

C-Lube Linear Way ML

ML/MLF

IKO C-Lube Linear Way ML is a linear motion rolling guide, incorporating the C-Lube as a components part for lubrication in the slide unit of miniature type Linear Way L series to achieve maintenance free operations for a long period of time.

Long-term maintenance free

The lubricant in the C-Lube keeps the lubrication performance for a long period of time and achieves long-term maintenance free operations. (5 years and 20,000km)
So man-hours for troublesome lubrication control can be reduced.

Lightweight and compact

The C-Lube is incorporated in the lightweight and compact slide unit of miniature type Linear Way L series without changing the external dimensions of the slide unit.

Smooth and light motion

As the C-Lube is not in contact with the track rail, frictional resistance does not increase. A smooth and light motion is ensured.

Stainless Steel

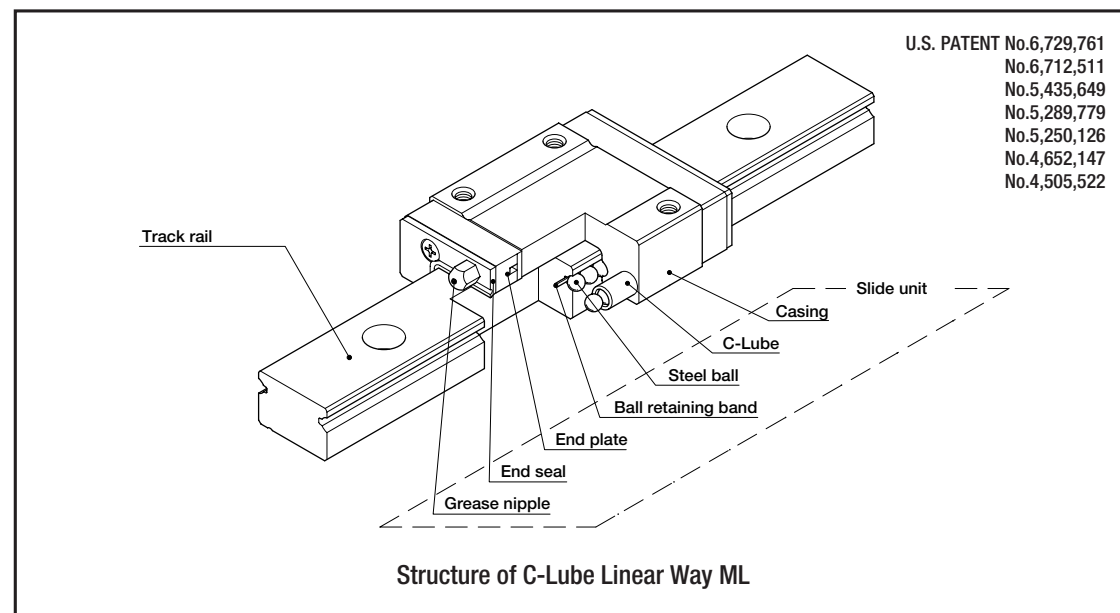
The metal components are manufactured from corrosion resistant stainless steel. So this series is most suitable for use in clean rooms and also for applications where the use of lubricants and rust preventive oil should be avoided or kept to a minimum.

Ball retained type

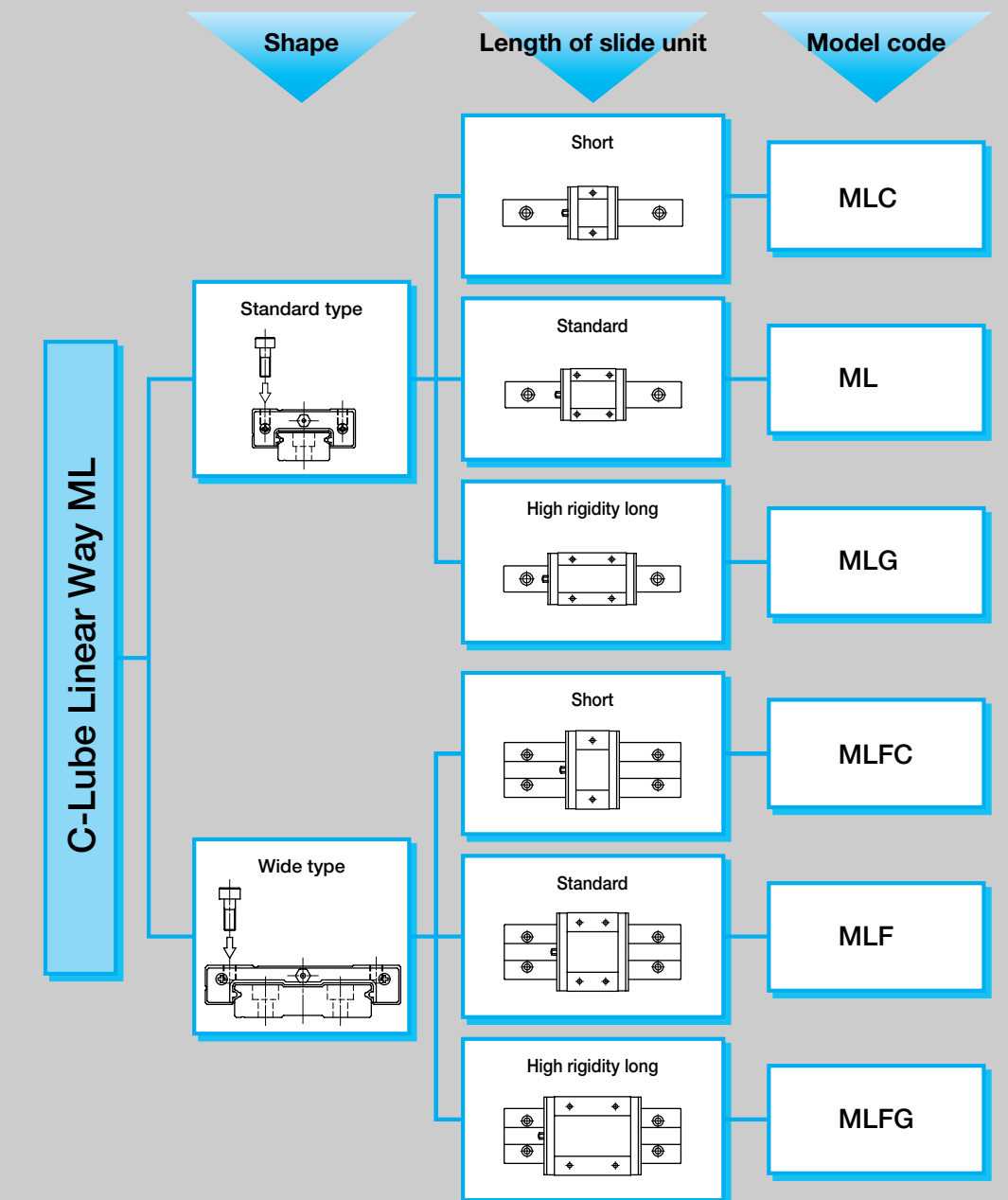
The slide unit incorporates ball retaining bands, which prevent steel balls from dropping when the slide unit is separated from the track rail. So handling is easy.

Interchangeability

The track rails and the slide units of interchangeable specification can be handled separately and can be assembled to make a set as required. Three types of slide units with different lengths are prepared. The best type and size can be selected these entire slide units can be freely assembled on the same track rail.

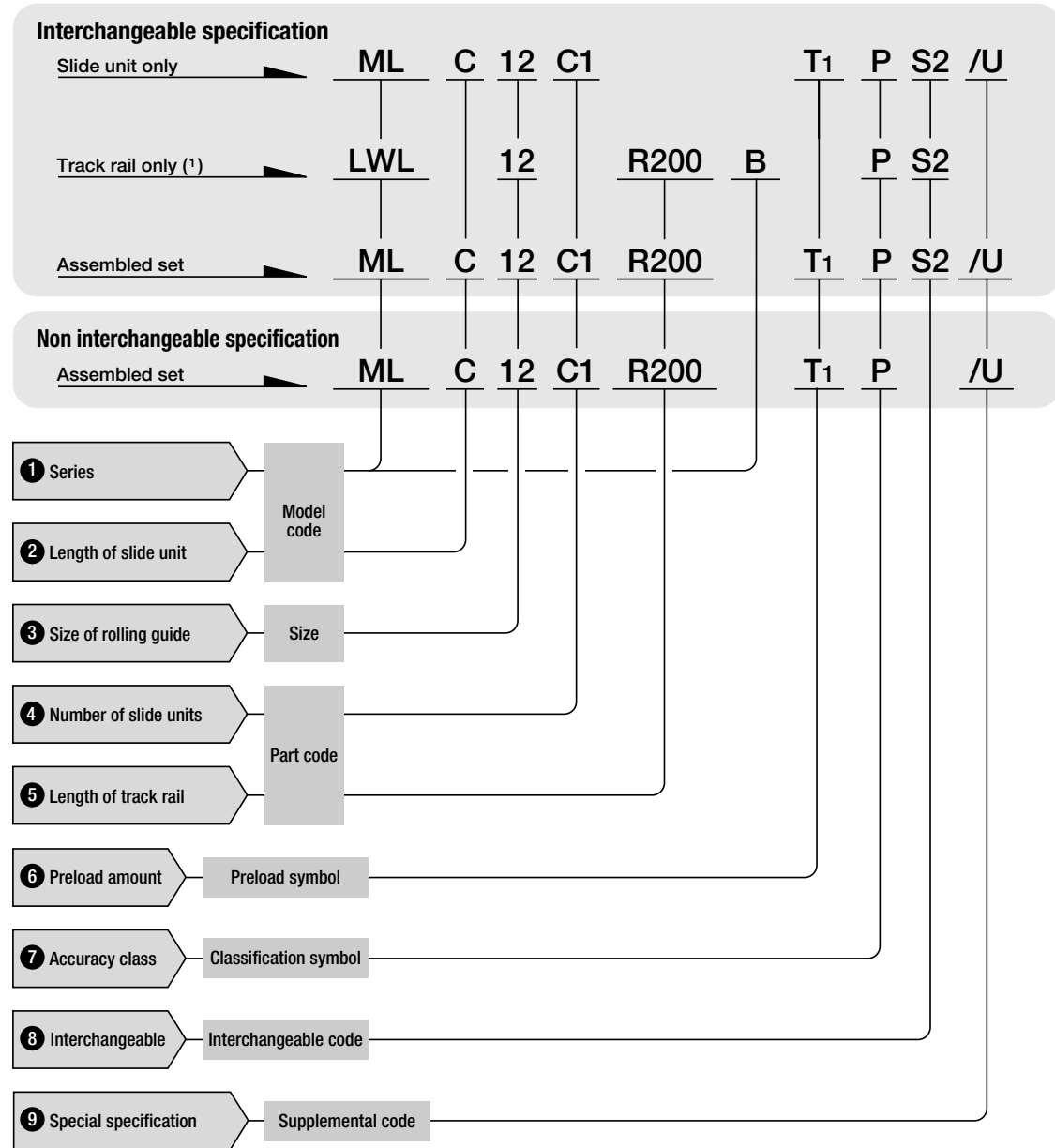


Variation of IKO C-Lube Linear Way ML



● Identification number and specification

The specification of C-Lube Linear Way ML is indicated by the identification number, consisting of a model code, a size, a part code, a preload symbol, a classification symbol and any supplemental codes. For details of each specification, see page 78.



Note(1) : In case ordering track rail only, model code should be changed as shown below.
 Track rail of interchangeable ML → Model code LWL...B (Ex: LWL9R160BHS2)
 Track rail of interchangeable MLF → Model code LWLF...B (Ex: LWLF42R320BHS2)

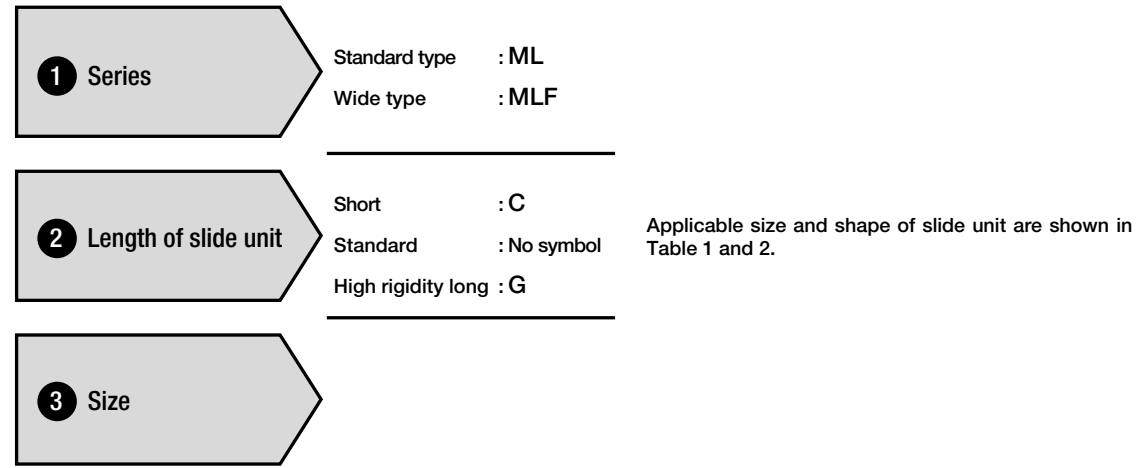


Table 1 Type and size of standard type C-Lube Linear Way ML

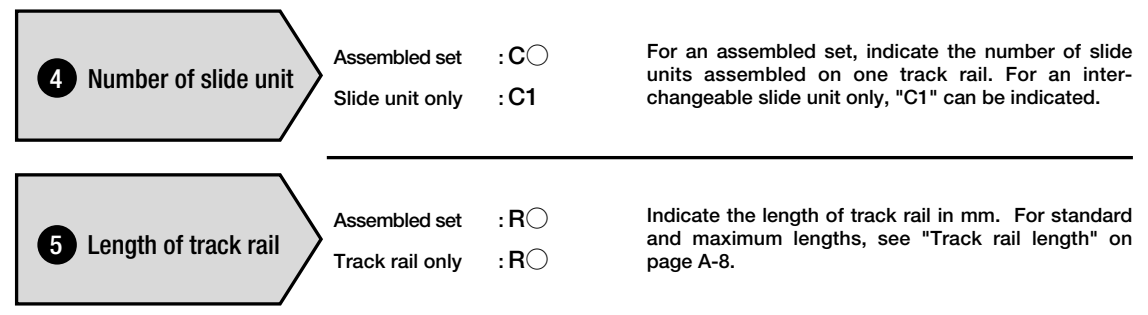
Size	Stainless steel		
	Short MLC	Standard ML	High rigidity long MLG
5	☆	☆	—
7	☆	☆	☆
9	☆	☆	☆
12	☆	☆	☆
15	☆	☆	☆
20	☆	☆	☆
25	☆	☆	☆

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

Table 2 Type and size of wide type C-Lube Linear Way MLF

Size	Stainless steel		
	Short MLFC	Standard MLF	High rigidity long MLFG
10	☆	☆	—
14	☆	☆	☆
18	☆	☆	☆
24	☆	☆	☆
30	☆	☆	☆
42	☆	☆	☆

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



6 Preload amount

Clearance : T0 Specify this items for an assembled set or an interchangeable single slide unit.
 Standard : No symbol Applicable preload and size are shown in Table 3.
 Light preload : T1 For detail of preload amount, see page 86.

Table 3 Preload of C-Lube Linear Way ML/MLF

Size		Preload and symbol		
Standard type	Wide type	Clearance (T ₀)	Standard (No symbol)	Light preload (T ₁)
5	10	☆	☆	—
7	14	☆	☆	☆
9	18	☆	☆	☆
12	24	☆	☆	☆
15	30	☆	☆	☆
20	42	☆	☆	☆
25	—	☆	☆	☆

Remark : The mark ☆ indicates that it is also applicable to interchangeable specification. Only standard preload is applicable for/HB. (Ceramic ball specification)

7 Accuracy class

High class : H In interchangeable specification, please combine same accuracy codes on both slide unit and track rail. For detail of accuracy, see page 81.
 Precision class : P

8 Interchangeable

Interchangeable : S2 Specify this item for the interchangeable specification products. Assemble track rails and slide units with the same interchangeable code.

9 Special specifications

Applicable special specifications are shown in Table 4. When a combination of several special specifications is required, please refer Table 5 and arrange their supplemental codes in alphabetical order. For detail of specifications, see page 88.

Table 4 Applicable specifications

Specifications	Supplemental code	Assembled set	Track rail only	Slide unit only	Dimension
Butt jointing track rail	A	○	—	—	
Opposite reference surfaces arrangement	D	☆	—	—	
Specified rail mounting hole positions	E	☆	☆	—	
Ceramic ball specification	HB	○ ⁽¹⁾	—	—	
Appending inspection sheet	I	○	—	—	
Black chrome surface treatment	LR	○ ⁽²⁾	—	—	
Without track rail mounting bolts	MN	☆	☆	—	
No rubber end seals	N	☆	—	☆	
Track rail with stopper pins	S	○	—	—	See Table 6
Under seals	U	☆ ⁽³⁾	—	☆ ⁽³⁾	See Table 7
Matched sets to be used as an assembled group	W	○	—	—	

Note⁽¹⁾ : Applicable to size 7, 9, 12 and 15.
 Note⁽²⁾ : Not applicable to size 5 and 10.
 Note⁽³⁾ : Not applicable to size 5, 7, 10 and 14.

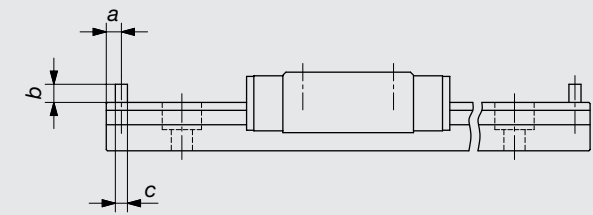
Remark : The mark ☆ indicates that it is also applicable to interchangeable specification.

Table 5 Combination of special specifications

D	○																				
E	—	—																			
HB	○	○	○																		
I	○	○	○	○																	
LR	—	○	○	○	○																
MN	○	☆	☆	○	○	○															
N	○	☆	☆	○	○	○	☆														
S	○	○	○	○	○	○	○	○													
U	○	☆	☆	○	○	○	☆	—	○												
W	○	○	—	○	○	○	○	○	○	○											
	A	D	E	HB	I	LR	MN	N	S	U											

Remark 1 : In the table, the mark ○ indicates that this combination can be made.
 Remark 2 : The mark ☆ indicates that the combination is available for also interchangeable specification.
 Remark 3 : When a combination of several special specifications is required, arrange their supplemental codes in alphabetical order.

Table 6 Dimension of track rail with stopper pins (Supplemental code: /S)

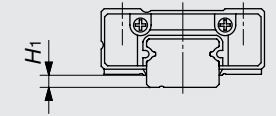


Model number	a	b	c
ML 5	2	2	1.6
ML 7	2.5	2.5	2
ML 9		3	
ML 12		4	
ML 15		5	
ML 20			
ML 25	3.5		

Model number	a	b	c
MLF 10	2.5	2	1.6
MLF 14		3	2
MLF 18			
MLF 24		4	
MLF 30		5	
MLF 42			

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

Table 7 H₁ dimension of slide unit with under seals (Supplemental code: /U)



Model number	H ₁
ML 9	1
ML 12	2
ML 15	3
ML 20	4
ML 25	5 ⁽¹⁾

Model number	H ₁
MLF 18	2
MLF 24	
MLF 30	
MLF 42	

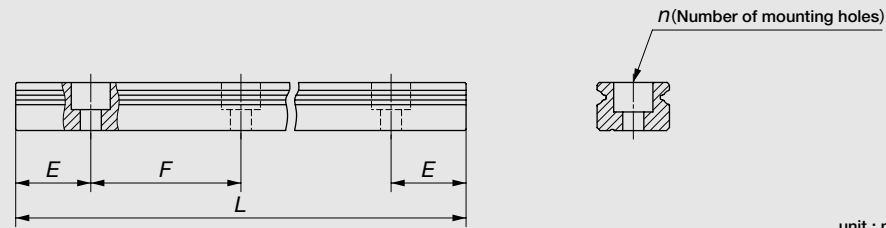
Note⁽¹⁾ : H₁ dimension of size 25 (ML25) is the same as the dimension without under seals.
 Remark : The table shows representative model numbers but is applicable to all models of the same size of ML and MLF series.

Track rail length

Standard and maximum lengths of track rail are shown in Table 8.1 and 8.2. Track rail in any lengths are also available. Simply indicate the necessary length of track rail in millimeter (mm) in the identification number.

- In non-interchangeable specification, for track rail longer than the maximum length shown in Table 8.1 and 8.2, butt-jointing track rails are available upon request. In this case, indicate supplemental code "/A" in the identification number.
- E dimensions at both ends are the same unless otherwise specified. To change these dimensions, specify the specified rail mounting hole positions (supplemental code "/E") of special specification.

Table 8.1 C-Lube Linear Way ML (Standard type) Standard and maximum lengths of track rails



Model number	ML 5	ML 7	ML 9	ML 12
Item				
Standard length $L(n)$	60(4) 90(6) 105(7) 120(8) 150(10)	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)
Mounting hole pitch F	15	15	20	25
E	7.5	7.5	10	12.5
Reference dimension $E^{(1)}$	Over (Incl.) 4 Under 11.5	4.5 12	4.5 14.5	5 17.5
Maximum length ⁽²⁾	210 (510)	300 (990)	860 (1 200)	1 000 (1 450)
Maximum number of track rails for butt jointing	5	7	2	2
Maximum length of butt jointing track rails	915	1 905	1 660	1 925
Model number	ML 15	ML 20	ML 25	
Item				
Standard length $L(n)$	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)	
Mounting hole pitch F	40	60	60	
E	20	30	30	
Reference dimension $E^{(1)}$	Over (Incl.) 5.5 Under 25.5	8 38	9 39	
Maximum length ⁽²⁾	1 000 (1 480)	960 (1 800)	960 (1 800)	
Maximum number of track rails for butt jointing	2	2	2	
Maximum length of butt jointing track rails	1 880	1 740	1 740	

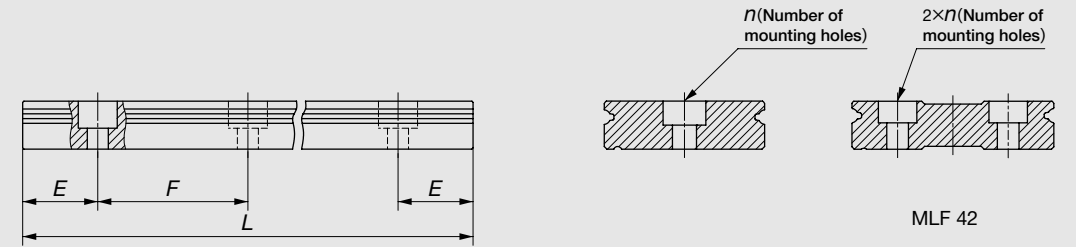
Note(1) : Not applied to optional specification "track rail stopper pins" (supplemental code "/S")

(2) : The track rails can be manufactured up to the maximum length shown in parentheses. If required, please consult **IKO**.

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

2 : "Maximum number of butt-jointing track rails" and "Maximum length of butt-jointing track rails" do not apply to the track rails of interchangeable specification and tapped rail specification.

Table 8.2 C-Lube Linear Way MLF (Wide type) Standard and maximum lengths of track rails



Model number	MLF 10	MLF 14	MLF 18	MLF 24
Item				
Standard length $L(n)$	60(3) 80(4) 120(6) 160(8) 220(11) 280(14)	90(3) 120(4) 150(5) 180(6) 240(8) 300(10)	90(3) 120(4) 150(5) 180(6) 240(8) 300(10)	120(3) 160(4) 240(6) 320(8) 400(10) 480(12)
Mounting hole pitch F	20	30	30	40
E	10	15	15	20
Reference dimension $E^{(1)}$	Over (Incl.) 4.5 Under 14.5	5.5 20.5	5.5 20.5	6.5 26.5
Maximum length ⁽²⁾	300 (500)	300 (990)	690 (1 860)	680 (1 960)
Maximum number of track rails for butt jointing	7	8	3	3
Maximum length of butt jointing track rails	1 840	1 950	1 920	1 840
Model number	MLF 30	MLF 42		
Item				
Standard length $L(n)$	160(4) 240(6) 320(8) 440(11) 560(14) 680(17)	160(4) 240(6) 320(8) 440(11) 560(14) 680(17)		
Mounting hole pitch F	40	40		
E	20	20		
Reference dimension $E^{(1)}$	Over (Incl.) 6.5 Under 26.5	6.5 26.5		
Maximum length ⁽²⁾	680 (2 000)	680 (2 000)		
Maximum number of track rails for butt jointing	3	3		
Maximum length of butt jointing track rails	1 840	1 840		

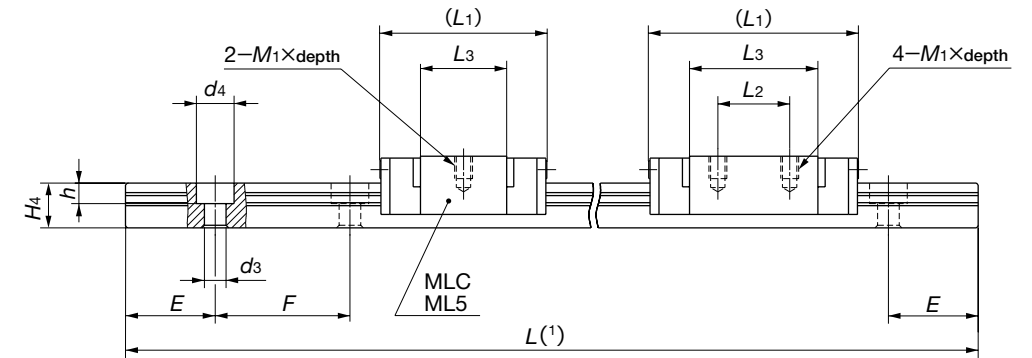
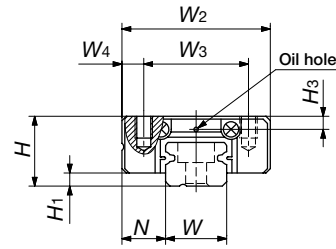
Note(1) : Not applied to optional specification "track rail stopper pins" (supplemental code "/S")

(2) : The track rails can be manufactured up to the maximum length shown in parentheses. If required, please consult **IKO**.

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

2 : "Maximum number of butt-jointing track rails" and "Maximum length of butt-jointing track rails" do not apply to the track rails of interchangeable specification and tapped rail specification.

MLC
ML
MLG



Model number	Interchangeable	Mass (Reference) g		Dimension of assembly mm			Dimension of slide unit mm							
		Slide unit	Track rail (per 100mm)	H	H ₁	N	W ₂	W ₃	W ₄	L ₁	L ₂	L ₃	M ₁ × depth	
MLC 5	☆	3.4	12	6	1	3.5	12	8	2	16	-	9.6	M2 × 1.5	
ML 5	☆	4.3								19		12.6		
MLC 7	☆	6.7	22	8	1.5	5	17	12	2.5	19	-	9.6	M2 × 2.5	
ML 7	☆	9.1								23.5		8		14.3
MLG 7	☆	13								31		12		21.6
MLC 9	☆	11	35	10	2	5.5	20	15	2.5	21.5	-	11.9	M3 × 3	
ML 9	☆	18								30		10		20.8
MLG 9	☆	26								40.5		15		30.9
MLC 12	☆	22	65	13	3	7.5	27	20	3.5	25	-	13	M3 × 3.5	
ML 12	☆	34								34		15		21.6
MLG 12	☆	48								44		20		32

H ₃	Dimension of track rail mm								Appended mounting bolt for track rail mm Bolt size x length	Basic dynamic load rating ⁽²⁾ C N	Basic static load rating ⁽²⁾ C ₀ N	Static moment rating ⁽²⁾		
	W	H ₄	d ₃	d ₄	h	E	F	T ₀ N·m				T _X N·m	T _Y N·m	
1.2	5	3.7	2.4	3.6	0.8	7.5	15	Cross-recessed head cap screw for precision equipment M2×6	562	841	2.2	1.4 8.5	1.2 7.2	
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	
									1 330	1 890	6.9	4.7 28.2	3.9 23.6	
									1 690	2 650	9.7	8.8 50.7	7.4 42.5	
2.2	9	6	3.5	6	3.5	10	20	Hexagon socket head bolt M3×8	1 180	1 480	6.9	2.9 21.4	2.4 18.0	
									1 810	2 760	12.8	9.1 51.1	7.6 42.9	
									2 370	4 030	18.7	18.7 98.3	15.7 82.5	
2.7	12	8	3.5	6.5	4.5	12.5	25	Hexagon socket head bolt M3×8	2 210	2 380	14.8	5.3 41.7	4.5 35.0	
									3 330	4 290	26.6	15.4 93.1	12.9 78.2	
									4 310	6 200	38.4	30.6 168	25.7 141	

Note⁽¹⁾: Track rail lengths L are shown in Table 8.1 on page A-8.

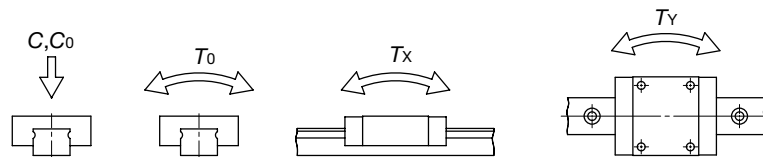
⁽²⁾: The directions of basic dynamic load rating (C), basic static load rating (C₀) and static moment rating (T₀, T_X and T_Y) are shown in the sketches below. The upper values in the T_X and T_Y column apply to one slide unit, and the lower values apply to two units in close contact.

Remark 1: The mark ☆ indicates that it is also applicable to interchangeable specification.

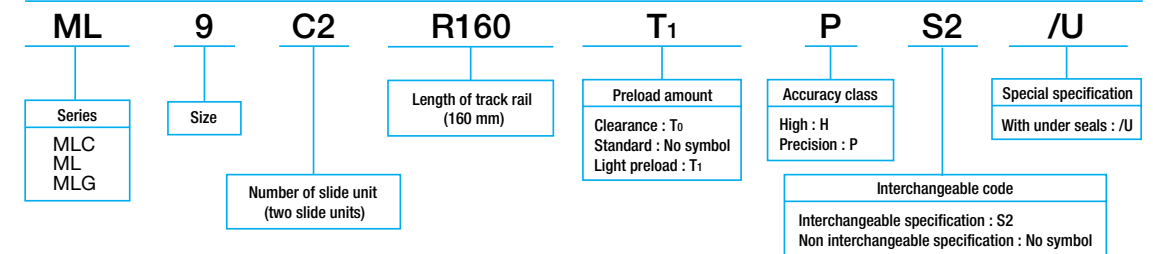
2: The appended bolts for mounting track rails are stainless hexagon socket head bolts of JIS B1176 or equivalent, or stainless cross-recessed head cap screws for precision equipment.

3: Oil hole is provided for ML5 to ML12 models.

4: For specification of oil hole, see page 101.

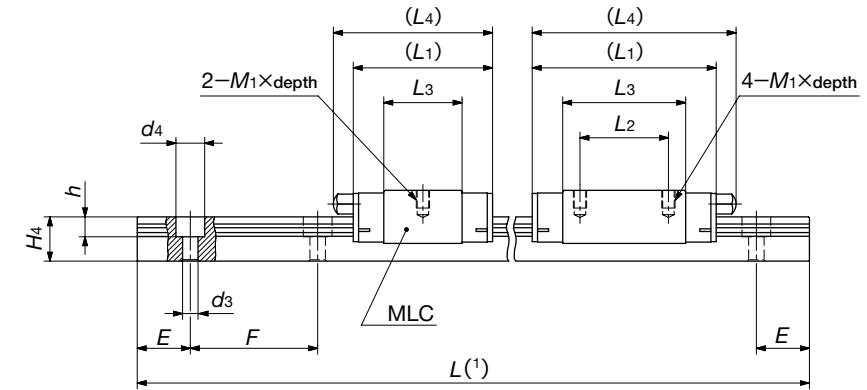
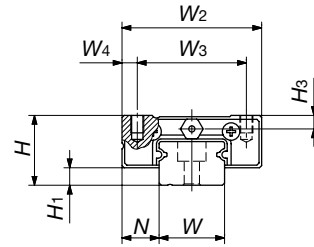


Example of identification number for assembled set (For details, see "Identification number and specification".)



※In case ordering track rail only, model code is changed as shown below.
Track rail of interchangeable ML ⇒ Model code LWL...B (Ex: LWL9R160BPS2)

MLC
ML
MLG



Model number	Interchangeable	Mass (Reference) g		Dimension of assembly mm			Dimension of slide unit mm							
		Slide unit	Track rail (per 100mm)	H	H ₁	N	W ₂	W ₃	W ₄	L ₁	L ₂	L ₃	L ₄	M ₁ × depth
MLC 15	☆	43	107	16	4	8.5	32	25	3.5	32	—	17.8	36	M3×4
ML 15	☆	63								42	20	27.9	47	
MLG 15	☆	93								57	25	42.8	62	
MLC 20	☆	89	156	20	5	10	40	30	5	38	—	22.3	42	M4×6
ML 20	☆	130								50	25	34.6	55	
MLG 20	☆	189								68	30	52.3	72	
MLC 25	☆	189	243	25	5	12.5	48	35	6.5	55	—	31.9	65	M6×7
ML 25	☆	305								78	35	55.7	89	
MLG 25	☆	405								98	40	75.5	108	

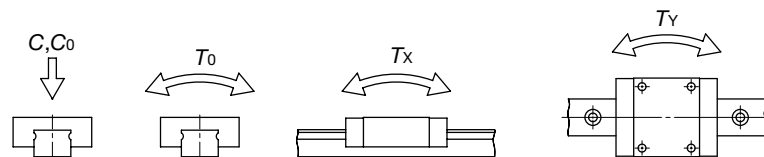
Note(1): Track rail lengths L are shown in Table 8.1 on page A-8.

(2): The directions of basic dynamic load rating (C), basic static load rating (C₀) and static moment rating (T₀, T_x and T_y) are shown in the sketches below. The upper values in the T_x and T_y column apply to one slide unit, and the lower values apply to two units in close contact.

Remark 1: The mark ☆ indicates that it is also applicable to interchangeable specification.

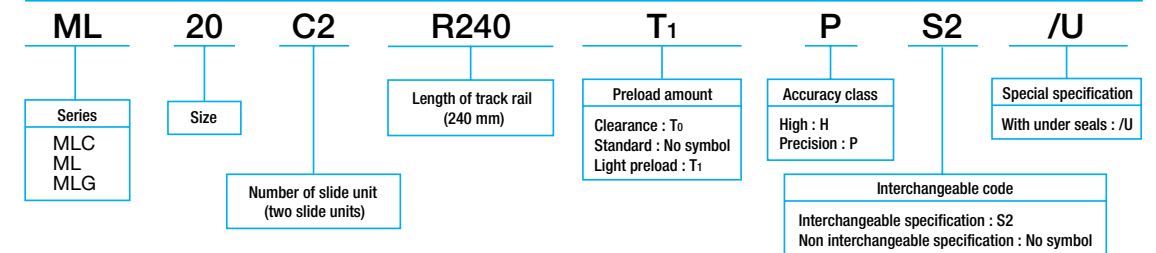
2: The appended bolts for mounting track rails are stainless hexagon socket head bolts of JIS B1176 or equivalent, or stainless cross-recessed head cap screws for precision equipment.

3: For specification of grease nipple, see page 99.



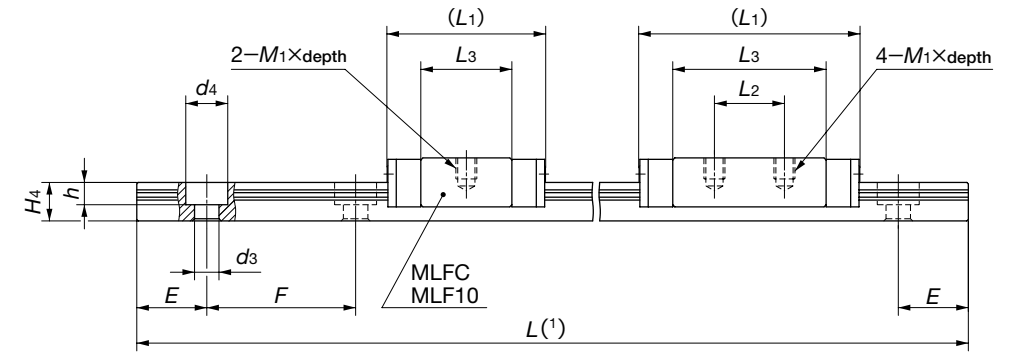
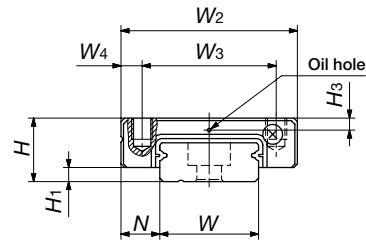
H ₃	Dimension of track rail mm							Appended mounting bolt for track rail mm Bolt size x length	Basic dynamic load rating ⁽²⁾	Basic static load rating ⁽²⁾	Static moment rating ⁽²⁾		
	W	H ₄	d ₃	d ₄	h	E	F		C N	C ₀ N	T ₀ N·m	T _x N·m	T _y N·m
3.1	15	10	3.5	6.5	4.5	20	40	Hexagon socket head bolt M3×10	3 490	3 890	30.0	11.7	9.8
									4 980	6 490	50.0	29.7	24.9
									6 620	9 740	75.0	63.9	53.6
4.2	20	11	6	9.5	5.5	30	60	Hexagon socket head bolt M5×14	4 580	5 300	54.0	19.4	16.3
									6 650	9 080	92.6	52.7	44.2
									8 510	12 900	131	102	85.7
5	23	15	7	11.0	9.0	30	60	Hexagon socket head bolt M6×16	9 120	10 600	128	57.4	48.1
									13 500	18 500	223	163	137
									16 700	25 200	303	293	246

Example of identification number for assembled set (For details, see "Identification number and specification".)



※In case ordering track rail only, model code is changed as shown below.
Track rail of interchangeable ML → Model code LWL...B (Ex: LWL20R240BPS2)

MLFC
MLF
MLFG



Model number	Interchangeable	Mass (Reference) g		Dimension of assembly mm			Dimension of slide unit mm							
		Slide unit	Track rail (per 100mm)	H	H ₁	N	W ₂	W ₃	W ₄	L ₁	L ₂	L ₃	M ₁ × depth	H ₃
MLFC 10	☆	6.1	28	6.5	1.5	3.5	17	13	2	20.5	-	13.6	M2.5 × 1.5	1.3
MLF 10	☆	7.6								24.5		17.6		
MLFC 14	☆	13	54	9	2	5.5	25	19	3	22.5	10	13	M3 × 3	1.7
MLF 14	☆	20								31.5		22		
MLFG 14	☆	29								42		19		
MLFC 18	☆	26	90	12	3	6	30	21	4.5	26.5	12	16.6	M3 × 3	2.5
MLF 18	☆	42								39		28.6		
MLFG 18	☆	59								23		3.5		
MLFC 24	☆	46	139	14	3	8	40	28	6	30.5	15	17.7	M3 × 3.5	3.2
MLF 24	☆	74								44		31		
MLFG 24	☆	108								59		28		

Note(1) : Track rail lengths L are shown in Table 8.2 on page A-9.

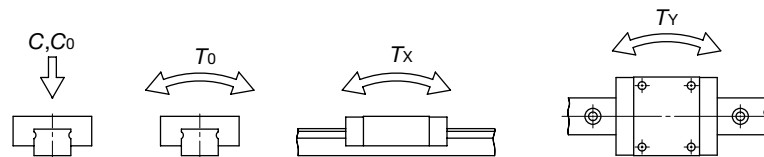
(2) : The directions of basic dynamic load rating (C), basic static load rating (C₀) and static moment rating (T₀, T_x and T_y) are shown in the sketches below. The upper values in the T_x and T_y column apply to one slide unit, and the lower values apply to two units in close contact.

Remark 1 : The mark ☆ indicates that it is also applicable to interchangeable specification.

2 : The appended bolts for mounting track rails are stainless hexagon socket head bolts of JIS B1176 or equivalent, or stainless cross-recessed head cap screws for precision equipment.

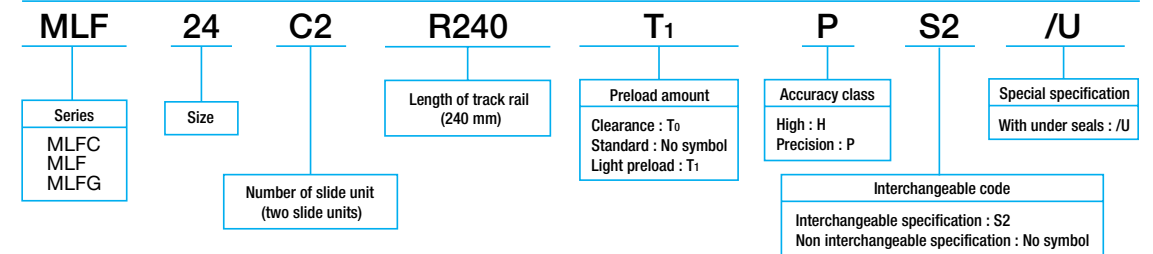
3 : Oil hole is provided for MLF10 to MLF24 models.

4 : For specification of oil hole, see page 101.



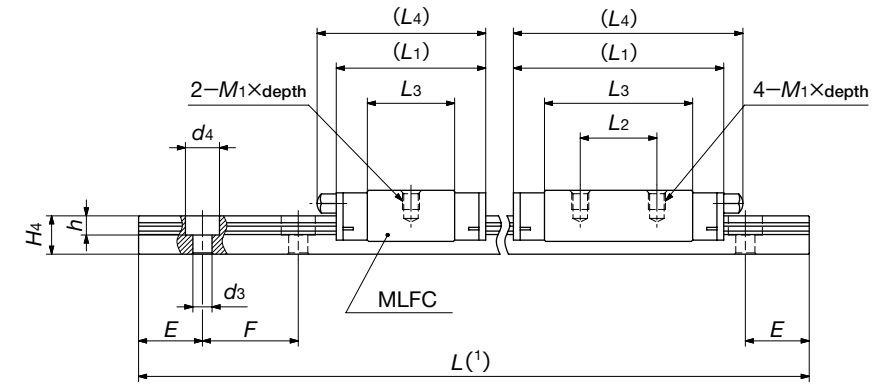
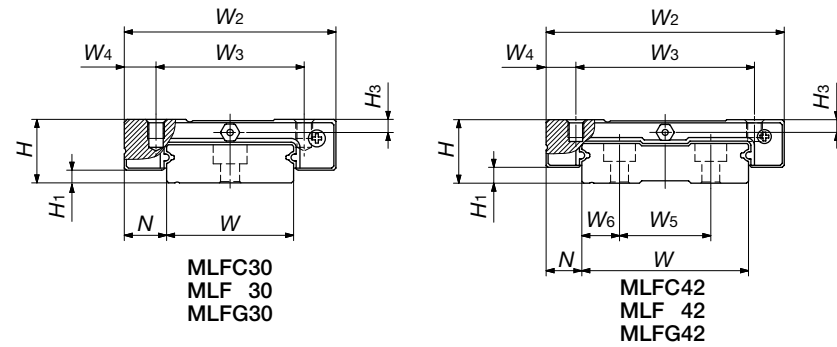
Dimension of track rail mm							Appended mounting bolt for track rail mm Bolt size x length	Basic dynamic load rating(2) C N	Basic static load rating(2) C ₀ N	Static moment rating(2)		
W	H ₄	d ₃	d ₄	h	E	F				T ₀ N·m	T _x N·m	T _y N·m
10	4	2.9	4.8	1.6	10	20	Cross-recessed head cap screw for precision equipment M2.5×7	712	1 180	6.1	2.6	2.2
								849	1 510	7.8	14.9	12.5
14	5.5	3.5	6	3.2	15	30	Hexagon socket head bolt M3×8	1 240	1 700	12.2	3.8	3.2
								1 770	2 840	20.3	24.6	20.7
								2 320	4 160	29.8	10.1	8.4
18	7	3.5	6.5	4.5	15	30	Hexagon socket head bolt M3×8	1 510	2 120	19.4	5.5	4.7
								2 280	3 810	34.9	35.9	30.1
								2 870	5 300	48.5	16.9	14.2
24	8	4.5	8	4.5	20	40	Hexagon socket head bolt M4×10	2 800	3 340	40.7	9.7	8.2
								4 310	6 200	75.6	67.6	56.8
								5 620	9 060	111	31.9	25.7
											159	134

Example of identification number for assembled set (For details, see "Identification number and specification".)



※In case ordering track rail only, model code is changed as shown below.
Track rail of interchangeable MLF ⇒ Model code LWLF...B (Ex: LWLF14R240BPS2)

MLFC
MLF
MLFG



Model number	Interchangeable	Mass (Reference) g	Dimension of assembly mm		Dimension of slide unit mm										
			Slide unit	Track rail (per 100mm)	H	H ₁	N	W ₂	W ₃	W ₄	L ₁	L ₂	L ₃	L ₄	M ₁ × depth
MLFC 30	☆	70	198	15	3	10	50	35	7.5	35.5	—	20.5	40	M4 × 4.5	3.1
MLF 30	☆	111								50	18	34.8	54		
MLFG 30	☆	167								68.5	35	53.8	73		
MLFC 42	☆	95	294	16	4	9	60	45	7.5	41.5	—	25.7	46	M4 × 4.5	3.2
MLF 42	☆	138								55	20	39.4	60		
MLFG 42	☆	200								74.5	35	58.7	79		

Dimension of track rail mm									Appended mounting bolt for track rail mm	Basic dynamic load rating ⁽²⁾ C	Basic static load rating ⁽²⁾ C ₀	Static moment rating ⁽²⁾			
W	H ₄	W ₅	W ₆	d ₃	d ₄	h	E	F				Bolt size x length	T ₀	T _x	T _y
											N	N	N·m	N·m	N·m
30	9	—	—	4.5	8	4.5	20	40	Hexagon socket head bolt M4 × 12	3 890	4 540	69.1	15.4	13.0	
										5 970	8 440	128	48.7	40.8	
										7 810	12 300	187	100	84.3	
42	10	23	9.5	4.5	8	4.5	20	40	Hexagon socket head bolt M4 × 12	5 440	6 810	144	30.8	25.8	
										7 050	9 840	209	61.3	51.4	
										9 520	15 100	321	140	117	

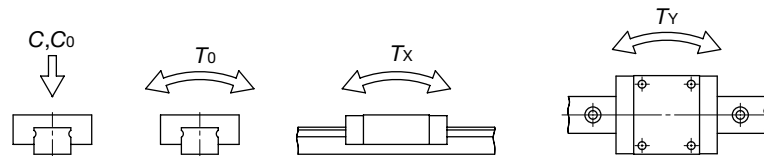
Note(1) : Track rail lengths L are shown in Table 8.2 on page A-9.

(2) : The directions of basic dynamic load rating (C), basic static load rating (C₀) and static moment rating (T₀, T_x and T_y) are shown in the sketches below. The upper values in the T_x and T_y column apply to one slide unit, and the lower values apply to two units in close contact.

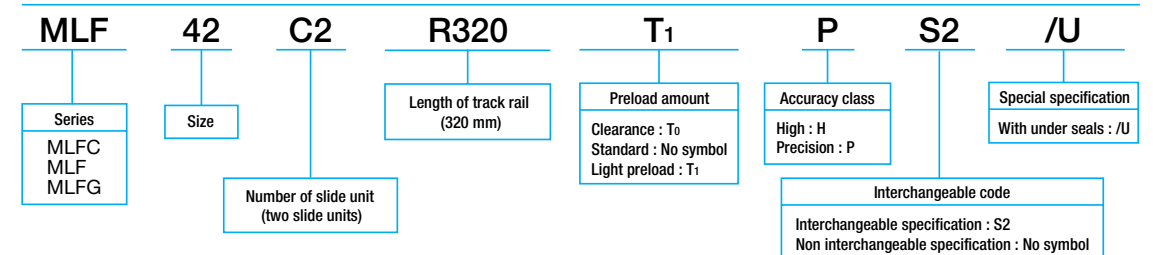
Remark 1 : The mark ☆ indicates that it is also applicable to interchangeable specification.

2 : The appended bolts for mounting track rails are stainless hexagon socket head bolts of JIS B1176 or equivalent, or stainless cross-recessed head cap screws for precision equipment.

3 : For specification of grease nipple, see page 99.



Example of identification number for assembled set (For details, see "Identification number and specification".)



※ In case ordering track rail only, model code is changed as shown below.
Track rail of interchangeable MLF → Model code LWLF...B (Ex: LWLF42R320BPS2)