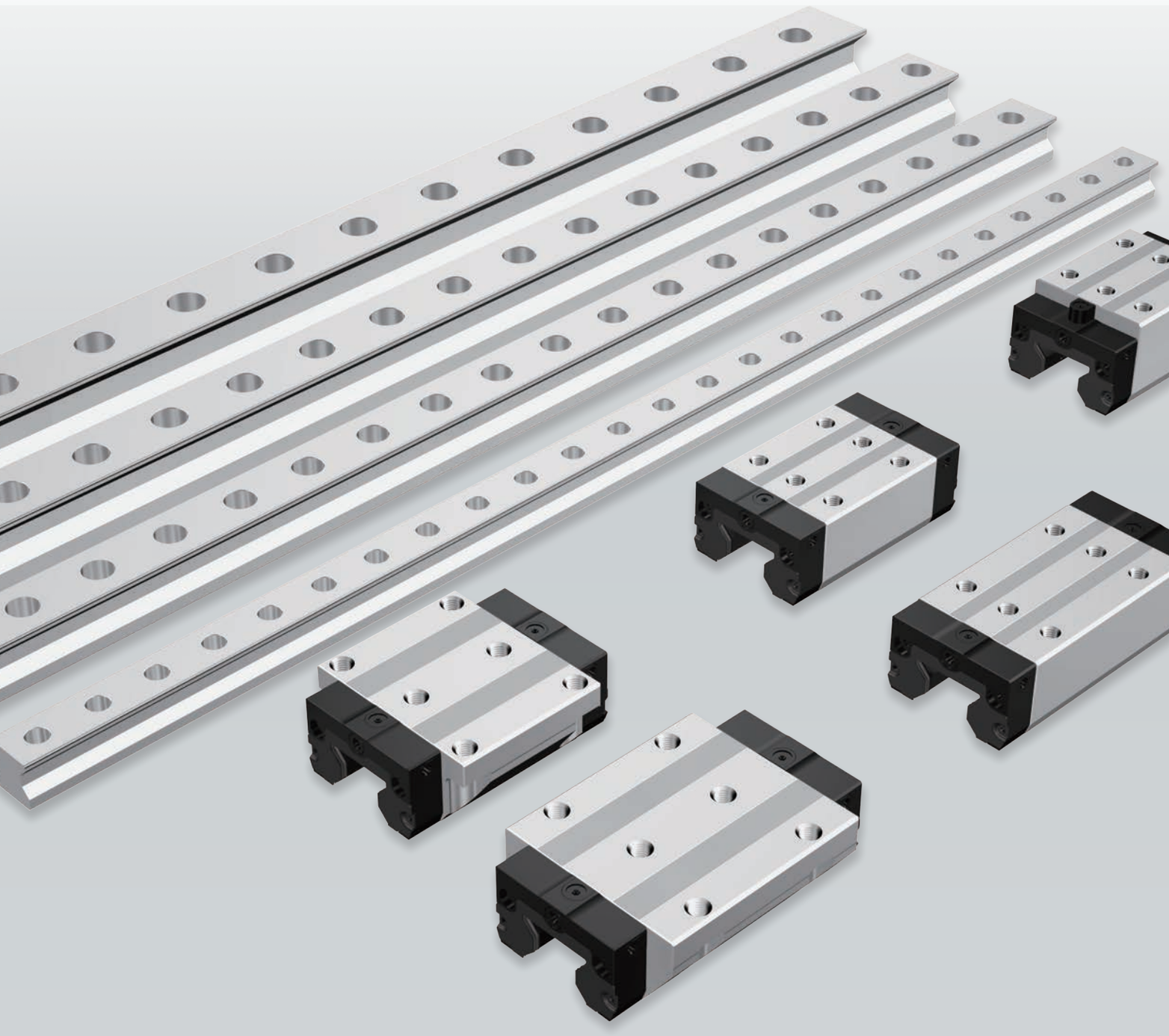
THK

ISO 12090-1 Compliant Standard Product

Full-Roller LM Guide

LM Blocks, LM Rails, and Optional Products Available for Individual Sale

Model Numbers: ERG35 to 65



An ultra-high rigidity Full-Roller LM Guide built for ease of use

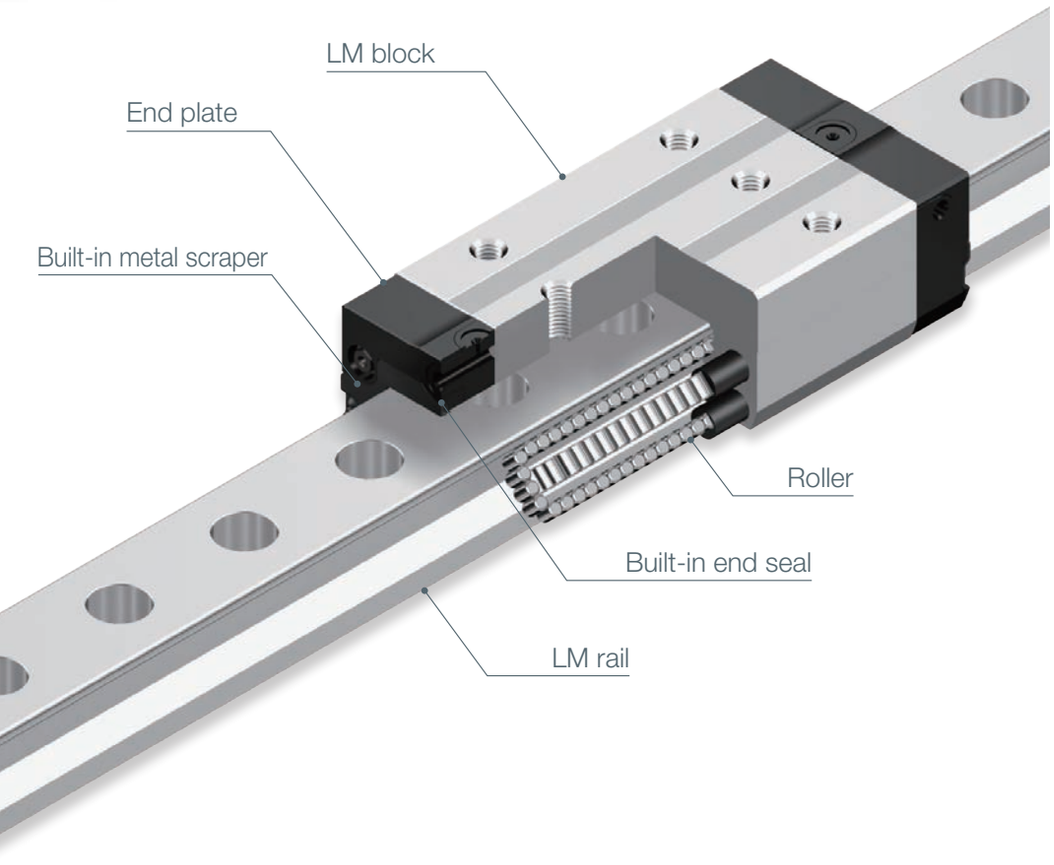
Full-Roller LM Guide

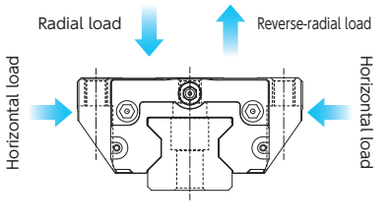
LM Blocks, LM Rails, and Optional Products Available for Individual Sale

Model Numbers: ERG35 to 65

Structure and Features

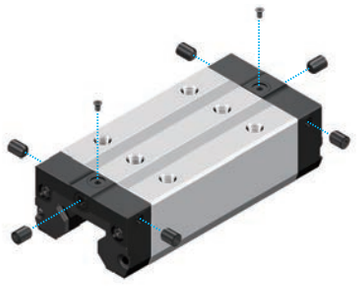
Each row of rollers is arranged at a 45° contact angle so the LM block will have an equal load rating in all directions: radial, reverse-radial, and horizontal. This ensures high rigidity in all directions.





Four-way equal load

The same load can be supported from all four directions.



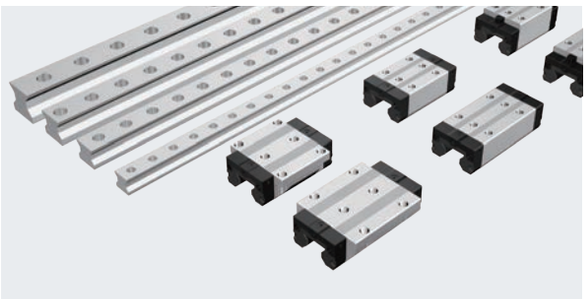
Front/side/top lubrication

You can use whichever lubrication hole you prefer on the LM block. Either grease or oil can be used as the lubricant. Please see the manual for the recommended lubrication conditions.

Note: An A-MT6 grease nipple and an O-ring for upper surface lubrication are included.

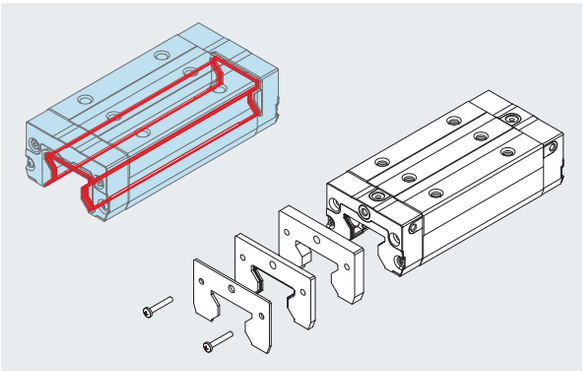
LM Blocks and LM Rails Available for Individual Sale

THK offers a lineup of interchangeable LM blocks and LM rails that can be flexibly combined with others of the same model number to meet your specifications.



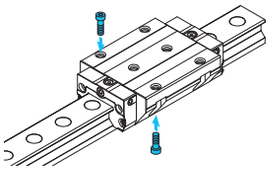
Optional External Accessories Also Available

This product incorporates an integrated contamination protection structure within the block. The block ends come standard with metal scrapers and double-lip end seals that offer excellent wear resistance. For applications exposed to environments with more severe contamination, additional external options can be added to further enhance contamination protection performance.



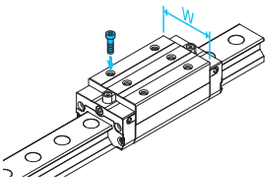
Lineup

Model ERG-C/LC



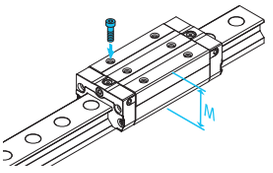
The flange of this LM block has tapped holes. This type can be mounted from the top or the bottom.

Model ERG-R/LR



With this type, the LM block has a narrower width (W) and tapped holes. It is ideal for compact designs.

Model ERG-V/LV



This type has a shorter height (M) than the R/LR and a more compact design.

Block type		ERG 35	ERG 45	ERG 55	ERG 65
Standard type	C	○	○	○	○
	R	○	○	○	—
	V	○	○	○	○
Long type	LC	○	○	○	○
	LR	○	○	○	—
	LV	○	○	○	○

○: Available —: Unavailable

Model Number Coding

Select an option | Fixed symbol

■ LM block

ERG45 P5 LC C0 N 1

- **ERG45** — Model No.
- **P5** — Accuracy symbol
  - P6: High Accuracy grade
  - P5: Precision grade
  - P4: Super Precision grade
- **LC** — Type of LM block
- **C0** — Radial clearance symbol
  - C1: Light preload
  - C0: Medium preload
- **N** — Lubrication
  - N: Anti-rust oil only
  - G: AFB-LF Grease + Anti-rust oil

  Note: Please select "N" for oil lubrication.
- **1** — Internal contamination prevention accessory symbol

■ LM rail

ERG45 P5 - 1000L A - TA - G/g

- **ERG45** — Model No.
- **P5** — Accuracy symbol
  - P6: High Accuracy grade
  - P5: Precision grade
  - P4: Super Precision grade
- **1000L** — LM rail length (in mm)
- **A** — Rail specifications
  - A: Normal
  - B: Plate cover compatible
  - C: GC cap compatible
  - D: Tapped-hole type

  ► p. 4 ► p. 6
- **TA** — Symbol for LM rail jointed use
  - No symbol: Normal
  - TA: End joint rail
  - TB: Intermediate joint rail

  ► p. 4
- **G/g** — G/g dimensions

  Note: A numerical value must be specified here. See p. 6 for the definition of the G/g dimensions.

■ External contamination protection accessory + Lubricator

ERG45 - 1A KIT

- **ERG45** — Model No.
- **1A** — External contamination protection accessory + Lubricator

  ► p. 3
- **KIT** — External contamination protection accessory + Lubricator symbol

■ Plate cover options

ERG45 - PC - 1000L

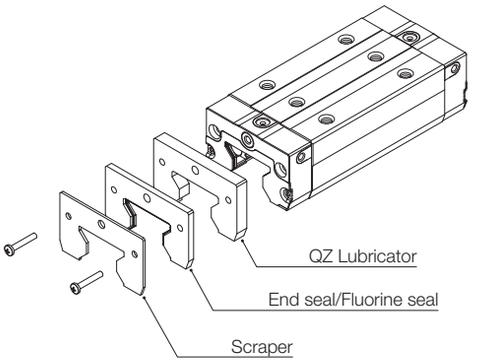
- **ERG45** — Model No.
- **PC** — Plate cover options
  - PC: Plate cover
  - PT: Protective caps
  - ST: Cover stamper

  ► p. 4
- **1000L** — Plate cover length
  - 1000L: Pre-cut type (cut to match the rail length) (mm)
  - 90M: Plate cover roll length (90 m only)
  - No symbol: Used when PT or ST is selected

Accessories

■ External contamination protection accessory + Lubricator

These accessories come with mounting screws for easy installation onto the end of the block, so there is no need to prepare any additional parts. This kit is only for the end of the block shown in the figure below. If you wish to install accessories on both ends of the block, please order two.



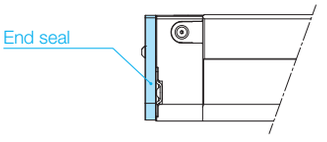
Exterior Drawing

Option Compatibility

Symbol	External contamination protection accessory + Lubricator
01	End seals
02	Fluorine seals
0A	End seals + metal scrapers
0B	Fluorine seals + metal scrapers
11	QZ + End seals
12	QZ + Fluorine seals
1A	QZ + End seals + metal scrapers
1B	QZ + Fluorine seals + metal scrapers

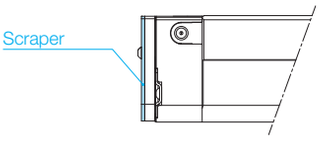
End Seal

An elastomer double-lip seal enhances contaminant exclusion performance in harsh environments.



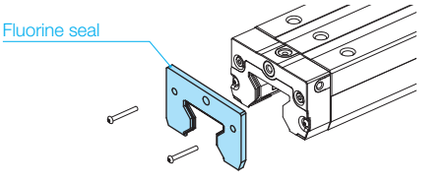
Metal Scraper (Non-Contact)

A metal scraper is effective at removing relatively large chips and spatter.



Fluorine Seal

Fluorine seals provide outstanding chemical stability and deliver reliable performance in environments exposed to aggressive coolants and cleaning agents.

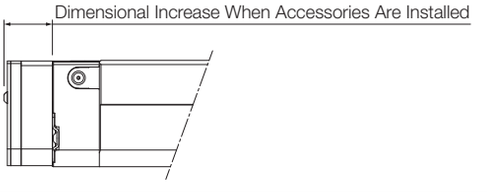


QZ Lubricator

The QZ Lubricator feeds the right amount of lubricant to the LM raceway so that an oil film can constantly be formed between the rollers and the raceway. This allows for longer periods between reapplications of lubricant.

- It replenishes lost oil and maintains constant lubrication.
- It provides the right amount of lubricant to prevent spatter.

Dimensional Increase When Accessories Are Installed



Unit: mm

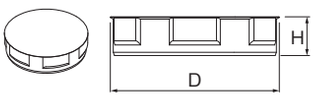
Model No.	01	02	0A	0B	11	12	1A	1B
	End seals	Fluorine seals	End seals + metal scrapers	Fluorine seals + metal scrapers	QZ + End seals	QZ + Fluorine seals	QZ + End seals + metal scrapers	QZ + Fluorine seals + metal scrapers
ERG35	6.7	6.7	7.9	7.9	21.7	21.7	22.9	22.9
ERG45	6.7	6.7	8.3	8.3	21.7	21.7	23.3	23.3
ERG55	7.2	7.2	8.8	8.8	27.2	27.2	28.8	28.8
ERG65	7.8	7.8	9.4	9.4	27.8	27.8	29.4	29.4

■ Dedicated Cap for LM Rail Mounting Holes

Using dedicated caps to cover the LM rail mounting holes helps prevent foreign material from entering the mounting holes and LM block. Caps are not included with rails and must be ordered separately.

CV Caps

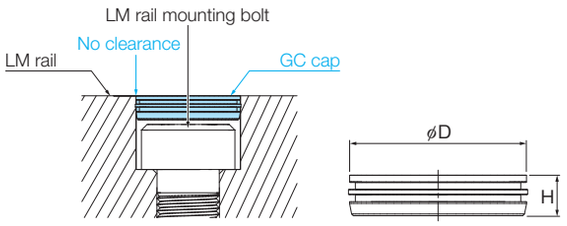
CV caps are made of a special synthetic resin. When using CV caps, please select “A” for the rail specification. (See p. 2)



Model No.	Cap model	Bolts used	Main dimensions (mm)	
			D	H
ERG35	CV8	M8	14.4	3.3
ERG45	CV12	M12	20.4	3.4
ERG55	CV14	M14	23.4	5.5
ERG65	CV16	M16	26.4	5.6

GC Caps

GC caps are made of gunmetal. (They are RoHS compliant.) They adhere closer to the counterbore than CV caps, so there is no clearance once they are inserted. When using GC caps, please select “C” for the rail specification. (See p. 2)

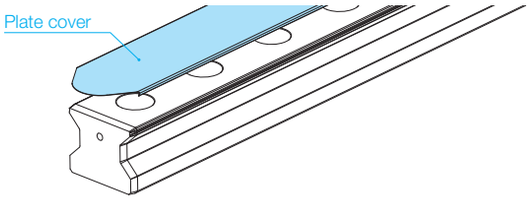


Model No.	Cap model	Bolts used	Main dimensions (mm)	
			D	H
ERG35	GC8	M8	14.36	3.5
ERG45	GC12	M12	20.36	4.6
ERG55	GC14	M14	23.36	5
ERG65	GC16	M16	26.36	5

Note: The openings of the rail mounting holes for GC caps are sharp. Please wear protective gloves when handling them to avoid cutting your hand.

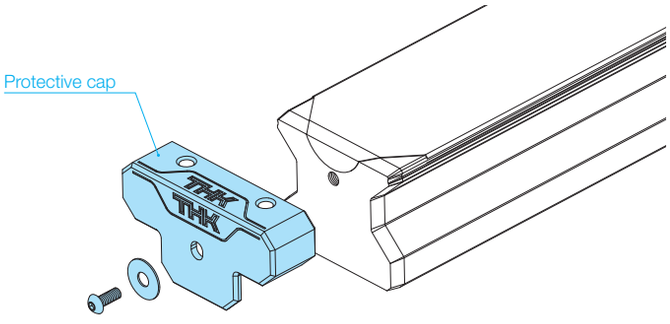
■ Plate Cover

A plate cover can be placed over the entire upper surface of the LM rail to better prevent foreign materials from getting inside the LM block. Special tools that suit the installation method for the plate cover are available. When using a plate cover, please select “B” for the rail specification. (See p. 2) Plate covers are not included with rails and must be ordered separately.



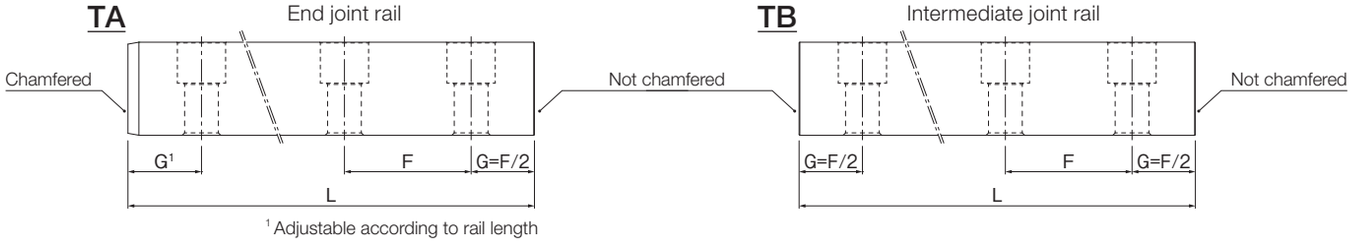
■ Protective Cap

Protective caps secure the plate covers at both ends of the rail.

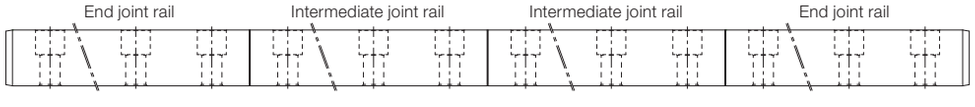


Joint LM Rail

Joint rails come in two types: end rails and intermediate rails. These are useful for many applications, as you can use either side as the reference surface, choose the number of rails, and combine them freely in any order. The distance between the outermost mounting hole and the end surface on the joint side is fixed at half the length of mounting hole pitch F.



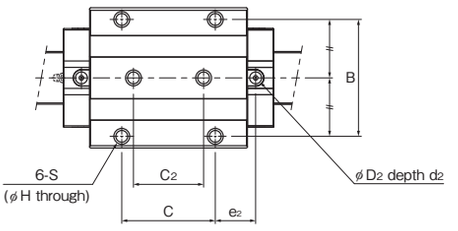
[1] Adjustable according to rail length

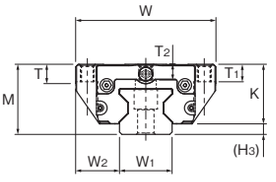


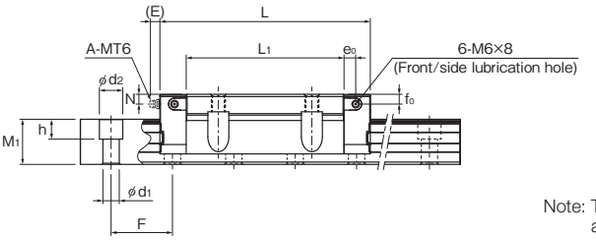
Note: The ends of joint rails are sharp. Please wear protective gloves when handling them to avoid cutting your hand.

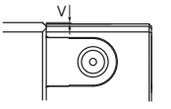
Dimensional Tables

Models ERG-C and ERG-LC









Dimensions for the location of the top face lubrication hole

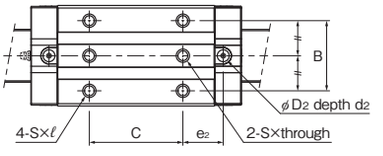
Note: These dimensions are for when a grease nipple is attached to the front.

Unit: mm

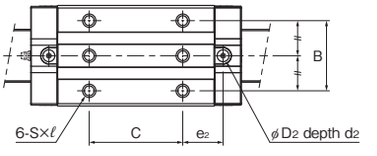
Model No.	External dimensions			LM block dimensions												Side lubrication hole		Lubrication hole on the top face						Basic load rating		Static permissible moment[1] (kN·m)						Mass
	Height	Width	Length																					C_{100}	C_0	M_A		M_B		M_C	LM block
	M	W	L	B	C	C_2	S	H	L_1	T	T_1	T_2	K	N	E	e_0	f_0	D_2	V	e_2	d_2	O-ring	H_3	(kN)	(kN)	1 block	2 blocks	1 block	2 blocks	1 block	(kg)
ERG35C	48	100	119	82	62	52	M10	8.5	80	13.1	12	11	41	7.2	8.1	8.5	7.2	10.2	0.3	16.0	1.4	P7	7	59.3	115	1.56	9.30	1.56	9.30	2.39	1.74
ERG35LC			143						104											28.0				72.7	150	2.61	14.4	2.61	14.4	3.12	2.31
ERG45C	60	120	145	100	80	60	M12	10.5	100	16.5	15	13.5	51	8.4	8.1	10	8.4	10.2	0.3	17.0	1.4	P7	9	103	200	3.39	19.6	3.39	19.6	5.43	3.17
ERG45LC			180						135											34.5				130	270	6.10	32.4	6.10	32.4	7.33	4.29
ERG55C	70	140	172	116	95	70	M14	12.4	123	19.1	18	13.7	58	9.2	8.1	11	9.2	10.2	0.3	22.0	1.4	P7	12	143	288	6.14	33.3	6.14	33.3	9.04	5.04
ERG55LC			211						162											41.5				173	370	10.0	51.9	10.0	51.9	11.6	6.71
ERG65C	90	170	203	142	110	82	M16	14.5	144	23.9	23	21.5	77	11.2	8.1	12.8	11.2	10.2	0.3	30.0	1.4	P7	13	237	450	11.1	61.8	11.1	61.8	17.1	10.1
ERG65LC			251						192											54.0				296	600	19.4	100	19.4	100	22.9	13.7

[1] Static permissible moment 1 block: Static permissible moment value with 1 LM block
2 blocks: Static permissible moment value with 2 LM blocks in close contact with each other

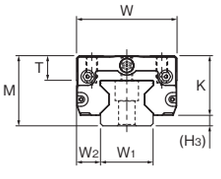
Models ERG-V and ERG-LV

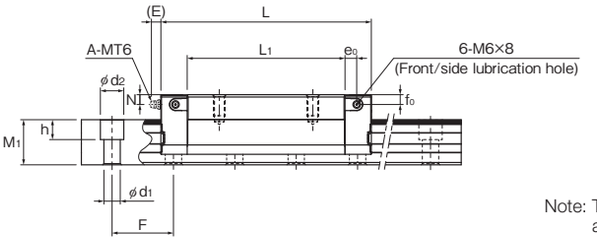


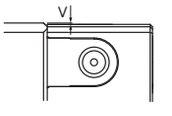
ERG35V/LV, 45V/LV, 55V/LV



ERG65V/LV







Dimensions for the location of the top face lubrication hole

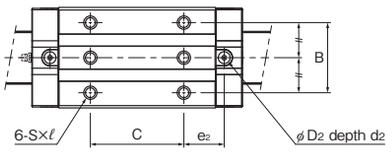
Note: These dimensions are for when a grease nipple is attached to the front.

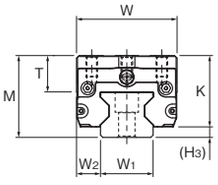
Unit: mm

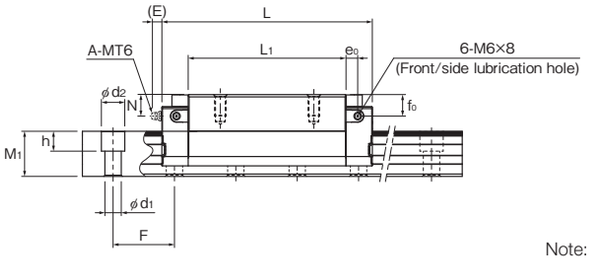
Model No.	External dimensions			LM block dimensions								Side lubrication hole		Lubrication hole on the top face						Basic load rating		Static permissible moment[1] (kN·m)						Mass
	Height	Width	Length																			C_{100}	C_0	M_A		M_B		M_C	LM block
	M	W	L	B	C	S	ℓ	L_1	T	K	N	E	e_0	f_0	D_2	V	e_2	d_2	O-ring	H_3	(kN)	(kN)	1 block	2 blocks	1 block	2 blocks	1 block	(kg)
ERG35V	48	70	119	50	50	M8	12	80	12	41	7.2	8.1	8.5	7.2	10.2	0.3	22.0	1.4	P7	7	59.3	115	1.56	9.30	1.56	9.30	2.39	1.36
ERG35LV			143		72			104									23.0				72.7	150	2.61	14.4	2.61	14.4	3.12	1.77
ERG45V	60	86	145	60	60	M10	18	100	15	51	8.4	8.1	10	8.4	10.2	0.3	27.0	1.4	P7	9	103	200	3.39	19.6	3.39	19.6	5.43	2.46
ERG45LV			180		80			135									34.5				130	270	6.10	32.4	6.10	32.4	7.33	3.25
ERG55V	70	100	172	75	75	M12	19	123	18	58	9.2	8.1	11	9.2	10.2	0.3	32.0	1.4	P7	12	143	288	6.14	33.3	6.14	33.3	9.04	3.92
ERG55LV			211		95			162									41.5				173	370	10.0	51.9	10.0	51.9	11.6	5.05
ERG65V	90	126	203	76	70	M16	21	144	23	77	11.2	8.1	12.8	11.2	10.2	0.3	50.0	1.4	P7	13	237	450	11.1	61.8	11.1	61.8	17.1	8.05
ERG65LV			251		120			192									49.0				296	600	19.4	100	19.4	100	22.9	10.5

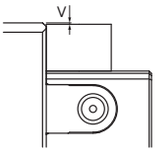
[1] Static permissible moment 1 block: Static permissible moment value with 1 LM block
2 blocks: Static permissible moment value with 2 LM blocks in close contact with each other

Models ERG-R and ERG-LR









Dimensions for the location of the top face lubrication hole

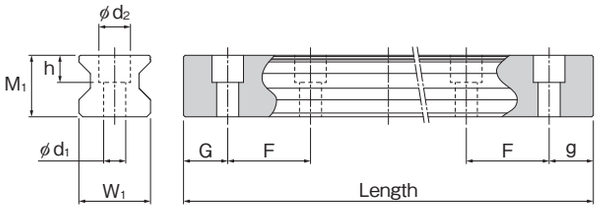
Note: These dimensions are for when a grease nipple is attached to the front.

Unit: mm

Model No.	External dimensions			LM block dimensions									Side lubrication hole		Lubrication hole on the top face						Basic load rating		Static permissible moment[1] (kN·m)						Mass
	Height	Width	Length																		C_{100}	C_0	M_A		M_B		M_C	LM block
	M	W	L	B	C	S	ℓ	L_1	T	K	N	E	e_0	f_0	D_2	V	e_2	d_2	O-ring	H_3	(kN)	(kN)	1 block	2 blocks	1 block	2 blocks	1 block	(kg)
ERG35R	55	70	119	50	50	M8	13	80	19	48	14.2	8.1	8.5	14.2	10.2	0.3	22.0	1.4	P7	7	59.3	115	1.56	9.30	1.56	9.30	2.39	1.66
ERG35LR			143		72			104									23.0				72.7	150	2.61	14.4	2.61	14.4	3.12	2.16
ERG45R	70	86	145	60	60	M10	18	100	25	61	18.4	8.1	10	18.4	10.2	0.3	27.0	1.4	P7	9	103	200	3.39	19.6	3.39	19.6	5.43	3.13
ERG45LR			180		80			135									34.5				130	270	6.10	32.4	6.10	32.4	7.33	4.16
ERG55R	80	100	172	75	75	M12	19	123	28	68	19.2	8.1	11	19.2	10.2	0.3	32.0	1.4	P7	12	143	288	6.14	33.3	6.14	33.3	9.04	4.9
ERG55LR			211		95			162									41.5				173	370	10.0	51.9	10.0	51.9	11.6	6.32

[1] Static permissible moment 1 block: Static permissible moment value with 1 LM block
2 blocks: Static permissible moment value with 2 LM blocks in close contact with each other

LM Rail



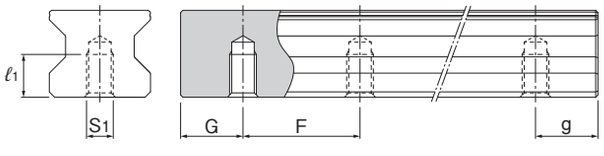
Unit: mm

Model No.	LM rail dimensions						Mass
	Width		Height	Pitch		Standard length and maximum length	LM rail
	W_1	W_2	M_1	F	d_1 x d_2 x h	(G,g)	(kg/m)
ERG35	34	18	31.6	40	9×14×12	4,483 (21.5, 21.5)	6.52
ERG45	45	20.5	38.6	52.5	14×20×17	4,466 (28, 28)	10.4
ERG55	53	23.5	47	60	16×23×20	4,443 (31.5, 31.5)	14.9
ERG65	63	31.5	58.7	75	18×26×22	4,428 (39, 39)	21.6

Note: Either side of the rail can be used as the reference surface. For the G and g dimensions, the capital "G" refers to the larger of the two dimensions (G>g). Both of these dimensions will be less than F/2.

■ LM Rail Tapped-Hole Type

Tapped-hole type LM rails with tapped holes machined on the bottom surface are available for the Model ERG. This type is effective in situations where you want to mount from the bottom surface of the base or increase contamination protection. See the LM rail dimensions table above for standard tap pitch F and the G and g dimensions.



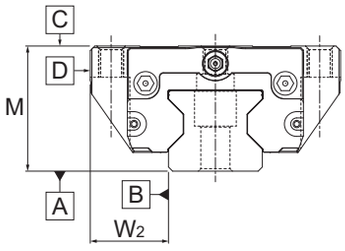
LM Rail Tapped Hole

Unit: mm

Model No.	S_1	Effective tap depth $ℓ_1$
ERG35	M8	15
ERG45	M12	19
ERG55	M14	22
ERG65	M16	25

Accuracy Standards

The accuracy of the LM Guide is specified for each model in terms of the dimensional tolerance for height and width, the difference between height and width in a pair, and running parallelism.
Either side of the rail can be used as the reference surface. Therefore, even if the orientation of the rail and block combination is changed, the W_2 dimension will still meet the specification.
(High Accuracy grade/Precision grade/Super Precision grade)



Accuracy Standards

Unit: mm

Accuracy item	High Accuracy grade	Precision grade	Super Precision grade
Dimensional tolerance in height M	±0.030	±0.020	±0.010
Difference in height M	0.015	0.007	0.005
Dimensional tolerance in width W_2	±0.020	±0.010	±0.007
Difference in width W_2	0.015	0.007	0.005
Running parallelism of surface C against surface A	As specified in "LM Rail Length and Running Parallelism by Accuracy Standard"		
Running parallelism of surface D against surface B	As specified in "LM Rail Length and Running Parallelism by Accuracy Standard"		

Note: Height M and width W_2 are measured at the center of the block's top/side surface (reference surface).
The differences in height M and width W_2 are dimensional variances between multiple block-and-rail sets when these are used in combination with each other. Measurements are taken at the same point on each rail and at the center of the top/side surface (reference surface) of each block.

LM Rail Length and Running Parallelism by Accuracy Standard

Unit: μm

LM rail length (mm)		Running parallelism value		
Above	Up to	High Accuracy grade	Precision grade	Super Precision grade
125	200	-	4	1.5
200	250	-	4.5	1.5
250	315	8	5	1.5
315	400	9	5.5	2
400	500	9.5	6.5	2.5
500	630	10	7	3
630	800	11	7.5	3.5
800	1,000	12	8.5	4
1,000	1,250	14	9.5	4.5
1,250	1,600	15	10	5.5
1,600	2,000	18	12	6
2,000	2,500	20	13	7
2,500	3,150	22	14	7.5
3,150	4,000	24	16	8.5
4,000	4,500	26	18	10

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* Currently only available for customers in Germany. Access will be expanded to other regions in the future.

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