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PRODUCT CATALOGUE

LINEAR GUIDE

WIN2 LINEAR MOTION

Expertise Beyond Components

Win Win Linear Motion Co., Ltd. leverages over 20 years of mastery in linear motion industry. From basic components to advanced linear module, and collaborative robotic systems, we are capable to provide high-performance, cost-effective solutions. Our solid technical background ensures every project with the stability and commit the quality.

Business Philosophy

We redefine the traditional "win-win" model through our 2x2 (Quadruple-Win) philosoph. By integrating strong manufacturing resources with flexible and responsive support, we aim for building long-term, reliable partnerships with both distributors and end-users. With strict ISO-standard quality assurance and seamless fluent communication, Win Win Linear eliminates design errors and cultural gaps, ensuring your success is not just achieved, but multiplied.

CONTENTS

Linear Guide - LMG/GQ series A-001

LMG series A-020

LMGQ series A-033

Self-Lubricating Module - SR series A-049

Solid Self-lubricating Module - GR series A-052

Grease for high speed - GREASE GS2 A-054

Stainless Steel series A-055

Metal Circulator - M series A-057

CONTENTS

Roller-type Linear Guide - LMR series A-095

Dust proof Cover Stripe C A-121

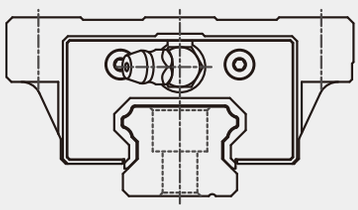
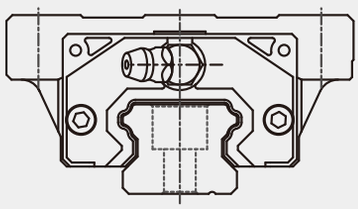
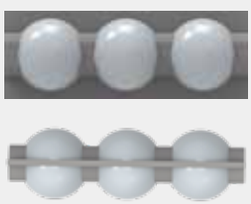
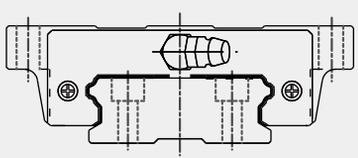
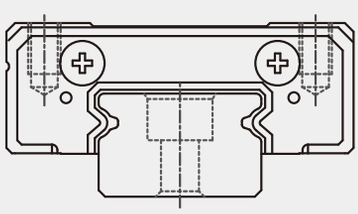
Linear Guide Basic knowledge A-124

Feature of Linear Guide A-132

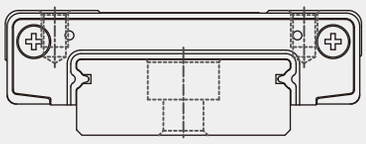
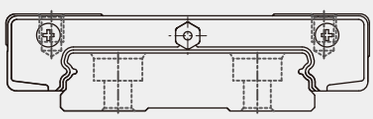
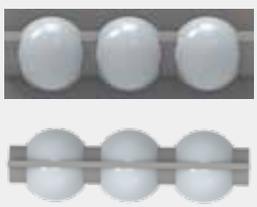
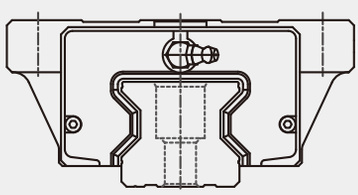
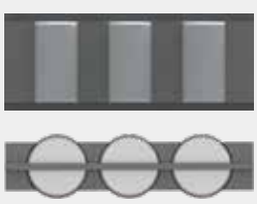
Key Points for Selecting Linear Guide A-133

Design Reference Elements A-147

Guide Type

LMG series	Ball Type	Page
		A-17
LMGQ series	**Ball-Linkage**	**Page**
		A-30
LMGW series	**Ball Type**	**Page**
		B-01
LMN series	**Ball Type**	**Page**
		C-01

Guide Type

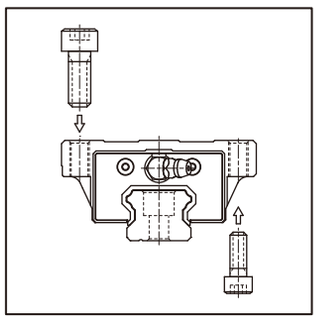
LMNW7/9/12 series	Ball Type	Page
		C-02
LMNW15 series	**Ball-Linkage**	**Page**
		C-02
LMR series	**Roller-Linkage**	**Page**
		D-01

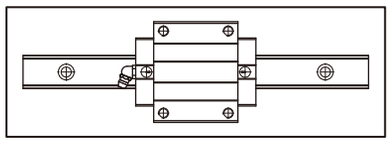
Linear Guide

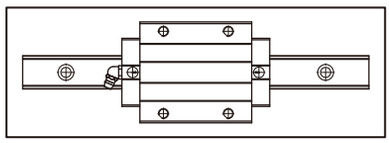
LMG/GQ series

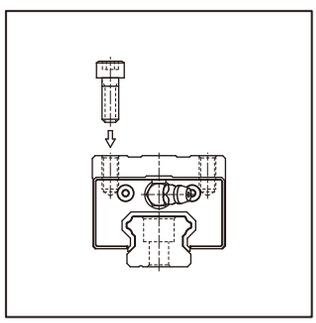
Carriage Type

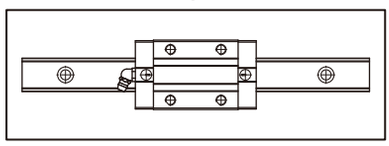
Contour	Length	Spec. Code
Flange type	Heavy load	C / TC
	Ultra heavy load	LC
Square high type	Heavy load	H
	Ultra heavy load	LH

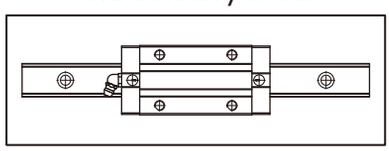






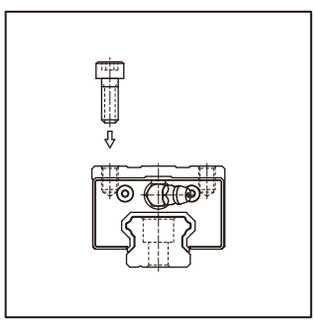


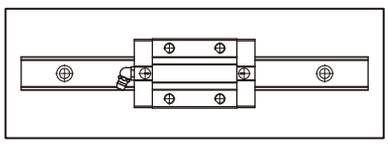


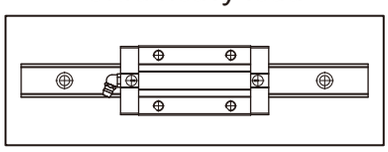


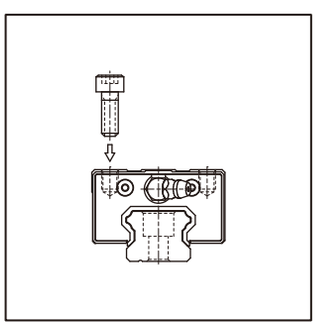
Carriage Type

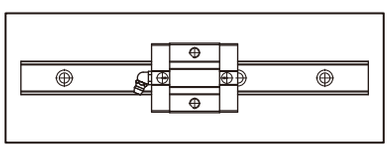
Contour	Length	Spec. Code
Square medium type	Heavy load	V
	Ultra heavy load	LV
Square compact type	Medium load	ST
	Heavy load	T
	Ultra heavy load	LT

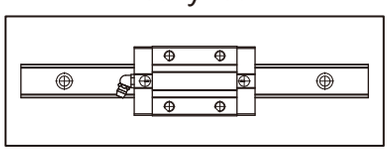


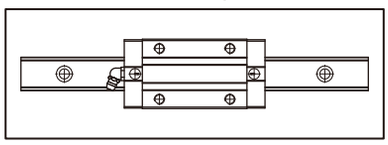






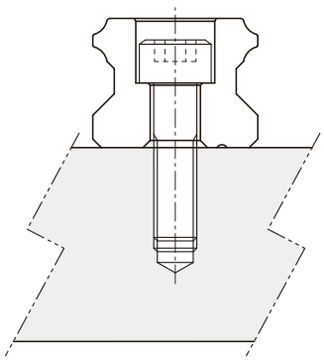




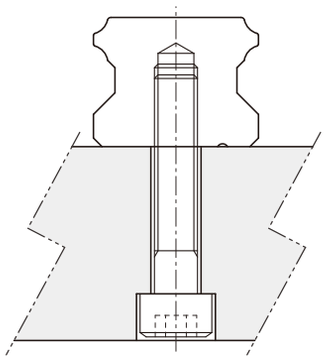


Rail Type

Counter bore (R, U type)



Tapped hole (T type)



(1) For Butt-joint Rail

When applied length of rail longer than specified max. length, the rails can be connected to one another. For this situation, the joint marks indicate the matching position.
Accuracy may deviate at joints when carriages pass the joint simultaneously. Therefore, the joints should be interlaced for avoiding such accuracy problem.

Butt-Joint

- Dentification of butt-joint rail

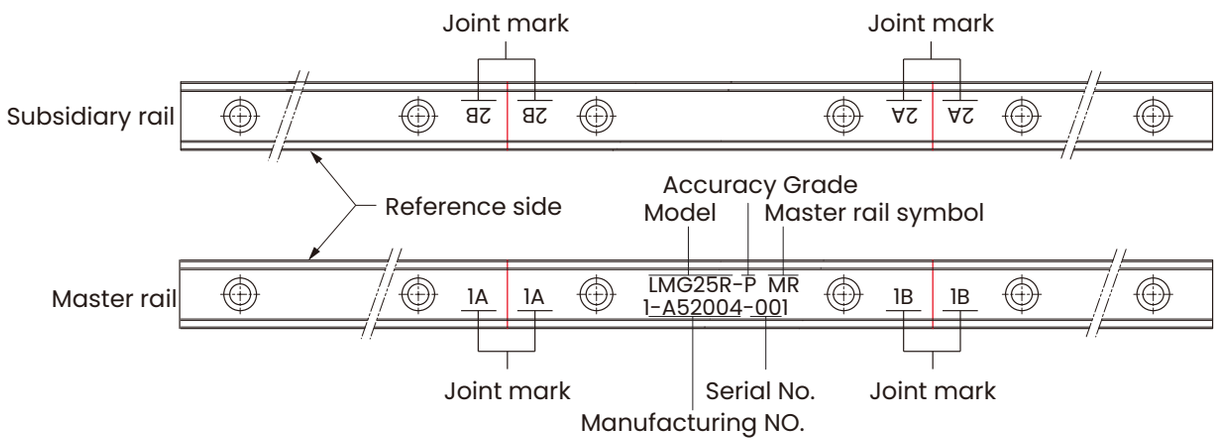


Fig. (A)

- Staggering the joint position

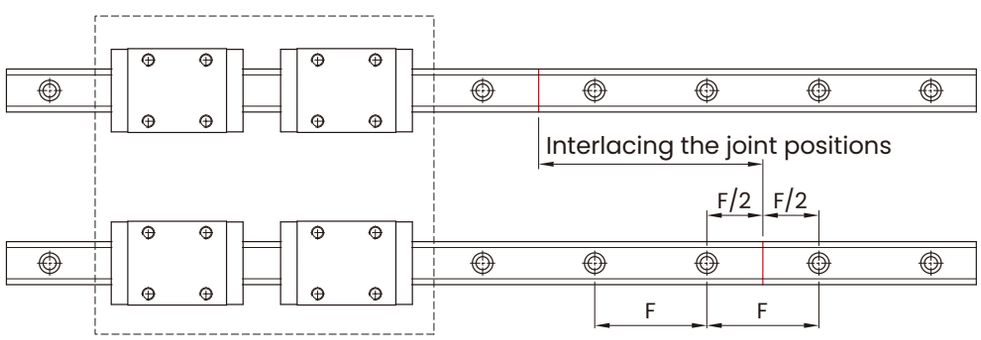


Fig. (B)

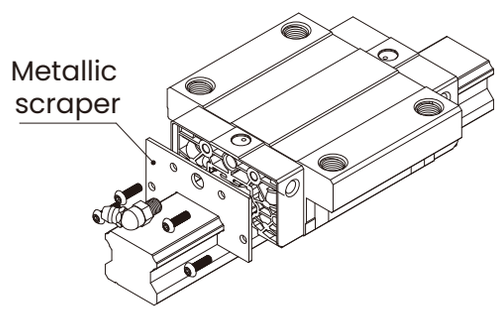
Dust Proof

(1) Code of contamination protection for carriage

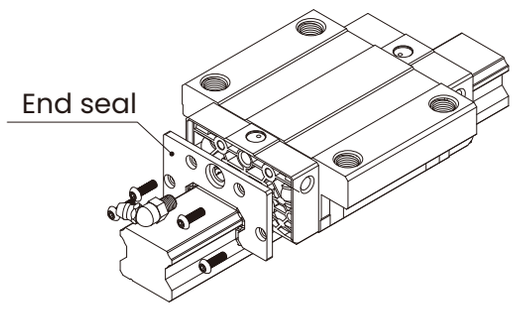
- Contamination protection

  LMG series of linear guideway offers various kinds of dust protection accessory to keep the foreign objects from entering into the carriage.

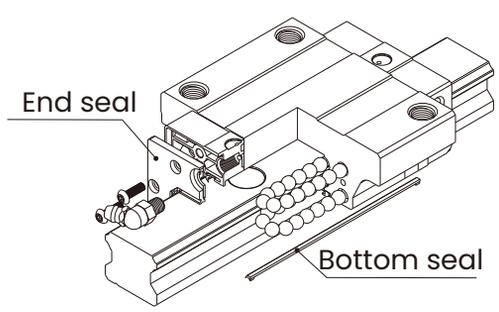
● No symbol Metallic scraper (both ends)



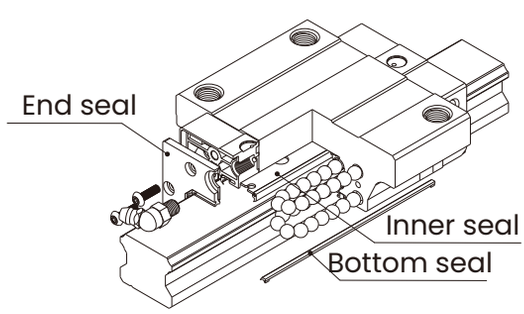
● UU Bidirectional end seal (both ends)



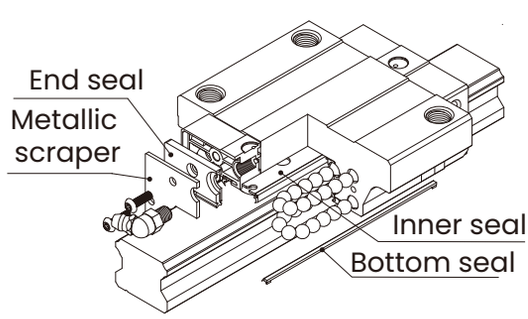
● SS Bidirectional end seal + Bottom seal



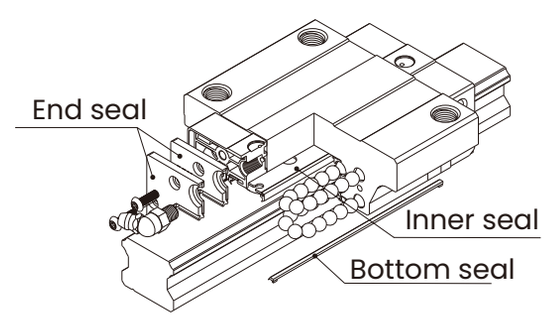
● VV Bidirectional end seal + Bottom seal + Inner seal



● ZZ SS + Metallic scraper

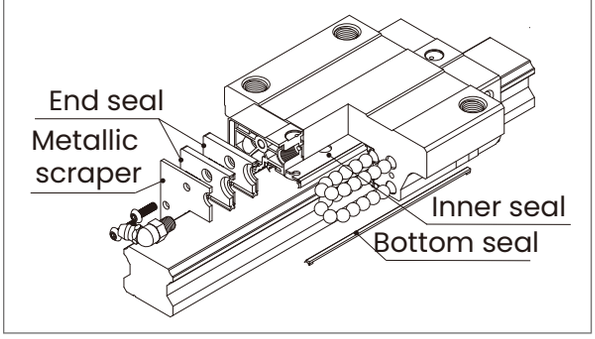


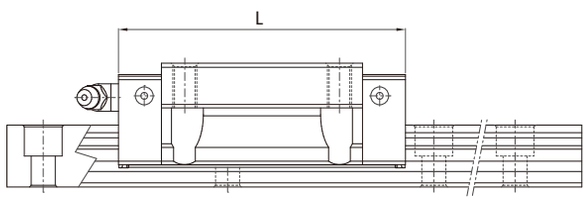
● DD Double bidirectional end seal+ Bottom seal + Inner seal



Dust Proof

● KK DD + Metallic scraper





- Types of dust proof accessories, and the increment to be added to the carriage overall length.The increment to be added to the length of carriage with different dust-proof accessory is shown below.

Model No.	No symbol	UU	SS	VV	ZZ	DD	KK
LMG 15	-	-	-	-	7	6	13
LMG 20	-	-	-	-	7	6	13
LMG 25	-	-	-	-	7	6	13
LMG 30	-	-	-	-	7	6	13
LMG 35	-	-	-	-	7	6	13
LMG 45	-	-	-	-	7	6	13
LMG 55	-	-	-	-	7	6	13

Dust Proof

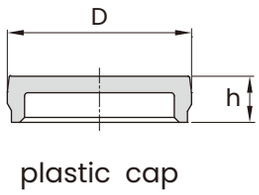
(2) Code of contamination protection for rail

- Caps for rail mounting hole

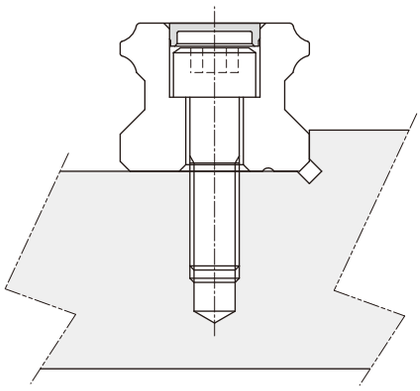
  A special designed of cap is used to cover the bolt hole to prevent the foreign matters from entering the carriage.

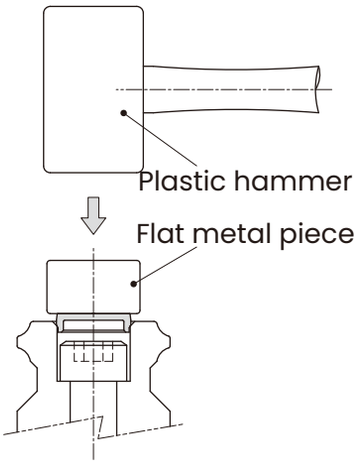
- Installation of plastic cap

  Put the plate on the cap,then pound it into the bolt of rail with rubber hammer vertically. Continue pounding the cap until the cap is on the same plane with the top surface of rail.



plastic cap





- Plastic Cap

Code of Plastic Cap	Bolt Size	D (mm)	h (mm)	Rail Model
L3	M3	6.2	1.1	LMG/GQ 15U
L4	M4	7.5	1.1	LMG/GQ 15R
L5	M5	9.7	2.4	LMG/GQ 20R
L6	M6	11.2	2.8	LMG/GQ 25R , LMG 30U
L8	M8	14.2	3.3	LMG 30R , LMG 35R
L12	M12	20.2	4.5	LMG 45R
L14	M14	23.2	5.5	LMG 55R

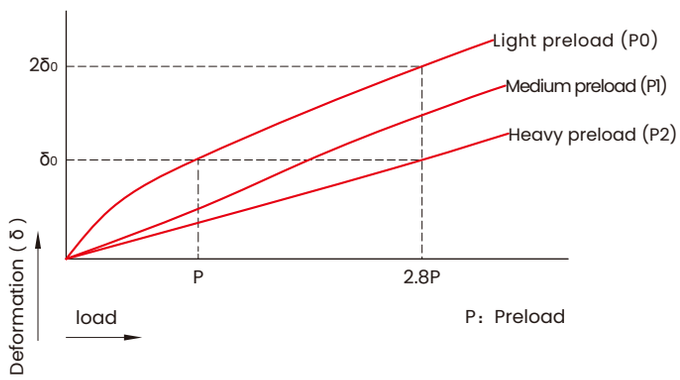
Preload

Since the radial chearance of the linear guideway greatly affects the running accuracy load carrying capacity and rigidity of the linear guideway, it is important to select an appropriate clearance according to the application. in general, selecting a negative clearance while taking into account possible vibrations and impact generated from reciprocating motion favorably affects the service life and the accuracy.

(1) Preload and Rigidity

Selecting appropriate preload to adapt the rigidity of machiney and equipment.

The rigidity of a linear guideway could be enhanced by increasing he preload. As shown as below figure, the load could be raised up to 2.8 times the preload applied.



(2) Preload and Service life

The preload is represented by negative clearance resulting from the increase of rolling element diameter. Therefore, the preload should be considered in calculation service life.

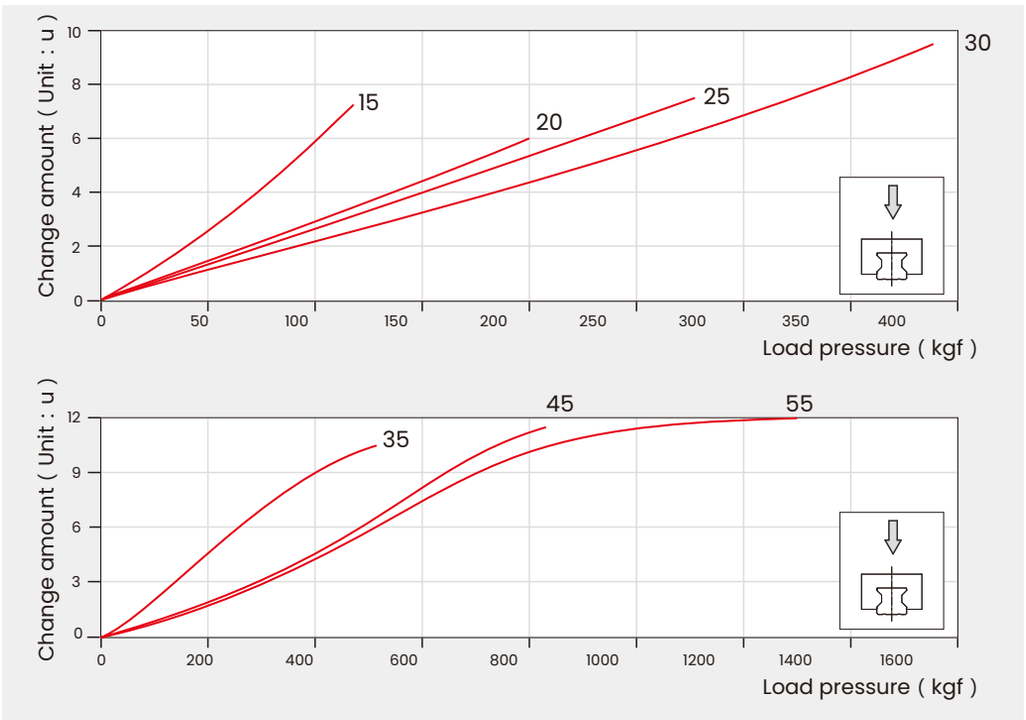
Preload Grade

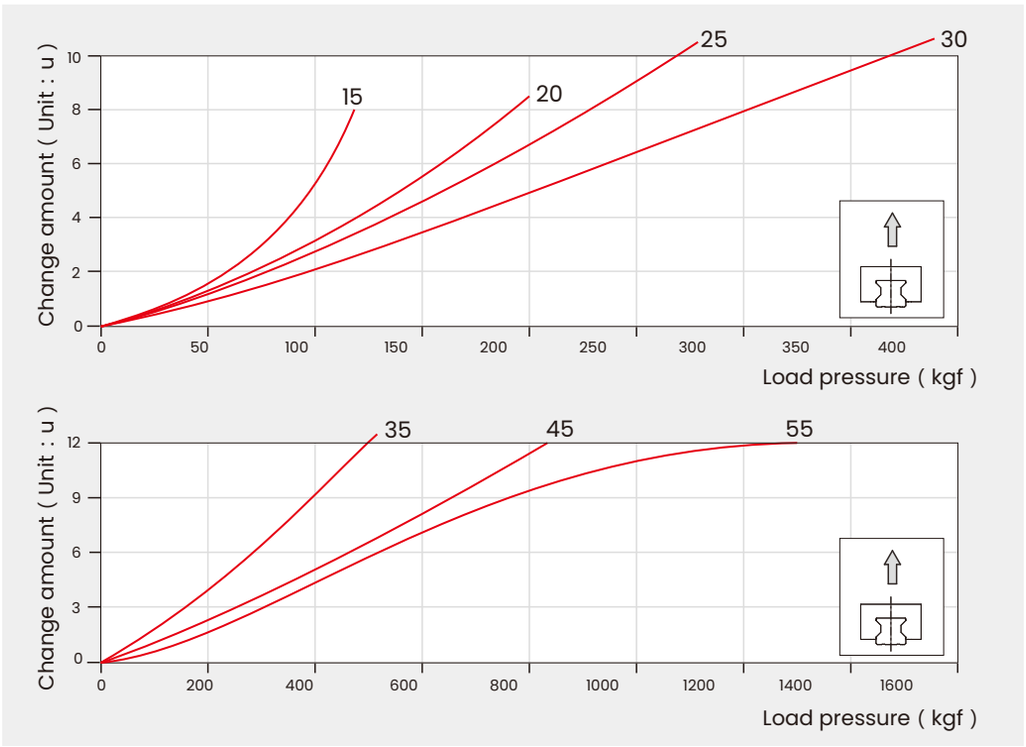
Preload grade	Code	Preload	Operating Condition
Clearance	PC	-2~+5μm	• The loading direction is fixed, vibration and impact are light, and two axes are applied in parallel. • Low precision requirements, and must be the low frictional resistance.
Light preload	P0	0~0.02C	• The loading direction is fixed, vibration and impact are light, and two axes are applied in parallel. • High precision is not required, and the low frictional resistance is needed.
Medium preload	P1	0.04~0.06C	• Overhang application with a moment load. • Applied in one-axis configuration • The need of light preload and high precision.
Heavy preload	P2	0.07~0.09C	• Machine is subjected to vibration and impact, and high rigidity required. • Application of heavy load or heavy cutting.

Note：The preload is the percentage of basic dynamic load rating (C).

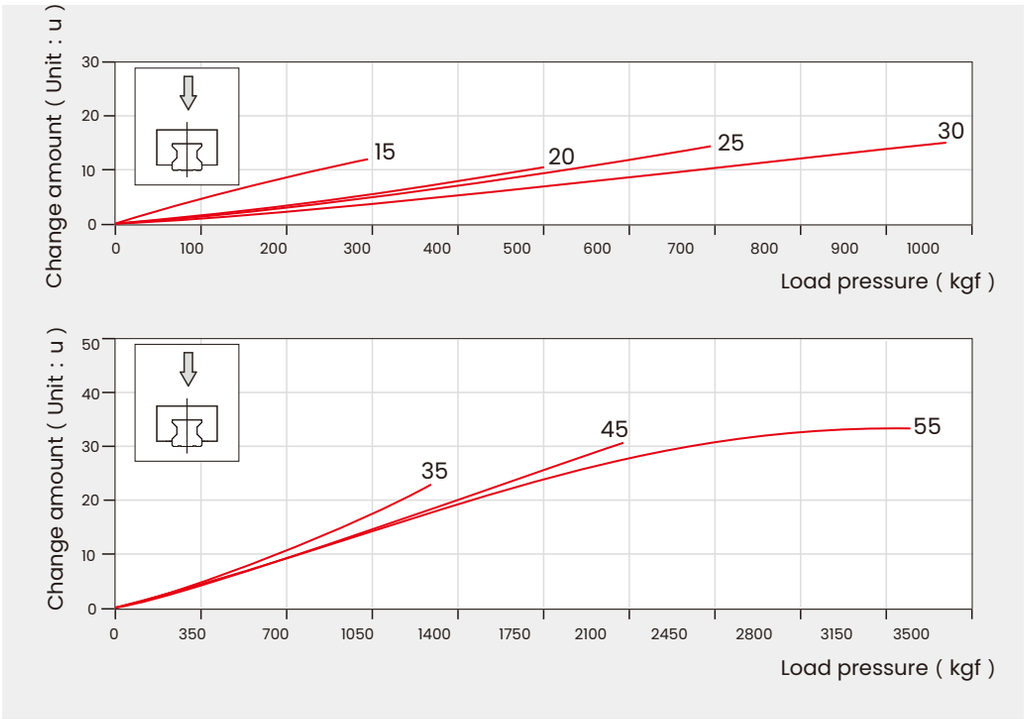
Rigidity

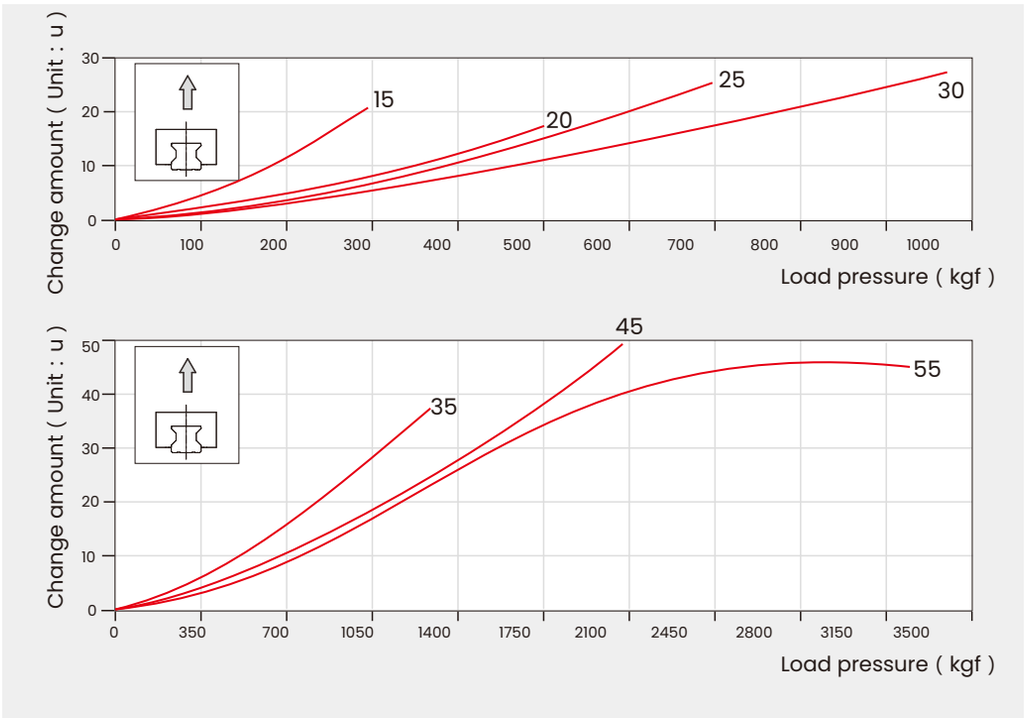
When the preload is P0, the rigidity of the roller guide is as shown in the figure below.





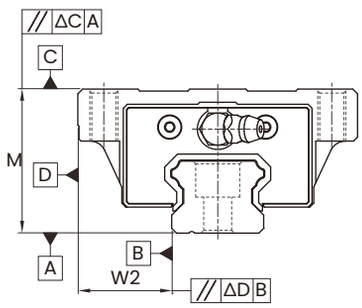
When the preload is P0, the rigidity of the roller guide is as shown in the figure below.





Non-Interchangeable Accuracy Grade

The accuracy of LMG/GQ series is divided into five classes, Normal grade (N), High accuracy grade (H), Precision grade (P), Super precision grade (SP) and Ultra precision grade (UP).

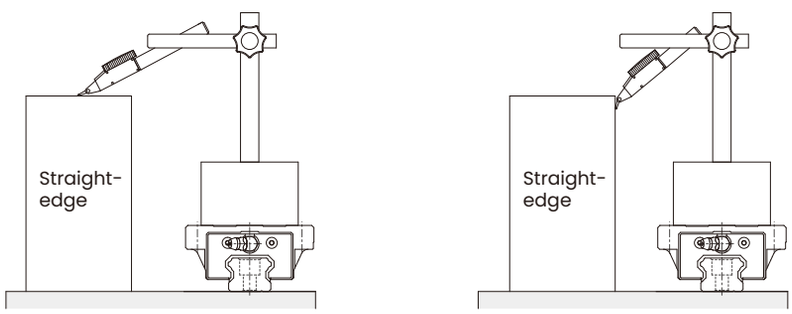


Unit (mm)

Model No.	Item	Accuracy Grade				
		Normal N	High H	Precision P	Super Precision SP	Ultra Precision UP
15 20	Tolerance for height M	±0.08	±0.03	0 -0.03	0 -0.015	0 -0.008
	Height difference ΔM	0.02	0.01	0.006	0.004	0.003
	Tolerance for distance W2	±0.08	±0.03	0 -0.03	0 -0.015	0 -0.008
	Difference in distance W2 (ΔW2)	0.02	0.01	0.006	0.004	0.003
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)				
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)				
25 30 35	Tolerance for height M	±0.08	±0.04	0 -0.04	0 -0.02	0 -0.01
	Height difference ΔM	0.02	0.015	0.007	0.005	0.003
	Tolerance for distance W2	±0.08	±0.04	0 -0.04	0 -0.02	0 -0.01
	Difference in distance W2 (ΔW2)	0.03	0.015	0.007	0.005	0.003
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)				
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)				
45 55	Tolerance for height M	±0.08	±0.05	0 -0.05	0 -0.03	0 -0.02
	Height difference ΔM	0.03	0.015	0.007	0.005	0.003
	Tolerance for distance W2	±0.08	±0.05	0 -0.05	0 -0.03	0 -0.02
	Difference in distance W2 (ΔW2)	0.03	0.02	0.01	0.007	0.005
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)				
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)				

Running Parallelism

The running accuracy is the deviation of parallelism between the reference surface of carriage and reference surface of rail when carriage moving over the entire length of rail.

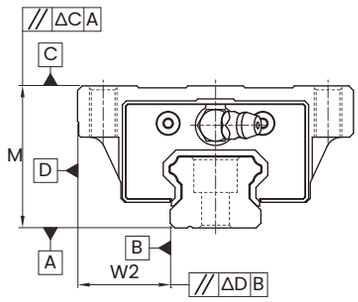


Measurement of running parallelism

Rail length (mm)		Running Parallelism Values (μm)				
Above (incl.)	Or less	Normal N	High H	Precision P	Super Precision SP	Ultra Precision UP
0	315	9	6	3	2	1.5
315	400	11	8	4	2	1.5
400	500	13	9	5	2	1.5
500	630	16	11	6	2.5	1.5
630	800	18	12	7	3	2
800	1000	20	14	8	4	2
1000	1250	22	16	10	5	2.5
1250	1600	25	18	11	6	3
1600	2000	28	20	13	7	3.5
2000	2500	30	22	15	8	4
2500	3000	32	24	16	9	4.5
3000	3500	33	25	17	11	5
3500	4000	34	26	18	12	6

Interchangeable Accuracy Grade

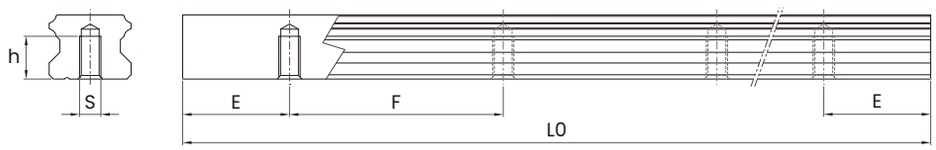
The accuracy of LMG/GQ series is divided into three classes, Normal grade (N), High accuracy grade (H), Precision grade (P).



Unit (mm)

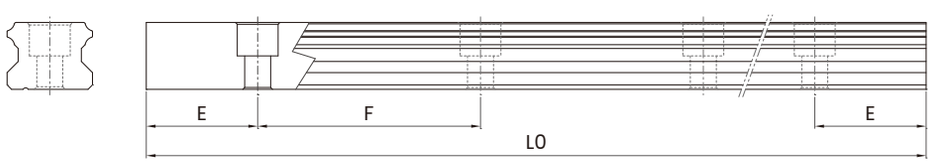
Model No.	Item		Accuracy Grade		
			Normal N	High H	Precision P
15 20	Tolerance for height M		±0.080	±0.030	±0.015
	Height difference ΔM	Single axis with multiple sliders (1 set)	0.020	0.015	0.006
		Multiple axes with multiple sliders (multiple sets)	0.04	0.030	0.030
	Tolerance for distance W2		±0.080	±0.030	±0.015
	Difference in distance W2 (ΔW2)		0.025	0.020	0.006
	Running parallelism of surface C with surface A		ΔC (see Running parallelism of carriageA-13)		
	Running parallelism of surface D with surface B		ΔD (see Running parallelism of carriageA-13)		
25 30 35	Tolerance for height M		±0.080	±0.040	±0.020
	Height difference ΔM	Single axis with multiple sliders (1 set)	0.020	0.015	0.007
		Multiple axes with multiple sliders (multiple sets)	0.040	0.030	0.030
	Tolerance for distance W2		±0.080	±0.040	±0.020
	Difference in distance W2 (ΔW2)		0.030	0.020	0.007
	Running parallelism of surface C with surface A		ΔC (see Running parallelism of carriageA-13)		
	Running parallelism of surface D with surface B		ΔD (see Running parallelism of carriageA-13)		
45 55	Tolerance for height M		±0.080	±0.050	±0.025
	Height difference ΔM	Single axis with multiple sliders (1 set)	0.030	0.020	0.007
		Multiple axes with multiple sliders (multiple sets)	0.06	0.040	0.035
	Tolerance for distance W2		±0.080	±0.050	±0.025
	Difference in distance W2 (ΔW2)		0.030	0.020	0.010
	Running parallelism of surface C with surface A		ΔC (see Running parallelism of carriageA-13)		
	Running parallelism of surface D with surface B		ΔD (see Running parallelism of carriageA-13)		

Tapped Hole Rail Dimensions



Model	S	h (mm)
LMG/GQ 15T	M5	8
LMG/GQ 20T	M6	10
LMG/GQ 25T	M6	12
LMG 30T	M8	15
LMG 35T	M8	17
LMG 45T	M12	24
LMG 55T	M14	24

Rail Maximum Length and Standard



Unit (mm)

Size	LMG/GQ 15	LMG/GQ 20	LMG/GQ 25	LMG 30	LMG 35	LMG 45	LMG 55
Standard Pitch (F)	60	60	60	80	80	105	120
Standard (Estd.)	20	20	20	45	45	58	30
Minimum (Emin.)	5	6	7	8	8	11	13
Maximum Length (L0)	4000	4000	4000	4000	4000	4000	4000

Recommended Torque Value for Fastening Bolts on Linear Guideway

When installing linear guideway, the tightening force of assembly bolts significantly impacts overall assembly precision. Therefore, uniformity in the tightening force is crucial. It is recommended to use a torque wrench to tighten assembly bolts according to the torque values provided in the table below.

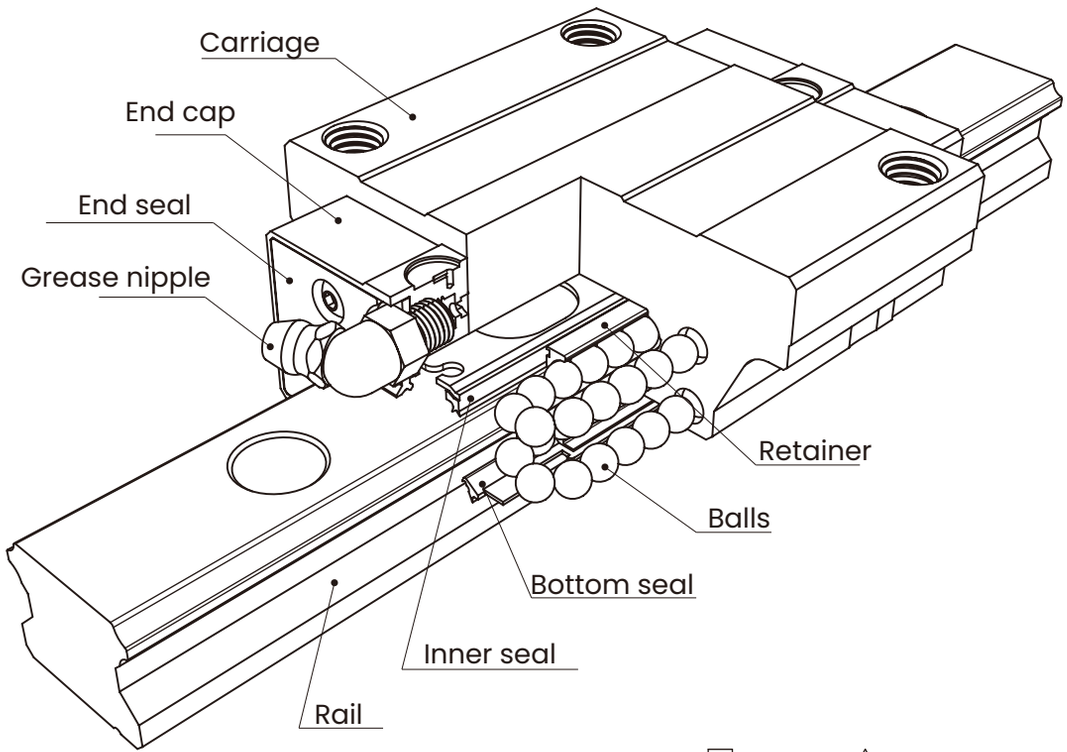
Keep in mind that the torque values for bolts may vary based on the material of the mounting surface.

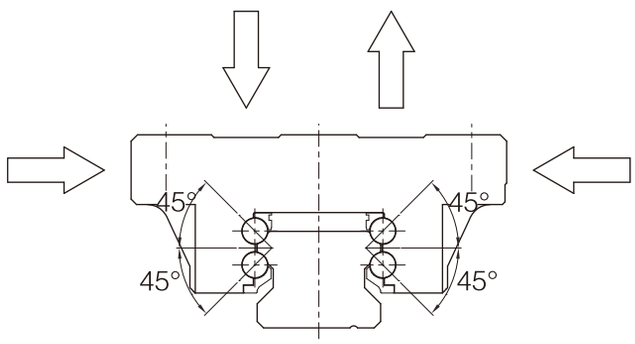
Unit (mm)

Nominal Size of Bolts	Tightening Torque Value		
	Iron components	Cast Components	Aluminum Alloy Components
M3×0.5P	2	1.3	1
M4×0.7P	4	2.7	2
M5×0.8P	8.8	5.9	4.4
M6×1P	13.7	9.2	6.8
M8×1.25P	30	20	15
M10×1.5P	68	45	33
M12×1.75P	120	78	58
M14×2P	157	105	78
M16×2P	196	131	98
M20×2.5P	382	255	191

*1 N-m = 0.738 lbf-ft

LMG series





Note：For reference only.

Characteristics

The four trains of balls are designed with a contact angle of 45° which enables it not only to bear load equally in radial, reversed radial and lateral directions but also can achieve high rigidity and high loading capacity. Therefore, it is suitable for all directional installation. Furthermore the unique self alignment function of LMG series can compensate the certain error while assembling, and which results in high precision and smooth motion.

- High rigidity
- Four-way equal load
- Self alignment capability
- Complete dust sealing system
- High positioning accuracy
- Smooth movement
- Low noise and high speed application
- Interchangeability
- Carriage common rail design
- International standard

Applications

- Machine Tool（CNC、Lathe…）
- Industrial Robot
- Semiconductor Manufacturing Equipment
- Other（Injection Molding Machine…）

Specifications

(1) Non-Interchangeable type

LMG 20 C M 2 SS P1 SR +R 1000-20/20 P II

Series : LMG

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

Carriage type

(1) Heavy load

C : Flange type, mounting either from top or bottom

TC : Flange type, mounting either from top or bottom

H : Square high type

V : Square medium type

T : Square compact type

(2) Ultra heavy load

LC : Flange type, mounting either from top or bottom

LH : Square high type

LV : Square medium type

LT : Square compact type

(3) Medium load

ST : Square compact type

Accessories : No symbol, M (Metal End Cap) , E (Electrolyte Resistant)

Number of carriages per rail : 1 , 2 , 3 ...

Dust protection option : No symbol , UU , SS , VV , ZZ , DD , KK

Preload : P0 (Light preload) , P1 (Medium preload) , P2 (Heavy preload)

Accessories : No symbol , SR (Self-Lubricating Module) , GR (Solid Self-lubricating Module)

Code of special carriage : A , B ... (Standard rail is no symbol)

Rail type : R , U* (Counter-bore type) , T (Tapped hole type)

Rail length (mm)

Rail hole pitch from start side (E1 , Refer to FigureA-23)

Rail hole pitch to the end side (E2 , Refer to FigureA-23)

Accuracy grade : N , H , P , SP , UP

Code of special rail : A , B ... (Standard rail is no symbol)

Number of rails per axis : No symbol , II , III , IV ...

*U type rail is only applicable for LMG15 and LMG30, detail information please see the specification table for the corresponding model number.

Specifications

(2) Interchangeable type

• Code of Carriage

LMG 20 C M SS P0 SR N

Series : LMG

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

Carriage type

(1) Heavy load

C : Flange type, mounting either from top or bottom

TC : Flange type

H : Square high type

V : Square medium type

T : Square compact type

(2) Ultra heavy load

LC : Flange type , mounting either from top or bottom

LH : Square high type

LV : Square medium type

LT : Square compact type

(3) Short type

ST : Square compact type

Accessories : No symbol , M (Metal End Cap) , MG (Full-Metal) ,
E (Electrolyte Resistant)

Dust protection option : No symbol , UU , SS , VV , ZZ , DD , KK

Preload : P0 (Light preload)

Accessories : No symbol , SR (Self-Lubricating Module)
GR (Solid Self-lubricating Module)

Accuracy grade : N , H , P

Code of special carriage : No symbol , A , B ...

Code of Rail

LMG 20 R 1000 -20 /20 N

Series : LMG

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

Rail type : R , U* (Counter-bore type) , T (Tapped hole type)

Rail length (mm)

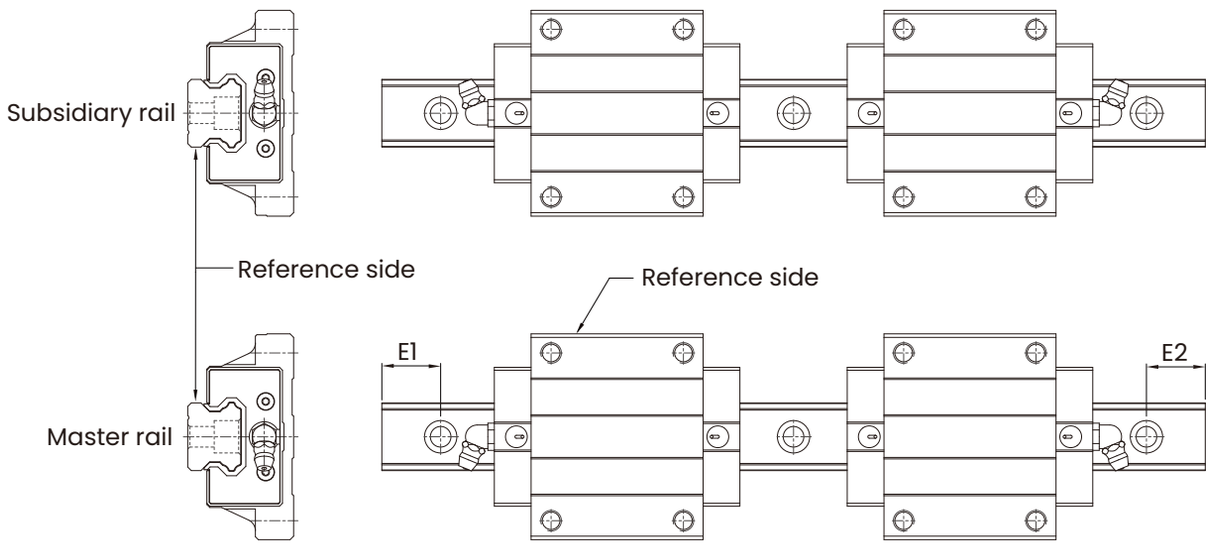
Rail hole pitch from start side (E1 , see Figure below)

Rail hole pitch to the end side (E2 , see Figure below)

Accuracy grade : N , H , P

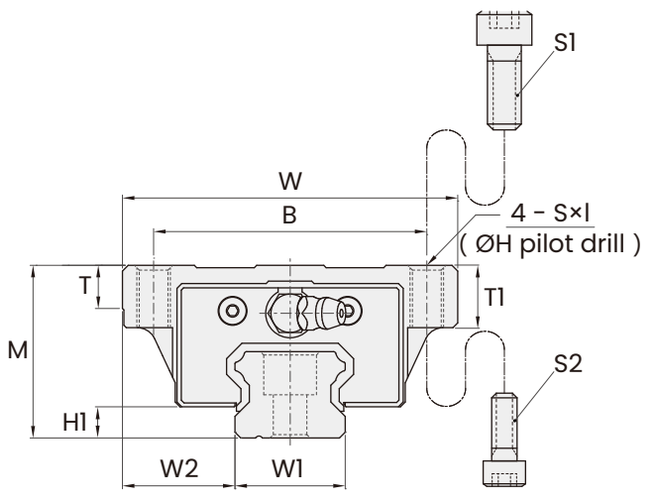
Code of special rail : No symbol , A , B ...

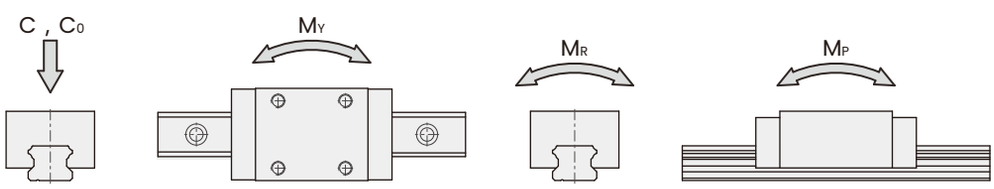
*U type rail is only applicable for LMG15 and LMG30, detail information please see the specification table for the corresponding model number.



Dimensions of LMG···C / LC

Model No.	Bolt Size		Pilot drill
	S1	S2	H
LMG15	M5	M4	4.4
LMG20	M6	M5	5.3
LMG25	M8	M6	6.9
LMG30	M10	M8	8.6
LMG35	M10	M8	8.6
LMG45	M12	M10	10.4
LMG55	M14	M12	12.5

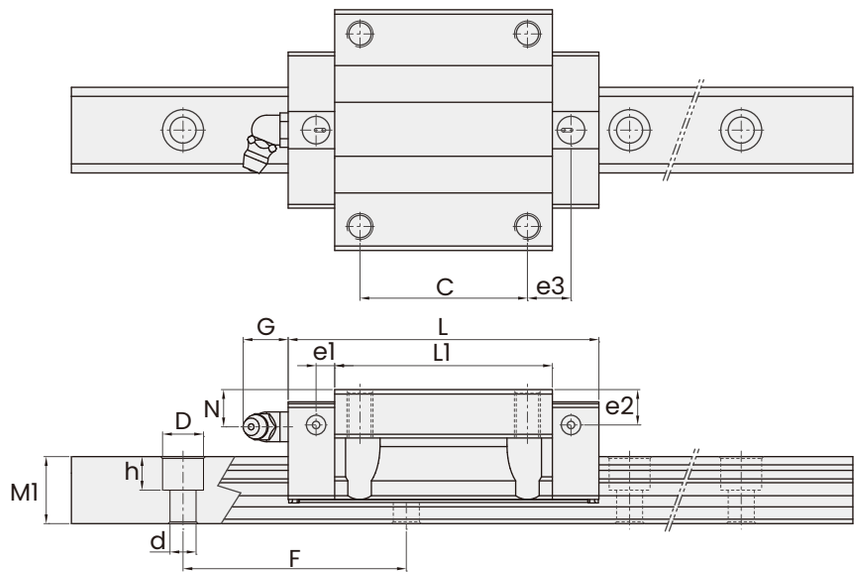




Unit (mm)

Model No.	External dimension			Carriage dimension												
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	T1	H1	N	e1	e2	e3	G	Grease nipple
	M	W	L													
LMG15 C	24	47	58.5	38	30	M5×8	39.5	5.5	8	4.5	5	3.3	4	8.6	5	M4×0.7
LMG20 C	30	63	75.2	53	40	M6×10	52.5	7	10	4.6	8.5	4.5	7	10.8	12	M6×0.75
LMG20 LC	30	63	87.6	53	40	M6×10	64.9	7	10	4.6	8.5	4.5	7	17	12	M6×0.75
LMG25 C	36	70	84	57	45	M8×13	58.8	9	13	6	10	5	9.5	11.8	12	M6×0.75
LMG25 LC	36	70	103	57	45	M8×13	77.8	9	13	6	10	5	9.5	21.3	12	M6×0.75
LMG30 C	42	90	98	72	52	M10×15	69.8	10	15	8	8	6	8	14	12	M6×0.75
LMG30 LC	42	90	120.2	72	52	M10×15	92	10	15	8	8	6	8	25.1	12	M6×0.75
LMG35 C	48	100	111.2	82	62	M10×15	80.2	10	15	9.5	8	7.5	8	15.6	12	M6×0.75
LMG35 LC	48	100	136.6	82	62	M10×15	105.6	10	15	9.5	8	7.5	8	28.3	12	M6×0.75
LMG45 C	60	120	138.2	100	80	M12×18	102.2	12	18	11	10	8.5	10	17.6	13.5	PT 1/8
LMG45 LC	60	120	169.9	100	80	M12×18	133.9	12	18	11	10	8.5	10	33.5	13.5	PT 1/8
LMG55 C	70	140	166	116	95	M14×25	126	15	25	13	12	9	10.5	33.5	13.5	PT 1/8
LMG55 LC	70	140	204	116	95	M14×25	164	15	25	13	12	9	10.5	42.5	13.5	PT 1/8

Dimensions of LMG···C / LC



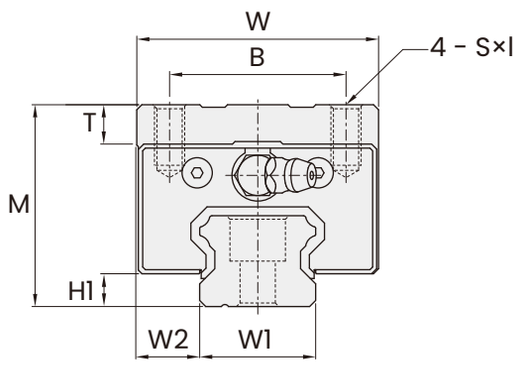
Unit (mm)

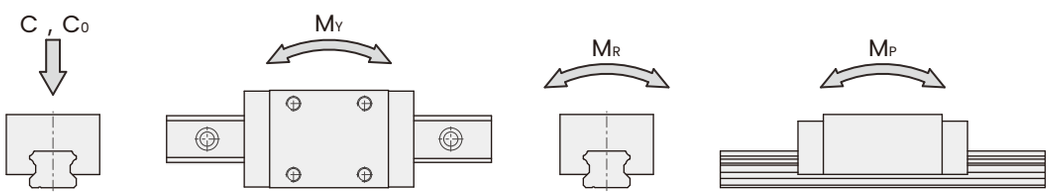
Model No.	Rail dimension					Basic load rating		Static moment rating					Weight	
	Width	W2	Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P (KN·m)		M_Y (KN·m)		M_R KN·m	Carriage Kg	Rail Kg/m
	W1		M1	F	D×h×d	C KN	C_0 KN	Single Carriage	Double Carriages	Single Carriage	Double Carriages			
LMG15 C	15	16	13	60	7.5×5.3×4.5*	11.1	16.2	0.11	0.61	0.11	0.61	0.13	0.19	1.29
LMG20 C	20	21.5	15	60	9.5×8.5×6	18.9	27.4	0.23	1.29	0.23	1.29	0.28	0.42	1.92
LMG20 LC	20	21.5	15	60	9.5×8.5×6	22.4	33.7	0.35	1.84	0.35	1.84	0.35	0.53	1.92
LMG25 C	23	23.5	18	60	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.62	2.67
LMG25 LC	23	23.5	18	60	11×9×7	32.3	48.6	0.60	3.09	0.60	3.09	0.57	0.81	2.67
LMG30 C	28	31	23	80	14×12×9*	37.5	49.6	0.58	3.13	0.58	3.13	0.72	1.10	4.48
LMG30 LC	28	31	23	80	14×12×9*	45.9	66.1	0.98	4.96	0.98	4.96	0.96	1.43	4.48
LMG35 C	34	33	26	80	14×12×9	49.9	64.8	0.88	4.80	0.88	4.80	1.14	1.50	6.24
LMG35 LC	34	33	26	80	14×12×9	61.1	86.3	1.48	7.39	1.48	7.39	1.52	1.94	6.24
LMG45 C	45	37.5	32	105	20×17×14	80.4	101.0	1.77	9.17	1.77	9.17	2.35	2.83	10.25
LMG45 LC	45	37.5	32	105	20×17×14	98.3	135.0	2.97	14.54	2.97	14.54	3.13	3.68	10.25
LMG55 C	53	43.5	44	120	23×20×16	118.0	156.0	3.23	16.27	3.23	16.27	4.34	6.35	15.08
LMG55 LC	53	43.5	44	120	23×20×16	147.0	206.0	5.33	25.61	5.33	25.61	5.68	7.67	15.08

*1. Rail mounting hloes for M3 bolt (6×4.5×3.5) and M4 bolt (7.5×5.3×4.5) are available for LMG15 rail.
The codes of rail type are LMG15R for M4 bolt, and LMG15U for M3 bolt.

2. Rail mounting hloes for M6 bolt (11×9×7) and M8 bolt (14×12×9) are available for LMG30 rail.
The codes of rail type are LMG30R for M8 bolt, and LMG30U for M6 bolt.

Dimensions of LMG···H / LH

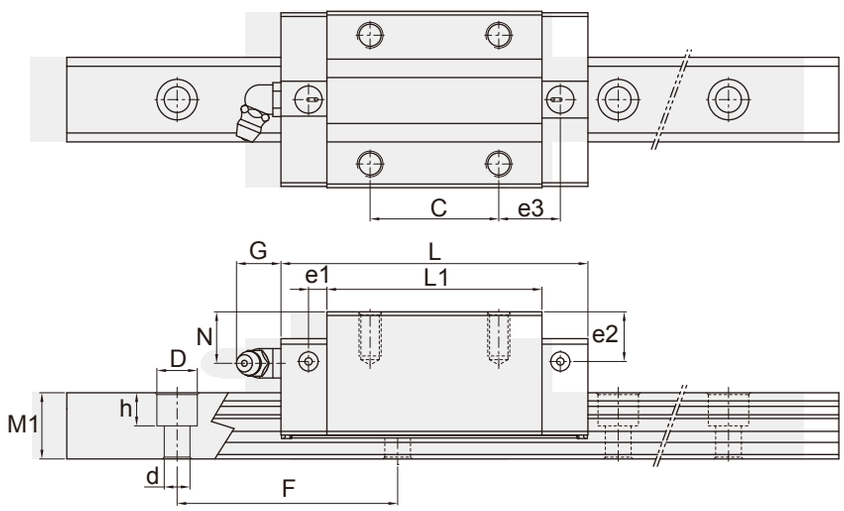




Unit (mm)

Model No.	External dimension			Carriage dimension											
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	H1	N	e1	e2	e3	G	Grease nipple
	M	W	L												
LMG15 H	28	34	58.5	26	26	M4×7	39.5	6	4.5	9	3.3	8	10.6	5	M4×0.7
LMG15 LH	28	34	72.6	26	34	M4×7	53.6	6	4.5	9	3.3	8	13.7	5	M4×0.7
LMG20 H	30	44	75.2	32	36	M5×8	52.5	6	4.6	8.5	4.5	7	12.8	12	M6×0.75
LMG20 LH	30	44	87.6	32	50	M5×8	64.9	6	4.6	8.5	4.5	7	12	12	M6×0.75
LMG25 H	40	48	84	35	35	M6×12	58.8	8	6	14	5	13.5	16.8	12	M6×0.75
LMG25 LH	40	48	103	35	50	M6×12	77.8	8	6	14	5	13.5	18.8	12	M6×0.75
LMG30 H	45	60	98	40	40	M8×12	69.8	8	8	11	6	11	20	12	M6×0.75
LMG30 LH	45	60	120.2	40	60	M8×12	92	8	8	11	6	11	21.1	12	M6×0.75
LMG35 H	55	70	111.2	50	50	M8×14	80.2	11	9.5	15	7.5	15	21.6	12	M6×0.75
LMG35 LH	55	70	136.6	50	72	M8×14	105.6	11	9.5	15	7.5	15	23.3	12	M6×0.75
LMG45 H	70	86	138.2	60	60	M10×20	102.2	16	11	20	8.5	20	27.6	13.5	PT 1/8
LMG45 LH	70	86	169.9	60	80	M10×20	133.9	16	11	20	8.5	20	33.5	13.5	PT 1/8
LMG55 H	80	100	166	75	75	M12×18	126	17	13	22	9	20.5	33.5	13.5	PT 1/8
LMG55 LH	80	100	204	75	95	M12×18	164	17	13	22	9	20.5	42.5	13.5	PT 1/8

Dimensions of LMG···H / LH

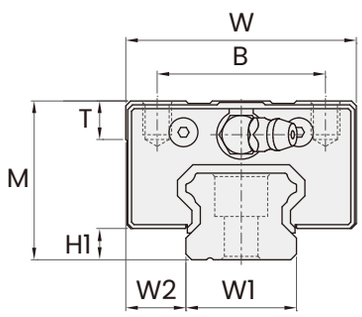


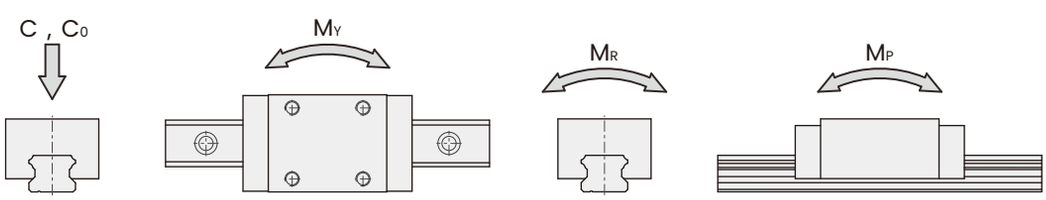
Unit (mm)

Model No.	Rail dimension					Basic load rating		Static moment rating					Weight	
	Width		Height	Pitch	Mounting bolt hole	Dynamic	Static	MP (KN·m)		MY (KN·m)		MR KN·m	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C0 KN	Single Carriage	Double Carriages	Single Carriage	Double Carriages			
LMG15 H	15	9.5	13	60	7.5×5.3×4.5*	11.1	16.2	0.11	0.61	0.11	0.61	0.13	0.19	1.29
LMG15 LH	15	9.5	13	60	7.5×5.3×4.5*	13.9	21.6	0.19	1.00	0.19	1.00	0.17	0.27	1.29
LMG20 H	20	12	15	60	9.5×8.5×6	18.9	27.4	0.23	1.29	0.23	1.29	0.28	0.33	1.92
LMG20 LH	20	12	15	60	9.5×8.5×6	22.4	33.7	0.35	1.84	0.35	1.84	0.35	0.41	1.92
LMG25 H	23	12.5	18	60	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.55	2.67
LMG25 LH	23	12.5	18	60	11×9×7	32.3	48.6	0.60	3.09	0.60	3.09	0.57	0.72	2.67
LMG30 H	28	16	23	80	14×12×9*	37.5	49.6	0.58	3.13	0.58	3.13	0.72	0.87	4.48
LMG30 LH	28	16	23	80	14×12×9*	45.9	66.1	0.98	4.96	0.98	4.96	0.96	1.13	4.48
LMG35 H	34	18	26	80	14×12×9	49.9	64.8	0.88	4.80	0.88	4.80	1.14	1.44	6.24
LMG35 LH	34	18	26	80	14×12×9	61.1	86.3	1.48	7.39	1.48	7.39	1.52	1.88	6.24
LMG45 H	45	20.5	32	105	20×17×14	80.4	101.0	1.77	9.17	1.77	9.17	2.35	2.85	10.25
LMG45 LH	45	20.5	32	105	20×17×14	98.3	135.0	2.97	14.54	2.97	14.54	3.13	3.70	10.25
LMG55 H	53	23.5	44	120	23×20×16	118.0	156.0	3.23	16.27	3.23	16.27	4.34	6.18	15.08
LMG55 LH	53	23.5	44	120	23×20×16	147.0	206.0	5.33	25.61	5.33	25.61	5.68	7.45	15.08

*1.Rail mounting hloes for M3 bolt (6×4.5×3.5) and M4 bolt (7.5×5.3×4.5) are available for LMG15 rail.
The codes of rail type are LMG15R for M4 bolt, and LMG15U for M3 bolt.
2.Rail mounting hloes for M6 bolt (11×9×7) and M8 bolt (14×12×9) are available for LMG30 rail.
The codes of rail type are LMG30R for M8 bolt, and LMG30U for M6 bolt.

Dimensions of LMG···ST / T / LT / V / LV

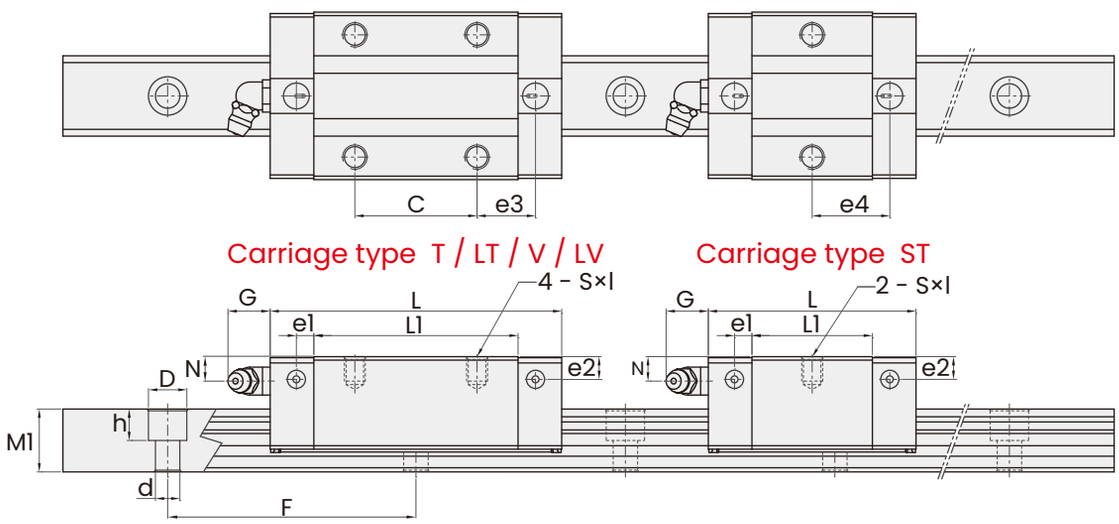




Unit (mm)

Model No.	External dimension			Carriage dimension												
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	H1	N	e1	e2	e3	e4	G	Grease nipple
	M	W	L													
LMG15 ST	24	34	41	26	-	M4×5	22	6	4.5	5	3.3	4	14.9	14.8	5	M4×0.7
LMG15 T	24	34	58.5	26	26	M4×5	39.5	6	4.5	5	3.3	4	10.6	-	5	M4×0.7
LMG15 LT	24	34	72.6	26	34	M4×5	53.6	6	4.5	5	3.3	4	13.7	-	5	M4×0.7
LMG20 ST	28	42	47.6	32	-	M5×6	24.9	6	4.6	6.5	4.5	5	-	17	12	M6×0.75
LMG20 T	28	42	75.2	32	32	M5×6	52.5	6	4.6	6.5	4.5	5	14.8	-	12	M6×0.75
LMG25 ST	33	48	59.9	35	-	M6×7	34.5	8	6	7	5	6.5	22.2	22.3	12	M6×0.75
LMG25 T	33	48	84	35	35	M6×7	58.8	8	6	7	5	6.5	16.8	-	12	M6×0.75
LMG25 V	36	48	84	35	35	M6×9	58.8	8	6	10	5	9.5	16.8	-	12	M6×0.75
LMG25 LV	36	48	103	35	50	M6×9	77.8	8	6	10	5	9.5	16.8	-	12	M6×0.75
LMG30 T	42	60	98	40	40	M8×10	69.8	8	8	8	6	8	20	-	12	M6×0.75
LMG30 LT	42	60	120.2	40	60	M8×10	92	8	8	8	6	8	21.1	-	12	M6×0.75
LMG35 T	48	70	111.2	50	50	M8×12	80.2	10	9.5	8	7.5	8	21.6	-	12	M6×0.75
LMG35 LT	48	70	136.6	50	72	M8×12	105.6	10	9.5	8	7.5	8	23.3	-	12	M6×0.75
LMG45 T	60	86	138.2	60	60	M10×17	102.2	16	11	10	8.5	10	27.6	-	13.5	PT 1/8
LMG45 LT	60	86	169.9	60	80	M10×17	133.9	16	11	10	8.5	10	33.5	-	13.5	PT 1/8
LMG55 T	70	100	166	75	75	M12×18	126	17	13	12	9	10.5	33.5	-	13.5	PT 1/8
LMG55 LT	70	100	204	75	95	M12×18	164	17	13	12	9	10.5	42.5	-	13.5	PT 1/8

Dimensions of LMG···ST / T / LT / V / LV



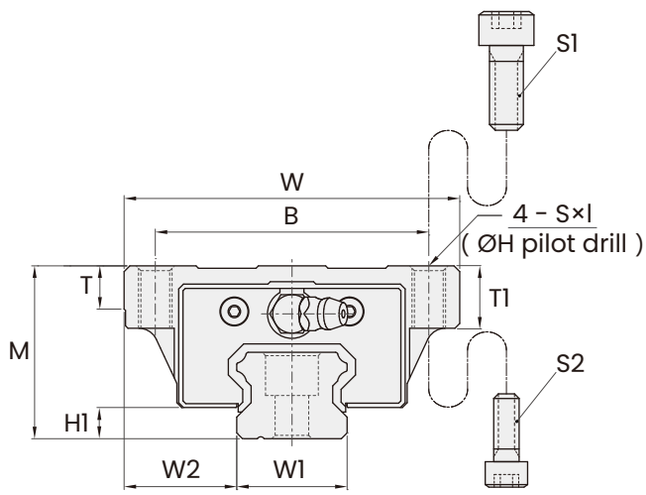
Unit (mm)

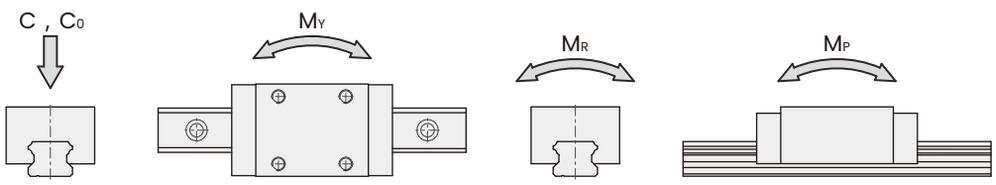
Model No.	Rail dimension					Basic load rating		Static moment rating					Weight	
	Width		Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P (KN·m)		M_Y (KN·m)		M_R KN·m	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C0 KN	Single Carriage	Double Carriages	Single Carriage	Double Carriages			
LMG15 ST	15	9.5	13	60	7.5×5.3×4.5*	6.7	8.1	0.04	0.25	0.04	0.25	0.06	0.09	1.29
LMG15 T	15	9.5	13	60	7.5×5.3×4.5*	11.1	16.2	0.11	0.61	0.11	0.61	0.13	0.15	1.29
LMG15 LT	15	9.5	13	60	7.5×5.3×4.5*	13.9	21.6	0.19	1.00	0.19	1.00	0.17	0.21	1.29
LMG20 ST	20	11	15	60	9.5×8.5×6	7.4	9.4	0.04	0.33	0.04	0.33	0.07	0.15	1.92
LMG20 T	20	11	15	60	9.5×8.5×6	18.9	27.4	0.23	1.29	0.23	1.29	0.28	0.28	1.92
LMG25 ST	23	12.5	18	60	11×9×7	13.1	16.9	0.11	0.71	0.11	0.71	0.18	0.26	2.67
LMG25 T	23	12.5	18	60	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.41	2.67
LMG25 V	23	12.5	18	60	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.47	2.67
LMG25 LV	23	12.5	18	60	11×9×7	32.3	48.6	0.60	3.09	0.60	3.09	0.57	0.61	2.67
LMG30 T	28	16	23	80	14×12×9*	37.5	49.6	0.58	3.13	0.58	3.13	0.72	0.79	4.48
LMG30 LT	28	16	23	80	14×12×9*	45.9	66.1	0.98	4.96	0.98	4.96	0.96	1.02	4.48
LMG35 T	34	18	26	80	14×12×9	49.9	64.8	0.88	4.80	0.88	4.80	1.14	1.14	6.24
LMG35 LT	34	18	26	80	14×12×9	61.1	86.3	1.48	7.39	1.48	7.39	1.52	1.47	6.24
LMG45 T	45	20.5	32	105	20×17×14	80.4	101.0	1.77	9.17	1.77	9.17	2.35	2.17	10.25
LMG45 LT	45	20.5	32	105	20×17×14	98.3	135.0	2.97	14.54	2.97	14.54	3.13	2.81	10.25
LMG55 T	53	23.5	44	120	23×20×16	118.0	156.0	3.23	16.27	3.23	16.27	4.34	5.20	15.08
LMG55 LT	53	23.5	44	120	23×20×16	147.0	206.0	5.33	25.61	5.33	25.61	5.68	6.17	15.08

*1.Rail mounting hloes for M3 bolt (6×4.5×3.5) and M4 bolt (7.5×5.3×4.5) are available for LMG15 rail.
The codes of rail type are LMG15R for M4 bolt, and LMG15U for M3 bolt.
2.Rail mounting hloes for M6 bolt (11×9×7) and M8 bolt (14×12×9) are available for LMG30 rail.
The codes of rail type are LMG30R for M8 bolt, and LMG30U for M6 bolt.

Dimensions of LMG···TC

Model No.	Bolt Size		Pilot drill
	S1	S2	H
LMG15	M5	M4	4.4
LMG20	M6	M5	5.3
LMG25	M8	M6	6.9
LMG30	M10	M8	8.6
LMG35	M10	M8	8.6

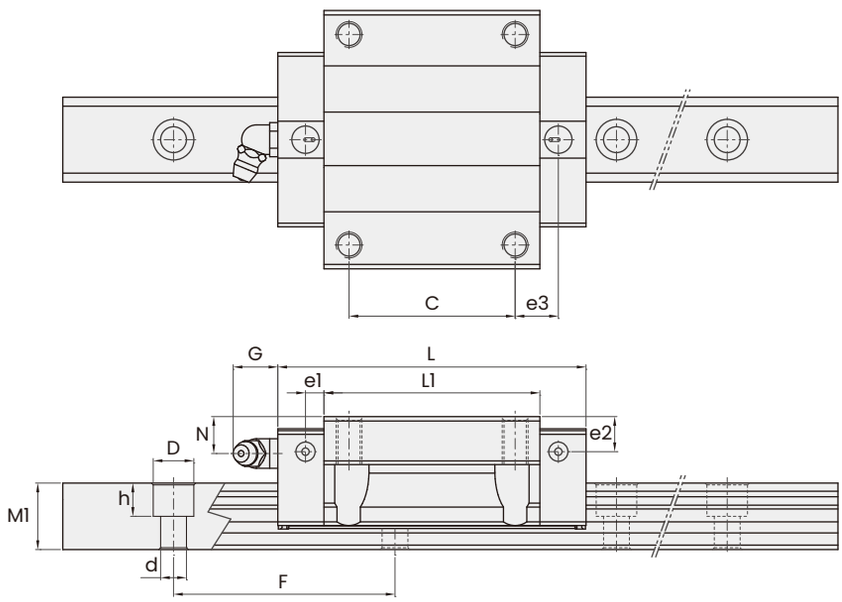




Unit (mm)

Model No.	External dimension			Carriage dimension												
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	T1	H1	N	e1	e2	e3	G	Grease nipple
	M	W	L													
LMG15 TC	24	52	58.5	41	26	M5×7	39.5	5	7	4.5	5	3.3	4	10.6	5	M4×0.7
LMG20 TC	28	59	75.2	49	32	M6×9	52.5	5	9	4.6	6.5	4.5	5	14.8	12	M6×0.75
LMG25 TC	33	73	84	60	35	M8×10	58.8	6	10	6	7	5	6.5	16.8	12	M6×0.75
LMG30 TC	42	90	98	72	40	M10×15	69.8	12	15.2	8	8	6	8	20	12	M6×0.75
LMG35 TC	48	100	111.2	82	50	M10×15	80.2	10	15.3	9.5	8	7.5	8	21.6	12	M6×0.75

Dimensions of LMG···TC

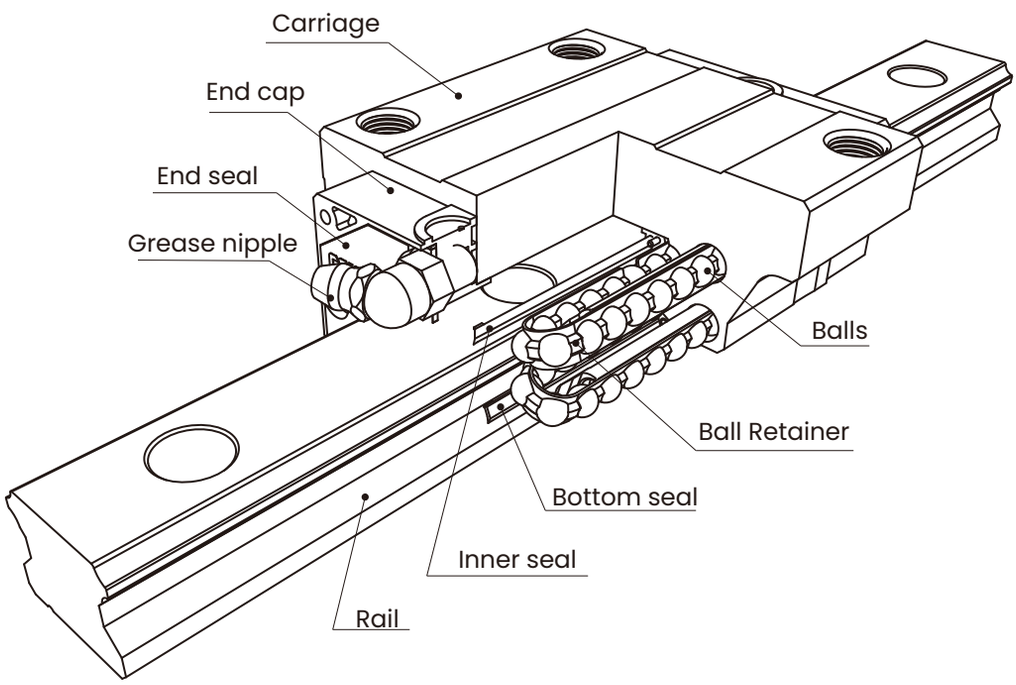


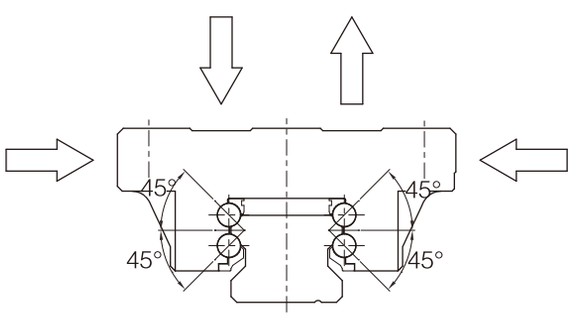
Unit(mm)

Model No.	Width		Rail dimension			Basic load rating		Static moment rating					Weight	
			Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P(KN·m)		M_Y(KN·m)		M_R KN·m	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C_0 KN	Single Carriage	Double Carriages	Single Carriage	Double Carriages			
LMG15 TC	15	18.5	13	60	7.5×5.3×4.5*	11.1	16.2	0.11	0.61	0.11	0.61	0.13	0.20	1.29
LMG20 TC	20	19.5	15	60	9.5×8.5×6	18.9	27.4	0.23	1.29	0.23	1.29	0.28	0.36	1.92
LMG25 TC	23	25	18	60	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.58	2.67
LMG30 TC	28	31	23	80	14×12×9*	37.5	49.6	0.58	3.13	0.58	3.13	0.72	1.10	4.48
LMG35 TC	34	33	26	80	14×12×9	49.9	64.8	0.88	4.80	0.88	4.80	1.14	1.50	6.24

*1.Rail mounting hloes for M3 bolt (6×4.5×3.5) and M4 bolt (7.5×5.3×4.5) are available for LMG15 rail.
The codes of rail type are LMG15R for M4 bolt, and LMG15U for M3 bolt.
2.Rail mounting hloes for M6 bolt (11×9×7) and M8 bolt (14×12×9) are available for LMG30 rail.
The codes of rail type are LMG30R for M8 bolt, and LMG30U for M6 bolt.

LMGQ series





Note：For reference only.

Characteristics

The four trains of balls are designed with a contact angle of 45° which enables it not only to bear load equally in radial, reversed radial and lateral directions but also can achieve high rigidity and high loading capacity. Therefore, it is suitable for all directional installation. Furthermore the unique self alignment function of LMG series can compensate the certain error while assembling, and which results in high precision and smooth motion.

- High rigidity
- Four-way equal load
- Self alignment capability
- Complete dust sealing system
- High positioning accuracy
- Low dust emission
- Smooth movement
- Low noise and high speed application
- Interchangeability
- Carriage common rail design
- International standard

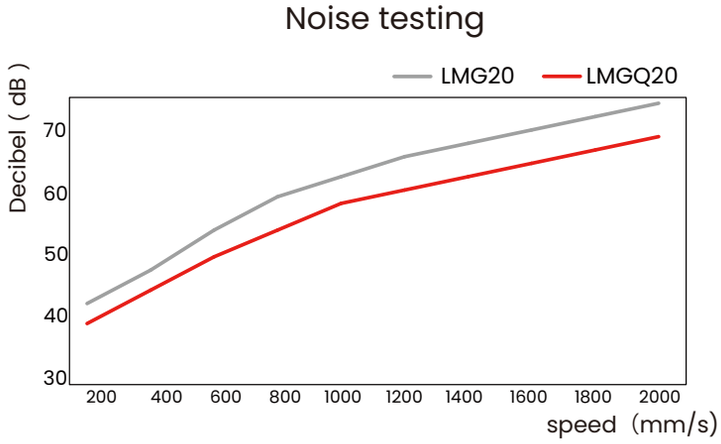
Applications

- Machine Tool（CNC、Lathe …）
- Industrial Robot
- Semiconductor Manufacturing Equipment
- Other（Injection Molding Machine …）

Characteristics

The LMGQ series uses a Ball Linker to eliminate the sharp sound (high audio sound) caused by the collision between the balls. Through experimental measurements, it has been found that under different speed conditions, the overall sound of the LMGQ series is effectively reduced by 5-7 decibels compared to the LMG series.

Model No.	Test conditions
Size	LMG/GQ20H1SSP0+R1200-30/30N
speed	200mm/s-2000mm/s
stroke	1000mm



● Noise testing machine

Specifications

(1) Non-Interchangeable type

LMGQ 20 C 2 SS P1 +R 1000 -20 /20 P II

Series : LMGQ
Size : 15 , 20 , 25
Carriage type
(1) Heavy load
C : Flange type, mounting either from top or bottom
H : Square high type
T : Square compact type
(2) Ultra heavy load
LC : Flange type, mounting either from top or bottom
LH : Square high type
(3) Medium load
ST : Square compact type
Number of carriages per rail : 1 , 2 , 3 ...
Dust protection option : No symbol , UU , SS , VV ,
Preload : P0 (Light preload) , P1 (Medium preload) , P2 (Heavy preload)
Code of special carriage : A , B ... (Standard rail is no symbol)
Rail type : R , U* (Counter-bore type) , T (Tapped hole type)
Rail length (mm)
Rail hole pitch from start side (E1, Refer to Figure A-37)
Rail hole pitch to the end side (E2, Refer to Figure A-37)
Accuracy grade : N , H , P , SP , UP
Code of special rail : A , B ... (Standard rail is no symbol)
Number of rails per axis : No symbol , II , III , IV ...

*U type rail is only applicable for LMGQ15, detail information please see the specification table for the corresponding model number.

Specifications

(2) Interchangeable type

• Code of Carriage

LMGQ 20 C SS P0 N

Series : LMGQ
Size : 15 , 20 , 25
Carriage type
(1) Heavy load
C : Flange type, mounting either from top or bottom
H : Square high type
T : Square compact type
(2) Ultra heavy load
LC : Flange type, mounting either from top or bottom
LH : Square high type
(3) Medium load
ST : Square compact type
Dust protection option : No symbol , UU , SS , VV
Preload : P0 (Light preload)
Accuracy grade : N , H
Code of special carriage : A , B ... (Standard carriage is no symbol)

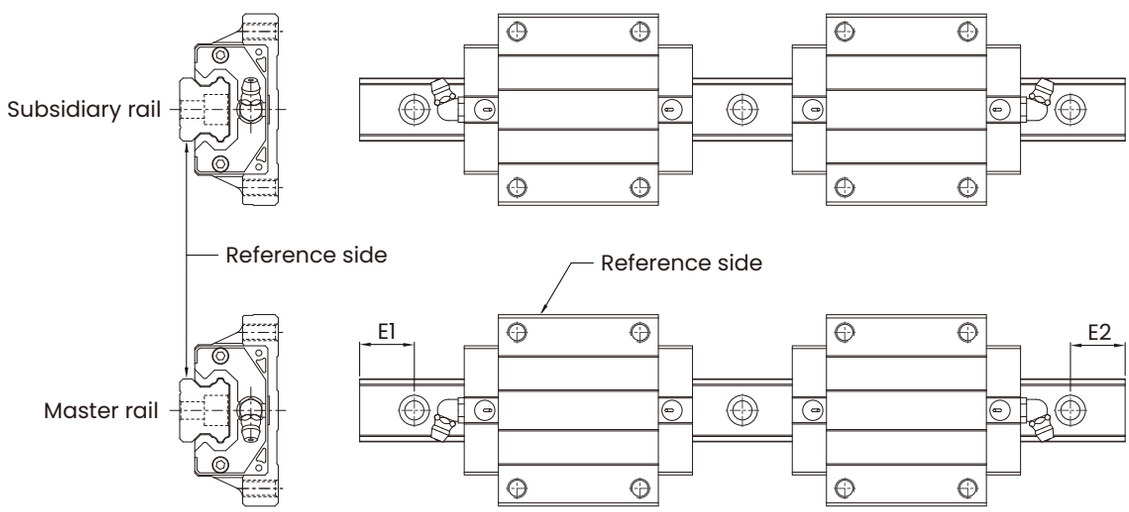
Specifications

Code of Rail

LMG 20 R 1000 -20 /20 N

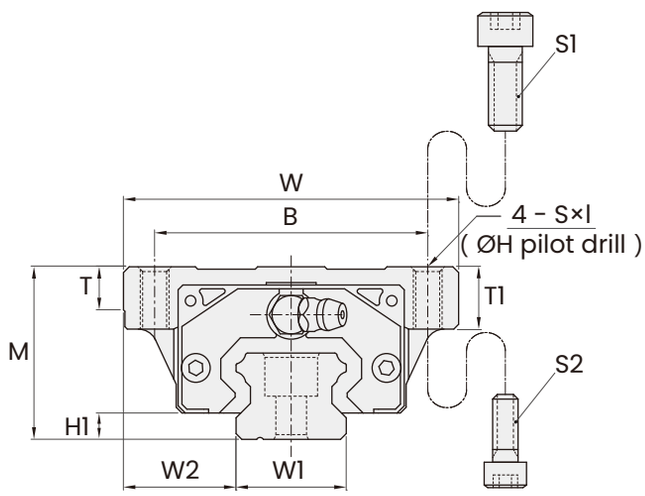
Series : LMG
Size : 15 , 20 , 25
Rail type : R , U* (Counter-bore type) , T (Tapped hole type)
Rail length (mm)
Rail hole pitch from start side (E1, see Figure below)
Rail hole pitch to the end side (E2, see Figure below)
Accuracy grade : N , H
Code of special rail : A , B ... (Standard rail is no symbol)

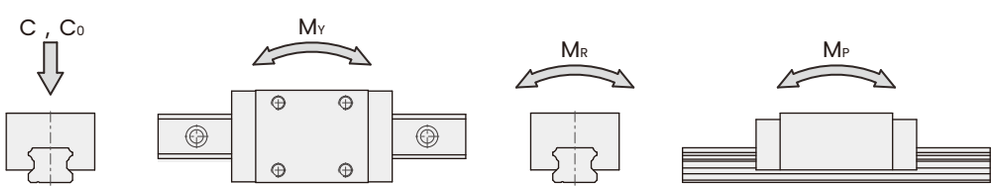
*U type rail is only applicable for LMG15, detail information please see the specification table for the corresponding model number.



Dimensions of LMGQ···C / LC

Model No.	Bolt Size		Pilot drill
	S1	S2	H
LMGQ15	M5	-	-
LMGQ20	M6	M5	5.3
LMGQ25	M8	M6	6.9

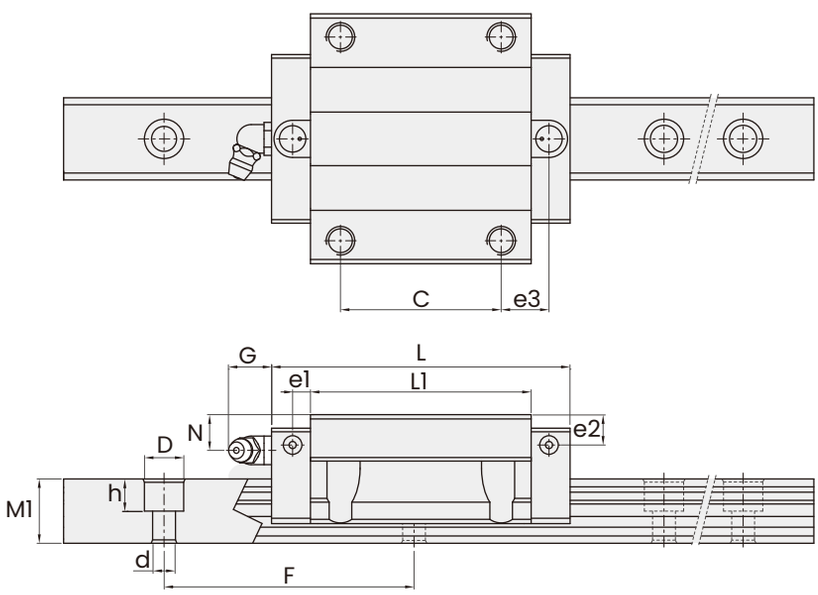




Unit (mm)

Model No.	External dimension			Carriage dimension												
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	T1	H1	N	e1	e2	e3	G	Grease nipple
	M	W	L													
LMGQ15 C	24	47	61.2	38	30	M5×8	43.8	5.5	8	4	5	3.3	4	10.9	5	M4×0.7
LMGQ20 C	30	63	76.1	53	40	M6×10	53.7	7	10.2	4.6	8.5	4.5	7	13.4	12	M6×0.75
LMGQ20 LC	30	63	91.1	53	40	M6×10	68.5	7	10.2	4.6	8.5	4.5	7	18.8	12	M6×0.75
LMGQ25 C	36	70	84.7	57	45	M8×13	62.7	9	13	5.5	10	5	9.5	13.9	12	M6×0.75
LMGQ25 LC	36	70	104.2	57	45	M8×13	83	9	13	5.5	10	5	9.5	23.7	12	M6×0.75

Dimensions of LMGQ···C / LC

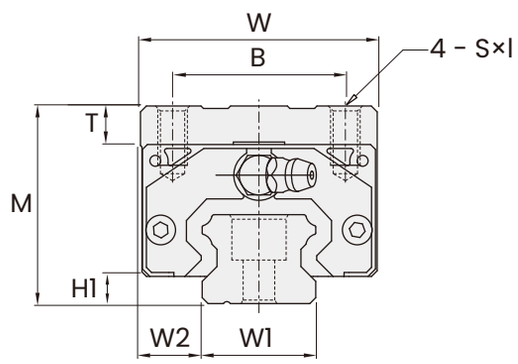


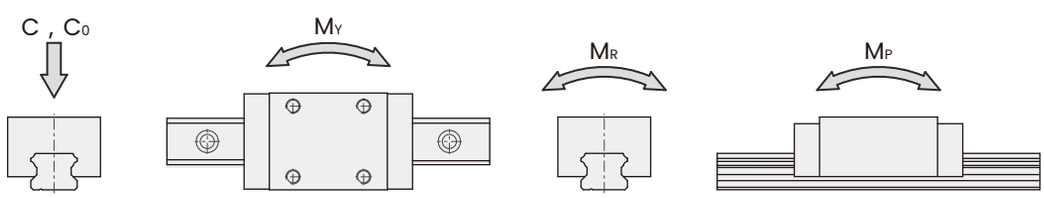
Unit(mm)

Model No.			Rail dimension			Basic load rating		Static moment rating					Weight	
	Width		Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P(KN·m)		M_Y(KN·m)		M_R KN·m	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C_0 KN	Single Carriage	Double Carriages	Single Carriage	Double Carriages			
LMGQ15 C	15	16	13	60	7.5×5.3×4.5*	11.1	16.2	0.11	0.61	0.11	0.61	0.13	0.18	1.29
LMGQ20 C	20	21.5	15	60	9.5×8.5×6	18.9	27.4	0.23	1.29	0.23	1.29	0.28	0.40	1.92
LMGQ20 LC	20	21.5	15	60	9.5×8.5×6	22.4	33.7	0.35	1.84	0.35	1.84	0.35	0.51	1.92
LMGQ25 C	23	23.5	18	60	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.62	2.67
LMGQ25 LC	23	23.5	18	60	11×9×7	32.3	48.6	0.60	3.09	0.60	3.09	0.57	0.81	2.67

*1.Rail mounting hloes for M3 bolt (6×4.5×3.5) and M4 bolt (7.5×5.3×4.5) are available for LMG15 rail.
The codes of rail type are LMG15R for M4 bolt, and LMG15U for M3 bolt.
2.Rail mounting holes for M6 bolt (11×9×7) and M8 bolt (14×12×9) are available for the LMG30 rail.
The codes of rail type are LMG30R for M8 bolt, and LMG30U for M6 bolt.
3.The LMGQ15C type slider does not provide a bottom-locking feature.

Dimensions of LMGQ···H / LH

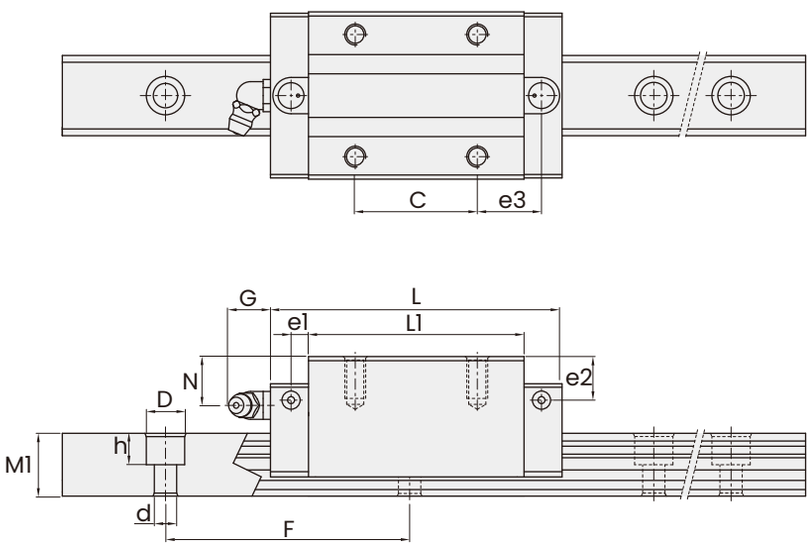




Unit (mm)

Model No.	External dimension			Carriage dimension											
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	H1	N	e1	e2	e3	G	Grease nipple
	M	W	L												
LMGQ15 H	28	34	61.2	26	26	M4×7	43.8	6	4	9	3.3	8	12.9	5	M4×0.7
LMGQ20 H	30	44	76.1	32	36	M5×8	53.7	6	4.6	8.5	4.5	7	13.4	12	M6×0.75
LMGQ20 LH	30	44	91.1	32	50	M5×8	68.5	6	4.6	8.5	4.5	7	13.8	12	M6×0.75
LMGQ25 H	40	48	84.7	35	35	M6×12	62.7	8	5.5	14	5	13.5	18.9	12	M6×0.75
LMGQ25 LH	40	48	104.2	35	50	M6×12	83	8	5.5	14	5	13.5	21.5	12	M6×0.75

Dimensions of LMGQ···H/ LH

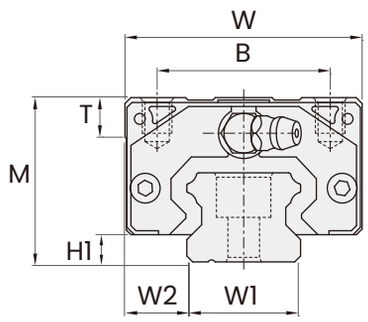


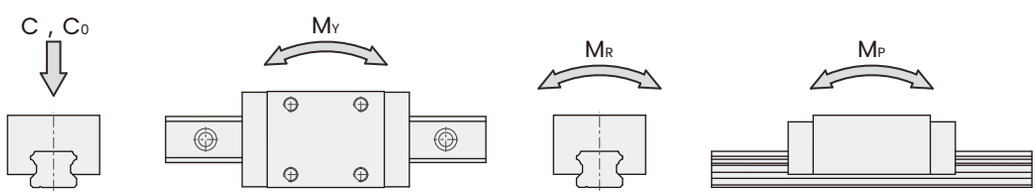
Unit(mm)

Model No.	Width		Rail dimension			Basic load rating		Static moment rating					Weight	
			Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P(KN·m)		M_Y(KN·m)		M_R KN·m	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C_0 KN	Single Carriage	Double Carriages	Single Carriage	Double Carriages			
LMGQ15 H	15	9.5	13	60	7.5×5.3×4.5*	11.1	16.2	0.11	0.61	0.11	0.61	0.13	0.18	1.29
LMGQ20 H	20	12	15	60	9.5×8.5×6	18.9	27.4	0.23	1.29	0.23	1.29	0.28	0.31	1.92
LMGQ20 LH	20	12	15	60	9.5×8.5×6	22.4	33.7	0.35	1.84	0.35	1.84	0.35	0.39	1.92
LMGQ25 H	23	12.5	18	80	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.55	2.67
LMGQ25 LH	23	12.5	18	80	11×9×7	32.3	48.6	0.60	3.09	0.60	3.09	0.57	0.72	2.67

*1.Rail mounting hloes for M3 bolt (6×4.5×3.5) and M4 bolt (7.5×5.3×4.5) are available for LMG15 rail.
The codes of rail type are LMG15R for M4 bolt, and LMG15U for M3 bolt.

Dimensions of LMGQ···ST / T

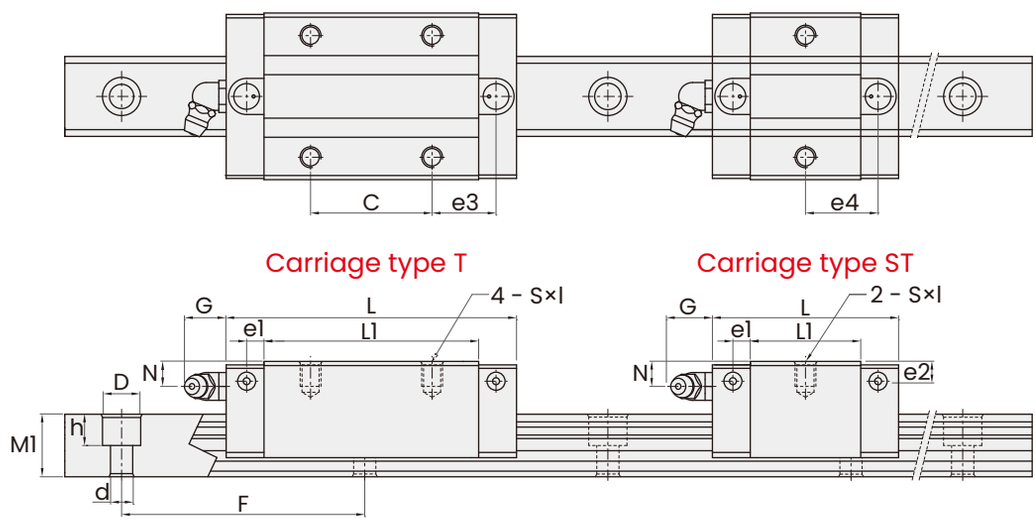




Unit (mm)

Model No.	External dimension			Carriage dimension												
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	H1	N	e1	e2	e3	e4	G	Grease nipple
	M	W	L													
LMGQ15 T	24	34	61.2	26	26	M4×5	43.8	6	4	5	3.3	4	12.9	-	5	M4×0.7
LMGQ20 ST	28	42	50.9	32	-	M5×6	28.3	6	4.6	6.5	4.5	5	-	18.7	12	M6×0.75
LMGQ20 T	28	42	76.1	32	32	M5×6	53.7	6	4.6	6.5	4.5	5	15.4	-	12	M6×0.75
LMGQ25 T	33	48	84.7	35	35	M6×7	62.7	6	5.5	7	5	6.5	18.9	-	12	M6×0.75

Dimensions of LMGQ···ST / T



Unit(mm)

Model No.	Width		Rail dimension			Basic load rating		Static moment rating					Weight	
			Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P(KN·m)		M_Y(KN·m)		M_R KN·m	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C_0 KN	Single Carriage	Double Carriages	Single Carriage	Double Carriages			
LMGQ15 T	15	9.5	13	60	7.5×5.3×4.5*	11.1	16.2	0.11	0.61	0.11	0.61	0.13	0.14	1.29
LMGQ20 ST	20	11	15	60	9.5×8.5×6	7.4	9.4	0.04	0.33	0.04	0.33	0.07	0.13	1.92
LMGQ20 T	20	11	15	60	9.5×8.5×6	18.9	27.4	0.23	1.29	0.23	1.29	0.28	0.26	1.92
LMGQ25 T	23	12.5	18	80	11×9×7	26.4	36.4	0.35	1.94	0.35	1.94	0.43	0.41	2.67

*1.Rail mounting hloes for M3 bolt (6×4.5×3.5) and M4 bolt (7.5×5.3×4.5) are available for LMG15 rail.
The codes of rail type are LMG15R for M4 bolt, and LMG15U for M3 bolt.

Lubrication

A well lubrication is important for maintaining the function of the linear guideway. If the lubrication is not sufficient, the frictional resistance at rolling area will increase and the service life will be shortened as a result of wear of rolling parts. Two primary lubricants are both grease and oil used for the linear motion system, and the lubrication methods are categorized into manual and forced oiling. The selection of lubricant and its method should be based on the consideration of operating speed and environment requirement.

Grease lubrication

The grease feeding interval will be varied with different operating conditions and environments.Under normal operating condition, the grease should be replenished every 100km of travel. The standard pre-filled grease is lithium-based grease No.2. Moving the carriage back and forth with minimum stroke length of three carriages after the carriages been greased. To assure the grease is evenly distributed inside of carriage, the mentioned process should be repeated twice at least.

Oil lubrication

The recommended viscosity of oil is 30~150 cst, and the recommended feeding rate per hour. The nstallation other than horizontal may caused the oil unable to reach raceway area, so please specify the installed direction of your linear guideway applied.

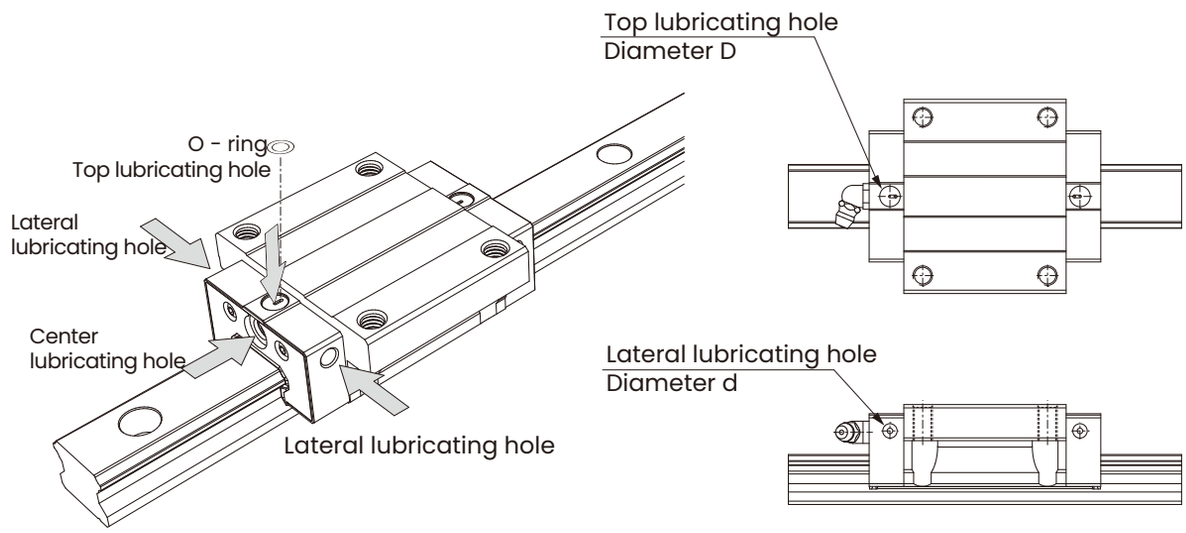
Note：

When the operating stroke length less than the sum of length of two carriages, the lubrication fitting should be applied on both ends of carriage for adequacy. Moreover, if the stroke length less than a half of the length of a carriage, the carriage should be moved back and forth up to the length of two carriages while lubricating.

Lubrication

Lubrication position

The standard lubricating position of carriage is at the center of both ends, as shown below. As for lateral and top application, please specify when ordering.



Unit (mm)

Model No.	Center Lubricating	Lateral Lubricating			Top Lubricating		
	Grease Nipple	Diameter D	Grease Nipple	Drilling size	Diameter D	O - ring	Drilling size
LMG/GQ 15	M4×0.7P	3.3	M4×0.7P	1.5	5.8	P2	1
LMG/GQ 20	M6×0.75P	5.2	M6×0.75P	2	7.4	P4	
LMG/GQ 25							
LMG 30							
LMG 35					10.2	P7	
LMG 45	PT1/8						
LMG 55							1.5

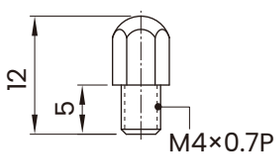
*In cases where the travel distance is less than the total length of two sliders, grease fittings or oil pipe connectors must be installed at both ends of the sliders, and regular lubrication is required. If the travel distance is less than half the total length of a slider, in addition to the aforementioned method, the slider must be moved back and forth over a lubrication distance of at least two slider lengths during lubrication.

Lubrication

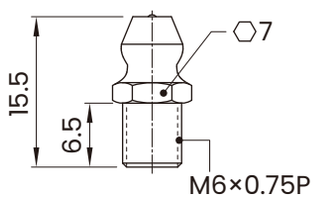
Grease nipples and oil piping joint

(1) Grease nipples

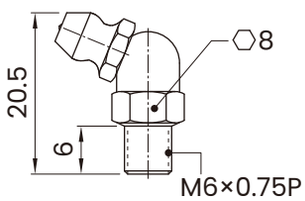
GS - M4



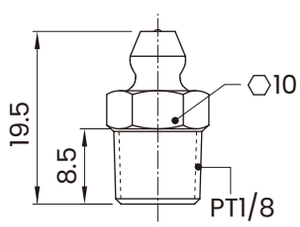
GS - M6



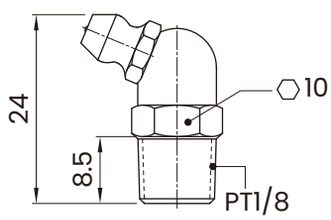
GC - M6



GS - 7



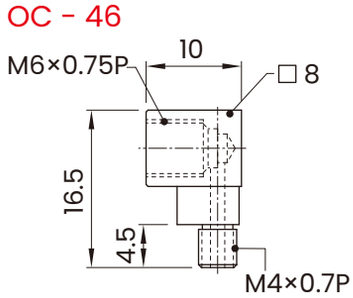
GC - 7



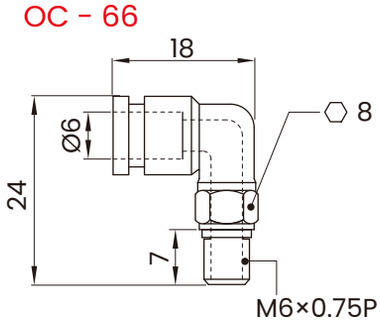
(2) Oil piping joint

- OC Type

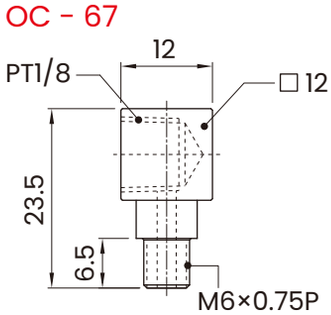
OC - 46



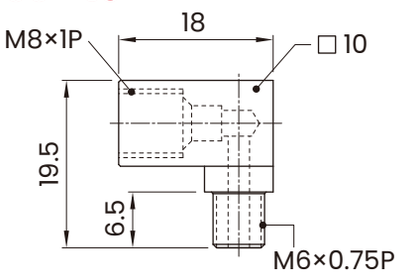
OC - 66



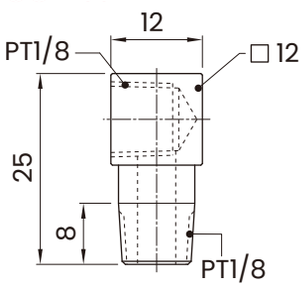
OC - 67



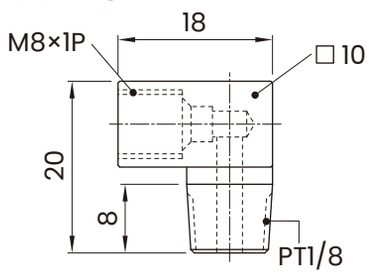
OC - 68



OC - 77



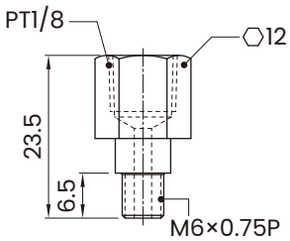
OC - 78



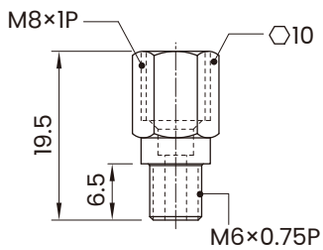
Specifications

OS Type

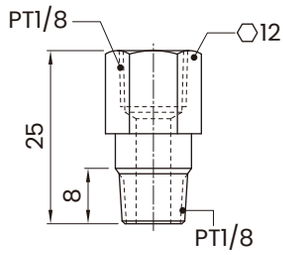
OS - 67



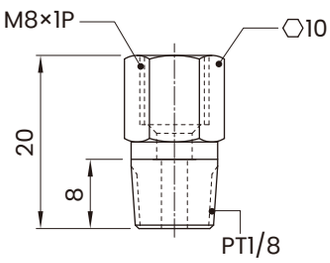
OS - 68



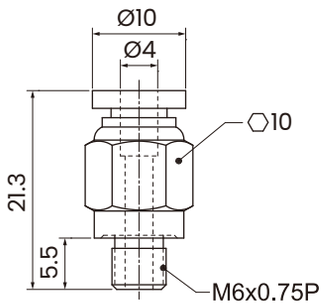
OS - 77



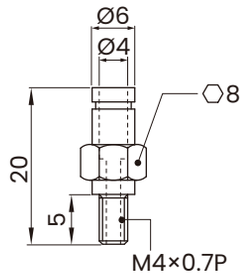
OS - 78



OS - 64 (Fast joint)



OS - 44 (Fast joint)



Model No.	Grease Nipples		Oil Piping Joint
	Standard	Option	Option
LMG/GQ 15	GS - M4	-	OC - 46、OS - 44
LMG/GQ 20	GC - M6	GS - M6	OC - 66、OC - 67、OC - 68、OS - 67、OS - 68、OS - 64
LMG/GQ 25			
LMG 30			
LMG 35			
LMG 45	GC - 7	GS - 7	OC - 77、OC - 78、OS - 77、OS - 78
LMG 55			

- SR Self-Lubricating Module

Characteristics

- Can be used with grease
- Wide use of ambient temperature range
- Extend the maintenance cycle and reduce the maintenance cost
- Low consumption and environmentally friendly
- Oil supplement design, low cost
- Improve the service life of guide rail

Applications

- Automation equipment
- Electronic machinery
- Industrial machinery
- Other

Specifications

(1) Non-Interchangeable type

LMG/GQ20C2SSP1 SR +R1000-20/20PII

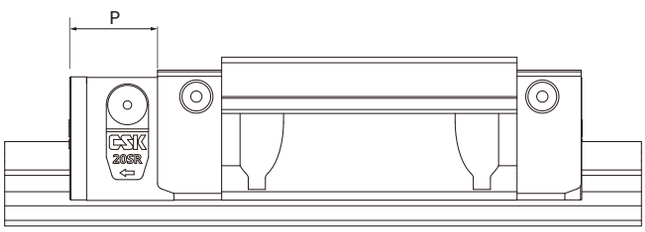
Self-Lubricating Module：SR

(2) Interchangeable type

LMG/GQ20CSSP0SR N

Self-Lubricating Module：SR

Dimension parameters



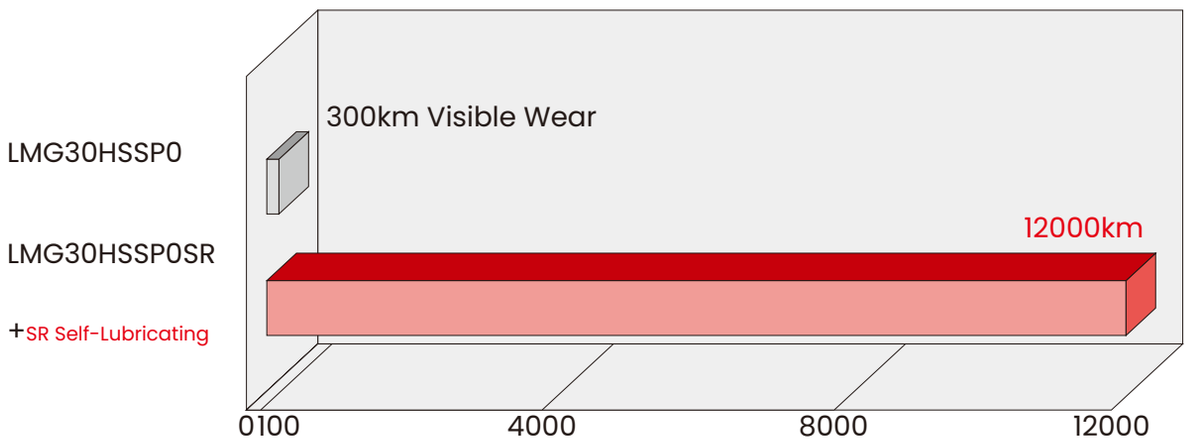
Extended size of Carriage

Model No.	P	Oil replenishment volume(ml)
LMG 15	12.6	1.3
LMG 20	15.6	2.8
LMG 25	15.6	4
LMG 30	15.6	5.9
LMGQ 15	15.6	1.3
LMGQ 20	18.6	2.8
LMGQ 25	18.6	4

Test conditions

Model No.	Test conditions
Size	LMG30H2SSP0SR+R1200-40/40NII
Speed	60m/min
stroke	1000mm
Payload	300kgf

Test conditions



Normal exercise mileage (km)

Model No.	Need to replenish lubricating oil (km)
LMG/GQ 15 SR	4000
LMG/GQ 20 SR	6000
LMG/GQ 25 SR	9000
LMG 30 SR	12000

*When installing self-lubricating modules, grease fittings are not included as standard.
If required, please contact us.

*The self-lubricating modules are pre-filled with specialized lubricant upon shipment.
If the lubricant level in the module is insufficient, please consult us.

*Due to factors such as the operating environment and conditions of the self-lubricating modules, the lubrication replenishment interval should be adjusted based on the actual situation.

- GR Self-Lubricating Module

Characteristics

- Can be used in combination with other lubrication solutions
- Wide range of applicable environmental temperatures
- No flowing oil, protecting the equipment environment
- Can be used simultaneously with lubricating grease; only a small amount of oil is required to achieve lubrication, making it environmentally friendly
- Effectively extends maintenance cycles, reduces maintenance costs, and comprehensively extends the service life of guide rails

Applications

- Automation equipment
- Electronic machinery
- Industrial machinery
- Other

Specifications

(1) Non-Interchangeable type

LMG/GQ20C2SSP1GR+R1000-20/20PII

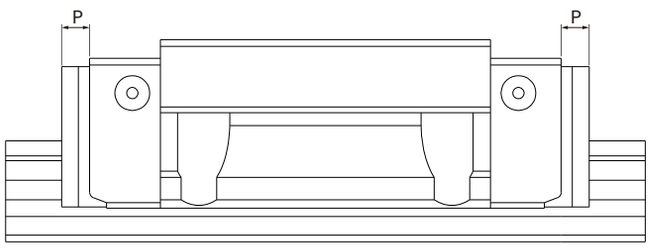
Self-Lubricating Module: GR

(2) Interchangeable type

LMG/GQ20CSSP0GRN

Self-Lubricating Module: GR

Dimension parameters



Extended size of Carriage

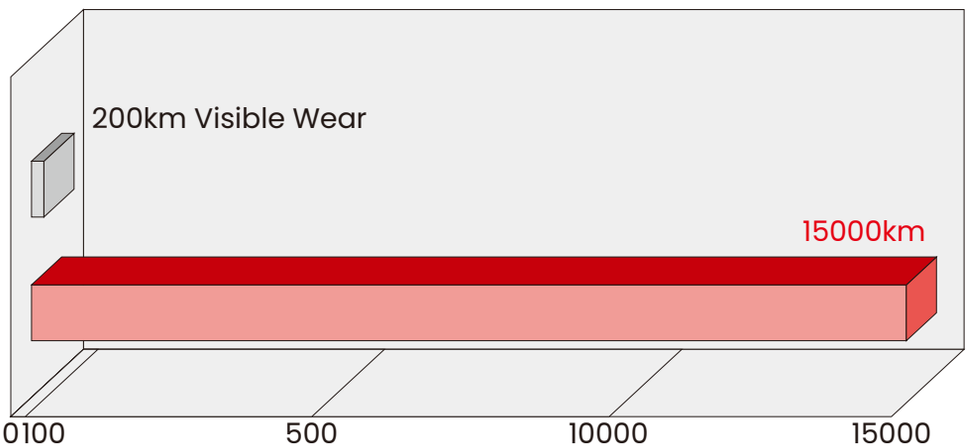
Model No.	P×2
LMG15/GQ15	10
LMG20/GQ20	10
LMG25/GQ25	10
LMG30	18
LMG35	18
LMG45	18
LMG55	18

Test conditions

Model No.	Test conditions
Size	LMG15H2SSP0GR+R1200-30/30
Speed	150m/min
stroke	1000mm
Payload	145kgf

LMG15HSS

LMG15HSSP0GR
+GR Self-Lubricating



*When installing self-lubricating modules, grease fittings are not included as standard.
If required, please contact us.

Properties

- NLGI-grade：2
- Dropping point：>180˚C
- Worked penetration(Pw 60)：265~295 (1/10mm)
- Temperature range：-40˚C~140˚C
- Net.80g

Description

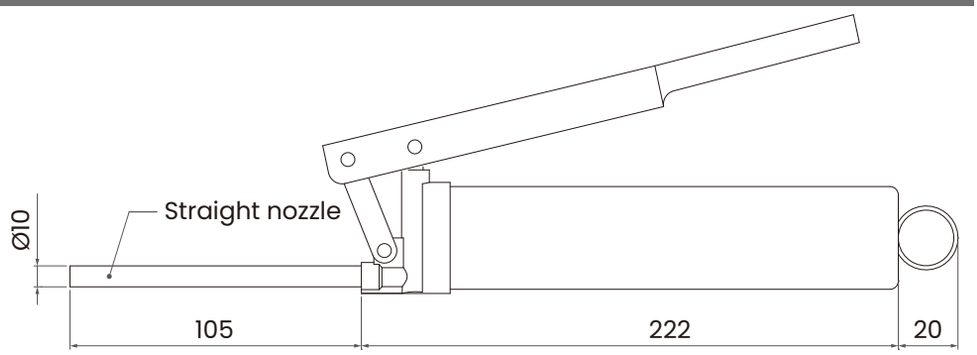
GS2 is an adhesive, lithium soap based lubricating grease designed for long-term application.
Suitable for high speed operation.

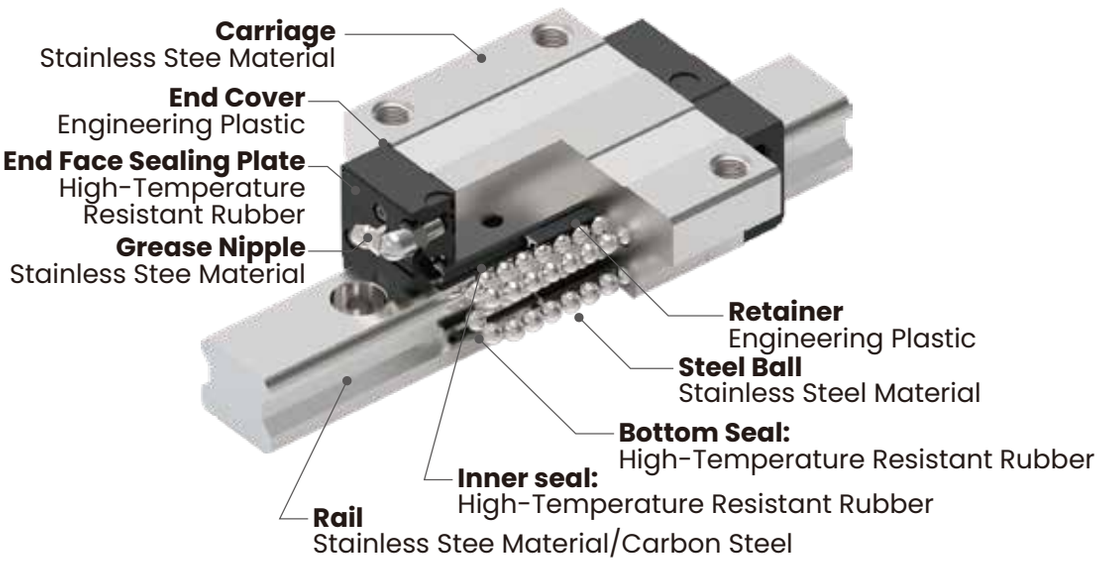
Advantages

- ●Suitable for life-time lubricatio
- ●Water resistant
- ●Work stable
- ●Protects from corrosion,even in the presence of salt water
- ●Suitable for high thermal loads
- ●Good adhesiveness
- ●Suitable for low temperatures
- ●Mechanically high loadable

Grease gun LG80

LG80 ： Grease gun for GS2.

Model No.	
Dimension	
Specifications	1.Discharge pressure：300kg/cm² 2.Weight (excluding the grease) ： 0.5kg 3.Grease：80g in a bellows tube



Characteristics

- High corrosion resistance
- Superior impact resistance
- Suitable for high-temperature environments
- Easy maintenance and long service life

Applications

Heat Treatment Equipment
Automation Equipment for High-Temperature Environments
Woodworking Industry Equipment
Harsh Environments
Vacuum Environments
Areas Requiring Chemical Resistance
(Please inform us of the operating environment before purchase)

Specifications

LMG/GQ 20 C M 2 SS P1 SR +R 1000-20/20 P M II

Size：LMG15，20，25，30，35，45，55
LMGQ15, 20, 25

Carriage type
（1）Standard Type
C:Flange type, mounting either from top or bottom
TC:Flange type, mounting either from top or bottom
H:Square high type
V:Square medium type
T:Square compact type
（2）Extended Type
LC:Flange type, mounting either from top or bottom
LH:Square high type
LV:Square medium type
LT:Square compact type
（3）Short Type
ST:Square compact type

Accessories：No symbol，M（Metal End Cap），
MG（Full Metal Circulator），E（Electrolyte Resistant）

Number of carriages per rail：1，2，3 ..

Dust protection option：No symbol，UU，SS，VV，ZZ，
DD，KK

Preload：P0（Light preload），P1（Medium preload），
P2（Heavy preload）

Accessories：No symbol，SR（Self-Lubricating Module），
GR（Solid Self-lubricating Module）

Code of special Carriage：No symbol，A，B ...

Rail type：R，U*（Counter-bore type），T（Tapped hole type）

Rail length（mm）

Rail hole pitch from start side E1

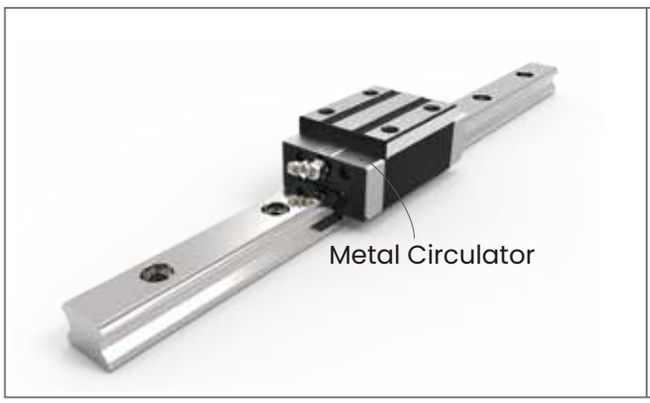
Rail hole pitch to the end side E2

Accuracy grade：N，H，P，SP，UP

Material：No symbol，M（Stainless Steel）

Code of special rail：A，B ...（Standard rail is no symbol）

Number of rails per axis：No symbol，II，III，IV ...



- Metal Circulator

Specifications

LMG 20 C M 2 SS P1 +R 1000 -20 /20 P II

Series：15 , 20 , 25 , 30 , 35 , 45 , 55

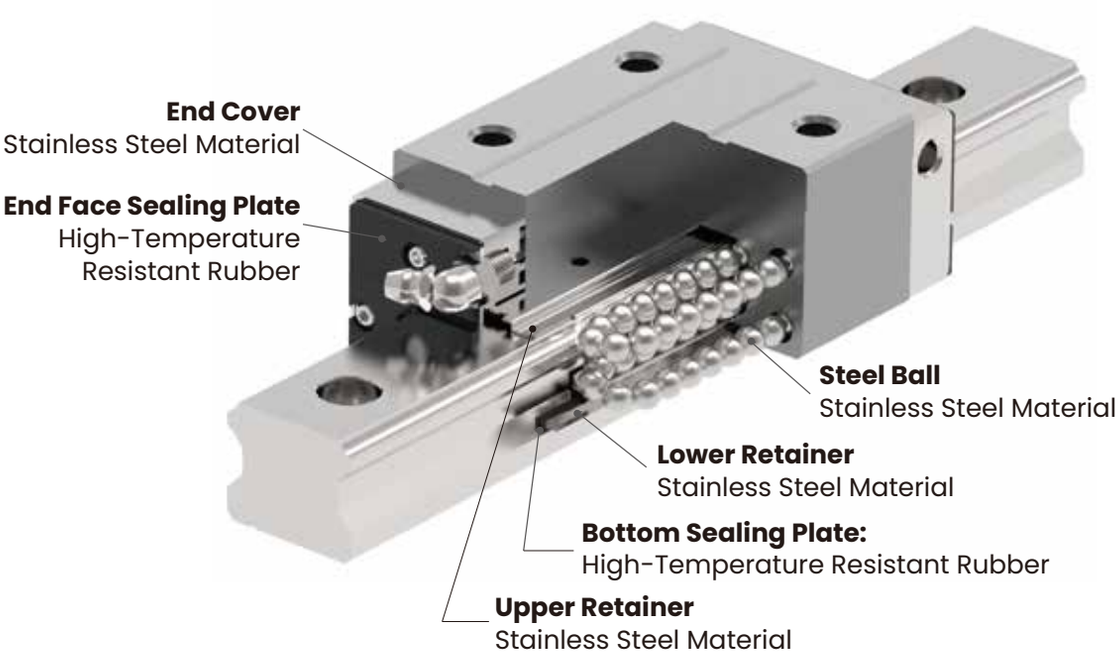
Metal Circulator：M

Characteristics

- Enhanced the strength of the Metal Circulator
- Higher acceleration and deceleration capacity
- Superior impact resistance performance
- Suitable for use in high temperature environment
- Significantly reducing the destructive intrusion of foreign matters arising
- Does not change the total length of the standard block

Applications

Heat treatment equipment
Automation equipment in high temperature environment
Equipment with low dust emission requirements
Other



Specifications

LMG 20 C M 2 SS P1 +R 1000 -20 /20 P II

Series：15 , 20 , 25 , 30 , 35 , 45 , 55

Metal Circulator：MG

Characteristics

- **Can be used with grease**
  The end covers and retainers are made of stainless steel, while the end face and bottom sealing plates are made of high-temperature resistant rubber, enabling the slider to operate continuously in environments with a maximum working temperature of 150°C.

- **Higher Overall Strength and Impact Resistance**
  The use of stainless steel for the end covers and retainers significantly enhances the wear resistance and impact resistance of the slider's circulating components compared to standard plastic parts.

- **High Corrosion Resistance**
  The end covers, retainers, and steel balls are all made of stainless steel. Combined with the surface-coated slider and rail, the overall corrosion resistance of the linear guide is greatly improved, making it suitable for harsh working environments such as outdoors, high temperatures, and high humidity.

- **Suitable for Vacuum Environments**
  The use of stainless steel for the end covers and retainers eliminates the impact of vacuum environments on the components. When paired with vacuum-specific grease, the slider can operate stably and continuously in vacuum conditions.

Applications

Heat Treatment Equipment

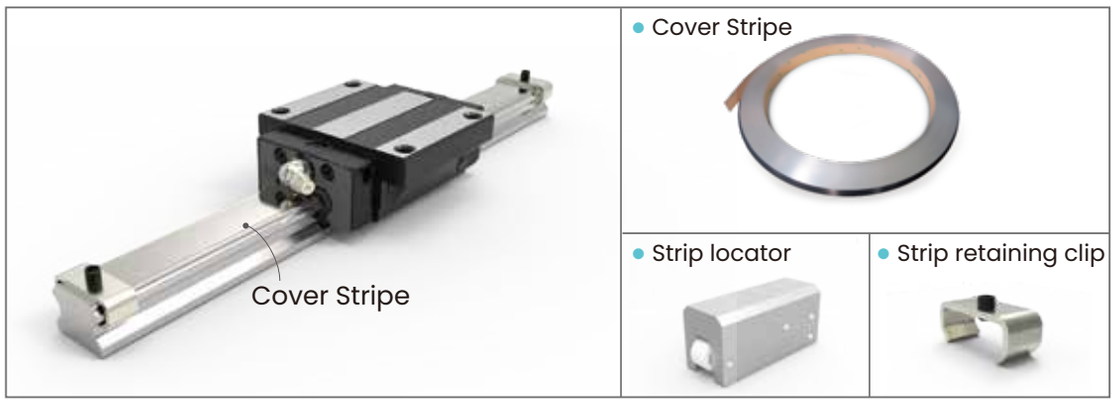
Automated Equipment in High-Temperature Environments

Woodworking Industry Equipment

Fields Requiring Chemical Corrosion Resistance (Please inform us of the operating environment before purchasing)

Harsh Environment Applications

Vacuum Environment Applications



Advantages

- Simple installation and disassembly
- Prevent the intrusion of foreign matters
- No need to do special processing or individually customized rail

Specifications

LMG/GQ 20 CS 50

Series：LMG/GQ

Size：20 , 25

Components

CS ： Cover Stripe

CSL ： Strip locator

CSRC： Strip retaining clip

The quantity ordered

Cover Stripe： m

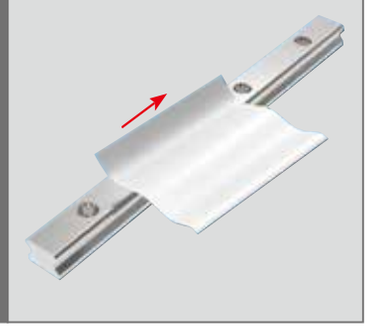
Strip locator/Strip retaining clip： pcs

Precautions for use：

- The cover stripe cannot be bent.
- Clean rail surface before installation.
- When installing, please wear gloves to prevent scratches.
- Cut off position, please chamfer processing.
- When cutting , make the cover stripe1~3mm shorter than the guide rail.

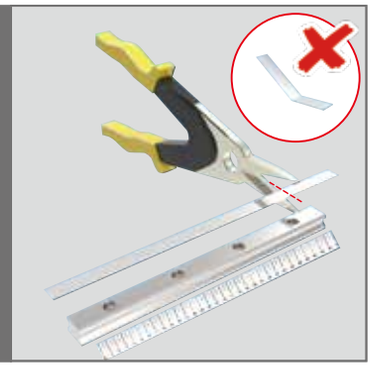
Installation

1



Clean rail surface before installation.

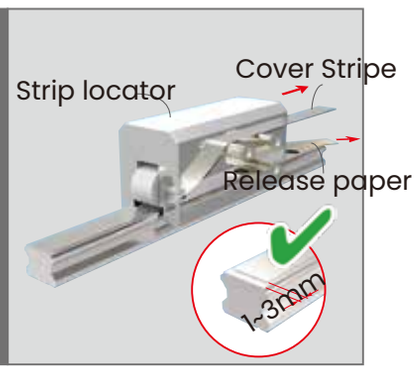
2



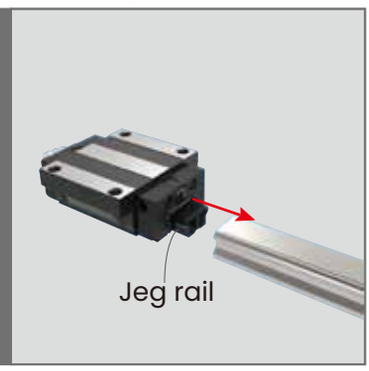
When cutting , make the cover stripe1~3mm shorter than the guide rail.

⚠ The cover stripe cannot be bent.

3



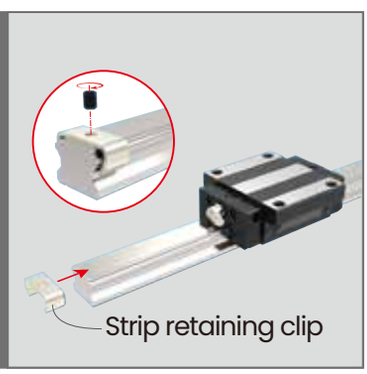
4



Use the strip locator to install the cover stripe.Use Jeg rail mounting.

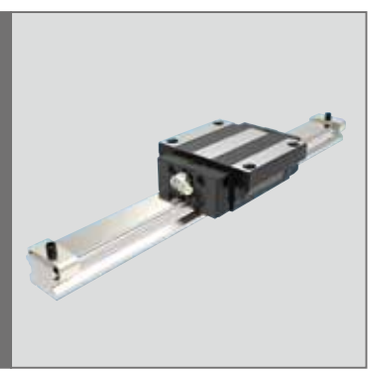
⚠ The cover stripe cannot be bent.

5



Insert strip retaining clip into the guide rail and bolt it tight.

6



Complete

Industrial black chrome coating	Manganese phosphate coating	Primary Chrome Coating
		

Advantages

Improved corrosion resistance
Accuracy is not affected
Change the appearance

Applications

Chemical industry
Automation
Experimental environment
Humid environment

Specifications

LMG/GQ 20 C 2 SS P1 B +R 1000 -20 /20 P B II

Carriage surface treatment：B
Rail surface treatment：B
The inside of the hole is not guaranteed to be completely treated.

Test conditions

Primary Chrome Coating

LMG-R
Surface treatment
Salt-water spray resistance 24h

LMG-R
Surface treatment
Salt-water spray resistance 72h

Manganese phosphate coating

LMG-R
Surface treatment
Salt-water spray resistance 24h

LMG-R
Surface treatment
Salt-water spray resistance 72h

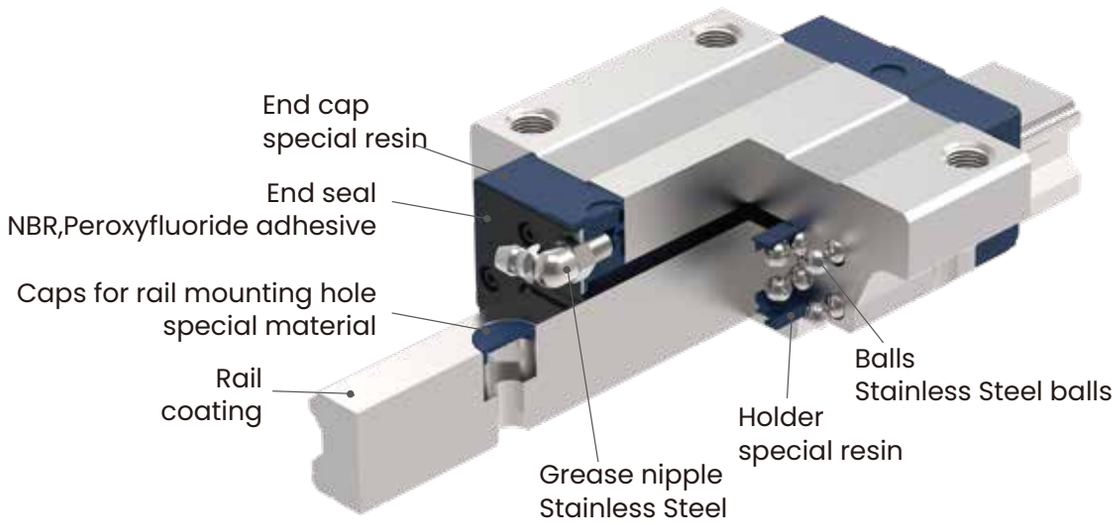
Industrial-grade black chrome coating

LMG-R
Surface treatment
Salt-water spray resistance 24h

LMG-R
Surface treatment
Salt-water spray resistance 72h

Item	Spray liquid	PH	Temperature	Humidity	Smoke collection volume
Description	5%NaCl solution	6.9	35°	85%RH	1.5ml (80cm²/H)

*Industrial grade low-temperature black chromium surface treatment, commonly known as cold electroplating.



Specifications

LMG 20 C E 2 SS P1 +R 1000 -20 /20 P II

Size：15 , 20 , 25 , 30

Anti electrolyte Corrosion：E

Characteristics

- For the lithium battery industry, this product does not contain copper, zinc, or nickel elements.
- Plastic accessories are made of special materials that can resist the corrosiveness of battery electrolytes.
- The lubricating oil nozzle is made of stainless steel material to prevent the generation of hazardous elements during the battery manufacturing process.
- Replacing steel balls with stainless steel balls enhances the corrosion resistance of their battery electrolyte.

Test conditions

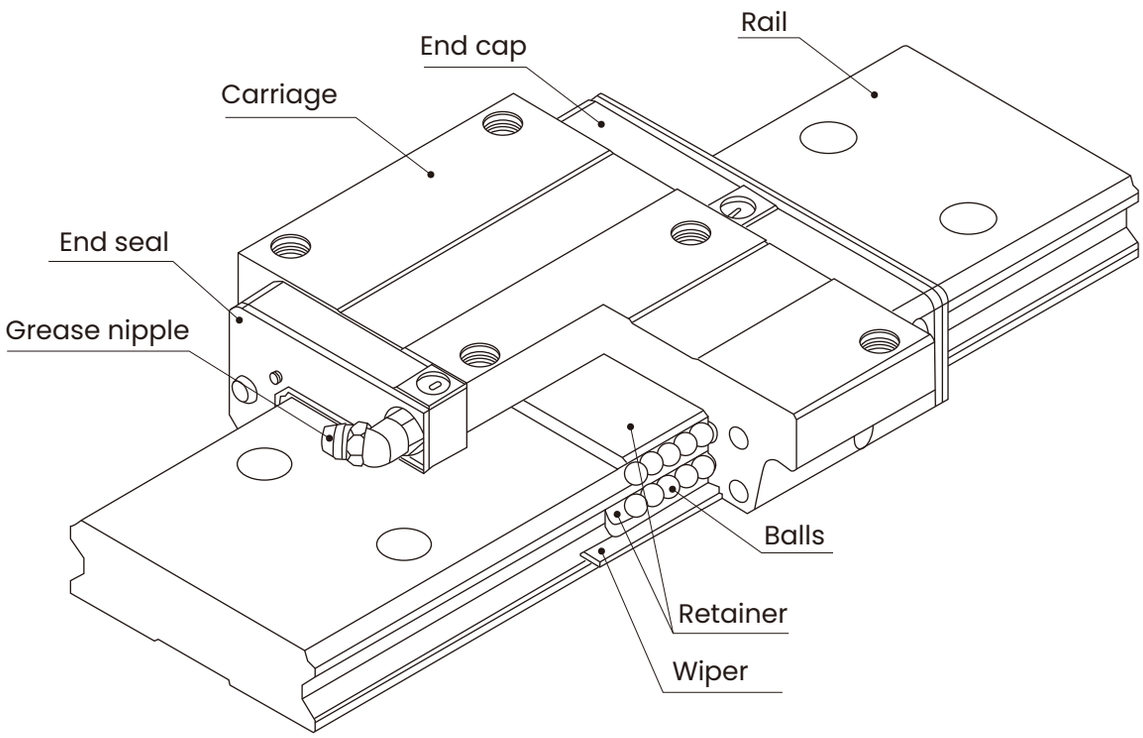
Item	Standard Part	Anti Corrosion Part
Before testing		
Battery electrolyte immersion After 24 hours		

Optional Accessories Table

		LMG							LMGQ		
		15	20	25	30	35	45	55	15	20	25
Dust Type	UU	○	○	○	○	○	○	○	○	○	○
	SS	○	○	○	○	○	○	○	○	○	○
	VV	○	○	○	○	○	○	○	○	○	○
	ZZ	○	○	○	○	○	○	○	○	○	○
	DD	○	○	○	○	○	○	○	○	○	○
	KK	○	○	○	○	○	○	○	○	○	○
Self-Lubricating Module SR Series		○	○	○	○	—	—	—	○	○	○
Solid Self-Lubricating Module GR Series		○	○	○	○	○	○	○	○	○	○
Metal Circulator M Series		○	○	○	○	○	○	○	—	—	—
Full-Metal MG Series		○	○	○	○	○	○	○	—	—	—
Stanless Steel Series	Carriage	○	○	○	○	○	○	—	○	○	○
	Rail	○	○	○	—	—	—	—	○	○	○
Cover Stripe CS Series		○	○	○	—	—	—	—	○	○	○
Anti electrolyte Corrosion E Series		○	○	○	○	—	—	—	—	—	—

Four-row wide Linear Guide

LMGW series



Note：For reference only.

Characteristics

With its 45-degree contact angle design, this system offers equal load capacity in all four directions and self-aligning capability, effectively compensating for assembly inaccuracies on mounting surfaces to meet high-precision requirements. Moreover, the increased rail width and reduced overall height provide extremely high resistance to torsion. In applications where space is limited or high torque loads are involved, a single rail configuration can be adopted.

- **High rigidity**
- **Four-way equal load**
- **Self alignment capability**
- **High positioning accuracy**
- **Running Smoothness**
- **Low noise and high speed application**
- **Long Service Life**
- **International standard**

Applications

Conductor Manufacturing Equipment

Printing and Packaging Machinery

CNC Machine Tools

Industrial Robots

Medical Equipment

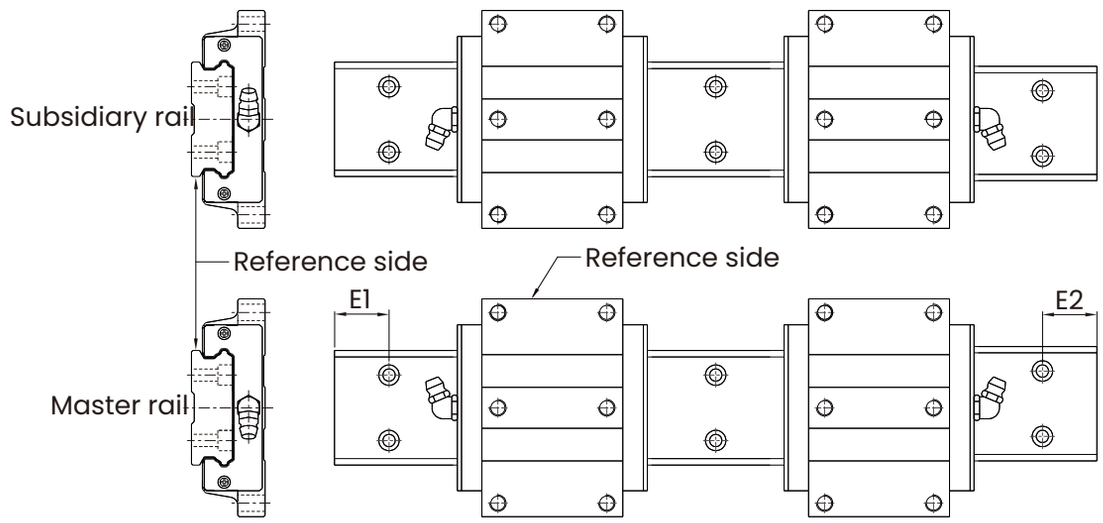
New Energy and Heavy Machiner

Specifications

(1) Non-Interchangeable type

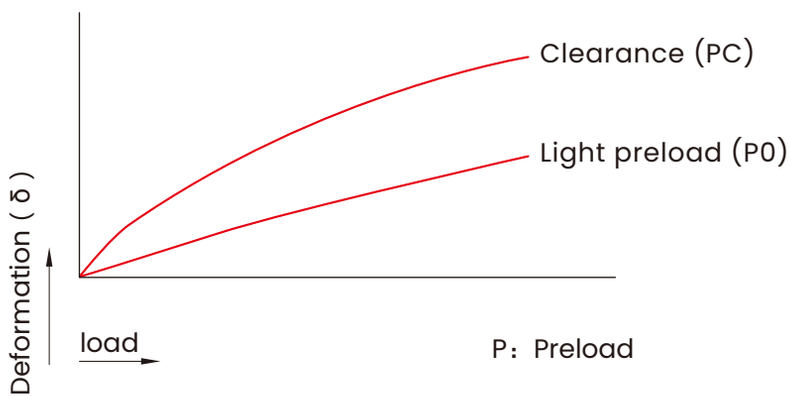
LMGW 17 T 1 UU P0 +R 300 -10 /10 N II

Series：LMGW
Size：12，14，17，21，27
Carriage type
T：Standard Type
LT：Extended Type
C：Flange Type
Number of carriages per rail：1，2，3 ...
Dust protection option：UU
Preload：PC（Clearance），P0（Light preload），
P1（Medium preload）
Rail type：R，T
Rail length（mm）
Rail hole pitch from start side （E1，see Figure below）
Rail hole pitch to the end side（E2，see Figure below）
Accuracy grade：N，H，P，SP，UP
Number of rails per axis：No symbol，II，III，IV ...



Preload Grade

Preload refers to the pre-applied force on the steel balls, achieved by increasing the ball diameter to create a negative clearance between the balls and the raceway. This enhances the rigidity of the linear guide and eliminates clearance. As shown in the figure, increasing the preload can improve the rigidity of the linear guide. However, for smaller specifications, it is recommended to use light preload or lower to avoid reducing service life due to excessive preload.

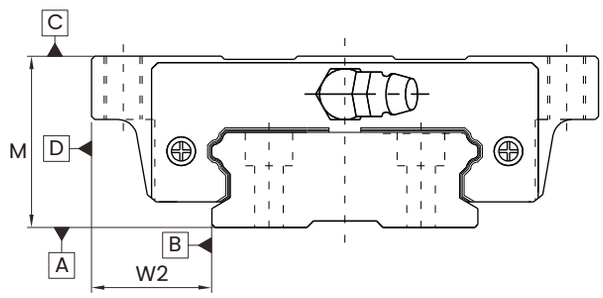


Preload grade	Code	Preload (μm)	Operating Condition
Clearance	PC	0~0.02C	● Load direction is fixed with minimal impact ● Low precision requirements
Light preload	P0	0.03~0.05C	● Light load with high precision requirements
Medium preload	P1	0.06~0.08C	● High rigidity requirements ● Operating environment with vibration and impact

*The "C" in the preload column represents the basic dynamic load rating.

Non-Interchangeable Accuracy Grade

The accuracy of LMGW series is divided into five classes, Normal grade (N), High accuracy grade (H), Precision grade (P), Super precision grade (SP) and Ultra precision grade (UP).

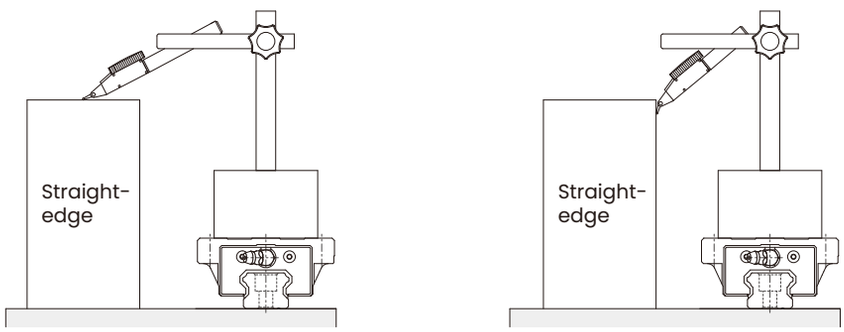


Unit (mm)

Model No.	Item	Accuracy Grade				
		Normal N	High H	Precision P	Super Precision SP	Ultra Precision UP
12 14 17 21	Tolerance for height M	±0.1	±0.03	0 -0.03	0 -0.015	0 -0.008
	Height difference ΔM	0.02	0.01	0.006	0.004	0.003
	Tolerance for distance W2	±0.1	±0.03	0 -0.03	0 -0.015	0 -0.008
	Difference in distance W2 (ΔW2)	0.02	0.01	0.006	0.004	0.003
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)				
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)				
27	Tolerance for height M	±0.1	±0.04	0 -0.04	0 -0.02	0 -0.01
	Height difference ΔM	0.02	0.015	0.007	0.005	0.003
	Tolerance for distance W2	±0.1	±0.04	0 -0.04	0 -0.02	0 -0.01
	Difference in distance W2 (ΔW2)	0.03	0.015	0.007	0.005	0.003
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)				
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)				

Running Parallelism

The running accuracy is the deviation of parallelism between the reference surface of carriage and reference surface of rail when carriage moving over the entire length of rail.

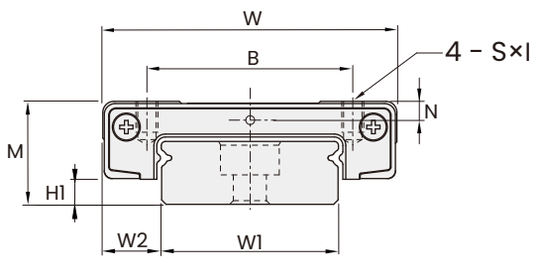


Measurement of running parallelism

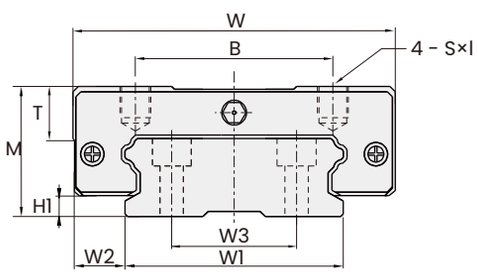
Rail length (mm)		Running Parallelism Values (μm)				
Above(incl.)	Or less	Normal N	High H	Precision P	Super Precision SP	Ultra Precision UP
0	100	12	7	3	2	2
100	200	14	9	4	2	2
200	300	15	10	5	3	2
300	500	17	12	6	3	2
500	700	20	13	7	4	2
700	900	22	15	8	5	3
900	1100	24	16	9	6	3
1100	1500	26	18	11	7	4
1500	1900	28	20	13	8	4
1900	2000	31	22	15	10	5

Dimensions of LMGW···T/LT

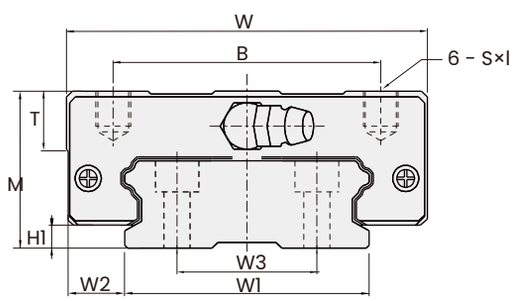
LMGW12/14T
LMGW12LT

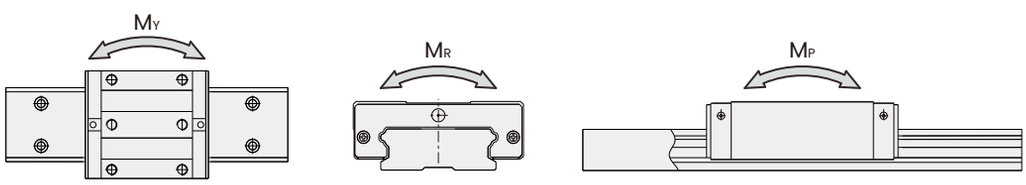


LMGW17T



LMGW21/27T

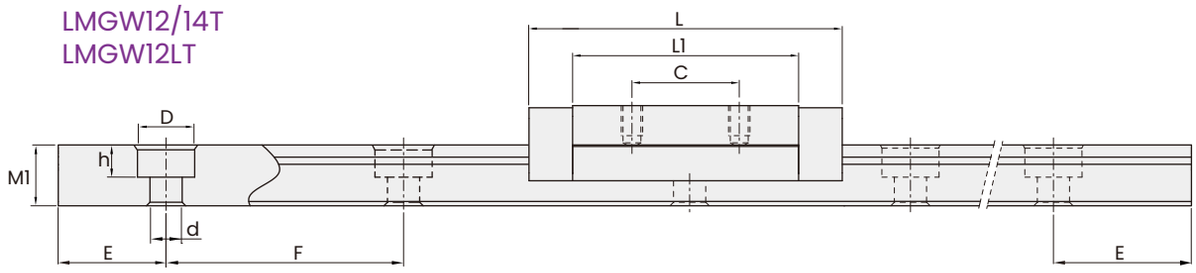




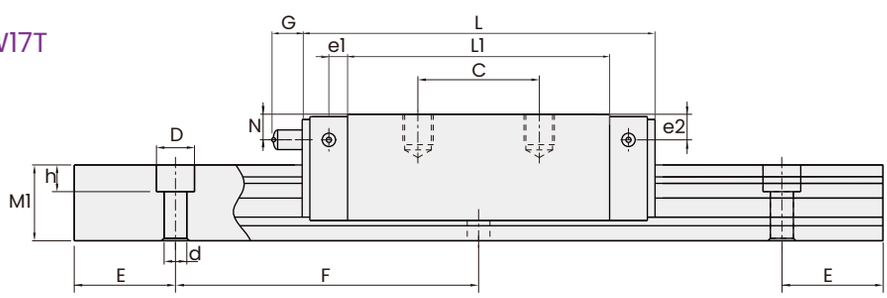
Model No.	External dimension			Carriage dimension										
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	H1	N	e1	e2	G	Grease nipple
	M	W	L											
LMGW12T	12	30	39.3	21	12	M3×3	27.5	-	2.9	2.4	-	-	-	-
LMGW12LT-	12	30	50.7	21	24	M3×3	38.5	-	2.9	2.4	-	-	-	-
LMGW14T	14	40	45.5	28	15	M3×3.6	31.5	-	3.4	2.8	-	-	-	-
LMGW17T	17	50	50.6	29	15	M4×5	35	6	2.5	4	3.1	3	4	M3×0.5
LMGW21T	21	54	59	31	19	M5×6	41.7	8	3	4.5	3.65	4.2	12	M6×1.0
LMGW27T	27	62	72.8	46	32	M6×6	51.8	10	4	6	3.5	5	12	M6×1.0

Dimensions of LMGW···T/LT

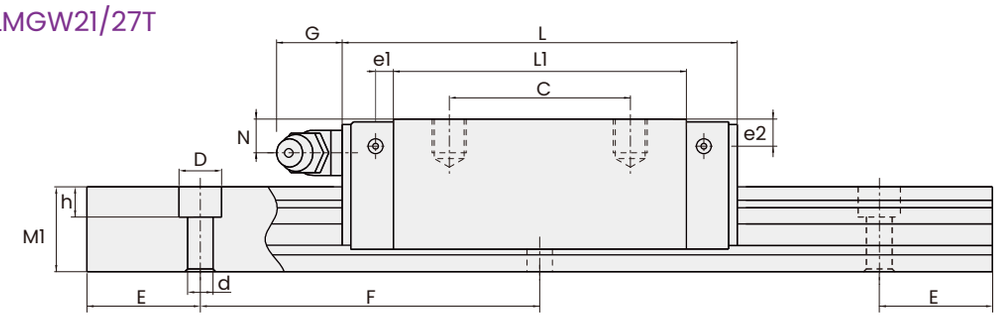
LMGW12/14T
LMGW12LT



LMGW17T



LMGW21/27T

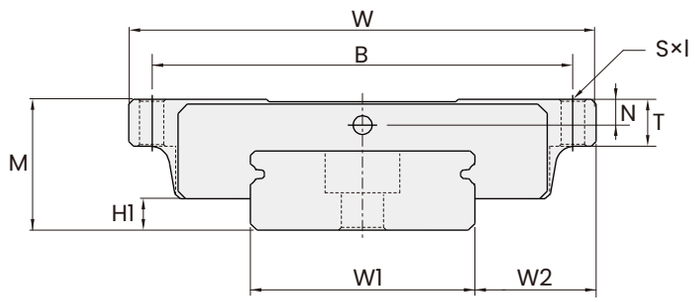


Unit (mm)

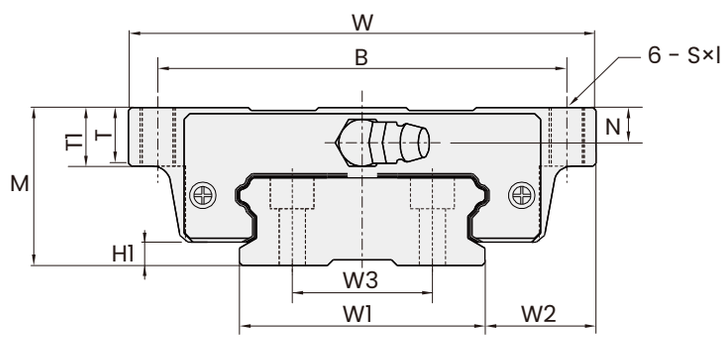
Model No.	Rail dimension							Basic load rating		Static moment rating			Weight	
	Width			Height	Pitch	End	Mounting bolt hole	Dynamic	Static					
	W1	W2	W3	M1	F	E	D×h×d	C KN	C0 KN	MP KN·m	MY KN·m	MR KN·m	Carriage Kg	Rail Kg/m
LMGW12T	18	6	-	7	40	15	7.5×5.3×4.5	2.75	4.12	18.96	18.96	40.12	0.04	0.91
LMGW12LT-	18	6	-	7	40	15	7.5×5.3×4.5	3.43	5.89	34.00	34.00	54.54	0.057	0.91
LMGW14T	24	8	-	8.5	40	15	8×4.5×4.5	3.92	5.59	27.80	27.80	70.34	0.071	1.49
LMGW17T	33	8.5	18	9.3	40	15	7.5×5.3×4.5	5.23	9.64	0.062	0.062	0.15	0.12	2.2
LMGW21T	37	8.5	22	11	50	15	7.5×5.3×4.5	7.21	13.7	0.10	0.10	0.23	0.20	3.0
LMGW27T	42	10	24	15	60	20	7.5×5.3×4.5	12.4	21.6	0.17	0.17	0.42	0.35	4.7

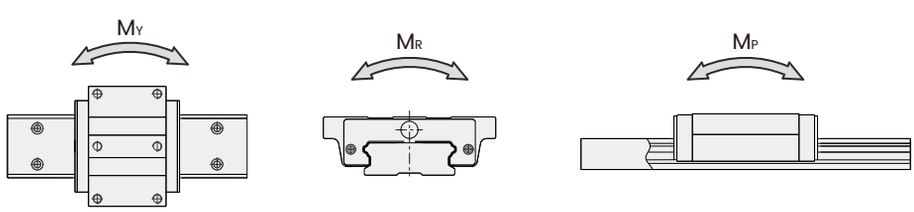
Dimensions of LMGW···C

LMGW12/14C



LMGW17/21/27C

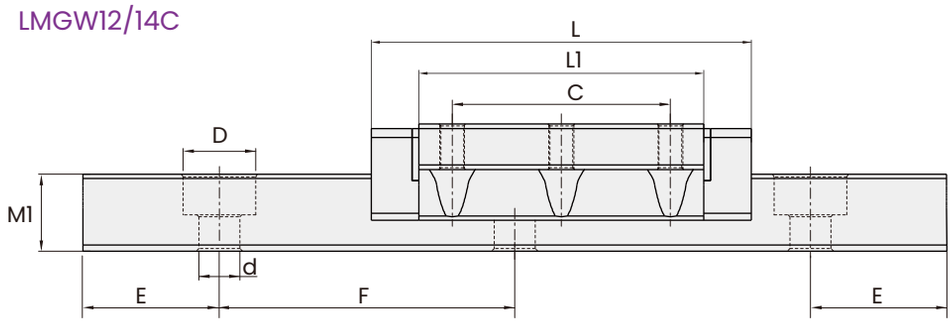




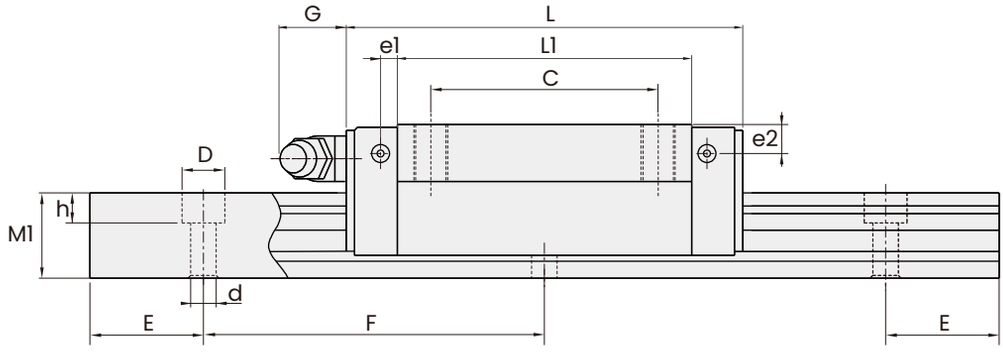
Model No.	External dimension			Carriage dimension											
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	T1	H1	N	e1	e2	G	Grease nipple
	M	W	L												
LMGW12C	12	40	37	35	18	M3	26.2	4	-	2.9	2.4	-	-	-	-
LMGW14C	141	50	45.5	45	24	M3	31.3	5	-	3.4	2.8	-	-	-	-
LMGW17C	7	60	50.6	53	26	M4	35	5.3	6	2.5	4	3.1	3	4	M3×0.5
LMGW21C	21	68	59	60	29	M5	41.7	7.3	8	3	4.5	3.65	4.2	12	M6×1.0
LMGW27C	27	80	72.8	70	40	M6	51.8	8	10	4	6	3.5	5	12	M6×1.0

Dimensions of LMGW···C

LMGW12/14C



LMGW17/21/27C

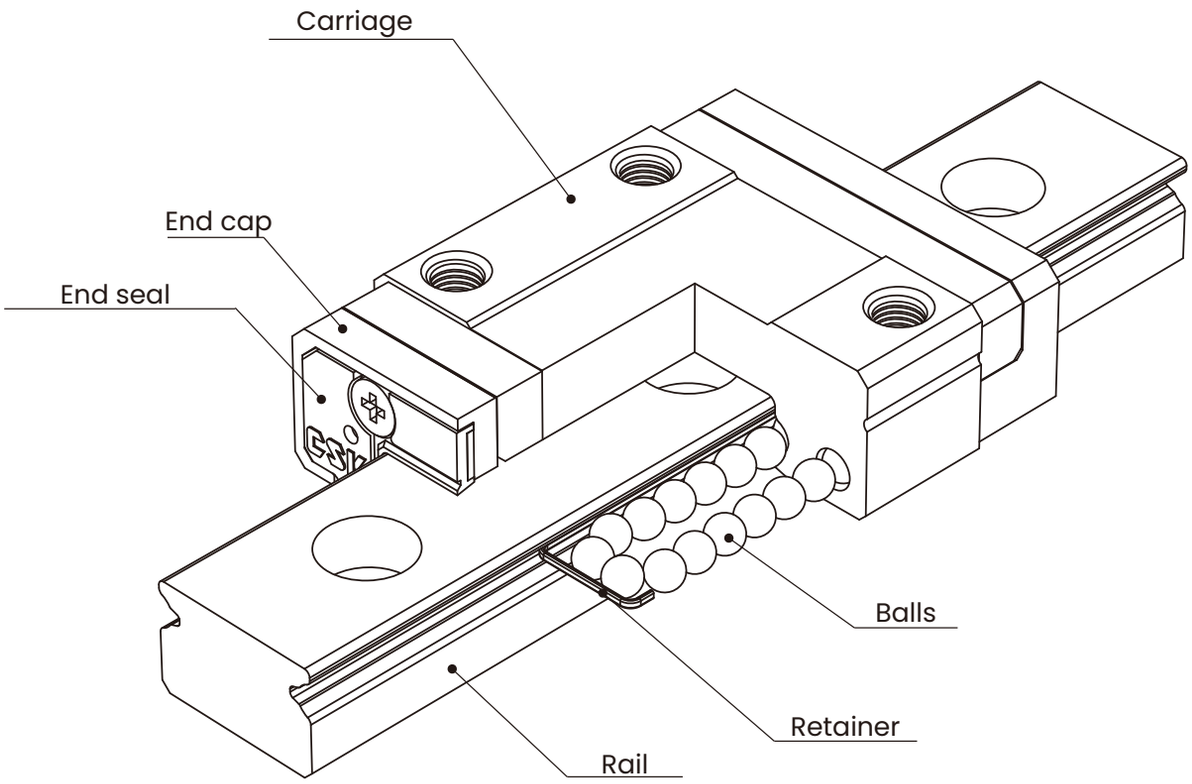


Unit (mm)

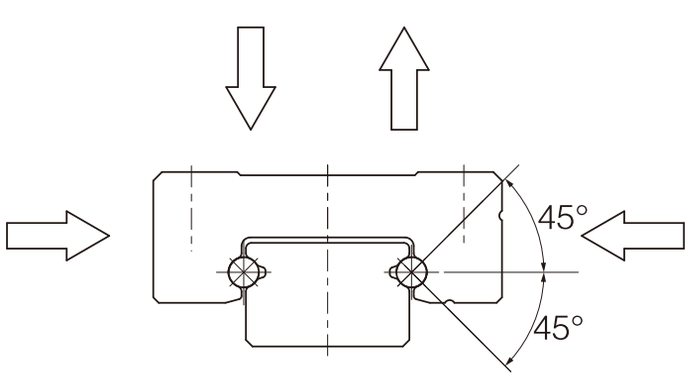
Model No.	Rail dimension							Basic load rating		Static moment rating			Weight	
	Width			Height	Pitch	End	Mounting bolt hole	Dynamic	Static					
	W1	W2	W3	M1	F	E	D×h×d	C KN	C_0 KN	M_P KN·m	M_Y KN·m	M_R KN·m	Carriage Kg	Rail Kg/m
LMGW12C	18	11	-	7	40	15	7.5×5.3×4.5	2.75	4.12	18.962	18.962	40.12	0.050	0.91
LMGW14C	24	13	-	8.5	40	15	8×4.5×4.5	3.92	5.59	7.80	7.80	70.340	0.100	1.49
LMGW17C	33	13.5	18	9.3	40	15	7.5×5.3×4.5	5.23	9.64	0.062	0.062	.15	0.13	2.2
LMGW21C	37	15	22	11	50	15	7.5×5.3×4.5	7.21	13.7	0.10	0.10	0.23	0.23	3.0
LMGW27C	42	19	24	15	60	20	7.5×5.3×4.5	12.4	21.6	0.17	0.17	0.42	0.43	4.7

Miniature Linear Guide

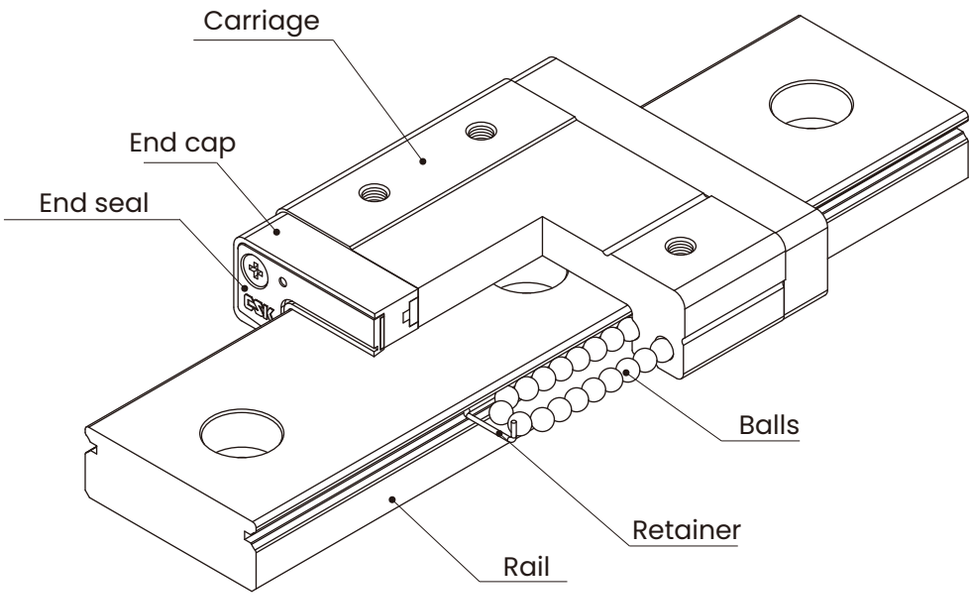
LMN/NW series



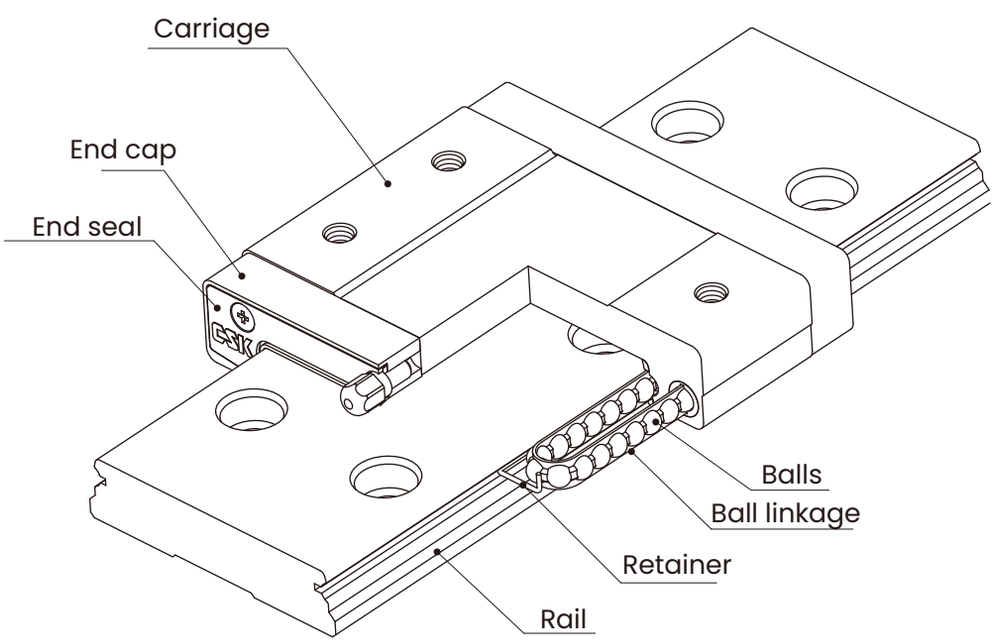
LMN5/7/9/12/15-T/LT



Note：For reference only.



LMNW7/9/12-T/LT



LMNW15-T/LT

Characteristics

LMN/LMNW The linear guide rail adopts two rows of steel balls and a Gothic four point contact design, which can bear loads in all directions, making it highly efficientCharacteristics such as rigidity and high precision. Micro linear guide rails are suitable for spaces or parts that require small volume and light weight, especially for small self Dynamic equipment; The micro wide linear guide rail adopts a widened design and is suitable for equipment that carries loads from all directions and is used on a single axis. Designed steel ball protection. The holder can be interchangeable with precision.

- **High rigidity,High positioning repeatability**
- **Low friction, smooth walking**
- **High positioning repeatability and good reproducibility**
- **Small size, Light weight**
- **Interchangeability**
- **International standard**

Applications

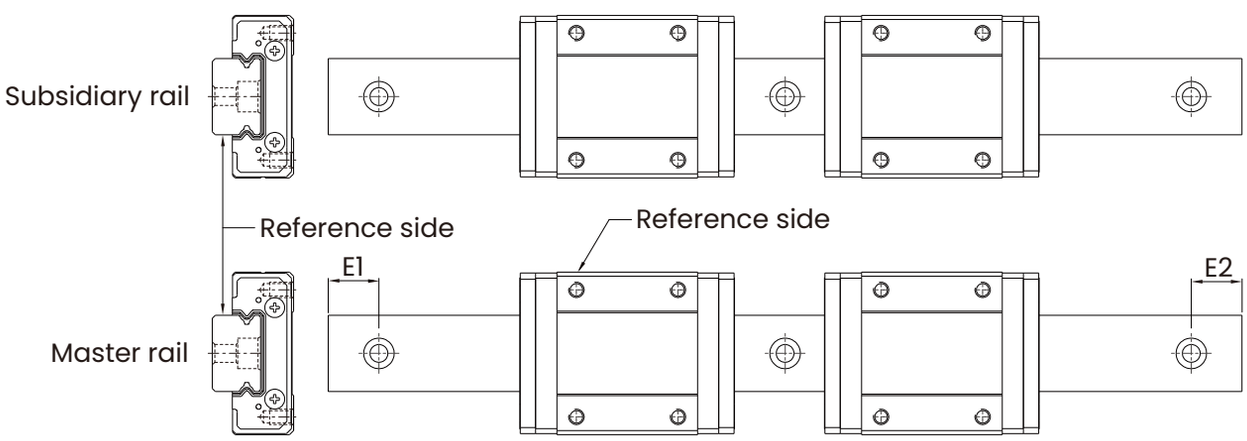
Semiconductor manufacturing devices, Industrial r obots, Medical equipment, Precision testing instruments, Office aut omation equipment, Other small linear mot ion devices.

Specifications

(1) Non-Interchangeable type

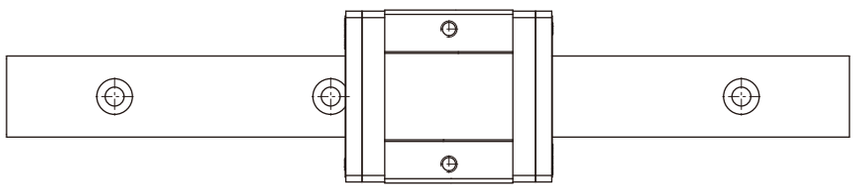
LMN 5 T 2 UU P0 M +R 100 -5 /5 N M II

- Series：LMN/LMNW
- Size：5，7，9，12，15
- Carriage type
  - ST：Short Type
  - T：Standard Type
  - LT：Extended Type
- Number of carriages per rail：1，2，3 ...
- Dust protection option：UU
- Preload：PC（Clearance），P0（Light preload），P1（Medium preload）
- Carriage Material：No symbol（carbon steel）M（stainless steel）
- Code of special carriage：A，B ...（Standard rail is no symbol）
- Rail type：R
- Rail length（mm）
- Rail hole pitch from start side（E1, see Figure below）
- Rail hole pitch to the end side（E2, see Figure below）
- Accuracy grade：N，H，P
- Rail Material：No symbol（carbon steel），M（stainless steel）
- Code of special rail：A，B ...（Standard rail is no symbol）
- Number of rails per axis：No symbol，II，III，IV ...



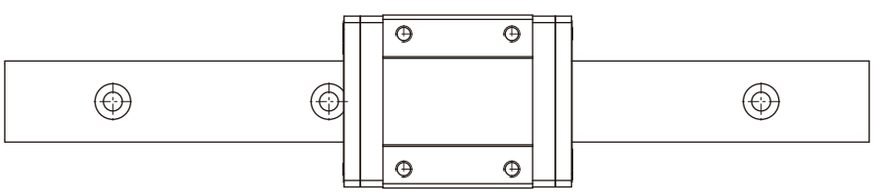
Specifications

Square compact type



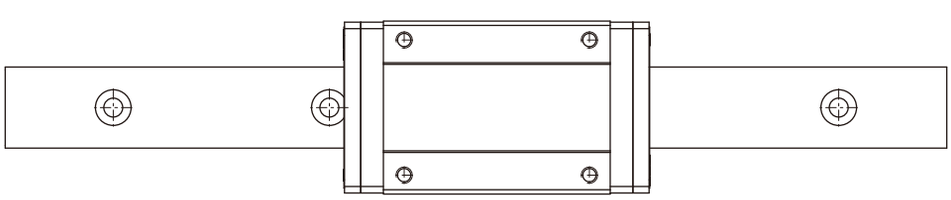
LMN/LMNW ··· ST

Heavy load



LMN/LMNW ··· T

Ultra heavy load



LMN/LMNW ··· LT

Specifications

(2) Interchangeable type

- Code of Carriage

LMN 5 T UU P0 N M

Series：LMN/LMNW
Size：5，7，9，12，15
Carriage type
ST：Short Type
T：Standard Type
LT：Extended Type
Dust protection option：UU
Preload：P0（Light preload）
Accuracy grade：N，H
Material quality：No symbol（carbon steel），M（stainless steel）
Code of special carriage：A，B…（Standard rail is no symbol）

- Code of Rail

LMN 5 R 100 -5 /5 N M

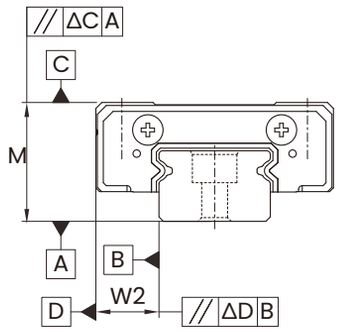
Series：LMN/LMNW
Size：5，7，9，12，15
Rail type：R
Rail length（mm）
Rail hole pitch from start side（E1, Refer to Figure C-04）
Rail hole pitch to the end side（E2, Refer to Figure C-04）
Accuracy grade：N，H
Material quality：No symbol（carbon steel），M（stainless steel）
Code of special rail：A，B…（Standard rail is no symbol）

Preload Grade

Preload grade	Code	Preload (μm)	Operating Condition
Clearance	PC	+3 ~ +8 (Preload 0)	● Starting frictional resistance is required. ● Installation errors to be absorbed.
Light preload	P0	+0 ~ +2 (Preload 0)	● Minute vibration is applied. ● Accurate motion is required. ● Micromoment is applied.
Medium preload	P1	Preload 0.02C	● Light vibration is applied. ● High precision motion is required. ● Moment is applied.

Accuracy Grade

The accuracy of LMN/LMNW series is divided into three classes, Normal grade (N), High accuracy grade (H), Precision grade (P).

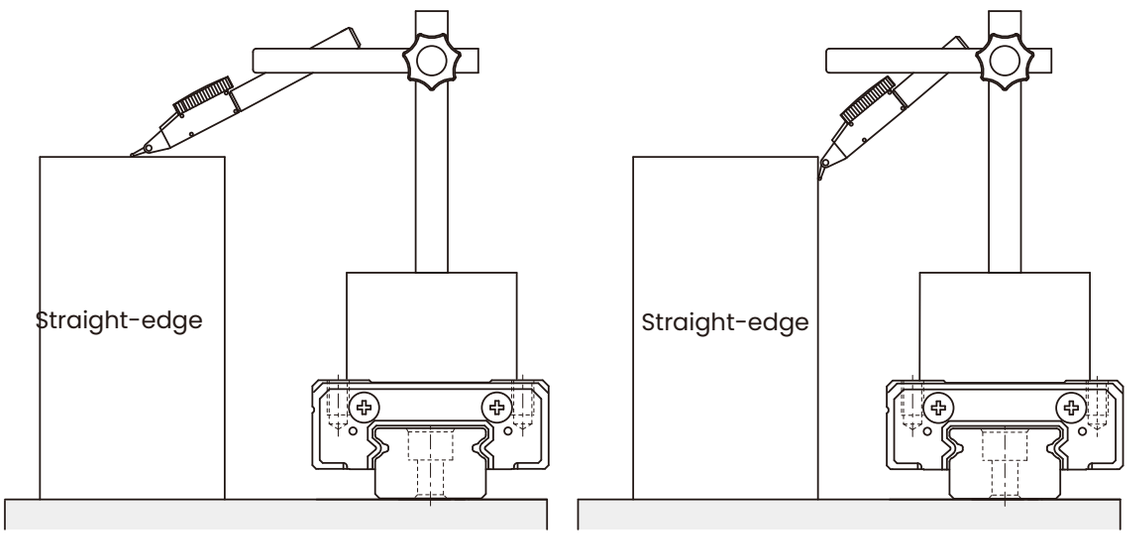


Unit (mm)

Model No.	Item	Accuracy Grade		
		Normal N	High H	Precision P
LMN 5 LMN/NW 7 LMN/NW 9 LMN/NW 12 LMN/NW 15	Tolerance for height M	±0.04	±0.02	±0.01
	Height difference (ΔM)	0.03	0.015	0.007
	Tolerance for distance W2	±0.04	±0.025	±0.015
	Difference in distance W2 (ΔW2)	0.03	0.02	0.01
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)		
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)		

Running Parallelism

The running accuracy is the deviation of parallelism between the reference surface of carriage and reference surface of rail when carriage moving over the entire length of rail.

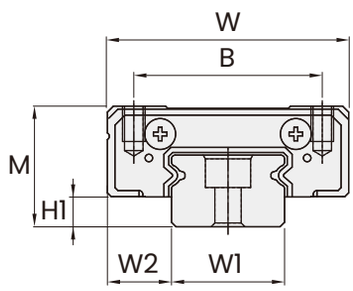


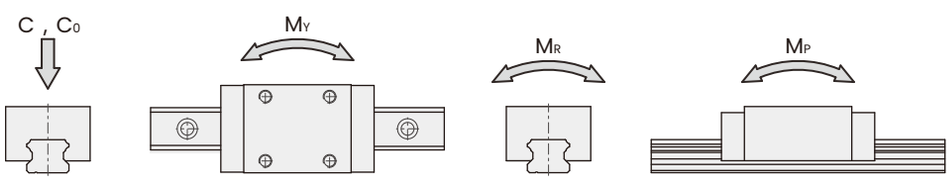
Measurement of running parallelism

Running Parallelism

Rail length (mm)		Running Parallelism Values (μm)		
Above (incl.)	Or less	Normal N	High H	Precision P
0	50	12	6	2
50	80	13	7	3
80	125	14	8	3.5
125	200	15	9	4
200	250	16	10	5
250	315	17	11	5
315	400	18	11	6
400	500	19	12	6
500	630	20	13	7
630	800	22	14	8
800	1000	23	16	9
1000	1200	25	18	11
1200	1300	26	19	12
1300	1400	27	19	12
1400	1500	28	20	13
1500	1600	29	20	14
1600	1700	30	21	14
1700	1800	30	21	15
1800	1900	31	22	15
1900	2000	31	22	16

Dimensions of LMN···T / LT

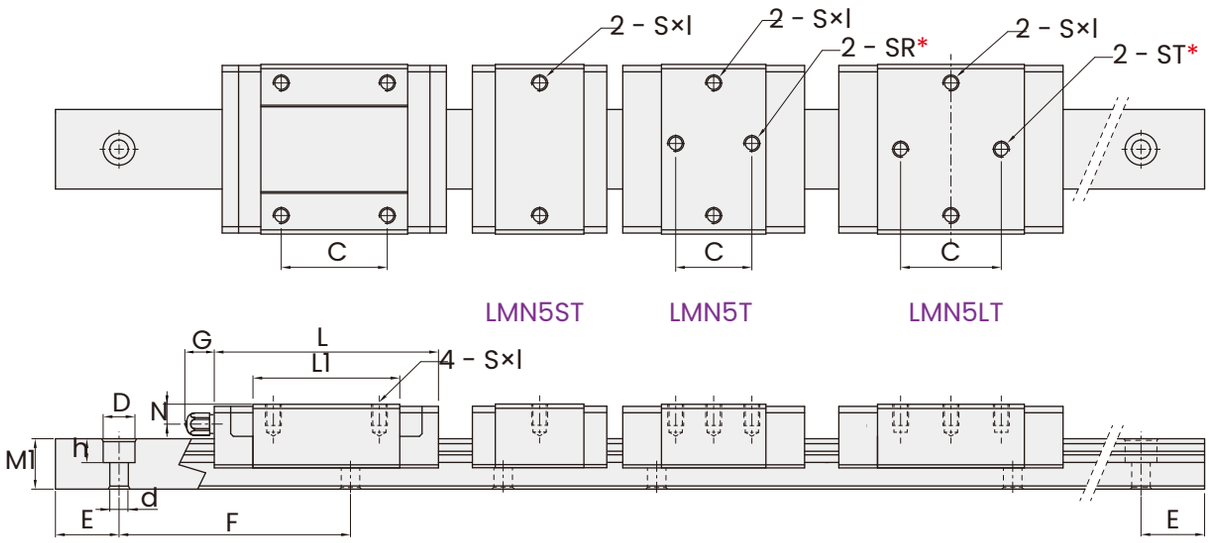




Unit (mm)

Model No.	External dimension			Carriage dimension						
	Height	Width	Length	B	C	Mounting hole S×l	L1	H1	G	N
	M	W	L							
LMN5 ST	6	12	11.8	8	-	M2×1.5	6.7	1.2	-	-
LMN5 T	6	12	16.3	8	6	M2×1.5	9.7	1.2	-	-
LMN5 LT	6	12	19.3	8	7	M2×1.5	12.7	1.2	-	-
LMN7 T	8	17	23.4	12	8	M2×2.5	13.7	1.5	-	-
LMN7 LT	8	17	29.7	12	13	M2×2.5	20	1.5	-	-
LMN9 ST	10	20	21.9	15	-	M3×3.5	10.6	2	-	-
LMN9 T	10	20	29.9	15	10	M3×3.5	18.6	2	-	-
LMN9 LT	10	20	41	15	16	M3×3.5	29.7	2	-	-
LMN12T	13	27	34.4	20	15	M3×3.5	21.2	3	-	-
LMN12 LT	13	27	46.3	20	20	M3×3.5	33.1	3	-	-
LMN15T	16	32	42.3	25	20	M3×4	27.7	4	5.6	3.4
LMN15 LT	16	32	55.8	25	25	M3×4	41.2	4	5.6	3.4

Dimensions of LMN···T / LT



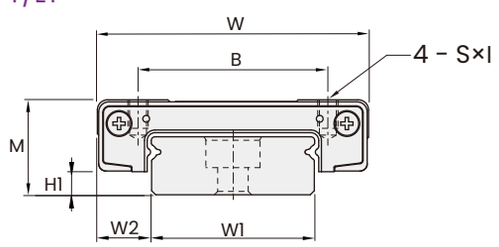
Unit (mm)

Model No.	Rail dimension						Basic load rating		Static moment rating			Weight	
	Width		Height	Pitch	End	Mounting bolt hole	Dynamic	Static	M_P N·m	M_Y N·m	M_R N·m	Carriage g	Rail g/100mm
	W1	W2	M1	F	E	D×h×d	C KN	C0 KN					
LMN5 ST	**5**	3.5	3.6	15	5	**3.6×0.8×2.4**	0.38	0.5	0.6	0.6	0.8	2.5	13
LMN5 T	5	3.5	3.6	15	5	3.6×0.8×2.4	0.48	0.71	1.1	1.1	1.8	3	13
LMN5 LT	**5**	3.5	3.6	15	5	**3.6×0.8×2.4**	0.58	**0.93**	**1.8**	**1.8**	2.4	4	13
LMN7 T	7	5	4.7	15	7.5	4.2×2.3×2.4	1.21	1.62	3.5	3.5	6	10	21
LMN7 LT	**7**	5	4.7	15	7.5	**4.2×2.3×2.4**	1.56	**2.34**	7	7	8.6	13	21
LMN9 ST	9	5.5	5.5	20	15	6×3.5×3.5	1.21	1.62	3.5	3.5	6	10	21
LMN9 T	**9**	**5.5**	5.5	20	15	**6×3.5×3.5**	1.85	**2.38**	**6.7**	**6.7**	11.2	20	31
LMN9 LT	9	5.5	5.5	20	15	6×3.5×3.5	2.52	**3.7**	15.3	15.3	17.4	28	31
LMN12T	**12**	7.5	7.5	25	15	**6×4.5×3.5**	3.12	4.05	13.1	13.1	26.3	37	61
LMN12 LT	12	7.5	7.5	25	15	6×4.5×3.5	4.25	6.3	26.1	26.1	38	53	61
LMN15T	**15**	8.5	9.5	40	20	**6×4.5×3.5**	4.67	6.13	**25.3**	25.3	49.5	66	102
LMN15 LT	15	8.5	9.5	40	20	6×4.5×3.5	6.2	9.19	54.2	54.2	74.2	94	102

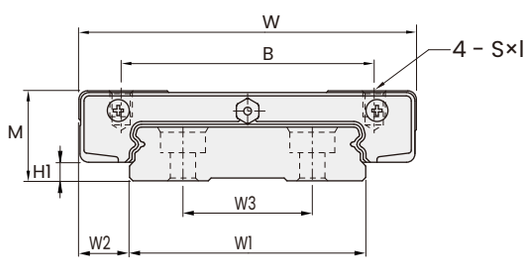
*ST : M2.6 THRU.
*Sr : M2.0 THRU.

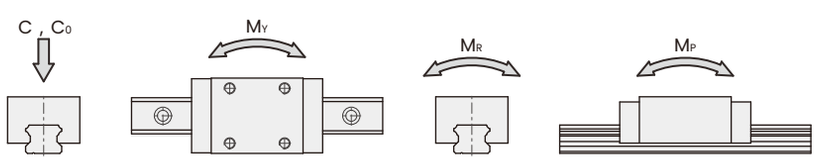
Dimensions of LMN···T / LT

LMNW7/9/12-T/LT



LMNW15T/LT



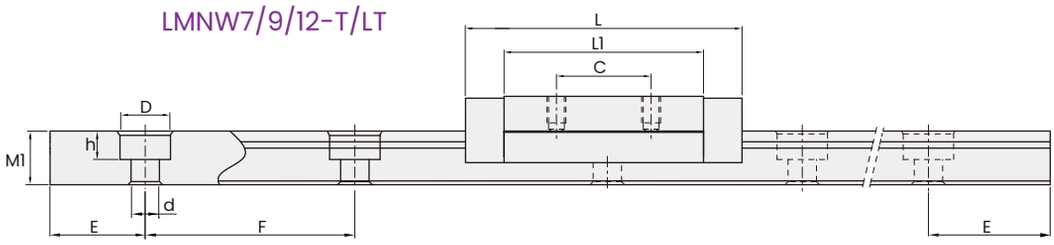


Unit (mm)

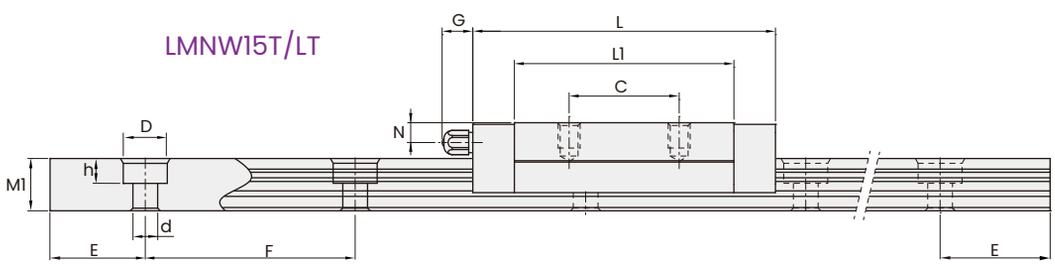
Model No.	External dimension			Carriage dimension						
	Height	Width	Length	B	C	Mounting hole S×l	L1	H1	G	N
	M	W	L							
LMNW7 T	9	25	31.2	19	10	M3×3	21.5	2	-	-
LMNW7 LT	9	25	40.8	19	19	M3×3	31.1	2	-	-
LMNW9 T	12	30	38.5	21	12	M3×3	27.4	3	-	-
LMNW9 LT	12	30	50.4	23	24	M3×3	39.3	3	-	-
LMNW12T	14	40	43.8	28	15	M3×3.8	31.6	3.5	-	-
LMNW12 LT	14	40	58.1	28	28	M3×3.8	45.9	3.5	-	-
LMNW15T	16	60	55	45	20	M4×4.5	39.9	3.3	5.6	3.6
LMNW15 LT	16	60	72.6	45	35	M4×4.5	57.5	3.3	5.6	3.6

Dimensions of LMN···T / LT

LMNW7/9/12-T/LT



LMNW15T/LT



Unit (mm)

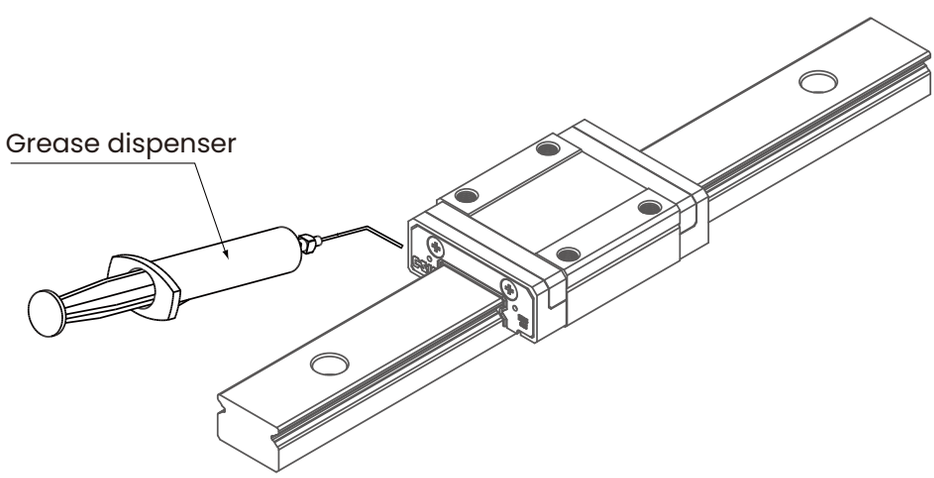
Model No.	Rail dimension							Basic load rating		Static moment rating			Weight	
	Width			Height	Pitch	End	Mounting bolt hole	Dynamic	Static	M_P N·m	M_Y N·m	M_R N·m	Carriage g	Rail g/100mm
	W1	W2	W3	M1	F	E	D×h×d	C KN	C0 KN					
LMNW7 T	14	5.5	-	5.2	30	10	6×3.2×3.5	1.61	2.3	6.9	6.9	15.4	20	51
LMNW7 LT	14	5.5	-	5.2	30	10	6×3.2×3.5	2.14	3.56	14.7	14.7	25.4	29	51
LMNW9 T	18	6	-	7	30	10	6×4.5×3.5	2.52	3.7	15.3	15.3	33.4	40	91
LMNW9 LT	18	6	-	7	30	10	6×4.5×3.5	3.23	5.28	30.3	30.3	47.7	57	91
LMNW12T	24	8	-	8.5	40	20	8×4.5×4.5	4.04	5.85	26.1	26.1	75.8	71	149
LMNW12 LT	24	8	-	8.5	40	20	8×4.5×4.5	5.27	8.55	53.9	53.9	110.8	103	149
LMNW15T	42	9	23	9.5	40	20	8×4.5×4.5	6.95	9.37	55.4	55.4	192.2	143	286
LMNW15 LT	42	9	23	9.5	40	20	8×4.5×4.5	9.15	13.7	120.3	120.3	293.5	215	286

Lubrication

Lubrication position

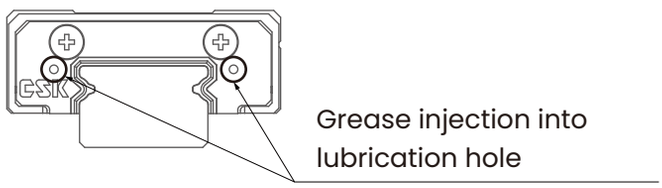
A high grade lithium soap based grease is applied to the CSK carriages prior to shipment for immediate use. Relubricate timely according to the use. A special syringe lubricant dispenser is available from CSK as an option.

- Special syringe lubricant dispenser
- Scientific greasing method and position
- For technical support, please contact us.

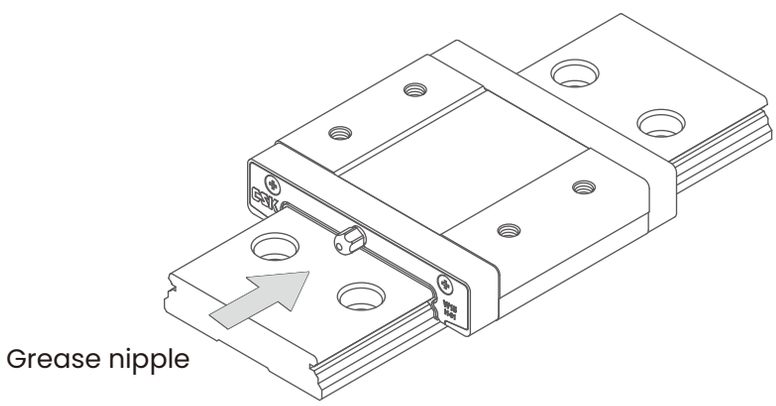


Lubrication

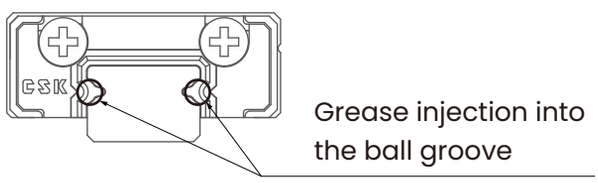
LMN12 LMNW9 LMNW12



LMN15 LMNW15



LMN5 LMN7 LMN9 LMNW7



Characteristics

- Can be used simultaneously with lubricating grease
- Wide range of applicable environmental temperatures
- Effectively extends maintenance cycles and reduces maintenance costs
- Only a small amount of oil is required to achieve lubrication, making it environmentally friendly
- Designed for easy oil replenishment, resulting in low operating costs
- Comprehensively extends the service life of guide rails

Applications

Automation equipment
Electronic machinery
Industrial machinery
Other

Specifications

(1) Non-Interchangeable type

LMN9T2UUP0GR+R1000-10/10NII

Self-Lubricating Module：GR

(2) Interchangeable type

LMN9TUUP0GRN

Self-Lubricating Module：GR

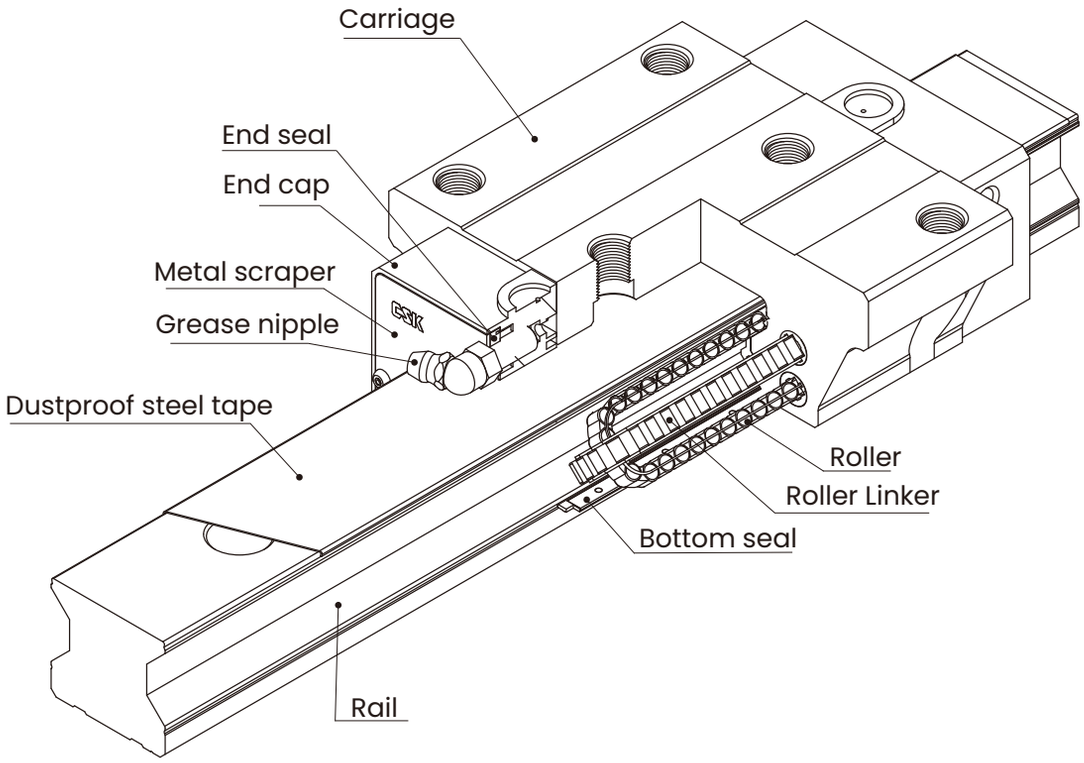
Dimension parameters

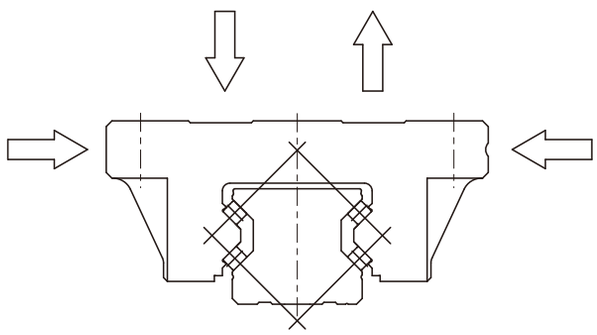
Slider Total Length

Model No.	L
LMN7T	25.4
LMN7LT	31.7
LMN9ST	23.9
LMN9T	31.9
LMN9LT	43
LMN12T	36.4
LMN12LT	48.3
LMN15T	46.3
LMN15LT	59.8

Roller-type Linear Guide

LMR series





Note：For reference only.

Characteristics

The LMR series linear guides utilize cylindrical rolling elements to replace traditional steel ball rolling elements. The transition from point contact to line contact significantly enhances load capacity. When subjected to high loads, the cylindrical rolling elements exhibit minimal elastic deformation. Additionally, the use of a 45° contact angle DB design across four rolling element rows ensures high rigidity and load-bearing performance. These guides can withstand radial, reverse radial, and lateral loads in all four directions. Furthermore, they feature a specially designed rolling element synchronizer internally, which eliminates gear effects caused by mutual friction during rolling. This greatly reduces travel resistance, improves operational smoothness, and lowers noise levels. Years of validated preload settings have achieved a perfect balance between travel resistance, rigidity, and lifespan. The LMR series fully meets the requirements of high-end precision equipment for high precision, high load capacity, high reliability, low noise, and smooth and stable linear motion.

- **Ultra-High Rigidity and Heavy Load Capacity**
- **DB Design Across Four Rolling Element**
- **Ultra-High Precision with Optional Grades**
- **Smooth Travel**
- **High Speed and Low Noise**
- **Interchangeable Blocks**
- **Comprehensive Lubrication Design**
- **Sealed and Configurable**
- **Dust-Resistant Steel Belt Design**
- **Manufactured to International Standards**

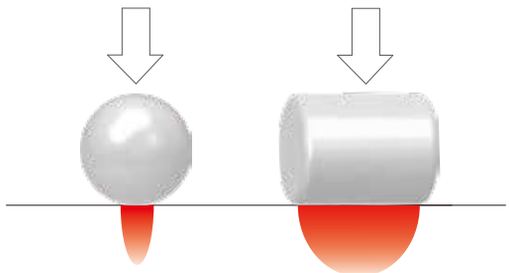
Applications

Machine Tool (Machine canter, Large gantry, Precision Lathe)
Industrial Automation (Heavy gantry robot, Cantilever cartesian robot, Robot ground track)

Characteristics

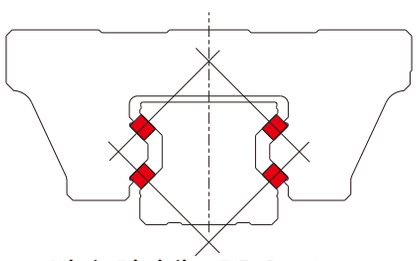
Heavy Load Capacity

The LMR series linear guides utilize cylindrical rolling elements to replace traditional steel ball rolling elements. The transition from point contact to line contact significantly enhances load capacity.



Ultra-High Rigidity

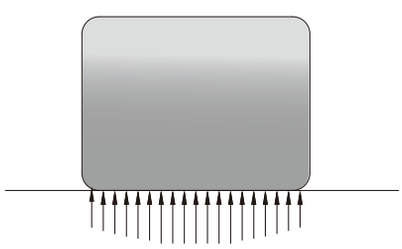
By utilizing modern digital technology, we analyze and optimize the contact position of the rolling column to maximize its resistance torque load capacity.



High Rigidity DB·Contact

Motion Accuracy

Smooth and precise walking accuracy achieved through exclusive fine control specifically developed for the rolling contact surface of the cylindrical component.



Stress distribution

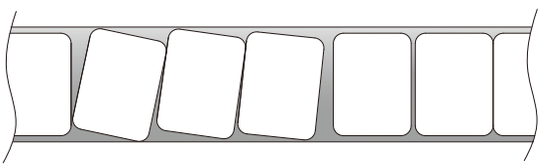
Creative Lubrication

The block features a built-in self-lubricating module that guides lubricating oil to the surface of the linear guide using engineered fibers. The rolling friction guide requires only an extremely thin oil film for effective lubrication. By incorporating an internally self-built self-lubricating module, the lubrication cycle can be extended to some extent, thereby prolonging the service life.

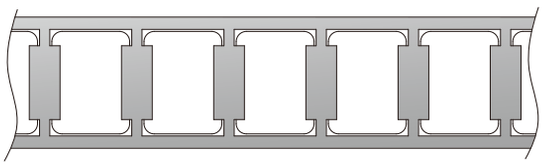
Characteristics

Smooth Motion

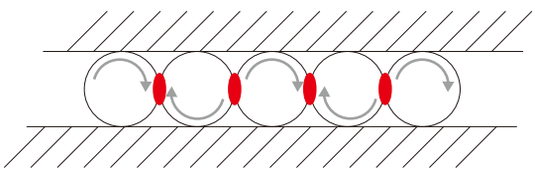
Optimization extends to each component, achieving uniform arrangement of cylindrical rolling elements through a rolling element synchronizer. This addresses the inherent rolling tilt issue and eliminates gear effects within the rolling elements, significantly reducing rolling resistance. The result is an optimal operational feel.



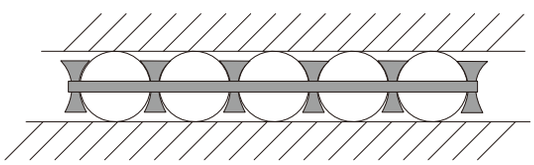
Cylindrical Rolling Element Tilt Illustration



Linker Array of Rolling Elements

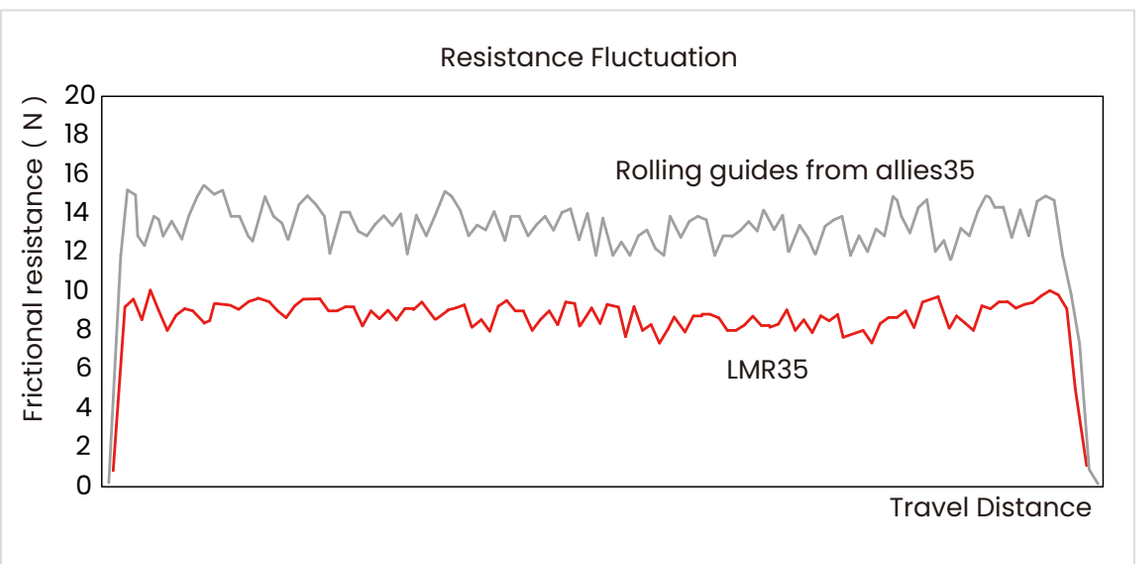


Gear Friction Effect Illustration



Linker Structure Illustration

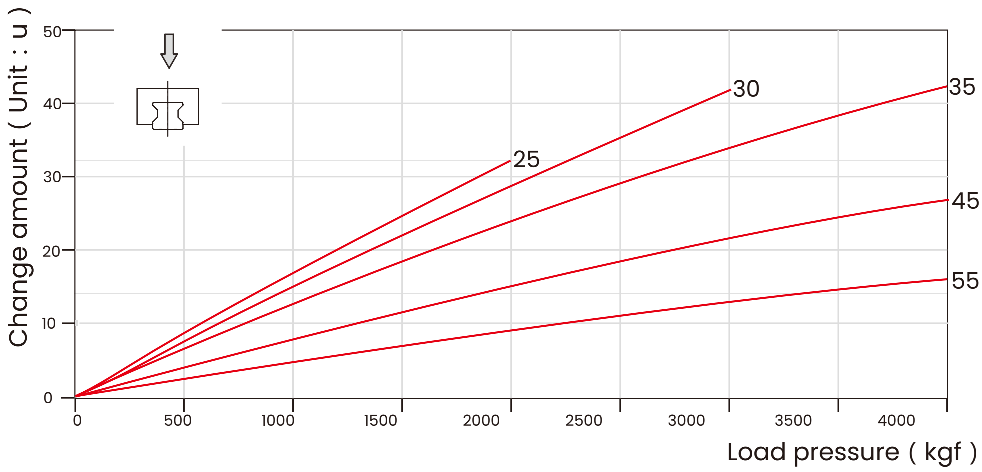
Resistance Fluctuation Test Report

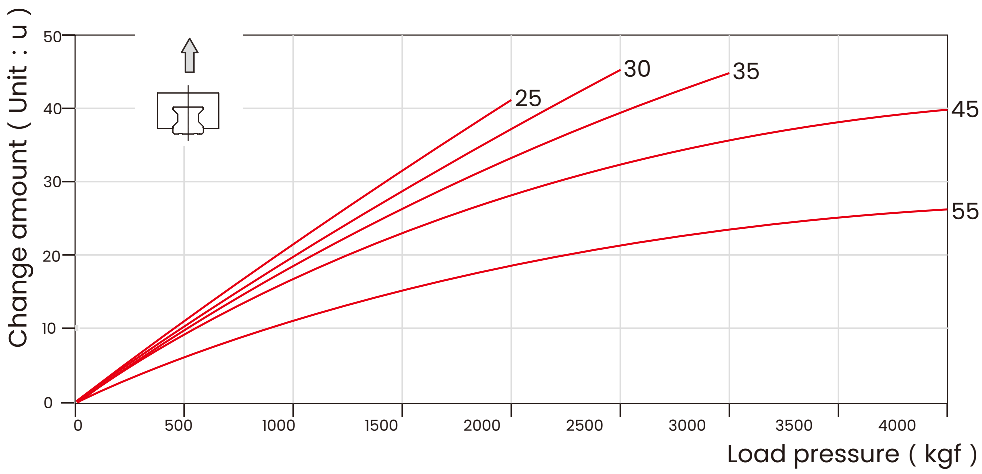


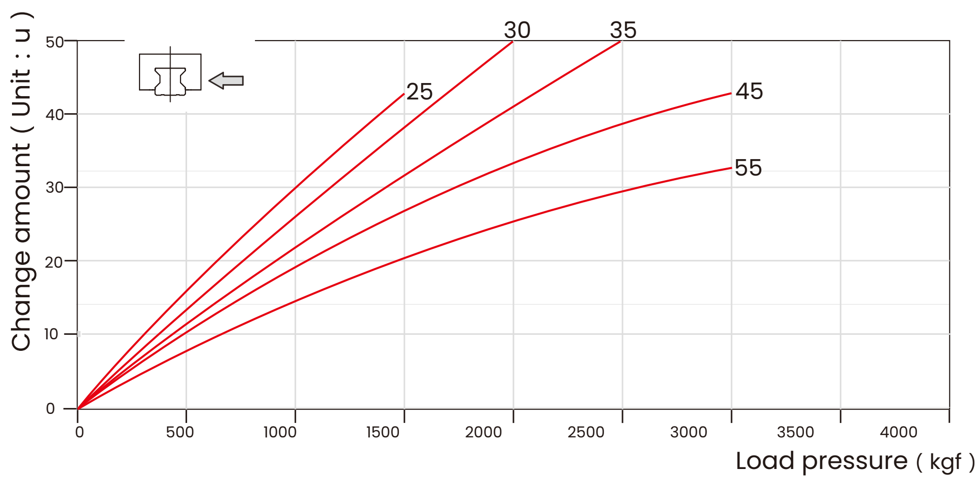
Characteristics

Rigidity

When the preload is P1，Roller guide rail rigidity.



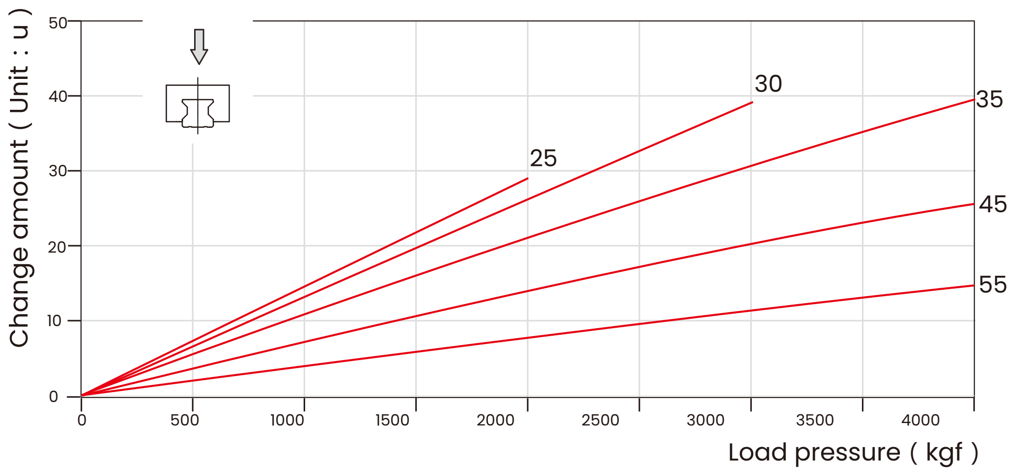


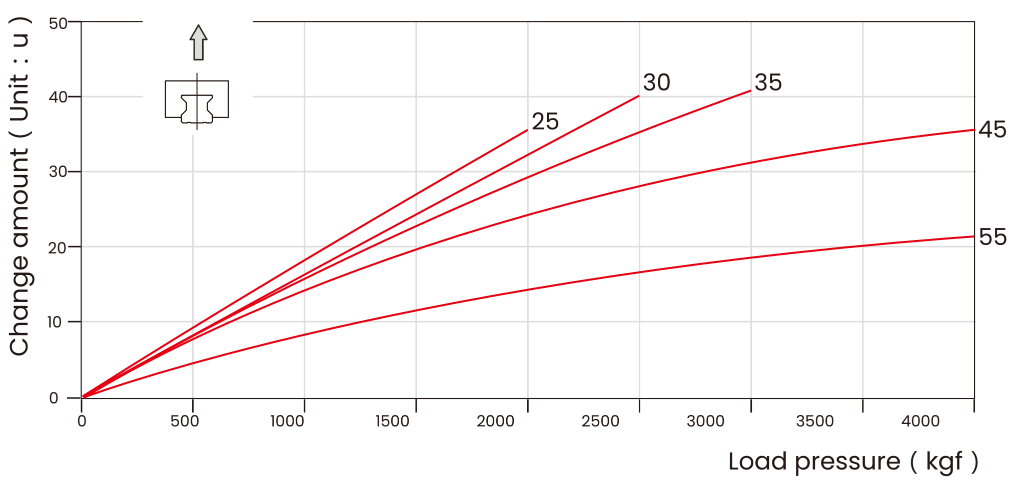


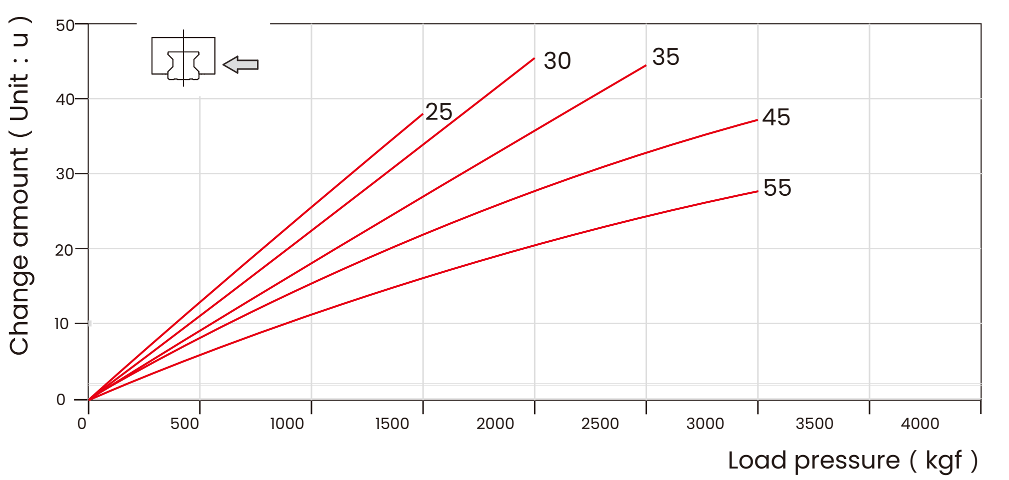
Characteristics

Rigidity

When the preload is P2，Roller guide rail rigidity.







Characteristics

Heavy Load Capacity

In harsh environments, metal scrapers serve as the first layer of protection, effectively protecting the sealing plate from the risk of being damaged by metal debris. The slide rail is equipped with steel strips for overall rail protection, which not only improves ssembly efficiency but also avoids the problem of foreign object intrusion caused by traditional bolt cover wear.

Dust test

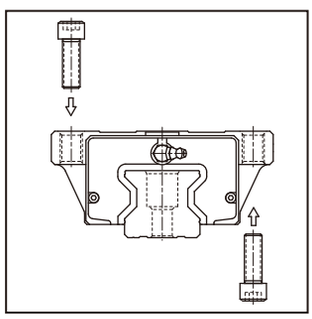
Model No.	Test conditions
specifications	LMR30H1ZZP1+R1000-20/20H
speed	1m/s
Stroke	800mm
Environment	Aluminum chip covering

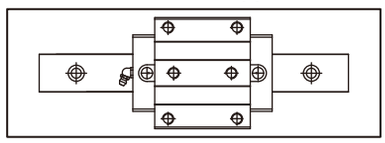
Dust testing machine	Using bolt caps	Dustproof steel tape
		
		

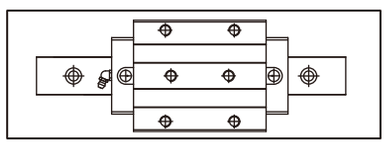
Dust prevention method for guide rails	Operating mileage	Test result
Bolt cover	10000km	There are aluminum chips inside the slider
Dustproof steel tape	10000km	There is no abnormal inside the slider

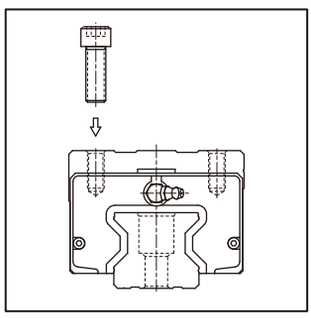
Carriage Type

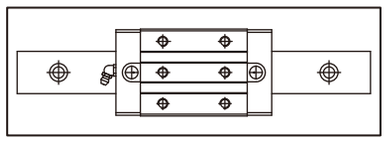
Contour	Length	Spec Code
Flange type	Standard type	C
	Extended	LC
Square high type	Standard type	H
	Extended	LH

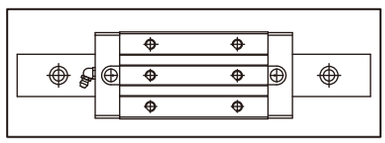






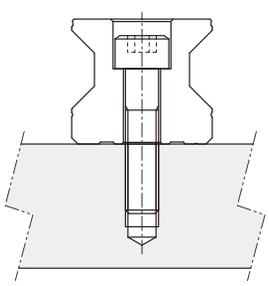


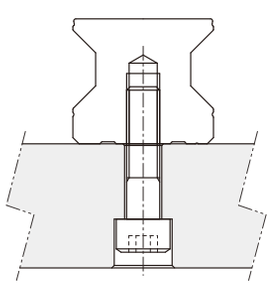




Rail Type

Counter bore (R type)	Tapped hole (T type)



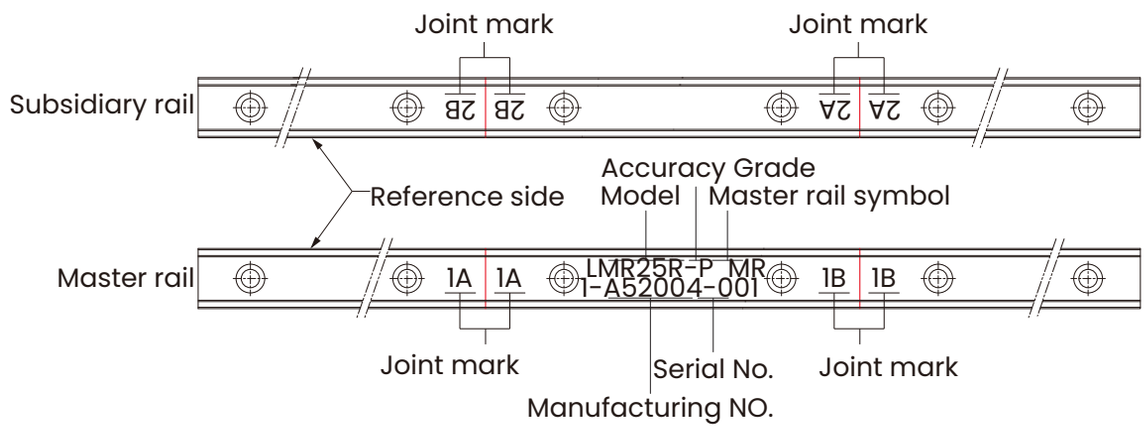


Butt-Joint

（1）For Butt-joint Rail

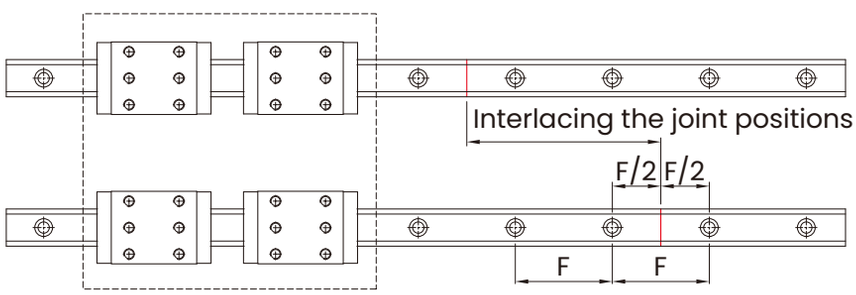
When applied length of rail longer than specified max. length, the rails can be connected to one another. For this situation, the joint marks indicate the matching position. Accuracy may deviate at joints when carriages pass the joint simultaneously. Therefore, the joints should be interlaced for avoiding such accuracy problem.

- Dentification of butt-joint rail



(A)

- Staggering the joint position



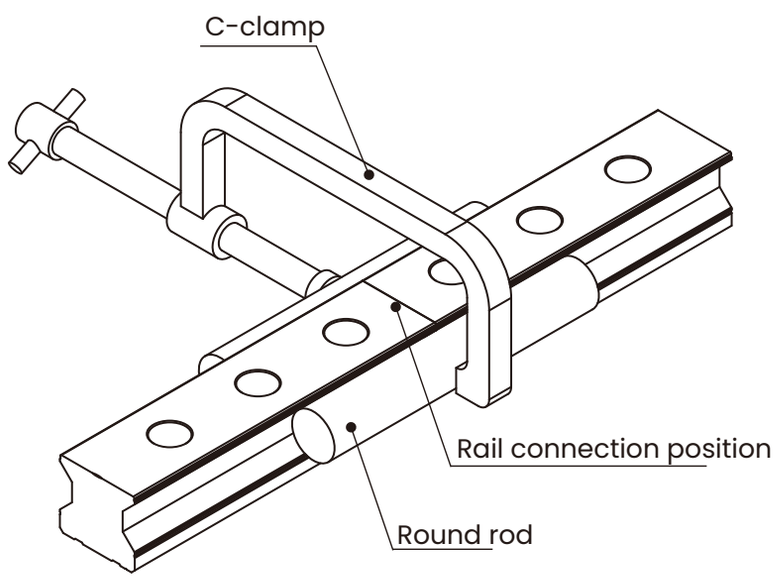
(B)

Rail Type

Method of continuous installation

As shown in the schematic diagram, connect the two ends of the guide rail to be spliced together, take two standard round rods and press them against the groove of the guide rail, and use C-clamp.

Model No.	Standard round bar size
LMR 25	Ø15
LMR 30	Ø20
LMR 35	Ø22
LMR 45	Ø25
LMR 55	Ø28



Guide rail connection installation diagram

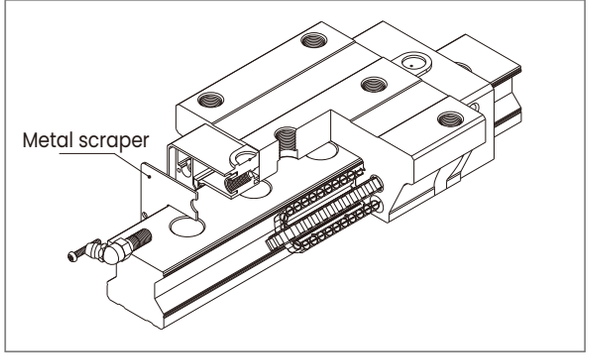
Dust Proof

(1) Code of contamination protection for carriage

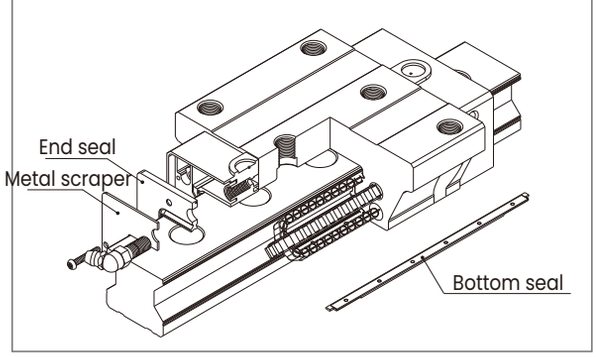
Contamination protection

LMR series of linear guideway offers various kinds of dust proof accessory to keep the foreign matters from entering into the carriage.

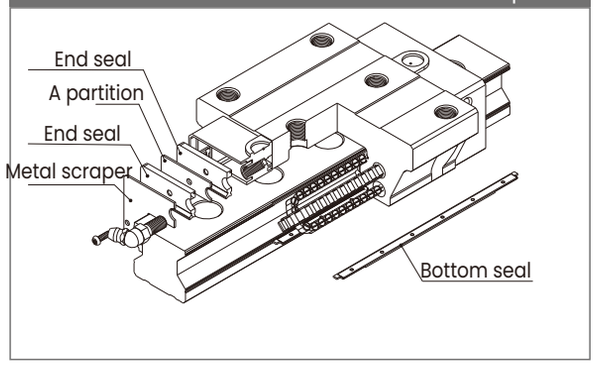
● No symbol Metal scrapers



● ZZ End seals + Bottom seals + metal scrapers

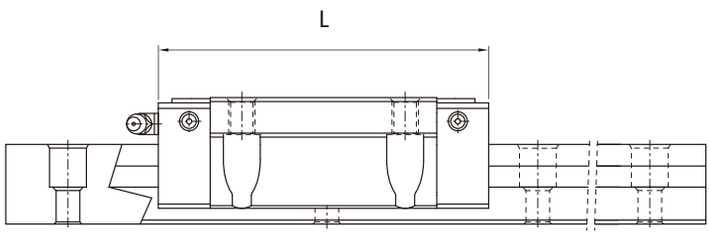


● KK Double End seals + Bottom seals + metal scrapers



Types of dust proof accessories, and the increment to be added to the carriage overall length The increment to be added to the length of carriage with different applications of dust proof accessory is shown below.

Model No.	No symbol	ZZ	KK
LMR 25	-	-	6
LMR 30	-	-	6
LMR 35	-	-	8
LMR 45	-	-	6
LMR 55	-	-	6



Dust Proof

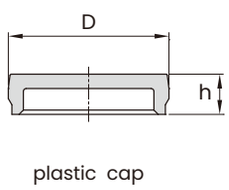
（2）Code of contamination protection for rail

Caps for rail mounting hole

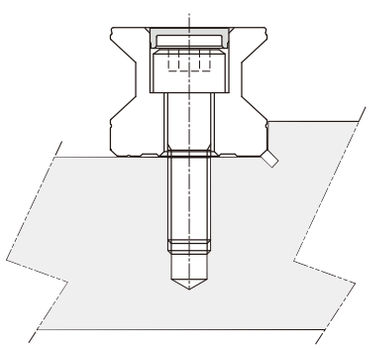
A special designed of cap is used to cover the bolt hole to prevent the foreign matters from entering the carriage.

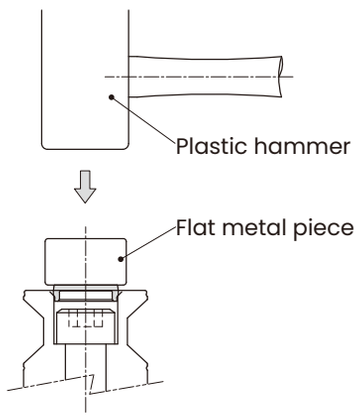
Installation of plastic cap

Put the plate on the cap,then pound it into the bolt of rail with rubber hammer vertically. Continue pounding the cap until the cap is on the same plane with the top surface of rail.



plastic cap





Plastic Cap

Code of Plastic Cap	Bolt Size	D (mm)	h (mm)	Rail Model
L6	M6	11.2	2.8	LMR25R
L8	M8	14.2	3.3	LMR30R，LMR35R
L12	M12	20.2	4.5	LMR45R
L14	M14	23.2	5.5	LMR55R

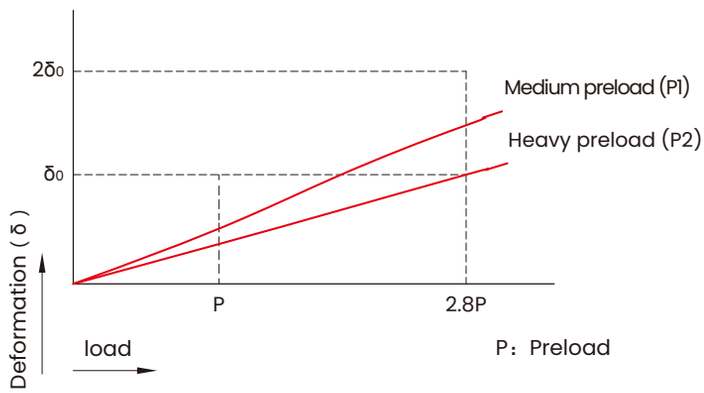
* For details on the dust-proof steel strip, please refer to the details page-C26

Preload

Since the radial chearance of the linear guideway greatly affects the running accuracy, load carrying capacity and rigidity of the linear guideway,it is important to select an appropriate clearance according to the application. in general,selecting a negative clearance while taking into account possible vibrations and impact generated from reciprocating motion favorably affects the service life and the accuracy.

Preload and Rigidity

Selecting appropriate preload to adapt the rigidity of machiney and equipment. The rigidity of a linear guideway could be enhanced by increasing the preload. As shown as below figure, the load could be raised up to 2.8 times the preload applied.



Preload and Service life

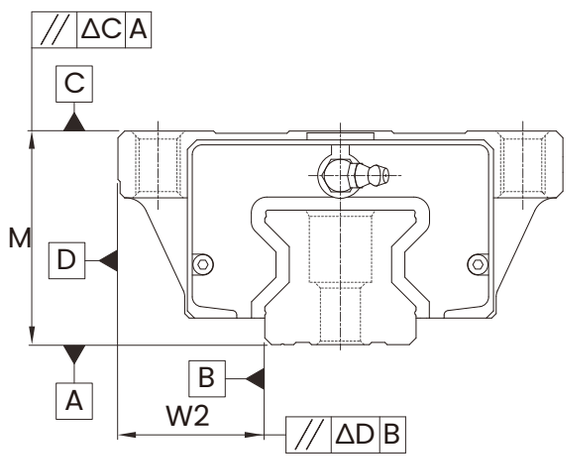
The preload is represented by negative clearance resulting from the increase of rolling element diameter. Therefore, the preload should be considered in calculation service life.

Preload grade	Code	Preload	Operating Condition
Medium preload	P1	0.07~0.09C	● Overhang application with a moment load. ● Applied in one-axis configuration ● The need of light preload and high precision.
Heavy preload	P2	0.12~0.14C	● Machine is subjected to vibration and impact, and high rigidity required. ● Application of heavy load or heavy cutting.

Note：The preload is the percentage of basic dynamic load rating (C).

Accuracy Grade

The accuracy of LMR series is divided into five classes, High accuracy grade (H), Precision grade (P), Super precision grade (SP) and Ultra precision grade (UP).

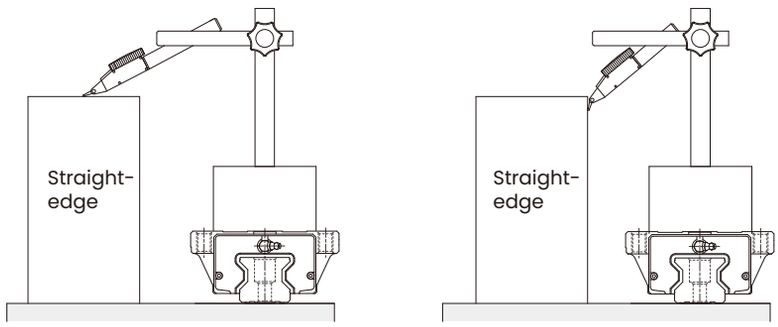


Unit (mm)

Model No.	Item	Accuracy Grade			
		High H	Precision P	Super Precision SP	Ultra Precision UP
LMR 25 LMR 30 LMR 35	Tolerance for height M	±0.04	0 -0.04	0 -0.02	0 -0.01
	Height difference ΔM	0.015	0.007	0.005	0.003
	Tolerance for distance W2	±0.04	0 -0.04	0 -0.02	0 -0.01
	Difference in distance W2 (ΔW2)	0.015	0.007	0.005	0.003
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)			
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)			
LMR 45 LMR 55	Tolerance for height M	±0.05	0 -0.05	0 -0.03	0 -0.02
	Height difference ΔM	0.015	0.007	0.005	0.003
	Tolerance for distance W2	±0.05	0 -0.05	0 -0.03	0 -0.02
	Difference in distance W2 (ΔW2)	0.02	0.01	0.007	0.005
	Running parallelism of surface C with surface A	ΔC (see Running parallelism of carriage)			
	Running parallelism of surface D with surface B	ΔD (see Running parallelism of carriage)			

Running Parallelism

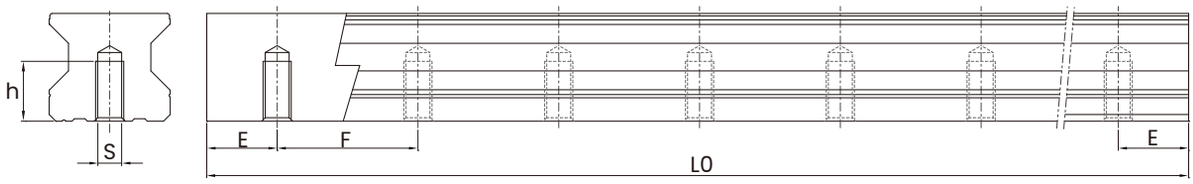
The running accuracy is the deviation of parallelism between the reference surface of carriage and reference surface of rail when carriage moving over the entire length of rail.



Measurement of running parallelism

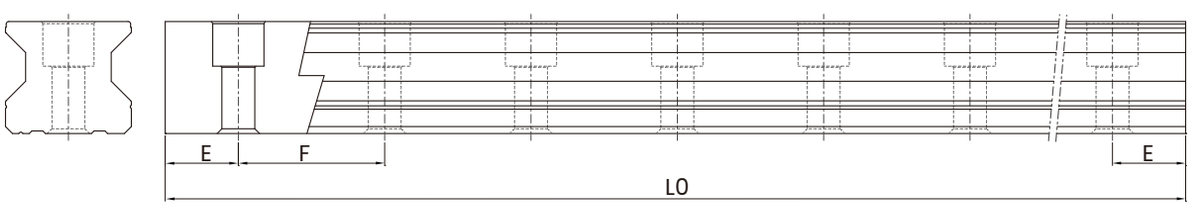
Rail length (mm)		Running Parallelism Values (μm)			
Above	Or less (incl.)	High H	Precision P	Super Precision SP	Ultra Precision UP
0	315	6	3	2	1.5
315	400	8	4	2	1.5
400	500	9	5	2	1.5
500	630	11	6	2.5	1.5
630	800	12	7	3	2
800	1000	14	8	4	2
1000	1250	16	10	5	2.5
1250	1600	18	11	6	3
1600	2000	20	13	7	3.5
2000	2500	22	15	8	4
2500	3000	24	16	9	4.5
3000	3500	25	17	11	5
3500	4000	26	18	12	6

Tapped Hole Rail Dimensions



Model	S	h (mm)
LMR 25T	M6	12
LMR 30T	M8	15
LMR 35T	M8	17
LMR 45T	M12	24
LMR 55T	M14	24

Rail Maximum Length and Standard



Unit (mm)

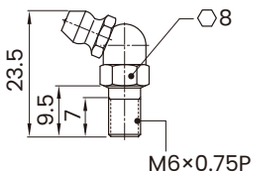
Size	LMR 25	LMR 30	LMR 35	LMR 45	LMR 55
Standard Pitch (F)	30	40	40	52.5	60
Standard (Estd.)	20	40	40	40	30
Minimum (Emin.)	7	8	8	11	12.5
Maximum Length (L0)	4000	4000	4000	4000	4000

Lubrication

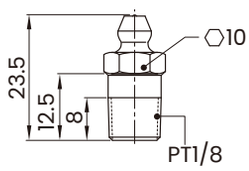
Grease nipples and oil piping joint

(1) Grease nipples

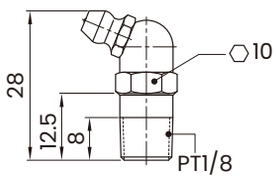
GC - M6M



GS - 7M



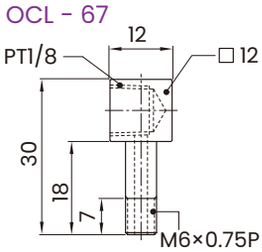
GC - 7M



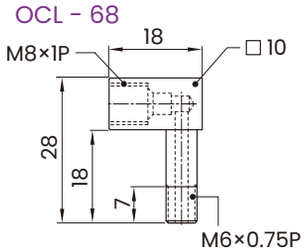
(2) Oil piping joint

- OC

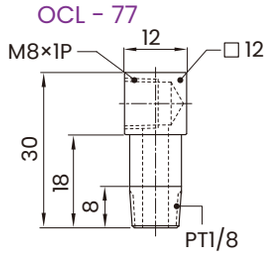
OCL - 67



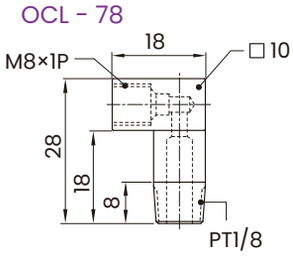
OCL - 68



OCL - 77

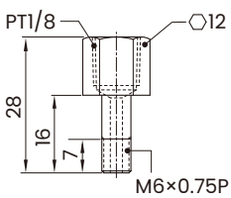


OCL - 78

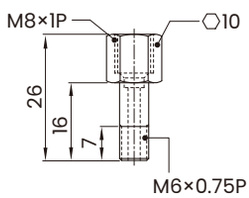


- OS

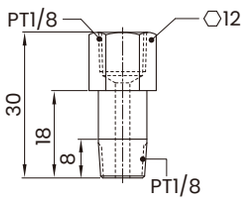
OSL - 67



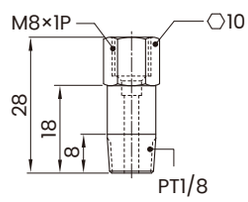
OSL - 68



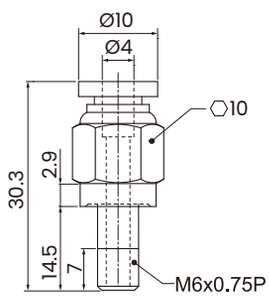
OSL- 77



OSL - 78



OSL - 64 (Fast joint)



Model No.	Grease Nipples		Oil Piping Joint
	Standard	Option	Option
LMR 25	GC - M6M	GS - M6M	OCL - 67、OCL - 68、OSL - 67、OSL- 68、OSL - 64
LMR 30			
LMR 35			
LMR 45	GC - 7M	GS - 7M	OCL - 77、OCL - 78、OSL - 77、OSL - 78
LMR 55			

Lubrication

A well lubrication is important for maintaining the function of the linear guideway. If the lubrication is not sufficient, the frictional resistance at rolling area will increase and the service life will be shortened as a result of wear of rolling parts. Two primary lubricants are both grease and oil used for the linear motion system, and the lubrication methods are categorized into manual and forced oiling. The selection of lubricant and its method should be based on the consideration of operating speed and environment requirement.

Grease lubrication

The grease feeding interval will be varied with different operating conditions and environments. Under normal operating condition, the grease should be replenished every 100km of travel. The standard pre-filled grease is lithium-based grease No.2. Moving the carriage back and forth with minimum stroke length of three carriages after the carriages been greased. To assure the grease is evenly distributed inside of carriage, the mentioned process should be repeated twice at least.

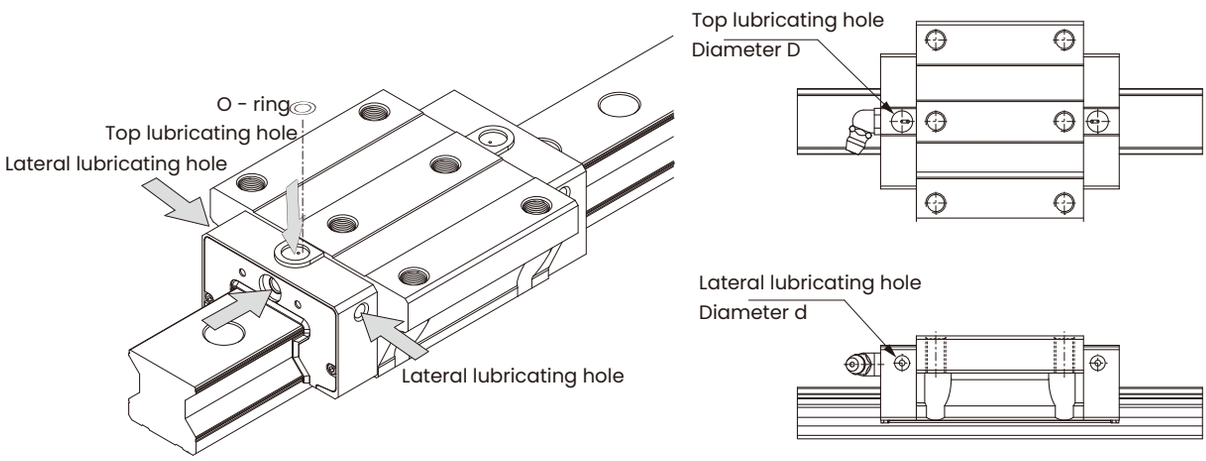
Oil lubrication

The recommended viscosity of oil is 30~150 cst, and the recommended feeding rate per hour. The nstallation other than horizontal may caused the oil unable to reach raceway area, so please specify the installed direction of your linear guideway applied.

Lubrication

Lubrication position

The standard lubricating position of carriage is at the center of both ends, as shown below. As for lateral and top application, please specify when ordering.



Unit (mm)

Model No.	Center Lubricating	Lateral Lubricating			Top Lubricating		
	Grease Nipple	Diameter d	Grease Nipple	Drilling size	Diameter D	O - ring	Drilling size
LMR 25	M6×0.75P	5.2	M6×0.75P	2	7.4	P4	1
LMR 30				2.5			1.5
LMR 35				2			1
LMR 45	PT1/8			2.5	10.2	P7	2
LMR 55				2			

* When the travel distance is less than the total length of two sliders, grease fittings or oil pipe connectors must be installed at both ends of the sliders, and regular lubrication is required. If the travel distance is less than half the total length of a slider, in addition to the aforementioned method, the slider must be moved back and forth over a lubrication distance of at least two slider lengths during lubrication.

Specifications

(1) Non-Interchangeable type

LMR 25 C 2 ZZ P1 +R C 1000 -20 /20 P II

Series：LMR

Size：25 , 30 , 35 , 45 , 55

Carriage type

(1) Heavy load

C：Flange type, mounting either from top or bottom

H：Square high type

(2) Ultra heavy load

LC：Flange type, mounting either from top or bottom

LH：Square high type

Number of carriages per rail：1 , 2 , 3 ...

Dust protection option：No symbol , ZZ , KK

Preload：P1 (Medium preload) , P2 (Heavy preload)

Code of special carriage：A , B ... (Standard rail is no symbol)

Rail type：R , T (Tapped hole type)

Dustproof steel tape：No symbol , C

Rail length (mm)

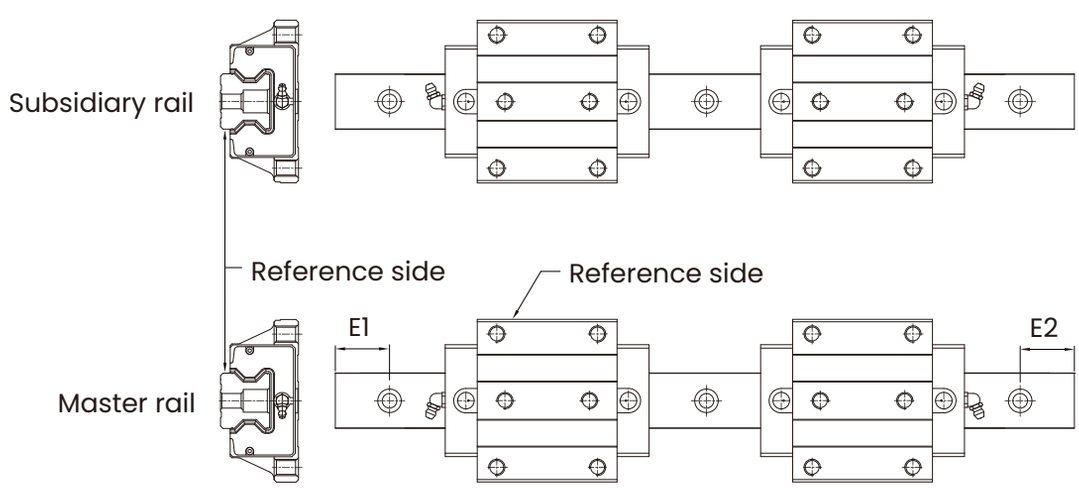
Rail hole pitch from start side (E1, see Figure below)

Rail hole pitch to the end side (E2, see Figure below)

Accuracy grade：H , P , SP , UP

Code of special rail：A , B ... (Standard rail is no symbol)

Number of rails per axis：No symbol , II , III , IV ...



Specifications

(2) Interchangeable type

- Code of Carriage

LMR 25 C ZZ P1 H

Series：LMR
Size：25，30，35，45，55
Carriage type
（1）Heavy load
C： Flange type, mounting either from top or bottom
H： Square high type
（2）Ultra heavy load
LC：Flange type, mounting either from top or bottom
LH：Square high type
Dust protection option：No symbol，ZZ，KK
Preload：P1（Medium preload），P2（Heavy preload）
Accuracy grade：H
Code of special carriage：A，B ...（Standard carriage is no symbol）

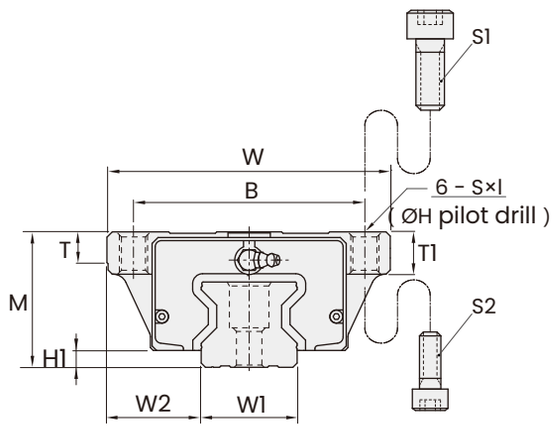
- Code of Rail

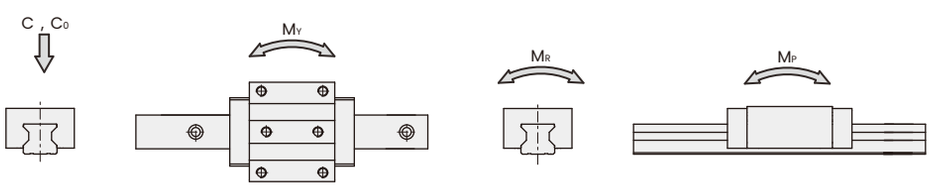
LMR 25 R 1000 -20 /20 H

Series：LMR
Size：25，30，35，45，55
Rail type：R，T（Tapped hole type）
Rail length（mm）
Rail hole pitch from start side（E1, Refer to Figure D-20）
Rail hole pitch to the end side（E2, Refer to Figure D-20）
Accuracy grade：H
Code of special rail：A，B ...（Standard rail is no symbol）

Dimensions of LMR···C / LC

Model No.	Bolt Size		Pilot drill
	S1	S2	H
LMR25	M8	M6	6.9
LMR30	M10	M8	8.6
LMR35	M10	M8	8.6
LMR45	M12	M10	10.4
LMR55	M14	M12	12.5

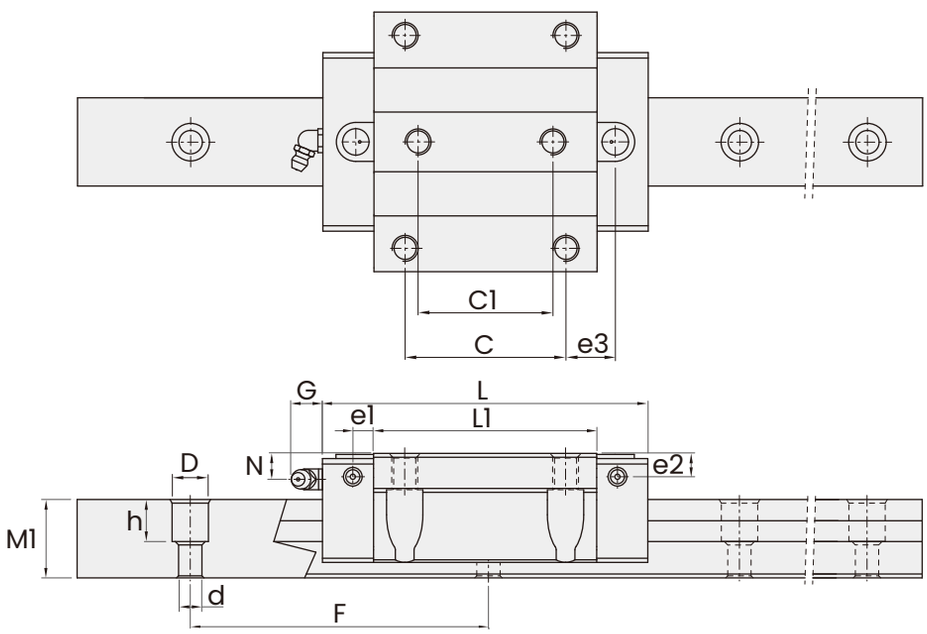




Unit (mm)

Model No.	External dimension			Carriage dimension													
	Height	Width	Length	B	C	C1	Mounting hole S×l	L1	T	T1	H1	N	e1	e2	e3	G	Grease nipple
	M	W	L														
LMR25C	36	70	101.2	57	45	40	M8×10	65.2	9	13	5	6.6	7.5	6.5	17.1	15	M6×0.75
LMR25LC	36	70	117.2	57	45	40	M8×10	81.2	9	13	5	6.6	7.5	6.5	25.1	15	M6×0.75
LMR30 C	42	90	113.1	72	52	44	M10×10	71.5	8	13	5.8	7.2	7.5	7	16.7	15	M6×0.75
LMR30LC	42	90	135.6	72	52	44	M10×10	94	8	13	5.8	7.2	7.5	7	28	15	M6×0.75
LMR35 C	48	100	129	82	62	52	M10×13	86	10	13.5	6.5	9.5	8	9	19	15	M6×0.75
LMR35 LC	48	100	158.4	82	62	52	M10×13	111.8	10	13.5	6.5	9.5	8	9	31.9	15	M6×0.75
LMR45 C	60	120	153	100	80	60	M12×15	107	12	15	7.8	10	8.5	10	20.5	16.5	PT 1/8
LMR45 LC	60	120	184.2	100	80	60	M12×15	138.2	12	15	7.8	10	8.5	10	36.1	16.5	PT 1/8
LMR55 C	70	140	182	116	95	70	M14×18	126.4	12	18	10	12	9	10	22.7	16.5	PT 1/8
LMR55 LC	70	140	231.6	116	95	70	M14×18	176	12	18	10	12	9	10	47.5	16.5	PT 1/8

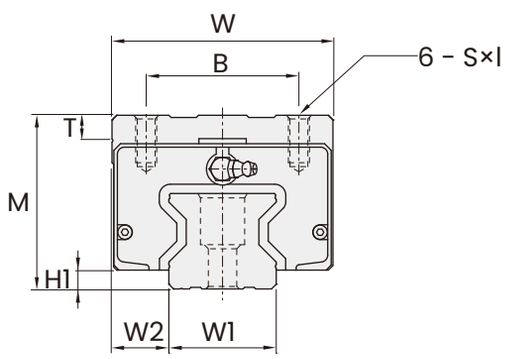
Dimensions of LMR···C / LC

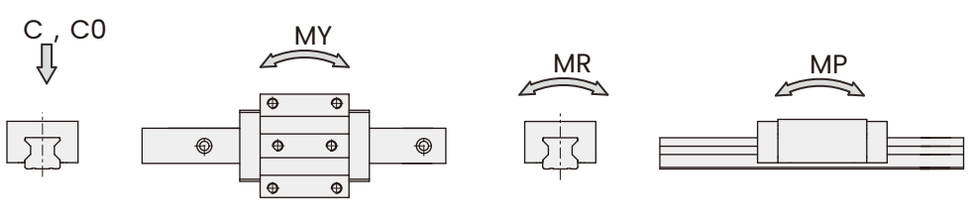


Unit (mm)

Model No.	Rail dimension					Basic load rating		Static moment rating			Weight	
	Width		Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P (KN·m)	M_Y (KN·m)	M_R (KN·m)	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C0 KN					
LMR25C	23	23.5	23.6	30	11×9×7	26.6	51.5	0.59	0.59	0.74	0.68	3.16
LMR25LC	23	23.5	23.6	30	11×9×7	30.9	62.3	0.85	0.85	0.90	0.85	3.16
LMR30 C	28	31	28	40	14×12×9	39.6	70.1	0.85	0.85	1.26	1.19	4.4
LMR30LC	28	31	28	40	14×12×9	51.3	98.2	1.64	1.64	1.76	1.45	4.4
LMR35 C	34	33	30.7	40	14×12×9	49.4	93.5	1.49	1.49	2.01	1.61	6.23
LMR35 LC	34	33	30.7	40	14×12×9	58.8	116.9	2.30	2.30	2.51	2.13	6.23
LMR45 C	45	37.5	38	52.5	20×17×14	88.3	181.5	3.56	3.56	5.00	3.04	10.23
LMR45 LC	45	37.5	38	52.5	20×17×14	109.4	239.2	6.12	6.12	6.59	3.85	10.23
LMR55 C	53	43.5	44	60	23×20×16	120.0	254.9	5.80	5.80	8.25	4.62	14.45
LMR55 LC	53	43.5	44	60	23×20×16	154.6	352.2	10.82	10.82	11.42	6.43	14.45

Dimensions of LMR···H / LH

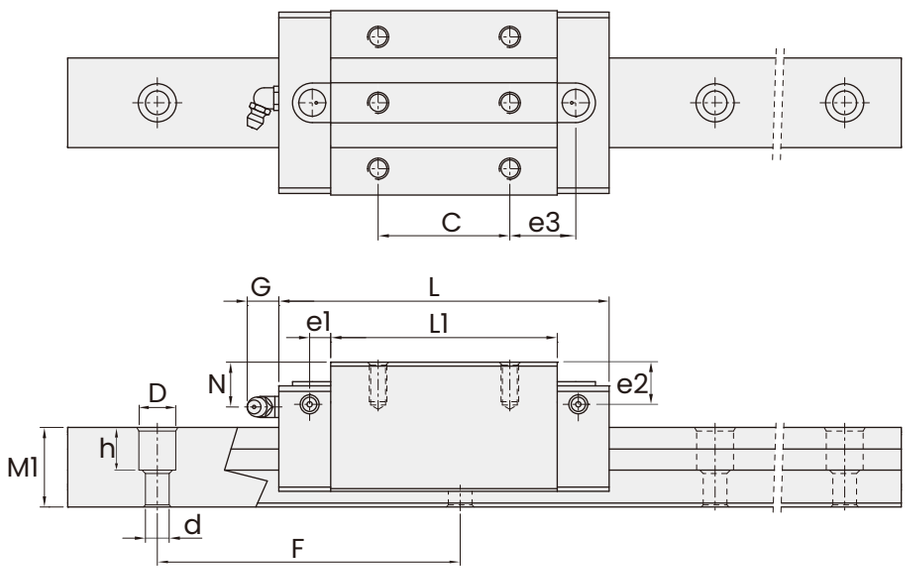




Unit (mm)

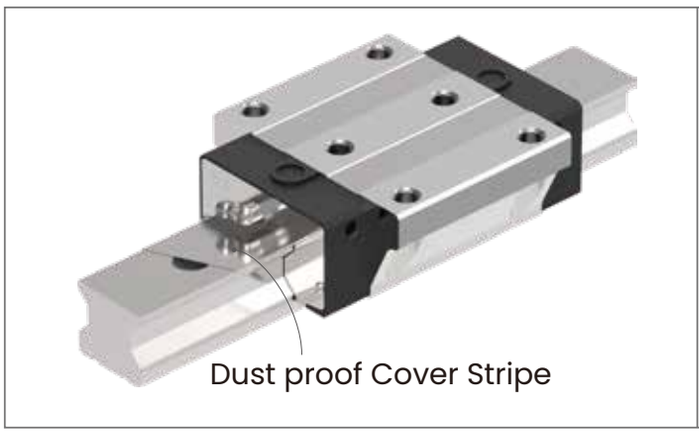
Model No.	External dimension			Carriage dimension											
	Height	Width	Length	B	C	Mounting hole S×l	L1	T	H1	N	e1	e2	e3	G	Grease nipple
	M	W	L												
LMR25H	40	48	101.2	35	35	M6×8	65.2	8	5	10.6	7.5	10.5	22.1	15	M6×0.75
LMR25LH	40	48	117.2	35	50	M6×8	81.2	8	5	10.6	7.5	10.5	22.6	15	M6×0.75
LMR30 H	45	60	113.1	40	40	M8×10	71.5	9	5.8	10.2	7.5	10.3	22.7	15	M6×0.75
LMR30LH	45	60	135.6	40	60	M8×10	94	9	5.8	10.2	7.5	10.3	24	15	M6×0.75
LMR35 H	55	70	129	50	50	M8×12	86	15	6.5	16.5	8	16	25	15	M6×0.75
LMR35 LH	55	70	158.4	50	72	M8×12	111.8	15	6.5	16.5	8	16	26.9	15	M6×0.75
LMR45 H	70	86	153	60	60	M10×17	107	12	7.8	20	8.5	20	30.5	16.5	PT 1/8
LMR45 LH	70	86	184.2	60	80	M10×17	138.2	12	7.8	20	8.5	20	36.1	16.5	PT 1/8
LMR55 H	80	100	182	75	75	M12×18	126.4	17	10	22	9	20	32.7	16.5	PT 1/8
LMR55 LH	80	100	231.6	75	95	M12×18	176	17	10	22	9	20	47.5	16.5	PT 1/8

Dimensions of LMR···H / LH



Unit (mm)

Model No.	Rail dimension					Basic load rating		Static moment rating			Weight	
	Width		Height	Pitch	Mounting bolt hole	Dynamic	Static	M_P (KN·m)	M_Y (KN·m)	M_R (KN·m)	Carriage Kg	Rail Kg/m
	W1	W2	M1	F	D×h×d	C KN	C_0 KN					
LMR25H	23	12.5	23.6	30	11×9×7	26.6	51.5	0.59	0.59	0.74	0.61	3.16
LMR25LH	23	12.5	23.6	30	11×9×7	30.9	62.3	0.85	0.85	0.90	0.76	3.16
LMR30 H	28	16	28	40	14×12×9	39.6	70.1	0.85	0.85	1.26	0.94	4.4
LMR30LH	28	16	28	40	14×12×9	51.3	98.2	1.64	1.64	1.76	1.15	4.4
LMR35 H	34	18	30.7	40	14×12×9	49.4	93.5	1.49	1.49	2.01	1.55	6.23
LMR35 LH	34	18	30.7	40	14×12×9	58.8	116.9	2.30	2.30	2.51	2.07	6.23
LMR45 H	45	20.5	38	52.5	20×17×14	88.3	181.5	3.56	3.56	5.00	3.07	10.23
LMR45 LH	45	20.5	38	52.5	20×17×14	109.4	239.2	6.12	6.12	6.59	3.87	10.23
LMR55 H	53	23.5	44	60	23×20×16	120.0	254.9	5.80	5.80	8.25	4.27	14.45
LMR55 LH	53	23.5	44	60	23×20×16	154.6	352.2	10.82	10.82	11.42	5.94	14.45



Product characteristics

Easy to install and disassemble

Quick installation during installation, simple and fast disassembly of the entire strip during disassembly.

Prevent foreign object intrusion

Effectively prevent the chip or foreign matter damage the bolt hole special cover and then invade the inside of the slider, affecting the life of the linear guide.

Strong versatility

There is no need for special processing or individual customization of the slide, which greatly saves costs.

Specifications

LMR 25 C 2 ZZ P1 +R C 1000 -20 /20 P

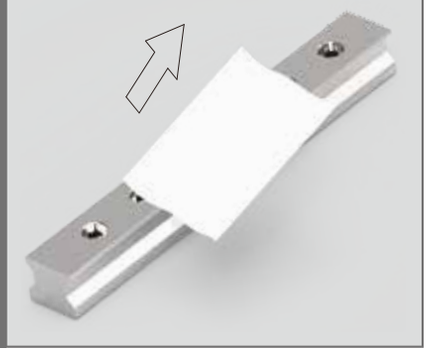
Series：LMR
Size：25 , 30 , 35 , 45 , 55
Dust proof Cover Stripe

Note:

- Dust proof steel belt can not be bent.
- Before installing the dust-proof steel belt, clean the upper surface of the guide rail.
- The edge and both ends of the dust-proof steel belt are sharp. To prevent scratches, please wear gloves when installing.
- Make chamfering at the cut off of the dust-proof steel belt to avoid scratches during installation.
- When cutting the dust-proof steel strip, it is recommended that the length of the steel strip on each side be 1~2mm shorter than the rail.

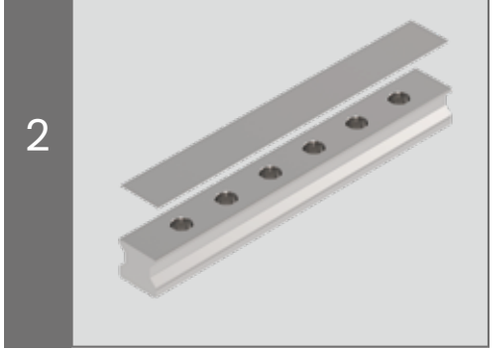
Installation

1



Clean rail surface before installation.

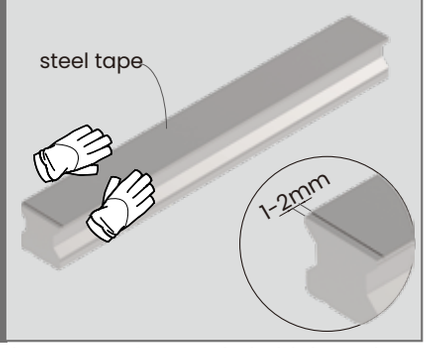
2



When cutting , make the cover stripe1~2mm shorter than the guideway.

⚠ The cover stripe cannot be bent.

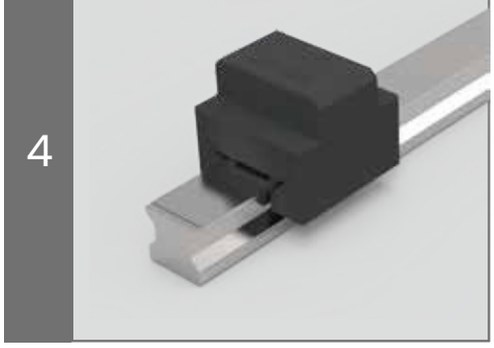
3



Place the cover stripe neatly, hold down the edge of the cover stripe, and press down to make sure that the end of the cover stripe is closely connected with the end of the guideway.

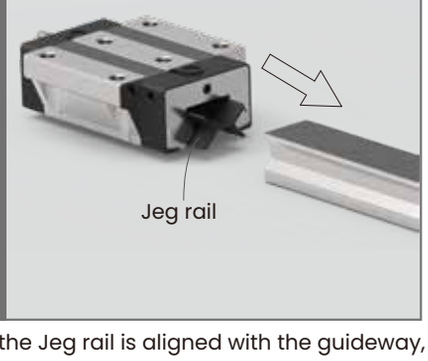
⚠ The cover stripe cannot be bent.

4



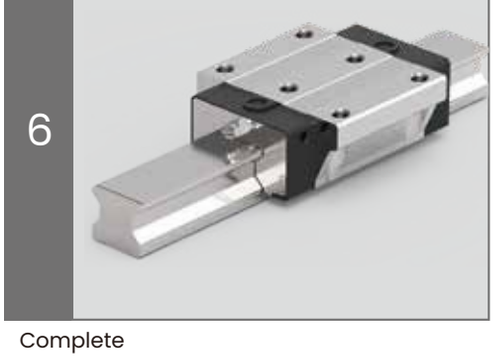
Align the cover stripe with the guideway and push it downward to check whether the cover stripe is in place. Repeat Step 4 until the cover stripe is in place.

5



After the Jeg rail is aligned with the guideway, push the slide block into the guideway. Take out the slide block, use the Jeg rail.

6



Complete

Description of slider back hole cove

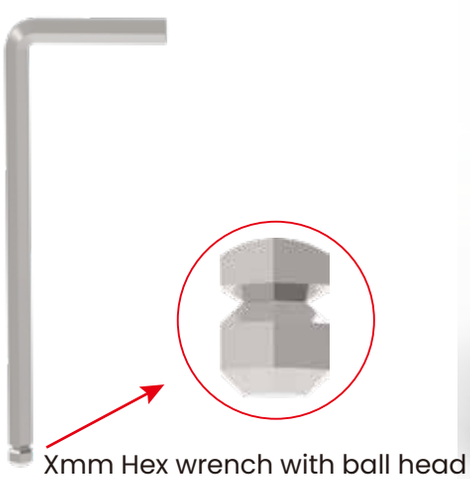
Characteristics

When the LMR series C-type slider is locked down，Prevent foreign objects from entering the interior of the slider through the back hole of the slider，Affects the service life of linear guides.

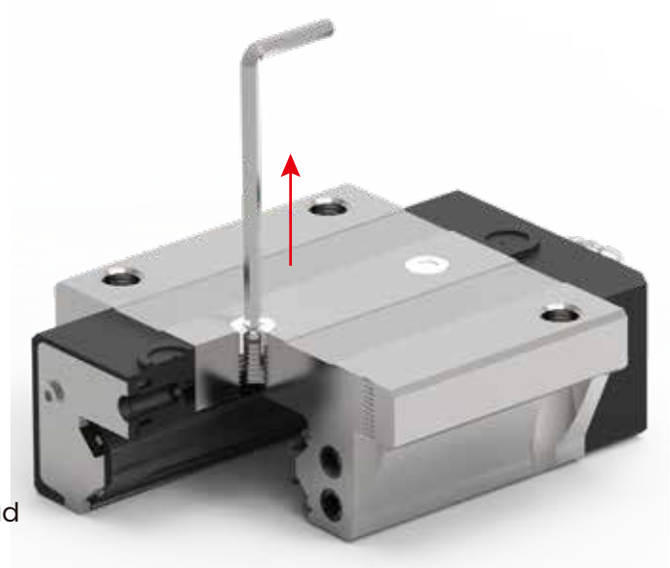
Disassembly method

When using the middle two holes, remove the dust plug from the back hole of the slider as follows.

1.Insert the ball head of the M4 Allen wrench into the center slot of the dustproof back hole cover. Lift out the dust proof back hole cover with vertical upward force.



Xmm Hex wrench with ball head



Linear Guide Service Life

When a linear guide rail operates under load, its rolling surfaces and rolling elements are continuously subjected to repetitive stress from rolling contact. When the fatigue limit is reached, the rolling surfaces can crack due to stress fatigue, leading to flaking that resembles scales on the metal surface. The service life of a linear guide rail is defined as the total operational distance until the onset of surface flaking on the rolling surfaces or rolling elements. This flaking phenomenon is a result of rolling fatigue in the material of the rolling surfaces or rolling elements.

Linear Guide Rated Life

Even when linear guide rails are manufactured under the same conditions and operated under the same conditions, there can be variations in their actual service life. Therefore, for the purpose of calculating the service life of linear guide rails, the rated life is defined as follows: The rated life refers to the total operational distance achieved by a batch of identical linear guide rails running under the same conditions, until 90% or more of the products do not exhibit surface flaking.

Basic Load Rating

Linear guide rails have two types of basic load ratings: the Basic Dynamic Load Rating (C) , which is used for calculating the service life, and the Basic Static Load Rating (C0), which defines the limit of the static permissible load.

Basic Dynamic Load Rating

The term “Basic Dynamic Load Rating (C)” refers to a consistent load condition in terms of direction and magnitude, under which a batch of identical linear guide rails, when operated under the same conditions, will have a rated life (L) of (L = 50) km for those using steel balls.

This load condition is known as the Basic Dynamic Load Rating (C). It is used to calculate the service life of linear guide rails when they are under load, and its value is recorded in the dimension tables for each model.

Basic Static Load Rating

When a linear guide rail is stationary or in motion, if it is subjected to an excessive load or a large impact load, local permanent deformation will occur at the contact area between the rolling surface and the rolling elements. Once this permanent deformation exceeds a certain limit, it will interfere with the smooth operation of the linear guide rail.

Basic Static Load Rating (C0) refers to a constant static load, both in direction and magnitude, that causes the total permanent deformation of the rolling elements and the rolling surface at the maximum stress contact area to reach 0.0001 times the diameter of the rolling elements.

The Basic Static Load Rating (C0) of linear guide rails is defined in terms of radial load. It is used to calculate the static safety factor relative to the applied load, and its values are listed in the dimension tables for each model.

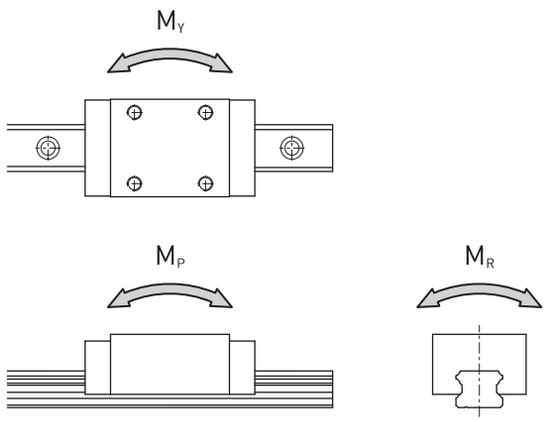
Permissible Static Moment Mo

When a linear guide rail is subjected to torque, the stress distribution on the rolling elements within the guide rail is uneven, resulting in the rolling elements at both ends bearing the maximum stress.

The Permissible Static Moment (Mo) refers to a fixed static moment, both in magnitude and direction, that results in the total permanent deformation of the rolling elements and the rolling surface at the contact area under maximum stress reaching 0.0001 times the diameter of the rolling elements.

The permissible static moments for linear guide rails are defined in three directions: MP, MR, and MY, and their values are listed in the dimension tables for each model.

Moment in various ditections



Static Safety Factor fs

When linear guide rails are stationary or in operation, they may be subjected to unexpected external forces due to vibration, impact, or the inertial forces generated by starting and stopping. For such load conditions, it is necessary to consider the static safety factor (fs). The static safety factor (fs) is represented by the number of times the actual load applied to the linear guide rail is of the basic static load rating (C0).

$$f_s = \frac{f_C \times C_0}{P} \text{ 或 } f_s = \frac{f_C \times M^0}{M}$$

- f_S Static safety factor
- f_C Contact Coefficient
- C_0 Static load rating
- M_0 Permissible static moments (MP, MR, and MY)
- P Load calculation value
- M Torque calculation value

Please refer to the safety factor shown in the table below as the reference value for the lower limit of operating conditions.

Reference of Static Safety Factor

Industry	Load conditions	Lower limit of fs
General Industry	With vibration and shock	1.0 ~ 3.5
	Without vibration and shock	2.0 ~ 5.0
Machine Tool Industry	With vibration and shock	1.0 ~ 4.0
	Without vibration and shock	2.5 ~ 7.0

Service Life Calculation Formula

The rated life (L) of a linear guide rail can be calculated based on the Basic Dynamic Load Rating (C) and the applied load (P). In practical use, linear guide rails often operate with vibrations and impacts, resulting in constantly changing applied loads. Additionally, the hardness of the rolling surfaces and the temperature of the operating environment greatly affect the service life.

Taking these factors into account, the actual service life calculation for linear guide rails using steel balls is as follows:

Ball screw

$$L = \left| \frac{f_H \times f_T \times f_C}{f_W} \times \frac{C}{P} \right|^{3} \times 50$$

Rolling

$$L = \left| \frac{f_H \times f_T \times f_C}{f_W} \times \frac{C}{P} \right|^{\frac{10}{3}} \times 100$$

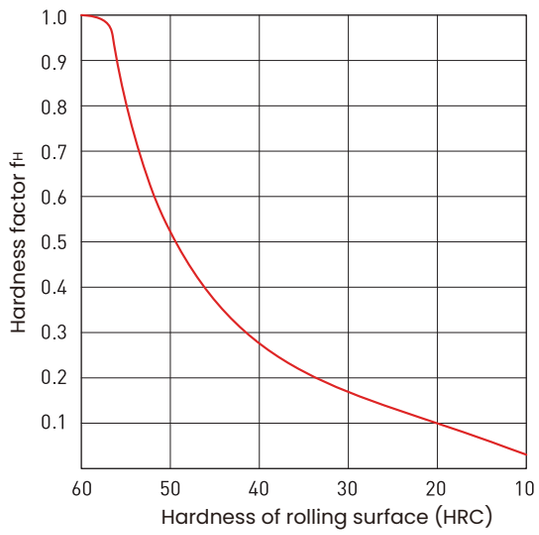
L	Rated life (km)
C	Basic dynamic load rating(N)
P	Load bearing
f_H	Hardness factor
f_T	Temperatre factor
f_C	Contact coefficient
f_W	Load Coefficient

Hardness Factor f_H

To fully utilize the load capacity of linear guideways, the hardness of the rolling surfaces should be between HRC 58 and 64. If the hardness falls below this range, the load capacity of the linear guideways will be reduced. In such cases, the basic dynamic rated load and basic static rate d load should be multiplied by the corresponding hardness factor (fH).

(Note) The hardness requirement for the rolling surface of CSK linear guideways is above HRC 58, therefore the hardness factor (fH)=1.

■ **Hardness Factor f_H**

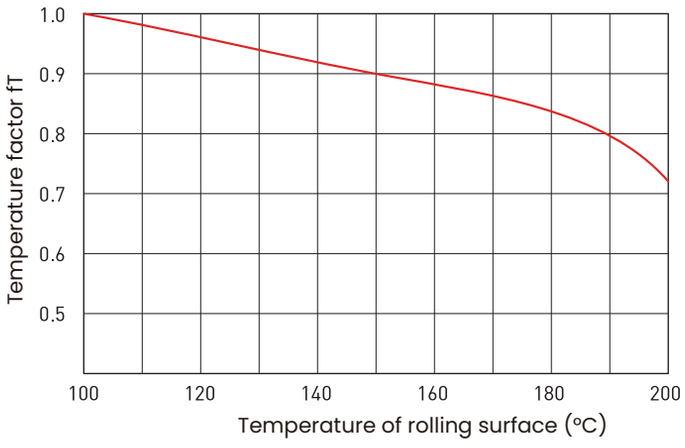


Temperature Factor f_T

When the operating environment of linear guideways exceeds 100°C, it is necessary to consider the adverse effects of high temperatures and multiply by the corresponding temperature coefficient from the list below.

(Note)The seal and end cap materials used in CSK linear guideway standard products are recommended for operating environments with temperatures below 90°C.

■ **Temperature Factor fT**



Contact Factor fc

When using multiple linear guideway sliders in close contact, the load distribution is difficult to even out due to the effects of torque load and installation precision. In such cases, when the sliders are positioned closely together, it is necessary to multiply the basic dynamic rated load (C) and the basic static rated load (C0) by the corresponding contact factor from the list provided.

■ **Contact Factor fc**

Number of sliders in close contact	Contact Factor
2	0.81
3	0.72
4	0.66
5	0.61
6 or more	0.6
Genaral use case	1

Load Factor fc

Machinery that typically performs reciprocating motion often experiences vibration or shock during operation. It is particularly challenging to accurately calculate the vibrations produced at high speeds and the impact of frequent starts and stops. At moments when the effects of speed and vibration are significant, please divide the basic dynamic rated load (C) by the load coefficient obtained from experience, as listed in the table below.

■ **Load Factor fw**

Operating conditions	Speed	fw
Without vibration and shock	V ≦ 15 m/min	1.0~1.2
Light vibration and shock	15 < V ≦ 60 m/min	1.2~1.5
Medium vibration and shock	60 < V ≦ 120 m/min	1.5~2.0
High vibration and shock	V ≧ 120 m/min	2.0~3.5

Calculation of Life Span

When the stroke length and the number of reciprocations for the use of linear guideways are fixed, the relative lifespan (Lh) can be calculated from the rated life (L) obtained from the aforementioned formula. This conversion allows for the determination of the lifespan in hours based on the specific operational parameters.

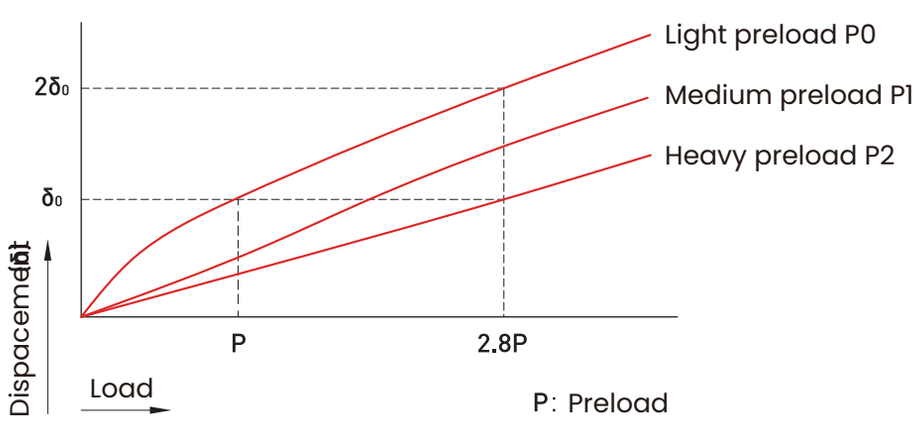
Linear motion of steel balls

$$L_h = \frac{L \times 10^3}{2 \times l_S \times n_1 \times 60}$$

- L_h Lifespan (hr)
- L Rated Life Calculation value (km)
- l_S Stroke Length (m)
- n_1 Counts Per Minute (min^{-1})

Rigidity and Preoad

When selecting linear guideways, it is essential to choose the appropriate preload that meets the operating conditions to achieve the required rigidity for the machinery and equipment. By applying a preload (i.e., preloading), the rigidity of the linear guideways can be increased up to 2.8 times the preload force. This results in a smaller displacement under the same load compared to a non-preloaded condition, significantly enhancing rigidity. The preload in linear guideways is achieved by increasing the diameter of the steel balls, creating a negative clearance between the balls and the rolling surface, thus applying an internal load. Therefore, this preload force must be taken into account when calculating the lifespan.



Friction Factor

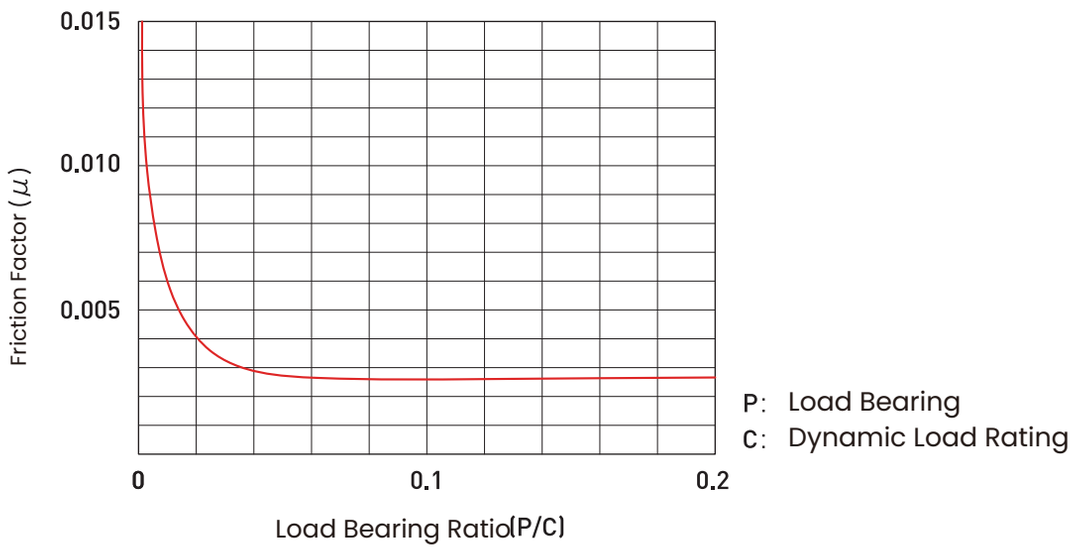
Linear guideways operate by rolling elements moving between rolling surfaces, which results in their frictional resistance being 1/20 to 1/40 of that of sliding guideways. Notably, their static friction is very low, almost identical to dynamic friction, preventing stick-slip motion during operation and enabling feed distances below the micron level. The frictional resistance of linear guide ways varies with their type, preload, the viscosity resistance of the lubricant, and the load applied to the guideways. Particularly, when torque is applied or preload is used to increase rigidity, the frictional resistance will rise accordingly. The frictional resistance (thrust value) of linear guideways can be calculated using the following formula, taking into account the load they bear and the resistance of the seals.

Note: Friction factor of LMG series linear guides is 0.002~0.003.

$$F=\mu\times P+f$$

F Friction Resistance (kgf)
μ Dynamic Frictional Resistance Factor
P Load Bearing (kgf)
f Seal Resistance

Load Bearing and Friction Factor Relationship



High positioning accuracy

Linear guide facilitate movement through rolling elements between rolling surfaces, resulting in frictional resistance that is 1/20 to 1/40 of that of sliding guideways. Particularly noteworthy is the very low static friction, which is nearly identical to dynamic friction, thus eliminating the occurrence of stick-slip during micro-feed operations. This ensures excellent precision resolution and reproducibility, achieving positioning accuracy at the sub-micron level.

Minimal wear allows for long-term maintenance of precision

Traditional sliding guideways, due to the adverse effects of oil film backflow during movement, can lead to poor motion accuracy. Additionally, their challenging lubrication can result in significant wear on the contact surfaces of the guideway, severely affecting precision. In contrast, linear guideways with a rolling motion system have a simple lubrication structure, making lubrication easy and effective. This minimizes wear on the friction contact surfaces, there by maintaining the machine's travel accuracy over a long period.

Capable of high load in all four directions

The geometric design of linear guideways enables them to simultaneously withstand loads in radial, reverse radial, and lateral directions while maintaining their travel accuracy. Additionally, rigidity and load capacity can be enhanced by applying preload and increasing the number of sliders.

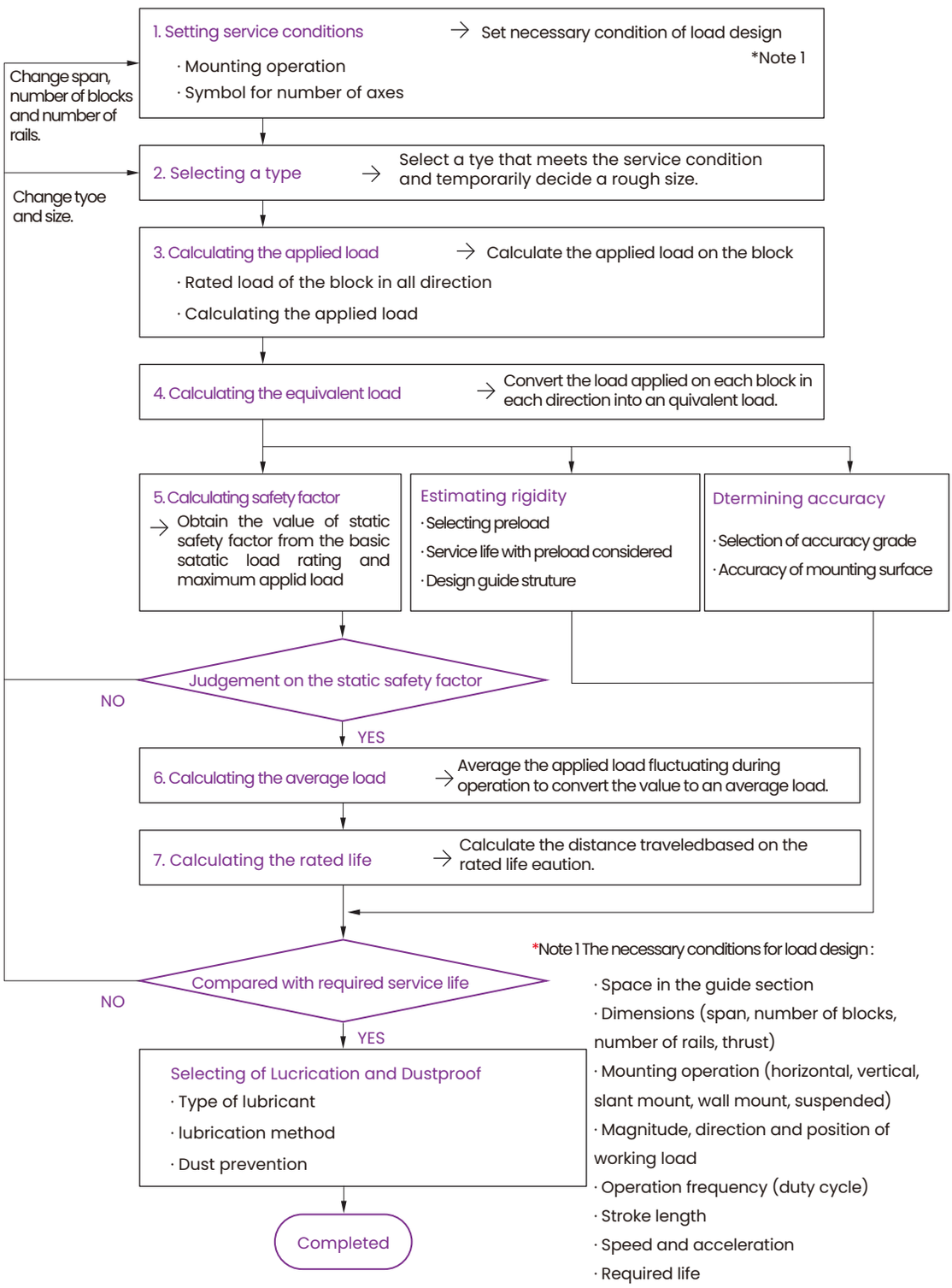
Suitable for applications requiring high-speed motion

The characteristic of low rolling friction resistance in linear guideways means that they require less power for mechanical equipment, thus saving on electricity consumption. Additionally, their low wear during movement and minimal frictional heat generation allow for the miniaturization of machinery and support the need for high-speed motion.

Easy to assemble and features interchangeability

The installation of linear guideways is straightforward: by following the recom mended assembly steps on a milled or ground mounting surface, the high precision achieved during the manufacturing of the guideways can be replicated. This process reduces the time and cost associated with traditional scraping methods required for the mounting surface. Additionally, the interchangeability feature of the guideways allows for the separate replacement of sliders or rails, or even the entire set of linear guideways, enabling the machinery to regain high-precision guidance. This makes machine assembly the easiest and maintenance the most convenient.

Selecting Steps for Linear Guide



*Note 1 The necessary conditions for load design :

- Space in the guide section
- Dimensions (span, number of blocks, number of rails, thrust)
- Mounting operation (horizontal, vertical, slant mount, wall mount, suspended)
- Magnitude, direction and position of working load
- Operation frequency (duty cycle)
- Stroke length
- Speed and acceleration
- Required life
- Dynamic accuracy
- Service environment

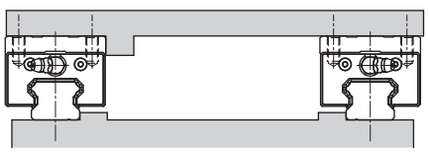
Setting Service Conditions

Mounting Operation

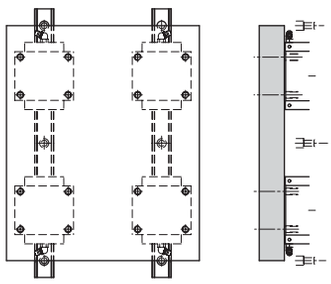
Linear guides can be mounted in following six orientations. If oil is to be used as lubricant, in cases where the installation method is other than horizontal use, there may be difficulties in delivering lubricating oil to the rolling surface. When placing an order, please specify the mounting orientation and the location of the oil nozzle and oil pipe joint on the block.

■ Mounting Orientation

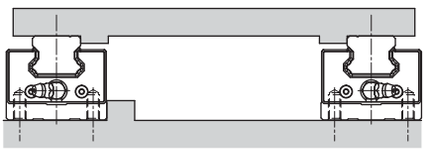
Horizontal (symbol:H)



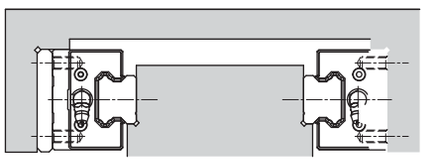
Vertical (symnol:V)



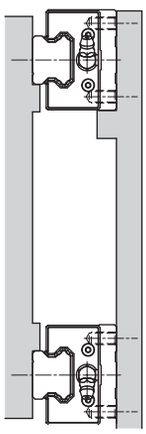
Inverted (symbol:R)



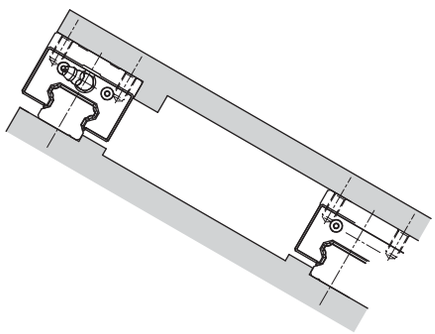
Relative (symbol:F)



Wall mount (symbol:K)



Slant mount (symbol:T)



Symbol for Number of Axes

When use two or more units of a model of precision or higher accuracy grades,please specify the number of rails (symbol for number of axes) in advance.

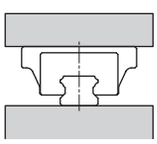
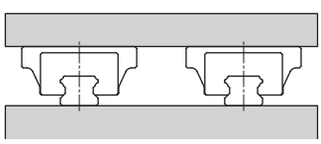
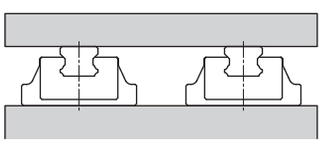
■ Example of model

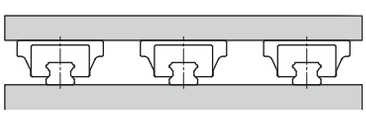
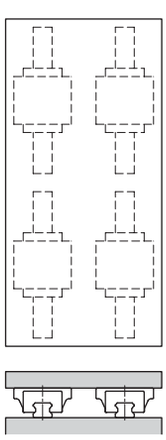
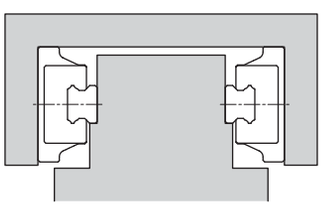
LMG20C2SSP1+R1000-20/20P **II**

Model number

Symbol for number of axes
("II"indicates 2 axes. no symbol for a single axis)

■ Symbol for number of axes

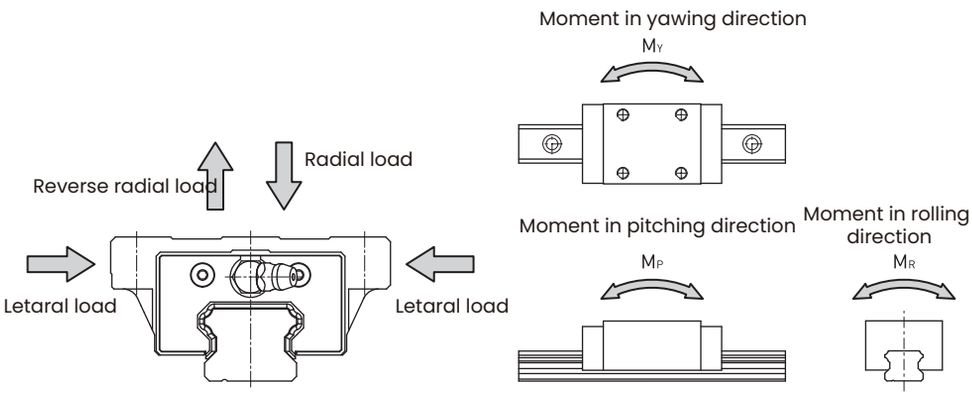
Symbol for number of axes: none	Symbol for number of axes: II	Symbol for number of axes: II
Required number of axes: 1	Required number of axes: 2	Required number of axes: 2
		

Symbol for number of axes: III	Symbol for number of axes: IV	Other
Required number of axes: 3	Required number of axes: 4	Required number of axes: 2
		

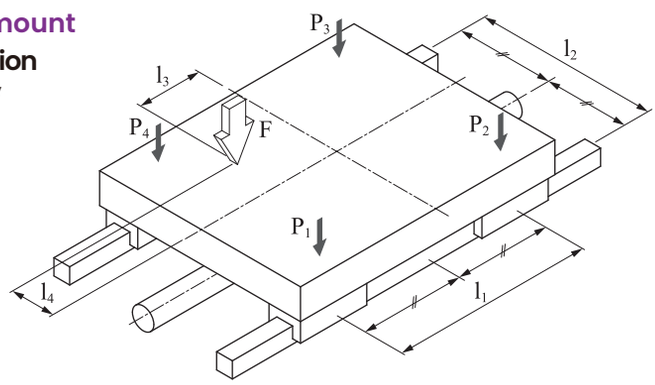
Calculate Applied Load

Linear guideway can withstand loads or torques in all directions due to installation methods, configurations, the center of gravity of moving objects, thrust positions, acceleration, and cutting resistance. When selecting linear guides, it is essential to consider various usage conditions to calculate the correct load-bearing capacity.

■ Direction of Rated Load



■ Apllied Load Equation

Type	Service Conditions	Applied load equation
Horizontal mount **Uniform motion or stationary**		$P_1 = \frac{F}{4} + \frac{F \cdot l_3}{2 \cdot l_1} - \frac{F \cdot l_4}{2 \cdot l_2}$ $P_2 = \frac{F}{4} - \frac{F \cdot l_3}{2 \cdot l_1} - \frac{F \cdot l_4}{2 \cdot l_2}$ $P_3 = \frac{F}{4} - \frac{F \cdot l_3}{2 \cdot l_1} + \frac{F \cdot l_4}{2 \cdot l_2}$ $P_4 = \frac{F}{4} + \frac{F \cdot l_3}{2 \cdot l_1} + \frac{F \cdot l_4}{2 \cdot l_2}$

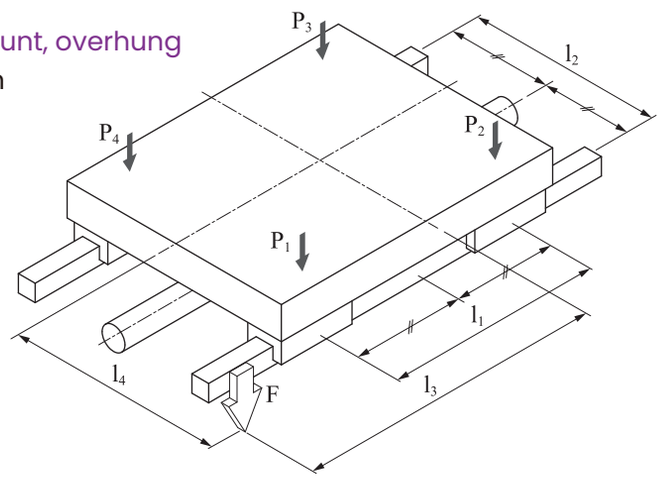
Calculate Applied Load

■ Apllied Load Equation

Type	Service Conditions	Applied load equation

Horizontal mount, overhung

Uniform motion
or stationary



$$P_1 = \frac{F}{4} + \frac{F \cdot l_3}{2 \cdot l_1} + \frac{F \cdot l_4}{2 \cdot l_2}$$

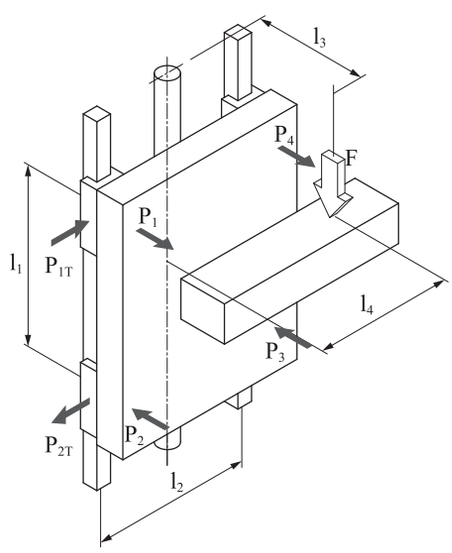
$$P_2 = \frac{F}{4} - \frac{F \cdot l_3}{2 \cdot l_1} + \frac{F \cdot l_4}{2 \cdot l_2}$$

$$P_3 = \frac{F}{4} - \frac{F \cdot l_3}{2 \cdot l_1} - \frac{F \cdot l_4}{2 \cdot l_2}$$

$$P_4 = \frac{F}{4} + \frac{F \cdot l_3}{2 \cdot l_1} - \frac{F \cdot l_4}{2 \cdot l_2}$$

Vertical mount

Uniform motion
or stationary



$$P_1 = P_2 = P_3 = P_4 = \frac{F \cdot l_3}{2 \cdot l_1}$$

$$P_{1T} = P_{2T} = P_{3T} = P_{4T} = \frac{F \cdot l_4}{2 \cdot l_1}$$

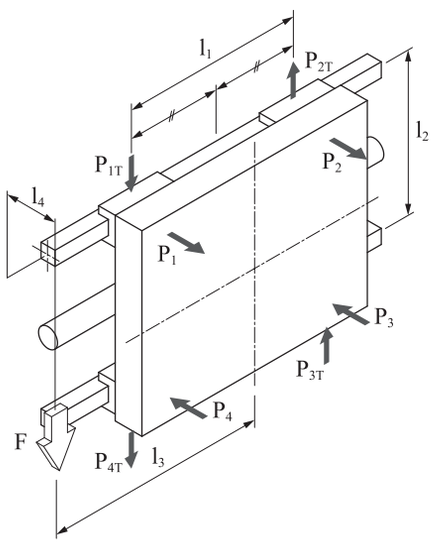
Calculate Applied Load

■ Apllied Load Equation

Type	Service Conditions	Applied load equation

Wall mount

Uniform motion or stationary

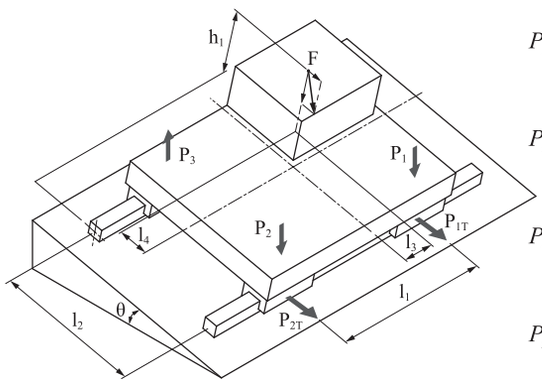


$$P_1 = P_2 = P_3 = P_4 = \frac{F \cdot l_4}{2 \cdot l_2}$$

$$P_{1T} = P_{4T} = \frac{F}{4} + \frac{F \cdot l_3}{2 \cdot l_1}$$

$$P_{2T} = P_{3T} = \frac{F}{4} - \frac{F \cdot l_3}{2 \cdot l_1}$$

Laterally tilt mount



$$P_1 = \frac{F \cdot \cos\theta}{4} + \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} - \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} + \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_2}$$

$$P_2 = \frac{F \cdot \cos\theta}{4} - \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} - \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} + \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_2}$$

$$P_3 = \frac{F \cdot \cos\theta}{4} - \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} + \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} - \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_2}$$

$$P_4 = \frac{F \cdot \cos\theta}{4} + \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} + \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} - \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_2}$$

$$P_{1T} = P_{4T} = \frac{F \cdot \sin\theta}{4} + \frac{F \cdot \sin\theta \cdot l_3}{2 \cdot l_1}$$

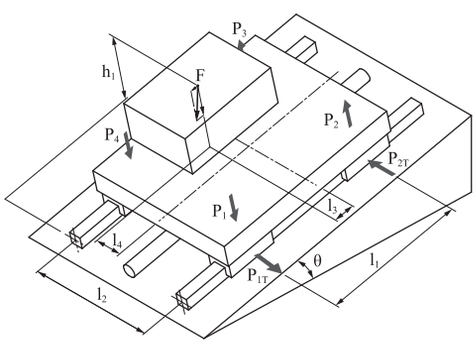
$$P_{2T} = P_{3T} = \frac{F \cdot \sin\theta}{4} - \frac{F \cdot \sin\theta \cdot l_3}{2 \cdot l_1}$$

Calculate Applied Load

■ Apllied Load Equation

Type	Service Conditions	Applied load equation

Longitudinally tilt mount



$$P_1 = \frac{F \cdot \cos\theta}{4} + \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} - \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} + \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_1}$$

$$P_2 = \frac{F \cdot \cos\theta}{4} - \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} - \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} - \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_1}$$

$$P_3 = \frac{F \cdot \cos\theta}{4} - \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} + \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} - \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_1}$$

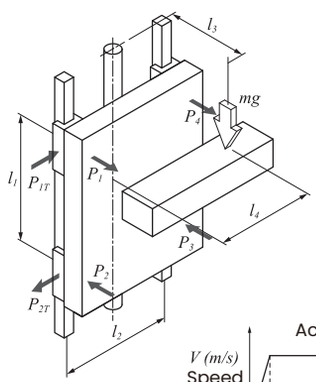
$$P_4 = \frac{F \cdot \cos\theta}{4} + \frac{F \cdot \cos\theta \cdot l_3}{2 \cdot l_1} + \frac{F \cdot \cos\theta \cdot l_4}{2 \cdot l_2} + \frac{F \cdot \sin\theta \cdot h_1}{2 \cdot l_1}$$

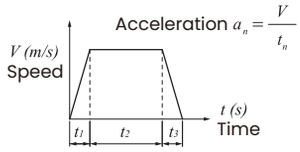
$$P_{1T} = P_{4T} = \frac{F \cdot \sin\theta \cdot l_4}{2 \cdot l_1}$$

$$P_{2T} = P_{3T} = -\frac{F \cdot \sin\theta \cdot l_4}{2 \cdot l_1}$$

Vertical mount

with intertia





■ Speed diagram

During acceleration

$$P_1 = P_2 = P_3 = P_4 = \frac{m \cdot (g + a_1) \cdot l_3}{2 \cdot l_1}$$

$$P_{1T} = P_{2T} = P_{3T} = P_{4T} = \frac{m \cdot (g + a_1) \cdot l_4}{2 \cdot l_1}$$

During uniform motion

$$P_1 = P_2 = P_3 = P_4 = \frac{m \cdot g \cdot l_3}{2 \cdot l_1}$$

$$P_{1T} = P_{2T} = P_{3T} = P_{4T} = \frac{m \cdot g \cdot l_4}{2 \cdot l_1}$$

During deceleration

$$P_1 = P_2 = P_3 = P_4 = \frac{m \cdot (g - a_3) \cdot l_3}{2 \cdot l_1}$$

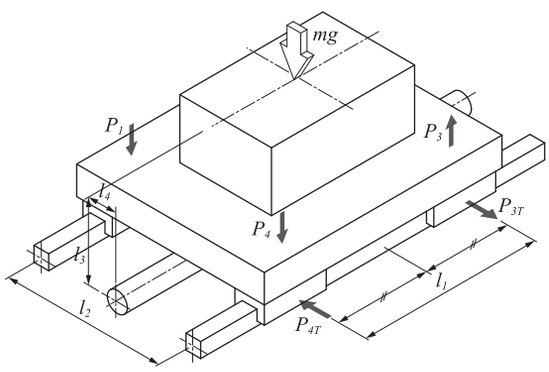
$$P_{1T} = P_{2T} = P_{3T} = P_{4T} = \frac{m \cdot (g - a_3) \cdot l_4}{2 \cdot l_1}$$

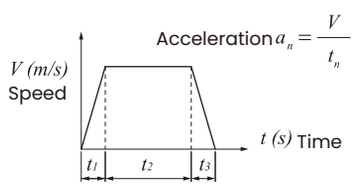
Calculate Applied Load

■ Apllied Load Equation

Type	Service Conditions	Applied load equation

Horizontal mount
with intertia





■ Speed diagram

During acceleration

$$P_1 = P_4 = \frac{mg}{4} - \frac{m \cdot a_1 \cdot l_3}{2 \cdot l_1}$$

$$P_2 = P_3 = \frac{mg}{4} + \frac{m \cdot a_1 \cdot l_3}{2 \cdot l_1}$$

$$P_{1T} = P_{2T} = P_{3T} = P_{4T} = \frac{m \cdot a_1 \cdot l_4}{2 \cdot l_1}$$

During uniform motion

$$P_1 = P_2 = P_3 = P_4 = \frac{mg}{4}$$

During deceleration

$$P_1 = P_4 = \frac{mg}{4} + \frac{m \cdot a_3 \cdot l_3}{2 \cdot l_1}$$

$$P_2 = P_3 = \frac{mg}{4} - \frac{m \cdot a_3 \cdot l_3}{2 \cdot l_1}$$

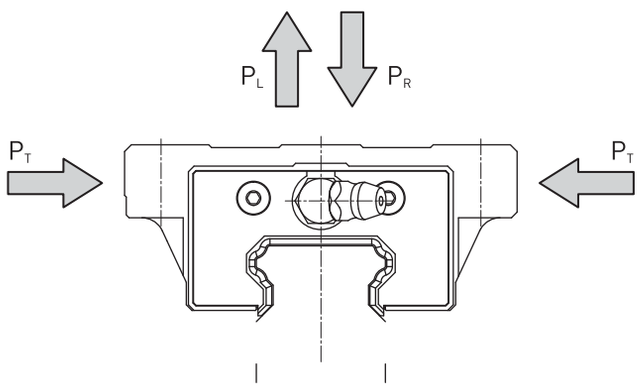
$$P_{1T} = P_{2T} = P_{3T} = P_{4T} = \frac{m \cdot a_3 \cdot l_4}{2 \cdot l_1}$$

Calculate Equivalent Load

The slider of a linear guide can simultaneously withstand loads and torques in various directions, including radial, anti-radial, and lateral forces. When multiple loads act in different directions, it is possible to convert all these loads into equivalent radial or lateral loads for calculating the service life or static safety factor. The LMG series linear guides are designed to handle equal loads in four directions. For cases where two or more (including two) guide rails are used, the calculation of equivalent load is as follows.

$$P_E = |P_{R(L)}| + |P_T|$$

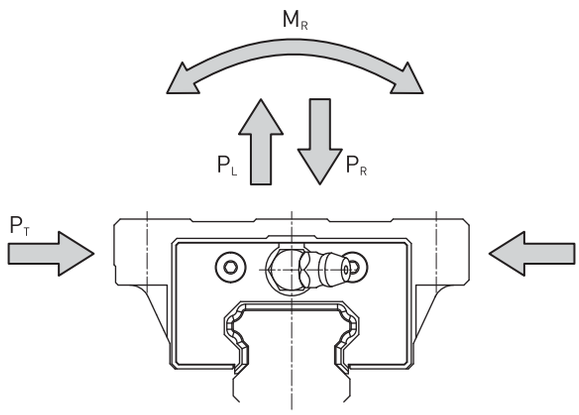
P_E Equivalent load (N)
P_R Radial load (N)
P_L Reverse-radial load (N)
P_T Lateral load (N)



In the case of using a single linear guide, the equivalent load must take into account the torque effect. The calculation formula for this is as follows.

$$P_E = |P_{R(L)}| + |P_T| + C_0 \times \frac{|M|}{M_R}$$

P_E Equivalent load (N)
P_R Radial load (N)
P_L Reverse-radial load (N)
P_T Lateral load (N)
C_0 Basic static load rating(N)
M Torque calculation value
M_R Permissible static moments



Calculate Static Safety Factor

When calculating the load applied to a linear guide, it is essential to determine both the average load required for calculating the service life and the maximum load needed for calculating the static safety factor. Particularly in cases of rapid starts and stops, or when cutting loads are involved, as well as situations where cantilever loads cause significant torque, unexpected high loads may impact the linear guide. When selecting a model, ensure that its maximum load capacity is suitable. For calculating the static safety factor, please refer to page D-02.

Calculate Average Load

In case where the load applied to each block fluctuates under different conditons, such as industrial robot's arm that grasps a moving workpiece during forward motion and experiences only the arm's own weight during backward motion, or when a machine tool's slider encounters changing loads due to various conditions, it is essential to comprehensively consider these dynamic load conditions for service life calculations.

The average load (Pm) refers to a certain load size during slider operation that has the same service life as under these varying load conditions. The basic formula for calculating the average load is as follows:

$$P_m = \sqrt[i]{\frac{1}{L} \cdot \sum_{n=1}^{n} (P_n^i \cdot L_n)}$$

P_m Average load (N)
P_n Varying load (N)
L Total distance traveled (mm)
L_n Distance traveled under load Pn (mm)
i Constant determined by the rolling elements (when rolling element is steel balls, i=3)

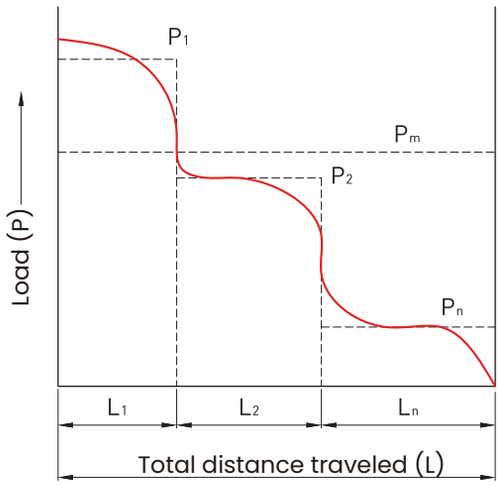
Examples of varying load

1. When the load varies in steps

Rolling element is steel balls, i=3

$$P_m = \sqrt[3]{\frac{1}{L} (P_1^3 \cdot L_1 + P_2^3 \cdot L_2 \cdots + P_n^3 \cdot L_n)}$$

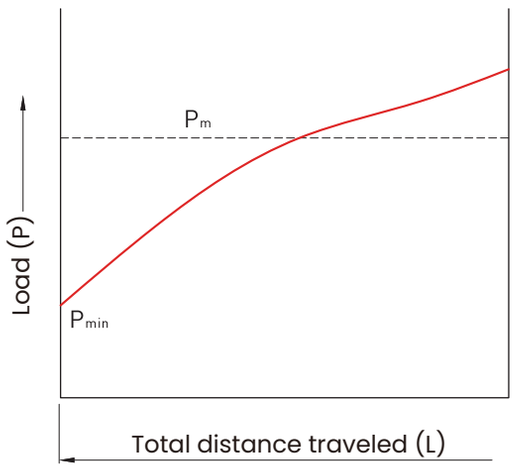
P_m Average load (N)
P_n Varying load (N)
L Total distance traveled (mm)
L_n Distance traveled under load Pn (mm)



2. When the load varies monotonously

$$P_m \cong \frac{1}{3}(P_{min} + 2 \cdot P_{max})$$

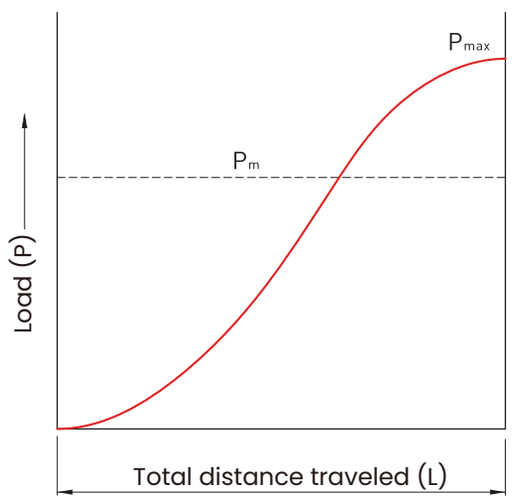
P_m Average load (N)
P_{min} Minimum load (N)
P_{max} Maximum load (N)



3. When the load varies sinusoidally

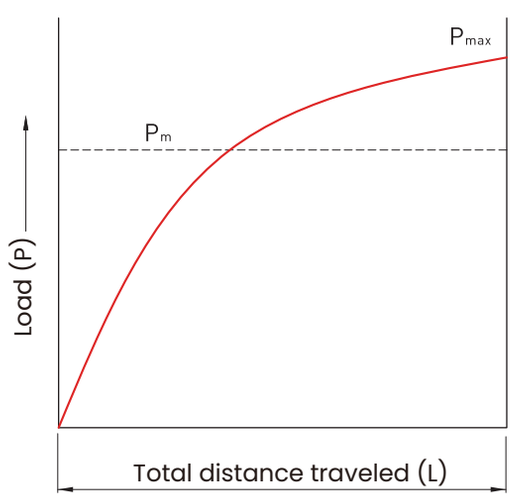
$$P_m \cong 0.65P_{max}$$

P_m Average load (N)
P_{max} Maximum load (N)



$$P_m \cong 0.75P_{max}$$

P_m Average load (N)
P_{max} Maximum load (N)



Calculate Rated Life

The service life of the linear guide is subject to variations even under the same operational conditions. Therefore, it is necessary to use the rated life as a reference value when estimating the service life of linear guides. For the calculation of rated life, please refer page E-03.

Estimate the Rigidity

Select the preload

Preload significantly affects the walking precision, load-bearing capacity, and rigidity of linear guides. In general, applying preload is beneficial for improving the service life and accuracy, especially in cases involving reciprocating motion that may cause vibration and impact.

The following are the reference criteria for preload selection:

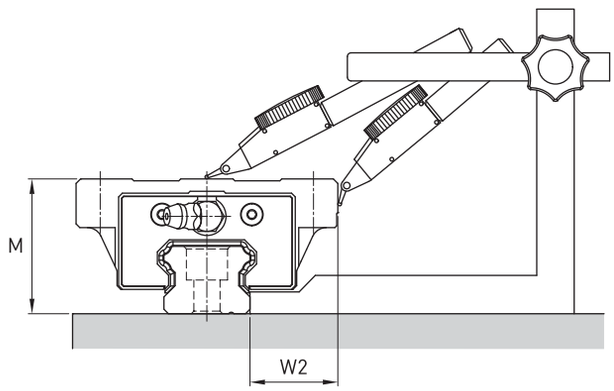
Preload	Service conditions	Sample applications
Light preload (P0)	· Fixed load direction, minimal vibration and impact, and 2 rails are installed in parallel. · Very high precision is not required, and the sliding resisitance must be as low as possible	Beam-welding machine, book-binding machine, automatic packaging machines, general industrial machinery XY axes, automatic sashing-manufacturing machines, flame cutting machine, and tool chanding machine
Medium preload (P1)	· Overhang or moment load is applied · Single axes configuration · Light weight and high accuracy are required	Grinding machine table feed axis, automatic painting machines, industrial robots, high speed machine feeder, grinding machine worktable feed axes, NC lathes, electrical discharge machining machines, measuring instruments, and precision alignment platforms
Heavey preload (P2)	· High rigidity is required and vibrations and impact are applied · Heavy-cutting machine tool	Machine center, NC lathe, grinding wheel feed axes in grinders, milling machine, centers, NC lathes, vertical or horizontal boring machines, and tool guide sections

When considering preload, it is essential to take into account the service life.
When use with medium or heavy preload, it is necessary to calculate the service life based on the preload load.

Determine the accuracy

Accuracy standard

Accuracy is specified in terms of parallelism, dimensional tolerance for height M and width W2, and height and with difference between a pair when 2 or more blocks are used on rail or when 2 or more rails are mounted on the same plane.



■ **Running parallelism**

■ **Running parallelism**

It refers to a parallelism error between the block and rail datum plane when the blovk travels the whole length of the rail with rail secured on the reference datum plane using bolts.

■ **Differences in height M (ΔM)**

Indicates a difference between the minimum maximum values of height (M) of each of the blocks used on the same plane in combination.

■ **Differences in width W2 (ΔW2)**

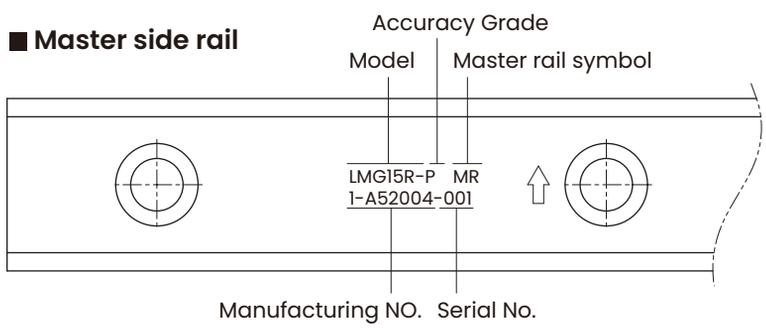
Indicates a difference between the minimum maximum values of width (W2) of each of the blocks, mounted on one rail in combination, and the rail.

Notes:

1. When 2 or more rails are used on the same plane in parallel, only the width (W2) tolerance and the difference on the master rail apply. The master rail is imprinted with"MR"(except for normal grade of accuracy) in the end.

2. Accuracy measurements each represent the average value of the central point or the central area of the block.

■ **Master side rail**



Guidelines for accuracy grades

Guidelines for selecting an accuracy grades of Guides Lines according to the machine type.

Type of machine		Acurracy grade				
		Normal N	High H	Precision P	Super Precision SP	Ultra Precision UP
Machine Tool	Machine center			●	●	
	Lathe			●	●	
	Milling machine			●	●	
	Drilling machine			●	●	
	Jig borer				●	●
	Grinder machine				●	●
	Elecric discharge machine			●	●	●
	Punching press		●	●		
	Laser beam machine		●	●	●	
	Woodwoking machine	●	●	●		
	NC drilling machine		●	●		
	Tapping center		●	●		
	Pallet changer	●				
	ATC	●				
	Wire cutting machine			●	●	
	Dressing machine				●	●
Idustrial robot	Cartesian coordinate	●	●	●		
	Cylindrical coordinate	●	●			
Semiconductor manufacturing machine	Wire bonding machine			●	●	
	Prober				●	●
	Electronic component inserter		●	●		
	Printed circuit board drilling machine		●	●	●	
Others	Inject molding machine	●	●			
	3D measuring instrument				●	●
	Office equipment	●	●			
	Conveyance system	●	●			
	XY table		●	●	●	
	Coating machine	●	●			
	Welding machine	●	●			
	Medical equipment	●	●			
	Digitizer		●	●	●	
	Inspection machine			●	●	●

Design Reference Elements

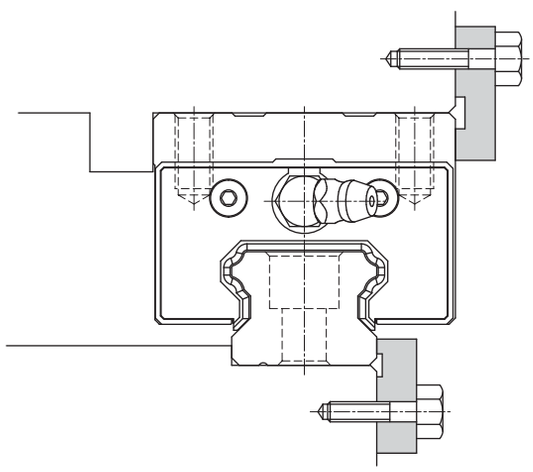
■ Design of Structure

Linear Guide Installation Method

When there are vibrations or impacts in the machinery, the linear guide and block may deviate from their original fixed positions, affecting operational precision and lifespan. To prevent this situation, it is recommended to secure the linear guide and slider using the following methods.

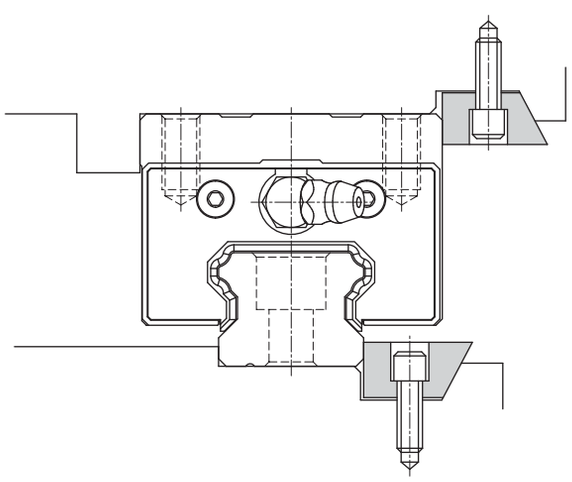
■ Pressure Plate Fixation Method

Ensure that the side surfaces of the guide and slider slightly protrude from the edges of the bed or worktable. The pressure plate should be machined with grooves to avoid interference with the corners of the guide or slider during installation.



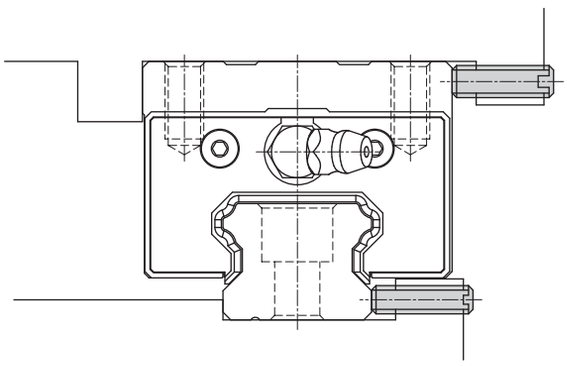
■ Tapered Wedge Fixation Method

Apply pressure to the tapered wedge for secure fixation. Be cautious not to apply excessive force, as it may cause bending of the guide or deformation of the outer shoulder. Proper attention to the tightening force is essential during installation.



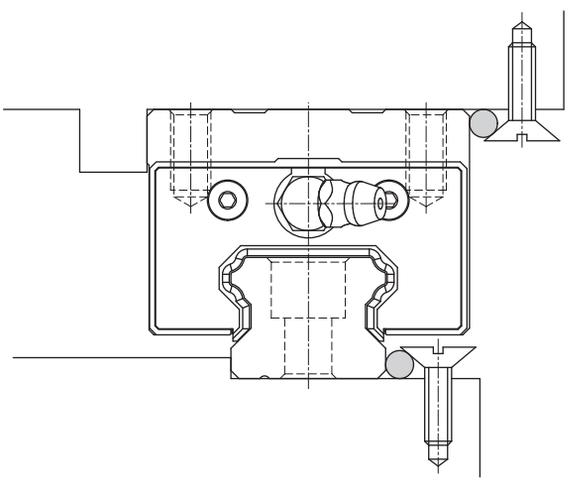
■ Positioning Bolt Fixation Method

Due to space limitations, avoid using excessively large bolts.



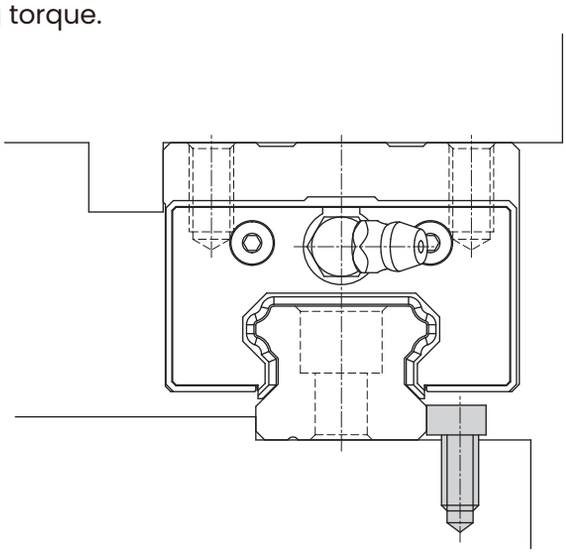
■ Roller Fixation Method

Use inclined surfaces on the bolt heads to press the rollers. Pay special attention to the position of the bolt heads.



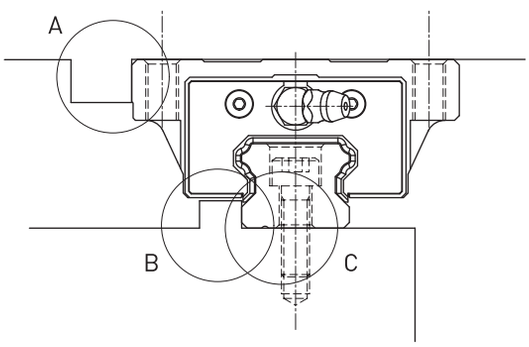
■ Clamping Bolt with Eccentric Head Fixation Method

After fixing the clamping bolt with eccentric head, apply pressure to the eccentric head of the clamping for secure fixation. When tightened, the eccentric head of the bolt exerts strong clamping force by utilizing the wedge effect, allowing significant clamping force with a small tightening torque.



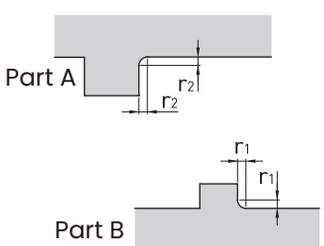
Design of Mounting Surface

When installing linear guide rails, especially in equipment requiring high precision, it is necessary to install the linear tracks with high accuracy. At this time, please pay attention to the following points to design the mounting surface.



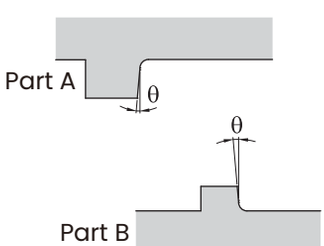
Angle Shape

Refers to the shape of the corner on the mounting surface of linear guide rails or blocks. If it is machined with an R shape larger than the chamfer size of the linear guide rail or block, it may not correctly contact reference surface. Therefore, when designing the mounting surface, pay attention to the "angle shape" specified in each item.



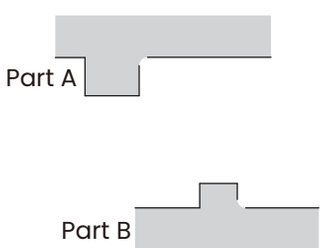
Perpendicularity of Reference Surface

If the perpendicularity accuracy between the mounting surface of linear guide rails or blocks and reference surface cannot be guaranteed, it may not correctly align with reference surface. Therefore, during design, be mindful of the angular deviation between the mounting surface and the reference surface.



Dimension of Reference Surface

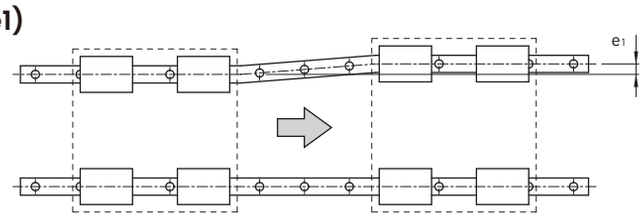
When designing the datum surface for linear guides, consider the height and thickness of reference surface. If it is too high, there is a risk of interference; conversely, if it is too low, it may not properly align due to the chamfer of linear guide rails or blocks. Additionally, if the thickness of the linear guide is too low, it may lack of rigidity when subjected to lateral loads or when using lateral thrust bolts for positioning, leading to poor accuracy. Pay close attention to these factors.



Tolerance of Mounting Surface

The linear guide series with self-aligning properties can achieve smooth linear motion even when the mounting surface has slight machining errors. Below are the allowable surface deviation values when there is no impact on rolling resistance or lifespan.

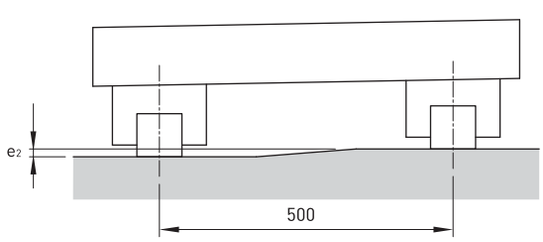
■ Parallelism error (e1)



Unit: μm

Model	Preload		
	P0	P1	P2
LMG 15	25	18	-
LMG 20	25	20	18
LMG 25	30	22	20
LMG 30	40	30	27
LMG 35	50	35	30
LMG 45	60	40	35

■ Horizontal error (e2)



Unit: μm

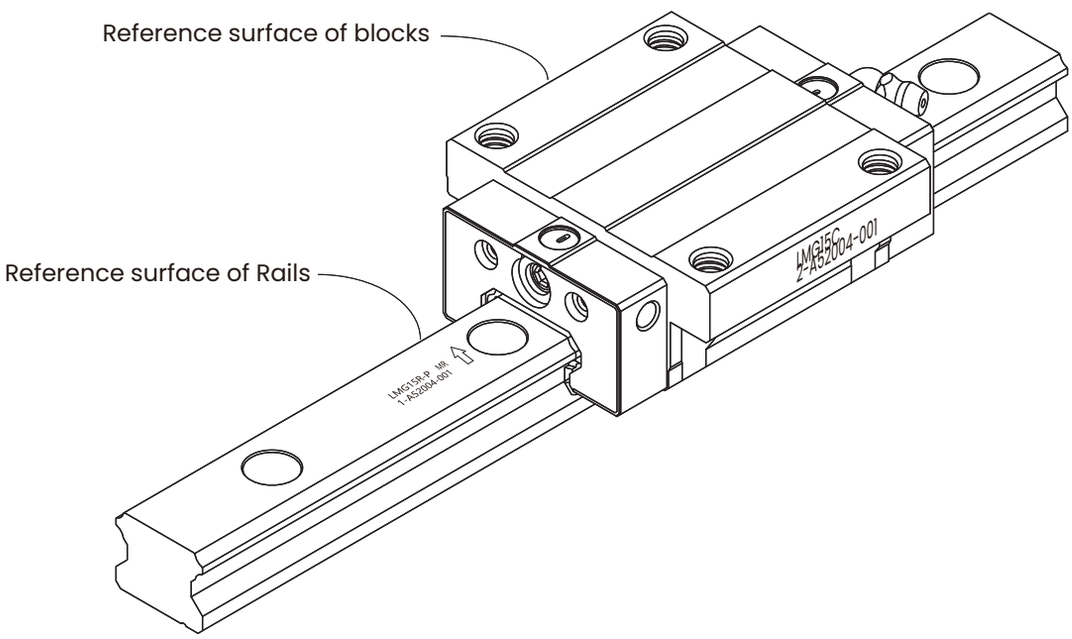
Model	Preload		
	P0	P1	P2
LMG 15	130	85	-
LMG 20	130	85	50
LMG 25	130	85	70
LMG 30	170	110	90
LMG 35	210	150	120
LMG 45	250	170	140

Note: The values in the table represent the permissible limits when the axis spacing is 500 mm, and these limits are proportional to the axis spacing.

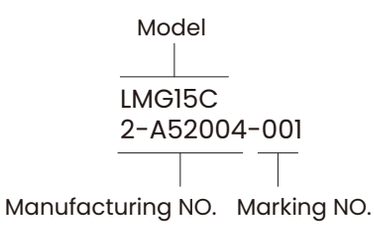
Marking on the Master Guide and Combined Use

Marking on the Reference Surface

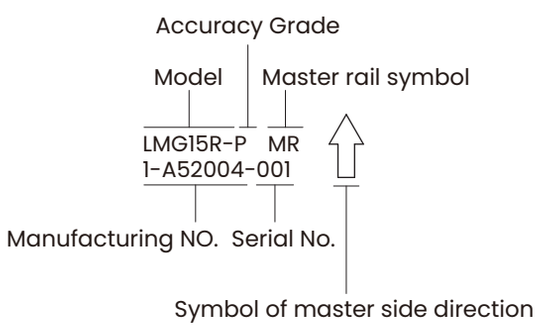
On the guide rail, the reference surface direction is indicated by the arrow pointing toward the model and manufacturing number mark. However, on the block, it is on the opposite side of the model and manufacturing number mark, as shown as below.



■ Mark on blocks



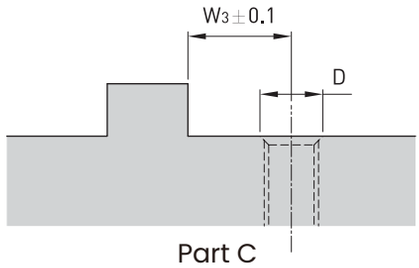
■ Mark on Rails



Note: The slider code of the assembly component corresponds to its mating guide rail code.

Tolerance of the Datum hole size

The size tolerance from the reference surface of the guide rail or block to the mounting hole should not be too large, as it may prevent correct positioning during installation. Typically, depend ing on the model, the tolerance should be set within ±0.1 mm.



Chamfering of threaded holes

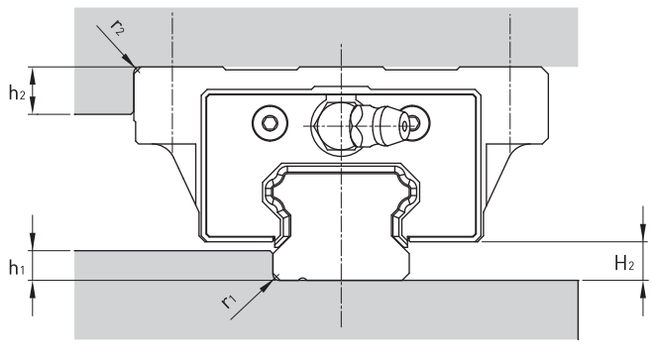
The chamfering of threaded holes during installation is essential for accurate positioning of guide rails. If the chamfer is too large or too small, it can adversely affect precision.

■ Chamfer dimensions

Chamfer inner diameter(D) =
bolt nominal dameter + pitch
Eg: M6 (pitch is 1)
Chamfer inner diameter(D) = 6+1=7

Shoulder Height and Coners'Shape of Mounting Surface

Usually, mounting surface of rails and blocks has a reference surface on their side. This is for ease of assembly and precise positioning. The height of this reference surface shoulder varies depending on the model. Additionally, the corner of the installation shoulder should be machined with a recessed section or a radius smaller than the corner angle to prevent interference with the chamfer of the rail or block.



The radius of the corner (denoted as 'r') varies depending on the model.
Please refer to the table below.

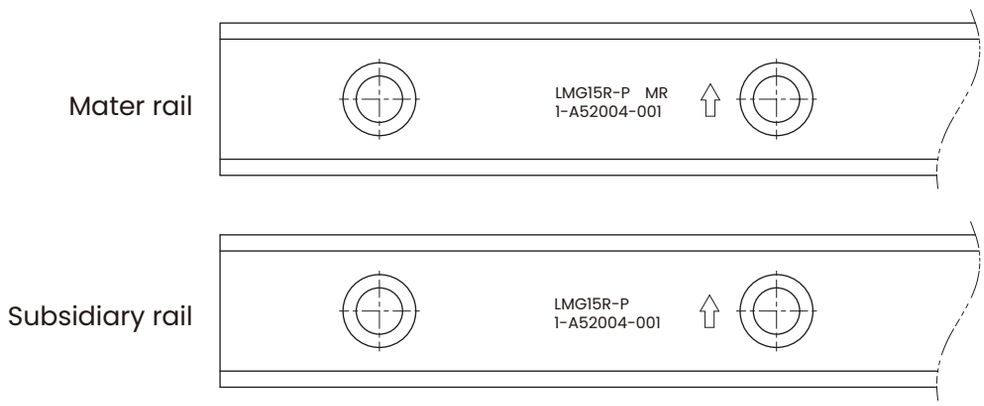
Unit: mm

Model	r1 max.	r2 max.	h1	h2	H2
LMG 15	0.5	0.5	3	4	4.5
LMG 20	0.5	0.5	3.5	5	5
LMG 25	1	1	5	5	6.5
LMG 30	1	1	5	5	8.5
LMG 35	1	1	6	6	9.5
LMG 45	1	1	8	8	11

Marking on the Master Rail

All LM rails mounted on the same plane are marked with the same serial number. The rail marked with “MR” after the serial number is the master rail. The block on the master rail has its reference surface finished to a designated precision, allowing it to serve as the positioning reference for tables. Normal grade linear guides are not marked with“MR.” Therefore, any one of the LM rails having the same model number can be used as the master rail.

■ Mark on mater rail



Use of Rails and Carriage

The rail and block(s) used in combination must have the same model number. When removing a block from the rail and reinstalling the block, make sure that they have the same model number and the numbers are oriented in the same direction.

Use of Jointed Rails

When a long LM rail is ordered, two or more rails will be jointed together to the desired length.

When jointing rails, make sure that the joint match marks shown in Fig.(A) are correctly positioned.

When jointing two rails, it is recommended to stagger the joint positions to avoid recision variations when the blocks passes through the joint. Please refer to Fig.(B) for illustration.

- Use of joint match mark

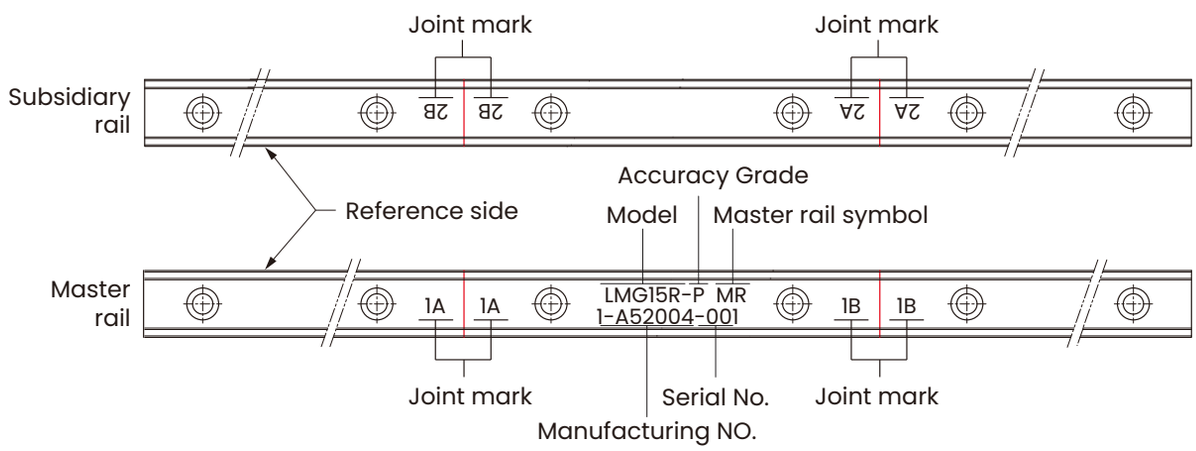


Fig. (A)

- Stagger the joint position

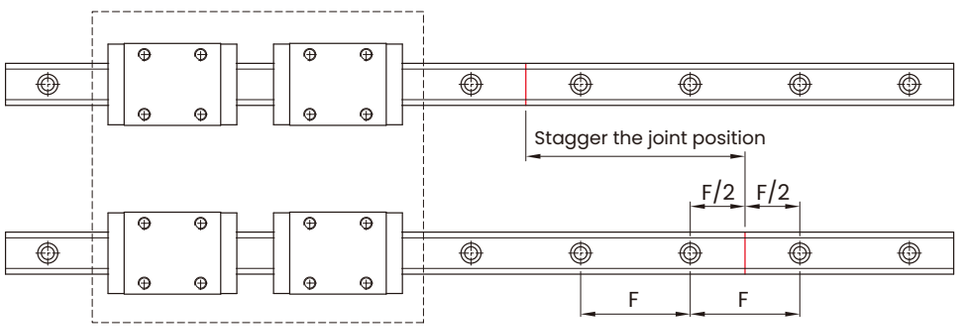
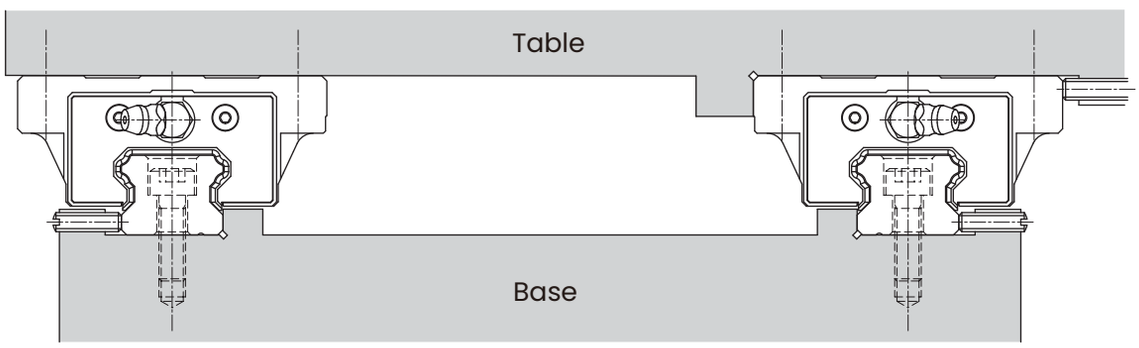


Fig. (B)

Mounting of Linear Guide

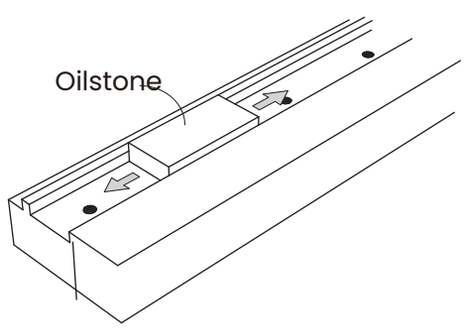
Mounting Procedure

When installing in a mechanical system with vibration and impact effects, and when high rigidity and high precision are required.

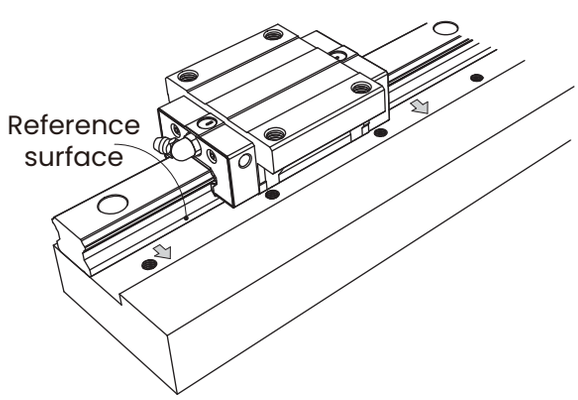


(1) Mounting the Rails

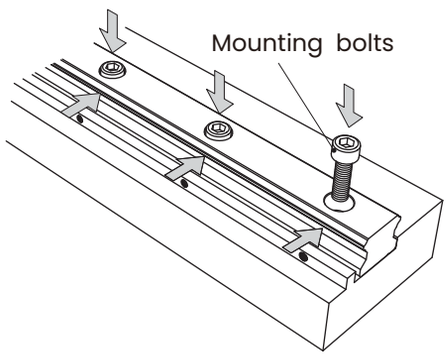
1. Before installation, ensure that any burrs and dusts are removed from the machining surface of the machine bed.



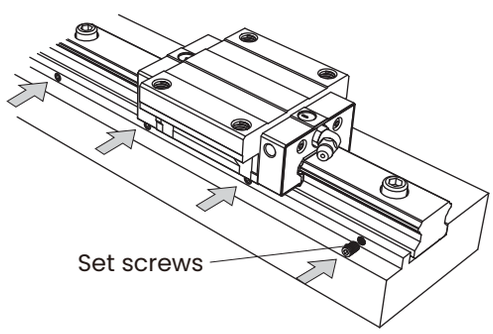
2. Gently place the linear guide on the base , aligning the reference surface of the guide with the lateral mounting surface of the bed. Note that both sides of the guide slider can serve as reference faces.



3. Secure the mounting bolts without fully tightening them. Ensure that the reference face of the linear guide aligns closely with the lateral mounting surface of the machine bed. Before installation, verify that the bolt holes match the assembly bolts.

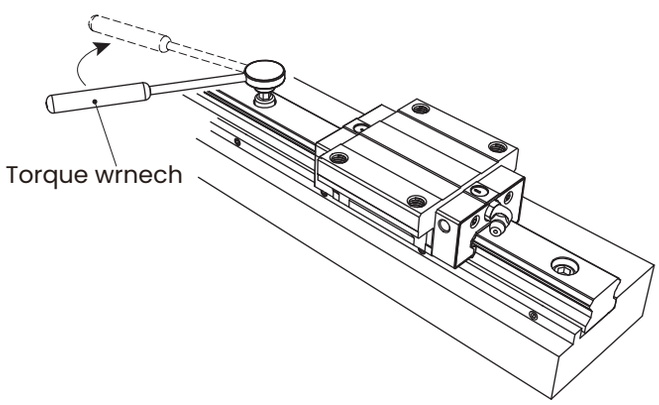


4. Gradually tighten the Set screws to ensure a snug fit between the linear guide and the machine bed's lateral mounting surface.



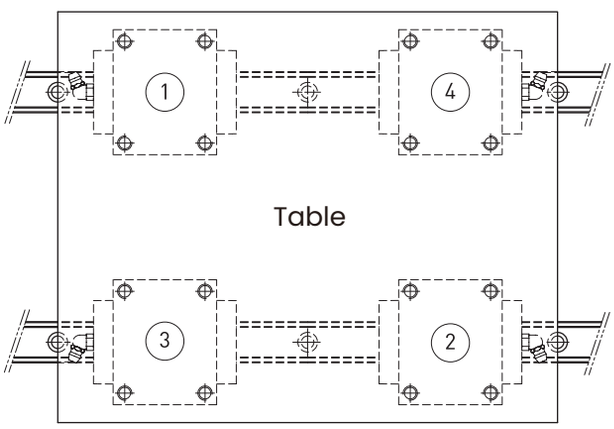
5. Use a torque wrench to tighten the assembly bolts to the specified torque value. Follow a sequence from the center of the guide towards both ends for consistent precision.

6. Install the remaining paired guides following steps 1 to 5.

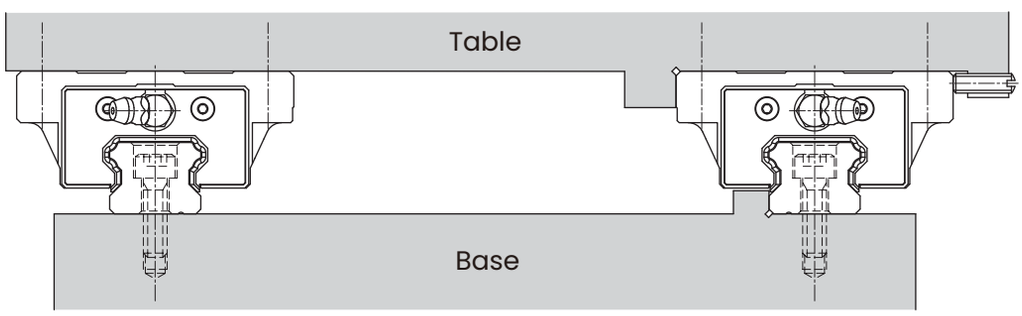


(2) Mounting the blocks

1. Gently place the table on the blocks and temperarily fasten the mounting bolts.
2. Press the master side blocks to the side reference surface of the table using se screws and position the table.
3. Fully fasten the mounting bolts on the master side and subsidiary side to complete the installation.

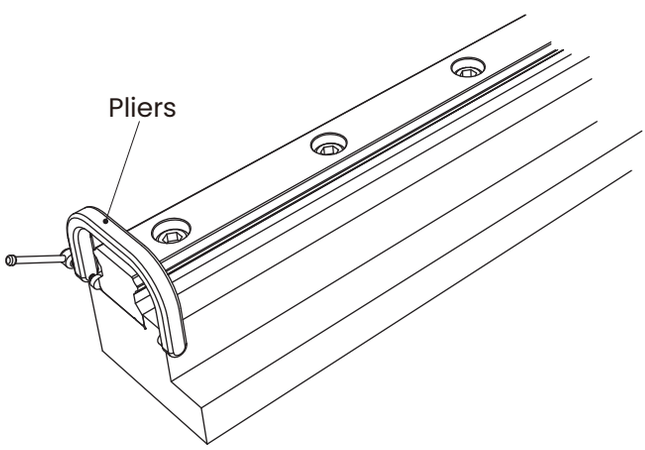


■ Mounting the guide when the master rail is not provided with set screws



(1) Mounting the Master Rail

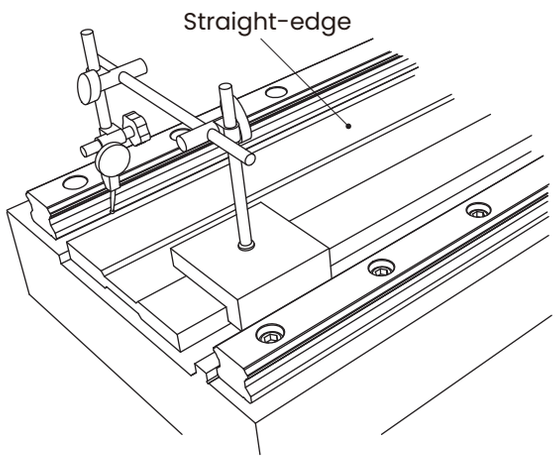
After temporarily fastening the mounting bolts, firmly press the rail to the side reference surface at the position of each mouting bolt using a small vice and fully fasten the bolts.Perform this in order from either rail end to the other.



(2) Mounting the Subsidiary Rail

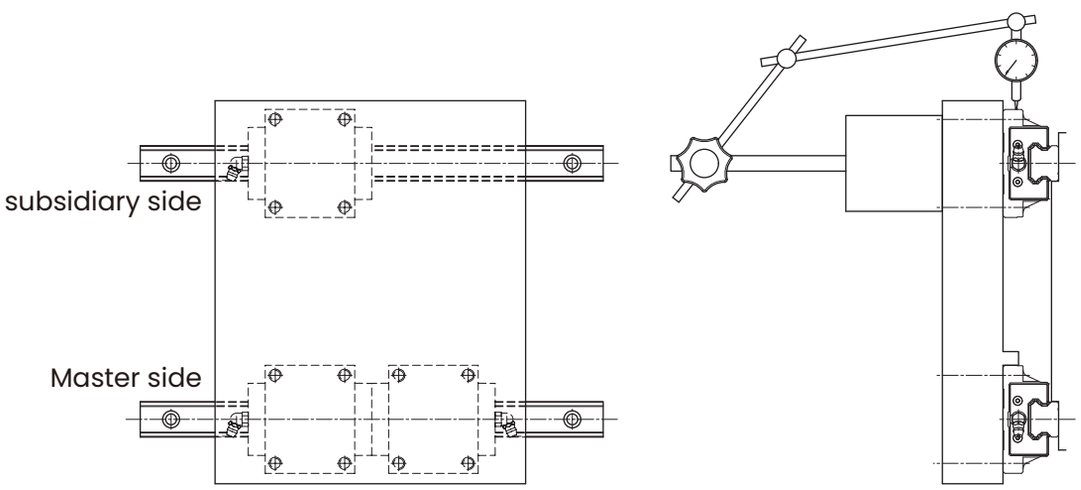
■ Using a Straight-edge

Place straight-edges between two rails, and arrange the straight-edge in parallel with the side reference of the master rail using a dial gauge. Then, secure the mounting bolts in order while achieving straightness of the subsidary rail with the straight-edge as the reference by using the dia gauge.



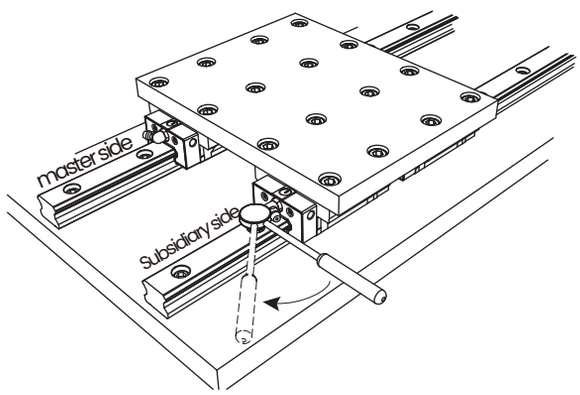
■ Moving Worktable

Secure the two LM blocks on the master rail with the table (or a temporary table for measurement), and temporarily fasten the rail and the block on the subsidiary rail with the table. Place a dial gauge to the side face of the block on the subsidiary rail from the dial stand fixed on the table top, then fasten the bolts in order while achieving parallelism of the subsidiary rail by moving the table from the rail end.



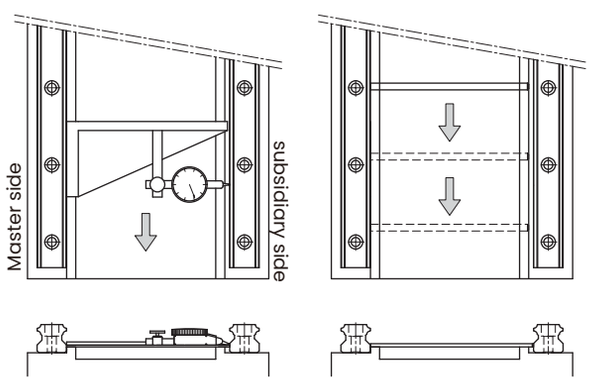
Having Subsidiary Rail Follow Master Rail

Place the table on the blocks of the correctly mounted master rail and the temporarily fastened subsidiary rail, and fully fasten the two blocks on the master rail and one of the two blocks on the subsidiary rail with bolts. Fully tighten the mounting bolts on the subsidiary rail in order while temporarily fastening the remaining block on the subsidiary rail.

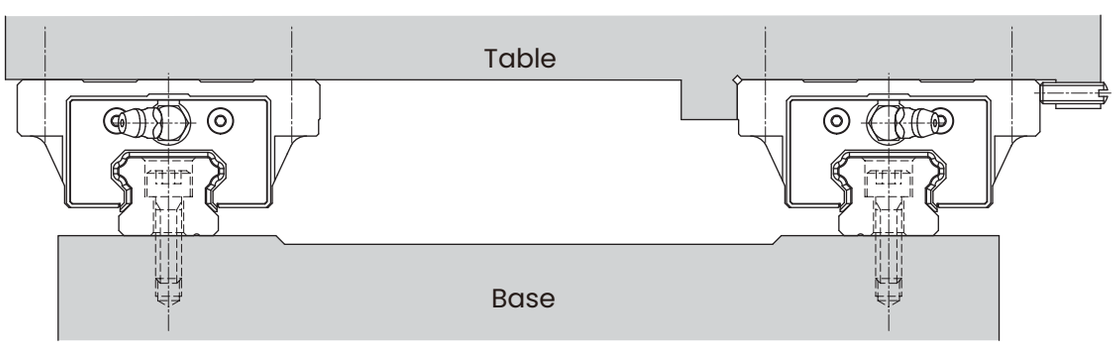


Using a Straight-edge

After temporarily fastening the mounting bolts, use a dial gauge to check the straightness of the side reference surface of the LM rail from the rail end, and at the same time, fully fasten the mounting bolts.



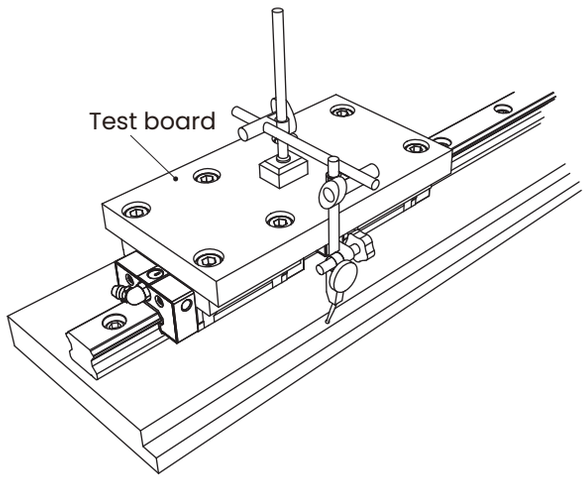
Mounting the guide when the master rail does not have a reference surface



(1) Mounting the Master Rail

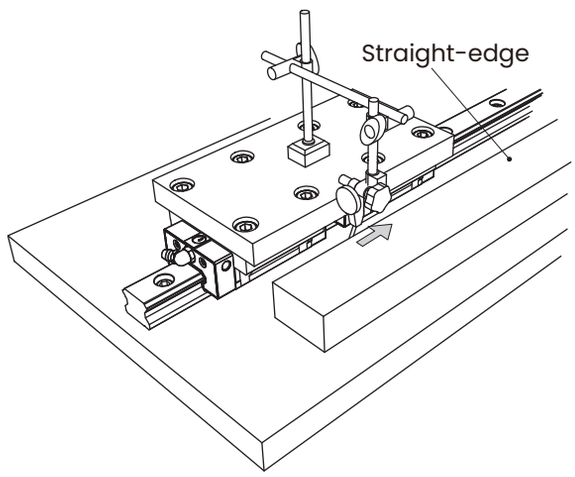
■ **Using a Temporary Reference Surface**

Temporarily set a reference surface near the rail mounting position on the base to achieve straightness of the rail from the rail end. In this method, two blocks must be joined together and attached to a measurement plate.



■ **Using a Straight-edge**

After temporarily fastening the mounting bolts, use a dial gauge to check the straightness of the side reference surface of the LM rail from the rail end, and at the same time, fully fasten the mounting bolts.

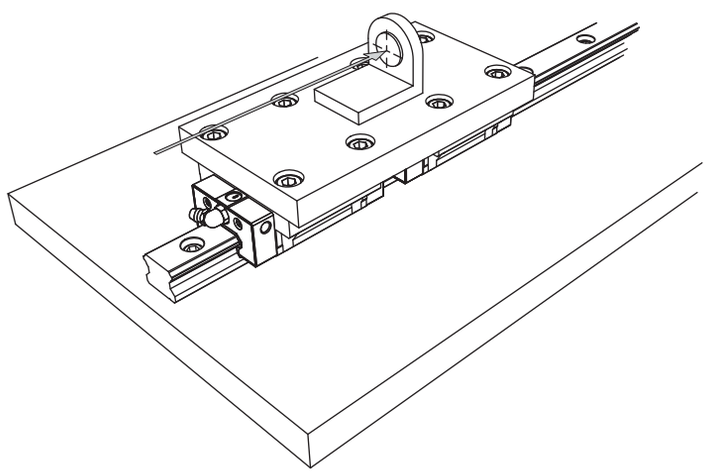


(2) Procedure of Mounting Subsidiary Rail and Block Follows the same specifications as mentioned earlier.

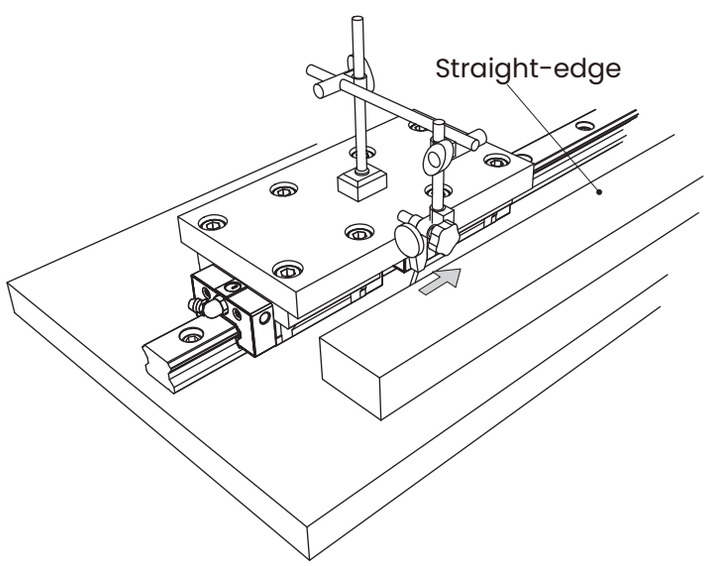
Method for Measuring Accuracy after Installation

When measuring running accuracy of the block, stable accuracy can be obtained by securing two blocks on an inspection plate. When using a dial gauge, we recommend placing the straight-edge as close as possible to the block in order to perform accurate measurement.

■ **Measurement method using an auto-collomator**



■ **Measurement method using a dial gauge**



Linear Guide precautions for use

Operation

1. After tilting, the slider and guide may slide due to their own weight. Please be vigilant.
2. Do not drop or strike the linear guide, as it may cause scratches or damage. Even if no visible damage is apparent, impact can still impair functionality.
3. Refrain from disassembling the slider on your own, as it could introduce foreign particles or negatively affect assembly precision.
4. Be mindful of preventing foreign objects from entering the slider. Damage to the steel ball circulation components may compromise functionality.
5. Avoid using the linear guide in environments exceeding 80°C (176°F). Instantaneous temperatures should not exceed 100°C (212°F).
6. When disassembling or replacing the slider from the guide, use rail clamps for assistance. Only detach the slider from the guide when necessary.
7. If operating in environments with frequent vibration, high dust, extreme temperatures (hot or cold), or other challenging conditions, please consult CSK.

Lubrication

1. Thoroughly remove anti-corrosion oil and feed lubricant before using the product.
2. Refrain from combining lubricants with different properties.
3. When using oil lubricants, be aware that due to installation orientations, lubricating oil maynot reach all internal areas of the blocks, please contact CSK for details.
4. Please apply grease every 100km of travel for reference.

Storage

When storing linear guide rails, make sure to apply rust-proof oil and seal them in the specified cover. Place them horizontally and avoid environments with high or low temperatures and excessive humidity. The recommended operating temperature should not exceed 80°C, and avoid sudden temperatures exceeding 100°C.

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