IKO Linear Motion Rolling Guide Series
General Catalog

BLUE

CAT-1560E

NIPPON THOMPSON CO., LTD. (JAPAN)

Head Office : 19-13 Takanawa 2-chome Minato-ku
Tokyo 108-8586, Japan
Phone : +81 (0)3-3448-5850
Fax : +81 (0)3-3447-7637
E-mail : ntt@ikonet.co.jp
URL : http://www.ikont.co.jp/eg
Plant : Gifu, Kamakura

IKO-THOMPSON (SHANGHAI) LTD. (CHINA)

Shanghai (Sales Head Office)
1608-10 MetroPlaza No.555 LouShanGuan Road
ChangNing District Shanghai
People's Republic of China 200051
Phone : +86 (0)21-3250-5525
Fax : +86 (0)21-3250-5526
E-mail : ntc@ikonet.co.jp

Beijing Branch
Room1506, Jingtai Tower,
NO.24, Jianguomenwai Avenue,
Chaoyang District, Beijing People's Republic of China 100022
Phone : +86 (0)10-6515-7681
Fax : +86 (0)10-6515-7681*106
E-mail : ntc@ikonet.co.jp

Guangzhou Branch
Room 834, Garden Tower, Garden Hotel
368 Huanshi East Road, Yuexiu District, Guangzhou, Guangdong
People's Republic of China 510064
Phone : +86 (0)20-8384-0797
Fax : +86 (0)20-8381-2863
E-mail : ntc@ikonet.co.jp

Wuhan Branch
Room 2300, Truroll Plaza No.72 Wusheng Road,
Qiao kou District, Wuhan, Hubei
People's Republic of China 430033
Phone : +86 (0)27-8556-1610
Fax : +86 (0)27-8556-1630
E-mail : ntc@ikonet.co.jp

Xi'an Office
Room 605, Zhongcai Finance Building,
No.22 Hepin Road, Beilin District, Xi'an City, Shanxi Province,
People's Republic of China 710001
Phone : +86 (0)29-8882-3225
Fax : +86 (0)29-8882-3215
E-mail : ntc@ikonet.co.jp

Shenzhen Office
Room 420, Oriental Plaza,
1072 Jianshe Road, Luohu District, Shenzhen, Guangdong
People's Republic of China 518001
Phone : +86 (0)755-2265-0553
Fax : +86 (0)755-2298-0665
E-mail : ntc@ikonet.co.jp

Chengdu Office
Room 604 of Tower5, Weima Plaza,
No.2 Gaopan Rd, Wuhou District, Chengdu, Sichuan,
People's Republic of China 610041
Phone : +86 (0)28-6250-5159
Fax : +86 (0)28-6250-5159
E-mail : ntc@ikonet.co.jp

Ningbo Office
Room 3406, Zhongnongxin Building, No.181
Zhongshan East Road, Haishu Ward, Ningbo, Zhejiang
People's Republic of China 315000
Phone : +86 (0)574-8718-9535
Fax : +86 (0)574-8718-9533
E-mail : ntc@ikonet.co.jp

Qingdao Office
2107 Block A, World Trade Center Building, No.230
Changjiang Middle Road, Development Zone Qingdao
People's Republic of China 266555
Phone : +86 (0)532-8670-2246
FAX : +86 (0)532-8670-2242
E-mail : ntc@ikonet.co.jp

Shenyang Office
2-1203 Tower I.City Plaza Shenyang, No.206
Nanjing North Street Heping District, Shenyang
People's Republic of China 110001
Phone : +86 (0)24-2334-2662
FAX : +86 (0)24-2334-2442
E-mail : ntc@ikonet.co.jp

IKO THOMPSON KOREA CO.,LTD. (KOREA)

2F, 111, Yeouigongwon-ro,
Yeongdeungpo-gu, Seoul, Korea
Phone : +82 (0)2-6337-5851
Fax : +82 (0)2-6337-5852
E-mail : itk@ikonet.co.jp

IKO THOMPSON ASIA CO., LTD. (THAILAND)

1-7 Zuellig House, 3rd Floor
Silom Road, Silom, Bangrak
Bangkok 10500, Thailand
Phone : +66 (0)2-637-5115
FAX : +66 (0)2-637-5116
E-mail : ita@ikonet.co.jp

IKO INTERNATIONAL, INC. (U.S.A.)

East Coast Operation (Sales Head Office)
91 Walsh Drive
Parsippany, NJ 07054
U.S.A.
Phone : +1 973-402-0254
Toll Free : 1-800-922-0337
Fax : +1 973-402-0441
E-mail : eco@ikonet.co.jp

Midwest Operations
500 East Thorndale Avenue, Suite K
Wood Dale, IL 60191
U.S.A.
Phone : +1 630-766-6464
Toll Free : 1-800-323-6694
Fax : +1 630-766-6869
E-mail : mwo@ikonet.co.jp

Minnesota Sales Office
1500 McAndrews Road West, Suite 210
Burnsville, MN 55337
U.S.A.
Phone : +1 952-892-8415
Toll Free : 1-800-323-6694
Fax : +1 952-892-1722
E-mail : mwo@ikonet.co.jp

West Coast Operations
9830 Norwalk Boulevard, Suite 198
Santa Fe Springs, CA 90670
U.S.A.
Phone : +1 562-941-1019
Toll Free : 1-800-252-3665
Fax : +1 562-941-4027
E-mail : wco@ikonet.co.jp

Silicon Valley Sales Office
1500 Wyatt Drive, Suite 10
Santa Clara, CA 95054
U.S.A.
Phone : +1 408-492-0240
Toll Free : 1-800-252-3665
Fax : +1 408-492-0245
E-mail : wco@ikonet.co.jp

Southeast Operations
2150 Boggs Road, Suite 100
Duluth, GA 30096
U.S.A.
Phone : +1 770-418-1904
Toll Free : 1-800-874-6445
Fax : +1 770-418-9403
E-mail : seo@ikonet.co.jp

Southwest Operations
8105 N. Beltline Road, Suite 130
Irving, TX 75063
U.S.A.
Phone : +1 972-929-1515
Toll Free : 1-800-295-7886
Fax : +1 972-915-0060
E-mail : swo@ikonet.co.jp

IKO THOMPSON BRAZIL SERVICE CO.,LTD. (BRAZIL)

Av.Paulista, 854 10th floor, Top Center,
01310-100, Sao Paulo, SP, Brazil
Phone : +55 (0)11-2186-0221
Fax : +55 (0)11-2186-0299
E-mail : itb@ikonet.co.jp

NIPPON THOMPSON EUROPE B.V. (EUROPE)

The Netherlands (Sales Head Office)
Sheffieldstraat 35-39
3047 AN Rotterdam
The Netherlands
Phone : +31 (0)10-462 68 68
Fax : +31 (0)10-462 60 99
E-mail : nte@ikonet.co.jp

Germany Branch
Mündelheimer Weg 56
40472 Düsseldorf
Germany
Phone : +49 (0)211-41 40 61
Fax : +49 (0)211-42 76 93
E-mail : ntd@ikonet.co.jp

Regensburg Sales Office
Im Gewerbepark D 30
93059 Regensburg
Germany
Phone : +49 (0)941-20 60 70
Fax : +49 (0)941-20 60 719
E-mail : ntdr@iko-nt.de

Neunkirchen Sales Office
Gruben Str.95c
66540 Neunkirchen
Germany
Phone : +49 (0)6821-99 98 60
Fax : +49 (0)6821-99 98 626
E-mail : ntdn@iko-nt.de

U.K. Branch
2 Vincent Avenue, Crownhill
Milton Keynes, Bucks, MK8 0AB
United Kingdom
Phone : +44 (0)1908-566144
Fax : +44 (0)1908-565458
E-mail : sales@iko.co.uk

Spain Branch
Autovia Madrid-Barcelona, Km. 43,700
Polig. Ind. AIDA - Nove A-8, Ofic. 2-1ª
19200 Azuqueca de Henares
(Guadalajara) Spain
Phone : +34 949-26 33 90
Fax : +34 949-26 31 13
E-mail : nts@ikonet.co.jp

France Branch
Roissypole Le Dôme
2 rue de La Haye
BP 15950 Tremblay en France
95733 Roissy C. D. G. Cedex
France
Phone : +33 (0)1-48 16 57 39
Fax : +33 (0)1-48 16 57 46
E-mail : contact@iko-france.com

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

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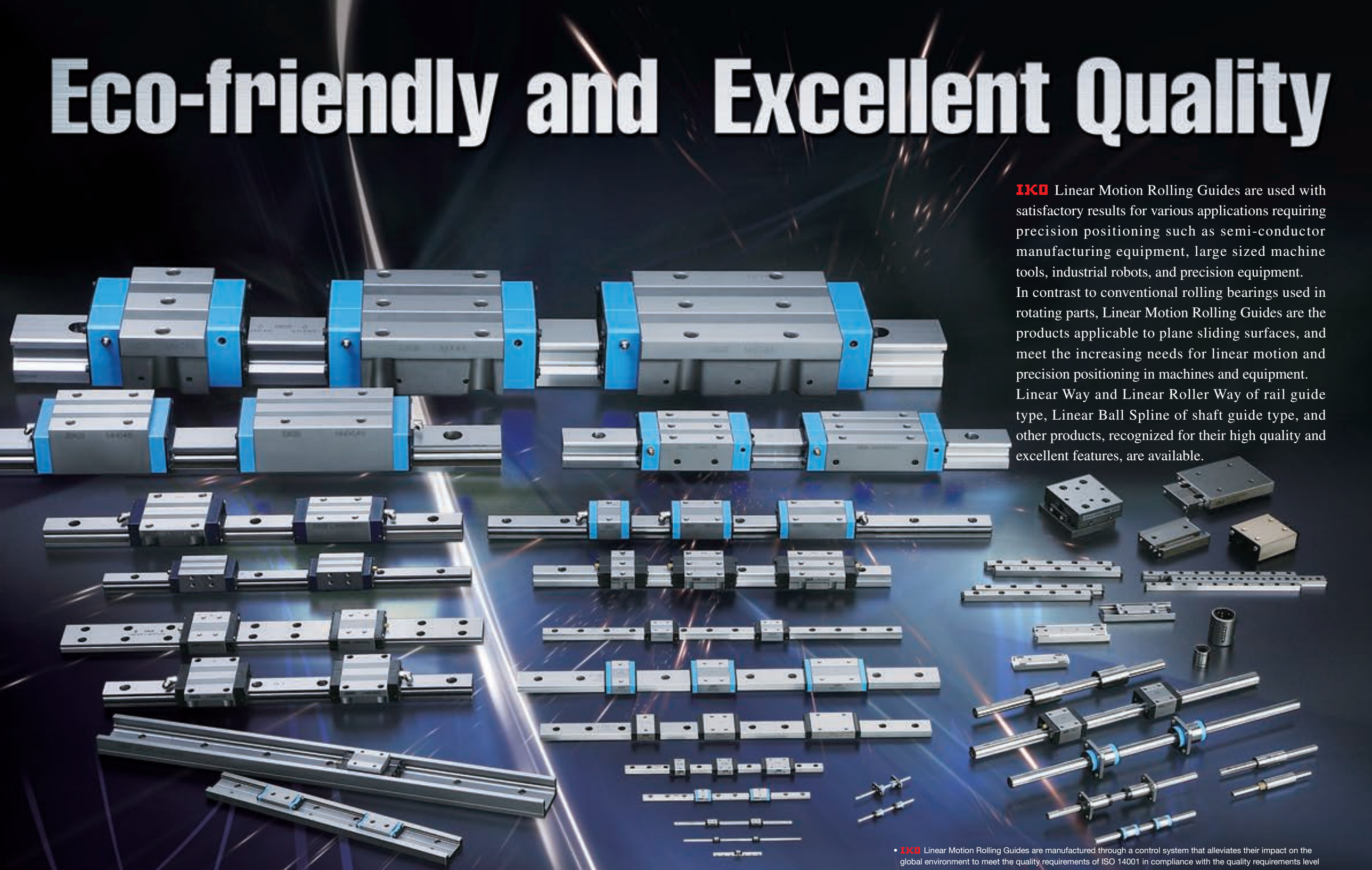
Eco-friendly and Excellent Quality

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 manufactured through a control system that alleviates their impact on the global environment to meet the quality requirements of ISO 14001 in compliance with the quality requirements level of ISO 9001 for quality improvement.
- The standard products listed in this catalog comply with the specifications of the six hazardous materials mentioned cited in the European RoHS Directive.

IKO Linear Motion Rolling Guide Series Full Lineup

Linear Motion Rolling Guide Series General Catalog BLUE

Recorded in CAT-1560E

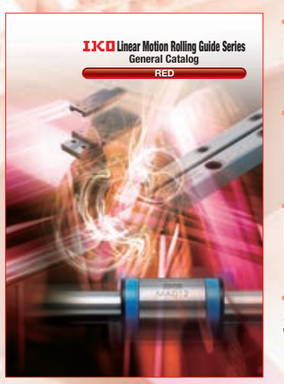
Linear Way

Linear Roller Way

Rail Guide Type

	C-Lube Maintenance Free Series		
 **Ball Type Miniature Series** Super small-size linear motion rolling guide produced by original small sizing technology	**C-Lube Linear Way ML** ML : Standard type MLF : Wide type	**Linear Way L** LWL : Standard type LWLF : Wide type	
 **Ball Type Miniature Value Series** Economical linear motion rolling guides without changing the superior performance of Ball Type Miniature Series	**C-Lube Linear Way MLV** MLV		
 **Ball Type Low Profile/Light Weight Series** Super low profile and super light weight linear motion rolling guides with high load capacity	**C-Lube Linear Way MV** MV		
 **Ball Type Compact Series** Versatile linear motion rolling guides pursuing compactness in every aspect	**C-Lube Linear Way ME** ME : Flange type mounting from bottom MET : Flange type mounting from top MES : Block type mounting from top	**Linear Way E** LWE : Flange type mounting from bottom LWET : Flange type mounting from top LWES : Block type mounting from top	**Low Decibel Linear Way E** LWE ···Q : Flange type mounting from bottom LWET ···Q : Flange type mounting from top LWES ···Q : Block type mounting from top
 **Ball Type High Rigidity Series** High rigidity linear motion rolling guides designed to evenly support high load capacity by incorporating large-diameter balls	**C-Lube Linear Way MH** MH : Flange type mounting from bottom MHT : Flange type mounting from top MHD : Block type mounting from top MHS : Compact block type mounting from top	**Linear Way H** LWH : Flange type mounting from bottom LWHT : Flange type mounting from top LWHD : Block type mounting from top LWHS : Compact block type mounting from top LWHY : Side mounting type	
 **Ball Type Wide Rail Type Series** Linear motion rolling guide suitable to single-row use due to having resistance to across-the-width moment load by using a wide track rail		**Linear Way F** LWFH : Flange type mounting from top / bottom LWFF : Flange type mounting from top / bottom LWFS : Block type mounting from top	
 **Ball Type U-Shaped Track Rail Series** Linear motion rolling guide of high track rail rigidity with U-shaped track rail	**C-Lube Linear Way MUL** MUL : Small type	**Linear Way U** LWUL···B : Small type LWU ···B : Standard ball-retained type LWU : Standard ball non-retained type	
 **Roller Type** Linear motion rolling guide that has achieved the highest level of performance in all characteristics utilizing the roller's superior characteristic	**C-Lube Linear Roller Way Super MX** MX : Flange type mounting from top / bottom MXD : Block type mounting from top MXS : Compact block type mounting from top MXN : Low profile flange type mounting from top / bottom MXNS : Low profile block type mounting from top	**Linear Roller Way Super X** LRX : Flange type mounting from top / bottom LRXD : Block type mounting from top LRXS : Compact block type mounting from top	
 **Roller Type** Roller type linear motion rolling guide with cylindrical rollers in four-rows		**Linear Roller Way X** LRWX : Block type mounting from top LRWXH : Flange type mounting from bottom	
 **Module Type** Minimum compact linear motion rolling guide with both a track rail and slide member provided		**Linear Way Module** LWLM : Ball type small type LWM : Ball type standard type LRWM : Roller type	

Linear Motion Rolling Guide Series General Catalog RED



Recorded in CAT-1561E

Crossed Roller Way

Linear Slide Unit

Linear Ball Spline

Linear Bushing

Stroke Rotary Bushing

Roller Way & Flat Roller Cage

Shaft Guide Type

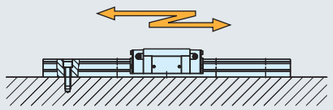
 **Crossed Roller Way** Linear motion rolling guide incorporating a roller cage between two ways whose two V-shaped surfaces are used as track groove		**Anti-Creep Cage Crossed Roller Way** CRWG **Anti-Creep Cage Crossed Roller Way Unit** CRWUG	**Anti-Creep Cage Crossed Roller Way H** CRWG···H **Crossed Roller Way Unit** CRWU / CRWU···R / CRWU···RS	**Crossed Roller Way** CRW : Standard type CRWM : Module type
 **Linear Slide Unit** Light weight, small, and compact linear motion rolling guide that has achieved light and smooth motion		**High Rigidity Precision Linear Slide Unit** BWU	**Precision Linear Slide Unit** BSP : Limited linear motion type BSPG : Built-in rack & pinion type BSR : Endless linear motion type	**Linear Slide Unit** BSU···A
 **Linear Ball Spline** Linear motion rolling guide performing linear motion while performing torque transmission along the spline shaft by external cylinder or slide unit	**C-Lube Linear Ball Spline MAG** MAG : Standard type MAGF : Flange type	**Linear Ball Spline G** LSAG : Standard type LSAGF : Flange type	**Block Type Linear Ball Spline** LSB	**Stroke Ball Spline** LS
 **Linear Bushing** A wide variety of linear motion rolling guides facilitating the rolling motion in bush guide portion		**Linear Bushing G** LMG	**Linear Bushing** LM / LME / LMB	**Miniature Linear Bushing** LMS
 **Stroke Rotary Bushing** Linear motion rolling guide enabling the rolling motion and rotary and linear motion in axial direction		**Stroke Rotary Bushing** ST : Ordinary type ST···B : For heavy load	**Miniature Stroke Rotary Bushing** STSI : Assembled set with a shaft STS : Assembled set without a shaft	**Stroke Rotary Cage** BG
Flat Guide Type  **Roller Way & Flat Roller Cage** High accuracy linear motion rolling guide providing high rigidity in load direction		**Roller Way** RW / SR / GSN	**Flat Roller Cage** FT : Single row type FTW···A : Double row angle type	

IKO Types and Specifications of Linear Motion Rolling Guide Series

Types of Linear Motion Rolling Guides

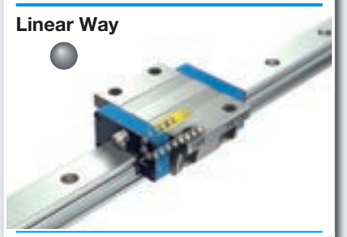
Rail Guide Type

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.

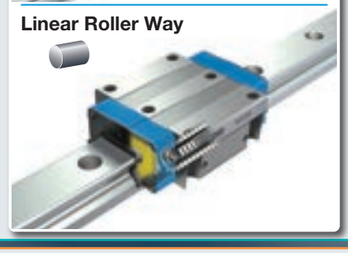


Endless linear motion

Linear Way



Linear Roller Way



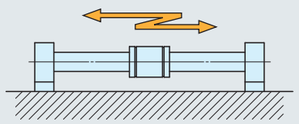
Limited linear motion

Crossed Roller Way

Linear Slide Unit

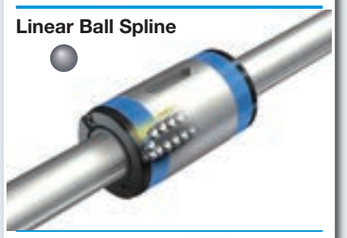
Shaft Guide Type

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

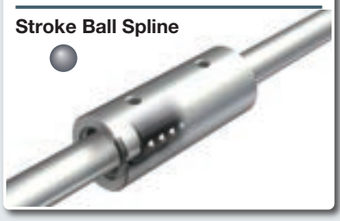
Linear Ball Spline



Linear Bushing

Limited linear motion

Stroke Ball Spline

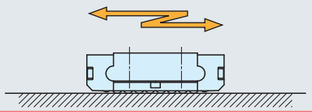


Limited linear motion + rotation

Stroke Rotary Bushing

Flat Guide Type

The flat guide type achieves linear motion on a surface. This product can receive only a unidirectional load but feature high rigidity in the load direction.



Endless linear motion

Roller Way

Limited linear motion

Flat Roller Cage

Specifications 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	Item-listed catalog
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 • Transfer machine	BLUE
		Linear Roller Way	Roller	Endless linear motion	Complex load, heavy to extra-heavy load	◎	○	◎	• Heavy duty machine tool • Large working machine • High-rigidity robot	BLUE
	Limited linear motion	Crossed Roller Way	Roller	Limited linear motion	Complex load, medium load	○	◎	◎	• Precision working machine • Electronic parts assembling machine • Precision measuring instrument	RED
		Linear Slide Unit	Ball	Limited linear motion	Complex load, light to medium load	△	◎	◎	• Electronic parts assembling machine	RED
Shaft Guide Type	Endless linear motion	Linear Ball Spline	Ball	Endless linear motion	Complex load, medium to heavy load	○	○	○	• Robot • Testing and inspection equipment • Transfer machine	RED
		Linear Bushing	Ball	Endless linear motion	Radial load, light load	△	○	○	• Packaging machine • Measuring instrument • Medical instrument	RED
	Limited linear motion	Stroke Ball Spline	Ball	Limited linear motion	Complex load, medium to heavy load	○	◎	○	• Robot • Testing and inspection equipment	RED
	Limited linear motion + rotation	Stroke Rotary Bushing	Ball	Limited linear motion + rotation	Radial load, light load	△	◎	○	• Printing press • Press die set • Precision measuring instrument	RED
Flat Guide Type	Endless linear motion	Roller Way	Roller	Endless linear motion	Unidirectional load, extra-heavy load	◎	○	△	• NC machine tool • Precision working machine	RED
	Limited linear motion	Flat Roller Cage	Roller	Limited linear motion	Unidirectional load, extra-heavy load	◎	◎	○	• Precision working machine • Optical measuring instrument	RED

Code description ◎Excellent ○Good △Fair

Linear Motion Rolling Guide Series　General Catalog BLUE　INDEX

Ball Type Miniature Series

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

Super small-size linear motion rolling guide produced by original small sizing technology

Ball Type Miniature Value Series

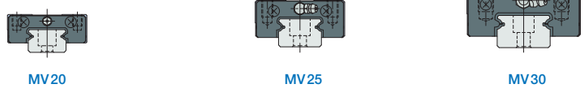
C-Lube Linear Way MLV

Economical linear motion rolling guides without changing the superior performance of Ball Type Miniature Series

Ball Type Low Profile/Light Weight Series

C-Lube Linear Way MV

Super low profile and super light weight linear motion rolling guides with high load capacity



Ball Type Compact Series

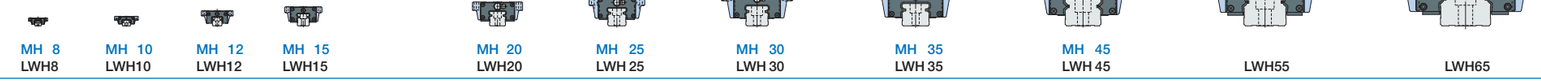
C-Lube Linear Way ME
Linear Way E / Low Decibel Linear Way E

Versatile linear motion rolling guides pursuing compactness in every aspect

Ball Type High Rigidity Series

C-Lube Linear Way MH
Linear Way H

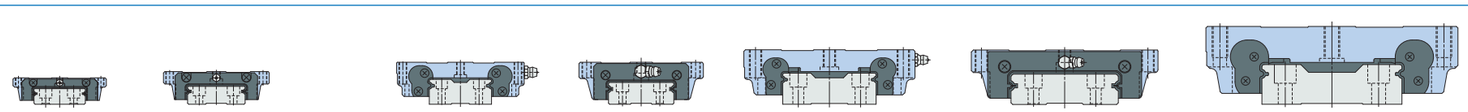
High rigidity linear motion rolling guides designed to evenly support high load capacity by incorporating large-diameter balls



Ball Type Wide Type Series

Linear Way F

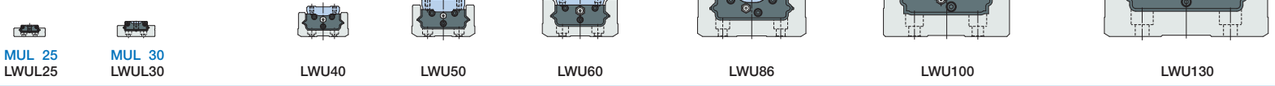
Linear motion rolling guide suitable to single-row use due to having resistance to across-the-width moment load by using a wide track rail



Ball Type U-Shaped Track Rail Series

C-Lube Linear Way MUL
Linear Way U

Linear motion rolling guide of high track rail rigidity with U-shaped track rail



Roller Type

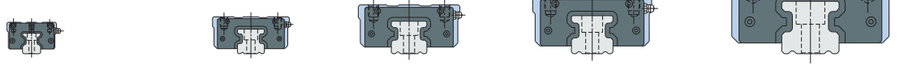
C-Lube Linear Roller Way Super MX
Linear Roller Way Super X

Linear motion rolling guide that has achieved the highest level of performance in all characteristics utilizing the roller's superior characteristic

Roller Type

Linear Roller Way X

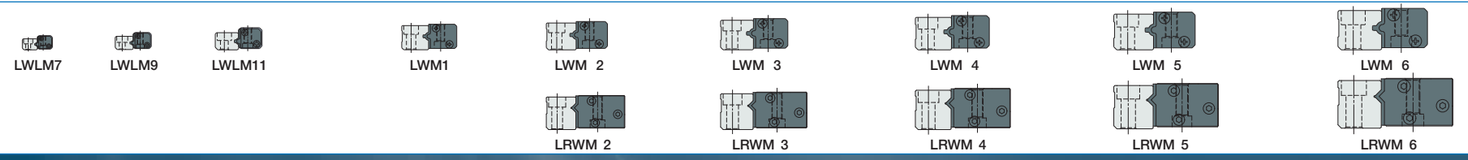
Roller type linear motion rolling guide with cylindrical rollers in four-rows



Module Type

Linear Way Module

Minimum compact linear motion rolling guide with both a track rail and slide member provided



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 customer's 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".

"C-Lube" minimizes usage of lubrication oil and supplies the optimal amount of lubrication oil for long period of time. So it realizes long term maintenance free and contributes to the global environment preservation.

IKO C-Lube Maintenance-free

The "Interchangeable" is a result of our consideration to the environment and radical pursuit of elimination of material and inventory waste.

Interchangeable is a collective name of **"systems of products selection from users' perspective"** which allows free interchange and replacement totally retaining the accuracy and preload of slide units and track rails.

The integration of maintenance free and advanced interchangeable system with C-Lube is the "Free & Interchangeable".

Oil Minimum
IKO Gentle to The Earth

Eco-friendly specification

Reducing usage of lubrication oil

IKO C-Lube Maintenance-free

U.S. PATENTED

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No. 7748905 7677804 6729761 6712511

C-Lube Linear Way MH
No. 7832929 6712511 7762723 7748905 7677804 6729761

C-Lube Linear Way MUL
No. 5435649

Linear Way L
No. 7258486 6517244 6176617 6082899 5967667

Linear Way E
No. 7677804 6176617 5967667

Linear Way H
No. 7677804 6082899 6517244 5967667 6461045 5622433 6250805 6176617

Linear Way F
No. 6176617 5967667

Linear Way U
No. 6880975 6176617 6851857 6082899 6517244 5967667 6461045 6309107

C-Lube Linear Roller Way Super MX
No. 8403563 7950852 8403562 7927016 8123408 7862234 8113714 7832930 8033730 7997800
No. 8585288 7458721 8506166 7458720 8206036 5800064 8113714 7780356 7534042

Linear Roller Way Super X
No. 7832930 6766897 6461045 7458721 7458720 6176617
No. 7341378 5622433 5967667 5464288 5800064

Eco-friendly

Consumption of precious oil resource is minimized! And elimination of oil feeder and its piping reduces the initial cost!

Contributes to reduction of total cost and environmental loads!!

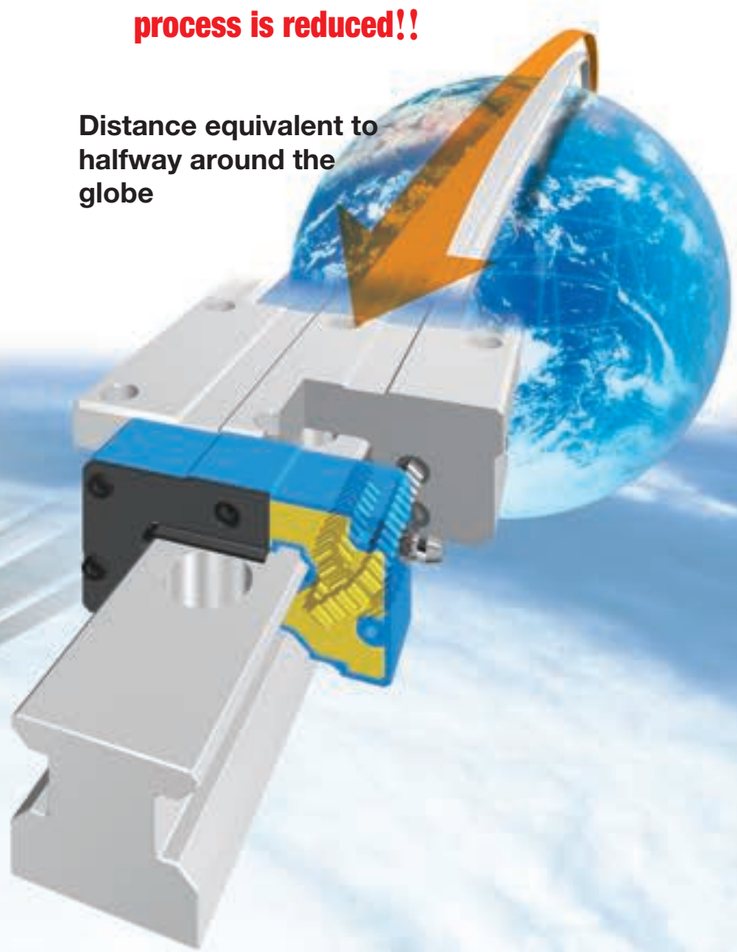
Oil usage reduction effect

Maintenance free

Endures running over 20,000 km without oil feeding!

Troublesome lubrication maintenance process is reduced!!

Distance equivalent to halfway around the globe



Compactness

The space consuming oil feeder is eliminated to save the space!

Freedom of machine designing is expanded for user!!

Efficient use of space

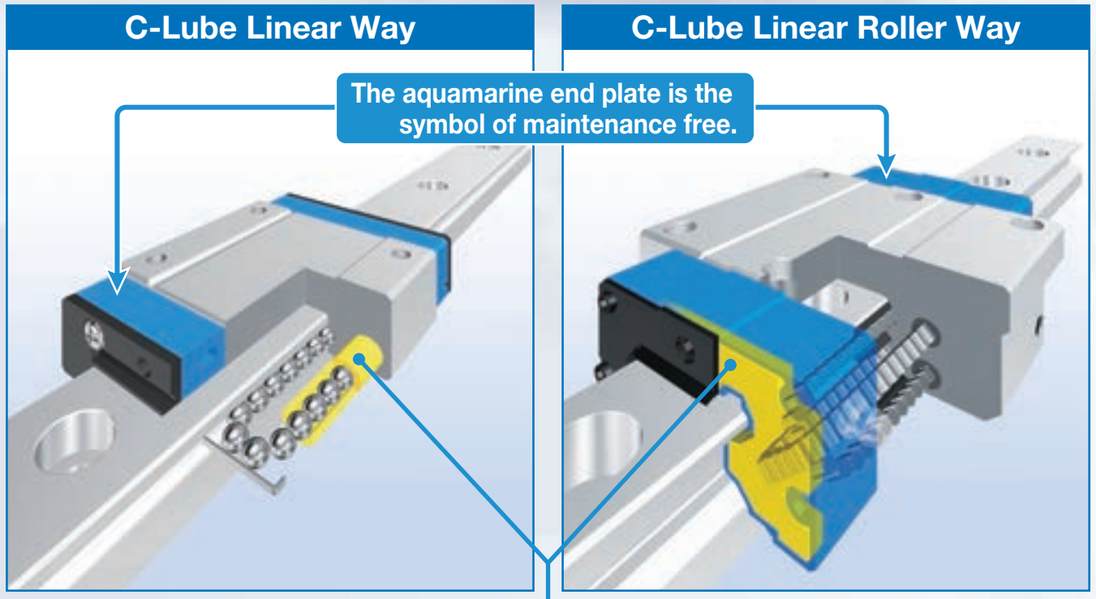
Oil Minimum
IKO Gentle to The Earth

Features of C-Lube Linear Way and C-Lube Linear Roller Way

Original and world's first structure with [C-Lube]

C-Lube Linear Way

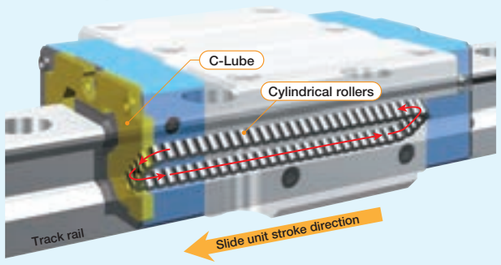
C-Lube Linear Roller Way



C-Lube integrated

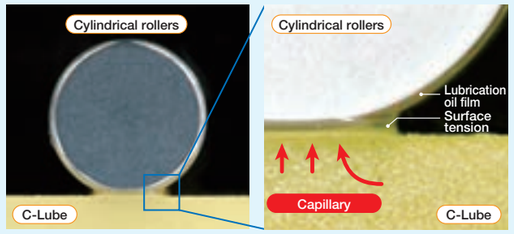
Lubrication oil is carried through circulation of rolling elements

The lubrication oil is supplied directly to the rolling elements, not to the track rail.
When rolling elements make contact with the capillary lubricating element integrated with the circulation path of slide unit rolling elements, the lubrication oil is supplied to surfaces of rolling elements and carried to the loading area through circulation of rolling elements.
This results in adequate lubrication oil being properly maintained in the loading area and lubrication performance will last for a long time.



Lubrication oil is directly supplied to surfaces of the rolling elements

The surface of capillary lubricating element is always covered with the lubrication oil.
Lubrication oil is continuously supplied to the surface of rolling elements by surface tension in the contact of capillary lubricating element surface and rolling elements.
On the surface of capillary lubricating element with which the rolling elements make contact, new lubrication oil is always supplied from the other sections.



long term maintenance free is realized with oil impregnated with C-Lube only !!

IKO C-Lube Maintenance-free

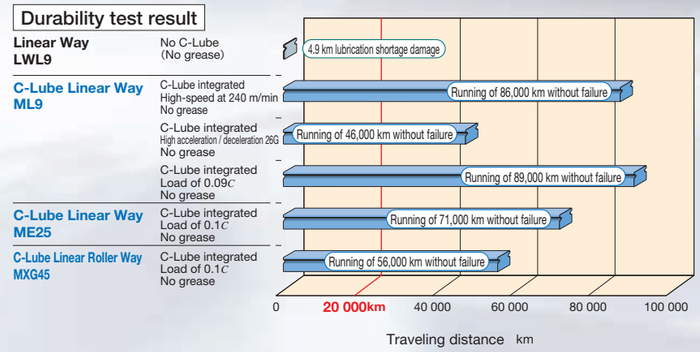
Maintenance free

This endures running over 20,000 km without oil feeding with lubrication oil in the C-Lube only.
Furthermore, grease is pre-packed in the slide unit so long term maintenance free can be realized.

Maintenance free is achieved until the end of device life[*1]*!*

*1. Typical device life is assumed. Re-greasing may be necessary depending on use conditions.

Durability test result

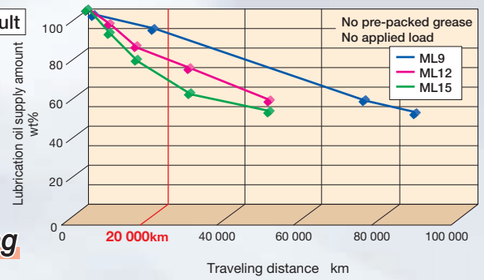


Eco-friendly

As lubrication oil in C-Lube is supplied by the amount necessary to maintain lubrication performance of the rolling guide, the consumption of lubrication oil is reduced and lubrication performance is maintained even when it run for a long period.

Eco-friendly specification reducing usage of lubrication oil!

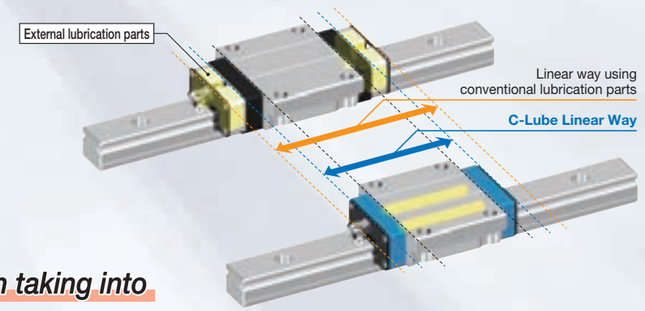
Oil supply test result



Compact

As C-Lube Linear Way and C-Lube Linear Roller Way are integrated with lubrication part C-Lube, their slide units are not long unlike types with external lubrication parts.
Replacement of conventional parts is easy free from constraints of mounting space and stroke length.

Compact design taking into account compactness!

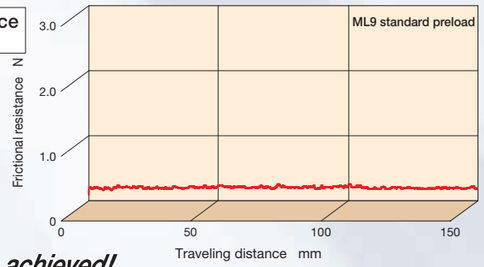


Smooth

C-Lube Linear Way and C-Lube Linear Roller Way do not generate slide resistance unlike lubrication parts external to the slide unit that make contact with the track rail.
Driving force follow-up property is superior and energy is saved by improvement of accuracy and reduction of friction loss.

Light and smooth motion is achieved!

Frictional resistance test result

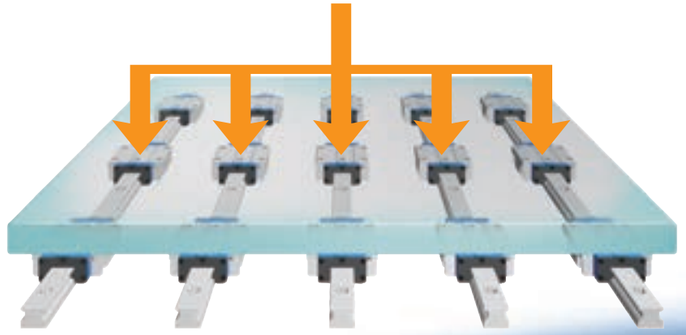


Ultimate Interchangeable system by radical pursuit of elimination of any waste

Accuracy interchangeability

Three accuracy classes are available!
Height variation can be controlled with multiple assembled sets!

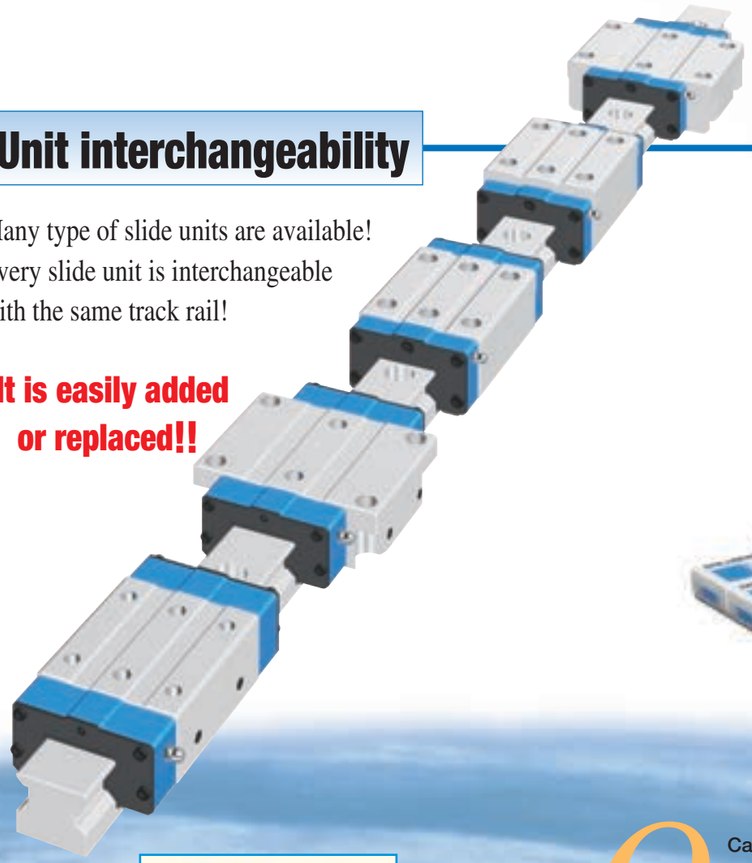
High accuracy of the device can be maintained in the multiple-use environment!!



Unit interchangeability

Many type of slide units are available!
Every slide unit is interchangeable with the same track rail!

It is easily added or replaced!!



Short delivery products

Separate delivery of slide unit and track rail!

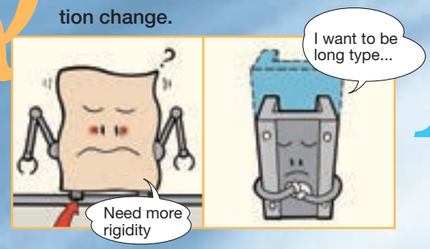
You may order what you need by any quantity at any time!!

Q I dropped the linear way unit by mistake, and the unit is damaged. Can I replace it?

A **Unit interchangeability**

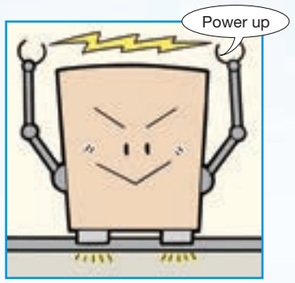
If you use Linear way of Interchangeable specification, you may need to replace only slide unit.

Q I need to increase the rigidity of the unit because of sudden specification change.

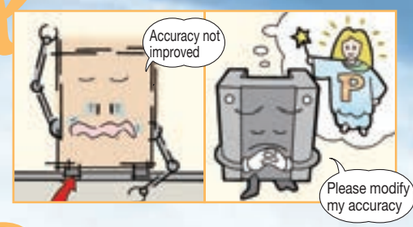


A **Unit interchangeability**

The rigidity can be improved easily by increasing the unit length.

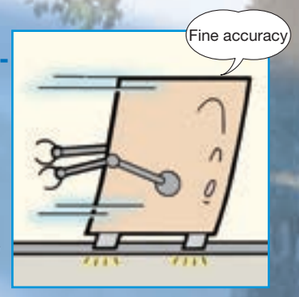


Q Calculated accuracy cannot be achieved after assembly of the device?



A **Accuracy interchangeability, preload interchangeability**

How do you like to use accuracy higher by one class or higher preload type?
As accuracy of the interchangeable products is controlled strictly by parts, setting can be modified.



Q I carelessly forgot to arrange some parts, but I need them urgently. Can it be delivered soon?

A **Short delivery available**

Interchangeable parts are available for short delivery, they can be delivered quickly with our perfect inventory system.
Slide unit and track rail can be ordered individually.

Free combination is enabled for model, accuracy, preload!!

Ultimate interchangeable system

Interchangeable specification

Interchangeable specification has realized the incomparable high interchangeability by severely managing the dimensions of slide unit and track rail with the background of unique high processing technology. This feature allows independent handling of slide unit and track rail, thus allowing you to select free combination and to order any products for any volume at any necessary time.

Requirements of ;

- Wish to improve the rigidity and life of machines
- Wish to improve the accuracy of machines
- Wish to replace the slide unit immediately
- The number of slide units is in short
- Wish to replace the track rail immediately
- The length of track rail is not sufficient
- Wish to store only the slide units in stock for emergency

Help

Interchangeable specification realizes ;

- Wish to prepare for a sudden design change
- Wish to select freely the combination of high accuracy and preload
- Slide unit and track rail are separately handled
- Free combination of slide unit and track rail can be selected
- Compactness-independent storing of slide units and track rails

Sorted out

Select the products as many as you wish.

Slide unit + Track rail = Set condition

Unit interchangeability

A wide variety of slide unit models with different sectional shape and length are provided, for free replacement on the same track rail.

Interchangeability of track rail

Track rail

High carbon steel-made track rail	Stainless steel-made track rail	Butt-jointing track rails

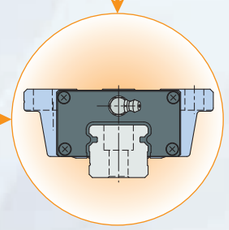
Interchangeability of slide unit

Slide unit shape

Flange type mounting from bottom	Flange type mounting from top	Block type mounting from top	Compact block type mounting from top

Length of slide unit

Short unit	Standard unit	Long unit	Extra long unit



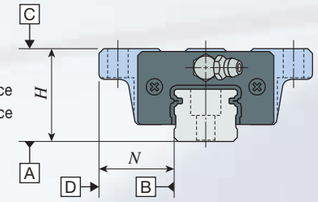
Free selection is possible for slide units and track rails!

Accuracy interchangeability

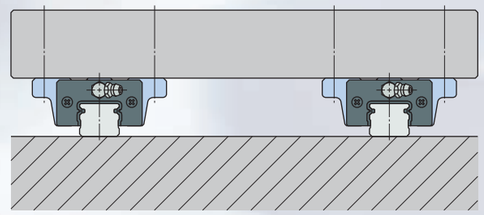
Three accuracy classes of Ordinary, High and Precision class are provided, to support even high traveling accuracy purposes. In addition, as height variation of multiple assembled sets is managed with high accuracy, you may use parallel track rails at ease.

Standard setting up to precision

- Tolerances of dimensions H and N
- Variation of dimensions H and N in 1 set
- Parallelism in operation of the C surface to A surface
- Parallelism in operation of the D surface to B surface



It allows the accuracy improvement of units without design changes!



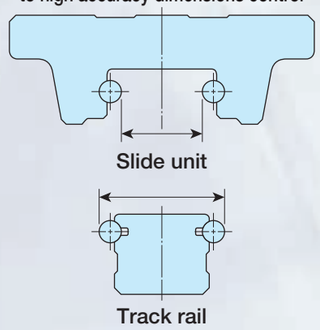
Corresponding to parallel arrangement of multiple assembled sets as standard

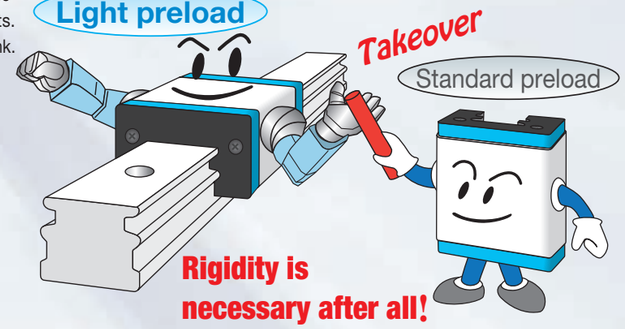
- Variation of dimensions H of multiple assembled sets is specified

Preload interchangeability

The high accuracy dimensions management utilizing the simple structure achieved the interchangeability of preloaded slide units. It supports the applications requiring the rigidity of one higher rank.

High preload setting is possible thanks to high accuracy dimensions control

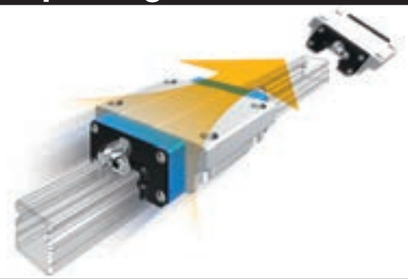




It allows the rigidity improvement of units without design changes!

Maintenance free is achieved only by replacing the slide unit!

By replacing the interchangeable linear way or linear roller way slide unit with C-Lube Linear Way or C-Lube Linear Roller Way slide unit, maintenance free is achieved while using the same track rail.

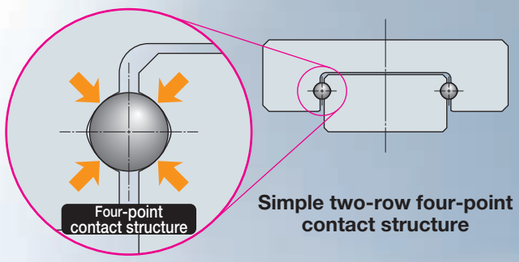


IKO's excellent features realized by contact in two-row raceways

a simple structure by four-points

Two-row four-point contact type simple structure

IKO adopts two-row four-point contact type for every Linear Way series. Thanks to our design know how and production technologies having been fostered for long time, high accuracy and smooth motion is realized in the micro series.
In addition, load in every direction can be received evenly and therefore stable high accuracy and rigidity can be achieved even in applications where load has variable direction and size or complex load is applied.



Simple two-row four-point contact structure

Essential for micro sizing!

Micro Linear Way L realized by simple structure

Micro linear way L for further needs of miniaturization produced by original small sizing technology
Wide variety of track rail width from 1 mm to 6 mm is available and high accuracy of micro positioning mechanism is realized.

IKO Micro Linear Way L

LWL1

World's smallest size!

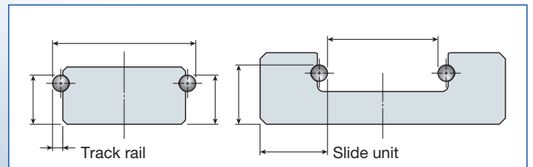
- **High accuracy even with the smallest size of 1 mm*!**
  *Track rail width of 1 mm
- **Even the smallest size of 1 mm can be securely mounted and fixed**!**
  **Tapped rail specification
- **Even the smallest size of 1 mm can ensure stable operation!**

LWL1 can be used for further super miniaturization of machines and devices with free-minded thinking.

Interchangeable

The simple structure of four-contact in two-row raceway yields small manufacturing errors or accuracy measurement errors, allowing the maintenance of each raceway in the high dimensions accuracy.

This technology realizes interchangeable specification and high interchangeable system in every series!



Measurement of way accuracy

As the ball is stabilized during track groove measurement, measurement of high accuracy and precise preload management are possible.

Variety of models and size variations

A wide variety of models and sizes, such as super miniature size of only 1 mm track rail width, is provided for your selection to meet each requirement.

Series		Model	Size	Track rail width Min	Max
C-Lube Linear Way ML	ML	13 models	15 sizes	3 ~	42 mm
Linear Way L	LWL	20 models	18 sizes	1 ~	42 mm
C-Lube Linear Way MLV	MLV	1 model	3 sizes	7 ~	12 mm
C-Lube Linear Way MV	MV	1 model	3 sizes	20 ~	30 mm
C-Lube Linear Way ME	ME	18 models	6 sizes	15 ~	45 mm
Linear Way E	LWE	21 models	6 sizes	15 ~	45 mm
C-Lube Linear Way MH	MH	19 models	9 sizes	8 ~	45 mm
Linear Way H	LWH	25 models	11 sizes	8 ~	65 mm
Linear Way F	LWF	4 models	7 sizes	33 ~	90 mm
C-Lube Linear Way MUL	MUL	1 model	2 sizes	25 ~	30 mm
Linear Way U	LWU	3 models	8 sizes	25 ~	130 mm

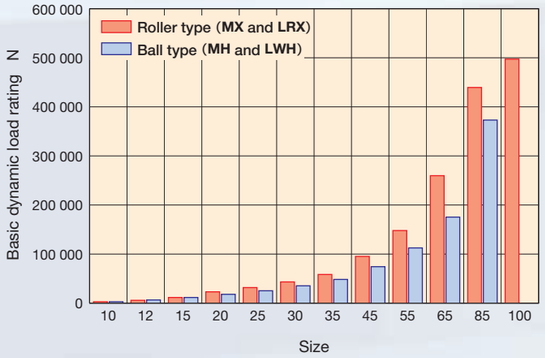
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Ultimate high performance produced by world's first roller guide structure of IKO

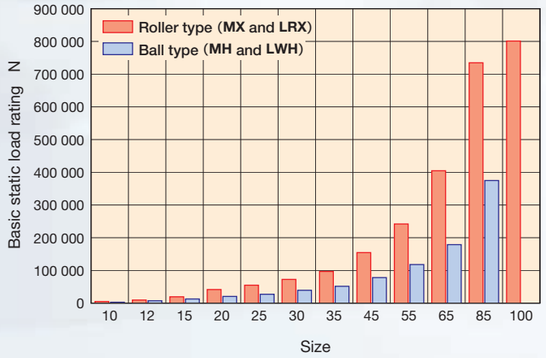
Super high load capacity

The Linear Roller Way Super X has a large contact area with the way and a number of cylindrical roller with excellent load capacity, which allows to achieve larger load rating.

Comparison of basic dynamic load rating



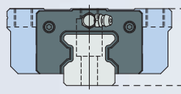
Comparison of basic static load rating



Size smaller by one size than the ball type can be used!

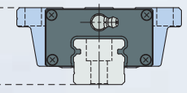
Long life

《Roller Type》 **MXG45**



Same size

《Ball Type》 **MHG45**



C = 124 000 N	C = 95 200 N
C_0 = 223 000 N	C_0 = 114 000 N

C : Basic dynamic load rating N
C_0 : Basic static load rating N
L : Life km
P : Applied load N

Roller type has large basic dynamic load rating C and long life due to the different "index"!

【Life calculation example】

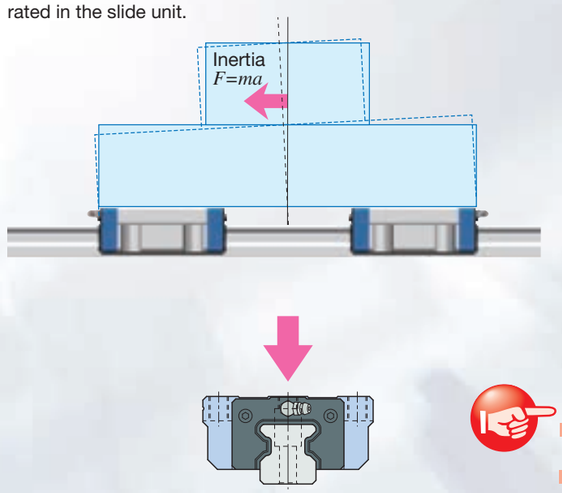
Applied load
In case of 10000 N

Roller Type	Ball type
$L=50\left(\frac{C}{P}\right)^{10/3}$	$L=50\left(\frac{C}{P}\right)^{3}$
$L \fallingdotseq 220\,000$ km	$L \fallingdotseq 43\,000$ km

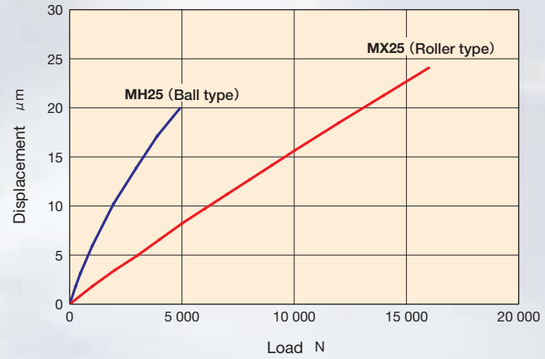
Significant increase!

Super high rigidity

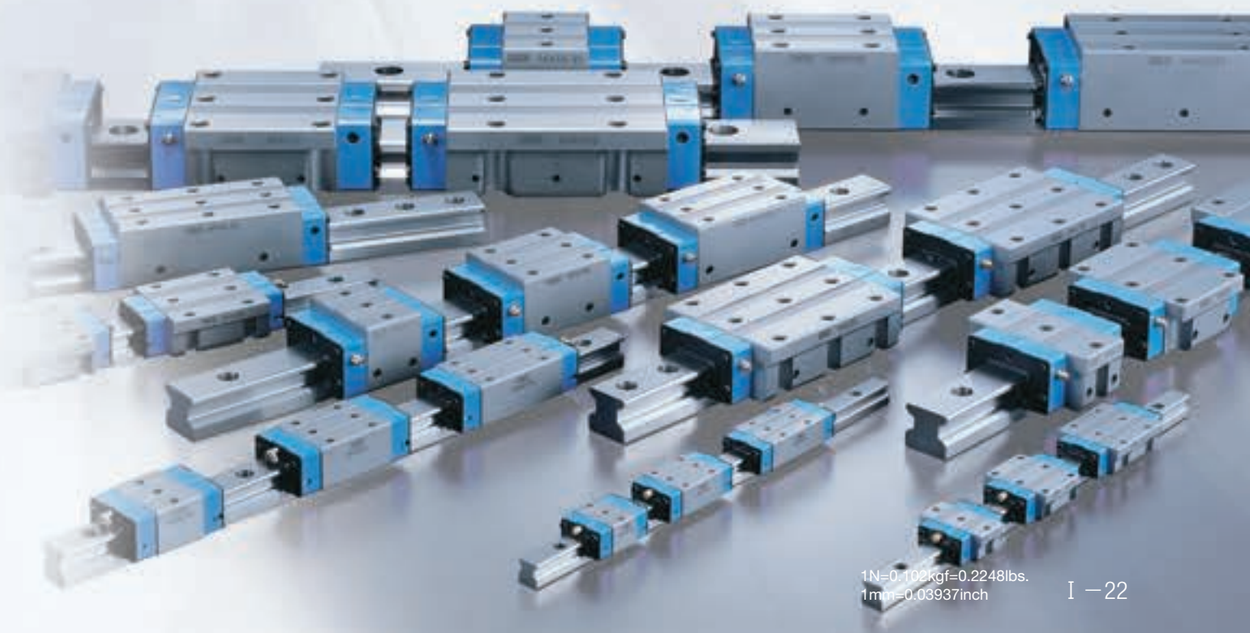
The rigidity of linear motion rolling guide significantly affects properties of machines and devices to be incorporated.
The Linear Roller Way Super X achieves high rigidity as a number of small cylindrical rollers with smaller elastic deformation relative to load than that of balls are incorporated in the slide unit.



Comparison of elastic deformation



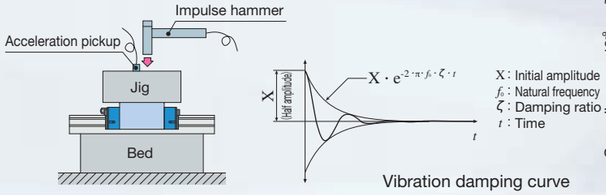
Well-balanced high rigidity is realized in every direction!



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

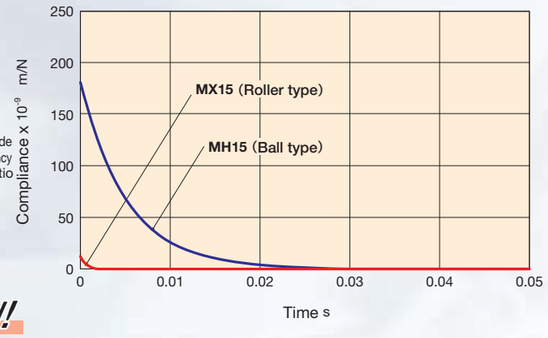
Vibration characteristics

The Linear Roller Way Super X has high rigidity relative to ball types of the same size, so deformation amount is low relative to repeated fluctuating load, natural frequency is high and vibration damping time is short.



Vibration damping curve

Vibration damping curve in downward vibration (Half amplitude)



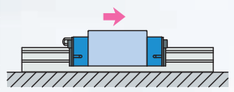
Positioning time can be shortened!

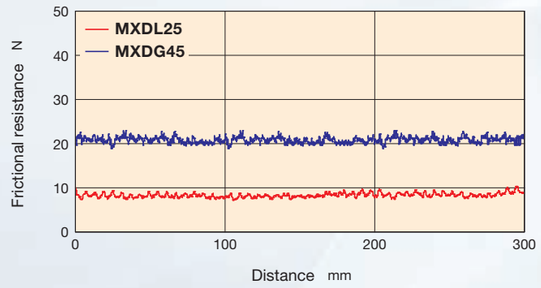
Allows accurate positioning with excellent frictional characteristic

The Linear Roller Way Super X prevents skew of cylindrical roller and achieves smooth motion by adopting unique retaining method to accurately guide cylindrical roller ends with retaining plate.
The Linear Roller Way Super X has good response characteristics to micro-feeding and allows for accurate positioning, thanks to small frictional resistance against preload and load and excellent frictional characteristics relative to plain guides and ball type linear motion rolling guide.

MXDL25 and MXDG45 T_3 preload frictional resistance

Test portion	Extra long unit **MXDL25** Long unit **MXDG45**
Preload	T_3 preload
Velocity	0.6 m/min
Lubrication	C-Lube integrated, with grease





High follow-up property is ensured even for micro-feeding!

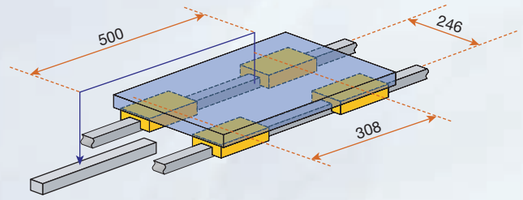
High running accuracy

Optimal design based on analysis of re-circulation behavior of cylindrical roller circulation realizes smooth and quiet motion. In addition, load is applied to many cylindrical rollers and therefore the micro deflection during running is minimized.
Extra long unit is optimal for applications requiring higher running accuracy. (For details, see page I -29)

Deflection amount during running

unit: μm

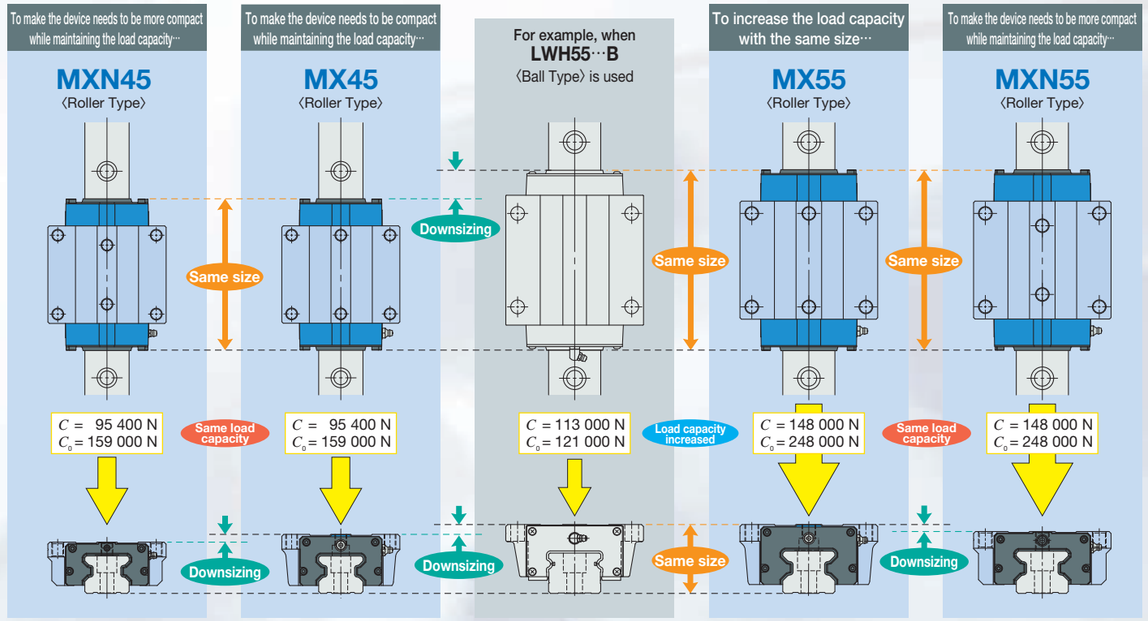
MXDG30 T_3 preload	0.12



Stable running accuracy is achieved!

Corresponding to compactification

Roller type with significantly higher load capacity than the ball type. The Linear Roller Way Super X allows for downsizing from many size variations for compactification of devices.

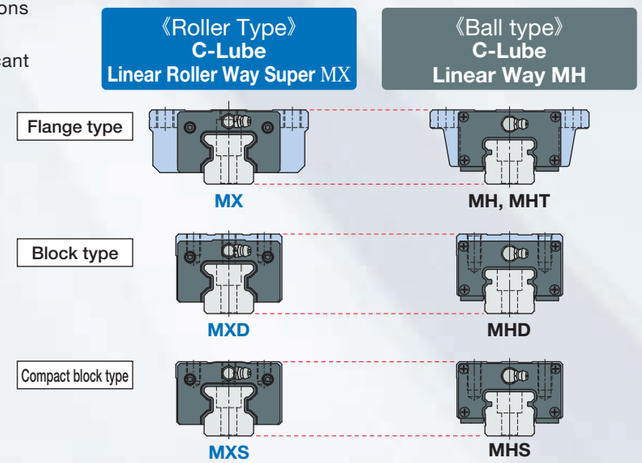


Downsizing and increased load capacity!

Roller type with large increase of load capacity!

Compatible ball type and mounting dimensions

The Linear Roller Way Super X has mounting dimensions compatible with the ball type Linear Way H.
Replacement with roller type is possible without significant design change to machine or device.



Downsizing and increased load capacity are possible!

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

A variety of models and size variations

Ball Type Miniature Series

C-Lube Linear Way ML
C-Lube Linear Way MLV
Linear Way L

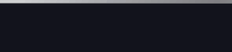
Thanks to the structure with two rows of balls to contact with the way at four points, stable accuracy and rigidity can be achieved even in applications where load has variable direction and size or complex load is applied, despite its very small body.

Micro Linear Way L

As the lineup of track rail width from 1 mm to 6 mm is available, you can select an optimal product for the specifications of your machine and device. For LWL1, world's smallest size is realized: track rail width of 1 mm, slide unit width of 4 mm and assembly height of 2.5 mm.

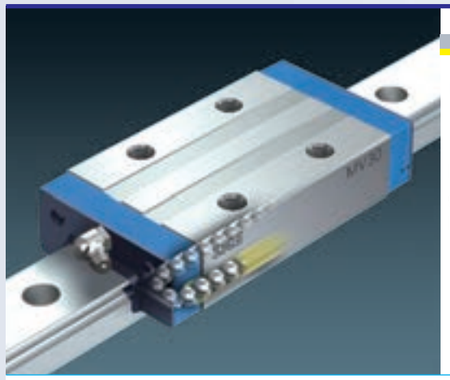
Standard type
ML
LWL

Wide type
MLF
LWLF

Length of slide unit	
C	Short 
No symbol	Standard 
G	Long 
L	Extra long 

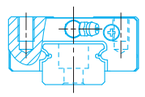
Size	
Standard type	1, 2, 3, 5, 7, 9, 12, 15, 20, 25
Wide type	4, 6, 10, 14, 18, 24, 30, 42

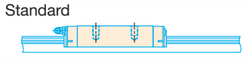
Ball Type Low Profile/Light Weight Series



C-Lube Linear Way MV

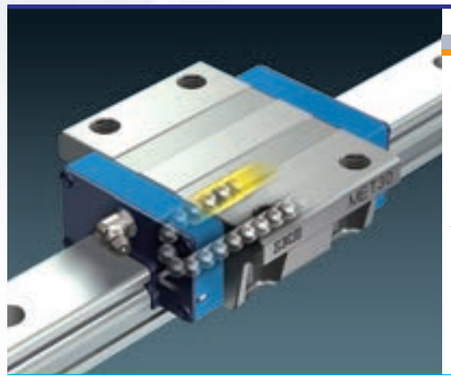
Despite its extra low profile and extra light weight, this linear motion rolling guide has the maximum load rating among the ball types while achieving high load capacity.



Length of slide unit	
Standard	

Size
20, 25, 30

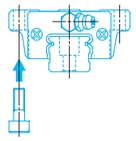
Ball Type Compact Series



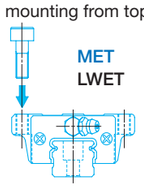
C-Lube Linear Way ME
Linear Way E
Low Decibel Linear Way E

Versatile linear motion rolling guide that has achieved utility pursuing compactness in every aspect. Low decibel types with resin separator to prevent direct contact between balls are also available.

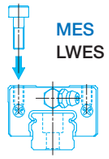
Flange type mounting from bottom
ME
LWE

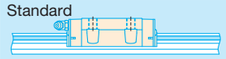
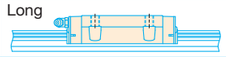


Flange type mounting from top
MET
LWET



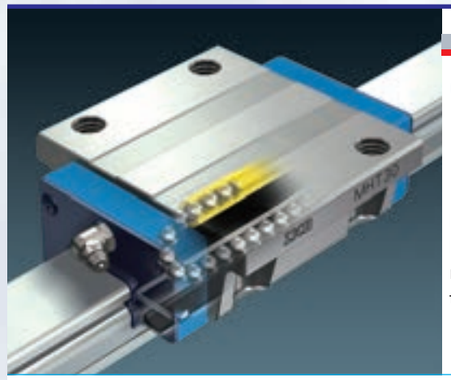
Block type mounting from top
MES
LWES



Length of slide unit	
C	Short 
No symbol	Standard 
G	Long 

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

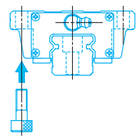
Ball Type High Rigidity Series



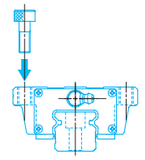
C-Lube Linear Way MH
Linear Way H

High rigidity linear motion rolling guides designed to evenly support high load capacity by incorporating large-diameter balls. Stable accuracy and rigidity can be achieved even in applications where load with variable direction and size and complex load are applied.

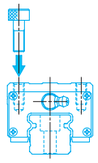
Flange type mounting from bottom
MH
LWH



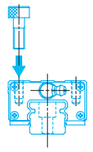
Flange type mounting from top (1)
MHT
LWHT



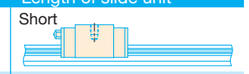
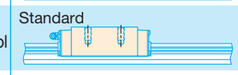
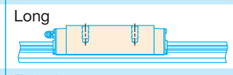
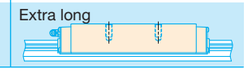
Block type mounting from top
MHD
LWHD



Compact block type mounting from top
MHS
LWHS



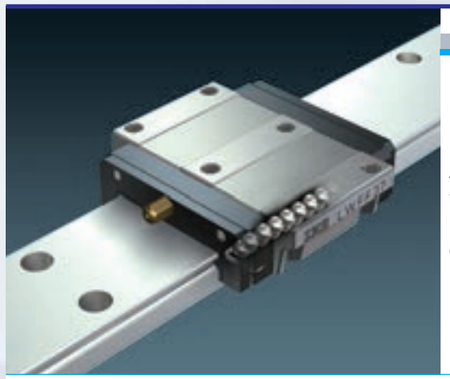
Note (1) Some models may be mounted from bottom.

Length of slide unit	
C	Short 
No symbol	Standard 
G	Long 
L	Extra long 

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

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

A variety of models and size variations

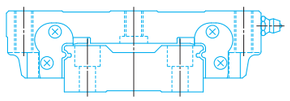


Ball Type Wide Type Series

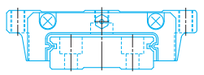
Linear Way F

As wide track rail is used and the distance between the load points is long, this is a linear motion rolling guide suitable to single-row use due to the structure resistant to across-the-width moment load. It is also resistant to complex load.

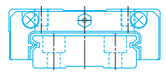
Flange type
mounting from top / bottom
LWFH

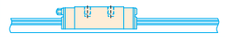


Flange type
mounting from top / bottom
LWFF

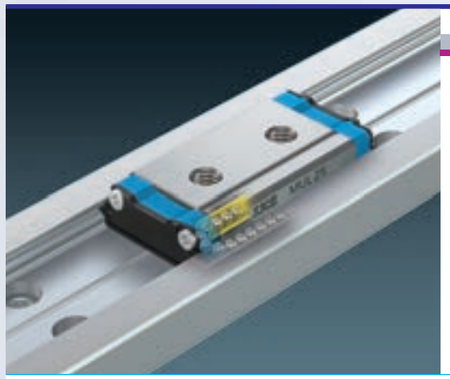


Block type
mounting from top
LWFS



Length of slide unit	
No symbol	Standard 

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

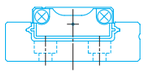


Ball Type U-Shaped Track Rail Series

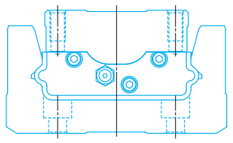
C-Lube Linear Way MUL
Linear Way U

Linear motion rolling guide of the structure with way inside the track rail of U-shaped section and slide unit therein. With the U-shaped track rail, rigidity against the track rail moment load and torsion is significantly improved.

Small type
MUL
LWUL



Standard type
LWU



Length of slide unit	
No symbol	Standard 

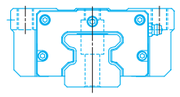
Size	
MUL	25, 30
LWUL	25, 30
LWU	40, 50, 60, 86, 100, 130

Roller Type

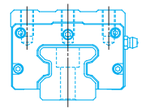
C-Lube Linear Roller Way Super MX
Linear Roller Way Super X

Linear motion rolling guide that has achieved the highest level of performance in all characteristics utilizing the roller's superior characteristic, such as rigidity, load capacity, running accuracy and vibration damping property. With extra long unit with the maximum slide unit length, load capacity and rigidity are improved and running performance with super high accuracy is realized.

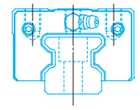
Flange type
mounting from top / bottom
MX(1)
LRX(1)



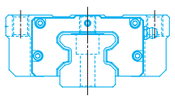
Block type
mounting from top
MXD
LRXD



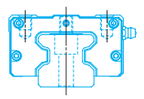
Compact block type
mounting from top
MXS
LRXS



Low profile flange type
mounting from top
MXN

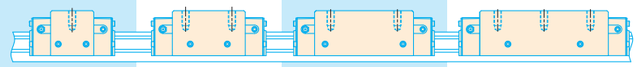


Low profile block type
mounting from top
MXNS



Note (1) Size 20 series allows only for mounting from top and model mounting from bottom is MXH and LRXH.

Length of slide unit			
C	No symbol	G	L
Short	Standard	Long	Extra long



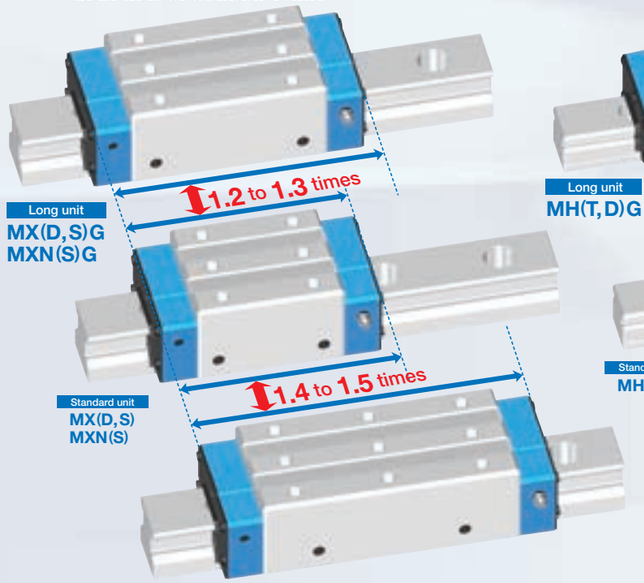
Size
10, 12, 15, 20, 25, 30, 35, 45, 55, 65, 85, 100

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

Features of extra long unit

C-Lube Linear Roller Way Super MX

Length of slide unit is **1.4** to **1.5** times longer than that of standard unit



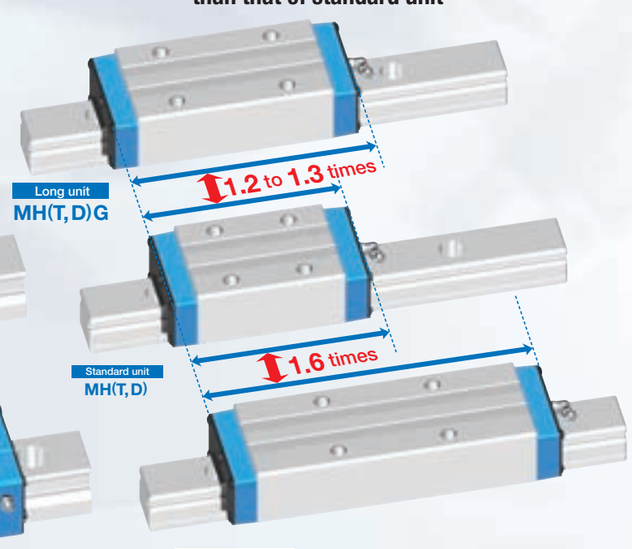
Long unit
MX(D,S)G
MXN(S)G

Standard unit
MX(D,S)
MXN(S)

Extra long unit
MX(D,S)L
MXN(S)L

C-Lube Linear Way MH

Length of slide unit is **1.6** times longer than that of standard unit



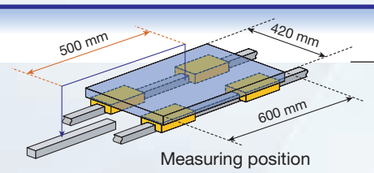
Long unit
MH(T,D)G

Standard unit
MH(T,D)

Extra long unit
MH(T,D)L

Super accurate feeding mechanism is realized

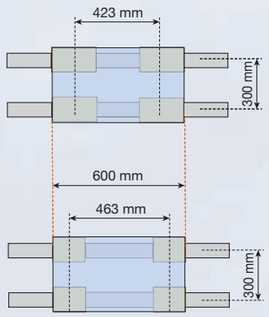
As running accuracy is as low as a half of that of long unit, feeding mechanism with super high accuracy can be realized.

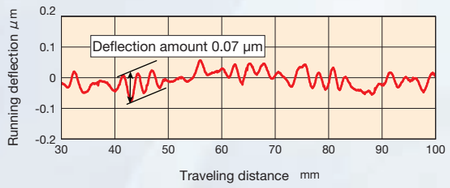


Measuring position

Test conditions

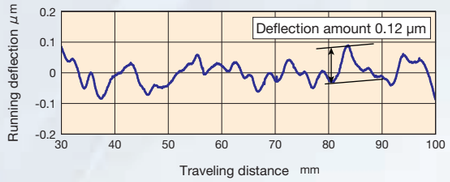
Test portion	Extra long unit **MXDL45**
Preload	T3 preload





Test conditions

Test portion	Long unit **MXDG45**
Preload	T3 preload



High accuracy running performance is realized without major change of machine or device design (1)!

Note (1) Position of the slide unit mounting hole is changed.

Further improvement of running accuracy

Load capacity and rigidity are significantly improved!!

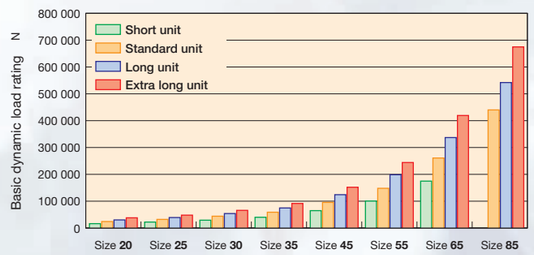
Load capacity of machine or device is improved

As its basic dynamic load rating and basic static load rating are larger than those of Long type by 122% and 129%, respectively, life and margin safety of machine or device are improved.

Comparison of basic dynamic load rating

*Increased to **158%** relative to standard unit!*
*Increased to **122%** relative to long unit!*

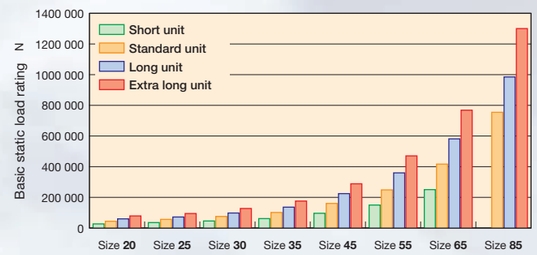
(In case of MXL45)



Comparison of basic static load rating

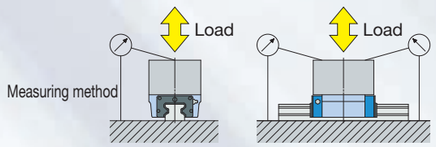
*Increased to **181%** relative to standard unit!*
*Increased to **129%** relative to long unit!*

(In case of MXL45)



Contributing to improvement of machine or device rigidity

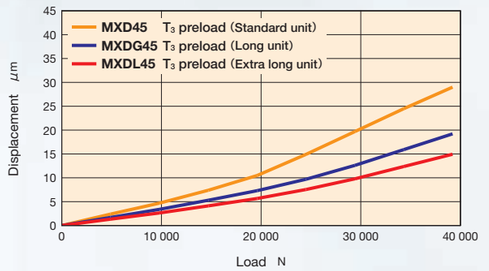
Elastic deformation relative to load is small in comparison with long unit, device rigidity is improved, accuracy is improved, and resonance can be avoided.



Comparison of elastic deformation under downward load

*Rigidity increased to **155%** relative to standard unit!*
*Rigidity increased to **117%** relative to long unit!*

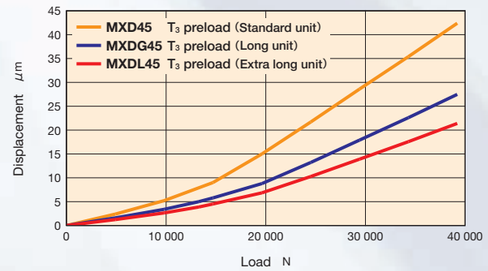
(With displacement of 10 μm for Size 45)



Comparison of elastic deformation under upward load

*Rigidity increased to **152%** relative to standard unit!*
*Rigidity increased to **113%** relative to long unit!*

(With displacement of 10 μm for Size 45)

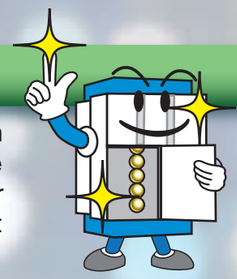


1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO's unique ideas and experiences are utilized to explore new world for special environment applications.

IKO Linear Way and Linear Roller Way are available for various special environment by using different materials and grease, surface treatment and dust protection measures, etc. Typical application fields and major countermeasures are described below.

Clean Environment



When the Linear Way or Linear Roller Way is used in clean environment such as a clean room, it is required that the environment is not polluted by dust-generation by the Linear Way or Linear Roller Way and it must have excellent rust prevention property as rust prevention oil cannot be used.

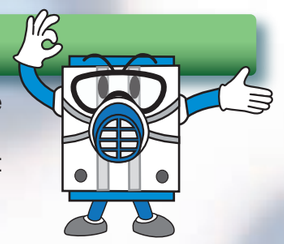
Vacuum Environment

When the Linear Way or Linear Roller Way is used in vacuum environment, it is required that the gas discharged from the Linear Way or Linear Roller Way does not pollute the environment or reduce the degree of vacuum, and it must have excellent rust prevention property as rust prevention oil cannot be used.

Heat Resistance Measures

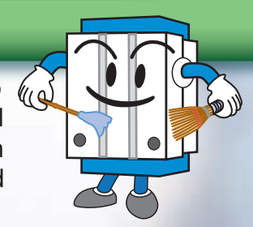
When the Linear Way is used in an environment where temperature is higher than usual, heat resistance of synthetic resin components and metal parts will be an issue.

Dust Protection



If dust such as metal or wooden chips get into the way of the Linear Way or Linear Roller Way, reduction of life and accuracy may be caused. Therefore, measures to prevent foreign substances from entering into the way are necessary.

Spatter Protection



Spatter of welding, etc. is so hot that it adheres to components. Foreign substances adhering to the track rail firmly cannot be fully removed by normal dust protection measures, so measures to avoid adherence and enhanced foreign substances removal measures are necessary.

Clean

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

Corrosion resistance

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

Vacuum

- ○ Vacuum Environment Linear Roller Way Super X
- ○ Hybrid Lubrication Linear Way L
- ● No end seal
- ● Stainless steel end plate
- ◇ Fluorine grease

Heat resistance

- ● Stainless steel end plate
- ● Special environment seal
- ● Specified grease (CG2 grease)
- ◇ High temperature grease

Foreign substances (wood chips and metal powder, etc.)

- ○ Linear Way H Ultra seal specification
- ○ Track rail mounting from bottom
- ● Double end seals
- ● Scrapers
- ● C-Wiper
- ● Caps for rail mounting holes
- ● Rail cover plate for track rail
- ● Rail cover sheet
- ● Female threads for bellows
- ● Specific bellows

Spatter

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

○ **Linear motion rolling guide series for special environment :**
Collective name of linear motion rolling guide series models corresponding to special environment.

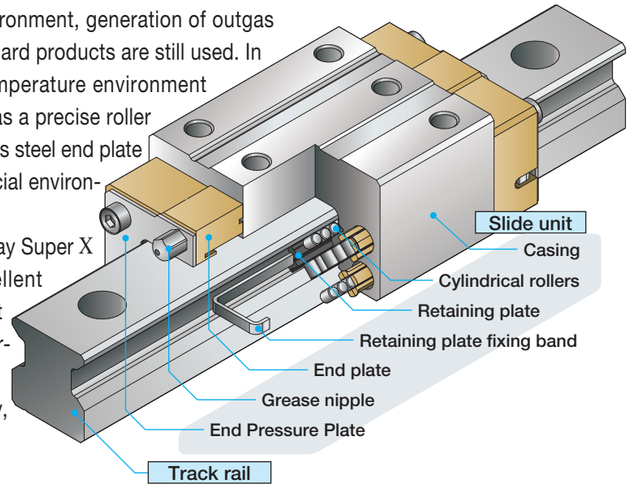
● **Special specification for special environment :**
Special specification corresponding to special environment by combination of linear motion rolling guide series.

◇ **Lubricant :**
Lubricant suitable for each special environment can be selected.

Vacuum Environment
Linear Roller Way Super X

When a linear motion rolling guide is used in vacuum environment, generation of outgas from resin parts such as end plates will be an issue if standard products are still used. In addition, the specification must be applicable to high temperature environment during baking. As roller type linear motion rolling guide has a precise roller circulation structure, it has not been compatible with stainless steel end plate widely used in ball type linear motion rolling guides for special environment applications.

The newly developed Vacuum Environment Linear Roller Way Super X is a roller type linear motion rolling guide realizing excellent outgas reduction property by combining corrosion-resistant stainless steel casing and resin parts such as super engineering plastic (PEEK resin) end plate to resolve these issues. Excellent properties of roller type such as high load capacity, high rigidity and smooth sliding characteristic with low frictional resistance can be ensured even under vacuum environment.



Features

Newly developed!
Roller type linear motion guide available under vacuum environment!

1 Corresponding to low to high vacuum area (degree of vacuum 10^{-3} [Pa])!

2 Excellent outgas reduction property!

3 Baking temperature can be up to 200°C!

- Temperature in still condition.
- If baking temperature exceeds 150°C, multiply the basic load rating by the temperature factor.

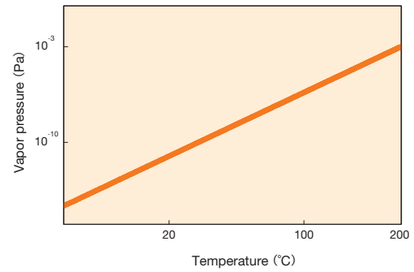
4 Excellent corrosion resistance!

- Corrosion-resistant stainless steel is used in all steel made parts.

Selection of lubricant

Though fluorine grease is recommended for lubricant, carefully select grease since vapor pressure and temperature of base oil are correlated as vapor pressure goes up along with increase of the temperature.
For details, see chosen grease manufacturer's catalog.

Relationship example between fluorine grease vapor pressure and temperature



■ Representative brands of fluorine grease

Brand	Manufacturer
KRYTOX® LVP	DU PONT
DEMNUM™ GREASE L-200	DAIKIN INDUSTRIES, LTD.
BARRIERTA SUPER IS/V	NOK KLUEBER
FOMBLIN® Y-VAC3	SOLVAY SOLEXIS
FULLTRIBO VAC	KYODO YUSHI CO., LTD.

Remarks 1. KRYTOX® is a registered trademark of DU PONT.
2. FOMBLIN® is a registered trademark of SOLVAY SOLEXIS.

Specifications

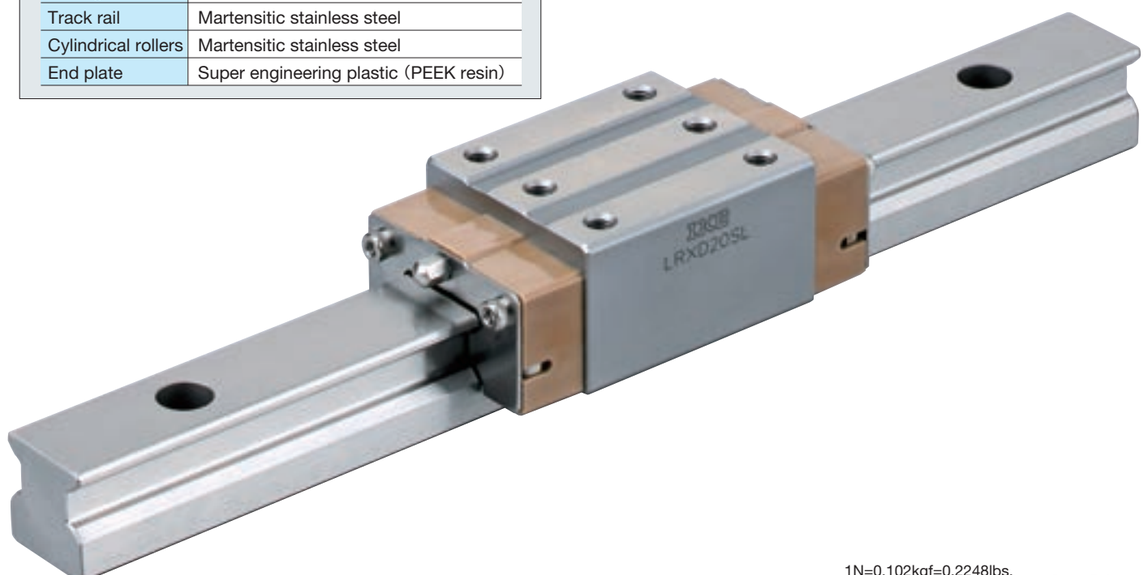
We can offer optimal specification for your use conditions. If needed, please contact IKO.

● Applicable products

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

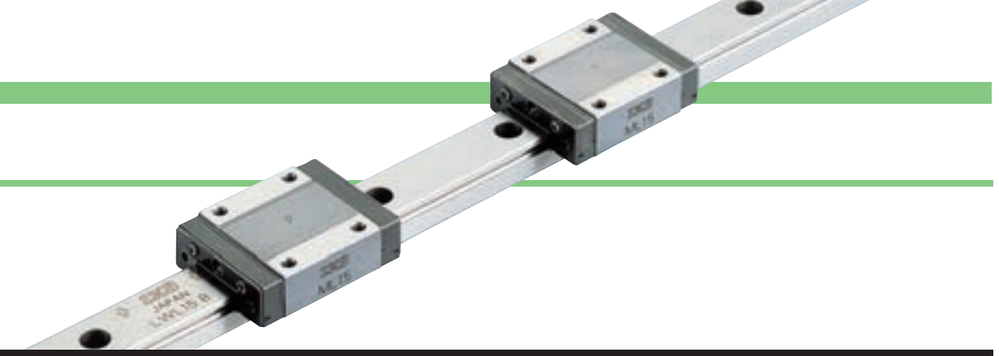
■ Main component materials

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

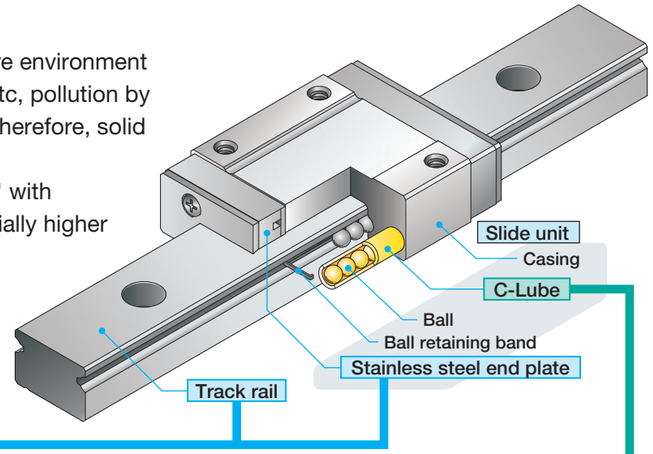


1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Hybrid Lubrication Linear Way L



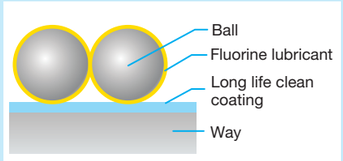
In clean environment, vacuum or high temperature environment of semiconductor producer and LCD producer, etc, pollution by outgas and particles is extremely not welcome. Therefore, solid lubrication film has been used as lubricant.
IKO developed "Hybrid Lubrication Linear Way" with dust-generation life and load resistance substantially higher than conventional solid lubrication film.
Optimal for applications where general grease or oil cannot be used, such as vacuum environment.



What is hybrid lubrication

IKO Hybrid system of IKO's landmark lubrication system "C-Lube" and newly developed "Low dust-generation coating" achieves low dust generating performance, outgas reduction property, long life and excellent load resistance of Linear Way.

Low dust-generation coating

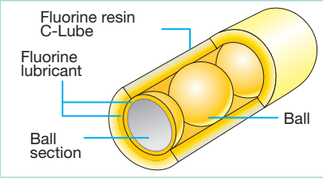


"Low dust-generation coating" consists of special high molecule fluorine lubricant of thinned submicron order, forming a gel lubricant film firmly adhering to metal surface with special jointing.

Hybrid lubrication

Lubricant supplied from C-Lube to ball surface and low dust-generation coating ensure excellent adherence and super low dust-generation performance.

Fluorine lubricant + Fluorine resin C-Lube



Poromeric fluorine resin lube is adopted for newly developed "C-Lube" incorporated in ball circulation path and impregnated fluorine lubricant is constantly supplied by minute amount to the ball surface by capillary from micro air holes to form stable lubrication film.

Features

Clean
(Low dust-generation)
JIS cleanliness class 4 compliant
(Up to 352 particles of diameter 0.5 $\mu m/m^3$)

Vacuum
Corresponding to low to high vacuum environment

High temperature property
~200℃※ (fluorine lubricant and fluorine resin C-Lube are adopted) compliant

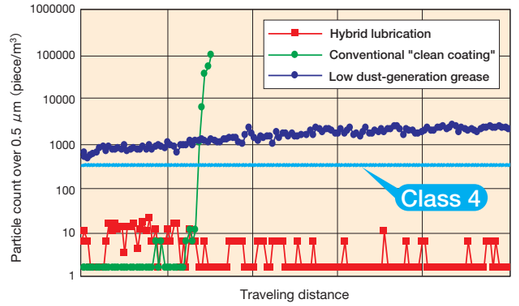
Load resistance
Load resistance more than double of general clean coating

※ For continuous operation, up to 150℃.

Performance

Class 4 low dust generating performance

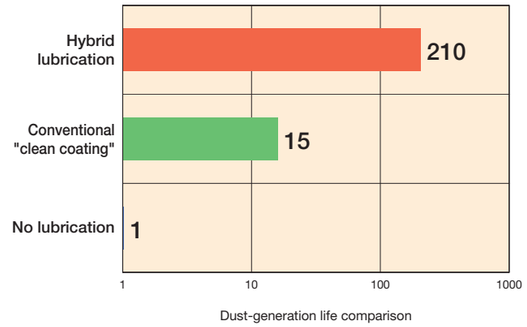
Dust-generation property



Test conditions Model : ML9 equivalent load: 80N stroke: 500 mm

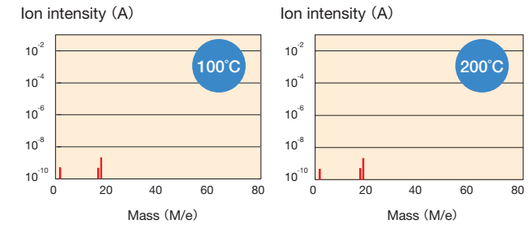
Life 10 times longer than general clean coating is achieved

Dust-generation life comparison



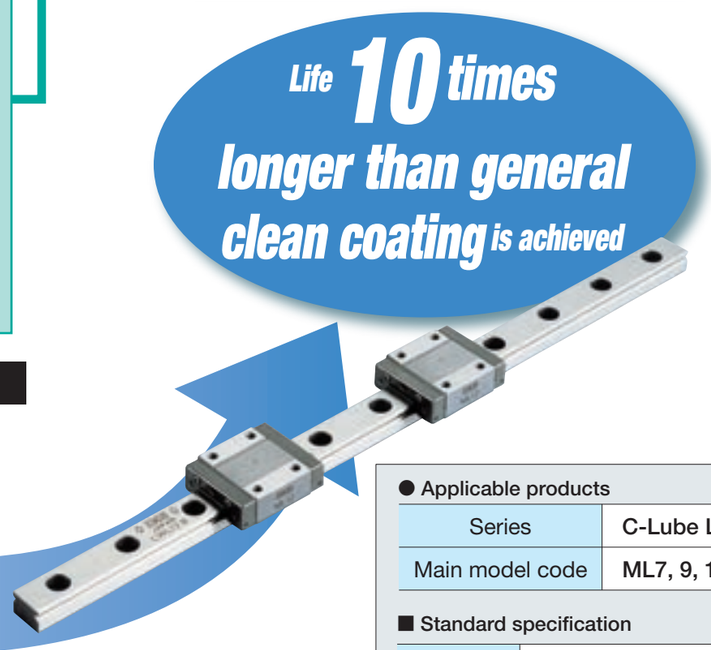
Excellent outgas reduction property

Outgas reduction property



Outgassing property of Hybrid Lubrication Linear Way

Measuring condition Model : ML9 Degree of vacuum: 10^{-5} Pa Temperature: 100℃, 200℃



● Applicable products

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

■ Standard specification

Casing	Martensitic stainless steel
Track rail	Martensitic stainless steel
Ball	Martensitic stainless steel
End plate	Stainless steel
C-Lube	Poromeric fluorinated resin

This is made-to-order. If needed, please contact IKO. In addition, we also offer non-magnetic stainless steel specification. Please ask us for your request.

● Precaution for Use

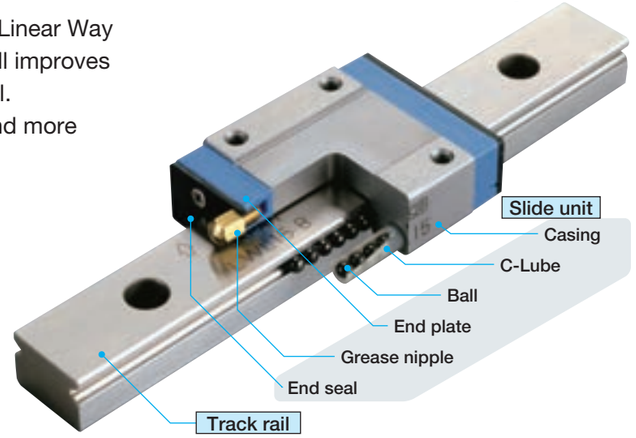
1. Although heat resistant fluorinated lubricant and parts are used, operating temperature shall be 200℃ at the maximum or up to 150℃ for continuous operation.
2. The unit must be stored in a dry and clean place and unpacked in the same environment right before use. In addition, do not touch the product directly by bare hand.
3. Hybrid Lubrication Linear Way is packed in clean condition and therefore cleaning is not necessary. In addition, do not wipe off the coating film on the raceway as it may affect lubrication and dust-generation properties.

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

Hybrid C-Lube Linear Way ML

While maintenance free performance of C-Lube Linear Way ML is maintained, the silicon nitride ceramics ball improves high-speed performance and reduces noise level. Ceramics has more resistance to deformation and more rigidity than bearing steel and stainless steel.

ML…/HB



■ Standard specification

Casing	Martensitic stainless steel
Track rail	Martensitic stainless steel
Ball	Silicon nitride ceramics
C-Lube	Capillary lubricating element (Porous resin)

Features

1 Superior high-speed performance ••• More than three times durability

2 Noise reduction •••••••••• Noise reduction by about 4.5 dB

3 High rigidity •••••••••• Displacement volume reduced by about 10%

4 Superior abrasion resistance ••• Preload reduction volume is about one fourth

※ All of the above based on comparison with our C-Lube Linear Way ML

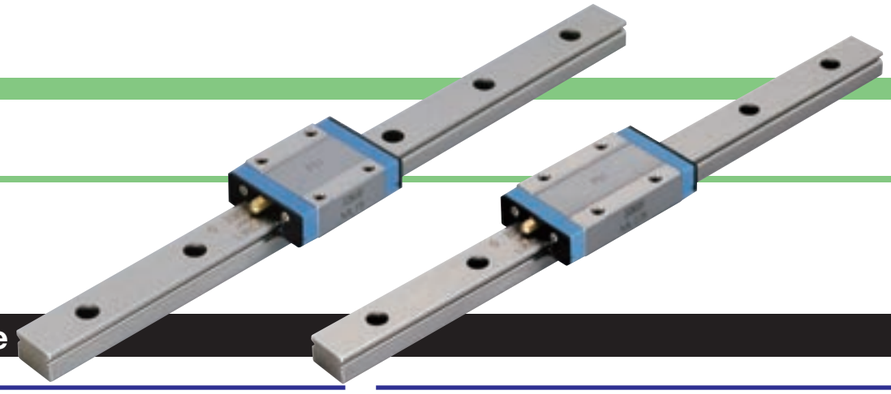
+

Maintenance free
Achieved long term maintenance free

Eco-friendly
Minimized lubrication oil consumption

Compact
Integral lubrication parts

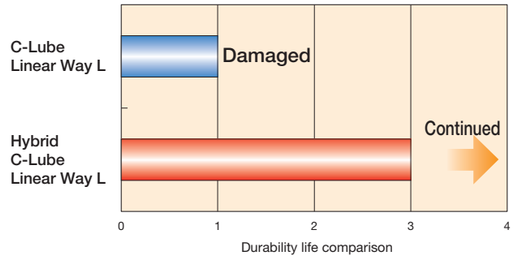
Smooth
Excellent sliding characteristic



Performance

More than three times durability

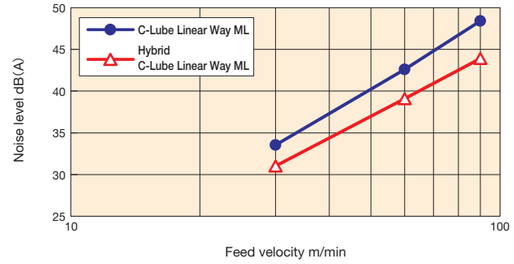
High-speed performance



Test conditions Model : ML12 Velocity: 300 m/min Acceleration: 40 G

Noise reduction by about 4.5 dB

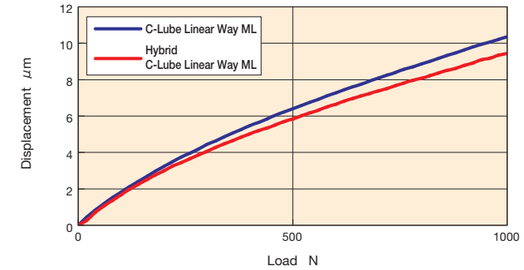
Low decibel



Test conditions Model : ML12 Measurement velocity: 30, 60, 90 m/min

Small deformation of rolling elements and excellent rigidity

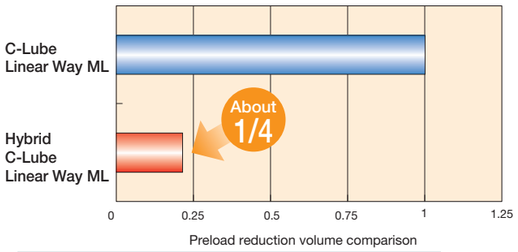
High rigidity



Test conditions Model : ML12 Preload: Standard Preload Load direction: Downward

Low preload reduction volume and accuracy maintained after operation

Abrasion resistance

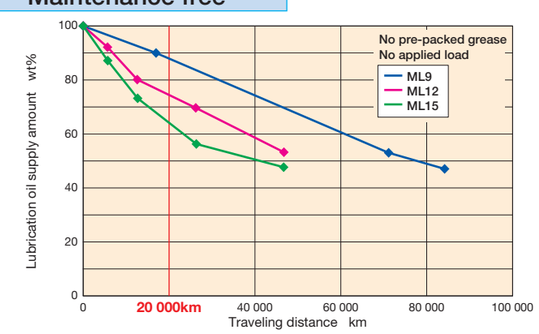


Test conditions Model : ML12 Velocity: 300 m/min
Acceleration: 40 G Traveling distance: 13,000 km

Basic performance of C-Lube Linear Way

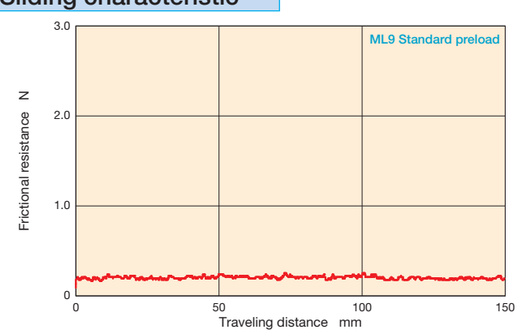
Achieved long term maintenance free

Maintenance free



Achieved light and smooth sliding

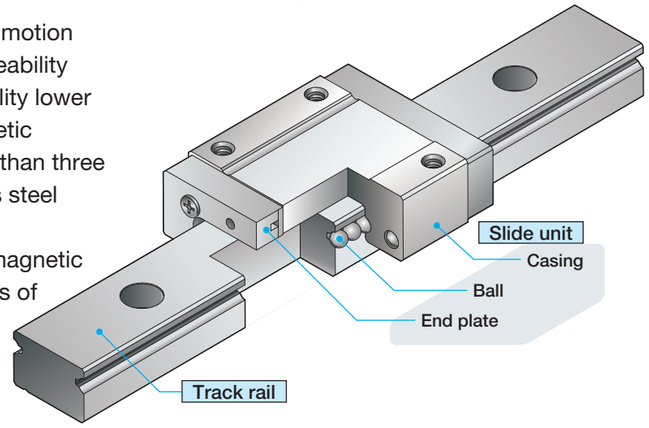
Sliding characteristic



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 that realizes relative magnetic permeability lower than 1.001 and relative magnetic permeability lower than one tenth of that of conventional non-magnetic stainless steel products. Further, durability more than three times as higher as that of non-magnetic stainless steel products is realized.
Non-magnetic hard alloy Linear Way L is a non-magnetic linear motion rolling guide optimal to avoid effects of magnetic force in magnetic field environment.



Features

Relative magnetic permeability lower than 1.001

Relative magnetic permeability lower than one tenth of that of non-magnetic stainless steel products

More than three times durability

More than three times durability with hardness 1.5 times as much as that of non-magnetic stainless steel products

High corrosion resistance

Optimal for use in clean environment thanks to corrosion-resistant alloy

Easy handling

Casing and track rail have excellent ductility and coefficient of linear expansion similar to general metals as they are made of metal

Non-magnetic hard alloy characteristics

Characteristics \ Material name	Non-magnetic hard alloy	Silicon nitride ceramics	Non-magnetic stainless steel
Relative magnetic[(1)] permeability	1.001 or less	1 (0.999991)	1.01 or less (1.005)
Electric conductivity	○	×	○
Hardness (HV)	610 ～ 700	1400 ～ 1600	380 ～ 450
Linear expansion coefficient (×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 component	Ni, Cr	Si_3N_4	Fe, Mn, Cr
Cost	○	△	○
Remark	Good corrosion resistance	Good corrosion resistance	—

Note (1) ( ) is only an example of the measurement value.

Selection of lubricant

By selecting appropriate lubricant such as vacuum grease and low dust-generating grease, this may be corresponding to any operating environment.

● Applicable products

Series	Linear Way L
Main model	LWL5···B ～ LWL15···B

Remark: No ball retaining band is included.

■ Main component materials

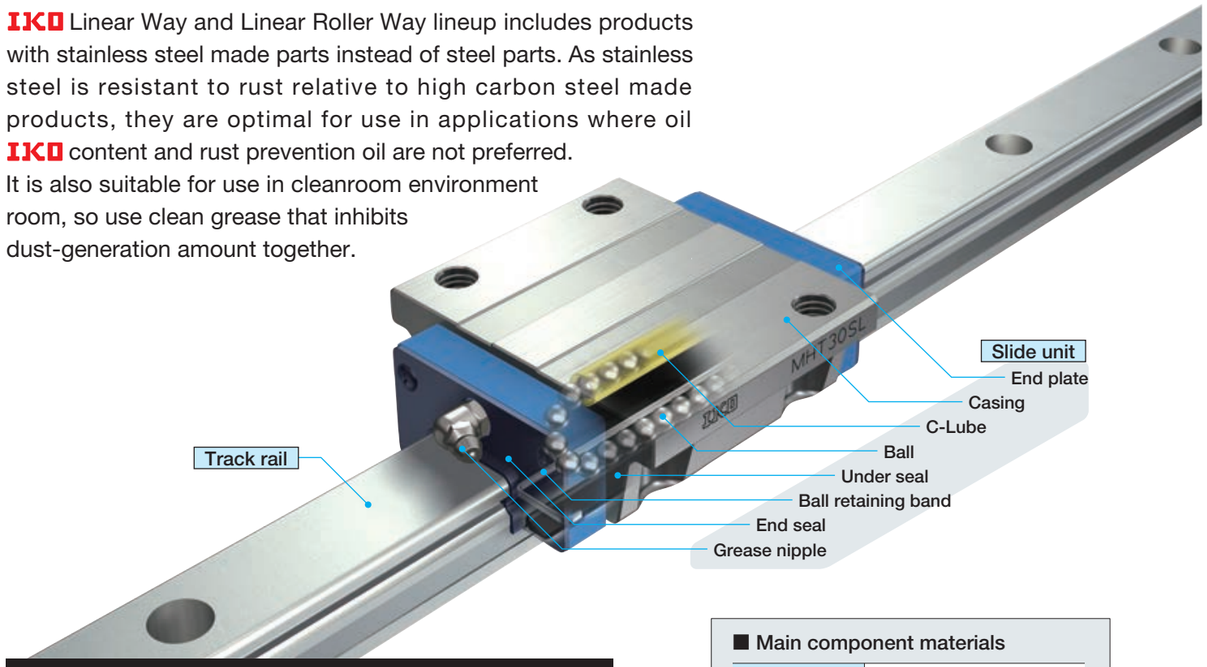
Casing	Non-magnetic hard alloy
Track rail	Non-magnetic hard alloy
Ball	Silicon nitride ceramics
End plate	Non-magnetic alloy steel

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

Stainless Linear Way and Linear Roller Way

A variety of stainless steel series

IKO Linear Way and Linear Roller Way lineup includes products with stainless steel made parts instead of steel parts. As stainless steel is resistant to rust relative to high carbon steel made products, they are optimal for use in applications where oil IKO content and rust prevention oil are not preferred.
It is also suitable for use in cleanroom environment room, so use clean grease that inhibits dust-generation amount together.



■ Main component materials

Casing	Martensitic stainless steel
Track rail	Martensitic stainless steel
Ball	Martensitic stainless steel
Ball retaining band	Stainless steel
End plate	Engineering plastic
End seal	Stainless steel + Synthetic rubber
Grease nipple	Brass

Series name

Linear Way

Ball Type Miniature Series

C-Lube Linear Way ML
C-Lube Linear Way MLV
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 Type 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

Combination with special specification corresponds to use in special environment!

Rust prevention

Black chrome surface treatment /L

Black chrome surface treatment on the track rail and slide unit improves rust prevention capacity.

Fluorine black chrome surface treatment /LF

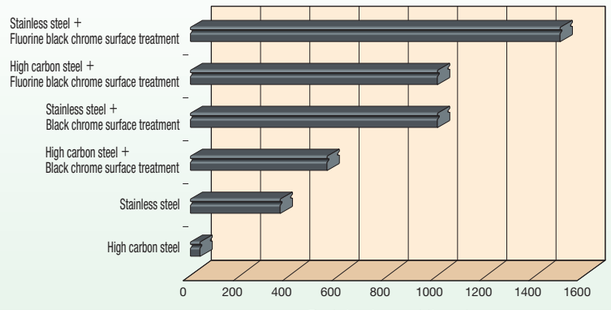
Coating of fluorinated resin is applied over the black chrome surface treatment to prevent foreign substances from sticking and improve the rust prevention capacity.

Black chrome surface treatment

Features

1. Thin film
2. Uniform film
3. Strong adhesion
4. Excellent rust prevention capacity
5. Low temperature processing to prevent distortion
6. No peeling and no effects on life and cleanroom environment

Corrosion resistance comparison based on humidity cabinet test



Test conditions Temperature 50℃, Relative humidity 95%RH

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

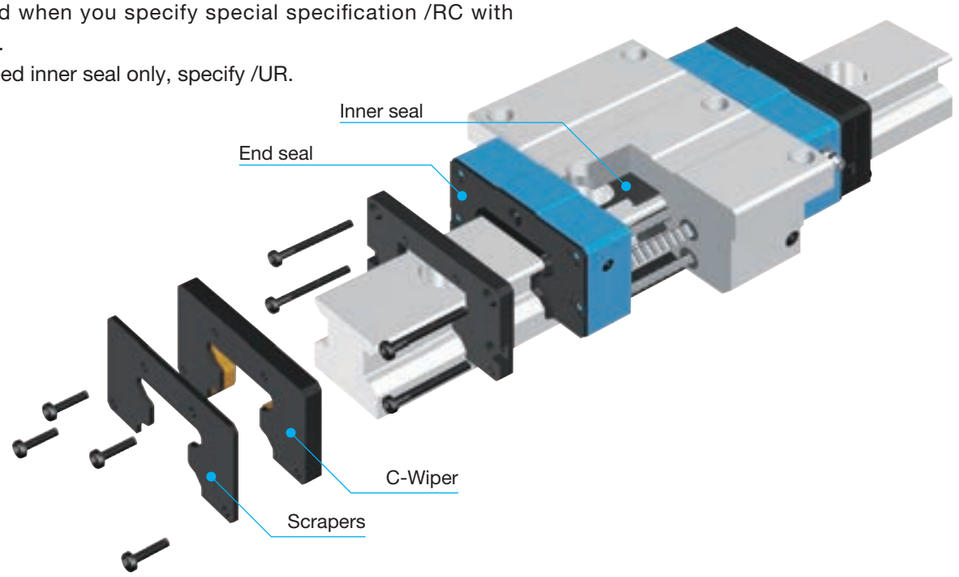
Special specification for special environment

IKO Linear Way and Linear Roller Way lineup includes following special specifications to correspond to various special environments.

Dust protection

C-Wiper /RC

Mounted to the outside of end seal, it may be used for long time even under environment where metal chips are spattering. End seal, inner seal (/UR) and scraper (/Z) may be equipped as standard when you specify special specification /RC with C-Wiper.
If you need inner seal only, specify /UR.



Applicable C-Wiper size

Model	Length of slide unit	Model code	Size								
			12	15	20	25	30	35	45	55	65
Flange type mounting from top / bottom	Short	MXC	–	–	○(1)	○	○	○	○	○	○
	Standard	MX	–	–	○(1)	○	○	○	○	○	○
	Long	MXG	–	–	○(1)	○	○	○	○	○	○
	Extra long	MXL	–	–	○(1)	○	○	○	○	○	○
Block type mounting from top	Short	MXDC	–	–	○	○	○	○	○	○	○
	Standard	MXD	–	–	○	○	○	○	○	○	○
	Long	MXDG	–	–	○	○	○	○	○	○	○
	Extra long	MXDL	–	–	○	○	○	○	○	○	○
Compact block type mounting from top	Short	MXSC	–	–	○	○	○	–	–	–	–
	Standard	MXS	–	–	○	○	○	○	○	○	–
	Long	MXSG	–	–	○	○	○	○	○	○	–
	Extra long	MXSL	–	–	○	○	○	–	–	–	–
Low profile flange type mounting from top	Standard	MXN	–	–	–	–	○	○	○	○	–
	Long	MXNG	–	–	–	–	○	○	○	○	–
	Extra long	MXNL	–	–	–	–	○	○	○	○	–
Low profile block type mounting from top	Standard	MXNS	–	–	–	–	○	○	○	○	–
	Long	MXNSG	–	–	–	–	○	○	○	○	–
	Extra long	MXNSL	–	–	–	–	○	○	○	○	–

Note (1) Also applicable to models mounting from bottom (MXHC20, MXH20, MXHG20, MXHL20).

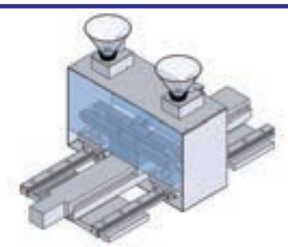
Dust protection

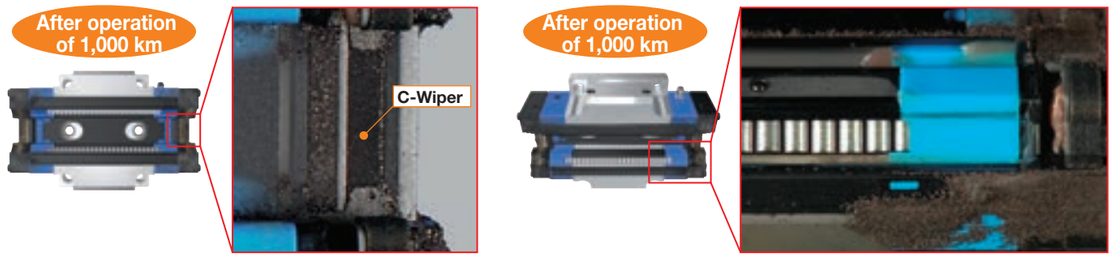
Durability test result backing excellent dust protection effect of [C-Wiper]!

Durability test in environment with foreign substances

Test conditions

Test portion	**MX35** T3 preload / caps for rail mounting holes and C-Wiper included
Maximum velocity	18 m/min
Stroke length	500 mm
Foreign substances	Fine metal chips Particle diameter lower than 125 μm Hardness HRC40 ~ 50 Application dose 1 g/hr (total dose: 1 kg)





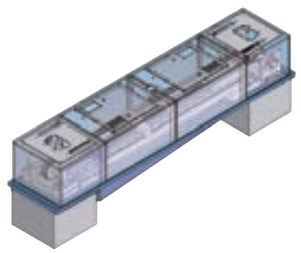
Only few foreign substances may get into the slide unit.

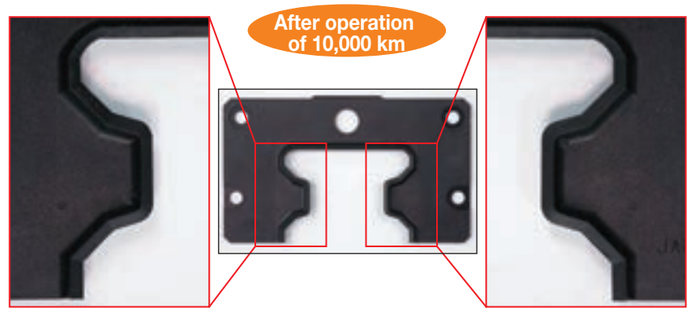
Only few foreign substances get into the way!

Durability test in coolant mist environment

Test conditions

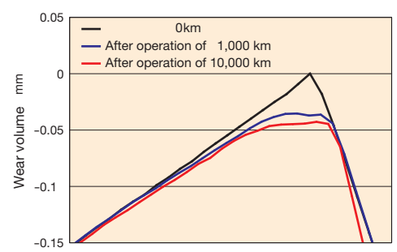
Test portion	**MX35** T3 preload / caps for rail mounting holes and C-Wiper included
Maximum	115.2 m/min
velocity	300 mm
Stroke length	Soluble type
Coolant	Dilute strength 20 times Spray amount 5 cc/hr





End seal is not damaged.

Wear condition of end seal lip tip



Wear on the end seal is negligible!

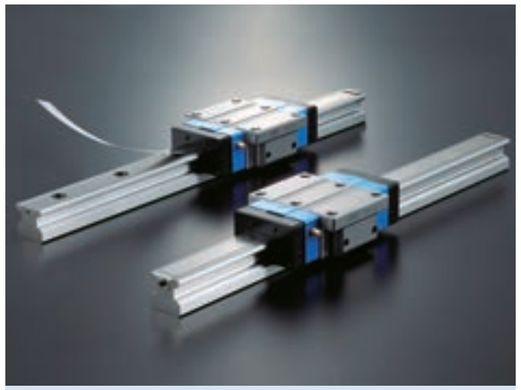
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Special specification for special environment

Dust protection

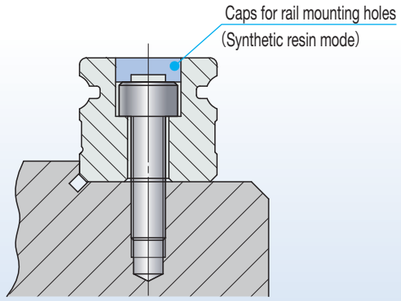
Rail cover sheet

Rail cover sheet that consists of steel plate and adhesive tape and fastened to the dedicated track rail with groove on the track rail prevents foreign substances from entering into the slide unit.



Caps for rail mounting holes /F

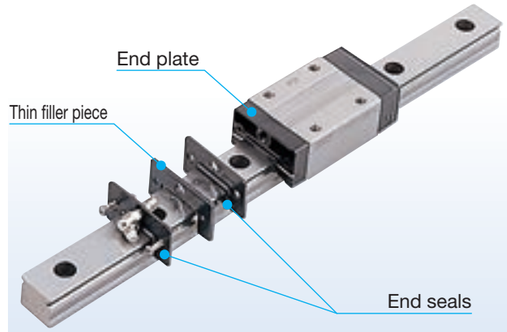
Caps for rail mounting holes close the track rail mounting holes to prevent foreign substances from entering into the slide unit.
Contact IKO for aluminum alloy caps for rail mounting holes.



Dust protection

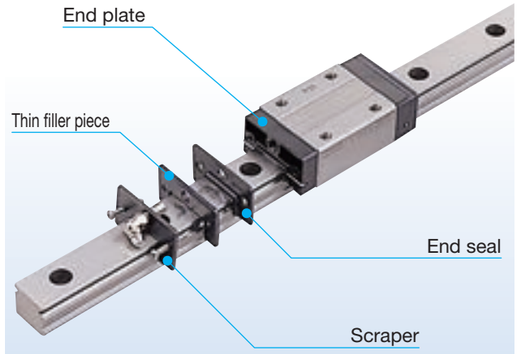
Double end seals /V

Double end seals improve the dust protection property further.



Scraper /Z

Mounted to the outside of end seal, it may remove large foreign substances adhering to the track rail.

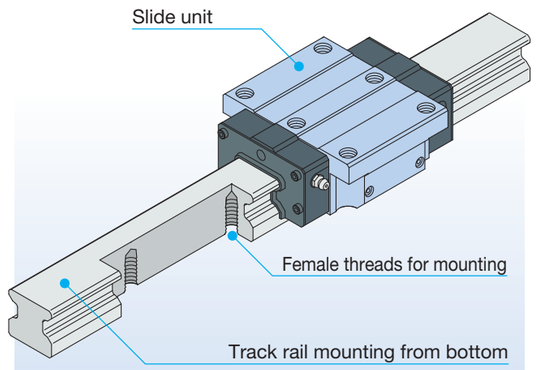


Rail cover plate /PS

Rail cover plate totally covers the upper surface of the track rail to prevent foreign substances from entering into the track rail.

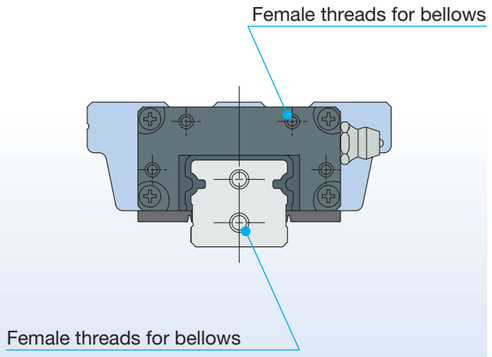
Track rail mounting from bottom

This is the specification that track rail is fixed from the mounting surface side. As there are no mounting holes on the track rail upper surface, adherence with the seal is superior and better dust protection effect is achieved.



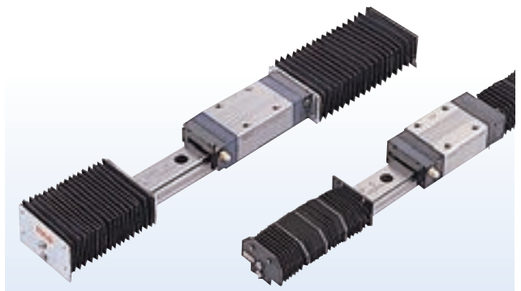
Female threads for bellows /J

Female threads for bellows are prepared on the slide unit and track rail ends.



Specific bellows

Dust protection cover over the exposed part of the track rail.

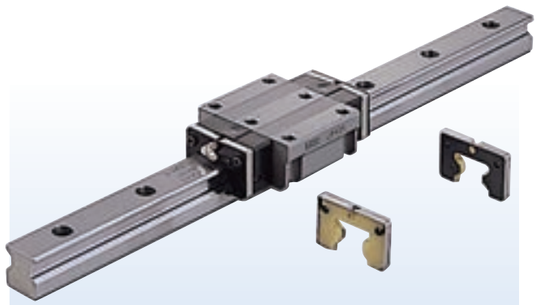


Special specification for special environment

Lubrication

With C-Lube plate /Q

Lubrication parts to substantially reduce the need for lubrication management, i.e. grease job.

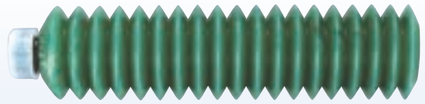


Low Dust-Generation Grease for Clean Environment CGL /YCL

For this grease, mixed soap is used as thickener and synthetic oil and low pour point mineral oil are mixed with base oil, so it has excellent low dust generating performance, rolling resistance, lubrication, and rust prevention property.

Bellows cartridge (80 g)

JG80 /CGL



With miniature greaser (2.5 ml)

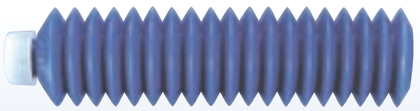
MG2.5 /CGL

Low Dust-Generation Grease for Clean Environment CG2 /YCG

For this grease, urea is used as thickener and synthetic oil is used as base oil, so it has excellent low dust generating performance, operating temperature range, lubrication property, rust prevention property and oxidation stability.

Bellows cartridge (80 g)

JG80 /CG2



With miniature greaser (2.5 ml)

MG2.5 /CG2

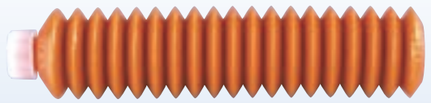
MG10 /CG2 with 10 ml are also available.

Anti-Fretting Corrosion Grease AF2 /YAF

Grease with excellent fretting-proof corrosion property.

Bellows cartridge (80 g)

JG80 /AF2



With miniature greaser (2.5 ml)

MG2.5 /AF2

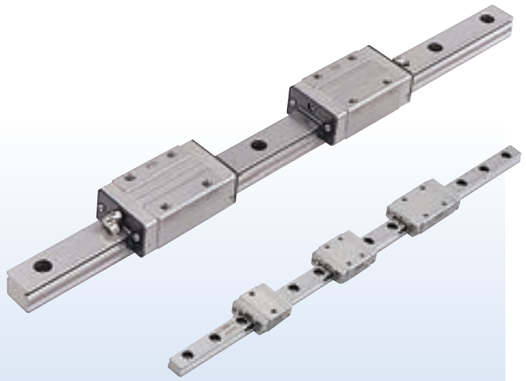
Other special grease

If you need any special grease for vacuum or high temperature, ask for IKO your request.

Others

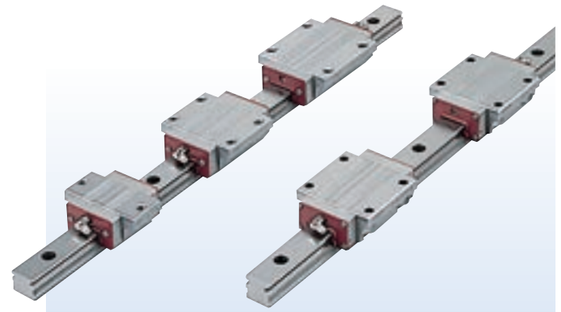
Stainless steel end plate /BS

End plate is changed to stainless steel.



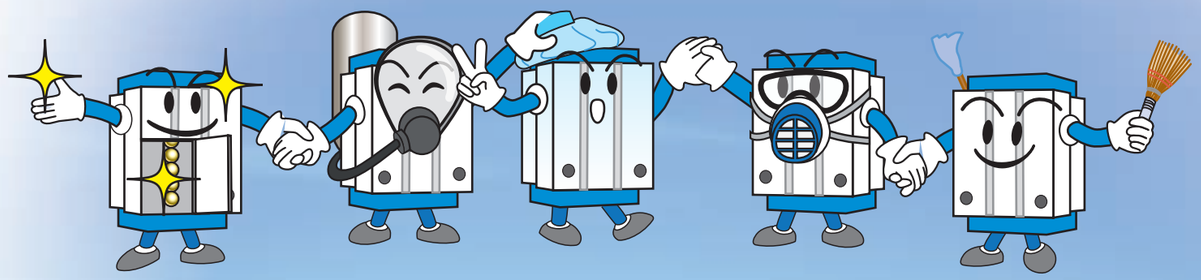
Special environment seal /RE

The end and under seals are replaced with end seals for special environment that can be used at high temperatures. When it is used in high temperature environment, stainless steel end plate (/BS) and high temperature grease should be combined.



The photo shows a combination of special environment seal (/RE) and stainless steel end plate (/BS).

IKO can offer products for special environment!



If needed, ask IKO for your request.

IKO C-Lube Maintenance-free

Explanation and Dimension Table for Respective Product Series

Rail Guide Type

General Explanation

C-Lube Linear Way ML
Linear Way L

C-Lube Linear Way ML

ML

C-Lube Maintenance-free

long term maintenance free supported!

Linear Way L

LWL

Points

● Extremely small size realized by simple structure

For details ➔ P.I-19

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

● Wide range of variations for your needs

For details ➔ P.I-25

2 The slide unit shape can be selected from two types, the standard type and the wide type suited for single-row track rail uses, and there are four types with different lengths of slide unit with same section. Furthermore, the track rail has the variation of standard type and tapped rail type with the screw thread implanted, allowing you to select an optimal product for the specifications of your machine and device.

● Ball retained type for easy operation

3 The slide unit of ball retained type incorporates the ball retaining band, which prevents the ball from dropping down when the slide unit is removed from the track rail. This safety structure brings you an easy operation to the machines / equipment.

● Stainless steel selections for excellent corrosion resistance

For details ➔ P.I-41

4 Stainless steel highly corrosion-resistant is used as the basic specification, so that the products are suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment. High carbon steel products suited to general purposes are also provided.

● Widely supports special environment uses

For details ➔ P.I-31

5 C-Lube Linear Way L for special environment uses are provided as a series. Increasingly varied special environment uses are supported, such as by high-speed / low-noise specifications by combining silicon nitride ceramics and low dust-generation specifications.

Identification Number and Specification

Example of an identification number

The specifications of ML(F) and LWL(F) series are indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a material code, a preload symbol, a classification symbol, an interchangeable code, and any supplemental codes for each specification to apply.

	1	2	4	5	6	3	7	8	9	10	11
Non-interchangeable specification											
Assembled set	ML	C	12	C1	R200			T_1	P		/U
Interchangeable specification											
Single slide unit	ML	C	12	C1				T_1	P	S1	/U
Single track rail (1)	LWL		12		R200	B			P	S1	
Assembled set	ML	C	12	C1	R200			T_1	P	S1	/U

1 Model
2 Length of slide unit
3 Structure
→ Model code Page Ⅱ－7

4 Size
→ Dimensions Page Ⅱ－7

5 Number of slide units
6 Length of track rail
→ Part code Page Ⅱ－7

7 Material type
→ Material code Page Ⅱ－7

8 Preload amount
→ Preload symbol Page Ⅱ－13

9 Accuracy class
→ Classification symbol Page Ⅱ－14

10 Interchangeable
→ Interchangeable code Page Ⅱ－15

11 Special specification
→ Supplemental code Page Ⅱ－15

Note (1) Indicate "LWL···B" or "LWLF···B" for the model code of the single track rail regardless of the series and the combination of slide unit models.

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

Identification Number and Specification — Model · Length of Slide Unit ·

1 Model

C-Lube Linear Way ML (ML(F) series)
Standard type : ML
Wide type : MLF

Linear way L (1) (LWL (F) series)
Standard type : LWL
Wide type : LWLF

For applicable models and sizes, see Table 2.1 and Table 2.2.
Indicate "LWL···B" or "LWLF···B" for the model code of the single track rail regardless of the series and the combination of slide unit models.

Note (1) This model has no built-in C-Lube.

2 Length of slide unit

Short : C
Standard : No symbol
Long : G
Extra long : L

For applicable models and sizes, see Table 2.1 and Table 2.2.

3 Structure

Table 1.1 Structure of ML and LWL

Model	Types and sizes of track rails			Structure	
ML	Standard rail specification		Size: 5~25	Ball retained type	: No symbol
	Tapped rail specification		Size: 3	Ball non-retained type	: No symbol
			Size: 5, 7, 9	Ball retained type	: N
LWL	Standard rail specification			Ball retained type	: B
	Tapped rail specification	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
	Solid rail specification		Size: 1	Ball non-retained type	: No symbol

Table 1.2 Structure of MLF and LWLF

Model	Types of track rails			Structure	
MLF	Standard rail specification		Size: 6	Ball non-retained type	: No symbol
			Size: 10~42	Ball retained type	
	Tapped rail specification		Size: 6	Ball non-retained type	: N
			Size: 10~18	Ball retained type	
LWLF	Standard rail specification		Size: 4, 6	Ball non-retained type	: No symbol
			Size: 10~42	Ball retained type	: B
	Tapped rail specification		Size: 6	Ball non-retained type	: N
			Size: 10~18	Ball retained type	

For applicable models and sizes, see Table 2.1 and Table 2.2.

4 Size

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

For applicable models and sizes, see Table 2.1 and Table 2.2.

5 Number of slide units

: C○

For an assembled set, indicates the number of slide units assembled on a track rail. For a single slide unit, only "C1" is specified.

6 Length of track rail

: R○

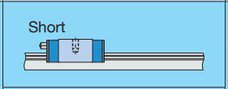
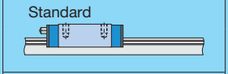
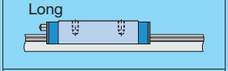
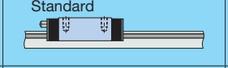
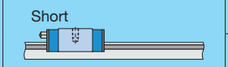
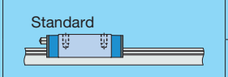
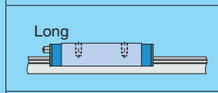
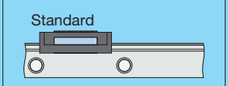
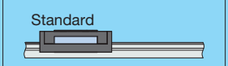
Indicate the length of track rail in mm.
For standard and maximum lengths, see Table 3.1, Table 3.2, and Table 3.3.

7 Material type

Stainless steel made : No symbol
High carbon steel made : CS

For applicable models and sizes, see Table 2.1 and Table 2.2.

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

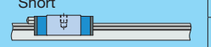
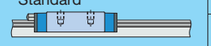
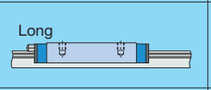
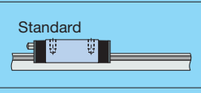
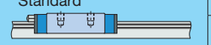
Types of track rails	Material type	Length of slide unit	Structure	Model	Size 1	2	3	5	7	9	12	15	20	25
Standard rail specification 	Stainless steel made	Short 	Ball retained type	MLC	–	–	–	○	○	○	○	○	○	○
				LWLC···B	–	–	–	○	○	○	○	○	○	○
		Standard 		ML	–	–	–	○	○	○	○	○	○	○
				LWL···B	–	–	–	○	○	○	○	○	○	○
		Long 		MLG	–	–	–	–	○	○	○	○	○	○
				LWLG···B	–	–	–	–	○	○	○	○	○	○
		Extra long 		MLL	–	–	–	–	–	○	○	○	–	–
	High carbon steel made	Standard 		LWL···BCS	–	–	–	–	–	○	○	○	○	–
Tapped rail specification Mounting from bottom 	Stainless steel made	Short 	Ball non-retained type	MLC	–	–	○	–	–	–	–	–	–	–
				LWLC	–	–	○	–	–	–	–	–	–	–
			Ball retained type	MLC···N	–	–	–	○	○	○	–	–	–	–
				LWLC···N	–	–	–	○	○	○	–	–	–	–
		Standard 	Ball non-retained type	ML	–	–	○	–	–	–	–	–	–	–
				LWL	–	○	○	–	–	–	–	–	–	–
			Ball retained type	ML···N	–	–	–	○	○	○	–	–	–	–
				LWL···N	–	–	–	○	○	○	–	–	–	–
		Long 	Ball retained type	MLG···N	–	–	–	–	○	○	–	–	–	–
				LWLG···N	–	–	–	–	○	○	–	–	–	–
		Extra long 	Ball retained type	MLL···N	–	–	–	–	–	○	–	–	–	–
Tapped rail specification Mounting from lateral 		Standard 	Ball non-retained type	LWL···Y	○	–	–	–	–	–	–	–	–	–
Solid rail specification 		Standard 	Ball non-retained type	LWL	○	–	–	–	–	–	–	–	–	–

Remark: For the models indicated in ▭, the interchangeable specification is available.

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

— Model · Length of Slide Unit · Structure · Size · Material Type —

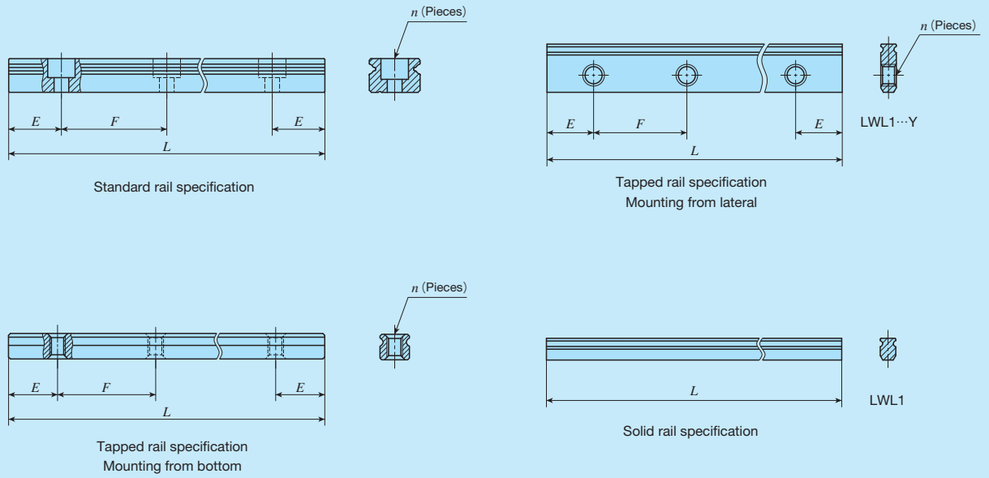
Table 2.2 Models and sizes of wide type ML(F) and LWL(F) series

Types of track rails	Material type	Length of slide unit	Structure	Model	Size 4	6	10	14	18	24	30	42
Standard rail specification 	Stainless steel made	Short 	Ball retained type	MLFC	–	–	○	○	○	○	○	○
				LWLFC···B	–	–	○	○	○	○	○	○
			Ball non-retained type	MLFC	–	○	–	–	–	–	–	–
				LWLFC	–	○	–	–	–	–	–	–
		Standard 	Ball retained type	MLF	–	–	○	○	○	○	○	○
				LWLF···B	–	–	○	○	○	○	○	○
			Ball non-retained type	MLF	–	○	–	–	–	–	–	–
				LWLF	○	○	–	–	–	–	–	–
		Long 	Ball retained type	MLFG	–	–	–	○	○	○	○	○
				LWLFG···B	–	–	–	○	○	○	○	○
	High carbon steel made	Standard 	Ball retained type	LWLF···BCS	–	–	–	–	○	○	○	○
Tapped rail specification Mounting from bottom 	Stainless steel made	Short	Ball retained type	MLFC···N	–	–	○	○	○	–	–	–
				LWLFC···N	–	–	○	○	○	–	–	–
			Ball non-retained type	MLFC···N	–	○	–	–	–	–	–	–
				LWLFC···N	–	○	–	–	–	–	–	–
		Standard 	Ball retained type	MLF···N	–	–	○	○	○	–	–	–
				LWLF···N	–	–	○	○	○	–	–	–
			Ball non-retained type	MLF···N	–	○	–	–	–	–	–	–
				LWLF···N	–	○	–	–	–	–	–	–
		Long 	Ball retained type	MLFG···N	–	–	–	○	○	–	–	–
				LWLFG···N	–	–	–	○	○	–	–	–

Remark: For the models indicated in ▭, the interchangeable specification is available.

— Length of Track Rail —

Table 3.1 Standard and maximum length of stainless steel track rail (Standard type)



unit: mm

Item \ Identification number	LWL1···Y	LWL1	LWL2	ML 3 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 E dimensions (1) or higher	2.5	–	2.5	3	4	4.5
Standard E dimensions (1) below	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 rail (3)	–	–	–	–	5	7
Maximum length of butt-jointing track rail (3)	–	–	–	–	915	1 905

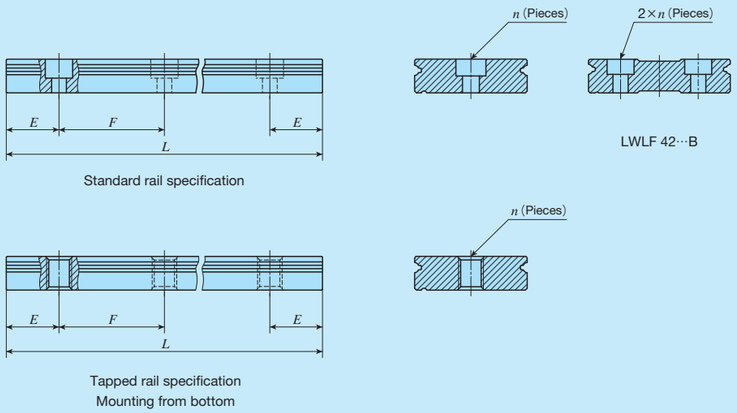
Item \ Identification number	ML 9 LWL9···B	ML 12 LWL12···B	ML 15 LWL15···B	ML 20 LWL20···B	ML 25 LWL25···B
Standard length L (n)	60 (3) 80 (4) 120 (6) 160 (8) 220 (11) 280 (14)	100 (4) 150 (6) 200 (8) 275 (11) 350 (14) 475 (19)	160 (4) 240 (6) 320 (8) 440 (11) 560 (14) 680 (17)	180 (3) 240 (4) 360 (6) 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 E dimensions (1) or higher	4.5	5	5.5	8	9
Standard E dimensions (1) below	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 rail (3)	2	2	2	2	2
Maximum length of butt-jointing track rail (3)	1 660	1 925	1 880	1 740	1 740

Notes (1) Not applicable to track rail with stopper pins (supplemental code "/S").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO. Not applicable to tapped rail specification.
(3) Not applicable to interchangeable specifications or tapped rail specifications.

Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LWL···B" for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ－30.

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

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

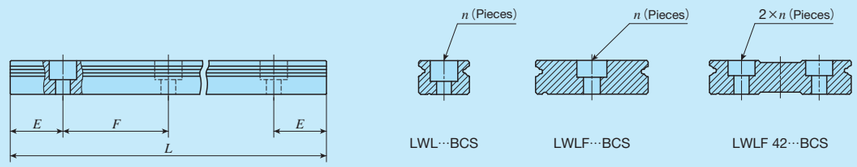


unit: mm

Item \ Identification number	LWLF4	MLF 6 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 E dimensions (1) or higher	3.5	4.5	4.5	5.5
Standard E dimensions (1) below	8.5	12	14.5	20.5
Maximum length (2)	180 (300)	240 (300)	300 (500)	300 (990)
Maximum number of butt-jointing track rail (3)	–	–	7	8
Maximum length of butt-jointing track rail (3)	–	–	1 840	1 950
Item \ Identification 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 E dimensions (1) or higher	5.5	6.5	6.5	6.5
Standard E dimensions (1) below	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 rail (3)	3	3	3	3
Maximum length of butt-jointing track rail (3)	1 920	1 840	1 840	1 840

Notes (1) Not applicable to track rail with stopper pins (supplemental code "/S").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO. Not applicable to tapped rail specifications.
(3) Not applicable to interchangeable specifications or tapped rail specifications.
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LWLF···B" for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

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



unit: mm

Item \ Identification 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 E dimensions (1) or higher	4.5	5	5.5	8
Standard E dimensions (1) below	14.5	17.5	25.5	38
Maximum length	1 000	1 500	1 520	1 560
Item \ Identification 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 E dimensions (1) or higher	5.5	6.5	6.5	6.5
Standard E dimensions (1) below	20.5	26.5	26.5	26.5
Maximum length	1 500	1 520	1 600	1 600

Note (1) Not applicable to track rail with stopper pins (supplemental code "/S").
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

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

— Preload Amount —

8 Preload amount

Clearance	: T_0	Specify this item for an assembled set or a single slide unit.
Standard	: No symbol	For details of the preload amount, see Table 4.
Light preload	: T_1	For applicable preload types, see Table 5.1 and Table 5.2.

Table 4 Preload amount

Item / Preload type	Preload symbol	Preload amount N	Operational conditions
Clearance	T_0	0 (1)	· Very light motion
Standard	(No symbol)	0 (2)	· Light and precise motion
Light preload	T_1	0.02 C_0	· Almost no vibrations · Load is evenly balanced · Light and precise motion

Notes (1) There is zero or subtle clearance.
(2) Indicates zero or minimal amount of preload.
Remark: C_0 indicates the basic static load rating.

Table 5.1 Application of preload (Standard type)

Size	Preload type (preload 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 when /HB is specified.
Remark: The mark ▭ indicates that interchangeable specification products are available.

Table 5.2 Application of preload (Wide type)

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

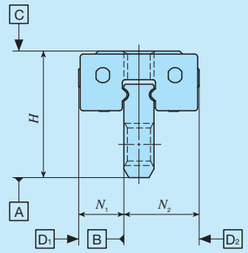
Remark: The mark ▭ indicates that interchangeable specification products are available.

— Accuracy class —

9 Accuracy class

High	: H	For interchangeable specification products, assemble a slide unit and a track rail of the same accuracy class.
Precision	: P	Size 1 series have "No symbols."
		For the details of accuracy class, see Table 6.1 and 6.2.

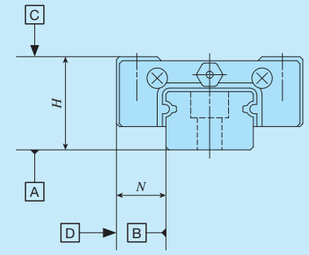
Table 6.1 Tolerance and allowable values (Series of size 1)



unit: mm

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

Table 6.2 Tolerance and allowance (Series of size 2 or higher)



unit: mm

Item / Class (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 the slide unit C surface to A surface	See Fig. 1	
Parallelism in operation of the slide unit D surface to B surface	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.

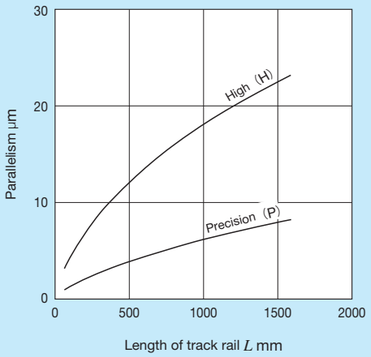


Fig. 1 Parallelism in operation (Series of size 2 or higher)

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

10 Interchangeable

S1 specification	: S1	This is specified for the interchangeable specifications. Assemble a track rail and a slide unit with the same interchangeable code. Performance and accuracy of "S1" and "S2" are the same. For applicable models and sizes, see Table 2.1 and Table 2.2. "No symbol" is indicated for non-interchangeable specification.
S2 specification	: S2	
Non-interchangeable specification	: No symbol	

11 Special specification

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

For applicable special specifications, see Tables 7.1, 7.2, 7.3, and 7.4.
For combination of multiple special specifications, see Table 8.
For details of special specification, see page Ⅲ−29.

Table 7.1 Application of special specifications (Interchangeable specification, single slide unit)

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

Note (1) Applicable to LWW(F) series.

Table 7.2 Application of special specifications (Interchangeable specification, single track rail)

Special specification	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 bolt	/MN	–	–	–	○	○	○	○	○	○	○

Table 7.3 Application of special specifications (Interchangeable specification, assembled set)

Special specification	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 bolt (1)	/MN	–	–	–	○	○	○	○	○	○	○
No end seal	/N	–	–	–	○	○	○	○	○	○	○
With C-Lube plate (2)	/Q	–	–	–	○	○	○	○	○	○	○
Under seal	/U	–	–	–	×	×	○	○	○	○	○

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

Table 7.4 Application of special specifications (Non-interchangeable specification)

Special specification	Supplemental code	Size									
		1	2	3	5	7	9	12	15	20	25
		–	4	6	10	14	18	24	30	42	–
Butt-jointing track rails (1) (2)	/A	×	×	×	○	○	○	○	○	○	○
Stainless steel end plate (3)	/BS	×	○(5)	○(5)	○	○	○	○	○	○	×
Opposite reference surfaces arrangement	/D	×	○	○	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	×	○	○	○	○	○	○	○	○	○
Hybrid C-Lube Linear Way	/HB	×	×	×	×	○(6)	○(6)	○(6)	○(6)	×	×
Inspection sheet	/I	×	○	○	○	○	○	○	○	○	○
Black chrome surface treatment (track rail)	/LR	×	×	×	×	○	○	○	○	○	○
Without track rail mounting bolt (2)	/MN	×	○(7)	○(7)	○	○	○	○	○	○	○
No end seal	/N	×	×	×	○	○	○	○	○	○	○
With C-Lube plate (3)	/Q	×	×	×	○	○	○	○	○	○	○
Special environment seal (3)	/RE	×	×	×	○	○	○	○	○	○	×
Track rail with stopper pins	/S	×	×	×	○	○	○	○	○	○	○
Under seal	/U	×	×	×	×	×	○	○	○	○	○
A group of multiple assembled sets	/W○	×	○	○	○	○	○	○	○	○	○
Specified grease (4)	/Y○	×	○(8)	○	○	○	○	○	○	○	○

Notes (1) Not applicable to high carbon steel made products.
(2) Not applicable to tapped rail specification.
(3) Applicable to LWL(F) series. / YCG is applicable to ML(F) series.
(4) ML(F) series is applicable only to /YCG.
(5) Not applicable to size 4 and 6 series.
(6) Applicable to size 7, 9, 12, and 15 of ML series.
(7) Not applicable to size 2 and 3 series.
(8) Applicable only to /YNG.

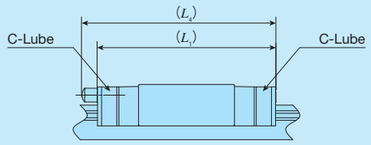
Table 8 Combination of supplemental codes

	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. The combination of " – " shown in the table is not available.
2. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

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

Table 9 Dimension of slide unit with C-Lube plate (Supplemental code /Q)



unit: mm

Identification number	L_1	L_4	Identification 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			

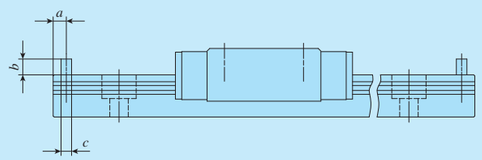
Remarks 1. The dimensions of the slide unit with C-Lube at both ends are indicated.
2. A typical identification number is indicated, but is applied to all LWL(F) series models of the same size.

Table 10 Load rating / static moment rating of Hybrid C-Lube Linear Way (Supplemental code /HB)

Identification 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 of T_x and T_y are for one slide unit and the lower values are for two slide units in close contact.

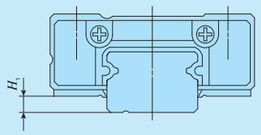
Table 11 Dimension of track rail with stopper pins (Supplemental code /S)



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 with under seal (Supplemental code /U)



unit: mm

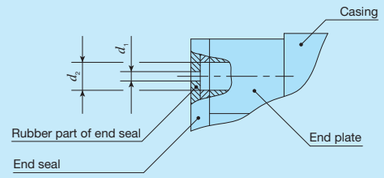
Size		H_1
9	–	1
12	–	2
15	–	3
–	18	2
20	–	4
–	24	2
25	–	5(1)
–	30	2
–	42	3

Note (1) The dimensions are the same as those before mounting of under seal.

Lubrication

Lithium-soap base grease (MULTEMP PS No.2 [KYODO YUSHI CO., LTD.]) is pre-packed in ML(F) and LWL(F) series. Additionally, ML(F) series has C-Lube placed in the recirculation part of balls, so that the interval for reapplicating lubricant can be extended and maintenance works such as grease job can be reduced significantly.
ML(F) series and LWL(F) series have grease nipple or oil hole as indicated in Table 14. Since the Size 1, 2, 3, 4 and 6 series do not have an oil hole, apply grease directly to the raceway part of the track rail for re-greasing. Supply nozzles fit to each shapes of grease nipple and dedicated supplying equipment (miniature greasers) fit to oil holes are also available. For order of these parts for lubrication, see Table 13 and Table 14.1 on Page Ⅲ−23, and Table 15 on page Ⅲ−24.

Table 13 Oil hole specifications



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 type (1)	Applicable supply nozzle type	Bolt 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) For grease nipple specification, see Table 14.1 on page Ⅲ−23.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

Dust Protection

The slide units of ML(F) series and LWL(F) series are equipped with end seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to attach a protective cover to the linear motion mechanism.
No end seal is provided for size 1, 2, 3, 4 or 6 series. For applications in the environment not clean enough, cover the entire unit with a protective case, etc. to prevent harmful foreign substances such as dust and particles from outside to enter.

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

Precaution for Use

❶ Mounting surface, reference mounting surface and general mounting structure

When mounting the ML(F) series and LWL(F) series, properly align the reference mounting surfaces B and D (D1 or D2)of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 2)

Reference mounting surfaces B and D (D1 or D2) and mounting surfaces A and C are precisely ground. By machining the mounting surface of the mating member, such as machine or device, to high accuracy and mounting them properly, stable linear motion with high accuracy is obtained.

Reference mounting surface of the slide unit of size 2 or higher is the opposite side of the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction of the arrow). (See Fig. 5.2)

Reference mounting surface of the slide unit of size 1 is located at both right and left sides (D1 and D2). (See Fig. 5.1)

The track rail of LWL1···Y has the mounting structure of lateral direction. Two types of mounting structure as shown in Fig. 3.1 and Fig. 3.2 are available.

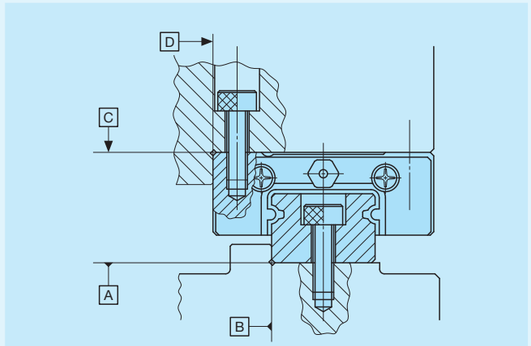


Fig. 2 Reference mounting surface and typical mounting structure

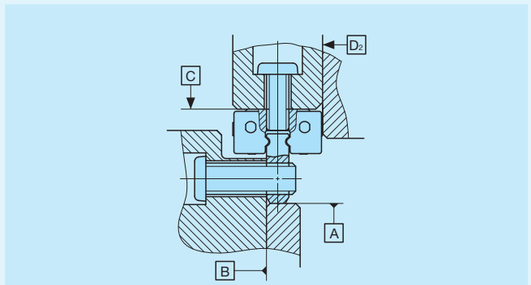


Fig. 3.1 Reference mounting surface of LWL1···Y and typical mounting structure ①

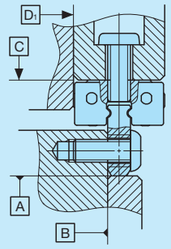


Fig. 3.2 Reference mounting surface of LWL1···Y and typical mounting structure ②

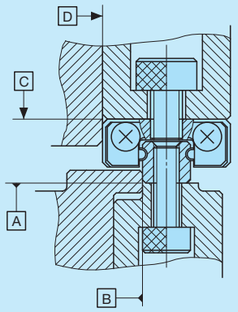


Fig. 4 Reference mounting surface of size 2, 3, 4 and 6 series and typical mounting structure

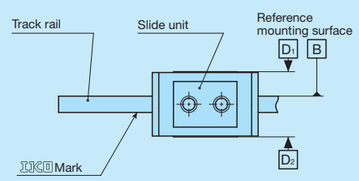


Fig. 5.1 Reference mounting surface of series size 1 or higher

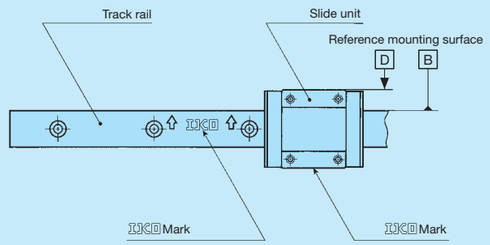


Fig. 5.2 Reference mounting surface of series size 2 or higher

❷ Mounting screws for slide unit

To mount a slide unit, tightly fasten the bolt against female thread of slide unit.

The female thread is created through holes of the slide unit for size 1 series, and also through holes for the slide unit and track rail for size 2, 3, 4 and 6 series. When the fixing thread depth of the mounting screw goes too deep, it can interfere with the track rail and impact the running accuracy or product life so that the fixing thread depth should be within the screwing depth specified in the dimension table.

Also prepare the small screws dedicated to precision devices (head diameter 1.8 mm or smaller) for the mounting bolt of slide unit of size 1.

❸ Mounting screws for track rail

In the size 2 and 3 series and tapped rail specifications, track rail mounting bolts are not appended. Prepare mounting bolts whose fixing thread depth is less than H_4 in dimension table.

❹ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 6 Recommended value for the shoulder height on the mating side is indicated in Table 16.

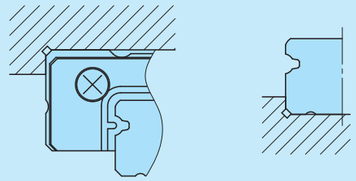


Fig. 6 Corner of the mating reference mounting

❺ Tightening torque for fixing screw

Typical tightening torque for mounting ML(F) series and LWL(F) series to the steel mating member material is indicated in Table 15. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

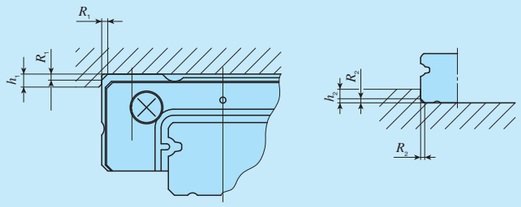
Table 15 Tightening torque for fixing screw

Bolt size	Tightening torque N · m	
	Stainless steel-made screw	High carbon steel-made screw
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	1.3
M4 ×0.7	2.5	2.9
M5 ×0.8	5.0	5.7
M6 ×1	8.5	–

Remarks 1. The tightening torque is calculated based on strength division 8.8 and property division A2-70.
2. It is recommended that the tightening torque of slide unit mounting holes for series size 1 is to be 70 to 80 % of the values in the table.

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

Table 16 Shoulder height and corner radius of the reference mounting surface



Mounting part of slide unit　　Mounting part of track rail

unit: mm

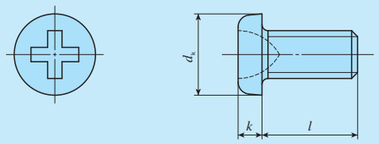
Identification number		Mounting part of slide unit		Mounting part of track rail	
		Shoulder height h_1	Corner radius R_1 (Maximum)	Shoulder height (1) h_2	Corner radius R_2 (Maximum)
–	LWL 1···Y	1.3	–	2	–
–	LWL 1			–	
–	LWL 2	1	0.1	0.5	0.05
ML 3	LWL 3	1.2	0.15	0.8	0.1
ML 5	LWL 5···B	2	0.3	0.8	0.2
ML 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
MLF 6	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 (supplemental code "/U"), it is recommended to use the values 1mm smaller than the values in the table. However for the models of size 9 with under seal, 0.8 mm is recommended.
Remark: A typical identification number is indicated, but is applied to all models of the same size.

Mounting Bolt

For LWL(F) series, track rail mounting bolt of slide unit and tapped rail specification shown in Table 17 and Table 18are available. If these parts are necessary, please contact IKO.

Table 17 Cross-recessed pan head screw for precision equipment

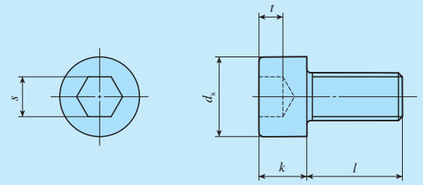


unit: mm

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 for precision equipment (Number 0) in Japan Camera Industry Standard JCIS 10-70.
Remark: The dimensions are different from the appended track rail mounting bolts.

Table 18 Hexagon socket head bolt



unit: mm

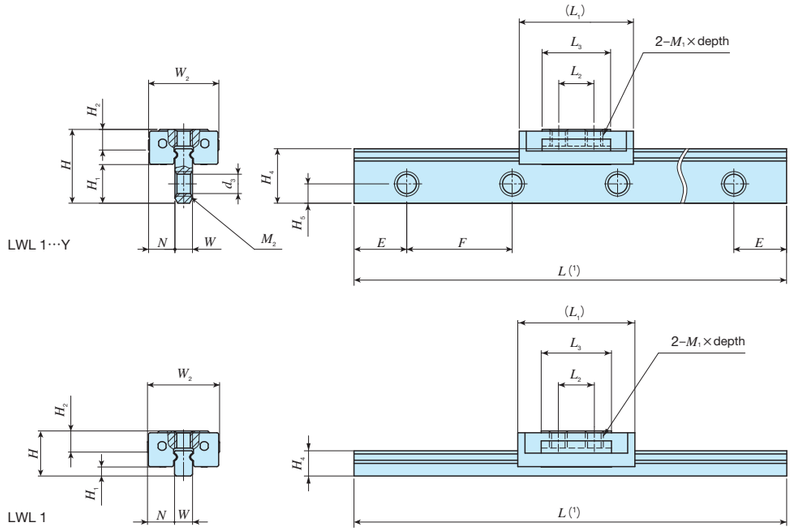
Bolt size (d)	Pitch of screw P	d_k	k	s	t	l
M1.4	0.3	2.6	1.4	1.3	0.6	2.5, 3, 4
M1.6(1)	0.35	3	1.6	1.5	0.7	4, 5, 6
M2(1)	0.4	3.8	2	1.5	1	3, 4, 5

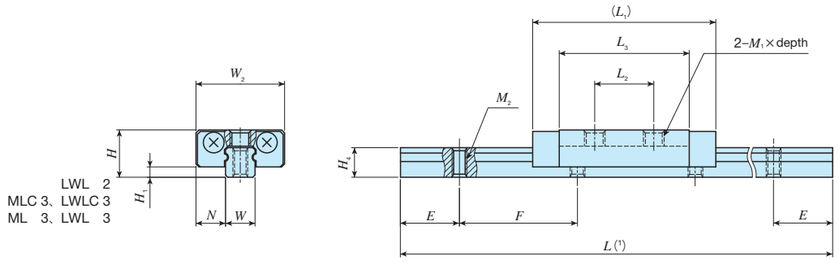
Note (1) Based on hexagon socket head bolts equivalent to JIS B 1176.

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

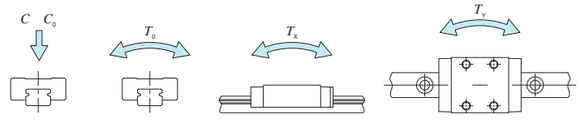




Identification number		Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm							Dimensions of track rail mm							Mounting bolt for track rail (2) mm	Basic dynamic load rating (5)	Basic static load rating (5)	Static moment rating (5)		
ML series	LWL series (No C-Lube)		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	L_1	L_2	L_3	M_1×depth	H_2		W	H_4	H_5	M_2	d_3	E	F	Bolt size× ℓ	C N	C_0 N	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 3.5
MLC 3		–	0.9	5.3	4	1	2.5	8	10.5	3.5	7	M1.6×1.3	–		3	2.6	–	M1.6 Through	–	5	10	M1.6× ℓ (4)	272	406	0.65	0.49 2.7	0.58 3.2
	LWLC 3	–	1.0						11.5		6.7												251	361	0.58	0.39 2.7	0.47 3.2
ML 3		–	1.3						14.5	5.5	11	M2 ×1.3											371	632	1.0	1.1 5.6	1.3 6.6
	LWL 3	–	1.6						15.5		10.7												353	587	0.94	0.98 5.6	1.2 6.7

Notes (1) Track rail lengths L are shown in Table 3.1 on page Ⅱ−10.
(2) Track rail mounting bolts are not appended.
(3) Prepare screws according to mounting structure.
(4) Choose screws whose dimension allow fixing thread depth into track rail ℓ to 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 of T_X and T_Y are for one slide unit and the lower values are for 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. If needed, please contact IKO.



Example of identification number of assembled set

Model code		Dimensions	Part code		Model code	Preload symbol	Classification symbol	Supplemental code
LWL		2	C2	R80		T0	P	/D
①	②	③	④	⑤	①	⑥	⑦	⑧

① Model	
ML	Standard type
LWL	
LWL···Y	

② Length of slide unit	
C	Short
No symbol	Standard

③ Size: 1, 2, 3

④ Number of slide unit (2)

⑤ Length of track rail (80 mm)

⑥ Preload amount	
T0	Clearance

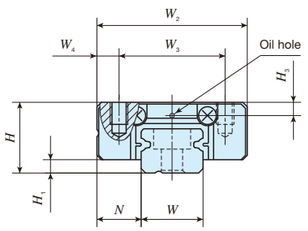
⑦ Accuracy class	
No symbol	Ordinary
H	High
P	Precision

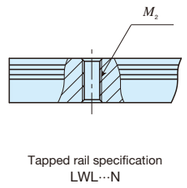
⑧ Special specification: BS, D, E, I , W, Y

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

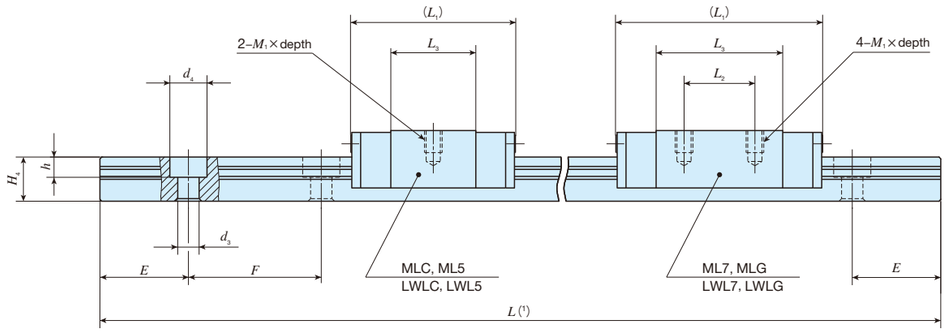
Standard type

Shape	ML • LWL
Size	1 / 9 · 2 / 12 · 3 / 15 · 5 / 20 · 7 / 25





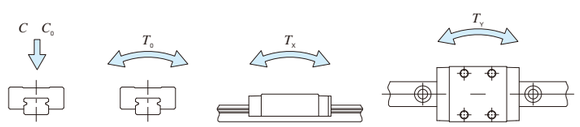
Tapped rail specification
LWL···N



Identification number		Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm								Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
ML series	LWL series (No C-Lube)		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3	W	H_4	M_2	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 pan head screw for precision equipment M2×6	562	841	2.2	1.4 8.5	1.2 7.2
MLC 5···N*	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 pan head screw for precision equipment M2×6	676	1 090	2.9	2.3 12.8	1.9 10.8
	LWL 5···B	○	4.4																									
ML 5···N*		–	4.3	13														M2.5 Through	–	–	–			M2.5× ℓ (3) (Not appended)					
	LWL 5···N*	–	4.4																									
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																									
MLC 7···N*		–	6.7	24														M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
	LWLC 7···N*	–	7.1																									
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																									
ML 7···N*		–	9.1	24														M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
	LWL 7···N*	–	10																									
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																									
MLG 7···N*		–	13	24														M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
	LWLG 7···N*	–	14																									

Notes (1) Track rail lengths L are shown in Table 3.1 on page Ⅱ−10.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176 or JCIS10-70 cross-recessed pan head screw for precision equipment.
(3) Choose screws whose dimension allow fixing thread depth into track rail ℓ to 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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
If hybrid C-Lube Linear Way specification (supplemental code "/HB") is selected in MLC7, ML7, and MLG7, see Table 10 on page Ⅱ−17.

Remarks 1. The specification of oil hole is shown in Table 13 on page Ⅱ−18.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code		Model code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
ML	C	7	C2	R120		T1	P			/D
①	②	③	④	⑤	①	⑥	⑦	⑧		⑨

① Model

ML	Standard type
LWL···B	
LWL···N	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 5, 7

④ Number of slide unit (2)

⑤ Length of track rail (120 mm)

⑥ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload

⑦ Accuracy class

H	High
P	Precision

⑧ Interchangeable

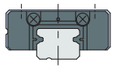
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

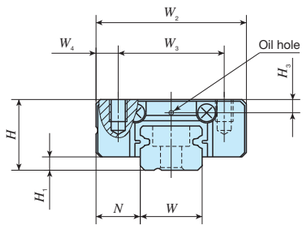
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

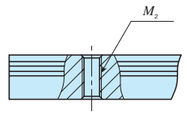
Standard type

Shape: **ML • LWL**

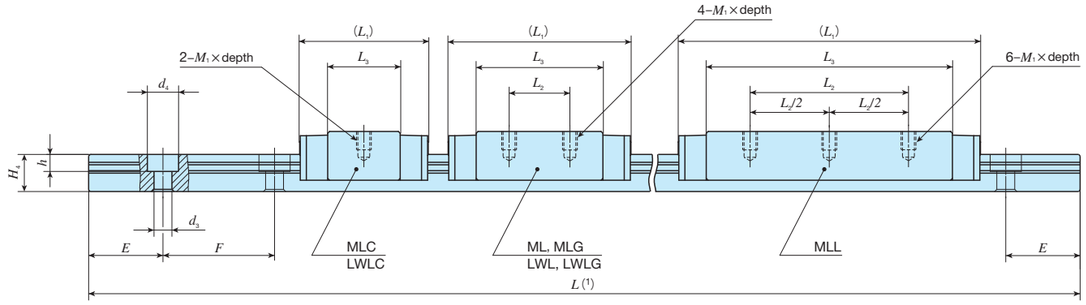


Size	1	2	3	5	7
	9	**12**	15	20	25





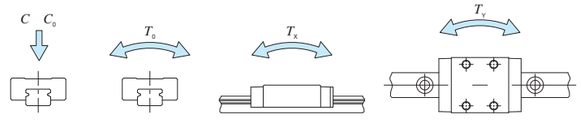
Tapped rail specification
LWL···N



Identification number		Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm								Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
ML series	LWL series (No C-Lube)		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3	W	H_4	M_2	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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
MLC 9···N*	LWLC 9···N*	–	11	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	○																										
ML 9···N*		–	18	37														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
	LWL 9···N*	–	19																									
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																									
MLG 9···N*		–	26	37														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
	LWLG 9···N*	–	28																									
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
MLL 9···N*	–	–		37														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
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 L are shown in Table 3.1 on page Ⅱ−10 and Table 3.3 on page Ⅱ−12.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
(3) Choose screws whose dimension allow fixing thread depth into track rail ℓ to 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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
If hybrid C-Lube Linear Way specification (supplemental code "/HB") is selected in ML series, see Table 10 on page Ⅱ−17.

Remarks 1. The specification of oil hole is shown in Table 13 on page Ⅱ−18.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
ML	G 9	C2	R160			T1	P		/D
①	② ③	④	⑤	1	⑥	⑦	⑧	⑨	⑩

① Model

ML	Standard type
LWL···B	
LWL···N	

② Length of slide unit

C	Short
No symbol	Standard
G	Long
L	Extra high rigidity long

③ Size: 9, 12

④ Number of slide unit (2)

⑤ Length of track rail (160 mm)

⑥ Material type

No symbol	Stainless steel made
CS	High carbon steel made

⑦ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload

⑧ Accuracy class

H	High
P	Precision

⑨ Interchangeable

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

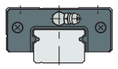
⑩ Special specification: A, BS, D, E, HB, Ⅰ, LR, MN N, Q, RE, S, U, W, Y

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

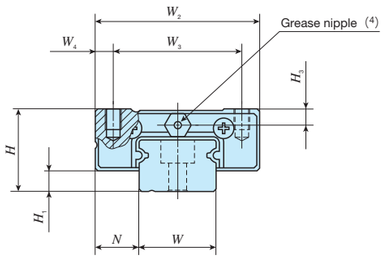
IKO C-Lube Linear Way ML

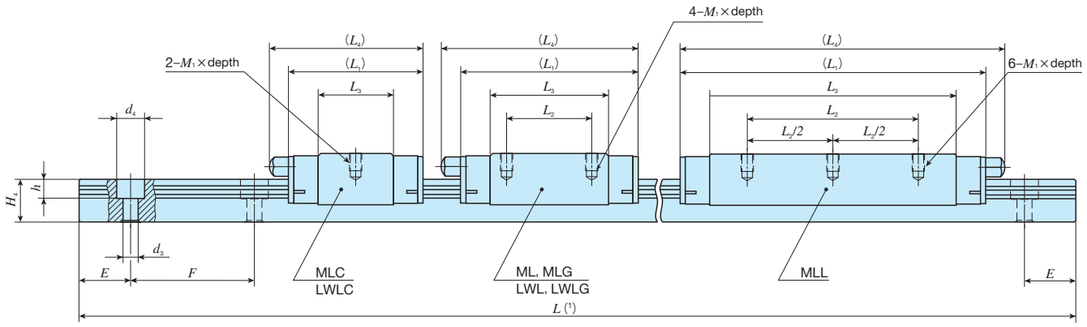
Standard type

Shape: **ML • LWL**



Size	1	2	3	5	7
	9	12	15	20	25





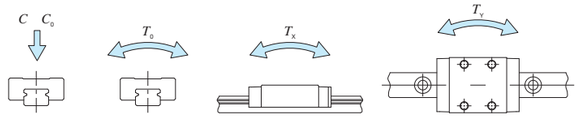
Identification number		Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm								Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
ML series	LWL series (No C-Lube)		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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	57.4 376	48.1 316
	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 L are shown in Table 3.1 on page Ⅱ−10 and Table 3.3 on page Ⅱ−12.

(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.

(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
If hybrid C-Lube Linear Way specification (supplemental code "/HB") is selected in MLC15, ML15, MLG15, and MLL15, see Table 10 on page Ⅱ−17.

(4) The shapes of grease nipple vary by size. The specifications are shown in Table 14 on page Ⅱ—18.



Example of identification number of assembled set

Model code		Dimensions	Part code		Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
ML	G	15	C2	R320			T1	P		/D
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

ML	Standard type
LWL···B	

② Length of slide unit

C	Short
No symbol	Standard
G	Long
L	Extra high rigidity long

③ Size: 15, 20, 25

④ Number of slide unit (2)

⑤ Length of track rail (320 mm)

⑥ Material type

No symbol	Stainless steel made
CS	High carbon steel made

⑦ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload

⑧ Accuracy class

H	High
P	Precision

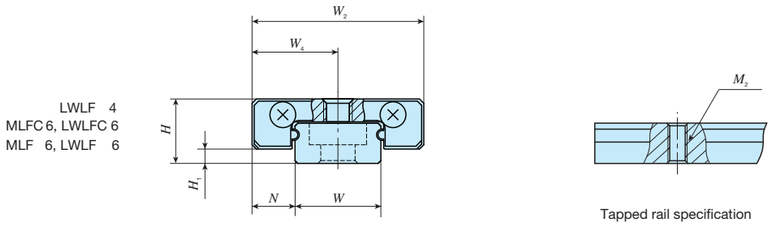
⑨ Interchangeable

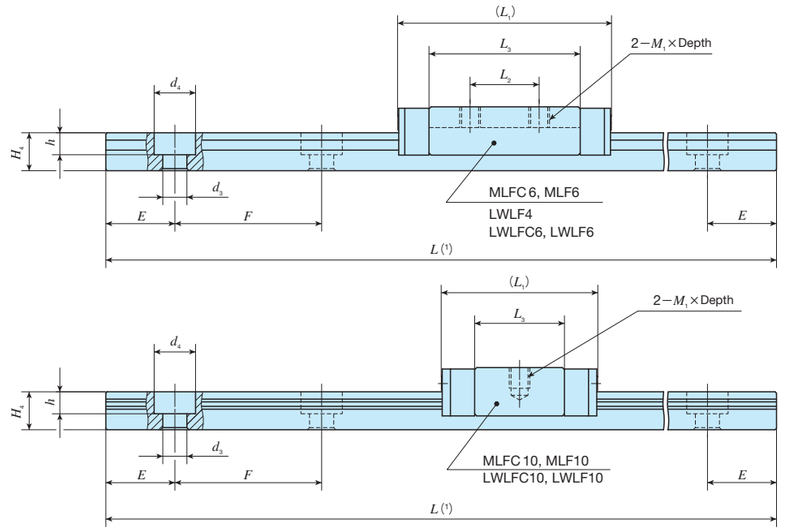
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

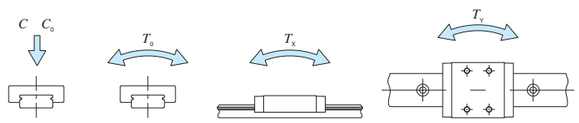
Wide type				
Shape	MLF • LWLF			
Size	4	6	10	14
	18	24	30	42





Identification number: MLF series	Identification number: LWLF series (No C-Lube)	Interchangeable	Mass (Ref.) g: Slide unit	Mass (Ref.) g: Track rail (per 100 mm)	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	M_1×depth	H_3	Dimensions of track rail mm: W	H_4	M_2	d_3	d_4	h	E	F	Appended mounting bolt for track rail mm: Bolt size× ℓ	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
–	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 pan head screw for precision equipment M1.6×5	390	677	1.4	1.3 7.1	1.5 8.4
MLFC 6(2)		–	2.1	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 pan head screw for precision equipment M2×4	334	542	1.7	0.84 5.1	1.0 6.1
	LWLFC 6(2)	–	2.4															M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
MLFC 6···N(2)*		–	2.1	12														–	2.4	4	1.5			Cross-recessed pan head screw for precision equipment M2×4	334	542	1.7	0.84 5.1	1.0 6.1
	LWLFC 6···N(2)*	–	2.4															M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
MLF 6(2)		–	3.1	13							20	8	14.6					–	2.4	4	1.5			Cross-recessed pan head screw for precision equipment M2×4	443	813	2.5	1.8 9.9	2.2 11.8
	LWLF 6(2)	–	3.4															M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
MLF 6···N(2)*		–	3.1	12														–	2.4	4	1.5			Cross-recessed pan head screw for precision equipment M2×4	443	813	2.5	1.8 9.9	2.2 11.8
	LWLF 6···N(2)*	–	3.4															M3 Through	–	–	–			M3× ℓ (3) (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 pan head 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															M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
MLFC 10···N*		–	6.1	29														–	2.9	4.8	1.6			Cross-recessed pan head screw for precision equipment M2.5×7	849	1 510	7.8	4.2 22.4	3.5 18.8
	LWLFC 10···N*	–	5.9															M3 Through	–	–	–			M3× ℓ (3) (Not appended)					
MLF 10		○	7.6	28							24.5		17.6															
	LWLF 10···B	○	7.5																									
MLF 10···N*		–	7.6	29																								
	LWLF 10···N*	–	7.5																									

Notes (1) Track rail lengths L are shown in Table 3.2 on page Ⅱ−11.
(2) Size 4 and 6 are non-retained-ball type. No end seal is attached.
(3) Choose screws whose dimension allow fixing thread depth into track rail ℓ to 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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) No oil hole is prepared for size 4 and 6.
The specification of oil hole for size 10 is shown in Table 13 on page Ⅱ−18.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

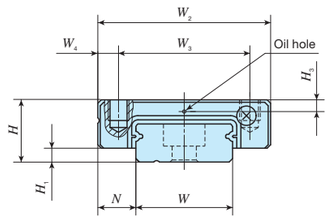
Model code	Dimensions	Part code		Model code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MLF	C	10	C2	R120		T0	P		/D
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨

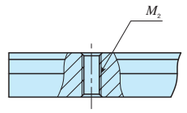
① Model: MLF, LWLF(···B), LWLF···N — Wide type
② Length of slide unit: C — Short; No symbol — Standard
③ Size: 4, 6, 10
④ Number of slide unit (2)
⑤ Length of track rail (120 mm)
⑥ Preload amount: T0 — Clearance; No symbol — Standard
⑦ Accuracy class: H — High; P — Precision
⑧ Interchangeable: No symbol — Non-interchangeable specification; S1 — S1 specification; S2 — S2 specification
⑨ Special specification: A, BS, D, E, Ⅰ, MN, N, Q, RE, S, W, Y

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

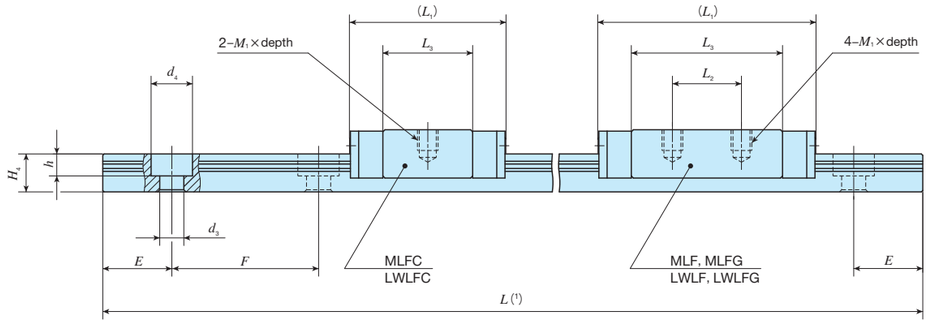
Wide type

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



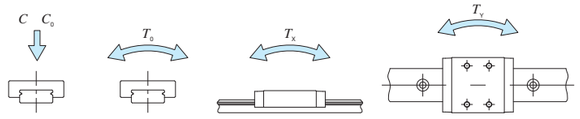


Tapped rail specification
LWLF···N



Identification number		Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm								Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MLF series	LWLF series (No C-Lube)		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3	W	H_4	M_2	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MLFC 14	LWLF 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
MLFC 14···N*	LWLF 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																									
MLF 14···N*		–	20	56														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
	LWLF 14···N*	–	21																									
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																									
MLFG 14···N*		–	29	56														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
	LWLFG 14···N*	–	31																									

Notes (1) Track rail lengths L are shown in Table 3.2 on page Ⅱ−11.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(3) Choose screws whose dimension allow fixing thread depth into track rail ℓ to 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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
Remarks 1. The specification of oil hole is shown in Table 13 on page Ⅱ−18.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code			Model code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MLF	G	14	C2	R240		T_1	P		/D
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨

① Model

MLF	Wide type
LWLF···B	
LWLF···N	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 14

④ Number of slide unit (2)

⑤ Length of track rail (240 mm)

⑥ Preload amount

T_0	Clearance
No symbol	Standard
T_1	Light preload

⑦ Accuracy class

H	High
P	Precision

⑧ Interchangeable

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

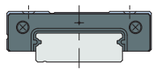
⑨ Special specification: A, BS, D, E, Ⅰ, LR, MN, N, Q, RE, S, W, Y

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

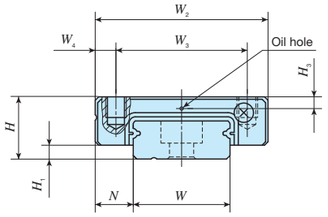
Wide type

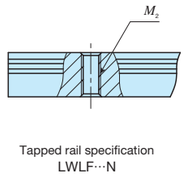
MLF • LWLF

Shape

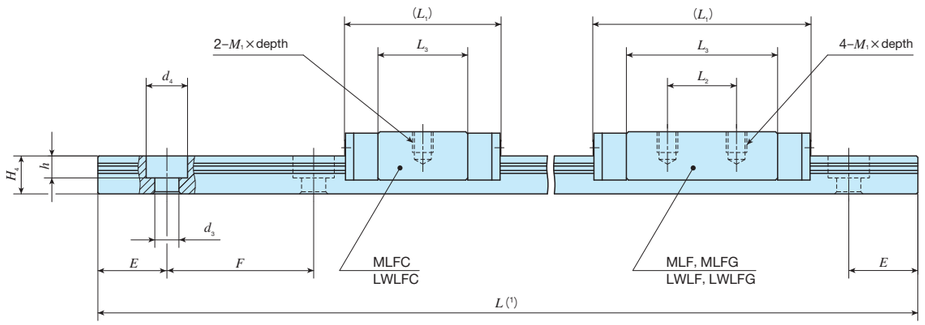


Size				
4	6	10	14	
18	24	30	42	





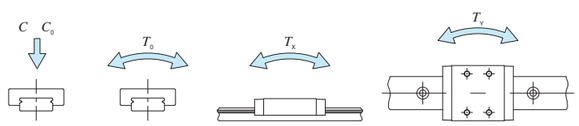
Tapped rail specification
LWLF···N



Identification number		Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm								Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MLF series	LWLF series (No C-Lube)		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3	W	H_4	M_2	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MLFC 18	LWLFC 18···B	○	26	90	12	3	6	30	21	4.5	26.5	–	16.6	M3×3	2.5	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
MLFC 18···N*	LWLFC 18···N*	–	26	92														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
MLF 18		○	42	90							38.5	12	28.6					–	3.5	6.5	4.5			M3×8	2 280	3 810	34.9	16.9 88.8	14.2 74.5
	LWLF 18···B	○	44																									
–	LWLF 18···BCS	○																										
MLF 18···N*		–	42	92														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
	LWLF 18···N*	–	44																									
MLFG 18		○	59	90					23	3.5	50.5	24	40.4					–	3.5	6.5	4.5			M3×8	2 870	5 300	48.5	31.9 159	26.7 134
	LWLFG 18···B	○	61																									
MLFG 18···N*		–	59	92														M4 Through	–	–	–			M4× ℓ (3) (Not appended)					
	LWLFG 18···N*	–	61																									
MLFC 24		○	46	139	14	3	8	40	28	6	30.5	–	17.7	M3×3.5	3.2	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	○	45																									
MLF 24		○	74								44	15	31												4 310	6 200	75.6	30.6 168	25.7 141
	LWLF 24···B	○	76																									
–	LWLF 24···BCS	○																										
MLFG 24		○	108								59	28	46.3												5 620	9 060	111	63.3 321	53.1 270
	LWLFG 24···B	○	111																									

Notes (1) Track rail lengths L are shown in Table 3.2 on page Ⅱ−11 and Table 3.3 on page Ⅱ−12.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
(3) Choose screws whose dimension allow fixing thread depth into track rail ℓ to 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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specification of oil hole is shown in Table 13 on page Ⅱ−18.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code		Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MLF	G	18	C2	R300			T1	P		/D
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MLF	Wide type
LWLF···B	
LWLF···N	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 18, 24

④ Number of slide unit (2)

⑤ Length of track rail (300 mm)

⑥ Material type

No symbol	Stainless steel made
CS	High carbon steel made

⑦ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload

⑧ Accuracy class

H	High
P	Precision

⑨ Interchangeable

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

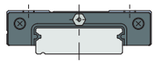
⑩ Special specification: A, BS, D, E, I, LR, MN, N, Q, RE, S, U, W, Y

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

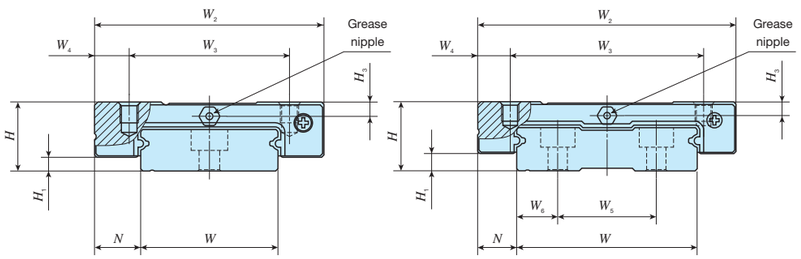
Wide type

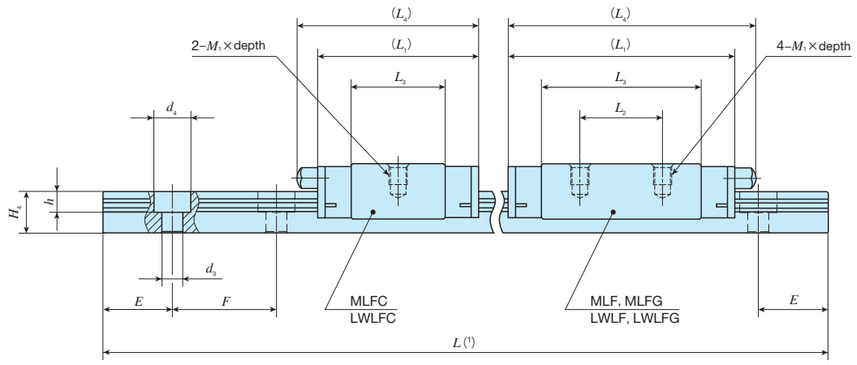
MLF • LWLF

Shape



Size				
4	6	10	14
18	24	30	42





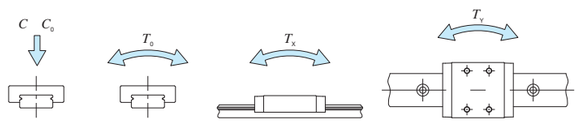
Identification number		Interchangeable	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm									Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MLF series	LWLF series (No C-Lube)		Slide unit	Track rail (per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	W_5	W_6	d_3	d_4	h	E	F	Bolt size× ℓ	C	C_0	T_0	T_x	T_y
																											N	N	N·m	N·m	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	48.7 256	40.8 215
	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 L are shown in Table 3.2 on page Ⅱ−11 and Table 3.3 on page Ⅱ−12.

(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.

(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 of T_x and T_y are for one slide unit and the lower values are for two slide units in close contact.

Remark: The specifications of grease nipple are shown in Table 14 on page Ⅱ−18.



Example of identification number of assembled set

Model code	Dimensions	Part code		Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MLF	G	42	C2	R320			T1	P		/D
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MLF	Wide type
LWLF···B	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 30, 42

④ Number of slide unit (2)

⑤ Length of track rail (320 mm)

⑥ Material type

No symbol	Stainless steel made
CS	High carbon steel made

⑦ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload

⑧ Accuracy class

H	High
P	Precision

⑨ Interchangeable

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

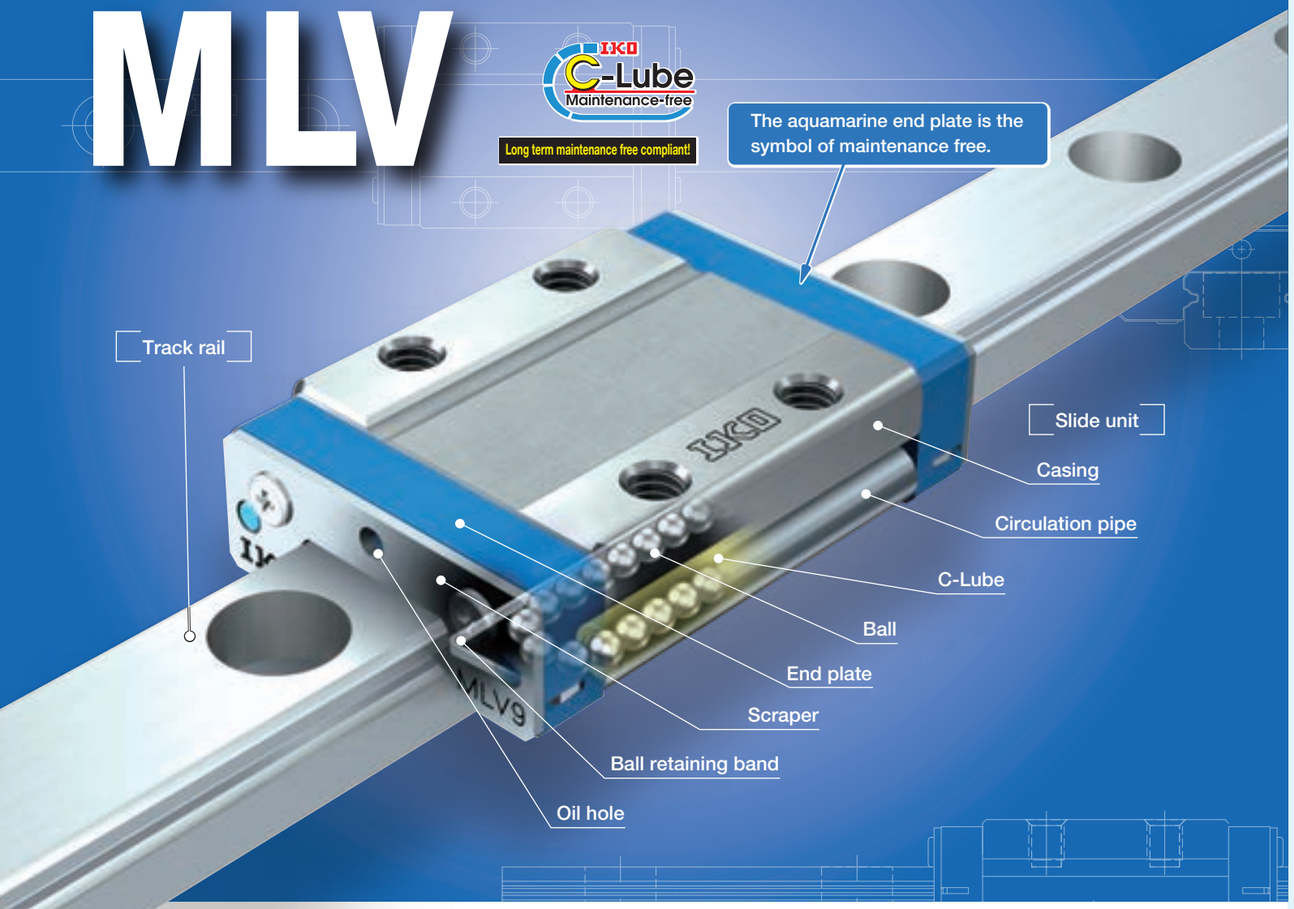
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

C-Lube Linear Way MLV

C-Lube Linear Way MLV

MLV

Long term maintenance free compliant!



Points

1 Extremely small size realized by simple structure

For details P.I-19

Super small-size linear motion rolling guide produced by two-row four-point contact simple structure and original small sizing technology.

2 Long term maintenance free

For details P.I-11

The built-in "C-Lube", the capillary lubricating element, in the ball circulation pipes of the slide unit makes it long term maintenance free.
Lubrication oil is continuously supplied to the surface of rolling elements by surface tension in the contact of the capillary lubricating element surface and rolling elements.

3 Cost performance

Preserving the basic performance of C-Lube Linear Way ML as is, lower cost has been achieved by reviewing the structure including the ball recirculation part.

4 Ball retained type for easy operation

The slide unit incorporates the ball retaining band, which prevents the ball from dropping down when the slide unit is removed from the track rail. This safety structure brings you an easy operation to the machines/equipment.

5 Stainless steel selections for excellent corrosion resistance

For details P.I-41

Stainless steel highly corrosion-resistant is used as the basic specification, so that the products are suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment.

Identification Number and Specification

Example of an Identification Number

The specifications of the MLV series are indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a classification symbol, and any supplemental codes for each specification to apply.

Non-interchangeable specification	1	2	3	4	5	6
Assembled set	MLV	9	C1	R160	H	/US

1 Model — Model code Ⅱ－43

2 Size — Dimensions Ⅱ－43

3 Number of slide units / **4 Length of track rail** — Part code Ⅱ－43

5 Accuracy class — Classification symbol Ⅱ－44

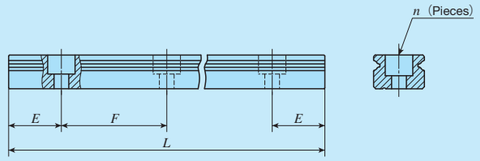
6 Special specification — Supplemental code Ⅱ－44

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

Identification Number and Specification — Model · Size · Number of Slide Unit · Length of Track Rail —

1 Model	C-Lube Linear Way MLV (MLV series)	: MLV	
2 Size	7, 9, 12		
3 Number of slide units		: C○	Indicates the number of slide units assembled on a track rail.
4 Length of track rail		: R○	Indicate the length of track rail in mm. For standard and maximum lengths, see Table 1.

Table 1 Standard and maximum lengths of track rail



unit: mm

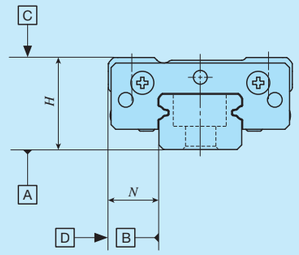
Item \ Identification number	MLV 7	MLV 9	MLV 12
Standard length L (n)	60 (4) 90 (6) 120 (8) 150 (10) 180 (12) 240 (16)	60 (3) 80 (4) 120 (6) 160 (8) 220 (11) 280 (14)	100 (4) 150 (6) 200 (8) 275 (11) 350 (14) 475 (19)
Pitch of mounting holes F	15	20	25
E	7.5	10	12.5
Standard E dimensions or higher	4.5	4.5	5
Standard E dimensions below	12	14.5	17.5
Maximum length (1)	300 (990)	860 (1 200)	1 000 (1 450)

Note (1) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remark: If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

—Accuracy Class · Special Specification—

5 Accuracy class	High	: H	For details of accuracy class, see Table 2.

Table 2 Tolerance and allowance



Unit: mm

Item \ Class (Classification symbol)	High (H)
Dim. H tolerance	±0.020
Dim. N tolerance	±0.025
Dim. variation of H (1)	0.015
Dim. variation of N (1)	0.020
Parallelism in operation of the slide unit C surface to A surface	See Fig. 1.
Parallelism in operation of the slide unit D surface to B surface	See Fig. 1.

Note (1) It means the size variation between slide units mounted on the same track rail.

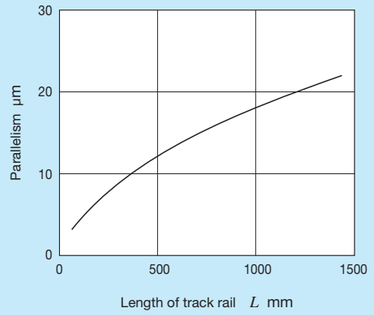


Fig. 1 Parallelism in operation

6 Special specification	/D, /E, /MN, /US, /W○, /YCG		For applicable special specifications, see Table 3. For combination of multiple special specifications, see Table 4. For details of special specifications, see page Ⅲ−29.

Table 3 Application of special specifications

Special specification	Supplemental code	Size 7	Size 9	Size 12
Opposite reference surfaces arrangement	/D	○	○	○
Specified rail mounting hole positions	/E	○	○	○
Without track rail mounting bolt	/MN	○	○	○
End seal	/US	○	○	○
A group of multiple assembled sets	/W○	○	○	○
Specified grease (Low Dust-Generation Grease for Clean Environment CG2)	/YCG	○	○	○

Table 4 Combination of supplemental codes

E	–				
MN	○	○			
US	○	○	○		
W	○	–	○	○	
YCG	○	○	○	○	○
	D	E	MN	US	W

Remarks: 1. The combination of "–" shown in the table is not available.
2. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

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

Preload

Preload for the MLV series is adjusted to have subtle clearance or minimal amount of preload.

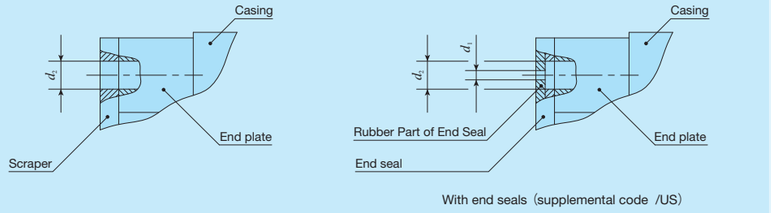
Lubrication

Lithium-soap base grease (MULTEMP PS No.2 [KYODO YUSHI CO., LTD.]) is pre-packed in MLV series. Additionally, MLV series has C-Lube placed in the recirculation part of balls, so that the interval for reapplicating lubricant can be extended and maintenance works such as grease job can be reduced significantly.
MLV series have an oil hole. (See Table 5)
Dedicated supplying equipment (miniature greasers) fit to oil holes are also available. For order of these parts for lubrication, see Table 13 on Page Ⅲ−23.

Dust Protection

No end seal is provided for the MLV series. For applications in other than clean environment, cover the whole unit with a protective case, etc. to prevent harmful foreign substances such as dust and particles from entering.
We can also attach end seals (supplemental code "/US") on both sides of the slide unit. If needed, indicate the supplemental code.
Even with the use of the end seals to prevent dust from entering, if large amount of contaminants or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to attach a protective cover to the linear motion mechanism.

Table 5 Oil hole specifications



unit: mm

Size	d_1	d_2
7	0.5	1.2
9		1.5
12		2

Precaution for Use

❶ Handling

A strong grip on the circulation pipes of the MLV series slide unit, will distort the circulation path, which may affect the operating performance; handle with care.

❷ Mounting surface, reference mounting surface and typical mounting structure

When mounting the MLV series, properly align the reference mounting surfaces B and D of the track rail and the slide unit with the reference mounting surface of the table and the bed and fix them. (See Fig.2)
The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.
Reference mounting surface of the slide unit is the upper surface when you see the IKO mark on the C surface in normal position. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction the arrow point). (See Fig.3)

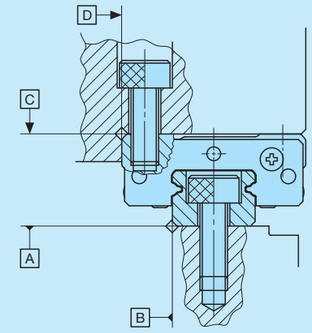


Fig. 2 Reference mounting surface and typical mounting structure

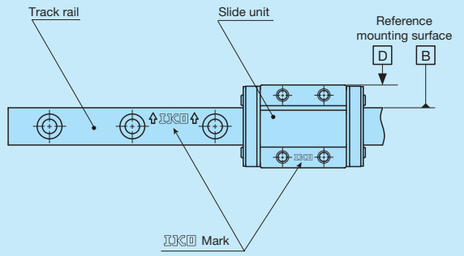


Fig. 3 Reference mounting surface

❸ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 4. Recommended value for the shoulder height on the mating side is indicated in Table 6.

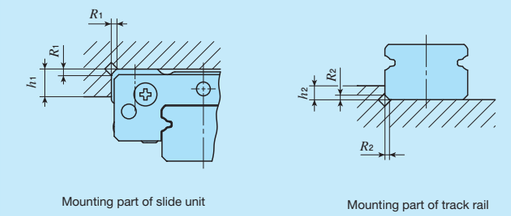


Fig. 4 Corner of the mating reference mounting

Table 6 Shoulder height and corner radius of the reference mounting surface

Size	Mounting part of slide unit		Mounting part of track rail	
	Shoulder height h_1	Corner radius R_1 (maximum)	Shoulder height h_2	Corner radius R_2 (maximum)
7	2.5	0.2	1.2	0.2
9	3	0.2	1.5	0.2
12	4	0.2	2.5	0.2

❹ Tightening torque for fixing screw

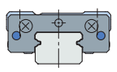
Typical tightening torque for mounting of the MLV series to the steel mating member material is indicated in Table 7. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

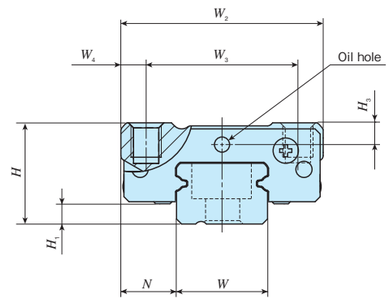
Table 7 Tightening torque for fixing screw

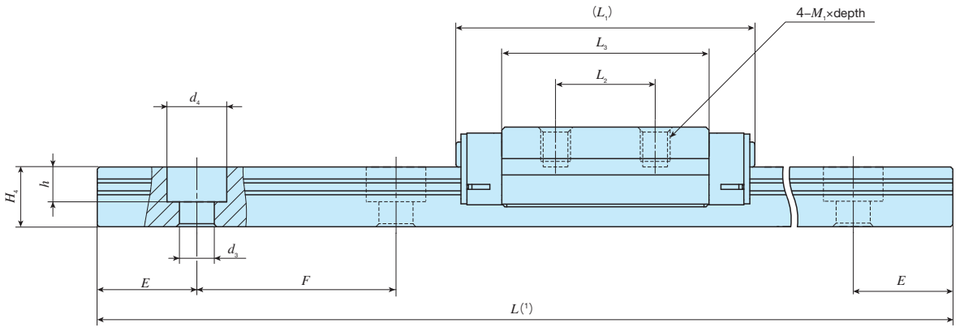
Bolt size	Tightening torque N・m
	Stainless steel-made screw
M2×0.4	0.31
M3×0.5	1.1

Remark: The tightening torque is calculated based on the property division A2-70.

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

Standard type			
Shape	MLV 		
Size	7	9	12

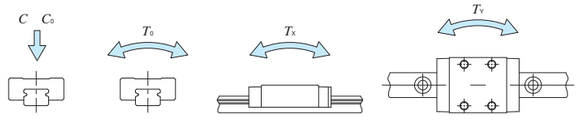




Identification number	Mass (Ref.) g		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm							Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
	Slide unit	Track rail (Per 100 mm)	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	M_1×depth	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MLV 7	8.4	22	8	1.5	5	17	12	2.5	23.5	8	14.3	M2×2	1.5	7	5	2.4	4.2	2.3	7.5	15	M2×6	1 330	1 890	6.9	4.7 28.2	3.9 23.6
MLV 9	17	35	10	2	5.5	20	15	2.5	30	10	20.8	M3×3	2.2	9	6	3.5	6	3.5	10	20	M3×8	1 810	2 760	12.8	9.1 51.1	7.6 42.9
MLV 12	31	65	13	3	7.5	27	20	3.5	34	15	21.6	M3×3.5	2.7	12	8	3.5	6.5	4.5	12.5	25	M3×8	3 330	4 290	26.6	15.4 93.1	12.9 78.2

Notes (1) Track rail lengths L are shown in Table 1 on page Ⅱ−43.
(2) The appended track rail mounting bolts are stainless steel hexagon socket head bolts equivalent to JIS B 1176.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
Remark: The specification of oil holes is shown in Table 5 on page Ⅱ−45.

1N=0.102 kgf



Example of identification number of assembled set

Model code	Dimensions	Part code		Classification symbol	Supplemental code
MLV	7	C2	R120	H	/US
①	②	③	④	⑤	⑥

① Model
MLV: C-Lube Linear Way MLV

② Size
7, 9, 12

③ Number of slide units (2)

④ Length of Track Rail (120mm)

⑤ Accuracy class
H: High

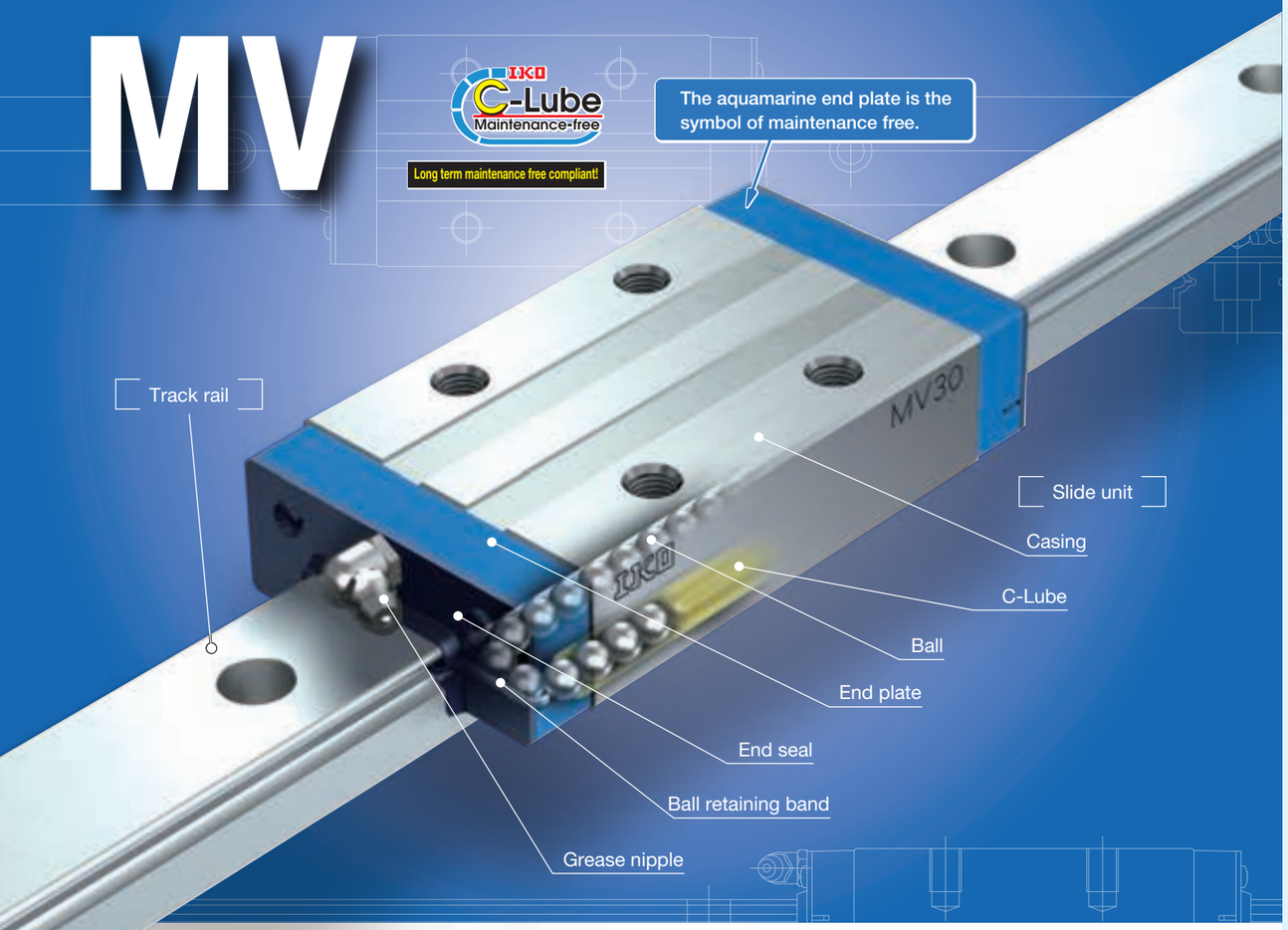
⑥ Special specification
D, E, MN, US, W, YCG

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

C-Lube Linear Way MV

C-Lube Linear Way MV

MV



Points

1 Ultimate ball type linear motion rolling guide pursuing extra low profile and extra light weight

For details ➔ P.I-19

A linear motion rolling guide with extra low profile and extra light weight, achieved only because of the simple mechanism of two-row four-point contact structure.

2 High load capacity

Despite its extra low profile and extra light weight, it has the maximum load rating among the ball types and contributes to long life and increases safety of machine or device.

3 Long term maintenance free

For details ➔ P.I-11

The built-in "C-Lube", the capillary lubricating element, in the ball circulation paths of the slide unit makes it long term maintenance free.
Lubrication oil is continuously supplied to the surface of rolling elements by surface tension in the contact of the capillary lubricating element surface and rolling elements.

4 Ball retained type for easy operation

The slide unit incorporates the ball retaining band, which prevents the ball from dropping down when the slide unit is removed from the track rail. This safety structure brings you an easy operation to the machines/equipment.

Designation of Identification Number and Specification

Example of an Identification Number

The specifications of the MV series are indicated by the identification number.
Indicate the identification number, consisting of a model code, dimensions, a part code, a preload symbol, a classification symbol, and any supplemental codes for each specification to apply.

	1	2	3	4	5	6	7
Assembled set	MV	20	C1	R1000	T_1	P	/FU

1 **Model** — Model code Ⅱ－53

2 **Size** — Dimensions Ⅱ－53

3 **Number of slide units**

4 **Length of track rail**

Part code Ⅱ－53

5 **Preload amount** — Preload symbol Ⅱ－53

6 **Accuracy class** — Classification symbol Ⅱ－54

7 **Special specification** — Supplemental code Ⅱ－55

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

Identification Number and Specification – Model · Size · Number of Slide Unit · Length of Track Rail · Preload amount –

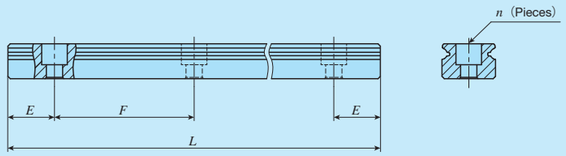
1 Model
C-Lube Linear Way MV : MV
(MV series)

2 Size
20, 25, 30

3 Number of slide units : C○
Indicates the number of slide units assembled on a track rail.

4 Length of track rail : R○
Indicate the length of track rail in mm.
For standard and maximum lengths, see Table 1.

Table 1 Standard and maximum lengths of track rail



unit: mm

Item \ Identification number	MV 20	MV 25	MV 30
Standard length L (n)	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)
Pitch of mounting holes F	60	60	80
E	20	20	20
Standard E dimensions or higher	8	9	9
Standard E dimensions below	38	39	49
Maximum length (1)	2 200 (2 980)	2 980	3 000

Note (1) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remark: If not directed, E dimensions for both ends will be the same within the range of E reference dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

5 Preload amount

Clearance	: Tc	For details of the preload amount, see Table 2.
Standard	: No symbol	
Light preload	: T1	

Table 2 Preload amount

Item / Preload type	Preload symbol	Preload amount N	Operational conditions
Clearance	Tc	0(1)	· Very light motion · To absorb slight errors
Standard	(No symbol)	0(2)	· Light and precise motion
Light preload	T1	0.02C_0	· Almost no vibrations · Load is evenly balanced · Light and precise motion

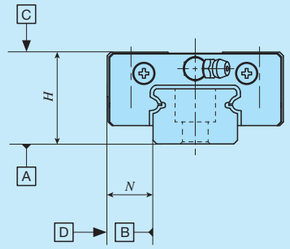
Notes (1) Clearance of about 10 μm
(2) Indicates zero or minimal amount of preload.
Remark: C_0 indicates the basic static load rating.

–Accuracy Class–

6 Accuracy class

Ordinary	: No symbol	For details of accuracy class, see Table 3.
High	: H	For applicable combinations of accuracy class and
Precision	: P	preload amount, see Table 4.
Super precision	: SP	

Table 3 Tolerance and allowance



unit: mm

Item \ Class (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
Parallelism in operation of the slide unit C surface to A surface	See Fig. 1.			
Parallelism in operation of the slide unit D surface to B surface	See Fig. 1.			

Note (1) It means the size variation between slide units mounted on the same track rail.

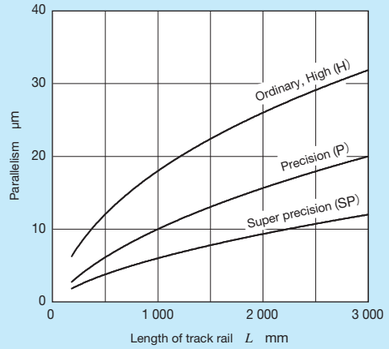


Fig. 1 Parallelism in operation

Table 4 Combination of accuracy class and preload

Item (preload symbol) \ Classification (Classification symbol)	Ordinary (No symbol)	High (H)	Precision (P)	Super precision (SP)
Clearance (Tc)	○	–	–	–
Standard (no symbol)	○	○	○	○
Light preload (T1)	–	○	○	○

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

7 Special specification

/A, /D, /E, /F, /I, /L○, /LF○, /MA, /N, /U, /V○, /W○, /YCG, /Z○

For applicable special specifications, see Table 5.
For combination of multiple special specifications, see Table 6.
For details of special specifications, see page Ⅲ−29.

Table 5 Application of special specifications

Special specification	Supplemental code
Butt-jointing track rails	/A
Opposite reference surfaces arrangement	/D
Specified rail mounting hole positions	/E
Caps for rail mounting holes	/F
Inspection sheet	/I
Black chrome surface treatment	/L○
Fluorine black chrome surface treatment	/LF○
With track rail mounting bolt	/MA
No seal	/N
Under seal	/U
Double seals	/V○
A group of multiple assembled sets	/W○
Specified grease (IKO Low Dust-Generation Grease for Clean Environment CG2)	/YCG
Scraper	/Z○

Table 6 Combination of supplemental codes

	A	D	E	F	I	L	LF	MA	N	U	V	W	YCG
D	○												
E	−	−											
F	○	○	○										
I	○	○	○	○									
L	○	○	○	○	○								
LF	○	○	○	○	○	−							
MA	○	○	○	○	○	○	○						
N	○	○	○	−	○	○	○	○					
U	○	○	○	○	○	○	○	○	−				
V	○	○	○	○	○	○	○	○	−	○			
W	○	○	−	○	○	○	○	○	○	○	○		
YCG	○	○	○	○	○	○	○	○	○	○	○	○	
Z	○	○	○	○	○	○	○	○	−	○	○	○	○

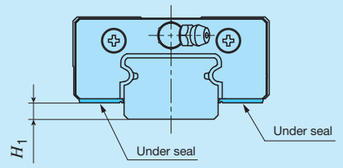
Remarks: 1. The combination of "−" shown in the table is not available.
2. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

Table 7 Track rail mounting bolt size (Supplemental code /MA)

Size	Bolt size for track rail
20	M5×14
25	M6×20
30	M6×20

Remark: Hexagon socket head bolts equivalent to JIS B 1176.

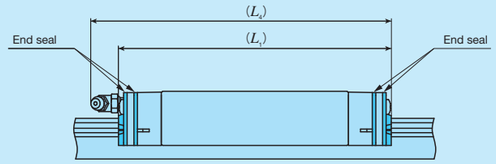
Table 8 H_1 dimension with under seal (Supplemental code: /U)



unit: mm

Size	H_1
20	4
25	4
30	4.5

Table 9 Dimension of slide unit with double end seals (Supplemental code /V /VV)

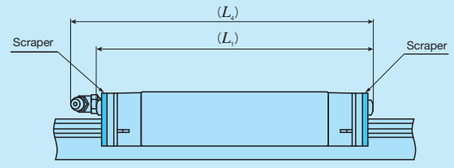


unit: mm

Size	L_1	L_4
20	81	83
25	101	111
30	125	141

Remark: The dimensions of the slide unit with double end seals at both ends are indicated.

Table 10 Dimension of slide unit with scrapers (Supplemental code: /Z /ZZ)



unit: mm

Size	L_1	L_4
20	82	84
25	103	112
30	127	142

Remark: The dimensions of the slide unit with scraper at both ends are indicated.

MV

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

Lubrication

Lithium-soap base grease with extreme-pressure additive (Alvania EP grease 2 [SHOWA SHELL SEKIYU K. K.]) is pre-packed in MV series. Additionally, MV series has C-Lube placed in the recirculation part of balls, so that the interval for reapplicating lubricant can be extended and maintenance works such as grease job can be reduced significantly.
MV series has grease nipple as indicated in Table 11. Supply nozzles fit to each shapes of grease nipple are also available. When these parts are desired, see Tables 14.1 and 14.2 on page Ⅲ-23 and Table 15 on page Ⅲ-24 to order.

Dust Protection

The slide units of MV series are equipped with end seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to cover the whole unit with bellows or telescope type shield, etc.
It is also effective to apply special specifications such as caps for rail mounting holes, under seal, double end seals and scrapers according to the use environment.

Table 11 Parts for lubrication

Size	Grease nipple type (1)	Applicable supply nozzle type	Bolt size of female threads for piping
20	A-M3	A-5120V A-5240V B-5120V B-5240V	–
25	B-M4	A-8120V B-8120V	M4
30	B-M6	Grease gun available on the market	M6

Note (1) For grease nipple specification, see Table 14.1 and 14.2 on page Ⅲ－23.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

Precaution for Use

❶ Mounting surface, reference mounting surface and typical mounting structure

When mounting the MV series, properly align the reference mounting surface B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig.2)
The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.
Reference mounting surface of the slide unit is the opposite side of the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction of the arrow). (See Fig.3)

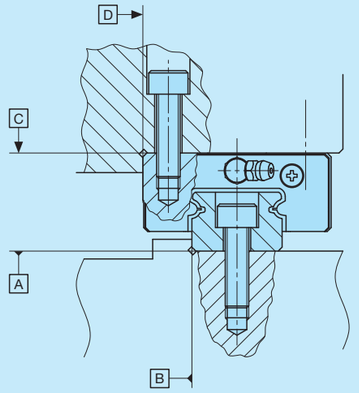


Fig. 2 Reference mounting surface and typical mounting structure

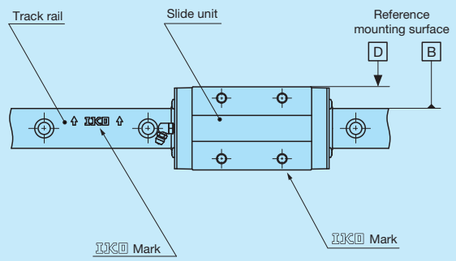


Fig. 3 Reference mounting surface

❷ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig.4. Recommended value for the shoulder height and corner radius on the mating side is indicated in Table 12.

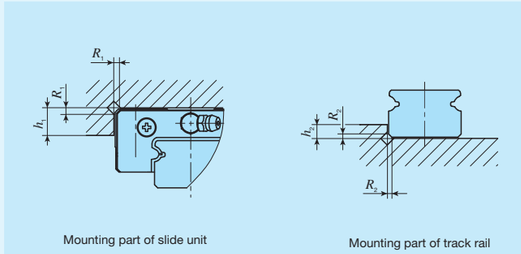


Fig. 4 Corner of the mating reference mounting

Table 12 Shoulder height and corner radius of the reference mounting surface

Size	Mounting part of slide unit		Mounting part of track rail	
	Shoulder height h_1	Corner radius R_1 (maximum)	Shoulder height h_2	Corner radius R_2 (maximum)
20	5	0.2	3	0.5
25	5	0.5	3	0.5
30	5	0.5	3	0.5

❸ Tightening torque for fixing screw

Typical tightening torque for mounting of the MV series to the steel mating member material is indicated in Table 13. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 13 Tightening torque for fixing screw

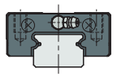
Bolt size	Tightening torque N・m	
	High carbon steel-made screw	Stainless steel-made screw
M5×0.8	8.0	5.0
M6×1	13.6	8.5
M8×1.25	32.7	20.4

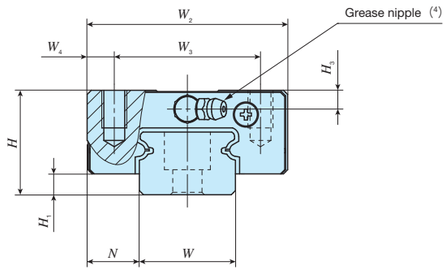
Remark: The tightening torque is calculated based on strength division 12.9 and property division A2-70.

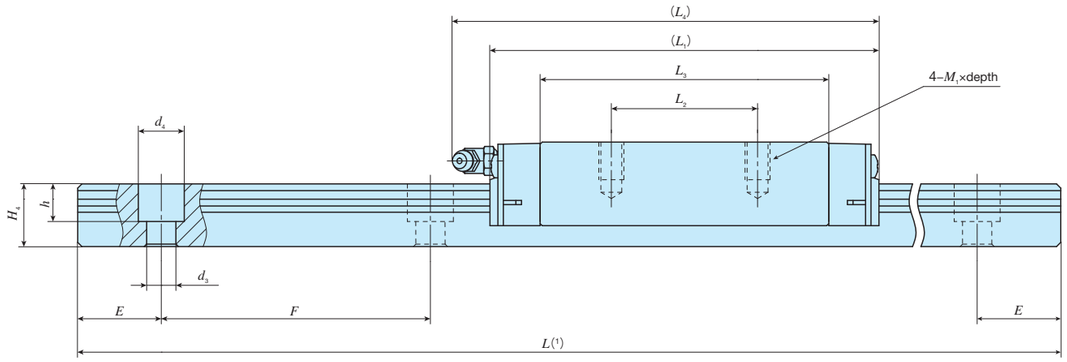
MV

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

IKO C-Lube Linear Way MV

Standard type			
Shape	MV 		
Size	20	25	30

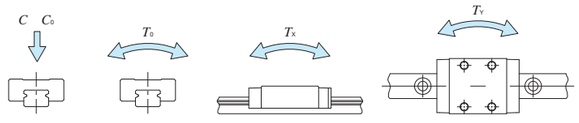




Identification number	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm							Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
	Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MV 20	0.18	1.66	20	5	11	42	32	5	73	32	51.2	76	M5×6	3.5	20	12	6	9.5	8.5	20	60	M5×14	19 600	25 600	138	115 624	102 555
MV 25	0.36	2.37	25	5	12.5	48	35	6.5	94	35	69.1	103	M6×9	4.5	23	15	7	11	9	20	60	M6×20	31 900	42 500	264	260 1 320	230 1 170
MV 30	0.72	3.33	30	6	16	60	40	10	116	40	86.6	126	M8×11	5	28	17	7	11	9	20	80	M6×20	46 300	61 800	468	467 2 350	414 2 090

Notes (1) Track rail lengths L are shown in Table 1 on page Ⅱ−53.
(2) Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 are recommended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) For specifications of grease nipple, see Table 11 on page Ⅱ−57.

1N=0.102 kgf



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Supplemental code
MV	25	C2	R1000	T1	SP	/FU
①	②	③	④	⑤	⑥	⑦

① Model

MV	C-Lube Linear Way MV

② Size
20, 25, 30

③ Number of slide units (2)

④ Length of Track Rail (1000mm)

⑤ Preload amount

TC	Clearance
No symbol	Standard
T1	Light preload

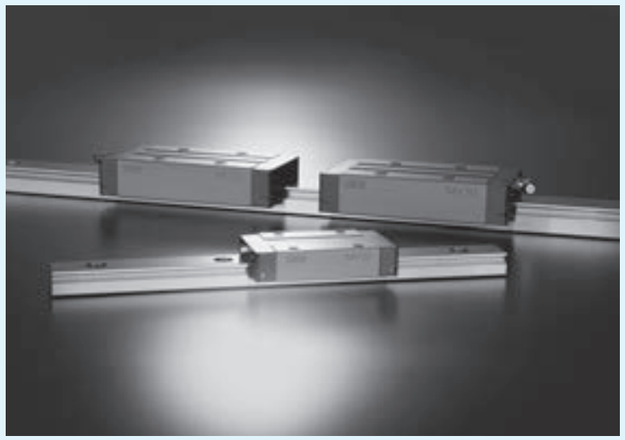
⑥ Accuracy class

No symbol	Ordinary
H	High
P	Precision
SP	Super precision

⑦ Special specification
A, D, E, F, I, L, LF, MA, N, U, V, W, YCG, Z

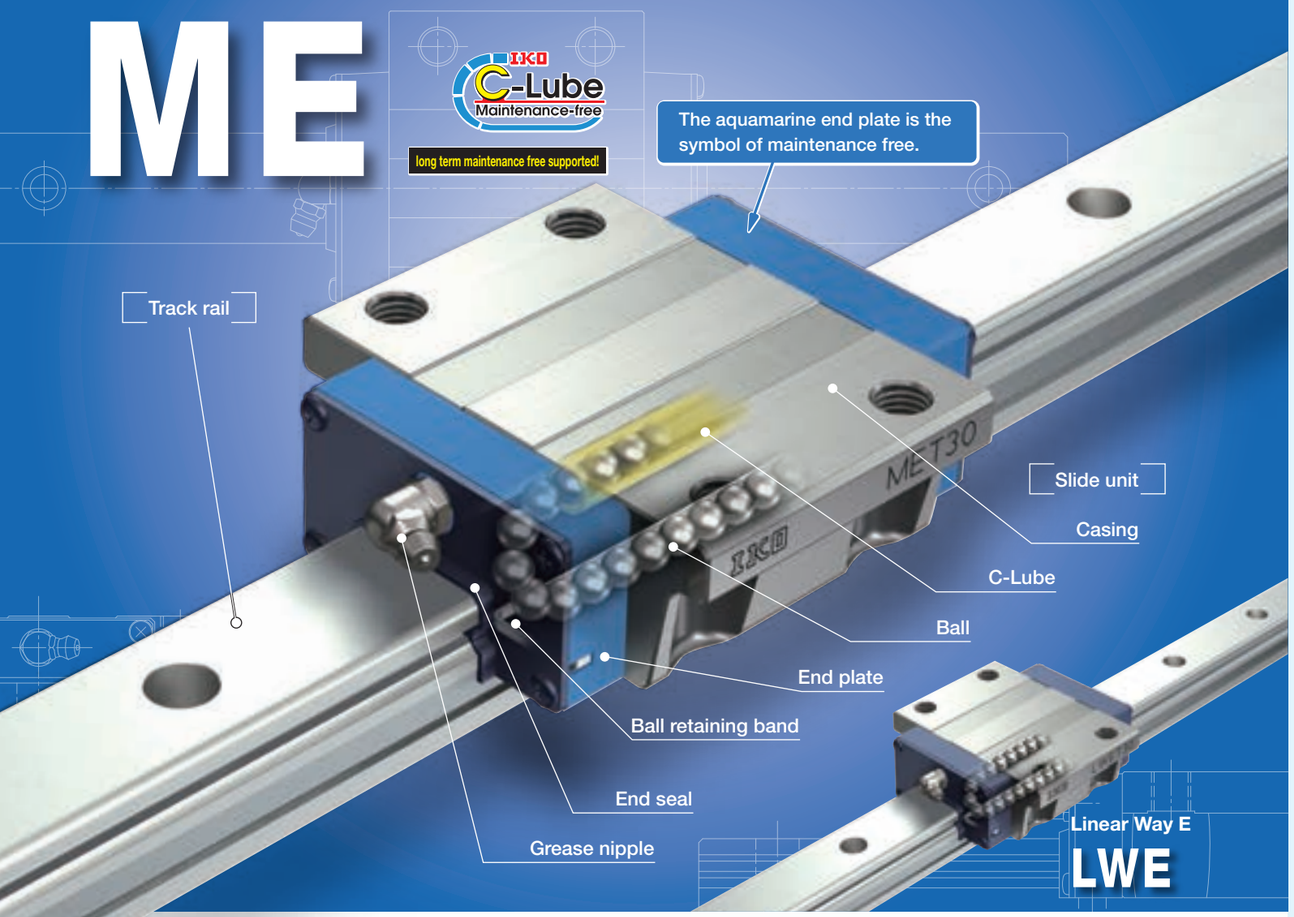
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

C-Lube Linear Way ME
Linear Way E



C-Lube Linear Way ME

ME



Points

1 Compact and versatile series with utility

Versatile linear motion rolling guide that has achieved utility pursuing compactness in every aspect.

2 Wide range of variations for your needs

For details P.I-26

As two shapes of slide unit, flange type and block type (with small width) and 3 types with different slide unit length with same section are available, you can select an optimal product for the specifications of your machine and device.

3 Stainless steel selections superior in corrosion resistance are listed on lineup.

For details P.I-41

Products made of stainless steel are highly resistant to corrosion, so that they are suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment.

4 Achieved smooth and quiet motion Low Decibel Linear Way E

Due to resin separator built-in balls, Low Decibel Linear Way E achieved smooth and quiet motion by eliminating of direct contact of balls each other. This feature reduces noise level in factory and contributes to a human-friendly environment.

Identification Number and Specification

Example of an identification number

The specifications of ME and LWE (···Q) series are indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a material code, a preload symbol, a classification symbol, an interchangeable code, and any supplemental codes for each specification to apply.

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

1 **Model** — Model code Page Ⅱ－65

2 **Length of slide unit** — Model code Page Ⅱ－65

3 **Size** — Dimensions Page Ⅱ－65

4 **Number of slide units** — Part code Page Ⅱ－65

5 **Length of track rail** — Part code Page Ⅱ－65

6 **Material type** — Material code Page Ⅱ－65

7 **Preload amount** — Preload symbol Page Ⅱ－68

8 **Accuracy class** — Classification symbol Page Ⅱ－68

9 **Interchangeable** — Interchangeable code Page Ⅱ－69

10 **Special specification** — Supplemental code Page Ⅱ－69

Note (1) Indicate "LWE" for the model code of the single track rail regardless of the series and the combination of slide unit model.

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

Identification Number and Specification —Model · Length of Slide Unit · Size ·

1 Model

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 series)	Flange type mounting from bottom	: LWE
	Flange type mounting from top	: LWET
	Block type mounting from top	: LWES
Low Decibel Linear Way E (1) (LWE···Q series)	Flange type mounting from bottom	: LWE···Q
	Flange type mounting from top	: LWET···Q
	Block type mounting from top	: LWES···Q

For applicable models and sizes, see Table 1.
Indicate "LWE" for the model code of single track rail regardless of the series and the slide unit model to be combined.

Note (1) This model has no built-in C-Lube.

2 Length of slide unit

Short	: C	For applicable models and sizes, see Table 1.
Standard	: No symbol	
Long	: G	

3 Size

15,20,25,30,35,45 — For applicable models and sizes, see Table 1.

4 Number of slide units

: C○ — For an assembled set, indicates the number of slide units assembled on a track rail. For a single slide unit, only "C1" is specified.

5 Length of track rail

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

6 Material type

High carbon steel made	: No symbol	For applicable models and sizes, see Table 1.
Stainless steel made (2)	: SL	

Note (2) Mount a standard grease nipple (brass) on the stainless steel type, too.
Stainless steel grease nipple is also available. If needed, please contact IKO.

Number of Slide Unit · Length of Track Rail · Material—

Table 1 Models and sizes of ME and LWE (···Q) series

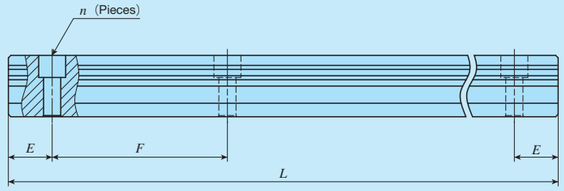
Material	Shape	Slide unit Length	Model	Size 15	20	25	30	35	45
High carbon steel made	Flange type mounting from bottom	Short	MEC	○	○	○	○	○	–
			LWEC	○	○	○	○	○	–
		Standard	ME	○	○	○	○	○	○
			LWE	○	○	○	○	○	○
			LWE···Q	○	○	○	○	○	–
		Long	MEG	○	○	○	○	–	–
			LWEG	○	○	○	○	–	–
	Flange type mounting from top	Short	METC	○	○	○	○	○	–
			LWETC	○	○	○	○	○	–
		Standard	MET	○	○	○	○	○	○
			LWET	○	○	○	○	○	○
			LWET···Q	○	○	○	○	○	–
		Long	METG	○	○	○	○	–	–
			LWETG	○	○	○	○	–	–
	Block type mounting from top	Short	MESC	○	○	○	○	○	–
			LWESC	○	○	○	○	○	–
		Standard	MES	○	○	○	○	○	○
			LWES	○	○	○	○	○	○
			LWES···Q	○	○	○	○	○	–
		Long	MESG	○	○	○	○	–	–
			LWESG	○	○	○	○	–	–
Stainless steel made	Flange type mounting from bottom	Short	MEC···SL	○	○	○	○	–	–
			LWEC···SL	○	○	○	○	–	–
		Standard	ME···SL	○	○	○	○	–	–
			LWE···SL	○	○	○	○	–	–
		Long	MEG···SL	○	○	○	○	–	–
			LWEG···SL	○	○	○	○	–	–
	Flange type mounting from top	Short	METC···SL	○	○	○	○	–	–
			LWETC···SL	○	○	○	○	–	–
		Standard	MET···SL	○	○	○	○	–	–
			LWET···SL	○	○	○	○	–	–
		Long	METG···SL	○	○	○	○	–	–
			LWETG···SL	○	○	○	○	–	–
	Block type mounting from top	Short	MESC···SL	○	○	○	○	–	–
			LWESC···SL	○	○	○	○	–	–
		Standard	MES···SL	○	○	○	○	–	–
			LWES···SL	○	○	○	○	–	–
		Long	MESG···SL	○	○	○	○	–	–
			LWESG···SL	○	○	○	○	–	–

Remark: For the models indicated in ▭, the interchangeable specification is available.

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

—Length of Track Rail—

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



unit: mm

Item \ Identification 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 E dimensions (2) or higher	6	8	9	9	10	12
Standard E dimensions (2) below	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 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) Length up to the value in ( ) can be produced. If needed, please contact IKO. The values in ( ) is not applicable to LWE···Q series.

Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LWE" for the model code of single track rail regardless of the series and the slide unit model to be combined.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

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

Item \ Identification 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 E dimensions (2) or higher	6	8	9	9
Standard E dimensions (2) below	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 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) Length up to the value in ( ) can be produced. If needed, please contact IKO.

Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LWE" for the model code of single track rail regardless of the series and the slide unit model to be combined.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

—Preload Amount · Accuracy Class—

7 Preload amount

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

8 Accuracy class

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

Table 3 Preload amount

Preload type \ Item	Preload symbol	Preload amount N	Operational conditions
Clearance	Tc	0 (1)	· Very light motion · To absorb slight errors
Standard	(No symbol)	0 (2)	· Light and precise motion
Light preload	T1	0.02C_0	· Almost no vibrations · Load is evenly balanced · Light and precise motion
Medium preload	T2	0.05C_0	· Medium vibration · Medium overhung load

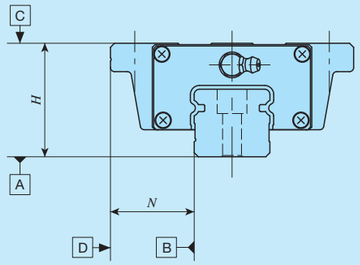
Notes (1) Clearance of about 10 μm
(2) Indicates zero or minimal amount of preload
Remark: C_0 indicates the basic static load rating.

Table 4 Combination of accuracy class and preload

Preload type (preload symbol) \ Classification (classification 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 series.
Remark: The mark ▭ indicates that interchangeable specification products are available.

Table 5 Tolerance and allowance



unit: mm

Item \ Class (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 the slide unit C surface to A surface	See Fig. 1.			
Parallelism in operation of the slide unit D surface to B surface	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.

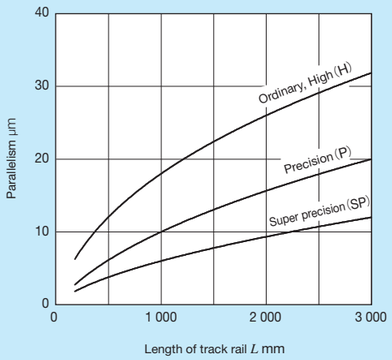


Fig. 1 Parallelism in operation

ME · LWE

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

9 Interchangeable

S1 specification	: S1	This is specified for the interchangeable specifications. Assemble a track rail and a slide unit with the same interchangeable code. Performance and accuracy of "S1" and "S2" are the same. For applicable models and sizes, see Table 1. "No symbol" is indicated for non-interchangeable specification.
S2 specification	: S2	
Non-interchangeable specification	: 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 Tables 6.1, 6.2, 6.3, and 6.4.
For combination of multiple special specifications, see Table 7.
For details of special specifications, see page Ⅲ—29.

Table 6.1 Application of 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	○	○	○	○	○	○
With C-Lube plate (2)	/Q	○	○	○	○	○	○
Special environment seal (2)	/RE	○	○	○	○	×	×
Under seal	/U	○	○	○	○	○	○
Double end seals	/V○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○

Notes (1) Not applicable to stainless steel made products.
(2) Applicable to LWE series.

Table 6.2 Application of special specifications (Interchangeable specification, single 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	○	○	○	○	○	○
With track rail mounting bolt	/MA	○	○	○	○	○	○
Changed size of mounting holes	/M4	○	×	×	×	×	×
Butt-jointing track rails	/T	○	○	○	○	○	○

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

Table 6.3 Application of special specifications (Interchangeable specification, assembled set)

Special specification	Supplemental code	Size					
		15	20	25	30	35	45
Stainless steel end plate (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 bolt	/MA	○	○	○	○	○	○
Changed size of mounting holes	/M4	○	×	×	×	×	×
No end seal	/N	○	○	○	○	○	○
With C-Lube plate (1)	/Q	○	○	○	○	○	○
Special environment seal (1)	/RE	○	○	○	○	×	×
Butt-jointing track rails	/T	○	○	○	○	○	○
Under seal	/U	○	○	○	○	○	○
Double end seals	/V○	○	○	○	○	○	○
Specified grease (3)	/Y○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○

Notes (1) Applicable to LWE series.
(2) Not applicable to stainless steel made products.
(3) ME series is applicable only to /YCG.

Table 6.4 Application of special specifications (Non-interchangeable specification)

Special specification	Supplemental code	Size					
		15	20	25	30	35	45
Butt-jointing track rails (1)	/A	○	○	○	○	○	○
Stainless steel end plate (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○	○	○	○	○	○	○
With track rail mounting bolt	/MA	○	○	○	○	○	○
Changed size of mounting holes	/M4	○	×	×	×	×	×
No end seal (1)	/N	○	○	○	○	○	○
With C-Lube plate (3)	/Q	○	○	○	○	○	○
Special environment seal (2)	/RE	○	○	○	○	×	×
Under seal (1)	/U	○	○	○	○	○	○
Double end seals	/V○	○	○	○	○	○	○
A group of multiple assembled sets	/W○	○	○	○	○	○	○
Specified grease (4)	/Y○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○

Notes (1) Not applicable to LWE···Q series.
(2) Applicable to LWE series.
(3) Applicable to LWE (···Q) series. / YCG is applicable to ME series.
(4) ME series is applicable only to /YCG.

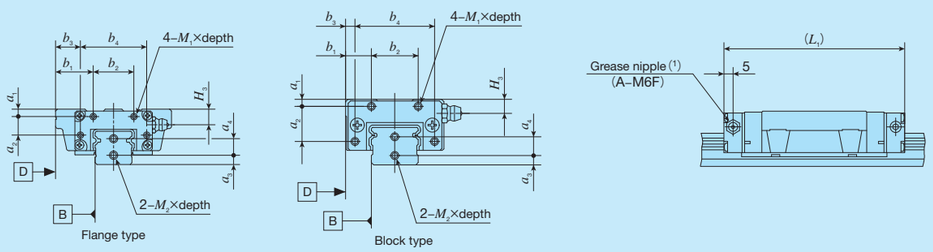
Table 7 Combination of supplemental codes

	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 combining "/MA" and "/M4", indicate "/MA4".
Remarks 1. The combination of "—" shown in the table is not available.
2. Contact IKO for the combination of the interchangeable specification marked with ●.
3. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

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

Table 8 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)



unit: mm

Identification 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							

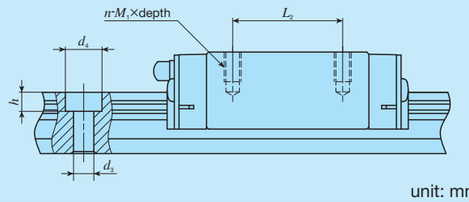
Notes (1) The specification and mounting positions of grease nipple are different from those of the standard specification product. Provided grease nipple for size 15 models is NPB2 type (special specification).
For details of dimensions, please contact IKO
(2) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.
Remark: This is also applicable to stainless steel 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. Hexagon socket head bolts equivalent to JIS B 1176
2. For stainless steel model, stainless steel made bolts are appended.

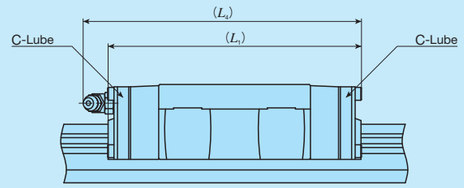
Table 10 Changed dimensions of mounting holes (Supplemental code /M4)



unit: mm

Size	d_3	d_4	h
15	4.5	8	6

Table 11 Dimension of slide unit with C-Lube plate (Supplemental code /Q)

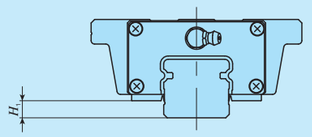


unit: mm

Identification 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 dimensions of the slide unit with C-Lube at both ends are indicated.
2. A typical identification number is indicated, but is applied to all LWE (···Q) series models of the same size.

Table 12 H_1 dimension with under seal (Supplemental code /U)



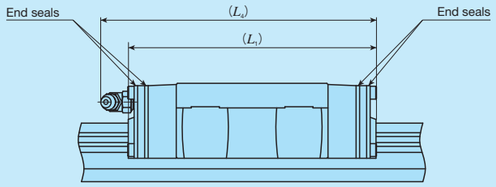
unit: mm

Identification number		H_1
ME 15	LWE 15	5
ME 20	LWE 20	5
ME 25	LWE 25	6
ME 30		9
	LWE 30	7
ME 35		10
	LWE 35	8
ME 45		13
	LWE 45	10

Remark: A typical identification number is indicated, but is applied to all models of the same size.

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

Table 13 Dimension of slide unit with double end seals (Supplemental code Single unit: /V Assembled set: /V /VV)

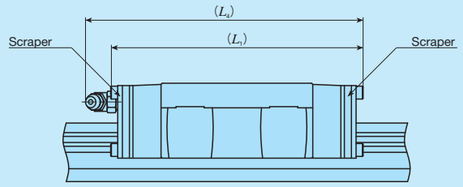


unit: mm

Identification 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 dimensions of the slide unit with double end seals at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

Table 14 Dimension of slide unit with scrapers (Supplemental code Single unit: /Z Assembled set: /Z /ZZ)



unit: mm

Identification 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 dimensions of the slide unit with scraper at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

Lubrication

Lithium-soap base grease with extreme-pressure additive (Alvania EP grease 2 [SHOWA SHELL SEKIYU K. K.]) is pre-packed in ME and LWE (···Q) series. Additionally, ME series has C-Lube placed in the recirculation part of balls, so that the interval for reapplicating lubricant can be extended and maintenance works such as grease job can be reduced significantly.
ME and LWE (···Q) series have grease nipple as indicated in Table 15. Supply nozzles fit to each shapes of grease nipple are also available. For order of these parts for lubrication, see Table 14.1 on page Ⅲ−23 and Table 15 on page Ⅲ−24.

Dust Protection

The slide units of ME and LWE (···Q) series are equipped with end seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to cover the whole unit with bellows or telescope type shield, etc.
ME series and LWE (···Q) series are provided with specific bellows. The bellows are easy to mount and provide excellent dust protection. If needed, please refer to Ⅲ−26 for ordering.

Table 15 Parts for lubrication

Size	Grease nipple type (1)	Applicable supply nozzle type	Bolt size of female threads 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) For grease nipple specification, see Tables 14.1 and 14.2 on page Ⅲ−23.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

Precaution for Use

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

When mounting the ME and LWE (···Q) series, properly align the reference mounting surface B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig.2)
The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.
Reference mounting surface of the slide unit is the opposite side of the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction of the arrow). (See Fig. 3.)

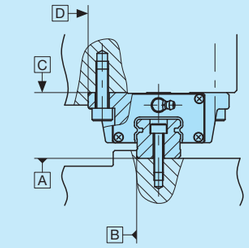


Fig. 2 Reference mounting surface and typical mounting structure

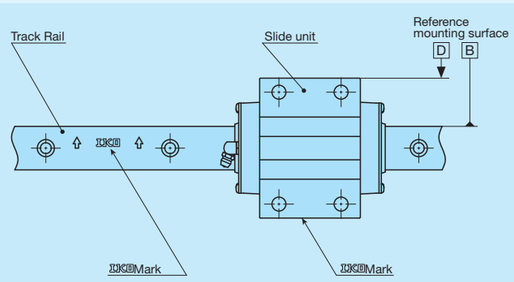


Fig. 3 Reference mounting surface

❷ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 4. Recommended value for the shoulder height on the mating side is indicated in Table 17.

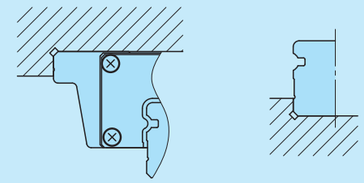


Fig. 4 Corner of the mating reference mounting

❸ Tightening torque for fixing screw

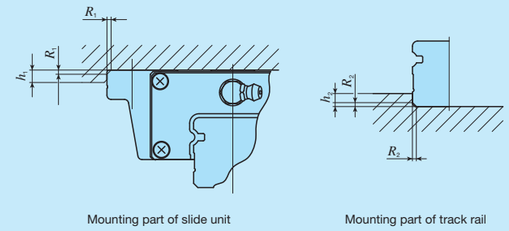
Typical tightening torque for mounting of the ME or LWE (···Q) series to the steel mating member material is indicated in Table 16. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 16 Tightening torque for fixing screw

Bolt size	Tightening torque N·m	
	High carbon steel-made screw	Stainless steel-made screw
M 3×0.5	1.8	1.1
M 4×0.7	4.1	2.5
M 5×0.8	8.0	5.0
M 6×1	13.6	8.5
M 8×1.25	32.7	20.4
M10×1.5	63.9	–
M12×1.75	110	–

Remark: The tightening torque is calculated based on strength division 12.9 and property division A2-70.

Table 17 Shoulder height and corner radius of the reference mounting surface



Mounting part of slide unit Mounting part of track rail

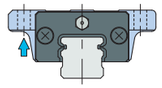
unit: mm

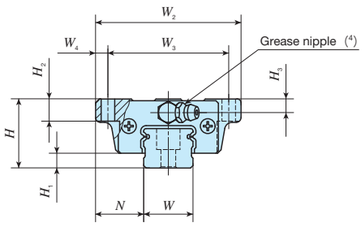
Size	Mounting part of slide unit		Mounting part of track rail	
	Shoulder height h_1	Corner radius R_1 (maximum)	Shoulder height h_2	Corner radius R_2 (maximum)
15	4	1 (0.5) (1)	3	0.5
20	5	1 (0.5) (1)	3	0.5
25	6	1	4	1
30	8	1	5	1
35	8	1	6	1
45	8	1.5	7	1.5

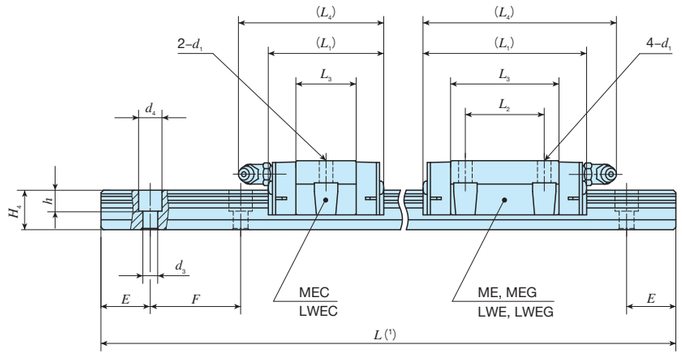
Note (1) The values in ( ) are applied to MES and LWES (···Q).

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

Flange type mounting from bottom

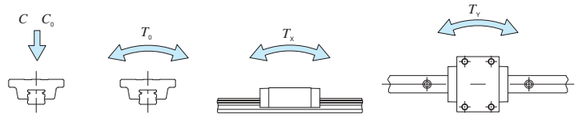
Shape	ME · LWE		
			
Size	15	20	25
	30	35	45





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Recommended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
ME series	LWE series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1		H_2	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 / 566	95.6 / 566
	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 / 930	172 / 930
	LWEG 20	○											59.9																		
MEG 20···SL		○											60.1																		
	LWEG 20···SL	○											59.9																		

Notes (1) Track rail lengths L are shown in Tables 2.1 and 2.2 on page Ⅱ−67.
(2) Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 are recommended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−73.
Remark: Values in ( ) represent dimensions when the track rail mounting hole is "M4". Indicate the identification number with "/M4" at the end.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
ME	G	15	C2	R340			T1	P		/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model	
ME	Flange type mounting from bottom
LWE	
LWE···Q	

② Length of slide unit	
C	Short
No symbol	Standard
G	Long

③ Size
15, 20

④ Number of slide unit (2)

⑤ Length of track rail (340 mm)

⑥ Material type	
No symbol	High carbon steel made
SL	Stainless steel made

⑦ Preload amount	
T_C	Clearance
No symbol	Standard
T_1	Light preload
T_2	Medium preload

⑥ Accuracy class	
No symbol	Ordinary
H	High
P	Precision
SP	Super precision

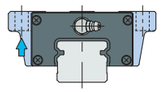
⑨ Interchangeable	
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

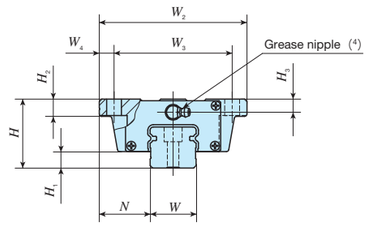
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

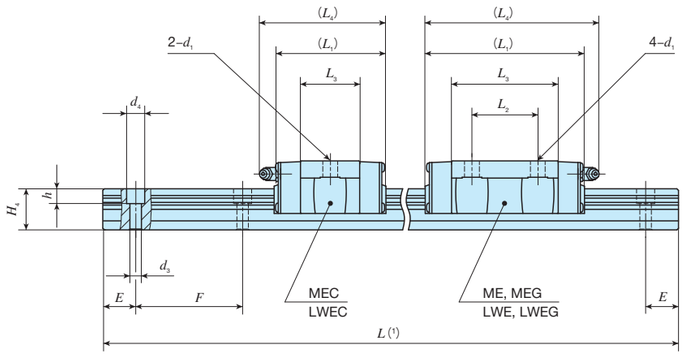
Flange type mounting from bottom

Shape: **ME · LWE**



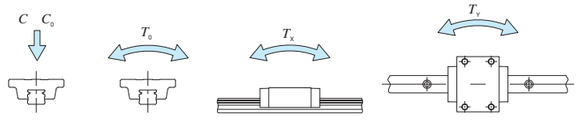
Size			
15	20	25	
30	35	45	





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Recommended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
ME series	LWE series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1		H_2	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size × ℓ	C N	C_0 N	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 / 1 580	278 / 1 580
MEG 30	LWEG 30	○	1.50	5.09							129	60	96.5	139													39 200	47 000	718	704 / 3 590	704 / 3 590
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 / 2 550	482 / 2 550
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 Tables 2.1 and 2.2 on page Ⅱ−67.
(2) Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 are recommended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−73.



Example of identification number of assembled set

Model code	Dimensions	Part code		Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
ME	G	30	C2	R440			T1	P		/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

ME	Flange type mounting from bottom
LWE	
LWE···Q	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 25, 30, 35, 45

④ Number of slide unit (2)

⑤ Length of track rail (440 mm)

⑥ Material type

No symbol	High carbon steel made
SL	Stainless steel made

⑦ Preload amount

T_C	Clearance
No symbol	Standard
T_1	Light preload
T_2	Medium preload

⑧ Accuracy class

No symbo	Ordinary
H	High
P	Precision
SP	Super precision

⑨ Interchangeable

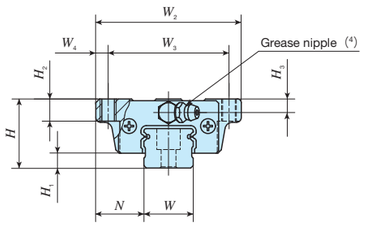
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

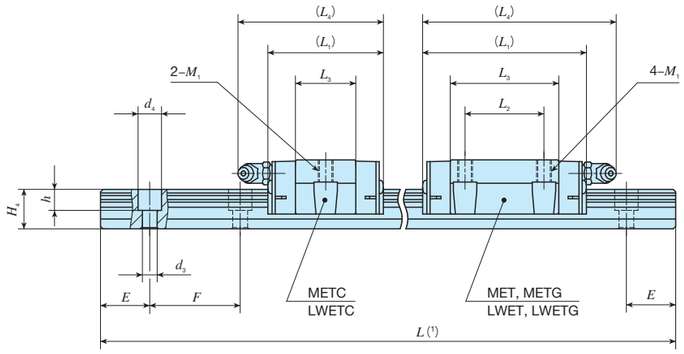
⑩ Special specification: A, BS, D, E, F, Ⅰ, J, L, LF, MA N, Q, RE, T, U, V, W, Y, Z

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

Flange type mounting from top

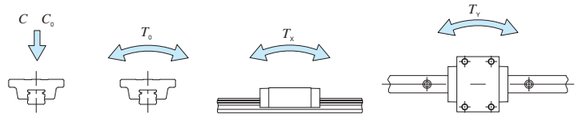
Shape	MET · LWET		
Size	15	20	25
	30	35	45





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Recommended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
ME series	LWE series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1		H_2	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 / 566	95.6 / 566
	LWET 20	○											44																		
MET 20···SL		○											44.2																		
	LWET 20···SL	○											44																		
–	LWET 20···Q	–				5																					10 500			100 / 562	100 / 562
METG 20		○	0.40			6					83	45	60.1	94													14 400	18 300	197	172 / 930	172 / 930
	LWETG 20	○											59.9																		
METG 20···SL		○											60.1																		
	LWETG 20···SL	○											59.9																		

Notes (1) Track rail lengths L are shown in Tables 2.1 and 2.2 on page Ⅱ−67.
(2) Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 are recommended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−73.
Remark: Values in ( ) represent dimensions when the track rail mounting hole is "M4". Indicate the identification number with "/M4" at the end.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MET	G	15	C2	R340			T1	P		/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MET	Flange type mounting from top
LWET	
LWET···Q	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 15, 20

④ Number of slide unit (2)

⑤ Length of track rail (340 mm)

⑥ Material type

No symbol	High carbon steel made
SL	Stainless steel made

⑦ Preload amount

T_C	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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

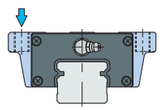
⑩ Special specification: A, BS, D, E, F, Ⅰ, J, L, LF, MA M4, N, Q, RE, T, U, V, W, Y, Z

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

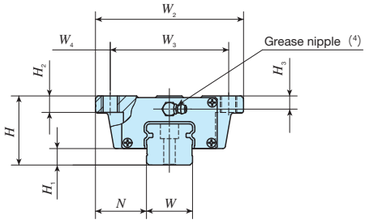
IKO C-Lube Linear Way ME

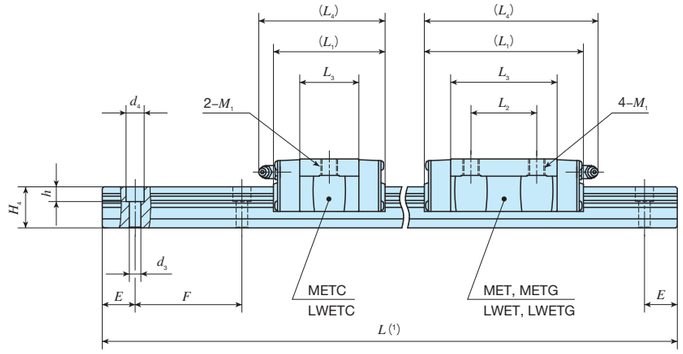
Flange type mounting from top

Shape: **MET · LWET**



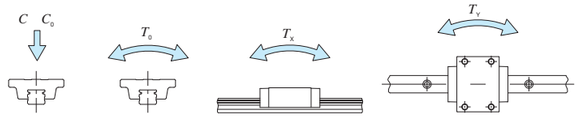
Size			
15	20	25	
30	35	45	





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Recommended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
ME series	LWE series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1		H_2	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 / 1 580	278 / 1 580
METG 30	LWETG 30	○	1.50	5.09							129	60	96.5	139													39 200	47 000	718	704 / 3 690	704 / 3 690
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 / 2 550	482 / 2 550
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 Tables 2.1 and 2.2 on page Ⅱ−67.
(2) Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 are recommended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−73.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MET	G	30	C2	R440			T1	P		/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MET	Flange type mounting from top
LWET	
LWET···Q	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 25, 30, 35, 45

④ Number of slide unit (2)

⑤ Length of track rail (440 mm)

⑥ Material type

No symbol	High carbon steel made
SL	Stainless steel made

⑦ Preload amount

T_C	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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

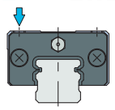
⑩ Special specification: A, BS, D, E, F, 1, J, L, LF, MA N, Q, RE, T, U, V, W, Y, Z

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

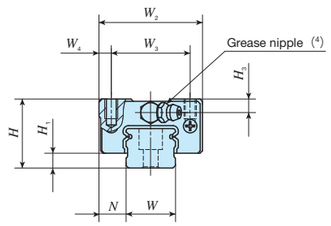
IKO C-Lube Linear Way ME

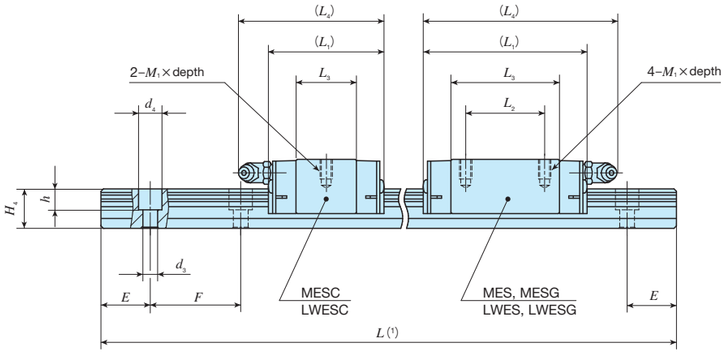
Block type mounting from top

Shape: **MES · LWES**



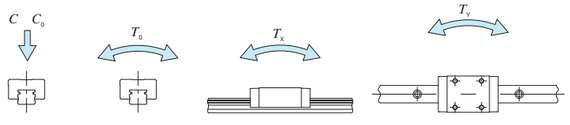
Size			
15	20	25	
30	35	45	





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm								Recommended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
ME series	LWE series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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	95.6 566	95.6 566
	LWES 20	○											44																
MES 20···SL		○											44.2																
	LWES 20···SL	○											44																
–	LWES 20···Q	–				5																			10 500			100 562	100 562
MESG 20		○	0.33			6					83	45	60.1	94											14 400	18 300	197	172 930	172 930
	LWESG 20	○											59.9																
MESG 20···SL		○											60.1																
	LWESG 20···SL	○											59.9																

Notes (1) Track rail lengths L are shown in Tables 2.1 and 2.2 on page Ⅱ−67.
(2) Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 are recommended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−73.
Remark: Values in ( ) represent dimensions when the track rail mounting hole is "M4". Indicate the identification number with "/M4" at the end.



Example of identification number of assembled set

Model code	Dimensions	Part code		Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MES	G	15	C2	R340			T1	P		/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MES	Block type mounting from top
LWES	
LWES···Q	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 15, 20

④ Number of slide unit (2)

⑤ Length of track rail (340 mm)

⑥ Material type

No symbol	High carbon steel made
SL	Stainless steel made

⑦ Preload amount

T_C	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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

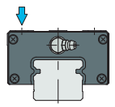
⑩ Special specification: A, BS, D, E, F, 1, J, L, LF, MA M4, N, Q, RE, T, U, V, W, Y, Z

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

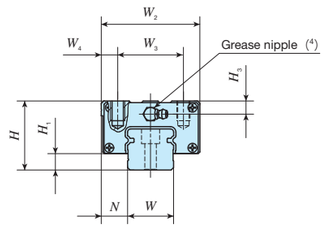
IKO C-Lube Linear Way ME

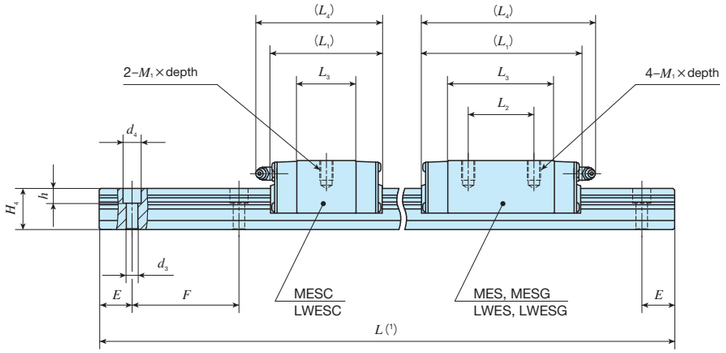
Block type mounting from top

Shape: **MES · LWES**



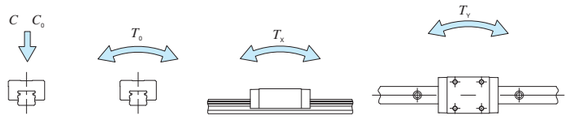
Size			
15	20	25	
30	35	45	





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm							Recommended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
ME series	LWE series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 1 580	278 1 580
MESG 30	LWESG 30	○	1.13	5.09							129	60	96.5	139											39 200	47 000	718	704 3 690	704 3 690
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 2 550	482 2 550
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 Tables 2.1 and 2.2 on page Ⅱ−67.
(2) Track rail mounting bolts are not appended. Hexagon socket head bolts of JIS B 1176 with strength division 12.9 are recommended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−73.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MES	G	30	C2	R440			T1	P		/U
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MES	Block type mounting from top
LWES	
LWES···Q	

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 25, 30, 35, 45

④ Number of slide unit (2)

⑤ Length of track rail (440 mm)

⑥ Material type

No symbol	High carbon steel made
SL	Stainless steel made

⑦ Preload amount

T_C	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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

ME・LWE

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

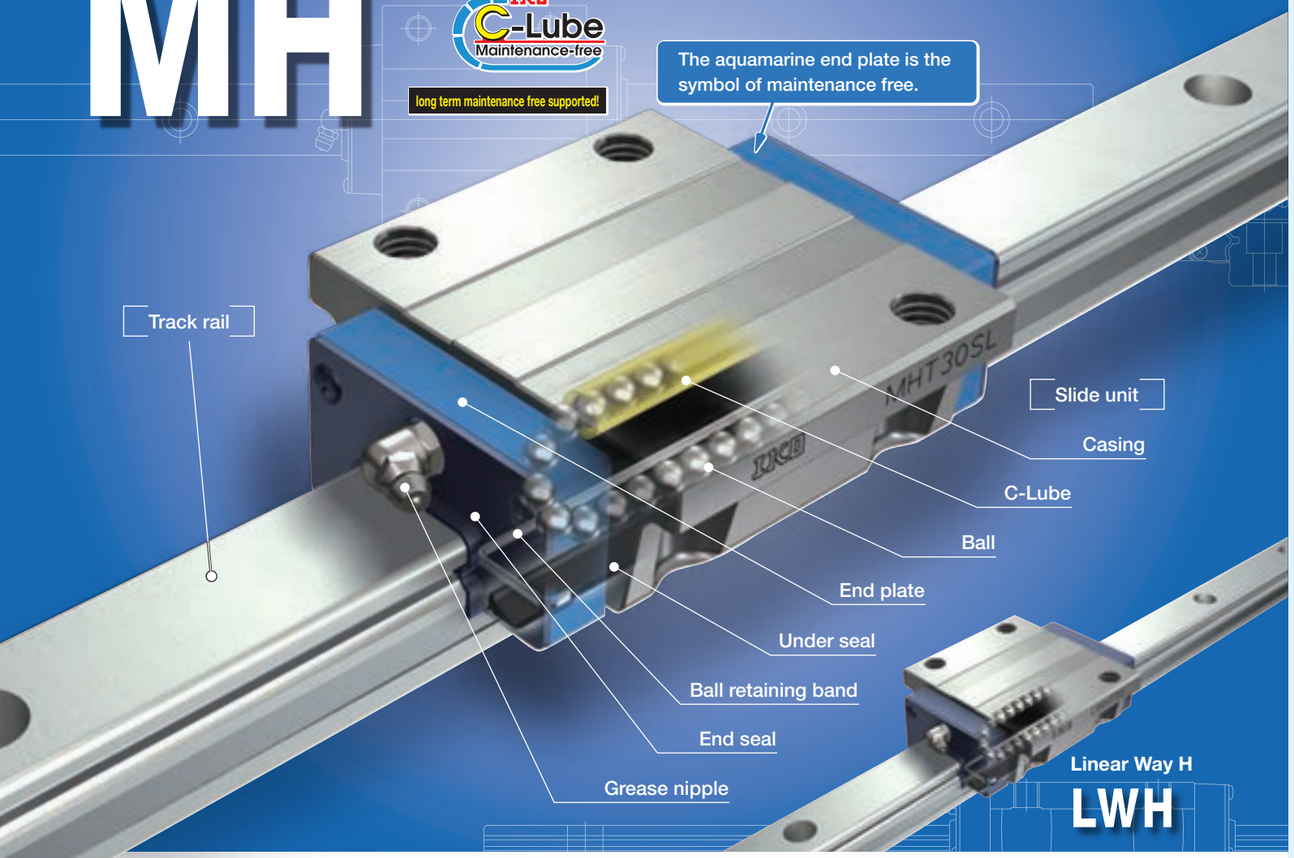
C-Lube Linear Way MH
Linear Way H

C-Lube Linear Way MH

MH

IKO C-Lube Maintenance-free

long term maintenance free supported!



Linear Way H

LWH

Points

High rigidity series with the largest-class load rating among ball types

1 High rigidity linear motion rolling guides designed to evenly support high load capacity by incorporating large-diameter balls.

Wide range of variations for your needs For details P.I-26

2 As the lineup of 5 types of slide unit shape including the flange type, block type with small width and side mounting type, etc., and 3 types with different slide unit length with same section are available, you can select an optimal product for the specifications of your machine and device.

Stainless steels selections superior in corrosion resistance are listed on lineup. For details P.I-41

3 Products made of stainless steel are highly resistant to corrosion, so that they are suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment.

Series of ultra seal specification for excellent dust protection performance

4 Products of ultra seal specifications have excellent dust protection performance thanks to the combination of the dedicated track rail finished with total ground and slide unit with end seal and under seal of special shapes. Special specification with inner seal further improves dust protection property of the ball circulation section against foreign substances from the upper surface of the track rail.

Identification Number and Specification

Example of an identification number

The specifications of MH and LWH series are indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a dust protection code, a material code, a preload symbol, a classification symbol, an interchangeable code, and any supplemental codes for each specification to apply.

	1	2	3	4	5	16	7	8	9	10	11
Non-interchangeable specification											
Assembled set	MHT	G	20	C1	R840			T_1	P		/FV
Interchangeable specification											
Single slide unit	MHT	G	20	C1				T_1	P	S1	/V
Single track rail (1)	LWH		20		R840	B			P	S1	/F
Assembled set	MHT	G	20	C1	R840			T_1	P	S1	/FV

1 **Model** — Model code: Page Ⅱ—91, Page Ⅱ—92

2 **Length of slide unit**

3 **Size** — Dimensions: Page Ⅱ—92

4 **Number of slide units** — Part code: Page Ⅱ—92, Page Ⅱ—93

5 **Length of track rail**

6 **Dust protection specification** — Dust protection code: Page Ⅱ—94

7 **Material type** — Material code: Page Ⅱ—96

8 **Preload amount** — Preload symbol: Page Ⅱ—96

9 **Accuracy class** — Classification symbol: Page Ⅱ—97

10 **Interchangeable** — Interchangeable code: Page Ⅱ—98

11 **Special specification** — Supplemental code: Page Ⅱ—99

Note (1) Indicate "LWH···B" or "LWH" for the model code of the single track rail regardless of the series and the combination of slide unit models.

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

Identification Number and Specification — Model —

1 Model

C-Lube Linear Way MH (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 H (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

For applicable models and sizes, see Table 1.1 and Table 1.2.
Indicate "LWH···B" or "LWH" for the model code of the single track rail regardless of the series and the combination of slide unit models.

Notes (1) This model has no built-in C-Lube.
(2) Some models may be mounted upward.

Table 1.1 Models and sizes of MH and LWH series

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

Notes (1) This may be mounted upward.
(2) "···B" is not included in the model code.
Remark: For the models indicated in ▭, the interchangeable specification is available.

— Length of Slide Unit · Size · Number of Slide Unit —

2 Length of slide unit

Short	: C	For applicable models and sizes, see Table 1.1 and Table 1.2.
Standard	: No symbol	
Long	: G	
Extra long	: L	

3 Size

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

For applicable models and sizes, see Table 1.1 and Table 1.2.

4 Number of slide units

: C○

For an assembled set, indicates the number of slide units assembled on a track rail. For a single slide unit, only "C1" is specified.

Table 1.2 Models and sizes of MH and LWH series

Material	Shape	Slide unit Length	Model	Size 8	10	12	15	20	25	30	35	45	55	65
Stainless steel made	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	○	○	○	–	–	–	–	–	–	–	–
		Long	MHDG···SL	○	○	○	–	–	–	–	–	–	–	–
			LWHDG···SL	○	○	○	–	–	–	–	–	–	–	–
	Compact block type mounting from top	Standard	MHS···SL	–	–	–	○	○	○	○	–	–	–	–
			LWHS···SL	–	–	–	○	○	○	○	–	–	–	–

Note (1) This may be mounted upward.
Remark: For the models indicated in ▭, the interchangeable specification is available.

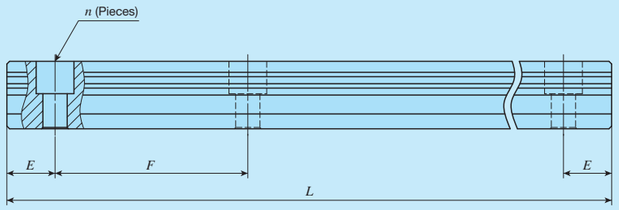
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

5 Length of track rail

: R○

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

Table 2.1 Standard and maximum length of high carbon steel track rail



unit: mm

Item \ Identification 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 E dimensions (1) or higher	5.5	7	8	9	10
Standard E dimensions (1) below	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)

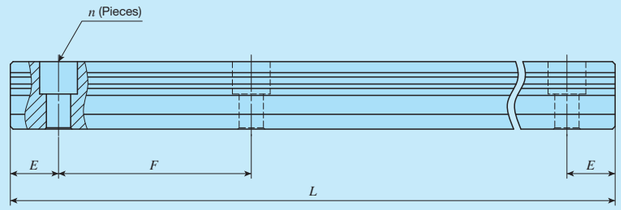
Item \ Identification number	MH 35 LWH35···B	MH 45 LWH45···B	LWH55···B	LWH65···B
Standard length L (n)	480 (6) 640 (8) 800 (10) 1 040 (13) 1 200 (15) 1 520 (19)	840 (8) 1 050 (10) 1 260 (12) 1 470 (14) 1 995 (19)	840 (7) 1 200 (10) 1 560 (13) 1 920 (16) 3 000 (25)	1 500 (10) 1 950 (13) 3 000 (20)
Pitch of mounting holes F	80	105	120	150
E	40	52.5	60	75
Standard E dimensions (1) or higher	10	12.5	15	17
Standard E dimensions (1) below	50	65	75	92
Maximum length (2)	2 960 (4 000)	2 940 (3 990)	3 000 (3 960)	3 000 (3 900)

Notes (1) This does not apply to female threads for bellows (supplemental code "/J").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LWH" for series of size 12 or "LWH···B" for series of size 15 or above for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. For ultra seal specifications, refer to Table 2.3 and Table 2.4.
4. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

6 Dust protection specification

Standard specification	: No symbol	For applicable models and sizes, see Table 1.1 and Table 1.2.
Ultra seal specification	: M	Each specification of ultra seal specification with track rail mounting from bottom is in compliance to the ultra seal specification.
Ultra seal specification with track rail mounting from bottom	: MU	Ultra seal specification with track rail mounting from bottom applies to products to fix the track rail on the mounting surface side by pressing in the aluminum alloy caps for rail mounting holes to the mounting hole of the track rail in advance. As the upper surface of the track rail is flat, adhesion to the seal is high and dust protection effect is improved further.
		For track rail specifications, see Table 2.3 and Table 2.4.

Table 2.2 Standard and maximum length of stainless steel track rail



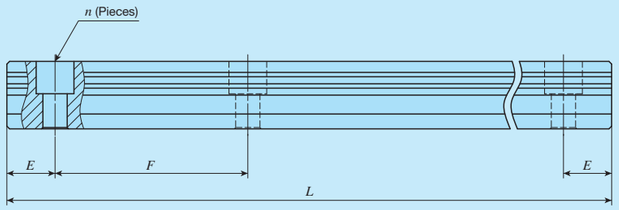
unit: mm

Item \ Identification 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)
Pitch of mounting holes F	20	25	40	60	60	60	80
E	10	12.5	20	30	30	30	40
Standard E dimensions (1) or higher	4.5	5	5.5	7	8	9	10
Standard E dimensions (1) below	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) This does not apply to female threads for bellows (supplemental code "/J").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LWH" for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

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

Table 2.3 Standard and maximum length of ultra seal specification high carbon steel track rail

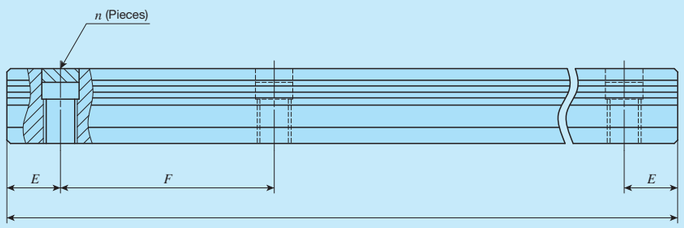


unit: mm

Item \ Identification number	LWH15···M	LWH20···M	MH 25···M LWH25···M	MH 30···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 E dimensions (1) or higher	7	8	9	10	10	12.5
Standard E dimensions (1) below	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 track rails	3	3	3	3	3	3
Maximum length of butt-jointing track rail	4 200	5 640	8 700	8 480	8 480	8 295

Note (1) This does not apply to female threads for bellows (supplemental code "/J").
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

Table 2.4 Standard and maximum length of ultra seal specification with track rail mounting from bottom



unit: mm

Item \ Identification number	LWH15···MU	LWH20···MU	MH 25···MU LWH25···MU	MH 30···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 E dimensions (1) or higher	7	8	9	10	10	12.5
Standard E dimensions (1) below	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 track rails	3	3	3	3	3	3
Maximum length of butt-jointing track rail	4 200	5 640	8 700	8 480	8 480	8 295

Note (1) This does not apply to female threads for bellows (supplemental code "/J").
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Track rail mounting bolt is not included.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

7 Material type

High carbon steel made	: No symbol	For applicable models and sizes, see Table 1.1 and Table 1.2.
Stainless steel made (1)	: SL	

Note (1) Mount a standard grease nipple (brass) on the stainless steel type, too. Stainless steel grease nipple is also available. If needed, please contact IKO.

8 Preload amount

Clearance	: T_0	Specify this item for an assembled set or a single slide unit.
Standard	: No symbol	For details of the preload amount, see Table 3.
Light preload	: T_1	For applicable preload types, see Table 4.
Medium preload	: T_2	
Heavy preload	: T_3	

Table 3 Preload amount

Item / Preload type	Preload symbol	Preload amount N	Operational conditions
Clearance	T_0	0 (2)	・Very light motion
Standard	(No symbol)	0 (3)	・Light and precise motion
Light preload	T_1	$0.02C_0$	・Almost no vibrations ・Load is evenly balanced ・Light and precise motion
Medium preload	T_2	$0.05C_0$	・Medium vibration ・Medium overhung load
Heavy preload	T_3	$0.08C_0$	・Operation with vibration and/or shock ・Overhanging load applied ・Heavy cutting

Notes (2) There is zero or subtle clearance.
(3) Indicates zero or minimal amount of preload.
Remark: C_0 indicates the basic static load rating.

Table 4 Application of preload

Size	Preload type (preload 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	–	○	○	○	○

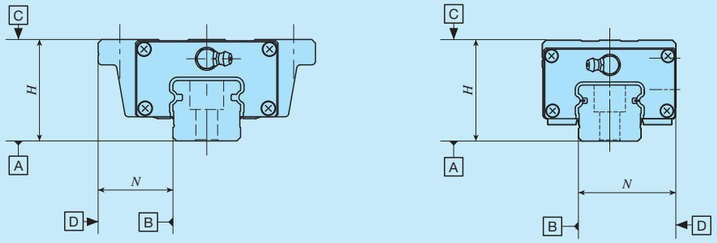
Remark: The mark ▭ indicates that interchangeable specification products are available.

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

9 Accuracy class

High	: H	For interchangeable specification products, assemble a slide unit and a track rail of the same accuracy class. For details of accuracy class, see Table 5.1 and Table 5.2. For applicable accuracy class, see Table 6.
Precision	: P	
Super precision	: SP	

Table 5.1 Tolerance and allowance (Series of size 15 or higher)



Flange type, block type, and compact block type

Side mounting type

unit: mm

Item \ Class (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	–
Slide unit against the A surface Parallelism during running on the C surface	See Fig. 1.1		
Slide unit against the B surface Parallelism during running on the D surface	See Fig. 1.1		

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

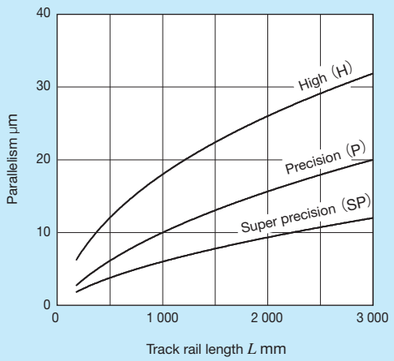
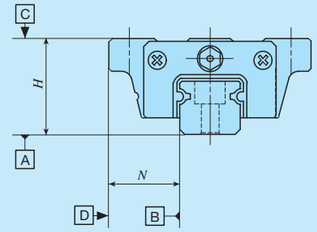


Fig. 1.1 Parallelism in operation (series of Size 15 or higher)

Table 5.2 Tolerance and allowance (Series of size 8 to 12)



unit: mm

Item \ Class (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 the slide unit C surface to A surface	See Fig. 1.2	
Parallelism in operation of the slide unit D surface to B surface	See Fig. 1.2	

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

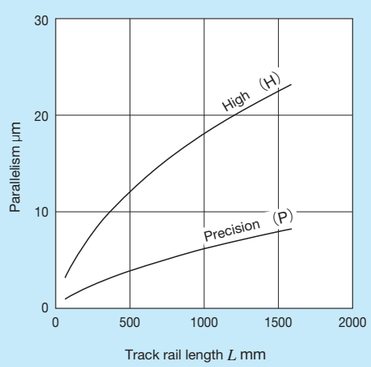


Fig. 1.2 Parallelism in operation (Series of size 8 to 12)

Table 6 Application of accuracy class

Size	Class (classification symbol) High (H)	Precision (P)	Super precision (SP)
8	○	○	–
10	○	○	–
12	○	○	–
15	○	○	○
20	○	○	○
25	○	○	○
30	○	○	○
35	○	○	○
45	○	○	○
55	○	○	○
65	○	○	○

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

10 Interchangeable

S1 specification	: S1	This is specified for the interchangeable specifications. Assemble a track rail and a slide unit with the same interchangeable code. Performance and accuracy of "S1" and "S2" are the same. For applicable models and sizes, see Table 1.1 and Table 1.2. "No symbol" is indicated for non-interchangeable specification.
S2 specification	: S2	
Non-interchangeable specification	: No symbol	

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

11 Special specification

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

For applicable special specifications, see Table 7.1, Table 7.2, Table 7.3, and Table 7.4.
For combination of multiple special specifications, see Table 8.
For details of special specification, see page Ⅲ−29.

Table 7.1 Application of special specifications (Interchangeable specification and slide unit specification)

Special specification	Supplemental code	Size										
		8	10	12	15	20	25	30	35	45	55	65
Stainless steel end plate (1)	/BS	×	×	×	○	○	○	○	×	×	×	×
Female threads for bellows (2)	/J○	×	×	×	○	○	○	○	○	○	○	○
No end seal	/N	○	○	○	○	○	○	○	○	○	○	○
With C-Lube plate (1)	/Q	○	○	○	○	○	○	○	○	○	○	○
Special environment seal (1)	/RE	×	×	×	○	○	○	○	×	×	×	×
Under seal	/U	○	○	○	×(3)	×(3)	×(3)	×(3)	×(3)	×(3)	×(3)	×(3)
Double end seals	/V○	×	×	×	○	○	○	○	○	○	○	○
Scrapers	/Z○	×	×	×	○	○	○	○	○	○	○	○

Notes (1) Applicable to LWH series.
(2) Not applicable to stainless steel made products.
(3) Attached as standard.

Table 7.2 Application of special specifications (Interchangeable specification and track rail specification)

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

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

Table 7.3 Application of special specifications (Interchangeable specification and assembled set)

Special specification	Supplemental code	Size										
		8	10	12	15	20	25	30	35	45	55	65
Stainless steel end plate (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 bolt (3)	/MA	○	○	○	○	○	○	○	○	○	×	×
Without track rail mounting bolt (1)	/MN	○	○	○	○	○	○	○	○	○	○	○
No end seal	/N	○	○	○	○	○	○	○	○	○	○	○
With C-Lube plate (1)	/Q	○	○	○	○	○	○	○	○	○	○	○
Special environment seal (1)	/RE	×	×	×	○	○	○	○	×	×	×	×
Butt-jointing track rails	/T	×	×	×	○	○	○	○	○	○	○	○
Under seal	/U	○	○	○	×(5)	×(5)	×(5)	×(5)	×(5)	×(5)	×(5)	×(5)
Double end seals	/V○	×	×	×	○	○	○	○	○	○	○	○
Specified grease (4)	/Y○	×	×	×	○	○	○	○	○	○	○	○
Scrapers	/Z○	×	×	×	○	○	○	○	○	○	○	○

Notes (1) Applicable to LWH series.
(2) Not applicable to stainless steel made products.
(3) Applicable to MH series.
(4) MH series is applicable only to /YCG.
(5) Attached as standard.

Table 7.4 Application of special specifications (Non-interchangeable specification)

Special specification	Supplemental code	Size										
		8	10	12	15	20	25	30	35	45	55	65
Butt-jointing track rails	/A	○	○	○(1)	○	○	○	○	○	○	○	○
Stainless steel end plate (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○	○(5)	○(5)	○(5)	○	○	○	○	○	○	○	○
Fluorine black chrome surface treatment	/LF○	×	×	×	○	○	○	○	○	○	○	○
With track rail mounting bolt (6)	/MA	○	○	○	○	○	○	○	○	○	×	×
Without track rail mounting bolt (2) (4)	/MN	○	○	○	○	○	○	○	○	○	○	○
No end seal (7)	/N	○	○	○	○	○	○	○	○	○	○	○
Rail cover plate for track rail (7) (8)	/PS	×	×	×	×	×	○	○	○	○	○	○
With C-Lube plate (2) (3) (7)	/Q	○	○	○	○	○	○	○	○	○	○	○
Special environment seal (2) (7)	/RE	×	×	×	○	○	○	○	×	×	×	×
Under seal	/U	○	○	○	×(9)	×(9)	×(9)	×(9)	×(9)	×(9)	×(9)	×(9)
Inner seal (10)	/UR	×	×	×	×	×	○	○	×	×	×	×
Double end seals	/V○	×	×	×	○	○	○	○	○	○	○	○
A pair of multiple assembled sets (3)	/W○	○	○	○	○	○	○	○	○	○	○	○
Specified grease (11)	/Y○	○	○	○	○	○	○	○	○	○	○	○
Scrapers	/Z○	×	×	×	○	○	○	○	○	○	○	○

Notes (1) Not applicable to high carbon steel made products.
(2) Applicable to LWH series.
(3) This does not apply to side mounting type (LWHY).
(4) This does not apply to ultra seal specification with track rail mounting from bottom (LWH···MU).
(5) Applicable only to "LR".
(6) Applicable to MH series.
(7) This does not apply to ultra seal specification (LWH···M) and ultra seal specification with track rail mounting from bottom (LWH···MU).
(8) Not applicable to stainless steel made products.
(9) Attached as standard.
(10) Applicable only to MH···M(U).
(11) MH series is applicable only to /YCG.

Table 8 Combination of supplemental codes

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

Note (1) Contact IKO for the case of size 8 to 12.
Remarks 1. The combination of "−" shown in the table is not available.
2. Contact IKO for the combination of the interchangeable specification marked with ●.
3. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

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

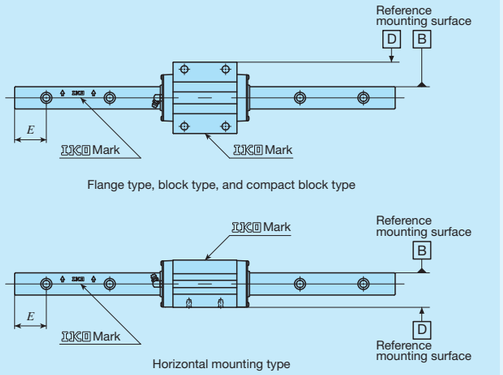


Fig. 2 Specified rail mounting hole positions (Supplemental code /E)

Remark: For details of specified rail mounting hole positions (supplemental code /E), see page Ⅲ−30.

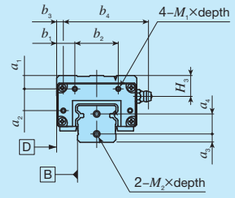
Table 9.1 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)

unit: mm

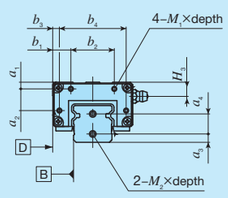
Identification number		Slide unit									Track rail		
		a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(2)	H_3	a_3	a_4	M_2×depth
MH(T) 15	LWH(T) 15···B	3	7	15.5	16	9.5	28	M3× 6	83	6.5	4	8	M3× 6
–	LWH(T) 15···M								86				
MHTG 15	–								99				
MH(T) 20	LWH(T) 20···B	4	10	20.5	22	13.5	36	M3× 6	99	8.5	5	9	M4× 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
MH(T) 25···M(U)	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
MH (T) 30···M (U)	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. Provided grease nipple for size 15 models is NPB2 type (special specification). For details of dimensions, contact IKO.
(2) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.
Remark: This is also applicable to stainless steel models of the same size.

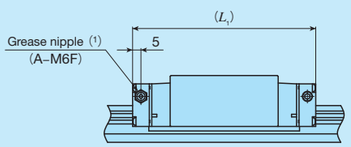
Table 9.2 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)



Block type



Compact block type



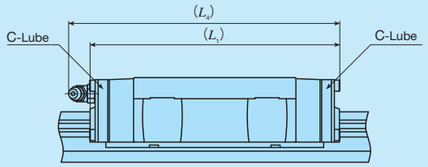
unit: mm

Identification 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
MHD 25···M(U)	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
MHS 25···M(U)	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
MHD 30···M(U)	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
MHS 30···M(U)	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. Provided grease nipple for size 15 models is NPB2 type (special specification). For details of dimensions, contact IKO.
(2) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.
Remark: This is also applicable to stainless steel models of the same size.

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

Table 10 Dimension of slide unit with C-Lube plate (Supplemental code /Q)

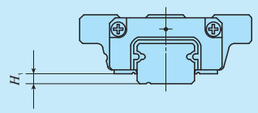


unit: mm

Identification 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 dimensions of the slide unit with C-Lube at both ends are indicated.
2. A typical identification number is indicated, but is applied to all LWH series models of the same size.

Table 11 H_1 dimension with under seal (Supplemental code /U)

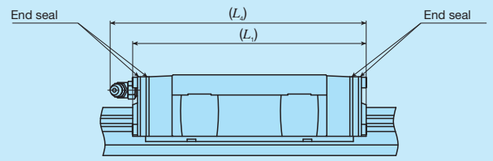


unit: mm

Size	H_1
8	1.5
10	1.8
12	3.2 (1)

Note (1) The dimensions are the same as those before mounting of under seal.

Table 12 Dimension of slide unit with double end seals (Supplemental code Single unit: /V Assembled set: /V /VV)

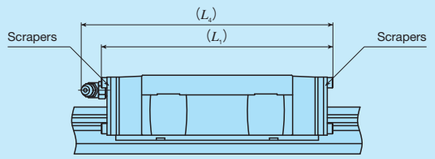


unit: mm

Identification 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
MH 25···M(U)	LWH 25···M(U)	103	115
MHG 25	LWHG 25	127	139
MH 30	LWH 30···B	122	134
MH 30···M(U)	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 dimensions of the slide unit with double end seals at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

Table 13 Dimension of slide unit with scrapers (Supplemental code Single unit: /Z Assembled set: /Z /ZZ)



unit: mm

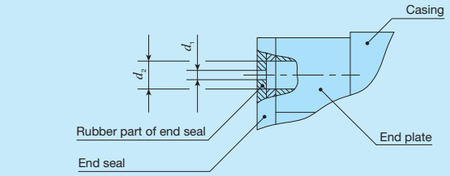
Identification number		L_1	L_4
MH 15	LWH 15···B	73	75
–	LWH 15···M(U)	72	74
MHTG 15	–	89	91
MH 20	LWH 20···B	91	104
–	LWH 20···M(U)	90	100
MHG 20	LWHG 20	119	133
MH 25	LWH 25···B	104	116
MH 25···M(U)	LWH 25···M(U)	103	112
MHG 25	LWHG 25	126	138
MH 30	LWH 30···B	124	135
MH 30···M(U)	LWH 30···M(U)	123	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 dimensions of the slide unit with scraper at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

Lubrication

In the series of size 8 to 12 of MH series and LWH series, lithium-soap base grease (MULTEMP PS No.2, KYODO YUSHI) is pre-packed, and in the series of size 15 to 65, lithium-soap base grease with extreme-pressure additive (Alvania EP grease 2, [SHOWA SHELL SEKIYU K. K.]) is pre-packed. Additionally, MH series has C-Lube placed in the recirculation part of balls, so that the interval for reapplicating lubricant can be extended and maintenance works such as grease job can be reduced significantly.
MH series and LWH series have grease nipple or oil hole as indicated in Table 15. Supply nozzles fit to each shapes of grease nipple and dedicated supplying equipment (miniature greasers) fit to oil holes are also available. For order of these parts for lubrication, see Table 13 and Table 14.1 on Page Ⅲ—23, and Table 15 on page Ⅲ—24.

Table 14 Oil hole specifications



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	Bolt size of female threads for piping
8	Oil hole	Miniature greaser	–
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			

Note (1) For grease nipple specification, see Table 14.1 and Table 14.2 on page Ⅲ—23.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

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

Dust Protection

The slide units of MH series and LWH series are equipped with end seals and under seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to cover the whole unit with bellows or telescope type shield, etc.
MH series and LWH series are provided with specific bellows. The bellows are easy to mount and provide excellent dust protection. If needed, please refer to Ⅲ−26 for ordering.
And, track rail mounting from bottom with no mounting hole on the upper surface of the track rail (Figure 3) is also available. If needed, contact IKO.

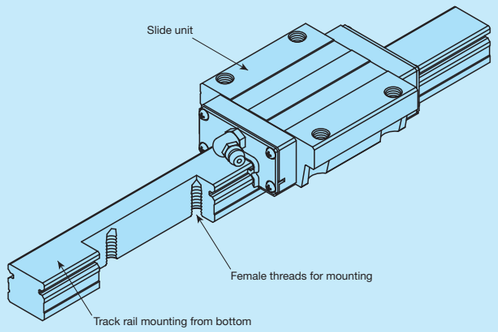


Fig. 3 Track rail mounting from bottom specification

Precaution for Use

❶ Mounting surface, reference mounting surface and typical mounting structure

When mounting the MH series and LWH series, properly align the reference mounting surfaces B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 4.)
The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.
Reference mounting surface of the slide unit is the opposite side of the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction of the arrow). (See Fig. 5.)

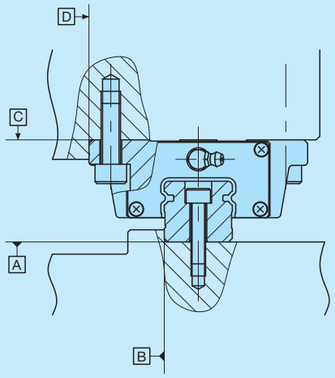


Fig. 4 Reference mounting surface and typical mounting structure

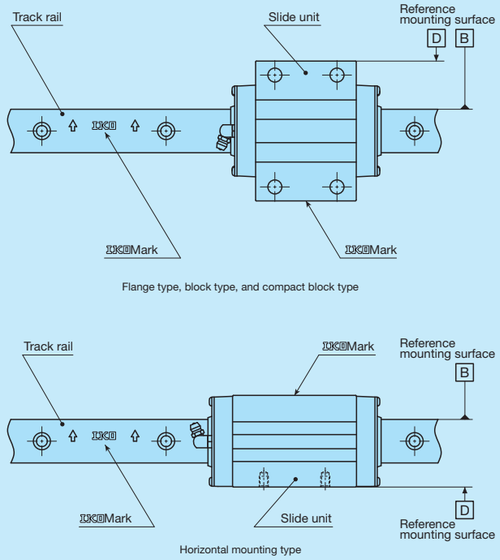


Fig. 5 Reference mounting surface

❷ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 6. Recommended value for the shoulder height and corner radius on the mating side is indicated in Table 16.

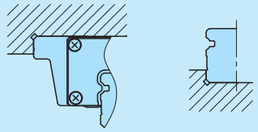
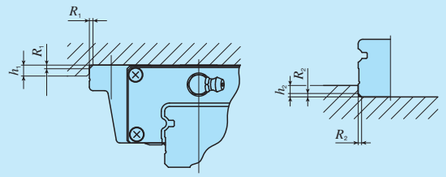


Fig. 6 Corner of the mating reference mounting

Table 16 Shoulder height and corner radius of the reference mounting surface



unit: mm

Size	Mounting part of slide unit		Mounting part of track rail	
	Shoulder height h_1	Corner radius R_1 (Maximum)	Shoulder height h_2	Corner radius R_2 (Maximum)
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) The values in ( ) are applied to MHD and LWHD.
(2) For models with under seals (supplemental code "/U"), it is recommended to use the values 0.6 mm smaller than the values in the table.

❸ Tightening torque for fixing screw

Typical tightening torque for mounting of the MH series and LWH series to the steel mating member material is indicated in Table 17. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 17 Tightening torque for fixing screw

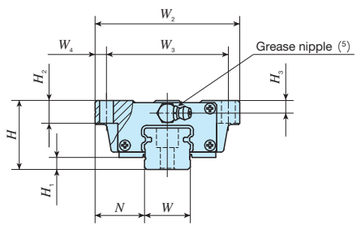
Bolt size	Tightening torque N·m		
	High carbon steel-made screw		Stainless steel-made screw
	Size: 12	Size: 15 to 65	
M 1.6×0.35	–	–	0.15
M 2 ×0.4	–	–	0.31
M 2.3×0.4	–	–	0.49
M 2.6×0.45	–	–	0.70
M 3 ×0.5	1.3	–	1.1
M 4 ×0.7	2.9	4.1	2.5
M 5 ×0.8	–	8.0	5.0
M 6 ×1	–	13.6	8.5
M 8 ×1.25	–	32.7	20.4
M10 ×1.5	–	63.9	40.0
M12 ×1.75	–	110	–
M14 ×2	–	175	–
M16 ×2	–	268	–

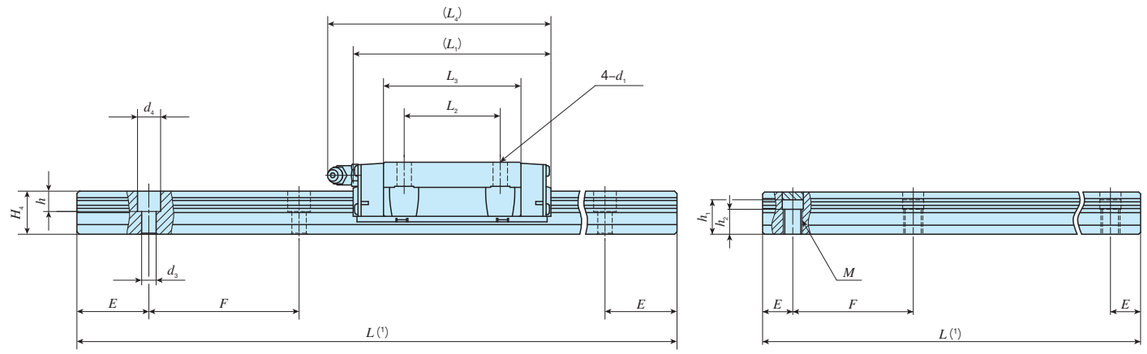
Remark: The tightening torque is calculated based on strength division 8.8 for high carbon steel bolts in product size 12, strength division 12.9 for carbon steel bolts in product size 15 to 65, and property division A2-70 for stainless steel bolts.

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

Flange type mounting from bottom

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

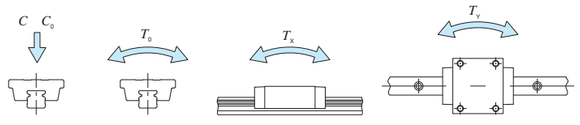




Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No 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	H_2	H_3	Dimensions of track rail mm: W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Appended mounting bolt for track rail (3) mm: Bolt size× ℓ	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
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	○											64.7																				
–	LWH 25…SL	○																															
MH 25…M*		–											63.9																				
	LWH 25…M*	–											64.7																				
MH 25…MU*		–											63.9							–	–	–	M10	18	13			–					
	LWH 25…MU*	–											64.7																				
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−93, Table 2.2 on page Ⅱ−94, and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series and LWH…MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−104.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MH	G	20	C2	R480				T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Model
MH	Flange type mounting from bottom
LWH(…B)	

② Length of slide unit
No symbol	Standard
G	Long

③ Size: 15, 20, 25

④ Number of slide unit (2)

⑤ Length of track rail (480 mm)

⑥ Dust protection code
No symbol	Standard specification
M	Ultra seal specification
MU	Ultra seal specification with track rail mounting from bottom

⑦ Material type
No symbol	High carbon steel made
SL	Stainless steel made

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
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

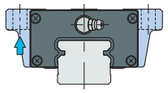
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Way MH

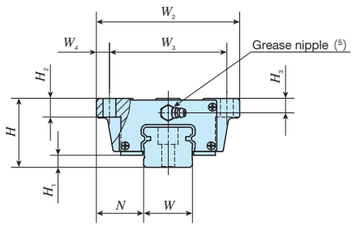
Flange type mounting from bottom

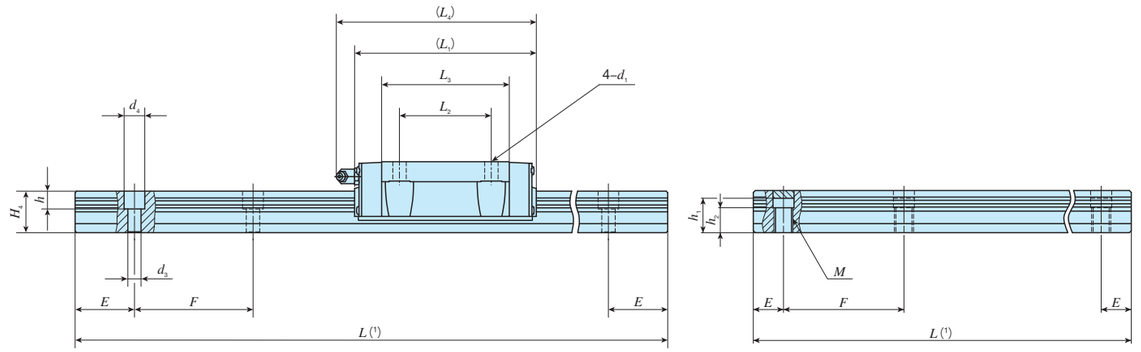
MH · LWH

Shape



Size: 15, 20, 25, 30, 35, 45, 55, 65



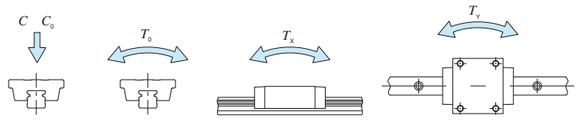


Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No 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	H_2	H_3	Dimensions of track rail mm: W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Appended mounting bolt for track rail (3) mm: Bolt size× ℓ	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
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																											
MH 30···M*		–																															
	LWH 30···M*	–																															
MH 30···MU*		–																		–	–	–	M12	20	13			–					
	LWH 30···MU*	–																															
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*	–																		–	–	–	M12	23	16			–					
–	LWH 35···MU*	–																															
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*	–																		–	–	–	M16	29	17			–					
–	LWH 45···MU*	–																															
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	○				10																											

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−93, Table 2.2 on page Ⅱ−94, and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series and LWH···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−104.

Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code		Dimensions	Part code		Model code	Dust protection code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MH	G	35	C2	R800				T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Model

MH	Flange type mounting from bottom
LWH(···B)	

② Length of slide unit

No symbol	Standard
G	Long

③ Size: 30, 35, 45

④ Number of slide unit (2)

⑤ Length of track rail (800 mm)

⑥ Dust protection code

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

⑦ Material type

No symbol	High carbon steel made
SL	Stainless steel made

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

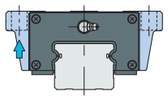
⑩ Interchangeable

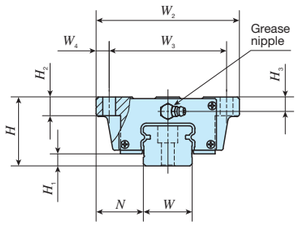
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

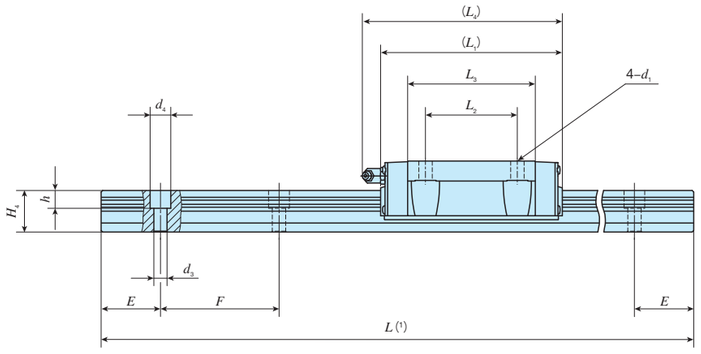
⑪ Special specification: A, BS, D, E, F, 1, J, L, LF, MA MN, N, PS, Q, RE, T, UR, V, W, Y, Z

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

Flange type mounting from bottom

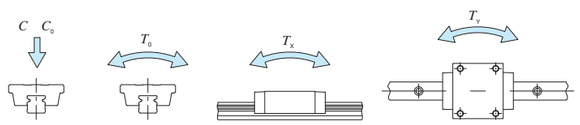
Shape	LWH			
				
Size	15	20	25	30
	35	45	55	65





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MH series	LWH series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	H_2		H_3	H_5	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−93.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
Remark: The specifications of grease nipple are shown in Table 15 on page Ⅱ−104.



Example of identification number of assembled set

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

① Model	
LWH(···B)	Flange type mounting from bottom

② Length of slide unit	
No symbol	Standard
G	Long

③ Size
55, 65

④ Number of slide unit (2)

⑤ Length of track rail (1,200 mm)

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

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

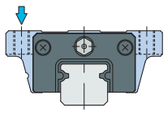
⑨ Special specification
A, D, E, F, Ⅰ, J, L, LF, MN N, PS, Q, T, V, W, Y, Z

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

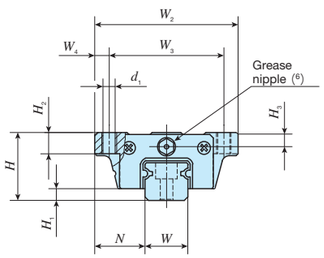
IKO C-Lube Linear Way MH

Flange type mounting from top

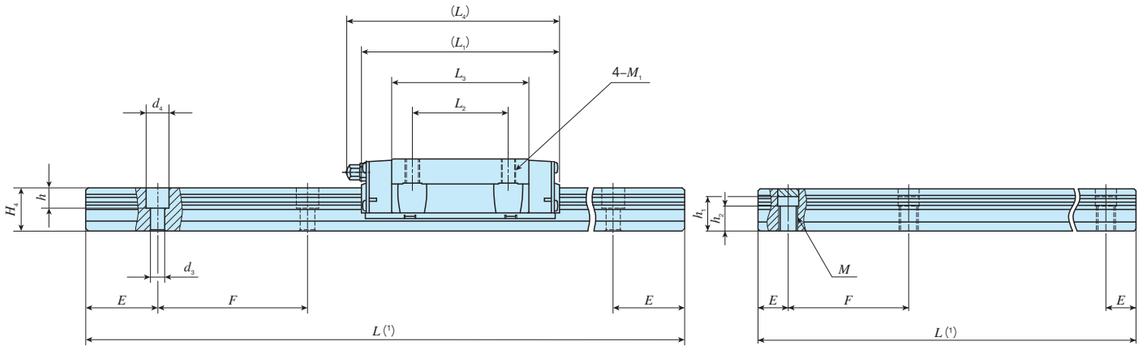
Shape: **MHT · LWHT**



Size: 8 | 10 | 12 | 15 | 20 | 25 | 30 | 35 | 45 | 55 | 65



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

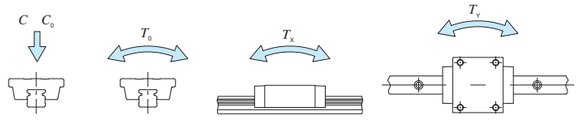


Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No 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 (2)	M_1	H_2	H_3	Dimensions of track rail mm: W	H_4	d_3	d_4	h	M	h_1 (3)	h_2	E	F	Appended mounting bolt for track rail (4) mm: Bolt size× ℓ	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
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−93, Table 2.2 on page Ⅱ−94, and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Series of size 8 to 12 and MHTG15 can also be mounted in upward direction.
(3) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(4) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series and LWHT···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(6) Series of size 8 and 10 are provided with an oil hole. The specifications of oil holes are shown in Table 14 on page Ⅱ−104.
The shapes of grease nipples of size 12 and 15 vary by size. The specifications are shown in Table 15 on page Ⅱ−104.

Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHT	G	15	C2	R900				T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Model

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

② Length of slide unit

No symbol	Standard
G	Long

③ Size: 8, 10, 12, 15

④ Number of slide unit (2)

⑤ Length of track rail (900 mm)

⑥ Dust protection code

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

⑦ Material type

No symbol	High carbon steel made
SL	Stainless steel made

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

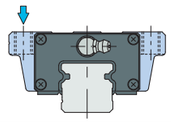
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

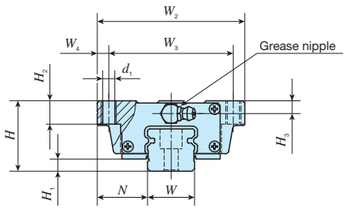
⑪ Special specification: A, BS, D, E, F, 1, J, L, LF, MA MN, N, Q, RE, T, U, V, W, Y, Z

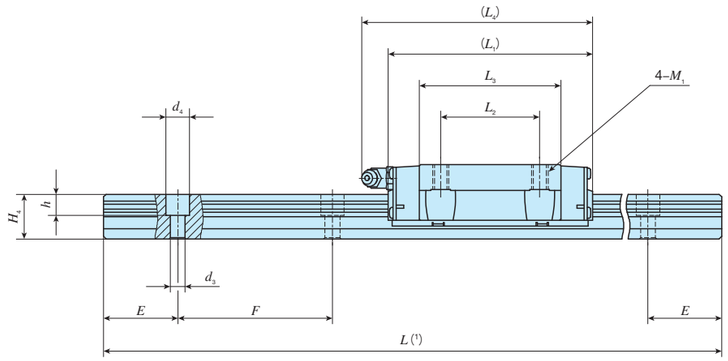
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

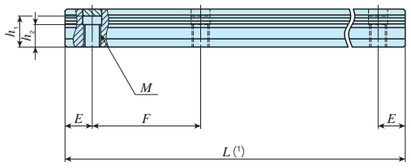
IKO C-Lube Linear Way MH

Flange type mounting from top

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





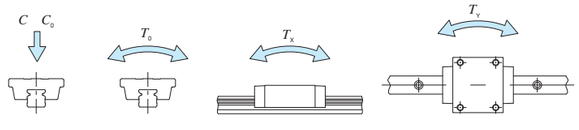


Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No 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	Dimensions of track rail mm: W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Appended mounting bolt for track rail (3) mm: Bolt size× ℓ	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
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																				
MHT 25···M*		–											63.9																				
	LWHT 25···M*	–											64.7																				
MHT 25···MU*		–											63.9								–	–	–	M10	18	13			–				
	LWHT 25···MU*	–											64.7																				
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−93, Table 2.2 on page Ⅱ−94, and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series and LWHT···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specifications of grease nipple are shown in Table 15 on page Ⅱ−104.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code			Model code	Dust protection code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHT	G	25	C2	R840				T_1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Model
MHT LWHT(···B)	Flange type mounting from top

② Length of slide unit
No symbol	Standard
G	Long

③ Size: 20, 25

④ Number of slide unit (2)

⑤ Length of track rail (840 mm)

⑥ Dust protection code
No symbol	Standard specification
M	Ultra seal specification
MU	Ultra seal specification with track rail mounting from bottom

⑦ Material type
No symbol	High carbon steel made
SL	Stainless steel made

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
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

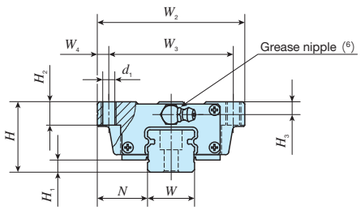
⑪ Special specification: A, BS, D, E, F, 1, J, L, LF, MA MN, N, PS, Q, RE, T, UR, V, W, Y, Z

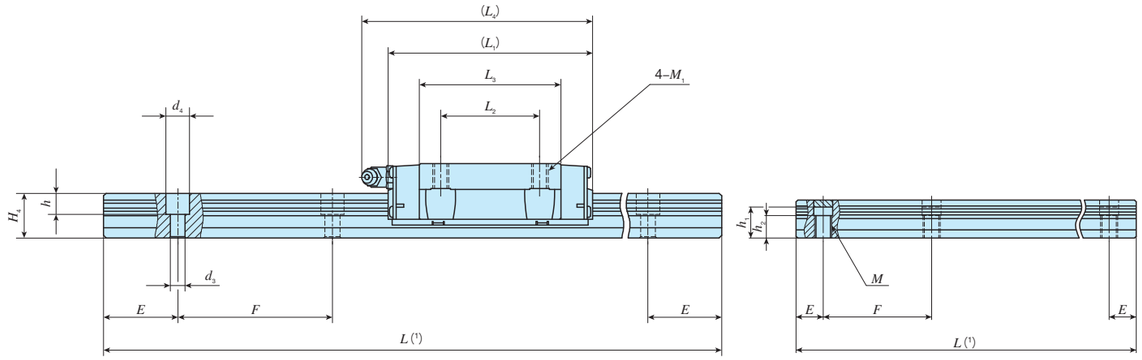
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

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



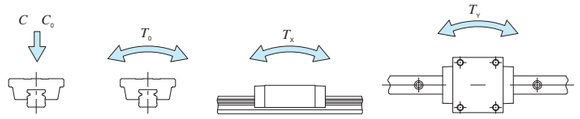


Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No C-Lube)	Interchangeable	Mass (Ref.): Slide unit kg	Mass (Ref.): Track rail kg/m	Dimensions of assembly mm: H	H1	N	Dimensions of slide unit mm: W2	W3	W4	L1	L2	L3	L4	d1 (2)	M1	H2	H3
MHT 30		○	1.28	4.82	42	9	31	90	72	9	113	52	80.6	123	–	M10	10	8
	LWHT 30···B	○				7												
MHT 30···SL		○				9												
	LWHT 30···SL	○																
MHT 30···M*		–																
	LWHT 30···M*	–																
MHT 30···MU*		–																
	LWHT 30···MU*	–																
MHTG 30		○	1.69			9					139		106.6	149				
	LWHTG30	○				7												
MHTL 30	–	○	2.30								185		152.2	194	8.5			
MHT 35		○	1.79	6.85	48	10	33	100	82	9	123	62	86.2	135	–	M10	13	10
	LWHT 35···B	○				8												
–	LWHT 35···M*	–																
–	LWHT 35···MU*	–																
MHTG 35		○	2.35			10					151		114	163				
	LWHTG35	○				8												
MHTL 35	–	○	3.24								199		162.2	211	8.5			

Dimensions of slide unit mm: W	H4	Dimensions of track rail mm: d3	d4	h	M	h1 (3)	h2	E	F	Appended mounting bolt for track rail (4) mm: Bolt size× ℓ	Basic dynamic load rating (5): C N	Basic static load rating (5): C0 N	Static moment rating (5): T0 N·m	Tx N·m	Ty N·m
28	25	9	14	12	–	–	–	40	80	M 8×28	35 400	40 700	623	536 2 820	536 2 820
		–	–	–	M12	20	13			–					
		9	14	12	–	–	–			M 8×28	42 700	53 200	814	894 4 460	894 4 460
											54 400	75 100	1 150	1 740 8 240	1 740 8 240
34	28	9	14	12	–	–	–	40	80	M 8×28	48 700	53 700	823	631 3 480	579 3 190
		–	–	–	M12	23	16			–					
		9	14	12	–	–	–			M 8×28	59 500	71 600	1 100	1 090 5 570	1 000 5 110
											76 700	103 000	1 580	2 200 10 400	2 010 9 490

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−93, Table 2.2 on page Ⅱ−94, and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) MHTL30 and MHTL35 can also be mounted in upward direction.
(3) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(4) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series and LWHT···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(6) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−104.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHT	G	35	C2	R1040			T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Model

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

② Length of slide unit

No symbol	Standard
G	Long
L	Extra long

③ Size: 30, 35

④ Number of slide unit (2)

⑤ Length of track rail (1,040 mm)

⑥ Dust protection code

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

⑦ Material type

No symbol	High carbon steel made
SL	Stainless steel made

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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

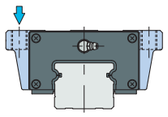
⑪ Special specification: A, BS, D, E, F, 1, J, L, LF, MA MN, N, PS, Q, RE, T, UR, V, W, Y, Z

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

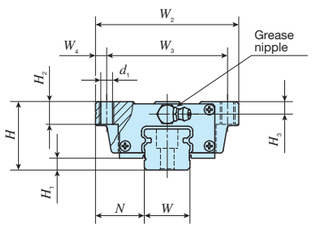
IKO C-Lube Linear Way MH

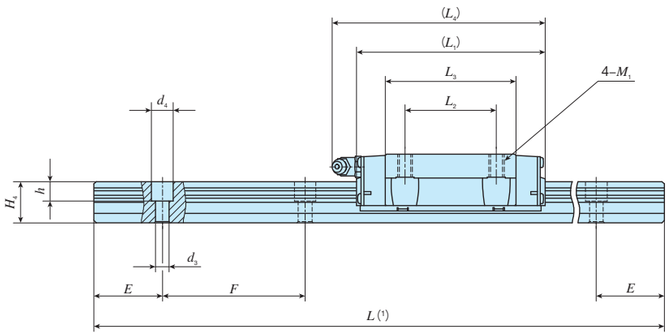
Flange type mounting from top

Shape: **MHT · LWHT**



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



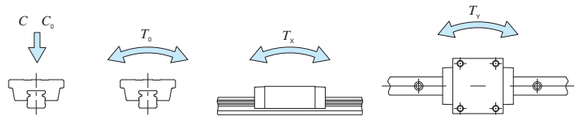


Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No 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 (2)	M_1	H_2	H_3	H_5	Dimensions of track rail mm: W	H_4	d_3	d_4	h	M	h_1 (3)	h_2	E	F	Appended mounting bolt for track rail (4) mm: Bolt size× ℓ	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
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	○																																	
–	LWHT 45···M*	–				10																													
–	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
	LWHTG45	○				10																													
MHTL 45	–	○	5.70								238		194.8	249	10.5																114 000	147 000	2 960	3 680 17 800	3 370 16 300
–	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
–	LWHTG55	○	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
–	LWHTG65	○	17.6								303		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−93 and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) MHTL45 can also be mounted in upward direction.
(3) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(4) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
In an assembled set of MH series and LWHT···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specifications of grease nipple are shown in Table 15 on page Ⅱ−104.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHT	G	45	C2	R1260			T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

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

② Length of slide unit

No symbol	Standard
G	Long
L	Extra long

③ Size: 45, 55, 65

④ Number of slide unit (2)

⑤ Length of track rail (1,260 mm)

⑥ Dust protection code

No symbol	Standard specification
M	Ultra seal specification
MU	Ultra seal specification with 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

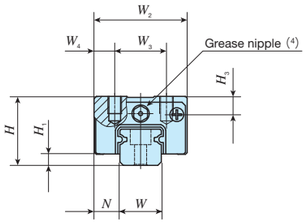
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

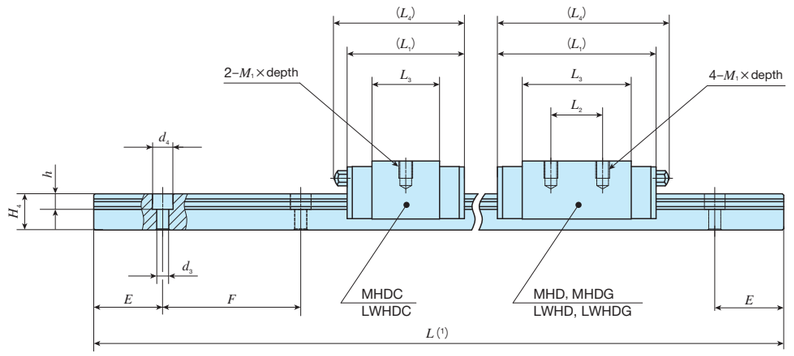
⑩ Special specification: A, BS, D, E, F, 1, J, L, LF, MA MN, N, PS, Q, RE, T, V, W, Y, Z

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

Block type mounting from top

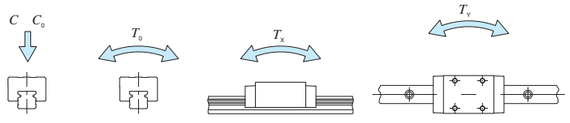
Shape	MHD · LWHD
Size	8 · 10 · 12 · 15 · 25 / 30 · 35 · 45 · 55 · 65





Identification number: MH series	Identification number: LWH series (No 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	Appended mounting bolt for track rail (2) mm: Bolt size× ℓ	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
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−93 and Table 2.2 on page Ⅱ−94.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) Series of size 8 and 10 are provided with an oil hole. The specifications of oil holes are shown in Table 14 on page Ⅱ−104.
The specification of grease nipple for size 12 is shown in Table 15 on page Ⅱ−104.



Example of identification number of assembled set

Model code	Dimensions	Part code		Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHD	G	12	C2	R320	SL	T1	P		/V
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Model

MHD LWHD	Block type mounting from top

② Length of slide unit

C	Short
No symbol	Standard
G	Long

③ Size: 8, 10, 12

④ Number of slide unit (2)

⑤ Length of track rail (320 mm)

⑥ Material type

No symbol	High carbon steel made
SL	Stainless steel made

⑦ Preload amount

T0	Clearance
No symbol	Standard
T1	Light preload

⑧ Accuracy class

H	High
P	Precision

⑨ Interchangeable

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

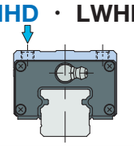
⑩ Special specification: A, D, E, F, Ⅰ, LR, MA MN, N, Q, U, W, Y

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

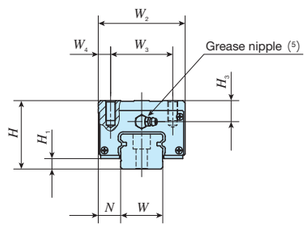
IKO C-Lube Linear Way MH

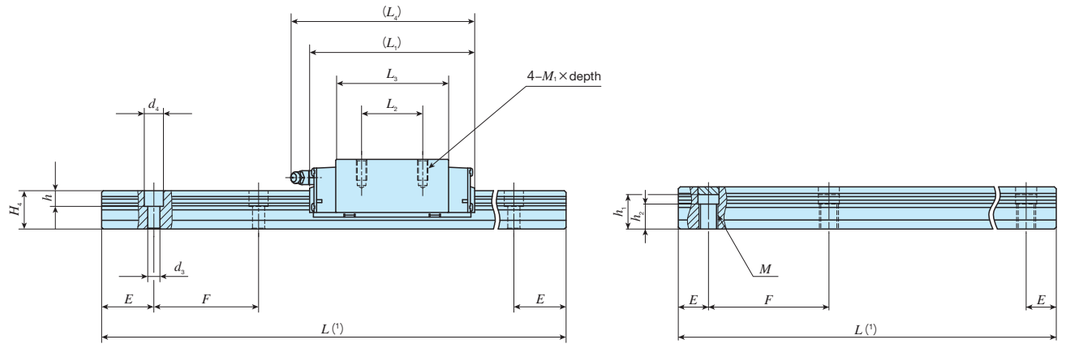
Block type mounting from top

Shape: **MHD · LWHD**



Size					
8	10	12	15	25
30	35	45	55	65

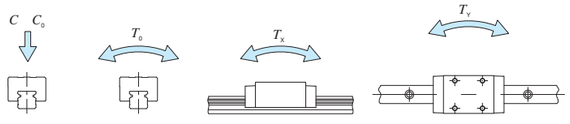




Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No 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	M	h_1 (2)	h_2	E	F	Appended mounting bolt for track rail (3) mm: Bolt size× ℓ	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
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*	–																													
–	LWHD 15···MU*	–																	–	–	–	M 6	12	9			–				
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																		
MHD 25···M*		–											63.9																		
	LWHD 25···M*	–											64.7																		
MHD 25···MU*		–											63.9						–	–	–	M10	18	13			–				
	LWHD 25···MU*	–											64.7																		
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																									
MHD 30···M*		–																													
	LWHD 30···M*	–																													
MHD 30···MU*		–																	–	–	–	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								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−93 and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
In an assembled set of MH series and LWHD···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−104.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHD G	25	C2 R840			T1	P		/V
① ②	③	④ ⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MHD LWHD(···B)	Block type mounting from top

② Length of slide unit

No symbol	Standard
G	Long
L	Extra long

③ Size: 15, 25, 30

④ Number of slide unit (2)

⑤ Length of track rail (840 mm)

⑥ Dust protection code

No symbol	Standard specification
M	Ultra seal specification
MU	Ultra seal specification with 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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

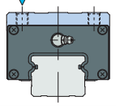
⑩ Special specification: A, BS, D, E, F, I , J, L, LF, MA MN, N, PS, Q, RE, T, UR, V, W, Y, Z

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

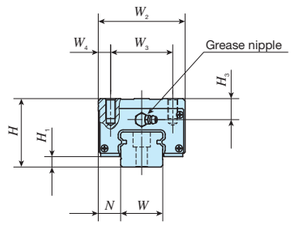
IKO C-Lube Linear Way MH

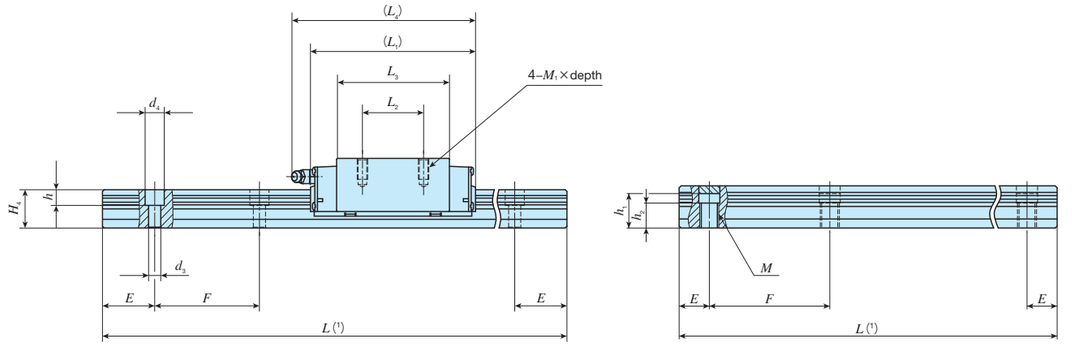
Block type mounting from top

Shape: **MHD · LWHD**



Size: 8 | 10 | 12 | 15 | 25 | 30 | 35 | 45 | 55 | 65



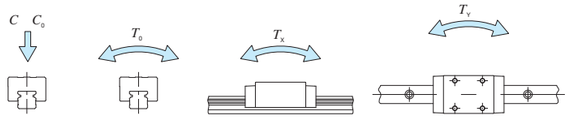


Ultra seal specification with track rail mounting from bottom

Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm										Appended mounting bolt for track rail (3) mm	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MH series	LWH series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MHD 35		○	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···B	○				8																									
–	LWHD 35···M*	–																	–	–	–	M12	23	16			–					
–	LWHD 35···MU*	–																													
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
	LWHDG35	○				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	○				14																									
–	LWHD 45···M*	–				10													–	–	–	M16	29	17			–					
–	LWHD 45···MU*	–																													
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
	LWHDG45	○				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	17	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
–	LWHDG55	○	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	18	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
–	LWHDG65	○	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−93 and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
In an assembled set of MH series and LWHD···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specifications of grease nipple are shown in Table 15 on page Ⅱ−104.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHD	G	45	C2	R1260			T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩

① Model

MHD LWHD(···B)	Block type mounting from top

② Length of slide unit

No symbol	Standard
G	Long
L	Extra long

③ Size

35, 45, 55, 65

④ Number of slide unit (2)

⑤ Length of track rail (1,260 mm)

⑥ Dust protection code

No symbol	Standard specification
M	Ultra seal specification
MU	Ultra seal specification with 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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

⑩ Special specification

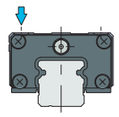
A, D, E, F, Ⅰ, J, L, LF, MA
MN, N, PS, Q, T, V, W, Y, Z

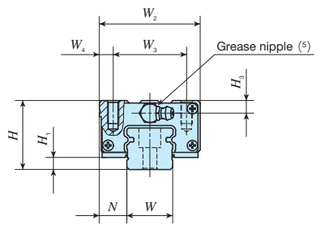
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

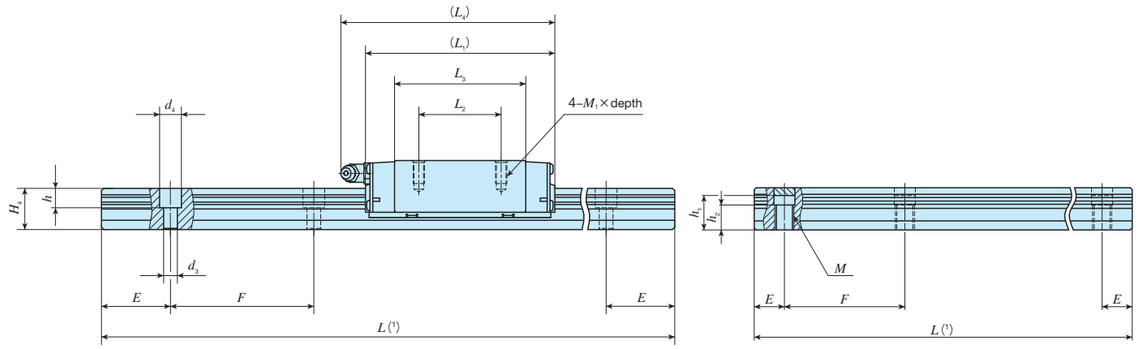
IKO C-Lube Linear Way MH

Compact block type mounting from top

Shape	MHS · LWHS
Size	15 / 20 / 25 / 30



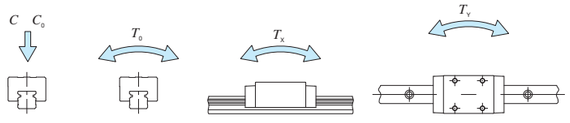




Ultra seal specification with track rail mounting from bottom

Identification number: MH series	Identification number: LWH series (No 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	M	h_1 (2)	h_2	E	F	Appended mounting bolt for track rail (3) mm: Bolt size× ℓ	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
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*	–																	–	–	–	M8	13.5	9.5			–				
–	LWHS 20···MU*	–																													
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
	LWHSG20	○											86																		

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−93, Table 2.2 on page Ⅱ−94, and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series and LWHS···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−104.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHS	G	20	C2	R480			T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Model

MHS	Compact block type mounting from top
LWHS(···B)	

② Length of slide unit

No symbol	Standard
G	Long

③ Size: 15, 20

④ Number of slide unit (2)

⑤ Length of track rail (480 mm)

⑥ Dust protection code

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

⑦ Material type

No symbol	High carbon steel made
SL	Stainless steel made

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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

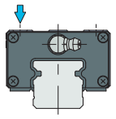
⑪ Special specification: A, BS, D, E, F, 1, J, L, LF, MA MN, N, Q, RE, T, V, W, Y, Z

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

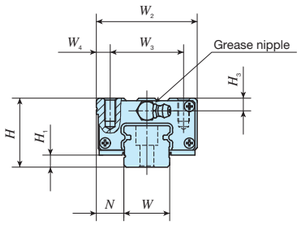
IKO C-Lube Linear Way MH

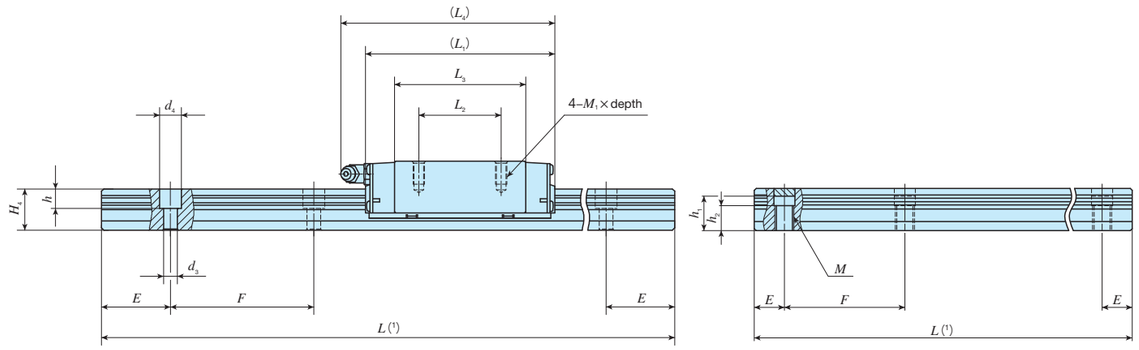
Compact block type mounting from top

Shape: **MHS · LWHS**



Size: 15 | 20 | 25 | 30



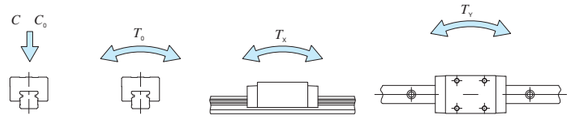


Ultra seal specification with track rail mounting from bottom

Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm										Appended mounting bolt for track rail (3) mm	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MH series	LWH series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	M	h_1 (2)	h_2	E	F	Bolt size× ℓ	C N	C_0 N	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																		
MHS 25···M*		–											63.9																		
	LWHS 25···M*	–											64.7																		
MHS 25···MU*		–											63.9						–	–	–	M10	18	13			–				
	LWHS 25···MU*	–											64.7																		
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
	LWHSG25	○											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	○				7																									
MHS 30···SL		○				9																									
	LWHS 30···SL	○				7																									
MHS 30···M*		–				9																									
	LWHS 30···M*	–				7																									
MHS 30···MU*		–				9													–	–	–	M12	20	13			–				
	LWHS 30···MU*	–				7																									
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
	LWHSG30	○				7																									

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−93, Table 2.2 on page Ⅱ−94, and Tables 2.3 and 2.4 on page Ⅱ−95.
(2) Choose bolts whose dimension allow fixing thread depth into track rail to be less than h_1.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MH series and LWHS···MU model, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specifications of grease nipple are shown in Table 15 on page Ⅱ−104.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Dust protection code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MHS	G	30	C2	R480				T1	P		/V
①	②	③	④	⑤	①	⑥	⑦	⑧	⑨	⑩	⑪

① Model

MHS	Compact block type mounting from top
LWHS(···B)	

② Length of slide unit

No symbol	Standard
G	Long

③ Size: 25, 30

④ Number of slide unit (2)

⑤ Length of track rail (480 mm)

⑥ Dust protection code

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

⑦ Material type

No symbol	High carbon steel made
SL	Stainless steel made

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

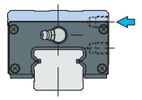
⑩ Interchangeable

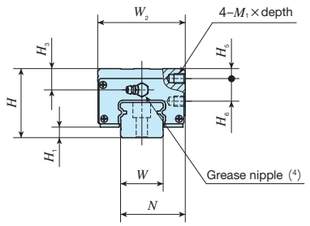
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

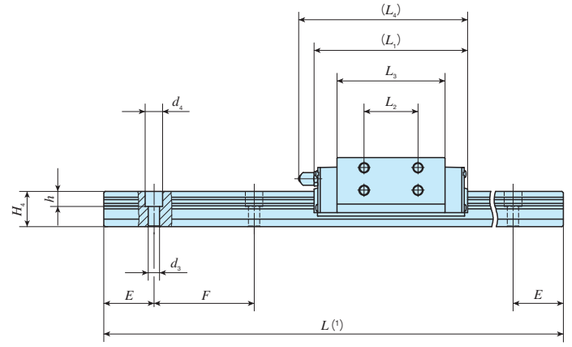
⑪ Special specification: A, BS, D, E, F, 1, J, L, LF, MA MN, N, PS, Q, RE, T, UR, V, W, Y, Z

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

IKO C-Lube Linear Way MH

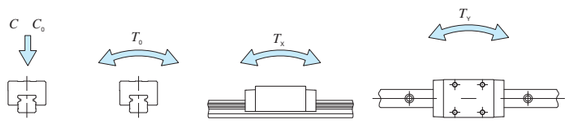
Side mounting type			
Shape	LWHY 		
Size	15	20	25
	30	35	45





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm							Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MH series	LWH series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	L_1	L_2	L_3	L_4	M_1×depth	H_3		H_5	H_6	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−93.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−104.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

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

① Model	
LWHY	Side mounting type

② Size
15, 20, 25, 30, 35, 45

③ Number of slide unit (2)

④ Length of track rail (480 mm)

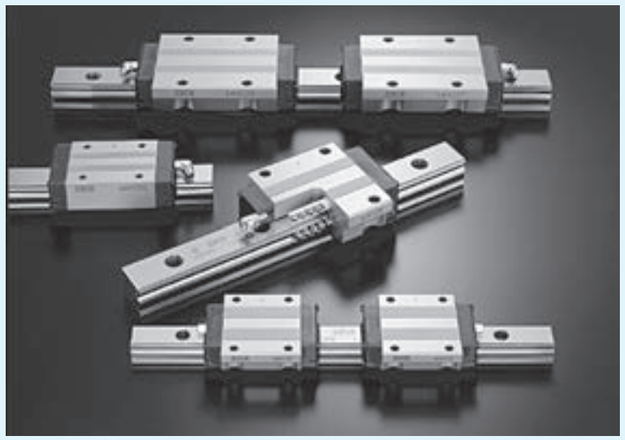
⑤ Preload amount	
No symbol	Standard
T1	Light preload
T2	Medium preload
T3	Heavy preload

⑥ Accuracy class	
H	High
P	Precision
SP	Super precision

⑦ Special specification
A, E, F, Ⅰ, L, LF, MA, N, PS, RE, Y, Z

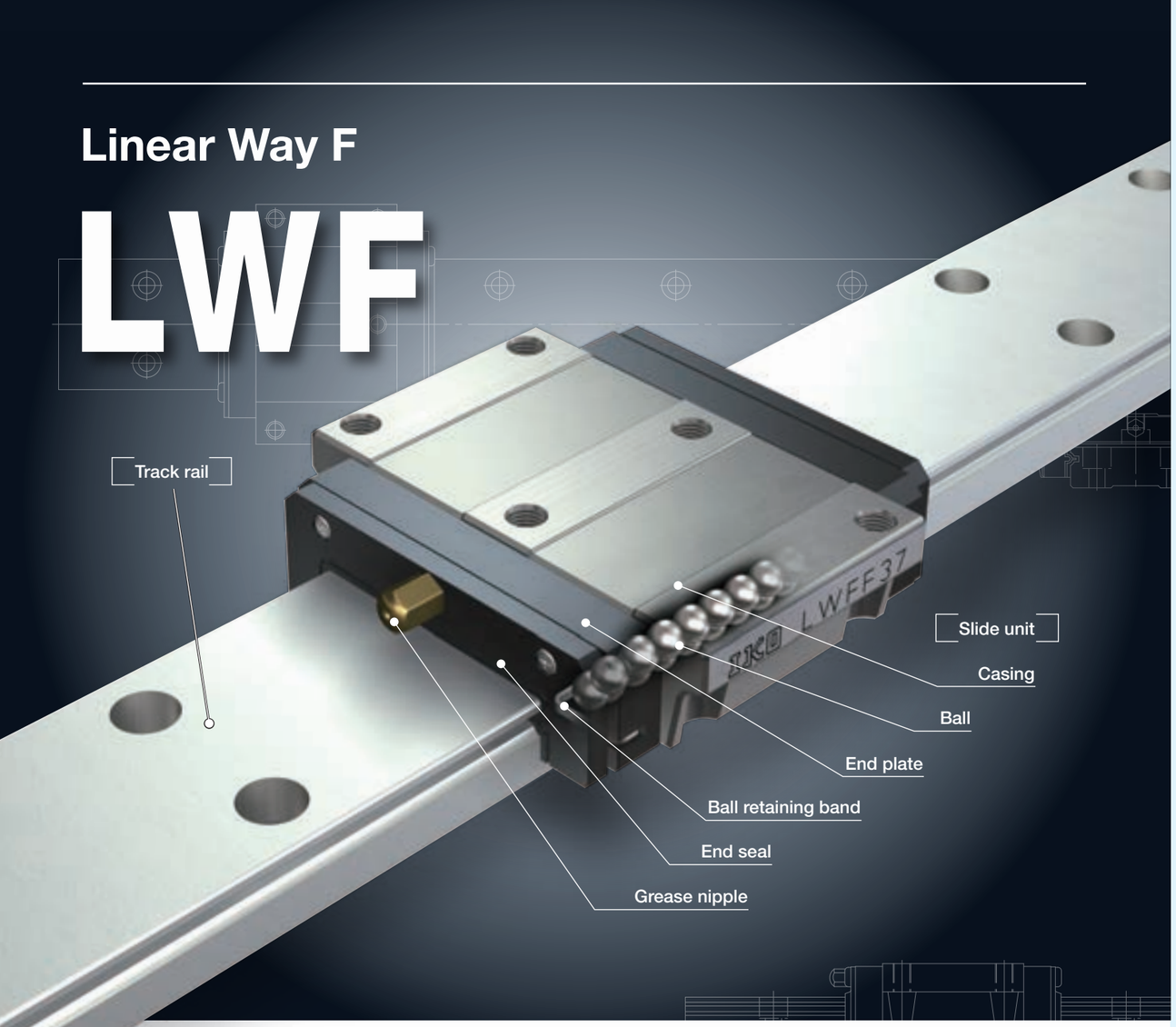
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Linear Way F



Linear Way F

LWF



Points

● Wide rail type series resistant to moment load

1 As track rail width is wide and distance between moment load points is long, this is a linear motion rolling guide resistant to moment load and complex load and suitable for serial use.

● Slide unit shapes for various usage

2 As the lineup of three types of slide unit shape including two flange types with different dimensional series and block type with small width are available, you can select an optimal product for the specifications of your machine and device.

● Stainless steel selections superior in corrosion resistance are listed on lineup.

For details ➔ P.I-41

3 Products made of stainless steel are highly resistant to corrosion, so that they are suitable for applications where rust prevention oil is not preferred, such as in a cleanroom environment.

Identification Number and Specification

Example of an identification number

The specification of LWF series is indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a material code, a preload symbol, a classification symbol, an interchangeable code, and any supplemental codes for each specification to apply.

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

1 **Model** — Model code Page Ⅱ－137

2 **Size** — Dimensions Page Ⅱ－137

3 **Number of slide units** — Part code Page Ⅱ－137

4 **Length of track rail** — Part code Page Ⅱ－137

5 **Material type** — Material code Page Ⅱ－137

6 **Preload amount** — Preload symbol Page Ⅱ－139

7 **Accuracy class** — Classification symbol Page Ⅱ－140

8 **Interchangeable** — Interchangeable code Page Ⅱ－141

9 **Special specification** — Supplemental code Page Ⅱ－141

Note (1) Indicate "LWFF" for the model code of the single track rail of block type LWFS mounting from top.

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

Identification Number and Specification —Model · Size · Number of Slide Unit ·

1 Model

Linear Way F (1) (LWF series)

Flange type mounting from top / bottom : LWFH / LWFF

Block type mounting from top : LWFS

For applicable models and sizes, see Table 1.
Indicate "LWFF" for the model code of the single track rail of block type LWFS mounting from top.

Note (1) This model has no built-in C-Lube.

2 Size

33,37,40,42,60,69,90 — For applicable models and sizes, see Table 1.

3 Number of slide units

: C○ — For an assembled set, indicates the number of slide units assembled on a track rail. For a single slide unit, only "C1" is specified.

4 Length of track rail

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

5 Material type

High carbon steel made : No symbol
Stainless steel made (2) : SL

For applicable models and sizes, see Table 1.

Note (2) Mount a standard grease nipple (brass) on the stainless steel type, too. Stainless steel grease nipple is also available. If needed, please contact IKO.

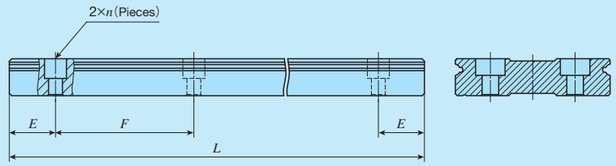
Table 1 Models and sizes of LWF series

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

Remark: For the models indicated in ▭, the interchangeable specification is available.

Length of Track Rail · Material Type—

Table 2.1 Standard and maximum length of high carbon steel track rail



unit: mm

Item \ Identification 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 E dimensions (1) or higher	8	10	10
Standard E dimensions (1) below	38	50	50
Maximum length (2)	1 500	1 520	1 520

Item \ Identification 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 E dimensions (1) or higher	7	7	7	9
Standard E dimensions (1) below	27	32	37	49
Maximum length (2)	1 600	2 000	1 980	2 000

Notes (1) This does not apply to female threads for bellows (supplemental code "/J").
(2) We can produce products longer than the maximum length. If needed, please contact IKO.
Remarks 1. Indicate "LWFF" for the model code of the single track rail of block type LWFS mounting from top.
2. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

Table 2.2 Standard and maximum length of stainless steel track rail unit: mm

Item \ Identification 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 E dimensions (1) or higher	7	7	7
Standard E dimensions (1) below	27	32	37
Maximum length (2)	1 200	1 200	1 200

Notes (1) This does not apply to female threads for bellows (supplemental code "/J").
(2) We can produce products longer than the maximum length. If needed, please contact IKO.
Remarks 1. Indicate "LWFF" for the model code of the single track rail.
2. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

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.
Light preload	: T_1	For details of the preload amount, see Table 3.
Medium preload	: T_2	For applicable preload types, see Table 4.

Table 3 Preload amount

Item / Preload type	Preload symbol	Preload amount N	Operational conditions
Standard	(No symbol)	0 (1)	· Light and precise motion
Light preload	T_1	$0.02C_0$	· Almost no vibrations · Load is evenly balanced · Light and precise motion
Medium preload	T_2	$0.05C_0$	· Medium vibration · Medium overhung load

Note (1) Indicates zero or minimal amount of preload.
Remark: C_0 indicates the basic static load rating.

Table 4 Application of preload

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

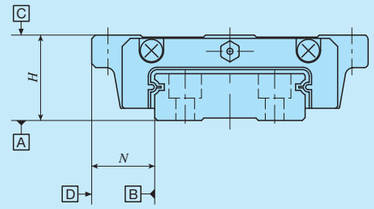
Remark: The mark ▭ indicates that interchangeable specification products are available.

—Accuracy Class—

7 Accuracy class

High	: H	For interchangeable specification products, assemble a slide unit and a track rail of the same accuracy class.
Precision	: P	For details of accuracy class, see Table 5.
Super precision	: SP	For applicable accuracy class, see Table 6.

Table 5 Tolerance and allowance



unit: mm

Item / Class (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 the slide unit C surface to A surface	See Fig. 1		
Parallelism in operation of the slide unit D surface to B surface	See Fig. 1		

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

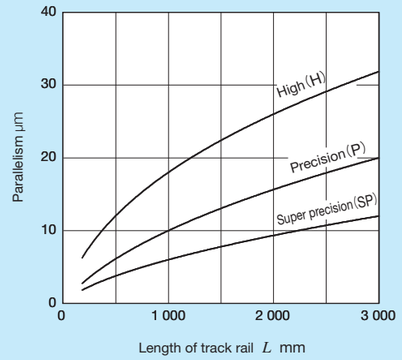


Fig. 1 Parallelism in operation

Table 6 Application of accuracy class

Size	Class (classification symbol)		
	High (H)	Precision (P)	Super precision (SP)
33	○	○	○
37	○	○	○
40	○	○	○
42	○	○	○
60	○	○	○
69	○	○	○
90	○	○	○

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

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

8 Interchangeable

S1 specification	: S1	This is specified for the interchangeable specifications. Assemble a track rail and a slide unit with the same interchangeable code. Performance and accuracy of "S1" and "S2" are the same. No symbol is indicated for non-interchangeable specification.
S2 specification	: S2	
Non-interchangeable specification	: 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.
For combination of multiple special specifications, see Table 8.
For details of special specifications, see page Ⅲ—29.

Table 7.1 Application of special 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	○	○	○	○	○	○	○
With C-Lube plate	/Q	○	○	○	○	○	○	○
Under seal	/U	○	○	○	○	○	○	○
Double end seals	/V○	○	○	×	○	×	○	×
Scrapers	/Z○	○	○	○	○	○	○	○

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

Table 7.2 Application of special 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○	○	○	○	○	○	○	○
Without track rail mounting bolt	/MN	○	○	○	○	○	○	○

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

Table 7.3 Application of special specifications (Interchangeable specification and 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○	○	○	○	○	○	○	○
Without track rail mounting bolt	/MN	○	○	○	○	○	○	○
No end seal	/N	○	○	○	○	○	○	○
With C-Lube plate	/Q	○	○	○	○	○	○	○
Under seal	/U	○	○	○	○	○	○	○
Double end seals	/V○	○	○	×	○	×	○	×
Specified grease	/Y○	○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○	○

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

Table 7.4 Application of special specifications (Non-interchangeable specification)

Special specification	Supplemental code	Size						
		33	37	40	42	60	69	90
Butt-jointing track rails	/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○	○	○	○	○	○	○	○
Without track rail mounting bolt	/MN	○	○	○	○	○	○	○
No end seal	/N	○	○	○	○	○	○	○
With C-Lube plate	/Q	○	○	○	○	○	○	○
Under seal	/U	○	○	○	○	○	○	○
Double end seals	/V○	○	○	×	○	×	○	×
A group of multiple assembled sets	/W○	○	○	○	○	○	○	○
Specified grease	/Y○	○	○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○	○	○

Table 8 Combination of supplemental codes

	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	○	○	○	○	○	○	●(1)	○	○	○	—	—	○	●	○	○

Note (1) Contact IKO for the case of LWFH.
Remarks 1. The combination of "—" shown in the table is not available.
2. Contact IKO for the combination of the interchangeable specification marked with ●.
3. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

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

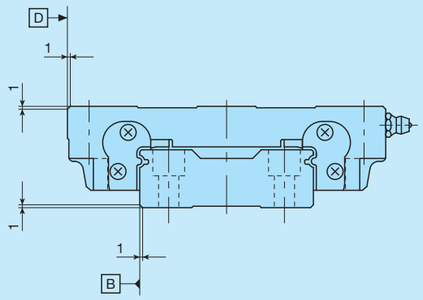
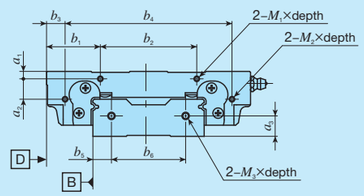


Fig. 2 Dimension of chamfered reference surface (Supplemental code /C /CC)

Remark: Add chamfer to the reference mounting surface of the slide unit and track rail.
For corner R of the mounting section, see Table 17.2 on page Ⅱ−148.

Table 9 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)

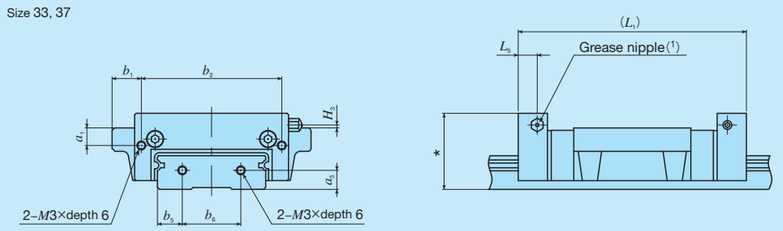


unit: mm

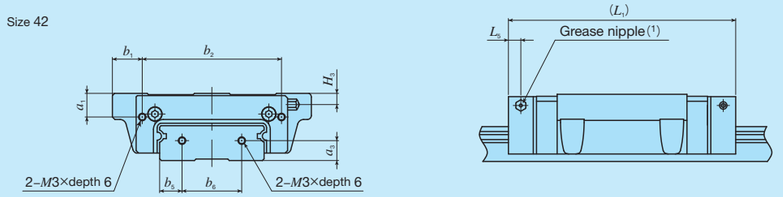
Identification number	Slide unit								Track rail			
	a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	M_2×depth	a_3	a_5	a_6	M_3×depth
LWFH 40	3	–	23.5	35	–	–	M3×6	–	9	8	24	M3×6
LWFH 60	4	11	29	52	10	90	M3×6	M3×3	11	10	40	M4×8
LWFH 90	6	17	41	80	13	136	M3×5	M3×5	13	15	60	M4×8

Table 10 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)

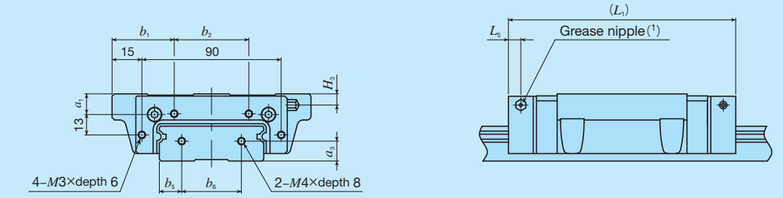
Size 33, 37



Size 42



Size 69

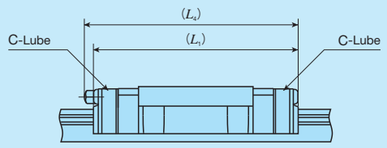


unit: mm

Identification 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) Grease nipple specifications and mounting position are different from standard specifications. Provided grease nipple is A-M3 for size 37 and 42 models, and A-M4 for size 69 model. For grease nipple specification, see Table 15 on page Ⅱ−146.
(2) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.
Remark: Dimensions indicated by * mark for series of size 33 and Size 37 is higher than the H dimension of Linear Way F. For details, contact IKO.

Table 11 Dimension of slide unit with C-Lube plate (Supplemental code /Q)

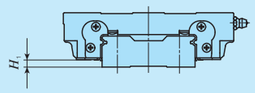


unit: mm

Size	L_1	L_4
33	64	66
37	73	75
40	78	–
42	86	98
60	98	–
69	121	132
90	131	–

Remark: The dimensions of the slide unit with C-Lube at both ends are indicated.

Table 12 H_1 dimension with under seal (Supplemental code /U)

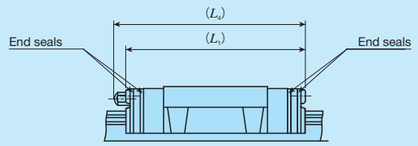


unit: mm

Size	H_1
40	3
60	4
90	5

Remark: H_1 dimensions of series of the Size 33, 37, 42, and 69 are the same as dimensions before mounting of under seal.

Table 13 Dimension of slide unit with double end seals (Supplemental code Single unit: /V Assembled set: /V /VV)

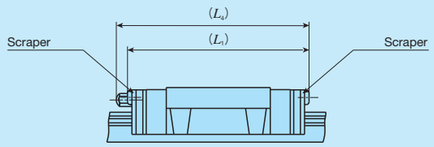


unit: mm

Size	L_1	L_4
33	61	64
37	70	74
42	82	96
69	117	130

Remark: The dimensions of the slide unit with double end seals at both ends are indicated.

Table 14 Dimension of slide unit with scrapers (Supplemental code Single unit: /Z Assembled set: /Z /ZZ)



unit: mm

Size	L_1	L_4
33	62	64
37	71	75
40	80	–
42	84	97
60	100	–
69	119	131
90	130	–

Remark: The dimensions of the slide unit with scraper at both ends are indicated.

Lubrication

Lithium-soap base grease with extreme-pressure additive (Alvania EP grease 2 [SHOWA SHELL SEKIYU K. K.]) is pre-packed in LWF series.
LWF series has grease nipple as indicated in Table 15. Supply nozzles fit to each shapes of grease nipple are also available. For order of these parts for lubrication, see Table 14.1 on page Ⅲ—23 and Table 15 on page Ⅲ—24.

Table 15 Parts for lubrication

Size	Grease nipple type (1)	Applicable supply nozzle type	Bolt size of female threads 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) For grease nipple specification, see Table 14.1 and Table 14.2 on page Ⅲ—23.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

Dust Protection

The slide units of LWF series are equipped with end seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to cover the whole unit with bellows or telescope type shield, etc.
LWF series is provided with specific bellows. The bellows are easy to mount and provide excellent dust protection. If needed, please refer to Ⅲ—26 for ordering.

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

Precaution for Use

❶ Mounting surface, reference mounting surface and typical mounting structure

When mounting the LWF series, properly align the reference mounting surface B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 3.)

The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.

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

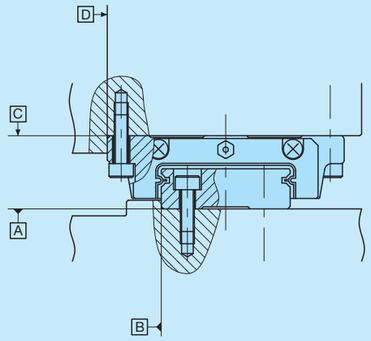


Fig. 3 Reference mounting surface and typical mounting structure

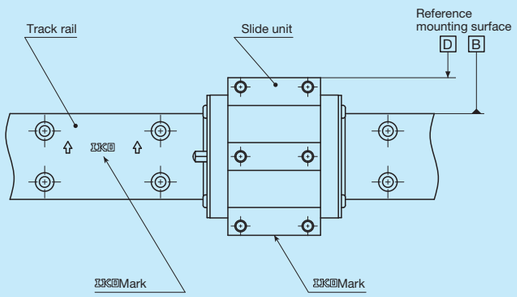


Fig. 4 Reference mounting surface

❷ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 5. Recommended value for the shoulder height and corner radius on the mating side is indicated in Table 17.1 and Table 17.2.

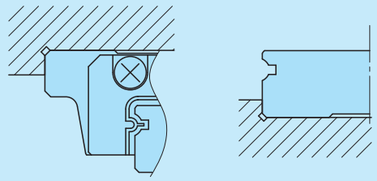


Fig. 5 Corner of the mating reference mounting

❸ Tightening torque for fixing screw

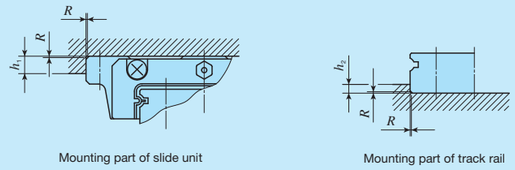
Typical tightening torque for mounting of the LWF series to the steel mating member material is indicated in Table 16. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 16 Tightening torque for fixing screw

Bolt size	Tightening torque N・m	
	High carbon steel-made screw	Stainless steel-made screw
M 4×0.7	4.1	2.5
M 5×0.8	8.0	5.0
M 6×1	13.6	8.5
M 8×1.25	32.7	–
M10×1.5	63.9	–

Remark: The tightening torque is calculated based on strength division 12.9 and property division A2-70.

Table 17.1 Shoulder height and corner radius of the reference mounting surface

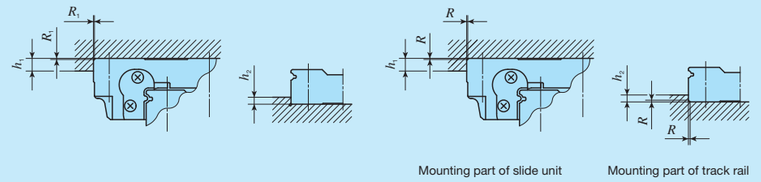


Mounting part of slide unit　　Mounting part of track rail

unit: mm

Size	Mounting part of slide unit		Mounting part of track rail	
	Shoulder height h_1	Corner radius R (Maximum)	Shoulder height h_2	Corner radius R (Maximum)
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 height and corner radius of the reference mounting surface



Mounting part of slide unit　　Mounting part of track rail　　Mounting part of slide unit　　Mounting part of track rail

When supplemental code "/CC" is specified

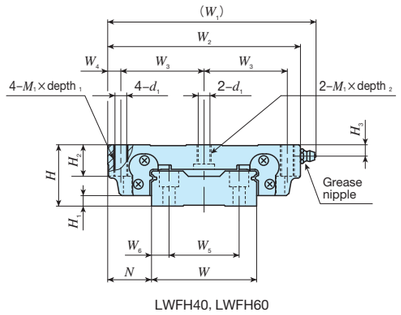
unit: mm

Size	Mounting part of slide unit		Mounting part of track rail Shoulder height	Corner radius when supplemental code "/CC" is specified
	Shoulder height h_1	Corner radius R (Maximum)	h_2	R (Maximum)
40	4	0.3	3	1
60	6	0.5	4	1
90	8	0.5	6	1

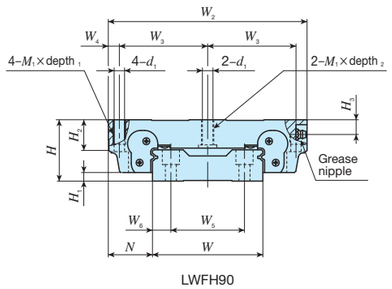
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Flange type mounting from top / bottom

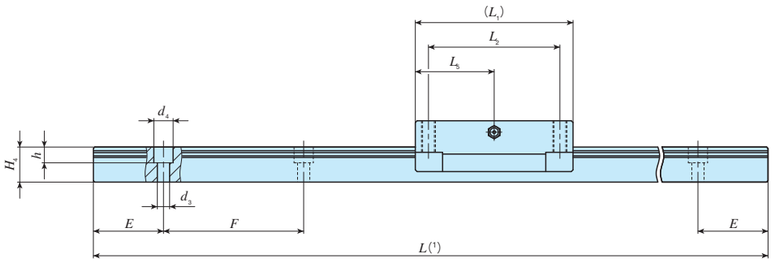
Shape	LWFH		
Size	40	60	90



LWFH40, LWFH60

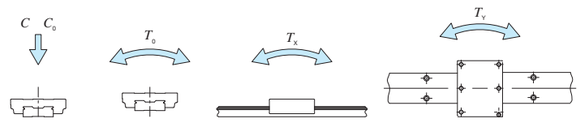


LWFH90



Identification number	Interchangeable	Mass(Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm													Dimensions of track rail mm									Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
LWF series (No 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×depth 1	depth 2	H_2		H_3	W	H_4	W_5	W_6	d_3	d_4	h	E	F	Bolt size× ℓ	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	91	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	119	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 L are shown in Table 2.1 on page Ⅱ−138.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
Remark: The specifications of grease nipple are shown in Table 15 on page Ⅱ−146.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
LWFH	60	C2	R800	T1	P		/U
①	②	③	④	⑤	⑥	⑦	⑧

① Model

LWFH	Flange type mounting from top / bottom

② Size: 40, 60, 90

③ Number of slide unit (2)

④ Length of track rail (800 mm)

⑤ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload

⑥ Accuracy class

H	High
P	Precision
SP	Super precision

⑦ Interchangeable

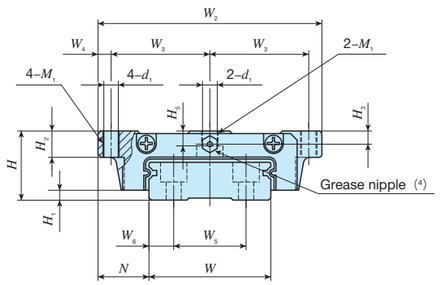
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

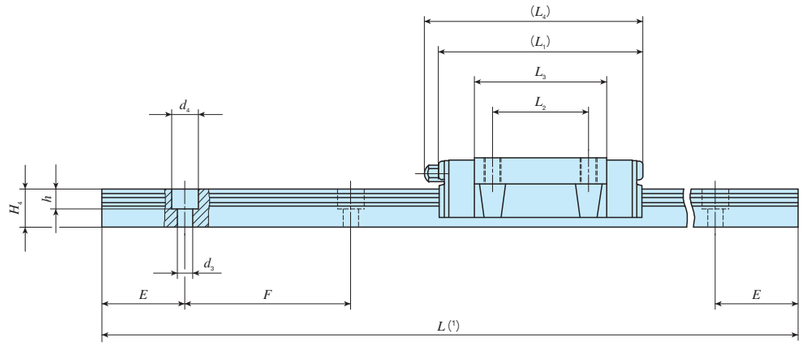
⑧ Special specification: A, C, D, E, F, Ⅰ, J, L, LF, MN, N, Q, U, W, Y, Z

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

Flange type mounting from top / bottom

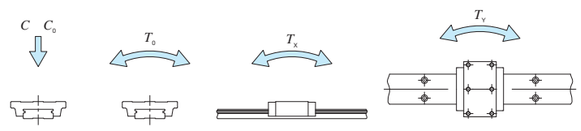
Shape	LWFF
Size	33 / 37 / 42 / 69





Identification number	Interchangeable	Mass(Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm												Dimensions of track rail mm									Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
LWF series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	M_1	H_2	H_3	H_5	W	H_4	W_5	W_6	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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	54	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	49.0 292	49.0 292
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	120	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 L are shown in Table 2.1 on page Ⅱ−138.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−146.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
LWFF	37	C2	R800	T1	P		/U
①	②	③	④	⑤	⑥	⑦	⑧

① Model

LWFF	Flange type mounting from top / bottom

② Size: 33, 37, 42, 69

③ Number of slide unit (2)

④ Length of track rail (800 mm)

⑤ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload

⑥ Accuracy class

H	High
P	Precision
SP	Super precision

⑦ Interchangeable

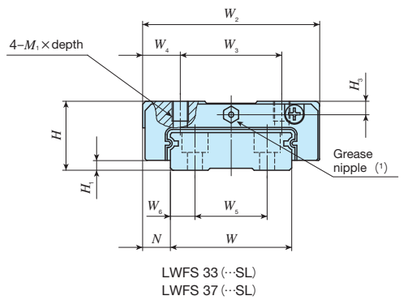
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

⑧ Special specification: A, D, E, F, Ⅰ, J, L, LF, MN, N, Q, U, V, W, Y, Z

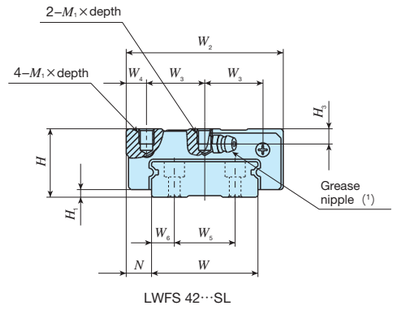
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Block type mounting from top

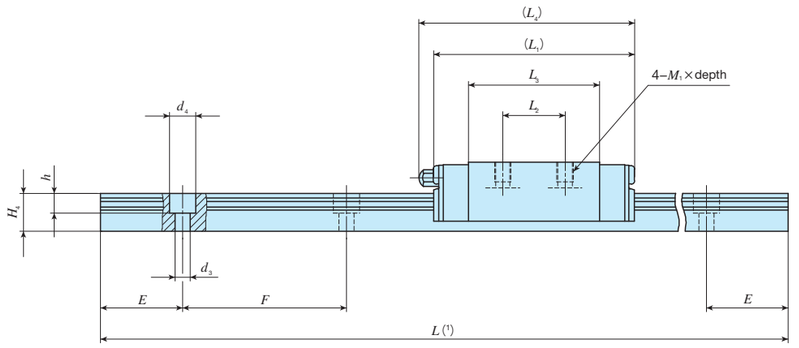
Shape	LWFS		
Size	33	37	42



LWFS 33 (···SL)
LWFS 37 (···SL)

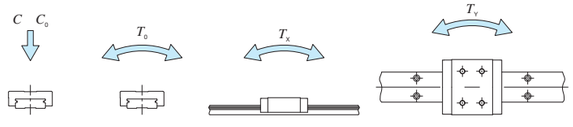


LWFS 42···SL



Identification number	Interchangeable	Mass(Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm									Appended mounting bolt for track rail (2) mm	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
LWF series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	W_5	W_6	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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	54	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	49.0 292	49.0 292
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 L are shown in Tables 2.1 and 2.2 on page Ⅱ−138.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−146.



Example of identification number of assembled set

Model code	Dimensions	Part code		Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
LWFS	37	C2	R800		T1	P		/U
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

LWFS	Block type mounting from top

② Size: 33, 37, 42

③ Number of slide unit (2)

④ Length of track rail (800 mm)

⑤ Material type

No symbol	High carbon steel made
SL	Stainless steel made

⑥ Preload amount

No symbol	Standard
T1	Light preload
T2	Medium preload

⑦ Accuracy class

H	High
P	Precision
SP	Super precision

⑧ Interchangeable

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 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

C-Lube Maintenance-free

long term maintenance free supported!

Points

1 Original U-shaped track rail

MUL and LWU series are the linear motion rolling guides adopting the U-shaped track rail to greatly increase rigidity of track rail under moment load and torsion.

2 Expanded freedom of design for use as a structure beam

Because of the high rigidity of the track rail, 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.

3 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.

4 Stainless steel selections superior in corrosion resistance are listed on lineup.

For details P.I-41

The main metal components made of corrosion-resistant stainless steel are available for small size of 25 mm and 30 mm of track rail width. They are suitable for applications where rust prevention oil is not preferred, such as in a cleanroom environment.

Identification Number and Specification

Example of an identification number

The specifications of MUL and LWU series are indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a preload symbol, a classification symbol, and any supplemental codes for each specification to apply.

	1	3	4	5	2	6	7	8
Assembled set	MUL	25	C2	R280		T_1	H	/U

1 Model — Model code Page Ⅱ－159

2 Structure — Model code Page Ⅱ－159

3 Size — Dimensions Page Ⅱ－159

4 Number of slide units — Part code Page Ⅱ－159

5 Length of track rail — Part code Page Ⅱ－159

6 Preload amount — Preload symbol Page Ⅱ－161

7 Accuracy class — Classification symbol Page Ⅱ－161

8 Special specification — Supplemental code Page Ⅱ－162

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

Identification Number and Specification —Model · Structure · Size · Number of Slide unit ·

1 Model

C-Lube Linear Way MUL (MUL series)	Small type	: MUL
Linear Way U (1) (LWU series)	Small type	: LWUL
	Standard type	: LWU

For applicable models and sizes, see Table 1.

Note (1) This model has no built-in C-Lube.

2 Structure

Ball retained type	: B	For applicable models and sizes, see Table 1.
Ball non-retained type	: No symbol	

3 Size

25,30,40,50,60,86,100,130 — For applicable models and sizes, see Table 1.

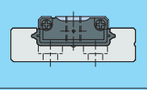
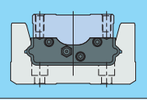
4 Number of slide units

: C○ — Indicates the number of slide units assembled on a track rail.

5 Length of track rail

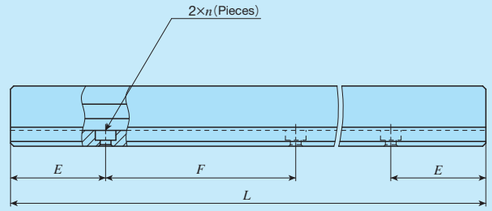
: R○ — Indicate the length of track rail in mm. For standard and maximum lengths, see Table 2.

Table 1 Models and sizes of MUL and LWU series

Shape	Material	Model	Size							
			25	30	40	50	60	86	100	130
Small type 	Stainless steel made	MUL	○	○	–	–	–	–	–	–
		LWUL···B	○	○	–	–	–	–	–	–
Standard type 	High carbon steel made	LWU···B	–	–	○	○	○	○	–	–
		LWU	–	–	○	○	○	○	○	○

Length of Track Rail —

Table 2 Standard and maximum lengths of track rail



unit: mm

Item \ Identification 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 E dimensions or higher	4.5	4.5	–	–
Standard E dimensions below	22	24.5	–	–
Maximum length (1)	420 (840)	480 (960)	720	800

Item \ Identification 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) Length up to the value in ( ) can be produced. If needed, please contact IKO.

Remarks 1. 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.

2. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

MUL • LWU

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

6 Preload amount

Standard : No symbol
Light preload : T_1

For details of the preload amount, see Table 3.

Table 3 Preload amount

Item / Preload type	Preload symbol	Preload amount N	Operational conditions
Standard	(No symbol)	0 (1)	· Light and precise motion
Light preload	T_1	$0.02C_0$	· Almost no vibrations · Load is evenly balanced · Light and precise motion

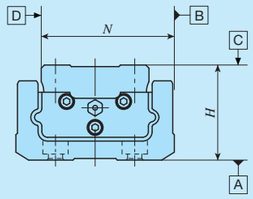
Note (1) Indicates zero or minimal amount of preload.
Remark: C_0 indicates the basic static load rating.

7 Accuracy class

Ordinary : No symbol
High : H

For details of accuracy class, see Table 4.

Table 4 Tolerance and allowance



unit: mm

Item \ Class (classification 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 the slide unit C surface to A surface	See Fig. 1	
Parallelism in operation of the slide unit D surface to B surface	See Fig. 1	

Note (1) It means the size variation between slide units mounted on the same track rail.

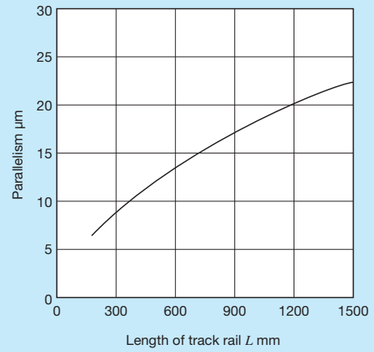


Fig. 1 Parallelism in operation

8 Special specification

/E, /L○, /MA, /MN, /Q, /U○, /W○

For applicable special specifications, see Table 5.
For combination of multiple special specifications, see Table 6.
For details of special specifications, see page Ⅲ—29.

Table 5 Application of 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)	○	○	○	○	○	○
With track rail mounting bolt	/MA	○(2)	○(2)	○	○	○	○	○	○
Without track rail mounting bolt (3)	/MN	○	○	×	×	×	×	×	×
With C-Lube plate (3)	/Q	×	×	○	○	○	○	○	○
Upper seal	/U	○	○	×	×	×	×	×	×
A group of multiple assembled sets	/W○	○	○	○	○	○	○	○	○

Notes (1) Applicable only to "/LR".
(2) Applicable to MUL series.
(3) Applicable to LWU series.

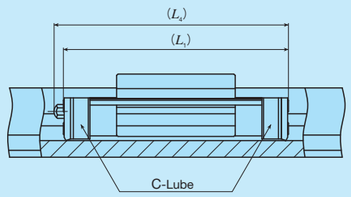
Table 6 Combination of supplemental codes

	E	L	MA	MN	Q	U
L	○					
MA	○	○				
MN	○	○	—			
Q	—	○	○	○		
U	○	○	○	○	—	
W	—	○	○	○	○	○

Remarks 1. The combination of "—" shown in the table is not available.
2. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

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

Table 7 Dimension of slide unit with C-Lube plate (Supplemental code /Q)

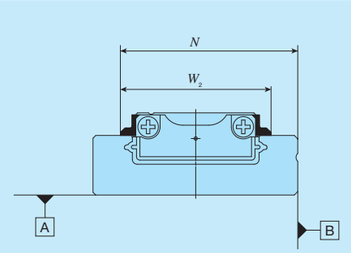


unit: mm

Size	L_1	L_4
40	67	68
50	82	83
60	95	100
86	142	146
100	166	170
130	190	194

Remark: The dimensions of the slide unit with C-Lube at both ends are indicated.

Table 8 Dimension of slide unit with upper seal (Supplemental code /U)



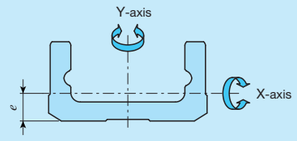
unit: mm

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. The moment of inertia of sectional area of track rails are shown in Table 9.

Table 9 Moment of inertia of sectional area of track rails

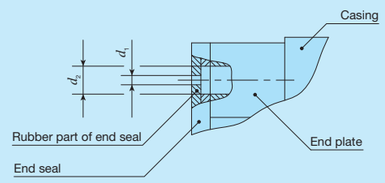


Identification number		Moment of inertia of sectional area mm⁴		Center of gravity e mm
		I_X	I_Y	
MUL 25	LWUL 25···B	3.7×10^2	7.5×10^3	2.6
MUL 30	LWUL 30···B	9.3×10^2	1.7×10^4	3.3
—	LWU 40···B	1.0×10^4	6.8×10^4	6.6
—	LWU 40		6.9×10^4	
—	LWU 50···B	2.8×10^4	1.7×10^5	8.7
—	LWU 50			
—	LWU 60···B	6.3×10^4	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

In the series of size 25 and 30 of MUL series and LWU series, lithium-soap base grease (MULTEMP PS No.2, KYODO YUSHI) is pre-packed, and in the series of size 40 to 130, lithium-soap base grease with extreme-pressure additive (Alvania EP grease 2 [SHOWA SHELL SEKIYU K. K.]) is pre-packed. Additionally, MUL series has C-Lube placed in the recirculation part of balls, so that the interval for reapplicating lubricant can be extended and maintenance works such as grease job can be reduced significantly.
MUL series and LWU series have grease nipple or oil hole as indicated in Table 11. Supply nozzles fit to each shapes of grease nipple and dedicated supplying equipment (miniature greasers) fit to oil holes are also available. For order of these parts for lubrication, see Table 13 and Table 14.1 on page Ⅲ—23, and Table 15 on page Ⅲ—24.

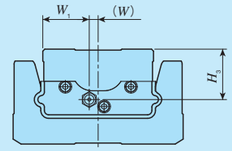
Table 10 Oil hole specifications



unit: mm

Size	d_1	d_2
25	0.5	1.2
30		1.5

Table 11 Lubrication parts and position of grease nipple



Size	Grease nipple type (1)	Applicable supply nozzle type	Bolt size of female threads for piping	Grease nipple position 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 type 1	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) For grease nipple specification, see Tables 14.1 and 14.2 on page Ⅲ—23.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

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

Dust Protection

The slide units of MUL series and LWU series are equiped with end seals and upper seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to attach a protective cover to the linear motion mechanism.

Precaution for Use

❶ Mounting surface, reference mounting surface and typical mounting structure

When mounting the MUL series and LWU series, properly align the reference mounting surfaces B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 2)

The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.

Reference mounting surfaces of slide unit and track rail of the MUL series and LWU series are the opposite side of the IKO mark. (See Fig. 3)

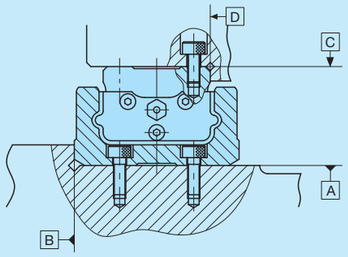


Fig. 2 Reference mounting surface and typical mounting structure

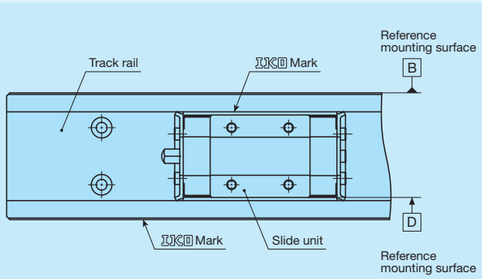


Fig. 3 Reference mounting surface

❷ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 4. Recommended value for the shoulder height and corner radius on the mating side is indicated in Table 13.

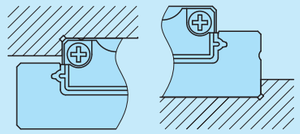


Fig. 4 Corner of the mating reference mounting

❸ Tightening torque for fixing screw

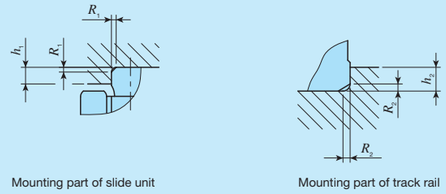
Typical tightening torque for mounting of the MUL series and LWU series to the steel mating member material is indicated in Table 12. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 12 Tightening torque for fixing screw

Bolt size	Tightening torque N・m	
	Stainless steel-made screw	High carbon steel-made screw
M 2.5×0.45	0.62	–
M 3 ×0.5	1.1	1.8
M 4 ×0.7	2.5	4.1
M 5 ×0.8	–	8.0
M 6 ×1	–	13.6
M 8 ×1.25	–	32.7
M10 ×1.5	–	63.9

Note (1) The tightening torque is calculated based on strength division 12.9 and property division A2-70.

Table 13 Shoulder height and corner radius of the reference mounting surface



unit: mm

Size	Mounting part of slide unit		Mounting part of track rail	
	Shoulder height h_1	Corner radius R_1 (Maximum)	Shoulder height h_2	Corner radius R_2 (Maximum) (1)
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

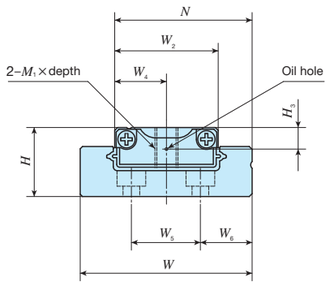
Note (1) In sizes 25 and 30, provide a relieved fillet as shown in Fig. 4.

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

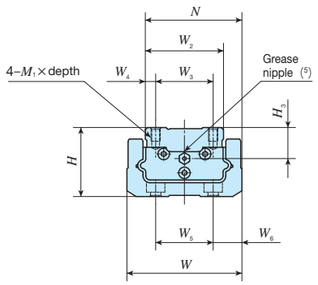
IKO C-Lube Linear Way MUL

Small type		
Shape	MUL ・ LWUL	
Size	25	30

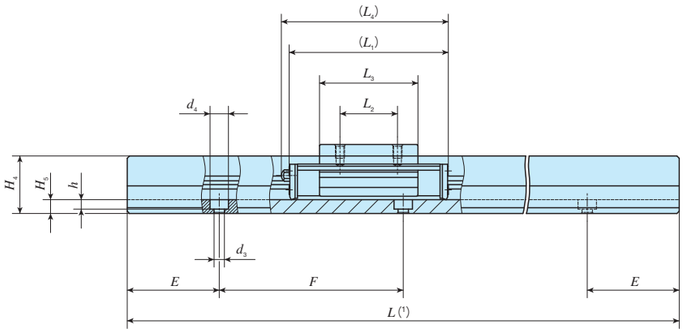
Standard type			
Shape	LWU (···B)		
Size	40	50	60
	86	100	130



MUL
LWUL···B

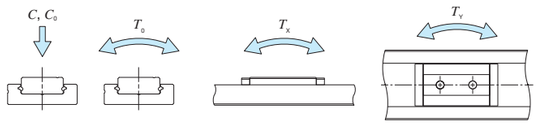


LWU(···B)



Identification number		Interchangeable	Mass(Ref.)		Dimensions of assembly mm		Dimensions of slide unit mm									Dimensions of track rail mm										Appended mounting bolt for track rail (3) mm	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MUL series	LWU series (No C-Lube)		Slide unit kg	Track rail kg/m	H	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	$M_1\times$ depth	H_3	W		H_4	H_5	W_5	W_6	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 pan 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	88	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	134	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 L are shown in Table 2 on page Ⅱ−160.
(2) The balls are not retained.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176 or JCIS10-70 cross-recessed pan head screw for precision equipment. For the size 25 and 30 series, stainless steel bolts are appended.
Track rail mounting bolts are not appended for MUL series.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 11 on page Ⅱ−164.
Remark: The specification of oil hole is shown in Table 10 on page Ⅱ−164.



Example of identification number of assembled set

Model code	Dimensions	Part code		Model code	Preload symbol	Classification symbol	Supplemental code
MUL	25	C2	R280		T1	H	/Q
①	②	③	④	⑤	⑥	⑦	⑧

① Model

MUL	Small type
LWUL···B	
LWU(···B)	Standard type

② Size
25, 30, 40, 50, 60, 86, 100, 130

③ Number of slide unit (2)

④ Length of track rail (280 mm)

⑤ Structure

B	Ball retained type
No symbol	Ball non-retained type

⑥ Preload amount

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

MX

Points

1 Roller type linear motion rolling guides having the highest level of rolling guide performance

For details P.I-21

Linear motion rolling guide that has achieved the highest level of performance in all characteristics, including load capacity, rigidity, friction characteristics and accuracy, brought about by utilizing the roller's excellent characteristic.

2 Wide range of variations for your needs

For details P.I-28

A wide variety of products, including five types of different slide unit shape such as the flange type, low profile flange type and low profile block type with low cross sectional height, etc., and four types of different slide unit length with varying lengths with same section are available. You can select an optimal product for the specifications of your machine and device.

3 Extra long unit

For details P.I-29

Extra long slide unit series having the length 1.4 to 1.5 times of standard type is now available. With more rollers built into the slide units, the new series not only have the enhanced load capacity and rigidity but also exhibit super accuracy running performance.

4 Stainless steels selections superior in corrosion resistance are listed on lineup.

For details P.I-41

A series of stainless steel products is available from the miniature size of track rail width 10 mm. They are highly corrosion-resistant and suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment.

5 Easy replacement from ball type

For details P.I-24

Mounting dimensions are compatible with MH / LWH series of ball type. Therefore, replacement to roller type is possible without major design changes of machine and device.

Identification Number and Specification

Example of an identification number

The specifications of MX and LRX series are indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a material code, a preload symbol, a classification symbol, an interchangeable code, and any supplemental codes for each specification to apply.

	1	2	3	4	5	6	7	8	9	10
Non-interchangeable specification										
Assembled set	MX	G	15	C2	R240		T_1	P		/Z
Interchangeable specification										
Single slide unit	MX	G	15	C1			T_1	P	S1	/Z
Single track rail (1)	LRX		15		R240			P	S1	
Assembled set	MX	G	15	C2	R240		T_1	P	S1	/Z

1 **Model** — Model code Page Ⅱ－173

2 **Length of slide unit** — Model code Page Ⅱ－173

3 **Size** — Dimensions Page Ⅱ－173

4 **Number of slide units** — Part code Page Ⅱ－174

5 **Length of track rail** — Part code Page Ⅱ－174

6 **Material type** — Material code Page Ⅱ－174

7 **Preload amount** — Preload symbol Page Ⅱ－177

8 **Accuracy class** — Classification symbol Page Ⅱ－178

9 **Interchangeable** — Interchangeable code Page Ⅱ－179

10 **Special specification** — Supplemental code Page Ⅱ－179

Note (1) Indicate "LRX" for the model code of the single track rail regardless of the series and the combination of slide unit model.

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

Identification Number and Specification —Model · Length of Slide Unit · Size—

1 Model

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 profile flange type mounting from top	: MXN
	Low profile 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

For applicable models and sizes, see Table 1.1 and Table 1.2.
Indicate "LRX" for the model code of the single track rail regardless of the series and the combination of slide unit models.

Notes (1) This model has no built-in C-Lube.
(2) Series of size 20 can only be mounted by the bolts from top. The models with the same dimensions allowing mounting from bottom are "MXH" and "LRXH."

2 Length of slide unit

Short	: C	For applicable models and sizes, see Table 1.1 and Table 1.2.
Standard	: No symbol	
Long	: G	
Extra long	: L	

3 Size

10, 12, 15, 20, 25, 30, 35, 45, 55, 65, 85, 100 — For applicable models and sizes, see Table 1.1 and Table 1.2.

Table 1.1 Models and sizes of MX and LRX series

Material	Shape	Slide unit Length	Model	Size											
				10	12	15	20	25	30	35	45	55	65	85	100
High carbon steel made	Flange type mounting from top / bottom	Short	MXC	–	○	○	○(1)	○	○	○	○	○	○	–	–
			LRXC	–	○	○	○(1)	○	○	○	○	○	○	–	–
		Standard	MX	–	○	○	○(1)	○	○	○	○	○	○	–	–
			LRX	–	○	○	○(1)	○	○	○	○	○	○	○	–
		Long	MXG	–	○	○	○(1)	○	○	○	○	○	○	–	–
			LRXG	–	○	○	○(1)	○	○	○	○	○	○	○	○
		Extra long	MXL	–	–	–	○(1)	○	○	○	○	○	○	–	–
			LRXL	–	–	–	–	–	–	–	–	–	–	○	–
	Block type mounting from top	Short	MXDC	–	○	○	○	○	○	○	○	○	○	–	–
			LRXDC	–	○	○	○	○	○	○	○	○	○	–	–
		Standard	MXD	–	○	○	○	○	○	○	○	○	○	–	–
			LRXD	–	○	○	○	○	○	○	○	○	○	○	–
		Long	MXDG	–	○	○	○	○	○	○	○	○	○	–	–
			LRXDG	–	○	○	○	○	○	○	○	○	○	○	–
		Extra long	MXDL	–	–	–	○	○	○	○	○	○	○	–	–
			LRXDL	–	–	–	–	–	–	–	–	–	–	○	–

Note (1) MXC20, MX20, MXG20, MXL20, LRXC20, LRX20 and LRXG20 can only be mounted by the bolts from top.
The models with the same dimensions allowing mounting from bottom are MXHC20, MXH20, MXHG20, MXHL20, LRXHC20, LRXH20 and LRXHG20.
Remark: For the models indicated in ▭, the interchangeable specification is available.

—Number of Slide Unit · Length of Track Rail · Material Type—

4 Number of slide units

: C○ — For an assembled set, indicates the number of slide units assembled on a track rail. For a single slide unit, only "C1" is specified.

5 Length of track rail

: R○ — Indicate the length of track rail in mm.
For the standard and maximum lengths, see Table 2.1, Table 2.2, Table 2.3 and Table 2.4.

6 Material type

High carbon steel made	: No symbol	For applicable models and sizes, see Table 1.1 and Table 1.2.
Stainless steel made (1)	: SL	

Note (1) Mount a standard grease nipple (brass) on the stainless steel type, too.
Stainless steel grease nipple is also available. If needed, please contact IKO.

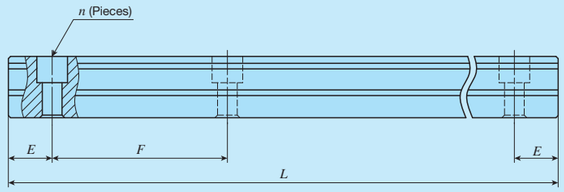
Table 1.2 Models and sizes of MX and LRX series

Material	Shape	Slide unit Length	Model	Size											
				10	12	15	20	25	30	35	45	55	65	85	100
High carbon steel made	Compact block type mounting from top	Short	MXSC	–	–	○	○	○	○	–	–	–	–	–	–
			LRXSC	–	–	○	○	○	○	–	–	–	–	–	–
		Standard	MXS	–	–	○	○	○	○	○	○	○	–	–	–
			LRXS	–	–	○	○	○	○	–	–	–	–	–	–
		Long	MXSG	–	–	○	○	○	○	○	○	○	–	–	–
			LRXSG	–	–	○	○	○	○	–	–	–	–	–	–
		Extra long	MXSL	–	–	–	○	○	○	–	–	–	–	–	–
	Low profile flange type mounting from top	Standard	MXN	–	–	–	–	–	○	○	○	○	–	–	–
		Long	MXNG	–	–	–	–	–	○	○	○	○	–	–	–
		Extra long	MXNL	–	–	–	–	–	○	○	○	○	–	–	–
	Low profile block type mounting from top	Standard	MXNS	–	–	–	–	–	○	○	○	○	–	–	–
		Long	MXNSG	–	–	–	–	–	○	○	○	○	–	–	–
		Extra long	MXNSL	–	–	–	–	–	○	○	○	○	–	–	–
Stainless steel made	Block type mounting from top	Short	LRXDC···SL	–	○	○	○	○	○	–	–	–	–	–	–
		Standard	MXD···SL	○	○	○	○	○	○	–	–	–	–	–	–
			LRXD···SL	○	○	○	○	○	○	–	–	–	–	–	–
		Long	LRXDG···SL	–	○	○	○	○	○	–	–	–	–	–	–

Remark: For the models indicated in ▭, the interchangeable specification is available.

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

Table 2.1 Standard and maximum length of high carbon steel track rail



unit: mm

Item \ Identification 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 E dimensions (1) or higher	5.5	7	8	9	10	10
Standard E dimensions (1) below	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 \ Identification 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 E dimensions (1) or higher	12.5	15	17	23	29
Standard E dimensions (1) below	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) This does not apply to female threads for bellows (Supplemental code "/J").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LRX" for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. In the case where track rail mounting hole is half pitch specification (Supplemental code "/HP"), see Table 2.3.
4. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

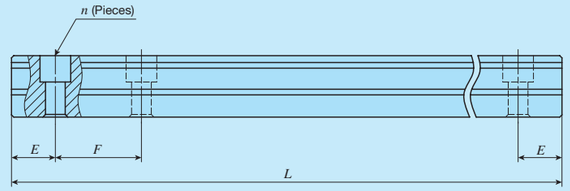
Table 2.2 Standard and maximum length of stainless steel track rail

unit: mm

Item \ Identification number	MXD 10···SL 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 E dimensions (1) or higher	5	5.5	7	8	9	10
Standard E dimensions (1) below	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) This does not apply to female threads for bellows (Supplemental code "/J").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LRX" for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. In the case where track rail mounting hole is half pitch specification (Supplemental code "/HP"), see Table 2.4.
4. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

Table 2.3 Standard and maximum length of high carbon steel track rail (Half pitch mounting holes specification supplemental code /HP)



unit: mm

Item \ Identification 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 E dimensions (1) or higher	5.5	7	8	9	10	10
Standard E dimensions (1) below	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 \ Identification 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 E dimensions (1) or higher	12.5	15	17	23
Standard E dimensions (1) below	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) This does not apply to female threads for bellows (Supplemental code "/J").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LRX" for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

Table 2.4 Standard and maximum length of stainless steel track rail (Half pitch mounting holes specification supplemental code /HP)

unit: mm

Item \ Identification 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 E dimensions (1) or higher	5.5	7	8	9	10
Standard E dimensions (1) below	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) This does not apply to female threads for bellows (Supplemental code "/J").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remarks 1. A typical identification number is indicated, but is applied to all models of the same size.
2. Indicate "LRX" for the model code of the single track rail regardless of the series and the combination of slide unit models.
3. If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

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

—Preload Amount—

7 Preload amount

Standard	: No symbol	Specify this item for an assembled set or a single slide unit.
Light preload	: T_1	For details of the preload amount, see Table 3.
Medium preload	: T_2	For applicable preload types, see Table 4.
Heavy preload	: T_3	

Table 3 Preload amount

Item / Preload type	Preload symbol	Preload amount N	Operational conditions
Standard	(No symbol)	0(1)	· Light and precise motion
Light preload	T_1	0.02 C_0	· Almost no vibrations · Load is evenly balanced · Light and precise motion
Medium preload	T_2	0.05 C_0	· Medium vibration · Medium overhung load
Heavy preload	T_3	0.08 C_0	· Operation with vibration and/or shock · Overhanging load applied · Heavy cutting

Note (1) Indicates zero or minimal amount of preload.
Remark: C_0 indicates the basic static load rating.

Table 4 Application of preload

Size	Preload type (preload symbol)			
	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	○	○	○	○

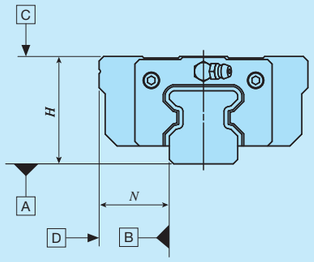
Remark: The mark ▭ indicates that interchangeable specification products are available.

—Accuracy Class—

8 Accuracy class

High	: H	For interchangeable specification products, assemble a slide unit and a track rail of the same accuracy class.
Precision	: P	For details of accuracy class, see Table 5.
Super precision	: SP	For applicable accuracy class, see Table 6.
Ultra precision	: UP	

Table 5 Tolerance and allowance



unit: mm

Item / Class (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 the slide unit C surface to A surface	See Fig. 1			
Parallelism in operation of the slide unit D surface to B surface	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.

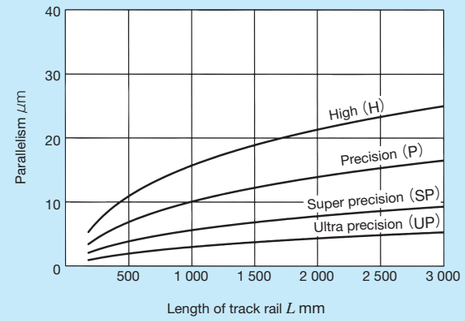


Fig. 1 Parallelism in operation

Table 6 Application of accuracy class

Size	Class (classification symbol)			
	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 products are available.

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

9 Interchangeable

S1 specification	: S1	This is specified for the interchangeable specifications. Assemble a track rail and a slide unit with the same interchangeable code. Performance and accuracy of "S1" and "S2" are the same. For applicable models and sizes, see Table 1.1 and Table 1.2. "No symbol" is indicated for non-interchangeable specification.
S2 specification	: S2	
Non-interchangeable specification	: No symbol	

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 Tables 7.1, 7.2, 7.3, and 7.4. For combination of multiple special specifications, see Table 8. For details of special specifications, see page Ⅲ—29.

Table 7.1 Application of special specifications (Interchangeable specification, single slide unit)

Special 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	—	○	○	○	○	○	○	○	×	×	—	—
With C-Lube plate (4)	/Q	—	○	○	○	○	○	○	○	○	○	—	—
Double end seals	/V○	—	○	○	○	○	○	○	○	○	○	—	—
Scrapers	/Z○	—	○	○	○	○	○	○	○	○	○	—	—

Notes (1) Applicable to flange type (MX, MXG, MXH20, MXHG20, LRX, LRXG, LRXH20, LRXHG20).
(2) Not applicable to stainless steel made products.
(3) Not applicable to low profile flange type (MXN, MXNG, MXNL) and low profile block type (MXNS, MXNSG, MXNSL).
(4) Applicable to LRX series.

Table 7.2 Application of special specifications (Interchangeable specification, single track rail)

Special 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 mounting holes for track rail	/HP	—	○	○	○	○	○	○	○	○	○	—	—
Female threads for bellows (1)	/J○	—	×	○	○	○	○	○	○	○	○	—	—
Black chrome surface treatment	/LR	—	○	○	○	○	○	○	○	○	○	—	—
Without track rail mounting bolt	/MN	—	○	○	○	○	○	○	○	○	○	—	—
Butt-jointing track rails	/T	—	○	○	○	○	○	○	○	○	○	—	—

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

Table 7.3 Application of special specifications (Interchangeable specification, assembled set)

Special 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 mounting holes for track rail	/HP	—	○	○	○	○	○	○	○	○	○	—	—
Female threads for bellows (2)	/J○	—	×	○	○	○	○	○	○	○	○	—	—
Black chrome surface treatment	/L○	—	○	○	○	○	○	○	○	○	○	—	—
Fluorine black chrome surface treatment	/LF○	—	○	○	○	○	○	○	○	○	○	—	—
With track rail mounting bolt (3)	/MA	—	○	○	○	○	○	○	○	○	○	—	—
Without track rail mounting bolt (4)	/MN	—	○	○	○	○	○	○	○	○	○	—	—
No end seal (5)	/N	—	○	○	○	○	○	○	○	×	×	—	—
With C-Lube plate (4)	/Q	—	○	○	○	○	○	○	○	○	○	—	—
Butt-jointing track rails	/T	—	○	○	○	○	○	○	○	○	○	—	—
Double end seals	/V○	—	○	○	○	○	○	○	○	○	○	—	—
Specified grease (6)	/Y○	—	○	○	○	○	○	○	○	○	○	—	—
Scrapers	/Z○	—	○	○	○	○	○	○	○	○	○	—	—

Notes (1) Applicable to flange type (MX, MXG, MXH20, MXHG20, LRX, LRXG, LRXH20, LRXHG20).
(2) Not applicable to stainless steel made products.
(3) Applicable to MX series.
(4) Applicable to LRX series.
(5) Not applicable to low profile flange type (MXN, MXNG, MXNL) and low profile block type (MXNS, MXNSG, MXNSL).
(6) MX series is applicable only to /YCG.

Table 7.4 Application of special specifications (Non-interchangeable specification)

Special 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 mounting holes for track rail	/HP	×	○	○	○	○	○	○	○	○	○	○	×
Inspection sheet	/I	○	○	○	○	○	○	○	○	○	○	○	○
Female threads for bellows	/J○	×	×	○	○	○	○	○	○	○	○	○	×
Black chrome surface treatment	/L○	×	○	○	○	○	○	○	○	○	○	×	×
Fluorine black chrome surface treatment	/LF○	×	○	○	○	○	○	○	○	○	○	×	×
With track rail mounting bolt (2)	/MA	○	○	○	○	○	○	○	○	○	○	×	×
Without track rail mounting bolt (3)	/MN	○	○	○	○	○	○	○	○	○	○	○	○
No end seal (4)	/N	○	○	○	○	○	○	○	○	×	×	×	×
Rail cover plate for track rail (3)	/PS	×	×	×	×	×	×	○	○	○	×	×	×
With C-Lube plate (3)	/Q	○	○	○	○	○	○	○	○	○	○	○	×
C-Wiper (2) (5)	/RC○	×	×	×	○	○	○	○	○	○	○	×	×
Inner seal (2)	/UR	×	×	×	○	○	○	○	○	○	○	×	×
Double end seals	/V○	×	○	○	○	○	○	○	○	○	○	○	○
A group of multiple assembled sets	/W○	○	○	○	○	○	○	○	○	○	○	×	×
Specified grease (6)	/Y○	○	○	○	○	○	○	○	○	○	○	○	○
Scrapers	/Z○	×	○	○	○	○	○	○	○	○	○	○	○

Notes (1) Applicable to flange type (MX, MXG, MXH20, MXHG20, LRX, LRXG, LRXH20, LRXHG20).
(2) Applicable to MX series.
(3) Applicable to LRX series.
(4) Not applicable to low profile flange type (MXN, MXNG, MXNL) and low profile block type (MXNS, MXNSG, MXNSL).
(5) Since inner seal and scraper are mounted simultaneously, indication of "/UR" or "/Z" is not necessary.
(6) MX series is applicable only to /YCG.

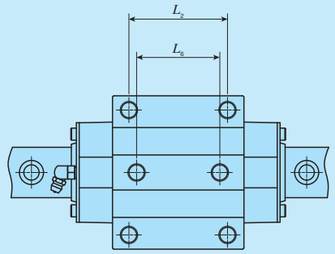
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 8 Combination of supplemental codes

	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 combination of "—" shown in the table is not available.
2. Contact IKO for the combination of the interchangeable specification marked with ●.
3. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

Table 9 Pitch of slide unit middle mounting holes (Supplemental code /GE)

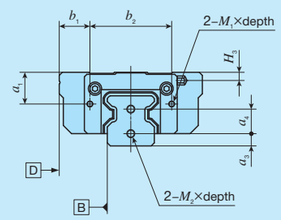


unit: mm

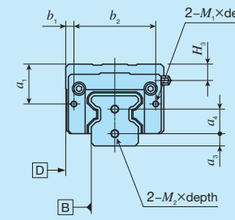
Size	L_2	L_6
15	30	26
20	40	35
25	45	40
30	52	44
35	62	52
45	80	60
55	95	70
65	110	82
100	200	150

Table 10.1 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)

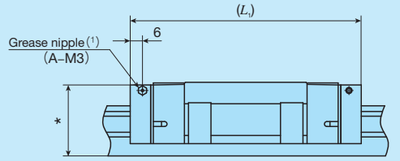
Size 15, 20, 25 and 30



Flange type



Block type
Compact block type



unit: mm

Identification 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				

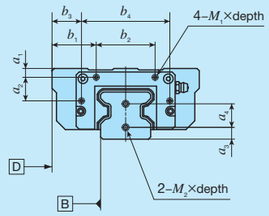
Notes (1) The specification and mounting positions of grease nipple are different from those of the standard specification product. Note that grease nipple for size 30 models is A-M4 type. For grease nipple specification, see Table 14.1 on page Ⅲ—23.
(2) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.
(3) This is also applicable to the models allowing mounting from bottom (MXHC20, MXH20, MXHG20, MXHL20, LRXHC20, LRXH20 and LRXHG20).

Remarks 1. Size 15 and 20 series of flange type and compact block type will have the dimension with * mark higher than the dimensions of assembly H. For details of dimensions, contact IKO.
2. This is also applicable to stainless steel type models of the same size.

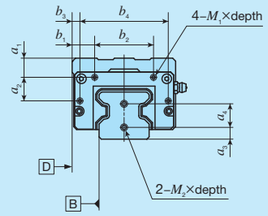
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Table 10.2 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)

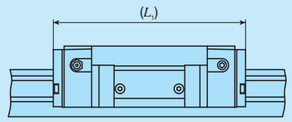
Size 35, 45, 55, 65 and 85



Flange type



Block type
Compact block type

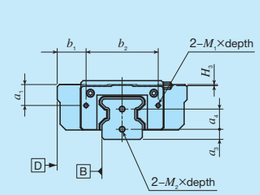


unit: mm

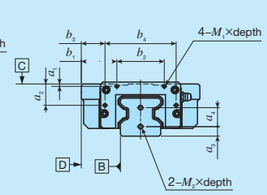
Identification number		Slide unit								Track rail		
		a_1	a_2	b_1	b_2	b_3	b_4	M_1×depth	L_1(1)	a_3	a_4	M_2×depth
MXC 35	LRXC 35	6	16	30	40	20	60	M3× 6	99	8	16	M4× 8
MX 35	LRX 35								131			
MXG 35	LRXG 35								159			
MXL 35	–								191			
MXDC 35	LRXDC 35	13		15		5			99			
MXD 35	LRXD 35								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			
–	LRXD 85	15	45	38	90	13	140	M6×10	334	14.5	38	M6×12
–	LRXDG 85								406			
–	LRXDL 85								505			

Note (1) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.

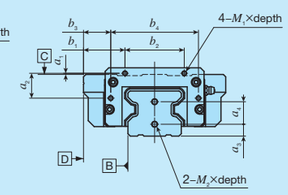
Table 10.3 Dimension of female threads for bellows (Supplemental code Single unit: /J Assembled set: /J /JJ)



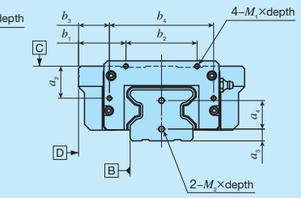
Size 30



Size 35

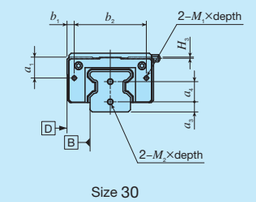


Size 45

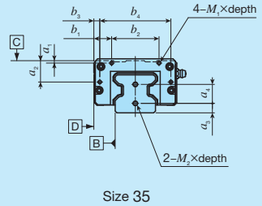


Size 55

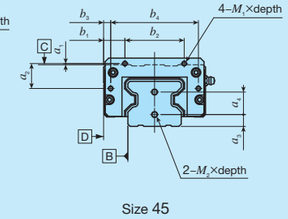
Low profile flange type



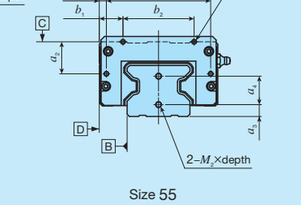
Size 30



Size 35

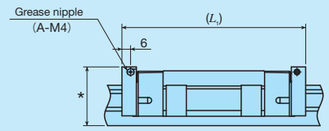


Size 45

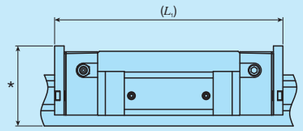


Size 55

Low profile block type



Size 30



Size 35, 45, 55

unit: mm

Identification 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				

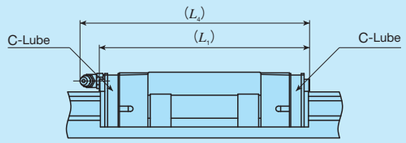
Notes (1) a_1 shows the dimension between mounting surface C and upper female thread.
(2) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.
Remark: The dimension of * is higher than the dimensions of assembly H. For details of dimensions, contact IKO.

MX • LRX

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

Table 11.1 Dimension of slide unit with C-Lube plate (Supplemental code /Q)

Size: 10, 12, 15, 20, 25, 30



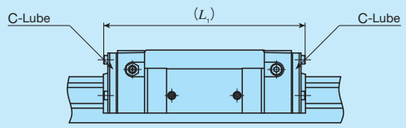
unit: mm

Identification number	L_1	L_4
LRXD 10···SL	44	–
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 dimensions of the slide unit with C-Lube at both ends are indicated.
2. A typical identification number is indicated, but is applied to all LRX series models of the same type.

Table 11.2 Dimension of slide unit with C-Lube plate (Supplemental code /Q)

Size: 35, 45, 55, 65, 85



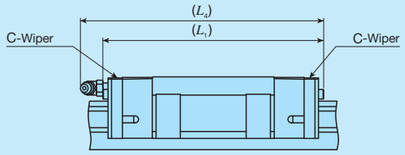
unit: mm

Identification 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 dimensions of the slide unit with C-Lube at both ends are indicated.
2. A typical identification number is indicated, but is applied to all LRX series models of the same type.

Table 12.1 Dimension of slide unit with C-Wiper (Supplemental code Assembled set: /RC /RCC)

Size: 20, 25, 30



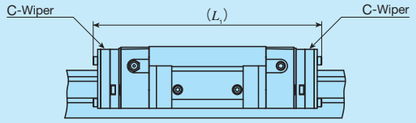
unit: mm

Identification 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 dimensions of the slide unit with C-Wiper at both ends are indicated.
2. A typical identification number is indicated, but is applied to all MX series models of the same size.

Table 12.2 Dimension of slide unit with C-Wiper (Supplemental code Assembled set: /RC /RCC)

Size: 35, 45, 55, 65



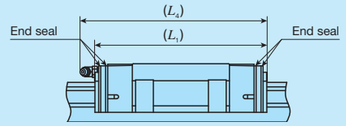
unit: mm

Identification 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 dimensions of the slide unit with C-Wiper at both ends are indicated.
2. A typical identification number is indicated, but is applied to all MX series models of the same size.

Table 13.1 Dimension of slide unit with double end seals (Supplemental code Single unit: /V Assembled set: /V /VV)

Size: 12, 15, 20, 25, 30



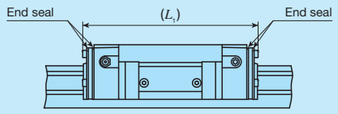
unit: mm

Identification 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	59
MX 15	LRX 15	74	75
MXG 15	LRXG 15	90	91
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 dimensions of the slide unit with double end seals at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

Table 13.2 Dimension of slide unit with double end seals (Supplemental code Single unit: /V Assembled set: /V /VV)

Size: 35, 45, 55, 65, 85, 100



unit: mm

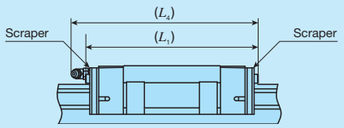
Identification number		L_1
MXC 35	LRXC 35	101
MX 35	LRX 35	133
MXG 35	LRXG 35	161
MXL 35	–	193
MXC 45	LRXC 45	127
MX 45	LRX 45	167
MXG 45	LRXG 45	207
MXL 45	–	247
MXC 55	LRXC 55	149
MX 55	LRX 55	197
MXG 55	LRXG 55	251
MXL 55	–	305
MXC 65	–	192
–	LRXC 65	193
MX 65	–	256
–	LRX 65	257
MXG 65	–	320
–	LRXG 65	321
MXL 65	–	392
–	LRX 85	338
–	LRXG 85	410
–	LRXL 85	509
–	LRXG 100	376

Remarks 1. The dimensions of the slide unit with double end seals at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

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

Table 14.1 Dimension of slide unit with scrapers (Supplemental code Single unit: /Z Assembled set: /Z /ZZ)

Size: 12, 15, 20, 25, 30



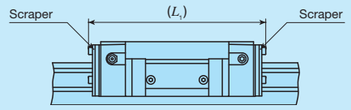
unit: mm

Identification 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 dimensions of the slide unit with scraper at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

Table 14.2 Dimension of slide unit with scrapers (Supplemental code Single unit: /Z Assembled set: /Z /ZZ)

Size: 35, 45, 55, 65, 85, 100



unit: mm

Identification 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 dimensions of the slide unit with scraper at both ends are indicated.
2. A typical identification number is indicated, but is applied to all models of the same size.

Lubrication

Lithium-soap base grease with extreme-pressure additive (Alvania EP grease 2 [SHOWA SHELL SEKIYU K. K.]) is pre-packed in MX series and LRX series. Additionally, MX series has C-Lube placed in the recirculation part of cylindrical roller, so that the interval for reapplicating lubricant can be extended and maintenance works such as grease job can be reduced significantly.
MX series and LRX series have grease nipple or oil hole as indicated in Table 15. Supply nozzles fit to each shapes of grease nipple and dedicated supplying equipment (miniature greasers) fit to oil holes are also available. For order of these parts for lubrication, see Table 13 and Table 14.1 on Page Ⅲ—23, and Table 15 on page Ⅲ—24.

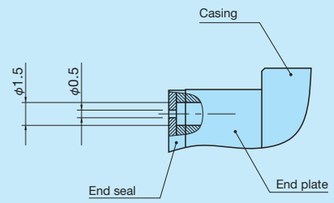


Fig. 2 Oil hole specification of MXD10···SL and LRXD10···SL

Table 15 Parts for lubrication

Size	Grease nipple type (1)	Applicable supply nozzle type	Bolt 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)	JIS1 type		
45(6)	JIS2 type		PT1/8
55			
65			
85			
100	A-PT1/4		PT1/4

Notes (1) For grease nipple specification, see Table 14.1 and Table 14.2 in page Ⅲ—23.
(2) The grease nipple when female threads for bellows (supplemental code "J") is specified is A-M3.
(3) The grease nipple when female threads for bellows (supplemental code "J") is specified is A-M4.
(4) The grease nipple for MXN30 is B-M4. The grease nipple when female threads for bellows (supplemental code "J") is specified is A-M4.
(5) The size of the grease nipple mounting thread hole for MXN35 in the slide unit travelling direction is smaller than that of the crosswise direction. When the grease nipple is mounted along the travelling direction, contact IKO.
(6) The grease nipple for MXN45 is JIS type1.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

Dust Protection

The slide units of MX series and LRX series are equipped with end seals and under seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to cover the whole unit with bellows or telescope type shield, etc.
MX series and LRX series are provided with specific bellows. The bellows are easy to mount and provide excellent dust protection. If needed, please refer to Ⅲ−26 for ordering.
Also the rail cover sheet to cover the mounting hole of track rail (Fig. 3) and track rail mounting from bottom with no mounting hole on the upper surface (Fig.4) are available. If needed, please contact IKO.

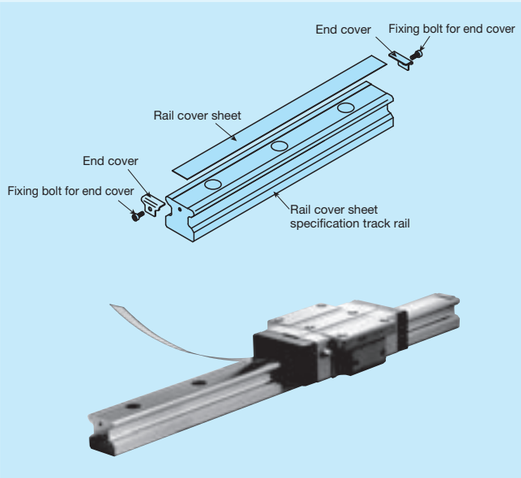


Fig. 3 Rail cover sheet

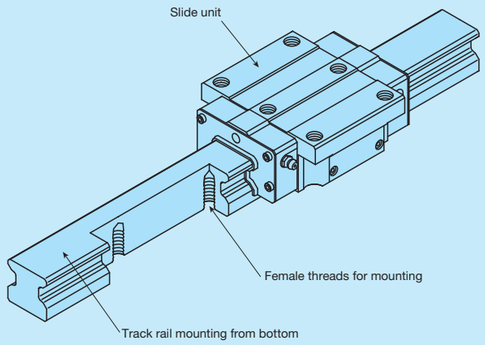


Fig. 4 Track rail mounting from bottom specification

Precaution for Use

❶ Mounting surface, reference mounting surface and typical mounting structure

When mounting the MX series and LRX series, properly align the reference mounting surfaces B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 5.)
The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.
Reference mounting surface of the slide unit is the opposite side of the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction of the arrow). (See Fig. 6.)

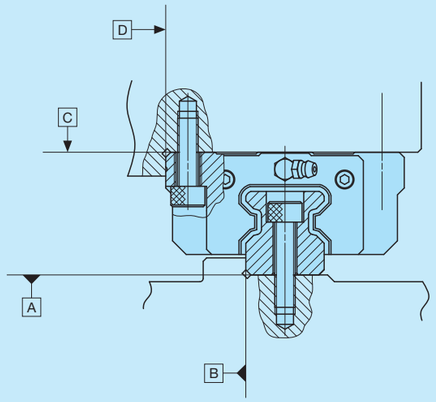


Fig. 5 Reference mounting surface and typical mounting structure

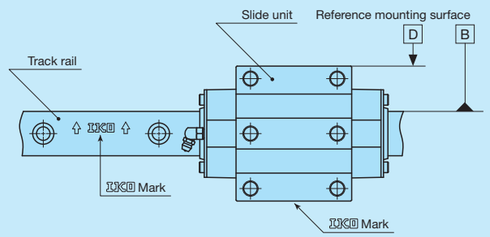


Fig. 6 Reference mounting surface

❷ Fixing the slide unit

Slide unit is also provided with mounting holes in the middle of width direction (see Fig.7) and some products have the arrangement to receive the applied load in a good balance. When designing machines or equipment, consider the arrangement so that the mounting holes in the middle of slide unit can also be used to fix the units, to use the highest performance out of the product.
To fix the slide unit of compact block type or low profile block type, we recommend to secure the fixing thread depth of Table 16.1and Table 16.2. Also, with the low profile flange type and low profile block type, make sure that the fixing thread depth for the mounting screw in the middle of slide unit width direction should be less than the maximum fixing thread depth of the dimension table.

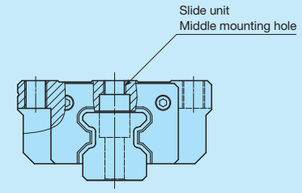


Fig. 7 Slide unit middle mounting hole

Table 16.1 Fixing thread depth for slide unit mounting hole of compact block type unit: mm

Identification number		Recommended minimum fixing thread depth
MXS 15	LRXS 15	4.5
MXS 20	LRXS 20	5.5
MXS 25	LRXS 25	7
MXS 30	LRXS 30	9

Remark: A typical identification number is indicated, but is applied to all compact block types of the same size.

Table 16.2 Fixing thread depth for slide unit mounting hole of low profile block type unit: mm

Identification number	Recommended minimum fixing thread depth
MXNS 30	8
MXNS 35	8.5
MXNS 45	10.5
MXNS 55	14

Remark: A typical identification number is indicated, but is applied to all low profile block types of the same size.

❸ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 8, but you may also use it with providing corner radius R as shown in Table 17. Recommended value for the shoulder height and corner radius on the mating side is indicated in Table 17.

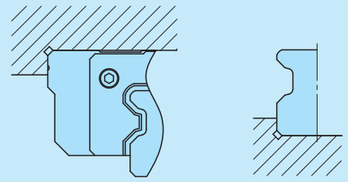
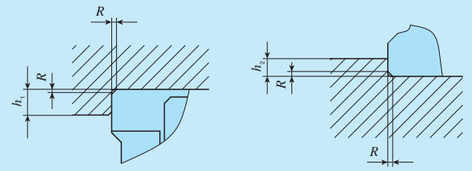


Fig. 8 Corner of the mating reference mounting

Table 17 Shoulder height and corner radius of the reference mounting surface



unit: mm

Size	Shoulder height of slide unit mounting part h_1	Shoulder height of track rail mounting part h_2	Corner radius R (Maximum)
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

❹ Tightening torque for fixing screw

Typical tightening torque for mounting of the MX series and LRX series to the steel mating member material is indicated in Table 18. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 18 Tightening torque for fixing screw

Bolt size	Tightening torque N · m		
	High carbon steel-made screw		Stainless steel-made screw
	Size 12 to 65	Size 85 and 100	
M 2.6×0.45	–	–	0.70
M 3 ×0.5	1.8	–	1.1
M 4 ×0.7	4.1	–	2.5
M 5 ×0.8	8.0	–	5.0
M 6 ×1	13.6	–	8.5
M 8 ×1.25	32.7	–	20.4
M10 ×1.5	63.9	–	–
M12 ×1.75	110	–	–
M14 ×2	175	–	–
M16 ×2	268	–	–
M20 ×2.5	522	–	–
M24 ×3	–	749	–
M30 ×3.5	–	1 490	–

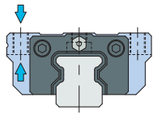
Remarks 1. The tightening torque is calculated based on strength division 12.9 for product size 12 to 65, strength division 10.9 for product sizes 85 and 100, and property division A2-70 for stainless steel bolts.
2. It is recommended that the tightening torque of slide unit middle mounting holes for size 15, 20, 25, 30, 35 of flange type (MXC, MX, MXG, MXL, LRXC, LRX, LRXG) is to be 70 to 80% of the values in the table.

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

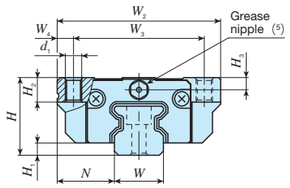
IKO C-Lube Linear Roller Way Super MX

Flange type mounting from top / bottom

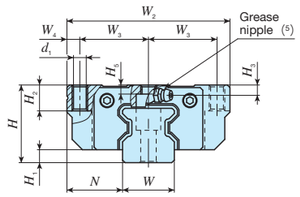
Shape: **MX • LRX**

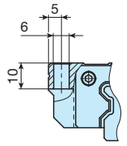


Size: 12 15 20 25 30 35 45 55 65 85 100

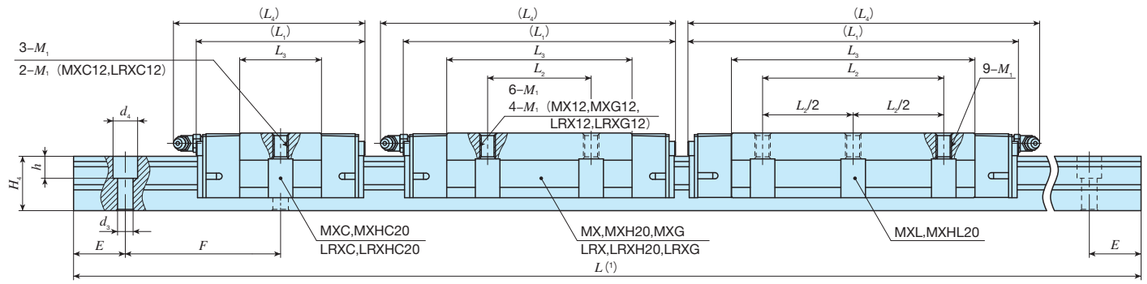


MXC12,LRXC12
MX 12,LRX 12
MXG12,LRXG12



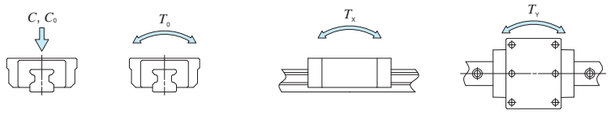


MXHC 20,LRXHC 20
MXH 20,LRXH 20
MXHG20,LRXHG 20
Mounting from bottom only (2)



Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Appended mounting bolt for track rail (3)	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	M_1		H_2	H_3	H_5	W	H_4	d_3	d_4	h	E	F	Bolt size × ℓ	C N	C_0 N	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) The mounting bolt can be mounted only in downward direction. The models with the same dimensions allowing mounting from bottom are MXHC20, MXH20, MXHG20, MXHL20, LRXHC20, LRXH20, and LRXHG20.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.
Remark: A grease nipple mounting thread hole is provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MX	G	15	C2	R360	T1	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

MX	Flange type mounting from top / bottom
LRX	

② Length of slide unit

C	Short
No symbol	Standard
G	Long
L	Extra long

③ Size: 12, 15, 20

④ Number of slide unit (2)

⑤ Length of track rail (360 mm)

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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

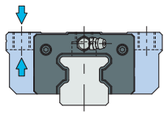
⑨ Special specification: A, D, E, F, GE, HP, Ⅰ, J, L, LF, MA, MN, N, Q, RC, T, UR, V, W, Y, Z

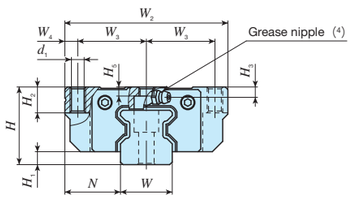
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

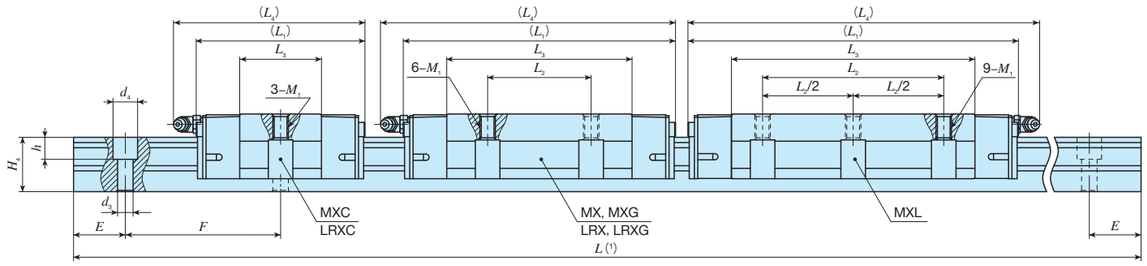
IKO C-Lube Linear Roller Way Super MX

Flange type mounting from top / bottom

Shape	MX • LRX
Size	12 15 20 25 30 / 35 45 55 65 85 100

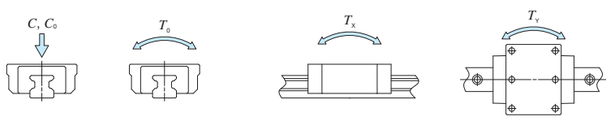






Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	d_1	M_1		H_2	H_3	H_5	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.
Remark: A grease nipple mounting thread hole is provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code		Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MX	G	25	C2	R840	T1	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

MX	Flange type mounting from top / bottom
LRX	

② Length of slide unit

C	Short
No symbol	Standard
G	Long
L	Extra long

③ Size: 25, 30

④ Number of slide unit (2)

⑤ Length of track rail (840 mm)

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

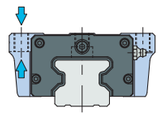
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

⑨ Special specification: A, D, E, F, GE, HP, Ⅰ, J, L, LF, MA, MN, N, Q, RC, T, UR, V, W, Y, Z

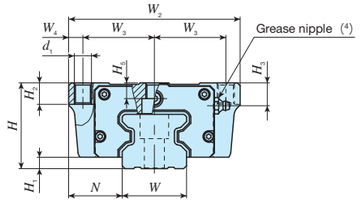
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

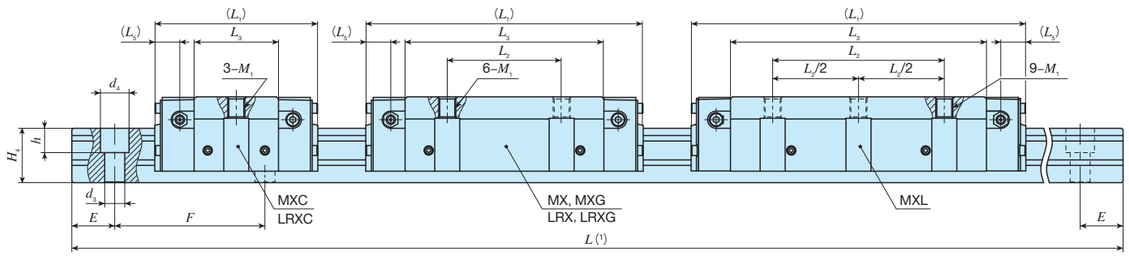
Flange type mounting from top / bottom

Shape: **MX • LRX**



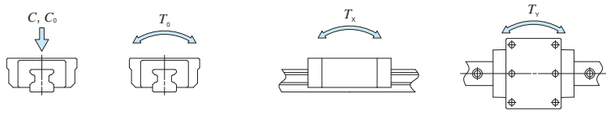
Size: 12, 15, 20, 25, 30, **35**, **45**, 55, 65, 85, 100





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm														Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_5	d_1	M_1		H_2	H_3	H_5	W	H_4	d_3	d_4	h	E	F	Bolt size × ℓ	C N	C_0 N	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.
Remark: Three grease nipple mounting thread holes are provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code			Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MX	G	35	C2	R1200	T2	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

MX	Flange type mounting from top / bottom
LRX	

② Length of slide unit

C	Short
No symbol	Standard
G	Long
L	Extra long

③ Size: 35, 45

④ Number of slide unit (2)

⑤ Length of track rail (1,200 mm)

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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

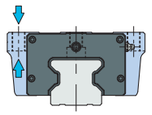
⑨ Special specification: A, D, E, F, GE, HP, I , J, L, LF, MA, MN, N, PS, Q, RC, T, UR, V, W, Y, Z

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

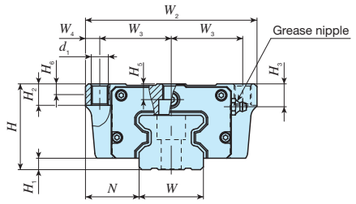
IKO C-Lube Linear Roller Way Super MX

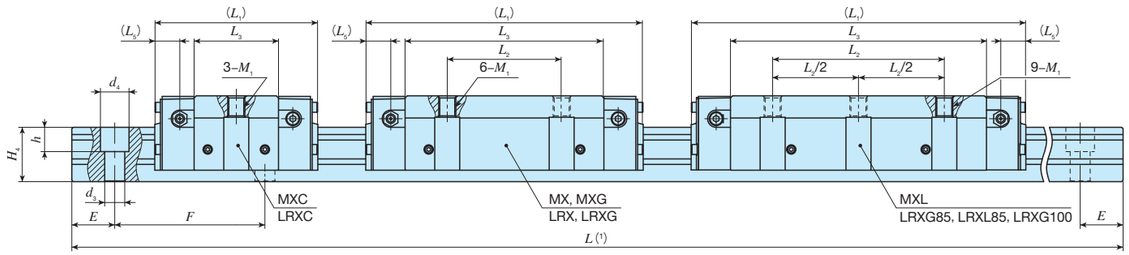
Flange type mounting from top / bottom

Shape: **MX • LRX**



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

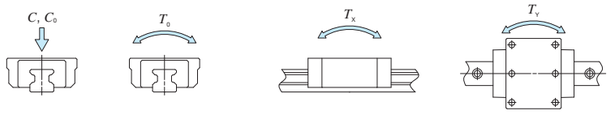




Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm																				Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	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	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specifications of grease nipple are shown in Table 15 on page Ⅱ−188.
2. Three grease nipple mounting thread holes are provided on the right and left end plates respectively.
3. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code			Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MX	G	55	C2	R3000	T2	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model
MX	Flange type mounting from top / bottom
LRX	

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

③ Size: 55, 65, 85, 100

④ Number of slide unit (2)

⑤ Length of track rail (3,000 mm)

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

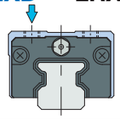
⑧ Interchangeable
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

⑨ Special specification: A, D, E, F, GE, HP, Ⅰ, J, L LF, MA, MN, PS, Q, RC T, UR, V, W, Y, Z

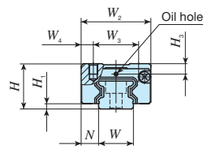
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Block type mounting from top

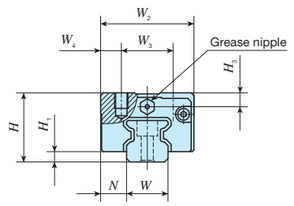
Shape: **MXD • LRXD**



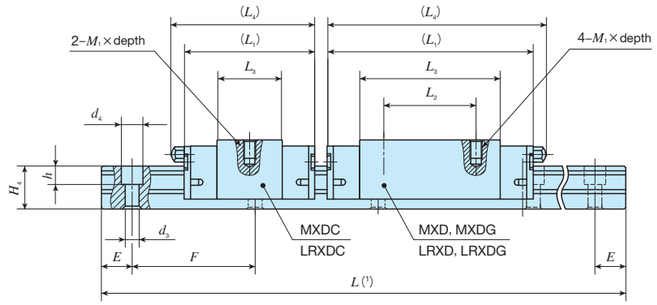
Size						
10	12	15	20	25	30
35	45	55	65	85	



MXD 10
LRXD10



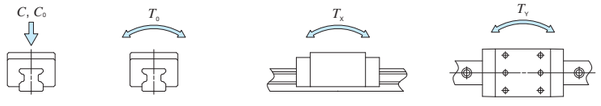
MXDC12, LRXDC12
MXD 12, LRXD 12
MXDG12, LRXDG12



Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm								Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth		H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MXD 10···SL		–	0.028	0.48	13	1.5	5	20	13	3.5	36	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	20.9 147	20.9 147
	LRXD 10···SL	–									35																		20.9 142	20.9 142
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	10 400	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		○									50		25.4	53												6 120		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		○	0.072								50		25.4	53												6 120		79.1	45.8 371	45.8 371
	LRXD 12···SL	○									47	15	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	○																								7 710	14 600	111	88.6 581	88.6 581
–	LRXDG 12···SL	○									58		35.8	61																

Notes (1) Track rail lengths L are shown in Tables 2.1 and 2.2 on page Ⅱ−175 and Tables 2.3 and 2.4 on page Ⅱ−176.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specification of oil hole is shown in Fig. 2 on page Ⅱ−188.
2. The specifications of grease nipple are shown in Table 15 on page Ⅱ−188.
3. For size 12 series, a grease nipple mounting thread hole is provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code			Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXD	G	12	C2	R560	—	T1	P	—	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Model
MXD	Block type mounting from top
LRXD	

② Length of slide unit
C	Short
No symbol	Standard
G	Long

③ Size
10, 12

④ Number of slide unit (2)

⑤ Length of track rail (560 mm)

⑥ Material type
No symbol	High carbon steel made
SL	Stainless steel made

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

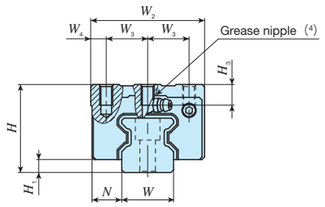
⑨ Interchangeable
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

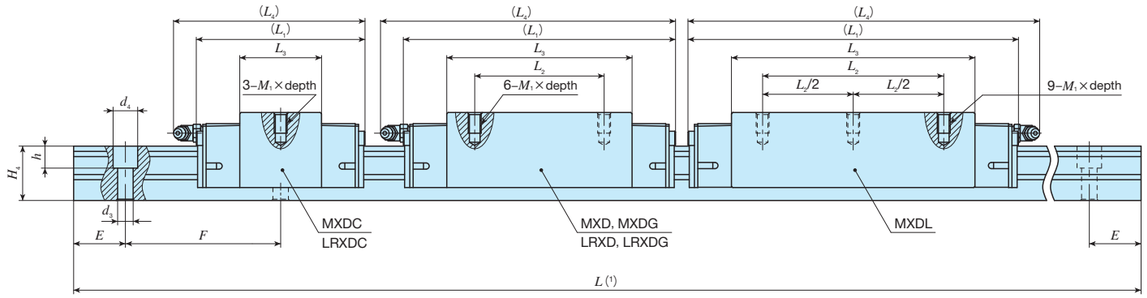
⑩ Special specification
A, D, E, F, HP, Ⅰ, L, LF
MA, MN, N, Q, T, V, W
Y, Z

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

Block type mounting from top

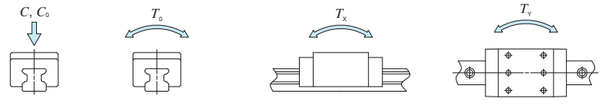
Shape	MXD • LRXD
Size	10 12 15 20 25 30 35 45 55 65 85





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 L are shown in Tables 2.1 and 2.2 on page Ⅱ−175 and Tables 2.3 and 2.4 on page Ⅱ−176.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.
Remark: A grease nipple mounting thread hole is provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code			Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXD	G	20	C2	R840	—	T1	P	—	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Model	
MXD	Block type mounting from top
LRXD	

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

③ Size
15, 20

④ Number of slide unit (2)

⑤ Length of track rail (840 mm)

⑥ Material type	
No symbol	High carbon steel made
SL	Stainless steel made

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

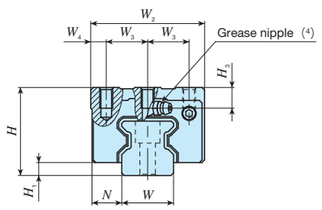
⑨ Interchangeable	
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

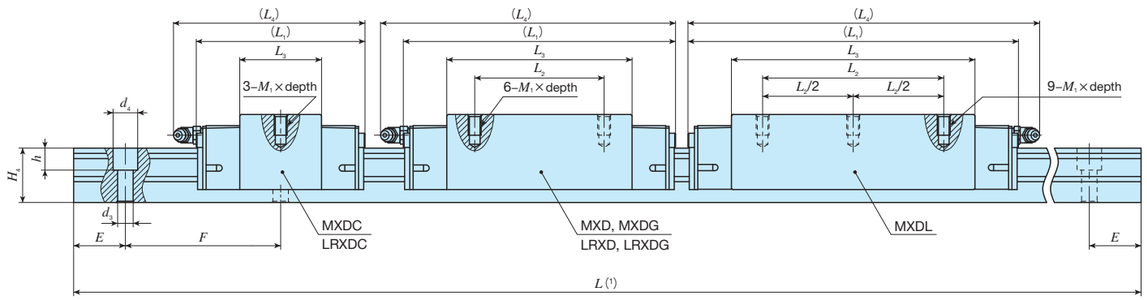
⑩ Special specification
A, D, E, F, HP, Ⅰ, J, L, LF MA, MN, N, Q, RC, T, UR V, W, Y, Z

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

Block type mounting from top

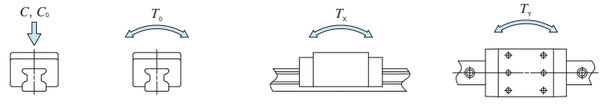
Shape	MXD • LRXD
Size	10 12 15 20 25 30 35 45 55 65 85





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm								Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 L are shown in Tables 2.1 and 2.2 on page Ⅱ－175 and Tables 2.3 and 2.4 on page Ⅱ－176.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.
In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ－188.
Remark: A grease nipple mounting thread hole is provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code		Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXD	G	25	C2	R840	—	T1	P	—	/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Model	
MXD	Block type mounting from top
LRXD	

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

③ Size: 25, 30

④ Number of slide unit (2)

⑤ Length of track rail (840 mm)

⑥ Material type	
No symbol	High carbon steel made
SL	Stainless steel made

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

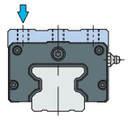
⑨ Interchangeable	
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

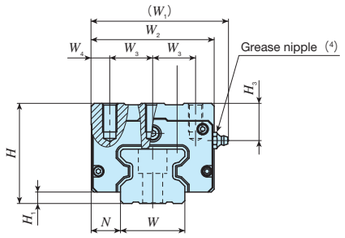
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

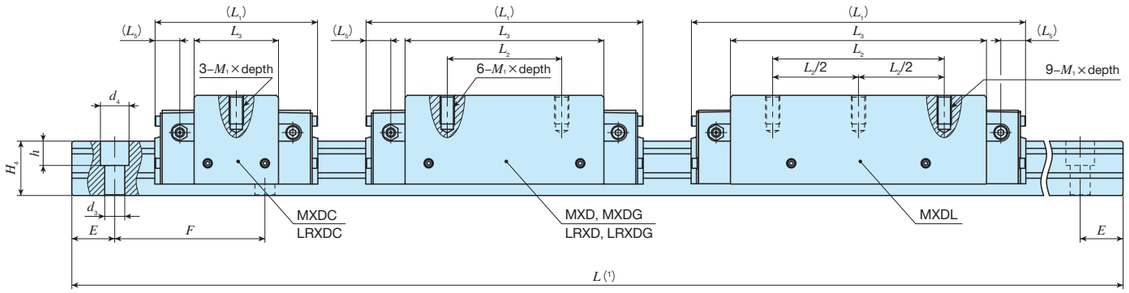
Block type mounting from top

Shape: MXD • LRXD



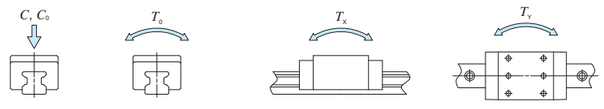
Size: 10 | 12 | 15 | 20 | 25 | 30 | 35 | 45 | 55 | 65 | 85





Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No 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_3	L_5	M_1×depth		H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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	96	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.
Remark: Three grease nipple mounting thread holes are provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXD	G	35	C2	R1200	T2	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

MXD	Block type mounting from top
LRXD	

② Length of slide unit

C	Short
No symbol	Standard
G	Long
L	Extra long

③ Size: 35, 45

④ Number of slide unit (2)

⑤ Length of track rail (1,200 mm)

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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

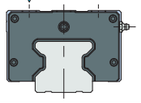
⑨ Special specification: A, D, E, F, HP, Ⅰ, J, L, LF, MA, MN, N, PS, Q, RC, T, UR, V, W, Y, Z

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

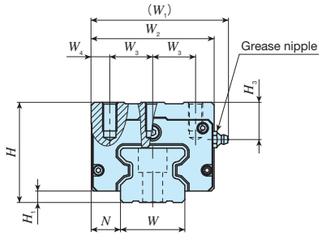
IKO C-Lube Linear Roller Way Super MX

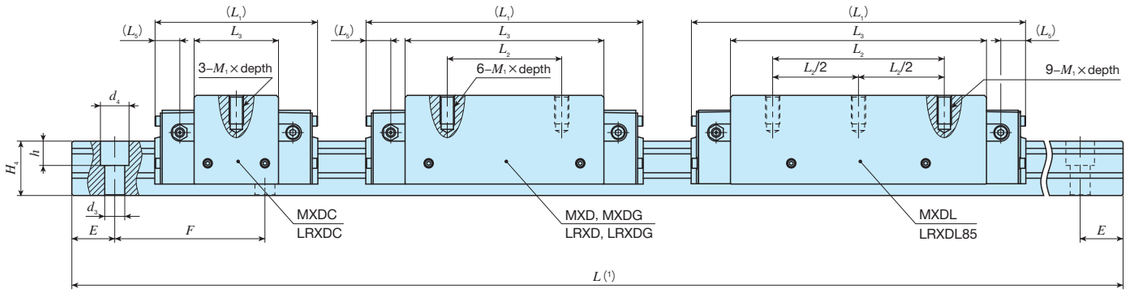
Block type mounting from top

Shape: **MXD • LRXD**



Size: 10 12 15 20 25 30 / 35 45 55 65 85

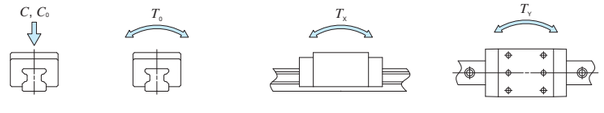




Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No 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_3	L_5	M_1×depth		H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MXDC 55	LRXDC 55	○	3.17	14.1	80	9	23.5	110	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	135	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
	LRXD 85	–	19.9	36.7	110	16	40.5	175	166	60	23	323	140	232	27.5	M20×30		22	85	67	26.5	39	30	90	180	M24×70	440 000	753 000	38 900	29 500 163 000	29 500 163 000
	LRXDG 85	–	25.5									395	200	304													542 000	985 000	50 800	50 000 257 000	50 000 257 000
	LRXDL 85	–	34.1									494	280	403													674 000	1 300 000	67 300	87 000 422 000	87 000 422 000

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.

Remarks 1. The specifications of grease nipple are shown in Table 15 on page Ⅱ−188.
2. Three grease nipple mounting thread holes are provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXD	G	55	C2	R3000	T2	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model
MXD	Block type mounting from top
LRXD	

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

③ Size: 55, 65, 85

④ Number of slide unit (2)

⑤ Length of track rail (3,000 mm)

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
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

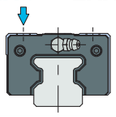
⑨ Special specification: A, D, E, F, HP, Ⅰ, J, L, LF, MA, MN, PS, Q, RC, T, UR, V, W, Y, Z

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

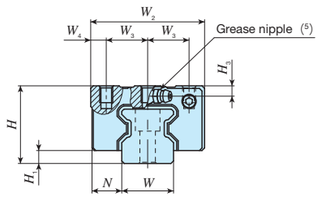
IKO C-Lube Linear Roller Way Super MX

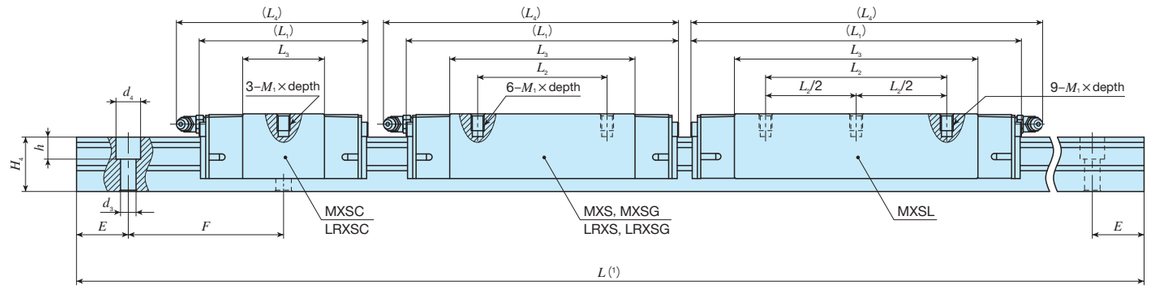
Compact block type mounting from top

Shape	MXS • LRXS



Size	15	20	25	30
	35	45	55	

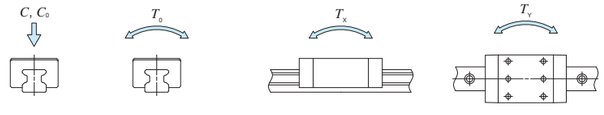




Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm									Dimensions of track rail mm							Appended mounting bolt for track rail (3)	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_2	W_3	W_4	L_1	L_2	L_3	L_4	M_1×depth (2)	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) For the fixing thread depth of the slide unit mounting hole, the value indicated in Table 16.1 on page Ⅱ−190 is recommended.
(3) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. In an assembled set of MX series, track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.

Remark: A grease nipple mounting thread hole is provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXS	G	25	C2	R840	T1	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

MXS	Compact block type mounting from top
LRXS	

② Length of slide unit

C	Short
No symbol	Standard
G	Long
L	Extra long

③ Size: 15, 20, 25, 30

④ Number of slide unit (2)

⑤ Length of track rail (840 mm)

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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

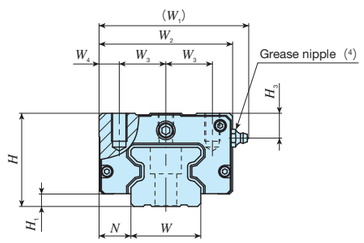
⑨ Special specification: A, D, E, F, HP, I , J, L, LF, MA, MN, N, Q, RC, T, UR, V, W, Y, Z

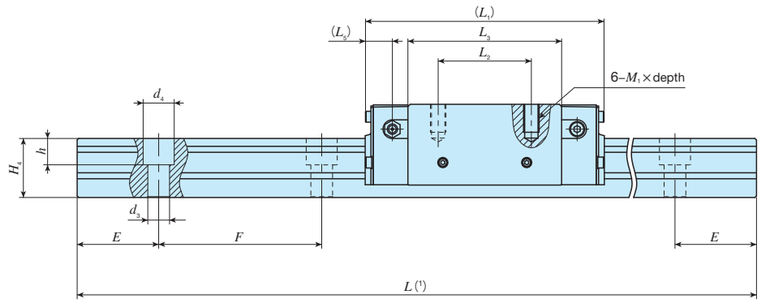
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

IKO C-Lube Linear Roller Way Super MX

Compact block type mounting from top

Shape	MXS
Size	15 · 20 · 25 · 30 · **35** · **45** · **55**

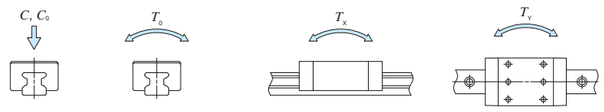




Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm								Mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_5	M_1× depth		H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	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	96	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	110	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) Track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.

Remark: Three grease nipple mounting thread holes are provided on the right and left end plates respectively.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXS G	45	C2	R1470	T1	P		/F
① ②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

MXS	Compact block type mounting from top

② Length of slide unit

No symbol	Standard
G	Long

③ Size: 35, 45, 55

④ Number of slide unit (2)

⑤ Length of track rail (1,470 mm)

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

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

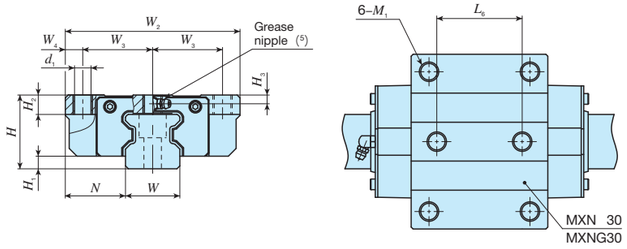
⑨ Special specification: A, D, E, F, HP, I, J, L, LF, MA, N, RC, T, UR, V, W, Z

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

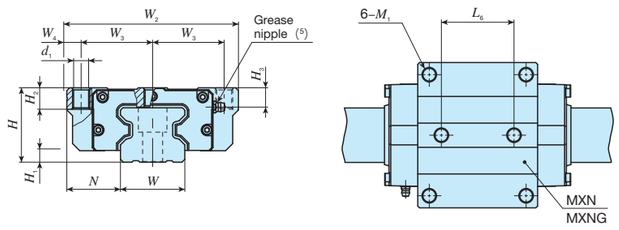
Low profile flange type mounting from top

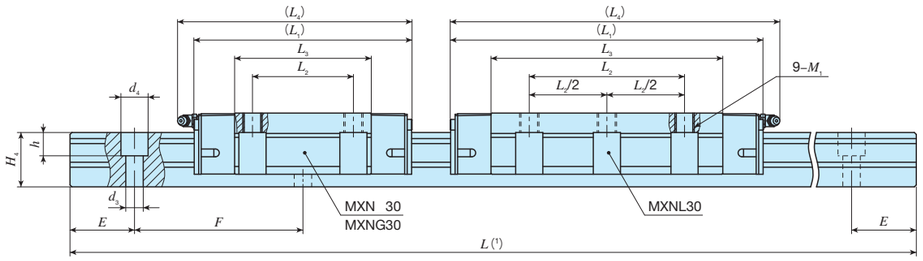
Shape	MXN			
Size	30	35	45	55

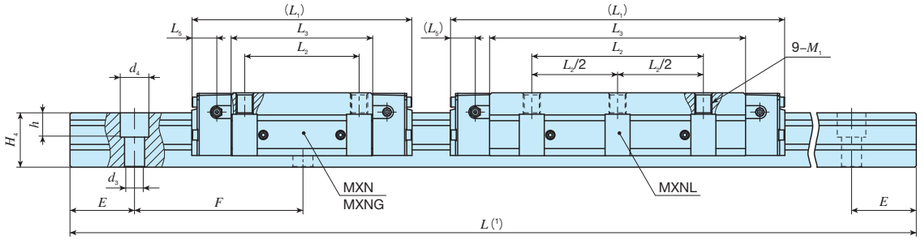
MXN 30
MXNG 30
MXNL 30



MXN
MXNG
MXNL



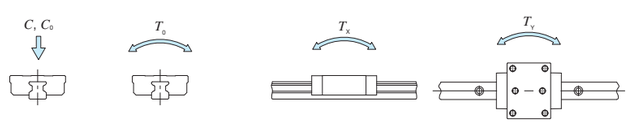




Identification number: MX series	Identification number: LRX series (No C-Lube)	Interchangeable	Mass (Ref.): Slide unit kg	Mass (Ref.): Track rail kg/m	Dimensions of assembly mm: H	H_1	N	Dimensions of slide unit mm: W_2	W_3	W_4	L_1	L_2	L_3	L_4	L_5	L_6	d_1	M_1	Maximum fixing thread depth (2)	H_2	H_3	Dimensions of track rail mm: W	H_4	d_3	d_4	h	E	F	Mounting bolt for track rail (3): Bolt size × ℓ	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		80														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			100														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			120														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			150														244 000	470 000	15 300	17 700 90 700	17 700 90 700

Notes (1) Track rail lengths L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) The fixing thread depth of mounting screw in the middle of the way in the slide unit width direction should be less than the maximum fixing thread depth.
(3) Track rail mounting bolts are not appended.
(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 of T_x and T_y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.

Remarks 1. For size 30 series, a grease nipple mounting thread hole is provided on the right and left end plates respectively.
2. For size 35, 45, and 55 series, three grease nipple mounting thread holes are provided on the right and left end plates respectively. However, the size of thread hole for size 35 in the slide unit travelling direction is smaller than that of the crosswise direction. When the grease nipple is mounted along the travelling direction, contact IKO.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXN	G	55	C2	R3000	T2	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model	
MXN	Low profile flange type mounting from top

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

③ Size: 30, 35, 45, 55

④ Number of slide unit (2)

⑤ Length of track rail (3,000 mm)

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	
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

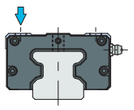
⑨ Special specification: A, D, E, F, HP, Ⅰ, J, L, LF MA, RC, T, UR, V, W, Z

MX • LRX

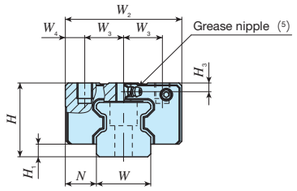
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Low profile block type mounting from top

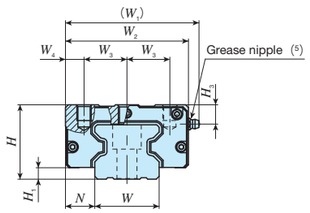
Shape	MXNS			
Size	30	35	45	55

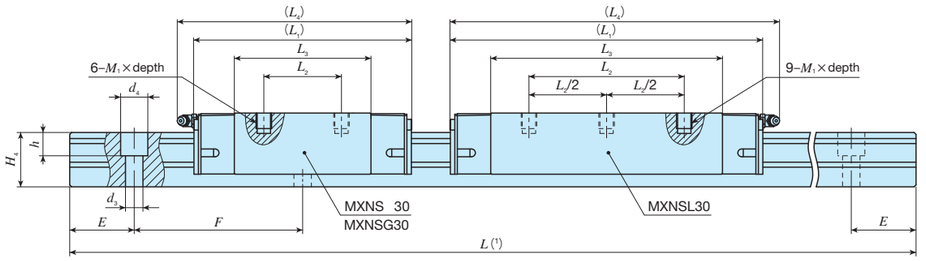


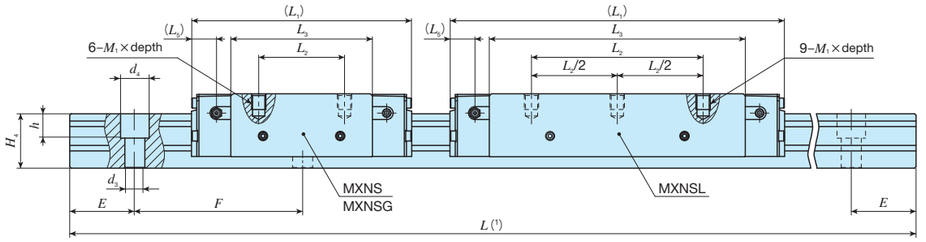
MXNS 30
MXNSG 30
MXNSL 30



MXNS
MXNSG
MXNSL



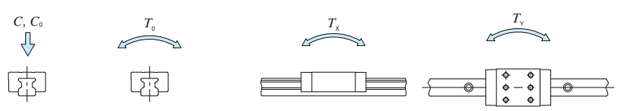




Identification number		Interchangeable	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm											Dimensions of track rail mm							Mounting bolt for track rail (3)	Basic dynamic load rating (4)	Basic static load rating (4)	Static moment rating (4)		
MX series	LRX series (No C-Lube)		Slide unit kg	Track rail kg/m	H	H_1	N	W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_4	L_5	M_1×depth (2)	Maximum fixing thread depth (2)	H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N	T_0 N·m	T_X N·m	T_Y N·m
MXNS 30	–	○	0.70									113	40	70.4	121													43 400	74 400	1 350	883 5 780	883 5 780
MXNSG 30	–	○	0.90	5.01	38	6.5	16	–	60	20	10	134	60	91.4	142	–	M 8× 8		9	4.5	28	28	9	14	12	40	80	M 8×28	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									124	50	78.6														58 700	100 000	2 170	1 360 8 470	1 360 8 470
MXNSG 35	–	○	1.42	6.88	44	6.5	18	78	70	25	10	152	72	106.6	–	12.7	M 8× 9		11	11	34	32	9	14	12	40	80	M 8×35	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									154	60	99														95 400	159 000	4 430	2 700 16 800	2 700 16 800
MXNSG 45	–	○	2.58	10.8	52	8	20.5	94	86	30	13	194	80	139	–	17.5	M10×11		13	13.5	45	38	14	20	17	52.5	105	M12×40	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									184	75	120														148 000	248 000	8 040	5 040 31 100	5 040 31 100
MXNSG 55	–	○	4.83	14.1	63	9	23.5	110	100	37.5	12.5	238	95	174	–	20	M12×15		19	16	53	43	16	23	20	60	120	M14×45	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 L are shown in Table 2.1 on page Ⅱ−175 and Table 2.3 on page Ⅱ−176 .
(2) For the fixing thread depth of the slide unit mounting hole, the value indicated in Table 16.2 on page Ⅱ−190 is recommended. The fixing thread depth of mounting screw in the middle of the way in the slide unit width direction should be less than the maximum fixing thread depth.
(3) Track rail mounting bolts are not appended.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(5) The shapes of grease nipple vary by size. The specifications are shown in Table 15 on page Ⅱ−188.

Remarks 1. For size 30 series, a grease nipple mounting thread hole is provided on the right and left end plates respectively.
2. For size 35, 45, and 55 series, three grease nipple mounting thread holes are provided on the right and left end plates respectively. However, the size of thread hole for size 35 in the slide unit travelling direction is smaller than that of the crosswise direction. When the grease nipple is mounted along the travelling direction, contact IKO.



Example of identification number of assembled set

Model code		Dimensions	Part code		Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MXNS	G	55	C2	R3000	T2	P		/F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Model

MXNS	Low profile block type mounting from top

② Length of slide unit

No symbol	Standard
G	Long
L	Extra long

③ Size: 30, 35, 45, 55

④ Number of slide unit (2)

⑤ Length of track rail (3,000 mm)

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

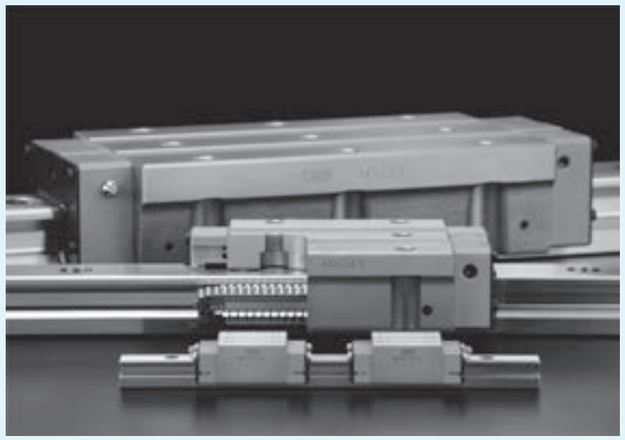
⑧ Interchangeable

No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

⑨ Special specification: A, D, E, F, HP, I, J, L, LF MA, RC, T, UR, V, W, Z

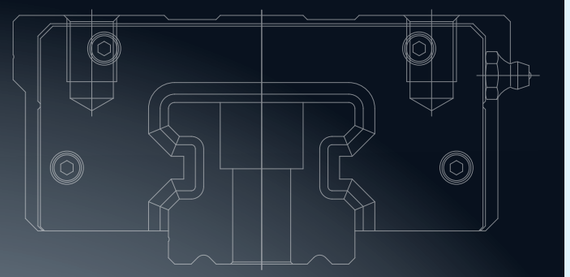
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

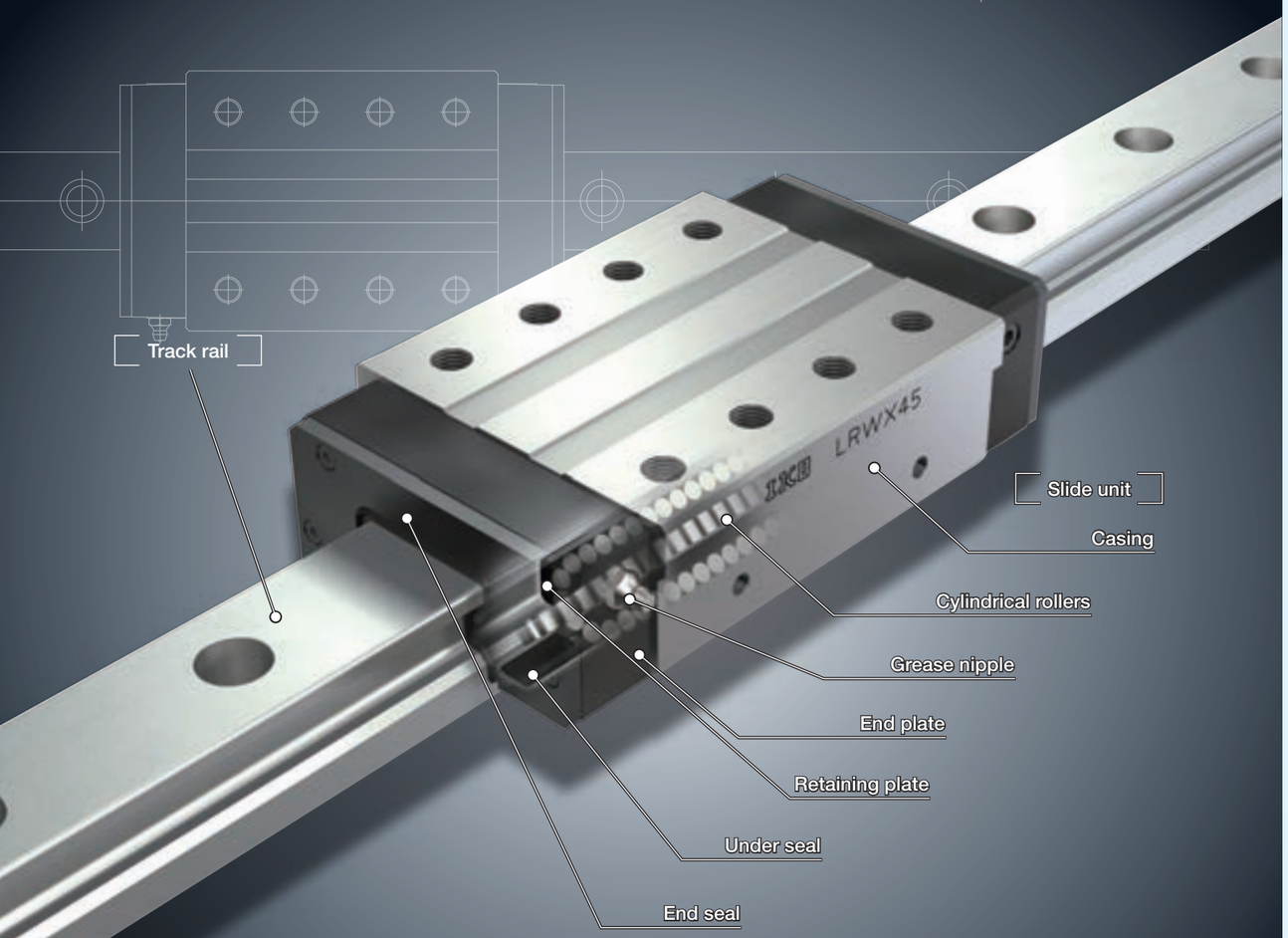
Linear Roller Way X



Linear Roller Way X

LRWX





Roller type linear motion rolling guide with cylindrical rollers in four-rows!

Well-balanced roller arrangement enabling equal resistance to all direction loads!

Slide unit shape block type and flange type are available and can be selected according to the application!

Identification Number and Specification

Example of an identification number

The specification of LRWX series is indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a preload symbol, a classification symbol, and any supplemental codes for each specification to apply.

	1	2	3	4	1	5	6	7
Assembled set	LRWX	35	C2	R660	B	T_2	SP	/Z

1 **Model** — Model code — Page Ⅱ－221

2 **Size** — Dimensions — Page Ⅱ－221

3 **Number of slide units**

4 **Length of track rail**

Part code — Page Ⅱ－221

5 **Preload amount** — Preload symbol — Page Ⅱ－222

6 **Accuracy class** — Classification symbol — Page Ⅱ－222

7 **Special specification** — Supplemental code — Page Ⅱ－223

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

Identification Number and Specification —Model · Size · Number of Slide Unit · Length of Track Rail—

1 Model

Linear Roller Way X (1) (LRWX series)

Block type mounting from top : LRWX···B
Flange type mounting from bottom : LRWXH

For applicable models and sizes, see Table 1.

Note (1) This model has no built-in C-Lube.

2 Size

25,35,45,55,75 — For applicable models and sizes, see Table 1.

3 Number of slide units : C○

Indicates the number of slide units assembled on a track rail.

4 Length of track rail : R○

Indicate the length of track rail in mm.
For standard and maximum lengths, see Table 2.

Table 1 Models and sizes of LRWX series

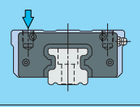
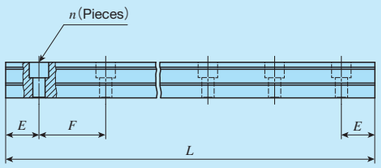
Shape	Model	Size				
		25	35	45	55	75
Block type mounting from top 	LRWX···B	○	○	○	○	○
Flange type mounting from bottom	LRWXH	–	○	○	○	○

Table 2 Standard and maximum lengths of track rail



unit: mm

Item \ Identification number	LRWX25···B	LRWX25···B/HP(3)	LRWX 35···B LRWXH35	LRWX 45···B LRWXH45	LRWX 55···B LRWXH55	LRWX 75···B LRWXH75
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 (25)
Pitch of mounting holes F	60	30	60	80	100	120
E	30	15	30	40	50	60
Standard E dimensions (1) or higher	9	9	12	15	18	23
Standard E dimensions (1) below	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 female threads for bellows (supplemental code "/J").
(2) Length up to the value in ( ) can be produced. If needed, please contact IKO.
(3) This indicates the dimension for the half pitch mounting holes specification of track rail.
Remark: If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ−30.

—Preload Amount · Accuracy Class—

5 Preload amount

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

For details of the preload amount, see Table 3.

6 Accuracy class

High : H
Precision : P
Super precision : SP
Ultra precision : UP

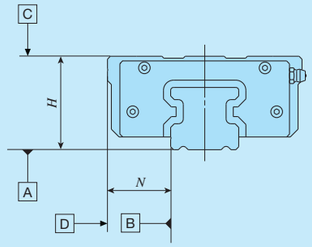
For details of accuracy class, see Table 4.

Table 3 Preload amount

Item \ Preload type	Preload symbol	Preload amount N	Operational conditions
Standard	(No symbol)	0(1)	· Light and precise motion
Light preload	T_1	0.02 C_0	· Almost no vibrations · Load is evenly balanced · Light and precise motion
Medium preload	T_2	0.05 C_0	· Medium vibration · Medium overhung load
Heavy preload	T_3	0.08 C_0	· Operation with vibration and / or shock · Overhanging load applied · Heavy cutting

Note (1) Indicates zero or minimal amount of preload.
Remark: C_0 indicates the basic static load rating.

Table 4 Tolerance and allowance



unit: mm

Item \ Class (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	0.035	0.025	–	–
Parallelism in operation of the slide unit C surface to A surface	See Fig. 1			
Parallelism in operation of the slide unit D surface to B surface	See Fig. 1			

Note (1) It means the size variation between slide units mounted on the same track rail.

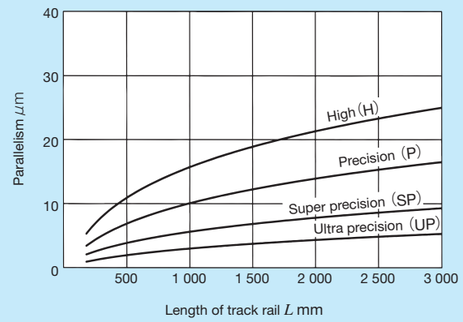


Fig. 1 Parallelism in operation

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

7 Special specification

/A, /D, /E, /F, /HP, /I,
/J○, /L○, /LF○, /Q,
/V○, /W○, /Y○, /Z○

For applicable special specifications, see Table 5.
For combination of multiple special specifications, see Table 6.
For details of special specifications, see page Ⅲ－29.

Table 5 Application of special specifications

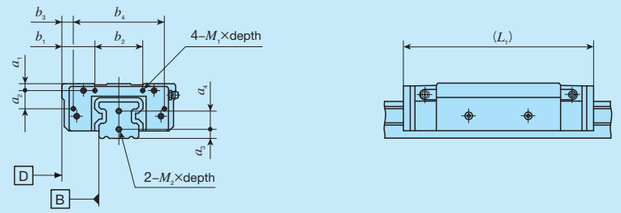
Special specification	Supplemental code	Size				
		25	35	45	55	75
Butt-jointing track rails	/A	○	○	○	○	○
Opposite reference surfaces arrangement	/D	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○
Caps for rail mounting holes	/F	○	○	○	○	○
Half pitch mounting holes for track rail	/HP	○	×	×	×	×
Inspection sheet	/I	○	○	○	○	○
Female threads for bellows	/J○	○	○	○	○	○
Black chrome surface treatment	/L○	○	○	○	○	○
Fluorine black chrome surface treatment	/LF○	○	○	○	○	○
With C-Lube plate	/Q	○	○	○	○	○
Double seals	/V○	○	×	×	×	×
A group of multiple assembled sets	/W○	○	○	○	○	○
Specified grease	/Y○	○	○	○	○	○
Scrapers	/Z○	○	○	○	○	○

Table 6 Combination of supplemental codes

	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 combination of "－" shown in the table is not available.
2. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

Table 7 Dimension of female threads for bellows (Supplemental code: /J /JJ)

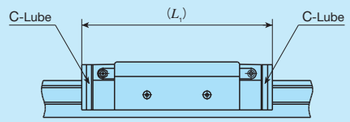


unit: mm

Identification 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) Dimensions of the specification that female threads for bellows are fitted to both ends of the slide unit are indicated.

Table 8 Dimension of slide unit with C-Lube plate (Supplemental code /Q)

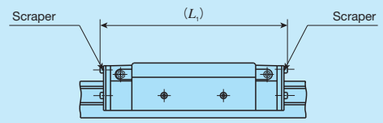


unit: mm

Size	L_1
25	120
35	166
45	218
55	275
75	364

Remark: The dimensions of the slide unit with C-Lube at both ends are indicated.

Table 9 Dimension of slide unit with scrapers (Supplemental code: /Z /ZZ)



unit: mm

Size	L_1
25	120
35	164
45	217
55	275
75	361

Remark: The dimensions of the slide unit with scraper at both ends are indicated.

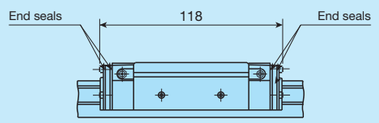


Fig. 2 Dimensions of slide unit with double seals (Size 25) (Supplemental code: /V /VV)

Remark: The dimensions of the slide unit with double end seals at both ends are indicated.

LRWX

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

Lubrication

Lithium-soap base grease with extreme-pressure additive (Alvania EP Grease 2 [SHOWA SHELL SEKIYU K. K.]) is pre-packed in LRWX series.

LRWX series has grease nipple as indicated in Table 10.

Table 10 Parts for lubrication

Size	Grease nipple type (1)	Applicable supply nozzle type	Bolt size of female threads for piping
25	JIS type 1	Grease gun available on the market	M6
35			
45	JIS type 2		PT1/8
55			
75			

Note (1) For grease nipple specification, see Table 14.2 on page Ⅲ−23.
Remark: Stainless steel grease nipple is also available. If needed, please contact IKO.

Dust Protection

The slide units of LRWX series are equipped with end seals and under seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to cover the whole unit with bellows or telescope type shield, etc.
LRWX series is provided with specific bellows. The bellows are easy to mount and provide excellent dust protection. If needed, please refer to Ⅲ−26 for ordering.

Precaution for Use

❶Mounting surface, reference mounting surface and typical mounting structure

When mounting the LRWX series, properly align the reference mounting surfaces B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 3)
Reference mounting surfaces B and D and mounting surfaces A and C are ground precisely. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.
Reference mounting surface of the slide unit is the opposite side of the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction of the arrow). (See Fig. 4)

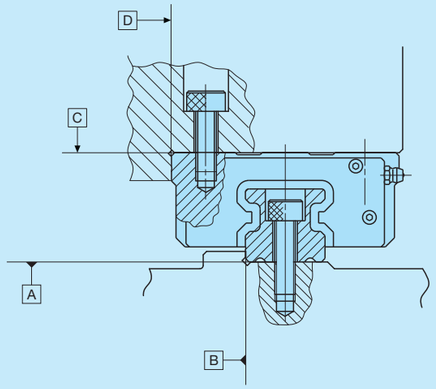


Fig. 3 Reference mounting surface and typical mounting structure

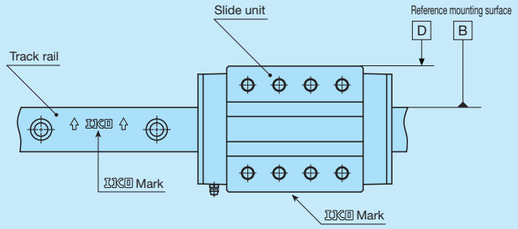


Fig. 4 Reference mounting surface

❷Fixing the slide unit

Slide unit of LRWX25··· B and LRWXH is also provided with mounting holes in the middle of width direction (see Fig. 5) and has the arrangement to receive the applied load in a good balance. When designing machines or equipment, consider the arrangement so that the mounting holes in the middle of slide unit can also be used to fix the units, to use the highest performance out of the product.

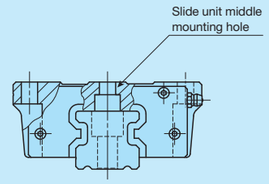


Table 5 Slide unit middle mounting hole

❸Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 6, but you may also use it with providing corner radius R as shown in Table 11. Recommended value for the shoulder height and corner radius on the mating side is indicated in Table 11.

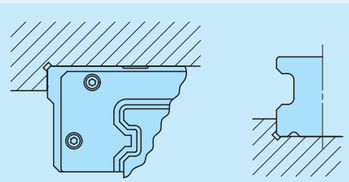
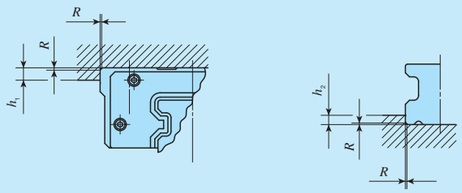


Fig. 6 Corner of the mating reference mounting

Table 11 Shoulder height and corner radius of the reference mounting surface



unit: mm

Size	Shoulder height of slide unit mounting part h_1	Shoulder height of track rail mounting part h_2	Corner radius R (Maximum)
25	6	4	1
35	8	5.5	1
45	8	6	1
55	10	8	1.5
75	10	8	1.5

❹Tightening torque for fixing screw

Typical tightening torque for mounting of the LRWX series to the steel mating member material is indicated in Table 12. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 12 Tightening torque for fixing screw

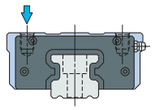
Bolt size	Tightening torque N · m
	High carbon steel-made screw
M 6×1	13.6
M 8×1.25	32.7
M10×1.5	63.9
M12×1.75	110
M16×2	268
M24×3	749

Remark: The tightening torque is calculated based on strength division 12.9 for product size up to 55, and strength division 10.9 for product size 75.

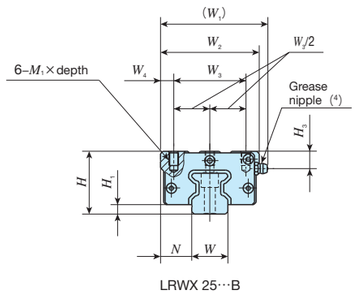
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Block type mounting from top

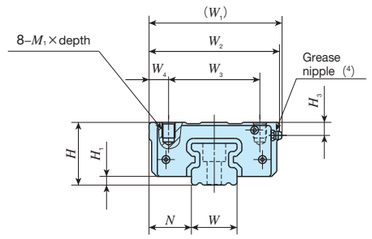
Shape: **LRWX···B**

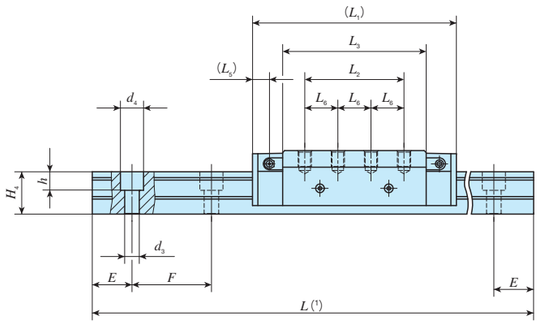


Size: **25** **35** **45** **55** **75**



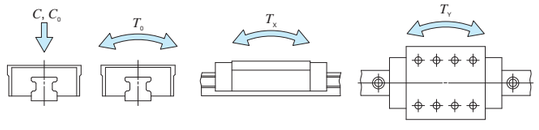
LRWX 25···B





Identification number	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm										Dimensions of track rail mm								Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
LRWX series (No C-Lube)	Slide unit	Track rail	H	H_1	N	W_1	W_2	W_3	W_4	L_1	L_2	L_3	L_5	L_6	$M_1\times$ depth		H_3	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C	C_0	T_0	T_X	T_Y
	kg	kg/m																								N	N	N · m	N · m	N · m
LRWX 25···B	0.93	3.70	40	6	20	69	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 5 170	885 5 170
LRWX 35···B	2.65	6.66	48	6.5	32.5	103	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	125	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	142	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	190	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 L are shown in Table 2 on page Ⅱ−221.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 10 on page Ⅱ−225.



Example of identification number of assembled set

Model code	Dimensions	Part code		Model code	Preload symbol	Classification symbol	Supplemental code
LRWX	35	C2	R840	B	T1	P	/W2
①	②	③	④	①	⑤	⑥	⑦

① Model
LRWX···B Block type mounting from top

② Size
25, 35, 45, 55, 75

③ Number of slide unit (2)

④ Length of track rail (840 mm)

⑤ Preload amount

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

⑥ Accuracy class

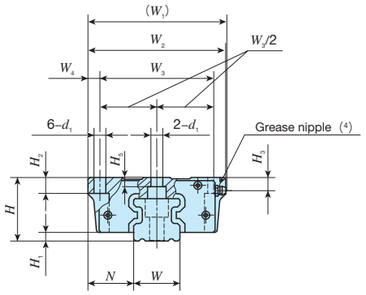
H	High
P	Precision
SP	Super precision
UP	Ultra precision

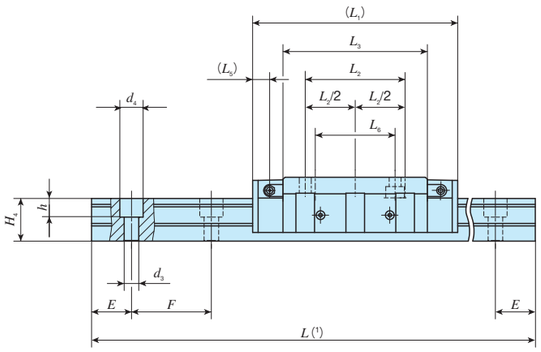
⑦ Special specification
A, D, E, F, HP, Ⅰ, J
L, LF, Q, V, W, Y, Z

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

Flange type mounting from bottom

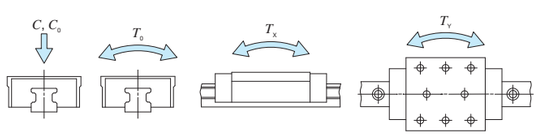
Shape	LRWXH			
Size	35	45	55	75





Identification number	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide unit mm												Dimensions of track rail mm							Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)	Static moment rating (3)		
LRWX series (No C-Lube)	Slide unit	Track rail	H	H_1	N	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	W	H_4	d_3	d_4	h	E	F	Bolt size× ℓ	C	C_0	T_0	T_X	T_Y
	kg	kg/m																									N	N	N · m	N · m	N · m
LRWXH 35	2.51	6.66	48	6.5	34.5	105	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	129	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	197	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 L are shown in Table 2 on page Ⅱ−221.
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(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 of T_X and T_Y are for one slide unit and the lower values are for two slide units in close contact.
(4) The shapes of grease nipple vary by size. The specifications are shown in Table 10 on page Ⅱ−225.



Example of identification number of assembled set

Model code	Dimensions	Part code		Preload symbol	Classification symbol	Supplemental code
LRWXH	35	C2	R840	T1	P	/W2
①	②	③	④	⑤	⑥	⑦

① Model

LRWXH	Flange type mounting from bottom

② Size: 35, 45, 55, 75

③ Number of slide unit (2)

④ Length of track rail (840 mm)

⑤ Preload amount

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

⑥ Accuracy class

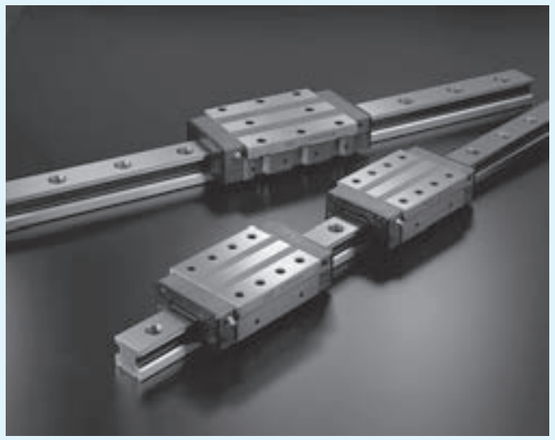
H	High
P	Precision
SP	Super precision
UP	Ultra precision

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

Points

● Compact module type

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

● Models for various usage

2 Three models are available; LWLM and LWM using the ball for rolling elements, and LRWM using the roller.

● Stainless steel selections for excellent corrosion resistance

3 LWLM is made of stainless steel of excellent corrosion resistance. They are suitable for applications where rust prevention oil is not preferred, such as in cleanroom environment.

Identification Number and Specification

Example of an identification number

The specification of Linear Way Module series is indicated by the identification number. Indicate the identification number, consisting of a model code, dimensions, a part code, a classification symbol, and any supplemental codes for each specification to apply.

	1	2	3	4	5	6
Assembled set	LWM	3	M2	R660	SP	/W2

- 1 **Model** — Model code Page Ⅱ－235
- 2 **Size** — Dimensions Page Ⅱ－235
- 3 **Number of slide members** — Part code Page Ⅱ－235 Page Ⅱ－236
- 4 **Length of track rail** — Part code Page Ⅱ－235 Page Ⅱ－236
- 5 **Accuracy class** — Classification symbol Page Ⅱ－237
- 6 **Special specification** — Supplemental Code Page Ⅱ－238

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

Identification Number and Specification —Model · Size · Number of Slide Member—

1 Model

Linear Way Module	Linear Way LM (1)	: LWLM
	Linear Way M (1)	: LWM
	Linear Roller Way M (1)	: LRWM

For applicable models and sizes, see Table 1.1, 1.2 and 1.3.

Note (1) This model has no built-in C-Lube.

2 Size

7, 9, 11
1, 2, 3, 4, 5, 6

For applicable models and sizes, see Table 1.1, 1.2 and 1.3.

3 Number of slide members

: M○

Indicates the number of slide members assembled on a track rail.

Table 1.1 Model and sizes of LWLM series

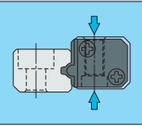
Shape	Model	Size		
		7	9	11
	LWLM	○	○	○

Table 1.2 Model and sizes of LWM series

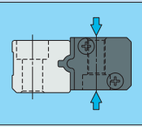
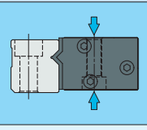
Shape	Model	Size					
		1	2	3	4	5	6
	LWM	○	○	○	○	○	○

Table 1.3 Model and sizes of LRWM series

Shape	Model	Size				
		2	3	4	5	6
	LRWM	○	○	○	○	○

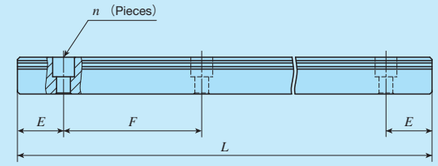
—Length of Track Rail—

4 Length of track rail

: R○

Indicate the length of track rail in mm.
For standard and maximum lengths, see Table 2.

Table 2 Standard and maximum lengths of track rail



unit: mm

Item \ Identification 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 E dimensions	or higher	4.5	5	5.5
	below	14.5	17.5	25.5
Maximum length (1)		240 (500)	350 (900)	520 (1 000)

Item \ Identification 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) 1 040 (13) 1 200 (15)	800 (8) 1 200 (12) 1 500 (15)	1 200 (10) 1 920 (16) 2 520 (21)
Pitch of mounting holes F	40	60	60	80	100	120
E	20	30	30	40	50	60
Standard E dimensions or higher	7	8	9	10	12	13
Standard E dimensions below	27	38	39	50	62	73
Maximum length	1 240	1 260	1 260	1 520	1 500	2 520

Item \ Identification number	LRWM2	LRWM3	LRWM4	LRWM5	LRWM6
Standard length L (n)	480 (8) 660 (11) 840 (14)	480 (8) 660 (11) 840 (14)	800 (10) 1 040 (13) 1 200 (15)	800 (8) 1 200 (12) 1 500 (15)	1 200 (10)
Pitch of mounting holes F	60	60	80	100	120
E	30	30	40	50	60
Standard E dimensions or higher	8	9	10	12	13
Standard E dimensions below	38	39	50	62	73
Maximum length	1 800	1 860	1 920	1 600	1 200

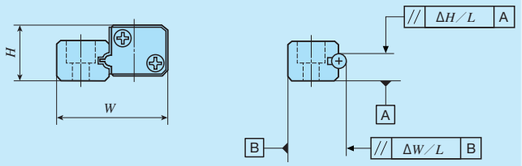
Note (1) Length up to the value in ( ) can be produced. If needed, please contact IKO.
Remark: If not directed, E dimensions for both ends will be the same within the range of standard E dimensions. To change the dimensions, indicate the specified rail mounting hole positions "/E" of special specification. For more information, see page Ⅲ－30.

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

5 Accuracy class

High	: H	For details of accuracy class, see Table 3.
Precision	: P	
Super precision	: SP	

Table 3 Tolerance and allowance



unit: mm

Item \ Class (classification symbol)	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 of H(1)	0.015	0.007	0.005
Dim. variation of W(1)	0.020	0.010	0.007
Track rail parallelism ΔH	See Fig. 1.1 and Fig. 1.2		
Track rail parallelism ΔW	See Fig. 1.1 and Fig. 1.2		

Note (1) It means the size variation between slide members mounted on the same track rail.

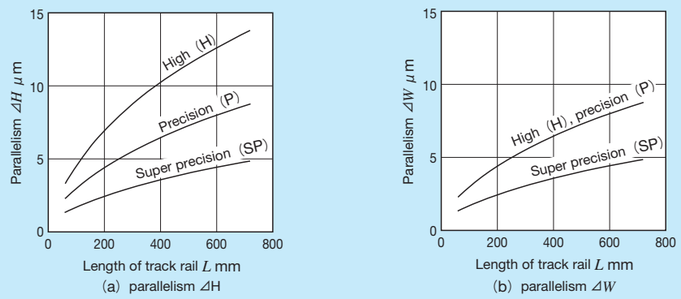


Fig.1.1 Track rail parallelism for LWLM

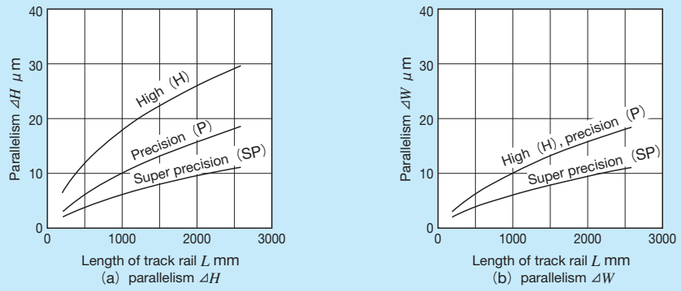


Fig.1.2 Track rail parallelism for LWM and LRWM

6 Special specification

/A, /E, /F, /I, /LR, /LFR, /MN, /W○, /Y○

For applicable special specifications, see Table 4.
For combination of multiple special specifications, see Table 5.
For details of special specifications, see page Ⅲ—29.

Table 4 Application of special specifications

Special specification	Supplemental code	Model and size								
		LWLM			LWM, LRWM					
		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 chrome surface treatment	/LR	×	×	×	○	○	○	○	○	○
Fluorine black chrome surface treatment	/LFR	×	×	×	○	○	○	○	○	○
Without track rail mounting bolt	/MN	○	○	○	○(1)	○(1)	○(1)	○(1)	○(1)	○(1)
A group of multiple assembled sets	/W○	○	○	○	○	○	○	○	○	○
Specified grease	/Y○	○	○	○	○	○	○	○	○	○

Note (1) None of mounting bolts for slide member and track rail are appended.

Table 5 Combination of supplemental codes

	A	E	F	I	LR	LFR	MN	W
E	–							
F	○	○						
I	○	○	○					
LR	○	○	○	○				
LFR	○	○	○	○	–			
MN	○	○	○	○	○	○		
W	○	–	○	○	○	○	○	
Y	○	○	○	○	○	○	○	○

Remarks 1. The combination of "–" shown in the table is not available.
2. When using multiple types for combination, please indicate by arranging the symbols in alphabetical order.

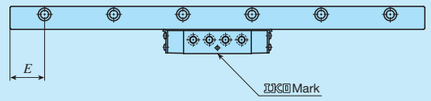


Fig.2 Specified rail mounting hole positions (Supplemental code /E)

Remark: For details of specified rail mounting hole positions (supplemental code /E), see page Ⅲ—30.

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

Lubrication

Lithium-soap base grease with extreme-pressure additive (Alvania EP Grease 2 [SHOWA SHELL SEKIYU K. K.]) is pre-packed in Linear Way Module series.
Though grease nipples are not appended to Linear Way Module series, oil holes are provided to slide member so that the grease or lubrication oil supplied from machines / devices is directly guided to the rolling elements recirculation route. Lubrication is easily conducted by providing the supply route in the machines / devices as shown in Fig. 3.

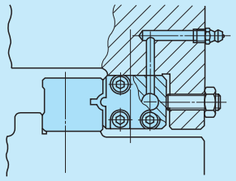


Fig. 3 Example of lubrication method

Dust Protection

The slide members of Linear Way Module series are equipped with end seals as standard for dust protection. However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the track rail, it is recommended to cover the whole unit with bellows or telescope type shield, etc.

Precaution for Use

❶ Mounting surface, reference mounting surface and typical mounting structure

When mounting the Linear Way Module series, properly align the reference mounting surfaces B and D of the track rail and slide member with the reference mounting surface of the table and bed and fix them. (See Fig. 4)
The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.

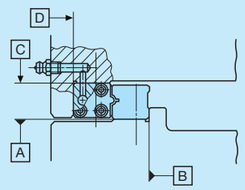


Fig. 4 Reference mounting surface and typical mounting structure

❷ Fixing the slide member

Typical mounting structure of Linear Way Module series is shown in Fig. 5. As a convenient means to eliminate play or to give preload in linear motion rolling mechanism, preload adjusting screws are often used.
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 LWLM, it is recommended to fix the slide member from the table side, because the allowance for the preload adjustment in the bolt hole of slide member is small. In this case, the bolt hole and the counterbore in the table should be made larger to give the adjustment allowance.

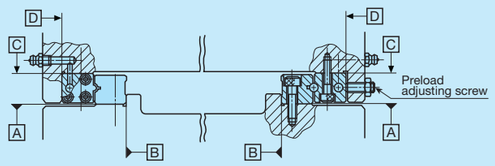


Fig.5 Mounting by preload adjusting screws

Preload amount varies depending on operational conditions of your machine and device. However, as excessive preload may lead to short life and damage on the raceway, it is typically ideal to adjust to zero clearance or slight preload state.

❸ Shoulder height and corner radius of the reference mounting surface

For the opposite corner of the mating reference mounting, it is recommended to have relieved fillet as indicated in Fig. 6. Recommended value for the shoulder height and corner radius on the mating side is indicated in Table 7.1, Table 7.2 and Table 7.3.

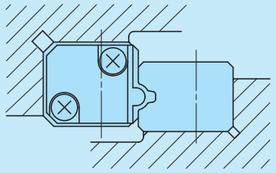


Fig. 6 Corner of the mating reference mounting

❹ Tightening torque for fixing screw

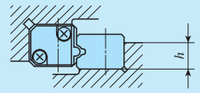
Typical tightening torque for mounting of Linear Way Module series to the steel mating member material is indicated in Table 6. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated in the table as necessary. If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.

Table 6 Tightening torque for fixing screw

Bolt size	Tightening torque N · m	
	High carbon steel-made screw	Stainless steel-made screw
M 2.6×0.45	–	0.7
M 3 ×0.5	1.8	1.1
M 4 ×0.7	4.1	–
M 5 ×0.8	8.0	–
M 6 ×1	13.6	–
M 8 ×1.25	32.7	–
M10 ×1.5	63.9	–
M12 ×1.75	110	–

Remark: The tightening torque is calculated based on strength division 12.9 and property division A2-70.

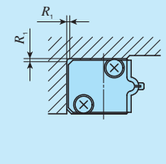
Table 7.1 Shoulder height of the reference mounting surface for LWLM



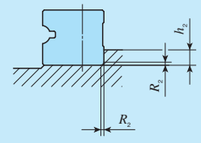
unit: mm

Size	Mounting part of track rail shoulder height h
7	4
9	5
11	6

Table 7.2 Shoulder height and corner radius of the reference mounting surface for LWM



Mounting part of slide member

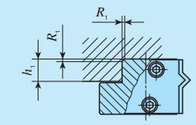


Mounting part of track rail

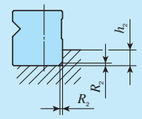
unit: mm

Size	Mounting part of slide member Corner radius R_1 (Maximum)	Mounting part of track rail	
		Shoulder height h_2	Corner radius R_2 (Maximum)
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 Shoulder height and corner radius of the reference mounting surface for LRWM



Mounting part of slide member

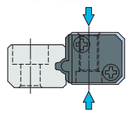


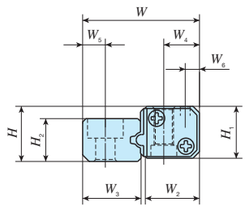
Mounting part of track rail

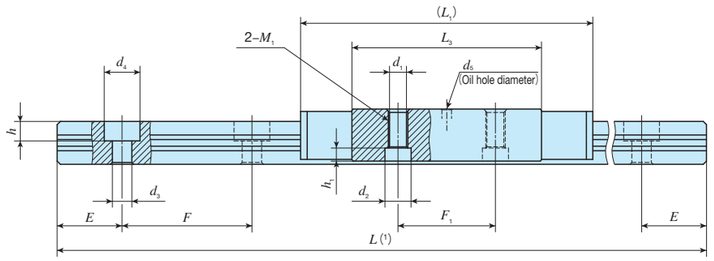
unit: mm

Size	Mounting part of slide member		Mounting part of track rail	
	Shoulder height h_1	Corner radius R_1 (Maximum)	Shoulder height h_2	Corner radius R_2 (Maximum)
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

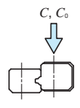
Linear Way LM			
Shape	LWLM 		
Size	7	9	11





Identification number	Mass (Ref.)		Dimensions of assembly mm		Dimensions of slide member mm										Dimensions of track rail mm								Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)
Linear Way Module series (No C-Lube)	Slide member g	Track rail g/m	H	W	H_1	W_2	W_4	W_6	L_1	L_3	F_1	d_1	d_2	h_1	M_1	d_5	H_2	W_3	W_5	d_3	d_4	h	E	F	Bolt size× ℓ	C N	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 L are shown in Table 2 on page Ⅱ−236.
(2) The appended mounting bolts are stainless steel hexagon socket head bolts equivalent to JIS B 1176.
(3) The direction of basic dynamic load rating (C) and basic static load rating (C_0) are shown in the sketch below.
(4) Track rail mounting holes have no counterbore.
When the appended track rail mounting bolts are used, the height from track rail bottom surface to bolt head is 7.4 mm.
Remarks 1. Slide member mounting bolts are not appended.
2. The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

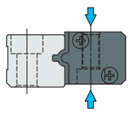
Model code	Dimensions	Part code		Classification symbol	Supplemental code
LWLM	9	M2	R200	P	/W2
①	②	③	④	⑤	⑥

① Model: LWLM — Linear Way LM
② Size: 7, 9, 11
③ Number of slide member (2)
④ Length of track rail (200 mm)
⑤ Accuracy class: H — High; P — Precision; SP — Super precision
⑥ Special specification: E, Ⅰ, MN, W, Y

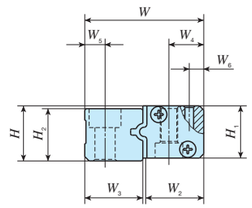
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

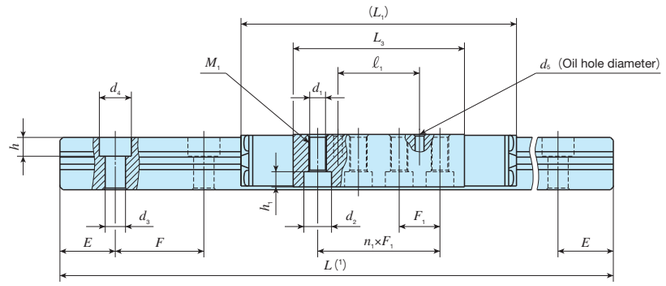
Linear Way M

Shape: LWM



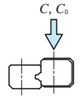
Size: 1 | 2 | 3 | 4 | 5 | 6





Identification number	Mass (Ref.)		Dimensions of assembly mm		Dimensions of slide member mm														Appended mounting bolt for slide member (2)	Dimensions of track rail mm								Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)
Linear Way Module series (No C-Lube)	Slide member kg	Track rail kg/m	H	W	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	Bolt size× ℓ	H_2	W_3	W_5	d_3	d_4	h	E	F	Bolt size× ℓ	C N	C_0 N
LWM 1*	0.07	1.20	14	28	13	14.6	9	4	64	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	122	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 L are shown in Table 2 on page Ⅱ−236.
(2) The appended mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(3) The direction of basic dynamic load rating (C) and basic static load rating (C_0) are shown in the sketch below.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code		Classification symbol	Supplemental code
LWM	3	M2	R660	P	/W2
①	②	③	④	⑤	⑥

① Model: LWM — Linear Way M

② Size: 1, 2, 3, 4, 5, 6

③ Number of slide member (2)

④ Length of track rail (660 mm)

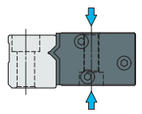
⑤ Accuracy class

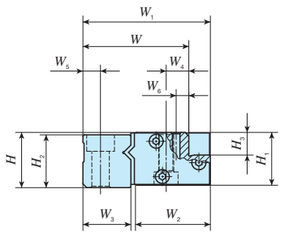
H	High
P	Precision
SP	Super precision

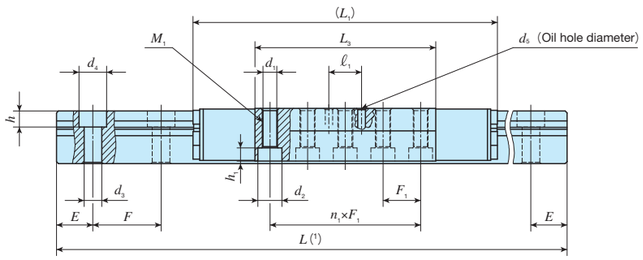
⑥ Special specification: A, E, F, Ⅰ, LR, LFR, MN, W, Y

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

Linear Roller Way M

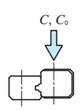
Shape	LRWM 
Size	2 3 4 5 6





Identification number	Mass (Ref.)		Dimensions of assembly mm			Dimensions of slide member mm															Appended mounting bolt for slide member (2)	Dimensions of track rail mm								Appended mounting bolt for track rail (2)	Basic dynamic load rating (3)	Basic static load rating (3)
Linear Way Module series (No C-Lube)	Slide member kg	Track rail kg/m	H	W	W_1	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	Bolt size× ℓ	H_2	W_3	W_5	d_3	d_4	h	E	F	Bolt size× ℓ	C N	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	157	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 L are shown in Table 2 on page Ⅱ−236.
(2) The appended mounting bolts are hexagon socket head bolts equivalent to JIS B 1176.
(3) The direction of basic dynamic load rating (C) and basic static load rating (C_0) are shown in the sketch below.
Remark: The identification numbers with * are our semi-standard items.



Example of identification number of assembled set

Model code	Dimensions	Part code		Classification symbol	Supplemental code
LRWM	3	M2	R660	P	/W2
①	②	③	④	⑤	⑥

① Model
LRWM — Linear Roller Way M

② Size
2, 3, 4, 5, 6

③ Number of slide member (2)

④ Length of track rail (660 mm)

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 Explanation

Selection Procedure

Selection of Linear Way and Linear Roller Way should be considered from the most important required matter to details in order.
Typical procedure is shown below.

Example of Linear Way and Linear Roller Wayselection procedure

Check for use condition

- Machines and locations in use
- Confirm requirements, performance, and special environments of Linear Way and Linear Roller Way.

↓

Selection of Linear Way and Linear Roller Way model

- Select a suitable Linear Way and Linear Roller Way model for usage conditions in consideration of an applied load, a load direction, rigidity, friction, ease of mounting, etc.

→ See pages Ⅰ−7 to Ⅰ−8 and descriptions of each series.

↓

Selection of interchangeable or non-interchangeable specification

- Take maintainability and ease of assembly into account.

→ See pages Ⅰ−15 to Ⅰ−18 and descriptions of each series.

↓

Selection of accuracy class

- Select based on required traveling accuracy. Select a higher accuracy class especially when traveling accuracy is important.

→ See descriptions of each series.

↓

Temporary specification of size and numbers of sets and slide units

- Take a balance of machines / equipment and past experience into account.

↓

Calculation of applied load

- Calculate an applied load on each slide unit of Linear Way and Linear Roller Way.
- Consider loads and fluctuating loads by acceleration and deceleration.

→ See pages Ⅲ−9 to Ⅲ−18.

↓

Calculation of static safety factor

- Calculate a static safety factor to confirm suitability for usage conditions.

→ See page Ⅲ−6.

↓

Calculation of life

- Calculate rating life to confirm suitability for use conditions.

→ See page Ⅲ−6.

↓

Consideration of preload amount or clearance

- Select a suitable preload amount or clearance for use conditions.

→ See page Ⅲ−20 and descriptions of each series.

↓

Determination of size, numbers of sets and slide units, and preload

↓

Selection of lubrication and dust protection

- Select oil lubrication or grease lubrication.
- Select dust protection such as seals and bellows according to environmental conditions.

→ See page Ⅲ−21 and descriptions of each series.

↓

Consideration of surroundings

- Consider a mounting method and related dimensions.

→ See page Ⅲ−36 and descriptions of each series.

↓

Final specification determination of Linear Way, Linear Roller Way and their surroundings

Load Rating and Life

Life of linear motion rolling guides

Even in normal operational status, a linear motion rolling guide will reach the end of its life after a certain period of operations. As repeated load is constantly applied onto a raceway and rolling elements of the linear motion rolling guide, this leads to leprous damage (scale-like wear fragments) called fatigue flaking due to rolling contact fatigue of materials, it will be unusable at the end. Total traveling distance before occurrence of this fatigue flaking on a raceway or rolling elements is called the life of linear motion rolling guide.
As the life of linear motion rolling guide may vary depending on material fatigue phenomenon, rating life based on statistic calculation is used.

Rating life

Rating life of linear motion rolling guide refers to the total traveling distance 90% of a group of the same linear motion rolling guide can operate without linear motion rolling guide material damages due to rolling contact fatigue when they are operated individually under the same conditions.

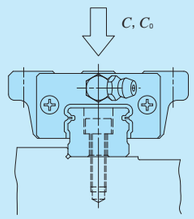


Fig. 1 Direction of load rating

Basic dynamic load rating C

Complying with ISO 14728-1

Basic dynamic load rating refers to load with certain direction and size that is logically endurable for rating life of 50×10^3 m when a group of the same linear motion rolling guides is operated individually under the same conditions.

Basic static load rating C_0

Complying with ISO 14728-2

Basic static load rating refers to static load generating a certain contact stress at the center of contact part of the rolling elements and a raceway under maximum load, which is the load at the allowable limit for normal rolling motion. Generally, it is used considering static safety factor.

Static moment rating T_0, T_X, T_Y

Static moment rating refers to static moment load generating a certain contact stress at the center of contact parts of rolling elements and a raceway under the maximum load when the moment load shown in Fig. 2 is loaded, which is the moment load at the allowable limit for normal rolling motion. Generally, it is used considering static safety factor.

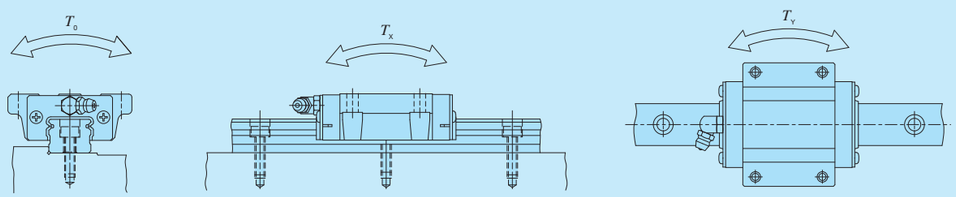


Fig. 2 Direction of static moment rating

Calculating formula of life

The rating life calculation formulas 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: Rating life, 10^3 m
C: Basic dynamic load rating, N
P: Dynamic equivalent load, N

Life time can be calculated by applying a stroke length and a number of strokes per minute to the formula below.

$$L_h=\frac{10^6 L}{2Sn_1\times60} \cdots\cdots(3)$$

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

Load factor

Load applied to a linear motion rolling guide can be larger than theoretical load due to machine vibration or shock. Generally, the applied load is obtained by multiplying it by the load factor indicated in Table 1.

Table 1 Load factor

Operating conditions	f_W
Smooth operation free from shock	1 ～ 1.2
Normal operation	1.2 ～ 1.5
Operation with shock load	1.5 ～ 3

Static safety factor

Generally, basic static load rating and static moment rating is considered as load at the allowable limit for normal rolling motion. However, static safety factor must be considered according to operating conditions and required performance of the linear motion rolling guide.
Static safety factor can be obtained by the following equation and typical values are indicated in Tables 2.1 and 2.2.
Equation (6) is a representative equation for a moment load. Moment load and static moment rating in each direction is applied for the calculation.

$$f_S=\frac{C_0}{P_0} \cdots\cdots(5)$$

$$f_S=\frac{T_0}{M_0} \cdots\cdots(6)$$

where, f_S : Static safety factor
C_0 : Basic static load rating, N
P_0 : Static equivalent load, N
T_0 : Static moment rating, N · m
M_0 : Moment load in each direction, N · m
(maximum moment load)

Table 2.1 Static safety factor for Linear Way

Operational conditions	f_s
Operation with vibration and / or shock	3 ～ 5
High operating performance	2 ～ 4
Normal operating conditions	1 ～ 3

Table 2.2 Static safety factor for Linear Roller Way

Operational conditions	f_s
Operation with vibration and / or shock	4 ～ 6
High operating performance	3 ～ 5
Normal operating conditions	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 or a complex load is applied, the dynamic equivalent load must be calculated to obtain the basic rating life.

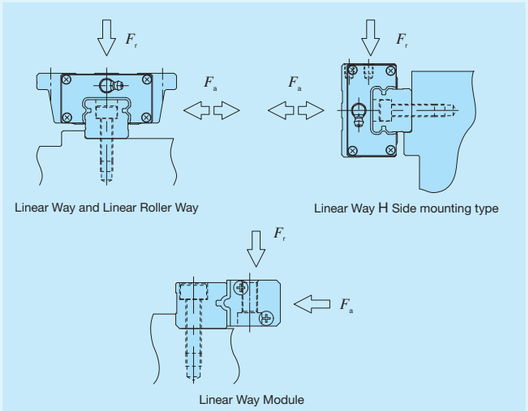
Obtain the downward and lateral conversion loads from the loads and moments in various directions.

$$F_{re}=k_r|F_r|+\frac{C_0}{T_0}|M_0|+\frac{C_0}{T_X}|M_X| \cdots\cdots(7)$$

$$F_{ae}=k_a|F_a|+\frac{C_0}{T_Y}|M_Y| \cdots\cdots(8)$$

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 load in the T_0 direction, N · m
M_X : Moment load in the T_X direction, N · m
M_Y : Moment load in the T_Y direction, N · m
k_r, k_a : Conversion factors for load direction (See Table 3)
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 3 Conversion factor for load direction



Series name and size			Conversion factor k_r $F_r \geqq 0$	Conversion factor k_r $F_r < 0$	Conversion factor 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 MLV			1	1	1.19
C-Lube Linear Way MV			1	1.23	1.35
C-Lube Linear Way ME Linear Way E	15～30		1	1	1
	35～45		1	1.19	1.28
Low Decibel 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
Linear Way H Horizontal mounting type	15～30		1	1	1
	35～45(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 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 of k_a columns represents the right direction and the lower value represents the left direction.

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

$$P=XF_{re}+YF_{ae} \cdots\cdots(9)$$

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

Table 4 Dynamic equivalent load factor

Class	X	Y
$\|F_{re}\| \geqq \|F_{ae}\|$	1	0.6
$\|F_{re}\| < \|F_{ae}\|$	0.6	1

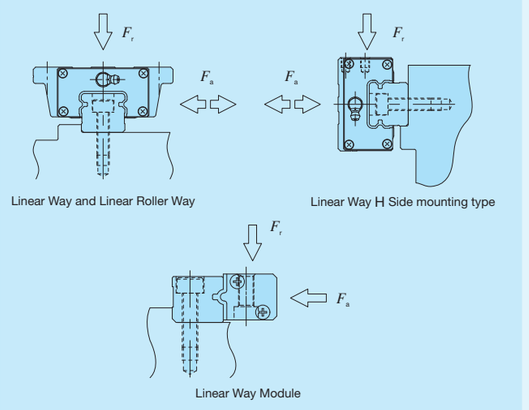
Static equivalent load

When a load is applied in a direction other than that of the basic static load rating or a complex load is applied, the static equivalent load must be calculated to obtain the static safety factor.

$$P_0=k_{0r}|F_r|+k_{0a}|F_a|+\frac{C_0}{T_0}|M_0|+\frac{C_0}{T_X}|M_X|+\frac{C_0}{T_Y}|M_Y| \cdots\cdots(10)$$

where, P_0 : Static equivalent load, N
F_r : Downward load, N
F_a : Lateral load, N
M_0 : Moment load in the T_0 direction, N · m
M_X : Moment load in the T_X direction, N · m
M_Y : Moment load in the T_Y direction, N · m
k_{0r}, k_{0a} : Conversion factors for load direction (See Table 5)
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 5 Conversion factor for load direction



Series name and size			Conversion factor k_{0r} $F_r \geqq 0$	Conversion factor k_{0r} $F_r < 0$	Conversion factor 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 MLV			1	1	1.19
C-Lube Linear Way MV			1	1.88	2.08
C-Lube Linear Way ME Linear Way E	15～30		1	1	1
	35～45		1	1.19	1.28
Low Decibel 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
Linear Way H Horizontal mounting type	15～30		1	1	1
	35～45(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

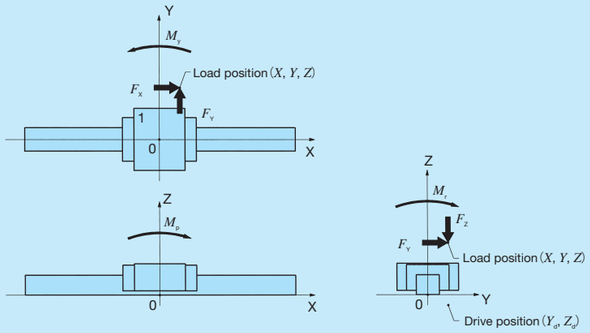
Note (1) The upper value of k_{0a} columns represents the right direction and the lower value represents the left direction.

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

Calculated Load

Examples of calculation for the loads applied to Linear Way and Linear Roller Way that is incorporated in machine / equipment is shown in Table 6.1 to Table 6.6.

Table 6.1 One track rail and one slide unit

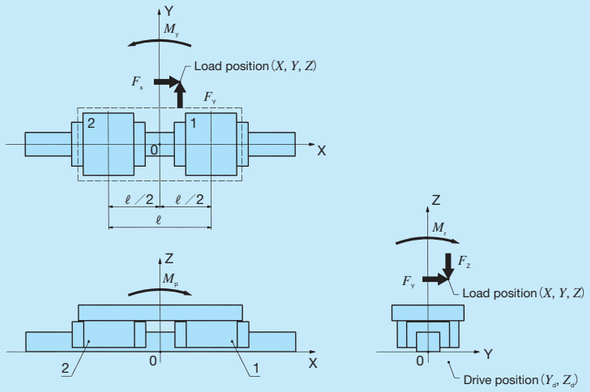


Slide unit No.	Load applied on the slide unit				
	Downward load F_r	Lateral load F_a	Moment load in the T_0 direction M_0	Moment load in the T_X direction M_X	Moment load in the T_Y direction M_Y
1	F_z	F_Y	M_r	M_p	M_y

Remark: The moment loads in each direction M_r, M_p, M_y can be obtained by the following equation.

$$M_r = F_Y Z + F_Z Y$$
$$M_p = F_X\ (Z - Z_d) + F_Z X$$
$$M_y = -F_X\ (Y - Y_d) + F_Y X$$

Table 6.2 One track rail and two slide units

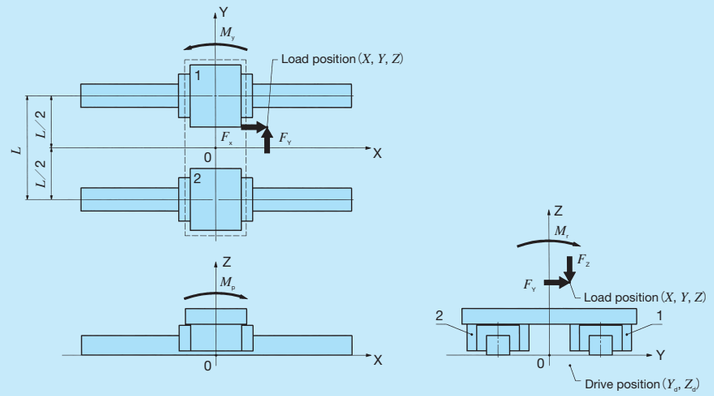


Slide unit No.	Load applied on the slide unit		
	Downward load F_r	Lateral load F_a	Moment load in the T_0 direction M_0
1	$\frac{F_z}{2} + \frac{M_p}{\ell}$	$\frac{F_Y}{2} + \frac{M_y}{\ell}$	$\frac{M_r}{2}$
2	$\frac{F_z}{2} - \frac{M_p}{\ell}$	$\frac{F_Y}{2} - \frac{M_y}{\ell}$	$\frac{M_r}{2}$

Remark: The moment loads in each direction M_r, M_p, M_y can be obtained by the following equation.

$$M_r = F_Y Z + F_Z Y$$
$$M_p = F_X\ (Z - Z_d) + F_Z X$$
$$M_y = -F_X\ (Y - Y_d) + F_Y X$$

Table 6.3 Two track rails and one slide unit



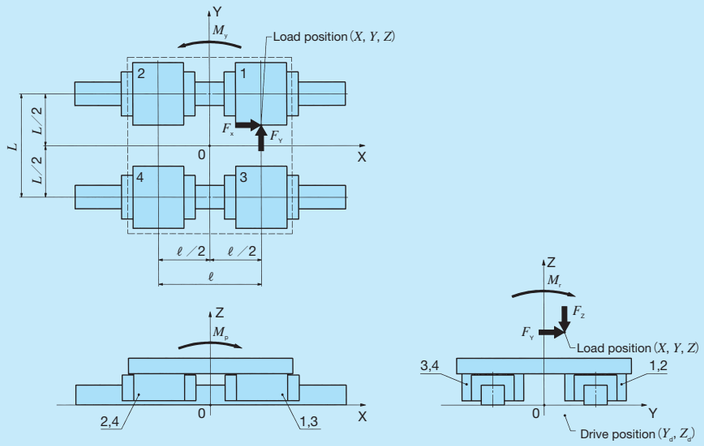
Slide unit No.	Load applied on the slide unit			
	Downward load F_r	Lateral load F_a	Moment load in the T_X direction M_X	Moment load in the T_Y direction M_Y
1	$\frac{F_z}{2} + \frac{M_r}{L}$	$\frac{F_Y}{2}$	$\frac{M_p}{2}$	$\frac{M_y}{2}$
2	$\frac{F_z}{2} - \frac{M_r}{L}$	$\frac{F_Y}{2}$	$\frac{M_p}{2}$	$\frac{M_y}{2}$

Remark: The moment loads in each direction M_r, M_p, M_y can be obtained by the following equation.

$$M_r = F_Y Z + F_Z Y$$
$$M_p = F_X\ (Z - Z_d) + F_Z X$$
$$M_y = -F_X\ (Y - Y_d) + F_Y X$$

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

Table 6.4 Two track rails and two slide units



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	$\frac{F_z}{4}-\frac{M_r}{2L}-\frac{M_p}{2\ell}$	$\frac{F_y}{4}-\frac{M_y}{2\ell}$

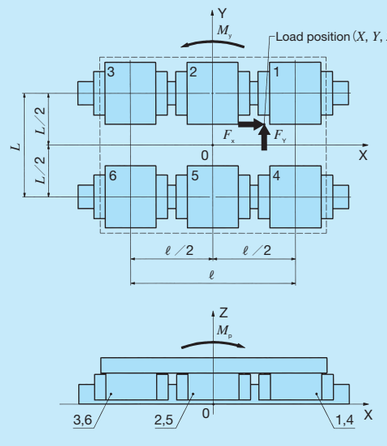
Remark: The moment loads in each direction M_r, M_p, M_y can be obtained by the following equation.

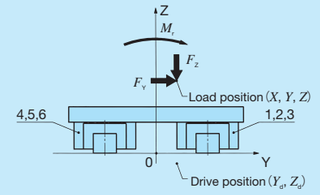
$M_r=F_yZ+F_zY$

$M_p=F_x\ (Z-Z_d)+F_zX$

$M_y=-F_x\ (Y-Y_d)+F_yX$

Table 6.5 Two track rails and three slide units





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, M_y can be obtained by the following equation.

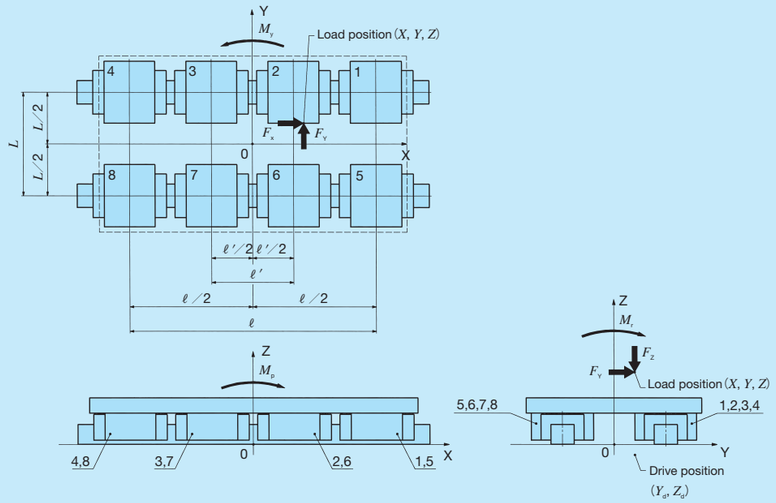
$M_r=F_yZ+F_zY$

$M_p=F_x\ (Z-Z_d)+F_zX$

$M_y=-F_x\ (Y-Y_d)+F_yX$

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

Table 6.6 Two track rails and four slide units



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, M_y can be obtained by the following equation.

$M_r=F_Y Z+F_Z Y$

$M_p=F_X\ (Z-Z_d)+F_Z X$

$M_y=-F_X\ (Y-Y_d)+F_Y X$

Mean Equivalent Load for Fluctuating Load

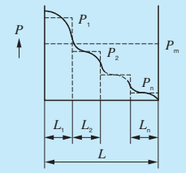
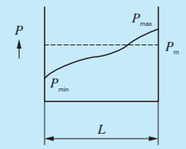
When the load on the Linear Way and Linear Roller Way varies, instead of dynamic equivalent load P, the mean equivalent load P_m is used for calculating formula of life.
The mean equivalent load is a load converted to give life equal to that for fluctuating load. It is obtained by the following formula:

$$P_m=\sqrt[p]{\frac{1}{L}\int_0^L P_n^{\,p}\,dL} \quad \cdots\cdots (11)$$

where, P_m : Mean equivalent load, N
L : Total traveling distance, m
P_n : Fluctuating load, N
p : Exponent (ball type: 3, roller type: 10/3)

Table 7 gives calculation examples of the mean equivalent load for typical fluctuating loads.

Table 7 Mean equivalent load for fluctuating load

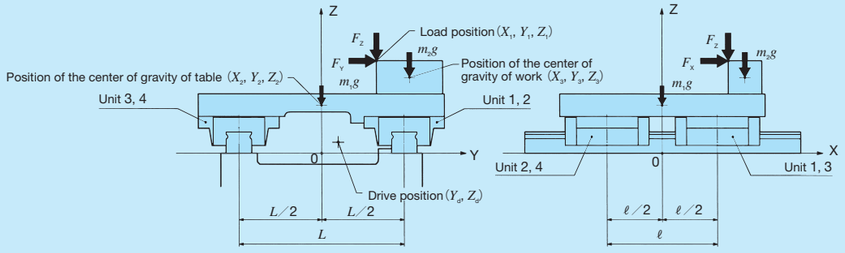
Example		Mean equivalent load
① Stepwise changing load		$P_m=\sqrt[p]{\frac{1}{L}(P_1^{\,p}L_1+P_2^{\,p}L_2+\ldots+P_n^{\,p}L_n)}$ where, L_1 : Total traveling distance receiving the load P_1, m L_2 : Total traveling distance receiving the load P_2, m L_n : Total traveling distance receiving the load 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

Linear Way Model·····ME 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 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 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 in the case of Example 1 is calculated. Load factor f_W is assumed to be 1.5.

❶Calculation of load on the slide unit

Due to the applied load and the table weight, moment load occurs around each coordinate axis of the Linear Way as shown below.

$$M_r = \Sigma (F_Y Z) + \Sigma (F_Z Y) = F_{Y1} Z_1 + F_{Z1} Y_1 + m_1 g Y_2 + m_2 g Y_3$$
$$= 2000 \times 83 + 1000 \times 50 + 10 \times 9.8 \times 0 + 10 \times 9.8 \times 80 \fallingdotseq 224000$$

$$M_p = \Sigma \{F_X (Z - Z_d)\} + \Sigma (F_Z X) = F_{X1} (Z_1 - Z_d) + F_{Z1} X_1 + m_1 g X_2 + m_2 g X_3$$
$$= 1000 \times (83 - 10) + 1000 \times 60 + 10 \times 9.8 \times 0 + 10 \times 9.8 \times 75 \fallingdotseq 140000$$

$$M_y = -\Sigma \{F_X (Y - Y_d)\} + \Sigma (F_Y X) = -F_{X1} (Y_1 - Y_d) + F_{Y1} X_1$$
$$= -1000 \times (50 - 150) + 2000 \times 60 = 220000$$

where, M_r: Moment load in the rolling direction, N · mm
M_p: Moment load in the pitching direction, N · mm
M_y: Moment load in the yawing direction, N · mm

The loads applied on each slide unit are calculated according to Table 6.4 on page Ⅲ−11.

$$F_{r1} = \frac{\Sigma F_z}{4} + \frac{M_r}{2L} + \frac{M_p}{2\ell} = \frac{F_{Z1} + m_1 g + m_2 g}{4} + \frac{M_r}{2L} + \frac{M_p}{2\ell}$$
$$= \frac{1000 + 10 \times 9.8 + 10 \times 9.8}{4} + \frac{224000}{2 \times 150} + \frac{140000}{2 \times 100}$$
$$\fallingdotseq 1750$$

$$F_{r2} = \frac{\Sigma F_z}{4} + \frac{M_r}{2L} - \frac{M_p}{2\ell} = \frac{F_{Z1} + m_1 g + m_2 g}{4} + \frac{M_r}{2L} - \frac{M_p}{2\ell} \fallingdotseq 346$$

$$F_{r3} = \frac{\Sigma F_z}{4} - \frac{M_r}{2L} + \frac{M_p}{2\ell} = \frac{F_{Z1} + m_1 g + m_2 g}{4} - \frac{M_r}{2L} + \frac{M_p}{2\ell} \fallingdotseq 252$$

$$F_{r4} = \frac{\Sigma F_z}{4} - \frac{M_r}{2L} - \frac{M_p}{2\ell} = \frac{F_{Z1} + m_1 g + m_2 g}{4} - \frac{M_r}{2L} - \frac{M_p}{2\ell}$$
$$\fallingdotseq -1150$$

$$F_{a1} = F_{a3} = \frac{\Sigma F_Y}{4} + \frac{M_y}{2\ell} = \frac{F_{Y1}}{4} + \frac{M_y}{2\ell}$$
$$= \frac{2000}{4} + \frac{220000}{2 \times 100} = 1600$$

$$F_{a2} = F_{a4} = \frac{\Sigma F_Y}{4} - \frac{M_y}{2\ell} = \frac{F_{Y1}}{4} - \frac{M_y}{2\ell} = -600$$

❷Calculating of rating life

The upward / downward load and lateral load are converted by formula (7) and (8) on page Ⅲ−7.

$$F_{re1} = k_r \,|\, F_{r1} \,| = 1 \times 1750 = 1750$$
$$F_{re2} = k_r \,|\, F_{r2} \,| = 1 \times 346 = 346$$
$$F_{re3} = k_r \,|\, F_{r3} \,| = 1 \times 252 = 252$$
$$F_{re4} = k_r \,|\, F_{r4} \,| = 1 \times 1150 = 1150$$
$$F_{ae1} = k_a \,|\, F_{a1} \,| = 1 \times 1600 = 1600$$
$$F_{ae2} = k_a \,|\, F_{a2} \,| = 1 \times 600 = 600$$
$$F_{ae3} = k_a \,|\, F_{a3} \,| = 1 \times 1600 = 1600$$
$$F_{ae4} = k_a \,|\, F_{a4} \,| = 1 \times 600 = 600$$

where, k_r, k_a: Conversion factors for load direction (See Table 3 on page Ⅲ−7.)

The dynamic equivalent load is calculated by formula (9) on page Ⅲ−7.

$$P_1 = X \,|\, F_{re1} \,| + Y \,|\, F_{ae1} \,| = 1 \times 1750 + 0.6 \times 1600 = 2710$$
$$P_2 = X \,|\, F_{re2} \,| + Y \,|\, F_{ae2} \,| = 0.6 \times 346 + 1 \times 600 \fallingdotseq 808$$
$$P_3 = X \,|\, F_{re3} \,| + Y \,|\, F_{ae3} \,| = 0.6 \times 252 + 1 \times 1600 \fallingdotseq 1750$$
$$P_4 = X \,|\, F_{re4} \,| + Y \,|\, F_{ae4} \,| = 1 \times 1150 + 0.6 \times 600 = 1510$$

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 (1) given on the page Ⅲ−6 considering the load factor f_w (see Table 1 on page Ⅲ−6).

$$L_1 = 50 \left(\frac{C}{f_W P_1} \right)^3 = 50 \times \left(\frac{18100}{1.5 \times 2710} \right)^3 \fallingdotseq 4410$$

$$L_{h1} = \frac{10^6 L_1}{2 S n_1 \times 60} = \frac{10^6 \times 4410}{2 \times 100 \times 5 \times 60} \fallingdotseq 73500$$

As the result of calculation above, the basic rating life is about 73,500 hours.

❸Calculating of static safety factor

The static equivalent load is calculated from the upward / downward load and lateral load by formula (10) on page Ⅲ−8.

$$P_{01} = k_{0r} \,|\, F_{r1} \,| + k_{0a} \,|\, F_{a1} \,| = 1 \times 1750 + 1 \times 1600 = 3350$$
$$P_{02} = k_{0r} \,|\, F_{r2} \,| + k_{0a} \,|\, F_{a2} \,| = 1 \times 346 + 1 \times 600 = 946$$
$$P_{03} = k_{0r} \,|\, F_{r3} \,| + k_{0a} \,|\, F_{a3} \,| = 1 \times 252 + 1 \times 1600 = 1852$$
$$P_{04} = k_{0r} \,|\, F_{r4} \,| + k_{0a} \,|\, F_{a4} \,| = 1 \times 1150 + 1 \times 600 = 1750$$

where, k_{0r}, k_{0a}: Conversion factors for load direction (See Table 5 on page Ⅲ−8.)

The static safety factor of slide unit 1 receiving the largest static equivalent load is calculated. The static safety factor is calculated by formula (5) on page Ⅲ−6.

$$f_{s1} = \frac{C_0}{P_{01}} = \frac{21100}{3350} \fallingdotseq 6.3$$

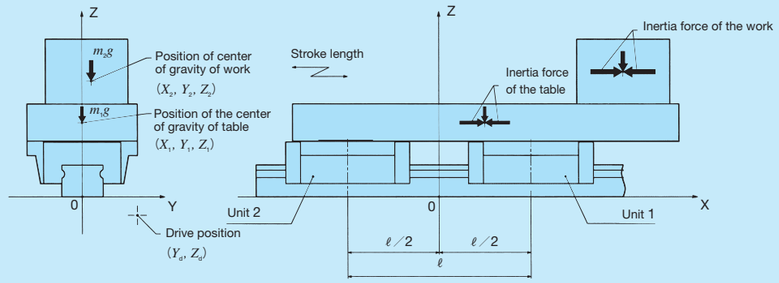
As the result of calculation above, the static safety factor is about 6.3.

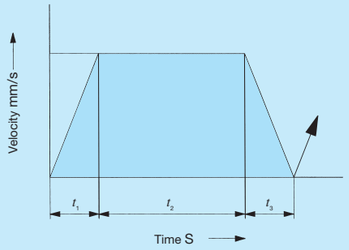
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Example 2

Linear Way Model·····MH 45 C2 R1050 H
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 center of gravity of work···· X_2 = 200 mm
···· Y_2 = 10 mm
···· Z_2 = 130 mm

Distance between slide units··· ℓ = 200 mm
Stroke length····· S = 500 mm
Number of strokes per minute··· n_1 = 6 cpm
Maximum traveling velocity···· V = 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 in the case of Example 2 is calculated. Load factor f_W is assumed to be 1.5.

❶Calculation of load on the slide unit

Due to the applied load and the table mass and inertia force, moment load occurs around each coordinate axis of the Linear Way as shown below.

〔During acceleration at the start of motion〕

$$M_r=\Sigma\ (F_YZ)+\Sigma\ (F_ZY)=m_1gY_1+m_2gY_2=100\times9.8\times0+1000\times9.8\times10\fallingdotseq98000$$

$$M_p=\Sigma\ \{F_X\ (Z-Z_d)\}+\Sigma\ (F_ZX)=m_1\frac{V_{max}}{1000\times t_1}\ (Z_1-Z_d)+m_2\frac{V_{max}}{1000\times t_1}\ (Z_2-Z_d)+m_1gX_1+m_2gX_2=100\times\frac{100}{1000\times0.1}\times\ (80+20)+1000\times\frac{100}{1000\times0.1}\times\ (130+20)+100\times9.8\times50+1000\times9.8\times200\fallingdotseq2169000$$

$$M_y=-\Sigma\ \{F_X\ (Y-Y_d)\}+\Sigma\ (F_YX)=-m_1\frac{V_{max}}{1000\times t_1}\ (Y_1-Y_d)-m_2\frac{V_{max}}{1000\times t_1}\ (Y_2-Y_d)=-100\times\frac{100}{1000\times0.1}\times\ (0-60)-1000\times\frac{100}{1000\times0.1}\times\ (10-60)\fallingdotseq56000$$

〔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〕

$$M_r=m_1gY_1+m_2gY_2\fallingdotseq98000$$

$$M_p=-m_1\frac{V_{max}}{1000\times t_3}(Z_1-Z_d)-m_2\frac{V_{max}}{1000\times t_3}(Z_2-Z_d)+m_1gX_1+m_2gX_2\fallingdotseq1850000$$

$$M_y=m_1\frac{V_{max}}{1000\times t_3}(Y_1-Y_d)+m_2\frac{V_{max}}{1000\times t_3}(Y_2-Y_d)\fallingdotseq-56000$$

where, M_r: Moment load in the rolling direction, N · mm
M_p: Moment load in the pitching direction, N · mm
M_y: Moment load in the yawing direction, N · mm

The loads applied on each slide unit are calculated according to Table 6.2 on page Ⅲ−9.

〔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〕

$$F_{r1}=\frac{100\times9.8+1000\times9.8}{2}+\frac{1850000}{200}\fallingdotseq14600$$

$$F_{r2}\fallingdotseq-3860$$

$$F_{a1}\fallingdotseq-280$$

$$F_{a2}\fallingdotseq280$$

$$M_{01}=M_{02}=49000$$

❷Calculating of rating life

The upward / downward load, lateral load and the moment load along T_0 direction are calculated by the formula (7) and (8) on page Ⅲ−7, and the dynamic equivalent load is calculated by formula (9).

〔During acceleration at the start of motion〕

$$F_{re1}=k_r\,|\,F_{r1}\,|\,+\frac{C_0}{T_0}|M_{01}\,|\,=1\times16200+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq18600$$

$$F_{re2}=1\times5460+\frac{80200}{1610}\times\frac{49000}{7900}\fallingdotseq7900$$

$$F_{ae1}=k_a\,|\,F_{a1}\,|\,=1.28\times280\fallingdotseq358$$

$$F_{ae2}=1.28\times280\fallingdotseq358$$

$$P_{1a}=X\,F_{re1}+Y\,F_{ae1}=1\times18600+0.6\times358\fallingdotseq18800$$

$$P_{2a}=X\,F_{re2}+Y\,F_{ae2}=1\times7900+0.6\times358\fallingdotseq8110$$

〔During constant speed motion〕

$$F_{re1}=1\times15400+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq17800$$

$$F_{re2}=1\times4660+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq7100$$

$$F_{ae1}=0$$

$$F_{ae2}=0$$

$$P_{1b}=17800$$

$$P_{2b}=7100$$

〔During deceleration at the end of motion〕

$$F_{re1}=1\times14600+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq17000$$

$$F_{re2}=1\times3860+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq6300$$

$$F_{ae1}=1.28\times280\fallingdotseq358$$

$$F_{ae2}=1.28\times280\fallingdotseq358$$

$$P_{1c}=1\times17000+0.6\times358\fallingdotseq17200$$

$$P_{2c}=1\times6300+0.6\times358\fallingdotseq6510$$

Because the dynamic equivalent load changes stepwise along the traveling distance, the mean equivalent load is calculated from ① in Table 7 on page Ⅲ−14.

$$P_{m1}=\sqrt[3]{\frac{1}{S}\left(P_{1a}{}^3\frac{V_{max}\,t_1}{2}+P_{1b}{}^3V_{max}t_2+P_{1c}{}^3\frac{V_{max}\,t_3}{2}\right)}=\left\{\frac{1}{500}\times\left(18800^3\times\frac{100\times0.1}{2}+17800^3\times100\times4.9+17200^3\times\frac{100\times0.1}{2}\right)\right\}^{1/3}\fallingdotseq17800$$

$$P_{m2}=\left\{\frac{1}{500}\times\left(8110^3\times\frac{100\times0.1}{2}+7100^3\times100\times4.9+6510^3\times\frac{100\times0.1}{2}\right)\right\}^{1/3}\fallingdotseq7110$$

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 (1) given on the page Ⅲ−6 considering the load factor f_w (see Table 1 on page Ⅲ−6).

$$L_1=50\left(\frac{C}{f_WP_{m1}}\right)^3=50\left(\frac{74600}{1.5\times17800}\right)^3\fallingdotseq1090$$

$$L_{h1}=\frac{10^6L_1}{2Sn_1\times60}=\frac{10^6\times1090}{2\times500\times6\times60}\fallingdotseq3030$$

As the result of calculation above, the basic rating life is about 3,030 hours.

❸Calculating of static safety factor

The static equivalent load is calculated from the upward / downward load and lateral load by formula (10) on page Ⅲ−8.

〔During acceleration at the start of motion〕

$$P_{01a}=k_{0r}\,|\,F_{r1}\,|\,+k_{0a}\,|\,F_{a1}\,|\,+\frac{C_0}{T_0}|M_{01}\,|\,=1\times16200+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq19000$$

$$P_{02a}=k_{0r}\,|\,F_{r2}\,|\,+k_{0a}\,|\,F_{a2}\,|\,+\frac{C_0}{T_0}|M_{02}\,|\,=1.19\times5460+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq9300$$

〔During constant speed motion〕

$$P_{01b}=1\times15400+1.28\times0+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq19000$$

$$P_{02b}=1.19\times4660+1.28\times0+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq7990$$

〔During deceleration at the end of motion〕

$$P_{01c}=1\times14600+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq17400$$

$$P_{02c}=1.19\times3860+1.28\times280+\frac{80200}{1610}\times\frac{49000}{1000}\fallingdotseq7390$$

The static safety factor of slide unit 1 during acceleration at the start of motion receiving the largest static equivalent load is calculated. The static safety factor is calculated by formula (5) on page Ⅲ−6.

$$f_s=\frac{C_0}{P_{01a}}=\frac{80200}{19000}\fallingdotseq4.2$$

As the result of calculation above, 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 Linear Way and Linear Roller Way.

The outline of applicable accuracy classes is shown in Table 8. For details, see an explanation of each series.

Table 8 Accuracy classes and series

Series name \ Class (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 MLV	–	○	–	–	–
C-Lube Linear Way MV	○	○	○	○	–
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

Objectives of preload

In some cases, the linear motion rolling guide is used with clearance given to the linear motion rolling guide when light motion with small load is required. However, for some applications, it may be used with play in the guiding mechanism removed or with preload to increase rigidity.

Preload is applied to the contact parts of a raceway and rolling elements with internal stress generated in advance. When a external load is applied on the preloaded linear motion rolling guide, shock absorbing with this internal stress makes elastic deformation smaller, and its rigidity is increased. (See Fig. 3)

Preload setting

Preload amount is determined by considering the characteristics of the machines or equipments on which the linear motion rolling guide is mounted and the nature of load acting on the linear motion 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 linear motion rolling guides are required to have very high rigidity to withstand vibration or fluctuating load, a larger preload may be applied.

For applicable preload amount, see Table 9. For details, see an explanation of each series.

Precaution for preload selection

Even when high rigidity must be required, excessive preload should be avoided, because it will produce an excessive stress between rolling elements and raceways, and eventually result in short life of linear motion rolling guides. It is important to apply a proper amount of preload, considering the operational conditions. When using with a large preload, contact IKO.

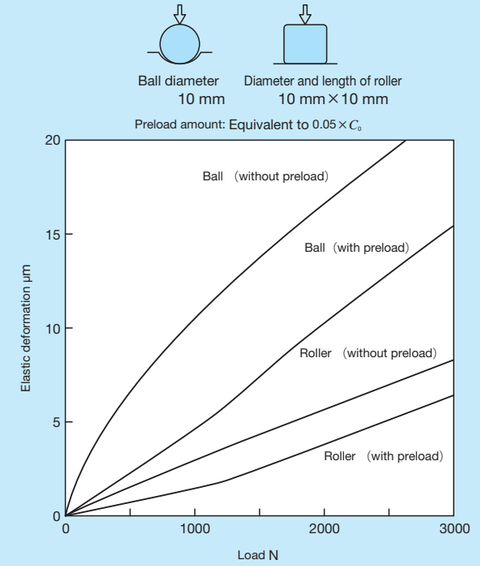


Fig. 3 Preload and elastic deformation behavior

Table 9 Series and preload amount

Series name \ Preload (preload 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 MLV(1)	–	–	–	–	–	–
C-Lube Linear Way MV	○	–	○	○	–	–
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	–	–	○	○	○	○

Note (1) Preload is adjusted to have subtle clearance or minimal amount of preload.

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

Friction

Friction of linear motion rolling guide

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 frictional resistance 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 characteristics to motion commands and high accuracy positioning can be achieved.

Friction coefficient

The frictional resistance of linear motion rolling guides varies with their model, applied load, velocity and characteristics of lubricant. Generally, lubricant or seals are major factors in determining the frictional resistance in light load or high-speed operation, while the amount of load is the major factor in heavy load or low speed operation. The frictional resistance of linear motion rolling guides depends on various factors, but generally the following formula is used.

$$F=\mu P \cdots\cdots (11)$$

where, F : Frictional resistance, N
μ : Dynamic friction coefficient
P : Applied load, N

For sealed guides, seal resistance is added to the above value, but this resistance varies greatly depending on the interference amount of seal lip and lubrication conditions.
Where the lubrication and mounting condition are correct and the load is moderate, the friction coefficients of Linear Way and Linear Roller Way in operation are within the range shown in Table 10. Generally, friction coefficient is large under small load.

Table 10 Friction coefficient

Series name	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 seal.

Lubrication

Objectives of lubrication

The objectives of applying lubricant for linear motion rolling guides is to keep raceways, rolling elements, etc. in a linear motion rolling guide from metal contact, and thereby reduce friction and wear preventing heat generation and seizure. When an adequate oil film is formed at the rolling contact area between the raceways and rolling elements, the contact stress due to load can be reduced. To manage the formation of adequate oil film is important for ensuring the reliability of linear motion rolling mechanism.

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 model, load and velocity 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 lubrication oil is needed and replenishment interval is longer, so maintenance can be greatly reduced. Grease and oil are the two most commonly used lubricants for linear motion rolling guides.

Grease lubrication

For 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 generating 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 that is suitable for the operating conditions of linear motion rolling guide and achieves satisfactory lubrication performance at the same time.

Table 11 Pre-packed grease list

Series name	Pre-packed grease
C-Lube Linear Way ML Linear Way L	MULTEMP PS No.2 [KYODO YUSHI CO., LTD.]
C-Lube Linear Way MLV	
C-Lube Linear Way MV	Alvania EP Grease 2 [SHOWA SHELL SEKIYU K. K.]
C-Lube Linear Way ME Linear Way E	
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 CO., LTD.]
C-Lube Linear Roller Way Super MX Linear Roller Way Super X	Alvania EP Grease 2 [SHOWA SHELL SEKIYU K. K.]
Linear Roller Way X	
Linear Way Module	

Notes (1) MULTEMP PS No.2 is pre-packed in size 8 to 12 series.
(2) Alvania EP Grease 2 is pre-packed in size 40 to 130 series.

Grease replenishment interval

The quality of any grease will gradually deteriorate as operating time passes. Therefore, periodic replenishment is necessary. Grease replenishment interval varies depending on the operating conditions. A six month interval is generally recommended, and if the machine operation consists of reciprocating motions with many cycles and long strokes, replenishment every three month is recommended.
In addition, linear motion rolling guides in which the lubrication part "C-Lube" is built deliver long-term maintenance free performance. This eliminates the need for lubrication mechanism and workload which used to be necessary for linear motion rolling guides and significantly reduces maintenance cost.

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 to outside of the linear motion 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 additional running-in is performed for 10 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 type of grease

Mixing different types of grease 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 trouble due to chemical changes of additives. Old grease should therefore be removed thoroughly before filling with new grease.

Lubrication part "C-Lube"

C-Lube is a porous resin with molding formed fine resin powder. It is a lubrication part impregnated with a large amount of lubrication oil in its open pores by capillary inside.
Lubrication oil is supplied directly to balls (steel balls) or rollers (cylindrical rollers), not to the track rail. When the balls or rollers have contact with C-Lube built in the slide unit, lubrication oil is supplied to the surface of the balls or rollers. As the balls or rollers circulate, the lubricant is distributed to the loading area along the track rail. This results in adequate lubrication oil being properly maintained in the loading area and lubrication performance will last for a long time.
The surface of C-Lube is always covered with the lubrication oil. Lubrication oil is continuously supplied to the surface of balls or rollers by surface tension in the contact of C-Lube surface and balls or rollers.

Oil lubrication

For oil lubrication, heavy load requires high oil viscosity and high velocity requires low oil viscosity. Generally, for linear motion rolling guides operating under heavy load, lubrication oil with a viscosity of about 68 mm^2/s is used. For linear motion rolling guides under light load at high-speed operation, lubrication oil with a viscosity of about 13 mm^2/s is used.

Table 12 Grease brands used in linear motion rolling guide

Brand		Base oil	Thickener	Range of operating temperature (2) ℃	Usage
Alvania EP Grease 2	[SHOWA SHELL SEKIYU K. K.]	Mineral oil	Lithium	-20～110	General application with extreme-pressure additive
Alvania Grease S2	[SHOWA SHELL SEKIYU K. K.]	Mineral oil	Lithium	-25～120	General application
MULTEMP PS No.2	[KYODO YUSHI CO., LTD.]	Synthetic oil, Mineral oil	Lithium	-50～130	General application
IKO Low Dust-Generation Grease for Clean Environment CG2	[NIPPON THOMPSON CO., LTD.]	Synthetic oil	Urea	-40～200	For clean environment Long life
IKO Low Dust-Generation Grease for Clean Environment CGL	[NIPPON THOMPSON CO., LTD.]	Synthetic oil, Mineral oil	Lithium / Calcium	-30～120	For clean environment Low sliding
DEMNUM™ Grease L-200 (1)	[DAIKIN INDUSTRIES, LTD.]	Synthetic oil	Ethylene tetra-fluoride	-60～300	For clean environment
FOMBLIN® Y-VAC3 (1)	[SOLVAY SOLEXIS]	Synthetic oil	Ethylene tetra-fluoride	-20～250	For vacuum
IKO Anti-Fretting Corrosion Grease AF2	[NIPPON THOMPSON CO., LTD.]	Synthetic oil	Urea	-50～170	Fretting-proof
6459 Grease N	[SHOWA SHELL SEKIYU K. K.]	Mineral oil	Poly-urea	–	Fretting-proof

Notes (1) Set replenishment intervals to short.
(2) The ranges of operating temperature are quoted from the grease manufacturer's cataloged values, but do not guarantee regular use under high temperature environment.
Remarks 1. FOMBLIN® is a registered trademark of SOLVAY SOLEXIS.
2. Check with the chosen grease manufacturer's catalog before use.
For grease for use other than listed, contact IKO.

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

Miniature greaser

The miniature greaser is specially prepared for grease replenishment for Linear Way and Linear Roller Way with an oil hole. Table 13 shows types of grease and specifications of miniature greasers.

Table 13 Grease type and miniature greaser

Identification number	Grease name	Amount	Outer diameter of grease feed needle
MG10 / MT2	MULTEMP PS No.2 [KYODO YUSHI CO., LTD.]	10 ml	ϕ1 mm
MG10 / CG2	IKO Low Dust-Generation Grease for Clean Environment CG2		
MG2.5 / EP2	Alvania EP Grease 2 [SHOWA SHELL SEKIYU K. K.]	2.5 ml	
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 14.1 and 14.2 show the specifications of grease nipples and applicable types of supply nozzles, and Table 15 shows the specifications of supply nozzles.

Table 14.1 Grease nipple and applicable supply nozzle type

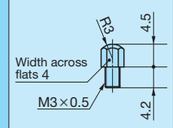
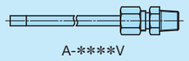
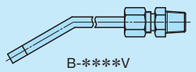
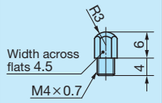
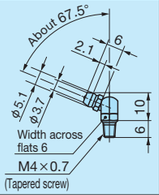
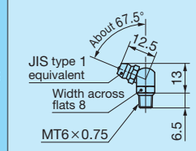
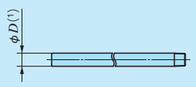
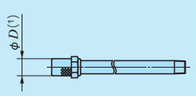
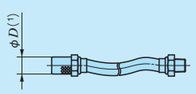
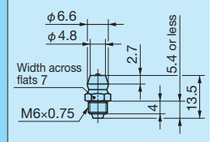
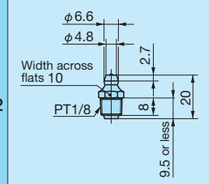
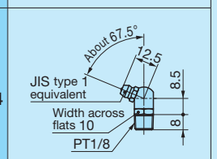
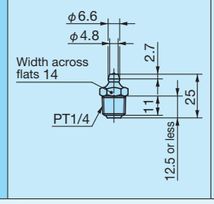
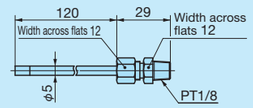
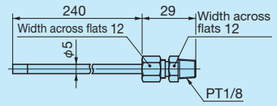
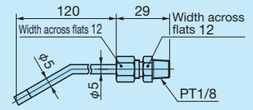
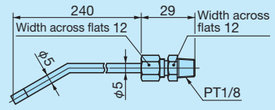
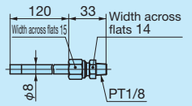
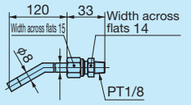
Grease nipple		Applicable supply nozzle type	
Type	Dimensions and shape	Type	Shape
A-M3		A-5120V A-5240V B-5120V B-5240V	Straight type  A-****V Straight type with angle  B-****V
A-M4			
B-M4		A-8120V B-8120V	

Table 14.2 Grease nipple and applicable supply nozzle type

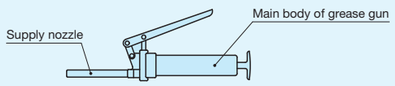
Grease nipple		Applicable supply nozzle type	
Type	Dimensions and shape	Type	Shape
B-M6		Products available on the market	Straight type  Chuck type  Hose type 
JIS type 1			
JIS type 2			
JIS type 4			
A-PT 1/4			

Note (1) For straight type, chuck type and hose type supply nozzles available on the market, it is recommended to use one with an outer diameter D of 13 mm or less.

Table 15 Types and dimensions of supply nozzle

Type	Dimensions and shape
A-5120V	
A-5240V	
B-5120V	
B-5240V	
A-8120V	
B-8120V	

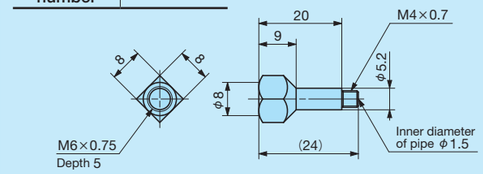
Remark: The supply nozzles shown in the table can be mounted on the main body of a common grease gun available on the market shown below. If needed, specify the supply nozzle type and place an order to IKO.



Piping joint

When applying centralized grease or oil lubrication, detach the grease nipple or plug from the slide unit, and replace them with piping joints, which are prepared for various female threads for piping. Use them after confirming the dimensions of the piping joints and H_3 dimensions in the dimensions table of each models, because the top face of some piping joints is at the same or higher level than the top face of slide unit. Fig. 4.1 and 4.2 and Tables 16.1, 16.2, 16.3, and 16.4 show identification number and dimensions of piping joints. Note that some of them are not applicable for the slide units of special specifications. Piping joints can be mounted on Linear Way and Linear Roller Way prior to delivery upon request. If needed, please contact IKO.

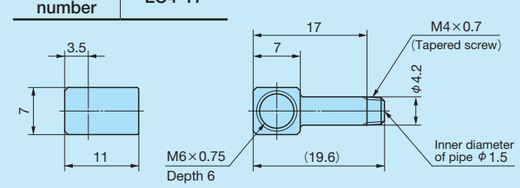
Identification number	SC4-20S



Remark: Not applicable to MX, LRX series.

Fig. 4.1 Piping joint for M4×0.7 (Straight type)

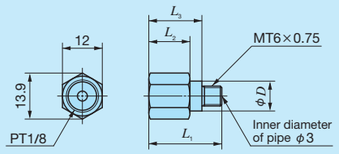
Identification number	LC4-17



Remark: It is recommended to mount the straight type piping joint in Table 16.1 for female threads (M6×0.75).

Fig. 4.2 Piping joint for M4×0.7 (L type)

Table 16.1 Piping joint for M6×0.75 (Straight type)

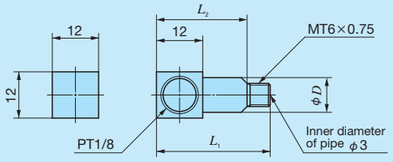


unit: mm

Identification number	L_1	L_2	L_3	D
SC6-16	22	12.4	16	9
SC6-22S	28	12	22	6
SC6-25S	31	12	25	6

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

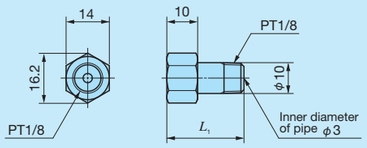
Table 16.2 Piping joint for M6×0.75 (L type)



unit: mm

Identification 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

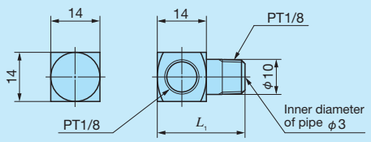
Table 16.3 Piping joint for PT1/8 (Straight type)



unit: mm

Identification number	L_1
SC1/8-19S	25
SC1/8-34S	40

Table 16.4 Piping joint for PT1/8 (L type)



unit: mm

Identification 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 substances. Select an effective sealing or dust-protection device to withstand any operating conditions that might be imposed.

Method of dust protection

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. Also caps and a rail cover sheet to cover the mounting hole of track rail (Fig. 5) and track rail mounting from bottom with no mounting hole on the upper surface (Fig. 6) will further increase the reliability of dust protection.
However, if large amount of contaminant or dust are floating, or if large particles of foreign substances such as chips or sand may adhere to the raceway, complete dust protection becomes difficult. In this case, it is recommended to cover the whole unit with bolts (Fig. 7), telescope type shield, etc.
When rail cover sheet or track rails mounting from bottom specification is needed, please contact **IKO**.

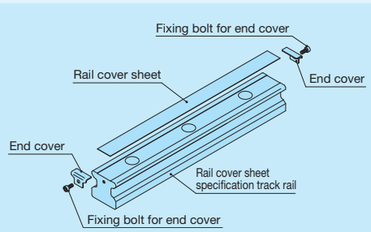


Fig. 5 Rail cover sheet

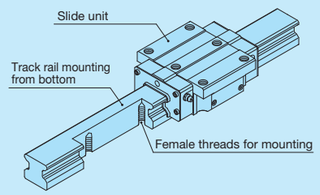


Fig. 6 Track rail mounting from bottom

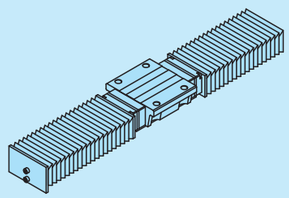


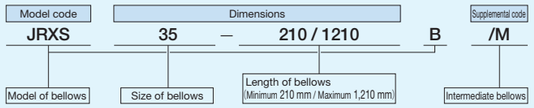
Fig. 7 Bellows

Specific bellows

The specific bellows are manufactured to match the dimensions of Linear Way and Linear Roller Way for easy mounting and excellent dust protection.
If special bellows to be used in an upside-down position or those made of heat-resistant material are needed, please contact **IKO**.

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 specific 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 : Stroke length, mm
ℓs_{max} : Maximum length of one pleat (See Tables 18.1 and 18.2)
ℓs_{min} : Minimum length of one pleat (See Tables 18.1 and 18.2)

$$L_{min}=ns\times \ell s_{min}+m\times 5+10$$
$$L_{max}=S+L_{min}$$

where, L_{min} : Minimum length of bellows, mm
L_{max} : Maximum length of bellows, mm
m : Number of internal guide plates (See Table 17)

Table 17 Number of internal guide plates for bellows

Model	P dimensions of specific bellows (1) mm Above	Below	Number of internal guide plates m
JEF JRES	—	35	$m=\frac{ns}{7}-1$
JES JHS JFS JRXS···B JFFS	—	22	$m=\frac{ns}{16}$ when $ns\leqq 20$, then $m=0$
	22	25	$m=\frac{ns}{12}$ when $ns\leqq 18$, then $m=0$
	25	35	$m=\frac{ns}{8}$

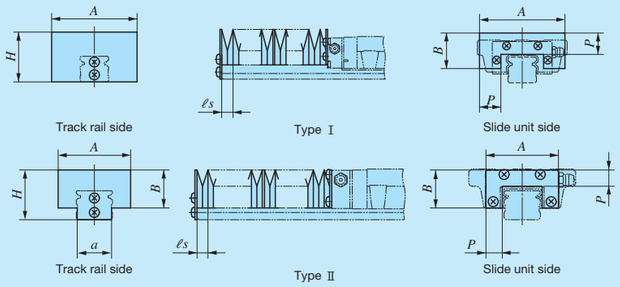
Note (1) For P dimensions, see Table 18.1 and Table 18.2.
Remark: In calculating the number of internal guide plates m, raise the decimal fractions for JEF and JRES and omit the decimal fractions for others.

Intermediate bellows

Since different type of mounting plate is used for mounting bellows between slide units. add 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. If needed, please contact **IKO**.

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

Table 18.1 Dimensions of bellows and applicable models

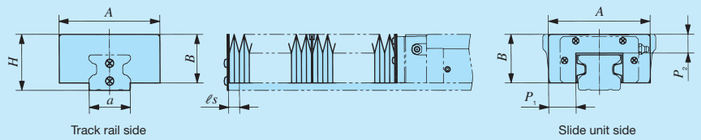


unit: mm

Series name	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 to horizontal mounting type LWHY.
(2) The height of bellows may become higher than the height H of dimensions of assembly of slide units. Check H dimensions of each series in dimension table.
(3) The width of bellows may become larger than the W_2 dimensions of slide units. Check with W_2 dimensions of each series in dimension table.

Table 18.2 Dimensions of bellows and applicable models



unit: mm

Series name	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
Linear Roller Way X	25	JRXS 25···B	40	60	22	34	15	12	2	10
	35	JRXS 35···B	48	88	34	41.5	24	15	2	14
	45	JRXS 45···B	60	108	44	52	29	20	2	21
	55	JRXS 55···B	70	122	54	61	31	22	2	23.5
	75	JRXS 75···B	90	160	74	80	40	30	2	36

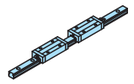
Notes (1) The height of bellows may become higher than the height H of dimensions of assembly of slide units. Check H dimensions of each series in dimension table.
(2) The width of bellows may become larger than the W_2 dimensions of slide units. Check W_2 dimensions of each series in dimension table.

Identification number and quantity for ordering

To order a set of Linear Way and Linear Roller Way, please specify the number of sets based on the number of track rails. For slide units of the interchangeable specification or single track rails, please specify the number of units.

Non-interchangeable specification

Assembled set



(When 1 set is needed)

Example of identification number indication

LWESG 25 C2 R640 SL T1 P /FU

Order quantity
1 set

Interchangeable specification

Single slide unit

(When 2 pieces are needed)

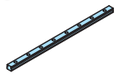
Example of identification number indication

LWESG 25 C1 SL T1 P SO /U

Only C1 is specified. Please specify S1 or S2.

Order quantity
2 pieces

Single track rail



(When 1 unit is needed)

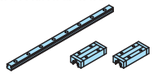
Example of identification number indication

LWE 25 R640 SL P SO /F

Please specify S1 or S2.

Order quantity
1 unit

Assembled set



(When 1 set is needed)

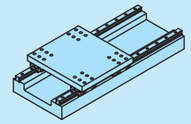
Example of identification number indication

LWESG 25 C2 R640 SL T1 P SO /FU

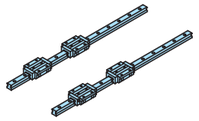
Please specify S1 or S2.

Order quantity
1 set

Specification with 1 multiple assembled sets as 1 assembled group (Special specification /W)



Linear Way and Linear Roller Way



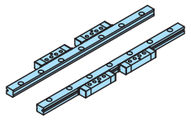
(When 2 sets as 1 assembled group is needed)

Example of identification number indication

LRX 45 C2 R1260 T3 SP /W2

Order quantity
2 sets

Linear Way Module



(When 2 sets as 1 assembled group is needed)

Example of identification number indication

LWM 2 M2 R480 P /W2

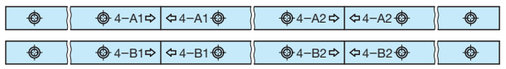
Order quantity
2 set

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

Special Specification

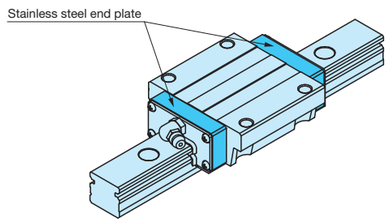
For Linear Way and Linear Roller Way, special specification described in pages Ⅲ−29 through Ⅲ−35 is available. There is limitation on applicable special specification. For details, see an explanation of each series.

Butt-jointing track rails /A



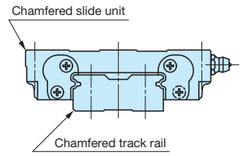
When the track rail of non-interchangeable specification is longer than the maximum length, two or more track rails should be butted in a linear motion direction. For length and number of track rails to butt, contact IKO.

Stainless steel end plate /BS



The standard synthetic resin end plates are replaced with stainless steel end plates. The total length of the slide unit remains unchanged.
In addition, for improvement of heat resistance, it is recommended to use "No end seal (supplemental code /N)" together.

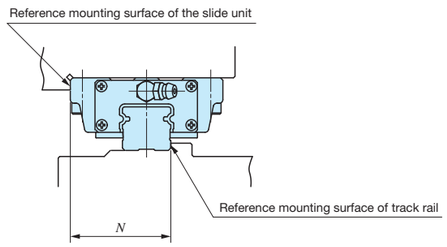
Chamfered reference surface /C /CC



Add chamfer to the reference mounting surface of the slide unit and track rail.

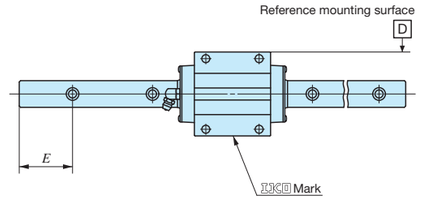
① /C Add chamfer to the reference mounting surface of the track rail.
② /CC Add chamfer to the reference mounting surface of the slide unit and track rail.

Opposite reference surfaces arrangement /D



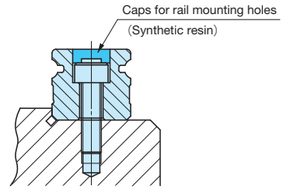
Reference mounting surface of the track rail should be the opposite of the standard position. Accuracy of N dimensions and parallelism during operation remain unchanged.

Specified rail mounting hole positions /E



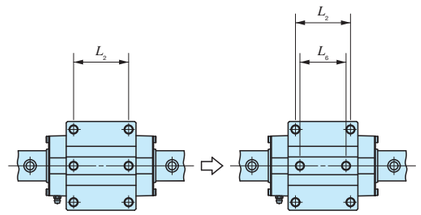
By specifying E dimensions from the mounting hole at the track rail left end to the left end surface when seen from IKO mark of the slide unit, specify the position of track rail mounting hole.
Specify the dimensions (in mm) after "/E".
In addition, E dimension range is limited. For details, please contact IKO.
For Linear Way H horizontal mounting type and Linear Way Module series, see an explanation of each series.

Caps for rail mounting holes /F



Dedicated caps for rail mounting holes are included. They close track rail mounting holes to improve sealing property in a motion direction. Contact IKO for aluminum alloy caps for rail mounting holes.

Changed pitch of slide unit middle mounting holes /GE

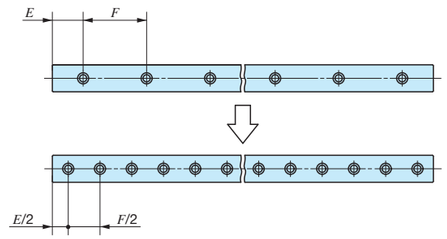


Change the dimension between mounting holes at the slide unit center.

Hybrid C-Lube Linear Way /HB

Change the material of rolling elements built into the slide unit to silicon nitride ceramics.

Half pitch mounting holes for track rail /HP



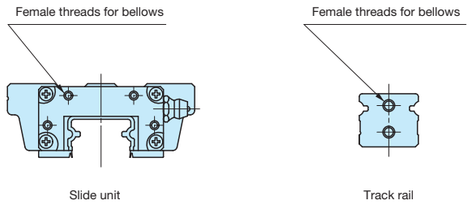
Set the pitch of track rail mounting holes to a half of the standard F dimension. The specification with bolts for track rail mounting holes are supplied with the required number of bolts.

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

Inspection sheet / I

Inspection sheet of H dimension, N dimension and parallelism during slide unit operation are appended in each set.

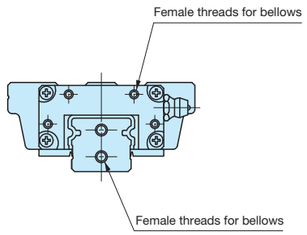
Female threads for bellows (Single unit) /J /JR /JL



For single slide unit or single track rail of the interchangeable specification, fit female threads for bellows.

① /J Fit female threads to both ends of the slide unit or track rail.
② /JR Fit female threads to a right end surface of the slide unit seen from IKO mark of the slide unit.
③ /JL Fit female threads to a left end surface of the slide unit seen from IKO mark of the slide unit.

Female threads for bellows (Assembled set) /J /JJ /JR /JS /JJS



For assembled set of the interchangeable specification or a non-interchangeable specification product, fit female threads for bellows to the slide unit and track rail.

① /J Fit female threads to both ends of the track rail and to slide unit end nearest to both ends of the track rail. (When only one slide unit is used, fit them to both ends of the track rail)
② /JJ When two or more slide units are used, fit female threads to both ends of the track rail and to both ends of each slide unit. (When only one slide unit is used, specify "/J")
③ /JR Fit female threads to both ends of the track rail.
④ /JS Fit female threads to slide unit end nearest to both ends of the track rail. (When only one slide unit is used, they are fitted to both ends of the track rail)
⑤ /JJS When two or more slide units are used, fit female threads to both ends of each slide unit. (When only one slide unit is used, specify "/JS")

Black chrome surface treatment /LC /LR /LCR

Acrylate resin coating is applied to improve the rust prevention property after black impregnated chrome surface treatment.

① /LC Perform casing treatment.
② /LR Perform track rail treatment.
③ /LCR Perform casing and track rail treatment.

Fluorine black chrome surface treatment /LFC /LFR /LFCR

Fluorinated resin coating is applied to improve the rust prevention property after black impregnated chrome surface treatment. In addition, this prevent foreign substances from sticking to the surface.

① /LFC Perform casing treatment.
② /LFR Perform track rail treatment.
③ /LFCR Perform casing and track rail treatment.

With track rail mounting bolt /MA

Recommended track rail mounting bolt is included. For bolt size, see the dimension table.

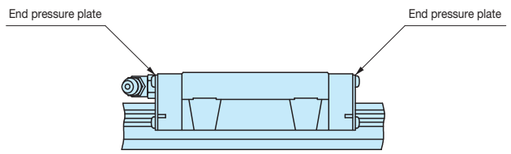
Without track rail mounting bolt /MN

Track rail mounting bolt is not included.

Changed size of mounting holes /M4

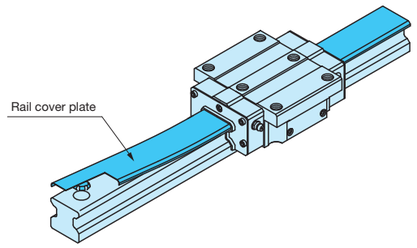
Set the M3 track rail mounting hole for ME15 to M4. For combination with track rail mounting bolt (supplemental code "/MA"), specify "/MA4".

No end seal /N



End seals at both ends of the slide unit can be replaced with end pressure plates, which do not come in contact with the track rail, to reduce frictional resistance. No under seal is attached.
This specification is not effective for dust protection.

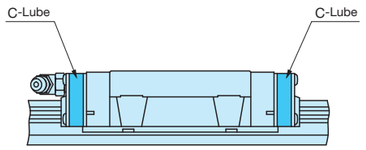
Rail cover plate for track rail /PS



Deliver with the track rail cover plate mounted. Covering the upper surface with U-shape stainless steel thin plate after assembly of the track rail improves the sealing property further. Change the end seal to dedicated one.
In addition, see the supplied rail cover plate instruction manual for mounting of rail cover plate.

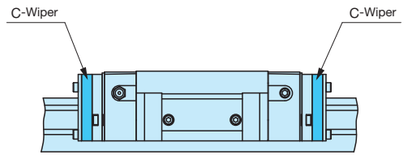
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

With C-Lube plate /Q



The C-Lube impregnated with lubricant is attached inside the end seal of the slide unit, so that the interval for reapplicating lubricant can be extended.

C-Wiper /RC /RCC



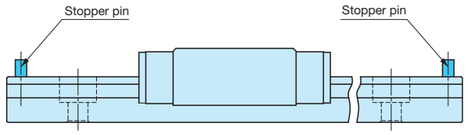
C-Wiper is mounted on the slide unit end to improve dust protection property.
In addition, the slide unit with C-Wiper is equipped with inner seal (/UR) and scraper (/Z) together.

① /RC Fit C-Wiper to slide unit end nearest to both ends of the track rail. When only one slide unit is used, fit them to both ends of the track rail.
② /RCC When two or more slide units are used, fit C-Wiper to both ends of each slide unit.

Special environment seal /RE

The standard end seal and under seal are replaced with seals for special environment that can be used at high temperatures.

Track rail with stopper pins /S

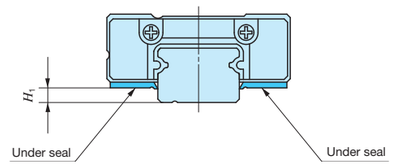


Mount stopper pins to both ends of the track rail as slide unit retainers.

Butt-jointing track rails (Interchangeable specification) /T

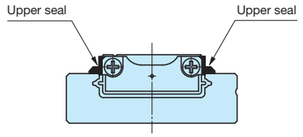
Finish the butted parts at both ends so as to set the interchangeable specification track rail in a linear motion direction. Butt the same interchangeable code for track rails. For non-interchangeable specification, specify butt-jointing track rails "/A".

Under seal (1) /U

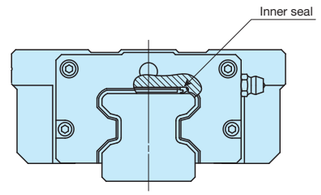


The seal is attached to the bottom of the slide unit to prevent foreign substances from entering from underneath.

Note (1) For C-Lube Linear Way UL and Linear Way U, attach "upper seal".
The seal is attached to the upper end of the slide unit to prevent foreign substances from entering from above.

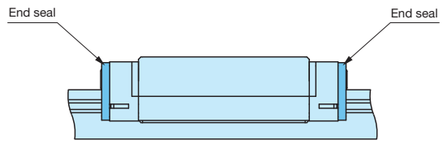


Inner seal /UR



Attach the inner seal to the inside of the slide unit.
Inner seal improves dust protection property of the cylindrical roller circulation part against foreign substances from the upper surface of the track rail.

End seal /US



Attach end seals instead of scrapers on both sides of the slide unit in order to improve the dust protection performance.

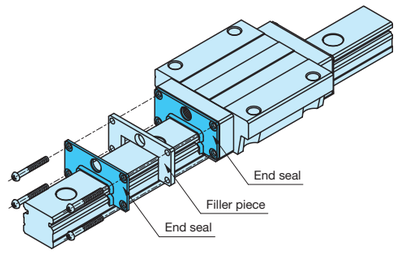
Double seals (Single unit) /V /VR /VL

Double end seals are mounted to the interchangeable specification slide unit to improve the dust protection property.

① /V Apply double seals to both ends of the slide unit.
② /VR Apply double seals to a right end surface of the slide unit seen from the IKO mark of the slide unit.
③ /VL Apply double seals to a left end surface of the slide unit seen from the IKO mark of the slide unit.

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

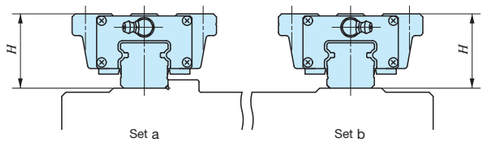
Double seals (Assembled set) /V /VV



Double end seals are mounted to the interchangeable specification assembled set or non-interchangeable specification product's slide unit to improve the dust protection property.

① /V Apply double seals to slide unit end nearest to both ends of the track rail. When only one slide unit is used, fit them to both ends of the track rail.
② /VV When two or more slide units are used, apply double seals to both ends of each slide unit.

A group of multiple assembled sets /W



Set the variation of H dimensions of the Linear Way and Linear Roller Way of multiple assembled sets on the same flat surface in the standard range.
The variation of H dimensions of the multiple assembled sets is the same as the accuracy of one set.
Indicate the number of sets after "/W" based on the number of units when specify.

Specified grease /YCG /YCL /YAF /YBR /YNG

The type of pre-packed grease can be changed by the supplemental code.

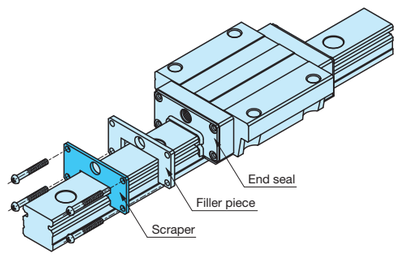
① /YCG Low Dust-Generation Grease for Clean Environment CG2 is pre-packed.
② /YCL Low Dust-Generation Grease for Clean Environment CGL is pre-packed.
③ /YAF Anti-Fretting Corrosion Grease AF2 is pre-packed.
④ /YBR MOLYCOTE BR2- Plus Grease [Dow Corning] is pre-packed.
⑤ /YNG No grease is pre-packed.

Scraper (Single unit) /Z /ZR /ZL

Mount a metal scraper to the interchangeable specification slide unit.
The scraper is non-contact type and effectively eliminate large foreign substances adhering to the track rail.

① /Z Mount scrapers to both ends of the slide unit.
② /ZR Fit a scraper to a right end surface of the slide unit seen from IKO mark of the slide unit.
③ /ZL Fit a scraper to a left end surface of the slide unit seen from IKO mark of the slide unit.

Scraper (Assembled set) /Z /ZZ



Mount a metal scraper to the interchangeable specification assembled set or non-interchangeable specification product's slide unit.
The scraper is non-contact type and effectively eliminate large foreign substances adhering to the track rail.

① /Z Fit a scraper to slide unit end nearest to both ends of the track rail. When only one slide unit is used, fit them to both ends of the track rail.
② /ZZ When two or more slide units are used, fit scrapers to both ends of each slide unit.

Precaution for Use

Operating temperature

The maximum operating temperature for linear motion rolling guide with integrated C-Lube is 80℃. The maximum operating temperature for linear motion rolling guide without integrated C-Lube is 120℃ and temperature up to 100℃ is allowed for continuous operation. When the temperature exceeds 100℃, contact IKO.
When specifying special specification with C-Lube plate (supplemental code "/Q"), utilize it below 80℃.

Multiple slide units used in close proximity

When using multiple slide units in close proximity, greater load may be applied than the calculated value depending on the deviation of slide unit mounting accuracy for the machine or device. In such cases, allowance for greater applied load than the calculated value should be made.

Lateral or upside-down mounting

For lateral or upside-down mounting of the Linear Way E and Linear Way F, specify the special specification (supplemental code "/U") with under seal as necessary to prevent foreign substances from entering into the slide unit.

Operation velocity

Operation velocity limit value of the Linear Way and Linear Roller Way depends on operation conditions such as motion characteristics, applied load, lubrication status, mounting accuracy and environment temperature.
Reference values based on actual performance and experienced values as a reference of maximum velocity under typical operating conditions are indicated in Table 19.

Table 19 Reference maximum velocity

Size	Maximum velocity m/min
35	180
45	120
55	100
65	75

Cleaning and removing fat

Never clean up a linear motion rolling guide with integrated C-Lube with organic solvent or white kerosene with property of removing fat.

Lubrication oil supply point for oil lubrication

If the lubrication oil is supplied by a gravity drip system, enough lubrication oil may not be supplied to ways above the supply point, so lubrication path and supply point must be considered. For such applications, contact IKO.

Precaution for Mounting

When mounting multiple assembled sets at the same time

● Interchangeable specification products
For interchangeable specification products, assemble a slide unit and a track rail with the same interchangeable code ("S1" or "S2").
● Non-interchangeable specification products
Do not change the combination of delivered slide unit and track rail.
● Product including multiple assembled sets
For special specification (supplemental code "/W") products with multiple assembled sets, the delivered combination is managed as a group for variation. So do not mix with different group for mounting.

Assembling of slide unit and track rail

When assembling the slide unit on the track rail, correctly fit the grooves of the slide unit and the track rail and move the slide unit softly in parallel direction. Rough handling may result in damaging of seals or dropping of steel balls and cylindrical roller.
For product including a dummy rail as a standard accessory, operation of the slide unit to the track rail can be made easier by using the dummy rail.
Though the dummy rail is included as an accessory of products indicated in Table 21.1 and Table 21.2, it is also available for other products. If these parts are necessary, please contact IKO.

Mounting accuracy

Deviation of accuracy of Linear Way and Linear Roller Way mounting surface or deviation of accuracy in mounting may generate large load over the calculated value. Note that such load could affect the life adversely. It enhances the reliability of Linear Way and Linear Roller Way to ensure high machining accuracy and assembly accuracy depending on operational conditions of the track rail and slide unit such as required motion accuracy and rigidity and to consider mounting structure that can maintain the accuracy and performance.
Typical reference values for mounting parallelism between multiple assembled sets used are shown in Table 20.

Table 20 Parallelism between two mounting surfaces unit: μm

Classification	Ordinary (No symbol)	High (H)	Precision (P)	Super precision (SP)	Ultra precision (UP)
Parallelism	30		20	10	6

Shoulder height and corner radius of the reference mounting surface

For the shape of opposite corner of the reference surface, it is recommended to have relieved fillet as indicated in Fig. 8, but you may also use it with providing radius at the corner. For recommended values for the shoulder height and corner radius of the reference mounting surface, see an explanation of each series.

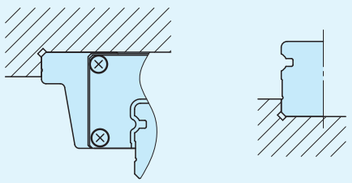


Fig. 8 Corner of the mating reference mounting

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

Table 21.1 Products appended with dummy rail

○: Appended

Series name and size		Interchangeable		Non-interchangeable specification
		Single unit	Assembled set	Assembled set
C-Lube Linear Way ML Linear Way L		○	See Table 21.2	See Table 21.2
C-Lube Linear Way MLV		–	–	
C-Lube Linear Way MV		–	–	–
C-Lube Linear Way ME Linear Way E		○	–	–
C-Lube Linear Way MH Linear Way H	8~12	○	○	○
	15~65	○	–	–
	Extra long	○	○	○
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 long	○	○	○
	85, 100	–	–	–
Linear Roller Way X		–	–	–

Table 21.2 Appended dummy rail model number for C-Lube Linear Way ML, C-Lube Linear Way MLV and Linear Way L

C-Lube Linear Way ML		C-Lube Linear Way MLV	Linear Way L	
Standard type	Wide type	Standard type	Standard type	Wide type
–	–	–	LWL 2	LWLF 4
MLC 3	MLFC 6	–	LWLC 3	LWLFC 6
ML 3	MLF 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	MLV 7	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	MLV 9	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
MLL 9	–	–	LWLG 12···B	LWLFG 24···B
MLG 12	MLFG 24	–	LWLG 15···B	LWLFG 30···B
MLL 12	–	–	LWLG 20···B	LWLFG 42···B
MLG 15	MLFG 30	–	LWLG 25···B	–
MLL 15	–	–	–	–
MLG 20	MLFG 42	–	–	–
MLG 25	–	–	–	–

Cleanup of mounting surface

Remove burrs and blemishes by using oil-stone, etc. and wipe off rust prevention oil and dust with clean cloth from mounting surface and reference mounting surface of the machine or device to which the Linear Way or Linear Roller Way are mounted.

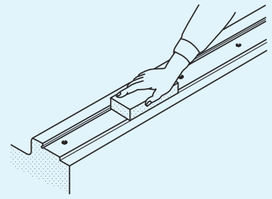


Fig. 9 Cleanup of mounting surface

Tightening torque for fixing screw

Typical fixing screw tightening torque to mount the Linear Way and Linear Roller Way is indicated in Table 22. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than the value indicated as necessary.
If the mating member material is cast iron or aluminum alloy, reduce the tightening torque depending on the strength characteristics of the mating member material.
For details, see an explanation of each series.
Though the track rail mounting bolts are appended as an accessory of products indicated in Table 23, it is also available for other products. If these parts are necessary, please contact IKO.

Table 22 Tightening torque for fixing screw

Bolt size	Tightening torque N · m			
	High carbon steel-made screw (Strength division 8.8)	High carbon steel-made screw (Strength division 10.9)	High carbon steel-made screw (Strength division 12.9)	Stainless steel-made screw (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	–	–	–	0.49
M 2.5×0.45	–	–	–	0.62
M 2.6×0.45	–	–	–	0.70
M 3 ×0.5	1.3	–	1.8	1.1
M 4 ×0.7	2.9	–	4.1	2.5
M 5 ×0.8	5.7	–	8.0	5.0
M 6 ×1	–	–	13.6	8.5
M 8 ×1.25	–	–	32.7	20.4
M10 ×1.5	–	–	63.9	–
M12 ×1.75	–	–	110	–
M14 ×2	–	–	175	–
M16 ×2	–	–	268	–
M20 ×2.5	–	–	522	–
M24 ×3	–	749	–	–
M30 ×3.5	–	1 490	–	–

Mounting of caps for rail mounting holes

When mounting the special specification caps for rail mounting holes (supplemental code "/F") on the track rail, use a flat applicator and stamp it by bits until it becomes plane with the track rail upper surface.

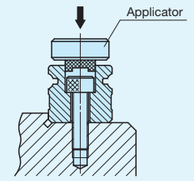


Fig. 10 Mounting of caps for rail mounting holes

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

Table 23 Specifications of appended track rail mounting bolts

Series	Size	Material type	Specifications of appended bolts: Type	Material	Class
C-Lube Linear Way ML Standard type(1)	1～ 3(2)	Stainless steel made	JCIS 10-70 Cross-recessed pan head screw for precision equipment	Stainless steel made	–
Linear Way L Standard type(1)	5	Stainless steel made	JCIS 10-70 Cross-recessed pan head screw for precision equipment	Stainless steel made	–
	7～ 25	Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
	9～ 20	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 8.8
C-Lube Linear Way ML Wide type(1)	4～ 10	Stainless steel made	JCIS 10-70 Cross-recessed pan head screw for precision equipment	Stainless steel made	–
Linear Way L Wide type(1)	14～ 42	Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
	18～ 42	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 8.8
C-Lube Linear Way MLV		Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
C-Lube Linear Way MV(3)		High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9
C-Lube Linear Way ME(3)		Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
Linear Way E(3)		High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9
C-Lube Linear Way MH(4)	8～ 30	Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
Linear Way H(5)	12	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 8.8
	15～ 65	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9
Linear Way F		Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
		High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9
C-Lube Linear Way MUL(3)	25	Stainless steel made	JCIS 10-70 Cross-recessed pan head screw for precision equipment	Stainless steel made	–
	30	Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
Linear Way U	25	Stainless steel made	JCIS 10-70 Cross-recessed pan head screw for precision equipment	Stainless steel made	–
	30	Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
	40～130(2)	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9
C-Lube Linear Roller Way Super MX(4)	10～ 65	Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
Linear Roller Way Super X		High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9
	85～100	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 10.9
Linear Roller Way X	25～ 55	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9
	75	High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 10.9
Linear Way LM(6)		Stainless steel made	JIS B 1176 Hexagon socket head bolt	Stainless steel made	Property division A2-70
Linear Way M(7) Linear Roller Way M(7)		High carbon steel made	JIS B 1176 Hexagon socket head bolt	High carbon steel made	Strength division 12.9

Notes (1) The bolts are not appended for tapped rail specification.
(2) The bolts are not appended. Specifications in the table are the ones prepared by IKO.
(3) The bolts are not appended. Specifications in the table are the ones when special specification "/MA" (with track rail mounting bolts) is specified.
(4) The bolts are not appended in an assembled set. Specifications in the table are the ones when special specification "/MA" (with track rail mounting bolts) is specified.
(5) The bolts are not appended in LWH···MU.
(6) Slide member mounting bolts are not appended.
(7) Slide member mounting bolts are also appended.

Mounting surface, reference mounting surface and typical mounting structure

When mounting Linear Way and Linear Roller Way, properly align the reference mounting surface B and D of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 11)
The reference mounting surfaces B and D and mounting surfaces A and C are precisely ground. Machining the mounting surface of the table and bed, such as machine or device, to high accuracy and mounting them properly will ensure stable linear motion with high accuracy.

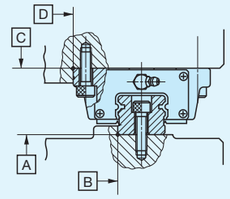


Fig. 11 Reference mounting surface and typical mounting structure of Linear Way and Linear Roller Way

Reference mounting surface of the slide unit is the opposite side of the IKO mark. The track rail reference mounting surface is identified by locating the IKO mark on the top surface of the track rail. It is the side surface above the mark (in the direction of the arrow). (See Fig. 12.)

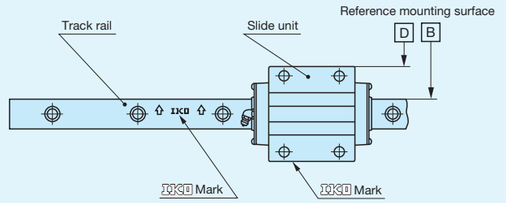


Fig. 12 Position of reference mounting surface of Linear Way and Linear Roller Way (Representative example)

Load direction and mounting structure

When lateral load, alternate load, or fluctuating load is applied onto the Linear Way or Linear Roller Way, securely fix the ends of slide unit and track rail as indicated in the Fig. 13 and Fig. 14.
When the load is small or operational conditions are not harsh, mounting methods indicated in Fig. 15 and Fig. 16 may be used.

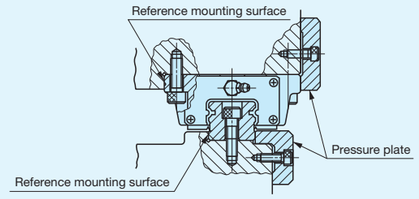


Fig. 13 Mounting example with pressure plate

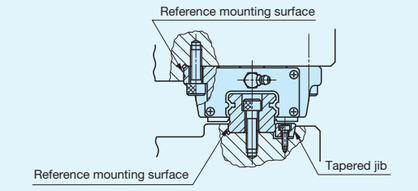


Fig. 14 Mounting example with tapered jib

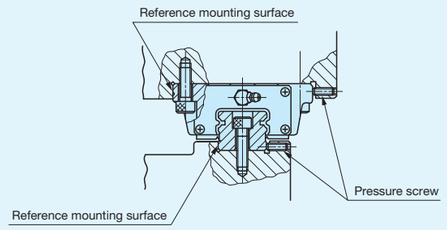


Fig. 15 Mounting example with pressure screw

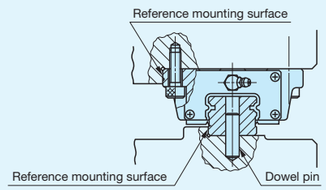


Fig. 16 Mounting example with dowel pin

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

Mounting Examples

Typical procedures to mount Linear Way and Linear Roller Way are described in Examples 1 to 4 using a Linear Way as a representative case.

Example 1. Typical operation

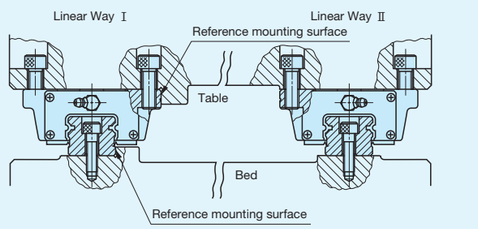


Fig. 17 Mounting example 1

For typical application without shock, reference mounting surface is prepared on each bed and table on the reference side. The mounting procedures are as follows. (See Fig. 17)

❶ Cleanup of mounting surface and reference mounting surface

- Remove burrs and blemishes by using oil-stone, etc. from reference mounting surface and mounting surface of the machine or the device to which Linear Way is mounted and wipe off with clean cloth. (see Fig. 18)
- Wipe off rust prevention oil and dust on the reference mounting surface and the mounting surface of the Linear Way with clean cloth.

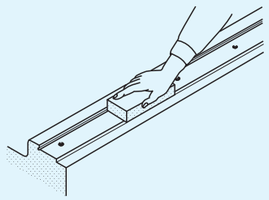


Fig. 18 Cleanup of mounting surface

❷ Temporary fixing of Linear Way Ⅰ and Ⅱ track rails

- Align and temporarily fix them with reference mounting surface of each Linear Way track rail. (See Fig. 19)
  At this point, ensure that the fixing bolt does not interfere with the mounting hole.
- Fix the Linear Way Ⅱ track rail to the bed.

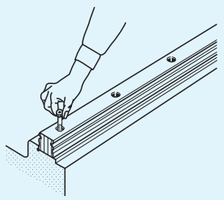


Fig. 19 Temporary fixing of track rail

❸ Fixing of Linear Way Ⅰ track rail

- Use small type vise or the like to stick track rail reference mounting surface to the reference mounting surface of the bed and tighten the fixing bolt at the same position. Repeat this method from one end to fix the track rail in order. (See Fig. 20)
- Linear Way Ⅱ track rail should be left temporarily fixed.

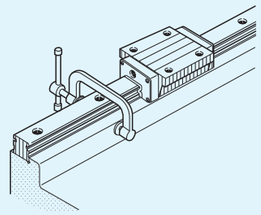


Fig. 20 Fixing of reference side track rail

❹ Temporary fixing of Linear Way Ⅰ and Ⅱ slide units

- Align the Linear Way with the mounting position of the table and load the table gently.
- Temporarily fix the Linear Way Ⅰ and Ⅱ slide units to the table.

❺ Fixing of Linear Way Ⅰ slide unit

- Align the reference mounting surface of the Linear Way Ⅰ slide unit with the reference mounting surface of the table correctly and fix them.

❻ Fixing of Linear Way Ⅱ slide unit

- Fix one of the Linear Way Ⅱ slide units in a motion direction correctly and leave the other slide units temporarily fixed. (See Fig. 21)

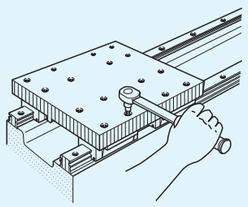


Fig. 21 Fixing of slide unit

❼ Fixing of Linear Way Ⅱ track rail

- Move the table and fix the Linear Way Ⅱ track rail ensuring smooth motion status. At this point, tighten each fixing bolt immediately after the fixed slide unit of the Linear Way Ⅱ passes on each of it. Repeat this method from one end to fix the track rail in order. (See Fig. 22)

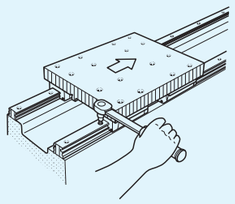


Fig. 22 Fixing of driven side track rail

❽ Fixing of Linear Way Ⅱ slide unit

- Fix the rest of the Linear Way II slide units.

Example 2. Operation for linear motion with accuracy and rigidity

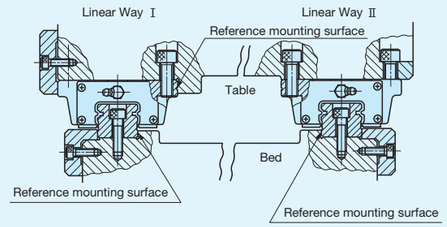


Fig. 23 Mounting example 2

If accuracy and rigidity of linear motion are required, prepare two reference mounting surfaces on the bed and one reference mounting surface on the table. The mounting procedures are as follows. (See Fig. 23)

❶ Cleanup of mounting surface and reference mounting surface

- Remove burrs and blemishes by using oil-stone, etc. from reference mounting surface and mounting surface of the machine or the device to which Linear Way is mounted and wipe off with clean cloth. (see Fig. 24)
- Wipe off rust prevention oil and dust on the reference mounting surface and the mounting surface of the Linear Way with clean cloth.

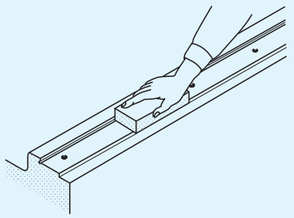


Fig. 24 Cleanup of mounting surface

❷ Temporary fixing of Linear Way Ⅰ and Ⅱ track rails

- Align and temporarily fix them with reference mounting surface of each Linear Way track rail. (See Fig. 25)
  At this point, ensure that the fixing bolt does not interfere with the mounting hole.

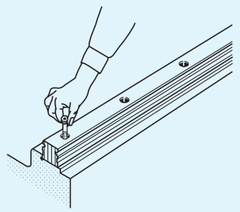


Fig. 25 Temporary fixing of track rail

❸ Fixing of Linear Way Ⅰ and Ⅱ track rails

- Stick the track rail reference mounting surface of the Linear Way Ⅰ to the reference mounting surface of the bed with pressure plate or pressure screws and tighten the track rail fixing bolt at the same position. Repeat this method from one end to fix the track rail in order. (See Fig. 26)

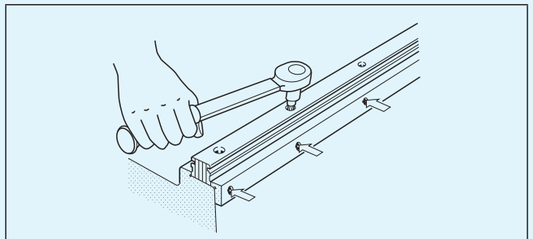


Fig. 26 Fixing of track rail

❹ Temporary fixing of Linear Way Ⅰ and Ⅱ slide units

- Align the slide unit with the mounting position of the table and load the table gently. Temporarily fix the Linear Way Ⅰ and Ⅱ slide units to the table.

❺ Fixing of Linear Way Ⅰ slide unit

- Align the reference mounting surface of the Linear Way Ⅰ slide unit with the reference mounting surface of the table correctly and fix them with pressure plate or pressure screws.

❻ Fixing of Linear Way Ⅱ slide unit

- Move the table ensuring smooth motion status, and fix the Linear Way Ⅱ slide unit. (See Fig. 27)

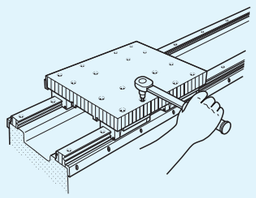


Fig. 27 Fixing of slide unit

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

Example 3 Operation in case the slide unit is fixed separated from the track rail

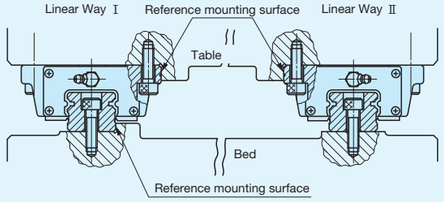


Fig. 28 Mounting example 3

If it cannot be fixed securely with the table loaded, prepare one reference mounting surface on the bed and two reference mounting surfaces on the table. The mounting procedures are as follows. (See Fig. 28)

❶ Cleanup of mounting surface and reference mounting surface

- Remove burrs and blemishes by using oil-stone, etc. from reference mounting surface and mounting surface of the machine or the device to which Linear Way is mounted and wipe off with clean cloth. (see Fig. 29)
- Wipe off rust prevention oil and dust on the reference mounting surface and the mounting surface of the Linear Way with clean cloth.

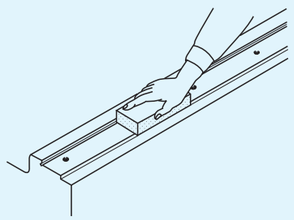


Fig. 29 Cleanup of mounting surface

❷ Temporary fixing of Linear Way Ⅰ and Ⅱ track rails

- Align and temporarily fix them with reference mounting surface of each Linear Way track rail. (See Fig. 30)
  At this point, ensure that the fixing bolt does not interfere with the mounting hole.

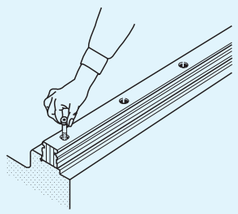


Fig. 30 Temporary fixing of track rail

❸ Fixing of Linear Way Ⅰ track rail

- Use small type vise or the like to stick track rail reference mounting surface to the reference mounting surface of the bed and tighten the fixing bolt at the same position. Repeat this method from one end to fix the track rail in order. (See Fig. 31)
- Linear Way Ⅱ track rail should be left temporarily fixed.

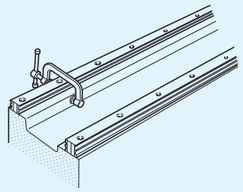


Fig. 31 Fixing of track rail

❹ Separation of track rail and slide unit

- After checking the combination and positions of Linear Way Ⅰ and Ⅱ track rails and slide units, separate each slide unit from the track rail.

❺ Fixing of Linear Way Ⅰ and Ⅱ slide units

- Align with the reference mounting surface of the Linear Way Ⅰ and Ⅱ slide units correctly, and fix them. (See Fig. 32)

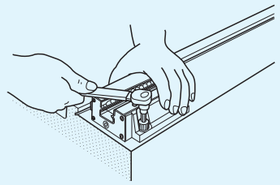


Fig. 32 Fixing of slide unit

❻ Setting of track rail and slide unit

- Insert and assemble the slide unit fixed to the table slowly with care while aligning it with the track rail fixed and temporarily fixed to the bed to maintain parallelism.

❼ Fixing of Linear Way Ⅱ track rail

- Move the table and fix the Linear Way Ⅱ track rail ensuring smooth motion status. At this point, tighten each fixing bolt immediately after the fixed slide unit of the Linear Way Ⅱ passes on each of it. Repeat this method from one end to fix the track rail in order.

Example 4. Operation of Linear Way Module

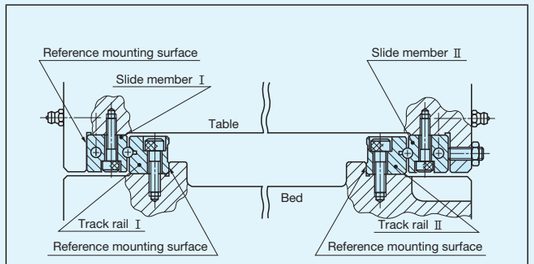


Fig. 33 Mounting example 4

For the Linear Way Module, normally 2 sets are used in parallel as indicated in Fig. 33. For the mounting, typically follow the procedure below (see Fig. 33).

❶ Cleanup of mounting surface and reference mounting surface

- Remove burrs and blemishes by using oil-stone, etc. from reference mounting surface and mounting surface of the machine or the device to which Linear Way Module is mounted and wipe off with clean cloth (see Fig. 34).
- Wipe off rust prevention oil and dust on the reference mounting surface and the mounting surface of the Linear Way Module with clean cloth.

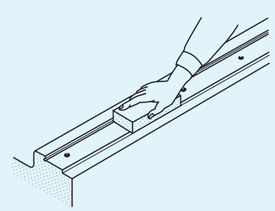


Fig. 34 Cleanup of mounting surface

❷ Fixing of track rail

- Align the reference mounting surfaces of track rails Ⅰ and Ⅱ with the reference mounting surfaces of the bed correctly, stick them by using small type vise, and tighten the fixing bolts at the same position (see Fig. 35).

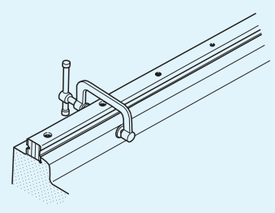


Fig. 35 Fixing of track rail

❸ Fixing the slide member

- Align the reference mounting surface of the slide member Ⅰ with the reference mounting surface of the table correctly, tighten the fixing bolt to fix them, and temporarily fix the slide member Ⅱ (see Fig. 36).

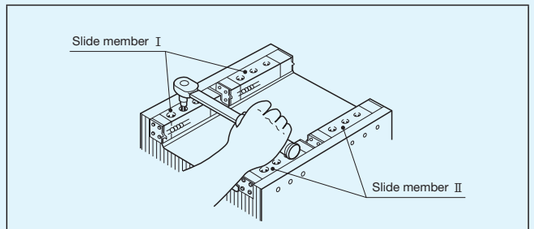


Fig. 36 Fixing of slide member

❹ Setting of table and bed

- Insert and assemble the slide member fixed to the table slowly with care while aligning it with the track rail fixed to the bed to maintain parallelism.

❺ Fixing the slide member Ⅱ

- As indicated in Fig. 37, tighten the preload adjusting screw at the center first and then all the rest preload adjusting screws in order while measuring the clearance by using the dial gauge.
- The position where the dial gauge deflection stops after moving the table to right and left indicates zero preload or slight preload state.
- After preload adjustment, tighten the fixing bolt to fix them.

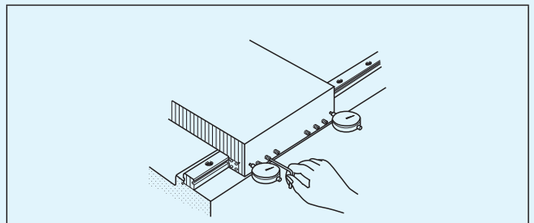


Fig. 37 Preload adjustment

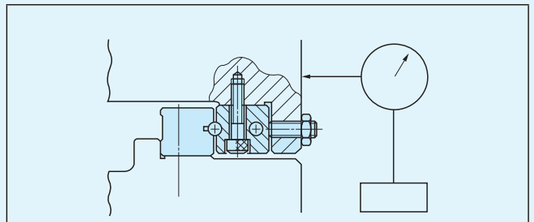


Fig. 38 Example of preload adjustment check method

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

Mounting of reference side track rail

Mounting methods of reference side track rail are indicated below. Select a method suitable for the specifications of your machine or device.

❶ Method to use reference mounting surface

・Stick track rail reference mounting surface to the reference mounting surface of the bed by using a pressure plate or small type vise, and tighten the fixing bolt at the same position. Repeat this method from one end to fix the track rail in order.

❷ Method to use temporary reference surface

・Prepare temporary reference surface around the mounting surface of the bed, temporarily fix the track rail, fix the measurement stand on the upper surface of the slide unit as indicated in Fig. 39, place an indicator onto the temporary reference surface, and fix them from one end of the track rail in order while maintaining straightness.

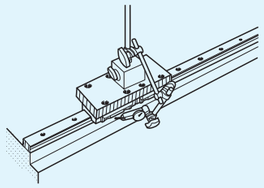


Fig. 39 Method to use temporary reference surface

❸ Method with straight-edge

・After temporary fixing of the track rail, apply an indicator to the reference mounting surface of the track rail as indicated in Fig. 40 and fix them from one end of the track rail in order referring to the straight-edge while maintaining straightness.

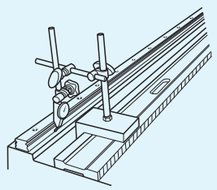


Fig. 40 Method with straight-edge

Mounting of driven side track rail

Mounting methods of driven side track rail are indicated below. Select a method suitable for the specifications of your machine or device.

❶ Method to use reference mounting surface

・Stick track rail reference mounting surface to the reference mounting surface of the bed by using a pressure plate or small type vise, and tighten the fixing bolt at the same position. Repeat this method from one end to fix the track rail in order.

❷ Method to follow the reference side track rail

・Correctly mount the reference side track rail and one of the driven slide units in motion direction, temporarily fix the rest of slide units and track rails, and fix them from one end of the driven side track rail in order ensuring smooth motion status.

❸ Method with straight-edge

・After temporary fixing of the track rail, apply an indicator to the reference mounting surface of the track rail as indicated in Fig. 40 and fix them from one end of the track rail in order referring to the straight-edge while maintaining straightness.

❹ Method to use reference side Linear Way

・Fix a measurement stand onto the upper surface of the reference side slide unit as indicated in Fig. 41, place an indicator onto the reference mounting surface of the driven side track rail, and fix them from one end in order while maintaining parallelism.

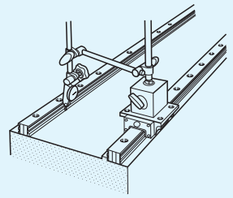


Fig. 41 Method to use reference side Linear Way

Mounting procedures when track rails are butt-jointed

When multiple track rails are butt-jointed, it is necessary to specify special specification butted track rails (non-interchangeable specification, supplemental code "/A") or butt-jointing track rails (interchangeable specification, supplemental code "/T").
Butt-jointing track rails have a butt-jointing mark on the track rail end surface as indicated in Fig. 42. Typical method to butt-joint the track rails is as follows.

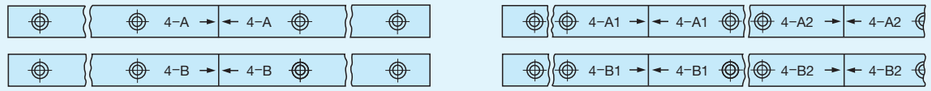


Fig. 42 Butt-jointing mark

❶ Align the butt-jointing mark on the track rail end surface and temporarily fix it. Since butt-jointing track rails are interchangeable, no butt-jointing position is specified.

❷ Correctly align the reference mounting surface of the track rail with that of the bed in order. At this point, use a small type vise or the like to stick the reference mounting surfaces of the bed and track rail together so as to eliminate any step at the joint part of the track rail. (See Fig. 43)

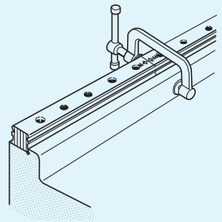


Fig. 43 Method to butt-joint track rails

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

Statements

● Unit Conversion Rate Table

SI, CGS series and gravity system unit cross-reference table

Amount / Unit system	Length	Mass	Time	Acceleration	Force	Stress and pressure
SI	m	kg	s	m/s^2	N	Pa
CGS series	cm	g	s	Gal	dyn	dyn/cm^2
Gravity system	m	$kgf·s^2/m$	s	m/s^2	kgf	kgf/m^2

Energy	Power	Temperature	Viscosity	Kinetic viscosity	Flux	Flux density	Magnetic field intensity
J	W	K	Pa·s	m^2/s	Wb	T	A/m
erg	erg/s	℃	P	St	Mx	Gs	Oe
kgf·m	kgf·m/s	℃	$kgf·s/m^2$	m^2/s	—	—	—

SI unit conversion

Amount	Unit name	Code	SI conversion rate	SI unit name	Code
Angle	D	°	$\pi/180$	Radian	rad
	Min	′	$\pi/10\ 800$		
	Sec	″	$\pi/648\ 000$		
Length	Meter	m	1	Meter	m
	Micron	μ	10^{-6}		
	Angstrom	Å	10^{-10}		
	X ray unit		$\approx 1.002\ 08\times10^{-13}$		
	Nautical mile	n mile	1852		
Area	Square meter	m^2	1	Square meter	m^2
	Are	a	10^2		
	Hectare	ha	10^4		
Volume	Cubic meter	m^3	1	Cubic meter	m^3
	Liter	l, L	10^{-3}		
Mass	Kilogram	kg	1	Kilogram	kg
	Ton	t	10^3		
	Atomic mass unit	u	$\approx 1.660\ 57\times10^{-27}$		
Time	Sec	s	1	Sec	s
	Min	min	60		
	Hr	h	3 600		
	Day	d	86 400		
Velocity	Meter per second	m/s	1	Meter per second	m/s
	Knot	kn	1 852/3 600		
Frequency and vibration	Number of cycle	s^{-1}	1	Hertz	Hz
Number of rotations	Rotation per minute	rpm	1/60	Per second	s^{-1}
Angular velocity	Radian per second	rad/s	1	Radian per second	rad/s
Acceleration	Meter per second	m/s^2	1	Meter per second	m/s^2
	G	G	9.806 65		
Force	Weight in kg	kgf	9.806 65	Newton	N
	Weight in ton	tf	9 806.65		
	Dyne	dyn	10^{-5}		
Force moment load	Weight in kg meter	kgf·m	9.806 65	Newton meter	N · m
Stress and pressure	Weight in kg per square meter	kgf/m^2	9.806 65	Pascal	Pa
	Weight in kg per square cm	kgf/cm^2	$9.806\ 65\times10^4$		
	Weight in kg per square mm	kgf/mm^2	$9.806\ 65\times10^6$		

Amount	Unit name	Code	SI conversion rate	SI unit name	Code
Pressure	Meter water column	mH_2O	9 806.65	Pascal	Pa
	millimeter of mercury column	mmHg	101 325/760		
	Torr	Torr	101 325/760		
	Air pressure	atm	101 325		
	Bar	bar	10^5		
Energy	Erg	erg	10^{-7}	Joule	J
	IT calorie	cal_{IT}	4.186 8		
	Weight in kg meter	kgf·m	9.806 65		
	Kilowatt per hour	kW·h	3.600×10^6		
	French horse-power per hour	PS·h	$\approx 2.647\ 79\times10^6$		
	Electron volt	eV	$\approx 1.602\ 19\times10^{-19}$		
Power and motivity	Watt	W	1	Watt	W
	French horse-power	PS	≈735.5		
	Weight in kg meter per second	kgf·m/s	9.806 65		
Viscosity	Poise	P	10^{-1}	Pascal second	Pa·s
	Centipoise	cP	10^{-3}		
	Weight in kg second per square meter	$kgf·s/m^2$	9.806 65		
Kinetic viscosity	Stokes	St	10^{-4}	Square meter per second	m^2/s
	Centistokes	cSt	10^{-6}		
Temperature	D	℃	+273.15	Kelvin	K
Radioactivity	Curie	Ci	3.7×10^{10}	Becquerel	Bq
Exposure radiation dose	Roentgen	R	2.58×10^{-4}	Coulomb per kg	C/kg
Absorbed dose	Rad	rad	10^{-2}	Gray	Gy
Dose equivalent	Rem	rem	10^{-2}	Sievert	Sv
Flux	Maxwell	Mx	10^{-8}	Weber	Wb
Flux density	Gamma	γ	10^{-9}	Tesla	T
	Gauss	Gs	10^{-4}		
Magnetic field intensity	Oersted	Oe	$10^3/4\pi$	Ampere per meter	A/m
Electric charge	Coulomb	C	1	Coulomb	C
Electric potential difference	Volt	V	1	Volt	V
Capacitance	Farad	F	1	Farad	F
(Electric) Resistance	Ohm	Ω	1	Ohm	Ω
(Electric) Conductance	Siemens	S	1	Siemens	S
Inductance	Henry	H	1	Henry	H
Current	Ampere	A	1	Ampere	A

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

● Inch-mm Conversion Table

1 inch=25.4mm

inch		0″	1″	2″	3″	4″	5″	6″	7″	8″
Fractional number	Decimal number									
	0		25.400	50.800	76.200	101.600	127.000	152.400	177.800	203.200
1 / 64″	0.015625	0.397	25.797	51.197	76.597	101.997	127.397	152.797	178.197	203.597
1 / 32″	0.031250	0.794	26.194	51.594	76.994	102.394	127.794	153.194	178.594	203.994
3 / 64″	0.046875	1.191	26.591	51.991	77.391	102.791	128.191	153.591	178.991	204.391
1 / 16″	0.062500	1.588	26.988	52.388	77.788	103.188	128.588	153.988	179.388	204.788
5 / 64″	0.078125	1.984	27.384	52.784	78.184	103.584	128.984	154.384	179.784	205.184
3 / 32″	0.093750	2.381	27.781	53.181	78.581	103.981	129.381	154.781	180.181	205.581
7 / 64″	0.109375	2.778	28.178	53.578	78.978	104.378	129.778	155.178	180.578	205.978
1 / 8″	0.125000	3.175	28.575	53.975	79.375	104.775	130.175	155.575	180.975	206.375
9 / 64″	0.140625	3.572	28.972	54.372	79.772	105.172	130.572	155.972	181.372	206.772
5 / 32″	0.156250	3.969	29.369	54.769	80.169	105.569	130.969	156.369	181.769	207.169
11 / 64″	0.171875	4.366	29.766	55.166	80.566	105.966	131.366	156.766	182.166	207.566
3 / 16″	0.187500	4.762	30.162	55.562	80.962	106.362	131.762	157.162	182.562	207.962
13 / 64″	0.203125	5.159	30.559	55.959	81.359	106.759	132.159	157.559	182.959	208.359
7 / 32″	0.218750	5.556	30.956	56.356	81.756	107.156	132.556	157.956	183.356	208.756
15 / 64″	0.234375	5.953	31.353	56.753	82.153	107.553	132.953	158.353	183.753	209.153
1 / 4″	0.250000	6.350	31.750	57.150	82.550	107.950	133.350	158.750	184.150	209.550
17 / 64″	0.265625	6.747	32.147	57.547	82.947	108.347	133.747	159.147	184.547	209.947
9 / 32″	0.281250	7.144	32.544	57.944	83.344	108.744	134.144	159.544	184.944	210.344
19 / 64″	0.296875	7.541	32.941	58.341	83.741	109.141	134.541	159.941	185.341	210.741
5 / 16″	0.312500	7.938	33.338	58.738	84.138	109.538	134.938	160.338	185.738	211.138
21 / 64″	0.328125	8.334	33.734	59.134	84.534	109.934	135.334	160.734	186.134	211.534
11 / 32″	0.343750	8.731	34.131	59.531	84.931	110.331	135.731	161.131	186.531	211.931
23 / 64″	0.359375	9.128	34.528	59.928	85.328	110.728	136.128	161.528	186.928	212.328
3 / 8″	0.375000	9.525	34.925	60.325	85.725	111.125	136.525	161.925	187.325	212.725
25 / 64″	0.390625	9.922	35.322	60.722	86.122	111.522	136.922	162.322	187.722	213.122
13 / 32″	0.406250	10.319	35.719	61.119	86.519	111.919	137.319	162.719	188.119	213.519
27 / 64″	0.421875	10.716	36.116	61.516	86.916	112.316	137.716	163.116	188.516	213.916
7 / 16″	0.437500	11.112	36.512	61.912	87.312	112.712	138.112	163.512	188.912	214.312
29 / 64″	0.453125	11.509	36.909	62.309	87.709	113.109	138.509	163.909	189.309	214.709
15 / 32″	0.468750	11.906	37.306	62.706	88.106	113.506	138.906	164.306	189.706	215.106
31 / 64″	0.484375	12.303	37.703	63.103	88.503	113.903	139.303	164.703	190.103	215.503
1 / 2″	0.500000	12.700	38.100	63.500	88.900	114.300	139.700	165.100	190.500	215.900

1 inch=25.4mm

inch		0″	1″	2″	3″	4″	5″	6″	7″	8″
Fractional number	Decimal number									
33 / 64″	0.515625	13.097	38.497	63.897	89.297	114.697	140.097	165.497	190.897	216.297
17 / 32″	0.531250	13.494	38.894	64.294	89.694	115.094	140.494	165.894	191.294	216.694
35 / 64″	0.546875	13.891	39.291	64.691	90.091	115.491	140.891	166.291	191.691	217.091
9 / 16″	0.562500	14.288	39.688	65.088	90.488	115.888	141.288	166.688	192.088	217.488
37 / 64″	0.578125	14.684	40.084	65.484	90.884	116.284	141.684	167.084	192.484	217.884
19 / 32″	0.593750	15.081	40.481	65.881	91.281	116.681	142.081	167.481	192.881	218.281
39 / 64″	0.609375	15.478	40.878	66.278	91.678	117.078	142.478	167.878	193.278	218.678
5 / 8″	0.625000	15.875	41.275	66.675	92.075	117.475	142.875	168.275	193.675	219.075
41 / 64″	0.640625	16.272	41.672	67.072	92.472	117.872	143.272	168.672	194.072	219.472
21 / 32″	0.656250	16.669	42.069	67.469	92.869	118.269	143.669	169.069	194.469	219.869
43 / 64″	0.671875	17.066	42.466	67.866	93.266	118.666	144.066	169.466	194.866	220.266
11 / 16″	0.687500	17.462	42.862	68.262	93.662	119.062	144.462	169.862	195.262	220.662
45 / 64″	0.703125	17.859	43.259	68.659	94.059	119.459	144.859	170.259	195.659	221.059
23 / 32″	0.718750	18.256	43.656	69.056	94.456	119.856	145.256	170.656	196.056	221.456
47 / 64″	0.734375	18.653	44.053	69.453	94.853	120.253	145.653	171.053	196.453	221.853
3 / 4″	0.750000	19.050	44.450	69.850	95.250	120.650	146.050	171.450	196.850	222.250
49 / 64″	0.765625	19.447	44.847	70.247	95.647	121.047	146.447	171.847	197.247	222.647
25 / 32″	0.781250	19.844	45.244	70.644	96.044	121.444	146.844	172.244	197.644	223.044
51 / 64″	0.796875	20.241	45.641	71.041	96.441	121.841	147.241	172.641	198.041	223.441
13 / 16″	0.812500	20.638	46.038	71.438	96.838	122.238	147.638	173.038	198.438	223.838
53 / 64″	0.828125	21.034	46.434	71.834	97.234	122.634	148.034	173.434	198.834	224.234
27 / 32″	0.843750	21.431	46.831	72.231	97.631	123.031	148.431	173.831	199.231	224.631
55 / 64″	0.859375	21.828	47.228	72.628	98.028	123.428	148.828	174.228	199.628	225.028
7 / 8″	0.875000	22.225	47.625	73.025	98.425	123.825	149.225	174.625	200.025	225.425
57 / 64″	0.890625	22.622	48.022	73.422	98.822	124.222	149.622	175.022	200.422	225.822
29 / 32″	0.906250	23.019	48.419	73.819	99.219	124.619	150.019	175.419	200.819	226.219
59 / 64″	0.921875	23.416	48.816	74.216	99.616	125.016	150.416	175.816	201.216	226.616
15 / 16″	0.937500	23.812	49.212	74.612	100.012	125.412	150.812	176.212	201.612	227.012
61 / 64″	0.953125	24.209	49.609	75.009	100.409	125.809	151.209	176.609	202.009	227.409
31 / 32″	0.968750	24.606	50.006	75.406	100.806	126.206	151.606	177.006	202.406	227.806
63 / 64″	0.984375	25.003	50.403	75.803	101.203	126.603	152.003	177.403	202.803	228.203

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

● Hardness Conversion Table (Reference)

Rockwell C scale hardness Load 1471N HRC	Vickers hardness HV	Brinell hardness Standard ball	Brinell hardness Tungsten Carbide ball	Rockwell hardness A scale Load 588.4N Diamond circular cone	Rockwell hardness B scale Load 980.7N Diameter 1/16in ball	Shore hardness HS
68	940	—	—	85.6	—	97
67	900	—	—	85.0	—	95
66	865	—	—	84.5	—	92
65	832	—	(739)	83.9	—	91
64	800	—	(722)	83.4	—	88
63	772	—	(705)	82.8	—	87
62	746	—	(688)	82.3	—	85
61	720	—	(670)	81.8	—	83
60	697	—	(654)	81.2	—	81
59	674	—	(634)	80.7	—	80
58	653	—	615	80.1	—	78
57	633	—	595	79.6	—	76
56	613	—	577	79.0	—	75
55	595	—	560	78.5	—	74
54	577	—	543	78.0	—	72
53	560	—	525	77.4	—	71
52	544	(500)	512	76.8	—	69
51	528	(487)	496	76.3	—	68
50	513	(475)	481	75.9	—	67
49	498	(464)	469	75.2	—	66
48	484	451	455	74.7	—	64
47	471	442	443	74.1	—	63
46	458	432	432	73.6	—	62
45	446	421	421	73.1	—	60
44	434	409	409	72.5	—	58
43	423	400	400	72.0	—	57
42	412	390	390	71.5	—	56
41	402	381	381	70.9	—	55
40	392	371	371	70.4	—	54
39	382	362	362	69.9	—	52
38	372	353	353	69.4	—	51
37	363	344	344	68.9	—	50
36	354	336	336	68.4	(109.0)	49
35	345	327	327	67.9	(108.5)	48
34	336	319	319	67.4	(108.0)	47
33	327	311	311	66.8	(107.5)	46
32	318	301	301	66.3	(107.0)	44
31	310	294	294	65.8	(106.0)	43
30	302	286	286	65.3	(105.5)	42
29	294	279	279	64.7	(104.5)	41
28	286	271	271	64.3	(104.0)	41
27	279	264	264	63.8	(103.0)	40
26	272	258	258	63.3	(102.5)	38
25	266	253	253	62.8	(101.5)	38
24	260	247	247	62.4	(101.0)	37
23	254	243	243	62.0	100.0	36
22	248	237	237	61.5	99.0	35
21	243	231	231	61.0	98.5	35
20	238	226	226	60.5	97.8	34
(18)	230	219	219	—	96.7	33
(16)	222	212	212	—	95.5	32
(14)	213	203	203	—	93.9	31
(12)	204	194	194	—	92.3	29
(10)	196	187	187	—	90.7	28
(8)	188	179	179	—	89.5	27
(6)	180	171	171	—	87.1	26
(4)	173	165	165	—	85.5	25
(2)	166	158	158	—	83.5	24
(0)	160	152	152	—	81.7	24

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

● Tolerances of Shaft Dimensions

unit: μm

Classification of diameter mm		b12		c12		d6		e6		e12		f5		f6		g5	
Above	Below	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
—	3	−140	− 240	− 60	− 160	− 20	− 26	− 14	− 20	− 14	−114	− 6	−10	− 6	− 12	− 2	− 6
3	6	−140	− 260	− 70	− 190	− 30	− 38	− 20	− 28	− 20	−140	−10	−15	−10	− 18	− 4	− 9
6	10	−150	− 300	− 80	− 230	− 40	− 49	− 25	− 34	− 25	−175	−13	−19	−13	− 22	− 5	−11
10	18	−150	− 330	− 95	− 275	− 50	− 61	− 32	− 43	− 32	−212	−16	−24	−16	− 27	− 6	−14
18	30	−160	− 370	−110	− 320	− 65	− 78	− 40	− 53	− 40	−250	−20	−29	−20	− 33	− 7	−16
30	40	−170	− 420	−120	− 370	− 80	− 96	− 50	− 66	− 50	−300	−25	−36	−25	− 41	− 9	−20
40	50	−180	− 430	−130	− 380												
50	65	−190	− 490	−140	− 440	−100	−119	− 60	− 79	− 60	−360	−30	−43	−30	− 49	−10	−23
65	80	−200	− 500	−150	− 450												
80	100	−220	− 570	−170	− 520	−120	−142	− 72	− 94	− 72	−422	−36	−51	−36	− 58	−12	−27
100	120	−240	− 590	−180	− 530												
120	140	−260	− 660	−200	− 600	−145	−170	− 85	−110	− 85	−485	−43	−61	−43	− 68	−14	−32
140	160	−280	− 680	−210	− 610												
160	180	−310	− 710	−230	− 630												
180	200	−340	− 800	−240	− 700	−170	−199	−100	−129	−100	−560	−50	−70	−50	− 79	−15	−35
200	225	−380	− 840	−260	− 720												
225	250	−420	− 880	−280	− 740												
250	280	−480	−1000	−300	− 820	−190	−222	−110	−142	−110	−630	−56	−79	−56	− 88	−17	−40
280	315	−540	−1060	−330	− 850												
315	355	−600	−1170	−360	− 930	−210	−246	−125	−161	−125	−695	−62	−87	−62	− 98	−18	−43
355	400	−680	−1250	−400	− 970												
400	450	−760	−1390	−440	−1070	−230	−270	−135	−175	−135	−765	−68	−95	−68	−108	−20	−47
450	500	−840	−1470	−480	−1110												

g6		h5		h6		h7		h8		h9		h10		h11		Classification of diameter mm	
H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	Above	Below
− 2	− 8	0	− 4	0	− 6	0	−10	0	−14	0	− 25	0	− 40	0	− 60	—	3
− 4	−12	0	− 5	0	− 8	0	−12	0	−18	0	− 30	0	− 48	0	− 75	3	6
− 5	−14	0	− 6	0	− 9	0	−15	0	−22	0	− 36	0	− 58	0	− 90	6	10
− 6	−17	0	− 8	0	−11	0	−18	0	−27	0	− 43	0	− 70	0	−110	10	18
− 7	−20	0	− 9	0	−13	0	−21	0	−33	0	− 52	0	− 84	0	−130	18	30
− 9	−25	0	−11	0	−16	0	−25	0	−39	0	− 62	0	−100	0	−160	30	40
																40	50
−10	−29	0	−13	0	−19	0	−30	0	−46	0	− 74	0	−120	0	−190	50	65
																65	80
−12	−34	0	−15	0	−22	0	−35	0	−54	0	− 87	0	−140	0	−220	80	100
																100	120
−14	−39	0	−18	0	−25	0	−40	0	−63	0	−100	0	−160	0	−250	120	140
																140	160
																160	180
−15	−44	0	−20	0	−29	0	−46	0	−72	0	−115	0	−185	0	−290	180	200
																200	225
																225	250
−17	−49	0	−23	0	−32	0	−52	0	−81	0	−130	0	−210	0	−320	250	280
																280	315
−18	−54	0	−25	0	−36	0	−57	0	−89	0	−140	0	−230	0	−360	315	355
																355	400
−20	−60	0	−27	0	−40	0	−63	0	−97	0	−155	0	−250	0	−400	400	450
																450	500

unit: μm

Classification of diameter mm		h12		js5		j5		js6		j6		j7		k5		k6	
Above	Below	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
—	3	0	−100	+ 2	− 2	+2	− 2	+ 3	− 3	+ 4	− 2	+ 6	− 4	+ 4	0	+ 6	0
3	6	0	−120	+ 2.5	− 2.5	+3	− 2	+ 4	− 4	+ 6	− 2	+ 8	− 4	+ 6	+1	+ 9	+1
6	10	0	−150	+ 3	− 3	+4	− 2	+ 4.5	− 4.5	+ 7	− 2	+10	− 5	+ 7	+1	+10	+1
10	18	0	−180	+ 4	− 4	+5	− 3	+ 5.5	− 5.5	+ 8	− 3	+12	− 6	+ 9	+1	+12	+1
18	30	0	−210	+ 4.5	− 4.5	+5	− 4	+ 6.5	− 6.5	+ 9	− 4	+13	− 8	+11	+2	+15	+2
30	40	0	−250	+ 5.5	− 5.5	+6	− 5	+ 8	− 8	+11	− 5	+15	−10	+13	+2	+18	+2
40	50																
50	65	0	−300	+ 6.5	− 6.5	+6	− 7	+ 9.5	− 9.5	+12	− 7	+18	−12	+15	+2	+21	+2
65	80																
80	100	0	−350	+ 7.5	− 7.5	+6	− 9	+11	−11	+13	− 9	+20	−15	+18	+3	+25	+3
100	120																
120	140	0	−400	+ 9	− 9	+7	−11	+12.5	−12.5	+14	−11	+22	−18	+21	+3	+28	+3
140	160																
160	180																
180	200	0	−460	+10	−10	+7	−13	+14.5	−14.5	+16	−13	+25	−21	+24	+4	+33	+4
200	225																
225	250																
250	280	0	−520	+11.5	−11.5	+7	−16	+16	−16	+16	−16	+26	−26	+27	+4	+36	+4
280	315																
315	355	0	−570	+12.5	−12.5	+7	−18	+18	−18	+18	−18	+29	−28	+29	+4	+40	+4
355	400																
400	450	0	−630	+13.5	−13.5	+7	−20	+20	−20	+20	−20	+31	−32	+32	+5	+45	+5
450	500																

m5		m6		n5		n6		p6		Classification of diameter mm	
H	L	H	L	H	L	H	L	H	L	Above	Below
+ 6	+ 2	+ 8	+ 2	+ 8	+ 4	+10	+ 4	+ 12	+ 6	—	3
+ 9	+ 4	+12	+ 4	+13	+ 8	+16	+ 8	+ 20	+12	3	6
+12	+ 6	+15	+ 6	+16	+10	+19	+10	+ 24	+15	6	10
+15	+ 7	+18	+ 7	+20	+12	+23	+12	+ 29	+18	10	18
+17	+ 8	+21	+ 8	+24	+15	+28	+15	+ 35	+22	18	30
+20	+ 9	+25	+ 9	+28	+17	+33	+17	+ 42	+26	30	40
										40	50
+24	+11	+30	+11	+33	+20	+39	+20	+ 51	+32	50	65
										65	80
+28	+13	+35	+13	+38	+23	+45	+23	+ 59	+37	80	100
										100	120
+33	+15	+40	+15	+45	+27	+52	+27	+ 68	+43	120	140
										140	160
										160	180
+37	+17	+46	+17	+51	+31	+60	+31	+ 79	+50	180	200
										200	225
										225	250
+43	+20	+52	+20	+57	+34	+66	+34	+ 88	+56	250	280
										280	315
+46	+21	+57	+21	+62	+37	+73	+37	+ 98	+62	315	355
										355	400
+50	+23	+63	+23	+67	+40	+80	+40	+108	+68	400	450
										450	500

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

● Tolerances of Housing Hole Dimensions

unit: μm

Classification of diameter mm		B12		E7		E11		E12		F6		F7		G6		G7	
Above	Below	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
—	3	+ 240	+140	+ 24	+ 14	+ 74	+ 14	+114	+ 14	+ 12	+ 6	+ 16	+ 6	+ 8	+ 2	+12	+ 2
3	6	+ 260	+140	+ 32	+ 20	+ 95	+ 20	+140	+ 20	+ 18	+10	+ 22	+10	+12	+ 4	+16	+ 4
6	10	+ 300	+150	+ 40	+ 25	+115	+ 25	+175	+ 25	+ 22	+13	+ 28	+13	+14	+ 5	+20	+ 5
10	18	+ 330	+150	+ 50	+ 32	+142	+ 32	+212	+ 32	+ 27	+16	+ 34	+16	+17	+ 6	+24	+ 6
18	30	+ 370	+160	+ 61	+ 40	+170	+ 40	+250	+ 40	+ 33	+20	+ 41	+20	+20	+ 7	+28	+ 7
30	40	+ 420	+170	+ 75	+ 50	+210	+ 50	+300	+ 50	+ 41	+25	+ 50	+25	+25	+ 9	+34	+ 9
40	50	+ 430	+180														
50	65	+ 490	+190	+ 90	+ 60	+250	+ 60	+360	+ 60	+ 49	+30	+ 60	+30	+29	+10	+40	+10
65	80	+ 500	+200														
80	100	+ 570	+220	+107	+ 72	+292	+ 72	+422	+ 72	+ 58	+36	+ 71	+36	+34	+12	+47	+12
100	120	+ 590	+240														
120	140	+ 660	+260	+125	+ 85	+335	+ 85	+485	+ 85	+ 68	+43	+ 83	+43	+39	+14	+54	+14
140	160	+ 680	+280														
160	180	+ 710	+310														
180	200	+ 800	+340	+146	+100	+390	+100	+560	+100	+ 79	+50	+ 96	+50	+44	+15	+61	+15
200	225	+ 840	+380														
225	250	+ 880	+420														
250	280	+1000	+480	+162	+110	+430	+110	+630	+110	+ 88	+56	+108	+56	+49	+17	+69	+17
280	315	+1060	+540														
315	355	+1170	+600	+182	+125	+485	+125	+695	+125	+ 98	+62	+119	+62	+54	+18	+75	+18
355	400	+1250	+680														
400	450	+1390	+760	+198	+135	+535	+135	+765	+135	+108	+68	+131	+68	+60	+20	+83	+20
450	500	+1470	+840														

H6		H7		H8		H9		H10		H11		JS6		J6		Classification of diameter mm	
H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L	Above	Below
+ 6	0	+10	0	+14	0	+ 25	0	+ 40	0	+ 60	0	+ 3	− 3	+ 2	−4	—	3
+ 8	0	+12	0	+18	0	+ 30	0	+ 48	0	+ 75	0	+ 4	− 4	+ 5	−3	3	6
+ 9	0	+15	0	+22	0	+ 36	0	+ 58	0	+ 90	0	+ 4.5	− 4.5	+ 5	−4	6	10
+11	0	+18	0	+27	0	+ 43	0	+ 70	0	+110	0	+ 5.5	− 5.5	+ 6	−5	10	18
+13	0	+21	0	+33	0	+ 52	0	+ 84	0	+130	0	+ 6.5	− 6.5	+ 8	−5	18	30
+16	0	+25	0	+39	0	+ 62	0	+100	0	+160	0	+ 8	− 8	+10	−6	30	40
																40	50
+19	0	+30	0	+46	0	+ 74	0	+120	0	+190	0	+ 9.5	− 9.5	+13	−6	50	65
																65	80
+22	0	+35	0	+54	0	+ 87	0	+140	0	+220	0	+11	−11	+16	−6	80	100
																100	120
+25	0	+40	0	+63	0	+100	0	+160	0	+250	0	+12.5	−12.5	+18	−7	120	140
																140	160
																160	180
+29	0	+46	0	+72	0	+115	0	+185	0	+290	0	+14.5	−14.5	+22	−7	180	200
																200	225
																225	250
+32	0	+52	0	+81	0	+130	0	+210	0	+320	0	+16	−16	+25	−7	250	280
																280	315
+36	0	+57	0	+89	0	+140	0	+230	0	+360	0	+18	−18	+29	−7	315	355
																355	400
+40	0	+63	0	+97	0	+155	0	+250	0	+400	0	+20	−20	+33	−7	400	450
																450	500

unit: μm

Classification of diameter mm		JS7		J7		K5		K6		K7		M6		M7		N6	
Above	Below	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
—	3	+ 5	− 5	+ 4	− 6	0	− 4	0	− 6	0	−10	− 2	− 8	−2	−12	− 4	−10
3	6	+ 6	− 6	+ 6	− 6	0	− 5	+2	− 6	+ 3	− 9	− 1	− 9	0	−12	− 5	−13
6	10	+ 7	− 7	+ 8	− 7	+1	− 5	+2	− 7	+ 5	−10	− 3	−12	0	−15	− 7	−16
10	18	+ 9	− 9	+10	− 8	+2	− 6	+2	− 9	+ 6	−12	− 4	−15	0	−18	− 9	−20
18	30	+10	−10	+12	− 9	+1	− 8	+2	−11	+ 6	−15	− 4	−17	0	−21	−11	−24
30	40	+12	−12	+14	−11	+2	− 9	+3	−13	+ 7	−18	− 4	−20	0	−25	−12	−28
40	50																
50	65	+15	−15	+18	−12	+3	−10	+4	−15	+ 9	−21	− 5	−24	0	−30	−14	−33
65	80																
80	100	+17	−17	+22	−13	+2	−13	+4	−18	+10	−25	− 6	−28	0	−35	−16	−38
100	120																
120	140	+20	−20	+26	−14	+3	−15	+4	−21	+12	−28	− 8	−33	0	−40	−20	−45
140	160																
160	180																
180	200	+23	−23	+30	−16	+2	−18	+5	−24	+13	−33	− 8	−37	0	−46	−22	−51
200	225																
225	250																
250	280	+26	−26	+36	−16	+3	−20	+5	−27	+16	−36	− 9	−41	0	−52	−25	−57
280	315																
315	355	+28	−28	+39	−18	+3	−22	+7	−29	+17	−40	−10	−46	0	−57	−26	−62
355	400																
400	450	+31	−31	+43	−20	+2	−25	+8	−32	+18	−45	−10	−50	0	−63	−27	−67
450	500																

N7		P6		P7		R7		S7		Classification of diameter mm	
H	L	H	L	H	L	H	L	H	L	Above	Below
− 4	−14	− 6	−12	− 6	− 16	− 10	− 20	− 14	− 24	—	3
− 4	−16	− 9	−17	− 8	− 20	− 11	− 23	− 15	− 27	3	6
− 4	−19	−12	−21	− 9	− 24	− 13	− 28	− 17	− 32	6	10
− 5	−23	−15	−26	−11	− 29	− 16	− 34	− 21	− 39	10	18
− 7	−28	−18	−31	−14	− 35	− 20	− 41	− 27	− 48	18	30
− 8	−33	−21	−37	−17	− 42	− 25	− 50	− 34	− 59	30	40
										40	50
− 9	−39	−26	−45	−21	− 51	− 30	− 60	− 42	− 72	50	65
						− 32	− 62	− 48	− 78	65	80
−10	−45	−30	−52	−24	− 59	− 38	− 73	− 58	− 93	80	100
						− 41	− 76	− 66	− 101	100	120
−12	−52	−36	−61	−28	− 68	− 48	− 88	− 77	−117	120	140
						− 50	− 90	− 85	−125	140	160
						− 53	− 93	− 93	−133	160	180
−14	−60	−41	−70	−33	− 79	− 60	−106	−105	−151	180	200
						− 63	−109	−113	−159	200	225
						− 67	−113	−123	−169	225	250
−14	−66	−47	−79	−36	− 88	− 74	−126	−138	−190	250	280
						− 78	−130	−150	−202	280	315
−16	−73	−51	−87	−41	− 98	− 87	−144	−169	−226	315	355
						− 93	−150	−187	−244	355	400
−17	−80	−55	−95	−45	−108	−103	−166	−209	−272	400	450
						−109	−172	−229	−292	450	500

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

Note: BLUE denotes CAT-1560E, while RED denotes CAT-1561E.

Model Code Index

Note: BLUE denotes CAT-1560E, while RED denotes CAT-1561E.

Note: BLUE denotes CAT-1560E, while RED denotes CAT-1561E.

Model Code Index

Note: BLUE denotes CAT-1560E, while RED denotes CAT-1561E.

IKO Linear Motion Rolling Guide Series, Configuration of General Catalog

IKO Linear Motion Rolling Guide Series General Catalog Consists of **BLUE** (CAT-1560E) and **RED** (CAT-1561E), the two volumes.

BLUE

CAT-1560E

【Models】

- Rail Guide Type
  - Endless Linear Motion Type

RED

CAT-1561E

【Models】

- Rail Guide Type
  - Limited Linear Motion Type
- Shaft Guide Type
  - Endless Linear Motion Type
  - Limited Linear Motion Type
    - Limited Linear Motion Type + Rolling Motion Type
- Flat Guide Type
  - Endless Linear Motion Type
  - Limited Linear Motion Type

C-Lube Linear Way ML
Linear Way L

ML・LWL

C-Lube Linear Way MLV

MLV

C-Lube Linear Way MV

MV

C-Lube Linear Way ME
Linear Way E

ME・LWE

C-Lube Linear Way MH
Linear Way H

MH・LWH

Linear Way F

LWF

C-Lube Linear Way MUL
Linear Way U

MUL・LWU

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

MX・LRX

Linear Roller Way X

LRWX

Linear Way Module

LWLM・LWM
LRWM

Rail Guide Type
Crossed Roller Way

CRW(G)(…H)
CRWU(G)

Rail Guide Type
Linear Slide Unit

BWU・BSP(G)
BSU…A

Shaft Guide Type
Linear Ball Spline

MAG・LSAG
LSB・LS

Shaft Guide Type
Linear Bushing

LMG・LM・LMS

Shaft Guide Type
Stroke Rotary Bushing

ST・STSI・BG

Flat Guide Type
Roller Way & Flat Roller Cage

RW・SR・GSN
FT・FTW…A

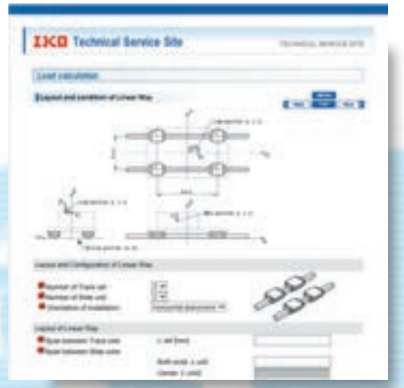
IKO Introduction of Technical Service Site

"IKO Technical Service Site" can be accessed from our home page IKO. The site also distributes various tools, etc., to select Linear ways/Linear roller ways, and please utilize the site for the assistance to select products. Additionally the site also provides CAD data and product catalog of needle series, linear motion rolling guide series and mechatronics series for you to download. Please consider to use for enhancing your design efficiency.

http://www.ikont.co.jp/eg/

1. Technical calculations

For Linear Way/Linear Roller Way load and life calculation, you can obtain the calculated load and the rating life by entering the operating conditions.
Also you can derive the motor torque required for operation and the effective propulsion force during operation in the sections of motor torque calculation and calculation of effective propulsion force of linear motor tables respectively, and output the calculation results in PDF format, as well as save the histories.



2. Selection of Identification Number

By selecting such specification as model code, dimensions, part code, material code, preload symbol, classification symbol, interchangeable code and supplemental code of Linear ways/Linear roller ways, you can easily specify the identification number used for ordering.
Also you can browse the CAD data of the selected products, calculate the load, and output the selection results in PDF format, as well as save the histories.

3. Downloading CAD data

2-dimensional CAD data (DXF file)

There are two types of figures, brief figure and detailed figure. The brief figure shows only the external view lines, and the detailed figure shows the detailed lines. The drawing consists of three drawings: front view, side view and plain view. The scale shows only the original size (1:1), and it does not show dimension lines.

3-dimensional CAD data

It is linked to the mechanical parts CAD library "PART community". Entering the rail dimension and option contents to the detail, you can view the 2D/3D CAD data suitable for the specification for free of charge.

4. Downloading Catalog and Operation Manual

You can download product catalogs of needle series, linear motion rolling guide series and mechatronics series, operation manuals of precision positioning tables and various electrical components in PDF format, as well as support software for precision positioning tables. If you would like a copy of our catalog, please visit the IKO official website and apply for the catalog, or contact our regional office or sales office nearby.

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 in compliance with the quality requirements level of ISO 9001 for quality improvement.
- The standard products listed in this catalog comply with the specifications of the six hazardous materials mentioned cited in the European RoHS Directive.

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