

Dedicated Shafts for Model LM

The LM shaft of the Linear Bushing needs to be manufactured with much consideration for hardness, surface roughness and dimensional accuracy of the shaft since balls roll directly on it. THK manufactures dedicated LM shafts for the Linear Bushing. See the specification table for standard LM shafts on B-460.

Among other factors, the surface hardness of an LM shaft affects the service life of your Linear Bushing system most significantly. Therefore, take much care in selecting a material and a heat treatment method when assembling the system. In addition, as the surface hardness of the LM shaft greatly affects the service life as stated above, use care in selecting and/or handling a material and heat treatment.

[Material]

Generally, the following materials are used for surface hardening through induction-hardening.

- SUJ2 (JIS G 4805: high-carbon chromium bearing steel)
- SK3 to 6 (JIS G 4401: carbon tool steel)
- S55C (JIS G 4051: carbon steel for machine structural use)

For special applications, martensite stainless steel SUS440C, which is corrosion resistant, may also be used.

[Hardness]

We recommend surface hardness of 58 HRC (≈ 653 HV) or higher. The depth of the hardened layer is determined by the size of the Linear Bushing; we recommend approximately 2 mm for general use.

[Surface Roughness]

To achieve smooth motion, the surface should preferably be finished to 0.40a or less.

[Dimensions of Hollow LM Shafts]

If a hollow LM shaft is required for purposes such as weight reduction, use the desired material from Table1 for the dimensions of hollow LM shafts that THK keeps in stock.

Models marked with " * " are build-to-order items.

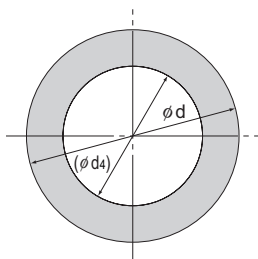


Table1 Dimensions of Hollow LM Shafts

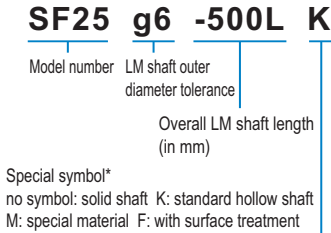
Unit: mm

Supported model numbers	LM shaft outer diameter d	Inner diameter (ϕd_i)	Mass (kg/m)
LM 8	8	3	0.4
LM 10	10	4	0.6
LM 12	12	6	0.7
LM 13	13	7	0.8
LM 16	16	9	1.1
LM 20	20	10	1.9
LM 20	20	14	1.3
LM 25	25	15	2.5
LM 30	30	16	4
LM 35	35	20	5.1
* LM 38	38	22	6
LM 40	40	22	6.9
LM 50	50	25	11.6
LM 60	60	32	16
* LM 80	80	52.5	22.6
* LM 100	100	67.5	33.7

Standard LM Shafts

THK manufactures high quality, dedicated LM shafts for Linear Bushing model LM series.

Model number coding



*If two or more symbols are given, they are shown in an alphabetical order.

- (1) [Major materials]
 THK5SP (THK standard material)
 SUJ2 (high-carbon chromium bearing steel)
 [Hardness]
 HRC58 to 64
 [Hardened layer depth]
 0.8 to 2.5mm (varies with shaft diameter)
 [Surface roughness]
 0.20a to 0.40a
 [Straightness of the LM shaft]
 50 μ m/300 mm or less
- (2) Precision-grade LM shafts with shaft diameter tolerance of g5 or h5 are also manufactured as standard.
- (3) Corrosion resistance, martensite stainless steel LM shafts are also available.
- (4) When asking an estimate or placing an order, refer to the model number coding shown on the left.



Model No.	Shaft diameter		Overall LM shaft length: L mm												Supported model numbers		
	d	Tolerance μ m	100	200	300	400	500	600	700	800	1000	1200	1300	1500		2000	3000
SF 3	3	$-\frac{2}{8}$	○	○													LM 3
SF 4	4		○	○													LM 4
SF 5	5	-4	○	○	○												LM 5
SF 6	6	-12	○	○	○	○											LM 6
SF 8	8	-5	○	○	○	○	○										LM 8, 8S
SF 10	10	-14	○	○	○	○	○	○	○								LM 10
SF 12	12			○	○	○	○	○		○	○						LM 12
SF 13	13	-6	○	○	○	○	○	○	○	○							LM 13
SF 16	16	-17	○	○	○	○	○	○	○	○	○			○			LM 16
SF 20	20			○	○	○	○	○	○	○	○	○	○				LM 20
SF 25	25	-7		○	○	○	○	○	○	○	○	○	○				LM 25
SF 30	30	-20			○	○	○	○	○	○	○	○	○	○			LM 30
SF 35	35					○	○		○	○	○		○	○			LM 35
SF 38	38	-9						○		○	○			○			LM 38
SF 40	40	-25					○	○	○	○	○	○	○	○	○	○	LM 40
SF 50	50						○	○		○	○	○	○	○	○	○	LM 50
SF 60	60	-10								○	○			○	○		LM 60
SF 80	80	-29								○	○			○	○		LM 80
SF 100	100	$-\frac{12}{34}$								○	○			○	○		LM 100

Note) ○ indicates standard stock; ◯ indicates semi-standard stock.

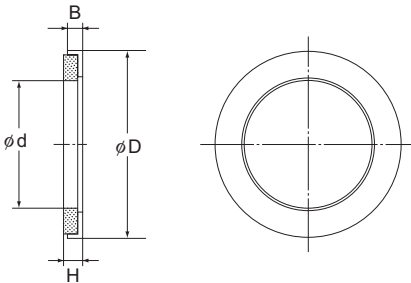
Felt Seal Model FLM

Linear Bushing model LM series include types equipped with a special synthetic rubber seal (LM···UU, U). If there is a need for additional contamination protection, or a need to lower the seal resistance, use the felt seal model FLM. (See Table1.)

[Dimensions of the Felt Seal]

Table1 Major Dimensions of FLM

Unit: mm



Supported model numbers	Main dimensions				Supported linear bushing model
	d	D	B	H	
FLM 6	6	12	2	2	LM 6
FLM 8	8	15	2	2	LM 8
FLM 10	10	19	3	3	LM 10
FLM 12	12	21	3	3	LM 12
FLM 13	13	23	3	3	LM 13
FLM 16	16	28	4	5	LM 16
FLM 20	20	32	4	5	LM 20
FLM 25	25	40	5	6	LM 25
FLM 30	30	45	5	5	LM 30
FLM 35	35	52	5	6	LM 35
FLM 38	38	57	5	6	LM 38
FLM 40	40	60	5	6	LM 40
FLM 50	50	80	10	11	LM 50
FLM 60	60	90	10	11	LM 60
FLM 80	80	120	10	11	LM 80
FLM 100	100	150	10	11	LM 100