

Linear Bush

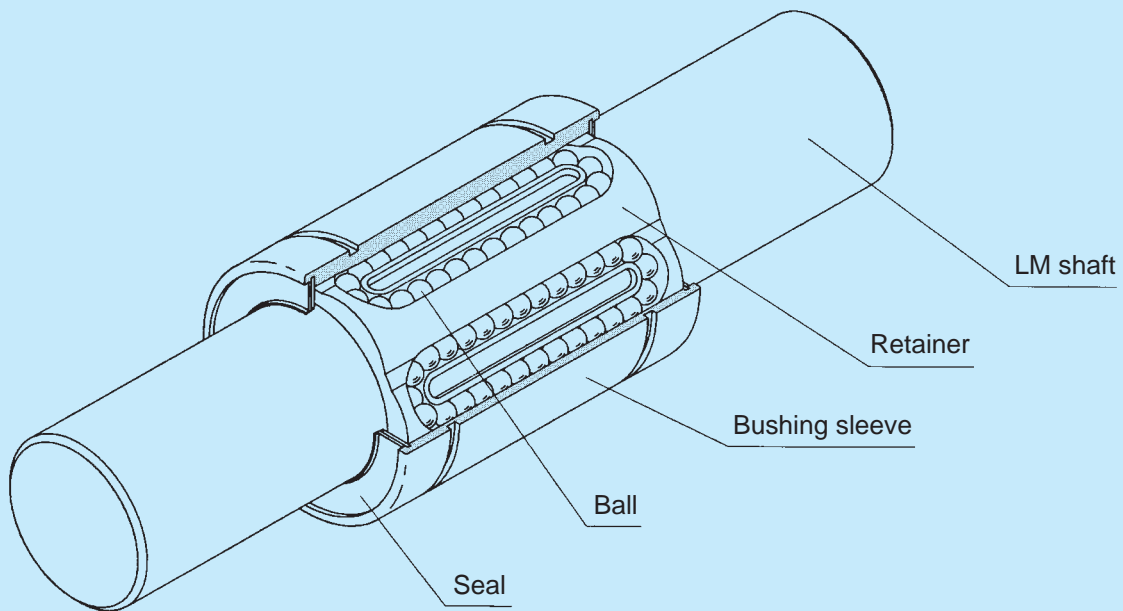


Fig. 3 Construction of Linear Bush Type LM-UU

A linear-motion system, Linear Bush type LM, incorporating an LM shaft with a plain exterior, provides limitless linear motion. As the load-bearing balls are in point-contact with the LM shaft, the permissible load level is low, but there is little frictional resistance during linear motion. Thus, the Linear Bush provides high-precision, smooth, linear motion.

Construction and Features

Linear Bush type LM, as shown in Fig. 3, consists of an LM shaft and a bushing sleeve in which raceways are formed into a semi-circular groove. The load-bearing balls are sequentially guided by the retainer, which is formed into one piece with the nut, in the shaft longitudinal direction. The bushing sleeve is made of high-carbon chrome bearing steel. Its interior and exterior are ground after heat treatment.

Types and Features

Standard Type



The exterior of the Linear Bush, which is cylindrical in shape, has a plain, high-precision surface. The bush can be put to a wide range of uses.

The Linear Bush comes in the two series' specified below, which are classified by their dimensions.

LM series: Japanese specifications in millimeters;
widespread use in Japan

Type LM-M: Stainless steel models of the LM series

LME series: European specifications in millimeters;
widespread use in Europe

Open Type



This type features a slit as wide as one train of balls (50° to 80°) in the bushing sleeve, and is therefore suitable for installation where the LM shaft is supported by pillars or supporting bases. Additionally, this makes clearance adjustment easy.

Types LM-OP and LME-OP

Type LM-MOP

Sealed Type



The dimensions of this type are the same as those of the standard type. Special synthetic rubber seals are incorporated on one or both sides of the bush so as to prevent the entry of foreign matter and the leakage of grease.

Types LM-UU, LME-UU, and LM-MUU

(Models with a model number containing a "U" have a seal on one side.)

Models of the clearance-adjustable and open types with seals are also available.

Clearance-Adjustable Type

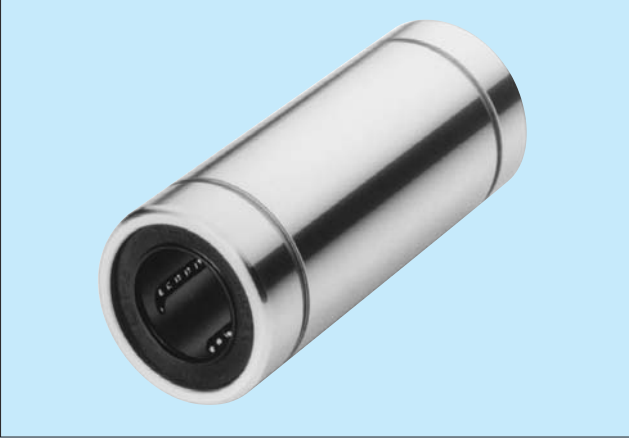


The dimensions of this type are the same as those of the standard type. The bushing sleeve has a slit in the LM-shaft longitudinal direction. Therefore, when installed in a housing with an adjustable inner diameter, this type eases adjustment of the clearance between the LM shaft and the linear bush.

Types LM-AJ and LME-AJ

Type LM-MAJ

Long Type LM-L



This type incorporates two retainers of the standard type, and is therefore best suited for locations subject to a moment load. It is useful in reducing assembly man-hours.

Type LM-L: Standard

Type LM-L-UU: Sealed

Flange Type (round)



The bushing sleeve and flange of the standard Linear Bush are formed into one piece. This type can be bolted directly to a housing, making installation simple.

Type LMF: Standard

Type LMF-M: Stainless steel

Type LMF-UU: Sealed

Flange Type (square)



The flange of type LMK is cut into a square shape. Compared to the round type, this type has a lower center-line height, making compact designs possible.

Type LMK: Standard

Type LMK-M: Stainless steel

Type LMK-UU: Sealed

Long Flange Type (round)



This is the longer version of the flange type, with the bushing sleeve and flange formed into one piece. It can be bolted directly to a housing, making installation simple. It incorporates two retainers of the standard type, and is therefore best suited for locations subject to moment load.

Type LMF-L: Standard

Type LMF-L-UU: Sealed

Long Flange Type (square)



The flange of type LMF-L is cut into a square shape. Compared to the round type, this type has a lower center-line height, making compact designs possible.

Type LMK-L: Standard

Type LMK-L-UU: Sealed

Flange Type (oval square)



The flange and bushing sleeve are formed into one piece, and the round flange is cut in parallel on two opposing sides. Compared to type LMK, this has a lower center-line height, making compact designs possible. Due to the fact that the two trains of balls bear loads from the flat sides, the service life is extended.

Type LMH: Standard

Type LMH-M: Stainless steel

Type LMH-UU: Sealed

Long Flange Type (oval square)



Due to the oval-square shape of the flange, this type has a lower center-line height than type LMK-L, making compact designs possible. It incorporates two retainers of the standard type, and is therefore best suited for a location subject to moment load. Due to the fact that the two trains of balls bear loads from the flat sides, the service life is extended.

Type LMH-L: Standard

Type LMH-L-M: Stainless steel

Type LMH-L-UU: Sealed

LM Casing Unit Type SC



This is a compact aluminum casing unit incorporating the standard Linear Bush. It can be bolted directly to a table, making installation simple.

LM Casing Unit Type SL (long type)



This is the long version of type SC. The aluminum casing incorporates two Linear Bushes.

B

LM Casing Unit Type SH

Universal orientation type



The standard Linear Bush, which is incorporated into the aluminum casing, is smaller and more lightweight than type SC. More compact design is possible with this type than with type SC, and it can be attached in any orientation. Due to the fact that the two trains of balls bear loads from the casing top, the service life is extended.

Type SH-UU: Standard

Type SH-M: Stainless steel

Type SH: Non-sealed

LM Casing Unit Type SH-L (long type)

Universal orientation type



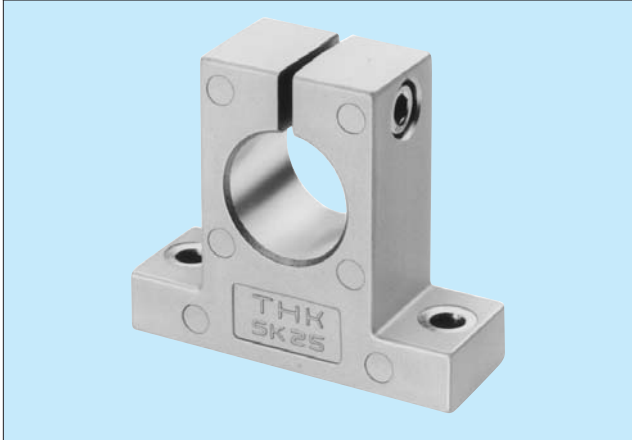
This is the long version of type SH. The aluminum casing incorporates two Linear Bushes.

Type SH-L-UU: Standard

Type SH-L-M: Stainless steel

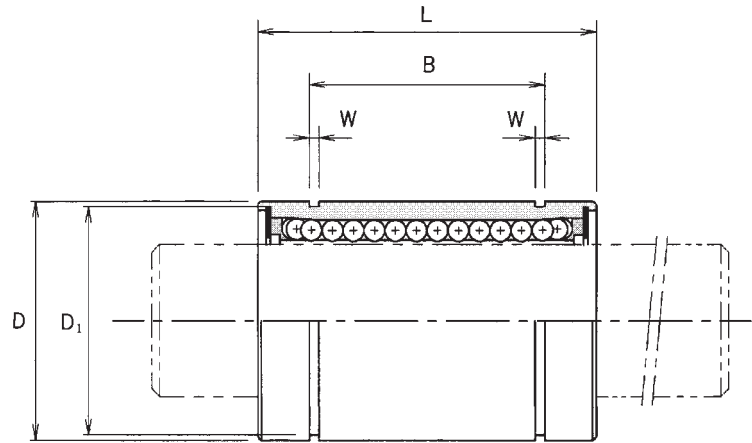
Type SH-L: Non-sealed

LM-Shaft Support Type SK



This is a supporting base for the lightweight aluminum LM shaft. The slit in the shaft hole enables a shaft to be tightly bolted.

Type LM

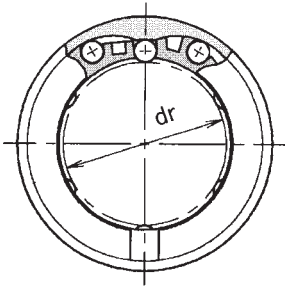


Standard type	Cylindrical No. of ball trains	Mass g	Model No.		Inscribed-circle diameter dr	Tolerance		Major Outer diameter D	
			Adjustable- clearance type	Open type		Precision grade	High grade	Precision grade/ High grade	
LM 3	4	1.4	—	—	3	0 -0.005	0 -0.008	7	0 -0.009
LM 4	4	1.9	—	—	4			8	
LM 5	4	4	—	—	5			10	
LM 6	4	8	LM 6-AJ	—	6	0 -0.006	0 -0.009	12	0 -0.011
LM 8S	4	11	LM 8 S-AJ	—	8			15	
LM 8	4	16	LM 8-AJ	—	8			15	
LM 10	4	30	LM 10-AJ	—	10			19	
LM 12	4	31.5	LM 12-AJ	LM 12-OP	12	0 -0.006	0 -0.009	21	0 -0.013
LM 13	4	43	LM 13-AJ	LM 13-OP	13			23	
LM 16	5	69	LM 16-AJ	LM 16-OP	16			28	

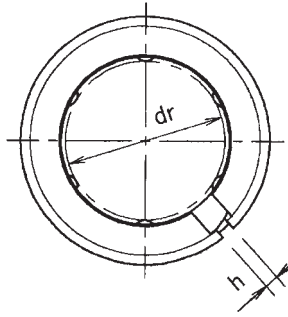
Notes:

- Linear Bushes of model numbers 60 and below accommodate a retainer made of synthetic resin that does not generate a large amount of noise during operation. If the operating temperature exceeds 80°C, use a model incorporating metal retainers.

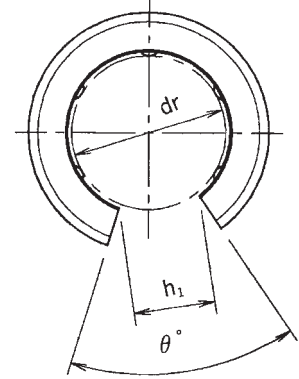
- If a model with seals is required, that fact must be specified.



Type LM



Type LM-AJ



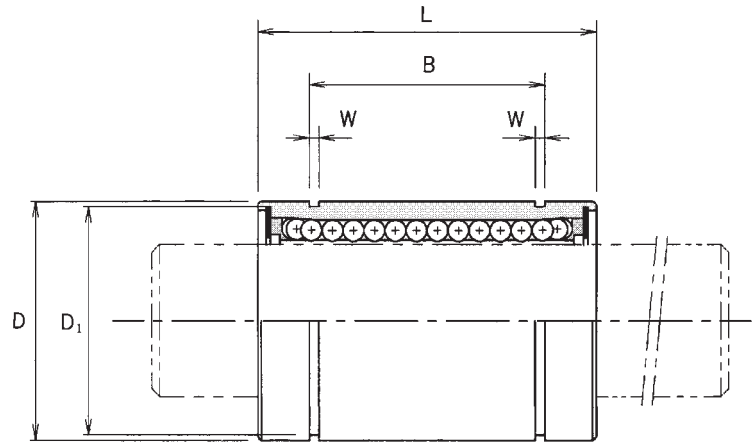
Type LM-OP

Unit: mm

dimensions									Eccentricity (max.)		Radial-clearance tolerance	Basic static-load rating	
Length L	Tolerance	B	W	D ₁	h	h ₁	θ	μm		μm		C N	C ₀ N
								Precision grade	High grade				
10	0 -0.12	—	—	—	—	—	—	4	8	-2	88.2	108	
12		—	—	—	—	—	—	4	8	-3	88.2	127	
15	0 -0.2	10.2	0 -0.2	1.1	9.6	—	—	—	4	8	-3	167	206
19		13.5		1.1	11.5	1	—	—	8	12	-5	206	265
17		11.5		1.1	14.3	1	—	—	8	12	-5	176	225
24		17.5		1.1	14.3	1	—	—	8	12	-5	265	402
29		22		1.3	18	1	—	—	8	12	-5	373	549
30		23		1.3	20	1.5	8	80	8	12	-5	412	598
32		23		1.3	22	1.5	9	80	8	12	-7	510	775
37		26.5		1.6	27	1.5	11	60	8	12	-7	775	1180

- If only one Linear Bush unit is used on each shaft, avoid moment loads. If a moment load is to be applied, use two Linear Bush units on each shaft and mount the bushes so that there is a significant interval between them.

Type LM



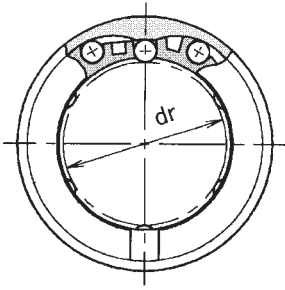
Cylindrical Standard type	No. of ball trains	Mass g	Model No.		Inscribed-circle diameter dr	Tolerance		Major Outer diameter D	
			Adjustable- clearance type	Open type		Precision grade	High grade	Precision grade/ High grade	
LM 20	5	87	LM 20-AJ	LM 20-OP	20	0 -0.007	0 -0.010	32	0 -0.016
LM 25	6	220	LM 25-AJ	LM 25-OP	25				
LM 30	6	250	LM 30-AJ	LM 30-OP	30				
LM 35	6	390	LM 35-AJ	LM 35-OP	35	0 -0.008	0 -0.012	52	0 -0.019
LM 38	6	565	LM 38-AJ	LM 38-OP	38				
LM 40	6	585	LM 40-AJ	LM 40-OP	40				
LM 50	6	1580	LM 50-AJ	LM 50-OP	50	0 -0.009	0 -0.015	80	0 -0.022
LM 60	6	2000	LM 60-AJ	LM 60-OP	60				

Notes:

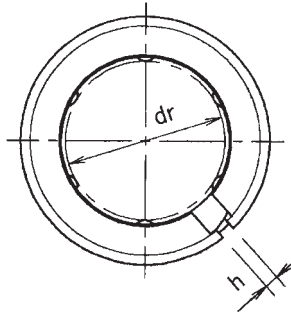
- Linear Bushes of model numbers 60 and below accommodate a retainer made of synthetic resin that does not generate a large amount of noise during operation. If the operating temperature exceeds 80°C, use a model incorporating metal retainers. (Type LM38 contains only models with metal retainers.)

[Ex.] LM20 A
High-temperature symbol

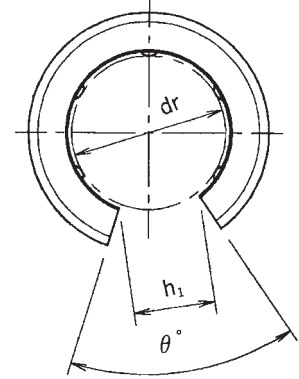
- If a model with seals is required, that fact must be specified.



Type LM



Type LM-AJ



Type LM-OP

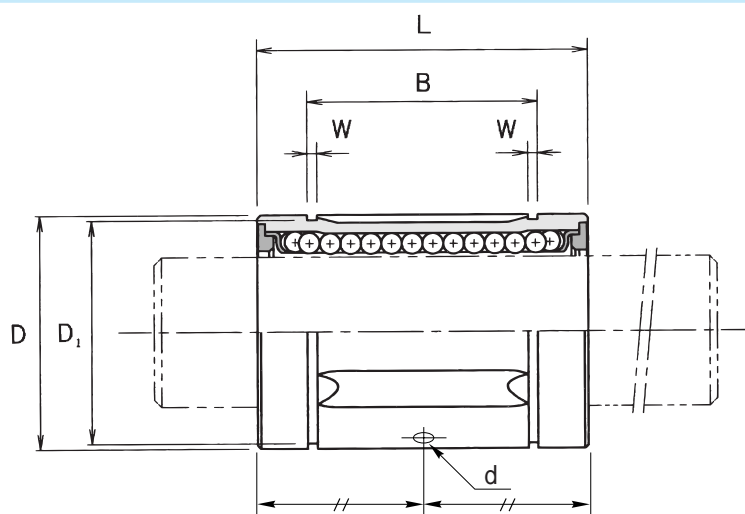
Unit: mm

dimensions		B		W	D ₁	h	h ₁	θ	Eccentricity (max.) μm		Radial-clearance tolerance μm	Basic static-load rating	
Length L	Tolerance		Tolerance						Precision grade	High grade		C	C ₀
												N	N
42	$0_{-0.2}$	30.5	$0_{-0.2}$	1.6	30.5	1.5	11	60	10	15	-9	863	1370
59	$0_{-0.3}$	41	$0_{-0.3}$	1.85	38	2	12	50	10	15	-9	980	1570
64		44.5		1.85	43	2.5	15	50	10	15	-9	1570	2750
70		49.5		2.1	49	2.5	17	50	12	20	-13	1670	3140
76		58.5		2.1	54.5	3	18	50	12	20	-13	2160	4020
80		60.5		2.1	57	3	20	50	12	20	-13	2160	4020
100		74		2.6	76.5	3	25	50	12	20	-13	3820	7940
110		85		3.15	86.5	3	30	50	17	25	-16	4710	10000

- If only one Linear Bush unit is used on each shaft, avoid moment loads. If a moment load is to be applied, use two Linear Bush units on each shaft and mount the bushes so that there is a significant interval between them.

Type LM-A

(Metal-retainer type)



Standard type	Cylindrical No. of ball trains	Mass g	Model No.		Inscribed-circle diameter dr	Tolerance		Major Outer diameter D	
			Adjustable-clearance type	Open type		Precision grade	High grade	Precision grade/ High grade	
LM 6A	3	8	—	—	6	0 -0.006	0 -0.009	12	0 -0.011
LM 8SA	3	11	—	—	8			15	
LM 8A	3	16	—	—	8			15	
LM 10A	3	30	—	—	10			19	0 -0.013
LM 12A	4	31.5	LM 12A-AJ	LM 12A-OP	12			21	
LM 13A	4	43	LM 13A-AJ	LM 13A-OP	13			23	
LM 16A	4	69	LM 16A-AJ	LM 16A-OP	16			28	

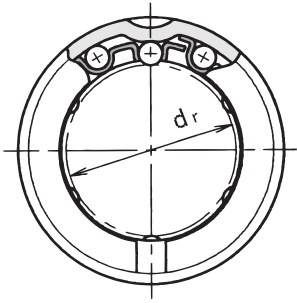
Notes:

- When specifying a model incorporating a metal retainer, append “A” to the model number.

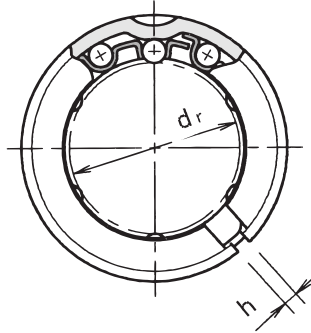
[Ex.] LM16 A

High-temperature symbol

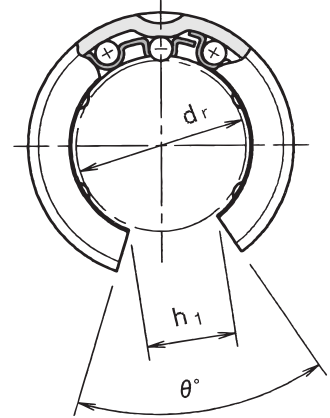
- If a model with seals is required, that fact must be specified (the seal is heat-resistant up to 80°).



Type LM-A



Type LM-A-AJ



Type LM-A-OP

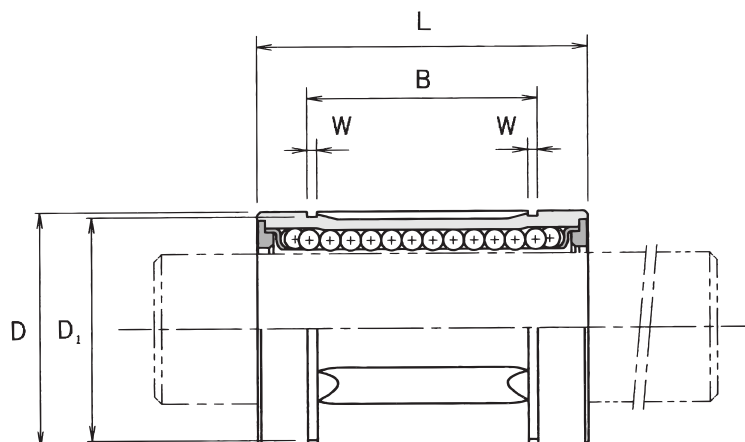
Unit: mm

dimensions									Oil hole d	Eccentricity (max.) μm		Radial- clearance tolerance μm	Basic static-load rating	
Length L	B	W	D_1	h	h_1	θ	Precision grade	High grade		C N	C_0 N			
Tolerance	Tolerance													
19	0 -0.2	13.4	0 -0.2	1.2	11.5	—	—	—	—	8	12	-5	206	265
17		11.4		1.2	14	—	—	—	—	8	12	-5	176	225
24		17.4		1.2	14	—	—	—	—	8	12	-5	265	402
29		21.8		1.4	18	—	—	—	2	8	12	-5	373	549
30		22.8		1.4	20	1.5	7.5	80	2	8	12	-5	412	598
32		22.8		1.4	22	1.5	9	80	2	8	12	-7	510	775
37		26.4		1.7	27	1.5	11	60	2.3	8	12	-7	775	1180

- If only one Linear Bush unit is used on each shaft, avoid moment loads. If a moment load is to be applied, use two Linear Bush units on each shaft and mount the bushes so that there is a significant interval between them.

Type LM-A

(Metal-retainer type)



Standard type	Cylindrical No. of ball trains	Mass g	Model No.		Inscribed-circle diameter dr	Tolerance		Major Outer diameter D	
			Adjustable- clearance type	Open type		Precision grade	High grade	Precision grade/ High grade	
LM 20A	5	87	LM 20A-AJ	LM 20A-OP	20			32	
LM 25A	5	220	LM 25A-AJ	LM 25A-OP	25	0 -0.007	0 -0.010	40	0 -0.016
LM 30A	6	250	LM 30A-AJ	LM 30A-OP	30			45	
LM 35A	6	390	LM 35A-AJ	LM 35A-OP	35			52	
LM 38A	6	565	LM 38A-AJ	LM 38A-OP	38	0 -0.008	0 -0.012	57	0 -0.019
LM 40A	6	585	LM 40A-AJ	LM 40A-OP	40			60	
LM 50A	6	1580	LM 50A-AJ	LM 50A-OP	50			80	
LM 60A	6	2000	LM 60A-AJ	LM 60A-OP	60	0 -0.009	0 -0.015	90	0 -0.022
LM 80A	6	4520	LM 80A-AJ	LM 80A-OP	80			120	
LM 100A	6	8600	LM 100A-AJ	LM 100A-OP	100	0 -0.010	0 -0.020	150	0 -0.025
LM 120A	8	15000	LM 120A-AJ	LM 120A-OP	120			180	

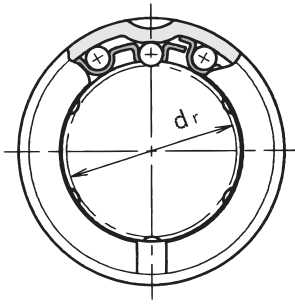
Notes:

- When specifying a model incorporating a metal retainer, append "A" to the model number.

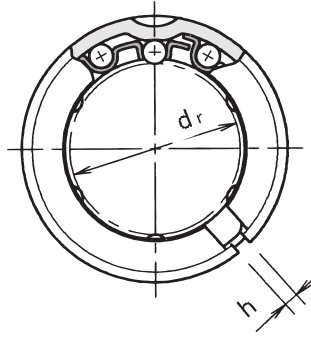
[Ex.] LM20 A

High-temperature symbol

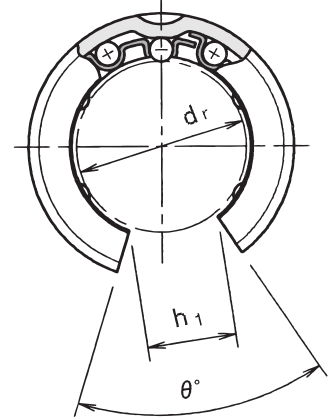
- If a model with seals is required, that fact must be specified (the seal is heat-resistant up to 80°).



Type LM-A



Type LM-A-AJ



Type LM-A-OP

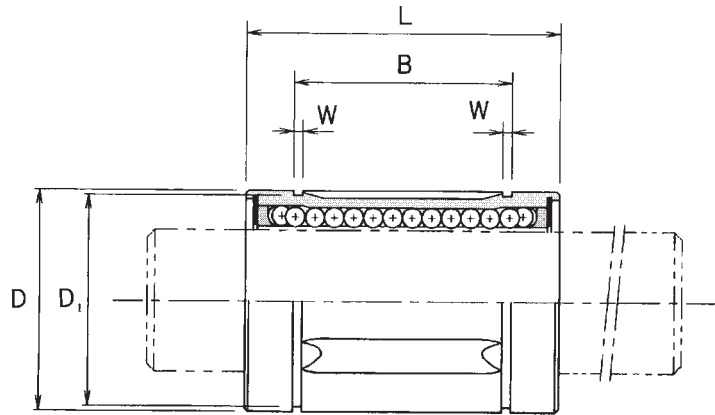
Unit: mm

dimensions		B		W	D ₁	h	h ₁	θ	Oil hole d	Eccentricity (max.) μm		Radial-clearance tolerance μm	Basic static-load rating	
Length L	Tolerance		Tolerance							Precision grade	High grade		C N	C ₀ N
42	$0_{-0.2}$	30.4	$0_{-0.2}$	1.7	31	2	11	60	2.3	10	15	-9	863	1370
59		41		2.0	39	2	13	60	3	10	15	-9	980	1570
64		44.4		2.2	43	2.5	15	50	3	10	15	-9	1570	2750
70		49.4		2.2	50	2.5	17	50	3	12	20	-13	1670	3140
76	$0_{-0.3}$	58.4	$0_{-0.3}$	2.2	55	3	18	50	3	12	20	-13	2160	4020
80		60.4		2.2	58	3	20	50	3	12	20	-13	2160	4020
100		73.6		2.8	77	3	25	50	3	12	20	-13	3820	7940
110		84.8		3.4	87	3	30	50	4	17	25	-16	4710	10000
140		105		4.5	116	3	40	50	4	17	25	-16	7350	16000
175	$0_{-0.4}$	125	$0_{-0.4}$	5.0	145	3	50	50	4	20	30	-20	14100	34800
200		158.3		4.15	175	4	85	80	5	20	30	-25	16400	40000

- If only one Linear Bush unit is used on each shaft, avoid moment loads. If a moment load is to be applied, use two Linear Bush units on each shaft and mount the bushes so that there is a significant interval between them.

Type LM-M

(Stainless steel type)



Standard type	Cylindrical No. of ball trains	Mass g	Model No.		Inscribed-circle diameter dr	Tolerance		Major Outer diameter D	
			Adjustable- clearance type	Open type		Precision grade	High grade	Precision grade/ High grade	
LM 3 M	4	1.4	—	—	3	0 -0.005	0 -0.008	7	0 -0.009
LM 4 M	4	1.9	—	—	4			8	
LM 5 M	4	4	—	—	5			10	
*LM 6 M	4	8	LM 6 M-AJ	—	6	0 -0.006	0 -0.009	12	0 -0.011
*LM 8SM	4	11	LM 8 SM-AJ	—	8			15	
*LM 8 M	4	16	*LM 8 M-AJ	—	8			15	
*LM 10 M	4	30	*LM 10 M-AJ	—	10			19	
LM 12 M	4	31.5	LM 12 M-AJ	—	12			21	
*LM 13 M	4	43	*LM 13 M-AJ	*LM 13 M-OP	13	23	0 -0.013		

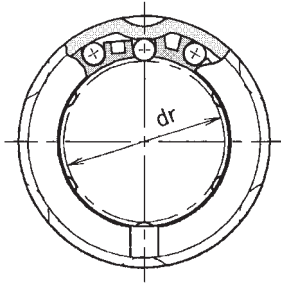
Notes:

- The standard Linear Bush accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
- When specifying a model incorporating a stainless steel retainer, append "A" to the model number. (Asterisked Model Nos. indicate models provided with a stainless-steel retainer.)

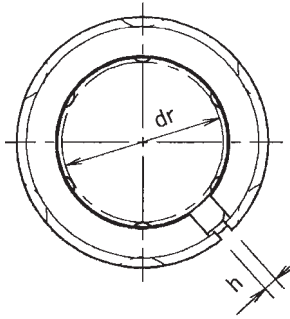
- If a model with seals is required, that fact must be specified.
- The open series contains only type A.

[Ex.] LM13M A

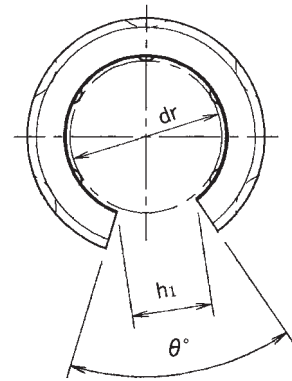
Stainless-steel-retainer symbol



Type LM-M



Type LM-M-AJ



Type LM-M-OP

Unit: mm

dimensions									Eccentricity (max.)		Radial-clearance tolerance	Basic static-load rating	
Length L	B	W	D ₁	h	h ₁	θ	μm	Precision grade/High grade	μm	C N		C ₀ N	
Tolerance	Tolerance												
10	—	—	—	—	—	—	—	4	8	-2	88.2	108	
12	⁰ / _{-0.12}	—	—	—	—	—	—	4	8	-3	88.2	127	
15	10.2	⁰ / _{-0.2}	1.1	9.6	—	—	—	4	8	-3	167	206	
19	13.5		1.1	11.5	1	—	—	8	12	-5	206	265	
17	11.5		1.1	14.3	1	—	—	8	12	-5	176	225	
24	17.5		1.1	14.3	1	—	—	8	12	-5	265	402	
29	22		1.3	18	1	—	—	8	12	-5	373	549	
30	23		1.3	20	1.5	8	80	8	12	-5	412	598	
32	23		1.3	22	1.5	9	80	8	12	-7	510	775	

Material:

Bushing sleeve: Martensite stainless steel
(SUS440C-equivalent)

Ball: Martensite stainless steel
(SUS440C)

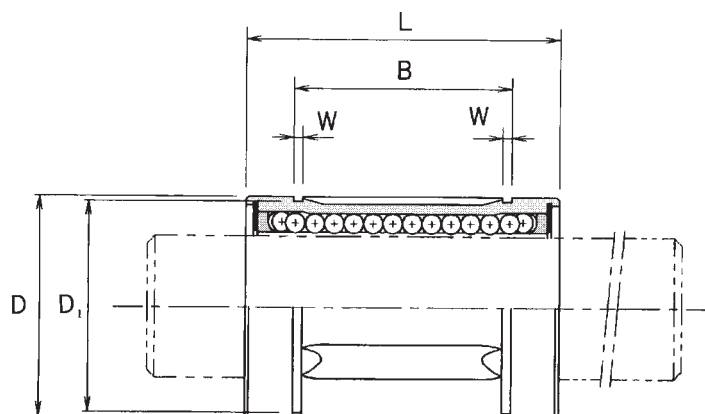
Retainer (standard type):

Synthetic resin (The model numbers of those made of austenite stainless steel (SUS304) are appended with an "A.")

- If only one Linear Bush unit is used on each shaft, avoid moment loads. If a moment load is to be applied, use two Linear Bush units on each shaft and mount the bushes so that there is a significant interval between them.

Type LM-M

(Stainless steel type)



Cylindrical Standard type	No. of ball trains	Mass g	Model No.		Inscribed-circle diameter dr			Major Outer diameter D	
			Adjustable- clearance type	Open type	Precision grade	High grade	Precision grade/ High grade	Tolerance Precision grade/ High grade	
*LM 16 M	4	69	*LM 16 M-AJ	*LM 16 M-OP					16
*LM 20 M	5	87	*LM 20 M-AJ	*LM 20 M-OP	20	$\begin{matrix} 0 \\ -0.007 \end{matrix}$	$\begin{matrix} 0 \\ -0.010 \end{matrix}$	32	$\begin{matrix} 0 \\ -0.016 \end{matrix}$
*LM 25 M	5	220	*LM 25 M-AJ	*LM 25 M-OP	25			40	
*LM 30 M	6	250	*LM 30 M-AJ	*LM 30 M-OP	30			45	
*LM 35 M	6	390	*LM 35 M-AJ	*LM 35 M-OP	35	$\begin{matrix} 0 \\ -0.008 \end{matrix}$	$\begin{matrix} 0 \\ -0.012 \end{matrix}$	52	$\begin{matrix} 0 \\ -0.019 \end{matrix}$
*LM 40 M	6	585	*LM 40 M-AJ	*LM 40 M-OP	40			60	

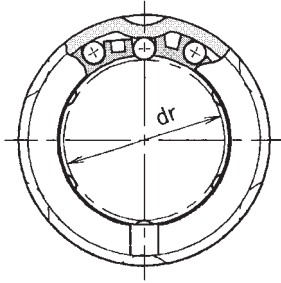
Notes:

- The standard Linear Bush accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
- When specifying a model incorporating a stainless steel retainer, append "A" to the model number. (Asterisked Model Nos. indicate models provided with a stainless-steel retainer.)

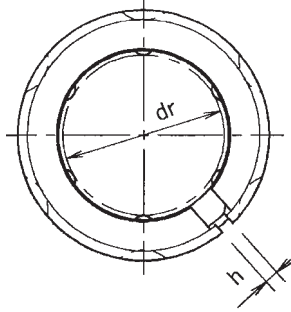
[Ex.] LM20M A

Stainless-steel-retainer symbol

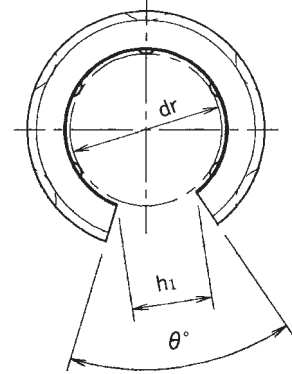
- If a model with seals is required, that fact must be specified.
- The open series contains only type A.



Type LM-M



Type LM-M-AJ



Type LM-M-OP

Unit: mm

dimensions										Eccentricity (max.)		Radial-clearance tolerance		Basic static-load rating	
Length L	Tolerance	B	Tolerance	W	D ₁	h	h ₁	θ	μm		μm			C N	C ₀ N
									Precision grade/	High grade					
37	0 -0.2	26.5	0 -0.2	1.6	27	1.5	11	80	8	12	-7	775	1180		
42		30.5		1.6	30.5	1.5	11	60	10	15	-9	863	1370		
59	0 -0.3	41	0 -0.3	1.85	38	2	12	50	10	15	-9	980	1570		
64		44.5		1.85	43	2.5	15	50	10	15	-9	1570	2750		
70		49.5		2.1	49	2.5	17	50	12	20	-13	1670	3140		
80		60.5		2.1	57	3	20	50	12	20	-13	2160	4020		

Material:

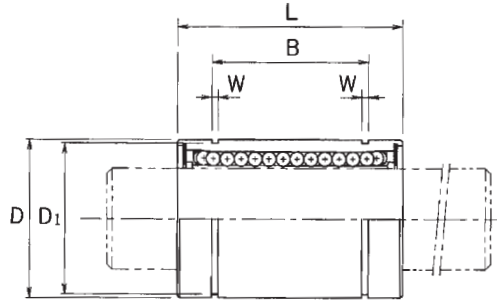
Bushing sleeve: Martensite stainless steel
(SUS440C-equivalent)

Ball: Martensite stainless steel
(SUS440C)

Retainer (standard type):
Synthetic resin (The model numbers of those made of austenite stainless steel (SUS304) are appended with an "A.")

- If only one Linear Bush unit is used on each shaft, avoid moment loads. If a moment load is to be applied, use two Linear Bush units on each shaft and mount the bushes so that there is a significant interval between them.

Type LME



Standard type	Cylindrical No. of ball trains	Mass g	Model No.		Inscribed-circle diameter dr	Major Outer diameter D		
			Adjustable-clearance type	Open type		Tolerance	Tolerance	
LME 5	4	11	LME 5-AJ	—	5	+0.008 0	12	0 -0.008
LME 8	4	20	LME 8-AJ	—	8		16	
LME 12	4	41	LME 12-AJ	LME 12-OP	12		22	0 -0.009
LME 16	4	57	LME 16-AJ	LME 16-OP	16	+0.009 -0.001	26	
LME 20	5	91	LME 20-AJ	LME 20-OP	20		32	
LME 25	6	215	LME 25-AJ	LME 25-OP	25	+0.011 -0.001	40	0 -0.011
LME 30	6	325	LME 30-AJ	LME 30-OP	30		47	
LME 40	6	705	LME 40-AJ	LME 40-OP	40	+0.013 -0.002	62	0 -0.013
LME 50	6	1130	LME 50-AJ	LME 50-OP	50		75	
LME 60	6	2220	LME 60-AJ	LME 60-OP	60		90	0 -0.015
LME 80	6	5140	LME 80-AJ	LME 80-OP	80	+0.016 -0.004	120	

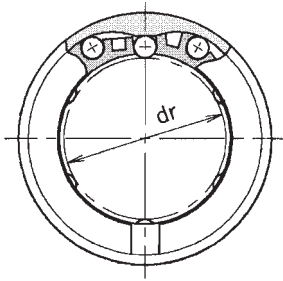
Notes:

- Linear Bushes of model numbers 50 and below accommodate a retainer made of synthetic resin that does not generate a large amount of noise during operation. If the operating temperature exceeds 80°C, use a model incorporating metal retainers. When specifying a model of this type, append “A” to the model number.

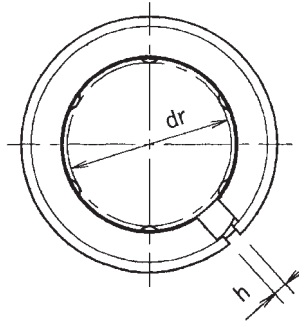
[Ex.] LME20 A

High-temperature symbol

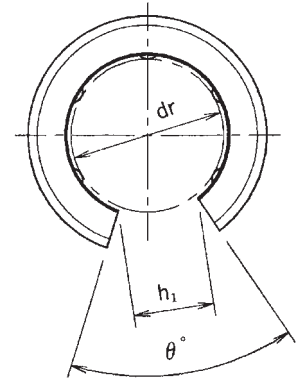
- If a model with seals is required, that fact must be specified.



Type LME



Type LME-AJ



Type LME-OP

Unit: mm

dimensions								Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating		
Length L		B	W	D_1	h	h_1	θ			C N	C_0 N	
	Tolerance		Tolerance									
22	$0_{-0.2}$	14.5	$0_{-0.2}$	1.1	11.5	1	—	—	12	-5	206	265
25		16.5		1.1	15.2	1	—	—	12	-5	265	402
32		22.9		1.3	21	1.5	7.5	78	12	-7	510	775
36		24.9		1.3	24.9	1.5	10	78	12	-7	578	892
45		31.5		1.6	30.3	2	10	60	15	-9	863	1370
58	$0_{-0.3}$	44.1	$0_{-0.3}$	1.85	37.5	2	12.5	60	15	-9	980	1570
68		52.1		1.85	44.5	2	12.5	50	15	-9	1570	2750
80		60.6		2.15	59	3	16.8	50	17	-13	2160	4020
100		77.6		2.65	72	3	21	50	17	-13	3820	7940
125	$0_{-0.4}$	101.7	$0_{-0.4}$	3.15	86.5	3	27.2	54	20	-16	4710	10000
165		133.7		4.15	116	3	36.3	54	20	-16	7350	16000

- Models with a metal retainer come in the shape shown below.



Type LME-A

- If only one Linear Bush unit is used on each shaft, avoid moment loads. If a moment load is to be applied, use two Linear Bush units on each shaft and mount the bushes so that there is a significant interval between them.

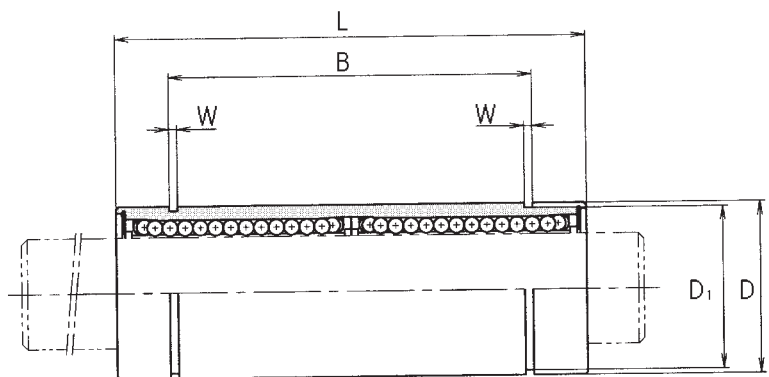
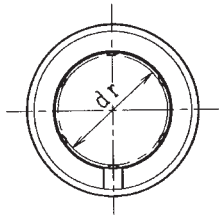
Type LM-L



Model No.			Inscribed-circle diameter d_r		Major Outer diameter D		
Standard type	No. of ball trains	Mass g		Tolerance		Tolerance	
LM 3L	4	3	3	0 -0.010	7	0 -0.013	
LM 4L	4	4	4		8		
LM 5L	4	8	5		10		
LM 6L	4	16	6		12		
LM 8L	4	31	8		15		
LM 10L	4	62	10		19		
LM 12L	4	80	12		21		0 -0.016
LM 13L	4	90	13		23		
LM 16L	5	145	16		28		
LM 20L	5	180	20		0 -0.012		32
LM 25L	6	440	25	40			
LM 30L	6	580	30	45			
LM 35L	6	795	35	0 -0.015	52	0 -0.022	
LM 40L	6	1170	40		60		
LM 50L	6	3100	50		80		
LM 60L	6	3500	60	0 -0.020	90	0 -0.025	

Notes:

- Linear Bush type LM-L accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation. (There is no high-temperature model for type LM-L.)
- If a model with seals is required, that fact must be specified.
[Ex.] LM16LUU = Rubber seals provided on both ends



B

Unit: mm

dimensions						Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
Length L		B		W	D_1			C N	C_0 N
	Tolerance		Tolerance						
19	$\begin{matrix} 0 \\ -0.3 \end{matrix}$	—	—	—	—	10	-2	139	216
23		—		—	—	—	10	-3	139
29		20	$\begin{matrix} 0 \\ -0.3 \end{matrix}$	1.1	9.6	10	-3	263	412
35		27		1.1	11.5	15	-5	324	529
45		35		1.1	14.3	15	-5	431	784
55		44		1.3	18	15	-5	588	1100
57		46		1.3	20	15	-5	657	1200
61		46		1.3	22	15	-7	814	1570
70		53		1.6	27	15	-7	1230	2350
80		61		1.6	30.5	20	-9	1400	2750
112	$\begin{matrix} 0 \\ -0.4 \end{matrix}$	82	$\begin{matrix} 0 \\ -0.4 \end{matrix}$	1.85	38	20	-9	1560	3140
123		89		1.85	43	20	-9	2490	5490
135		99		2.1	49	25	-13	2650	6270
154		121		2.1	57	25	-13	3430	8040
192		148		2.6	76.5	25	-13	6080	15900
211		170		3.15	86.5	25	-16	7650	20000

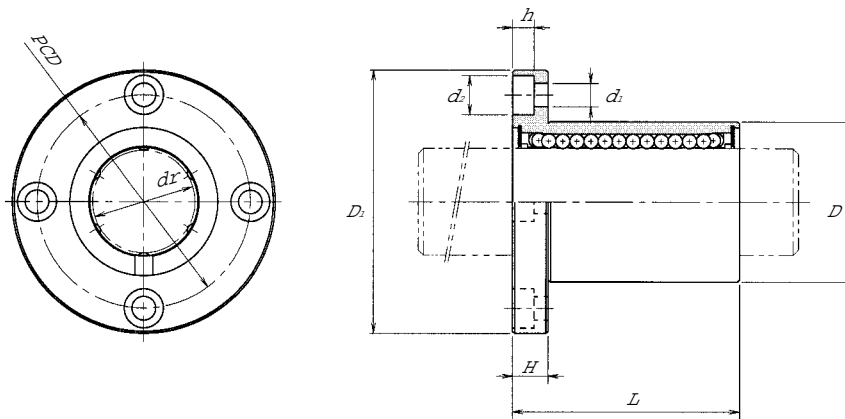
Type LMF



Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMF 6	4	26.5	6	0 -0.009	12	0 -0.011	19	0 -0.2	28	0 -0.2
LMF 8S	4	34	8		15		17		32	
LMF 8	4	40	8		15		24		32	
LMF 10	4	78	10		19	0 -0.013	29		40	
LMF 12	4	76	12		21		30		42	
LMF 13	4	94	13		23		32		43	
LMF 16	5	134	16		28		37	48		
LMF 20	5	180	20		0 -0.010	32	0 -0.016	42	54	
LMF 25	6	340	25			40		59	62	
LMF 30	6	460	30			45	64	74		
LMF 35	6	795	35	0 -0.012	52	0 -0.019	70	0 -0.3	82	
LMF 40	6	1054	40		60		80		96	
LMF 50	6	2200	50		80		100	116	0 -0.3	
LMF 60	6	2960	60		90	110	134			

Notes:

- Linear Bush type LMF accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
- If a model with seals is required, that fact must be specified.



Type LMF

Unit: mm

H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
						C N	C_0 N
5	20	$3.4 \times 6.5 \times 3.1$	12	12	-5	206	265
5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	176	225
5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	265	402
6	29	$4.5 \times 8 \times 4.1$	12	12	-5	373	549
6	32	$4.5 \times 8 \times 4.1$	12	12	-5	412	598
6	33	$4.5 \times 8 \times 4.1$	12	12	-7	510	775
6	38	$4.5 \times 8 \times 4.1$	12	12	-7	775	1180
8	43	$5.5 \times 9.5 \times 5.1$	15	15	-9	863	1370
8	51	$5.5 \times 9.5 \times 5.1$	15	15	-9	980	1570
10	60	$6.6 \times 11 \times 6.1$	15	15	-9	1570	2750
10	67	$6.6 \times 11 \times 6.1$	20	20	-13	1670	3140
13	78	$9 \times 14 \times 8.1$	20	20	-13	2160	4020
13	98	$9 \times 14 \times 8.1$	20	20	-13	3820	7940
18	112	$11 \times 17.5 \times 10.8$	25	25	-13	4710	10000

Type LMF-M

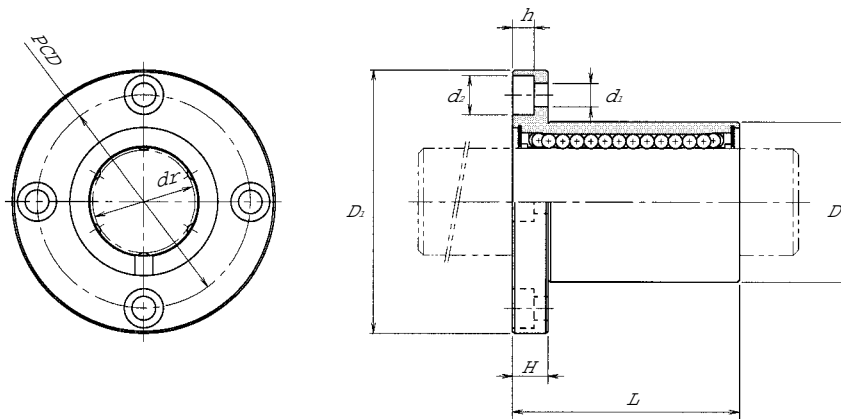
(Stainless steel type)



Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMF 6 M	4	26.5	6	-0.009	12	0 -0.011	19	0 -0.2	28	0 -0.2
LMF 8S M	4	34	8		15		17		32	
LMF 8 M	4	40	8		15		24		32	
LMF 10 M	4	78	10		19	29	40			
LMF 12 M	4	76	12		21	30	42			
LMF 13 M	4	94	13		23	32	43			
LMF 16 M	5	134	16		28	37	48			
LMF 20 M	5	180	20	-0.010	32	0 -0.016	42	54		
LMF 25 M	6	340	25		40		59	62		
LMF 30 M	6	460	30		45		64	74	0 -0.3	

Notes:

- Linear Bush type LMF-M accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
- If a model with seals is required, that fact must be specified.



Type LMF-M

Unit: mm

H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
						C N	C_0 N
5	20	$3.4 \times 6.5 \times 3.1$	12	12	-5	206	265
5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	176	225
5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	265	402
6	29	$4.5 \times 8 \times 4.1$	12	12	-5	373	549
6	32	$4.5 \times 8 \times 4.1$	12	12	-5	412	598
6	33	$4.5 \times 8 \times 4.1$	12	12	-7	510	775
6	38	$4.5 \times 8 \times 4.1$	12	12	-7	775	1180
8	43	$5.5 \times 9.5 \times 5.1$	15	15	-9	863	1370
8	51	$5.5 \times 9.5 \times 5.1$	15	15	-9	980	1570
10	60	$6.6 \times 11 \times 6.1$	15	15	-9	1570	2750

Material:

Bushing sleeve: Martensite stainless steel
(SUS440C-equivalent)

Ball: Martensite stainless steel
(SUS440C)

Retainer: Synthetic resin

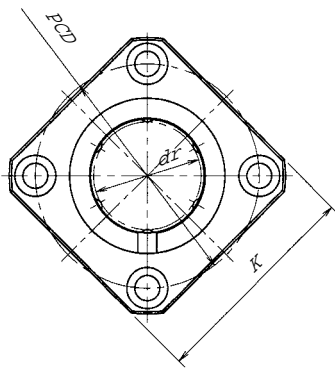
Type LMK



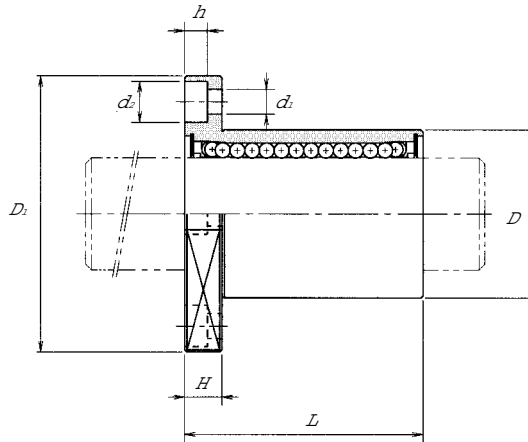
Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMK 6	4	18.5	6	-0.009	12	0 -0.011	19	0 -0.2	28	0 -0.2
LMK 8S	4	23	8		15		17		32	
LMK 8	4	29	8		15		24		32	
LMK 10	4	61	10		19	0 -0.013	29		40	
LMK 12	4	56	12		21		30		42	
LMK 13	4	75	13		23		32		43	
LMK 16	5	104	16		28		37		48	
LMK 20	5	145	20	32	0 -0.016	42	54			
LMK 25	6	300	25	40		59	62			
LMK 30	6	375	30	45		64	74			
LMK 35	6	692	35	0 -0.012	52	0 -0.019	70	0 -0.3	82	
LMK 40	6	864	40		60		80		96	
LMK 50	6	2020	50		80		100		116	
LMK 60	6	2520	60		90		110		134	
				0 -0.015		0 -0.022				0 -0.3

Notes:

- Linear Bush type LMK accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
- If a model with seals is required, that fact must be specified.



Type LMK



B

Unit: mm

K	H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
							C N	C_0 N
22	5	20	$3.4 \times 6.5 \times 3.1$	12	12	-5	206	265
25	5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	176	225
25	5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	265	402
30	6	29	$4.5 \times 8 \times 4.1$	12	12	-5	373	549
32	6	32	$4.5 \times 8 \times 4.1$	12	12	-5	412	598
34	6	33	$4.5 \times 8 \times 4.1$	12	12	-7	510	775
37	6	38	$4.5 \times 8 \times 4.1$	12	12	-7	775	1180
42	8	43	$5.5 \times 9.5 \times 5.1$	15	15	-9	863	1370
50	8	51	$5.5 \times 9.5 \times 5.1$	15	15	-9	980	1570
58	10	60	$6.6 \times 11 \times 6.1$	15	15	-9	1570	2750
64	10	67	$6.6 \times 11 \times 6.1$	20	20	-13	1670	3140
75	13	78	$9 \times 14 \times 8.1$	20	20	-13	2160	4020
92	13	98	$9 \times 14 \times 8.1$	20	20	-13	3820	7940
106	18	112	$11 \times 17.5 \times 10.8$	25	25	-13	4710	10000

Type LMK-M

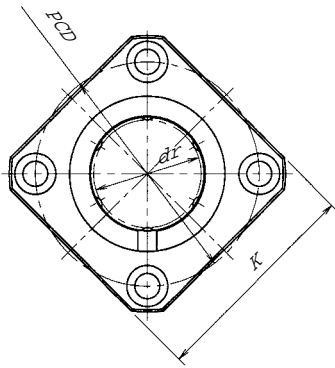
(Stainless steel type)



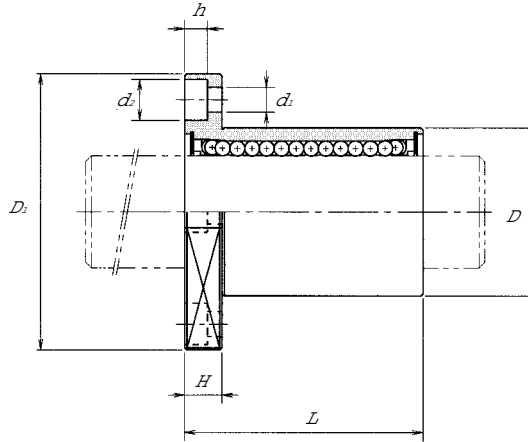
Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMK 6 M	4	18.5	6	0 -0.009	12	0 -0.011	19	0 -0.2	28	0 -0.2
LMK 8SM	4	23	8		15		17		32	
LMK 8 M	4	29	8		15		24		32	
LMK 10 M	4	61	10		19	0 -0.013	29		40	
LMK 12 M	4	56	12		21		30		42	
LMK 13 M	4	75	13		23		32		43	
LMK 16 M	5	104	16		28		37		48	
LMK 20 M	5	145	20	0 -0.010	32	0 -0.016	42	54		
LMK 25 M	6	300	25		40		59	62		
LMK 30 M	6	375	30		45	0 -0.016	64	0 -0.3	74	

Notes:

- Linear Bush type LMK-M accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
- If a model with seals is required, that fact must be specified.



Type LMK-M



Unit: mm

K	H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
							C N	C_0 N
22	5	20	$3.4 \times 6.5 \times 3.1$	12	12	-5	206	265
25	5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	176	225
25	5	24	$3.4 \times 6.5 \times 3.1$	12	12	-5	265	402
30	6	29	$4.5 \times 8 \times 4.1$	12	12	-5	373	549
32	6	32	$4.5 \times 8 \times 4.1$	12	12	-5	412	598
34	6	33	$4.5 \times 8 \times 4.1$	12	12	-7	510	775
37	6	38	$4.5 \times 8 \times 4.1$	12	12	-7	775	1180
42	8	43	$5.5 \times 9.5 \times 5.1$	15	15	-9	863	1370
50	8	51	$5.5 \times 9.5 \times 5.1$	15	15	-9	980	1570
58	10	60	$6.6 \times 11 \times 6.1$	15	15	-9	1570	2750

Material:

Bushing sleeve: Martensite stainless steel
(SUS440C-equivalent)

Ball: Martensite stainless steel
(SUS440C)

Retainer: Synthetic resin

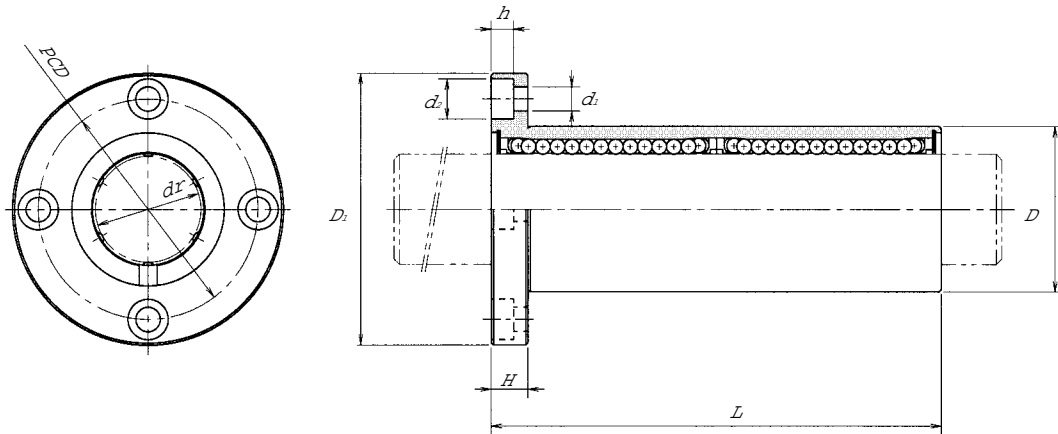
Type LMF-L



Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMF 6L	4	32	6	0 -0.010	12	0 -0.013	35	0 -0.3	28	0 -0.2
LMF 8L	4	53	8		15		45		32	
LMF 10L	4	105	10		19	0 -0.016	55		40	
LMF 12L	4	100	12		21		57		42	
LMF 13L	4	130	13		23		61		43	
LMF 16L	5	187	16		28		70		48	
LMF 20L	5	260	20	0 -0.012	32	0 -0.019	80	54		
LMF 25L	6	515	25		40		112	62		
LMF 30L	6	655	30		45		123	74		
LMF 35L	6	970	35	0 -0.015	52	0 -0.022	135	82		
LMF 40L	6	1560	40		60		154	96		
LMF 50L	6	3500	50		80		192	116	0 -0.3	
LMF 60L	6	4500	60		90		211	134		

Notes:

- Linear Bush type LMF-L accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
(There is no high-temperature model for type LMF-L.)
- If a model with seals is required, that fact must be specified.



Type LMF-L

Unit: mm

H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
						C N	C_0 N
5	20	$3.4 \times 6.5 \times 3.1$	15	15	-5	324	529
5	24	$3.4 \times 6.5 \times 3.1$	15	15	-5	431	784
6	29	$4.5 \times 8 \times 4.1$	15	15	-5	588	1100
6	32	$4.5 \times 8 \times 4.1$	15	15	-5	657	1200
6	33	$4.5 \times 8 \times 4.1$	15	15	-7	814	1570
6	38	$4.5 \times 8 \times 4.1$	15	15	-7	1230	2350
8	43	$5.5 \times 9.5 \times 5.1$	20	20	-9	1400	2750
8	51	$5.5 \times 9.5 \times 5.1$	20	20	-9	1560	3140
10	60	$6.6 \times 11 \times 6.1$	20	20	-9	2490	5490
10	67	$6.6 \times 11 \times 6.1$	25	25	-13	2650	6270
13	78	$9 \times 14 \times 8.1$	25	25	-13	3430	8040
13	98	$9 \times 14 \times 8.1$	25	25	-13	6080	15900
18	112	$11 \times 17.5 \times 10.8$	25	25	-13	7650	20000

Type LMF-ML

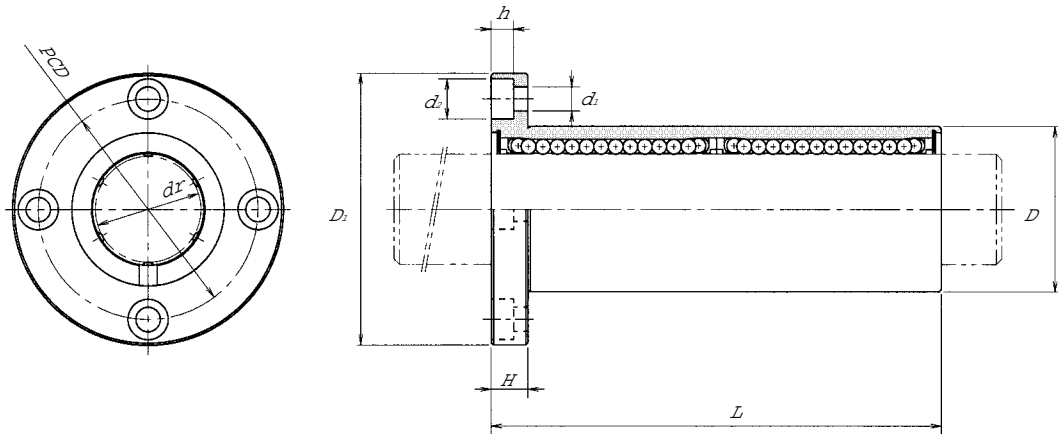
(Stainless steel type)



Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMF 6ML	4	32	6	0 -0.010	12	0 -0.013	35	0 -0.3	28	0 -0.2
LMF 8ML	4	53	8		15		45		32	
LMF 10ML	4	105	10		19	0 -0.016	55		40	
LMF 12ML	4	100	12		21		57		42	
LMF 13ML	4	130	13		23		61		43	
LMF 16ML	5	187	16		28		70		48	
LMF 20ML	5	260	20	0 -0.012	32	0 -0.019	80	54		
LMF 25ML	6	515	25		40		112	62		
LMF 30ML	6	655	30		45		123	74		

Notes:

- Linear Bush type LMF-ML accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
(There is no high-temperature model for type LMF-ML.)
- If a model with seals is required, that fact must be specified.



Type LMF-ML

Unit: mm

H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
						C N	C_0 N
5	20	$3.4 \times 6.5 \times 3.1$	15	15	-5	324	529
5	24	$3.4 \times 6.5 \times 3.1$	15	15	-5	431	784
6	29	$4.5 \times 8 \times 4.1$	15	15	-5	588	1100
6	32	$4.5 \times 8 \times 4.1$	15	15	-5	657	1200
6	33	$4.5 \times 8 \times 4.1$	15	15	-7	814	1570
6	38	$4.5 \times 8 \times 4.1$	15	15	-7	1230	2350
8	43	$5.5 \times 9.5 \times 5.1$	20	20	-9	1400	2750
8	51	$5.5 \times 9.5 \times 5.1$	20	20	-9	1560	3140
10	60	$6.6 \times 11 \times 6.1$	20	20	-9	2490	5490

Material:

Bushing sleeve: Martensite stainless steel
(SUS440C-equivalent)

Ball: Martensite stainless steel
(SUS440C)

Retainer: Synthetic resin

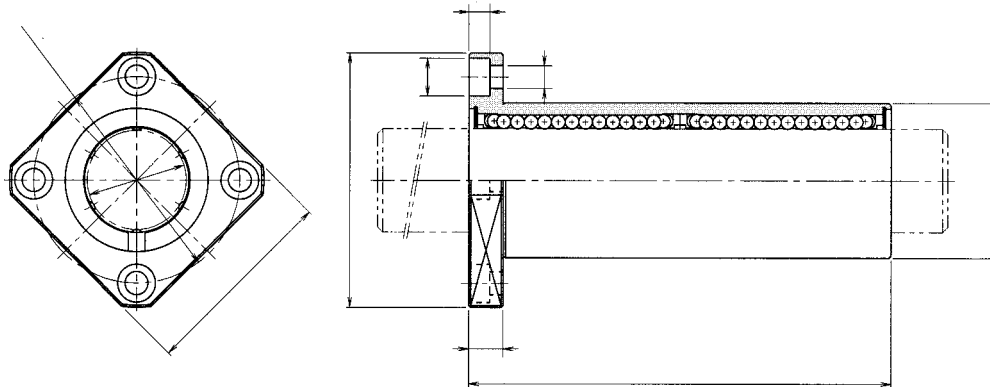
Type LMK-L



Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMK 6L	4	26	6	0 -0.010	12	0 -0.013	35	0 -0.3	28	0 -0.2
LMK 8L	4	46	8		15		45		32	
LMK 10L	4	88	10		19	0 -0.016	55		40	
LMK 12L	4	82	12		21		57		42	
LMK 13L	4	108	13		23		61		43	
LMK 16L	5	160	16		28		70		48	
LMK 20L	5	230	20	0 -0.012	32	0 -0.019	80	54		
LMK 25L	6	475	25		40		112	62		
LMK 30L	6	575	30		45		123	74		
LMK 35L	6	870	35	0 -0.015	52	0 -0.022	135	82	0 -0.3	
LMK 40L	6	1380	40		60		154	96		
LMK 50L	6	3300	50		80		192	116		
LMK 60L	6	4060	60		90		211	134		

Notes:

- Linear Bush type LMK-L accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
(There is no high-temperature model for type LMK-L.)
- If a model with seals is required, that fact must be specified.



Type LMK-L

Unit: mm

K	H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
							C N	C_0 N
22	5	20	$3.4 \times 6.5 \times 3.1$	15	15	-5	324	529
25	5	24	$3.4 \times 6.5 \times 3.1$	15	15	-5	431	784
30	6	29	$4.5 \times 8 \times 4.1$	15	15	-5	588	1100
32	6	32	$4.5 \times 8 \times 4.1$	15	15	-5	657	1200
34	6	33	$4.5 \times 8 \times 4.1$	15	15	-7	814	1570
37	6	38	$4.5 \times 8 \times 4.1$	15	15	-7	1230	2350
42	8	43	$5.5 \times 9.5 \times 5.1$	20	20	-9	1400	2750
50	8	51	$5.5 \times 9.5 \times 5.1$	20	20	-9	1560	3140
58	10	60	$6.6 \times 11 \times 6.1$	20	20	-9	2490	5490
64	10	67	$6.6 \times 11 \times 6.1$	25	25	-13	2650	6270
75	13	78	$9 \times 14 \times 8.1$	25	25	-13	3430	8040
92	13	98	$9 \times 14 \times 8.1$	25	25	-13	6080	15900
106	18	112	$11 \times 17.5 \times 10.8$	25	25	-13	7650	20000

Type LMK-ML

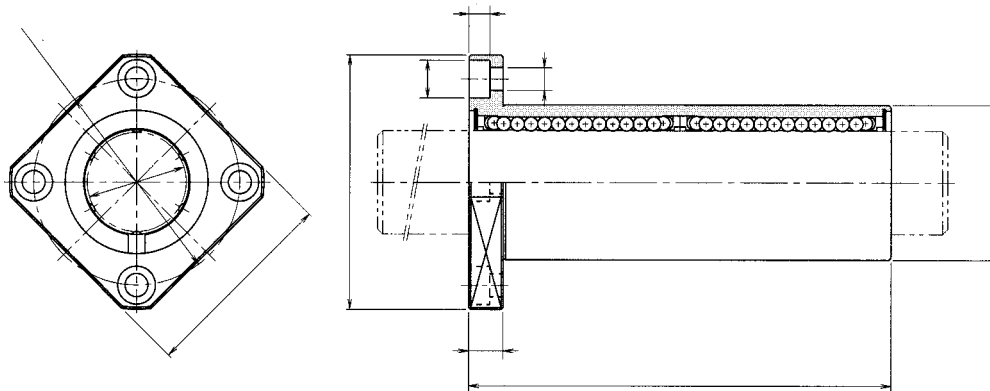
(Stainless steel type)



Model No.			Major dimensions							
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter	
			dr	Tolerance	D	Tolerance	L	Tolerance	D ₁	Tolerance
LMK 6ML	4	26	6	0 -0.010	12	0 -0.013	35	0 -0.3	28	0 -0.2
LMK 8ML	4	46	8		15		45		32	
LMK 10ML	4	88	10		19	0 -0.016	55		40	
LMK 12ML	4	82	12		21		57		42	
LMK 13ML	4	108	13		23		61		43	
LMK 16ML	5	160	16		28		70		48	
LMK 20ML	5	230	20	0 -0.012	32	0 -0.019	80	54		
LMK 25ML	6	475	25		40		112	62		
LMK 30ML	6	575	30		45		123	74		

Notes:

- Linear Bush type LMK-ML accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation. (There is no high-temperature model for type LMK-ML.)
- If a model with seals is required, that fact must be specified.



Type LMK-ML

Unit: mm

K	H	PCD	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
							C N	C_0 N
22	5	20	$3.4 \times 6.5 \times 3.1$	15	15	-5	324	529
25	5	24	$3.4 \times 6.5 \times 3.1$	15	15	-5	431	784
30	6	29	$4.5 \times 8 \times 4.1$	15	15	-5	588	1100
32	6	32	$4.5 \times 8 \times 4.1$	15	15	-5	657	1200
34	6	33	$4.5 \times 8 \times 4.1$	15	15	-7	814	1570
37	6	38	$4.5 \times 8 \times 4.1$	15	15	-7	1230	2350
42	8	43	$5.5 \times 9.5 \times 5.1$	20	20	-9	1400	2750
50	8	51	$5.5 \times 9.5 \times 5.1$	20	20	-9	1560	3140
58	10	60	$6.6 \times 11 \times 6.1$	20	20	-9	2490	5490

Material:

Bushing sleeve: Martensite stainless steel
(SUS440C-equivalent)

Ball: Martensite stainless steel
(SUS440C)

Retainer: Synthetic resin

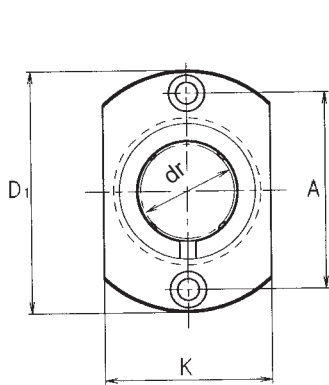
Type LMH



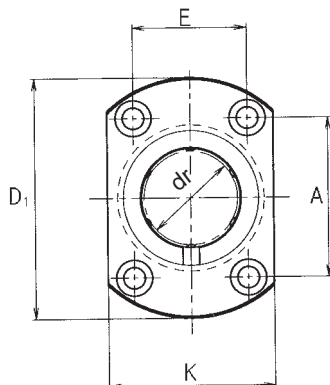
Model No.			Major dimensions						
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter
			dr	Tolerance	D	Tolerance	L	Tolerance	D_1
LMH 6	4	18	6	0 -0.009	12	0 -0.011	19	0 -0.2	28
LMH 8	4	28	8		15		24		32
LMH 10	4	50	10		19	0 -0.013	29		39
LMH 12	4	55	12		21		30		42
LMH 13	4	70	13		23		32		43
LMH 16	5	95	16		28		37		48
LMH 20	5	150	20	0 -0.010	32	0 -0.016	42	54	
LMH 25	6	275	25		40		59	62	
LMH 30	6	350	30		45		64	74	

Notes:

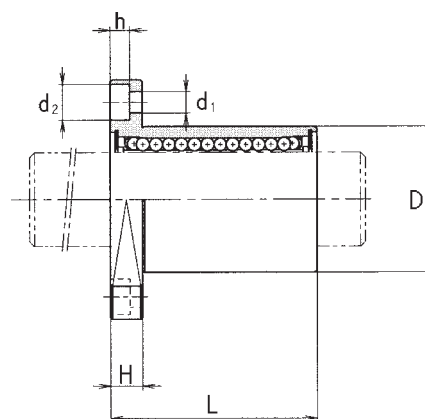
- Linear Bush type LMH accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation. (There is no high-temperature model for type LMH.)
- If a model with seals is required, that fact must be specified.
[Ex.] LMH16UU = Rubber seals provided on both ends



Type LMH 6-13



Type LMH 16-30



B

Unit: mm

K	H	A	E	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity	Eccentricity (max.)	Radial- clearance tolerance	Basic static-load rating	
					μm	μm	μm	C N	C_0 N
18	5	20	—	$3.4 \times 6.5 \times 3.3$	12	12	-5	206	265
21	5	24	—	$3.4 \times 6.5 \times 3.3$	12	12	-5	265	402
25	6	29	—	$4.5 \times 8 \times 4.4$	12	12	-5	373	549
27	6	32	—	$4.5 \times 8 \times 4.4$	12	12	-5	412	598
29	6	33	—	$4.5 \times 8 \times 4.4$	12	12	-7	510	775
34	6	31	22	$4.5 \times 8 \times 4.4$	12	12	-7	775	1180
38	8	36	24	$5.5 \times 9.5 \times 5.4$	15	15	-9	863	1370
46	8	40	32	$5.5 \times 9.5 \times 5.4$	15	15	-9	980	1570
51	10	49	35	$6.6 \times 11 \times 6.5$	15	15	-9	1570	2750

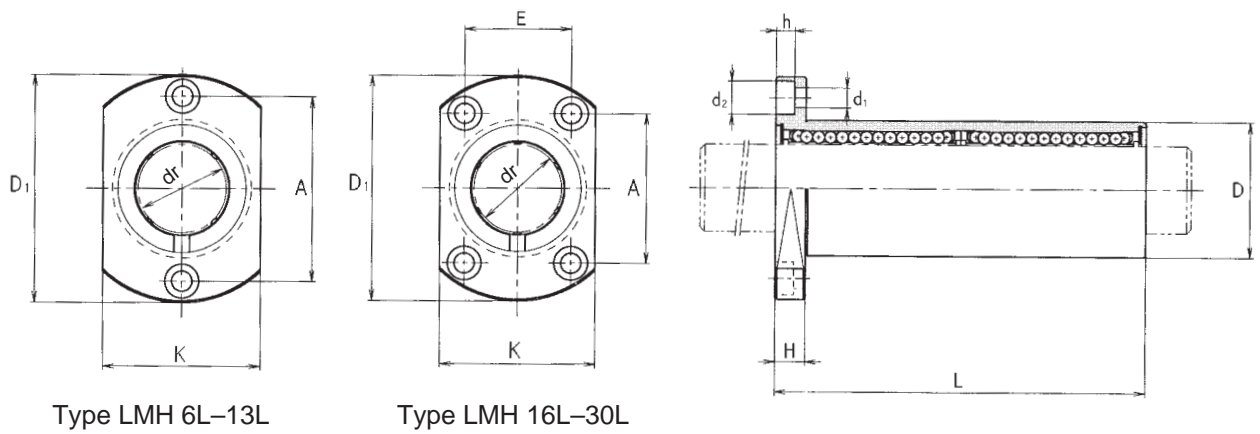
Type LMH-L



Model No.			Major dimensions						
Standard type	No. of ball trains	Mass g	Inscribed-circle diameter		Outer diameter		Length		Flange diameter
			dr	Tolerance	D	Tolerance	L	Tolerance	D_1
LMH 6L	4	28	6	0 -0.010	12	0 -0.013	35	0 -0.3	28
LMH 8L	4	40	8		15		45		32
LMH 10L	4	75	10		19		55		39
LMH 12L	4	82	12		21	0 -0.016	57		42
LMH 13L	4	107	13		23		61		43
LMH 16L	5	143	16		28		70		48
LMH 20L	5	225	20	0 -0.012	32	0 -0.019	80	0 -0.4	54
LMH 25L	6	450	25		40		112		62
LMH 30L	6	575	30		45		123		74

Notes:

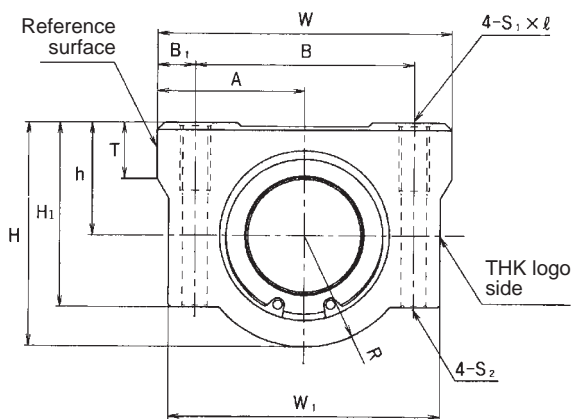
- Linear Bush type LMH-L accommodates a retainer made of synthetic resin that does not generate a large amount of noise during operation.
(There is no high-temperature model for type LMH-L.)
- If a model with seals is required, that fact must be specified.
[Ex.] LMH16UU = Rubber seals provided on both ends



Unit: mm

K	H	A	E	Mounting hole $d_1 \times d_2 \times h$	Flange perpendicularity μm	Eccentricity (max.) μm	Radial- clearance tolerance μm	Basic static-load rating	
								C N	C_0 N
18	5	20	—	$3.4 \times 6.5 \times 3.3$	15	15	-5	324	529
21	5	24	—	$3.4 \times 6.5 \times 3.3$	15	15	-5	431	784
25	6	29	—	$4.5 \times 8 \times 4.4$	15	15	-5	588	1100
27	6	32	—	$4.5 \times 8 \times 4.4$	15	15	-5	657	1200
29	6	33	—	$4.5 \times 8 \times 4.4$	15	15	-7	814	1570
34	6	31	22	$4.5 \times 8 \times 4.4$	15	15	-7	1230	2350
38	8	36	24	$5.5 \times 9.5 \times 5.4$	20	20	-9	1400	2750
46	8	40	32	$5.5 \times 9.5 \times 5.4$	20	20	-9	1560	3140
51	10	49	35	$6.6 \times 11 \times 6.5$	20	20	-9	2490	5490

Type SC6-30



Type SC6-30

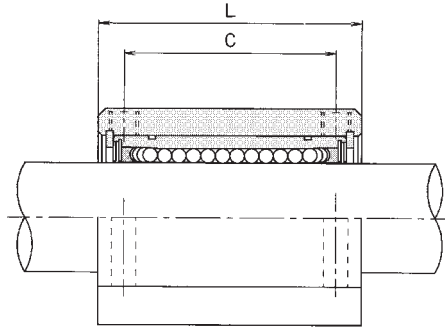
Model No.	External dimensions			LM Casing dimensions						
	Height H	Width W	Length L	Mounting-hole position			Tapping $S_1 \times \ell$	Through-bolt designation S_2	Center-line height h ± 0.02	A ± 0.02
				B	B_1	C				
SC 6UU	18	30	25	20	5	15	M4 × 8	M3	9	15
SC 8UU	22	34	30	24	5	18	M4 × 8	M3	11	17
SC 10UU	26	40	35	28	6	21	M5 × 12	M4	13	20
SC 12UU	29	42	36	30.5	5.75	26	M5 × 12	M4	15	21
SC 13UU	30	44	39	33	5.5	26	M5 × 12	M4	15	22
SC 16UU	38.5	50	44	36	7	34	M5 × 12	M4	19	25
SC 20UU	42	54	50	40	7	40	M6 × 12	M5	21	27
SC 25UU	51.5	76	67	54	11	50	M8 × 18	M6	26	38
SC 30UU	59.5	78	72	58	10	58	M8 × 18	M6	30	39

Note:

- Upon request, we can incorporate in the casing a stainless steel Linear Bush of type LM-M for superior corrosion resistance.

Sample Model Number for Combined Linear Bush

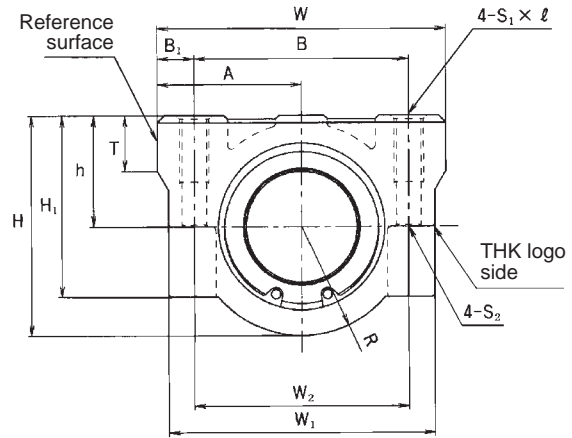
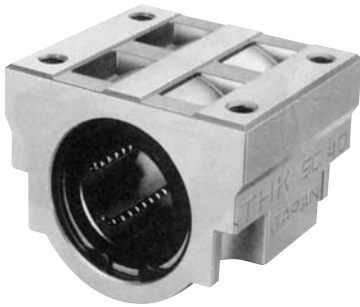
Combined Linear Bush	Sample model number
With seals on both ends	SC13UU
Non-sealed	SC13
With stainless steel seals on both ends	SC13MUU



Unit: mm

H ₁	W ₁	T	R	Inscribed-circle diameter		Unit mass	Combined Linear Bush		
				dr	Tolerance		g	Model No.	Basic load rating
								C	C ₀
								N	N
15	28	6	9	6	0 -0.009	34	LM 6UU	206	265
18	32	6	11	8		52	LM 8UU	265	402
21	37	8	13	10		92	LM 10UU	373	549
25	39	8	14	12		102	LM 12UU	412	598
26	41	8	15	13		123	LM 13UU	510	775
35	46	9	19.5	16		189	LM 16UU	775	1180
36	52	11	21	20	0 -0.010	237	LM 20UU	863	1370
41	68	12	25.5	25		555	LM 25UU	980	1570
49	72	15	29.5	30		685	LM 30UU	1570	2750

Type SC35-50



Type SC35-50

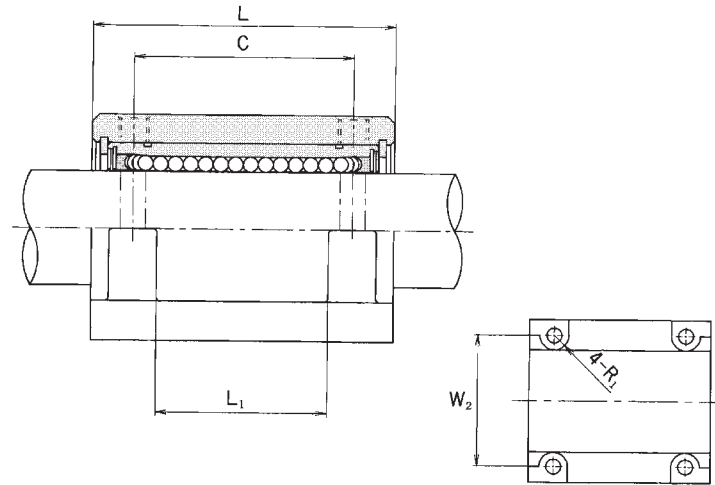
Model No.	External dimensions			LM Casing dimensions							
	Height H	Width W	Length L	Mounting-hole position			Tapping $S_1 \times \ell$	Through-bolt designation S_2	Center-line height h ± 0.02	A ± 0.02	H_1
SC 35UU	68	90	80	B	B_1	C	M 8 × 18	M6	34	45	54
SC 40UU	78	102	90	80	11	60	M10 × 25	M8	40	51	62
SC 50UU	102	122	110	100	11	80	M10 × 25	M8	52	61	80

Note:

- Upon request, we can incorporate in the casing a stainless steel Linear Bush of type LM-M for superior corrosion resistance.
(The SC50 series does not have a stainless steel type.)

Sample Model Number for Combined Linear Bush

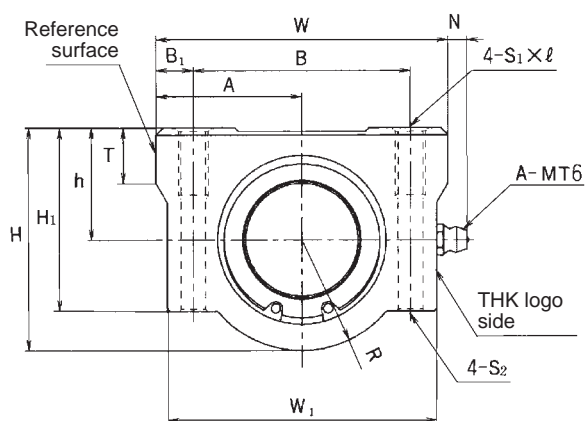
Combined Linear Bush	Sample model number
With seals on both ends	SC40UU
Non-sealed	SC40
With stainless steel seals on both ends	SC40MUU



Unit: mm

W_1	W_2	L_1	T	R	R_1	Inscribed-circle diameter dr	Tolerance	Unit mass g	Combined Linear Bush		
									Model No.	Basic load rating	
									C N	C_0 N	
85	60	42	18	34	5	35	$\begin{matrix} 0 \\ -0.012 \end{matrix}$	1100	LM 35UU	1670	3140
96	80	44	20	38	8	40		1600	LM 40UU	2160	4020
116	100	64	25	50	8	50		3350	LM 50UU	3820	7940

Type SL



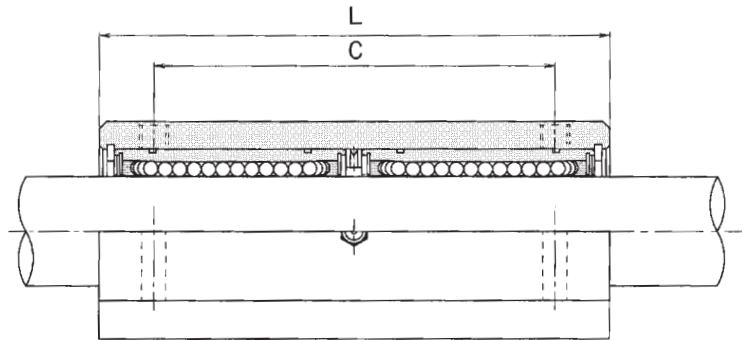
Model No.	External dimensions			LM Casing dimensions						
	Height H	Width W	Length L	Mounting-hole position			Tapping $S_1 \times \ell$	Through-bolt designation S_2	Center-line height h ± 0.02	A ± 0.02
				B	B_1	C				
SL 6UU	18	30	48	20	5	36	M4 × 8	M3	9	15
SL 8UU	22	34	58	24	5	42	M4 × 8	M3	11	17
SL 10UU	26	40	68	28	6	46	M5 × 12	M4	13	20
SL 12UU	29	42	70	30.5	5.75	50	M5 × 12	M4	15	21
SL 13UU	30	44	75	33	5.5	50	M5 × 12	M4	15	22
SL 16UU	38.5	50	85	36	7	60	M5 × 12	M4	19	25
SL 20UU	42	54	96	40	7	70	M6 × 12	M5	21	27
SL 25UU	51.5	76	130	54	11	100	M8 × 18	M6	26	38
SL 30UU	59.5	78	140	58	10	110	M8 × 18	M6	30	39

Note:

- Upon request, we can incorporate in the casing a stainless steel Linear Bush of type LM-M for superior corrosion resistance.

Sample Model Number for Combined Linear Bush

Combined Linear Bush	Sample model number
With seals on both ends	SL13UU
Non-sealed	SL13
With stainless steel seals on both ends	SL13MUU



Unit: mm

H ₁	W ₁	T	R	R ₁	Inscribed-circle diameter dr	Tolerance	Unit mass g	Combined Linear Bush		
								Model No.	Basic load rating	
								C	C ₀	
								N	N	
15	28	6	9	7	6	0 -0.009	68	LM 6U	206	265
18	32	6	11	7	8		105	LM 8U	265	402
21	38	8	13	7	10		185	LM 10U	373	549
25	39	8	14	6.5	12		205	LM 12U	412	598
26	41	8	15	6.5	13		242	LM 13U	510	775
35	46	9	19.5	6	16		403	LM 16U	775	1180
36	52	11	21	7	20	0 -0.010	520	LM 20U	863	1370
41	68	12	25.5	4	25		1120	LM 25U	980	1570
49	72	15	29.5	5	30		1440	LM 30U	1570	2750

Type SH



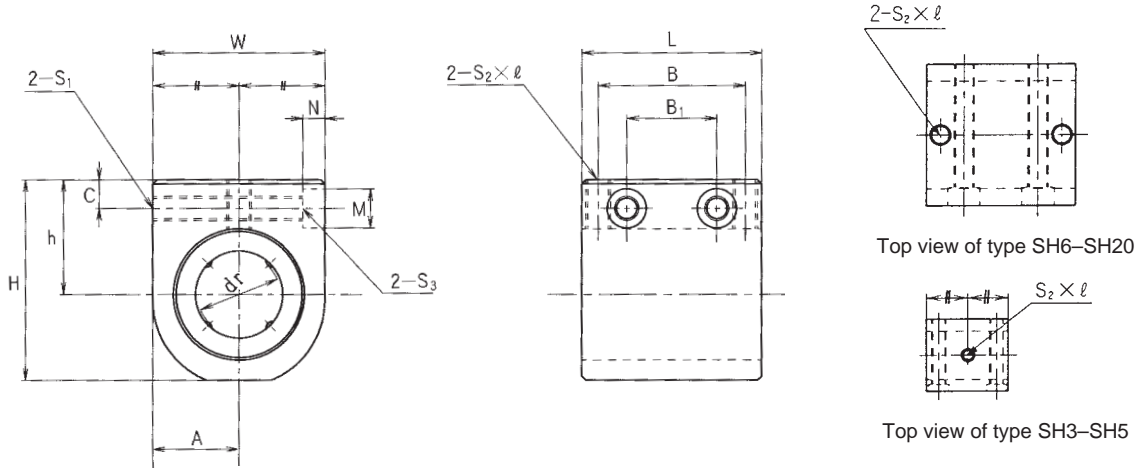
Model No.	External dimensions			LM Casing dimensions					
	Height H	Width W	Length L	Mounting-hole position			Tapping		Through-bolt designation S_3
				B	B_1	C	S_1	$S_2 \times \ell$	
SH 3UU	14	10	13	—	8	3	M3	M3 × 5.5	M2
SH 4UU	16	12	15	—	10	3	M3	M3 × 6	M2
SH 5UU	18	14	17	—	12	3	M3	M3 × 6	M2
SH 6UU	22	16	24	18	9	5	M4	M4 × 8	M3
SH 8UU	26	20	27	20	10	5	M4	M5 × 8.5	M3
SH 10UU	32	26	35	27	15	6	M5	M6 × 9.5	M4
SH 12UU	34	28	35	27	15	6	M5	M6 × 9.5	M4
SH 13UU	36	30	36	28	16	6	M5	M6 × 9.5	M4
SH 16UU	42	36	40	32	18	6	M5	M6 × 10	M4
SH 20UU	49	42	44	36	22	7	M6	M6 × 12	M5

Note:

- Upon request, we can incorporate in the casing a stainless steel Linear Bush of type LM-M for superior corrosion resistance.

Sample Model Number for Combined Linear Bush

Combined Linear Bush	Sample model number
With seals on both ends	SH13UU
Non-sealed	SH13
With stainless steel seals on both ends	SH13MUU



Unit: mm

Center-line height h ±0.02	A ±0.02	M	N	Inscribed-circle diameter dr	Tolerance	Unit mass g	Combined Linear Bush		
							Model No.	Basic load rating C N	C ₀ N
9	5	4.2	1.5	3	0 -0.008	4.5	LM 3UU	88.2	108
10	6	4.2	1.5	4		7	LM 4UU	88.2	127
11	7	4.2	1.5	5		11	LM 5UU	167	206
14	8	6.5	3.3	6	0 -0.009	21.6	LM 6UU	206	265
16	10	6.5	3.3	8		32	LM 8UU	265	402
19	13	8	4.4	10		65	LM 10UU	373	549
20	14	8	4.4	12		81	LM 12UU	412	598
21	15	8	4.4	13		90	LM 13UU	510	775
24	18	8	4.4	16	0 -0.010	150	LM 16UU	775	1180
28	21	9.5	5.4	20		215	LM 20UU	863	1370

Type SH-L



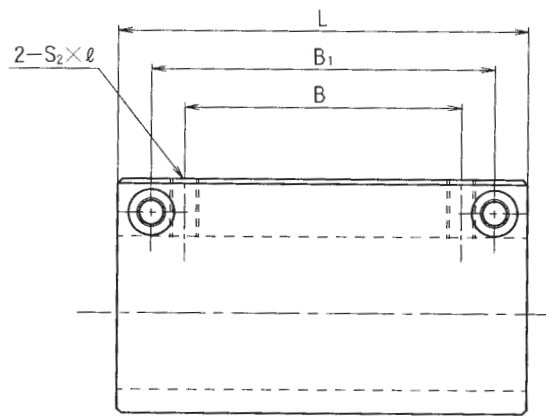
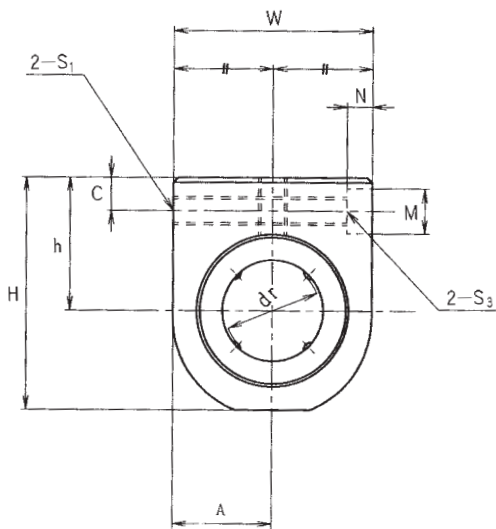
Model No.	External dimensions			LM Casing dimensions					
	Height H	Width W	Length L	Mounting-hole position			Tapping		Through-bolt designation S_3
				B	B_1	C	S_1	$S_2 \times \ell$	
SH 3LUU	14	10	23	10	18	3	M3	M3 × 5.5	M2
SH 4LUU	16	12	27	14	22	3	M3	M3 × 6	M2
SH 5LUU	18	14	32	18	26	3	M3	M3 × 6	M2
SH 6LUU	22	16	40	20	30	5	M4	M4 × 8	M3
SH 8LUU	26	20	52	30	42	5	M4	M5 × 8.5	M3
SH 10LUU	32	26	60	36	50	6	M5	M6 × 9.5	M4
SH 12LUU	34	28	62	36	50	6	M5	M6 × 9.5	M4
SH 13LUU	36	30	66	40	54	6	M5	M6 × 9.5	M4
SH 16LUU	42	36	76	52	66	6	M5	M6 × 10	M4
SH 20LUU	49	42	86	58	72	7	M6	M6 × 12	M5

Note:

- Upon request, we can incorporate in the casing a stainless steel Linear Bush of type LM-M for superior corrosion resistance.

Sample Model Number for Combined Linear Bush

Combined Linear Bush	Sample model number
With seals on both ends	SH13LUU
Non-sealed	SH13L
With stainless steel seals on both ends	SH13MLUU

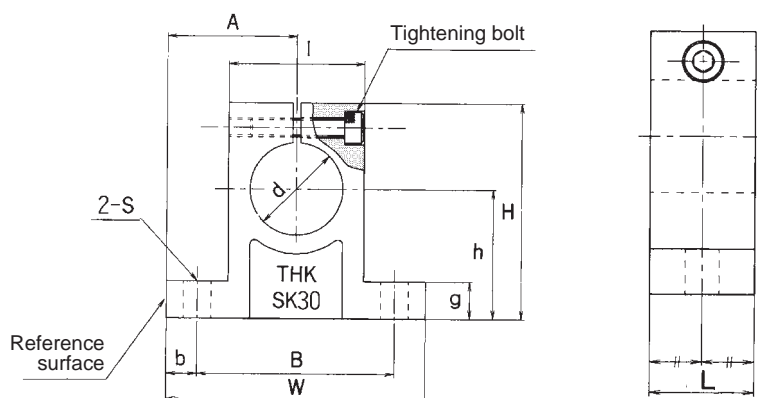


B

Unit: mm

Center-line height h ±0.02	A ±0.02	M	N	Inscribed-circle diameter dr	Tolerance	Unit mass g	Combined Linear Bush		
							Model No.	Basic load rating	
								C N	C ₀ N
9	5	4.2	1.5	3	0 -0.008	8.5	LM 3U	88.2	108
10	6	4.2	1.5	4		13	LM 4U	88.2	127
11	7	4.2	1.5	5		22	LM 5U	167	206
14	8	6.5	3.3	6	0 -0.009	35	LM 6U	206	265
16	10	6.5	3.3	8		65	LM 8U	265	402
19	13	8	4.4	10		125	LM 10U	373	549
20	14	8	4.4	12		155	LM 12U	412	598
21	15	8	4.4	13		190	LM 13U	510	775
24	18	8	4.4	16	0 -0.010	295	LM 16U	775	1180
28	21	9.5	5.4	20		425	LM 20U	863	1370

Type SK



Unit: mm

Model No.	Major dimensions													Mass g
	H	W	L	B	S	Mounting- bolt designation	h ±0.02	A ±0.05	b	g	l	Shaft diameter d	Tightening- bolt designation	
SK 10	32.8	42	14	32	5.5	M 5	20	21	5	6	18	10	M 4	24
SK 12	37.5	42	14	32	5.5	M 5	23	21	5	6	20	12	M 4	30
SK 13	37.5	42	14	32	5.5	M 5	23	21	5	6	20	13	M 4	30
SK 16	44	48	16	38	5.5	M 5	27	24	5	8	25	16	M 4	40
SK 20	51	60	20	45	6.6	M 6	31	30	7.5	10	30	20	M 5	70
SK 25	60	70	24	56	6.6	M 6	35	35	7	12	38	25	M 6	130
SK 30	70	84	28	64	9	M 8	42	42	10	12	44	30	M 6	180
SK 35	83	98	32	74	11	M10	50	49	12	15	50	35	M 8	270
SK 40	96	114	36	90	11	M10	60	57	12	15	60	40	M 8	420

LM Stroke

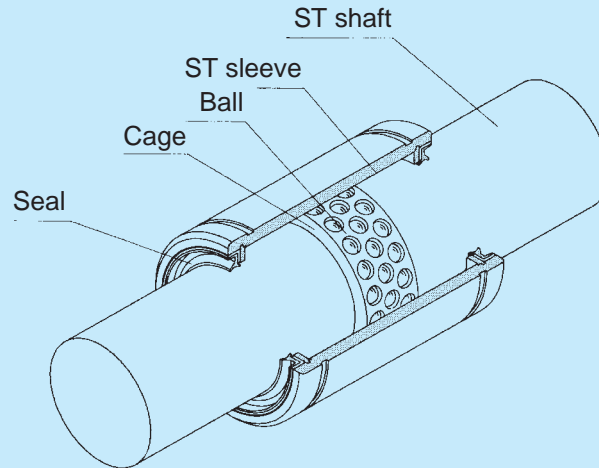


Fig. 4 Construction of LM Stroke Type ST

LM Stroke type ST is a high-precision linear-motion system with a very low friction coefficient. It is capable of rotating or reciprocating motion, and of both motions simultaneously.

Type ST is divided into the standard and sealed types, and each type is subdivided into light- and intermediate-duty types. The simple construction of the stroke enables high precision to be achieved at a low price. The stroke's wide range of applications include press die sets, printing-machine ink rolls, punching-press work chucks, press feeders, electric-discharge machine work heads, winder-roll correction devices, textile machinery, strain measuring instruments, optical-measuring-instrument spindles, and various copiers.

Construction and Features

In stroke ST, as shown in Fig. 1, the cage and balls are incorporated into the cylindrical ST sleeve. The balls are arranged in a staggered pattern so that they bear loads evenly. The cage is made of light alloy, making it lightweight yet highly rigid, and is perforated so as to enable high-speed movement. The ST sleeve is provided with thrust and snap rings on both ends, which prevent the cage from overrunning.

This design enables a composite rotation and reciprocation motion to be achieved with a low friction coefficient. The stroke length can be twice the range over which the cage can move within the sleeve. The maximum stroke length for each model number is specified in its dimension table.

Very low friction coefficient

The balls and raceway form point-contacts, which feature the smallest rolling loss of any mode of contact. Moreover, the balls are held by the cage and are isolated from one another, and can therefore roll with a very low friction coefficient ($\mu = 0.0006$ to 0.0012).

Lightweight and compact

As the ST sleeve consists only of a thin wall and balls, the bearing outer diameter can be kept small. This enables a lightweight, compact design that does not require a large installation space.

High precision and low cost

Construction is simple, and machining can be performed easily. This ensures high precision and enables the construction of a sliding system at low cost.

Types and Features

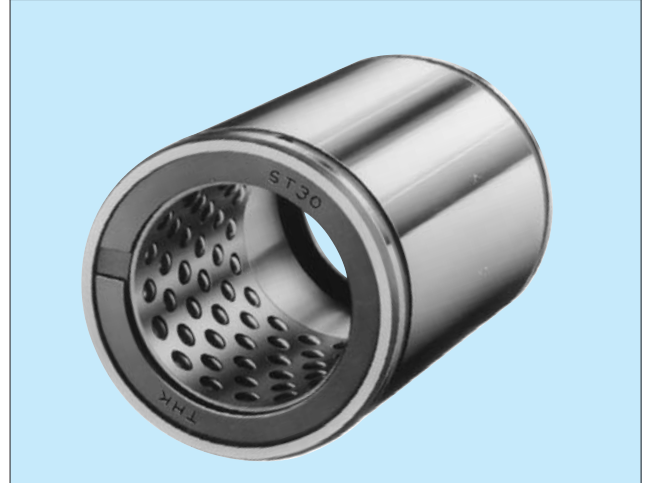
Light-duty type ST



This type provides a long stroke. It is designed for light-duty uses.

Shaft diameter: 6 mm to 100 mm

Intermediate-duty type ST-B



This type features the same dimensions as type ST, but has a shorter stroke. It is designed for intermediate-duty uses, and doubles the load rating.

Shaft diameter: 20 mm to 100 mm

B

Type STI with an inner cylinder



If your LM shaft cannot be hardened, this type should be used. We will produce the inner cylinder upon receipt of individual orders.

Sealed Types ST-UU and ST-UUB



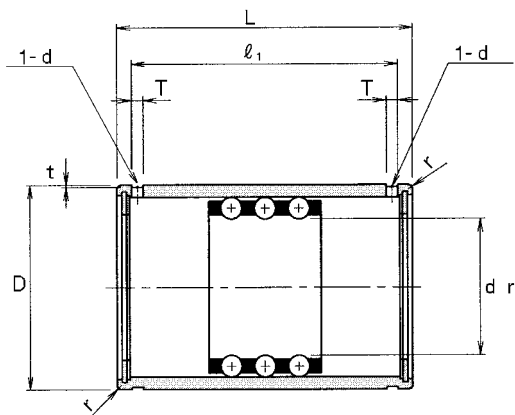
Both ends of the ST sleeve are provided with special synthetic rubber seals, which prevent the entry of foreign matter and the leakage of grease.

If it is necessary to reduce the seal resistance, models with felt seals are also available (types ST-DD and ST-DDB).

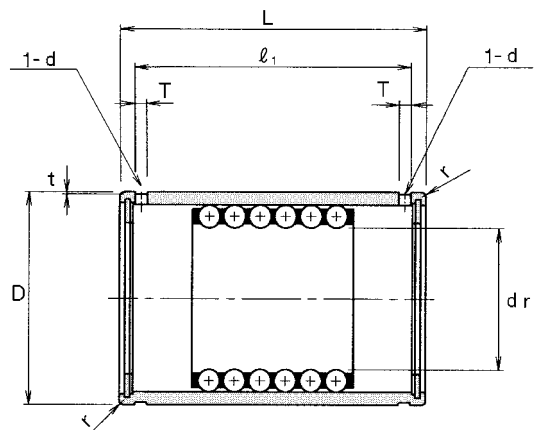
Type ST/ST-B



Model No.	Max. stroke	Basic dynamic-load rating C kN	Basic static-load rating C ₀ kN	Mass g	Model No.	Max. stroke	Basic dynamic-load rating C kN	Basic static-load rating C ₀ kN	Mass g
ST 6	14	0.98	0.23	8.0	—	—	—	—	—
ST 8	24	0.98	0.27	16.4	ST 8 B	8	2.06	0.55	17.6
ST 10	30	2.35	0.62	31.5	ST 10 B	8	4.61	1.27	34.5
ST 12	32	4.02	1.08	47	ST 12 B	8	8.14	2.25	53.5
ST 16	40	4.02	1.27	77	ST 16 B	16	8.04	2.65	85
ST 20	54	4.12	1.57	109	ST 20 B	28	8.33	3.24	120
ST 25	54	4.12	1.76	128	ST 25 B	28	8.14	3.63	142
ST 30	82	9.31	4.12	240	ST 30 B	44	18.7	8.14	275
ST 35	92	9.41	4.51	370	ST 35 B	54	18.7	9.02	410
ST 40	108	12.5	6.18	570	ST 40 B	66	25.0	12.4	635
ST 45	108	12.6	6.76	625	ST 45 B	66	25.2	13.5	695
ST 50	138	16.3	8.82	910	ST 50 B	88	32.5	17.7	1020
ST 55	138	16.6	9.71	1270	ST 55 B	88	33.0	19.3	1380
ST 60	138	16.8	10.5	1360	ST 60 B	88	33.6	21.0	1480
ST 70	138	16.9	11.7	1530	ST 70 B	88	33.8	23.3	1670
ST 80	132	21.3	15.3	2220	ST 80 B	76	42.5	30.6	2430
ST 90	132	21.7	16.9	2440	ST 90 B	76	43.3	33.7	2670
ST 100	132	22.0	18.3	2670	ST 100 B	76	43.9	36.8	2910



Type ST
(For light duty)



Type ST-B
(For intermediate duty)

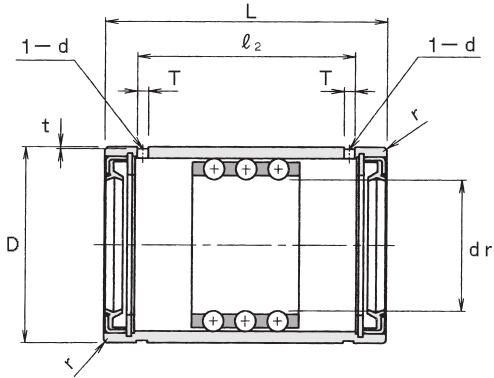
Unit: mm

Major dimensions										
Inscribed-circle diameter dr		Outer diameter D		Length L		ℓ_1	T	t	d	r
	Tolerance		Tolerance		Tolerance					
6	+0.018 +0.010	12	0 -0.008	19	0 -0.2	13.5	1.1	0.25	—	0.3
8	+0.022 +0.013	15		24		20.1	1.5	0.5	1.5	0.5
10		19	30	25.7		1.5	0.5	1.5	0.5	
12	+0.027 +0.016	23	0 -0.009	32		27.5	1.5	0.5	1.5	0.5
16		28	37	32.1		1.5	0.5	1.5	0.5	
20	+0.033 +0.020	32	0 -0.011	45		39.8	2	0.5	2	0.5
25		37		45	39.8	2	0.5	2	1	
30	+0.041 +0.025	45	0 -0.013	65	0 -0.3	58.5	2.5	0.5	2.5	1
35		52		70		63.5	2.5	0.7	2.5	1.5
40		60		80		73.3	2.5	0.7	2.5	1.5
45		65		80		73.3	2.5	0.7	2.5	1.5
50	+0.049 +0.030	72	0 -0.015	100	0 -0.4	92.4	3	1	3	1.5
55		80		100		92.4	3	1	3	2
60		85		100		92.4	3	1	3	2
70		95		100		92.4	3	1	3	2
80	+0.058 +0.036	110	0 -0.018	100	0 -0.4	92	3	1.5	3	2
90		120		100		92	3	1.5	3	2
100		130		100		92	3	1.5	3	2

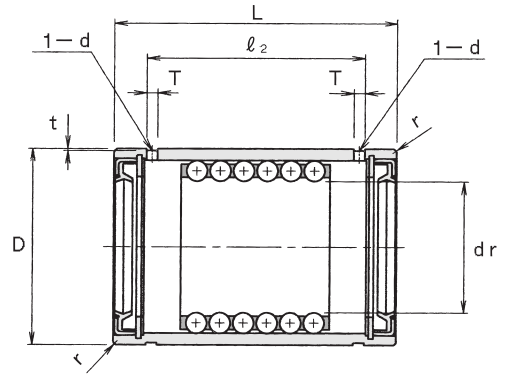
Type ST-UU/ST-UUB



Model No.	Max. stroke	Basic dynamic-load rating C kN	Basic static-load rating C ₀ kN	Mass g	Model No.	Max. stroke	Basic dynamic-load rating C kN	Basic static-load rating C ₀ kN	Mass g
ST 8 UU	14	0.98	0.27	17	—	—	—	—	—
ST 10 UU	16	2.35	0.62	31	—	—	—	—	—
ST 12 UU	17	4.02	1.08	49	—	—	—	—	—
ST 16 UU	24	4.02	1.27	80	—	—	—	—	—
ST 20 UU	32	4.12	1.57	112	ST 20 UUB	12	8.33	3.24	125
ST 25 UU	32	4.12	1.76	132	ST 25 UUB	12	8.14	3.63	145
ST 30 UU	65	9.31	4.12	245	ST 30 UUB	27	18.7	8.14	280
ST 35 UU	75	9.41	4.51	375	ST 35 UUB	37	18.7	9.02	420
ST 40 UU	91	12.5	6.18	580	ST 40 UUB	49	25.0	12.4	640
ST 45 UU	91	12.6	6.76	635	ST 45 UUB	49	25.2	13.5	705
ST 50 UU	120	16.3	8.82	920	ST 50 UUB	70	32.5	17.7	1030
ST 55 UU	120	16.6	9.71	1280	ST 55 UUB	70	33.0	19.3	1400
ST 60 UU	120	16.8	10.5	1370	ST 60 UUB	70	33.6	21.0	1490
ST 70 UU	120	16.9	11.7	1540	ST 70 UUB	70	33.8	23.3	1680
ST 80 UU	114	21.3	15.3	2240	ST 80 UUB	58	42.5	30.6	2450
ST 90 UU	114	21.7	16.9	2470	ST 90 UUB	58	43.3	33.7	2700
ST 100 UU	114	22.0	18.3	2700	ST 100 UUB	58	43.9	36.8	2940



Type ST-UU
(For light duty)



Type ST-UU B
(For intermediate duty)

Unit: mm

Major dimensions										
Inscribed-circle diameter dr	Tolerance	Outer diameter D	Tolerance	Length L		l_1	T	t	d	r
					Tolerance					
8	+0.022 +0.013	15	0 -0.008	24	0 -0.2	15.3	1.5	0.5	1.5	0.5
10		19		30		18.5	1.5	0.5	1.5	0.5
12	+0.027 +0.016	23	0 -0.009	32		20.1	1.5	0.5	1.5	0.5
16		28		37		24.1	1.5	0.5	1.5	0.5
20	+0.033 +0.020	32	0 -0.011	45		30.8	2	0.5	2	0.5
25		37		45	30.8	2	0.5	2	1	
30	+0.041 +0.025	45	0 -0.013	65	0 -0.3	50.1	2.5	0.5	2.5	1
35		52		70		55.1	2.5	0.7	2.5	1.5
40		60		80		64.9	2.5	0.7	2.5	1.5
45	65	80	64.9	2.5		0.7	2.5	1.5		
50	+0.049 +0.030	72	0 -0.013	100		83.4	3	1	3	1.5
55		80		100	83.4	3	1	3	2	
60		85		100	83.4	3	1	3	2	
70		95		100	83.4	3	1	3	2	
80	+0.058 +0.036	110	0 -0.015	100	0 -0.4	83	3	1.5	3	2
90		120		100		83	3	1.5	3	2
100		130		100		83	3	1.5	3	2

Miniature Stroke

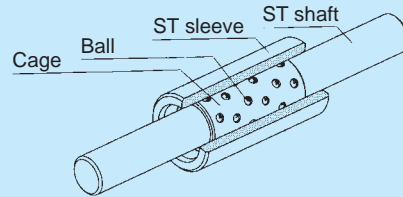


Fig. 5 Construction of Miniature Stroke Type MST

Miniature Stroke type MST is a precision rolling bearing using balls. It is capable of providing composite rotation and reciprocation motion.

The cross section is small in size, the clearance is minimal, and the movement is smooth. Thus, the Miniature Stroke is suitable for a wide range of small measuring instruments, including optical-measuring-instrument spindles, pen plotters, office automation equipment, computer terminals, automatic balances, digital length-measuring instruments, and solenoid valves.

Construction and Features

Miniature Stroke type MST comprises an ST shaft, ball cage, and ST sleeve. These components can be freely combined to your specifications.

Precision bearing

Precision-grade steel balls (spherical deviation, as specified in JIS B1501, not exceeding 0.0003 mm) incorporated in the copper alloy cage guarantee high precision.

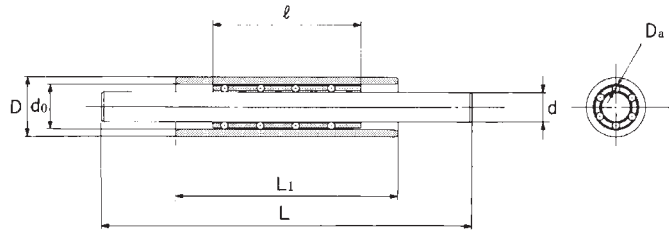
Highly durable bearing

The ST shaft and sleeve are made of select material, which is heat-treated and ground, and the raceways are finished to ultra-fine smoothness. Though they are densely packed into the cage, the balls are arranged so that their raceways do not overlap each other. The balls therefore remain free from wear for an extended period, making them highly durable.

Compact bearing

The ball diameter is only 1 mm, and the ST sleeve consists of a thin wall. The cross section is therefore small, making compact designs possible.

Type MST



Unit: mm

Combined model No.	Ball cage			Permissible load C ₀ N	ST sleeve			ST shaft			Combined radial clearance μm	
	Model No.	D _a	ℓ A		Model No.	D	d ₀	L ₁ B	Model No.	d		L C
MST 3-A-B-C	M3510		10	68.6	S5710			10	T350		50	-2 ~ +5
	M3515	1.0	15	98.0	S5720	7 ⁰ _{-0.006}	5±0.002	20	T360	3 ⁰ _{-0.003}	60	
	M3520		20	137	S5730			30				
MST 4-A-B-C	M4610		10	78.4	S6810			10	T450		50	-2 ~ +5
	M4615	1.0	15	118	S6820	8 ⁰ _{-0.006}	6±0.002	20	T460	4 ⁰ _{-0.003}	60	
	M4620		20	157	S6830			30				
MST 5-A-B-C	M5710		10	98.0	S71010			10	T550		50	-2 ~ +5
	M5715	1.0	15	137	S71020	10 ⁰ _{-0.006}	7±0.002	20	T580	5 ⁰ _{-0.003}	80	
	M5720		20	186	S71030			30				
MST 6-A-B-C	M6810		10	108	S81120			20	T650		50	-2 ~ +5
	M6815	1.0	15	157	S81130	11 ⁰ _{-0.011}	8±0.002	30	T680	6 ⁰ _{-0.003}	80	
	M6820		20	216	S81140			40				

If it is necessary that the radial clearance be zero or less, "C1" must be appended to the model number.

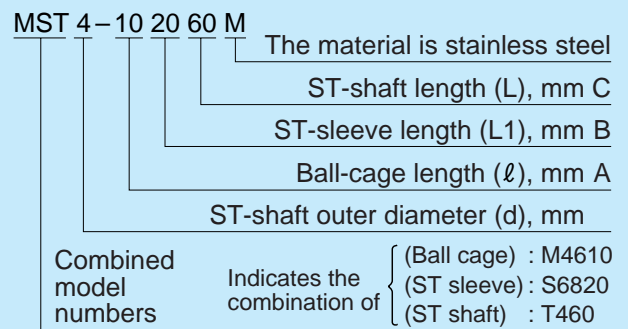
[Ex.]

MST5-203080 C1

Indicates that the combined radial clearance is zero or less

Indicates the combination of M5720, S71030, and T580

Construction and Features



The model numbers of the ball cage, ST sleeve, and ST shaft are specified in the respective dimension tables.

Die-Set Ball Cage

Die-Set Ball Cage types KS and BS are used primarily as the guide in the guide post of a precision punch-press die set. Their high performance allows high-speed reciprocal movement.

These ball cages are used also in various machines and instruments, including textile machinery, precision measuring instruments, automatic recorders, medical equipment, and machine tools. If the housing cannot be hardened and ground, the Die-Set Ball Cage can be replaced by stroke ST to obtain similar performance.

Construction and Features

Die-Set Ball Cage types KS and BS comprise lightweight, highly rigid cages accommodating many precision-grade steel balls, as specified in JIS B1501 (spherically relative difference: 0.0005 mm). The balls are arranged spirally on the cage circumference, and the raceways are designed so as not to overlap each other. As a result, the balls remain free from wear for an extended period and are therefore highly durable.

After being precision-finished, the ball pocket that holds the balls in place is prevented from falling off by THK's unique continuous caulking method. Therefore, even if the cage is used in a space longer than that of the housing, smooth movement is not prevented.

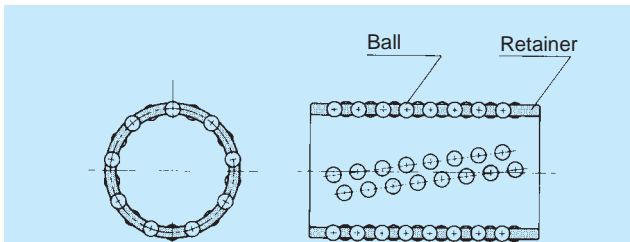


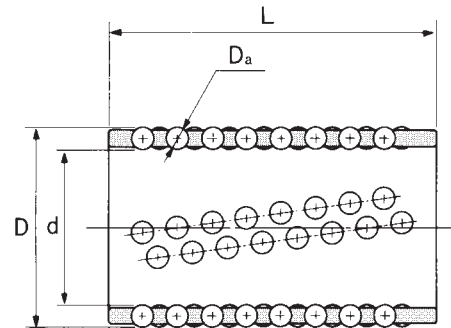
Fig. 6 Construction of Die-Set Ball Cage Type KS

Type KS and Type BS

Type KS



Type BS



B

Unit: mm

Model No.	Major dimensions				Tolerance for radial clearance μm	Basic load rating	
	d	Da (inches)	D	L		C kN	C ₀ kN
KS 1955	19	3	25	55	-7	10.3	3.82
BS 1955	19	3.175 (1/8)	25.350	55	-7	11.7	4.22
KS 2260	22	3	28	60	-7	10.7	4.22
BS 2260	22	3.175 (1/8)	28.350	60	-7	12.2	4.71
KS 2565	25	3	31	65	-7	11.7	5.00
BS 2565	25	3.175 (1/8)	31.350	65	-7	13.2	5.59
KS 2870	28	4	36	70	-9	18.0	7.65
BS 2870	28	3.969 (5/32)	35.938	70	-9	17.7	7.55
KS 3275	32	4	40	75	-9	19.7	9.12
BS 3275	32	3.969 (5/32)	39.938	75	-9	19.3	8.92
KS 3880	38	5	48	80	-10	25.0	12.0
BS 3880	38	4.762 (3/16)	47.525	80	-10	22.5	10.9

Notes:

- Type BS has a groove on its cage to enable it to be distinguished from other types.
- THK produces shafts for types KS and BS. If you require one of these shafts, contact us.

