

History of Linear Motion Guide

The history of Linear Motion (LM) Guide goes back to 1944 when Round-shaft linear bushing type was devised in the United States. Thereafter, improvements were made to develop a ball spline type that has raceway that fit the balls. Then, it evolved into a ball spline type with an angular-contact structure where the shaft has stright ridges.

This ball spline type with an angular-contact structure, developed in 1971, was the first linear guideway devised in Japan. In addition, having ridges on the shaft was a groundbreaking improvement since this led to the development of the present rail type.

In 1973, further improvement was made and LM Guide using rail shafts was developed.

And in 1996, LM Guide containing a caged ball was developed.



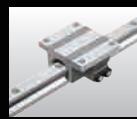
Linear Bushing



Ball Spline



Angular-contact Ball Spline



LM Guide in 1973



Caged Ball LM Guide in 1996

THK Technical Support site

<https://tech.thk.com/>

Product Information FAQ Catalog Information
Technical Information CAD Data Technical Calculation

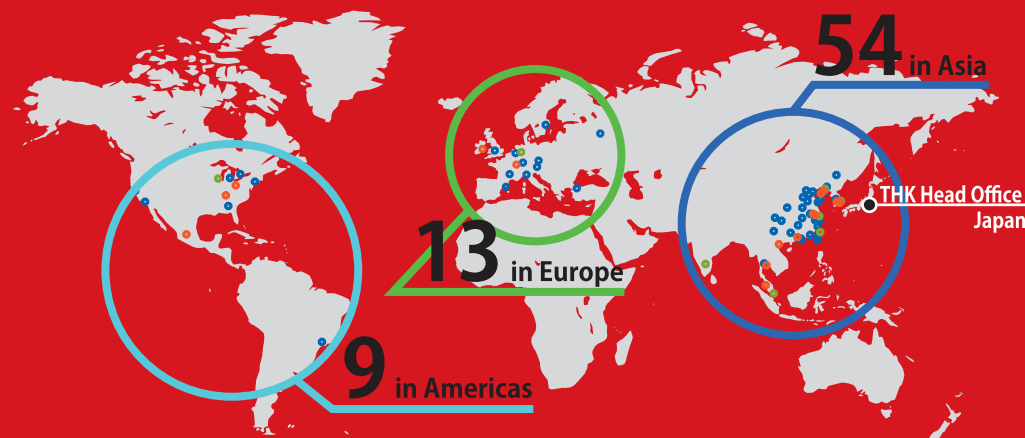
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Other areas

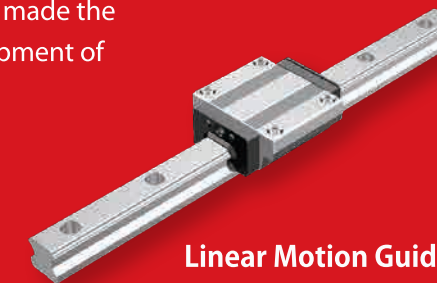
Sales Contact

THK
The Mark of Linear Motion

**PRODUCTS
INFORMATION**


The Pioneer in "Linear Motion Guides" since 1971


THK's creative ideas and unique technology made the company worldwide pioneers in the development of the Linear Motion (LM) Guide mechanism. Today, our LM Guide devices are an indispensable component of mechanical and electronic systems in a wide variety of industries.

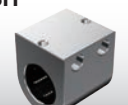







Linear Motion Guide


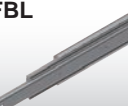


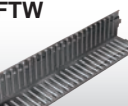








Linear Bushing					
LM	LM-GA/LM-MG	LME	LM-L	LMF	LMF-L
					
Shaft diameter: 5 to 60 mm	Shaft diameter: 3 to 120 mm	Shaft diameter: 5 to 80 mm	Shaft diameter: 3 to 60 mm	Shaft diameter: 6 to 60 mm	Shaft diameter: 6 to 60 mm

Linear Bushing				LM Case Unit	
LMK	LMK-L	LMH	LMH-L	SC	SL
					
Shaft diameter: 6 to 60 mm	Shaft diameter: 6 to 60 mm	Shaft diameter: 6 to 30 mm	Shaft diameter: 6 to 30 mm	Shaft diameter: 6 to 50 mm	Shaft diameter: 6 to 30 mm

LM Case Unit		LM shaft end support & Shafts		LM Stroke	
SH	SH-L	SK	SF	ST/ST-B	STI
					
Shaft diameter: 3 to 20 mm	Shaft diameter: 3 to 20 mm	Shaft diameter: 10 to 40 mm	Shaft diameter: 3 to 100 mm	Shaft diameter: 6 to 100 mm	Shaft diameter: 6 to 100 mm

Die-setting Ball Cage	Miniature Stroke	Precision Linear Pack	Linear Ball Slide		
KS/BS	MST	ER	LSP	LS	LSC
					
Shaft diameter: 19 to 38 mm	Shaft diameter: 3 to 6 mm	Model No. ER513 to 1025	Model No. LSP1340 to 25150	Model No. LS827 to 1077	Model No. LSC1015 to 1550

Slide Pack & Slide Rail			Flat Roller		LM Roller
FBW	FBL	E15/20, D20	FT	FTW	LR
					
Rail length: 160 to 1800 mm	Rail length: 200 to 2160 mm	Rail length: 50 to 300 mm	Width: 10 to 60 Length: 32 to 500	Width: 30 to 70 Length: 150 to 500	Model No. LR4095 to 50130

LM Roller					
LR-Z	LRA	LRA-Z	LRB	LRB-Z	LRU
					
Model No. LR1547Z to 3275Z	Model No. LRA4095 to 50130	Model No. LRA1547Z to 3275Z	Model No. LRB4095 to 50130	Model No. LRB1547Z to 3275Z	Model No. LRU22.2 to 76.2















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PRODUCTS INFORMATION


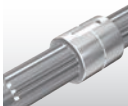



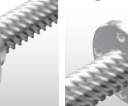
Linear Motion Link Motion Slide Contact Precision Roller

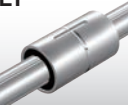





LM Guide				LM Guide Actuator	
Global standard size HSR	Radial Type SR	Structural Member Rail JR	Miniature RSR-Z	SKR	KR
					
Model No. HSR8 to 150	Model No. SR15 to 150	Model No. JR25 to 55	Model No. RSR7Z to 15Z	Stroke: Max 808.5mm Lead: 1 to 25 mm	Stroke: Max 1510mm Lead: 1 to 20 mm



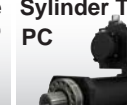



Cam Follower					
Popular Type CF	Containing Thrust Balls CFN-R-A	Eccentric Cam Follower with Hexagon Socket CFH-A	With a Tapped Hole for Greasing CFT	Outer ring compact CFS	Easy-mount model CF-SFU
					
Stud diameter: 5 to 30 mm	Stud diameter: 5 to 12 mm	Stud diameter: 6 to 30 mm	Stud diameter: 6 to 30 mm	Stud diameter: 2.5 to 6 mm	Stud diameter: 6 to 20 mm







Roller Follower			Link Ball		Rod End
Separable Type NAST	Separable Type RNAS	Non-separable NART	BL	RBI	Standard Type PB
					
Inner diameter: 6 to 50 mm	Inner diameter: 6 to 50 mm	Inner diameter: 5 to 50 mm	Shank thread diameter M6 to M16	M5 to M16	Spherical inner ring: 5 to 30 mm

Rod End				Spherical Plain Bearing	
Female Threading Type PHS	No Lubrication Type NHS-T	Male Threading Type POS	No Lubrication, Male Type NOS-T	Double-split Outer Ring SB	Single-split Outer Ring SA1
					
Spherical inner ring: 5 to 30 mm	Spherical inner ring: 3 to 22 mm	Spherical inner ring: 5 to 30 mm	Spherical inner ring: 3 to 22 mm	Inner diameter: 12 to 65 mm	Inner diameter: 12 to 70 mmh

Spline Nut		Lead Screw Nut		Change Nut	
DPM	DP	DCM	DC	DCMA	DCMB
					
Model No. DPM1220 to 5080	Model No. DP12 to 50	Shaft diameter: 12 to 50 mm	Shaft diameter: 12 to 50 mm	Shaft diameter: 15.8 to 52 mm	Shaft diameter: 9 to 52 mm

Medium Torque Type Ball Spline		High Torque Type Ball Spline		Actuator	
LT	LF	LBS	LBST	Slide Type ES	Slide Type US
					
Shaft diameter: 4 to 100 mm	Shaft diameter: 6 to 50 mm	Shaft diameter: 6 to 100 mm	Shaft diameter: 20 to 150 mm	Stroke: 50 to 300mm Lead: 6, 12 mm	Stroke: Max 1700mm Lead: 6 to 40 mm

Actuator			Rolled Ball Screw		
Sylinder Type EC	Sylinder Type PCT	Sylinder Type PC	Miniature MTF	BTK	BLK
					
Stroke: 50 to 300mm Lead: 6, 12 mm	Stroke: 50 to 300mm Lead: 4, 6 mm	Stroke: 50 to 250mm Lead: 6 to 10 mm	Shaft diameter:6 to 12 Lead: 1 to 2 mm	Shaft diameter:10 to 50 Lead: 4 to 16 mm	Shaft diameter:15 to 50 Lead :10 to 50 mm

Rolled/Precision		Precision Ball Screw			
BNT	WHF	BIF	BNFN	Finished Shaft Ends BNK	Nut Braket MC
					
Shaft diameter: 14 to 45 Lead: 4 to 12 mm	Shaft diameter: 15 to 25 Lead: 30 to 50 mm	Shaft diameter: 16 to 50 Lead: 5 to 12 mm	Shaft diameter: 16 to 100 Lead: 4 to 20 mm	Shaft diameter: 4 to 25 Lead: 1 to 20 mm	BNK1004 to 2020

Shaft Support Unit		Cross Roller Guide/Table			
Square Fixed BK	Square Supported BF	VR	VRT	VRT-A	VRU
					
Shaft diameter: 10 to 40 mm	Shaft diameter: 8 to 40 mm	Model No. VR1 to 18	Model No. VRT1025 to 3205	Model No. VRT1025A to 3205A	Model No. VRU1025 to 91010

Cross-Roller Ring			Accessories for Lubrication		
Integrated Type RU	Separable Outer Ring RB	Two-piece Inner Ring RE	Grease Gun Unit MG70	Original Grease AFA	Original Grease AFB-LF
					
Inner diameter: 20 to 350 mm	Inner diameter: 20 to 1250 mm	Inner diameter: 20 to 600 mm	For a 70-g bellows cartridge	Thickener: urea-based	Thickener: lithium-based