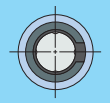
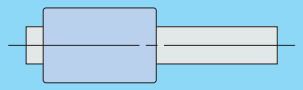
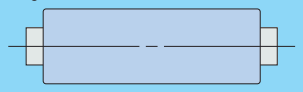
Table 1 Models and sizes of LMS series

Shape	External cylinder length	Material type	Seal structure	Model	Size 3	Size 4	Size 5
	Standard 	High carbon steel made	Without seal	LMS	○	○	○
			With two end seals	LMS···UU	○	○	○
		Stainless steel made	Without seal	LMS···F	○	○	○
			With two end seals	LMS···FUU	○	○	○
	Long 	High carbon steel made	Without seal	LMSL	○	○	○
			With two end seals	LMSL···UU	○	○	○
		Stainless steel made	Without seal	LMSL···F	○	○	○
			With two end seals	LMSL···FUU	○	○	○

Relationship between Load Rating and Ball Raceway

The load rating of LMS series varies according to the loading direction and position of ball raceway. The dimension table describes two types of values shown in Fig. 1.1 and Fig. 1.2 according to the loading direction and position of ball raceway.

Fig. 1.1 shows the case where the loading direction and ball raceway position coincides with each other, representing the loading direction A in the dimension table. Generally, this is applied when the ball raceway position cannot be specified to indeterminate direction load or loading direction.

Fig. 1.2 shows the case where the loading direction is positioned between ball raceways, representing the loading direction B in the dimension table. Generally, this can be subjected to load bigger than loading direction A.

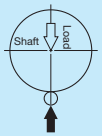


Fig. 1.1 Loading direction A

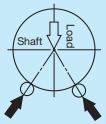


Fig. 1.2 Loading direction B

Lubrication

Grease is not pre-packed in the LMS series, so please perform adequate lubrication as needed.

Both of oil lubrication and grease lubrication are available in the LMS series. For grease lubrication, it is typically applied lightly to the shaft and each row. Use of high-quality lithium-soap base grease is recommended for the grease to use.

Related Products

Shaft for Miniature Linear Bushing

To make full use of performance of the LMS series, we also offer shaft with high accuracy for Miniature Linear Bushing grounded after heat treatment. If you are interested, contact IKO.

Precaution for Use

❶ Fitting of external cylinder

Recommended fit for the LMS series is indicated in Table 2. As the external cylinder is thin, use epoxy type adhesive agent for fixing to the housing hole, instead of press-fitting.

Table 2 Recommended fit
(Tolerances of dimensions for shaft and housing hole) unit: μm

Item / Accuracy class	Shaft	Housing hole
High	− 6 −14	+12 0
Precision	− 4 − 9	+ 8 0

❷ Raceway

LMS series operates with a shaft as a raceway surface, the shaft should be heat-treated and ground. Recommended surface hardness, roughness, and minimum effective hardening depth of shaft are indicated in Table 3.

Table 3 Surface hardness, roughness, and effective hardening depth of shaft

Item	Recommended value	Remark
Surface hardness	58~64HRC	When the surface hardness is low, multiply the load rating by hardness factor (1).
Surface roughness	0.2 μmRa or lower (0.8 μmRy or lower)	–
Effective hardening depth	0.8 mm or higher	–

Note (1) For hardness factor, refer to Fig. 3 in page Ⅲ-5.

❸ When accompanied by rotational motion

LMS series units support only linear motion but do not support rotational motion. When performing rotational motion and linear motion of short stroke length, IKO Miniature Stroke Rotary Bushing is recommended to be used.

❹ Insertion of shaft

When inserting a shaft to the external cylinder, be careful not to let the shaft pried open as it may cause dropping of balls or deformation of the retainer.

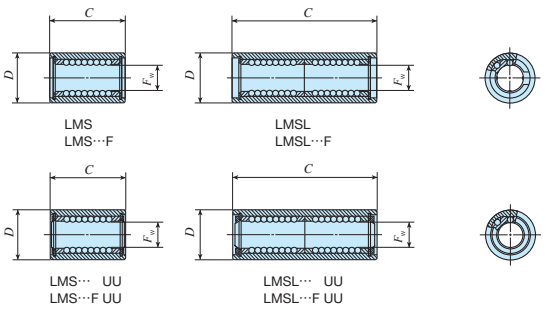
❺ Operating temperature

The maximum operating temperature is 120˚C and temperature up to 100˚C is allowed for continuous operation. When the temperature exceeds 100˚C, contact IKO.

IKO Miniature Linear Bushing

Shape: LMS

Shaft diameter: 3 4 5



Shaft diameter mm	Identification number	Ball raceway	Mass (Ref.) g	Nominal dimensions and tolerances mm: Dim. F_w	Dim. F_w tolerance μm P	Dim. F_w tolerance μm H	Dim. D	Dim. D tolerance μm P	Dim. D tolerance μm H	C	Dim. C tolerance μm	Eccentricity Maximum μm P	Eccentricity Maximum μm H	Basic dynamic load rating C Load direction A N	Basic dynamic load rating C Load direction B N	Basic static load rating C_0 Load direction A N	Basic static load rating C_0 Load direction B N
3	LMS 3 LMS 3 F LMS 3 UU LMS 3 F UU	4	1.8	3	0 −5	0 − 8	7	0 −7	0 − 8	10	0 −120	2	4	48.9	56.1	37.4	52.9
	LMSL 3 LMSL 3 F LMSL 3 UU LMSL 3 F UU		3.0		–	0 −10		–	0 −13	19	0 −300	–	5	79.5	91.4	74.8	106
4	LMS 4 LMS 4 F LMS 4 UU LMS 4 F UU	4	2.8	4	0 −5	0 − 8	8	0 −7	0 − 8	12	0 −120	2	4	58.6	67.3	47.5	67.1
	LMSL 4 LMSL 4 F LMSL 4 UU LMSL 4 F UU		4.3		–	0 −10		–	0 −13	23	0 −300	–	5	95.3	109	94.9	134
5	LMS 5 LMS 5 F LMS 5 UU LMS 5 F UU	4	3.8	5	0 −5	0 − 8	10	0 −7	0 − 8	15	0 −120	2	4	135	155	103	146
	LMSL 5 LMSL 5 F LMSL 5 UU LMSL 5 F UU		6.7		–	0 −10		–	0 −13	29	0 −300	–	5	219	252	206	292

Remark: "P" and "H" in Dim. F_w tolerance and Eccentricity represent precision and high, respectively.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch