

C-Lube Linear Way ML Linear Way L

C-Lube Linear Way ML

ML



The aquamarine end plate is the symbol of maintenance free.

Track rail

Slide unit

Casing

C-Lube

Ball

End plate

End seal

Ball retaining band

Oil hole

Linear Way L

LWL

Points

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. The track rail width of LWL1, the smallest size, is only 1mm.

Wide range of variations for your needs

For details P.I-25

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

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-43

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-33

C-Lube Linear Way ML 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.

Non-interchangeable specification										
1	2	4	5	6	3	7	8	9	10	11
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

4 Size

5 Number of slide units

6 Length of track rail

7 Material type

8 Preload amount

9 Accuracy class

10 Interchangeable

11 Special specification

Model code

Dimensions

Part code

Material code

Preload symbol

Classification symbol

Interchangeable code

Supplemental code

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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

1Model

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.

2Length 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.

3Structure

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
		Size: 5, 7, 9	Ball non-retained type : No symbol
		Mounting from lateral	Size: 1
	Solid rail specification	Size: 1	Ball non-retained type : Y

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 : No symbol
	Tapped rail specification	Size: 6	Ball non-retained type : N
LWLF		Size: 10~18	Ball retained type : N
	Standard rail specification	Size: 4, 6	Ball non-retained type : No symbol
		Size: 10~42	Ball retained type : B
	Tapped rail specification	Size: 2	Ball non-retained type : No symbol
		Size: 6	Ball non-retained type : N

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

4Size

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

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

5Number 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.

6Length 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.

7Material type

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

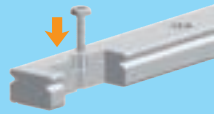
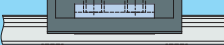
For applicable models and sizes, see Table 2.1 and Table 2.2.

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	—	—	—	—	○	○	—	—	—	—	—	
 Tapped rail specification Mounting from lateral		Standard	Ball non-retained type	LWL…Y	○	—	—	—	—	—	—	—	—	—		
 Solid rail specification		Standard	Ball non-retained type	LWL	○	—	—	—	—	—	—	—	—	—		

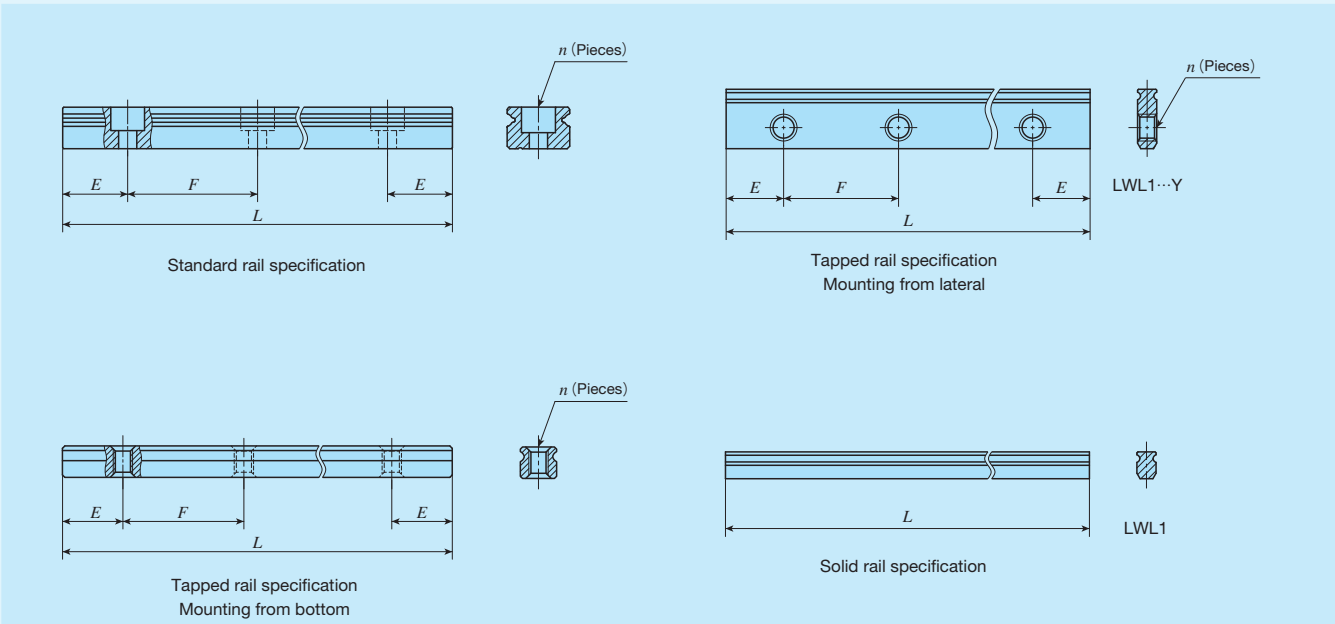
Remark: For the models indicated in , the interchangeable specification is available.

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								
					2	4	6	10	14	18	24	30	42
 Standard rail specification	Stainless steel made	 Short	Ball retained type	MLFC	—	—	—	○	○	○	○	○	○
			Ball non-retained type	MLFC LWLFC...B	—	—	—	○	○	○	○	○	○
		 Standard	Ball retained type	MLF	—	—	—	○	○	○	○	○	○
			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	—	—	—	○	○	○	—	—	—
		 Standard	Ball retained type	MLF...N	—	—	—	○	○	○	—	—	—
				LWLF...N	—	—	—	○	○	○	—	—	—
		 Long	Ball retained type	MLFG...N	—	—	—	—	○	○	—	—	—
				LWLFG...N	—	—	—	—	○	○	—	—	—
		 Standard	Ball non-retained type	LWLF	○	—	—	—	—	—	—	—	—

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

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



unit: mm

Identification number	LWL1...Y	LWL1	LWL2	ML 3 LWL3	ML 5 ⁽⁴⁾ LWL5...B ⁽⁴⁾	ML 7 ⁽⁴⁾ LWL7...B ⁽⁴⁾
Item						
Standard length L (n)	18 (3)	18 (—)	32 (4)	30 (3)	60 (4)	60 (4)
	30 (5)	30 (—)	40 (5)	40 (4)	90 (6)	90 (6)
	42 (7)	42 (—)	56 (7)	60 (6)	105 (7)	120 (8)
			80 (10)	80 (8)	120 (8)	150 (10)
Pitch of mounting holes F	6	—	8	10	15	15
E	3	—	4	5	7.5	7.5
Standard E or higher dimensions ⁽¹⁾ below	2.5	—	2.5	3	4	4.5
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
Identification number	ML 9 ⁽⁴⁾ LWL9...B ⁽⁴⁾	ML 12 LWL12...B	ML 15 LWL15...B	ML 20 LWL20...B	ML 25 LWL25...B	
Item						
Standard length L (n)	60 (3)	100 (4)	160 (4)	180 (3)	240 (4)	
	80 (4)	150 (6)	240 (6)	240 (4)	300 (5)	
	120 (6)	200 (8)	320 (8)	360 (6)	360 (6)	
	160 (8)	275 (11)	440 (11)	480 (8)	480 (8)	
	220 (11)	350 (14)	560 (14)	660 (11)	660 (11)	
Pitch of mounting holes F	20	25	40	60	60	
E	10	12.5	20	30	30	
Standard E or higher dimensions ⁽¹⁾ below	4.5	5	5.5	8	9	
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.

⁽³⁾ Not applicable to interchangeable specifications or tapped rail specifications.

⁽⁴⁾ Also applicable to tapped rail specification.

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.

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

Standard rail specification LWLF 42...B Tapped rail specification Mounting from bottom						
unit: mm						
Item \ Identification number	LWLF2	LWLF4	MLF 6 ⁽⁴⁾ LWLF6 ⁽⁴⁾	MLF 10 ⁽⁴⁾ LWLF10...B ⁽⁴⁾	MLF 14 ⁽⁴⁾ LWLF14...B ⁽⁴⁾	
Standard length <i>L</i> (<i>n</i>)	18 (3) 30 (5) 42 (7) 54 (9)	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 <i>F</i>	6	10	15	20	30	
<i>E</i>	3	5	7.5	10	15	
Standard <i>E</i> dimensions ⁽¹⁾	or higher below	2.5 5.5	3.5 8.5	4.5 12	4.5 14.5	5.5 20.5
Maximum length ⁽²⁾	102	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 ⁽⁴⁾ LWLF18...B ⁽⁴⁾	MLF 24 LWLF24...B	MLF 30 LWLF30...B	MLF 42 LWLF42...B		
Standard length <i>L</i> (<i>n</i>)	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 <i>F</i>	30	40	40	40		
<i>E</i>	15	20	20	20		
Standard <i>E</i> dimensions ⁽¹⁾	or higher below	5.5 20.5	6.5 26.5	6.5 26.5	6.5 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.

⁽³⁾ Not applicable to interchangeable specifications or tapped rail specifications.

⁽⁴⁾ Also applicable to tapped rail specification.

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)

Standard rail specification LWL...BCS LWLF...BCS LWLF 42...BCS					
unit: mm					
Item	Identification number	LWL 9...BCS	LWL12...BCS	LWL15...BCS	LWL20...BCS
Standard length <i>L</i> (<i>n</i>)		80 (4)	100 (4)	160 (4)	180 (3)
		160 (8)	200 (8)	320 (8)	240 (4)
		220 (11)	275 (11)	440 (11)	360 (6)
		280 (14)	350 (14)	560 (14)	480 (8)
		380 (19)	475 (19)	680 (17)	660 (11)
		500 (25)	600 (24)	800 (20)	900 (15)
		600 (30)	700 (28)	920 (23)	1 020 (17)
Pitch of mounting holes <i>F</i>		20	25	40	60
<i>E</i>		10	12.5	20	30
Standard <i>E</i> dimensions ⁽¹⁾	or higher	4.5	5	5.5	8
	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 <i>L</i> (<i>n</i>)		90 (3)	120 (3)	160 (4)	160 (4)
		180 (6)	240 (6)	320 (8)	320 (8)
		240 (8)	320 (8)	440 (11)	440 (11)
		300 (10)	400 (10)	560 (14)	560 (14)
		420 (14)	600 (15)	680 (17)	680 (17)
		510 (17)	720 (18)	800 (20)	800 (20)
		600 (20)	800 (20)	920 (23)	920 (23)
Pitch of mounting holes <i>F</i>		30	40	40	40
<i>E</i>		15	20	20	20
Standard <i>E</i> dimensions ⁽¹⁾	or higher	5.5	6.5	6.5	6.5
	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.

8	Preload amount	Clearance	: T ₀	Specify this item for an assembled set or a single slide unit. For details of the preload amount, see Table 4. For applicable preload types, see Table 5.1 and Table 5.2.
		Standard	: No symbol	
		Light preload	: T ₁	

Table 4 Preload amount

Preload type	Item	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: C₀ 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.

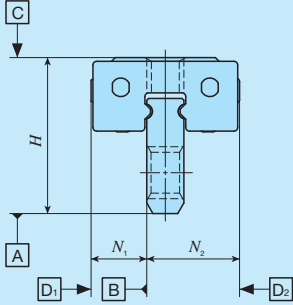
Table 5.2 Application of preload (Wide type)

Size	Preload type (preload symbol)		
	Clearance (T ₀)	Standard (No symbol)	Light preload (T ₁)
2	○	—	—
4	○	—	—
6	○	—	—
10	○	○	—
14	○	○	○
18	○	○	○
24	○	○	○
30	○	○	○
42	○	○	○

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

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

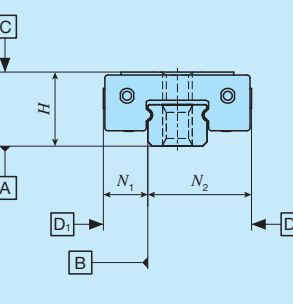
Table 6.1 Tolerance and allowable values (Series of size 1)



unit: mm

Item	Tolerance
Dim. H tolerance	±0.020
Dim. N ₁ and Dim. N ₂ tolerance	±0.025

Table 6.3 Tolerance and allowance (LWLF 2)

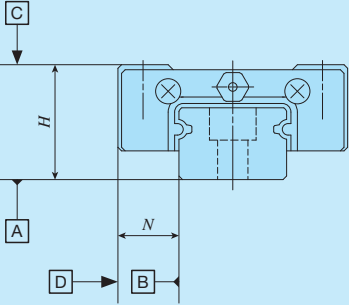


unit: mm

Class (classification symbol)	High (H)	Precision (P)
Item		
Dim. H tolerance	±0.020	±0.010
Dim. N ₁ and Dim. N ₂ tolerance	±0.025	±0.015
Dim. variation of H ⁽¹⁾	0.015	0.007
Dim. variation of N ⁽¹⁾	0.020	0.010
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.

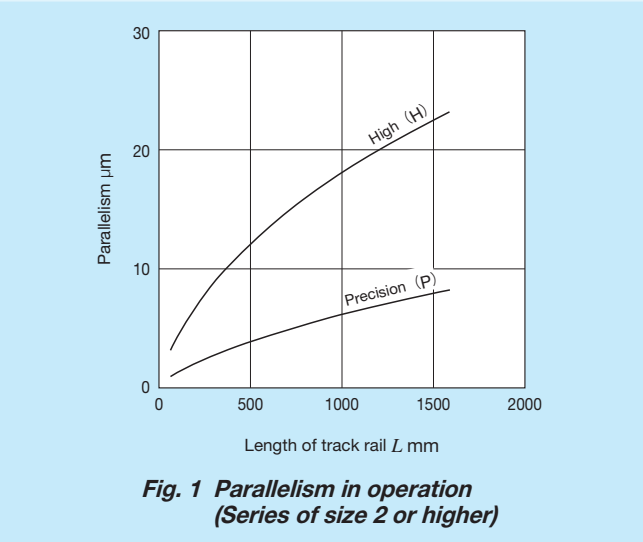
Table 6.2 Tolerance and allowance (Series of size 2 or larger excluding LWLF2)



unit: mm

Class (classification symbol)	High (H)	Precision (P)
Item		
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.



10 Interchangeable

S1 specification	: S1	This is specified for the interchangeable specifications.
S2 specification	: S2	Assemble a track rail and a slide unit with the same interchangeable code. When using in combination with different interchangeable codes, please contact IKO.
Non-interchangeable specification	: No symbol	Note that the combination of interchangeable codes will not have any effect on accuracy. For applicable models and sizes, see Table 2.1 and Table 2.2. "No symbol" is indicated for non-interchangeable specification.

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.
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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 LWL(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.

— **Special Specification** —

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

Special specification	Supplemental code	Size									
		1	2	3	5	7	9	12	15	20	25
Butt-jointing track rails ⁽¹⁾ ⁽²⁾	/A	×	×	×	○	○	○	○	○	○	○
Stainless steel end plate ⁽³⁾	/BS	×	○	○	○	○	○	○	○	○	×
Opposite reference surfaces arrangement	/D	×	○	○	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	×	○	○	○	○	○	○	○	○	○
Hybrid C-Lube Linear Way ⁽⁴⁾	/HB	×	×	×	×	○	○	○	○	×	×
Inspection sheet	/I	×	○	○	○	○	○	○	○	○	○
Black chrome surface treatment (track rail) ⁽²⁾	/LR	×	×	×	×	○	○	○	○	○	○
Without track rail mounting bolt ⁽²⁾	/MN	×	×	×	○	○	○	○	○	○	○
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 ⁽⁵⁾	/Y○	×	○ ⁽⁶⁾	○	○	○	○	○	○	○	○

Notes (1) Not applicable to high carbon steel made products.

(2) Not applicable to tapped rail specification.

(3) Applicable to LWL series.

(4) Applicable only to ML.

(5) ML series is applicable only to /YCG.

(6) Applicable only to /YNG.

Table 7.5 Application of special specifications (Non-interchangeable specification, wide type)

Special specification	Supplemental code	Size								
		2	4	6	10	14	18	24	30	42
Butt-jointing track rails ⁽¹⁾ ⁽²⁾	/A	×	×	×	○	○	○	○	○	○
Stainless steel end plate ⁽³⁾	/BS	×	×	×	○	○	○	○	○	○
Opposite reference surfaces arrangement	/D	×	○	○	○	○	○	○	○	○
Specified rail mounting hole positions	/E	○	○	○	○	○	○	○	○	○
Inspection sheet	/I	○	○	○	○	○	○	○	○	○
Black chrome surface treatment (track rail) ⁽²⁾	/LR	×	×	×	×	○	○	○	○	○
Without track rail mounting bolt ⁽²⁾	/MN	×	○	○	○	○	○	○	○	○
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○	×	○ ⁽⁵⁾	○	○	○	○	○	○	○

Notes (1) Not applicable to high carbon steel made products.

(2) Not applicable to tapped rail specification.

(3) Applicable to LWLF series.

(4) MLF series is applicable only to /YCG.

(⁵) Applicable only to /YNG.

Table 8 *Combination of supplemental codes*

[illegible]

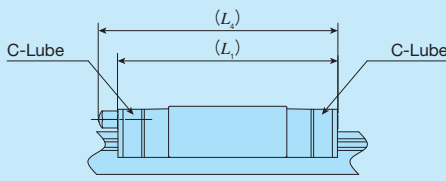
Note (1) Applicable only to YCG (Low Dust-Generation Grease for Clean Environment CG2).

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	—	LWLFC 10...B	30.5	—
LWLC 7...B	27	—	LWLFC 14...B	30.5	—
LWL 7...B	31.5	—	LWLFC 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	—	LWLFC 18...B	46.5	—
LWLG 9...B	49	—	LWLFC 18...B	58.5	—
LWLC 12...B	33	—	LWLFC 24...B	38.5	—
LWL 12...B	42	—	LWLFC 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	LWLFC 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	LWLFC 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)

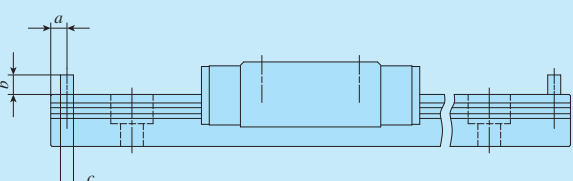
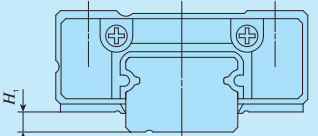
				
unit: mm				
Size	a	b	c	
5	—	2	2	1.6
7	—	2.5	2.5	2
9	—		3	
— 10	—		2	1.6
12	—		3	2
— 14	—	3.5	4	
15	—		5	
— 18	—		3	
20	—		4	
— 24	—	2.5	5	
25	—		4	
— 30	—		5	
— 42	—			

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

	
unit: mm	
Size	H_1
9	—
12	—
15	—
— 18	—
20	—
— 24	—
25	—
— 30	—
— 42	—

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 reapplying 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

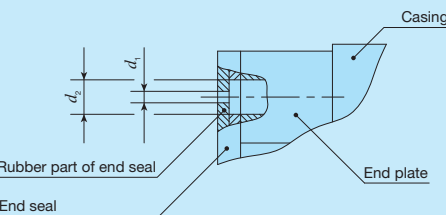
			
unit: mm			
Size	d_1	d_2	
5	10	0.5	1.1
7	14		1.2
9	18		1.5
12	24		2

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 MG10B/MT2
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.

Precaution for Use

① Mounting surface, reference mounting surface and general mounting structure

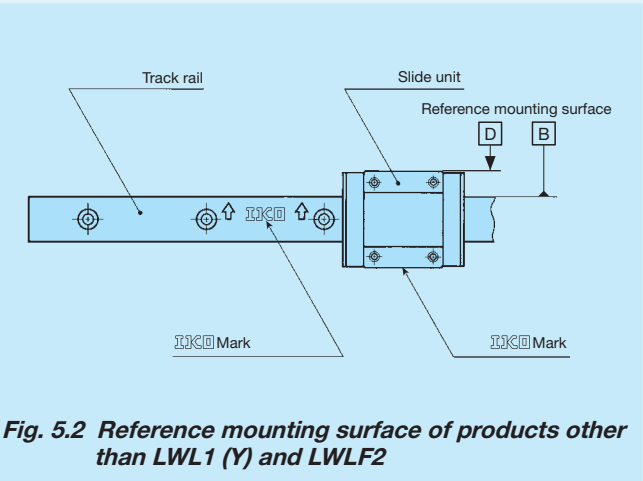
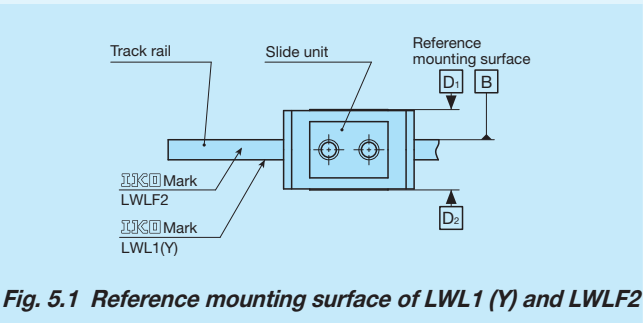
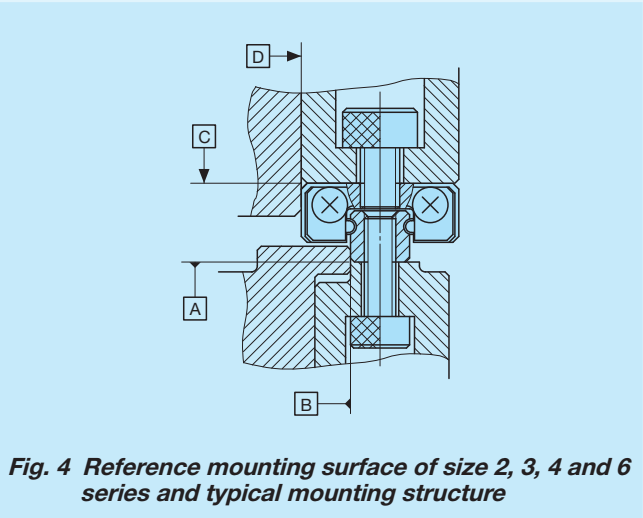
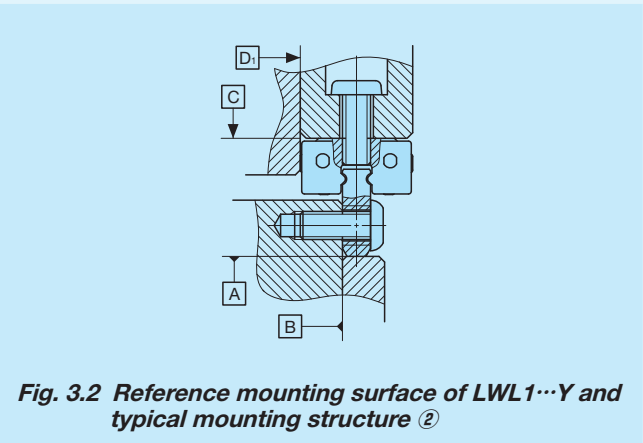
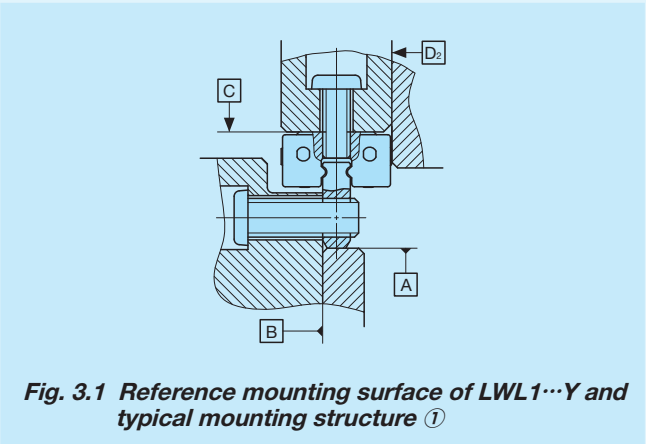
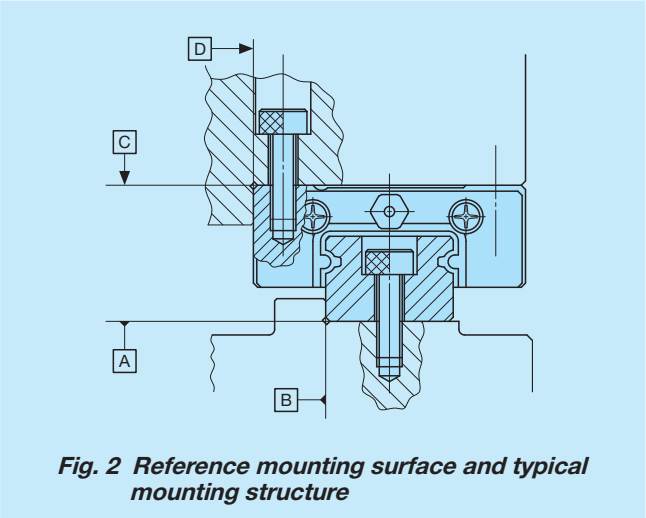
When mounting the ML(F) series and LWL(F) series, properly align the reference mounting surfaces B and D (D1 or D2)of the track rail and slide unit with the reference mounting surface of the table and bed and fix them. (See Fig. 2)
Reference mounting surfaces B and D (D1 or D2) and mounting surfaces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

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

The reference mounting surfaces of the slide unit LWL1 (Y) and LWLF2 are located at both the left and right sides (D1 and D2). (See Fig. 5.1)

Excluding LWL1 (Y) and LWLF2, the reference mounting surface of the slide unit is on the opposite side of the  mark. (See Fig. 5.2)

The reference mounting surface of the track rail, with the exception of LWL1 (Y), is identified by locating the  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. 5.1 and Fig. 5.2)



② Mounting screws for slide unit

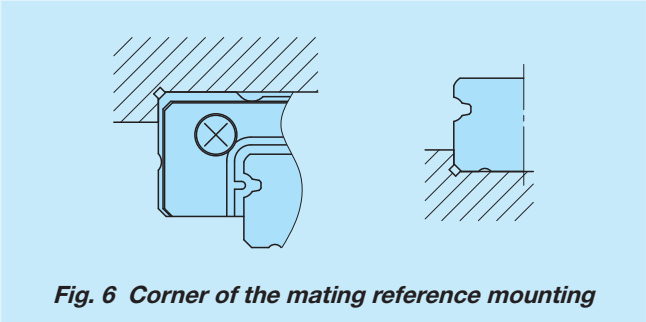
To mount a slide unit, tightly fasten the bolt against female thread of slide unit.
The female thread is created through holes of the slide unit for size 1 series, and also through holes for the slide unit and track rail for size 2, 3, 4 and 6 series. When the fixing thread depth of the mounting screw 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 and LWLF2.

③ 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.

④ 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.



⑤ Tightening torque for fixing screw

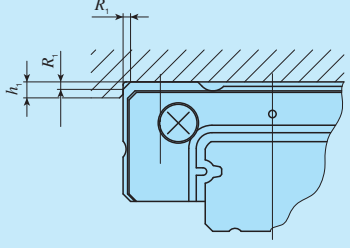
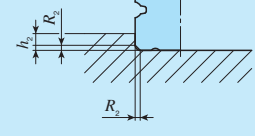
Typical tightening torque for mounting ML(F) series and LWL(F) series to the steel mating member material is indicated in Table 15. When vibration and shock of the machine or device are large, fluctuating load is large, or moment load is applied, fix it by using the torque 1.2 to 1.5 times larger than 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.
3. For the tightening torque of cross-recessed pan head screws for precision equipment, see Table 22 on page III-38.

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

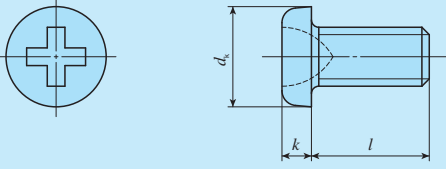
  Mounting part of slide unitMounting part of track rail unit: mm					
Identification number		Mounting part of slide unit		Mounting part of track rail	
		Shoulder height h_1	Corner radius R_1 (Maximum)	Shoulder height ⁽¹⁾ h_2	Corner radius R_2 (Maximum)
—	LWL 1··Y	1.3	—	2	—
—	LWL 1			—	
—	LWL 2	1	0.1	0.5	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 2	1.3	—	—	—
—	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.

Track rail mounting bolts for slide unit and tapped rail specification

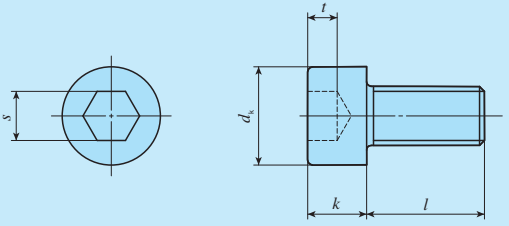
For LWL(F) series, track rail mounting bolts for slide unit and tapped rail specification shown in Table 17 and Table 18 are available. If these parts are necessary, please contact IKO.
Note that the dimensions are different from those of the appended track rail mounting bolts listed on pages II-24 to II-38.

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	0.35	2.8	0.85	4, 5, 6
M2 ⁽¹⁾	0.4	3.5	1	3, 4, 5

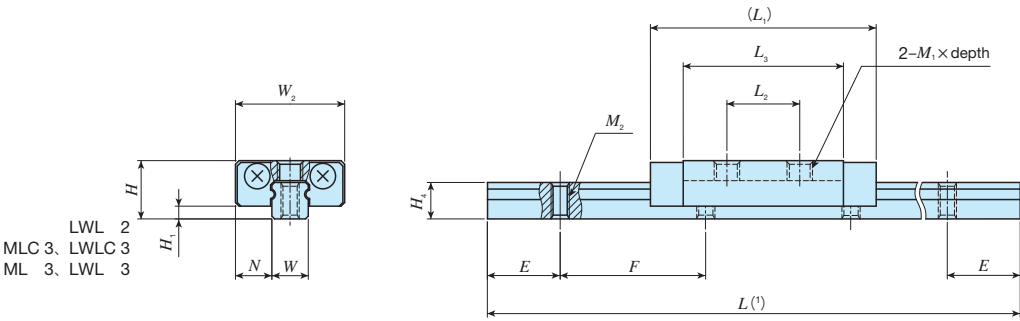
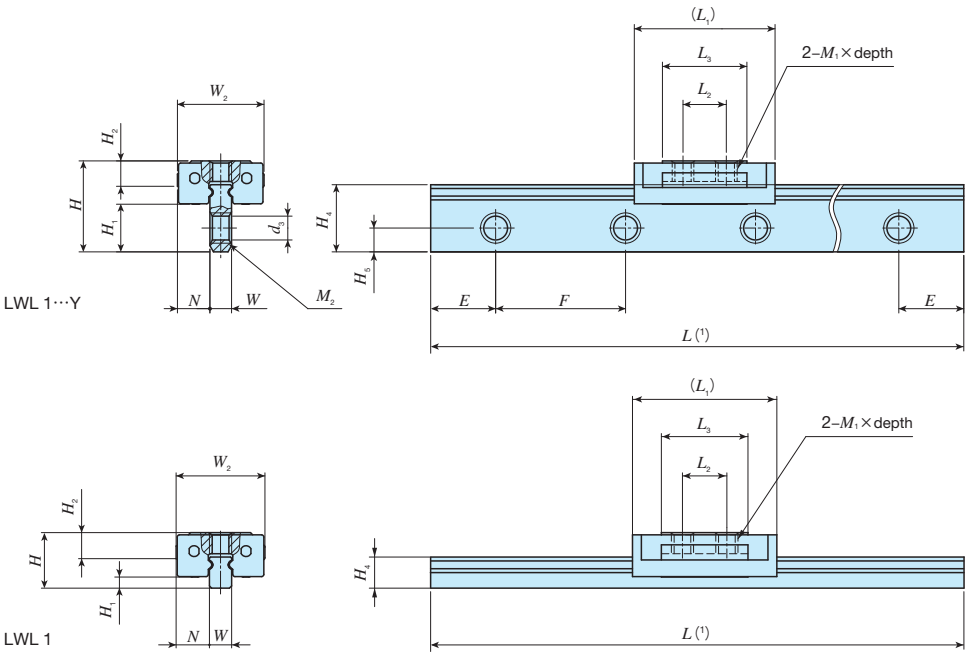
Note ⁽¹⁾ Based on Camera & Imaging Products Association CIPA AD-003-2020 cross recessed head screw for precision equipment (No. 0 small screw). The type is Class 3.

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

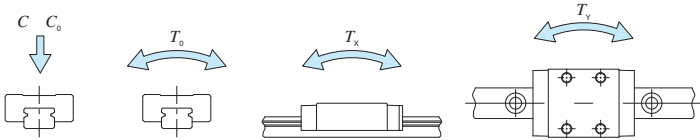
Note ⁽¹⁾ Based on hexagon socket head bolts equivalent to JIS B 1176.

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	Cross-recessed pan head screw for precision equipment (Class 1) 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	Cross-recessed pan head screw for precision equipment (Class 1) M1 ×ℓ ⁽⁴⁾	211	381	0.42	0.54 2.9	0.64 3.5
MLC 3	LWLC 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	Cross-recessed pan head screw for precision equipment M1.6×ℓ ⁽⁴⁾	272	406	0.65	0.49 2.7	0.58 3.2	
		—	1.0						11.5		6.7											251	361	0.58	0.39 2.7	0.47 3.2	
ML 3	—	1.3	14.5						11	371	632	1.0										1.1 5.6	1.3 6.6				
	LWL 3	—	1.6						15.5	10.7	M2 ×1.3																

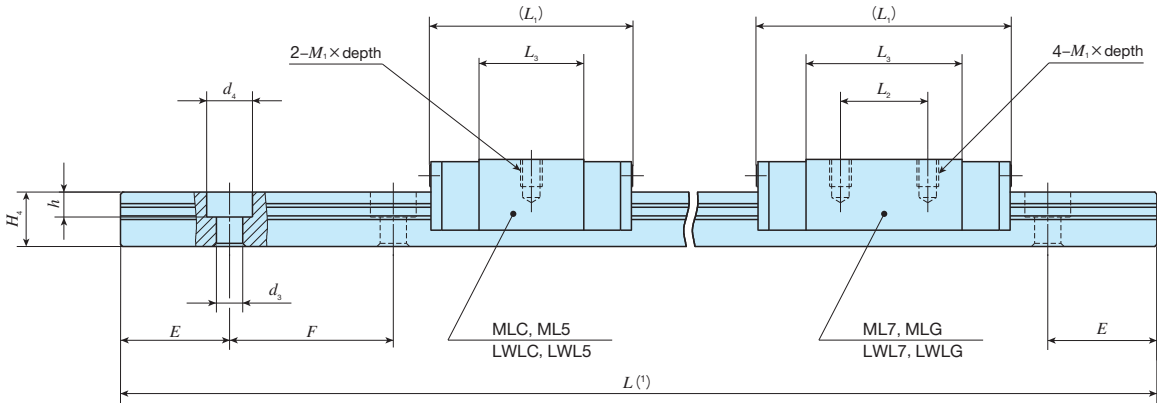
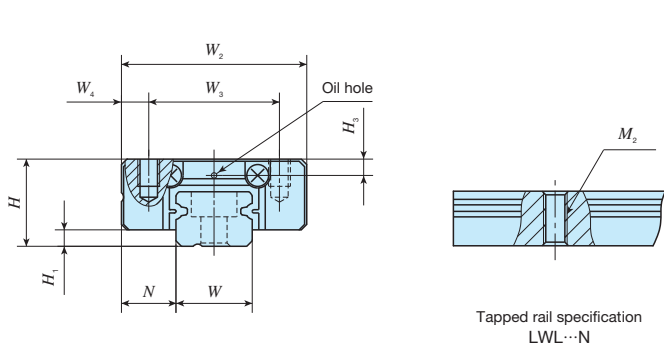
Notes (1) Track rail lengths L are shown in Table 3.1 on page II - 10.
(2) Track rail mounting bolts are not appended.
(3) Prepare screws according to mounting structure.
(4) Choose screws whose dimension allow fixing thread depth into track rail l to be less than H_4 .
(5) The direction of basic dynamic 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

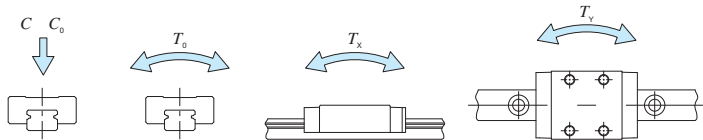
Model code		Dimensions		Part code		Model code		Preload symbol		Classification symbol		Supplemental code	
<u>LWL</u>		<u>2</u>		<u>C2</u>		<u>R80</u>				<u>T₀</u>		<u>P</u>	
<u>1</u>		<u>2</u>		<u>3</u>		<u>4</u>		<u>5</u>		<u>1</u>		<u>6</u>	
										<u>7</u>		<u>8</u>	
① Model		③ Size				⑥ Preload amount		⑧ Special specification					
ML		1, 2, 3				T ₀		BS, D, E, I, W, Y					
LWL						Clearance							
LWL...Y													
② Length of slide unit		④ Number of slide unit (2)				⑦ Accuracy class							
C						No symbol		Ordinary					
No symbol						H		High					
Standard		⑤ Length of track rail (80 mm)				P		Precision					

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 ⁽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 (Class 1) 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	LWL 5…B	○	4.3	12							19		12.6					M2×2.5	1.5	7	5			—	2.4	4.2	2.3	7.5	15	Cross-recessed pan head screw for precision equipment (Class 1) M2×6	676	1 090	2.9	2.3 12.8	1.9 10.8							
ML 5…N*	LWL 5…N*	—	4.3																											M2.5 Through						—	—	—	M2.5×ℓ ⁽³⁾ (Not appended)			
		○	4.4								—	—	—											—																		
		○	4.4																																							
MLC 7	LWLC 7…B	○	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							
MLC 7…N*	LWLC 7…N*	—	6.7	24														M3 Through	—	—	—	M3×ℓ ⁽³⁾ (Not appended)																				
ML 7	LWL 7…B	○	9.1	22							23.5	8	14.3					M2×2.5	1.5	7	5	—	2.4	4.2	2.3			7.5	15	Hexagon socket head bolt M2×6	1 330	1 890	6.9	4.7 28.2	3.9 23.6							
ML 7…N*	LWL 7…N*	—	9.1	24																										M3 Through						—	—	—	M3×ℓ ⁽³⁾ (Not appended)			
MLG 7	LWLG 7…B	○	13	22							31	12	21.6					M2×2.5	1.5	7	5	—	2.4	4.2	2.3			7.5	15	Hexagon socket head bolt M2×6	1 690	2 650	9.7	8.8 50.7	7.4 42.5							
MLG 7…N*	LWLG 7…N*	—	13	24																										M3 Through						—	—	—	M3×ℓ ⁽³⁾ (Not appended)			
		○	14	22																																						
		○	14	24																																						
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- Notes (1) Track rail lengths L are shown in Table 3.1 on page II - 10.
- (2) The appended mounting bolts are hexagon socket head bolts equivalent to JIS B 1176 or CIPA AD-003-2020 cross recessed head screw for precision equipment (No. 0 small screw).
- (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.

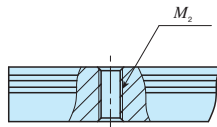
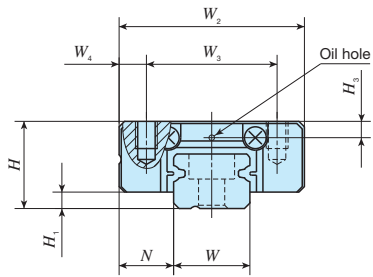


Example of identification number of assembled set

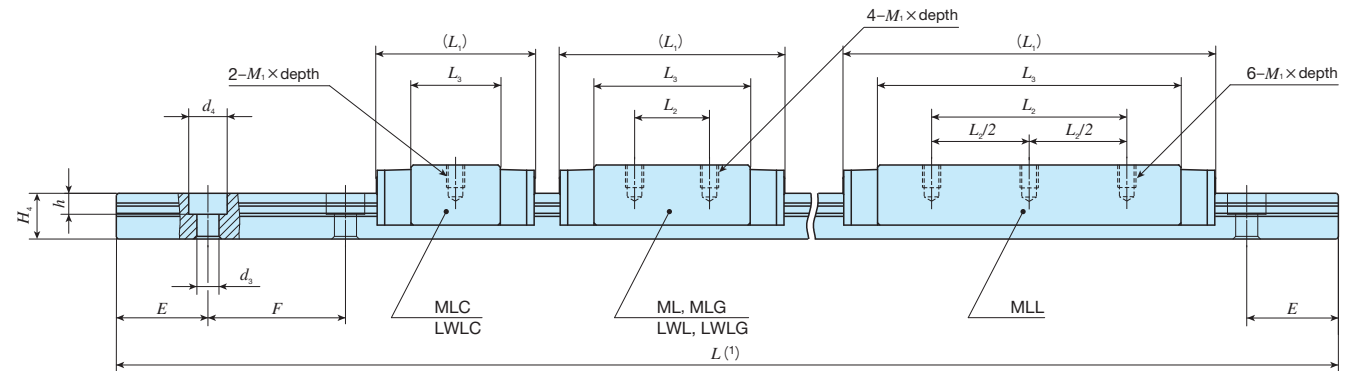
Model code	Dimensions	Part code	Model code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
ML	C	7	C2	R120	T1	P	/D
1	2	3	4	5	6	7	8
① Model	③ Size		⑥ Preload amount		⑧ Interchangeable		
ML	5, 7		T0		No symbol		
LWL...B			Clearance		Non-interchangeable specification		
LWL...N			No symbol		S1		
			T1		S2		
② Length of slide unit	④ Number of slide unit (2)		⑦ Accuracy class		⑨ Special specification		
C			H		A, BS, D, E, HB, I, LR		
No symbol			P		MN, N, Q, RE, S, W, Y		
G							

IKO C-Lube Linear Way ML

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

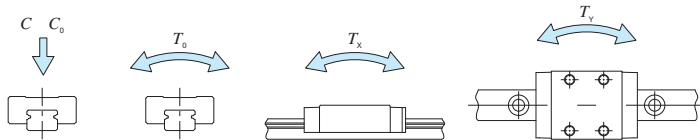


Tapped rail specification
LWL...N



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*	—	37	M4 Through														—	—	—	M4×ℓ ⁽³⁾ (Not appended)																				
ML 9	LWL 9…B	○	18	35														—	3.5	6	3.5			M3×8																	
—	LWL 9…BCS	○	19	35							30	10	20.8					40.5	15	30.9	50			26	40.4	M3×3.5	2.7	12	8	—	3.5	6.5	4.5	12.5	25	M3×8	2 870	5 300	24.6	31.9 157	26.7 132
ML 9…N*	LWL 9…N*	—	18	37							M4 Through	—	—																												
MLG 9	LWLG 9…B	○	26	35							—	3.5	6																								3.5	M3×8			
MLG 9…N*	LWLG 9…N*	—	26	37							M4 Through	—	—					—	M4×ℓ ⁽³⁾ (Not appended)	2 370	4 030			18.7	18.7 98.3	15.7 82.5															
MLL 9	—	○	34	35							—	3.5	6					3.5	M3×8																						
MLL 9…N*	—	—	34	37							M4 Through	—	—					—	M4×ℓ ⁽³⁾ (Not appended)	2 870	5 300			24.6	31.9 157	26.7 132															
MLC 12	LWLC 12…B	○	22	65	13	3	7.5	27	20	3.5	25	—	13	M3×3.5	2.7	12	8	—	3.5	6.5	4.5	12.5	25	M3×8	2 210	2 380	14.8	5.3 41.7	4.5 35.0												
ML 12	LWL 12…B	○	34								34	15	21.6												3 330	4 290	26.6	15.4 93.1	12.9 78.2												
—	LWL 12…BCS	○	35																																						
MLG 12	LWLG 12…B	○	48								44	20	32												4 310	6 200	38.4	30.6 168	25.7 141												
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.

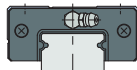


Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Material code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
ML	G	9	C2	R160	—	—	—	—
1	2	3	4	5	6	7	8	9
10								
① Model		③ Size		⑦ Preload amount		⑨ Interchangeable		
ML	Standard type	9, 12		T0	Clearance	No symbol	No interchangeability specification	
LWL...B				No symbol	Standard	S1	S1 specification	
LWL...N				T1	Light preload	S2	S2 specification	
② Length of slide unit		⑤ Length of track rail (160 mm)		⑧ Accuracy class		⑩ Special specification		
C	Short			H	High	A, BS, D, E, HB, I, LR, MN		
No symbol	Standard			P	Precision	N, Q, RE, S, U, W, Y		
G	Long							
L	Extra high rigidity long							
⑥ Material type		⑪						
No symbol	Stainless steel made							
CS	High carbon steel made							

Standard type

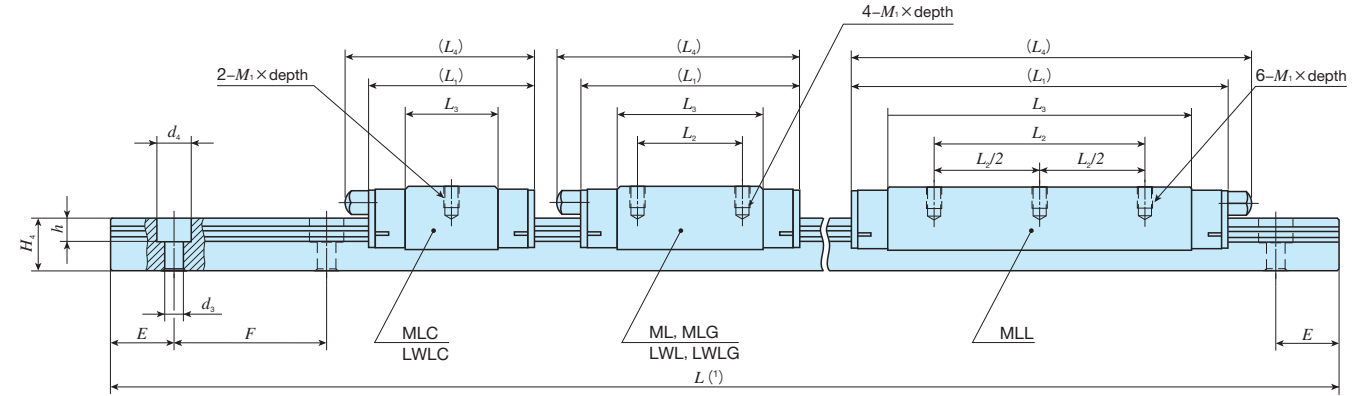
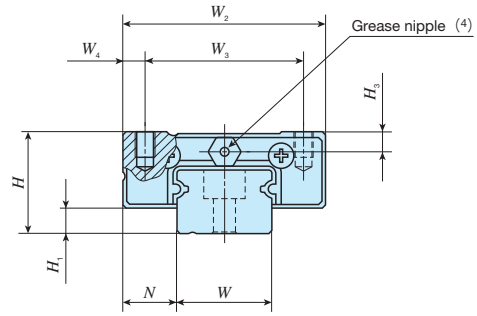
ML • LWL



Shape

Size

1	2	3	5	7
9	12	15	20	25



ML • LWL

[illegible]

Notes (1) Track rail lengths L are shown in Table 3.1 on page II – 10 and Table 3.3 on page II – 12.

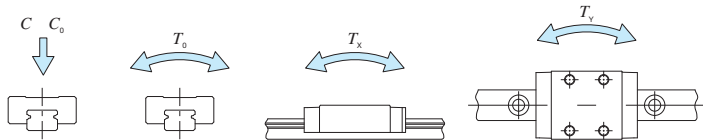
(2) The appended track rail mounting bolts are hexagon socket head bolts equivalent to JIS B 1176. For stainless steel model, stainless steel bolts are appended.

(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.



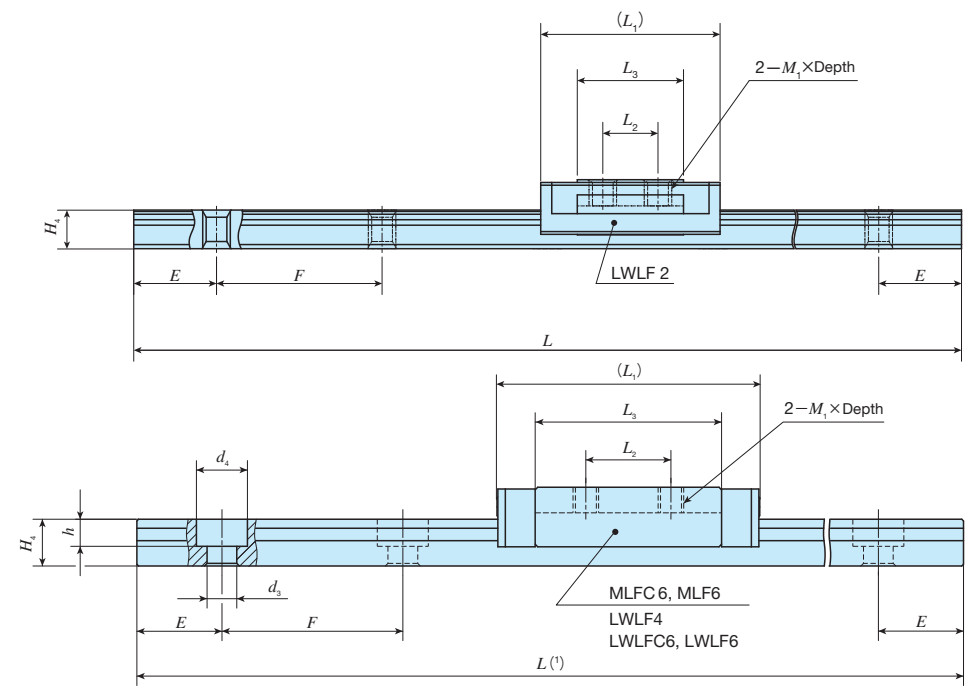
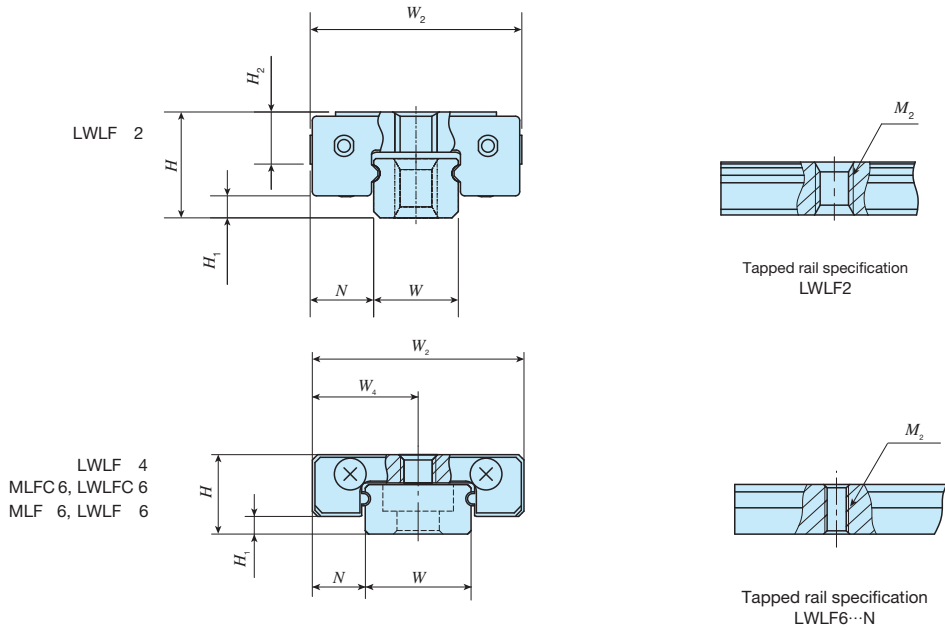
Example of identification number of assembled set

Model code Dimensions Part code Model code Material code Payload symbol Classification symbol Interchangeable code Supplemental code

ML G 15 C2 R320 1 T1 P /D

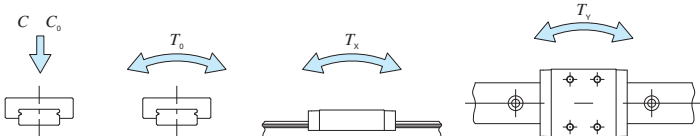
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Wide type	
Shape	MLF • LWLF
Size	2 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 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 ₂	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																					
—	LWLF 2 ⁽²⁾	—	0.21	2	2.5	0.5	1.5	5	—	—	6.5	2	3.9	M1 × 0.9	1.2	—		2	1.4	M1 Through	—	—	—	3	6	M1 × ℓ ⁽³⁾ (Not appended)	66.8	113	0.12	0.07 0.47	0.09 0.56																				
—	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 (Class 1) 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 (Class 3) M2×4	334	542	1.7	0.84 5.1	1.0 6.1																					
	LWLFC 6 ⁽²⁾	—	2.4																																																
MLFC 6…N ^{(2)*}		—	2.1																																																
	LWLFC 6…N ^{(2)*}	—	2.4																																																
MLF 6 ⁽²⁾		—	3.1	13																		20			8	14.6																									
	LWLF 6 ⁽²⁾	—	3.4																																																
MLF 6…N ^{(2)*}		—	3.1																																																
	LWLF 6…N ^{(2)*}	—	3.4	12																															M3 Through	—	—	—				M3 × ℓ ⁽³⁾ (Not appended)	443	813	2.5	1.8 9.9	2.2 11.8				

Notes ⁽¹⁾ Track rail lengths L are shown in Table 3.2 on page II - 11.
⁽²⁾ Steel balls are not retained. 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.
Remarks 1. The identification numbers with * are our semi-standard items.
2. There is no oil hole on the slide unit.

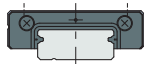


Example of identification number of assembled set

Model code	Dimensions	Part code	Model code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
MLF	C	6	C2	R120	T0	P	/D
1	2	3	4	5	6	7	8
1 Model	2 Length of slide unit	3 Size	4 Number of slide unit (2)	5 Length of track rail (120 mm)	6 Preload amount	7 Accuracy class	8 Interchangeable
MLF	C	2, 4, 6, 10	2	120	T0	H	No symbol
LWLF	Short				Clearance	High	No-interchangeable specification
LWLFC...N	Standard				Standard	Precision	S1 S1 specification
							S2 S2 specification
							9 Special specification
							A, BS, D, E, I, MN, N, Q
							RE, S, W, Y

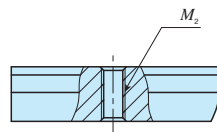
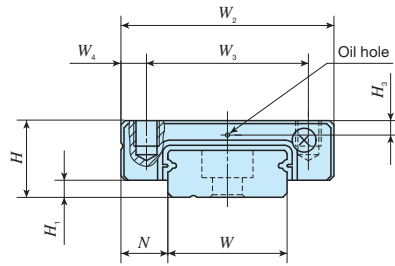
MLF • LWLF

Shape

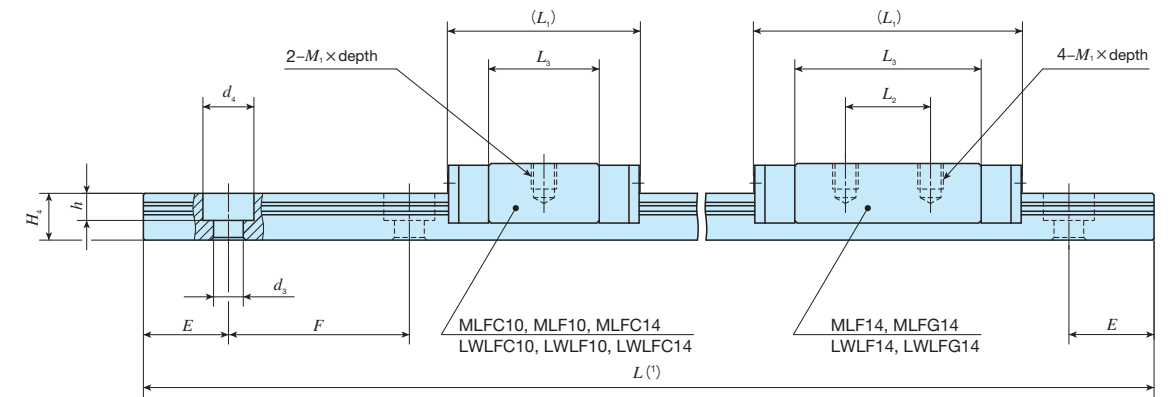


Size

2	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 10		○	6.1	28	6.5	1.5	3.5	17	13	2	20.5	—	M2.5×1.5	1.3	10	4	—	2.9	4.8	1.6	10	20	Cross-recessed pan head screw for precision equipment (Class 3) M2.5×7	712	1 180	6.1	2.6 14.9	2.2 12.5															
	LWLFC 10…B	○	5.9																																								
MLFC 10…N*		—	6.1																				29																				
	LWLFC 10…N*	—	5.9																																								
MLF 10		○	7.6																				28																				
	LWLF 10…B	○	7.5																																								
MLF 10…N*		—	7.6	29																																							
	LWLF 10…N*	—	7.5																																								
MLFC 14	LWLFC 14…B	○	13	54	9	2	5.5	25	19	3	22.5	—	13	M3 ×3	1.7	14	5.5	—	3.5	6	3.2	15	30	M3×8	1 240	1 700	12.2	3.8 24.6	3.2 20.7														
MLFC 14…N*	LWLFC 14…N*	—																						56						M4 Through	—	—	—	M4×ℓ ⁽³⁾ (Not appended)									
MLF 14	LWLF 14…B	○	20	54																				31.5	10	22	M3 ×3	1.7	—	3.5	6	3.2	15	30	M3×8	1 770	2 840	20.3	10.1 54.7	8.4 45.9			
MLF 14…N*	LWLF 14…N*	—	20																																M4 Through						—	—	—
	LWLF 14…N*	—	21																																56								
MLFG 14		○	29																																	42	19	32.5	M3 ×3	1.7	—	3.5	6
	LWLFG 14…B	○	31																																								
MLFG 14…N*		—	29								56																																
	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.

 $1\text{ N} \doteq 0.102\text{ kgf}$

Example of identification number of assembled set

Model code		Dimensions	Part code		Model code	Preload symbol	Classification symbol	Interchangeable code	Supplemental code
<u>MLF</u>	<u>G</u>	<u>14</u>	<u>C2</u>	<u>R240</u>	<u> </u>	<u>T₁</u>	<u>P</u>	<u> </u>	<u>/D</u>
1	2	3	4	5	1	6	7	8	9

① Model	
MLF	Wide type
LWLF...B	
LWLF...N	

③ Size	10, 14
--------	--------

⑥ Preload amount	
T ₀	Clearance
No symbol	Standard
T ₁	Light preload

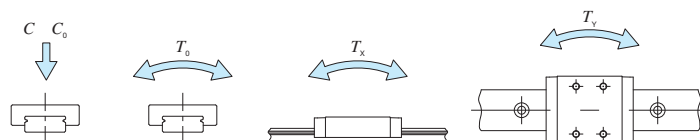
⑧ Interchangeable	
No symbol	Non-interchangeable specification
S1	S1 specification
S2	S2 specification

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

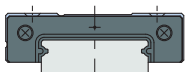
⑤ Length of track rail (240 mm)

⑦ Accuracy class	
H	High
P	Precision

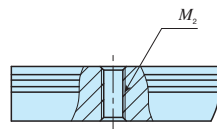
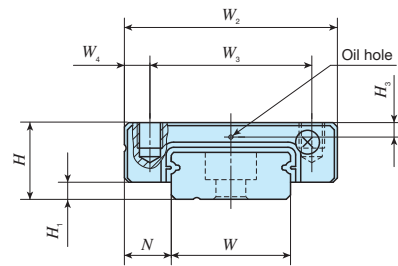
⑨ Special specification
A, BS, D, E, I, LR, MN
N, Q, RE, S, W, Y



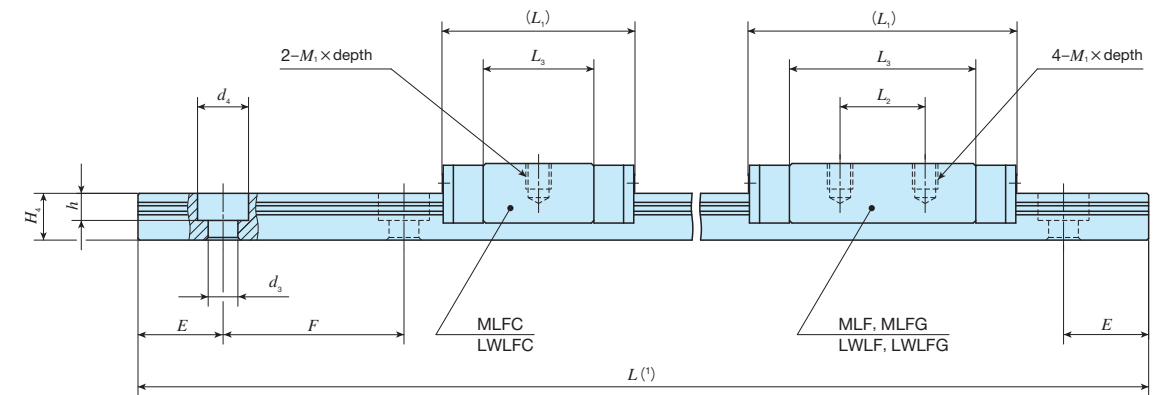
MLF • LWLF



Size	2	4	6	10	14
	18	24	30	42	



Tapped rail specification
LWLF...N

[illegible]

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.

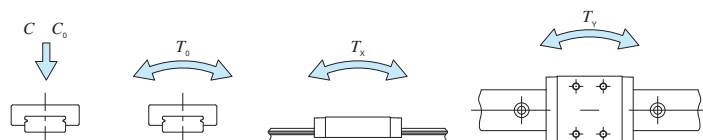
(3) Choose screws whose dimension allow fixing thread depth into track rail ℓ to be less than H_4 .

(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
<u>MLF</u>	<u>G</u>	<u>18</u>	<u>C2</u>	<u>R300</u>	<u> </u>	<u> </u>	<u>T₁</u>	<u>P</u>	<u> </u>	<u>/D</u>
1	2	3	4	5	1	6	7	8	9	10

① Model	
MLF	Wide type
LWLF...B	
LWLF...N	

③ Size	18, 24
--------	--------

④ Number of slide unit (2)

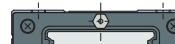
⑤ Length of track rail (300 mm)	
⑥ Material type	
No symbol	Stainless steel made
CS	High carbon steel made

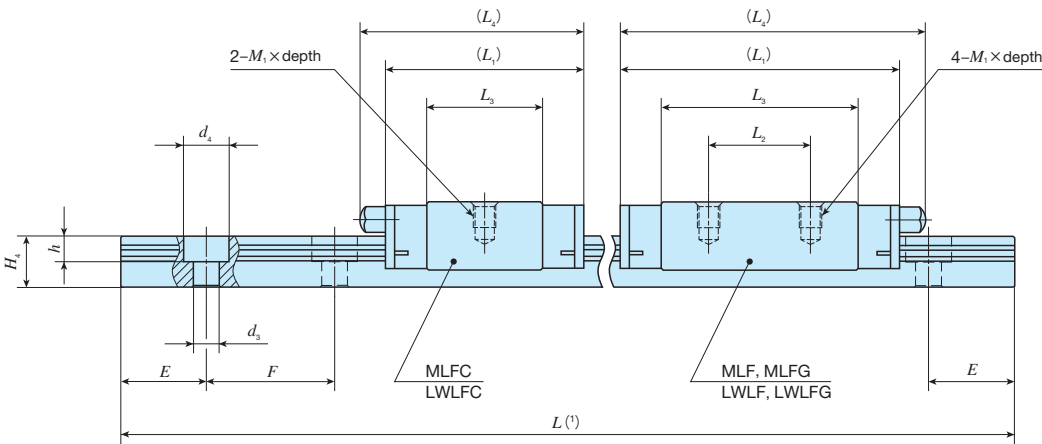
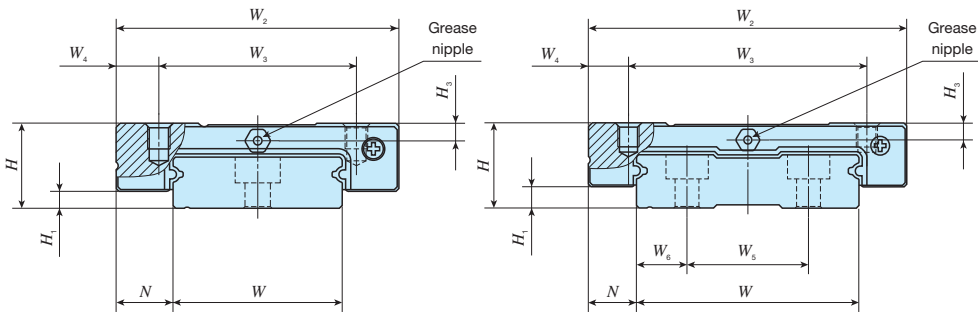
⑦ Preload amount	
T ₀	Clearance
No symbol	Standard
T ₁	Light preload

⑧ Accuracy class	
H	High
P	Precision

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

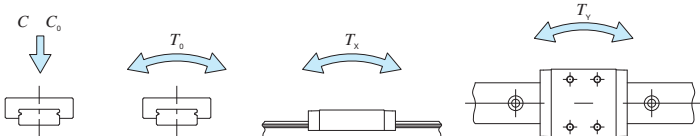
⑩ Special specification
A, BS, D, E, I, LR, MN
N, Q, RE, S, U, W, Y

Wide type					
Shape	MLF • LWLF				
					
Size	2	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 N	C ₀ N	T ₀ N・m	T _x N・m	T _y N・m														
MLFC 30	LWLFC 30…B	○	70	198	15	3	10	50	35	7.5	35.5	—	20.5	40	M4×4.5		3.1	30	9	—	—	4.5	8	4.5	20	40	M4×12	3 890	4 540	69.1	15.4 107	13.0 89.9														
MLF 30		○	111								112	49.5	18	34.8														54	M4×4.5		3.1	30	9	—	—	4.5	8	4.5	20	40	M4×12	5 970	8 440	128	48.7 256	40.8 215
—	LWLF 30…B	○																																												
	LWLF 30…BCS	○																																												
MLFG 30		○	167								170	68.5	35	53.8														73	M4×4.5		3.1	30	9	—	—	4.5	8	4.5	20	40	M4×12	7 810	12 300	187	100 508	84.3 426
	LWLFG 30…B	○																																												
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	○									140	41.5	—	25.3														46	5 030	6 050	128	24.8 164	20.8 137													
MLF 42		○	138																															55	20	39.4	60	M4×4.5		3.2	42	10	23	9.5	4.5	8
	LWLF 42…B	○																																												
—	LWLF 42…BCS	○									74.5	35	58.7	79														M4×4.5		3.2	42	10	23	9.5	4.5	8	4.5	20	40	M4×12	9 520	15 100	321	140 674	117 565	
MLFG 42		○	200	9 200	14 400	305	126 644	106 541																																						
	LWLFG 42…B	○	204																																											

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	6	7	8	9

① Model
MLF
LWLF...B
Wide type

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