommended (3) mounting bolt for track rail mm Bolt size×length	Basic (4) dynamic load rating C N	Basic (4) static load rating C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MHT 20		○	0.48	2.56	30	5	21.5	63	53	5	83	40	56	94	–	M6	10	5.5	20	18	6	9.5	8.5	–	–	–	30	60	M5×18	18 100	21 100	232	195 1 090	195 1 090
	LWHT 20…B	○											57.2																					
MHT 20…SL		○											56																					
	LWHT 20…SL	○											57.2																					
–	LWHT 20…M*	–																																
–	LWHT 20…MU*	–																			–	–	–	M 8	13.5	9.5			–					
MHTG 20		○	0.71								112		84.8	122							6	9.5	8.5	–	–	–			M5×18	24 100	31 700	349	421 2 140	421 2 140
	LWHTG 20	○											86																					
MHT 25		○	0.70	3.50	36	6.5	23.5	70	57	6.5	95	45	63.9	105	–	M8	10	6.5	23	22	7	11	9	–	–	–	30	60	M6×22	25 200	28 800	362	309 1 690	309 1 690
	LWHT 25…B	○											64.7																					
MHT 25…SL		○											63.9																					
	LWHT 25…SL	○											64.7																					
–	LWHT 25…M*	–																																
–	LWHT 25…MU*	–																			–	–	–	M10	18	13			–					
MHTG 25		○	0.93								118		86.6	128							7	11	9	–	–	–			M6×22	30 800	38 300	483	533 2 740	533 2 740
	LWHTG 25	○											87.4																					

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, Table 2.2 on page Ⅱ-72, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : Tightning depth should not be exceeded h_1 dimension.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled set of MHT and LWHT…MU, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
Remarks 1. For the shape of grease nipple, see Table 15 on page Ⅱ-82.
2. Model numbers marked ＊ are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code	Model code	Sealing type	Preload amount	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHT	G	25 C2 R840				T_1	P	S1	/V
①	②	③ ④ ⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Series

MHT	Flange type, mounting from top
LWHT (…B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size

20, 25

④ Number of slide unit (two slide units)

⑤ Length of track rail (840mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Material

No symbol	High carbon steel
SL	Stainless steel

⑧ Preload amount

No symbol	Standard
T_1	Light preload
T_2	Medium preload
T_3	Heavy preload

⑨ Accuracy class

H	High
P	Precision
SP	Super precision

⑩ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

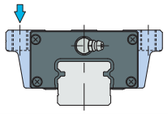
⑪ Special specification

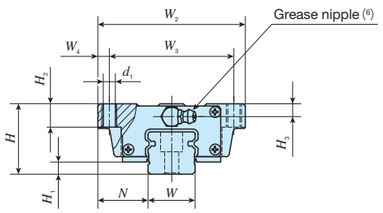
A, BS, D, E, F, I, J, L, LF, MA
MN, N, PS, Q, RE, T, V, W, Y, Z

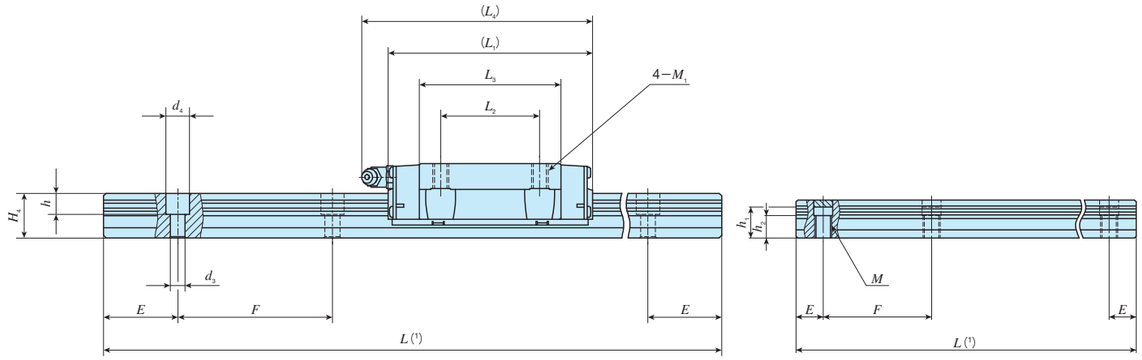
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Flange type, mounting from top

Shape	MHT • LWHT 					
Size	8	10	12	15	20	25
	30	35	45	55	65	85

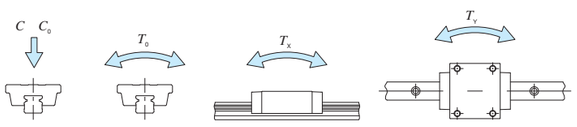




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1 (2)	M_1	H_2	H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1 (3)	h_2	E	F	Recommended (4) mounting bolt for track rail mm Bolt size×length	Basic (5) dynamic load rating C N	Basic (5) static load rating C_0 N	Static moment rating (5) T_0 N·m	T_X N·m	T_Y N·m
MHT 30		○	1.28	4.82	42	9	31	90	72	9	113	52	80.6	123	–	M10	10	8	28	25	9	14	12	–	–	–	40	80	M 8×28	35 400	40 700	623	536 / 2 820	536 / 2 820
	LWHT 30…B	○				7																												
MHT 30…SL		○				9																												
	LWHT 30…SL	○																																
–	LWHT 30…M*	–				7																												
–	LWHT 30…MU*	–																			–	–	–	M12	20	13			–					
MHTG 30		○	1.69			9					139		106.6	149							9	14	12	–	–	–			M 8×28	42 700	53 200	814	894 / 4 460	894 / 4 460
	LWHTG 30	○				7																												
MHTL 30	–	○	2.30			8					185		152.2	194	8.5															54 400	75 100	1 150	1 740 / 8 240	1 740 / 8 240
MHT 35		○	1.79	6.85	48	10	33	100	82	9	123	62	86.2	135	–	M10	13	10	34	28	9	14	12	–	–	–	40	80	M 8×28	48 700	53 700	823	631 / 3 480	579 / 3 190
	LWHT 35…B	○				8																												
–	LWHT 35…M*	–																																
–	LWHT 35…MU*	–																			–	–	–	M12	23	16			–					
MHTG 35		○	2.35			10					151		114	163							9	14	12	–	–	–			M 8×28	59 500	71 600	1 100	1 090 / 5 570	1 000 / 5 110
	LWHTG 35	○				8																												
MHTL 35	–	○	3.24			9					199		162.2	211	8.5															76 700	103 000	1 580	2 200 / 10 400	2 010 / 9 490
MHT 45		○	3.17	10.7	60	13	37.5	120	100	10	147	80	103.4	158	–	M12	15	13	45	34	14	20	17	–	–	–	52.5	105	M12×35	74 600	80 200	1 610	1 150 / 6 190	1 060 / 5 690
	LWHT 45…B	○				10																												
–	LWHT 45…M*	–																																
–	LWHT 45…MU*	–																			–	–	–	M16	29	17			–					
MHTG 45		○	4.34			13					190		146.6	201							14	20	17	–	–	–			M12×35	95 200	114 000	2 280	2 240 / 11 100	2 050 / 10 200
	LWHTG 45	○				10																												
MHTL 45	–	○	5.70			12					238		194.8	249	10.5															114 000	147 000	2 960	3 680 / 17 800	3 370 / 16 300

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, Table 2.2 on page Ⅱ-72, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : MHTL30, MHTL35, and MHTL45 can be mounted also from bottom.
(3) : Tightning depth should not be exceeded h_1 dimension.
(4) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled see of MH and LWHT…MU, track rail mounting bolt is not appended.
(5) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(6) : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code			Model code	Sealing type	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHT	G	45	C2	R1260				T1	P	S1	/V
1	2	3	4	5	1	6	7	8	9	10	11

① Series

MHT	Flange type, mounting from top
LWHT(…B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long
L	Extra High rigidity long

③ Size

30, 35, 45

④ Number of slide unit (two slide units)

⑤ Length of track rail (1260mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Material

No symbol	High carbon steel
SL	Stainless steel

⑧ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑨ Accuracy class

H	High
P	Precision
SP	Super precision

⑩ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

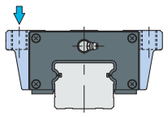
⑪ Special specification

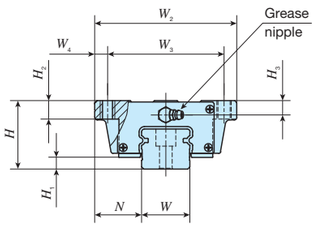
A, BS, D, E, F, I, J, L, LF, MA
MN, N, PS, Q, RE, T, V, W, Y, Z

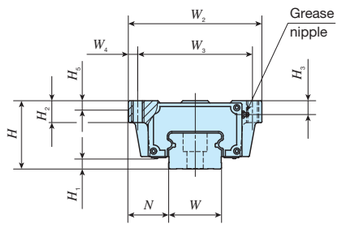
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

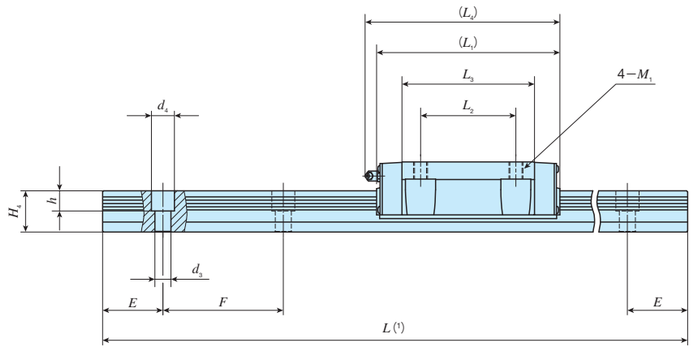
Flange type, mounting from top

Shape	LWHT 					
Size	8	10	12	15	20	25
	30	35	45	55	65	85



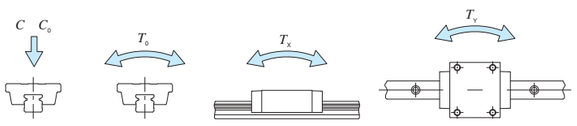


LWHTG 85



Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1	H_2	H_3	H_5	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
–	LWHT 55…B	○	5.30	15.5	70	13	43.5	140	116	12	183	95	132	194	M14	17	14	–	53	41	16	23	20	60	120	M14×45	113 000	121 000	2 870	2 210 11 600	2 030 10 600
–	LWHTG 55	○	7.40								235		183.6	246													142 000	168 000	3 970	4 120 20 200	3 780 18 500
–	LWHT 65…B	○	12.3	22.2	90	14	53.5	170	142	14	229	110	164	239	M16	23	20	–	63	48	18	26	22	75	150	M16×50	176 000	184 000	5 180	4 130 22 000	3 790 20 200
–	LWHTG 65	○	17.6								303		238.8	313													229 000	269 000	7 560	8 530 41 500	7 810 38 100
–	LWHTG 85 (4)	–	25.9	34.6	110	16	65	215	185	15	318	140	240	–	M20	35	22	15	85	58	26	39	30	90	180	M24×60	374 000	384 000	11 900	11 100 55 100	11 100 55 300

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : Customised item.
Remark : For the specification of grease nipple, see Table 15 on page Ⅱ-82.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Preload amount	Class symbol	Interchangeable code	Supplemental code
LWHT (1)	G (2)	55 (3)	C2 (4)	R1200 (5)	– (1)	T1 (6)	P (7)	S1 (8)	/V (9)

① Series

LWHT(…B)	Flange type, mounting from top

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size

55, 65, 85

④ Number of slide unit (two slide units)

⑤ Length of track rail (1200mm)

⑦ Preload amount

No symbol	Standard
T_1	Light preload
T_2	Medium preload
T_3	Heavy preload

⑧ Accuracy class

H	High
P	Precision
SP	Super precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

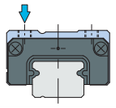
⑨ Special specification

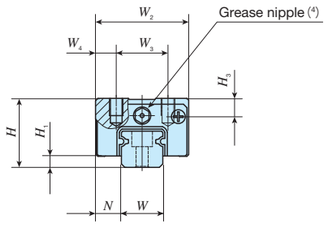
A, D, E, F, I, J, L, LF, MN
N, PS, Q, T, V, W, Y, Z

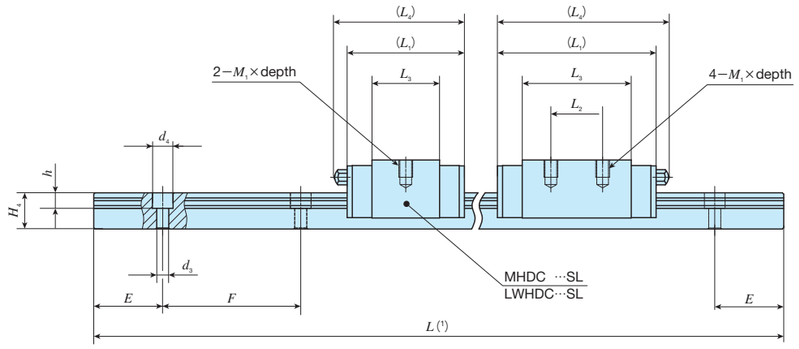
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Block type, mounting from top

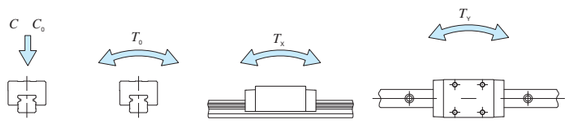
Shape	MHD • LWHD 				
Size	8	10	12	15	25
	30	35	45	55	65





Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth		H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MHDC 8···SL	LWHDC 8···SL	○	0.008	0.32	11	2.1	4	16	10	3	18	–	9.0	–	M2 ×2.5		3	8	6	2.4	4.2	2.3	10	20	M2× 8	1 050	1 270	5.3	2.2 15.5	1.8 13.0
MHD 8···SL	LWHD 8···SL	○	0.013								24	10	15.3													1 510	2 120	8.8	5.5 32.0	4.7 26.9
MHDG 8···SL	LWHDG 8···SL	○	0.018								30.5		21.7													1 910	2 970	12.3	10.4 55.4	8.8 46.4
MHDC 10···SL	LWHDC 10···SL	○	0.018	0.47	13	2.4	5	20	13	3.5	24	–	13.4	–	M2.6×3		3.5	10	7	3.5	6	3.5	12.5	25	M3× 8	1 920	2 350	12.2	5.8 37.1	4.8 31.2
MHD 10···SL		○	0.026								32	12	21.4													2 640	3 700	19.2	13.3 73.8	11.1 61.9
	LWHD 10···SL	○	0.027																											
MHDG 10···SL		○	0.035								40		29.4													3 280	5 050	26.2	23.8 123	20.0 103
	LWHDG 10···SL	○	0.036																											
MHDC 12···SL		○	0.057	0.86	20	3.2	7.5	27	15	6	34	–	19.6	38	M4 ×5		5	12	10.5	3.5	6	4.5	20	40	M3×12	4 560	5 300	32.8	19.4 117	16.3 98.5
	LWHDC 12···SL	○	0.058																											
MHD 12		○	0.089								46	15	31.6	50												6 260	8 330	51.6	44.7 237	37.5 199
	LWHD 12	○	0.091																											
MHD 12···SL		○	0.089																											
	LWHD 12···SL	○	0.091																											
MHDG 12···SL		○	0.115								58		43.6	62												7 780	11 400	70.4	80.4 399	67.5 335
	LWHDG 12···SL	○	0.118																											

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, and Table 2.2 on page Ⅱ-72.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled set of MHD, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : In sizes 8 and 10, they are provided with an oil hole. For specification, see Table 14 on page Ⅱ-82.
For the shape of grease nipple, see Table 15 on page Ⅱ-82.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHD G	12	C2	R320		T1	P	S1	/V
① ②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Series	
MHD	Block type, mounting from top
LWHD	

② Length of slide unit	
C	Short
No symbol	Standard
G	High rigidity long

③ Size
8, 10, 12

④ Number of slide unit (two slide units)

⑤ Length of track rail (320mm)

⑥ Material	
No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount	
T_0	Clearance
No symbol	Standard
T_1	Light preload
T_2	Medium preload
T_3	Heavy preload

⑧ Accuracy class	
H	High
P	Precision
SP	Super precision

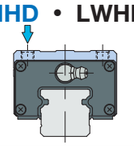
⑨ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

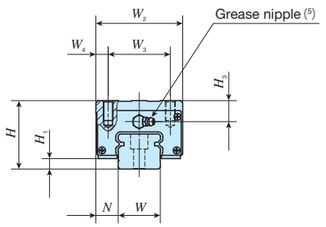
⑩ Special specification
A, D, E, F, I, LR, MA MN, N, Q, U, W, Y

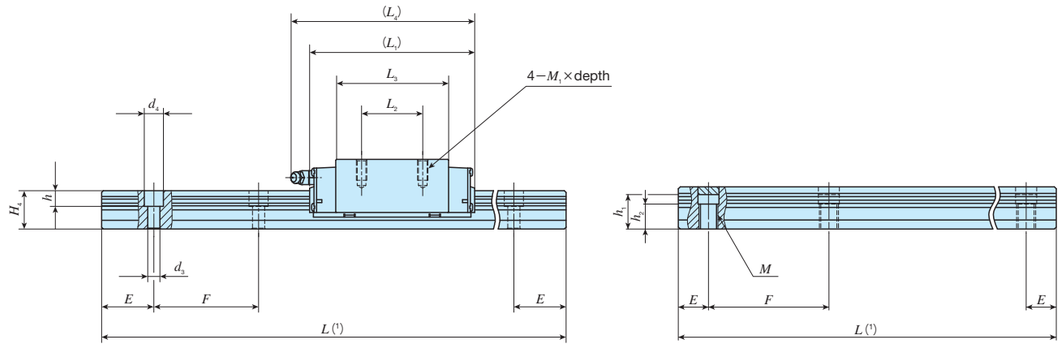
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Block type, mounting from top

Shape	MHD • LWHD 				
Size	8	10	12	15	25
	30	35	45	55	65

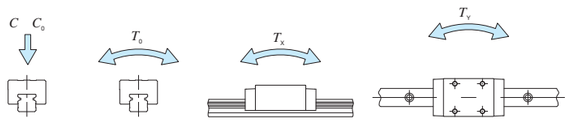




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth		H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Recommended (3) mounting bolt for track rail mm Bolt size×length	Basic (4) dynamic load rating C N	Basic (4) static load rating C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MHD 15		○	0.23	1.47	28	4.5	9.5	34	26	4	66	26	44.2	69	M4×10		8.5	15	15	4.5	8	6	–	–	–	30	60	M4×16	11 600	13 400	112	95.6 / 556	95.6 / 556
	LWHD 15…B	○											44.6																				
–	LWHD 15…M*	–																		–	–	–	M 6	12	9			–					
–	LWHD 15…MU*	–																															
MHD 25		○	0.65	3.50	40	6.5	12.5	48	35	6.5	95	35	63.9	105	M6×12		10.5	23	22	7	11	9	–	–	–	30	60	M6×22	25 200	28 800	362	309 / 1 690	309 / 1 690
	LWHD 25…B	○											64.7																				
–	LWHD 25…M*	–																		–	–	–	M10	18	13			–					
–	LWHD 25…MU*	–																															
MHDG 25		○	0.80								118	50	86.6	128						7	11	9	–	–	–			M6×22	30 800	38 300	483	533 / 2 740	533 / 2 740
	LWHDG 25	○											87.4																				
MHD 30		○	1.12	4.82	45	9	16	60	40	10	113	40	80.6	123	M8×16		11	28	25	9	14	12	–	–	–	40	80	M8×28	35 400	40 700	623	536 / 2 820	536 / 2 820
	LWHD 30…B	○				7																											
–	LWHD 30…M*	–																		–	–	–	M12	20	13			–					
–	LWHD 30…MU*	–																															
MHDG 30		○	1.44			9					139	60	106.6	149						9	14	12	–	–	–			M8×28	42 700	53 200	814	894 / 4 460	894 / 4 460
	LWHDG 30	○				7																											
MHDL 30	–	○	1.92			8					185		152.2	194															54 400	75 100	1 150	1 740 / 8 240	1 740 / 8 240

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : Tightning depth should not be exceeded h_1 dimension.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
In an assembled set of MHD and LWHD…MU, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(5) : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Sealing type	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHD	G	25	C2	R840			T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series

MHD	Block type, mounting from top
LWHD(…B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long
L	Extra High rigidity long

③ Size

15, 25, 30

④ Number of slide unit (two slide units)

⑤ Length of track rail (840mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑧ Accuracy class

H	High
P	Precision
SP	Super precision

⑨ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

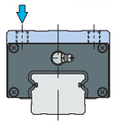
⑩ Special specification

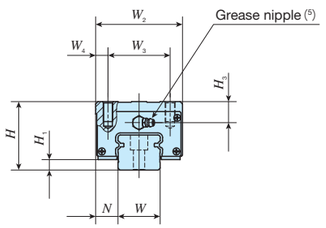
A, BS, D, E, F, I, J, L, LF, MA
MN, N, PS, Q, RE, T, V, W, Y, Z

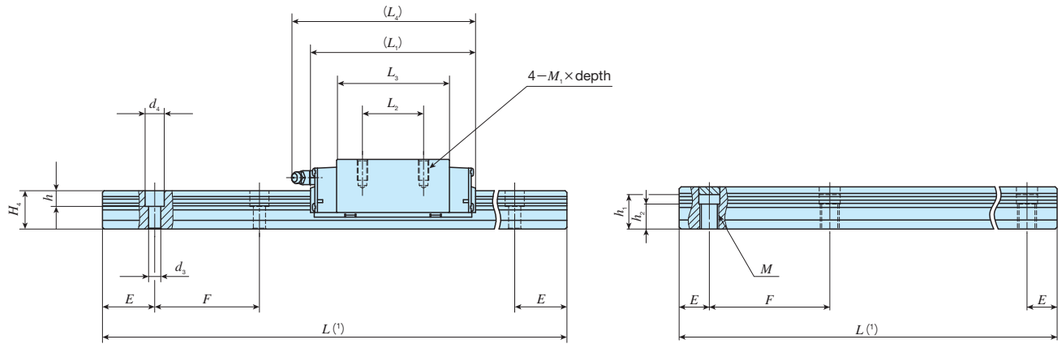
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Block type, mounting from top

Shape	MHD • LWHD 				
Size	8	10	12	15	25
	30	35	45	55	65

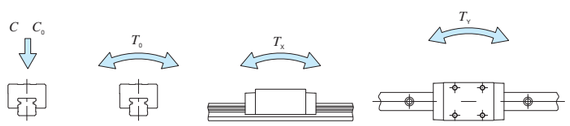




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth		H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Recommended (3) mounting bolt for track rail mm Bolt size×length	Basic (4) dynamic load rating C N	Basic (4) static load rating C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MHD 35	LWHD 35…B	○	1.74	6.85	55	10	18	70	50	10	123	50	86.2	135	M 8×16		17	34	28	9	14	12	–	–	–	40	80	M 8×28	48 700	53 700	823	631 3 480	579 3 190
–	LWHD 35…M*	–				8																											
–	LWHD 35…MU*	–																		–	–	–	M12	23	16			–					
MHDG 35		○	2.26			10					151	72	114	163						9	14	12	–	–	–			M 8×28	59 500	71 600	1 100	1 090 5 570	1 000 5 110
	LWHDG 35	○				8																											
MHDL 35	–	○	3.08			9					199		162.2	211															76 700	103 000	1 580	2 200 10 400	2 010 9 490
MHD 45		○	3.30	10.7	70	13	20.5	86	60	13	147	60	103.4	158	M10×20		23	45	34	14	20	17	–	–	–	52.5	105	M12×35	74 600	80 200	1 610	1 150 6 190	1 060 5 690
	LWHD 45…B	○				10																											
–	LWHD 45…M*	–																															
–	LWHD 45…MU*	–																		–	–	–	M16	29	17			–					
MHDG 45		○	4.57			13					190	80	146.6	201						14	20	17	–	–	–			M12×35	95 200	114 000	2 280	2 240 11 100	2 050 10 200
	LWHDG 45	○				14																											
MHDL 45	–	○	5.85			12					238		194.8	249															114 000	147 000	2 960	3 680 17 800	3 370 16 300
–	LWHD 55…B	○	5.36	15.5	80	13	23.5	100	75	12.5	183	75	132	194	M12×25		24	53	41	16	23	20	–	–	–	60	120	M14×45	113 000	121 000	2 870	2 210 11 600	2 030 10 600
–	LWHDG 55	○	7.20								235	95	183.6	246															142 000	168 000	3 970	4 120 20 200	3 780 18 500
–	LWHD 65…B	○	9.80	22.2	90	14	31.5	126	76	25	229	70	164	239	M16×30		20	63	48	18	26	22	–	–	–	75	150	M16×50	176 000	184 000	5 180	4 130 22 000	3 790 20 200
–	LWHDG 65	○	14.3								303	120	238.8	313															229 000	269 000	7 560	8 530 41 500	7 810 38 100

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : Tightning depth should not be exceeded h_1 dimension.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
In an assembled set of MHD and LWHD…MU, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(5) : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code		Model code	Sealing type	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHD	G	45	C2	R1260		T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Series	
MHD	Block type, mounting from top
LWHD (…B)	

② Length of slide unit	
No symbol	Standard
G	High rigidity long
L	Extra High rigidity long

③ Size
35, 45, 55, 65

⑤ Length of track rail (1260mm)
④ Number of slide unit (two slide units)

⑥ Sealing specification	
No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Preload amount	
No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑧ Accuracy class	
H	High
P	Precision
SP	Super precision

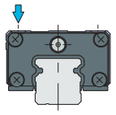
⑨ Interchangeable code	
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

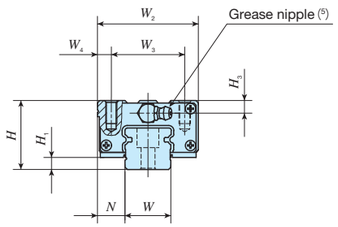
⑩ Special specification
A, D, E, F, I, J, L, LF, MA MN, N, PS, Q, T, V, W, Y, Z

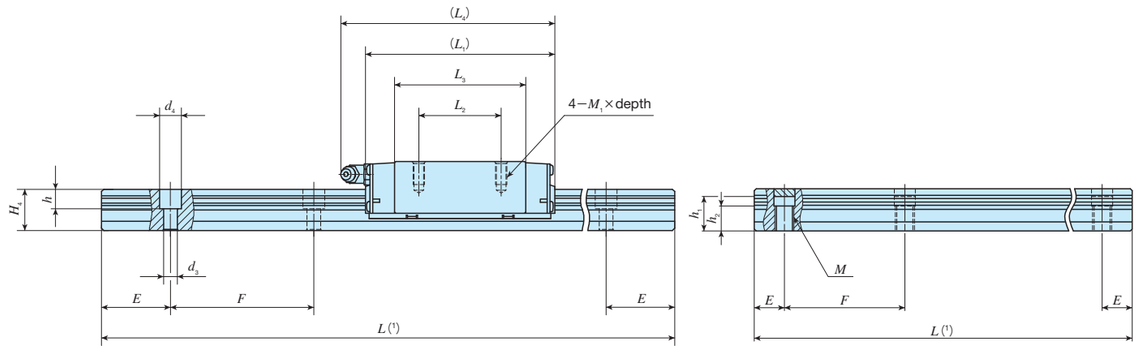
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Compact block type, mounting from top

Shape	MHS • LWHS 			
Size	15	20	25	30

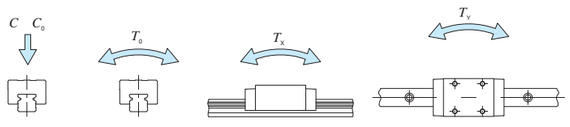




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	$M_1\times$depth		H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Recommended (3) mounting bolt for track rail mm Bolt size×length	Basic (4) dynamic load rating C N	Basic (4) static load rating C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MHS 15		○	0.18	1.47	24	4.5	9.5	34	26	4	66	26	44.2	69	M4× 8		4.5	15	15	4.5	8	6	–	–	–	30	60	M4×16	11 600	13 400	112	95.6 556	95.6 556
	LWHS 15…B	○											44.6																				
MHS 15…SL		○											44.2																				
	LWHS 15…SL	○											44.6																				
–	LWHS 15…M*	–																		–	–	–	M6	12	9			–					
–	LWHS 15…MU*	–																															
MHSG 15		○	0.25								82		60.1	85						4.5	8	6	–	–	–			M4×16	14 400	18 300	153	172 918	172 918
MHS 20		○	0.36	2.56	30	5	12	44	32	6	83	36	56	94	M5×10		5.5	20	18	6	9.5	8.5	–	–	–	30	60	M5×18	18 100	21 100	232	195 1 090	195 1 090
	LWHS 20…B	○											57.2																				
MHS 20…SL		○											56																				
	LWHS 20…SL	○											57.2																				
–	LWHS 20…M*	–																															
–	LWHS 20…MU*	–																		–	–	–	M8	13.5	9.5			–					
MHSG 20		○	0.53								112	50	84.8	122						6	9.5	8.5	–	–	–			M5×18	24 100	31 700	349	421 2 140	421 2 140
	LWHSG 20	○											86																				

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, Table 2.2 on page Ⅱ-72, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : Tightning depth should not be exceeded h_1 dimension.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled set of MHS and LWHS…MU, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(5) : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked ＊ are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code			Model code	Sealing type	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHS	G	20	C2	R480				T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Series

MHS	Compact block type, mounting from top
LWHS (…B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size

15, 20

④ Number of slide unit (two slide units)

⑤ Length of track rail (480mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Material

No symbol	High carbon steel
SL	Stainless steel

⑧ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑨ Accuracy class

H	High
P	Precision
SP	Super precision

⑩ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

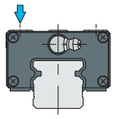
⑪ Special specification

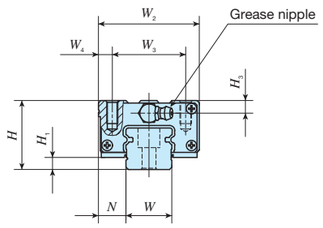
A, BS, D, E, F, I, J, L, LF, MA
MN, N, Q, RE, T, V, W, Y, Z

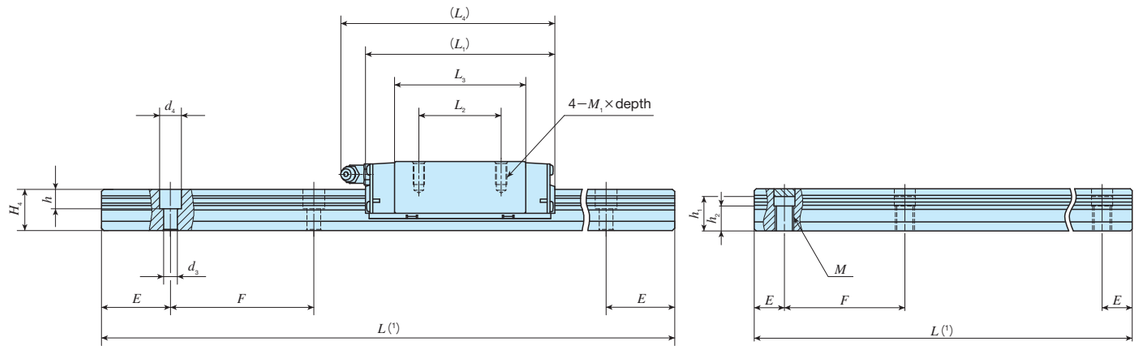
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

Compact block type, mounting from top

Shape	MHS • LWHS 			
Size	15	20	25	30

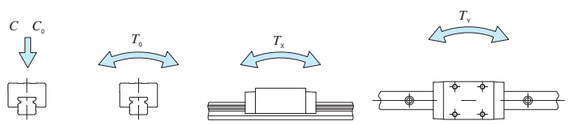




Ultra sealed track rail mounting from bottom

Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	$M_1\times$depth		H_3	Dimension of track rail mm W	H_4	d_3	d_4	h	M	h_1(2)	h_2	E	F	Recommended(3) mounting bolt for track rail mm Bolt size×length	Basic(4) dynamic load rating C N	Basic(4) static load rating C_0 N	Static moment rating(4) T_0 N·m	T_X N·m	T_Y N·m
MHS 25		○	0.55	3.50	36	6.5	12.5	48	35	6.5	95	35	63.9	105	M6×12		6.5	23	22	7	11	9	–	–	–	30	60	M6×22	25 200	28 800	362	309 1 690	309 1 690
	LWHS 25…B	○											64.7																				
MHS 25…SL		○											63.9																				
	LWHS 25…SL	○											64.7																				
–	LWHS 25…M*	–																															
–	LWHS 25…MU*	–																		–	–	–	M10	18	13			–					
MHSG 25		○	0.67								118	50	86.6	128						7	11	9	–	–	–			M6×22	30 800	38 300	483	533 2 740	533 2 740
	LWHSG 25	○											87.4																				
MHS 30		○	1.00	4.82	42	9	16	60	40	10	113	40	80.6	123	M8×16		8	28	25	9	14	12	–	–	–	40	80	M8×28	35 400	40 700	623	536 2 820	536 2 820
	LWHS 30…B	○																															
MHS 30…SL		○				7																											
	LWHS 30…SL	○				9																											
–	LWHS 30…M*	–				7																											
–	LWHS 30…MU*	–																		–	–	–	M12	20	13			–					
MHSG 30		○	1.29			9					139	60	106.6	149						9	14	12	–	–	–			M8×28	42 700	53 200	814	894 4 460	894 4 460
	LWHSG 30	○				7																											

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71, Table 2.2 on page Ⅱ-72, and Table 2.3 and 2.4 on page Ⅱ-73.
(2) : Tightning depth should not be exceeded h_1 dimension.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
For stainless steel type, stainless steel bolts are appended.
In an assembled set of MHS and LWHS…MU, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
Remarks 1 : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
2 : Model numbers marked ∗ are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code			Model code	Sealing type	Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
MHS	G	30	C2	R480				T1	P	S1	/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Series

MHS	Compact block type, mounting from top
LWHS(…B)	

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size

25, 30

④ Number of slide unit (two slide units)

⑤ Length of track rail (480mm)

⑥ Sealing specification

No symbol	Standard specification
M	Ultra sealed specification
MU	Ultra sealed track rail mounting from bottom

⑦ Material

No symbol	High carbon steel
SL	Stainless steel

⑧ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑨ Accuracy class

H	High
P	Precision
SP	Super precision

⑩ Interchangeable code

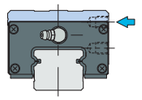
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

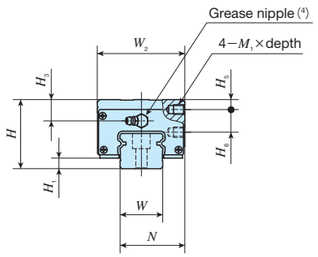
⑪ Special specification

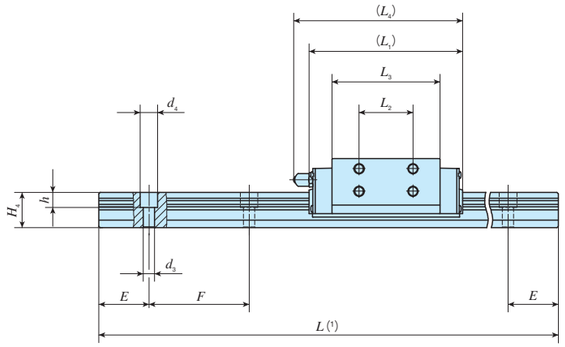
A, BS, D, E, F, I, J, L, LF, MA
MN, PS, N, Q, RE, T, V, W, Y, Z

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

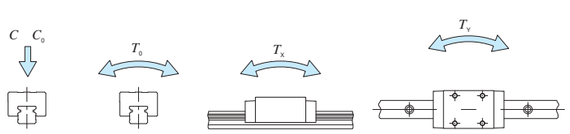
Side mounting type				
Shape	LWHY 			
Size	15	20	25	30
	35	45	55	65





Model number MH	Model number LWH (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	H_1	N	Dimension of slide unit mm W_2	L_1	L_2	L_3	L_4	M_1×depth	H_3	H_5	H_6	Dimension of track rail mm W	H_4	d_3	d_4	h	E	F	Recommended (2) mounting bolt for track rail mm Bolt size×length	Basic (3) dynamic load rating C N	Basic (3) static load rating C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
–	LWHY 15*	–	0.23	1.47	28	4.5	24.3	34	66	18	44.6	69	M 4× 4	8.5	4	9	15	15	4.5	8	6	30	60	M 4×16	9 360	13 900	116	99.2 577	99.2 577
–	LWHY 20*	–	0.36	2.56	30	5	31.5	43.7	83	25	57.2	94	M 5× 5	5.5	4	10	20	18	6	9.5	8.5	30	60	M 5×18	14 500	21 900	241	202 1 130	202 1 130
–	LWHY 25*	–	0.65	3.50	40	6.5	35	47.7	95	30	64.7	105	M 6× 6	10.5	6	12	23	22	7	11	9	30	60	M 6×22	20 100	29 800	376	320 1 750	320 1 750
–	LWHY 30*	–	1.12	4.82	45	7	43.5	59.7	113	40	80.6	123	M 6× 7	11	8	14	28	25	9	14	12	40	80	M 8×28	28 100	42 200	646	556 2 930	556 2 930
–	LWHY 35*	–	1.74	6.85	55	8	51.5	69.7	123	43	86.2	135	M 8× 9	17	8	18	34	28	9	14	12	40	80	M 8×28	31 200	43 500	878	665 3 600	601 3 310
–	LWHY 45*	–	3.30	10.7	70	10	65	85.7	147	55	103.4	158	M10×11	23	10	22	45	34	14	20	17	52.5	105	M12×35	47 600	65 000	1 720	1 200 6 420	1 100 5 900
–	LWHY 55*	–	5.36	15.5	80	13	76	99.7	183	70	132	194	M12×13	24	12	25	53	41	16	23	20	60	120	M14×45	71 200	98 300	3 050	2 300 12 000	2 110 11 000
–	LWHY 65*	–	9.80	22.2	90	14	94.5	126	229	85	164	239	M16×16	20	12	30	63	48	18	26	22	75	150	M16×50	110 000	149 000	5 510	4 280 22 800	3 930 21 000

Notes (1) : Track rail lengths L are shown in Table 2.1 on page Ⅱ-71.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X and T_Y) are shown in the sketches below.
The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.
(4) : For the shape of grease nipple, see Table 15 on page Ⅱ-82.
Remark : Model numbers marked * are semi-standard items.



Example of identification number for assembled set

Model code	Size	Part code		Preload amount	Class symbol	Supplemental code
LWHY	30	C2	R480	T1	P	/V
①	②	③	④	⑤	⑥	⑦

① Series

LWHY	Side mounting type

② Size
15, 20, 25, 30, 35, 45, 55, 65

③ Number of slide unit (two slide units)

④ Length of track rail (480mm)

⑤ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

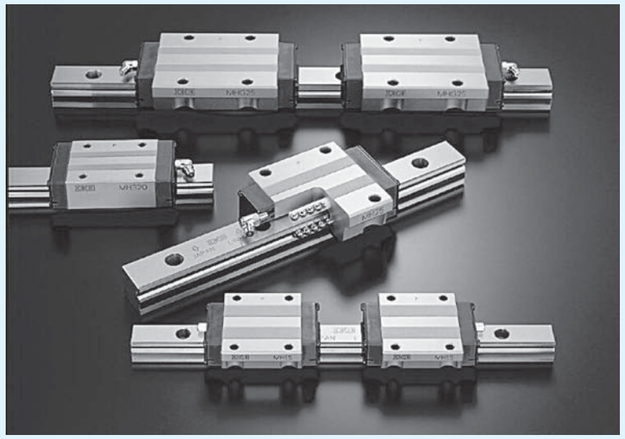
⑥ Accuracy class

H	High
P	Precision
SP	Super precision

⑦ Special specification
A, BS, D, E, F, I, J, L, LF, MA
MN, PS, N, Q, RE, T, V, W, Y, Z

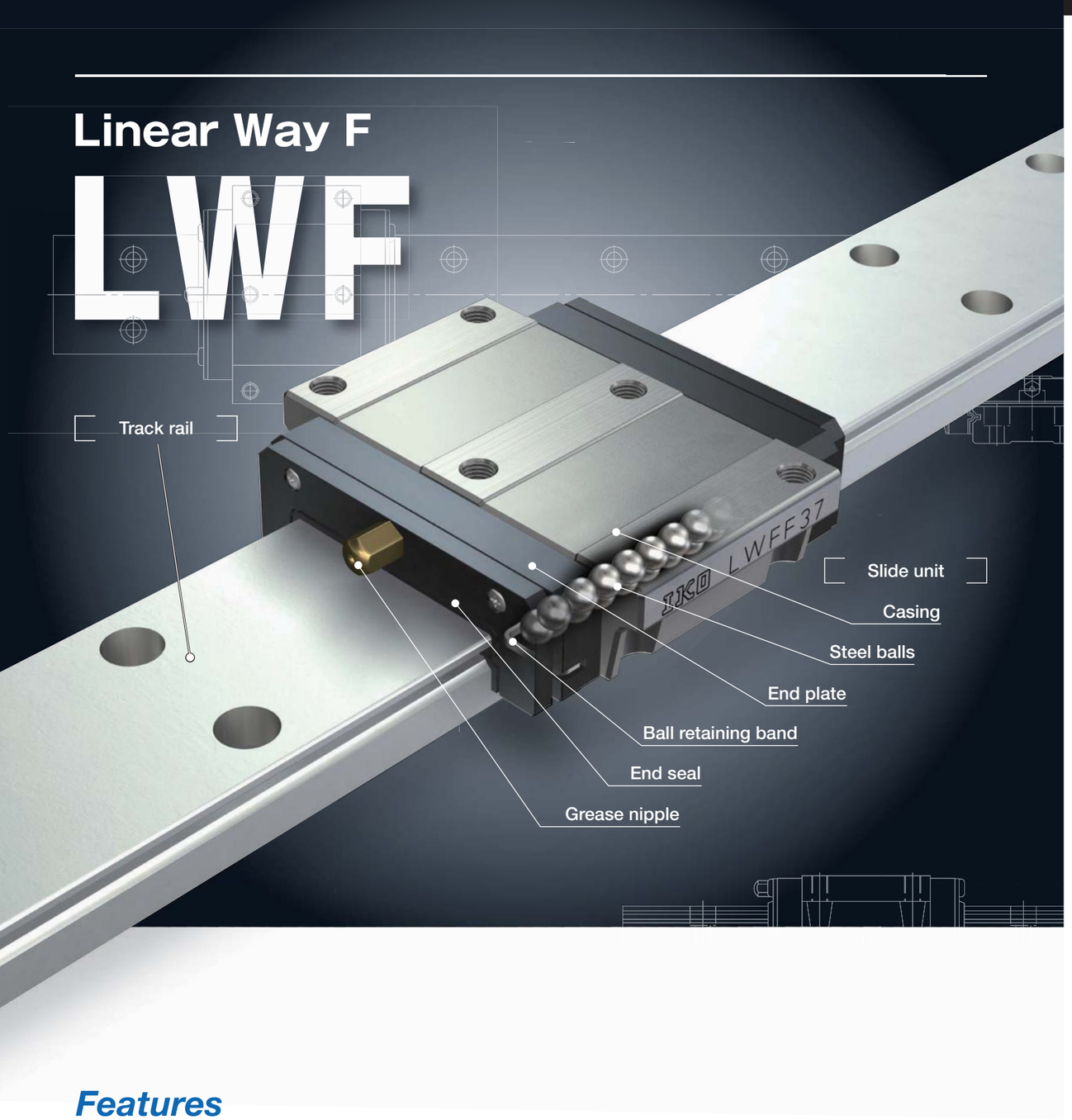
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Linear Way F



Linear Way F

LWF



Features

Wide structure

Because the distance between the load points under a moment load is large, this series has high load capacity under moment load and complex load.

Variation of slide unit shape corresponding to needs

Three types of slide units are available; two flange types of different dimension series and one block type with a narrower width. They are available for optimal products to fit for requirement of machine and equipment.

Stainless steel type is lined up

The main metal components made of corrosion resistant stainless steel are most suitable for use in cleanroom environment and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Identification number and specification

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

Interchangeable specification	1	2	3	4	5	6	7	8	9
Slide unit only	LWFF	37	C1			T_1	P	S1	/Z
Track rail only(1)	LWFF	37		R800			P	S1	/F
Assembled set	LWFF	37	C1	R800		T_1	P	S1	/FZ
Non-interchangeable specification									
Assembled set	LWFF	37	C1	R800		T_1	P		/FZ

1 Series — Model code on page Ⅱ-115

2 Size — Size on page Ⅱ-115

3 Number of slide units — Part code on page Ⅱ-115

4 Length of track rail

5 Material — Meterial code on page Ⅱ-115

6 Preload amount — Preload symbol on page Ⅱ-117

7 Accuracy class — Classifocation symbol on page Ⅱ-118

8 Interchangeable — Interchangeable code on page Ⅱ-119

9 Special specification — Supplemental code on page Ⅱ-119

Note(1) : For the model code of track rail of interchangeable specification of LWFS, indicate "LWFF".
Track rail of interchangeable LWFS ➡ Model code LWFF (Ex : LWFF37R800PS2/F)

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification —Series・Size・Number of slide units—

1 Series

Linear Way F(1) (LWF series)

Flange type mounted from top/bottom	: LWFH
	: LWFF
Block type mounted from top	: LWFS

Applicable type and size of slide unit are shown in Table 1.
For the model code of a single track rail of interchangeable specification of LWFS, indicate "LWFF".

Note(1) : Linear way without C-Lube.

2 Size

33, 37, 40, 42, 60, 69, 90

Applicable type and size of slide unit are shown in Table 1.

3 Number of slide units

: C○

For an assembled set, indicate the number of slide units assembled on one track rail. For a slide unit, only "C1" can be indicated.

4 Length of track rail

: R○

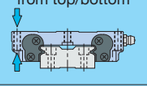
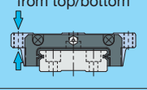
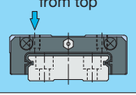
Indicate the length of track rail in mm.
For standard and maximum lengths, see "Track rail length" on page Table 2.1 and 2.2.

5 Material

High carbon steel	: No symbol
Stainless steel	: SL

Applicable type and size of slide unit are shown in Table 1.

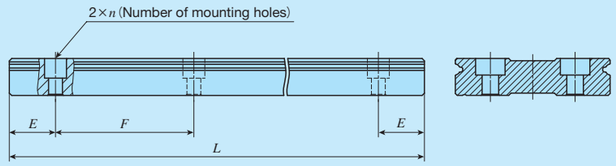
Table 1 Models and size of Linear Way F series

Material	Shape	Model code	Size 33	37	40	42	60	69	90
High carbon steel	Flange type mounting from top/bottom 	LWFH	–	–	○	–	○	–	○
	Flange type mounting from top/bottom 	LWFF	○	○	–	○	–	○	–
	Block type mounting from top	LWFS	○	○	–	–	–	–	–
Stainless steel	Block type mounting from top 	LWFS…SL	○	○	–	○	–	–	–

Remark : The mark ▭ indicates that interchangeable specification is available.

—Length of track rail・Material—

Table 2.1 Standard and maximum lengths of high carbon steel track rails



unit : mm

Item \ Model number	LWFH40	LWFH60	LWFH90
Standard length $L(n)$	180 (3) 240 (4) 360 (6) 480 (8) 660 (11) 840 (14)	240 (3) 480 (5) 640 (8) 800 (10) 1 040 (13)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)
Pitch of mounting holes F	60	80	80
E	30	40	40
Standard range of E(1) incl.	8	10	10
Standard range of E(1) under	38	50	50
Maximum length(2)	1 500	1 520	1 520

Item \ Model number	LWFF33 LWFS33	LWFF37 LWFS37	LWFF42	LWFF69
Standard length $L(n)$	120 (3) 200 (5) 320 (8) 480 (12) 560 (14)	150 (3) 250 (5) 400 (8) 500 (10) 600 (12) 800 (16)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11) 840 (14)	320 (4) 480 (6) 800 (10) 1 040 (13) 1 280 (16) 1 600 (20)
Pitch of mounting holes F	40	50	60	80
E	20	25	30	40
Standard range of E(1) incl.	7	7	7	9
Standard range of E(1) under	27	32	37	49
Maximum length(2)	1 600	2 000	1 980	2 000

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(2) : Track rails exceeding the maximum length can also be manufactured. Consult IKO for further information.
Remark : For the model code of track rail of interchangeable specification of LWFS, indicate "LWFF".

Table 2.2 Standard and maximum lengths of stainless steel track rails unit : mm

Item \ Model number	LWFS33…SL	LWFS37…SL	LWFS42…SL
Standard length $L(n)$	120 (3) 200 (5) 320 (8) 480 (12) 560 (14)	150 (3) 250 (5) 400 (8) 500 (10) 600 (12) 800 (16)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11) 840 (14)
Pitch of mounting holes F	40	50	60
E	20	25	30
Standard range of E(1) incl.	7	7	7
Standard range of E(1) under	27	32	37
Maximum length(2)	1 200	1 200	1 200

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(2) : Track rails exceeding the maximum length can also be manufactured. Consult IKO for further information.
Remark : For the model code of track rail of interchangeable specification, indicate "LWFF...SL".

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

—Preload amount—

6 Preload amount

Standard	: No symbol	Specify this item for an assembled set or a single slide unit. For applicable amount, see Table 4. For details of preload amount, see Table 3.
Light preload	: T_1	
Medium preload	: T_2	

Table 3 Preload amount

Item / Preload type	Symbol	Preload amount N	Application
Standard	(No symbol)	0 (1)	· Smooth and precise motion
Light preload	T_1	$0.02C_0$	· Minimum vibration · Load is evenly balanced. · Smooth and precise motion
Medium preload	T_2	$0.05C_0$	· Medium vibration · Medium overhung load

Note (1) : Zero or minimal amount of preload
Remark : C_0 means the basic static load rating.

Table 4 Applicable preload types

Size	Preload type (Symbol)		
	Standard (No symbol)	Light preload (T_1)	Medium preload (T_2)
33	○	○	○
37	○	○	○
40	○	○	○
42	○	○	○
60	○	○	○
69	○	○	○
90	○	○	○

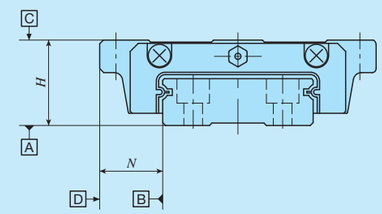
Remark : The mark ▭ indicates that it is also applicable to interchangeable specification.

—Accuracy class—

7 Accuracy class

High	: H	For applicable accuracy, see Table 5. For the interchangeable specification, combine slide units and track rails of the same class. For details of accuracy, see Table 6.
Precision	: P	
Super precision	: SP	

Table 5 Accuracy



unit : mm

Item / Classification (symbol)	High (H)	Precision (P)	Super precision (SP)
Dim. H tolerance	±0.040	±0.020	±0.010
Dim. N tolerance	±0.050	±0.025	±0.015
Dim. variation of H (1)	0.015	0.007	0.005
Dim. variation of N (1)	0.020	0.010	0.007
Dim. variation of H for multiple assembled sets (2)	0.035	0.025	–
Parallelism in operation of C to A	See Fig. 1.		
Parallelism in operation of D to B	See Fig. 1.		

Notes (1) : It means the size variation between slide units mounted on the same track rail.
(2) : Applicable to the interchangeable specification.

Table 6 Accuracy class and size

Size	Accuracy class (Symbol)		
	High (H)	Precision (P)	Super precision (SP)
33	○	○	○
37	○	○	○
40	○	○	○
42	○	○	○
60	○	○	○
69	○	○	○
90	○	○	○

Remark : The mark ▭ indicates that it is also applicable to interchangeable specification.

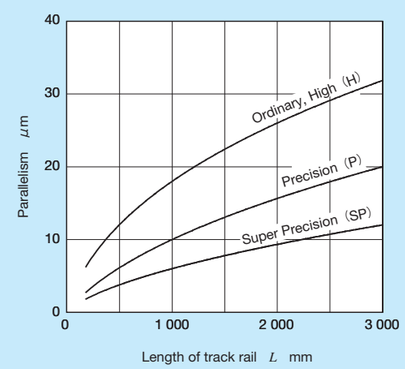


Fig. 1 Parallelism in operation

LWF

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

8 Interchangeable code

Interchangeable	: S1 : S2	Specity this code for the interchangeable specification products. Assemble track rails and slide units with the same interchangeable code.
Non-interchangeable	: No symbol	

9 Special specification

/A, /C, /D, /E, /F, /I, /J○, /L○, /LF○, /MN, /N, /Q, /U, /V○, /W○, /Y○, /Z○	For applicable special specifications, see Tables 7.1, 7.2, 7.3 and 7.4. When several special specifications are required, see Table 8. For details of special specifications, see page Ⅲ-28.

Table 7.1 Applicable specifications (Interchangeable specification, Single slide unit)

Special specification	Supplemental code	Size						
		33	37	40	42	60	69	90
Female threads for bellows(1)	/J○	○	○	○	○	○	○	○
No end seal	/N	○	○	○	○	○	○	○
C-Lube plates	/Q	○	○	○	○	○	○	○
Under seals	/U	○	○	○	○	○	○	○
Double end seals	/V○	○	○	×	○	×	○	×
Scrapers	/Z○	○	○	○	○	○	○	○

Note(1) : Not applicable to stainless steel model.

Table 7.2 Applicable specifications (Interchangeable specification, Single track rail)

Special specification	Supplemental code	Size						
		33	37	40	42	60	69	90
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○	○	○
Female threads for bellows(1)	/J○	○	○	○	○	○	○	○
Supplied without track rail mounting bolt	/MN	○	○	○	○	○	○	○

Note(1) : Not applicable to stainless steel model.

Table 7.3 Applicable specifications (Interchangeable specification, Assembled set)

Special specification	Supplemental code	Size						
		33	37	40	42	60	69	90
Opposite reference surfaces arrangement	/D	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○	○	○
Female threads for bellows(1)	/J○	○	○	○	○	○	○	○
Black chrome surface treatment	/L○	○	○	○	○	○	○	○
Fluorine black chrome surface treatment	/LF○	○	○	○	○	○	○	○
Supplied without track rail mounting bolt	/MN	○	○	○	○	○	○	○
Supplied without track rail mounting bolt	/N	○	○	○	○	○	○	○
C-Lube plates	/Q	○	○	○	○	○	○	○
Under seals	/U	○	○	○	○	○	○	○
Double end seals	/V○	○	○	×	○	×	○	×
Specified grease	/Y○	○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○	○

Note(1) : Not applicable to stainless steel model.

Table 7.4 Applicable specifications (Non Interchangeable specifications)

Special specification	Supplemental code	Size						
		33	37	40	42	60	69	90
Butt-jointing track rail	/A	○	○	○	○	○	○	○
Chamfered reference surface	/C○	×	×	○	×	○	×	○
Opposite reference surfaces arrangement	/D	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○	○	○
Inspection sheet	/I	○	○	○	○	○	○	○
Female threads for bellows	/J○	○	○	○	○	○	○	○
Black chrome surface treatment	/L○	○	○	○	○	○	○	○
Fluorine black chrome surface treatment	/LF○	○	○	○	○	○	○	○
Supplied without track rail mounting bolt	/MN	○	○	○	○	○	○	○
Supplied without track rail mounting bolt	/N	○	○	○	○	○	○	○
C-Lube plates	/Q	○	○	○	○	○	○	○
Under seals	/U	○	○	○	○	○	○	○
Double end seals	/V○	○	○	×	○	×	○	×
Matched sets to be used as an assembled group	/W○	○	○	○	○	○	○	○
Specified grease	/Y○	○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○	○

Table 8 Combination of special specifications

	A	C	D	E	F	I	J	L	LF	MN	N	Q	U	V	W	Y
C	○															
D	○	○														
E	–	○	–													
F	○	○	○	○												
I	○	○	○	○	○											
J	○	○	○	○	○	○										
L	○	○	○	○	○	○	○									
LF	○	○	○	○	○	○	○	–								
MN	○	○	○	○	○	○	○	○	○							
N	○	○	○	○	–	○	–	○	○	○						
Q	○	○	○	○	○	○	–	○	○	○	○					
U	○	○	○	○	○	○	○	○	○	○	–	○				
V	○	–	○	○	○	○	●	○	○	○	–	–	○			
W	○	○	○	–	○	○	○	○	○	○	○	○	○	○		
Y	○	○	○	○	○	○	○	○	○	○	○	–	○	○	○	
Z	○	○	○	○	○	○	●	○	○	○	–	–	○	●	○	○

Remarks 1 : In the table, the mark "—" indicates that this combination cannot be made.
2 : The combinations marked ● are applicable to non-interchangeable specification products.
For combinations of interchangeable specification products, consult IKO for further information.
3 : When several special specifications are required, arrange the supplemental codes alphabetically.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

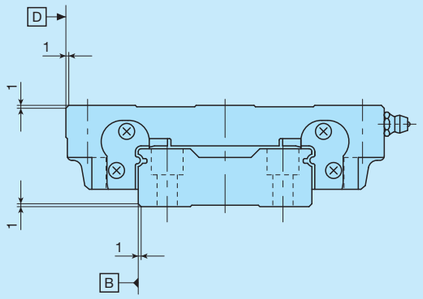
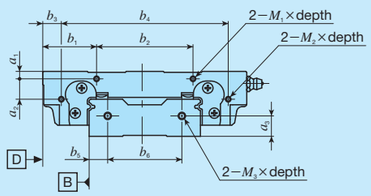


Fig. 2 Chamfers on reference surfaces (Supplemental code /C /CC)

Remarks 1 : Chamfering is additionally made at the edges of reference mounting surfaces of slide unit and track rail.
2 : For the corner radius of mating mounting parts, see Table 17.2 on page Ⅱ-126.

Table 9 Female threads for bellows for LWFH（Supplemental code Single slide unit：/J Assembled set：/J /JJ）

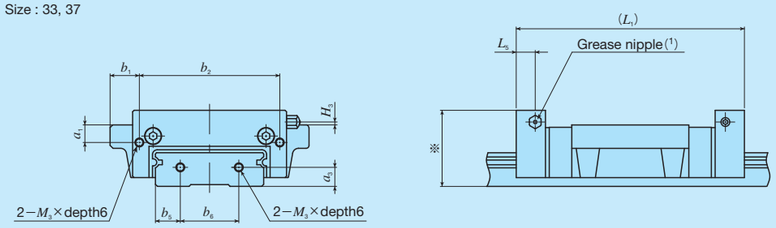


unit : mm

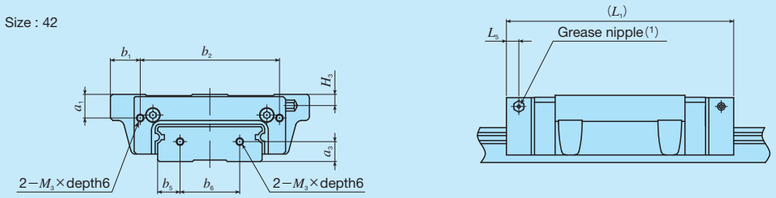
Model number	Slide unit								Track rail			
	a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	M_2×depth	a_3	a_5	a_6	M_3×depth
LWFH 40	3	–	23.5	35	–	–	M3×6	–	9	8	24	M3×6
LWFH 60	4	11	29	52	10	90	M3×6	M3×3	11	10	40	M4×8
LWFH 90	5	17	41	80	13	136	M3×5	M3×5	13	15	60	M4×8

Table 10 Female threads for bellows or LWFF and LWFS（Supplemental code Single slide unit：/J Assembled set：/J /JJ）

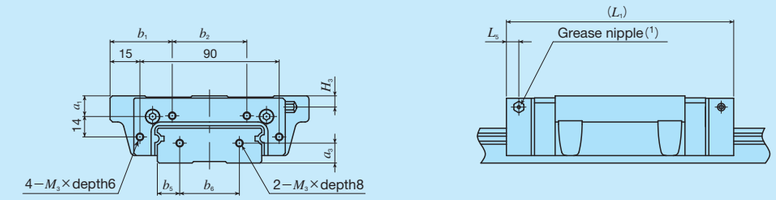
Size : 33, 37



Size : 42



Size : 69



unit : mm

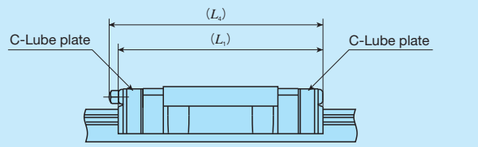
Model number	Slide unit						Track rail		
	a_1	b_1	b_2	L_1(2)	L_5	H_3	a_3	b_5	b_6
LWFF 33	4	8.25	43.5	71	5	1	6	7.5	18
LWFS 33(…SL)		3.25							
LWFF 37	6	10	48	78	5	1	6.5	8.5	20
LWFS 37(…SL)		3							
LWFF 42	9.5	12	56	92	7	4.5	8	9	24
LWFS 42…SL		3							
LWFF 69	9	35	50	125	7	5	11	14.5	40

Notes (1) : The specification and mounting position of grease nipple are different from those of the standard specification product.
For grease nipple specifications, see Table 15 on page Ⅱ-124.
(2) : The values for a slide unit with female threads for bellows at both ends are shown.
Remark : For the size 33 and 37 models, the dimension indicated by an asterisk (※) is higher than the H dimension of Linear Way F.
For details, consult IKO for further information.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

—Special specification—

Table 11 Slide unit with C-Lube plates (Supplemental code /Q)

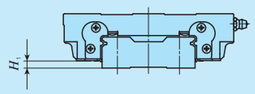


unit : mm

Size	L_1	L_4
33	64	67
37	73	75
40	78	–
42	86	99
60	98	–
69	121	133
90	131	–

Remark : The above dimensions are for slide units with double end seals at both ends.

Table 12 H_1 dimension of slide unit with under seals (Supplemental code /U)

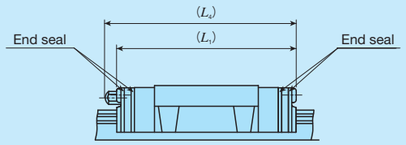


unit : mm

Size	H_1
40	3
60	4
90	5

Remark : The H_1 dimension of LWFF and LWFS is the same as that without under seals.

Table 13 LWFF and LWFS slide units with double end seals (Supplemental code Single slide unit : /V Assembled set : /V /VV)

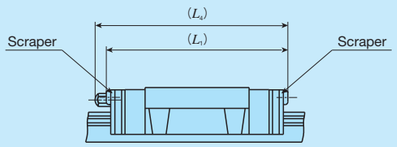


unit : mm

Size	L_1	L_4
33	61	64
37	70	74
42	82	96
69	117	130

Remark : The above dimensions are for slide units with double end seals at both ends.

Table 14 Slide units with scrapers (Supplemental code Single slide unit : /Z Assembled set : /Z /ZZ)



unit : mm

Size	L_1	L_4
33	62	64
37	71	75
40	79.2	–
42	84	97
60	99.2	–
69	119	131
90	130	–

Remark : The above values are for slide units with scrapers at both ends.

Lubrication

Lithium-soap base grease (ALVANIA grease EP 2: SHELL) is pre-packed in LWF series slide units. LWF series are provided with grease nipple shown in Table 15. Supply nozzles matching the size of grease nipple are also available. For these parts for lubrication, refer to Table 15.1 on page Ⅲ-22, and Table 16 on page Ⅲ-23 and consult IKO for further information.

Table 15 Parts for lubrication

Size	Grease nipple(1)	Applicable supply nozzle type	Nominal size of female threals for piping
33	A-M3	A-5120V A-5240V B-5120V B-5240V	–
37	A-M4		M4
40	JIS type 1	Grease gun available on the market	M6
42	B-M6		
60	JIS type 1		
69	B-M6		
90	JIS type 1		

Note(1) : In grease nipple specification please see Table 15.1 and 15.2 on page Ⅲ-22.

Dust protection

The LWF series of slide units are equipped with end seals as standard for protection against dust. If the product will be used in a working environment that contains lots of dust, contaminants, or comparatively large particles such as chips and sands that may cover its track rail, IKO recommend protecting the linear motion parts against them with a protective cover or the like. Bellows to much the dimension of LWF are optionally available. Please refer to page Ⅲ-25 for ordering.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Precautions for Use

❶Mounting surface, reference mounting surface, and general mounting structure

To mount Linear Way F, correctly fit the reference mounting surfaces B and D of the slide unit and the track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig. 3.)

The reference mounting surfaces B and D and mounting surfaces A and C of Linear Way F are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.

The slide unit reference mounting surface is always the side surface opposite to the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. The track rail reference mounting surface is the side surface above the IKO mark (in the direction of the arrow). (See Fig. 4.)

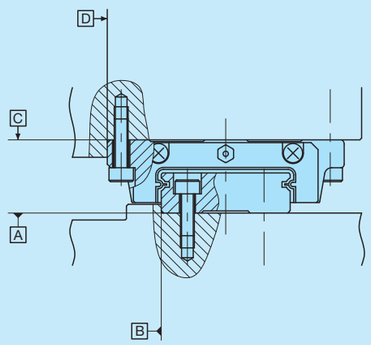


Fig. 3 Reference mounting surfaces and general mounting structure

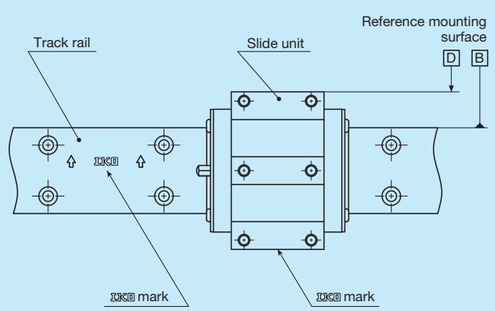


Fig. 4 Reference mounting surfaces

❷Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surfaces as shown in Fig. 5. However, in some series, corner radii R_1 and R_2 shown in Fig. 5 can also be used. Tables 17.1 and 17.2 show recommended shoulder heights and corner radii of the mating reference mounting surfaces.

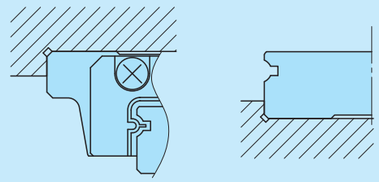


Fig. 5 Relieved fillet at the corner of the mating reference mounting surfaces

❸Tightening torque of mounting bolts

The standard torque values for Linear Way F mounting bolts are shown in Tables 16. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown.

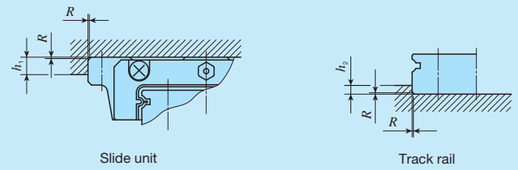
When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 16 Tightening torque of mounting bolts

Bolt size	Tightening torque N·m	
	Carbon steel bolt	Stainless steel bolt
M 3×0.5	1.7	–
M 4×0.7	4.0	2.5
M 5×0.8	7.9	5.0
M 6×1	13.3	8.5
M 8×1.25	32.0	–
M10×1.5	62.7	–

Remark : The values show recommended tightening torque for strength division 12.9 (for carbon steel bolt) and property division A2-70 (for stainless steel bolt).

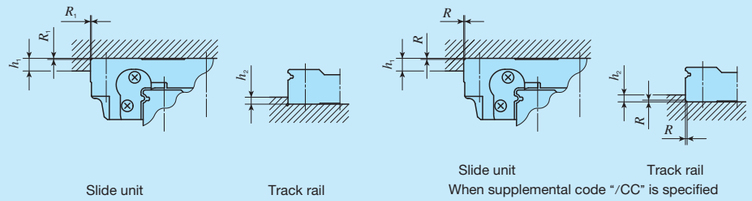
Table 17.1 Shoulder heights and corner radius of the mating reference mounting surfaces



unit : mm

Size	Slide unit		Track rail	
	Shoulder heigh h_1	Corner radius R (max.)	Shoulder heigh h_2	Corner radius R (max.)
33	4	0.4	2	0.4
37	5	0.4	2.5	0.4
42	5	0.4	2.5	0.4
69	5	0.8	3.5	0.8

Table 17.2 Shoulder heights and corner radii of the mating reference mounting surfaces



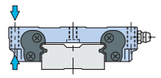
unit : mm

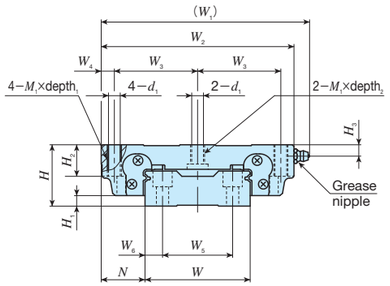
Size	Slide unit		Track rail Shoulder heigh h_2	Corner radius for "/CC" specification R (max.)
	Shoulder heigh h_1	Corner radius R (max.)		
40	4	0.3	3	1
60	6	0.5	4	1
90	8	0.5	6	1

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

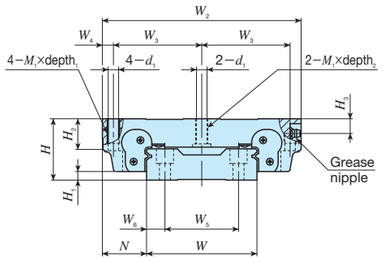
IKO Linear Way F

Flange type mounting from top/bottom

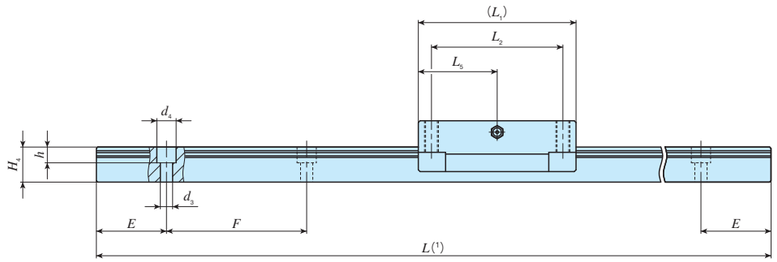
Shape	LWFH 		
Size	40	60	90



LWFH40, LWFH60



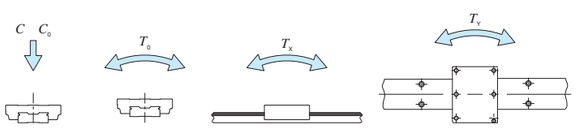
LWFH90



Model number	Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm												Dimensions of track rail mm									Mounting bolt for track rail(2) mm	Basic dynamic load rating(3)	Basic static load rating(3)	Static moment rating(3)		
LWF (Non C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_1	W_2	W_3	W_4	L_1	L_2	L_5	d_1	$M_1\times$depth$_1$	depth$_2$	H_2	H_3	W	H_4	W_5	W_6	d_3	d_4	h	E	F	Bolt size×length	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
LWFH 40	○	0.58	4.60	27	5	21	92	82	37	4	70	60	27.5	4.3	M 5×14	8	14	6.5	40	16	24	8	4.5	7.2	6	30	60	M4×16	12 600	16 600	280	108 612	99.3 563
LWFH 60	○	1.29	8.60	35	6	25	120	110	47.5	7.5	90	75	45	6.7	M 8×18	11	18	6.5	60	20	40	10	7	11	9	40	80	M6×22	16 100	23 500	600	210 1 090	193 998
LWFH 90	○	4.06	16.5	50	7	36	–	162	72	9	120	100	60	8.6	M10×20	20.5	26	12	90	25.5	60	15	9	14	12	40	80	M8×28	31 600	43 300	1 650	513 2 680	470 2 460

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-116.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

Remark : For grease nipple specifications, see page Table 15 on page Ⅱ-124.



Example of identification number of assembled set

Model code	Size	Part code		Preload amount	Class symbol	Interchangeable code	Supplemental code
LWFH	60	C2	R800	T1	P	S1	/U
①	②	③	④	⑤	⑥	⑦	⑧

① Model number

LWFH	Flange type mounting from top/bottom

② Size

40, 60, 90

③ Number of slide units (Two slide units)

④ Length of track rail (800 millimeters)

⑤ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload

⑥ Accuracy class

H	High
P	Precision
SP	Super precision

⑦ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

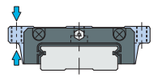
⑧ Special specification

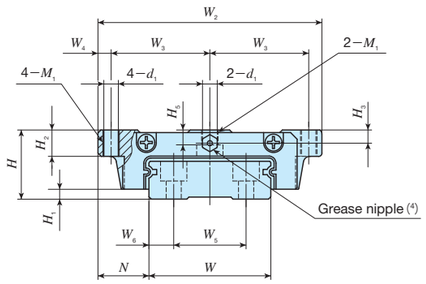
A, C, D, E, F, I, J, L, LF
MN, N, Q, U, W, Y, Z

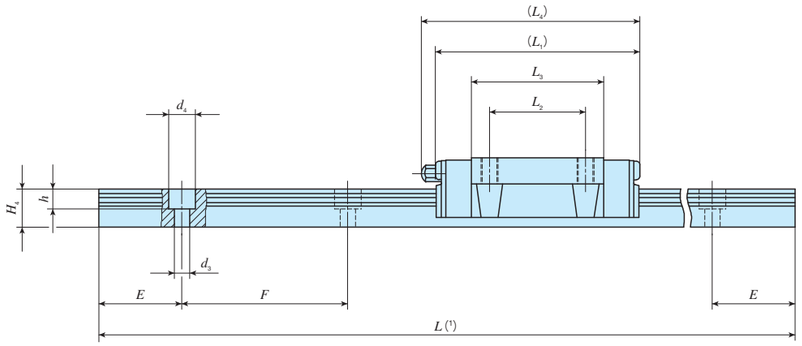
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Linear Way F

Flange type mounting from top/bottom

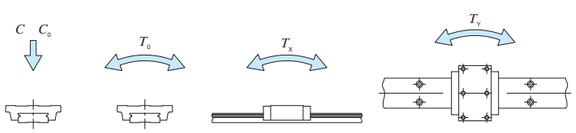
Shape	LWFF 			
Size	33	37	42	69





Model number LWF (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	M_1	H_2	H_3	H_5	Dimensions of track rail mm W	H_4	W_5	W_6	d_3	d_4	h	E	F	Mounting bolt for track rail (2) mm Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
LWFF 33	○	0.14	2.41	17	2.5	13.5	60	26.5	3.5	53.5	26	35.3	56	3.3	M4	6	3.2	3.7	33	10	18	7.5	4.6	8	6	20	40	M4×10	6 530	8 610	146	49.0 289	49.0 289
LWFF 37	○	0.23	3.05	21	3	15.5	68	30	4	62	29	40	66	4.4	M5	8	4	4.5	37	11.5	22	7.5	4.6	8	6	25	50	M4×12	9 840	12 200	235	80.0 480	80.0 480
LWFF 42	○	0.49	4.30	27	3	19	80	35	5	75	40	52.2	86	5.3	M6	10	6	7	42	14	24	9	4.6	8	6	30	60	M4×16	15 500	19 400	424	165 904	165 904
LWFF 69	○	1.40	9.51	35	4	25.5	120	53.5	6.5	109	60	79.5	119	7	M8	14	8	8	69	19.5	40	14.5	7	11	9	40	80	M6×22	34 900	44 100	1 560	581 2 940	488 2 460

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-116.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see page Table 15 on page Ⅱ-124.



Example of identification number of assembled set

Model code	Size	Part code		Preload amount	Class symbol	Interchangeable code	Supplemental code
LWFF	37	C2	R800	T1	P	S1	/U
①	②	③	④	⑤	⑥	⑦	⑧

① Model number

LWFF	Flange type mounting from top/bottom

② Size

33, 37, 42, 69

③ Number of slide units (Two slide units)

④ Length of track rail (800 millimeters)

⑤ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload

⑥ Accuracy class

H	High
P	Precision
SP	Super precision

⑦ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑧ Special specification

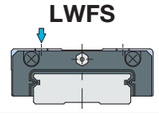
A, D, E, F, I, J, L, LF
MN, N, Q, U, V, W, Y, Z

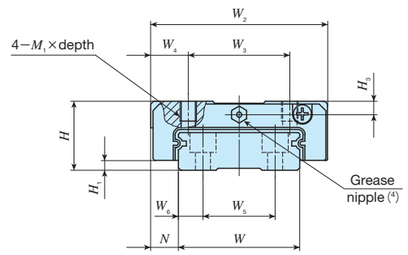
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Linear Way F

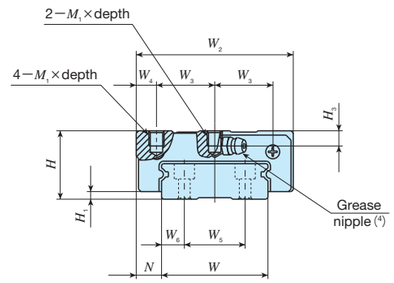
Block type mounting from top

Shape	LWFS		
Size	33	37	42

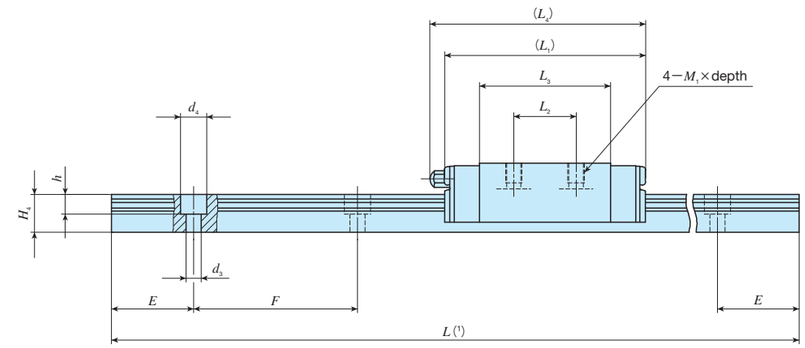




LWFS 33 (…SL)
LWFS 37 (…SL)

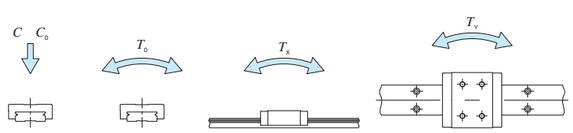


LWFS 42…SL



Model number LWF (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	Dimensions of track rail mm W	H_4	W_5	W_6	d_3	d_4	h	E	F	Mounting bolt for track rail (2) mm Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
LWFS 33	○	0.13	2.41	17	2.5	8.5	50	29	10.5	53.5	15	35.3	56	M4×5	3.2	33	10	18	7.5	4.6	8	6	20	40	M4×10	6 530	8 610	146	49.0 289	49.0 289
LWFS 33…SL	○																													
LWFS 37	○	0.20	3.05	21	3	8.5	54	31	11.5	62	19	40	66	M5×6	4	37	11.5	22	7.5	4.6	8	6	25	50	M4×12	9 840	12 200	235	80.0 480	80.0 480
LWFS 37…SL	○																													
LWFS 42…SL	○	0.40	4.30	27	3	10	62	23	8	75	32	52.2	86	M6×6	6	42	14	24	9	4.6	8	6	30	60	M4×16	15 500	19 400	424	165 904	165 904

Notes (1) : Track rail lengths are shown in Table 2.1 and 2.2 on page Ⅱ-116.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel made bolts are appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see page Table 15 on page Ⅱ-124.



Example of identification number of assembled set

Model code	Size	Part code		Material	Preload amount	Class symbol	Interchangeable code	Supplemental code
LWFS	37	C2	R800	—	T1	P	S1	/U
1	2	3	4	5	6	7	8	9

1 Model number

LWFS	Block type mounting from top

2 Size

33, 37, 42

3 Number of slide units (Two slide units)

4 Length of track rail (800 millimeters)

5 Material

No symbol	High carbon steel
SL	Stainless steel

6 Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload

7 Accuracy class

H	High
P	Precision
SP	Super precision

8 Interchangeable code

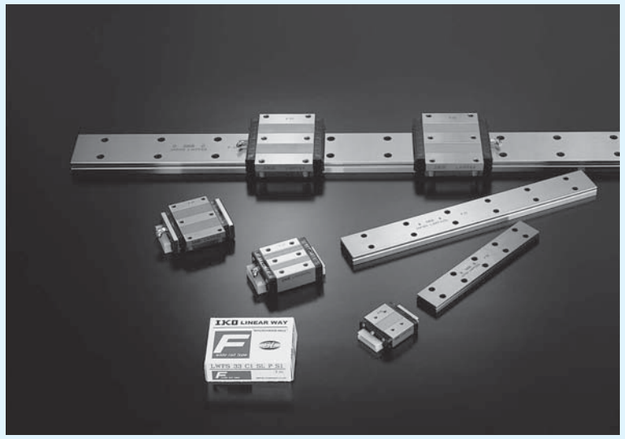
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

9 Special specification

A, D, E, F, I, J, L, LF
MN, N, Q, U, V, W, Y, Z

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

C-Lube Linear Way MUL
Linear Way U



C-Lube Linear Way MUL

MUL

Features

Original U-shaped track rail

Rigidity of track rail under moment and torsion is greatly increased by adopting the U-shaped design.

Expanded freedom of design for use as a structure beam

Because of the high moment of inertia of sectional area, the track rail can be used as a structure beam, such as a cantilever or both-end support in the machine and equipment. Therefore, freedom of design is expanded for user.

Additional machining available for corresponding to needs

High carbon steel track rail can be machined additionally to fix mechanical components such as a driving mechanism on the track rail directly at user.

Stainless steel

The main metal components made of corrosion resistant stainless steel are available for small size of 25mm and 30mm of track rail width. Therefore, they are most suitable for use in cleanroom environment and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Identification number and specification

The specification of C-Lube Linear Way MUL 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.

	1	3	4	5	2	6	7	8
Assembled set	MUL	25	C2	R280		T_1	H	/U

1 Series — Model code on page Ⅱ-137

2 Ball Retaining

3 Size — Size on page Ⅱ-137

4 Number of slide units — Part code on page Ⅱ-137

5 Track rail

6 Preload amount — Preload symbol on page Ⅱ-139

7 Accuracy class — Classification symbol on page Ⅱ-139

8 Special specification — Supplemental code on page Ⅱ-140

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification

—Series・Ball Retaining・Size・Number of slide unit—

1 Series

C-Lube Linear Way MUL (MUL Series)	Miniature type	: MUL
Linear Way U(1) (LWU Series)	Miniature type Standard type	: LWUL : LWU

Applicable size and shape of slide unit are shown in Table 1.

Note(1) : Linear Way without C-Lube.

2 Ball Retaining

Ball retained type	: B	For avaliable models and size, see Table 1.
Ball non-retained type	: No symbol	

3 Size

25, 30, 40, 50, 60, 86, 100, 130 — For avaliable models and size, see Table 1.

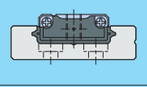
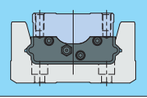
4 Number of slide units

: C○ — For an assembled set, indicate the number of slide units assembled on one track rail.

5 Length of track rail

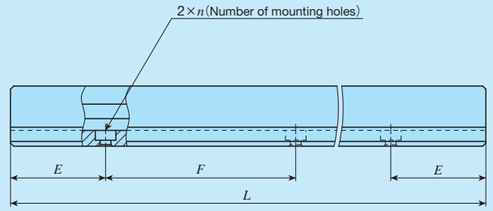
: R○ — Indicate the length of track rail in mm. For standard and maximum lengths, see Table 2.

Table 1 Type and Size

Shape	Material	Model code	Size							
			25	30	40	50	60	86	100	130
Miniature type 	Stainless steel	MUL	○	○	–	–	–	–	–	–
		LWUL…B	○	○	–	–	–	–	–	–
Standard type 	High carbon steel	LWU…B	–	–	○	○	○	○	–	–
		LWU	–	–	○	○	○	○	○	○

—Length of track rail—

Table 2 Standard and maximum lengths of track rails



unit : mm

Item \ Model number	MUL25 LWUL25…B	MUL30 LWUL30…B	LWU40…B LWU40	LWU50…B LWU50
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
Standard range of E incl.	4.5	4.5	–	–
Standard range of E under	22	24.5	–	–
Maximum length(1)	420 (840)	480 (960)	720	800

Item \ Model number	LWU60…B LWU60	LWU86…B LWU86	LWU100	LWU130
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)	1 000	1 200	1 500	1 500

Note(1) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
Remark : M8 female threads for hanging bolt are provided on the track rail of size 100 model. And M10 female threads for hanging bolt are provided on the track rail of size 130 model.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

—Preload amount・Accuracy class—

6 Preload amount

Standard	: No symbol	For detail of preload amount, see Table 3.
Light preload	: T_1	

Table 3 Preload amount

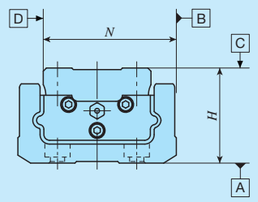
Item / Preload type	Symbol	Preload amount N	Application
Standard	(No symbol)	0(1)	・Smooth and precise motion
Light preload	T_1	$0.02C_0$	・Minimum vibration ・Load is evenly balanced ・Smooth and precise motion

Note(1) : Zero or minimal amount of preload.
Remark : C_0 means the basic static load rating.

7 Accuracy class

Ordinary class	: No symbol	For detail of accuracy, see Table 4.
Hight class	: H	

Table 4 Accuracy



unit : mm

Item / Standard(No symbol)	Ordinary (No Symbol)	High (H)
Dim. H tolerance	±0.100	±0.050
Dim. N tolerance	±0.100	±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. 1	
Parallelism in operation of D to B	See Fig. 1	

Note(1) : It means the size variation between slide units mounted on the same track rail.

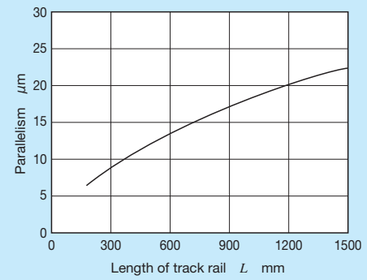


Fig. 1 Parallelism in operation

—Special specification—

8 Special specification

/E, /L○, /MA, /MN, /Q, /U○, /W○

Applicable special specifications are shown in Table 5. When a combination of several special specifications is required, please refer Table 6 and arrange their supplemental codes in alphabetical order. For detail of specifications, see page Ⅲ-28.

Table 5 Special specifications

Special specification	Supplemental code	Size							
		25	30	40	50	60	86	100	130
Specified rail mounting hole positions	/E	○	○	×	×	×	×	×	×
Black chrome surface treatment	/L○	○(1)	○(1)	○	○	○	○	○	○
Supplied with track rail mounting bolt	/MA	○(2)	○(2)	○	○	○	○	○	○
Supplied without track rail mounting bolt(3)	/MN	○	○	×	×	×	×	×	×
C-Lube plates(3)	/Q	×	×	○	○	○	○	○	○
Upper seals	/U	○	○	×	×	×	×	×	×
Matched sets to be used as an assembled group	/W○	○	○	○	○	○	○	○	○

Notes(1) : Applicable to only "/LR"
(2) : Applicable to MUL series.
(3) : Applicable to LWU series.

Table 6 Combination of special specifications

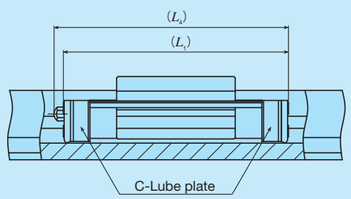
	E	L	MA	MN	Q	U
L	○					
MA	○	○				
MN	○	○	–			
Q	–	○	○	○		
U	○	○	○	○	–	
W	–	○	○	○	○	○

Remarks : 1. In the table, mark "–" indicates that this combination cannot be made.
2. When several special specifications are required, arrange the supplemental codes alphabetically.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

—Special specification—

Table 7 Slide unit with C-Lube plates (Supplemental code /Q)

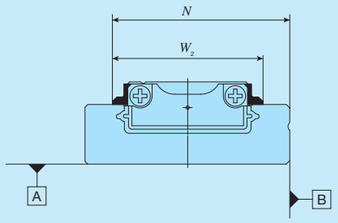


unit : mm

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

Remark : The values are for total length of slide unie with C-Lube plaees at both enls.

Table 8 Slide unit with upper seals (Supplemental code /U)



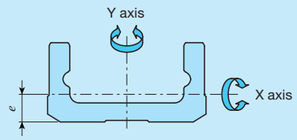
unit : mm

Size	N	W_2
25	21.4	18
30	25.9	22

Moment of inertia of sectional area

High rigidity design of C-Lube Linear Way MUL and LWU are 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

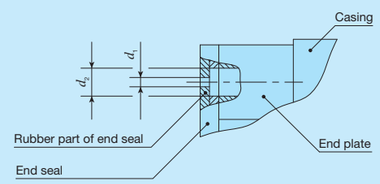


Model number		Moment of inertia of sectional area mm⁴		Center of gravity e mm
		I_X	I_Y	
MUL 25	LWUL 25…B	3.7×10^2	7.5×10^3	2.6
MUL 30	LWUL 30…B	9.3×10^2	1.7×10^4	3.3
–	LWU 40…B	1.0×10^4	6.8×10^4	6.6
–	LWU 40		6.9×10^4	
–	LWU 50…B	2.8×10^4	1.7×10^5	8.7
–	LWU 50			
–	LWU 60…B	6.3×10^4	3.9×10^5	10.7
–	LWU 60			10.8
–	LWU 86…B	2.4×10^5	1.6×10^6	14.6
–	LWU 86			
–	LWU 100	5.9×10^5	3.3×10^6	18.8
–	LWU 130	1.4×10^6	8.8×10^6	23.0

Lubrication

Lithium-soap base grease (MULTEMP PS No.2 : KYODO YUSHI) is pre-packed in MUL and LWU series slide units of Size 25 and Size 30 and lithium-soap base grease containing extreme pressure additive (ALVANIA grease EP 2 : SHELL) is pre-packed in series of Size 40 to Size 130. Additionally, C-Lube (Capillary sleeve) a component part is placed in the ball recirculation path, thereby extending the re-lubrication (greasing) interval time and reducing maintenance work for a long period. MUL and LWU series are provided with an oil hole and with grease nipple shown in Table 11.
Supply nozzles matching the size of grease nipple and dedicated miniature greasers matching the oil holes are also available.
For these parts for lubrication, refer to Table 14 and Table 15.1 on page Ⅲ-22, and Table 16 on page, and consult IKO for further information.

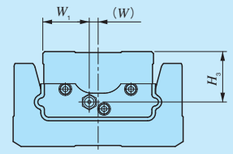
Table 10 Oil hole



unit : mm

Size	d_1	d_2
25	0.5	1.2
30		1.5

Table 11 Parts for lubrication



Size	Greese nipple(1)	Applicabe supply nozzle	Nominal size of female threads for piping	Location of grease nipple mm		
				W_1	W	H_3
25	Oil hole	Miniature greaser	–	7	0	2.9
30				9	0	3.75
40	A-M4	A-5120V A-5240V B-5120V B-5240V	M4	13	0	10.5
50				17	0	13.5
60	JIS 1形	Grease gun available on the market	M6	19	0	14.5
86				23.5	4.5	25.5
100				28.5	4	29
130				44	0	35.5

Note(1) : In grease nipple specification please see Table 15.1 and 15.2 on page Ⅲ-22.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Dust Protection

The MUL and LWU series of slide units are equipped with double end seals and upper seals as standard for protection against dust. If the slide unit will be used in a working environment that contains lots of dust, contaminants, or comparatively large particles such as chips and sands that may cover its track rail, IKO recommend protecting the linear motion parts against them with a protective cover or the like.

Precautions for Use

❶Mounting surface, reference mounting surface, and general mounting structure

To mount C-Lube linear MUL and LWU, correctly fit the reference mounting surfaces B and D of the slide unit and track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig.2)
The reference mounting surfaces B and D and mounting surfaces A and C of MUL and LWU series are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.
The reference mounting surfaces are the opposite surfaces of each IKO marks. (See Fig. 3)

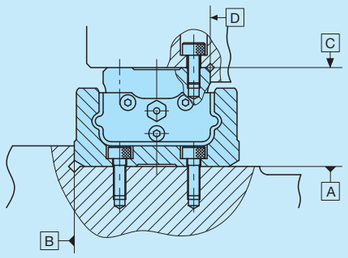


Fig. 2 Reference mounting surfaces and general mounting structure

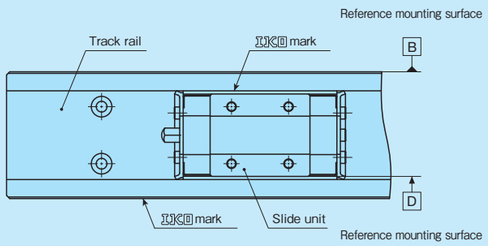


Fig. 3 Reference mounting surfaces

❷Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surfaces as shown in Fig. 4. Table 13 show recommended shoulder heights and corner radii of the mating reference mounting surfaces.

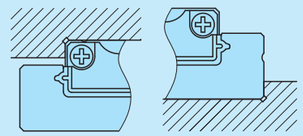


Fig. 4 Relieved fillet at the corner of the mating reference mounting surfaces

❸Tightening torque of mounting bolts

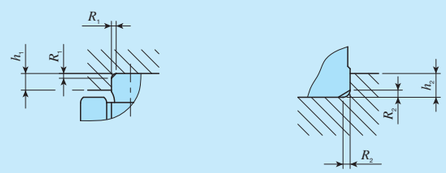
The standard torque values for MUL and LWU series mounting bolts are shown in Table 12. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown.
When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 12 Tightening torque of mounting bolts

Bolt size	Tightening torque N · m	
	Carbon steel bolt	Stainless steel bolt
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

Note(1) : The values show recommended tightening torque for strength division 12.9 (for carbon steel bolt) and property division A2-70 (for stainless steel bolt).

Table 13 Shoulder heights and corner of the mating reference mounting



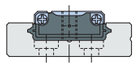
unit : mm

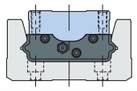
Size	Slide unit		Track rail	
	Shoulder height h_1	Comer radius R_1 (max.)	Shoulder height h_2	Comer radius R_2 (max.)
25	1.5	0.2	2.5	–
30	2.5	0.2	3	–
40	3	0.5	5	1
50	3	0.5	7	2
60	3	0.5	9	2
86	4	0.5	11	2
100	4	0.5	13	1
130	5	1	14	2

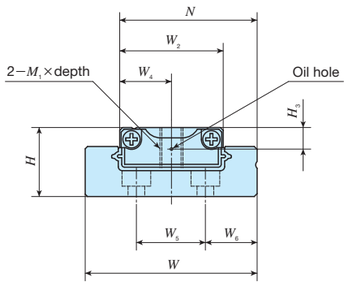
Note(1) : In sizes 25 and 30, provide a relieved fillet as shown in Fig. 4.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

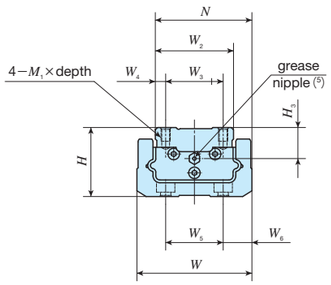
IKO C-Lube Linear Way MUL

Miniature type			
Shape	MUL • LWUL 		
Size	25	30	

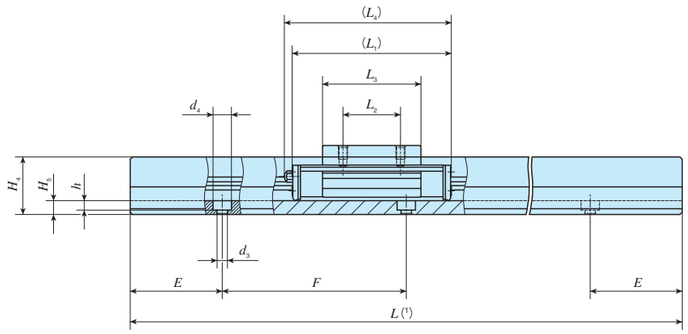
Standard type			
Shape	LWU (…B) 		
Size	40	50	60
	86	100	130



MUL
LWUL…B

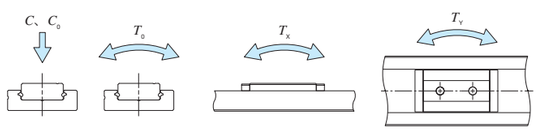


LWU(…B)



Model number MUL	Model number LWU (Non C-Lube)	Interchangeable	Mass (Reference) Slide unit kg	Mass (Reference) Track rail kg/m	Dimension of assembly mm H	Dimension of assembly mm N	Dimension of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	Dimension of track rail mm H_4	H_5	W_5	W_6	d_3	d_4	h	E	F	Appended mounting bolt for track rail (3) mm Bolt size x length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MUL 25	LWUL 25…B	–	0.013	0.87	9	19.4	14	–	7	31	12	22	–	M 3× 5	2.9	24.9	6.7	3.2	9	8	2.9	4.8	1.6	17.5	35	Cross recessed head screw for precision equipment M 2.5× 6	1 770	2 840	20.3	10.1 53.7	8.4 45.0
MUL 30		–	0.028	1.39	12	23.9	18	–	9	38	14	28.6	–	M 4× 7	3.75	29.9	8.7	4.5	12	9	2.9	5	2.7	20	40	M 2.5× 6	2 280	3 810	34.9	16.9 87.5	14.2 73.4
	LWUL 30…B	–	0.029																												
–	LWU 40…B	–	0.12	2.65	24	33	26	18	4	55	18	31.5	59	M 3× 5	10.5	40	19	5	18	11	3.4	6.5	3.1	30	60	M 3 × 8 (Not appended)	8 410	9 780	134	53.0 351	53.0 351
–	LWU 40 (2)	–		2.66																											
–	LWU 50…B	–	0.27	4.06	30	42	34	25	4.5	70	25	42.8	73	M 4× 6	13.5	50	25	6	25	12.5	4.5	8	4.1	40	80	M 4 ×10 (Not appended)	13 500	15 800	280	114 711	114 711
–	LWU 50 (2)	–		4.08																											
–	LWU 60…B	–	0.40	6.66	35	49	38	28	5	83	28	52.4	90	M 5× 8	14.5	60	30	8	28	16	5.5	9.5	5.4	50	100	M 5 ×12 (Not appended)	18 800	21 600	425	181 1 150	181 1 150
–	LWU 60 (2)	–		6.69																											
–	LWU 86…B	–	1.32	14.1	48	71	56	46	5	130	46	93	136	M 6×12	25.5	86	42	13	46	20	7	11	7	50	100	M 6 ×16 (Not appended)	41 400	51 500	1 470	764 4 120	764 4 120
–	LWU 86 (2)	–																													
–	LWU 100 (2)	–	2.20	21.5	58	82	65	50	7.5	154	50	111	158	M 8×15	29	99.5	52	17	50	24.5	9	14	9	75	150	M 8 ×20 (Not appended)	54 600	68 500	2 230	1 210 6 460	1 210 6 460
–	LWU 130 (2)	–	4.49	33.0	72	109	88	70	9	178	70	132	182	M10×20	35.5	130	65	20	70	30	11	17.5	10.6	75	150	M10 ×25 (Not appended)	70 300	88 800	3 920	1 830 9 630	1 830 9 630

Notes (1) : Track rail lengths are shown in Table 2 on page Ⅱ-138.
(2) : Steel balls are not retained.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent, or cross-recessed head screws for precision equipment. For stainless steel type Linear Way U, stainless steel bolts or screws are appended. In MUL, bolts are not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(5) : For grease nipple specifications, see Table 11 on page Ⅱ-142.
Remark : In sizes 25 and 30, oil holes are prepared. For specification, see Table 10 on page Ⅱ-142.



Example of identification number of assembled set

Model code	Size	Part code		Model code	Preload amount	Class symbol	Supplemental code
MUL	25	C2	R280		T1	H	/Q
①	②	③	④	⑤	⑥	⑦	⑧

① Model code	
MUL	Miniature type
LWUL…B	Miniature type
LWU(…B)	Standard type

② Size
25, 30, 40, 50, 60, 86, 100, 130

③ Number of slide unit (two units)

④ Length of track rail (280mm)

⑤ Ball retaining	
B	Ball retained type
No symbol	Ball non-retained type

⑥ Preload symbol	
No symbol	Standard
T1	Light preload

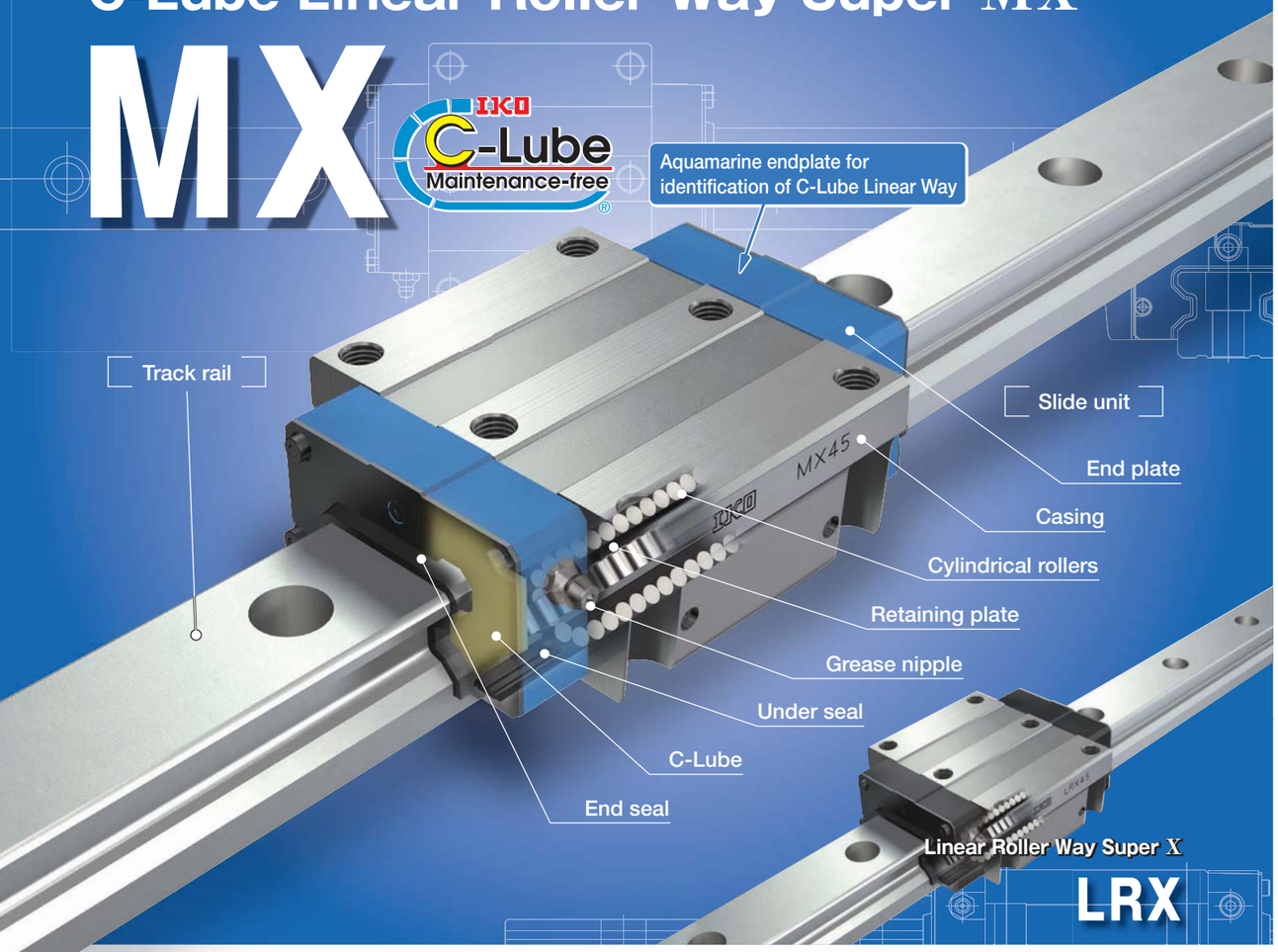
⑦ Accuracy class	
No symbol	Ordinary
H	High

⑧ Special specification
E, LR, MA, MN, Q, U, W

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

C-Lube Linear Roller Way Super MX
Linear Roller Way Super X

C-Lube Linear Roller Way Super MX



Features

The roller type linear motion rolling guide achieves the highest level of the performance

The superior characteristic of the roller makes linear motion rolling guide realize the most high-level performance in load capacity, rigidity, friction, every characteristic including running accuracy.

Wide variation corresponding to needs

Five shapes of slide unit, flanged type, block type, side mounting type and etc. are lined up with four variations in length of slide unit with same section. They are available for optimal products to fit for requirement of machine and equipment.

Extra high rigidity long unit

Extra high rigidity long type slide unit, which is 1.4 to 1.5 times rigid as standard slide unit, is serialized. Because number of rollers is increased, super high precise running performance is achieved, not only load capacity and rigidity.

Stainless steel

The main metal components made of corrosion resistant stainless steel are available for small size from 10mm of track rail width. Therefore, they are most suitable for use in cleanroom environment and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Easy replacement instead of ball type guide

Mounting dimensions are compatible as ball type Linear Way, MH and LWH series. Therefore, replacement to roller type is possible without design change of machine and equipment.

Identification number and specification

The specification of MX and LRX series are identified by the identification number, which consists of a model code, a size, a part code, a preload symbol, a classification symbol, interchangeable code and optional supplemental codes.

	1	2	3	4	5	6	7	8	9	10
Interchangeable specification										
Slide unit only	MX	G	15	C1			T_1	P	S1	/Z
Track rail only(1)	LRX		15		R240			P	S1	
Assenbled set	MX	G	15	C2	R240		T_1	P	S1	/Z
Non-interchangeable specification										
Assenbled set	MX	G	15	C2	R240		T_1	P		/Z

1 Series — Model code on page Ⅱ-151

2 Length of slide unit — Model code on page Ⅱ-151

3 Size — Size on page Ⅱ-151

4 Number of slide unit — Part code on page Ⅱ-152

5 Length of track rail — Part code on page Ⅱ-152

6 Material — Material symbol on page Ⅱ-152

7 Preload amount — Preload symbol on page Ⅱ-155

8 Accuracy class — Classification symbol on page Ⅱ-156

9 Interchangeable — Interchangeable code on page Ⅱ-157

10 Special specification — Supplemental code on page Ⅱ-157

Note(1) : For the model code of a single track rail of interchangeable specification, indicate "LRX" regardless of the slide unit type to be combined.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification

—Series · Length of slide unit · Size—

1 Series

C-Lube Linear Roller Way Super MX (MX Series)	Flange type mounting from top/bottom	: MX(2)
	Block type mounting from top	: MXD
	Compact block type mounting from top	: MXS
	Low section flange type mounting from top	: MXN
	Low section block type mounting from top	: MXNS
Linear Roller Way Super X(1) (LRX Series)	Flange type mounting from top/bottom	: LRX(2)
	Block type mounting from top	: LRXD
	Compact block type mounting from top	: LRXS

Applicable size and shape of slide unit are shown in Table 1.1 and 1.2.
For the model code of track rail of interchangeable specification, indicate "LRX" regardless of the slide unit type to be combined.

Note(1) : Linear Roller Way without C-Lube.
(2) : MX20 (LRX20) can be mounted from top only. MXH20 (LRXH20) can be mounted from bottom, which has the same dimensions as those of above models.

2 Length of slide unit

Short	: C	Applicable size and shape of slide unit are shown in Table 1.1 and 1.2.
Standard	: No symbol	
High rigidity long	: G	
Extra high rigidity long	: L	

3 Size of rolling guide

10, 12, 15, 20, 25, 30, 35, 45, 55, 65, 85, 100

Applicable size and shape of slide unit are shown in Table 1.1 and 1.2.

Table 1.1 Model and size of MX and LRX

Material	Shape	Length of slide unit	Model code	Size 10	12	15	20	25	30	35	45	55	65	85	100
High carbon steel	Flange type mounted from top/bottom	Short	MXC	–	○	○	○(1)	○	○	○	○	○	○	–	–
			LRXC	–	○	○	○(1)	○	○	○	○	○	○	–	–
		Standard	MX	–	○	○	○(1)	○	○	○	○	○	○	–	–
			LRX	–	○	○	○(1)	○	○	○	○	○	○	○	–
		High rigidity long	MXG	–	○	○	○(1)	○	○	○	○	○	○	–	–
			LRXG	–	○	○	○(1)	○	○	○	○	○	○	○	○
		Extra high rigidity long	MXL	–	–	–	○(1)	○	○	○	○	○	○	–	–
			LRXL	–	–	–	–	–	–	–	–	–	–	○	–
	Block type mounted from top	Short	MXDC	–	○	○	○	○	○	○	○	○	○	–	–
			LRXDC	–	○	○	○	○	○	○	○	○	○	–	–
		Standard	MXD	–	○	○	○	○	○	○	○	○	○	–	–
			LRXD	–	○	○	○	○	○	○	○	○	○	–	–
		High rigidity long	MXDG	–	○	○	○	○	○	○	○	○	○	–	–
			LRXDG	–	○	○	○	○	○	○	○	○	○	–	–
		Extra high rigidity long	MXDL	–	–	–	○	○	○	○	○	○	○	–	–

Note(1) : MXC20, MX20, MXG20, MXL20, LRXC20, LRX20, LRXG20 can be mounted from top. Models that can be mounted with same dimensions are MXHC20, MXH20, MXHG20, MXHL20, LRXHC20, LRXH20, LRXHG20.
Remark : The mark ▭ indicates that interchangeable specification is available.

—Number of slide units · Length of track rail · Material—

4 Number of slide units

: C○

For an assembled set, indicates the number of slide units assembled on one track rail. For an interchangeable slide unit only, "C1" can be indicated.

5 Length of track rail

: R○

Indicate the length of track rail in mm.
For standard and maximum lengths, see Table 2.1, 2.2, 2.3, 2.4.

6 Material

High carbon steel	: No symbol	Applicable types and sizes are shown in, Tables 1.1 and 1.2.
Stainless steel	: SL	

Table 1.2 Model and size of MX and LRX

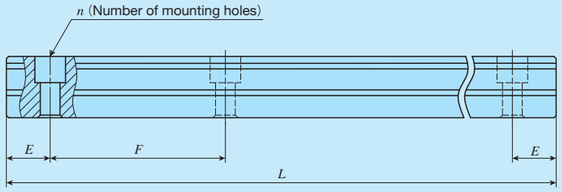
Material	Shape	Length of slide unit	Model code	Size 10	12	15	20	25	30	35	45	55	65	85	100
High carbon steel	Compact block type mounting from top	Short	MXSC	–	–	○	○	○	○	–	–	–	–	–	–
			LRXSC	–	–	○	○	○	○	–	–	–	–	–	–
		Standard	MXS	–	–	○	○	○	○	○	○	○	–	–	–
			LRXS	–	–	○	○	○	○	–	–	–	–	–	–
		High rigidity long	MXSG	–	–	○	○	○	○	○	○	○	–	–	–
			LRXSG	–	–	○	○	○	○	–	–	–	–	–	–
		Extra high rigidity long	MXSL	–	–	–	○	○	○	–	–	–	–	–	–
	Low section flange type mounting from top	Standard	MXN	–	–	–	–	–	○	○	○	○	–	–	–
		High rigidity long	MXNG	–	–	–	–	–	○	○	○	○	–	–	–
		Extra high rigidity long	MXNL	–	–	–	–	–	○	○	○	○	–	–	–
	Low section block type mounting from top	Standard	MXNS	–	–	–	–	–	○	○	○	○	–	–	–
		High rigidity long	MXNSG	–	–	–	–	–	○	○	○	○	–	–	–
		Extra high rigidity long	MXNSL	–	–	–	–	–	○	○	○	○	–	–	–
Stainless steel	Block type mounting from top	Short	LRXDC···SL	–	○	○	○	○	○	–	–	–	–	–	–
		Standard	MXD···SL	–	○	○	○	○	○	–	–	–	–	–	–
			LRXD···SL	○	○	○	○	○	○	–	–	–	–	–	–
		High rigidity long	LRXDG···SL	–	○	○	○	○	○	–	–	–	–	–	–

Remark : The mark ▭ indicates that interchangeable specification is available.

MX · LRX

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 2.1 Standard and maximum lengths of high carbon steel track rails



unit : mm

Item \ Model number	MX 12 LRX12	MX 15 LRX15	MX 20 LRX20	MX 25 LRX25	MX 30 LRX30	MX 35 LRX35
Standard length $L(n)$	80 (2) 160 (4) 240 (6) 320 (8) 400 (10) 480 (12) 560 (14) 640 (16) 720 (18)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25)	240 (4) 480 (8) 660 (11) 840 (14) 1 020 (17) 1 200 (20) 1 500 (25)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)
Pitch of mounting holes F	40	60	60	60	80	80
E	20	30	30	30	40	40
Standard range of E(1) incl.	5.5	7	8	9	10	10
Standard range of E(1) under	25.5	37	38	39	50	50
Maximum length(2)	1 480	1 500 (1 980)	1 980 (3 000)	3 000 (3 960)	2 960 (4 000)	2 960 (4 000)

Item \ Model number	MX 45 LRX45	MX 55 LRX55	MX 65 LRX65	LRX85	LRXG100
Standard length $L(n)$	840 (8) 1 050 (10) 1 260 (12) 1 470 (14) 1 995 (19)	840 (7) 1 200 (10) 1 560 (13) 1 920 (16) 3 000 (25)	1 500 (10) 1 950 (13) 3 000 (20)	1 620 (9) 1 980 (11) 2 340 (13) 2 700 (15)	1 500 (10) 1 950 (13) 3 000 (20)
Pitch of mounting holes F	105	120	150	180	150
E	52.5	60	75	90	75
Standard range of E(1) incl.	12.5	15	17	23	29
Standard range of E(1) under	65	75	92	113	104
Maximum length(2)	2 940 (3 990)	3 000 (3 960)	3 000 (3 900)	2 880	3 000

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(2) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
Remarks 1 : For half pitch of track rail mounting holes (supplemental code "/HP"), refer to Table 2.3.
2 : For the model code of track rail of interchangeable specification, indicate "LRX" regardless of the slide unit type to be combined.
3 : The above table shows representative model numbers but is applicable to all models of the same size.

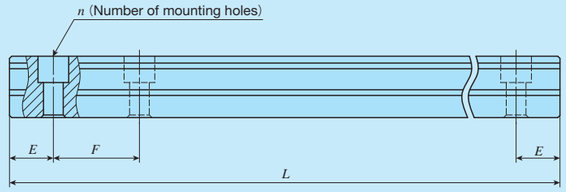
Table 2.2 Standard and maximum lengths of stainless steel track rail

unit : mm

Item \ Model number	LRXD10···SL	MX 12···SL LRX12···SL	MX 15···SL LRX15···SL	MX 20···SL LRX20···SL	MX 25···SL LRX25···SL	MX 30···SL LRX30···SL
Standard length $L(n)$	50 (2) 100 (4) 150 (6) 200 (8) 250 (10) 300 (12) 350 (14) 400 (16) 450 (18) 500 (20)	80 (2) 160 (4) 240 (6) 320 (8) 400 (10) 480 (12) 560 (14) 640 (16) 720 (18)	180 (3) 240 (4) 360 (6) 480 (8) 660 (11)	240 (4) 480 (8) 660 (11) 840 (14)	240 (4) 480 (8) 660 (11) 840 (14)	480 (6) 640 (8) 800 (10) 1 040 (13)
Pitch of mounting holes F	25	40	60	60	60	80
E	12.5	20	30	30	30	40
Standard range of E(1) incl.	5	5.5	7	8	9	10
Standard range of E(1) under	17.5	25.5	37	38	39	50
Maximum length(2)	850 (1 000)	1 000 (1 480)	1 200 (1 980)	1 200 (1 980)	1 200 (1 980)	1 200 (2 000)

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(2) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
Remarks 1 : For half pitch of track rail mounting holes (supplemental code "/HP"), refer to Table 2.4.
2 : For the model code of track rail of interchangeable specification, indicate "LRX" regardless of the slide unit type to be combined.
3 : The above table shows representative model numbers but is applicable to all models of the same size.

Table 2.3 Standard and maximum lengths of high carbon steel track rail (Half pitch of track rail mounting holes specification /HP)



unit : mm

Item \ Model number	MX 12···/HP LRX12···/HP	MX 15···/HP LRX15···/HP	MX 20···/HP LRX20···/HP	MX 25···/HP LRX25···/HP	MX 30···/HP LRX30···/HP	MX 35···/HP LRX35···/HP
Standard length $L(n)$	80 (4) 160 (8) 240 (12) 320 (16) 400 (20) 480 (24) 560 (28) 640 (32) 720 (36)	180 (6) 240 (8) 360 (12) 480 (16) 660 (22)	240 (8) 480 (16) 660 (22) 840 (28) 1 020 (34) 1 200 (40) 1 500 (50)	480 (16) 660 (22) 840 (28) 1 020 (34) 1 200 (40) 1 500 (50)	480 (12) 640 (16) 800 (20) 1 040 (26) 1 200 (30) 1 520 (38)	480 (12) 640 (16) 800 (20) 1 040 (26) 1 200 (30) 1 520 (38)
Pitch of mounting holes F	20	30	30	30	40	40
E	10	15	15	15	20	20
Standard range of E(1) incl.	5.5	7	8	9	10	10
Standard range of E(1) under	15.5	22	23	24	30	30
Maximum length(2)	1 480	1 500 (1 980)	1 980 (3 000)	3 000 (3 960)	2 960 (4 000)	2 960 (4 000)

Item \ Model number	MX 45···/HP LRX45···/HP	MX 55···/HP LRX55···/HP	MX 65···/HP LRX65···/HP	LRX85···/HP
Standard length $L(n)$	840 (16) 1 050 (20) 1 260 (24) 1 470 (28) 1 995 (38)	840 (14) 1 200 (20) 1 560 (26) 1 920 (32) 3 000 (50)	1 500 (20) 1 950 (26) 3 000 (40)	1 620 (18) 1 980 (22) 2 340 (26) 2 700 (30)
Pitch of mounting holes F	52.5	60	75	90
E	26.25	30	37.5	45
Standard range of E(1) incl.	12.5	15	17	23
Standard range of E(1) under	38.75	45	54.5	68
Maximum length(2)	2 940 (3 990)	3 000 (3 960)	3 000 (3 900)	2 970

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(2) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : For the model code of track rail of interchangeable specification, indicate "LRX" regardless of the slide unit type to be combined.

Table 2.4 Standard and maximum lengths of Stainless steel track rail (Half pitch of track rail mounting holes specification /HP)

unit : mm

Item \ Model number	MX 12···SL/HP LRX12···SL/HP	MX 15···SL/HP LRX15···SL/HP	MX 20···SL/HP LRX20···SL/HP	MX 25···SL/HP LRX25···SL/HP	MX 30···SL/HP LRX30···SL/HP
Standard length $L(n)$	80 (4) 160 (8) 240 (12) 320 (16) 400 (20) 480 (24) 560 (28) 640 (32) 720 (36)	180 (6) 240 (8) 360 (12) 480 (16) 660 (22)	240 (8) 480 (16) 660 (22) 840 (28)	480 (16) 660 (22) 840 (28)	480 (12) 640 (16) 800 (20) 1 040 (26)
Pitch of mounting holes F	20	30	30	30	40
E	10	15	15	15	20
Standard range of E(1) incl.	5.5	7	8	9	10
Standard range of E(1) under	15.5	22	23	24	30
Maximum length(2)	1 000 (1 480)	1 200 (1 980)	1 200 (1 980)	1 200 (1 980)	1 200 (2 000)

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J").
(2) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
Remarks 1 : The above table shows representative model numbers but is applicable to all models of the same size.
2 : For the model code of track rail of interchangeable specification, indicate "LRX" regardless of the slide unit type to be combined.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

7 Preload amount

Standard	: No symbol	Specify this item for an assembled set or a single slide unit.
Light preload	: T_1	For applicable preload amount, see Table 3. For details of preload amount, see Table 4.
Medium preload	: T_2	
Heavy preload	: T_3	

Table 3 Preload amount

Item / Preload type	Symbol	Preload amount N	Application
Standard	(No Symbol)	0(1)	· Very smooth motion
Light preload	T_1	0.02 C_0	· Minimum vibration · Load is evenly balancedLoad is evenly balanced · Smooth and precise motion
Medium preload	T_2	0.05 C_0	· Medium vibration · Medium overhung load
Heavy preload	T_3	0.08 C_0	· Vibration and / or shocks · Large overhung load · Heavy cutting

Note(1) : Zero or minimal amount of preload.
Remark : C_0 means the basic static load rating.

Table 4 Applicable preload

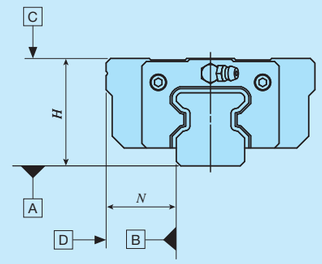
Size	Preload class and code			
	Standard (No symbol)	Light preload (T_1)	Medium preload (T_2)	Heavy preload (T_3)
10	○	○	–	–
12	○	○	○	○
15	○	○	○	○
20	○	○	○	○
25	○	○	○	○
30	○	○	○	○
35	○	○	○	○
45	○	○	○	○
55	○	○	○	○
65	○	○	○	○
85	○	○	○	○
100	○	○	○	○

Remark : The mark ▭ indicates that interchangeable specification is available.

8 Accuracy class

High	: H	Super precision class (SP) and Ultra precision class (UP) are applicable to Non-interchangeable products only. In the interchangeable specification, please combine the same accuracy codes on both slide unit and track rail.
Precision	: P	For detail of accuracy , see Table 5.
Super precision	: SP	Applicable sizes are shown in Table 6.
Ultra precision	: UP	

Table 5 Accuracy



unit : mm

Item / Classification(symbol)	High (H)	Precision (P)	Super precision (SP)	Ultra precision (UP)
Dim. H tolerance	±0.040	±0.020	±0.010	±0.008
Dim. N tolerance	±0.050	±0.025	±0.015	±0.010
Dim. variation of H(1)	0.015	0.007	0.005	0.003
Dim. variation of N(1)	0.020	0.010	0.007	0.003
Dim. variation of H for multiple assembled sets(2)	0.035	0.025	–	–
Parallelism in operation of C to A	See Fig. 1.			
Parallelism in operation of D to B	See Fig. 1.			

Notes(1) : It means the size variation between slide units mounted on the same track rail.
(2) : Applicable to the interchangeable specification.

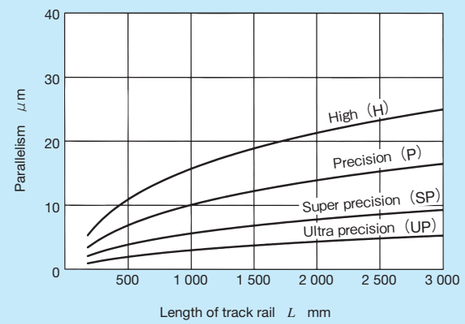


Fig. 1 Parallelism in operation

Table 6 Accuracy class and size

Size	Accuracy class			
	High (H)	Precision (P)	Super precision (SP)	Ultra precision (UP)
10	○	○	○	○
12	○	○	○	○
15	○	○	○	○
20	○	○	○	○
25	○	○	○	○
30	○	○	○	○
35	○	○	○	○
45	○	○	○	○
55	○	○	○	○
65	○	○	○	○
85	○	○	○	○
100	○	○	○	○

Remark : The mark ▭ indicates that interchangeable specification is available.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

9 Interchangeable specification

Interchangeable	: S1 : S2	Spedfy this code for the interchangeable specification products. Assemble track rails and slide units with the same interchangeable code.
Non-Interchangeable	: No symbol	For applicable models and sizes, see Table 1.1 and 1.2.

10 Special specification

/A, /D, /E, /F, /GE, /HP, /I, /J○, /L○, /LF○, /MA, /MN, /N, /PS, /Q, /RC○, /T, /UR, /V○, /W○, /Y○, /Z○	For applicable special specifications, see Table 7.1, 7.2, 7.3, 7.4. When several special specifications are combined, see Table 8. For details of special specifications, see page Ⅲ-28.

Table 7.1 Special specifications (Interchangeable specification, Single slide units)

Optional specification	Supplemental code	Size											
		10	12	15	20	25	30	35	45	55	65	85	100
Changed pitch of slide unit middle mounting holes(1)	/GE	–	×	○	○	○	○	○	○	○	○	–	–
Female threads for bellows(2)	/J○	–	×	○	○	○	○	○	○	○	○	–	–
No end seal(3)	/N	–	○	○	○	○	○	○	○	×	×	–	–
C-Lube plates(4)	/Q	–	○	○	○	○	○	○	○	○	○	–	–
Double end seals	/V○	–	○	○	○	○	○	○	○	○	○	–	–
Scrapers	/Z○	–	○	○	○	○	○	○	○	○	○	–	–

Notes(1) : Applicable to MX, MXG, MXH20, MXHG20, LRX, LRXG, LRXH20, and LRXHG20. (Flange types).
(2) : Not applicable to stainless steel model.
(3) : Not applicable to low section frange and block types.
(4) : Applicable to LRX series

Table 7.2 Special specifications (Interchangeable specification, track rail)

Optional specification	Supplemental code	Size											
		10	12	15	20	25	30	35	45	55	65	85	100
Specified rail mounting hole positions	/E	–	○	○	○	○	○	○	○	○	○	–	–
Caps for rail mounting holes	/F	–	○	○	○	○	○	○	○	○	○	–	–
Half pitch of track rail mounting holes	/HP	–	○	○	○	○	○	○	○	○	○	–	–
Female threads for bellows(1)	/J○	–	×	○	○	○	○	○	○	○	○	–	–
Black chrome surface treatment	/L○	–	○	○	○	○	○	○	○	○	○	–	–
Without track rail mounting bolts	/MN	–	○	○	○	○	○	○	○	○	○	–	–
Butt-jointing interchangeable track rail	/T	–	○	○	○	○	○	○	○	○	○	–	–

Note(1) : Not applicable to stainless steel model.

Table 7.3 Special specifications (Interchangeable specifition, assembled set)

Optional specification	Supplemental code	Size											
		10	12	15	20	25	30	35	45	55	65	85	100
Opposite reference surfaces arrangement	/D	–	○	○	○	○	○	○	○	○	○	–	–
Specified rail mounting hole positions	/E	–	○	○	○	○	○	○	○	○	○	–	–
Caps for rail mounting holes	/F	–	○	○	○	○	○	○	○	○	○	–	–
Changed pitch of slide unit middle mounting holes(1)	/GE	–	×	○	○	○	○	○	○	○	○	–	–
Half pitch of track rail mounting holes	/HP	–	○	○	○	○	○	○	○	○	○	–	–
Female threads for bellows(2)	/J○	–	×	○	○	○	○	○	○	○	○	–	–
Black chrome surface treatment	/L○	–	○	○	○	○	○	○	○	○	○	–	–
Fluorine black chrome surface treatment	/LF○	–	○	○	○	○	○	○	○	○	○	–	–
With track rail mounting bolts(3)	/MA	–	○	○	○	○	○	○	○	○	○	–	–
Without track rail mounting bolts(3)	/MN	–	○	○	○	○	○	○	○	○	○	–	–
No end seal(5)	/N	–	○	○	○	○	○	○	○	×	×	–	–
C-Lube plates(4)	/Q	–	○	○	○	○	○	○	○	○	○	–	–
Butt-jointing interchangeable track rail	/T	–	○	○	○	○	○	○	○	○	○	–	–
Double end seals	/V○	–	○	○	○	○	○	○	○	○	○	–	–
Specified grease(4)	/Y○	–	○	○	○	○	○	○	○	○	○	–	–
Scrapers	/Z○	–	○	○	○	○	○	○	○	○	○	–	–

Notes(1) : Applicable to MX, MXG, MXH20, MXHG20, LRX, LRXG, LRXH20, and LRXHG20 (Flange types).
(2) : Not applicable to stainless steel mode.
(3) : Applicable to MX series
(4) : Applicable to LRX series
(5) : Not applicable to low section frange and block types.

Table 7.4 Special specifications (Non interchangeable specification)

Optional specification	Supplemental code	Size											
		10	12	15	20	25	30	35	45	55	65	85	100
Butt-jointing track rails	/A	○	○	○	○	○	○	○	○	○	○	○	○
Opposite reference surfaces arrangement	/D	○	○	○	○	○	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○	○	○	○	○	○
Caps for rail mounting holes	/F	×	○	○	○	○	○	○	○	○	○	○	○
Changed pitch of slide unit middle mounting holes(1)	/GE	×	×	○	○	○	○	○	○	○	○	×	○
Half pitch of track rail mounting holes	/HP	×	○	○	○	○	○	○	○	○	○	○	×
Inspection sheet	/I	○	○	○	○	○	○	○	○	○	○	○	○
Female threads for bellows	/J○	×	×	○	○	○	○	○	○	○	○	○	×
Black chrome surface treatment	/L○	×	○	○	○	○	○	○	○	○	○	×	×
Fluorine black chrome surface treatment	/LF○	×	○	○	○	○	○	○	○	○	○	×	×
With track rail mounting bolts(2)	/MA	×	○	○	○	○	○	○	○	○	○	×	×
Without track rail mounting bolts(3)	/MN	○	○	○	○	○	○	○	○	○	○	○	○
No end seal(4)	/N	○	○	○	○	○	○	○	○	×	×	×	×
Rail cover plate for track rail(3)	/PS	×	×	×	×	×	×	○	○	○	×	×	×
C-Lube plates(3)	/Q	○	○	○	○	○	○	○	○	○	○	○	×
C-Wiper(2)(5)	/RC○	×	×	×	○	○	○	○	○	○	○	×	×
Inner seal(2)	/UR	×	×	×	○	○	○	○	○	○	○	×	×
Double end seals	/V○	–	○	○	○	○	○	○	○	○	○	○	○
Matched sets to be used as an assembled group	/W○	○	○	○	○	○	○	○	○	○	○	×	×
Specified grease(3)	/Y○	○	○	○	○	○	○	○	○	○	○	○	○
Scrapers	/Z○	–	○	○	○	○	○	○	○	○	○	○	○

Notes(1) : Applicable to MX, MXG, MXH20, MXHG20, LRX, LRXG, LRXH20, and LRXHG20 (Flange types).
(2) : Applicable to MX series
(3) : Applicable to LRX series
(4) : Not applicable to low section frange and block types.
(5) : /RC includes /UR and /Z as standard.

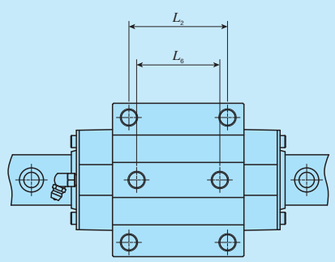
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 5 Combination of special specifications

	A	D	E	F	GE	HP	I	J	L	LF	MA	MN	N	PS	Q	RC	T	UR	V	W	Y
D	○																				
E	–	–																			
F	○	○	○																		
GE	○	○	○	○																	
HP	–	○	–	○	○																
I	○	○	○	○	○	○															
J	○	○	○	○	○	–	○														
L	○	○	○	○	○	○	○	○													
LF	○	○	○	○	○	○	○	○	–												
MA	○	○	○	○	○	○	○	○	○	○											
MN	○	○	○	○	○	○	○	○	○	○	–										
N	○	○	○	–	○	○	○	–	○	○	○	○									
PS	–	○	○	–	○	○	○	○	–	–	–	○	–								
Q	○	○	○	○	○	○	○	–	○	○	–	○	○	○							
RC	–	○	○	○	○	○	○	–	○	○	○	–	–	–	–						
T	–	○	○	○	○	○	–	–	○	○	○	○	○	–	○	–					
UR	–	○	○	○	○	○	○	○	○	○	○	–	–	–	–	–	–				
V	○	○	○	○	○	○	○	●	○	○	○	○	–	○	–	○	○	○			
W	○	○	–	○	○	○	○	○	○	○	○	○	○	○	○	○	–	○	○		
Y	○	○	○	○	○	○	○	○	○	○	–	○	○	○	–	–	○	–	○	○	
Z	○	○	○	○	○	○	○	●	○	○	○	○	–	–	–	–	○	○	●	○	○

Remarks 1 : The mark — indicates that this combination cannot be made.
2 : If the ● marks are required, please consult IKO.
3 : If a combination of special specifications is required, indicate the supplemental codes in alphabetical order.

Table 9 Pitch of slide unit middle mounting holes (Supplemental code /GE)

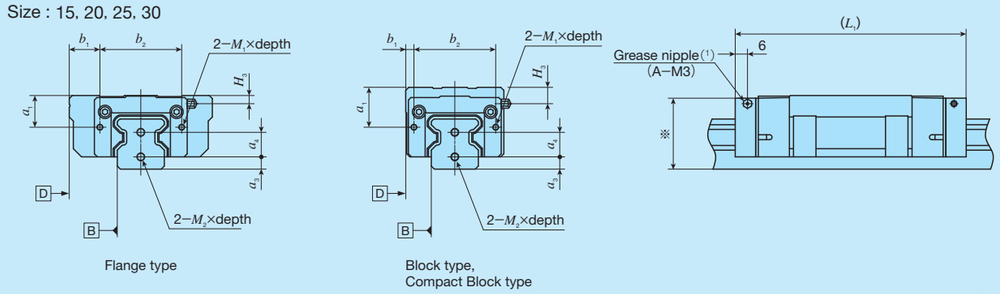


unit : mm

Size	L_2	L_6
15	30	26
20	40	35
25	45	40
30	52	44
35	62	52
45	80	60
55	95	70
65	110	82
100	200	150

Table 10.1 Female threads for bellow mounting (For single slide unit /J, For assembled set /J /JJ)

Size : 15, 20, 25, 30



unit : mm

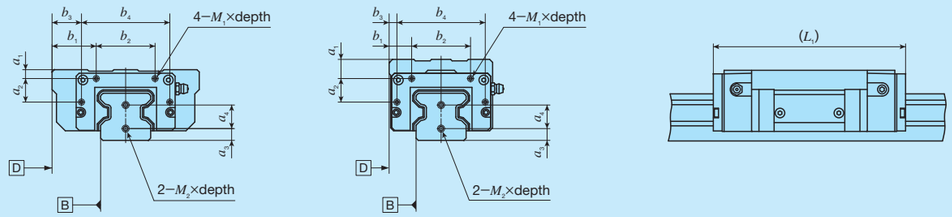
Model number		Slide unit						Track rail		
		a_1	b_1	b_2	M_1×depth	L_1(2)	H_3	a_3	a_4	M_2×depth
MXC 15	LRXC 15	10.5	10.5	26	M3×6	67	1	4	8	M3×6
MX 15	LRX 15					83				
MXG 15	LRXG 15					99				
MXDC 15	LRXDC 15	14.5	4			67	5			
MXD 15	LRXD 15					83				
MXDG 15	LRXDG 15					99				
MXSC 15	LRXSC 15	10.5				67	1			
MXS 15	LRXS 15					83				
MXSG 15	LRXSG 15					99				
MXC 20(3)	LRXC 20(3)	12	13.5	36	M3×6	81	2	5	10	M4×8
MX 20(3)	LRX 20(3)					101				
MXG 20(3)	LRXG 20(3)					121				
MXL 20(3)	–					143				
MXDC 20	LRXDC 20	16	4			81	6			
MXD 20	LRXD 20					101				
MXDG 20	LRXDG 20					121				
MXDL 20	–					143				
MXSC 20	LRXSC 20	12				81	2			
MXS 20	LRXS 20					101				
MXSG 20	LRXSG 20					121				
MXSL 20	–					143				
MXC 25	LRXC 25	15.5	15	40	M3×6	89	4	6	12	M4×8
MX 25	LRX 25					113				
MXG 25	LRXG 25					128				
MXL 25	–					152				
MXDC 25	LRXDC 25	19.5	4			89	8			
MXD 25	LRXD 25					113				
MXDG 25	LRXDG 25					128				
MXDL 25	–					152				
MXSC 25	LRXSC 25	15.5				89	4			
MXS 25	LRXS 25					113				
MXSG 25	LRXSG 25					128				
MXSL 25	–					152				
MXC 30	LRXC 30	18.5	20	50	M3×6	100	4.8	7	14	M4×8
MX 30	LRX 30					128				
MXG 30	LRXG 30					149				
MXL 30	–					177				
MXDC 30	LRXDC 30	21.5	5			100	7.8			
MXD 30	LRXD 30					128				
MXDG 30	LRXDG 30					149				
MXDL 30	–					177				
MXSC 30	LRXSC 30	18.5				100	4.8			
MXS 30	LRXS 30					128				
MXSG 30	LRXSG 30					149				
MXSL 30	–					177				

Notes(1) : The specification and mounting position of grease nipple are different from those of standard products. Grease nipple A-M4 is attached to size 30. For grease nipple specification, see Table 13.1 on page Ⅲ-10.
(2) : The values for the slide unit with female threads for bellow mounting at the both ends.
(3) : MXHC20, MXH20, MXHG20, MXHL20, LRXHC20, LRXH20, and LRXHG20 are also applied.
Remarks 1 : Also applicable to same size of stainless steel products.
2 : For the size 15 and 20 of flange type and compact block type, the dimension marked ※ is higher than H dimension. For details, consult IKO for future information.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 10.2 Female threads for bellows (For single slide unit /J, For assembled set /J /JJ)

Size : 35, 45, 55, 65, 85



Flange type

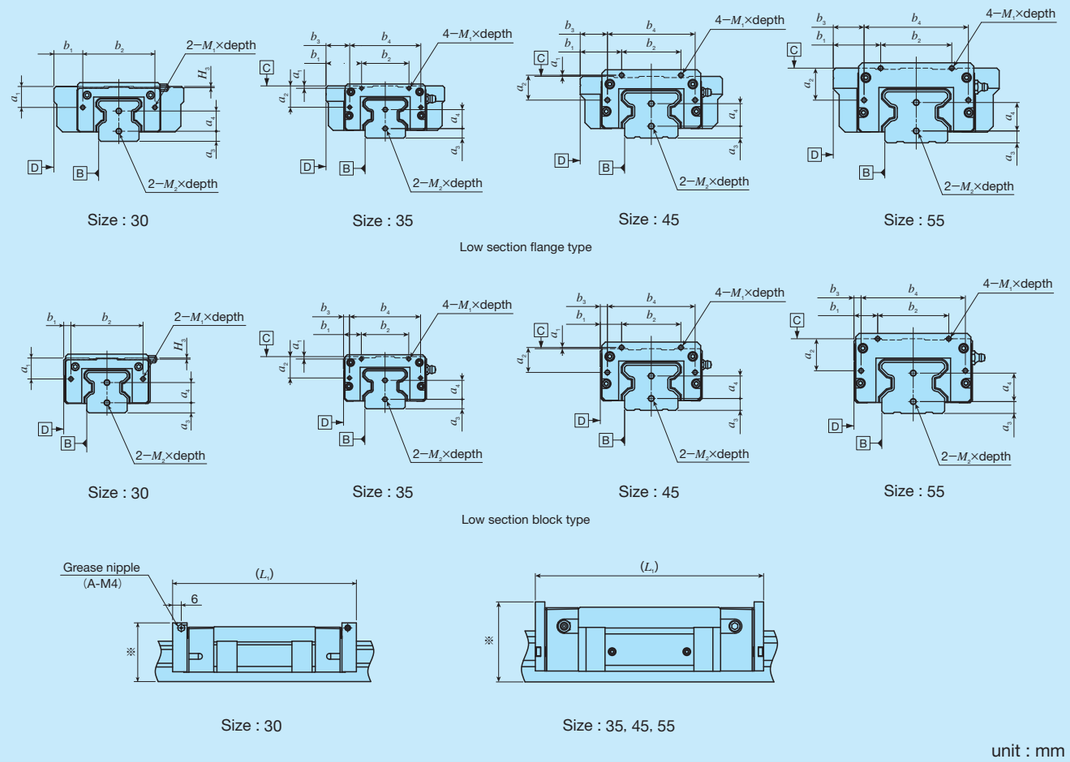
Block type,
Compact Block type

unit : mm

Model number		Slide unit								Track rail		
		a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(1)	a_3	a_4	M_2×depth
MXC 35	LRXC 35	6	16	30	40	20	60	M3× 6	99	8	16	M4× 8
MX 35	LRX 35								131			
MXG 35	LRXG 35								159			
MXL 35	–								191			
MXDC 35	LRXDC 35	13		15		5			99			
MXD 35	LRXD 35								131			
MXDG 35	LRXDG 35								159			
MXDL 35	–								191			
MXS 35	–	6							131			
MXSG 35	–								159			
MXC 45	LRXC 45	7	21	35	50	23	74	M4× 8	123	10	19	M5×10
MX 45	LRX 45								163			
MXG 45	LRXG 45								203			
MXL 45	–								243			
MXDC 45	LRXDC 45	17		18		6			123			
MXD 45	LRXD 45								163			
MXDG 45	LRXDG 45								203			
MXDL 45	–								243			
MXS 45	–	7							163			
MXSG 45	–								203			
MXC 55	LRXC 55	7	27	40	60	26	88	M4× 8	145	10	24	M5×10
MX 55	LRX 55								193			
MXG 55	LRXG 55								247			
MXL 55	–								301			
MXDC 55	LRXDC 55	17		20		6			145			
MXD 55	LRXD 55								193			
MXDG 55	LRXDG 55								247			
MXDL 55	–								301			
MXS 55	–	7							193			
MXSG 55	–								247			
MXC 65		8.7	37	47.5	75	31	108	M5×10	191	14	28	M6×12
	LRXC 65								192			
MX 65									255			
	LRX 65								256			
MXG 65									319			
	LRXG 65								320			
MXL 65	–								391			
MXDC 65				25.5		9			191			
	LRXDC 65								192			
MXD 65									255			
	LRXD 65								256			
MXDG 65									319			
	LRXDG 65								320			
MXDL 65	–								391			
–	LRX 85	15	45	62.5	90	37.5	140	M6×10	334	14.5	38	M6×12
–	LRXG 85								406			
–	LRXL 85								505			

Note(1) : The values for the slide unit with female threads for bellow mounting at the both ends.

Table 10.3 Female threads for bellow mounting (For single slide unit /J, For assembled set /J /JJ)



Size : 30 Size : 35 Size : 45 Size : 55

Low section flange type

Size : 30 Size : 35 Size : 45 Size : 55

Low section block type

Size : 30 Size : 35, 45, 55

unit : mm

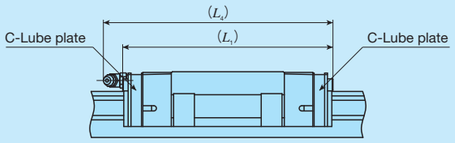
Model number	Slide unit									Track rail		
	a_1(1)	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(2)	H_3	a_3	a_4	M_2×depth
MXN 30	14.5	–	20	50	–	–	M3×6	128	0.8	7	14	M4× 8
MXNG 30								149				
MXNL 30								177				
MXNS 30			5					128				
MXNSG 30								149				
MXNSL 30								177				
MXN 35	2	16	30	40	20	60	M3×6	131	–	8	16	M4× 8
MXNG 35								159				
MXNL 35								191				
MXNS 35			15		5			131				
MXNSG 35								159				
MXNSL 35								191				
MXN 45	1	21	35	50	23	74	M4×8	163	–	10	19	M5×10
MXNG 45								203				
MXNL 45								243				
MXNS 45			18		6			163				
MXNSG 45								203				
MXNSL 45								243				
MXN 55	0	27	40	60	26	88	M4×8	193	–	10	24	M5×10
MXNG 55								247				
MXNL 55								301				
MXNS 55			20		6			193				
MXNSG 55								247				
MXNSL 55								301				

Notes(1) : Values a_1 are the dimension between C-surface (upper surface of slide unit) and the center of female thread.
(2) : The values for the slide unit with female threads for bellow mounting at the both ends.
Remark : The dimension marked ※ is higher than H dimension. For details, consult IKO for future information.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 11.1 Slide unit with C-Lube plates (Supplemental code /Q)

Size : 10, 12, 15, 20, 25, 30



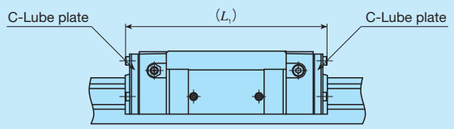
unit : mm

Model number	L_1	L_4
LRXD 10…SL	43.5	–
LRXC 12	47	50
LRX 12	57	60
LRXG 12	68	71
LRXC 15	63	64
LRX 15	79	80
LRXG 15	95	96
LRXC 20	76	84
LRX 20	96	104
LRXG 20	116	124
LRXC 25	85	93
LRX 25	109	117
LRXG 25	124	132
LRXC 30	96	107
LRX 30	124	135
LRXG 30	145	156

Remarks 1 : The values for the slide unit with C-Lube plates at both ends.
2 : The table shows representative model numbers only and is also applicable to all models in the same size.

Table 11.2 Slide unit with C-Lube plates (Supplemental code /Q)

Size : 35, 45, 55, 65, 85



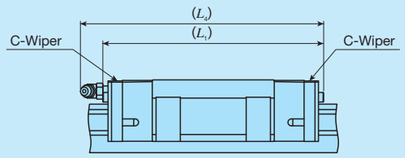
unit : mm

Model number	L_1
LRXC 35	103
LRX 35	135
LRXG 35	163
LRXC 45	127
LRX 45	167
LRXG 45	207
LRXC 55	149
LRX 55	197
LRXG 55	251
LRXC 65	198
LRX 65	262
LRXG 65	326
LRX 85	341
LRXG 85	413
LRXL 85	512

Remarks 1 : The values for the slide unit with C-Lube plates at both ends.
2 : The table shows representative model numbers only and is also applicable to all models in the same size.

Table 12.1 Slide unit with C-Wipers (Supplemental code /RC /RCC)

Size : 20, 25, 30



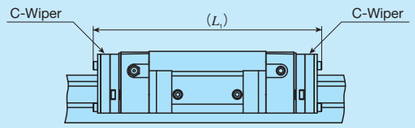
unit : mm

Model number	L_1	L_4
MXC 20	80	90
MX 20	100	110
MXG 20	120	130
MXL 20	142	153
MXC 25	89	99
MX 25	113	123
MXG 25	128	138
MXL 25	152	162
MXC 30	100	113
MX 30	128	141
MXN 30		138
MXG 30	149	162
MXNG 30		159
MXL 30	177	190
MXNL 30		187

Remarks 1 : The values for the slide unit with C-Wipers at both ends.
2 : The table shows representative model numbers only and is also applicable to all models in the same size.

Table 12.2 Slide unit with C-Wipers (Supplemental code /RC /RCC)

Size : 35, 45, 55, 65



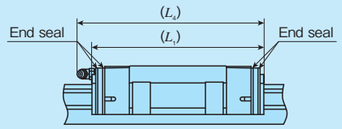
unit : mm

Model number	L_1
MXC 35	123
MX 35	155
MXG 35	183
MXL 35	215
MXC 45	149
MX 45	189
MXG 45	229
MXL 45	269
MXC 55	172
MX 55	220
MXG 55	274
MXL 55	328
MXC 65	223
MX 65	287
MXG 65	351
MXL 65	423

Remarks 1 : The values for the slide unit with C-Wipers at both ends.
2 : The table shows representative model numbers only and is also applicable to all models in the same size.

Table 13.1 Slide unit with double end seals (Supplemental code /V /VV)

Size : 12, 15, 20, 25, 30



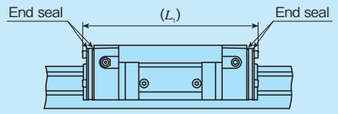
unit : mm

Model number		L_1	L_4
MXC 12	–	49	52
–	LRXC 12	44	46
MX 12	–	58	61
–	LRX 12	54	57
MXG 12	–	70	72
–	LRXG 12	65	67
MXC 15	LRXC 15	58	60
MX 15	LRX 15	74	76
MXG 15	LRXG 15	90	92
MXC 20	LRXC 20	73	83
MX 20	LRX 20	93	103
MXG 20	LRXG 20	113	123
MXL 20	–	135	145
MXC 25	LRXC 25	83	92
MX 25	LRX 25	107	116
MXG 25	LRXG 25	122	131
MXL 25	–	146	155
MXC 30	LRXC 30	93	106
MX 30	LRX 30	121	134
MXN 30	–		131
MXG 30	LRXG 30	142	155
MXNG 30	–		152
MXL 30	–	170	183
MXNL 30	–		180

Remarks 1 : The values for the slide unit with double end seals at both ends.
2 : The table shows representative model numbers only and is also applicable to all models in the same size.

Table 13.2 Slide unit with double end seals (Supplemental code /V /VV)

Size : 35, 45, 55, 65, 85, 100



unit : mm

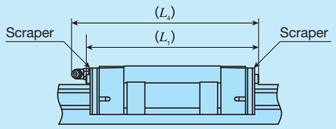
Model number		L_1
MXC 35	LRXC 35	101
MX 35	LRX 35	133
MXG 35	LRXG 35	161
MXL 35	–	193
MXC 45	LRXC 45	127
MX 45	LRX 45	167
MXG 45	LRXG 45	207
MXL 45	–	247
MXC 55	LRXC 55	149
MX 55	LRX 55	197
MXG 55	LRXG 55	251
MXL 55	–	305
MXC 65	–	192
–	LRXC 65	193
MX 65	–	256
–	LRX 65	257
MXG 65	–	320
–	LRXG 65	321
MXL 65	–	392
–	LRX 85	338
–	LRXG 85	410
–	LRXL 85	509
–	LRXG 100	376

Remarks 1 : The values for the slide unit with double end seals at both ends.
2 : The table shows representative model numbers only and is also applicable to all models in the same size.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 14.1 Slide unit with scrapers (Supplemental code /Z, /ZZ)

Size : 12, 15, 20, 25, 30



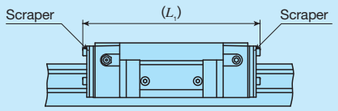
unit : mm

Model number		L_1	L_4
MXC 12	–	50	53
–	LRXC 12	45	48
MX 12	–	60	63
–	LRX 12	56	58
MXG 12	–	71	74
–	LRXG 12	66	69
MXC 15	LRXC 15	60	61
MX 15	LRX 15	76	77
MXG 15	LRXG 15	92	93
MXC 20	LRXC 20	74	83
MX 20	LRX 20	94	103
MXG 20	LRXG 20	114	123
MXL 20	–	137	146
MXC 25	LRXC 25	85	93
MX 25	LRX 25	109	117
MXG 25	LRXG 25	124	132
MXL 25	–	148	156
MXC 30	LRXC 30	96	107
MX 30	LRX 30	124	135
MXN 30	–		132
MXG 30	LRXG 30	145	156
MXNG 30	–		153
MXL 30	–	173	184
MXNL 30	–		181

Remarks 1 : The values are the slide unit lengths with scrapers at both ends.
2 : The table shows representative model numbers and is also applicable to all models in the same size.

Table 14.2 Slide unit with scrapers (Supplemental code /Z, /ZZ)

Size : 35, 45, 55, 65, 85, 100



unit : mm

Model number		L_1
MXC 35	LRXC 35	103
MX 35	LRX 35	135
MXG 35	LRXG 35	163
MXL 35	–	195
MXC 45	LRXC 45	129
MX 45	LRX 45	169
MXG 45	LRXG 45	209
MXL 45	–	249
MXC 55	LRXC 55	151
MX 55	LRX 55	199
MXG 55	LRXG 55	253
MXL 55	–	307
MXC 65	LRXC 65	194
MX 65	LRX 65	258
MXG 65	LRXG 65	322
MXL 65	–	394
–	LRX 85	339
–	LRXG 85	411
–	LRXL 85	510
–	LRXG 100	378

Remarks 1 : The values are the slide unit lengths with scrapers at both ends.
2 : The table shows representative model numbers and is also applicable to all models in the same size.

Lubrication

Lithium-soap base grease (ALVANIA grease EP 2: SHELL) is pre-packed in MX and LRX series slide units. In MX, C-Lube a component part is placed in the ball recirculation path, thereby extending the re-lubrication (greasing) interval time and reducing maintenance work for a long period. MX and LRX series are provided with grease nipple shown in Table 15. Supply nozzles matching the size of grease nipple are also available. For these parts for lubrication, refer to Table 14 and 15.1 on page Ⅲ-22, and Table 16 on page Ⅲ-23, and consult IKO for further information.

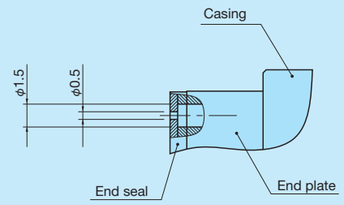


Fig. 2 Oil hole specification of LRXD10···SL

Table 15 Parts for lubrication

Size	Grease nipple(1)	Applicable supply nozzle	Nominal size of female threads for piping
10	Oil hole	Miniature greaser	–
12	A-M3	A-5120V A-5240V B-5120V B-5240V	–
15(2)	A-M4		M4
20(2)	B-M4	A-8120V B-8120V	
25(2)			
30(3)(4)	B-M6	Grease gun available on the market	M6
35(5)	JIS type 1		
45(6)	JIS type 2		PT1/8
55			
65			
85			
100	A-PT1/4		PT1/4

Notes(1) : See Table 13.1, 13.2 on Page Ⅲ-10 for specifications of grease nipples.
(2) : The grease nipple type is A-M3 when female threads for bellows (supplemental code of "/J") are specified.
(3) : The grease nipple type is A-M4 when female threads for bellows (supplemental code of "/J") are specified.
(4) : The grease nipple type of the MXN30 slide unit is B-M4. The grease nipple type is A-M4 when female threads for bellows (supplemental code of "/J") are specified.
(5) : The grease nipple mounting screw of the MXN35 slide unit is made smaller along the movement of the slide unit than in the traverse direction. Consult IKO when mounting the grease nipple along the movement of the slide unit.
(6) : The grease nipple type of the MXN45 slide unit is JIS type 1.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Dust Protection

MX and LRX series are protected from dust by special rubber seals. But, if large amount of fine contaminants are present, or if large particles of foreign matters such as dust or chips may fall on the track rail, it is recommended to provide protective covers such as bellows for the entire linear motion mechanism. Bellows to match the dimensions of MX and LRX series are optionally available. They are easy to mount and highly effective for dust protection. If required, refer to page Ⅲ-25 and consult IKO.
In otherhands, rail cover sheet to cover mounting holes all over the track rail or track rail for mounting from bottom can be prepared also for dust protection. Please consult IKO it required.

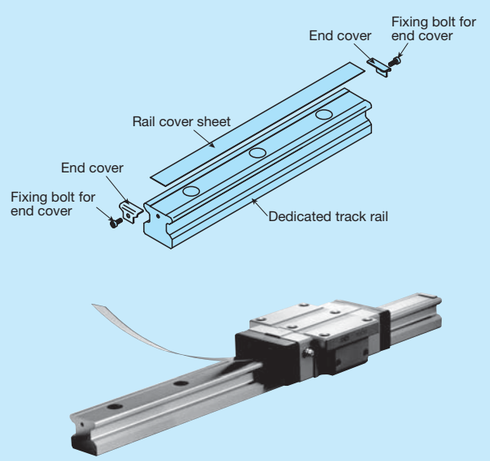


Fig. 3 Rail covver sheet

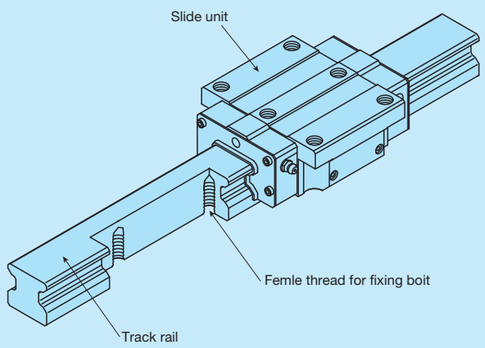


Fig. 4 Track rail for mounting from bottom

Precautions for Use

❶Mounting surface, reference mounting surface, and general

Dedicated bellows are available to MX and LRX series slide units. They are easy to be mounted and have a great dust-proof effect. Consult IKO for further information.
IKO also provide cover tape (see Fig. 5) to cover the mounting holes of the track rail and top-mounted track rails (see Fig. 6) having no mounting holes on their top surfaces.
The reference mounting surface of the track rail is on the upper side (in the arrow direction) when the IKO mark is normally viewed on the top of the track rail.

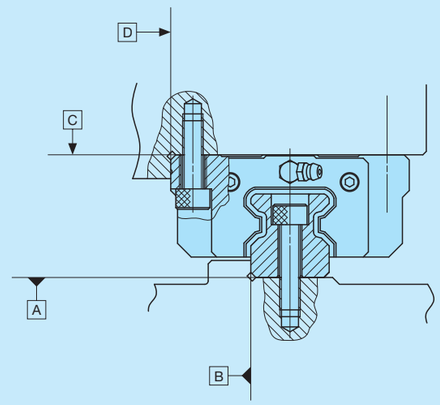


Fig. 5 Reference mounting surfaces and general mounting structure of Linear Way and Linear Roller Way

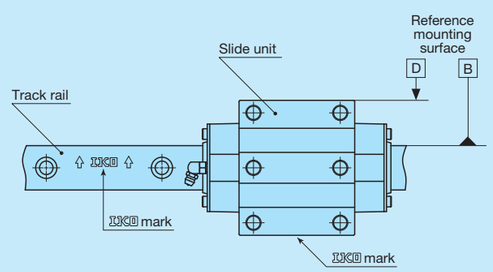


Fig. 6 Reference mounting surface

❷Mounting slide unit

In the slide unit, mounting holes are also prepared on the middle of slide unit (see Table 16.1 and 16.2) to support any direction of load and moment in good balance.
It is recommended to fix all mounting holes to have full performance of products.
For mounting slide unit of Compact block type and Low section block type, insertion depth shown in Table 16.1 and 16.2 is recommended to keep certain fixing strength.
Similarly, the penetration depth of the mounting holes in the center of the slide unit width should be equal to or less than the maximum penetration depth in the Table.

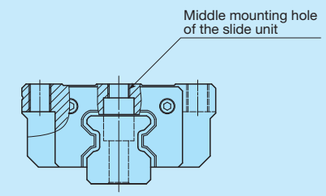


Fig. 7 Middle mounting hole of the slide unit

Table 16.1 Screwing depth of slide unit mounting holes for Compact block type

Model number		Recommended minimum depth
MXS 15	LRXS 15	4.5
MXS 20	LRXS 20	5.5
MXS 25	LRXS 25	7
MXS 30	LRXS 30	9

Remark : The table shows representative model numbers and is also applicable to all models in the same size.

Table 16.2 Screwing depth of slide unit mounting holes for Low section block type

Model number	Recommended minimum depth
MXNS 30	8
MXNS 35	8.5
MXNS 45	10.5
MXNS 55	14

Remark : The table shows representative model numbers and is also applicable to all models in the same size of low section block type.

❸Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surfaces as shown in Fig. 8. Otherwise, corner radius R is recommended shown in Table 17. Table 17 shows recommended shoulder heights and radius of the reference mounting surfaces.

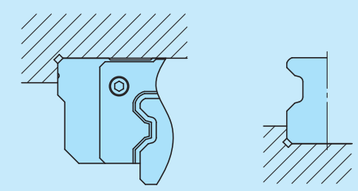
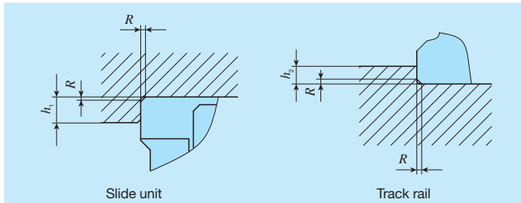


Fig. 8 Relieved radius shape of reference mounting surface

Table 17 Corner radius and shoulder height of reference mounting surfaces



unit : mm

Size	Slide unit Shoulder height h_1	Track rail Shoulder height h_2	Relieved radius R (max.)
10	4	1	0.3
12	4	2	0.5
15	4	3	0.5
20	5	4	0.5
25	6	5	1
30	8	5.5	1
35	8	5.5	1
45	8	7	1.5
55	10	8	1.5
65	10	10	1.5
85	14	14	2.5 (Slide unit) 1.5 (Track rail)
100	14	13	2.5

❹Tightening torque of mounting bolts

The standard torque values for MX and LRX series mounting bolts are shown in Tables 18. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown.
When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 18 Tightening torque of mounting bolts

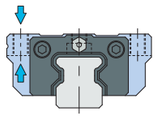
Bolt size	Tightening torque N·m	
	Carbon steel bolt	Stainless steel bolt
M 2.6×0.45	–	0.70
M 3 ×0.5	1.7	1.1
M 4 ×0.7	4.0	2.5
M 5 ×0.8	7.9	5.0
M 6 ×1	13.3	8.5
M 8 ×1.25	32.0	20.4
M10 ×1.5	62.7	–
M12 ×1.75	108	–
M14 ×2	172	–
M16 ×2	263	–
M20 ×2.5	512	–
M24 ×3	882	–
M30 ×3.5	1 750	–

Remarks 1 : The recommended tightening torque is for strength division 12.9 or property division A2-70.
2 : For the flange type slide units (MXC, MX, MXG, MXL, LRXC, LRX, and LRXG) of Sizes 15, 20, 25, 30, and 35, recommended tightening torques of mounting screws in the center mounting holes are 70 to 80% of the values in the Table.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Flange type mounting from top/bottom

Shape	MX • LRX 
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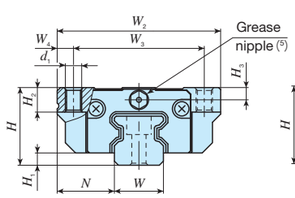
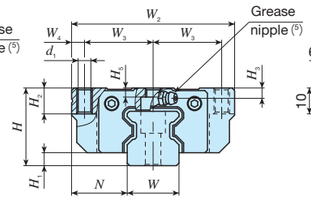
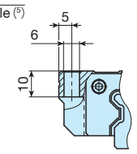
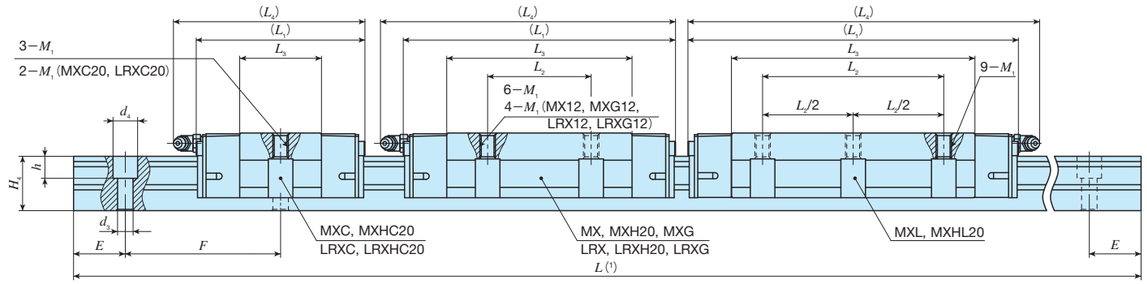


MXC12, LRXC12
MX 12, LRX 12
MXG12, LRXC12



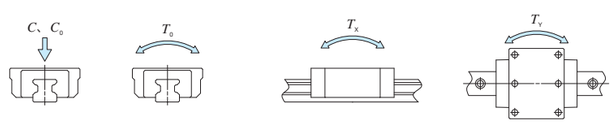


MXHC20, LRXHC 20
MXH 20, LRXH 20
MXHG20, LRXHG 20
Models mounting from bottom only(2)



Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	M_1	H_2	H_3	H_5	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (3) Bolt size×length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MXC 12		○	0.058	0.92	19	3	14	40	32	4	40	–	15.8	44	3.4	M4	6	3	–	12	12	3.5	6	4.5	20	40	M3×12	4 250	6 500	49.4	18.6 196	18.6 196
	LRXC 12	○									37		14.8	40														3 900	6 090	46.3	16.3 170	16.3 170
MX 12		○	0.092								50	15	25.4	53														6 120	10 400	79.1	45.8 371	45.8 371
	LRX 12	○									47		25.3	50														5 890		78.7	45.2 343	45.2 343
MXG 12		○	0.13								61		36.6	64														8 120	15 000	114	92.7 628	92.7 628
	LRXG 12	○									58		35.8	61														7 710	14 600	111	88.6 581	88.6 581
MXC 15	LRXC 15	○	0.13	1.65	24	4	16	47	19	4.5	52	–	24	55	4.4	M5	7	3.5	3	15	16.5	4.5	8	6	30	60	M4×16	7 730	12 000	113	50.6 457	50.6 457
MX 15	LRX 15	○	0.20								68	30	40	71														11 500	20 000	188	136 942	136 942
MXG 15	LRXG 15	○	0.28								84		56	87														14 900	28 000	263	262 1 590	262 1 590
MXC 20(2)	LRXC 20(2)	○	0.29	2.73	30	5	21.5	63	26.5	5	66	–	31.6	74	–(2)	M6(2)	10	4	3.5	20	21	6	9.5	8.5	30	60	M5×20	16 100	26 400	341	150 1 260	150 1 260
MX 20(2)	LRX 20(2)	○	0.44								86	40	51.6	94														23 400	42 700	550	379 2 520	379 2 520
MXG 20(2)	LRXG 20(2)	○	0.61								106		71.6	114														30 100	58 900	760	713 4 200	713 4 200
MXL 20(2)	–	–	0.80								128	70	94.1	137														37 200	77 200	996	1 210 6 560	1 210 6 560

Notes(1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : They can be mounted from top side only.
For mounting from bottom side, MXHC20, MXH20, MXHG20, MXHL20, LRXHC20, LRXH20 and LRXHG20 can be used.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of MX series, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(5) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : A mounting thread hole for grease nipple is provided on the left and right end plates respectively.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MX	G	15	C2	R360	T1	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MX	Flange type mounting from top/bottom
LRX	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size

12, 15, 20

④ Number of slide unit (two units)

⑤ Length of track rail (360mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

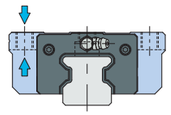
⑨ Special specification

A, D, E, F, GE, HP, I, J, L, LF
MA, MN, N, Q, RC, T, UR, V
W, Y, Z

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Flange type mounting from top/bottom

Shape	MX • LRX 
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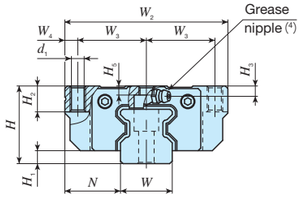
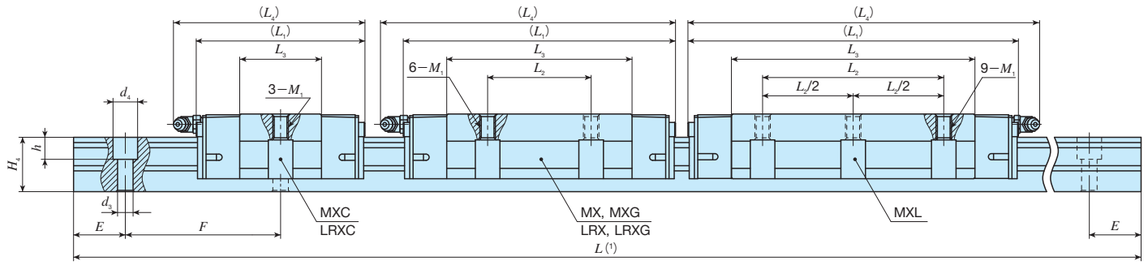
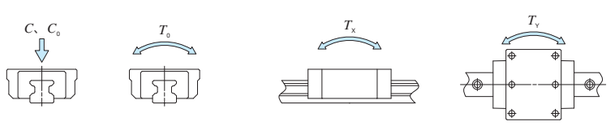




Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	M_1	H_2	H_3	H_5	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MXC 25	LRXC 25	○	0.44	3.59	36	6	23.5	70	28.5	6.5	74	–	36	83	7	M 8	10	5	5	23	24.5	7	11	9	30	60	M6×25	21 600	33 800	500	213 1 810	213 1 810
MX 25	LRX 25	○	0.67								98	45	60	107														32 100	56 300	833	573 3 800	573 3 800
MXG 25	LRXG 25	○	0.84								113		75	122														38 200	70 300	1 040	885 5 380	885 5 380
MXL 25	–	–	1.08								137	70	99	146														47 400	92 800	1 370	1 530 8 480	1 530 8 480
MXC 30	LRXC 30	○	0.78	5.01	42	6.5	31	90	36	9	85	–	42.4	95	8.5	M10	10	6.5	5.5	28	28	9	14	12	40	80	M8×28	29 200	44 600	808	329 2 740	329 2 740
MX 30	LRX 30	○	1.20								113	52	70.4	123														43 400	74 400	1 350	883 5 780	883 5 780
MXG 30	LRXG 30	○	1.58								134		91.4	144														53 200	96 700	1 750	1 470 8 740	1 470 8 740
MXL 30	–	–	2.03								162	80	119.4	172														65 600	126 000	2 290	2 500 13 600	2 500 13 600

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : A mounting thread hole for grease nipple is provided on the left and right end plates respectively.



MX • LRX

Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MX	G	25	C2	R840	T1	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MX	Flange type mounting from top/bottom
LRX	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size: 25, 30

④ Number of slide unit (two units)

⑤ Length of track rail (840mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

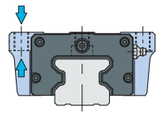
⑨ Special specification

A, D, E, F, GE, HP, I, J, L, LF
MA, MN, N, Q, RC, T, UR, V
W, Y, Z

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Flange type mounting from top/bottom

Shape	MX • LRX 
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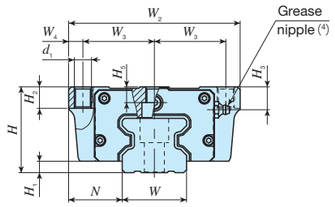
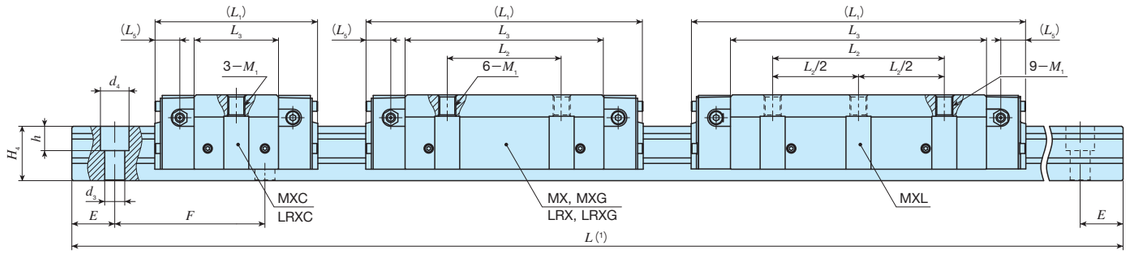
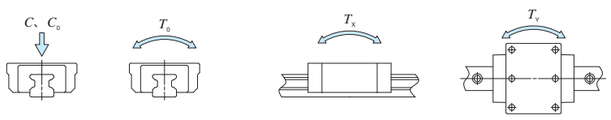




Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_5	d_1	M_1	H_2	H_3	H_5	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MXC 35		○	1.13	6.88	48	6.5	33	100	41	9	92	–	46.6	12.7	8.5	M10	13	13	7	34	32	9	14	12	40	80	M 8×35	39 500	60 000	1 300	506 3 950	506 3 950
	LRXC 35	○												12.5																		
MX 35		○	1.76								124	62	78.6	12.7														58 700	100 000	2 170	1 360 8 470	1 360 8 470
	LRX 35	○												12.5																		
MXG 35		○	2.41								152		106.6	12.7														74 200	135 000	2 930	2 440 13 800	2 440 13 800
	LRXG 35	○												12.5																		
MXL 35	–	–	3.00								184	100	138.6	12.7														90 800	175 000	3 800	4 060 21 300	4 060 21 300
MXC 45	LRXC 45	○	2.11	10.8	60	8	37.5	120	50	10	114	–	59	17.5	10.5	M12	15	16	11	45	38	14	20	17	52.5	105	M12×40	64 100	95 600	2 660	1 010 7 800	1 010 7 800
MX 45	LRX 45	○	3.26								154	80	99															95 400	159 000	4 430	2 700 16 800	2 700 16 800
MXG 45	LRXG 45	○	4.60								194		139															124 000	223 000	6 200	5 220 29 000	5 220 29 000
MXL 45	–	–	5.66								234	120	179															151 000	287 000	7 980	8 560 44 400	8 560 44 400

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : Three female threaded holes for grease nipple are prepared on each end plate.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MX	G	35	C2	R1200	T2	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MX	Flange type mounting from top/bottom
LRX	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size: 35, 45

④ Number of slide unit (two units)

⑤ Length of track rail (120mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

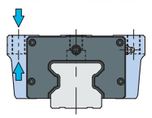
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

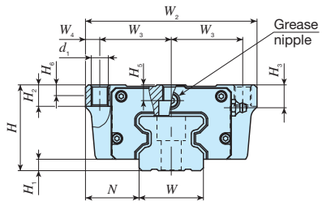
⑨ Special specification: A, D, E, F, GE, HP, I, J, L, LF MA, MN, N, PS, Q, RC, T, UR V, W, Y, Z

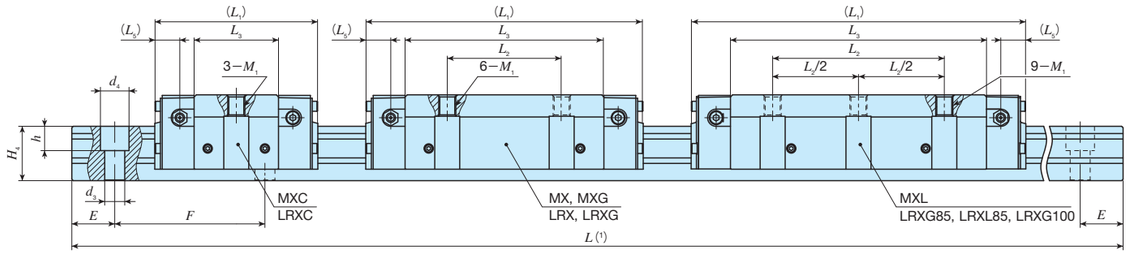
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Flange type mounting from top/bottom

Shape	MX • LRX 
Size	12 15 20 25 30 / 35 45 55 65 85 100

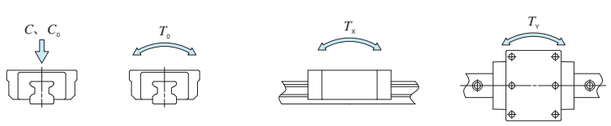




Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_5	d_1	M_1	H_2	H_3	H_5	H_6	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MXC 55	LRXC 55	○	3.49	14.1	70	9	43.5	140	58	12	136	–	72	20	12.5	M14	17	16	14	–	53	43	16	23	20	60	120	M14×45	99 700	149 000	4 830	1 880 14 400	1 880 14 400
MX 55	LRX 55	○	5.42								184	95	120																148 000	248 000	8 040	5 040 31 100	5 040 31 100
MXG 55	LRXG 55	○	7.93								238		174																198 000	359 000	11 700	10 400 57 000	10 400 57 000
MXL 55	–	–	10.1								292	150	228																244 000	470 000	15 300	17 700 90 700	17 700 90 700
MXC 65		○	7.18	22.6	90	12	53.5	170	71	14	180	–	95	26.3	14.5	M16	23	18	18.5	–	63	56	18	26	22	75	150	M16×60	174 000	249 000	9 790	4 200 32 000	4 200 32 000
	LRXC 65	○									181			26.6																		4 200 32 200	4 200 32 200
MX 65		○	11.5								244	110	159	26.3															260 000	415 000	16 300	11 300 69 000	11 300 69 000
	LRX 65	○									245			26.6																		11 300 69 300	11 300 69 300
MXG 65		○	16.0								308		223	26.3															337 000	581 000	22 800	21 800 120 000	21 800 120 000
	LRXG 65	○									309			26.6																			
MXL 65	–	–	20.8								380	200	295	26.3															419 000	768 000	30 200	37 600 193 000	37 600 193 000
–	LRX 85	–	25.4	36.7	110	16	65	215	92.5	15	323	140	232	27.5	17.8	M20	35	22	25.5	20	85	67	26.5	39	30	90	180	M24×70	440 000	753 000	38 900	29 500 163 000	29 500 163 000
–	LRXG 85	–	32.7								395	200	304																542 000	985 000	50 800	50 000 257 000	50 000 257 000
–	LRXL 85	–	44.0								494	280	403																674 000	1 300 000	67 300	87 000 422 000	87 000 422 000
–	LRXG 100*	–	43.0	43.2	120	15	75	250	110	15	362	200	262	29.7	17.8	M20	35	30	30.5	–	100	70	33	48	36	75	150	M30×80	498 000	821 000	49 700	35 800 199 000	35 800 199 000

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

Remarks 1 : For grease nipple specifications, see Table 15 on page Ⅱ-166.
2 : Three female threaded holes for grease nipple are prepared on each end plate.
3 : Model number marked * is semi-standard item.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MX	G	55	C2	R3000	T2	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MX	Flange type mounting from top/bottom
LRX	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size
35, 45, 55, 65, 85, 100

④ Number of slide unit (two units)

⑤ Length of track rail (3000mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

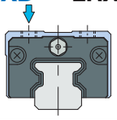
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

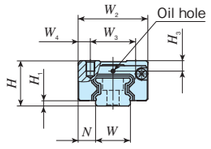
⑨ Special specification
A, D, E, F, GE, HP, I, J, L, LF
MA, MN, PS, Q, RC, T, UR, V
W, Y, Z

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

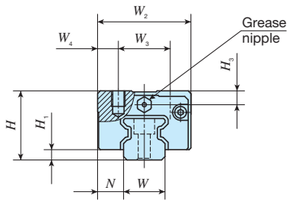
IKO C-Lube Linear Roller Way Super MX

Block type mounting from top

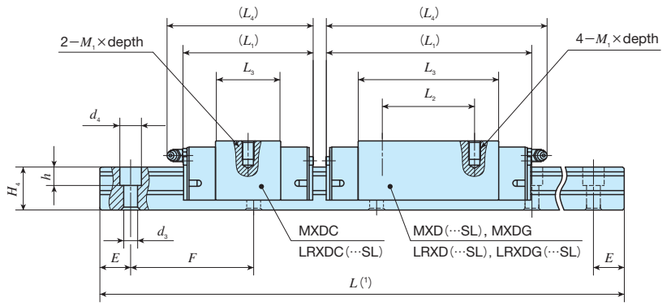
Shape	MXD • LRXD 				
Size	10	12	15	20	25
	30	35	45	55	65



LRXD10···SL



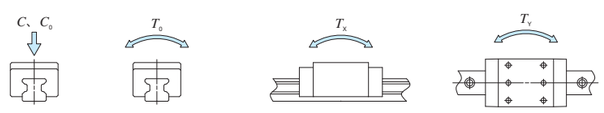
MXDC12, LRXDC12
MXD 12, LRXD 12
MXDG12, LRXDG12



Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
–	LRXD 10···SL	–	0.028	0.48	13	1.5	5	20	13	3.5	34.5	12	20.8	–	M2.6×3	3	10	8	3.5	6	3.5	12.5	25	M3×10	3 200	5 880	37.9	20.9 140	20.9 140
MXDC 12		○	0.045	0.92	20	3	7.5	27	15	6	40	–	15.8	44	M4 ×4.5	4	12	12	3.5	6	4.5	20	40	M3×12	4 250	6 500	49.4	18.6 196	18.6 196
	LRXDC 12	○									37		14.8	40											3 900	6 090	46.3	16.3 170	16.3 170
–	LRXDC 12···SL	○																											
MXD 12		○	0.072								50	15	25.4	53											6 120	10 400	79.1	45.8 371	45.8 371
	LRXD 12	○									47		25.3	50											5 890		78.7	45.2 343	45.2 343
MXD 12···SL		○									50		25.4	53											6 120		79.1	45.8 382	45.8 382
	LRXD 12···SL	○									47		25.3	50											5 890		78.7	45.2 343	45.2 343
MXDG 12		○	0.097								61		36.6	64											8 120	15 000	114	92.7 628	92.7 628
	LRXDG 12	○									58		35.8	61											7 710	14 600	111	88.6 581	88.6 581
–	LRXDG 12···SL	○																											

Notes (1) : Track rail lengths are shown in Table 2.1 and Table 2.2 on page Ⅱ-153, and Table 2.3 and Table 2.4 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel bolts are appended. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

Remarks 1 : Size 10 is provided with oil holes. For specification, see Fig. 2 on page Ⅱ-166.
2 : For grease nipple specifications, see Table 15 on page Ⅱ-166.
3 : In size 12, mounting thread hole for grease nipple is provided on the left and right end plates respectively.



Example of identification number of assembled set

Model code		Size	Part code		Material symbol	Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXD	G	12	C2	R560		T1	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Series

MXD	Block type mounting from bottom
LRXD	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long

③ Size

10, 12

④ Number of slide unit (two units)

⑤ Length of track rail (560mm)

⑥ Material symbol

No symbol	High carbon steel
SL	Stainless steel

⑦ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑧ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑨ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

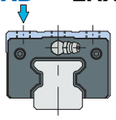
⑩ Special specification

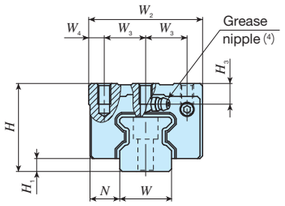
A, D, E, F, HP, I, L, LF, MA
MN, N, Q, T, V, W, Y, Z

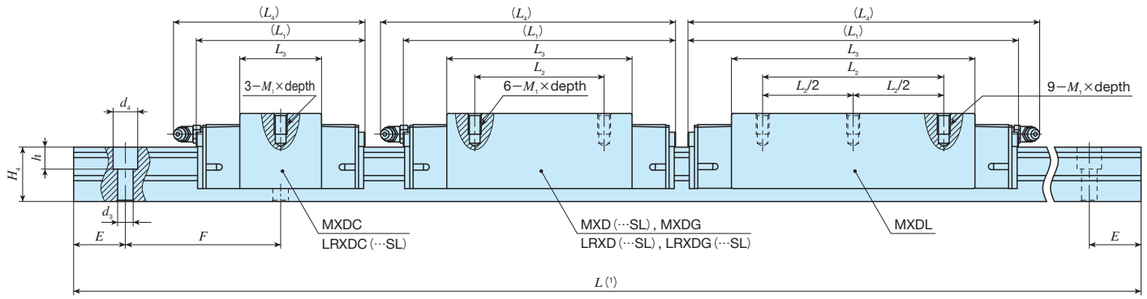
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Block type mounting from top

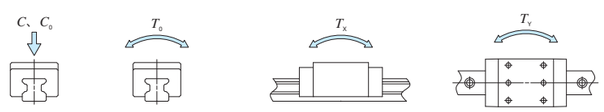
Shape	MXD • LRXD 				
Size	10	12	15	20	25
	30	35	45	55	65





Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth		H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MXDC 15	LRXDC 15	○	0.13	1.65	28	4	9.5	34	13	4	52	–	24	55	M4×8		7.5	15	16.5	4.5	8	6	30	60	M4×16	7 730	12 000	113	50.6 457	50.6 457
–	LRXDC 15…SL	○																												
MXD 15	LRXD 15	○	0.19								68	26	40	71												11 500	20 000	188	136 942	136 942
MXD 15…SL	LRXD 15…SL	○																												
MXDG 15	LRXDG 15	○	0.26								84		56	87												14 900	28 000	263	262 1 590	262 1 590
–	LRXDG 15…SL	○																												
MXDC 20	LRXDC 20	○	0.25	2.73	34	5	12	44	16	6	66	–	31.6	74	M5×8		8	20	21	6	9.5	8.5	30	60	M5×20	16 100	26 400	341	150 1 260	150 1 260
–	LRXDC 20…SL	○																												
MXD 20	LRXD 20	○	0.38								86	36	51.6	94												23 400	42 700	550	379 2 520	379 2 520
MXD 20…SL	LRXD 20…SL	○																												
MXDG 20	LRXDG 20	○	0.52								106	50	71.6	114												30 100	58 900	760	713 4 200	713 4 200
–	LRXDG 20…SL	○																												
MXDL 20	–	–	0.67								128	70	94.1	137												37 200	77 200	996	1 210 6 560	1 210 6 560

Notes (1) : Track rail lengths are shown in Table 2.1 and Table 2.2 on page Ⅱ-153 and Table 2.3 and Table 2.4 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel bolts are appended. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : A mounting thread hole for grease nipple is provided on the left and right end plates respectively.



Example of identification number of assembled set

Model code	Size	Part code			Material symbol	Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXD	G	20	C2	R840	—	T1	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Series

MXD	Block type mounting from bottom
LRXD	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size

15, 20

④ Number of slide unit (two units)

⑤ Length of track rail (840mm)

⑥ Material symbol

No symbol	High Carbon steel
SL	Stainless steel

⑦ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑧ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑨ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

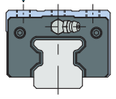
⑩ Special specification

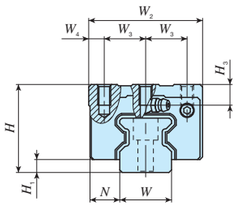
A, D, E, F, HP, I, J, L, LF, MA MN, N, Q, RC, T, UR, V, W, Y Z

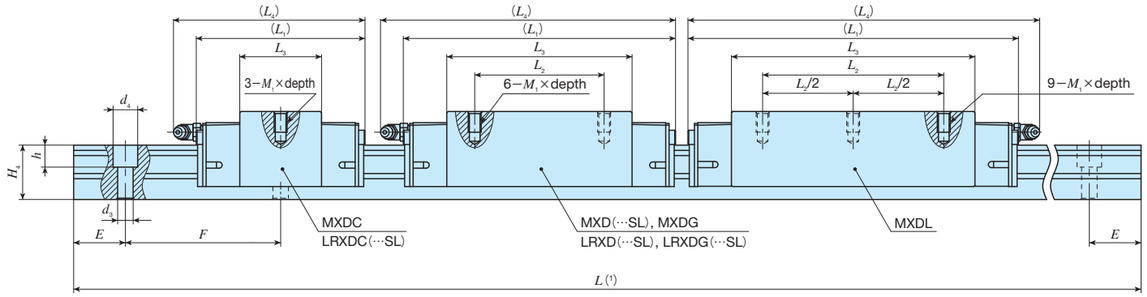
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Block type mounting from top

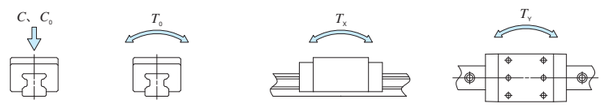
Shape	MXD • LRXD 				
Size	10	12	15	20	25
	30	35	45	55	65





Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth		H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail(2) Bolt size×length	Basic dynamic load rating(3) C N	Basic static load rating(3) C_0 N	Static moment rating(3) T_0 N·m	T_X N·m	T_Y N·m
MXDC 25	LRXDC 25	○	0.36	3.59	40	6	12.5	48	17.5	6.5	74	–	36	83	M6×12		9	23	24.5	7	11	9	30	60	M6×25	21 600	33 800	500	213 1 810	213 1 810
–	LRXDC 25…SL	○																												
MXD 25	LRXD 25	○	0.55								98	35	60	107												32 100	56 300	833	573 3 800	573 3 800
MXD 25…SL	LRXD 25…SL	○																												
MXDG 25	LRXDG 25	○	0.68								113	50	75	122												38 200	70 300	1 040	885 5 380	885 5 380
–	LRXDG 25…SL	○																												
MXDL 25	–	–	0.88								137	70	99	146												47 400	92 800	1 370	1 530 8 480	1 530 8 480
MXDC 30	LRXDC 30	○	0.60	5.01	45	6.5	16	60	20	10	85	–	42.4	95	M8×12		9.5	28	28	9	14	12	40	80	M8×28	29 200	44 600	808	329 2 740	329 2 740
–	LRXDC 30…SL	○																												
MXD 30	LRXD 30	○	0.92								113	40	70.4	123												43 400	74 400	1 350	883 5 780	883 5 780
MXD 30…SL	LRXD 30…SL	○																												
MXDG 30	LRXDG 30	○	1.18								134	60	91.4	144												53 200	96 700	1 750	1 470 8 740	1 470 8 740
–	LRXDG 30…SL	○																												
MXDL 30	–	–	1.52								162	80	119.4	172												65 600	126 000	2 290	2 500 13 600	2 500 13 600

Notes(1) : Track rail lengths are shown in Table 2.1 and Table 2.2 on page Ⅱ-153, and Table 2.3 and Table 2.4 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In stainless steel model, stainless steel bolts are appended. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : A mounting thread hole for grease nipple is provided on the left and right end plates respectively.



Example of identification number of assembled set

Model code		Size	Part code		Material symbol	Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXD	G	25	C2	R840	—	T1	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Series

MXD	Block type mounting from bottom
LRXD	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size

25, 30

④ Number of slide unit (two units)

⑤ Length of track rail (840mm)

⑥ Material symbol

No symbol	High Carbon steel
SL	Stainless steel

⑦ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑧ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑨ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑩ Special specification

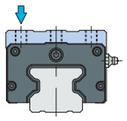
A, D, E, F, HP, I, J, L, LF, MA
MN, N, Q, RC, T, UR, V, W, Y
Z

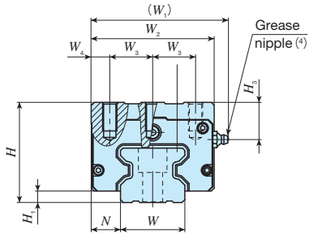
MX • LRX

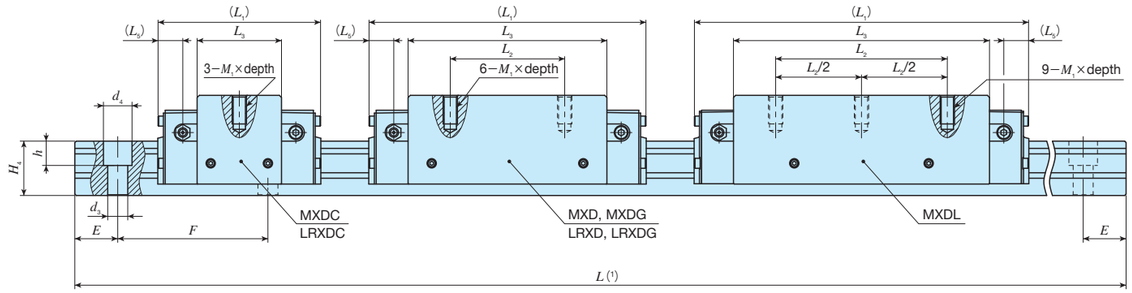
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Block type mounting from top

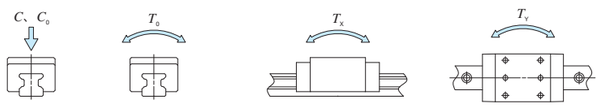
Shape	MXD • LRXD 				
Size	10	12	15	20	25
	30	35	45	55	65





Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_5	M_1×depth		H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MXDC 35		○	0.97	6.88	55	6.5	18	78	70	25	10	92	–	46.6	12.7	M 8×16		20	34	32	9	14	12	40	80	M 8×35	39 500	60 000	1 300	506 3 950	506 3 950
	LRXDC 35	○													12.5																
MXD 35		○	1.52									124	50	78.6	12.7												58 700	100 000	2 170	1 360 8 470	1 360 8 470
	LRXD 35	○													12.5																
MXDG 35		○	2.02									152	72	106.6	12.7												74 200	135 000	2 930	2 440 13 800	2 440 13 800
	LRXDG 35	○													12.5																
MXDL 35	–	–	2.55									184	100	138.6	12.7												90 800	175 000	3 800	4 060 21 300	4 060 21 300
MXDC 45	LRXDC 45	○	2.01	10.8	70	8	20.5	97	86	30	13	114	–	59	17.5	M10×20		26	45	38	14	20	17	52.5	105	M12×40	64 100	95 600	2 660	1 010 7 800	1 010 7 800
MXD 45	LRXD 45	○	3.13									154	60	99													95 400	159 000	4 430	2 700 16 800	2 700 16 800
MXDG 45	LRXDG 45	○	4.29									194	80	139													124 000	223 000	6 200	5 220 29 000	5 220 29 000
MXDL 45	–	–	5.36									234	120	179													151 000	287 000	7 980	8 560 44 400	8 560 44 400

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : Three female threaded holes for grease nipple are prepared on each end plate.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXD	G	35	C2	R1200	T2	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MXD	Block type mounting from bottom
LRXD	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size

35, 45

④ Number of slide unit (two units)

⑤ Length of track rail (1200mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

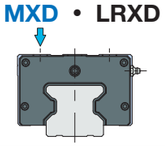
⑨ Special specification

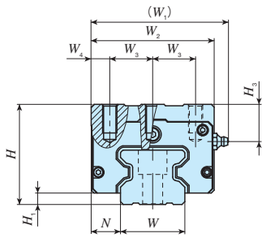
A, D, E, F, HP, I, J, L, LF, MA
MN, N, PS, Q, RC, T, UR, V, W
Y, Z

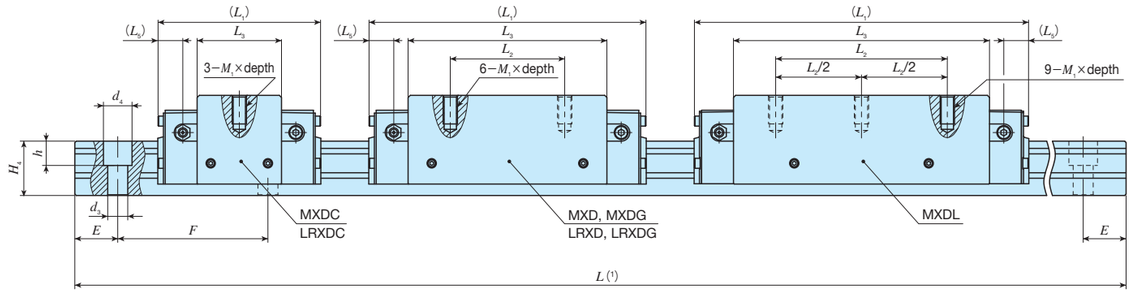
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Block type mounting from top

Shape	MXD • LRXD 				
Size	10	12	15	20	25
	30	35	45	55	65

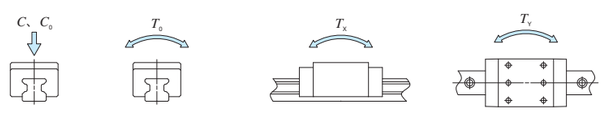




Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_5	$M_1\times$depth		H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MXDC 55	LRXDC 55	○	3.17	14.1	80	9	23.5	111	100	37.5	12.5	136	–	72	20	M12×25		26	53	43	16	23	20	60	120	M14×45	99 700	149 000	4 830	1 880 14 400	1 880 14 400
MXD 55	LRXD 55	○	4.97									184	75	120													148 000	248 000	8 040	5 040 31 100	5 040 31 100
MXDG 55	LRXDG 55	○	7.06									238	95	174													198 000	359 000	11 700	10 400 57 000	10 400 57 000
MXDL 55	–	–	9.08									292	150	228													244 000	470 000	15 300	17 700 90 700	17 700 90 700
MXDC 65		○	5.52	22.6	90	12	31.5	136	126	38	25	180	–	95	26.3	M16×25		18	63	56	18	26	22	75	150	M16×60	174 000	249 000	9 790	4 200 32 000	4 200 32 000
	LRXDC 65	○										181			26.6															4 200 32 200	4 200 32 200
MXD 65		○	8.70									244	70	159	26.3												260 000	415 000	16 300	11 300 69 000	11 300 69 000
	LRXD 65	○										245			26.6															11 300 69 300	11 300 69 300
MXDG 65		○	12.1									308	120	223	26.3												337 000	581 000	22 800	21 800 120 000	21 800 120 000
	LRXDG 65	○										309			26.6																
MXDL 65	–	–	15.5									380	200	295	26.3												419 000	768 000	30 200	37 600 193 000	37 600 193 000

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of MX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.

Remarks 1 : For grease nipple specifications, see Table 15 on page Ⅱ-166.
2 : Three female threaded holes for grease nipple are prepared on each end plate.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXD	G	55	C2	R3000	T2	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MXD	Block type mounting from bottom
LRXD	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size

55, 65

④ Number of slide unit (two units)

⑤ Length of track rail (3000mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

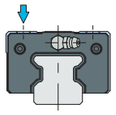
⑨ Special specification

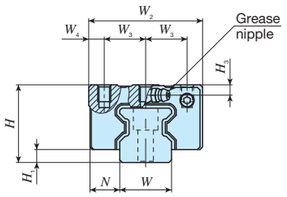
A, D, E, F, HP, I, J, L, LF, MA
MN, PS, Q, RC, T, UR, V, W
Y, Z

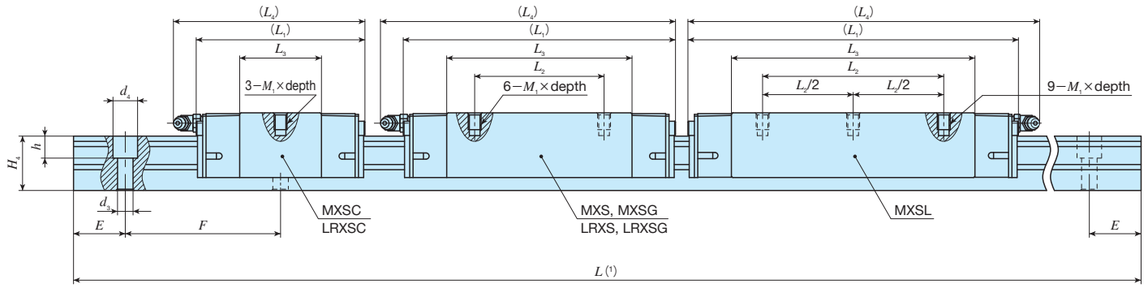
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Compact block type mounting from top

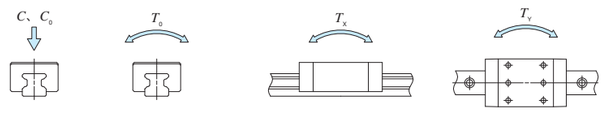
Shape	MXS • LRXS 			
Size	15	20	25	30
	35	45	55	





Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth(2)		H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail(3) Bolt size×length	Basic dynamic load rating(4) C N	Basic static load rating(4) C_0 N	Static moment rating(4) T_0 N·m	T_X N·m	T_Y N·m
MXSC 15	LRXSC 15	○	0.099	1.65	24	4	9.5	34	13	4	52	–	24	55	M4× 5.5		3.5	15	16.5	4.5	8	6	30	60	M4×16	7 730	12 000	113	50.6 457	50.6 457
MXS 15	LRXS 15	○	0.15								68	26	40	71												11 500	20 000	188	136 942	136 942
MXSG 15	LRXSG 15	○	0.21								84		56	87												14 900	28 000	263	262 1 590	262 1 590
MXSC 20	LRXSC 20	○	0.21	2.73	30	5	12	44	16	6	66	–	31.6	74	M5× 6.5		4	20	21	6	9.5	8.5	30	60	M5×20	16 100	26 400	341	150 1 260	150 1 260
MXS 20	LRXS 20	○	0.31								86	36	51.6	94												23 400	42 700	550	379 2 520	379 2 520
MXSG 20	LRXSG 20	○	0.42								106	50	71.6	114												30 100	58 900	760	713 4 200	713 4 200
MXSL 20	–	–	0.55								128	70	94.1	137												37 200	77 200	996	1 210 6 560	1 210 6 560
MXSC 25	LRXSC 25	○	0.30	3.59	36	6	12.5	48	17.5	6.5	74	–	36	83	M6× 9		5	23	24.5	7	11	9	30	60	M6×25	21 600	33 800	500	213 1 810	213 1 810
MXS 25	LRXS 25	○	0.47								98	35	60	107												32 100	56 300	833	573 3 800	573 3 800
MXSG 25	LRXSG 25	○	0.57								113	50	75	122												38 200	70 300	1 040	885 5 380	885 5 380
MXSL 25	–	–	0.74								137	70	99	146												47 400	92 800	1 370	1 530 8 480	1 530 8 480
MXSC 30	LRXSC 30	○	0.54	5.01	42	6.5	16	60	20	10	85	–	42.4	95	M8×11		6.5	28	28	9	14	12	40	80	M8×28	29 200	44 600	808	329 2 740	329 2 740
MXS 30	LRXS 30	○	0.83								113	40	70.4	123												43 400	74 400	1 350	883 5 780	883 5 780
MXSG 30	LRXSG 30	○	1.05								134	60	91.4	144												53 200	96 700	1 750	1 470 8 740	1 470 8 740
MXSL 30	–	–	1.37								162	80	119.4	172												65 600	126 000	2 290	2 500 13 600	2 500 13 600

Notes(1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : Insertion screw depth for slide units are recommended as shown in Table 16.1 on page Ⅱ-168.
(3) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of MX series, track rail mounting bolt is not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(5) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : A mounting thread hole for grease nipple is provided on the left and right end plates respectively.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXS	G	25	C2	R840	T1	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MXS	Compact block type mounting from bottom
LRXS	

② Length of slide unit

C	Short
No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size
15, 20, 25, 30

④ Number of slide unit (two units)

⑤ Length of track rail (840mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

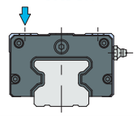
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

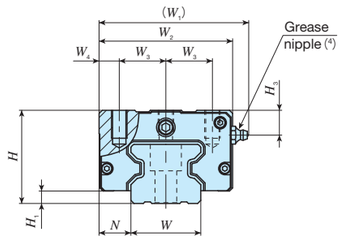
⑨ Special specification
A, D, E, F, HP, I, J, L, LF, MA MN, N, Q, RC, T, UR, V, W Y, Z

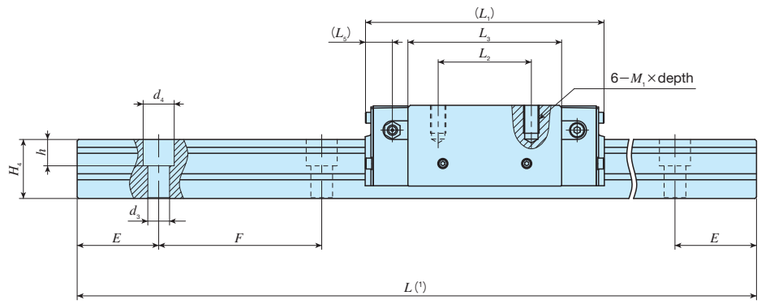
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Compact block type mounting from top

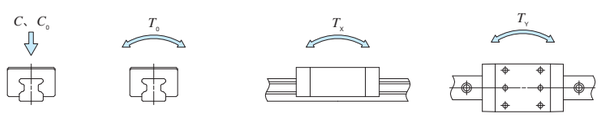
Shape	MXS 			
Size	15	20	25	30
	35	45	55	





Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_5	M_1×depth	H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (3) C N	Basic static load rating (3) C_0 N	Static moment rating (3) T_0 N·m	T_X N·m	T_Y N·m
MXS 35	–	○	1.22	6.88	48	6.5	18	78	70	25	10	124	50	78.6	12.7	M 8×12	13	34	32	9	14	12	40	80	M 8×35	58 700	100 000	2 170	1 360 8 470	1 360 8 470
MXSG 35	–	○	1.61									152	72	106.6												74 200	135 000	2 930	2 440 13 800	2 440 13 800
MXS 45	–	○	2.37	10.8	60	8	20.5	97	86	30	13	154	60	99	17.5	M10×18	16	45	38	14	20	17	52.5	105	M12×40	95 400	159 000	4 430	2 700 16 800	2 700 16 800
MXSG 45	–	○	3.27									194	80	139												124 000	223 000	6 200	5 220 29 000	5 220 29 000
MXS 55	–	○	3.96	14.1	70	9	23.5	111	100	37.5	12.5	184	75	120	20	M12×20	16	53	43	16	23	20	60	120	M14×45	148 000	248 000	8 040	5 040 31 100	5 040 31 100
MXSG 55	–	○	5.63									238	95	174												198 000	359 000	11 700	10 400 57 000	10 400 57 000

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : Track rail mounting bolts are not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(4) : For grease nipple specifications, see Table 15 on page Ⅱ-166.
Remark : Three female threaded holes for grease nipple are prepared on each end plate.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXS	G	45	C2	R1470	T1	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MXS	Compact block type mounting from bottom

② Length of slide unit

No symbol	Standard
G	High rigidity long

③ Size

35, 45, 55

④ Number of slide unit (two units)

⑤ Length of track rail (1470mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

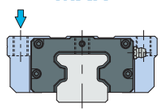
⑨ Special specification

A, D, E, F, HP, I, J, L, LF, MA
N, RC, T, UR, V, W, Z

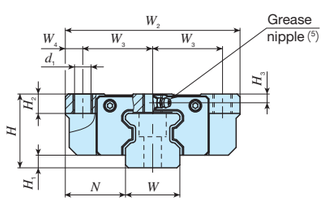
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

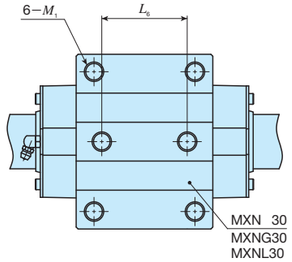
IKO C-Lube Linear Roller Way Super MX

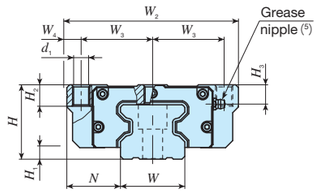
Low section flange type mounting from top

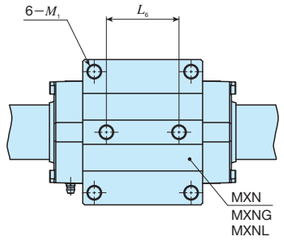
Shape	MXN 			
Size	30	35	45	55

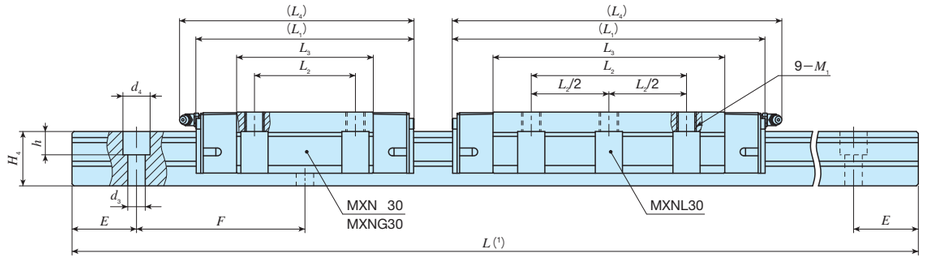
MXN 30
MXNG 30
MXNL 30

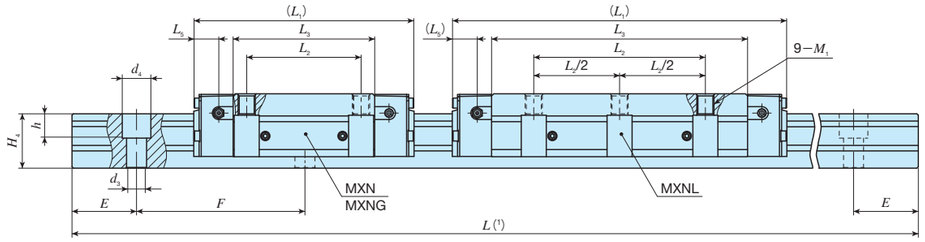








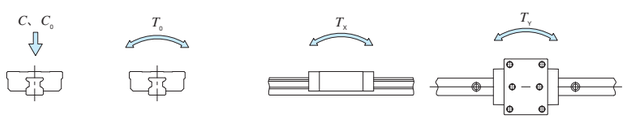




Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_2	W_3	W_4	L_1	L_2	L_3	L_4	L_5	L_6	d_1	M_1	Maximum screwing depth (2)	H_2	H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (3) Bolt size×length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MXN 30	–	○	1.05	5.01	38	6.5	31	90	36	9	113	52	70.4	121	–	44	8.5	M10	9	10	4.5	28	28	9	14	12	40	80	M 8×28	43 400	74 400	1 350	883 5 780	883 5 780
MXNG 30	–	○	1.38								134		91.4	142																53 200	96 700	1 750	1 470 8 740	1 470 8 740
MXNL 30	–	–	1.75								162	80	119.4	170		–														65 600	126 000	2 290	2 500 13 600	2 500 13 600
MXN 35	–	○	1.55	6.88	44	6.5	33	100	41	9	124	62	78.6	–	12.7	52	8.5	M10	11	13	11	34	32	9	14	12	40	80	M 8×35	58 700	100 000	2 170	1 360 8 470	1 360 8 470
MXNG 35	–	○	2.13								152		106.6																	74 200	135 000	2 930	2 440 13 800	2 440 13 800
MXNL 35	–	–	2.71								184	100	138.6			–														90 800	175 000	3 800	4 060 21 300	4 060 21 300
MXN 45	–	○	2.58	10.8	52	8	37.5	120	50	10	154	80	99	–	17.5	60	10.5	M12	13	15	13.5	45	38	14	20	17	52.5	105	M12×40	95 400	159 000	4 430	2 700 16 800	2 700 16 800
MXNG 45	–	○	3.73								194		139																	124 000	223 000	6 200	5 220 29 000	5 220 29 000
MXNL 45	–	–	4.72								234	120	179			–														151 000	287 000	7 980	8 560 44 400	8 560 44 400
MXN 55	–	○	4.61	14.1	63	9	43.5	140	58	12	184	95	120	–	20	70	12.5	M14	19	17	16	53	43	16	23	20	60	120	M14×45	148 000	248 000	8 040	5 040 31 100	5 040 31 100
MXNG 55	–	○	6.94								238		174																	198 000	359 000	11 700	10 400 57 000	10 400 57 000
MXNL 55	–	–	8.87								292	150	228			–														244 000	470 000	15 300	17 700 90 700	17 700 90 700

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : It is recommended to secure actual screwing depth should not exceed the maximum screwing depth in the table.
(3) : Track rail mounting bolts are not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(5) : For grease nipple specifications, see Table 15 on page Ⅱ-166.

Remarks 1 : In size 30, a grease nipple mounting thread hole is provided on the left and right end plates respectively.
2 : In size 35, 45 and 55, three female threaded holes for grease nipple are prepared on each end plate. In size 35, thread size of front face is smaller than other threads thus, please consult IKO if grease nipple for front face is required.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXN	G	55	C2	R3000	T2	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MXN	Low section flange type mounting from top

② Length of slide unit

No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size
30, 35, 45, 55

④ Number of slide unit (two units)

⑤ Length of track rail (3000mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

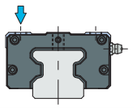
S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑨ Special specification
A, D, E, F, HP, I, J, L, LF, MA
RC, T, UR, V, W, Z

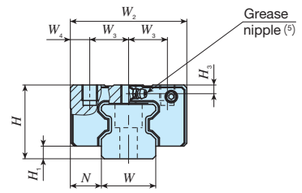
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

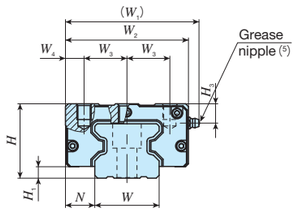
IKO C-Lube Linear Roller Way Super MX

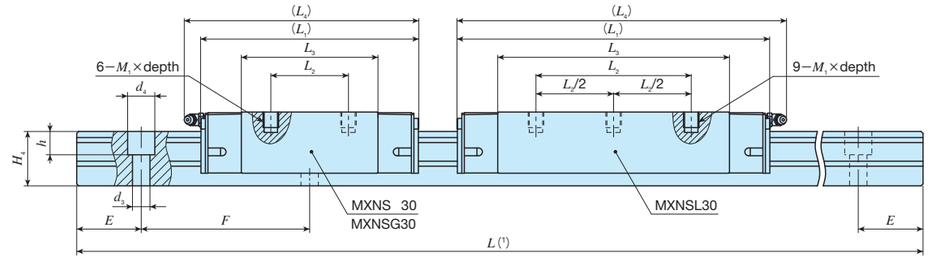
Low section block type mounting from top

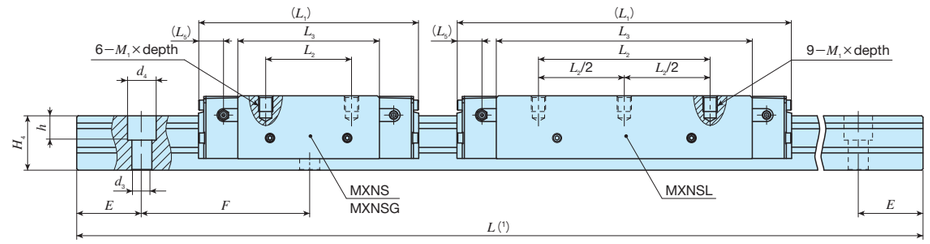
Shape	MXNS 			
Size	30	35	45	55

MXNS 30
MXNSG 30
MXNSL 30





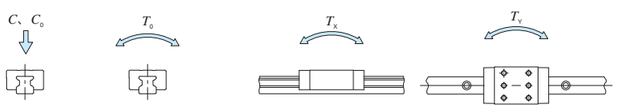




Model number MX	Model number LRX (Non C-Lube)	Interchangeable	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_4	L_5	M_1×depth (2)	Maximum screwing depth (2)	H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (3) Bolt size×length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
MXNS 30	–	○	0.70	5.01	38	6.5	16	–	60	20	10	113	40	70.4	121	–	M 8× 8	9	4.5	28	28	9	14	12	40	80	M 8×28	43 400	74 400	1 350	883 5 780	883 5 780
MXNSG 30	–	○	0.90									134	60	91.4	142													53 200	96 700	1 750	1 470 8 740	1 470 8 740
MXNSL 30	–	–	1.14									162	80	119.4	170													65 600	126 000	2 290	2 500 13 600	2 500 136 000
MXNS 35	–	○	1.08	6.88	44	6.5	18	78	70	25	10	124	50	78.6	–	12.7	M 8× 9	11	11	34	32	9	14	12	40	80	M 8×35	58 700	100 000	2 170	1 360 8 470	1 360 8 470
MXNSG 35	–	○	1.42									152	72	106.6														74 200	135 000	2 930	2 440 13 800	2 440 13 800
MXNSL 35	–	–	1.81									184	100	138.6														90 800	175 000	3 800	4 060 21 300	4 060 21 300
MXNS 45	–	○	1.84	10.8	52	8	20.5	94	86	30	13	154	60	99	–	17.5	M10×11	13	13.5	45	38	14	20	17	52.5	105	M12×40	95 400	159 000	4 430	2 700 16 800	2 700 16 800
MXNSG 45	–	○	2.58									194	80	139														124 000	223 000	6 200	5 220 29 000	5 220 29 000
MXNSL 45	–	–	3.29									234	120	179														151 000	287 000	7 980	8 560 44 400	8 560 44 400
MXNS 55	–	○	3.31	14.1	63	9	23.5	111	100	37.5	12.5	184	75	120	–	20	M12×15	19	16	53	43	16	23	20	60	120	M14×45	148 000	248 000	8 040	5 040 31 100	5 040 31 100
MXNSG 55	–	○	4.83									238	95	174														198 000	359 000	11 700	10 400 57 000	10 400 57 000
MXNSL 55	–	–	6.28									292	150	228														244 000	470 000	15 300	17 700 90 700	17 700 90 700

Notes (1) : Track rail lengths are shown in Table 2.1 on page Ⅱ-153 and Table 2.3 on page Ⅱ-154.
(2) : Insertion screw depth of slide unit mounting holes are shown in Table 16.2 on page Ⅱ-168. It is recommended to secure actual screwing depth should not exceed the maximum screwing depth in the table.
(3) : Track rail mounting bolts are not appended.
(4) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in close contact.
(5) : For grease nipple specifications, see Table 15 on page Ⅱ-166.

Remarks 1 : In size 30, a grease nipple mounting thread hole is provided on the left and right end plates respectively.
2 : In size 35, 45 and 55, three female threaded holes for grease nipple are prepared on each end plate. In size 35, thread size of front face is smaller than other threads thus, please consult IKO if grease nipple for front face is required.



Example of identification number of assembled set

Model code		Size	Part code		Preload symbol	Class symbol	Interchangeable code	Supplemental code
MXNS	G	55	C2	R3000	T2	P	S1	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Series

MXNS	Low section Block type mounting from top

② Length of slide unit

No symbol	Standard
G	High rigidity long
L	Extra high rigidity long

③ Size
30, 35, 45, 55

④ Number of slide unit (two units)

⑤ Length of track rail (3000mm)

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑧ Interchangeable code

S1	Interchangeable specification
S2	Interchangeable specification
No symbol	Non interchangeable specification

⑨ Special specification
A, D, E, F, HP, I, J, L, LF, MA
RC, T, UR, V, W, Z

MX・LRX

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Linear Roller Way X

Linear Roller Way X

LRWX

Roller type linear motion rolling guide with cylindrical rollers in four-rows!

Balanced roller arrangement provides stable load capacity in all direction!

Two shapes of slide unit, flanged type and block type are available for optimal products to fit for requirement of machine and equipment!

Identification number and specification

The specification of Linear Roller way X is indicated by the identification number, consisting of amodel code, a size, a part code, a preload symbol, a classification symbol and any supplemental coads.

	1	2	3	4	1	5	6	7
Assembled set	LRWX	35	C2	R660	B	T_2	SP	/Z

1 **Series** — Model code on page Ⅱ-199

2 **Size** — Size on page Ⅱ-199

3 **Number of slide units** — Part code on page Ⅱ-199

4 **Length of track rail**

5 **Preload ammount** — Preload symbol on page Ⅱ-200

6 **Accuracy class** — Classification symbol on page Ⅱ-200

7 **Special specification** — Supplemental code on page Ⅱ-201

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification

—Series・Size of rolling guide・Numberof slide units・Length of track rail—

1 Series

Linear Roller Way X(1)

Block type mounting from top : LRWX···B
Flange type mounting from bottom : LRWXH

Applicable size and shape of slide unit are shown in Table1.

Note(1) Linear Roller Way without C-lube.

2 Size

25, 35, 45, 55, 75

Applicable size and shape of slide unit are shown in Table1.

3 Number of slide units

: C○

For an assembled set, indicates the number of slide units assembled on track rail.

4 Length of track rail

: R○

Indicate the length of track rail in mm.
For standard and maximum lengths, see "Track rail length" in Table 2.

Table 1 Type and size

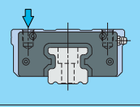
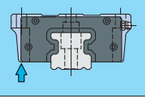
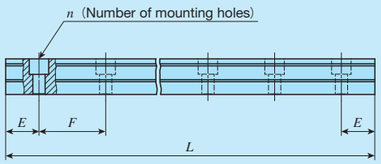
Shape	Model code	Size				
		25	35	45	55	75
Block type mounting from top 	LRWX···B	○	○	○	○	○
Flange type mounting from bottom 	LRWXH	–	○	○	○	○

Table 2 Standard and maximum length of track rail



unit : mm

Item \ Model number	LRWX25···B	LRWX25···B/HP(3)	LRWX 35···B LRWXH35	LRWX 45···B LRWXH45	LRWX 55···B LRWXH55	LRWX 75···B LRWXH65
Standard length $L(n)$	480 (8) 660 (11) 840 (14) 1020 (17) 1200 (20) 1500 (25)	480 (16) 660 (22) 840 (28) 1020 (34) 1200 (40) 1500 (50)	480 (8) 660 (11) 840 (14) 1020 (17) 1200 (20) 1500 (25)	800 (10) 1040 (13) 1200 (15) 1520 (19) 1920 (24)	800 (8) 1000 (10) 1200 (12) 1500 (15) 2000 (20) 3000 (30)	840 (7) 1200 (10) 1560 (13) 1920 (16) 3000 (30)
Pitch of mounting holes F	60	30	60	80	100	120
E	30	15	30	40	50	60
Standard range of E(1) Incl.	9	9	12	15	18	23
Standard range of E(1) under	39	24	42	55	68	83
Maximum length(2)	1980 (3000)	1980 (3000)	3000 (3960)	2960 (4000)	3000 (4000)	3000 (3960)

Notes(1) : Not applicable to the track rail with female threads for bellows (supplemental code "/J")
(2) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.
(3) : Applicable for Half pitch of track rail mounting hole.

—Preload amount・Accuracy class・Special specification—

5 Preload amount

Standard : No symbol
Light preload : T_1
Medium preload : T_2
Heavy preload : T_3

Specify this item for an assembled set or a single slide unit.
For applicable preload amount, see Table3. For details of preload amount, see Table4.

6 Accuracy class

High : H
Perecision : P
Super precision : SP
Ultra precision : UP

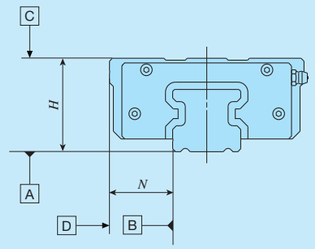
For details of accuracy, see Table3.

Table 3 Preload amount

Item / Preload type	Symbole	Preload amount N	Application
Standard	(No Symbol)	0(1)	・Very smooth motion
Light preload	T_1	0.02 C_0	・Minimum vibration ・Load is evenly balanced Load is evenly balanced ・Smooth and precise motion
Medium preload	T_2	0.05 C_0	・Medium vibration ・Medium overhung load
Heavy preload	T_3	0.08 C_0	・Vibration and / or shocks ・Large overhung load ・Heavy cutting

Note(1) : Zero or minimal amount of preload.
Remark : C_0 means the basic static load rating.

Table 4 Accuracy



unit : mm

Item \ Classification (Symbol)	High (H)	Precision (P)	Super precision (SP)	Ultra precision (UP)
Dim. H tolerance	±0.040	±0.020	±0.010	±0.008
Dim. N tolerance	±0.050	±0.025	±0.015	±0.010
Dim. variation of H(1)	0.015	0.007	0.005	0.003
Dim. variation of N(1)	0.020	0.010	0.007	0.003
Dim. variation of H for multiple assembled sets(2)	0.035	0.025	–	–
Parallelism in operation of C to A	See Fig.1			
Parallelism in operation of D to B	See Fig.1			

Note(1) : It means the size variation between slide units mounted on the same track rail.

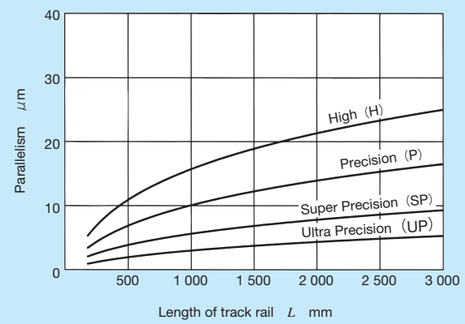


Fig.1 Parallelism in operation

LRWX

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

7 Special specification

Special specification	/A, /D, /E, /F, /HP, /I, /J○, /L○, /LF○, /Q, /V○, /W○, /Y○, /Z○	For applicable special specifications, see Table 5. When several special specifications are combined, see Table 6. For details of special specifications, see page Ⅲ-17.

Table 5 Special specifications

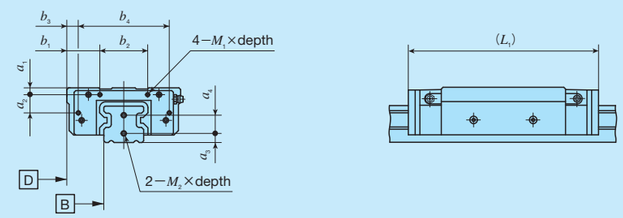
Optional specification	Supplemental code	Size				
		25	35	45	55	75
Butt-jointing track rails	/A	○	○	○	○	○
Opposite reference surfaces arrangement	/D	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○
Half pitch of track rail mounting hole	/HP	○	×	×	×	×
Inspection sheet	/I	○	○	○	○	○
Female threads for bellows	/J○	○	○	○	○	○
Black crome surface treatment	/L○	○	○	○	○	○
Fluorine black crome surface treatment	/LF○	○	○	○	○	○
C-Lube plates	/Q	○	○	○	○	○
Double end seals	/V○	○	×	×	×	×
Matched sets to be used as as assembled group	/W○	○	○	○	○	○
Specified grease	/Y○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○

Table 6 Combination of special specifications

	A	D	E	F	HP	I	J	L	LF	Q	V	W	Y
D	○												
E	–	–											
F	○	○	○										
HP	–	○	–	○									
I	○	○	○	○	○								
J	○	○	○	○	–	○							
L	○	○	○	○	○	○	○						
LF	○	○	○	○	○	○	○	–					
Q	○	○	○	○	○	○	–	○	○				
V	○	○	○	○	○	○	○	○	○	–			
W	○	○	–	○	○	○	○	○	○	○	○		
Y	○	○	○	○	○	○	○	○	○	–	○	○	
Z	○	○	○	○	○	○	–	○	○	–	○	○	○

Remarks 1 : The mark – indicates that this combination cannot be made.
2 : if a combination of special specifications is required, indicate the supplemental codes in alphabetical order.

Table 7 Female threads for bellow mounting (Supplemental code /J,/JJ)

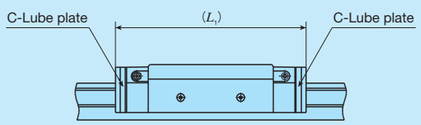


unit : mm

Model number	Slide unit								Track rail		
	a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(1)	a_3	a_4	M_2×depth
LRWX 25…B	5	12	15	33	7	49	M3× 6	116	7	12	M4× 8
LRWX 35…B	6	16	29	42	10	80	M3× 6	166	8	16	M4× 8
LRWXH 35			31		12						
LRWX 45…B	8	20	34	52	12	96	M4× 8	221	10	19	M5×10
LRWXH 45			38		16						
LRWX 55…B	9	24	36	68	15	110	M5×10	282	12	23	M6×12
LRWXH 55			43		22						
LRWX 75…B	10	35	35	110	15.5	149	M5×10	366	15	30	M6×12
LRWXH 75			42		22.5						

Note(1) : The vales for the slide unit with female threads for bellow mounting at the both sides.

Table 8 Slide unit with C-Lube plateas(Supplemental code /Q)

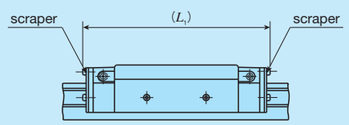


unit : mm

Size	L_1
25	120
35	166
45	218
55	275
75	364

Remark : The values for the slide unit with C-Lube plates at both ends.

Table 9 Slide unit with scrapers (Supplementa code /ZZ)



unit : mm

Size	L_1
25	120
35	164
45	217
55	275
75	361

Remark : The values for the slide unit with scrapers at both ends.

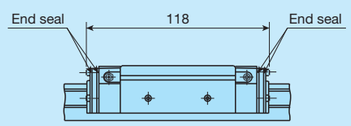


Fig. 2 Silde unit with double end seals (Size 25) (Supplemental code /V,/VV)

Remark : The vales for the slide unit with double end seals at both-ends.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Lubrication

Lithium-soap base grease (ALVANIA grease EP 2 : SHELL) is pre-packed in LRWX series slide units.
LRWX series are provided with grease nipple shown in Table 10.

Table 10 Parts of lubrication

Size	Grease nipple(1)	Applicable supply nozzle	Nominal size of female threads for piping
25	JIS 1 type	Grease gun available on the market	M6
35			
45	JIS 2 type		PT1/8
55			
75			

Note(1) : See Table15.2 on Page Ⅲ-22 for specifications of grease nipples.

Dust Protection

Linear Roller Way X is protected from dust by special rubber seals. But, if large amount of fine contaminants are present, or if large particles of foreign matters such as dust or chips may fall on the track rail, it is recommended to provide protective covers such as bellows for the entire linear motion mechanism. Bellows to match the simensions of Linear Roller Way X are optionally available. They are easy to mount and highly effective for dust protection. If required consult.

Precautions for Use

①Mounting surface, reference mounting surface, and general mounting structureMounting surface, reference mounting surface, and general mounting structure

To mount Linear Roller Way X, correctly fit the reference mounting surfaces B and D of the slide unit and the track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Figs. 3.)
The reference mounting surfaces B and D and mounting surfaces A and C of Linear Roller Way X are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.
The slide unit reference mounting surface is always the side surface opposite to the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. The track rail reference mounting surface is the side surface above the IKO mark (in the direction of the arrow). (See Figs. 4.)

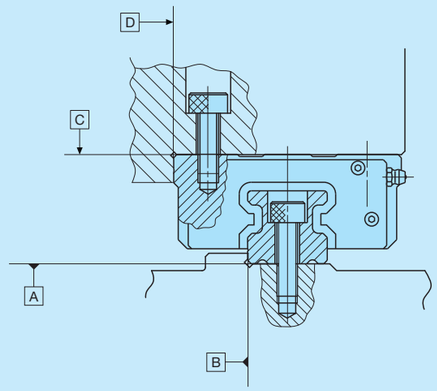


Fig. 3 Reference mounting surfaces and general mounting structure

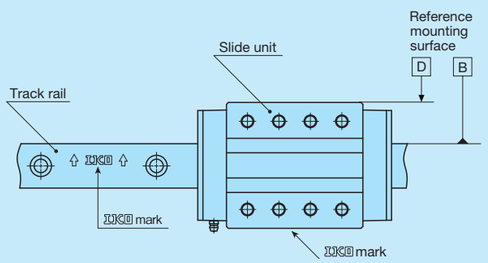


Fig. 4 Reference mounting surface

②Mounting slide unit

In the slide unit of LRWX25···B and LRWXH, mounting holes are also prepared on the middle of slide unit to support any direction of load and moment in good balance.
It is recommended to fix all mounting hokes to have full performance of products.

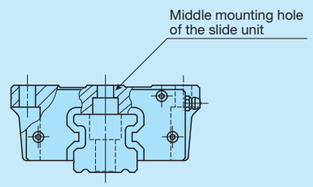


Fig. 5 Middle mounting hole of the slide unit

③Corner radius and shoulder height of reference mounting surface

It is recommended to make a relieved fillet at the corner of the mating reference mounting surfaces as shown in Fig. 6. Otherwise, corner radius R is recommended shown in Table 11. Table 11 shows recommended shoulder heights and radius of the reference mounting surfaces.

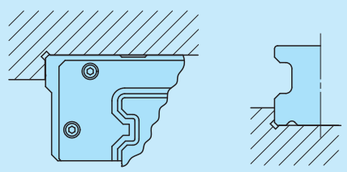
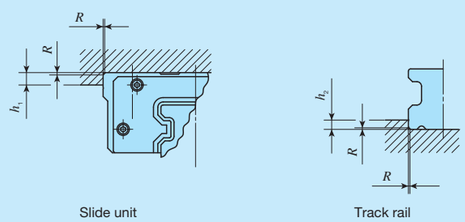


Fig. 6 Relieved radius shape of reference mounting surface

Table 11 Corner radius and shoulder height of reference mounting surfaces



unit : mm

Size	Slide unit Shoulder height h_1	Track rail Shoulder height h_2	Relieved radius R (max.)
25	6	4	1
35	8	5.5	1
45	8	6	1
55	10	8	1.5
75	10	8	1.5

④Tightening torque of mounting bolts

The standard torque values for Linear Roller Way X mounting bolts are shown Table 12. When machines or equipment are subjected to survere vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torauw 1.2 to 1.5 times higher than the standard torauq values shown.
When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 12 Tightening torque of mounting bolts

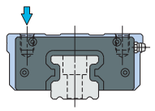
Bolt size	Tightening torque N·m Carbon steel bolt
M 6 × 1	13.3
M 8 × 1.25	32.0
M10 × 1.5	62.7
M12 × 1.75	108
M16 × 2	263
M24 × 3	882

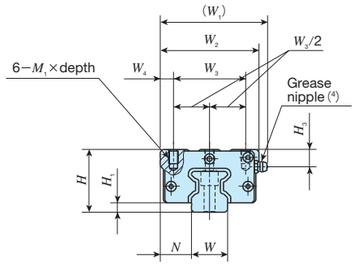
Remark : The recommended tightening torque is for strength division 12.9.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

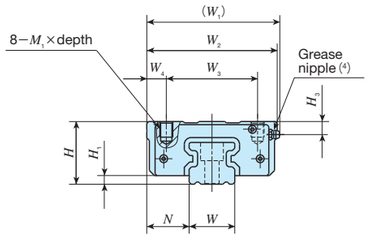
IKO Linear Roller Way X

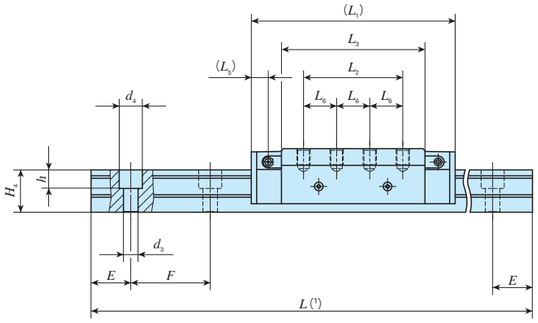
Block type mounting from top

Shape	LRWX…B 				
Size	25	35	45	55	75



LRWX 25…B

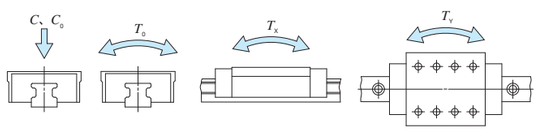




Model number	Mass (Ref.) Slide unit kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_5	L_6	M_1×深さ	H_3	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (3) Bolt size×length	Basic (4) dynamic load rating C N	Basic (4) static load rating C_0 N	Static moment rating (4) T_0 N·m	T_X N·m	T_Y N·m
LRWX 25…B	0.93	3.70	40	6	20	70	63	46	8.5	109	45	74.4	11	–	M 6× 9	11	23	26	7	11	9	30	60	M 6×28	32 700	70 300	1 110	885 5 220	885 5 220
LRWX 35…B	2.65	6.66	48	6.5	32.5	104	100	70	15	154	75	108.4	12.8	25	M10×12	10	35	32	11	17.5	14	30	60	M10×35	49 900	91 100	2 150	1 660 9 450	1 660 9 450
LRWX 45…B	5.32	10.3	60	8	37.5	129	120	82	19	205	105	144	18.5	35	M12×16	14.5	45	39	14	20	16	40	80	M12×40	93 300	167 000	5 000	4 030 23 000	4 030 23 000
LRWX 55…B	9.09	15.3	70	9	42.5	146	140	95	22.5	262	135	189	24.5	45	M12×18	16	55	47	18	26	21	50	100	M16×50	186 000	330 000	12 200	10 700 57 900	10 700 57 900
LRWX 75…B	19.0	25.1	90	10	52.5	195	180	123	28.5	346	180	240	45	60	M16×25	20	75	57	26	39	30	60	120	M24×60	298 000	518 000	25 200	20 900 121 000	20 900 121 000

Notes (1) : Track rail lengths are shown in Table 2 on page Ⅱ-199.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of LRWX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic static load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches below. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in clode contact.
(4) : For grease nipple specifications, see Table 10 on page Ⅱ-203.

1N≒0.102kgf



Example of identification number of assembled set

Model code	Size	Part code		Model code	Preload symbol	Class symbol	Supplemental code
LRWX	35	C2	R840	B	T1	P	/W2
①	②	③	④	①	⑤	⑥	⑦

① Series

LRWX…B	Block type mounting from top

② Size

25, 35, 45, 55, 75

③ Number of slide unit (two units)

④ Length of track rail (840mm)

⑤ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑥ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

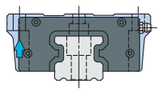
⑦ Special specification

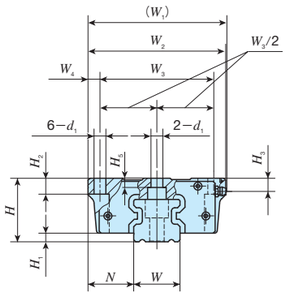
A, D, E, F, HP, I, J
L, LF, Q, V, W, Y, Z

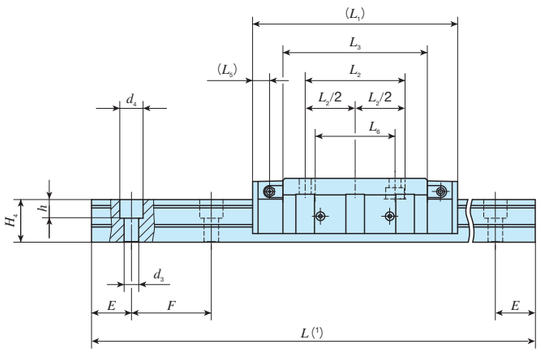
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Linear Roller Way X

Flange type mounting from bottom

Shape	LRWXH 			
Size	35	45	55	75

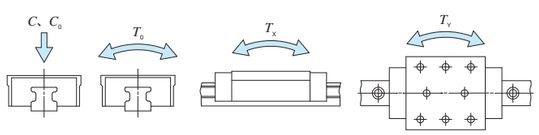




Model number	Mass(Ref.) Slide unit kg	Mass(Ref.) Track rail kg/m	Dimensions of assembly mm H	H_1	N	Dimensions of slide unit mm W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_5	L_6	d_1	H_2	H_3	H_5	Dimensions of track rail mm W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail(3) Bolt size×length	Basic(4) dynamic load rating C N	Basic(4) static load rating C_0 N	Static moment rating(4) T_0 N·m	T_X N·m	T_Y N·m
LRWXH 35	2.51	6.66	48	6.5	34.5	106	104	86	9	154	75	108.4	12.8	60	9	12	10	7	35	32	11	17.5	14	30	60	M10×35	49 900	91 100	2 150	1 660 9 450	1 660 9 450
LRWXH 45	5.18	10.3	60	8	41.5	133	128	108	10	205	105	144	18.5	80	11	15	14.5	10	45	39	14	20	16	40	80	M12×40	93 300	167 000	5 000	4 030 23 000	4 030 23 000
LRWXH 55	9.08	15.3	70	9	49.5	–	154	130	12	262	135	189	24.5	106	14	18	16	10	55	47	18	26	21	50	100	M16×50	186 000	330 000	12 200	10 700 57 900	10 700 57 900
LRWXH 75	19.7	25.1	90	10	59.5	202	194	164	15	346	180	240	45	134	18	24	20	16	75	57	26	39	30	60	120	M24×60	298 000	518 000	25 200	20 900 121 000	20 900 121 000

Notes (1) : Track rail lengths are shown in Table 2 on page Ⅱ-199.
(2) : The appended track rail mounting bolts are hexagon socket head bolts of JIS B 1176 or equivalent. In assembled set of LRWX series, track rail mounting bolt is not appended.
(3) : The directions of basic dynamic load rating (C), basic staic load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches bellow. The upper values in the T_X and T_Y columns apply to one slide unit, and the lower values apply to two slide units in clode contact.
(4) : For grease nipple specifications, see Table 10 on page Ⅱ-203.

1N≒0.102kgf



Example of identification number of assembled set

Model code	Size	Part code		Preload symbol	Class symbol	Supplemental code
LRWXH	35	C2	R840	T1	P	/W2
①	②	③	④	⑤	⑥	⑦

① Series

LRWXH	Flange type mounting from bottom

② Size

35, 45, 55, 75

③ Number of slide unit (two units)

④ Length of track rail (840mm)

⑤ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑥ Accuracy class

H	High
P	Precision
SP	Super precision
UP	Ultra precision

⑦ Special specification

A, D, E, F, HP, I, J
L, LF, Q, V, W, Y, Z

LRWX

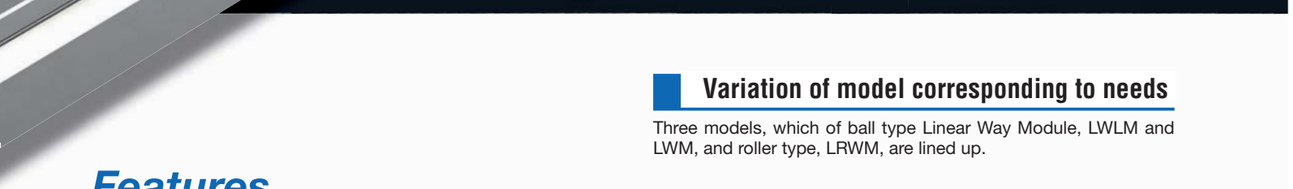
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Linear Way Module

Linear Way Module

LWLM
LWM

LRWM



Features

Compact module type

Minimum unit consisted from combination of track rail and slide member makes linear motion rolling guide compact.

Variation of model corresponding to needs

Three models, which of ball type Linear Way Module, LWLM and LWM, and roller type, LRWM, are lined up.

Stainless steel

The main metal components of LWLM are made of corrosion resistant stainless steel. Therefore, they are most suitable for use in cleanroom environment and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Identification number and specification

The specification of Linear Way Module is identified by the identification number, whitch consists of a model code, a size, a part code, a classification symbol and optional supplemental codes.

	1	2	3	4	5	6
Assembled set	LWM	3	M2	R660	SP	/W2

1. **Series** — Model code on page Ⅱ-213
2. **Size** — Size on page Ⅱ-213
3. **Number of slide members** — Part code on page Ⅱ-213 Ⅱ-214
4. **Length of track rail**
5. **Accuracy class** — Classification symbol on page Ⅱ-215
6. **Optional specification** — Supplemental code on page Ⅱ-216

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification number and specification —Series・Size・Number of slide

1 Series

Linear Way Module LM(1) : LWLM
Linear Way Module M(1) : LWM
Linear Roller Way Module M(1) : LRWM

Applicable size and shape of slide memberare shown in Table 1.1, Table 1.2, Table 1.3.

Note(1) Linear Way Module without C-Lube.

2 Size

7, 9, 11
1, 2, 3, 4, 5, 6

Applicable size and shape of slide memberare shown in Table 1.1, Table 1.2 and Table 1.3.

3 Number of slide members

: M○

Indicates the number of slide members assembled on one track rail.

Table 1.1 Model and size of LWLM

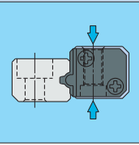
Shape	Model code	Size		
		7	9	11
	LWLM	○	○	○

Table1.2 Model and size of LWM

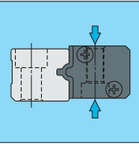
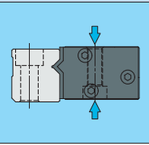
Shape	Model code	Size					
		1	2	3	4	5	6
	LWM	○	○	○	○	○	○

Table 1.3 Model and size of LRWM

Shape	Model code	Size				
		2	3	4	5	6
	LRWM	○	○	○	○	○

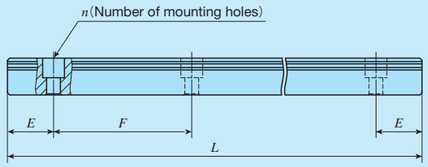
—Length of track rail—

4 Length of track rail

: R○

Indicate the length of track rail in mm.
For standard and maximum lengths see "Track rail length" in Table 2.

Table 2 Standard and maximum length of track rail



unit : mm

Item \ Model number		LWLM7	LWLM9	LWLM11
Standard length $L(n)$		60 (3) 80 (4) 120 (6) 160 (8)	100 (4) 150 (6) 200 (8) 275 (11)	160 (4) 240 (6) 320 (8) 440 (11)
Pitch of mounting holes F		20	25	40
E		10	12.5	20
Standard range of E	Incl.	4.5	5	5.5
	under	14.5	17.5	25.5
Maximum length(1)		240 (500)	350 (900)	520 (1000)

Item \ Model number		LWM1	LWM2	LWM3	LWM4	LWM5	LWM6
Standard length $L(n)$		240 (6) 360 (9) 480 (12)	240 (4) 360 (6) 480 (8)	480 (8) 660 (11) 840 (14)	800 (10) 1040 (13) 1200 (15)	800 (8) 1200 (12) 1500 (15)	1200 (10) 1920 (16) 2520 (21)
Pitch of mounting holes F		40	60	60	80	100	120
E		20	30	30	40	50	60
Standard range of E	Incl.	7	8	9	10	12	13
	under	27	38	39	50	62	73
Maximum length(1)		1240	1260	1260	1520	1500	2520

Item \ Model number		LRWM2	LRWM3	LRWM4	LRWM5	LRWM6
Standard length $L(n)$		480 (8) 660 (11) 840 (14)	480 (8) 660 (11) 840 (14)	800 (10) 1040 (13) 1200 (15)	800 (8) 1200 (12) 1500 (15)	1200 (10)
Pitch of mounting holes F		60	60	80	100	120
E		30	30	40	50	60
Standard range of E	Incl.	8	9	10	12	13
	under	38	39	50	62	73
Maximum length(1)		1800	1860	1920	1600	1200

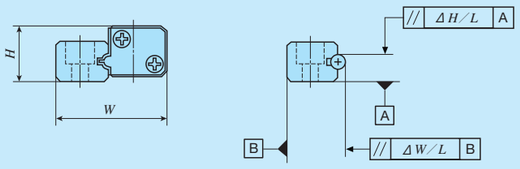
Note(1) : Track rails with the maximum lengths shown in parentheses can also be manufactured. Consult IKO for further information.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

5 Accuracy class

High	: H	For details of accuracy, see Table3.
Precision	: P	
Super precision	: SP	

Table 3 Accuracy



units : mm

Classification (Symbol) / Item	High (H)	Precision (P)	Super precision (SP)
Dim. H tolerance	±0.040	±0.020	±0.010
Dim. W tolerance	±0.050	±0.025	±0.015
Dim. Variation on H (1)	0.015	0.007	0.005
Dim. Variation on W (1)	0.020	0.010	0.007
Parallelism in operation ΔH	See Fig.1.1, Fig.1.2		
Parallelism in operation ΔW	See Fig.1.1, Fig.1.2		

Note (1) : It means the size variation between slide members mounted on the same track rail.

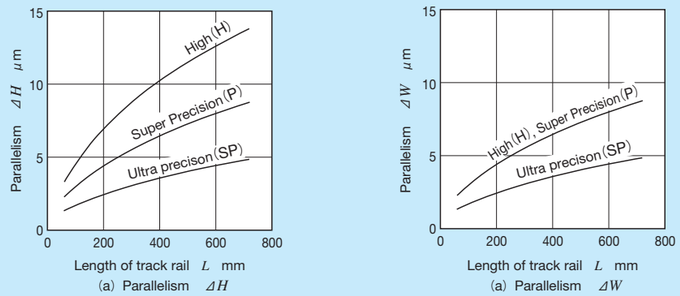


Fig.1.1 Parallelism in operation of LWLM

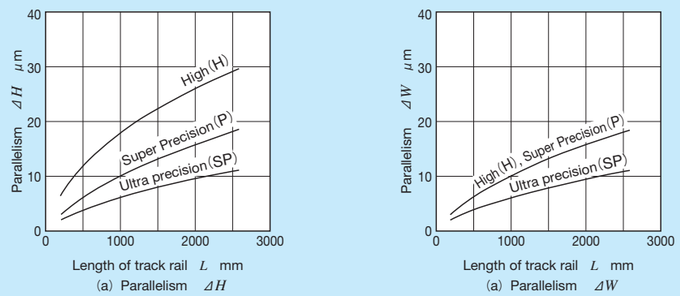


Fig.1.2 Parallelism in operation of LWM, LRWM

6 Special specification

/A, /E, /F, /I, /LR, /LFR, /MN, /W○, /Y○	For applicable special specifications, see Table 4. When several special specifications are combined, see Table3. For details of special specifications, see page Ⅲ-28.

Table 4 Special specifications

Optional specification	Supplemental code	Size								
		7	9	11	1	2	3	4	5	6
Butt-jointing track rails	/A	×	×	×	○	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○	○	○
Caps for rail mounting holes	/F	×	×	×	○	○	○	○	○	○
Inspection sheet	/I	○	○	○	○	○	○	○	○	○
Black crome surface treatment	/LR	×	×	×	○	○	○	○	○	○
Fluorine black crome surface treatment	/LFR	×	×	×	○	○	○	○	○	○
Without track rail mounting bolts	/MN	○	○	○	○(1)	○(1)	○(1)	○(1)	○(1)	○(1)
Matched sets to be used as as assembled group	/W○	○	○	○	○	○	○	○	○	○
Specified grease	/Y○	○	○	○	○	○	○	○	○	○

Note (1) : All mounting bolts for slide member and trackrail are not appended.

Table 5 Combination of special specifications

	A	E	F	I	LR	LFR	MN	W
E	–							
F	○	○						
I	○	○	○					
LR	○	○	○	○				
LFR	○	○	○	○	–			
MN	○	○	○	○	○	○		
W	○	–	○	○	○	○	○	
Y	○	○	○	○	○	○	○	○

Remarks 1 : The mark – indicates that this combination cannot be made.
2 : If a combination of special specifications is required, indicate the supplemental codes in alphabetical order.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Lubrication

Lithium-soap base grease (ALVANIA grease EP2 : SHELL) is pre-packed in Linear Way Module series slide members. Grease nipple is not prepared for Linear Way Module series, but an oil hole is available to lubricate with grease or oil supplied from machine or equipment to the recirculation pass in slide member. Structure of lubricating pass in machine or equipment as shown in Fig. 2 makes the lubrication easy.

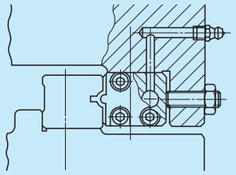


Fig 2 Example of lubrication method

Dust Protection

Linear Way Module is protected from dust by special rubber seals. But, if large amount of fine contaminants are present, or if large particles of foreign matters such as dust or chips may fall on the track rail, it is recommended to provide protective covers such as bellows for the entire linear motion mechanism. Bellows to match the dimensions of Linear Way Module are optionally available. They are easy to mount and highly effective for dust protection. If required, consult.

Precautions for Use

①Mounting surface, reference mounting surface, and general

To mount Linear Way Module series, correctly fit the reference mounting surface B and D of the slide member and track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig. 3)

The reference mounting surfaces B and D and mounting surfaces A and C of Linear Way Module are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.

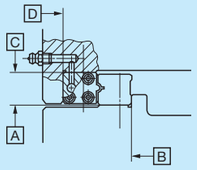


Fig. 3 Reference mounting surfaces and general mouting structure

②Mounting of Linear Way Module

Fig. 15 shows the standard mounting structure of Linear Way Module. As a convenient means to eliminate play or give preload, preload adjusting screws are often used in linear motion rolling guides.

Set the preload adjusting screws at the positions of fixing bolts of slide member and in the middle of the height of slide member, and then press the slide member by tightening the screw.

For mounting the slide member of Linear Way Module LM, it is recommended to fix the slide member from the table side, because the allowance for preload adjustment in the bolt hole of slide member is small. In this case, the bolt hole and the counter bore in the table should be made larger to give the adjustment allowance.

The preload amount differs depending on the operating conditions of machines or equipment. An excessive preload will result in short bearing life and raceway damage. The preload amount for general application should be adjusted to a zero or slight minus clearance in the ideal case.

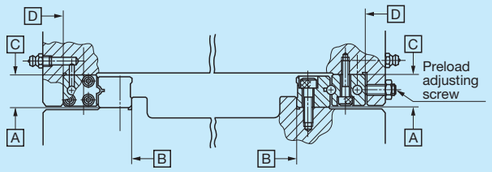


Fig.4 Mounting of Linear Way Module

③ Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surface as shown Fig. 5. Otherwise, corner radius R is recommended shown in Table 7.1,Table 7.2, Table 7.3.

Table 7.1,Table 7.2, Table 7.3 shows recommended shoulder heights and radius of the reference mounting surfaces.

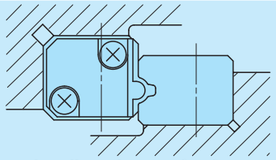


Fig. 5 Relieved radius shape of reference mounting surface

④Tightening torque of mounting bolts

The standard torque values for Linear Way Module mounting bolts are shown Table 6. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tighjtened with a torque 1.2 to 1.5 times higher than the standard torque values shown.

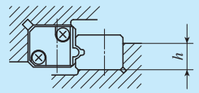
When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 6 Tightening torque of mounting bolts

Bolt size	Tightening torque N·m	
	Carbon steel bolt	Stainless steel bolt
M 2.6×0.45	–	0.7
M 3×0.5	1.7	1.1
M 4×0.7	4.0	–
M 5×0.8	7.9	–
M 6×1	13.3	–
M 8×1.25	32.0	–
M10×1.5	62.7	–
M12×1.75	108	–

Remark : The recommended tightening torque is for strength division 12.9 or property division A2-70.

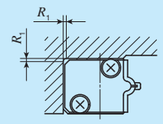
Table 7.1 Corner radius and sholder height of reference mounting surfaces of Linear Way Module LM



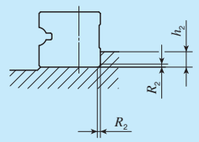
unit : mm

Size	Track rail Shoulder height H
7	4
9	5
11	6

Table 7.2 Corner radius and sholder height of reference mounting surfaces of Linear Way Module M



Mounting of slide member

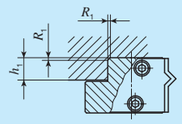


Mounting of track rail

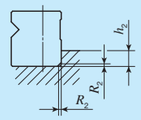
unit : mm

Size	Slide member Corner raqdius R_1 (max.)	Track rail Shoulder height h_2	Track rail Corner radius R_2 (max.)
1	0.8	4	0.8
2	1	5	1
3	1	5	1
4	1.5	6	1
5	1.5	6	1
6	1.5	8	1.5

Table 7.3 Corner radius and sholder height of reference mounting surfaces of Linear Roller Way Module M



Mounting of slide member



Mounting of track rail

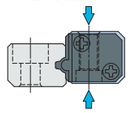
unit : mm

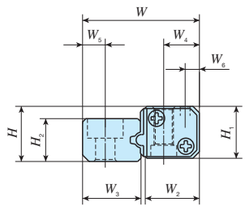
Size	Slide member Shoulder height h_1	Slide member Corner radius R_1 (max.)	Track rail Shoulder height h_2	Track rail Corner radius R_2 (max.)
2	7	1	5	1
3	8.5	1	6	1
4	10.5	1.5	6	1
5	12.5	1.5	8	1
6	14.5	2	8	1.5

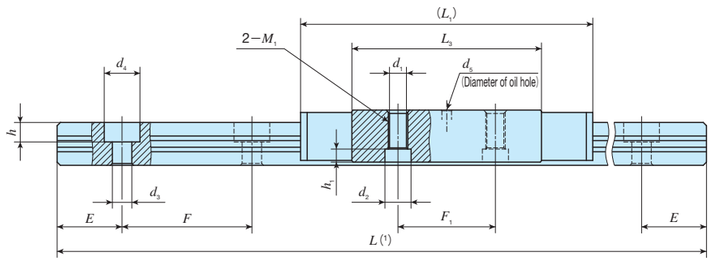
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Linear Way Module

Linear Way Module LM

Shape	LWLM 		
Size	7	9	11

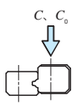




Model number	Mass(Ref.) Slide member g	Mass(Ref.) Track rail g/m	Dimensions of assembly mm H	Dimensions of assembly mm W	Dimensions of slide member mm H_1	W_2	W_4	W_6	L_1	L_3	F_1	d_1	d_2	h_1	M_1	d_5	Dimensions of track rail mm H_2	W_3	W_5	d_3	d_4	h	E	F	Mounting bolt for track rail(3) Bolt size×length	Basic dynamic load rating(4) C N	Basic static load rating(4) C_0 N
LWLM 7*	10	210	7	15	6.6	7.8	5	2.5	38	24	12	–	–	–	M2.6	1	4.8	6.8	3.3	3(4)	–(4)	–(4)	10	20	M2.6×8(4)	1 730	2 020
LWLM 9*	16	390	8.5	18	8	8.6	5.5	2.2	45	29.2	15	–	–	–	M3	1.5	6.6	9	3.5	3	5.5	3	12.5	25	M2.6×8	2 780	3 150
LWLM 11*	32	590	11	23	10	11.8	7	3	52	32.8	15	2.55	5	3	M3	2	8	10.8	5	3.5	6	4.5	20	40	M3×8	4 080	4 240

Notes(1) : Track rail lengths are shown in Table 2 on page Ⅱ-214.
(2) : The appended track rail mounting bolts are hexagon socket head stainless stell bolt of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic staic load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches bellow.
(4) : In LWLM7, counter bore is not provided to the track rail. Total height of track rail including bolt head is 7.4mm.

Remarks 1 : Slide member mounting bolt are not appended.
2 : Model numbers marked ∗ are semi-standard items.



Example of identification number of assembled set

Model code	Size	Part code		Class symbol	Supplemental code
LWLM	9	M2	R200	P	/W2
①	②	③	④	⑤	⑥

① Series
LWLM Linear Way LM

② Size
7, 9, 11

③ Number of slide unit (two units)

④ Length of track rail (200mm)

⑤ Accuracy class

H	High
P	Precision
SP	Super precision

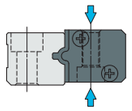
⑥ Special specification
E, I, MN, W, Y

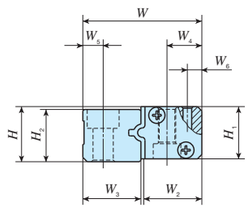
LW(L)M・LRWM

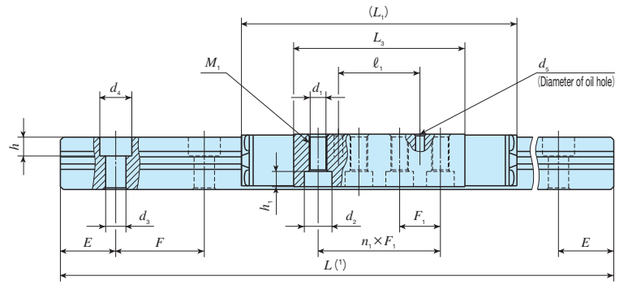
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Linear Way Module

Linear Way Module M

Shape	LWM 					
Size	1	2	3	4	5	6

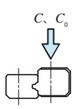




Model number	Mass(Ref.) Slide member kg	Mass(Ref.) Track rail kg/m	Dimensions of assembly mm H	Dimensions of assembly mm W	Dimensions of slide member mm H_1	W_2	W_4	W_6	L_1	L_3	$n_1 \times F_1$	d_1	d_2	h_1	M_1	ℓ_1	d_5	Mounting bolt for slide member(2) Bolt size×length	Dimensions of track rail mm H_2	W_3	W_5	d_3	d_4	h	E	F	Mounting bolt for track rail(2) Bolt size×length	Basic dynamic load rating(4) C N	Basic static load rating(4) C_0 N
LWM 1*	0.07	1.20	14	28	13	14.6	9	4	65	41.2	2×13	3.4	6.5	3.1	M 4	13	2	M3×14	13	13	5.5	4.5	8	4.5	20	40	M 4×14	4 720	6 410
LWM 2*	0.11	1.93	17	35	16	17	10	4	75	47.2	2×15	4.4	8	4.1	M 5	15	3	M4×18	16	17	6	6	9.5	5.4	30	60	M 5×18	7 150	9 240
LWM 3*	0.17	2.71	19	41	18	20	12	5	95	58.8	3×14	5.4	9.5	5.2	M 6	–	3	M5×20	18	20	7	7	11	6.5	30	60	M 6×20	13 700	16 600
LWM 4*	0.32	3.49	21	51	20	25	15	6	125	80.6	3×20	6.8	11	6.2	M 8	–	3	M6×22	20	25	9	9	14	9	40	80	M 8×22	23 200	27 400
LWM 5*	0.56	5.25	25	63	24	30	18	8	145	94.8	4×20	6.8	11	6.2	M 8	20	3	M6×28	24	31	12	11	17.5	11	50	100	M10×25	35 300	41 000
LWM 6*	1.35	7.56	31	78	30	40	24	11	180	131	5×22	8.6	14	8.2	M10	–	3	M8×35	30	36	14	14	20	13	60	120	M12×35	74 100	80 900

Notes(1) : Track rail lengths are shown in Table 2 on page Ⅱ-214.
(2) : The appended track rail mounting bolts are hexagon socket head bolt of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic staic load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches bellow.

Remark : Model numbers marked * are semi-standard items.



Example of identification number of assembled set

Model code	Size	Part code		Class symbol	Supplemental code
LWM	3	M2	R660	P	/W2
①	②	③	④	⑤	⑥

① Series
LWM Linear Way M

② Size
1, 2, 3, 4, 5, 6

③ Number of slide unit (two units)

④ Length of track rail (660mm)

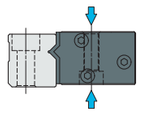
⑤ Accuracy class
H High
P Precision
SP Super precision

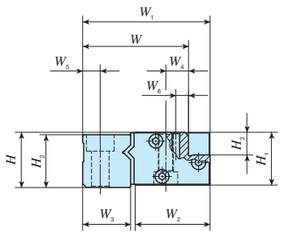
⑥ Special specification
A, E, F, I, LR, LFR
MN, W, Y

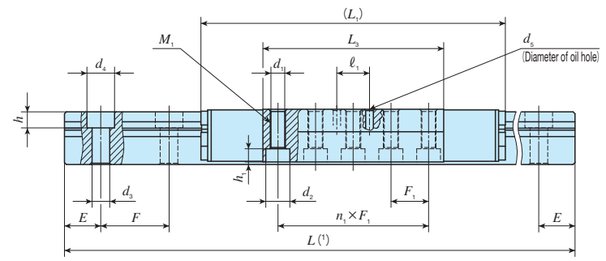
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO Linear Way Module

Linear Roller Way Module M

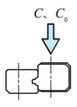
Shape	LRWM 				
Size	2	3	4	5	6





Model number	Mass (Ref.) Slide member kg	Mass (Ref.) Track rail kg/m	Dimensions of assembly mm H	W	W_1	Dimensions of slide member mm H_1	H_3	W_2	W_4	L_1	L_3	$n\times F_1$	M_1	d_1	d_2	h_1	W_6	ℓ_1	d_5	Mounting bolt for slide member (2) Bolt size×length	Dimensions of track rail mm H_2	W_3	W_5	d_3	d_4	h	E	F	Mounting bolt for track rail (2) Bolt size×length	Basic dynamic load rating (4) C N	Basic static load rating (4) C_0 N
LRWM 2*	0.26	1.98	19	33	39.6	18	7.5	22.9	8	105	63	4×12	M 5	4.4	8	4.1	4	10	3	M4×20	18	15	6	6	9.5	5.4	30	60	M 5×20	9 700	10 800
LRWM 3*	0.46	2.92	22	42	50.6	21	9	29.8	9	122	72	4×15	M 6	5.4	9.5	5.2	5	13	3	M5×25	21	19	7	7	11	6.5	30	60	M 6×25	18 500	20 300
LRWM 4*	0.98	4.64	28	56	65.6	27	11	39.4	13	158	96	5×16	M 8	6.8	11	6.2	6	–	3	M6×32	27	24	9	9	14	8.6	40	80	M 8×32	36 500	39 800
LRWM 5*	2.03	6.85	33	70	81.6	32	13	49.1	16	212	140	5×24	M10	8.6	14	8.2	7	–	3	M8×35	32	30	12	11	17.5	10.8	50	100	M10×35	67 900	75 500
LRWM 6*	3.42	9.25	38	83	96.6	37	15	58.6	21	256	168	6×25	M10	8.6	14	8.2	8	28	3	M8×40	37	35	14	14	20	13	60	120	M12×40	99 800	109 000

Notes (1) : Track rail lengths are shown in Table 2 on page Ⅱ-214.
(2) : The appended track rail mounting bolts are hexagon socket head bolt of JIS B 1176 or equivalent.
(3) : The directions of basic dynamic load rating (C), basic staic load rating (C_0) and static moment rating (T_0, T_X, T_Y) are shown in the sketches bellow.
Remark : Model numbers marked * are semi-standard items.



Example of identification number of assembled set

Model code	Size	Part code		Class symbol	Supplemental code
LRWM	3	M2	R660	P	/W2
①	②	③	④	⑤	⑥

① Series
LRWM Linear Roller Way M

② Size
2, 3, 4, 5, 6

③ Number of slide unit (two units)

④ Length of track rail (660mm)

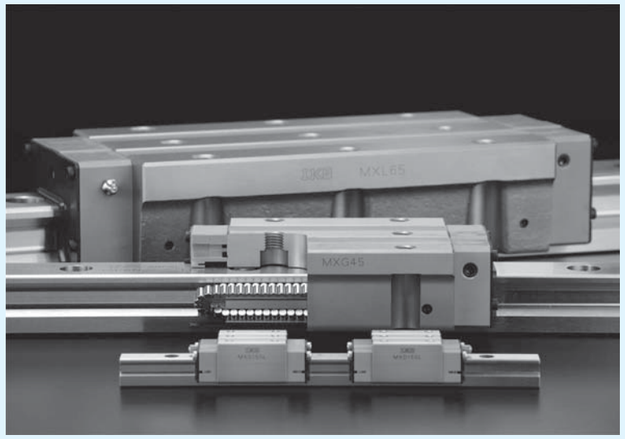
⑤ Accuracy class

H	High
P	Precision
SP	Super precision

⑥ Special specification
A, E, F, I, LR, LFR
MN, W, Y

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

General Description



Selection Procedure

Selection of Linear Way and Linear Roller Way is progressed from the required most important matter sequentially with considering of the detail factor carefully.

Example of Linear Way and Linear Roller Way selection procedure

Confirmation of operating condition	●Using machine, and using part ●Confirm of condition of requirement, performance, and special environment	
Selection of model of Linear Way and Linear Roller Way	●Select suitable Linear Way and Linear Roller Way to using condition with considering of applied load, loading direction, rigidity, friction, installation ability and etc.	Please refer to description on each series on Ⅰ-7 and Ⅰ-8.
Selection of interchangeable or non-interchangeable	●Consider from convenient of maintenance and assembling.	Please refer to description on each series on Ⅰ-15 to 18.
Selection of accuracy grade	●Select based on required running accuracy. Select higher precision grade when running accuracy is especially important.	Please refer to description on each series.
Specify temporary size and numbers of set and slide unit	●Specify temporary based on balance of machine or equipment, and experienced result.	
Calculation of applied load	●Calculate applied load on each slide unit of Linear Way and Linear Roller Way ●Consider of load by acceleration and deceleration, and fluctuating load.	Please refer to Ⅲ-9 to 18.
Calculation of static safety factor	●Calculate static safety factor to confirm accommodation to using condition.	Please refer to Ⅲ-6.
Calculation of expectable life	●Calculate expectable life to confirm accommodation to using condition.	Please refer to Ⅲ-6.
Consideration of preload amount or clearance	●Select suitable preload or clearance to accommodate to using condition	Please refer to description on each series on Ⅲ-19.
Specify size, numbers of set and slide unit, and preload		
Selection of lubrication and dust protection	●Select oil lubrication or grease lubrication ●Select dust protection of seals, bellows, or etc. to accommodate to environment condition	Please refer to description on each series on Ⅲ-20.
Consideration of surrounding	●Consider of mounting method and mounting dimension	Please refer to description on each series on Ⅲ-35.
Determination of final specification of Linear Way and Linear Roller Way and the surrounding		

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Basic Dynamic Load Rating and Life

Life of Linear Motion Rolling Guides

When linear motion rolling guides are operated over a certain period, they will eventually wear out even under normal operating conditions. This is because the raceways and rolling elements of linear motion rolling guides are subjected to repeated loads and will be damaged by rolling contact fatigue of material characterized by the formation of scale-like wear fragments (fatigue flaking). These damaged rolling guides can no longer be used. The life of linear motion rolling guide is defined as the total traveling distance accomplished before the first evidence of fatigue flaking appears on one of the raceways or rolling elements.
There is a variation in life because material fatigue is a statistical phenomenon. The basic rating life is therefore calculated statistically.

Rating life

The basic rating life of linear motion rolling guide is defined as the total traveling distance that 90% of a group of identical rolling guides can be operated individually under the same conditions free from any material damage caused by rolling fatigue.

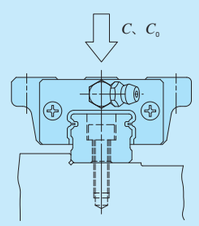


Fig. 1 Direction of load rating

Basic dynamic load rating C

(Complying with ISO 14728-1)

The basic dynamic load rating is defined as a constant load both in direction and magnitude under which a group of identical Linear Way series are individually operated and 90% of those in the group can travel 50×10^3m free from material damage due to rolling contact fatigue.

Basic static load rating C_0

(Complying with ISO 14728-2)

The basic static load rating of linear motion rolling guide is defined as the static load which gives the contact stress as shown in Table 1 at the center of the contact area between the rolling element and the raceway receiving the maximum load. It is the allowable limit load that permits normal rolling motion. Generally, the basic static load rating is used in combination with the static safety factor.

Table 1 Maximum contact stress

Series	Maximum contact stress
Linear Way	4 200 MPa
Linear Roller Way	4 000 MPa

Static moment rating T_0, T_X, T_Y

The static moment rating is defined as the static moment which gives the contact stress as shown in Table 1 at the center of the contact area between the rolling element and the raceway receiving the maximum load when the moment shown in the examples of Fig. 2 is applied.
Generally, like the basic static load rating, the static moment rating is used in combination with the static safety factor to give the limiting load for normal rolling motion.

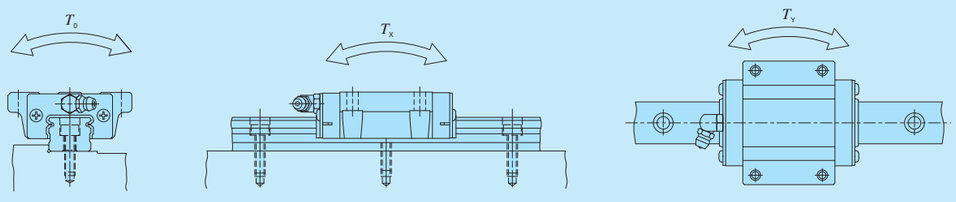


Fig. 2 Examples of static moment rating direction

Life calculation formula

The life calculation formulae are shown below.

Linear Way

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

Linear Roller Way

$$L=50\left(\frac{C}{P}\right)^{10/3} \cdots\cdots(2)$$

where, L : Basic rating life, 10^3m
C : Basic dynamic load rating, N
P : Dynamic equivalent load, N

Operating time is given by stroke length and number of strokes per minute.

$$L_h=\frac{10^6 L}{2Sn_1\times60} \cdots\cdots(3)$$

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

Load factor

Due to vibration and/or shocks during machine operation, the actual load on each rolling guide becomes greater in many cases than the theoretically calculated load. The applied load is generally calculated by multiplying the theoretically calculated load by the load factor indicated in Table 2.

Table 2 Load factor

Operating conditions	f_W
Smooth operation free from vibration and/or shocks	1 ~ 1.2
Normal operation	1.2 ~ 1.5
Operation with vibration and/or shocks	1.5 ~ 3

Static safety factor

The basic static load rating and the static moment rating (or static torque rating) are considered as the theoretical allowable limit of load for normal rolling motion. In practice, this limit must be corrected by the static safety factor considering the operating conditions and performance required of linear motion rolling guides. The static safety factor is obtained by the formulas below, and Tables 3.1 to 3.2 give standard values of this factor. For moment or torque load, the formula (5) is a representative formula. The static safety factor is calculated in each direction by applying the static moment rating and the maximum moment in that direction.

$$f_S=\frac{C_0}{P_0} \cdots\cdots(4)$$

$$f_S=\frac{T_0}{M_0} \cdots\cdots(5)$$

where, f_S : Static safety factor
C_0 : Basic static load rating, N
P_0 : Static equivalent load, N
(or applied static load (maximum load))
T_0 : Static moment rating, N·m
(or static torque rating)
M_0 : Moment or torque, N·m
(maximum moment or maximum torque)

Table 3.1 Static safety factor

Operating conditions	f_s
Operation with vibration and/or shocks	3 ~ 5
High operating performance	2 ~ 4
Normal operation	1 ~ 3

Table 3.2 Static safety factor of Linear Roller Way

Operating conditions	f_s
Operation with vibration and/or shocks	4 ~ 6
High operating performance	3 ~ 5
Normal operation	2.5 ~ 3

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Dynamic equivalent load

When a load is applied in a direction other than that of the basic dynamic load rating of Linear Way or Linear Roller Way or a complex load is applied, the dynamic equivalent load must be calculated to obtain the basic rating life.

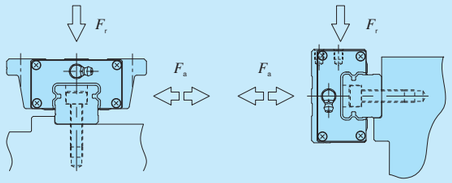
Obtain the downward and lateral conversion loads from the loads and moments in various directions.

$$F_{re}=k_r|F_r|+\frac{C_0}{T_0}|M_0|+\frac{C_0}{T_X}|M_X| \cdots\cdots(6)$$

$$F_{ae}=k_a|F_a|+\frac{C_0}{T_Y}|M_Y| \cdots\cdots(7)$$

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 the T_0 direction, N・m
M_X : Moment in the T_X direction, N・m
M_Y : Moment in the T_Y direction, N・m
k_r、k_a : Conversion factors for load direction (See Table 4.)
C_0 : Basic static load rating, N
T_0 : Static moment rating in the T_0 direction, N・m
T_X : Static moment rating in the T_X direction, N・m
T_Y : Static moment rating in the T_Y direction, N・m

Table 4 Conversion factor for load direction



Linear Way and Linear Roller Way — Linear Way H Side Mounting type

Series and size			Conversion factor k_r $F_r \geqq 0$	k_r $F_r<0$	k_a
C-Lube Linear Way ML Linear Way L	Ball retained type		1	1	1.19
	Ball non-retained type		1	1	0.84
C-Lube Linear Way ME Linear Way E	15～30		1	1	1
	35～45		1	1.19	1.28
Low Decibel Type Linear Way E			1	1	1
C-Lube Linear Way MH Linear Way H	8～12		1	1	1.19
	15～30		1	1	1
	35～65		1	1.19	1.28
	85		1	1.43	1.34
Linear Way H Side Mounting type	15～30		1	1	1
	35～65(1)		1	1	0.84 0.95
Linear Way F	33～42		1	1	1
	69		1	1	1.19
	LWFH		1	1.19	1.28
C-Lube Linear Roller Way MUL Linear Way U	25, 30		1	1	1.19
	40～130		1	1	1
C-Lube Linear Roller Way Super MX Linear Roller Way Super X			1	1	1
Linear Roller Way X			1	1	1
Linear Way Module	LWLM		1	1	0.73
	LWM	1～5	1	1.13	0.73
		6	1	1.28	0.76
	LRWM		1	1	0.58

Note(1) : The upper value in the k_a column is the value when the load is applied to the right and the lower value is the value when the load is applied to the left in the above sketch.

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

$$P=XF_{re}+YF_{ae} \cdots\cdots(8)$$

where, P : Dynamic equivalent load, N
X、Y : Dynamic equivalent load factor (See Table 5.)
F_{re} : Downward conversion load, N
F_{ae} : Lateral conversion load, N

Table 5 Dynamic equivalent load factor

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

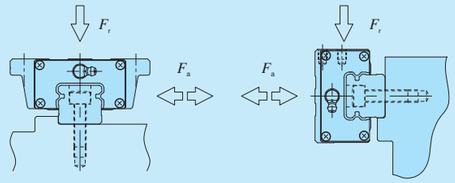
Static equivalent load

When a load is applied in a direction other than that of the basic static load rating of Linear Way or Linear Roller Way or a complex load is applied, the static equivalent load must be calculated to obtain the static safety factor.

$$P_0=k_{0r}|F_r|+k_{0a}|F_a|+\frac{C_0}{T_0}|M_0|+\frac{C_0}{T_X}|M_X|+\frac{C_0}{T_Y}|M_Y| \cdots\cdots(9)$$

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

Table 6 Conversion factor for load direction



Linear Way and Linear Roller Way — Linear Way H Side Mounting type

Series and size			Conversion factor k_{0r} $F_r \geqq 0$	k_{0r} $F_r<0$	k_{0a}
C-Lube Linear Way ML Linear Way L	Ball retained type		1	1	1.19
	Ball non-retained type		1	1	0.84
C-Lube Linear Way ME Linear Way E	15～30		1	1	1
	35～45		1	1.19	1.28
Low Decibel Type Linear Way E			1	1	1
C-Lube Linear Way MH Linear Way H	8～12		1	1	1.19
	15～30		1	1	1
	35～65		1	1.19	1.28
	85		1	1.43	1.34
Linear Way H Side Mounting type	15～30		1	1	1
	35～65(1)		1	1	0.78 0.93
Linear Way F	33～42		1	1	1
	69		1	1	1.19
	LWFH		1	1.19	1.28
C-Lube Linear Way MUL Linear Way U	25, 30		1	1	1.19
	40～130		1	1	1
C-Lube Linear Roller Way Super MX Linear Roller Way Super X			1	1	1
Linear Roller Way X			1	1	1
Linear Way Module	LWLM		1	1	0.60
	LWM	1～5	1	1.19	0.64
		6	1	1.43	0.67
	LRWM		1	1	0.50

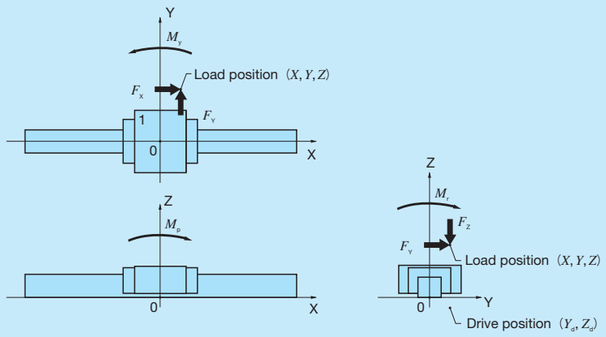
Note(1) : The upper value in the k_{0a} column is the value when the load is applied to the right and the lower value is the value when the load is applied to the left in the above sketch.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Calculation of load

Table 7.1 to Table 7.6 show calculation examples of the loads applied on Linear Motion Rolling Guides incorporated in machines or equipment.

Table 7.1 One track rail and one slide unit

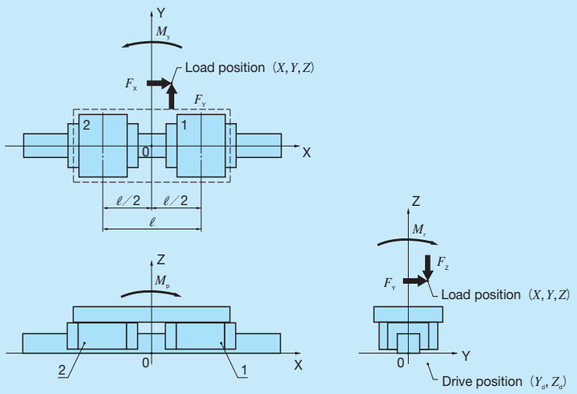


Slide unit No.	Load applied on the slide unit				
	Downward load F_r	Lateral load F_a	Moment in the T_0 direction M_0	Moment in the T_X direction M_X	Moment in the T_Y direction M_Y
1	F_z	F_Y	M_r	M_p	M_y

Remark : The moment loads in each direction M_r, M_p, and M_y can be obtained by the following formulae.

$$M_r = F_Y Z + F_Z Y$$
$$M_p = F_X (Z - Z_d) + F_Z X$$
$$M_y = -F_X (Y - Y_d) + F_Y X$$

Table 7.2 One track rail and two slide units

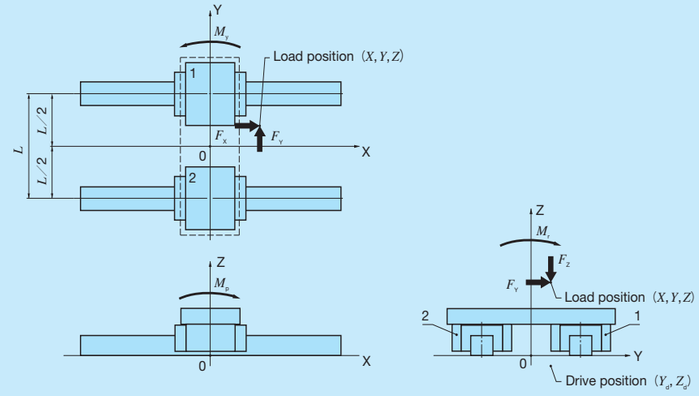


Slide unit No.	Load applied on the slide unit		
	Downward load F_r	Lateral load F_a	Moment in the T_0 direction M_0
1	$\frac{F_z}{2} + \frac{M_p}{\ell}$	$\frac{F_Y}{2} + \frac{M_y}{\ell}$	$\frac{M_r}{2}$
2	$\frac{F_z}{2} - \frac{M_p}{\ell}$	$\frac{F_Y}{2} - \frac{M_y}{\ell}$	$\frac{M_r}{2}$

Remark : The moment loads in each direction M_r, M_p, and M_y can be obtained by the following formulae.

$$M_r = F_Y Z + F_Z Y$$
$$M_p = F_X (Z - Z_d) + F_Z X$$
$$M_y = -F_X (Y - Y_d) + F_Y X$$

Table 7.3 Two track rails and one slide unit on each track rail



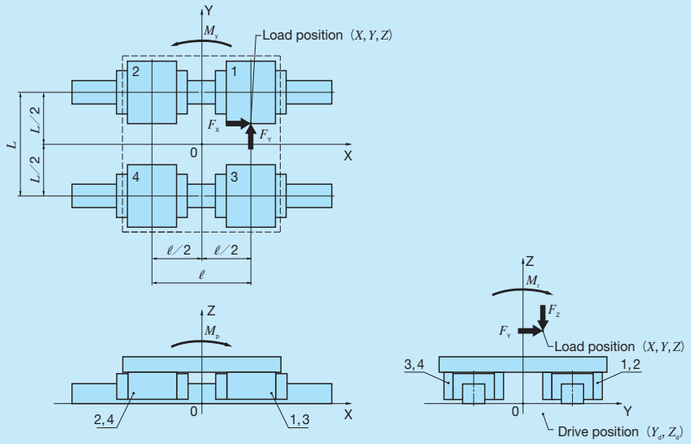
Slide unit No.	Load applied on the slide unit			
	Downward load F_r	Lateral load F_a	Moment in the T_X direction M_X	Moment in the T_Y direction M_Y
1	$\frac{F_z}{2} + \frac{M_r}{L}$	$\frac{F_Y}{2}$	$\frac{M_p}{2}$	$\frac{M_y}{2}$
2	$\frac{F_z}{2} - \frac{M_r}{L}$	$\frac{F_Y}{2}$	$\frac{M_p}{2}$	$\frac{M_y}{2}$

Remark : The moment loads in each direction M_r, M_p, and M_y can be obtained by the following formulae.

$$M_r = F_Y Z + F_Z Y$$
$$M_p = F_X (Z - Z_d) + F_Z X$$
$$M_y = -F_X (Y - Y_d) + F_Y X$$

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 7.4 Two track rails and two slide units on each track rail



Slide unit No.	Load applied on the slide unit	
	Downward load F_r	Lateral load F_a
1	$\frac{F_z}{4}+\frac{M_r}{2L}+\frac{M_p}{2\ell}$	$\frac{F_Y}{4}+\frac{M_y}{2\ell}$
2	$\frac{F_z}{4}+\frac{M_r}{2L}-\frac{M_p}{2\ell}$	$\frac{F_Y}{4}-\frac{M_y}{2\ell}$
3	$\frac{F_z}{4}-\frac{M_r}{2L}+\frac{M_p}{2\ell}$	$\frac{F_Y}{4}+\frac{M_y}{2\ell}$
4	$\frac{F_z}{4}-\frac{M_r}{2L}-\frac{M_p}{2\ell}$	$\frac{F_Y}{4}-\frac{M_y}{2\ell}$

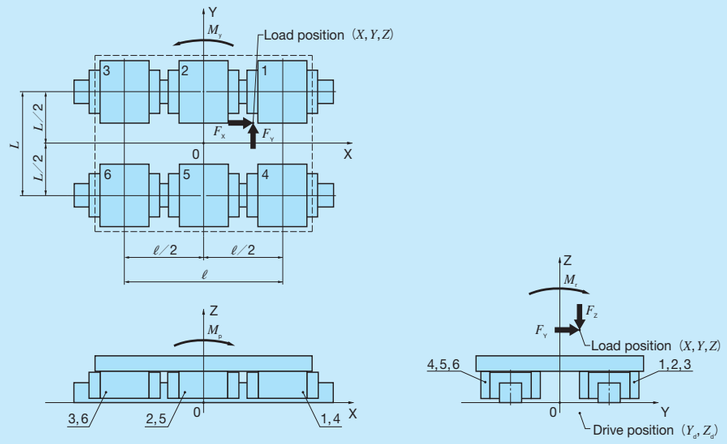
Remark : The moment loads in each direction M_r, M_p, and M_y can be obtained by the following formulae.

$M_r=F_YZ+F_zY$

$M_p=F_X(Z-Z_d)+F_zX$

$M_y=-F_X(Y-Y_d)+F_YX$

Table 7.5 Two track rails and three slide units on each track rail



Slide unit No.	Load applied on the slide unit	
	Downward load F_r	Lateral load F_a
1	$\frac{F_z}{6}+\frac{M_r}{3L}+\frac{M_p}{2\ell}$	$\frac{F_Y}{6}+\frac{M_y}{2\ell}$
2	$\frac{F_z}{6}+\frac{M_r}{3L}$	$\frac{F_Y}{6}$
3	$\frac{F_z}{6}+\frac{M_r}{3L}-\frac{M_p}{2\ell}$	$\frac{F_Y}{6}-\frac{M_y}{2\ell}$
4	$\frac{F_z}{6}-\frac{M_r}{3L}+\frac{M_p}{2\ell}$	$\frac{F_Y}{6}+\frac{M_y}{2\ell}$
5	$\frac{F_z}{6}-\frac{M_r}{3\ell}$	$\frac{F_Y}{6}$
6	$\frac{F_z}{6}-\frac{M_r}{3L}-\frac{M_p}{2\ell}$	$\frac{F_Y}{6}-\frac{M_y}{2\ell}$

Remark : The moment loads in each direction M_r, M_p, and M_y can be obtained by the following formulae.

$M_r=F_YZ+F_zY$

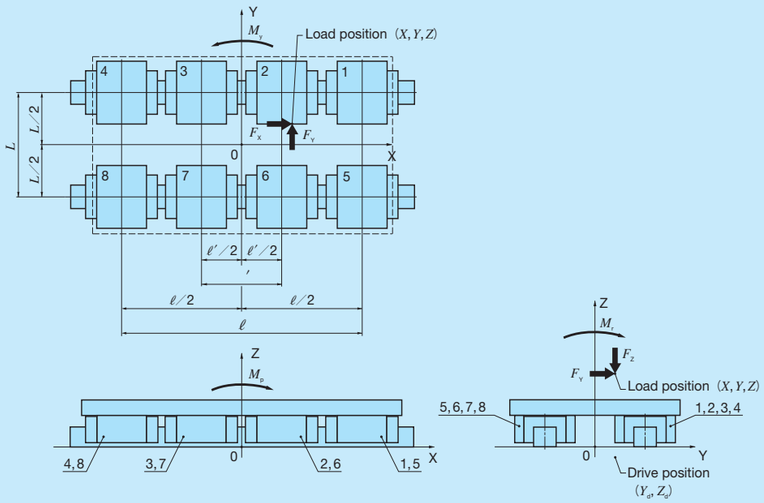
$M_p=F_X(Z-Z_d)+F_zX$

$M_y=-F_X(Y-Y_d)+F_YX$

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Calculation of load

Table 7.6 Two track rails and four slide units on each track rail



Slide unit No.	Load applied on the slide unit	
	Downward load F_r	Lateral load F_a
1	$\frac{F_z}{8}+\frac{M_r}{4L}+\frac{M_p}{2}\frac{\ell}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}+\frac{M_y}{2}\frac{\ell}{\ell^2+\ell'^2}$
2	$\frac{F_z}{8}+\frac{M_r}{4L}+\frac{M_p}{2}\frac{\ell'}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}+\frac{M_y}{2}\frac{\ell'}{\ell^2+\ell'^2}$
3	$\frac{F_z}{8}+\frac{M_r}{4L}-\frac{M_p}{2}\frac{\ell'}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}-\frac{M_y}{2}\frac{\ell'}{\ell^2+\ell'^2}$
4	$\frac{F_z}{8}+\frac{M_r}{4L}-\frac{M_p}{2}\frac{\ell}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}-\frac{M_y}{2}\frac{\ell}{\ell^2+\ell'^2}$
5	$\frac{F_z}{8}-\frac{M_r}{4L}+\frac{M_p}{2}\frac{\ell}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}+\frac{M_y}{2}\frac{\ell}{\ell^2+\ell'^2}$
6	$\frac{F_z}{8}-\frac{M_r}{4L}+\frac{M_p}{2}\frac{\ell'}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}+\frac{M_y}{2}\frac{\ell'}{\ell^2+\ell'^2}$
7	$\frac{F_z}{8}-\frac{M_r}{4L}-\frac{M_p}{2}\frac{\ell'}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}-\frac{M_y}{2}\frac{\ell'}{\ell^2+\ell'^2}$
8	$\frac{F_z}{8}-\frac{M_r}{4L}-\frac{M_p}{2}\frac{\ell}{\ell^2+\ell'^2}$	$\frac{F_Y}{8}-\frac{M_y}{2}\frac{\ell}{\ell^2+\ell'^2}$

Remark : The moment loads in each direction M_r, M_p, and M_y can be obtained by the following formulae.

$M_r=F_YZ+F_zY$

$M_p=F_x(Z-Z_d)+F_zX$

$M_y=-F_x(Y-Y_d)+F_YX$

Mean equivalent load for fluctuating load

When the load on the rolling guide fluctuates, the mean equivalent load P_m is used in place of the load P in the life calculation formula.

The mean equivalent load is a constant load which gives the basic rating life equal to that for the fluctuating load. It is obtained by the following formula.

$$P_m=\sqrt[p]{\frac{1}{L}\int_0^L P_n^{\,p}\,dL} \quad \cdots\cdots(10)$$

where, P_m : Mean equivalent load, N

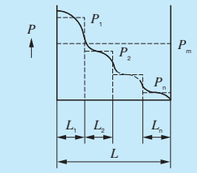
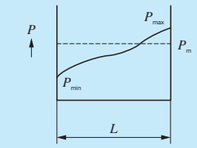
L : Total traveling distance, m

P_n : Fluctuating load, N

p : Exponent (Ball guide: 3, roller guide: 10/3)

Table 8 gives calculation examples of the mean equivalent load for typical fluctuating loads.

Table 8 Mean equivalent load for fluctuating load

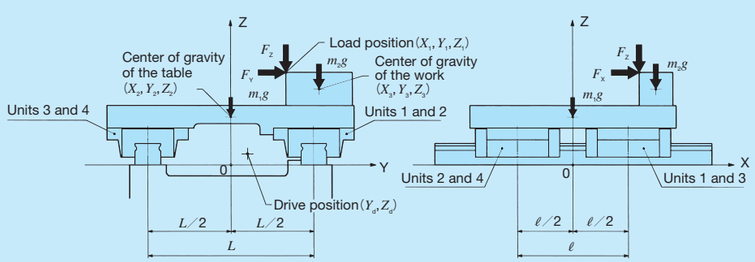
Example		Calculation formula
① Step load		$P_m=\sqrt[p]{\frac{1}{L}(P_1^{\,p}L_1+P_2^{\,p}L_2+\cdots+P_n^{\,p}L_n)}$ where, L_1 : Total traveling distance under load P_1, m L_2 : Total traveling distance under load P_2, m L_n : Total traveling distance under load P_n, m
② Monotonously changing load		$P_m \fallingdotseq \frac{1}{3}(2P_{max}+P_{min})$ where, P_{max} : Maximum value of fluctuating load, N P_{min} : Minimum value of fluctuating load, N

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Examples of Load and Life Calculation

Example 1

Model No.			LWE 25 C2 R640 H
Basic dynamic load rating	C	=	18100 N
Basic static load rating	C_0	=	21100 N
Applied load	F_{X1}	=	1000 N
	F_{Y1}	=	2000 N
	F_{Z1}	=	1000 N
Load position	X_1	=	60 mm
	Y_1	=	50 mm
	Z_1	=	83 mm
Table mass	m_1	=	10 kg
Position of the center of gravity of table	X_2	=	0 mm
	Y_2	=	0 mm
	Z_2	=	43 mm
Work mass	m_2	=	10 kg
Position of the center of gravity of work	X_3	=	75 mm
	Y_3	=	80 mm
	Z_3	=	68 mm
Number of strokes per minute	n_1	=	5 cpm
Stroke length	S	=	100 mm
Distance between the slide units	ℓ	=	100 mm
Distance between the track rails	L	=	150 mm
Drive position	Y_d	=	150 mm
	Z_d	=	10 mm



The life and static safety factor under the above conditions are calculated as follows. Load factor f_w is assumed to be 1.5.

❶Load on the slide unit

Moments that occur due to the applied load and the table weight act around each coordinate axis of the Linear Motion Rolling Guide as shown below.

$$M_r=\Sigma(F_YZ)+\Sigma(F_ZY)=F_{Y1}Z_1+F_{Z1}Y_1+m_1gY_2+m_2gY_3$$
$$=2000\times83+1000\times50+10\times9.8\times0+10\times9.8\times80$$
$$\fallingdotseq224000$$

$$M_p=\Sigma\{F_X(Z-Z_d)\}+\Sigma(F_ZX)=F_{X1}(Z_1-Z_d)+F_{Z1}X_1+m_1gX_2+m_2gX_3$$
$$=1000\times(83-10)+1000\times60+10\times9.8\times0+10\times9.8\times75\fallingdotseq140000$$

$$M_y=-\Sigma\{F_X(Y-Y_d)\}+\Sigma(F_YX)=-F_{X1}(Y_1-Y_d)+F_{Y1}X_1$$
$$=-1000\times(50-150)+2000\times60=220000$$

where, M_r : Moment in the rolling direction, N · mm
M_p : Moment in the pitching direction, N · mm
M_y : Moment in the yawing direction, N · mm

The loads applied on each slide unit are calculated according to Table 10.4 on page 33.

$$F_{r1}=\frac{\Sigma F_Z}{4}+\frac{M_r}{2L}+\frac{M_p}{2\ell}=\frac{F_{Z1}+m_1g+m_2g}{4}+\frac{M_r}{2L}+\frac{M_p}{2\ell}$$
$$=\frac{1000+10\times9.8+10\times9.8}{4}+\frac{224000}{2\times150}+\frac{140000}{2\times100}$$
$$\fallingdotseq1750$$

$$F_{r2}=\frac{\Sigma F_Z}{4}+\frac{M_r}{2L}-\frac{M_p}{2\ell}=\frac{F_{Z1}+m_1g+m_2g}{4}+\frac{M_r}{2L}-\frac{M_p}{2\ell}\fallingdotseq346$$

$$F_{r3}=\frac{\Sigma F_Z}{4}-\frac{M_r}{2L}+\frac{M_p}{2\ell}=\frac{F_{Z1}+m_1g+m_2g}{4}-\frac{M_r}{2L}+\frac{M_p}{2\ell}\fallingdotseq252$$

$$F_{r4}=\frac{\Sigma F_Z}{4}-\frac{M_r}{2L}-\frac{M_p}{2\ell}=\frac{F_{Z1}+m_1g+m_2g}{4}-\frac{M_r}{2L}-\frac{M_p}{2\ell}$$
$$\fallingdotseq-1150$$

$$F_{a1}=F_{a3}=\frac{\Sigma F_Y}{4}+\frac{M_y}{2\ell}=\frac{F_{Y1}}{4}+\frac{M_y}{2\ell}$$
$$=\frac{2000}{4}+\frac{220000}{2\times100}=1600$$

$$F_{a2}=F_{a4}=\frac{\Sigma F_Y}{4}-\frac{M_y}{2\ell}=\frac{F_{Y1}}{4}-\frac{M_y}{2\ell}=-600$$

❷Basic rating life

The upward/downward load and lateral load are converted into the conversion loads by formulas (1.5) and (1.6) on page 25.

$$F_{re1}=k_r|F_{r1}|=1\times1750=1750$$
$$F_{re2}=k_r|F_{r2}|=1\times346=346$$
$$F_{re3}=k_r|F_{r3}|=1\times252=252$$
$$F_{re4}=k_r|F_{r4}|=1\times1150=1150$$
$$F_{ae1}=k_a|F_{a1}|=1\times1600=1600$$
$$F_{ae2}=k_a|F_{a2}|=1\times600=600$$
$$F_{ae3}=k_a|F_{a3}|=1\times1600=1600$$
$$F_{ae4}=k_a|F_{a4}|=1\times600=600$$

where, k_r, k_a : Conversion factors for load direction (See Table 7 on page 26.)

The dynamic equivalent load is calculated by formula (1.7) on page 25.

$$P_1=X|F_{re1}|+Y|F_{ae1}|=1\times1750+0.6\times1600=2710$$
$$P_2=X|F_{re2}|+Y|F_{ae2}|=0.6\times346+1\times600\fallingdotseq808$$
$$P_3=X|F_{re3}|+Y|F_{ae3}|=0.6\times252+1\times1600\fallingdotseq1750$$
$$P_4=X|F_{re4}|+Y|F_{ae4}|=1\times1150+0.6\times600=1510$$

The basic rating life of slide unit 1 receiving the largest dynamic equivalent load is calculated. The basic rating life is obtained by the formula given in Table 2 on page 21 while considering the load factor f_w.

$$L_1=50\left(\frac{C}{f_W P_1}\right)^3=50\times\left(\frac{18100}{1.5\times2710}\right)^3\fallingdotseq4410$$

$$L_{h1}=\frac{10^6L_1}{2Sn_1\times60}=\frac{10^6\times4410}{2\times100\times5\times60}\fallingdotseq73500$$

As the result of the above calculation, the basic rating life is about 73500 hours.

❸Static safety factor

The static equivalent load is calculated from the upward/downward load and lateral load by formula (1.8) on page 27.

$$P_{01}=k_{0r}|F_{r1}|+k_{0a}|F_{a1}|=1\times1750+1\times1600=3350$$
$$P_{02}=k_{0r}|F_{r2}|+k_{0a}|F_{a2}|=1\times346+1\times600=946$$
$$P_{03}=k_{0r}|F_{r3}|+k_{0a}|F_{a3}|=1\times252+1\times1600=1852$$
$$P_{04}=k_{0r}|F_{r4}|+k_{0a}|F_{a4}|=1\times1150+1\times600=1750$$

where, k_{0r}, k_{0a} : Conversion factors for load direction (See Table 8 on page 28.)

The static safety factor of slide unit 1 receiving the largest static equivalent load is obtained. The static safety factor is calculated by formula (1.3) on page 24.

$$f_{s1}=\frac{C_0}{P_{01}}=\frac{21100}{3350}\fallingdotseq6.3$$

As the result of the above calculation, the static safety factor is about 6.3.

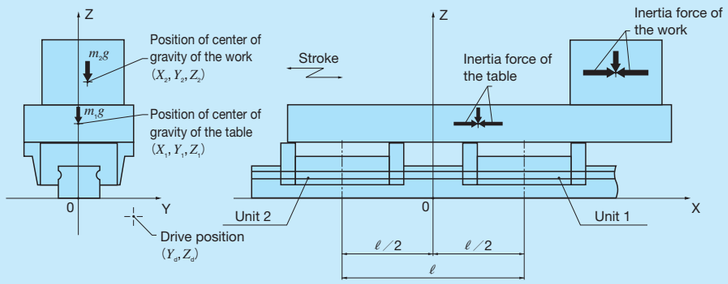
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

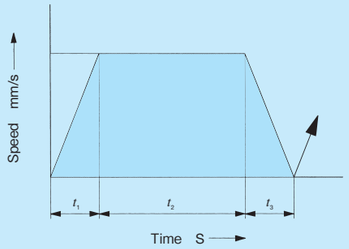
Examples of Load and Life Calculation

Example 2

Model No.·····LWH 45 C2 R1050 BH

Basic dynamic load rating·····	C	=	74600 N
Basic static load rating·····	C_0	=	80200 N
Static moment rating····· in the T_0 direction	T_0	=	1610 N · m
Table mass·····	m_1	=	100 kg
Position of the center of····· gravity of table ·····	X_1	=	50 mm
·····	Y_1	=	0 mm
·····	Z_1	=	80 mm
Work mass·····	m_2	=	1000 kg
Position of the center of····· gravity of work ·····	X_2	=	200 mm
·····	Y_2	=	10 mm
·····	Z_2	=	130 mm
Distance between····· the slide units	ℓ	=	200 mm
Stroke length·····	S	=	500 mm
Number of strokes per minute·····	n_1	=	6 cpm
Maximum travel speed·····	V_{max}	=	100 mm/s
Time spent for acceleration·····	t_1	=	0.1 s
Time spent during constant····· speed motion	t_2	=	4.9 s
Time spent for deceleration·····	t_3	=	0.1 s
Drive position·····	Y_d	=	60 mm
·····	Z_d	=	−20 mm





The life and static safety factor under the above conditions are calculated as follows. Load factor f_w is assumed to be 1.5.

❶Load on the slide unit

Moments that occur due to the applied load, the table weight and the inertia force act around each coordinate axis of the Linear Motion Rolling Guide as shown below.

·During acceleration at the start of motion

$$M_r=\Sigma(F_Y Z)+\Sigma(F_Z Y)=m_1gY_1+m_2gY_2=100\times9.8\times0+1000\times9.8\times10\fallingdotseq98000$$

$$M_p=\Sigma\{F_X(Z-Z_d)\}+\Sigma(F_Z X)$$
$$=m_1\frac{V_{max}}{1000\times t_1}(Z_1-Z_d)+m_2\frac{V_{max}}{1000\times t_1}(Z_2-Z_d)+m_1gX_1+m_2gX_2$$
$$=100\times\frac{100}{1000\times0.1}\times(80+20)+1000\times\frac{100}{1000\times0.1}\times(130+20)+100\times9.8\times50+1000\times9.8\times200\fallingdotseq2169000$$

$$M_y=-\Sigma\{F_X(Y-Y_d)\}+\Sigma(F_Y X)$$
$$=-m_1\frac{V_{max}}{1000\times t_1}(Y_1-Y_d)-m_2\frac{V_{max}}{1000\times t_2}(Y_2-Y_d)$$
$$=-100\times\frac{100}{1000\times0.1}\times(0-60)-1000\times\frac{100}{1000\times0.1}\times(10-60)\fallingdotseq56000$$

·During constant speed motion

$$M_r=m_1gY_1+m_2gY_2\fallingdotseq98000$$
$$M_p=m_1gX_1+m_2gX_2\fallingdotseq2010000$$
$$M_y=0$$

·During deceleration at the end of motion

$$M_r=m_1gY_1+m_2gY_2\fallingdotseq98000$$
$$M_p=-m_1\frac{V_{max}}{t_1}(Z_1-Z_d)-m_2\frac{V_{max}}{t_1}(Z_2-Z_d)+m_1gX_1+m_2gX_2\fallingdotseq1850000$$
$$M_y=m_1\frac{V_{max}}{t_1}(Y_1-Y_d)+m_2\frac{V_{max}}{t_2}(Y_2-Y_d)\fallingdotseq-56000$$

where, M_r : Moment in the rolling direction, N · mm
M_p : Moment in the pitching direction, N · mm
M_y : Moment in the yawing direction, N · mm

The loads applied on each slide unit are calculated according to Table 10.2 on page 31.

·During acceleration at the start of motion

$$F_{r1}=\frac{\Sigma F_Z}{2}+\frac{M_p}{\ell}=\frac{m_1g+m_2g}{2}+\frac{M_p}{\ell}$$
$$=\frac{100\times9.8+1000\times9.8}{2}+\frac{2169000}{200}\fallingdotseq16200$$
$$F_{r2}=\frac{\Sigma F_Z}{2}+\frac{M_p}{\ell}=\frac{m_1g+m_2g}{2}-\frac{M_p}{\ell}\fallingdotseq-5460$$
$$F_{a1}=\frac{\Sigma F_Y}{2}+\frac{M_y}{\ell}=280$$
$$F_{a2}=\frac{\Sigma F_Y}{2}-\frac{M_y}{\ell}=-280$$
$$M_{01}=M_{02}=\frac{M_r}{2}=49000$$

·During constant speed motion

$$F_{r1}=\frac{100\times9.8+1000\times9.8}{2}+\frac{2010000}{200}\fallingdotseq15400$$
$$F_{r2}\fallingdotseq-4660$$
$$F_{a1}=F_{a2}=0$$
$$M_{01}=M_{02}=49000$$

·During deceleration at the end of motion

$$F_{r1}=\frac{100\times9.8+1000\times9.8}{2}+\frac{1850000}{200}\fallingdotseq14600$$
$$F_{r2}\fallingdotseq-3860$$
$$F_{a1}\fallingdotseq-280$$
$$F_{a2}\fallingdotseq280$$
$$M_{01}=M_{02}=49000$$

❷Basic rating life

The upward/downward load, lateral load, and moment in the T_0 direction are converted into the conversion loads by formulas (1.5) and (1.6) on page 25, and the dynamic equivalent load is calculated by formula (1.7).

·During acceleration at the start of motion

$$F_{re1}=k_r|F_{r1}|+\frac{C_0}{T_0}|M_{01}|=1\times16200+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq18600$$
$$F_{re2}=1\times5460+\frac{80200}{1610}\times\frac{49000}{7900}\fallingdotseq7900$$
$$F_{ae1}=k_a|F_{a1}|=1.28\times280\fallingdotseq358$$
$$F_{ae2}=1.28\times280\fallingdotseq358$$
$$P_1=XF_{re1}+YF_{ae1}=1\times18600+0.6\times358\fallingdotseq18800$$
$$P_2=XF_{re2}+YF_{ae2}=1\times7900+0.6\times358\fallingdotseq8110$$

·During constant speed motion

$$F_{re1}=1\times15400+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq17800$$
$$F_{re2}=1\times4660+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq7100$$
$$F_{ae1}=0$$
$$F_{ae2}=0$$
$$P_1=17800$$
$$P_2=7100$$

·During deceleration at the end of motion

$$F_{re1}=1\times14600+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq17000$$
$$F_{re2}=1\times3860+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq6300$$
$$F_{ae1}=1.28\times280\fallingdotseq358$$
$$F_{ae2}=1.28\times280\fallingdotseq358$$
$$P_1=1\times17000+0.6\times358\fallingdotseq17200$$
$$P_2=1\times6300+0.6\times358\fallingdotseq6510$$

Because the dynamic equivalent load changes stepwise along the traveling distance, the average load is calculated from ① in Table 11 on page 36.

$$P_{m1}=\sqrt[3]{\frac{1}{S}\left(P_1^3\frac{V_{max}t_1}{2}+P_2^3V_{max}t_2+P_3^3\frac{V_{max}t_3}{2}\right)}$$
$$=\left\{\frac{1}{500}\times\left(18800^3\times\frac{100\times0.1}{2}+17800^3\times100\times4.9+17200^3\times\frac{100\times0.1}{2}\right)\right\}^{1/3}\fallingdotseq17800$$
$$P_{m2}=\left\{\frac{1}{500}\times\left(8110^3\times\frac{100\times0.1}{2}+7100^3\times100\times4.9+6510^3\times\frac{100\times0.1}{2}\right)\right\}^{1/3}\fallingdotseq7110$$

The basic rating life of slide unit 1 receiving the largest dynamic equivalent load is calculated. The basic rating life is obtained by the formula given in Table 2 on page 21 while considering the load factor f_w.

$$L_1=50\left(\frac{C}{f_W P_{m1}}\right)^3=50\left(\frac{74600}{1.5\times17800}\right)^3\fallingdotseq1090$$
$$L_{h1}=\frac{10^6L_1}{2Sn_1\times60}=\frac{10^6\times1090}{2\times500\times6\times60}\fallingdotseq3030$$

As the result of the above calculation, the basic rating life is about 3030 hours.

❸Static safety factor

The static equivalent load is calculated from the upward/downward load and lateral load by formula (1.8) on page 27.

·During acceleration at the start of motion

$$P_{01}=k_{0r}|F_{r1}|+k_{0a}|F_{a1}|+\frac{C_0}{T_0}|M_{01}|=1\times16200+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq19000$$
$$P_{02}=k_{0r}|F_{r2}|+k_{0a}|F_{a2}|+\frac{C_0}{T_0}|M_{02}|=1.19\times5460+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq9300$$

·During constant speed motion

$$P_{01}=1\times15400+1.28\times0+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq19000$$
$$P_{02}=1.19\times4660+1.28\times0+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq7990$$

·During deceleration at the end of motion

$$P_{01}=1\times14600+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq17400$$
$$P_{02}=1.19\times3860+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq7390$$

The static safety factor of slide unit 1 during acceleration at the start receiving the largest static equivalent load is calculated. The static safety factor is obtained by formula (1.3) on page 24.

$$f_s=\frac{C_0}{P_{01}}=\frac{80200}{19000}\fallingdotseq4.2$$

As the result of the above calculation, the static safety factor is about 4.2.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Accuracy

Five classes of accuracy, Ordinary, High, Precision, Super Precision, and Ultra Precision are specified for IKO Linear Way and Linear Roller Way.

Table 9 Accuracy classes

Series \ Classification (symbol)	Ordinary (No symbol)	High (H)	Precision (P)	Super Precision (SP)	Ultra Precision (UP)
C-Lube Linear Way ML Linear Way L	–	○	○	–	–
C-Lube Linear Way ME Linear Way E	○	○	○	○	–
C-Lube Linear Way MH Linear Way H	–	○	○	○	–
Linear Way F	–	○	○	○	–
C-Lube Linear Way MUL Linear Way U	○	○	–	–	–
C-Lube Linear Roller Way Super MX Linear Roller Way Super X	–	○	○	○	○
Linear Roller Way X	–	○	○	○	○
Linear Way Module	–	○	○	○	–

Preload

Purpose of preload

A clearance may be given to linear motion rolling guides, when the load is small and very smooth motion is required. However, in many cases, preload is preferred, because it eliminates play in the guide mechanism and increases the rigidity of rolling guide.

Preload is given by applying an internal stress, in advance, to the contact area between raceways and rolling elements. When a load is applied on the preloaded rolling guide, elastic deformation due to the load is smaller compared to that without preload by the effect of this internal stress, and the rigidity of rolling guide is increased. (See Fig. 3)

Setting preload

The preload amount is determined by considering the characteristics of the machines and equipment on which the rolling guide is mounted and the nature of load acting on the rolling guide. The standard amount of preload for linear motion rolling guides is, in general, approx. 1/3 of load when the rolling elements are balls (steel balls) and approx. 1/2 of load when they are rollers (cylindrical rollers). If the rolling guides are required to have very high rigidity to withstand vibration or fluctuating load, a larger preload may be applied. Specify this item for an assembled set or a single slide unit. For applicable preload amount, see Table 10.

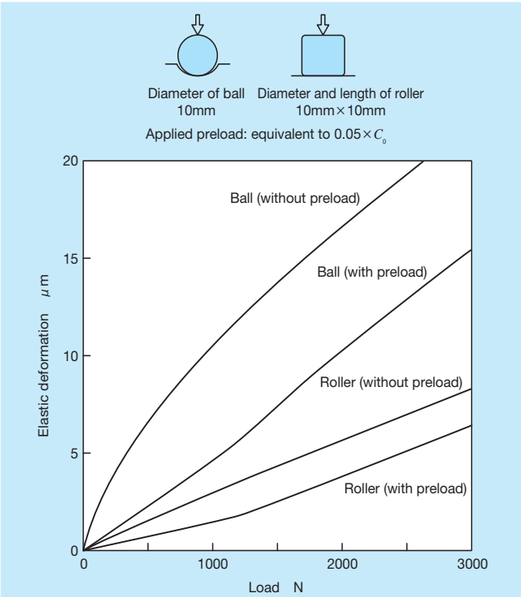


Fig. 3 Effect of preload on elastic deformation due to load

Table 10 Preload amount

Series \ Classification (symbol)	Clearance (T_C)	Clearance (T_0)	Standard (No symbol)	Light preload (T_1)	Medium preload (T_2)	Heavy preload (T_3)
C-Lube Linear Way ML Linear Way L	–	○	○	○	–	–
C-Lube Linear Way ME Linear Way E	○	–	○	○	○	–
C-Lube Linear Way MH Linear Way H	–	○	○	○	○	○
Linear Way F	–	–	○	○	○	–
C-Lube Linear Way MUL Linear Way U	–	–	○	○	–	–
C-Lube Linear Roller Way Super MX Linear Roller Way Super X	–	–	○	○	○	○
Linear Roller Way X	–	–	○	○	○	○

Cautions on Preload Selection

Even when high rigidity must be obtained, excessive preload should be avoided, because it will produce an excessive stress between rolling elements and raceways, and eventually result in short life of rolling guides. It is important to apply a proper amount of preload, considering the operating conditions. When linear motion rolling guides must be used with a large preload, consult IKO for further information.
Linear Bushing and Stroke Rotary Bushing should never be given a large amount of preload.

Friction

Friction of Linear Motion Rolling Guides

The static friction (start-up friction) of linear motion rolling guides is much lower than that of conventional plain guides. Also, the difference between static friction and dynamic friction is small, and friction varies little when velocity changes. These are excellent features of linear motion rolling guides, and account for their ability to reduce power consumption, suppress operating temperature rise, and increase traveling speed.
Since frictional resistance and variation are small, high speed response to motion commands and high accuracy positioning can be achieved.

Friction coefficient

The frictional resistance of rolling guides varies with their type, load, traveling speed and lubricant used. Generally speaking, lubricants or seals are major factors in determining the frictional resistance in light load and high speed applications, while the magnitude of load is the major factor in heavy load and low speed applications. The frictional resistance of rolling guides actually depends on various factors, but the following formula is used for practical purposes.

$$F=\mu P \quad \cdots\cdots (10)$$

where, F : Frictional resistance, N
μ : Dynamic friction coefficient
P : Load, N

For sealed guides, seal resistance is added to the above value, but this resistance varies greatly with the interference amount of seal lip and lubrication conditions.
Where the methods of lubrication and mounting are correct and the load is moderate, the friction coefficients of linear motion rolling guide in operation are within the range shown in Table 11. Generally, friction coefficient is large under small load. Table 11 gives typical examples of this relationship.

Table 11 Friction coefficient

Series	Dynamic friction coefficient μ (1)
Linear Way	0.0040~0.0060
Linear Roller Way	0.0020~0.0040

Note(1) : These friction coefficients do not include the seal friction.

Lubrication

Purpose of lubrication

The purpose of lubrication for linear motion rolling guides is to keep raceways, rolling elements, etc. from direct metal-to-metal contact, and thereby reduce friction and wear and prevent heat generation and seizure. When an adequate oil film is formed between the raceways and rolling elements at the rolling contact area, the contact stress due to load can be moderated. Lubrication is important for ensuring the reliability of linear motion rolling guides.

Selection of lubricant

To obtain the full performance of linear motion rolling guides, it is necessary to select an appropriate lubricant and lubrication method by considering the type, load and speed of each linear motion rolling guide. However, as compared with plain guides, lubrication of linear motion rolling guides is much simpler. Only a small amount of lubricant is needed and the replenishment interval is longer, so maintenance can be greatly reduced. Oil and grease are the two most commonly used lubricants for linear motion rolling guides.

Grease lubrication

For grease lubrication of linear motion rolling guides, lithium-soap base grease (Consistency No.2 of JIS) is commonly used. For rolling guides operating under heavy load conditions, grease containing extreme pressure additives is recommended.
In clean and high-vacuum environments, where low dust generation performance and low vaporization characteristics are required, greases containing a synthetic base oil or a soap other than the lithium-soap base are used. For applications in these environments, due consideration is necessary to select a grease type that is suitable for the special operating conditions and achieves satisfactory lubrication performance at the same time.

Table 12 Pre-packed grease list

Series	Pre-packed grease
C-Lube Linear Way ML Linear Way L	MULTEMP PS No.2 (KYODO YUSHI)
C-Lube Linear Way ME Linear Way E	ALVANIA EP GREASE 2 (SHELL)
C-Lube Linear Way MH(1) Linear Way H(1)	
Linear Way F	
C-Lube Linear Way MUL Linear Way U(2)	MULTEMP PS No.2 (KYODO YUSHI)
C-Lube Linear Roller Way Super MX Linear Roller Way Super X	ALVANIA EP GREASE 2 (SHELL)
Linear Roller Way X	
Linear Way Module	

Note(1) : For size 8 to 12 models, MULTEMP PS No.2 is pre-packed.
(2) : For size 40 and 130 models, MULTEMP PS No.2 is pre-packed.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Grease Replenishment Interval

The quality of any grease will gradually deteriorate as operating time passes. Therefore, periodic relubrication is necessary. The relubrication 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 reciprocating motions with many cycles and long strokes, relubrication every three months is recommended.

Grease Replenishment Method

New grease must be supplied through a grease feed device such as a grease nipple until old grease is discharged. After grease is replenished, running in is performed and excess grease will be discharged from the inside of rolling guide. Discharged grease must then be removed before starting the operation.
The amount of grease required for standard replenishment is about 1/3 to 1/2 of the free space inside the linear motion rolling guide. When grease is supplied from a grease nipple for the first time, there will be grease lost in the replenishment path. The amount lost should be taken into consideration.
Generally, immediately after grease is replenished, frictional resistance tends to increase. If running-in is performed for10 to 20 reciprocating cycles after excess grease is discharged, frictional resistance becomes small and stable.
For applications where low frictional resistance is required, the replenishment amount of grease may be reduced, but it must be kept to an appropriate level so as not to give a bad influence on the lubrication performance.

Mixing of Different Grease Types

Mixing different types of greases may result in changing the properties of base oil, soap base, or additives used, and, in some cases, severely deteriorate the lubrication performance or cause a trouble due to chemical changes of additives. Old grease should therefore be removed thoroughly before filling with new grease.

Oil lubrication

For oil lubrication, heavy loads require a higher oil viscosity and higher operating speeds require a lower viscosity. Generally, for linear motion rolling guides operating under heavy loads, lubrication oil with a viscosity of about 68 mm^2/s is used. For linear motion rolling guides under light loads at high speeds, lubrication oil with a viscosity of about 13 mm^2/s is used.

Maintenance-Free system “C-Lube”

C-Lube system IKO has been developed is for new type lubrication. It is a porous resin sleeve or plate with steel backing formed by sintering fine resin powder and impregnating a large amount of lubrication oil in its open pores. C-Lube system always supplies proper amount of lubrication oil to the balls and lubrication condition of the raceway can be kept well for long period of time.

Table 13 Grease Brands for Linear Motion Rolling Guides

Name		Base oil	Thickener	Service range(2) ℃	Remarks
ALVANIA GREASE EP2	SHELL	Mineral oil	Lithium	−20～110	General applications, contains extreme pressure additives
ALVANIA GREASE S2	SHELL	Mineral oil	Lithium	−25～120	General applications
MULTEMP PS No.2	KYODO OIL	Synthetic oil, mineral oil	Lithium	−50～130	General applications
IKO CLEAN ENVIRONMENT GREASE CG2	NIPPON THOMPSON	Synthetic oil	Urea	−40～200	For clean environment, long life
IKO CLEAN ENVIRONMENT GREASE CGL	NIPPON THOMPSON	Synthetic oil, mineral oil	Lithium/Calcium	−30～120	For clean environment, Low friction
DEMNUM GREASE L-200(1)	DAIKIN	Synthetic oil	Ethylene tetra-fluoride	−60～300	For clean environment
FOMBLIN YVAC3(1)	SOLVAY SOLEXIS	Synthetic oil	Ethylene tetra-fluoride	−20～250	For vacuum environment
IKO ANTI-FRETTING CORROSION GREASE AF2	NIPPON THOMPSON	Synthetic oil	Urea	−50～170	Fretting-proof
6459 GREASE N	SHELL	Mineral oil	Poly-urea	−	Fretting-proof

Notes(1) : Set a little shorter replenishment interval.
(2) : Figures show the maximum allowable temperature recommended by oil company in very short time operation, and they are not applicable for continuous operation.
Remark : When using a grease type, check the selected type according to the manufacturer's catalog of grease.
For applications other than those described above, consult IKO for further information.

Miniature grease

The miniature greaser is specially prepared for grease replenishment for Linear Way with an oil hole. Table 14 shows the types of grease and specifications of the miniature greaser.

Table 14 Specifications

Identification number	Grease name	Content	Outside diameter of injector needle
MG10/MT2	MULTEMP PS No.2 (KYODO YUSHI)	10ml	φ1mm
MG10/CG2	IKO Low Dust Generation Grease for Clean Environment CG2		
MG2.5/EP2	Alvania EP Grease 2 [Shell]	2.5ml	
MG2.5/CG2	IKO Low Dust Generation Grease for Clean Environment CG2		
MG2.5/CGL	IKO Low Dust Generation Grease for Clean Environment CGL		
MG2.5/AF2	IKO Anti-Fretting Corrosion Grease AF2		

Grease nipple and supply nozzle

Tables 15.1 and 15.2 show the specifications of grease nipples and applicable types of supply nozzles. Table 16 shows the specifications of supply nozzles.

Table 15.1 Grease nipples and applicable supply nozzles

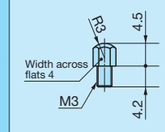
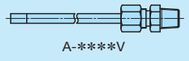
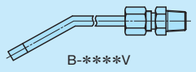
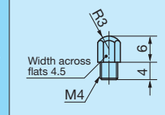
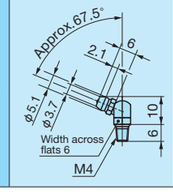
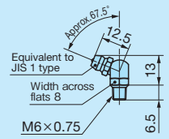
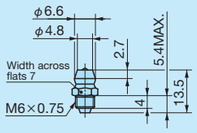
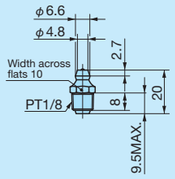
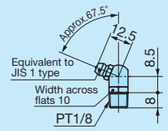
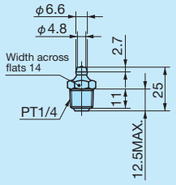
Grease nipple		Applicable supply nozzle	
Type	Shape and dimension	Type	Shape
A-M3		A-5120V A-5240V B-5120V B-5240V	Straight type  A-****V Straight type with angle  B-****V
A-M4			
B-M4		A-8120V B-8120V	

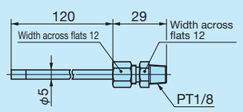
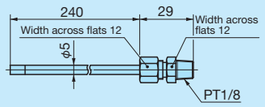
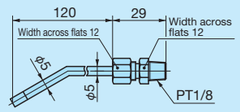
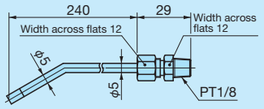
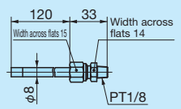
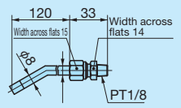
Table 15.2 Grease nipples and applicable supply nozzles

Grease nipple		Applicable supply nozzle	
Type	Shape and dimension	Type	Shape
B-M6		Product available on the market	Straight type Chuck type Hose type
JIS 1 type			
JIS 2 type			
JIS 4 type			
A-PT 1/4			

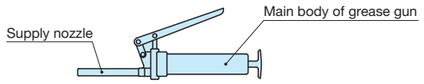
Note(1) : For straight type, chuck type and hose type supply nozzles available on the market, it is recommended to use one with an outside diameter (*D*) of 13 mm or less.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 16 Applicable supply nozzles

Type	Shape and dimension
A-5120V	
A-5240V	
B-5120V	
B-5240V	
A-8120V	
B-8120V	

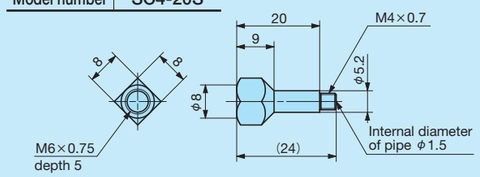
Remark : The supply nozzles shown in the table can be mounted on the main body of a common grease gun available on the market (shown below). If these supply nozzles are required, consult IKO by specifying the supply nozzle type.



Pipe joints

When applying centralized grease or oil lubrication, detach the grease nipple or stop cock from the slide unit, and replace them with pipe joints, which are prepared for various piping female thread sizes. Use them after comparing the dimension of the pipe joints and the dimension H_3 in the dimension table of each series, because the top face of some pipe joints is at the same or higher level with the top face of slide unit. Fig. 4.1 and 4.2, Tables 17.1, 17.2, 17.3, 17.4 show model numbers and dimensions of pipe joints. Note that some of them are not applicable for the slide units of special specifications. Pipe joints can be mounted on Linear Way and Linear Roller Way prior to delivery upon request. Consult IKO for further information.

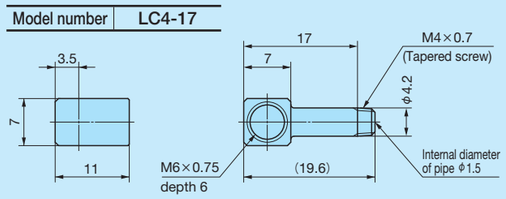
Model number	SC4-20S



Remark : Not applicable to MX, LRX.

Fig. 4.1 Pipe joint for M4×0.7 (Straight type)

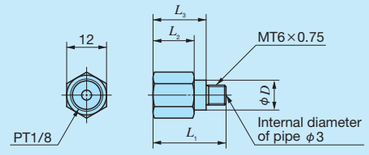
Model number	LC4-17



Remark : The straight type pipe joint shown in Table 15.1 is recommended for female threads (M6×0.75).

Fig. 4.2 Pipe joint for M4×0.7 (L type)

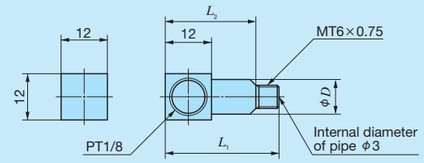
Table 17.1 Pipe joint for M6×0.75 (Straight type)



unit : mm

Model number	L_1	L_2	L_3	L_4
SC6-16	22	12.4	16	9
SC6-22S	28	12	22	6
SC6-25S	31	12	25	6

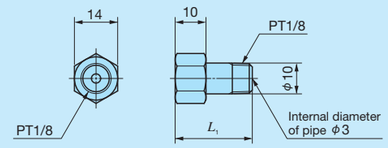
Table 17.2 Pipe joint for M6×0.75 (L type)



unit : mm

Model number	L_1	L_2	D
LC6-18	25	18	9
LC6-22S	28	–	6
LC6-24	30.5	23.5	9
LC6-25S	31	–	6

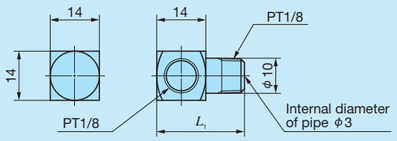
Table 17.3 Pipe joint for PT1/8 (Straight type)



unit : mm

Model number	L_1
SC1/8-19S	25
SC1/8-34S	40

Table 17.4 Pipe joint for PT1/8 (L type)



unit : mm

Model number	L_1
LC1/8-19S	25
LC1/8-34S	40

Dust protection

Purpose of dust protection

To obtain the full performance of linear motion rolling guides, it is important to protect them from the intrusion of dust and other harmful foreign matter. Select an effective sealing or dust-protection device to withstand any operating conditions that might be imposed.

Method of dust protection

Sealed types are available in some linear motion rolling guide series.
Linear Way and Linear Roller Way have end seals as a standard specification. In addition, double seals or scrapers are provided as special specifications for improvement in dust protection performance. Caps for covering the track rail mounting holes and a rail cover plate for covering the top surface of the track rail will further increase the reliability for dust protection.
However, when a large amount of dust or foreign particles are floating in air, or when large foreign substances such as chips or sand fall onto raceways, dust protection becomes difficult. In this case, it is recommended to cover the entire guide mechanism with bellows (Fig. 7), telescopic shields, etc.
Rail cover sheet and track rail for mouniting form bottom are alos available, consult IKO if required.

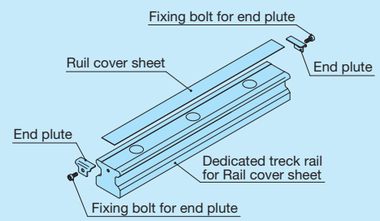


Fig. 5 Rail cover sheet

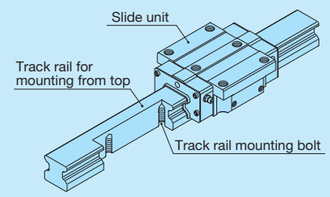


Fig. 6 Track rail for mounting from top

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

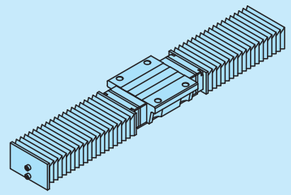


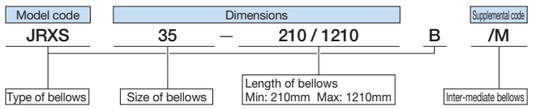
Fig. 7 Bellows

Bellows

Dimensions of bellows specially prepared for IKO Linear Way and Linear Roller Way are shown in Tables 17.1 and 17.2. These bellows are manufactured to match the dimensions of each series for easy mounting and effective dust protection.
For special bellows to be used in an upside-down position or those made of heat-resistant material, consult IKO for further information.

Identification number of bellows

The identification number of bellows consists of a model code, dimensions, and any supplemental codes. Its standard arrangement is shown below.



Calculation of minimum length of bellows

The minimum necessary length of bellows is determined, by first calculating the necessary number of accordion pleats as follows.

$$ns=\frac{S}{\ell s_{max}-\ell s_{min}}$$

where, ns : Number of pleats (Raise decimal fractions.)
S : Length of stroke, mm
ℓs_{max} : Maximum length of one pleat (See Tables 19.1 and 19.2.)
ℓs_{min} : Minimum length of one pleat (See Tables 19.1 and 19.2.)

$$L_{min}=ns\times\ell s_{min}+m\times5+10$$
$$L_{max}=S+L_{min}$$

where, L_{min} : Minimum length of bellows, mm
L_{max} : Maximum length of bellows, mm
m : Number of internal guide plates (See Table 18.)

Table 18 Number of internal guide plates

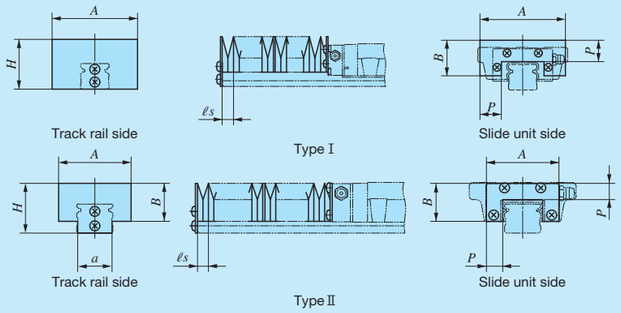
Type of bellows	Dimension P of bellows(1) mm over	incl.	Number of internal guide plates, m
JEF JRES	—	35	$m=\frac{ns}{7}-1$
JES JHS JFS JRXS…B JFFS	—	22	$m=\frac{ns}{16}$ but m=0, when ns≦20
	22	25	$m=\frac{ns}{12}$ but m=0, when ns≦18
	25	35	$m=\frac{ns}{8}$

Note(1) : For dimension P, see Tables 17.1 and 17.2.
Remark : In calculating the number of internal guide plates m, raise the decimal fractions for JEF and JRES and omit the decimal fractions for others.

Intermediate bellows

Another type of mounting plate is used for mounting bellows between slide units. Add the supplemental code "/M" onto the identification number when ordering.
Reinforced bellows are also available, which are specially designed for use on long track rails or for lateral mounting. The width A of reinforced bellows is greater than that of standard type bellows. For these reinforced bellows, consult IKO.

Table 19.1 Dimensions of bellows and applicable models

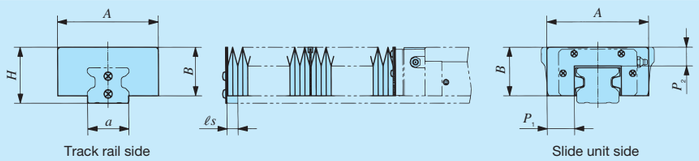


unit : mm

Series	Size	Bellows model code	Type	H	A	a	B	P	ℓs_{min}	ℓs_{max}
C-Lube Linear Way ME Linear Way E	15	JEF 15	Ⅱ	23.5	34	14	17	8	2	9
	20	JEF 20		27.5	40	19	21	9	2	10
	25	JEF 25		32	46	22	24	10	2	11
	30	JES 30		42	70	27	35	15	2	14
	35	JES 35		48	85	33	40	18	2	18.5
	45	JES 45		60	105	44	50	22	2	23.5
C-Lube Linear Way MH Linear Way H(1)	15	JHS 15	Ⅰ	31(2)	55	–	19.5	15	2	14
	20	JHS 20		35(2)	60	–	25	15	2	14
	25	JHS 25		39(2)	64	–	29.5	15	2	14
	30	JHS 30		42	70	–	35	15	2	14
	35	JHS 35		48	85	–	40	18	2	18.5
	45	JHS 45		60	105	–	50	22	2	23.5
	55	JHS 55		70	120	–	57	25	2	28
	65	JHS 65		90	158	–	76	35	2	42
Linear Way F	33	JFFS 33	Ⅱ	26(2)	66(3)	–	23	15	2	15
	37	JFFS 37	Ⅱ	27.5(2)	70(3)	–	24	15	2	15
	40	JFS 40	Ⅰ	32(2)	80	–	27	15	2	14
	42	JFFS 42	Ⅱ	30.5(2)	76(3)	–	27.5	15	2	15
	60	JFS 60	Ⅰ	36(2)	100	–	30	15	2	14
	69	JFFS 69	Ⅱ	36(2)	106	–	31.5	15	2	15
	90	JFS 90	Ⅰ	50	150	–	43	22	2	23.5

Notes(1) : Not applicable for LWHY series.
(2) : The height of bellows may become higher than the height H of Linear Way. Check H dimension of Linear Way shown in the table of dimensions of each series.
(3) : The width of bellows may become larger than the width W_2 of Linear Way. Check W_2 dimension of Linear Way shown in the table of dimensions of each series. : The width of bellows may become larger than the width W2 of Linear Way. Check W2 dimension of Linear Way shown in the table of dimensions of each series.

Table 19.2 Dimensions of bellows and applicable models



unit : mm

Series	Size	Bellows model code	H	A	a	B	P_1	P_2	ℓs_{min}	ℓs_{max}
C-Lube Linear Roller Way Super MX Linear Roller Way Super X	15	JRES 15	34(1)	55(2)	14	30	17.5	15	2	15
	20	JRES 20	39(1)	60(2)	19	34	15	15	2	15
	25	JRES 25	42(1)	65(2)	22	36	16.5	15	2	15
	30	JRES 30	46(1)	70(2)	27	39.5	15	15	2	15
	35	JRES 35	48	88(2)	33	41.5	24	15	2	15
	45	JRES 45	60	108(2)	44	52	29	20	2	21
	55	JRES 55	70	122(2)	52	61	31	22	2	23.5
	65	JRES 65	88	140(2)	61	76	25	25	2	30
	85	JRES 85	107	180	82	89	30	30	2	36

Notes(1) : The height of bellows may become higher than the height H of Linear Roller Way. Check H dimension of Linear Roller Way shown in the table of dimensions of each series.
(2) : The height of bellows may become higher than the height W_2 of Linear Way. Check H dimension of Linear Roller Way shown in the table of dimensions of each series.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

For Ordering

When ordering assembled sets of Linear Way or Linear Roller Way, indicate the number of sets which is always represented by the number of track rails. For ordering the slide units and track rails of interchangeable specification separately, indicate the number of slide units and track rails, respectively. Examples of ordering are shown below.

Interchangeable specification

Slide unit

(for two units)

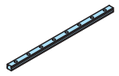
Ordering example

LWESG 25 C1 SL T1 P S1 /U

Only "C1" meaning one slide unit can be indicated.

Order quantity
2pieces

Track rail



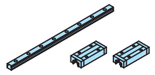
(for one rail)

Ordering example

LWE 25 R640 SL P S1 /F

Order quantity
1piece

Assembled set



(for one set)

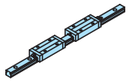
Ordering example

LWESG 25 C2 R640 SL T1 P S1 /FU

Order quantity
1piece

Non-interchangeable specification

Assembled set



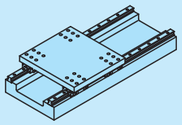
(for one set)

Ordering example

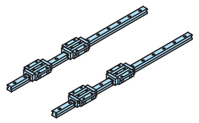
LWESG 25 C2 R640 SL T1 P /FU

Order quantity
1piece

Matched sets to be used as an assembled group (supplemental code /W)



Linear Way and Linear Roller Way



(for one group consisting of two sets)

Ordering example

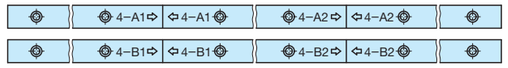
LRX 45 C2 R1260 T3 SP /W2

Order quantity
2pieces

Special Specifications

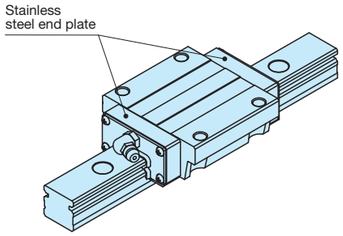
IKO Linear Way and Linear Roller Way of the special specifications shown on page Ⅲ-17 to Ⅲ-23 are available. In some cases, however, special specifications may not be applicable. For details, see the description of each series.
When a special specification is required, add the applicable supplemental code to the end of the identification number. When a combination of several special specifications is required, arrange their supplemental codes in alphabetical order.

Butt-jointing track rails /A



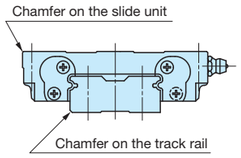
When the required length of non-interchangeable specification track rail exceeds the maximum length indicated in the description of each series, two or more track rails can be used by butt-jointing them in the direction of linear motion. For the length and the number of butt-jointing track rails, consult IKO for further information.

With stainless steel end plates /BS



The standard synthetic resin end plates are replaced with stainless steel end plates, keeping the total length of slide unit unchanged.
When superior heat resistance is required, it is recommended to apply this specification in combination with the "with no end seal (/N)" specification.

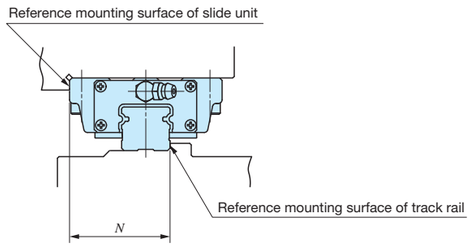
Chamfered reference surface /C /CC



Chamfering is additionally made at the edges of reference mounting surfaces of slide unit and track rail.

① /C Chamfering is additionally made at the edge of reference mounting surface of track rail.
② /CC Chamfering is additionally made at the edges of reference mounting surfaces of slide unit and track rail.

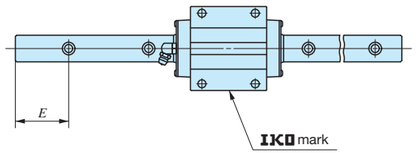
Opposite reference surfaces arrangement /D



The reference mounting surface of track rail is made opposite to the standard side. The accuracy of dimension N including parallelism in operation is the same with that of standard specification.

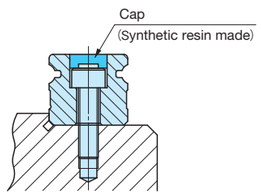
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Specified rail mounting hole positions /E



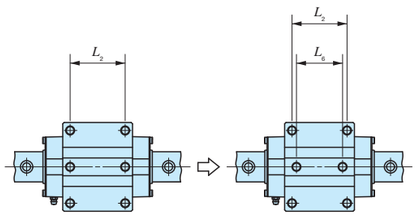
The mounting hole positions of track rail can be specified by specifying dimension E at the left end, which is the distance from the mounting hole nearest to the left end of the track rail to the left end face of the track rail in sight of IKO mark on the slide unit.
When ordering, add the dimension (in mm) after "/E".
Dimension E can be specified in a limited range. Consult IKO for further information.

With caps for rail mounting holes /F



Specially prepared caps for track rail mounting holes are appended. These caps cover the track rail mounting holes to improve the sealing performance in the linear motion direction. Aluminum caps are also available. Consult IKO for further information.

Changed pitch of slide unit middle mounting holes /GE

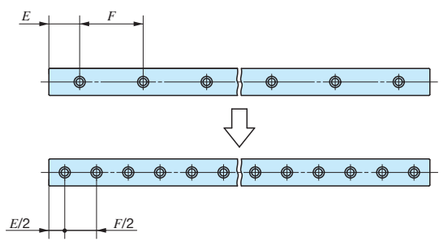


The pitch length between the two middle mounting holes of slide unit of Linear Roller Way Super X is changed. For this dimension, see the description of each series.

Ceramic ball specification /HB

Silicon nitride ceramics balls are incorporated in the slide unit to realize high-speed operation and low running noise.
In addition, the rigidity has been improved because of the minimal elastic deformation of ceramic characteristic.

Half pitch of track rail mounting holes /HP

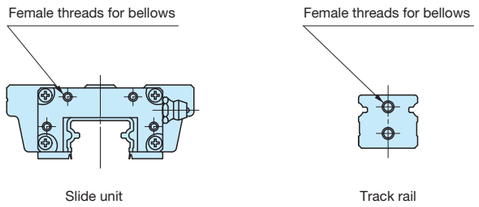


The pitch of the track rail mounting holes is changed to 1/2 of the dimension F of standard type. Track rail mounting bolts are appended in the same number as that of mounting holes.

Inspection sheet /I

The inspection sheet recording dimensions H and N, dimensional variations of H and N, and parallelism in operation of the slide unit (or slide member) is attached for each set.

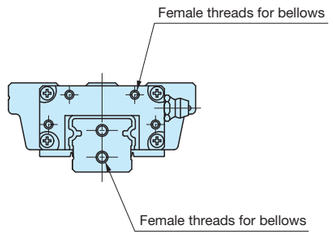
With female threads for bellows (for single slide unit or track rail) /J /JR /JL



Female threads for mounting bellows are provided on the interchangeable slide unit or the interchangeable track rail. For details of related dimensions, see the description of each series.

① /J Female threads are provided at both ends of the slide unit or the track rail.
② /JR Female threads are provided at the right end of the slide unit in sight of IKO mark.
③ /JL Female threads are provided at the left end of the slide unit in sight of IKO mark.

With female threads for bellows (for assembled set) /J /JJ /JR /JS /JJS



For an assembled set of interchangeable or non-interchangeable specification, female threads for mounting bellows are provided on the slide unit and the track rail. For details of related dimensions, see the description of each series.

① /J Female threads are provided at both ends of the track rail, and at the slide unit ends which are the closest to the track rail ends. (In case only one slide unit is assembled, female threads are provided at both ends.)
② /JJ Female threads are provided at both ends of the track rail, and at all ends of all slide units. (Applicable, when the number of slide units is two or more. In case only one slide unit is assembled, indicate "/J".)
③ /JR Female threads are provided at both ends of the track rail.
④ /JS Female threads are provided at the slide unit ends which are the closest to the track rail ends. (In case only one slide unit is assembled, female threads are provided at both ends.)
⑤ /JJS Female threads are provided at all ends of all slide units. (Applicable, when the number of slide units is two or more. In case only one slide unit is assembled, indicate "/JS".)

Black chrome surface treatment /LC /LR /LCR

After forming a black permeable chrome film, the surface is coated with acrylic resin for improvement in corrosion resistance.

① /LC Treatment is applied to the casing.
② /LR Treatment is applied to the track rail.
③ /LCR Treatment is applied to the casing and the track rail.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Fluorine black chrome surface treatment /LFC /LFR /LFCR

After forming a black permeable chrome film, the surface is coated with fluorine resin for further improvement in corrosion resistance. This treatment is also effective in preventing the adhesion of foreign substances on the surface.

① /LFC Treatment is applied to the casing.
② /LFR Treatment is applied to the track rail.
③ /LFCR Treatment is applied to the casing and the track rail.

With track rail mounting bolts /MA

Track rail mounting bolts are appended according to the number of mounting holes. For the size of bolt, see dimension tables.

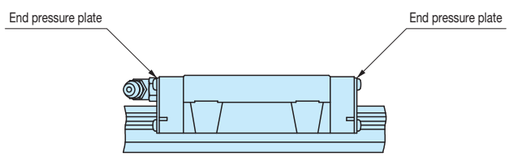
Without track rail mounting bolts /MN

Track rail mounting bolts are not appended.

Change of mounting hole size and female thread size /M4

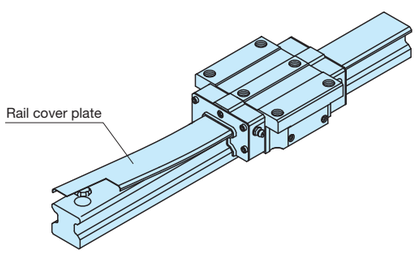
The track rail mounting holes for M3 of LWE15 are changed to holes for M4. Indicate "/MA4" if "/MA" is also required.

No end seal /N



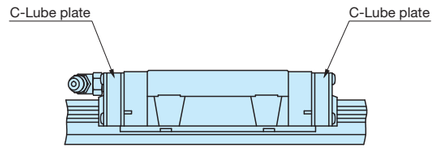
End seals at both ends of slide unit are replaced by end pressure plates (not in contact with the track rail) to reduce frictional resistance. The under seals are not assembled. This specification is not effective for dust protection.

Rail cover plate /PS



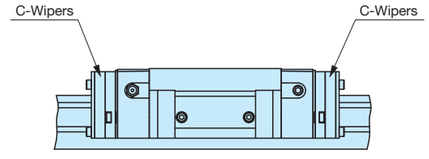
After mounting the track rail, the top surface of track rail is covered with a U-shaped thin stainless steel plate for further improvement in sealing performance. The rail cover plate is delivered as assembled on the track rail. Standard end seals must be replaced with the special end seals.
When mounting the cover plate, refer to the attached instruction manual for rail cover plate.

C-Lube plate /Q



The C-Lube plate is assembled inside the end seal of the slide unit. It is impregnated with lubricant so that re-lubrication interval can be made longer.

C-Wipers /RC /RCC



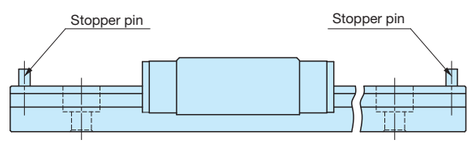
C-Wipers are attached on the slide unit for additional dust protection.
The slide unit with C-Wipers has also Inner Seal (/UR) and Scraper (/Z).

① /RC C-Wipers are provided at the ends of slide units which are closest to the end of the track rail. In case only one slide unit is assembled, C-Wipers are provided at the both ends of side unit.
② /RCC C-Wipers are provided at both ends of all slide units. Applicable when the number of slide units to be two or more. In case one slide unit, indeicate "/RC".

Seal for special environment /RE

The standard end seals and under seals are changed to seals for special environment that can be used at high temperature.

Track rail with stopper pins /S



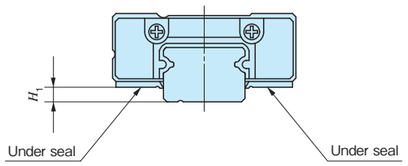
To prevent the slide unit of Linear Way L from slipping off, a stopper pin is provided at both ends of the track rail. For related dimensions, see the description of Linear Way L.

Butt-jointing interchangeable track rail (for interchangeable specification) /T

A special interchangeable track rail of which both ends are finished for butt-jointing is provided.
Use the track rails having the same interchangeable code for butt-jointing. For the non-interchangeable specification, indicate "butt-jointing track rail (/A)". In case /T, the maximum length of track rail is shorter for one pitch of mounting hole. (Dimension "F" in dimension table)

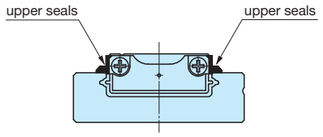
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

With under seals(1) /U

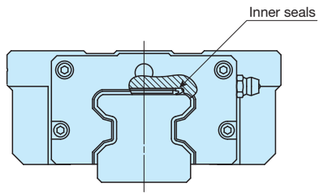


To prevent foreign substances intruding from the lower side of Linear Way, seals are provided on the bottom faces of slide unit. For size H_1, see the description of each series.

Note(1) For C-Lube Linear Way UL and Linear Way U, rubber seals are attached to upper side face of the slide unit to prevent foreign materials from entering from the upper side.
For dimensions with upper seals, please see the description of each series.



Inner seals /UR



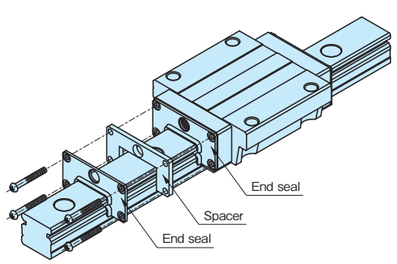
Inner seals are provided inside of slide unit, where recirculation area is effectively protected from dust collected on upper surface of track rail.

With double end seals (for single slide unit) /V /VR /VL

Double end seals are provided on the interchangeable slide unit for more effective dust protection. For the total length of the slide unit with double end seals, see the description of each series.

① /V Double end seals are provided at both ends of the slide unit.
② /VR Double end seals are provided at the right end of the slide unit in sight of IKO mark.
③ /VL Double end seals are provided at the left end of the slide unit in sight of IKO mark.

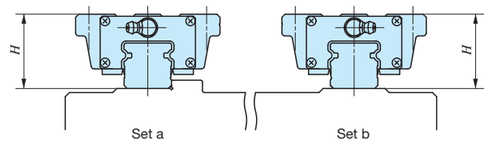
With double end seals (for assembled set) /V /VV



Double end seals are provided on the slide unit of assembled set of interchangeable specification or non-interchangeable specification for more effective dust protection. For the total length of the slide unit with double end seals, see the description of each series.

① /V Double end seals are provided at the ends of slide units which are the closest to the ends of the track rail. (In case only one slide unit is assembled, double end seals are provided at both ends.)
② /VV Double end seals are provided at all ends of all slide units. (Applicable when the number of slide units is two or more. In case only one slide unit is assembled, indicate "/V".)

Matched sets to be used as an assembled group /W



For two or more sets of Linear Way or Linear Roller Way used on the same plane, the dimensional variation of H of Linear Way or Linear Roller Way is kept within the specified range.
The dimensional variation of dimension H in matched sets is the same as that of a single set. Indicate the number of sets after "/W".
Order the number of sets in a grorp.
Please refer Page 80 for ordering.

Specified grease /YCG /YCL /YAF /YBR /YNG

The type of pre-packed grease in the slide unit can be changed by a supplemental code. Rust preventive oil is applied.

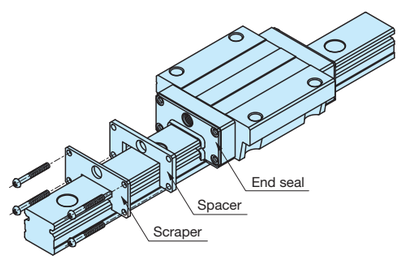
① /YCG IKO Low Dust Generation Grease for Clean Environment CG2 is pre-packed.
② /YCL IKO Low Dust Generation Grease for Clean environment CGL is pre-packed.
③ /YAF IKO Anti-Fretting Corrosion Grease AF2 is pre-packed.
④ /YBR MOLYCOTE BR2 Plus Grease (Dow Corning) is pre-packed.
⑤ /YNG No grease is pre-packed.

With scrapers (for single slide unit) /Z /ZR /ZL

Metal scrapers are provided on the slide unit of interchangeable specification. The scraper (non-contact type) is used to effectively remove large particles of dust or foreign matter adhering to the track rail. For the total length of the slide unit with scrapers, see the description of each series.

① /Z Scrapers are provided at both ends of the slide unit.
② /ZR A scraper is provided at the right end of the slide unit in sight of IKO mark.
③ /ZL A scraper is provided at the left end of the slide unit in sight of IKO mark.

With scrapers (for assembled set) /Z /ZZ



Metal scrapers are provided on the slide unit of assembled set of interchangeable specification or non-interchangeable specification.
The scraper (non-contact type) is used to effectively remove large particles of dust or foreign matter adhering to the track rail. For the total length of the slide unit with scrapers, see the description of each series.

① /Z Scrapers are provided at the ends of slide units which are the closest to the ends of the track rail. (In case only one slide unit is assembled, scrapers are provided at both ends.)
② /ZZ Scrapers are provided at all ends of all slide units. (Applicable when the number of slide units is two or more. In case only one slide unit is assembled, indicate "/Z".)

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Precautions for Use

Operating temperature

The maximum operating temperature is 120℃ and a continuous operation is possible at temperatures up to 100℃. When the temperature exceeds 100℃, consult IKO.
In the case of C-Lube Linear Way and the models "with Capillary plates" of special specification, operate below 80℃.
In "with C-Lube plates" (/Q), the maximum temperature is limited as 80℃.

Multiple slide units mounted in close distance

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

For lateral or upside-down mounting

When mounting Linear Way E or Linear Way F slide units in lateral or reverse (upside-down) position, specify slide units with under seals (supplemental code "/U"), if necessary, to prevent foreign particles from intruding into the slide units.

Operating speed

The limiting values for operating speed of Linear Way or Linear Roller Way depend on various operating conditions such as the type of motion, magnitude of applied load, lubrication conditions, mounting accuracy, and ambient temperature.
Based on the experiences and actual practice, standard values of maximum speed under general operating conditions are given in Table 20 for reference.

Table 20 Standard maximum speed

Model size	Maximum speed m/min
35	180
45	120
55	100
65	75

Cleaning

Do not wash C-Lube Linear Way with organic solvent and/or white kerosene, which have the ability of removing fat, nor leave them in contact with the above agents.

Oil supply point for lubrication

When lubrication oil is fed by gravity, sufficient amounts of oil may not reach to the raceways which are located higher than the supply point. In such cases, it is necessary to examine the lubrication route and supply point. Consult IKO for further information.

Precautions for Mounting

When mounting multiple sets at the same time

●Interchangeable specification product
In the case of an interchangeable specification product, assemble a slide unit and a track rail with the same interchangeable code ("S1" or "S2")
●Non-interchangeable specification product
Use an assembly of slide unit and track rail as delivered without changing the combination.
●Matched sets to be used as an assembled group
Special specification products of matched sets (supplemental code "/W") are delivered as a group in which dimensional variations are specially controlled. Mount them without mixing with the sets of another group.

Assembling a slide unit and a track rail

When assembling Linear Way or Linear Roller Way correctly fit the grooves of the slide unit mounted on a dummy rail (holder of rolling elements) to the grooves of the track rail, and then move the slide unit gently from the dummy rail to the track rail in parallel direction.
The slide unit can be assembled on the track rail much easier by using the dummy rail.
The slide unit of interchangeable specification is delivered as assembled on a dummy rail.
The dummy rail (holder of rolling elements) is appended as an accessory to models shown in Table 22.1 and 22.2. The dummy rail for other models are also available. If required, consult IKO for further information.

Mounting accuracy

Inadequate mounting accuracy of Linear Way and Linear Roller Way will affect the operating accuracy and life adversely, so mounting must be carried out with care. When multiple sets are mounted, the parallelism between the two mounting surfaces of machines must be prepared, in general, as shown in Table 21. In the case of Linear Way, if mounting parallelism is poor, frictional resistance will steeply increase giving a warning signal, which can be used to perform high accuracy mounting.

Table 21 Parallelism between two mounting surfaces unit : μm

Class	Ordinary (No symbol)	High (H)	Precision (P)	Super precision (SP)	Ultra Precision (UP)
Parallelism	30		20	10	6

Corner radius and shoulder height of reference mounting surfaces

It is recommended to make a relieved fillet at the corner of the mating reference mounting surfaces as shown in Fig. 8. For details, see each series explanation.

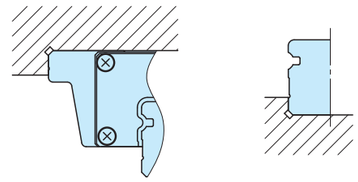


Fig. 8 Relieved fillet at the corner of the mating reference mounting surfaces

Table 22.1 Dummy rail

○ : Products append dummy rail

Series		Interchangeable specification		Non-interchangeable set
		Slidc unit	Assembled set	
C-Lube Linear Way ML Linear Way L		○	See Table 22.2	See Table 22.2
C-Lube Linear Way ME Linear Way E		○	–	–
C-Lube Linear Way MH Linear Way H	8~12	○	○	○
	15~65	○	–	–
	Extra high, rigidity long	○	○	○
	85	–	–	–
Linear Way F		○	–	–
C-Lube Linear Way MUL Linear Way U	25、30	–	–	○
	40~130	–	–	–
C-Lube Linear Roller Way Super MX Linear Roller Way Super X	10~30	○	○	○
	35~65	○	–	–
	Extra high, rigidity long	○	○	○
	85, 100	–	–	–
Linear Roller Way X		–	–	–

Table 22.2 Models to which a dummy rail is appended

C-Lube Linear Way L		Linear Way L	
Standard type	Wide Rail type	Standard type	Wide Rail type
–	–	LWL 2	LWLF 4
–	–	LWLC 3	LWLFC 6
–	–	LWL 3	LWLF 6
MLC 5	MLFC 10	LWLC 5…B	LWLFC 10…B
ML 5	MLF 10	LWL 5…B	LWLF 10…B
MLC 7	MLFC 14	LWLC 7…B	LWLFC 14…B
ML 7	MLF 14	LWL 7…B	LWLF 14…B
MLG 7	MLFG 14	LWLG 7…B	LWLFG 14…B
MLC 9	MLFC 18	LWLC 9…B	LWLFC 18…B
ML 9	MLF 18	LWL 9…B	LWLF 18…B
MLG 9	MLFG 18	LWLG 9…B	LWLFG 18…B
MLG 12	MLFG 24	LWLG 12…B	LWLFG 24…B
MLG 15	MLFG 30	LWLG 15…B	LWLFG 30…B
MLG 20	MLFG 42	LWLG 20…B	LWLFG 42…B
MLG 25	–	LWLG 25…B	–

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Cleaning of mounting surfaces

Remove burrs and blemishes from the reference mounting surfaces and mounting surfaces of the machine or equipment, on which Linear Way or Linear Roller Way will be mounted, using an oil-stone, etc., and then wipe the surfaces with clean cloth.

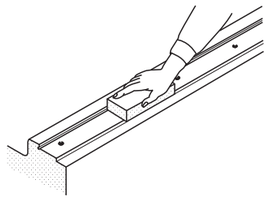


Fig. 9 Cleaning of mounting surfaces

Plugging-in of caps for rail mounting holes

When plugging the caps of special specification ("with caps for rail mounting holes, supplemental code /F") into the mounting holes of track rail, tap in the cap gently by applying a flat plate on the top face of the cap until the top face of the cap becomes level with the top face of the track rail.

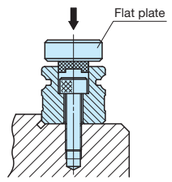


Fig. 10 Plugging-in of caps for rail mounting holes

Tightening torque of mounting bolts

The standard torque values for Linear Way and Linear Roller Way mounting bolts are shown in Tables 21. When machines or equipment are subjected to severe vibration, shock, large fluctuating load, or moment load, the bolts should be tightened with a torque 1.2 to 1.5 times higher than the standard torque values shown.
When the mating member material is cast iron or aluminum, tightening torque should be lowered in accordance with the strength characteristics of the material.

Table 23 Tightening torque of mounting bolts of Linear Way and Linear Roller Way

Bolt size	Tightening torque N · m		
	Carbon steel bolt (Strength division 8.8)	Stainless steel bolt (In case strength division 12.9)	Stainless steel bolt (Property division A2-70)
M 1 ×0.25	–	–	0.04
M 1.4×0.3	–	–	0.10
M 1.6×0.35	–	–	0.15
M 2 ×0.4	–	–	0.31
M 2.3×0.4	–	–	0.48
M 2.5×0.45	–	–	0.62
M 2.6×0.45	–	–	0.70
M 3 ×0.5	1.2	1.7	1.1
M 4 ×0.7	2.8	4.0	2.5
M 5 ×0.8	5.6	7.9	5.0
M 6 ×1	–	13.3	8.5
M 8 ×1.25	–	32.0	20.4
M10 ×1.5	–	62.7	–
M12 ×1.75	–	108	–
M14 ×2	–	172	–
M16 ×2	–	263	–
M20 ×2.5	–	512	–
M24 ×3	–	882	–
M30 ×3.5	–	1 750	–

Mounting surface, reference mounting surface, and general mounting structure

To mount Linear Way or Linear Roller Way, correctly fit the reference mounting surfaces B and D of the slide unit and the track rail to the reference mounting surfaces of the table and the bed, and then fix them tightly. (See Fig. 11.)
The reference mounting surfaces B and D and mounting surfaces A and C of Linear Way or Linear Roller Way are accurately finished by grinding. Stable and high accuracy linear motion can be obtained by finishing the mating mounting surfaces of machines or equipment with high accuracy and correctly mounting the guide on these surfaces.

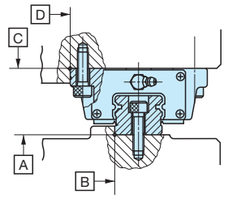


Fig. 11 Reference mounting surfaces and general mounting structure of Linear Way and Linear Roller Way

The slide unit reference mounting surface is always the side surface opposite to the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. The track rail reference mounting surface is the side surface above the IKO mark (in the direction of the arrow). (See Fig. 12.)

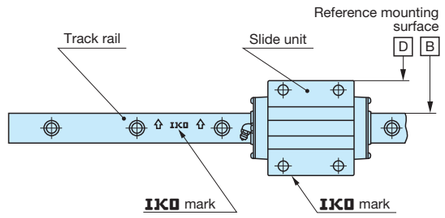


Fig. 12 Reference mounting surfaces of Linear Way and Linear Roller Way

Load direction and mounting structure

When a lateral load, alternate load, or fluctuating load is applied to Linear Way or Linear Roller Way, firmly fix the side faces of the slide unit and track rail as shown in Fig. 13 and Fig. 14.
When the applied load is small or the operating conditions are not too severe, mounting methods shown in Fig. 15 and Fig. 16 are also used.

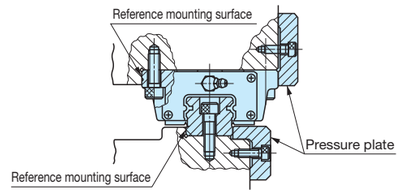


Fig. 13 Mounting example with pressure plate

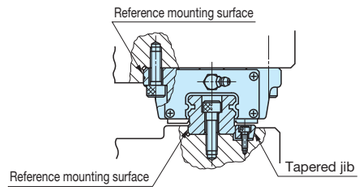


Fig. 14 Mounting example with tapered jib

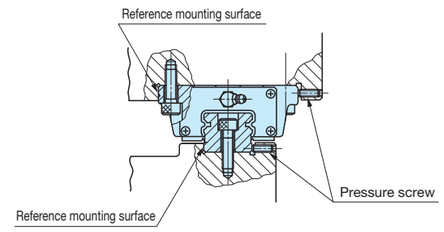


Fig. 15 Mounting example with pressure screw

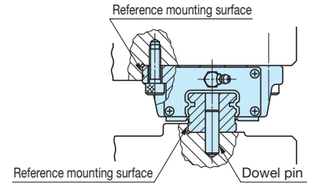


Fig. 16 Mounting example with dowel pin

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Mounting Examples

The general mounting procedure for Linear Way and Linear Roller Way is shown in Examples 1 to 3 using a Linear Way as an example.

Example 1 For general operation

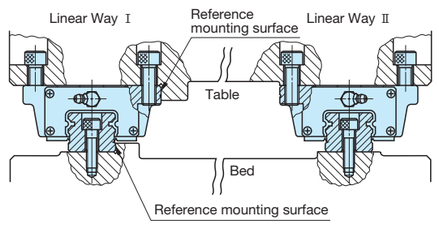


Fig. 17 Example 1

For operations under normal conditions without shocks, prepare one mating reference mounting surface on the table and the bed respectively, and proceed as follows. (See Fig. 17.)

❶Cleaning of mounting surfaces

- Remove burrs and blemishes from the reference mounting surfaces and mounting surfaces of the machine using an oil-stone, etc. and then wipe the surfaces with clean cloth. (See Fig. 18.)
- Remove rust preventive oil and dirt from the reference mounting surfaces and mounting surfaces of Linear Way with clean cloth.

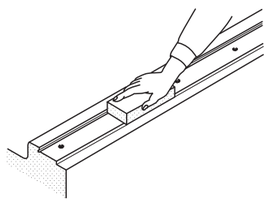


Fig. 18 Cleaning of mounting surfaces

❷Temporary fixing of Linear Way Ⅰ and Ⅱ track rails

- Correctly fit the reference mounting surface of Linear Way Ⅰ track rail onto the mating reference mounting surface of the bed, and temporarily fix the track rail with mounting bolts. (See Fig. 19.)
  During installation, ensure that track rail mounting bolts do not interfere with the mounting holes.
- emporarily fix Linear Way Ⅱ track rail onto the bed.

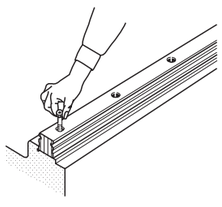


Fig. 19 Temporary fixing of track rail

❸Final fixing of Linear Way Ⅰ track rail

- Firmly push the reference mounting surface of Linear Way Ⅰ track rail to the mating reference mounting surface of the bed using a small vise or clamp. Tighten the track rail mounting bolt at the position where the vise or clamp is applied. Fix the track rail by progressively moving the position of the vise or clamp from one rail end to the other. (See Fig. 20.)
- At this stage, leave Linear Way Ⅱ track rail temporarily fixed.

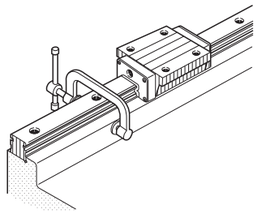


Fig. 20 Fixing of datum side track rail to the bed

❹Temporary fixing of Linear Way Ⅰ and Ⅱ slide units

- After locating all slide units to their respective table mounting positions, gently place the table on them.
- Temporarily fix Linear Way Ⅰ and Ⅱ slide units to the table.

❺Final fixing of Linear Way Ⅰ slide units

- Fix the Linear Way Ⅰ slide units to the table while correctly fitting the reference mounting surfaces of slide units to the mating reference mounting surface of the table.

❻Fixing of Linear Way Ⅱ slide units

- Correctly fix one of the slide units of Linear Way Ⅱ in relation to the linear motion direction and leave other slide units temporarily tightened with mounting bolts. (See Fig. 21.)

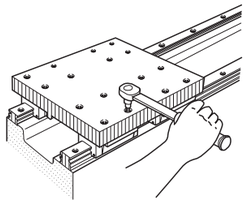


Fig. 21 Fixing of the slide units to the table

❼Final fixing of Linear Way Ⅱ track rail

- While moving the table by hand and ensuring its smooth movement, fix the Linear Way Ⅱ track rail to the bed with the mounting bolts. During this procedure, tighten the mounting bolt immediately behind the fixed slide unit of Linear Way , while progressively moving the table from one rail end to the other. (See Fig. 22.)

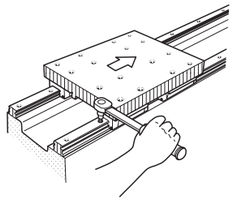


Fig. 22 Fixing of attendant side track rail

❽Final fixing of other Linear Way Ⅱ slide units

- Fix all Linear Way Ⅱ slide units that have been left temporarily fixed to the table.

Example 2 Operation requiring accurate movement and rigidity

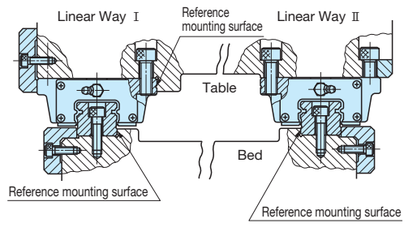


Fig. 23 Example 2

When machines using Linear Way require high running accuracy and rigidity, prepare two mating reference mounting surfaces on the bed and one mating reference mounting surface on the table, then perform the following procedure. (See Fig. 23.)

❶Cleaning of mounting surfaces and reference mounting surfaces

- Remove burrs and blemishes from mounting surfaces and reference mounting surfaces of the machine using an oil-stone, etc., and then wipe the surfaces with clean cloth. (See Fig. 24.)
- Remove rust preventive oil and dirt from Linear Way reference mounting surfaces and mounting surfaces with clean cloth.

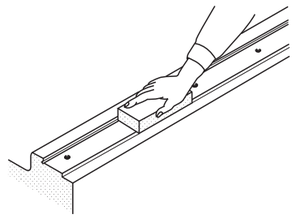


Fig. 24 Cleaning of mounting surfaces

❷Temporary fixing of Linear Way Ⅰ and Ⅱ track rails

- Correctly fit the reference mounting surfaces of Linear Way Ⅰ and Ⅱ track rails onto the mating reference mounting surfaces of the bed, and temporarily fix the track rails with mounting bolts. (See Fig. 25.)
  During installation, ensure that the track rail mounting bolts do not interfere with the mounting holes.

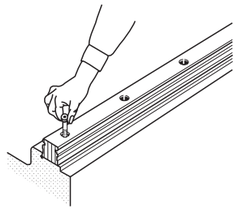


Fig. 25 Temporary fixing of track rail

❸Final fixing of Linear Way Ⅰ and Ⅱ track rails

- Firmly press the reference mounting surface of Linear Way Ⅰ track rail to the mating reference surface of the bed with pressure plates or pressure screws. Tighten the mounting bolt of the track rail at the pressure plate or screw position from one end of the track rail to the other in succession. (See Fig. 26.)

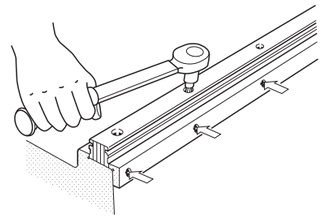


Fig. 26 Fixing of track rail using pressure plate

❹Temporary fixing of Linear Way Ⅰ and Ⅱ slide units

- After locating all slide units to their respective table mounting positions, gently place the table on them. Temporarily fix Linear Way Ⅰ and Ⅱ slide units to the table.

❺Final fixing of Linear Way Ⅰ slide units

- Fix the Linear Way Ⅰ slide units to the table while correctly fitting the reference mounting surfaces of the slide units to the mating reference mounting surface of the table using pressure plates or pressure screws.

❻Final fixing of Linear Way Ⅱ slide units

- Move the table by hand to ensure smooth movement, then fix the Linear Way Ⅱ slide units to the table with mounting bolts. (See Fig. 27.)

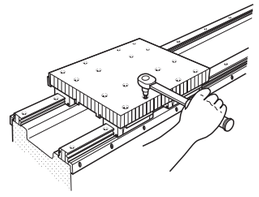


Fig.27 Fixing of slide units to the table

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Example 3 Separate mounting of slide units from track rails

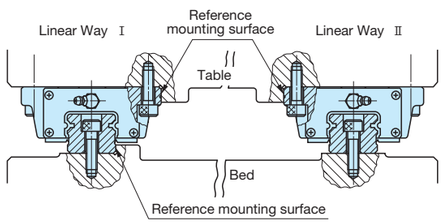


Fig. 28 Example 3

When the slide units assembled on the track rail cannot be securely fixed to the table due to table construction, prepare one reference mounting surface on the bed and two reference mounting surfaces on the table, then proceed as follows. (See Fig. 28.)

❶Cleaning of mounting surfaces

- Remove burrs and blemishes from reference mounting surfaces and mounting surfaces of the machine using an oil-stone, etc., and then wipe the surfaces with clean cloth. (See Fig. 29.)
- Remove rust preventive oil and dirt from Linear Way reference mounting surfaces and mounting surfaces with clean cloth.

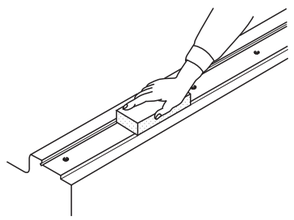


Fig. 29 Cleaning of mounting surfaces

❷Temporary fixing of Linear Way Ⅰ and Ⅱ track rails

- Correctly fit the reference mounting surface of Linear Way Ⅰ and Ⅱ track rail onto the mating reference mounting surface of the bed, and temporarily fix the track rail with mounting bolts. (See Fig. 30.)
  During installation, ensure that the track rail mounting bolts do not interfere with the mounting holes.

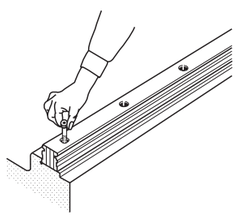


Fig. 30 Temporary fixing of track rail

❸Final fixing of Linear Way Ⅰ track rail

- Firmly push the reference mounting surface of Linear Way Ⅰ track rail to the mating reference mounting surface of the bed using a small vise or clamp. Tighten the track rail mounting bolt at the position of the vise or clamp. Fix the track rail by progressively moving the vise or clamp from one rail end to the other. (See Fig. 31.)
- At this stage, leave Linear Way Ⅱ track rail temporarily fixed.

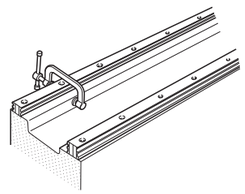


Fig. 31 Fixing of track rail

❹Separation of slide units from track rails

- After noting the respective markings which identify correct assembly positions of slide units on Linear Way Ⅰ and Ⅱ track rails, separate slide units from track rails.

❺Fixing of Linear Way Ⅰ and Ⅱ slide units

- Correctly fit the reference mounting surfaces of Linear Way Ⅰ and Ⅱ slide units to the mating reference mounting surfaces of the table and fix the slide units as shown in the figure. (See Fig. 32.)

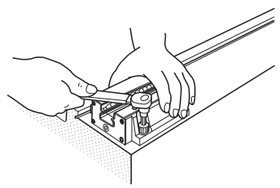


Fig. 32 Fixing of slide unit

❻Installing slide units on track rails

- Gently and gradually install the slide units which are fixed on the table onto the track rails which are fixed or temporarily tightened on the bed. Take care to maintain parallelism of the table to the track rails as the table is slid onto the rails.

❼Fixing of Linear Way Ⅱ track rail

- Fix the track rail of Linear Way Ⅱ while checking the smooth motion by moving the table. At this time, tighten the mounting bolt right behind the fixed slide unit of Linear Way Ⅱ just passed. Fix the track rail by repeating this procedure from one rail end to the other.

Example 4 Assembly of Linear Way Module

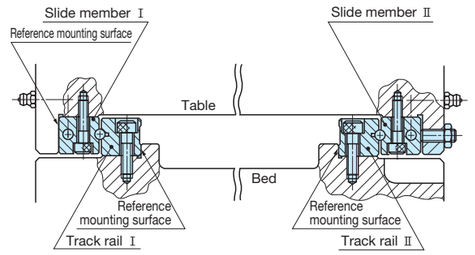


Fig. 33 Example 4

Generally, two sets of Linear Way Modules are used in parallel as shown in Fig. 33. They are usually mounted according to the following procedure. (See Fig. 33.)

❶Cleaning of mounting surfaces

- Remove burrs and blemishes from reference mounting surfaces and mounting surfaces of the machine using an oil-stone, etc., and then wipe the surfaces with clean cloth. (See Fig. 34.)
- Remove rust preventive oil and dirt from Linear Way Module reference mounting surfaces and mounting surfaces with clean cloth.

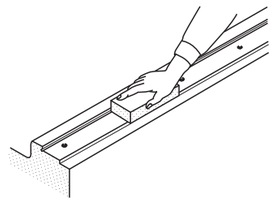


Fig. 34 Cleaning of mounting surfaces

❷Fixing of track rails

- Correctly fit the reference mounting surfaces of Track Rails Ⅰ and Ⅱ to the reference mounting surfaces of the bed and bring them in close contact using a small vise, etc. Tighten the mounting bolt at the position of the vise. (See Fig. 35.)

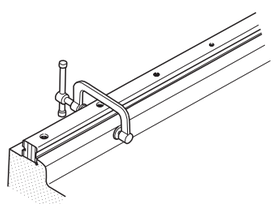


Fig. 35 Fixing of track rail

❸Fixing of slide members

- Tighten the mounting bolts and fix the slide member Ⅰ to the table while correctly fitting the reference mounting surface of the slide member to the mating reference mounting surface of the table. Temporarily fix the slide member Ⅱ. (See Fig. 36.)

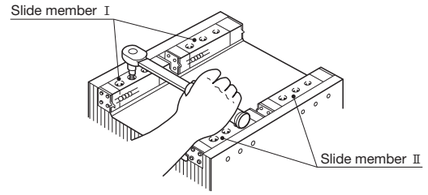


Fig. 36 Fixing of slide members

❹Installing slide members on track rails

- Gently and gradually install the slide members fixed to the table onto the track rails fixed to the bed, taking care to maintain parallelism between the table and the track rails.

❺Final fixing of slide member Ⅱ

- While measuring the clearance with a dial gauge as shown in Fig. 37, tighten all preload adjusting screws starting from the screw in the center.
- When the dial gauge indicates no deflection while the table is pushed to right and left in the direction perpendicular to the rails, the preload is zero or very light.
- After adjusting preload, fix slide members Ⅱ by tightening the mounting bolts.

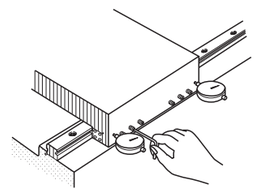


Fig. 37 Preload adjustment

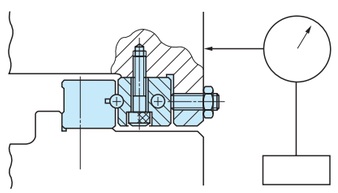


Fig. 38 Example of preload adjustment checking method

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Mounting methods of datum track rail

The following methods may be used to mount the datum track rails of IKO Linear Way and Linear Roller Way. Select the method most suited to the specifications of the machine or equipment.

❶Use of mating reference mounting surface of bed

・Firmly push the reference mounting surface of the track rail against the mating reference mounting surface of the bed using a small vise or clamp. Tighten the mounting bolt at the position of the vise. Fix the track rail by repeating this procedure from one end of the rail to the other in succession.

❷Use of a temporary reference surface

・Prepare a temporary reference surface near the mounting surface of the bed and temporarily fix the track rail. Next, fix an indicator stand on the top face of the slide unit as shown in Fig. 39. Apply the indicator probe to the temporary reference surface and fix the track rail by tightening the mounting bolts in succession from one end of the track rail to the other while checking the straightness of the slide unit movement.

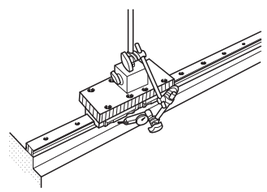


Fig. 39 Mounting by using a temporary reference surface

❸Use of straight-edge

・After temporarily fixing the track rail, apply an indicator probe to the reference mounting surface of the track rail as shown in Fig. 40. Tighten the mounting bolts one by one, while progressively checking the straightness of the track rail in reference to the straight-edge from one end of the track rail to the other.

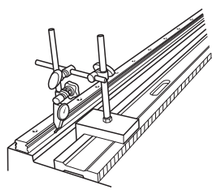


Fig. 40 Mounting by using a straight-edge

Mounting methods of attendant track rail

The following methods may be used to mount the attendant track rail. Select the method most suited to the specifications of the machine or equipment.

❶Use of reference mounting surface

・Firmly push the reference mounting surface of the track rail against the reference mounting surface of the bed using a pressure plate or small vise. Fix the track rail by tightening the mounting bolt at the position of the pressure plate or vise. Tighten the mounting bolts one by one starting from one end of the track rail to the other.

❷Use of mounted datum track rail as the reference

・Fix the datum track rail correctly, fix one attendant slide unit correctly in the direction of motion, and temporarily fix the other slide units and the attendant track rail. Then, fix the attendant track rail by tightening the mounting bolts one by one from one end of the track rail to the other while checking the smooth movement.

❸Use of straight-edge

・After fixing the track rail temporarily, apply the indicator probe to the reference mounting surface of the track rail (as shown in Fig. 40). While checking the straightness in reference to the straight-edge, fix the attendant track rail by tightening the mounting bolts one by one from one end of the track rail to the other.

❹Use of datum side Linear Way

・As shown in Fig. 41, set an indicator stand on the top face of the datum slide unit and apply the indicator probe to the reference mounting surface of the attendant track rail. While checking parallelism of the two rails, fix the attendant rail by tightening mounting bolts one by one from one end of the track rail to the other.

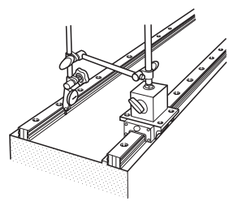


Fig. 41 Mounting by using Linear Way of datum side

Mounting method for butt-jointing track rails

When using butt-jointing track rails, indicate whether a butt-jointing track rail of special specification (non-interchangeable specification, supplemental code "/A") or a butt-jointing interchangeable track rail (interchangeable specification, supplemental code "/T") is to be mounted.
For butt-jointing track rails of non-interchangeable specification, a match mark as shown in Fig. 42 is indicated on the top face of track rail end. Procedures for mounting jointing track rails are generally as follows.

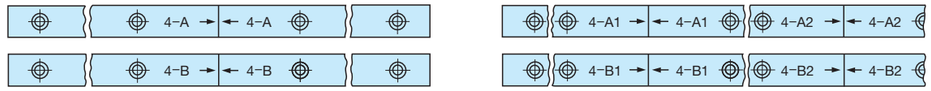


Fig. 42 Butt-jointing match marks

❶ Joint the track rails end-to-end in accordance with the match marks, and temporarily fix the rails onto the bed. The butt-jointing interchangeable track rail of interchangeable specification does not require matching butt-jointing rail ends, because the rail is prepared for free combination.

❷Fit the reference mounting surfaces of the track rails onto the reference mounting surface of the bed, then fix all track rails one by one. While performing this procedure, tightly press the reference mounting surface of each track rail with a small vise, etc. against the reference mounting surface of the bed at the butt-jointing position so that the track rails at the butt-jointing position are connected without a step. (See Fig. 43.)

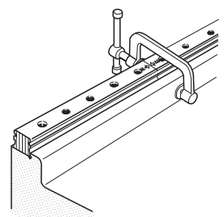


Fig. 43 Fixing of butt-jointing track rails

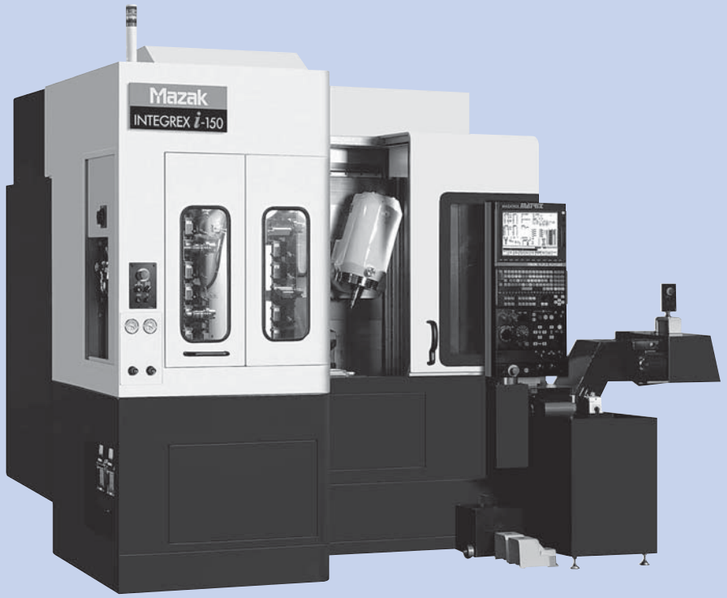
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Application Examples

Application Examples —Machine tools—

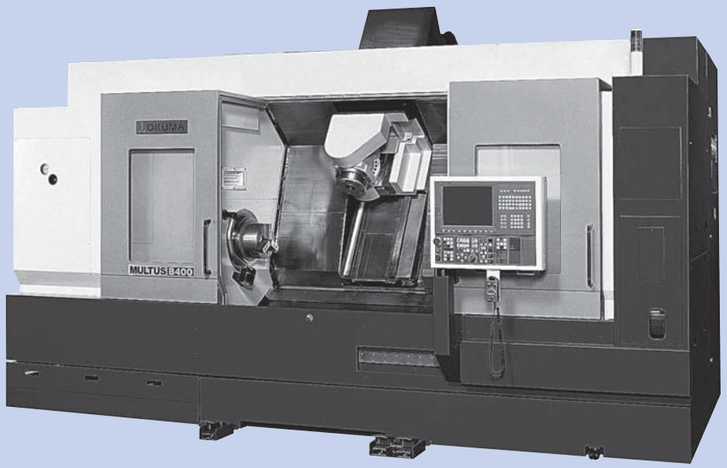
Complex machining center

LRX



Lateral type complex machining center

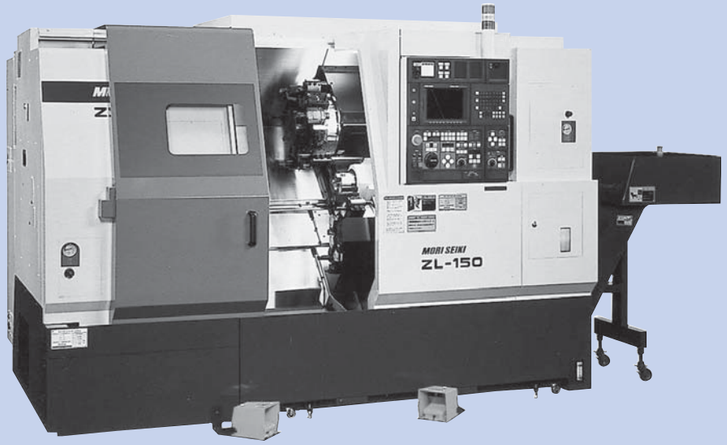
LRX

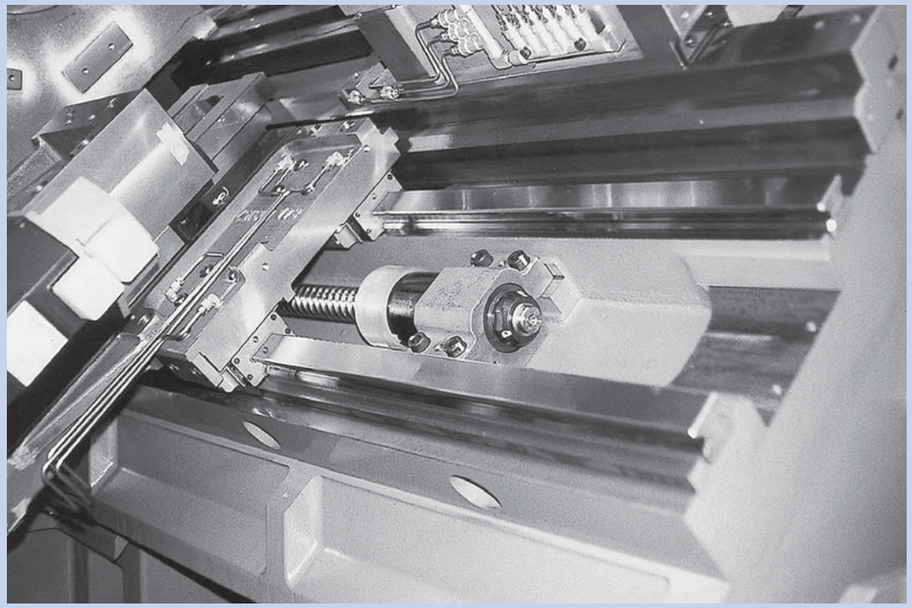


—Machine tools—

Four-axis control CNC lathe

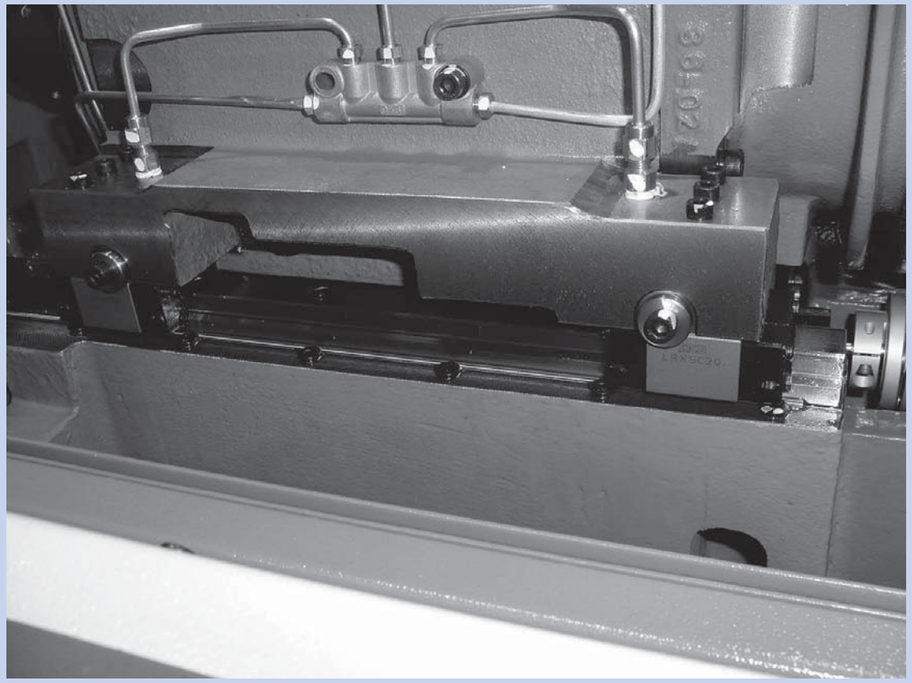
LRX





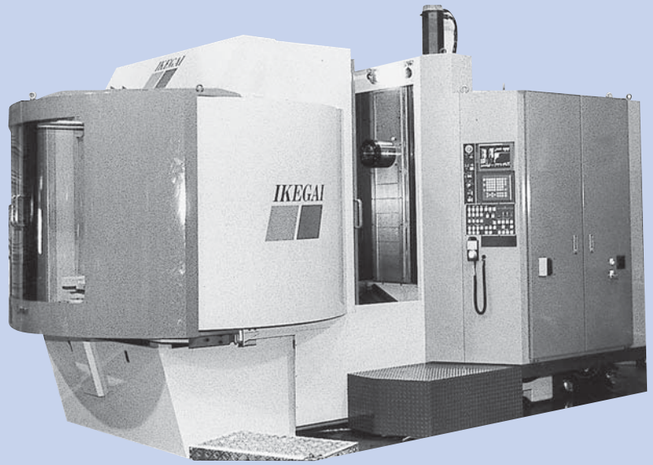
CNC compact type automatic lathe

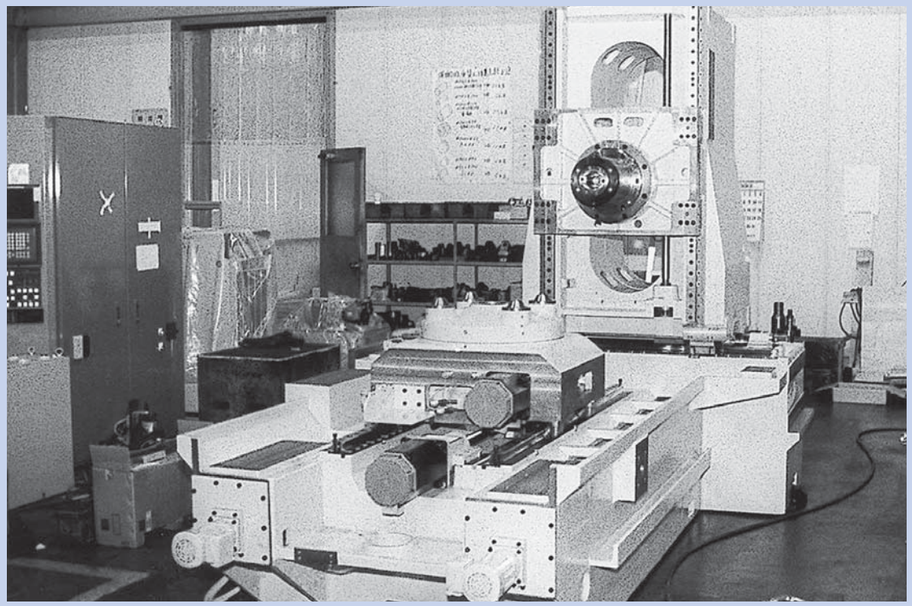
LRXS • LRXSC



Lateral type machining center

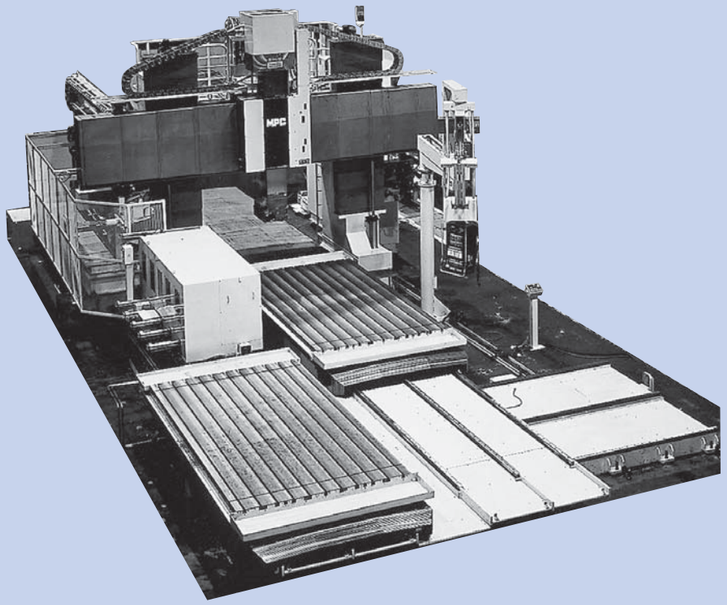
LRX • LRXDG

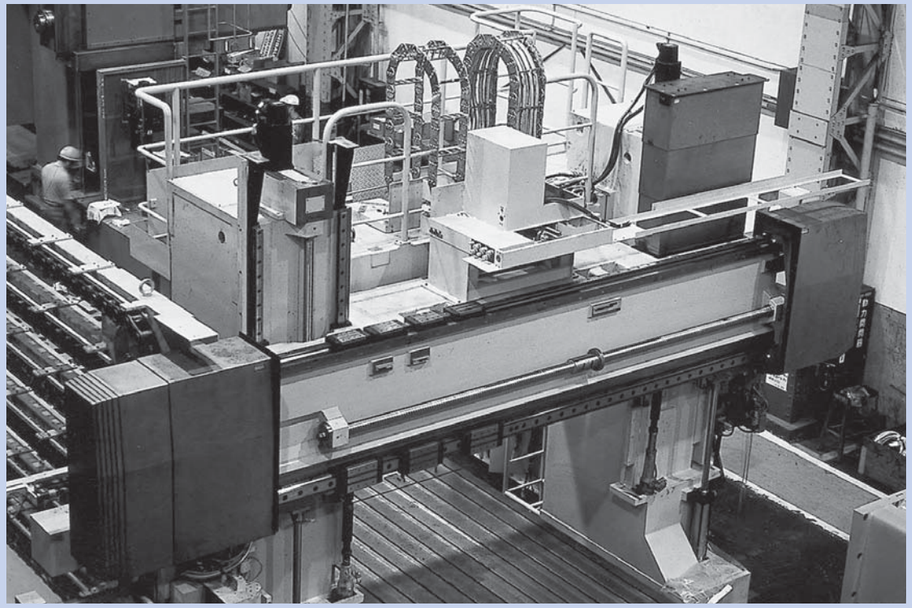




Gantry type machining center

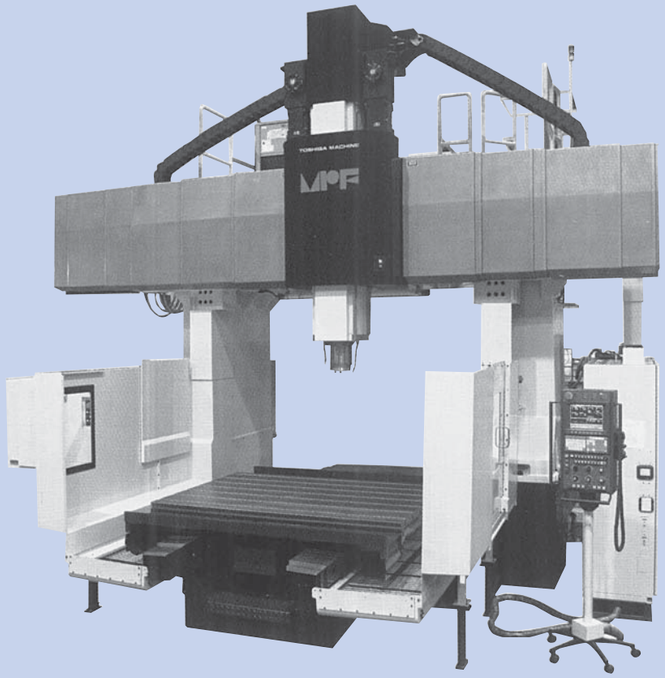
LWHG

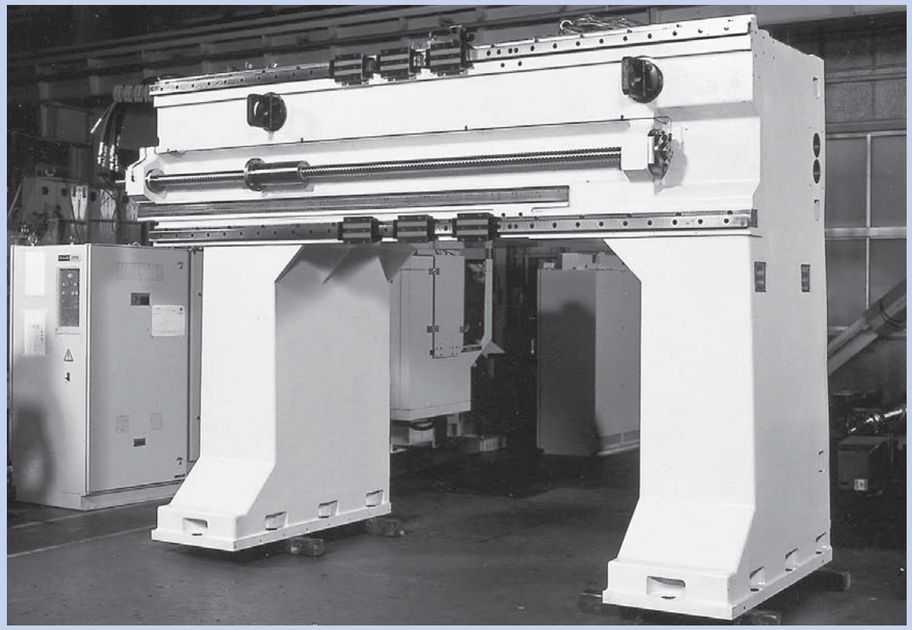




Gantry type machining center

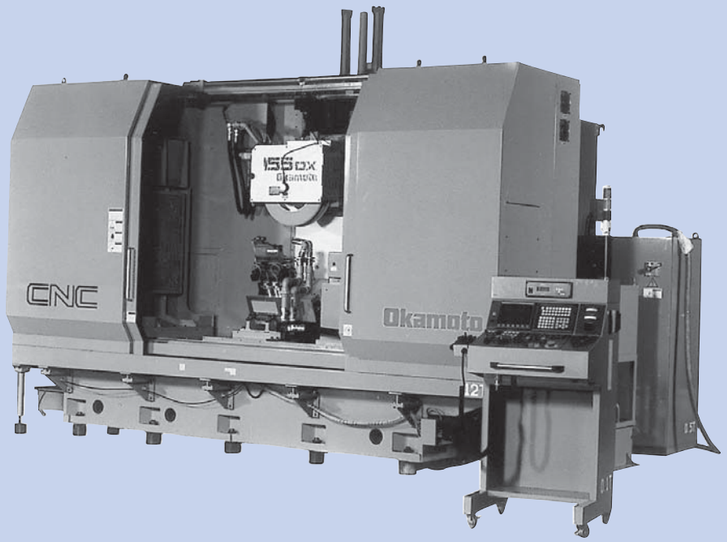
MXG・MXDG

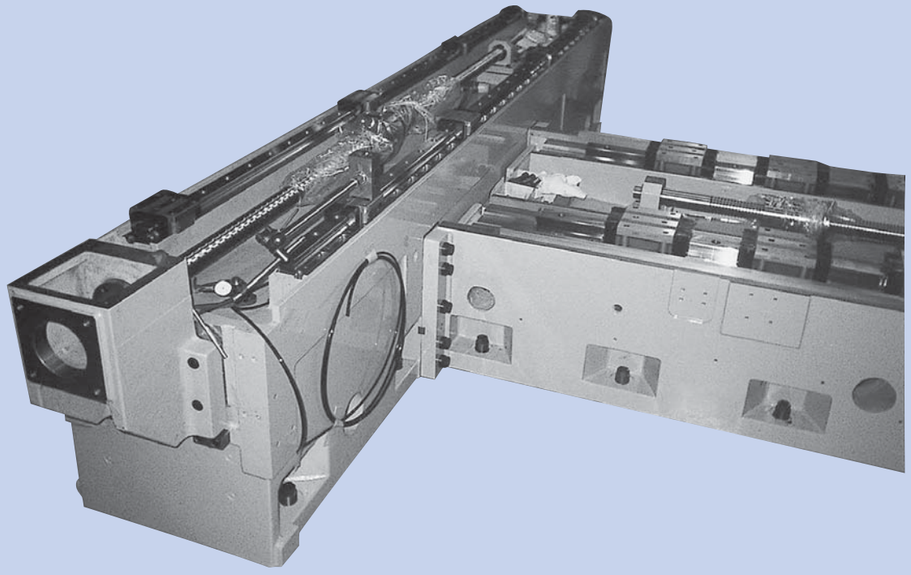




Surface grinding machine

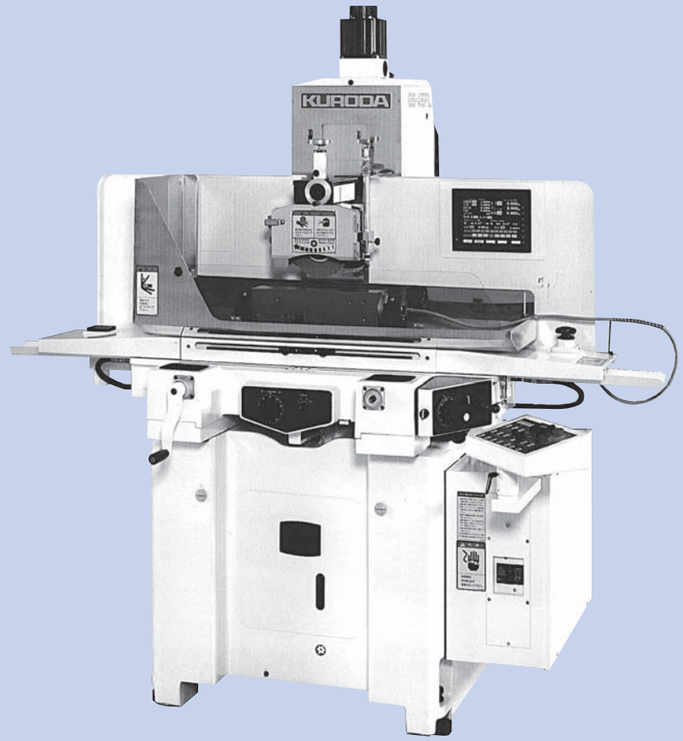
LRX

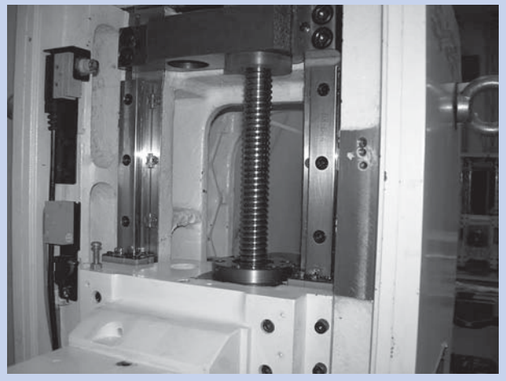


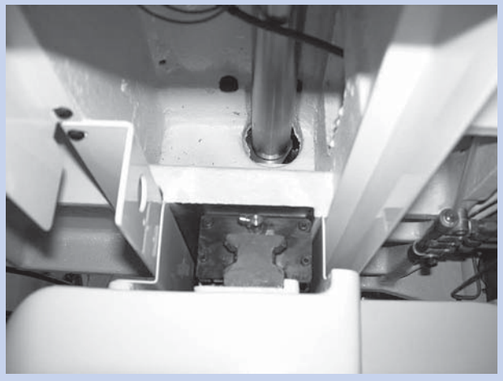


Precision forming surface grinding machine

MXD • LRXDG • MHD

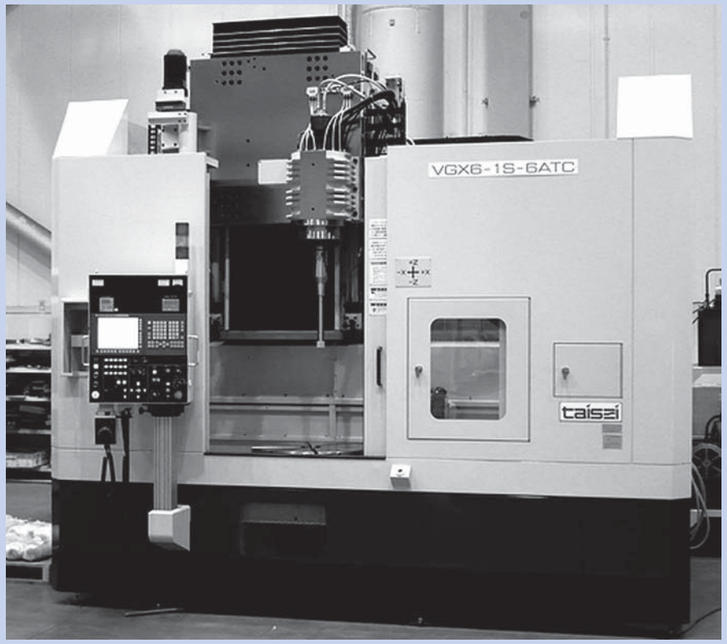


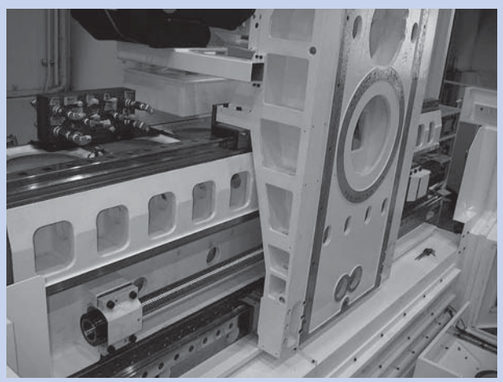


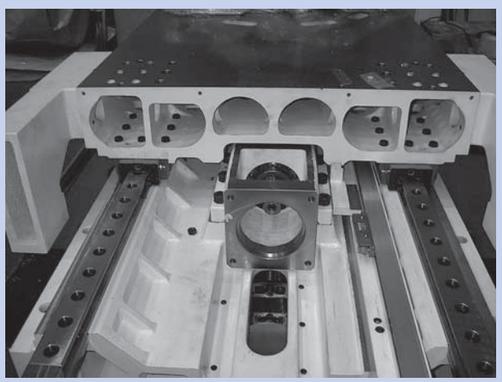


Vertical grinding machine

MX • MXL

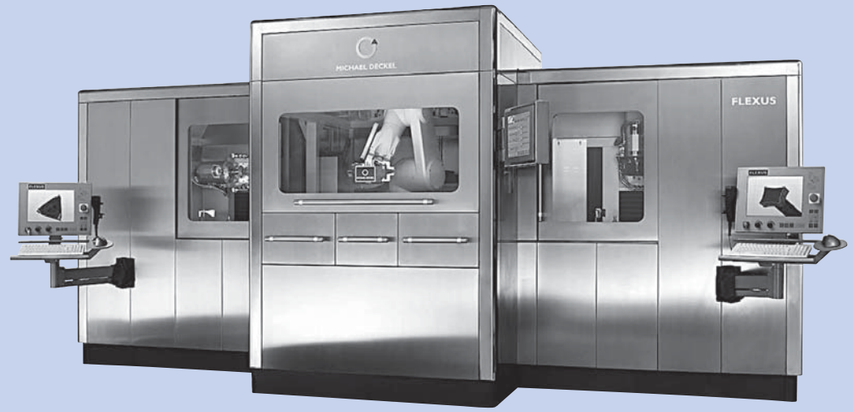






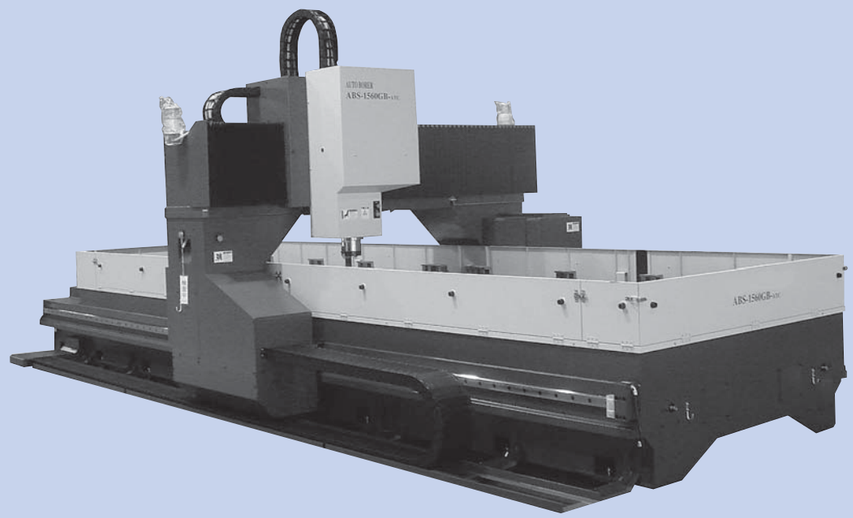
Tool grinding machine

LRXDG • LRXG



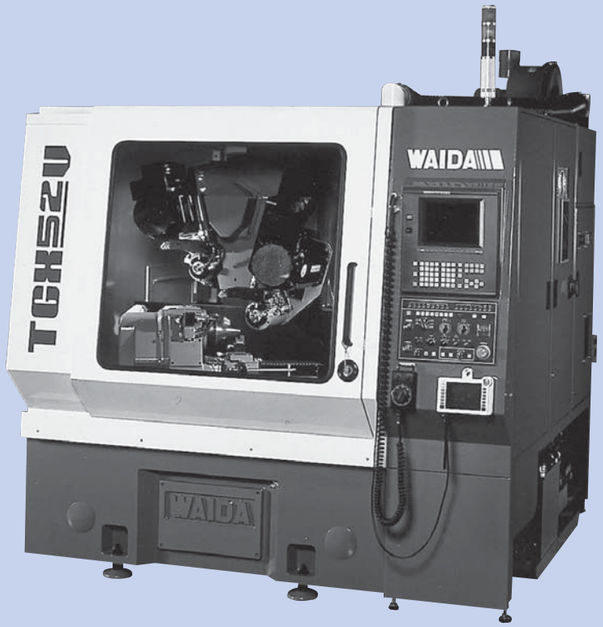
Multi function drilling machine

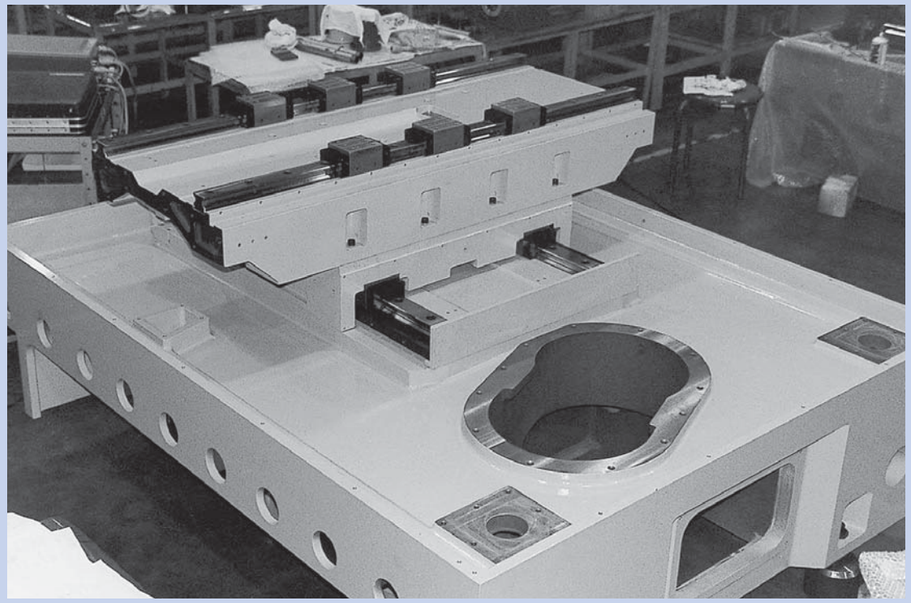
MXG • MXNG • MXNSG



Tool grinding machine

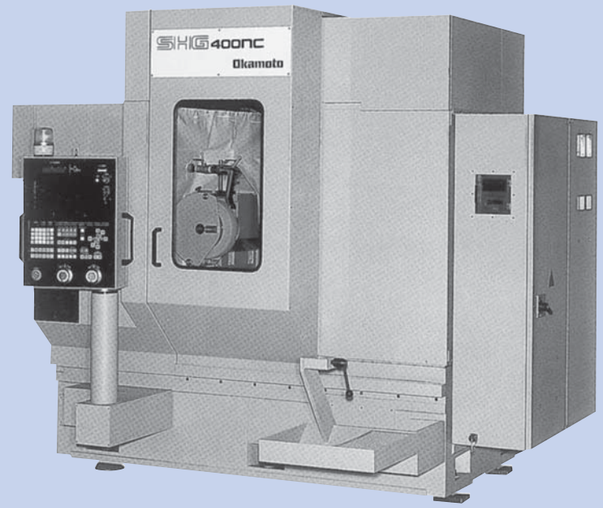
LRXD・LRXDG

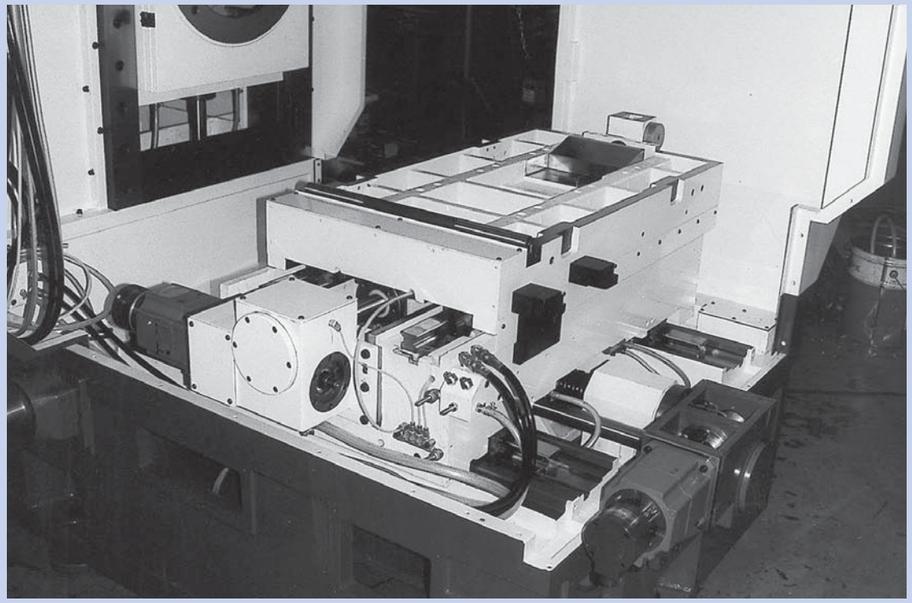




Synchronized control gear grinding machine

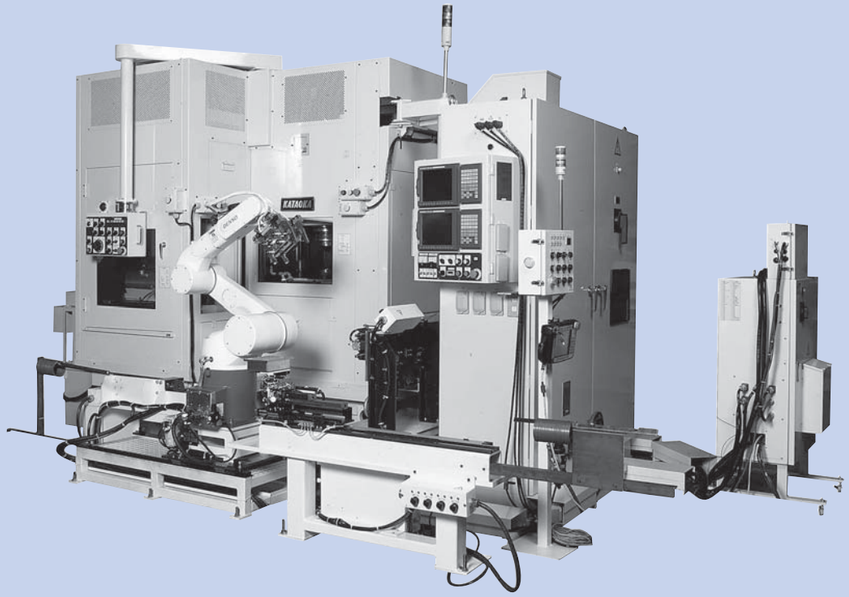
LRXG

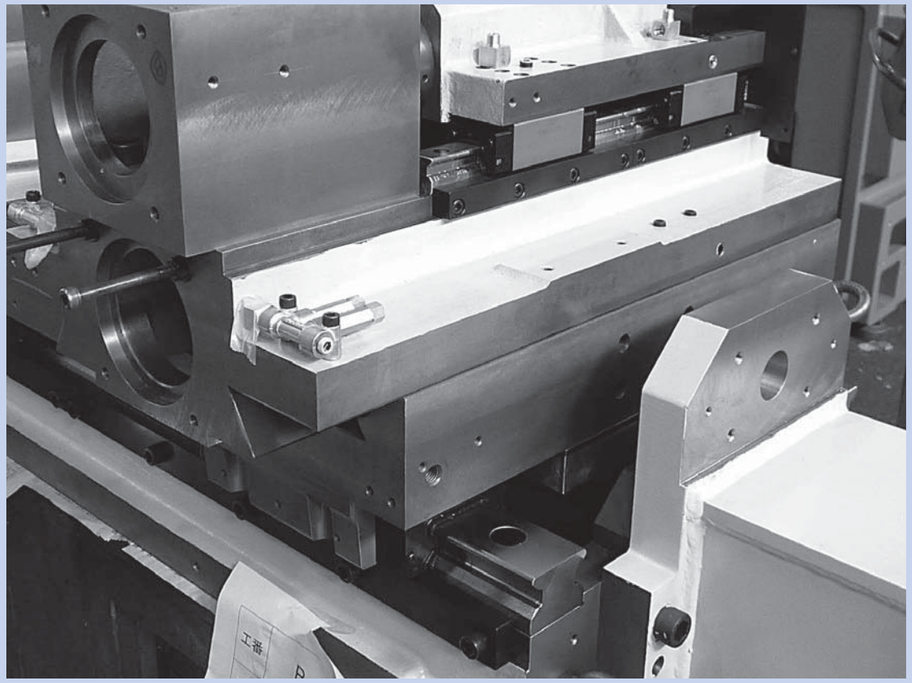




Piston ring grinding machine

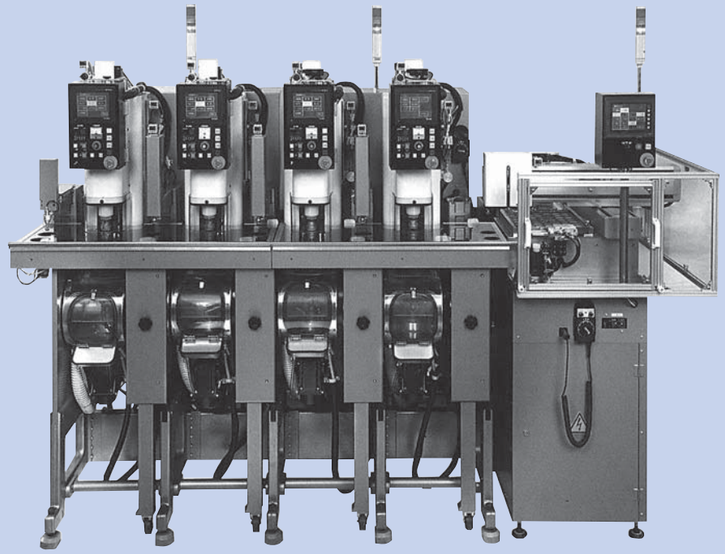
LRXG • LRXD

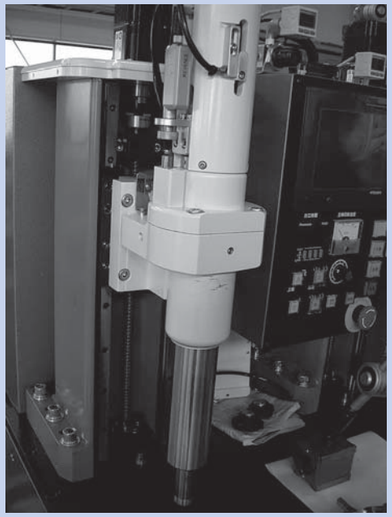


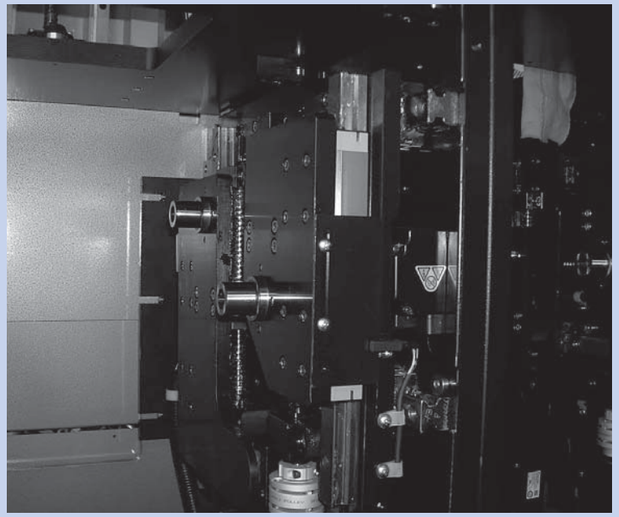


High precision NC lens polishing machine

MXD • LRXS

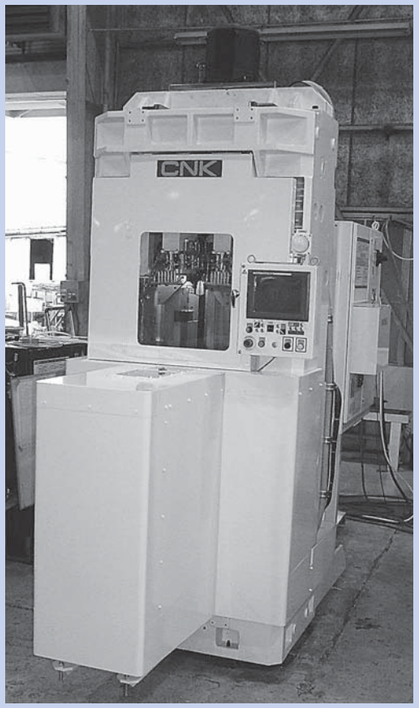


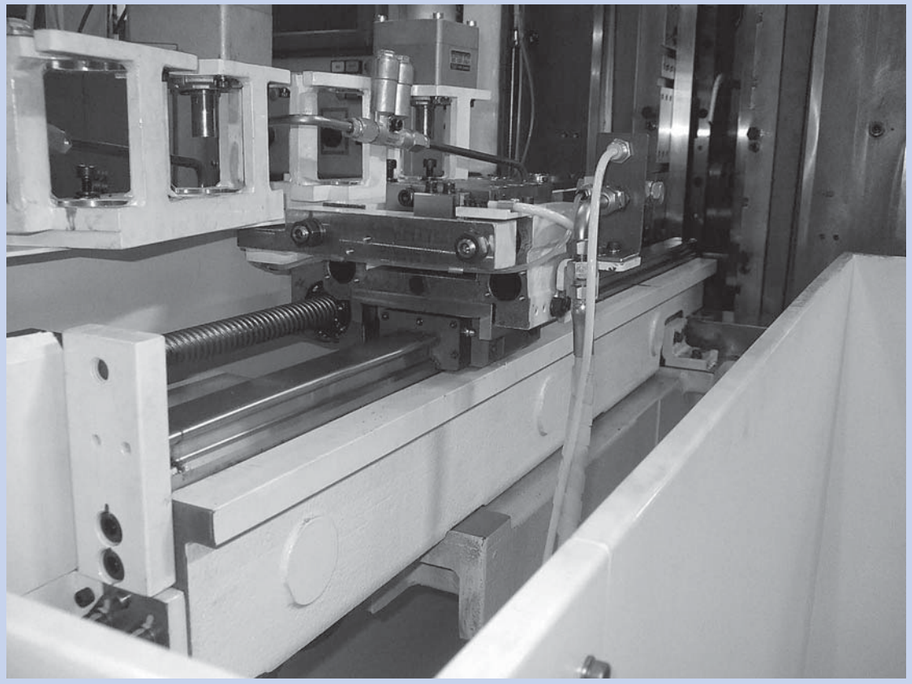




Roll forming machine

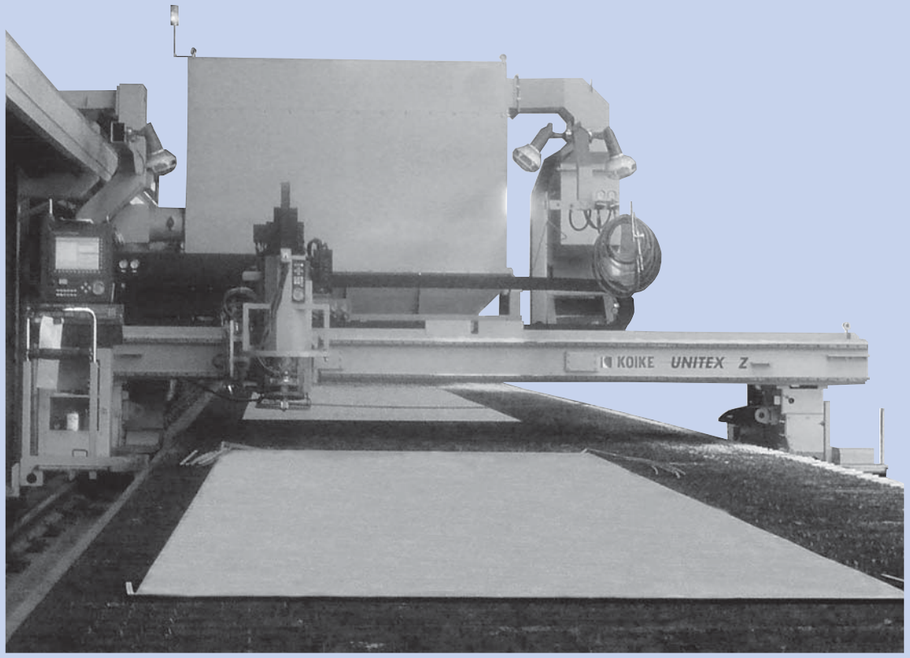
LRXG

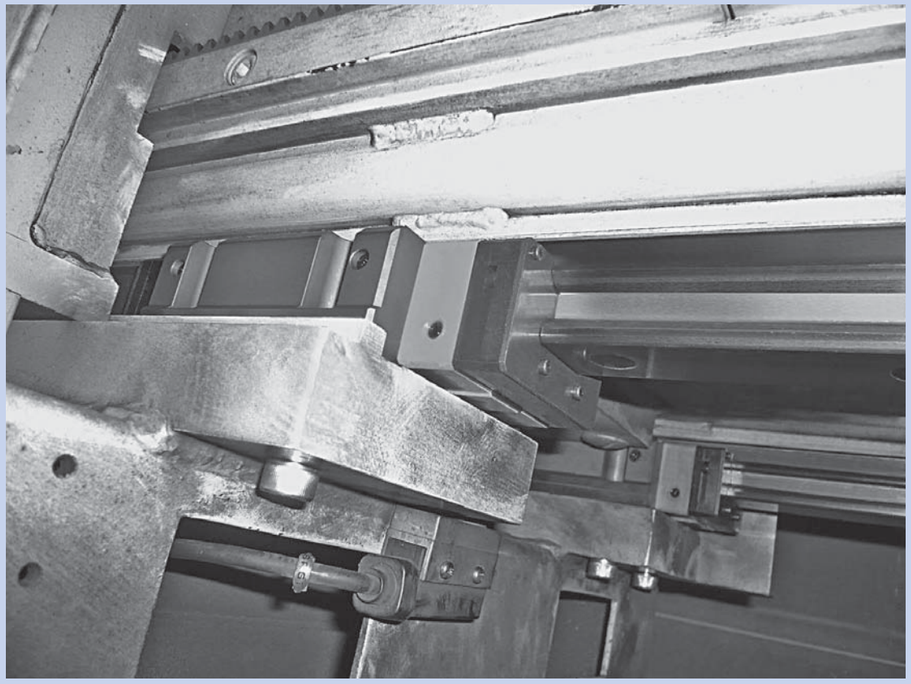




Plasma cutting machine

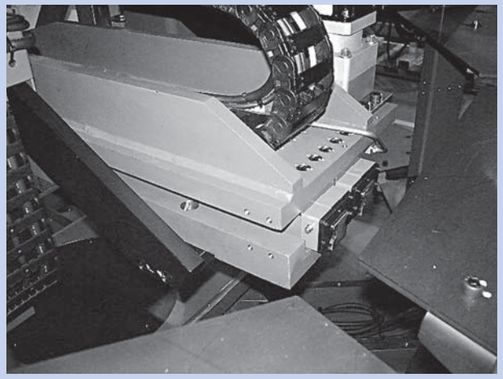
MXG

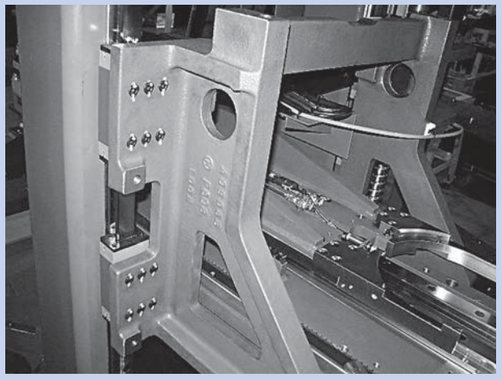




Automatic work changer for five-axis control vertical machining center

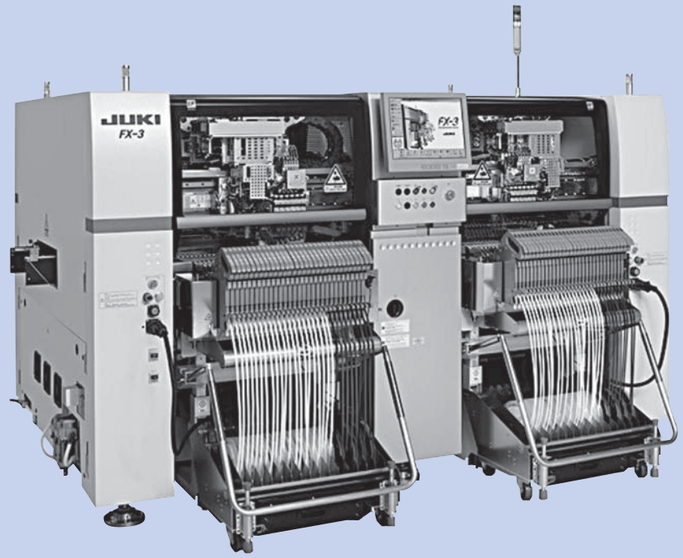
MXDG • MXDL





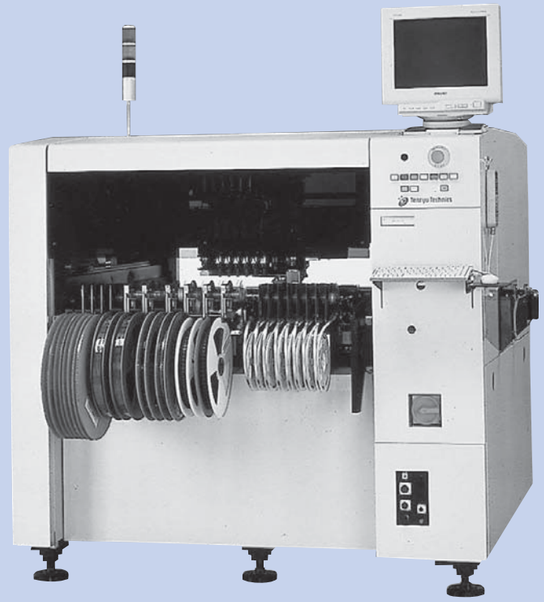
Chip mounter

MXSG • ML • MES • MHD



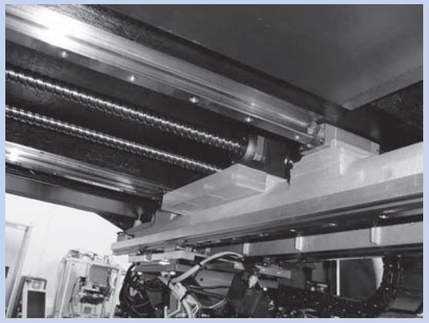
Chip mounter

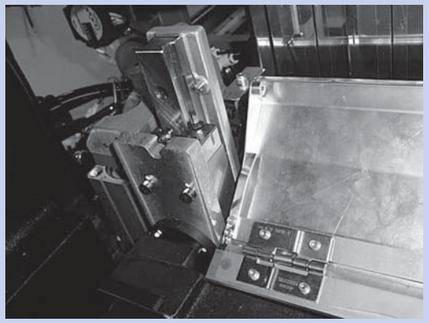
LWLC



Twin head high-speed multi function chip mounter

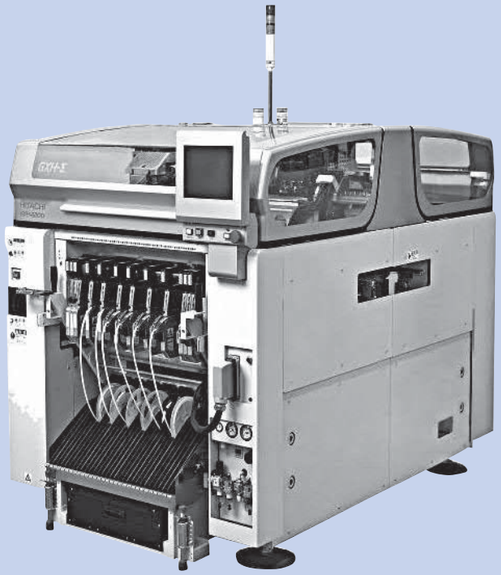
MXS • MXSG • MLFG





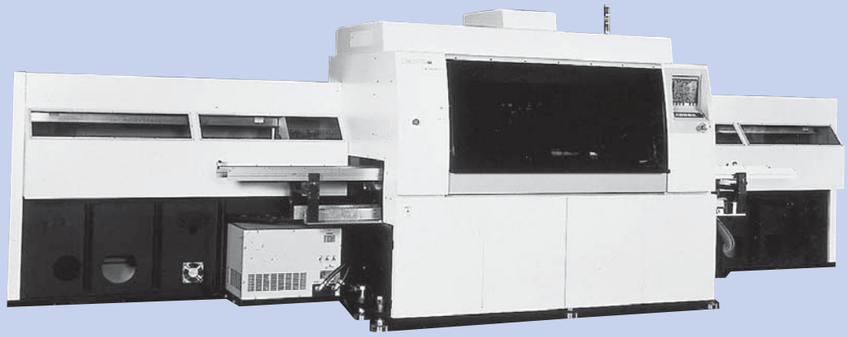
High-speed modular mounter

LRXD • MLG • MLF



High-speed chip mounter

LWLF • LWHS • LWHSG

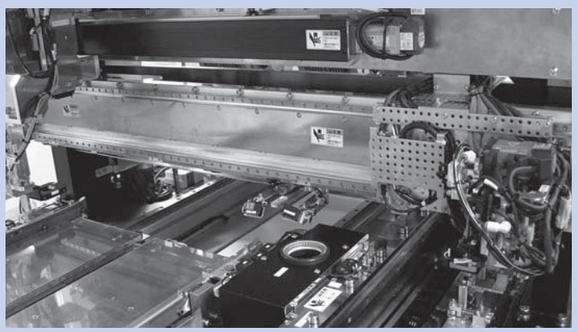


Stepper

LWL • LWLF • LWHS

Handler

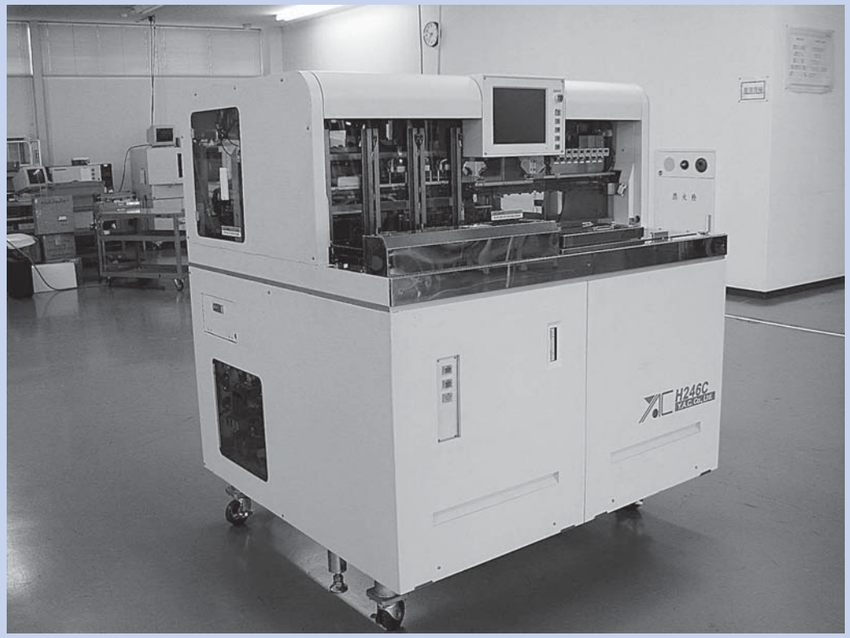
ML・LWHS

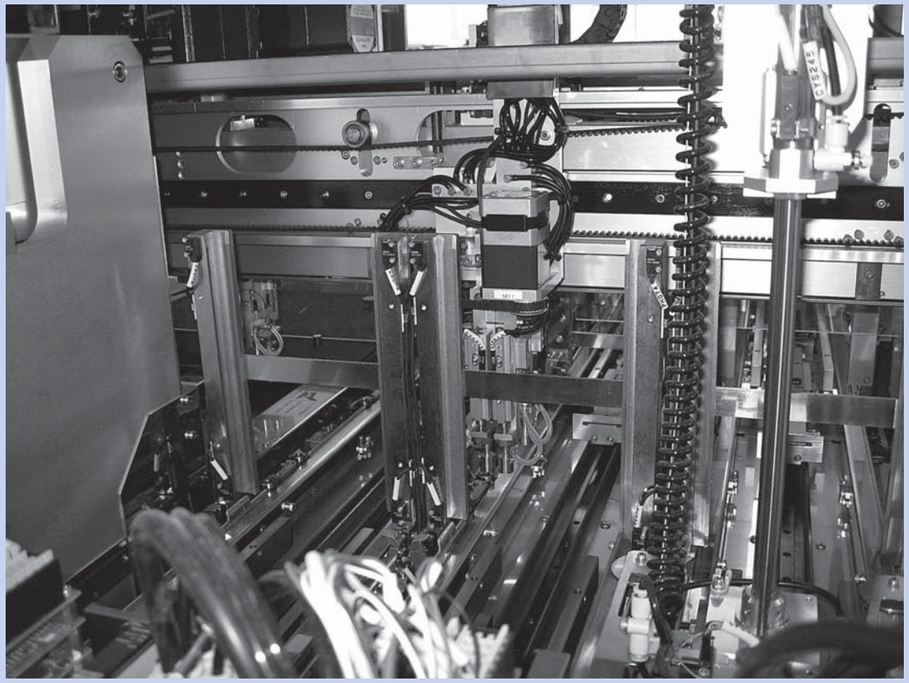


IKO
—Semiconductor and LCD manufacturing machines—

IC Handler

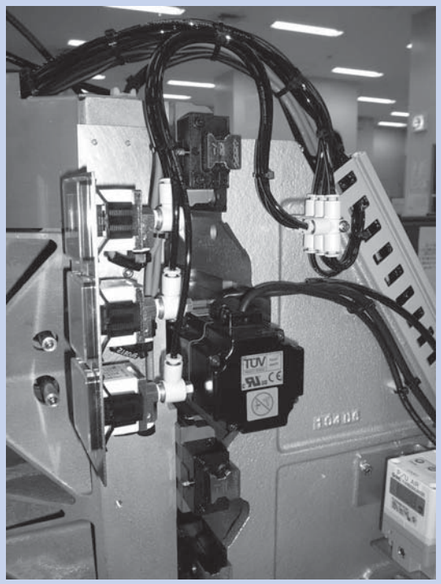
LWHD

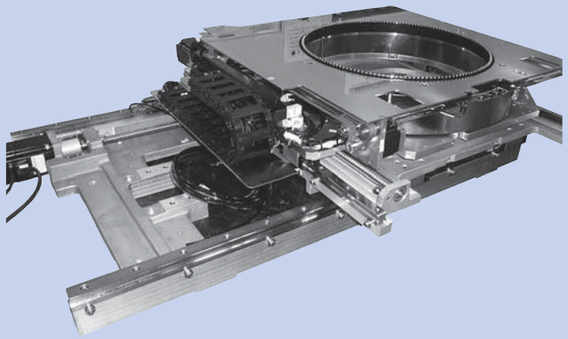




Die bonder

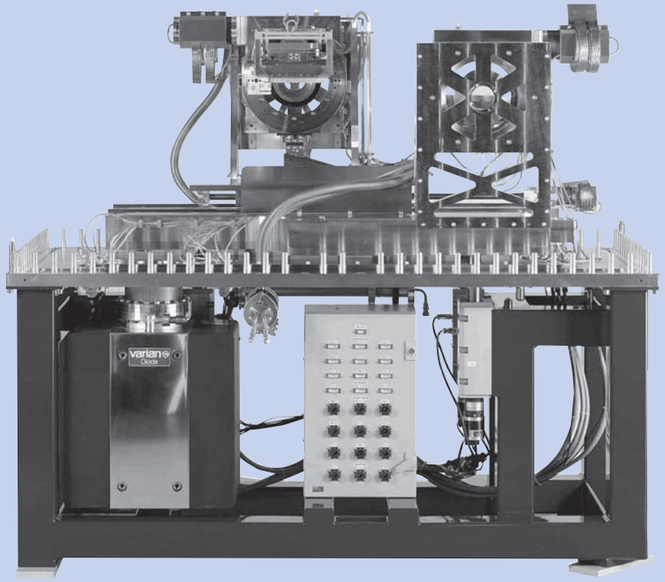
LRXD • LRXS

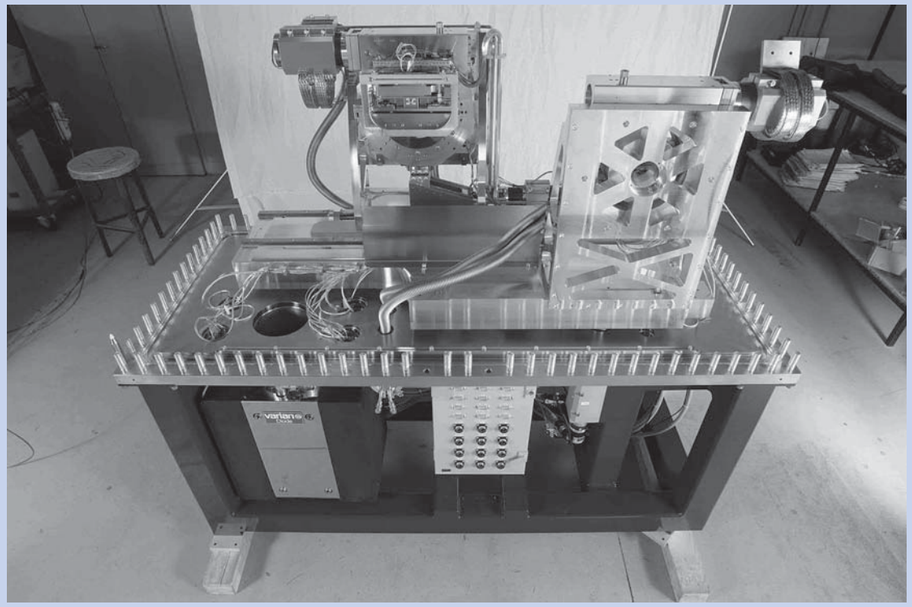




Spectroscope

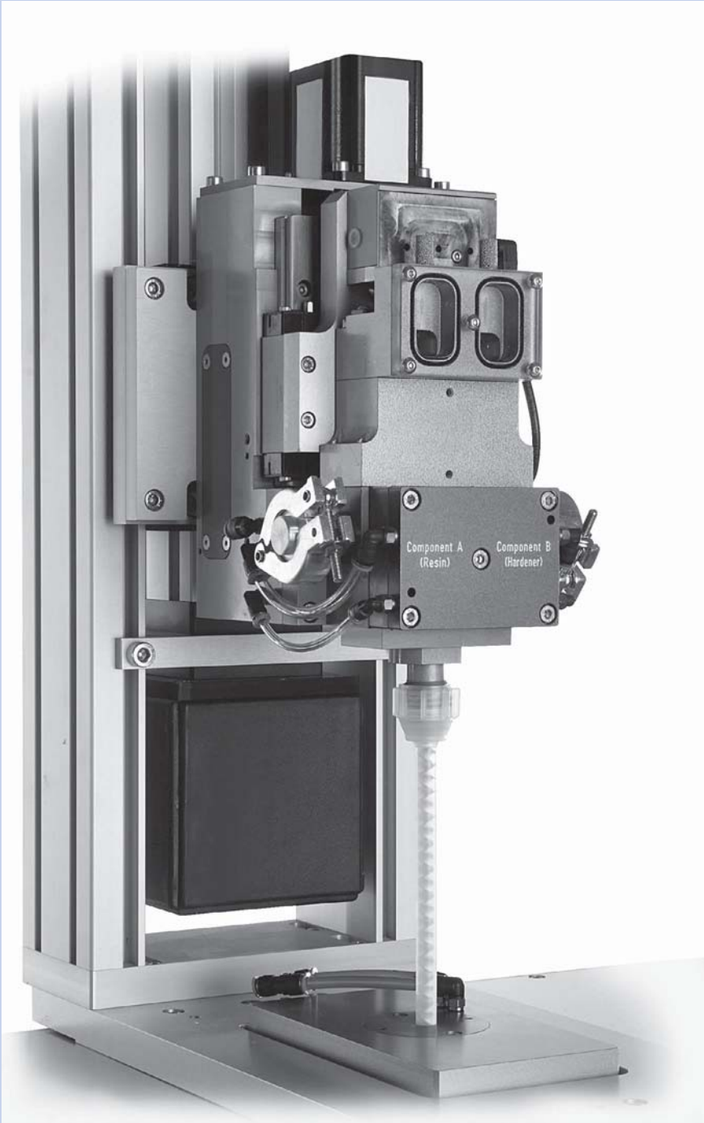
LWL





Resin forming machine for electronics devises

LRXDG



Rotary offset printing machine

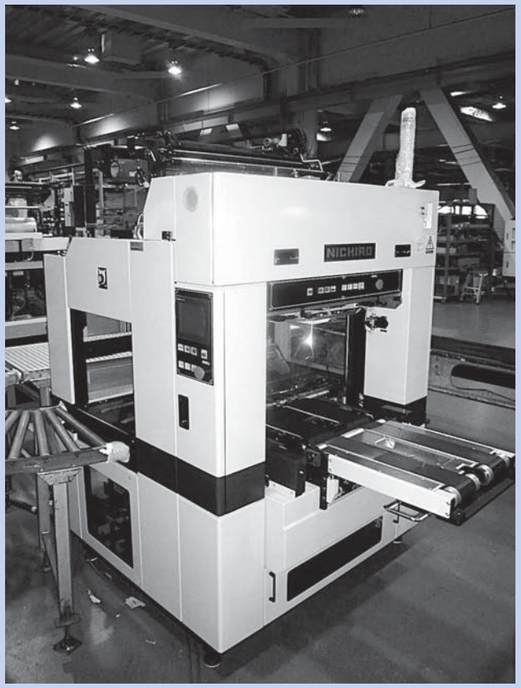
LWH • LWHDG

Multi-head type electronic embroidery machine

LWL

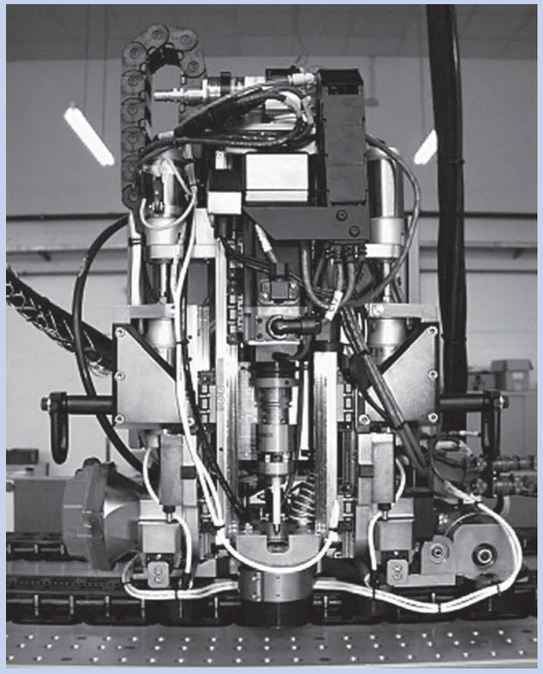
Newspaper packaging machine

LWHS



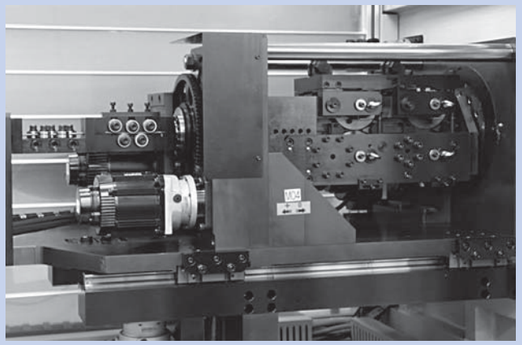
Welding machine for airplane body panels

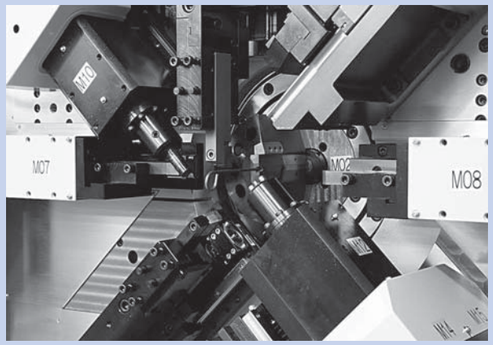
LRXD • LWL



Spring forming machine

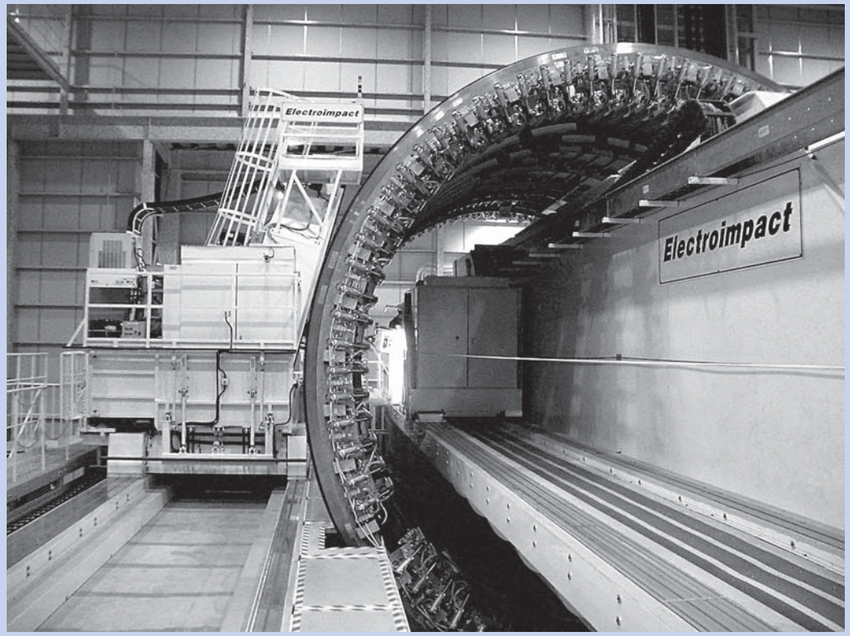
MXG • MXDG • MXSG • MXNSG





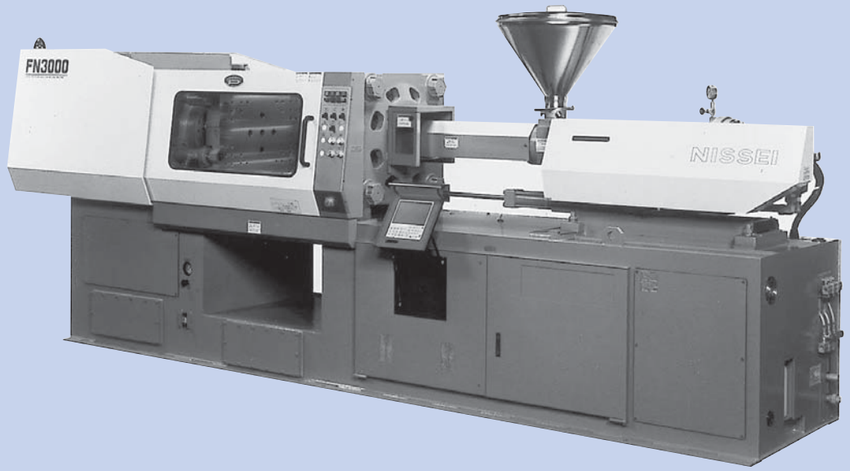
Locating machines for airplane body panels

LRX



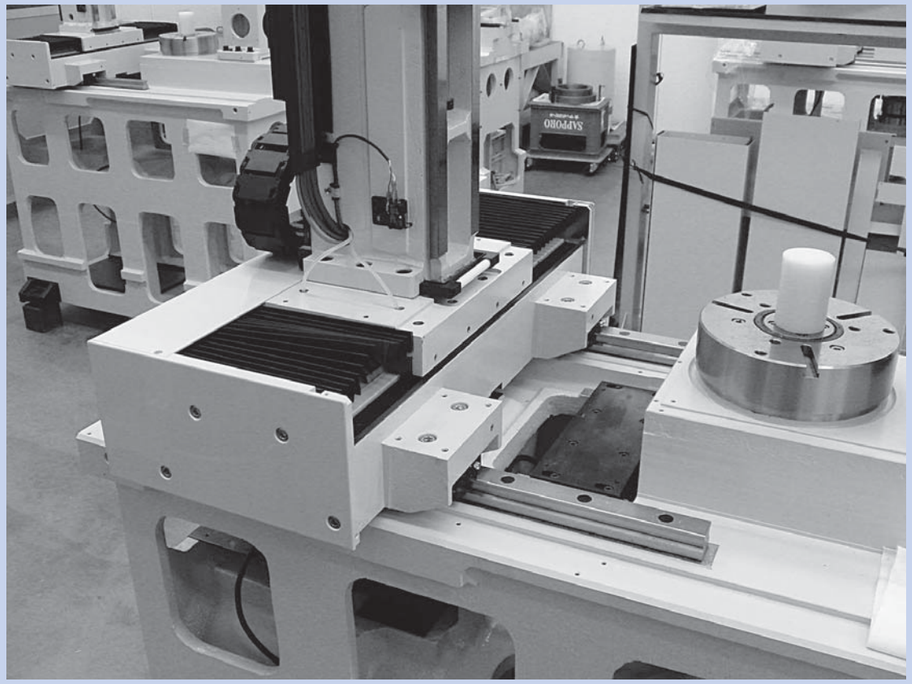
Injection machine

LWES



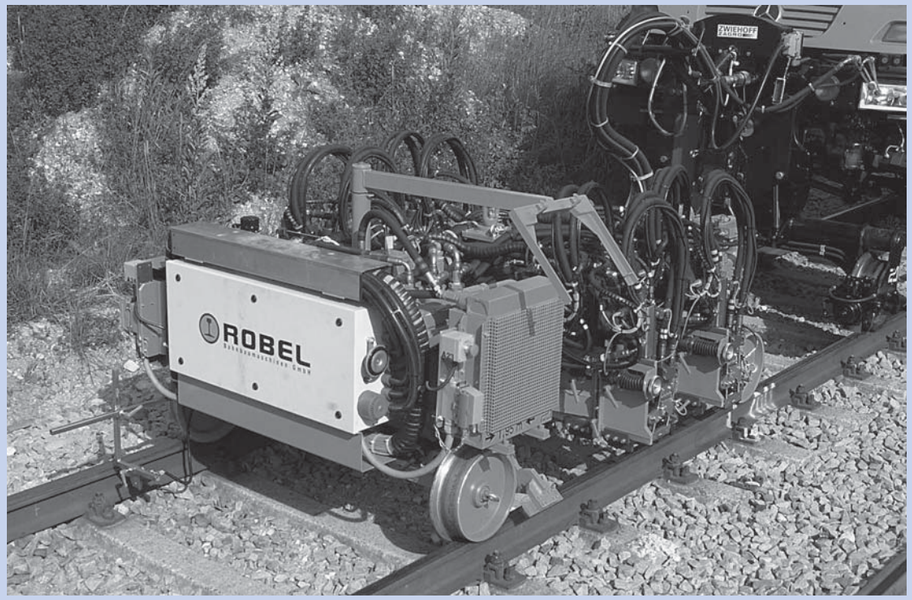
CNC gear profile inspection machine

LRX



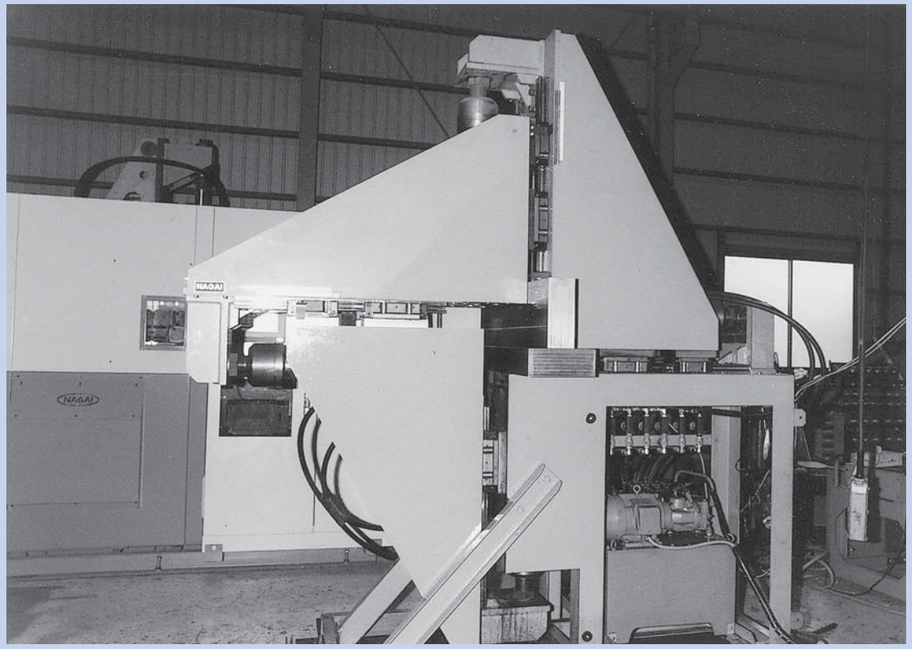
Maintenance machine for railroad application

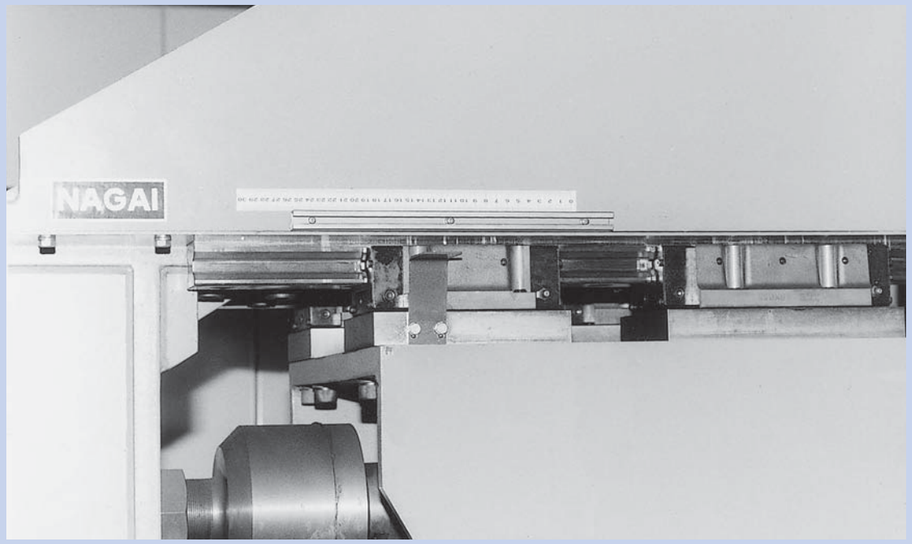
LRXG



High pressure forming machine for wood materials

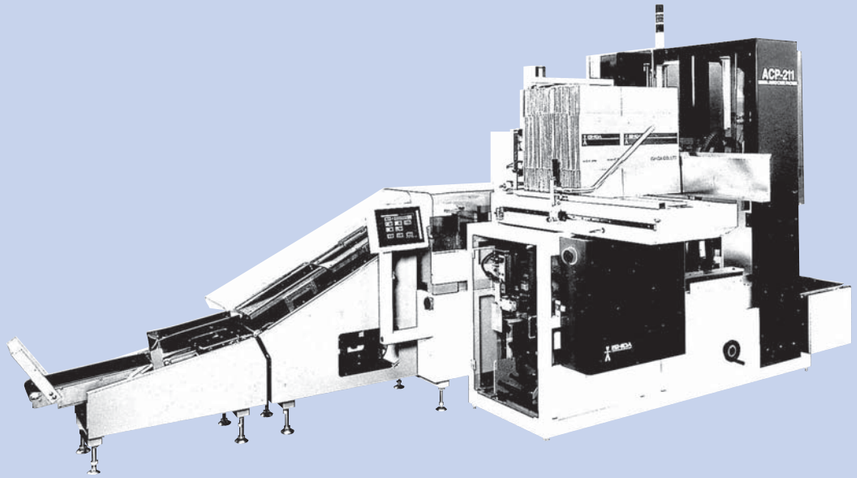
LRXG





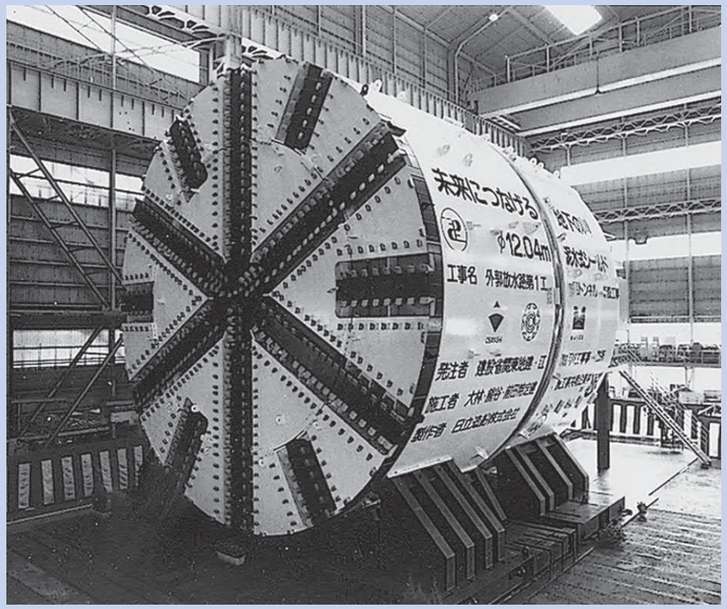
Automatic case packer

LWL • LWES • LWH • LWHS • LWHDG



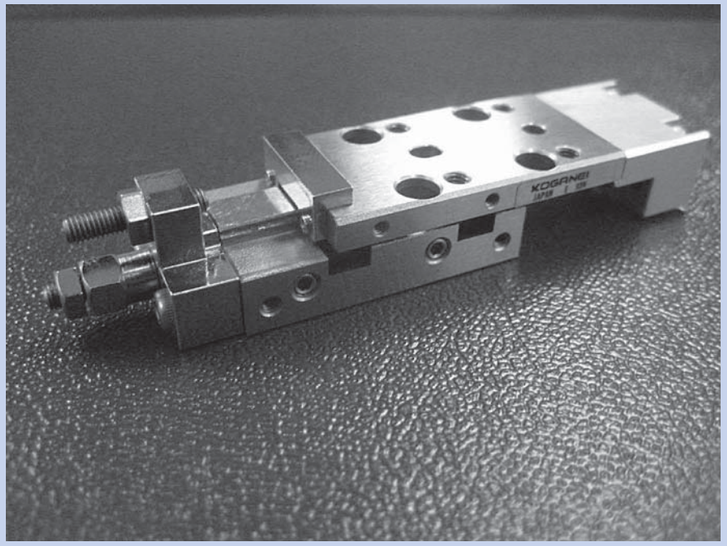
Shield type tunnel excavator

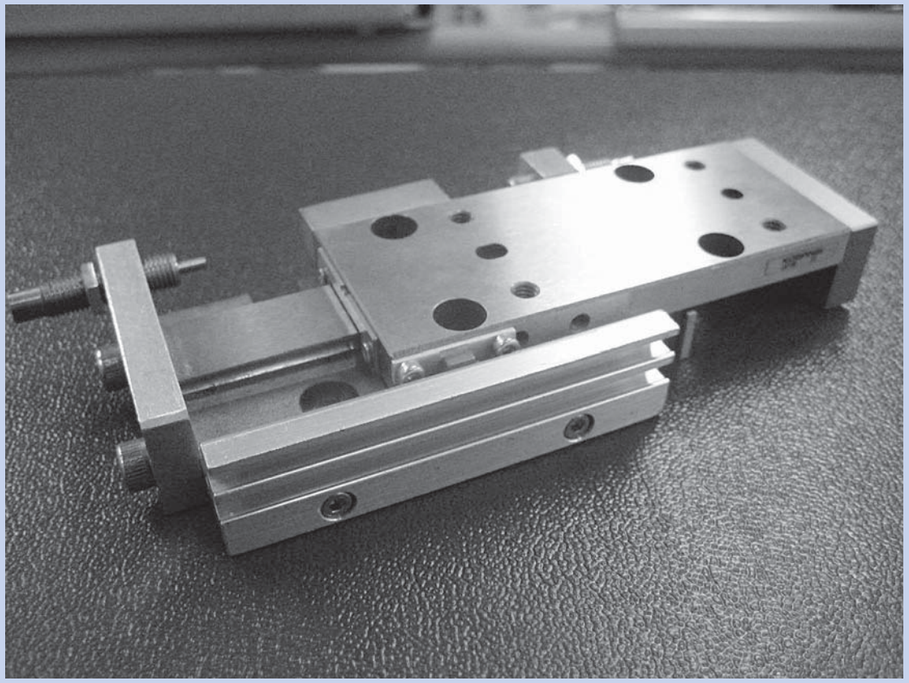
LRXDG • LWHS



Pneumatic cylinder unit

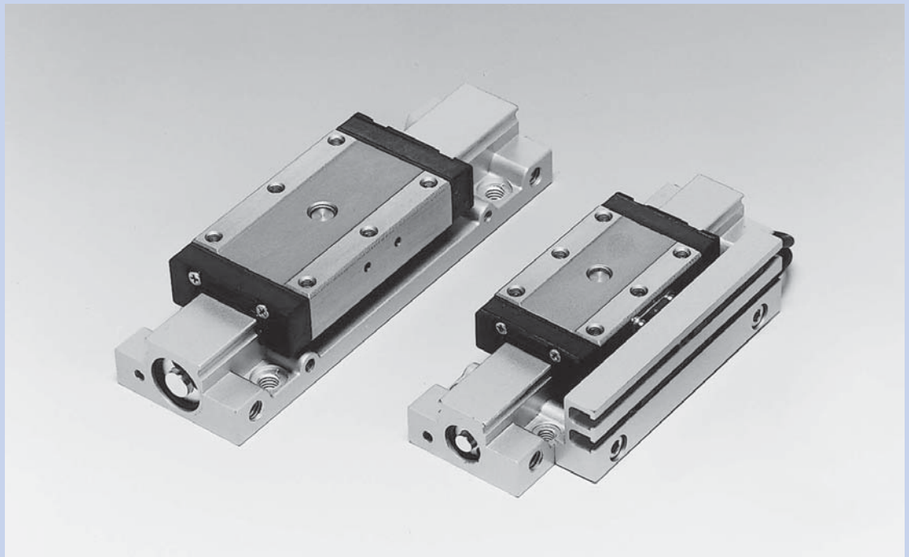
LWL





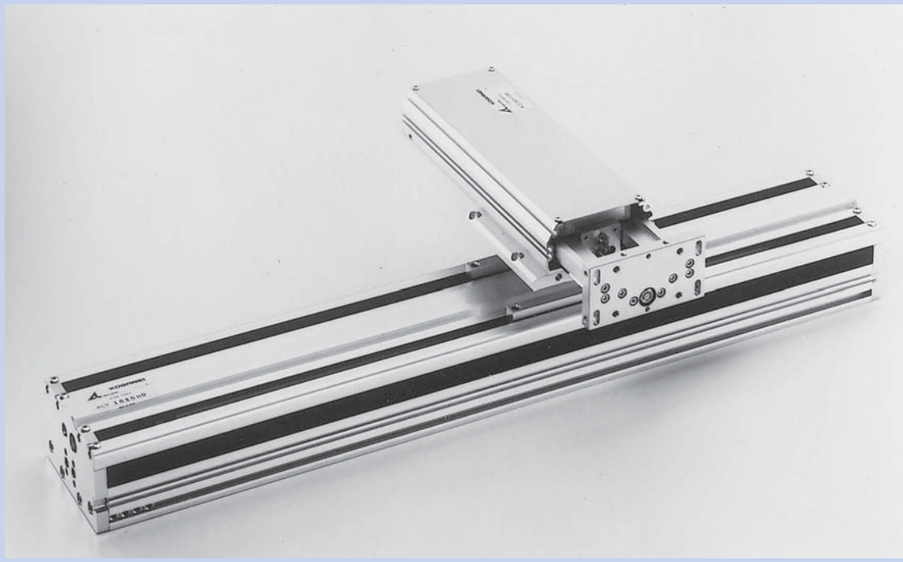
Pneumatic actuator

LWL



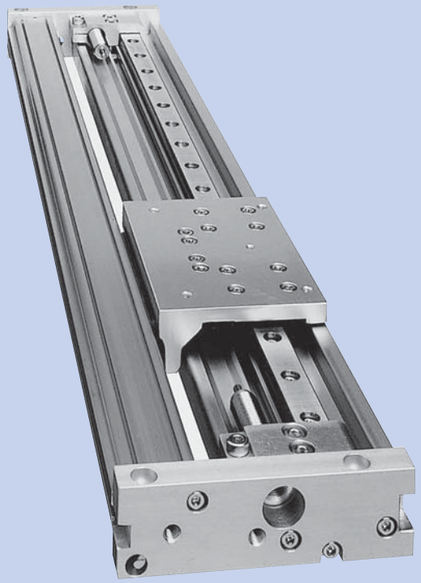
Pneumatic slide table

LWL



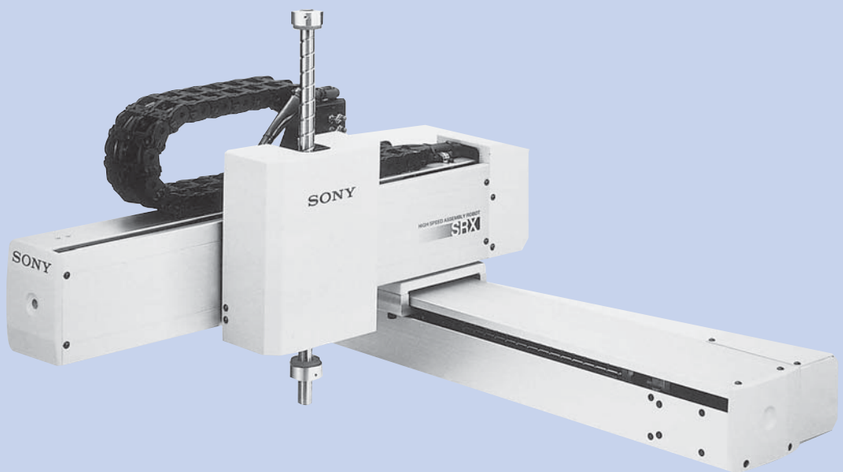
Rodless cylinder

LWL



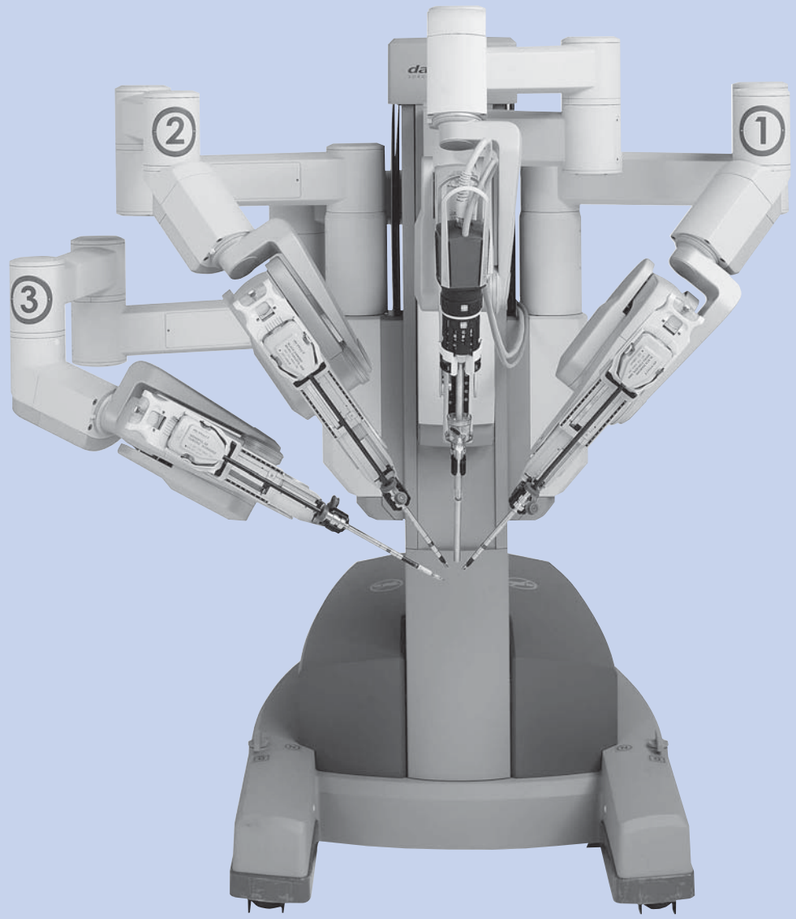
XYZ-axis robot

LWHD



Special surgical robot

LWLF



Oil Minimum

IKO Gentle to The Earth

Nippon Thompson Co., Ltd. is working to develop global environment-friendly products.
It is committed to developing products that make its customers' machinery and equipment more reliable, thereby contributing to preserving the global environment.
This development stance manifests well in the keyword "**Oil Minimum**."
Our pursuit of Oil Minimum has led to the creation of
IKO's proprietary family of lubricating parts as "C-Lube."

- IKO linear motion rolling guides are manufactured through a control system that alleviates their impact on the global environment to meet the quality requirements of ISO 14001 and ISO 9001.
- The standard products listed in this catalog comply with the specifications of the six hazardous materials mentioned cited in the European RoHS Directive. For information on all other products, please check with IKO.

IKO Products Underpin Sustain Technology Leaps

Nippon Thompson Co., Ltd. was the first Japanese manufacturer to develop needle bearings on its own and has since expanded into the arena of linear motion rolling guides (Linear Motion Series and Mechatro Series) on the support of its advanced expertise. The company now offers a vast assortment of ingenious products, including the world's first C-Lube maintenance-free series, to address increasingly diversified customer needs and thus sustain technology leaps.

C-Lube Maintenance-Free Series Products Evolving from the "Oil Minimum" Concept

We have developed lubricating parts impregnated with a large amount of lubricant as C-Lube Series to save the customer's oiling management workload and built them into bearings and linear motion rolling guides.
The C-Lube Series not only keeps products maintenance-free for long by giving them an optimal and minimal amount of a lubricant for an extended period of time but also contributes greatly to preserving the global environment.

Needle Roller Bearings

Needle Bearings
Machine elements essential to any industry

Linear Motion Rolling Guide Series

Linear Motion Rolling Guides/Linear Motion Series
Available in broad sizes, from minimum to extra-large

Mechatronics Series

Linear Motion Rolling Guides/Mechatro Series
A merger of precision machining expertise and electronics