NIKO®

NIPPON KODO
AUTOMATION TECHNOLOGY

LINEAR

RECIRCULATING

BALL

BEARINGS

Linear Recirculating Ball Bearings

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AUTOMATION TECHNOLOGY

Technical Information

Product Information

TECHNICAL TABLES

1. Recirculating Ball Bearing, drawn shell design, compact type, series KH

The Linear Recirculating Ball Bearings KH are composed of a steel drawn shell, made of case hardened steel, a retainer made from engineered resin and precision balls. The drawn shell has pockets designed to allow the recirculation of the balls. This bearing type can only be used for linear movement and does not allow rotational movements.

1.1 Seals
The linear bearings of KH type are available in two different variants.
Without seals: KH
With contact seals: KH..PP
The seals have the dual function to prevent ingress of contaminants and the retention of lubricants in the bearings.

1.2 Lubrication
Linear bearings type KH are supplied coated with rust inhibiting oil. Linear bearings type KH..PP are supplied packaged with lithium soap grease.

1.3 Mounting tolerances
The table below shows the tolerances to be used for a proper bearing installation. They insure a precise and smooth motion.

1.4 Assembly
Linear bearings type KH are assembled with a light press fit. This insures not only the retention of the bearing but also the proper rounding of the unit. A proper fitting should be performed with the help of a mounting arbor as shown in Fig. 1.

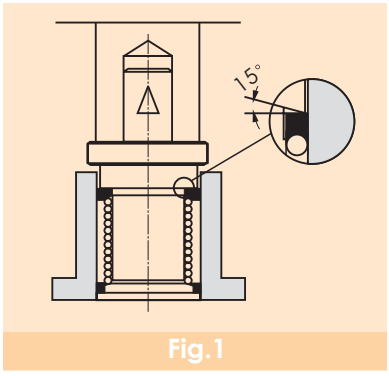


Fig.1

Table 1.1 Recommended mounting tolerances

Housing material	General application		Vertical operation Precision application	
	Housing tolerance	Shaft tolerance	Housing tolerance	Shaft tolerance
Steel/cast iron	H7	h6	H6	i5
Aluminium/alloy	K7	h6	K6	i5

2. Linear Recirculating Ball Bearing precision series type LME - LMB

NIKO Linear Recirculating Bearing type LME and LMB are composed by a cylindrical outer ring, by a cage that retains the balls, by two end rings to retain the cage and/or, when required, contact seals. All of the components are designed and assembled to optimize the unit performance. The outer ring is suitably hardened to provide the longest possible life expectancy. The cage made of steel or engineered resin, depending upon the type of bearing selected, provide the retention and allow the proper recirculation of the balls.

2.1 Characteristics of linear bearings type LME
2.1.1 High rigidity
Linear bearings with steel outer ring offer high rigidity due to the large number of balls in contact. The units can be supplied with a steel cage and, when low weight is required, with resin cage.

2.1.2 Ease of assembly
The standard units can carry load in every direction. The large variety of housing units and shaft supports allow simple and easy mounting.

2.1.3 Ease of replacement
These units follow internationally recognized boundary and are therefore dimensionally inter changeable with competitive units. Replacement due to wear or damage is quick and simple.

2.1.4 Complete range
The NIKO range of products is quite broad. The characteristics can be summarized as follows:
A) Closed type - standard version
B) Adjustable type - These units have a longitudinal slot tha allows the reduction of the operating clearance and the optimization of the unit rigidity.
C) Open type - These units have an opening that corresponds to a single recirculating channel (50 to 100 deg). These units are used in conjunction with long shafts that are typically supported along the entire length to reduce the elastic deflection. When mounted in a suitable housing, the units allow the adjustment of the operating clearance.
D) Flanged type - These units have a flange on the outer ring to allow the mounting without conventional housings.

2.2 Seals
Linear bearings LME and LMB can be supplied in the following versions:
-Without seals - LME/LMB
-With contact seals - LME..UU/LMB..UU

The seals have the following functions:
-Prevent the ingress of contaminants
-Retain the lubricant in the bearing

In some applications, it may be necessary to use additional seals to prevent grease migration and thus prolong the maintenance interval.

3. Linear Recirculating Ball Bearing precision series type LME - LMB

3.1 Lubrication
Linear bearings type LME-LMB are supplied coated with rust inhibiting oil. Linear bearings type LME..UU/LMB..UU are supplied packaged with lithium soap grease.

3.2 Mounting tolerances
The bearing assembly should be performed as to insure operation with adequate clearance. Unsuitable operating clearance could lead to poor running performance or lower than expected durability. The operating clearance of the adjustable or open version of the linear bearings can be adjusted by elastically deforming the outer ring. The suitable mounting tolerances for the mating components are shown in table 3.1 .

Note: The operating clearance is application dependent and could be zero or negative (preload). In the latter case the friction as well as the smooth running should be checked for suitability.

Table 3.1

Dimensional series	Shaft		Housing	
	Normal operating clearance	Operation without clearance	Normal operating clearance	Operation without clearance
LME	h6	j6	H7	J7

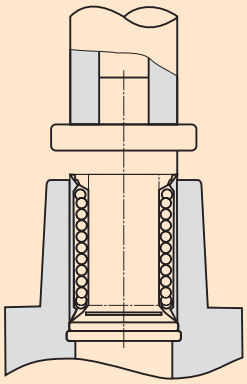
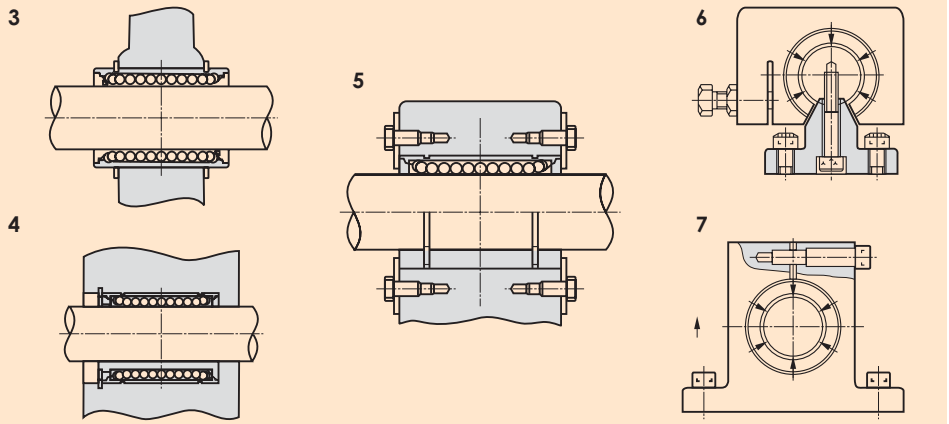


Fig. 2



3.3 Installation

Some cleanliness precautions should be taken before assembling NIKO Linear Bearings in their housings. Lack of cleanliness could lead to reduction of the bearing life. The installation of the units is not particularly difficult, though precaution should be observed to avoid potential damages to the unit. Direct pressing onto the cage retaining rings should be avoided. A suitable tool should be used (Fig. 2) to provide pressure on the rim of the outer ring. Once the bearing is mounted in the housing, the assembled unit should be installed onto the shaft paying attention not to score the shaft or to pop the balls from the bearing. When two shafts assemblies are assembled in a parallel assembly, the parallelism between the shafts should be checked to insure smooth running. The mounting examples shown in Fig. 3 through 7 should be used as guidelines to design and select the suitable bearings and support units.

4. Load ratings

Dynamic load rating C

The dynamic load rating C is a load of constant magnitude under which 90% of a statistically significant number of apparently identical bearings would reach a theoretical life of 50 km without the apparent appearance of metal fatigue.

Static load rating Co

The static load rating Co is defined as the load that would cause a permanent deformation equal to 1/10,000 of the ball diameter at the most stressed contact point.

4.1 Life of a Linear Recirculating Ball Bearing

Repeated stresses onto the contact surfaces could lead to material fatigue. This will lead to the appearance of surface pitting. The life of the unit is defined as the duration before the appearance of pitting.

4.1.1 Rated life(L)
The rated life L is the total travelled distance which 90% of a statistically significant number of apparently identical bearings would reach under the same operating conditions without the apparent appearance of metal fatigue.

$$L = \left(\frac{C}{P}\right)^3 \cdot 50 \quad \text{.....(1)}$$

L = rated life [km]
C = dynamic load ratings [N]
P = equivalent dynamic load [N]

When a system is subjected to a load equal to the dynamic load rating C the resulting life equal the rated life (50 km). The theoretical life of a linear bearing is affected by the load and by the operating conditions (temperature, vibration, shocks, load distribution, etc.). In such cases the theoretical life is calculated with the help of equation 2.

$$L = \left(\frac{f_H \cdot f_T \cdot f_C \cdot C}{F_W \cdot P}\right)^3 50 \quad \text{.....(2)}$$

L = Rated life[km]
C = Dynamic load rating [N]
P = Equivalent dynamic load [N]
fh = Hardness factor (see fig. 8)
ft = Temperature factor (see fig. 9)
fc = Contact coefficient (see table 4)
fw = Load factor (see table 5)

The following equation (3)allows the conversion of the rated life in hours.

$$L_h = \left(\frac{L.10}{2 .ls \cdot n_1 \cdot 60}\right)^3 \quad \text{.....(3)}$$

L_h = rated life [hours]
L_S = stroke length [m]
L = rated life [km]
n_1 = operating frequency [strokes/min]

● Hardness factor (fH)
The load ratings for the linear bearing are calculated with the raceway hardness equal or higher than 58 HRC. When the raceway hardness is reduced, the load rating of the bearing is also reduced and must be corrected using the the accompanying chart (Fig.8).

● Temperature factor (fT)
When a linear bearing operates at temperatures in excess of 100 deg. C, its hardness is affected and son is its ability to carry load. The load rating can be corrected by using the accompanying chart (Fig.9).

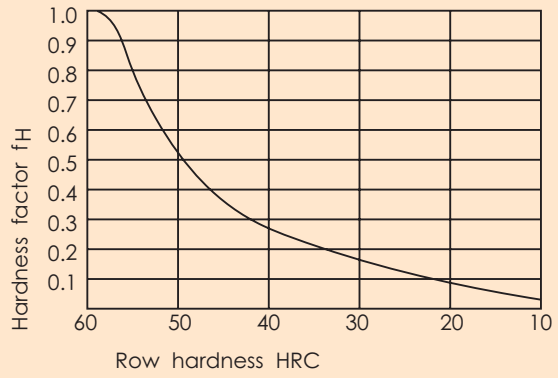


Fig. 8 Raceway hardness factor

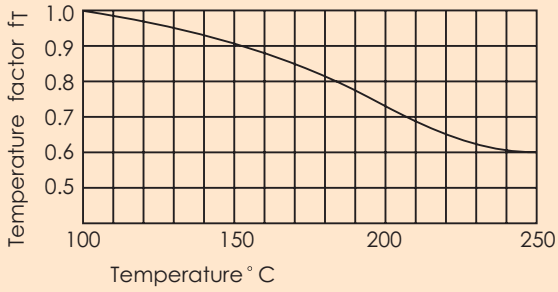


Fig. 9 Temperature factor

- Contact factor (fc)

Load biasing, attributed to mounting errors and multiple bearing assemblies can be accounted for by using the coefficient in table 4.1 .

Table 4.1 Contact factor

Number of bearings for shaft	Contact factor f_C
1	1,00
2	0,81
3	0,72
4	0,66
5	0,61

- Load factor (fw)

The loads acting on the linear units include payload, inertial effects during acceleration and deceleration as well as moment loads. All of these factors are difficult to assess and are further complicated by the potential presence of shocks and vibrations. A more practical solution involves the use of the coefficients in table 4.2 .

Table 4.2 Contact factor

Operating conditions	f_W
Low speed operations (<15 m/min) without shocks	1 - 1,5
Medium speed operation (60m/min) without shocks	1,5 - 2
High speed operations (>60m/min) with shocks	2 - 3,5

5. Static safety factor

For applications with a high requirement for accuracy and smooth running, the static safety factor fs should be higher than the values shown in table 5.1 to prevent permanent deformation at the contact points.

$$fs = \frac{CO}{PO}$$

fs = static safety factor
Po = static equivalent load (N)
Co = static load rating (N)

Table 5.1 Static safety factor

Operating conditions	f_S
Shafts subjected to small deflections and low shocks	1÷2
Elastic deflection can cross load the units	2÷4
System subjected to shock & vibration	3÷5

6. Friction

Linear Recirculating Ball Bearings have a very low static coefficient of friction, virtually identical to the dynamic coefficient of friction. This results in low and uniform motion in any condition of load and speed without sick-slip.

F = μ · W + f.....(4)
F = Friction force [N]
U = Friction coefficient [-]
f = Seal drag [N]
w = Load [N]

The magnitude of the friction force is affected by several factors. The type of bearing, the operating conditions, the type and quantity of the lubricant, the presence or lack of seals all impact the overall frictional behavior. Standard seals can add between 2 and 5 N to the overall friction force. The magnitude of the coefficient of friction depends upon the operating conditions such as load, moments and/or preload. Table 6.1 shows the dynamic coefficient of friction for each type of bearing under normal operating condition (P/C< =0.2) and proper assembly.

Table 6.1 Friction coefficient

Type of bearing	Friction coefficient
KH	0.004 to 0.006
LME / LMB	0.002 to 0.003

7. Operating temperature

The operating temperature ranges of the various bearings are shown in table 7.1 Should the operating temperature exceed the limits shown in the table, please contact fait International Engineering. Stainless steel units, without seals, can operate between - 20/+ 120 degree. C

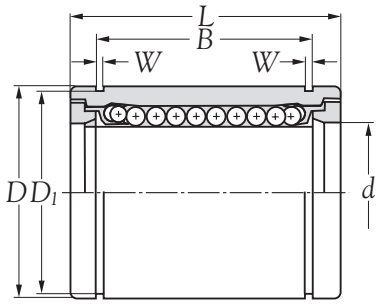
Table 7.1 Operating temperature

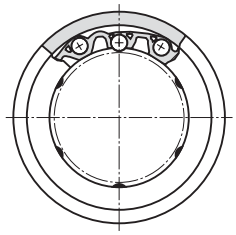
Bearing type	Operating temperature
KH	-20 to +120°C
LME / LMB	-20 to +110°C

NOTE

DIMENSION TABLES

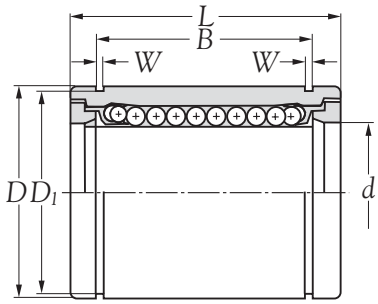
Linear Ball Bearings
series LM..

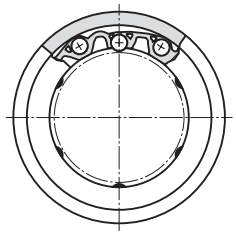




Boundary dimensions d mm	Bearing number standard steel retainer	standard resin retainer	standard steel retainer	standard resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
5	**LM5A**	**LM5**	**LM5A UU**	**LM5 UU**	4	5	(0/-8)	10	(0/-9)	15	(0/-0.2)
6	**LM6A**	**LM6**	**LM6A UU**	**LM6 UU**	4	6	(0/-9)	12	(0/-11)	19	(0/-0.2)
8	**LM8SA**	**LM8S**	**LM8SA UU**	**LM8S UU**	4	8	(0/-9)	15	(0/-11)	17	(0/-0.2)
8	**LM8A**	**LM8**	**LM8A UU**	**LM8 UU**	4	8	(0/-9)	15	(0/-11)	24	(0/-0.2)
10	**LM10A**	**LM10**	**LM10A UU**	**LM10 UU**	4	10	(0/-9)	19	(0/-13)	29	(0/-0.2)
12	**LM12A**	**LM12**	**LM12A UU**	**LM12 UU**	4	12	(0/-9)	21	(0/-13)	30	(0/-0.2)
13	**LM13A**	**LM13**	**LM13A UU**	**LM13 UU**	4	13	(0/-9)	23	(0/-13)	32	(0/-0.2)
16	**LM16A**	**LM16**	**LM16A UU**	**LM16 UU**	5	16	(0/-9)	28	(0/-13)	37	(0/-0.2)
20	**LM20A**	**LM20**	**LM20A UU**	**LM20 UU**	5	20	(0/-10)	32	(0/-16)	42	(0/-0.2)
25	**LM25A**	**LM25**	**LM25A UU**	**LM25 UU**	6	25	(0/-10)	40	(0/-16)	59	(0/-0.3)
30	**LM30A**	**LM30**	**LM30A UU**	**LM30 UU**	6	30	(0/-10)	45	(0/-16)	64	(0/-0.3)
35	**LM35A**	**LM35**	**LM35A UU**	**LM35 UU**	6	35	(0/-12)	52	(0/-16)	70	(0/-0.3)
40	**LM40A**	**LM40**	**LM40A UU**	**LM40 UU**	6	40	(0/-12)	60	(0/-16)	80	(0/-0.3)
50	**LM50A**	**LM50**	**LM50A UU**	**LM50 UU**	6	50	(0/-12)	80	(0/-19)	100	(0/-0.3)
60	**LM60A**	**LM60**	**LM60A UU**	**LM60 UU**	6	60	(0/-15)	90	(0/-19)	110	(0/-0.3)

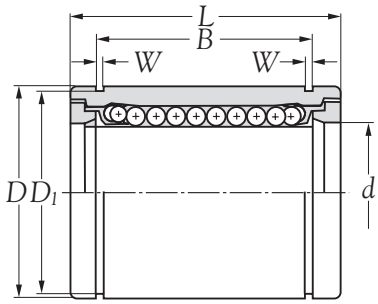
Linear Ball Bearings
series LM..

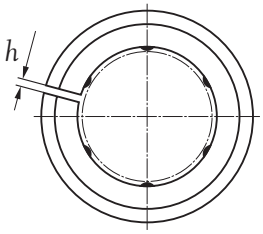




Principal dimensions				Roundness	Steel retainer	Load ratings		Mass
B		W	D_1		maximum radial clearance	dynamic C	static C_o	kg
tolerance		mm		0.001mm	0.001mm	N		(approx.)
10.2	(0/-0.2)	1.10	9.6	8	-3	17	21	0.0040
13.5	(0/-0.2)	1.10	11.5	12	-5	21	27	0.0080
11.5	(0/-0.2)	1.10	14.3	12	-5	18	23	0.0110
17.5	(0/-0.2)	1.10	14.3	12	-5	27	41	0.0160
22.0	(0/-0.2)	1.30	18.0	12	-5	38	56	0.0300
23.0	(0/-0.2)	1.30	20.0	12	-5	42	61	0.0315
23.0	(0/-0.2)	1.30	22.0	12	-7	52	79	0.0430
26.5	(0/-0.2)	1.60	27.0	12	-7	79	120	0.0690
30.5	(0/-0.2)	1.60	30.5	15	-9	88	140	0.0870
41.0	(0/-0.3)	1.85	38.0	15	-9	100	160	0.2200
44.5	(0/-0.3)	1.85	43.0	15	-9	160	280	0.2500
49.5	(0/-0.3)	2.10	49.0	20	-13	170	320	0.3900
60.5	(0/-0.3)	2.10	57.0	20	-13	220	410	0.5850
74.0	(0/-0.3)	2.60	76.5	20	-13	390	810	1.5800
85.0	(0/-0.3)	3.15	86.5	25	-16	480	1020	2.0000

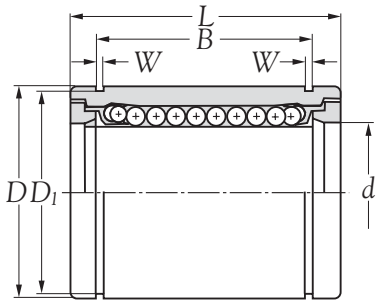
Linear Ball Bearings
series LM..AJ

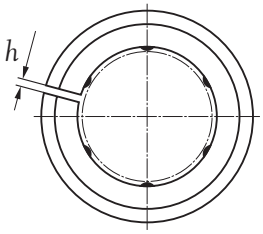




Boundary dimensions d mm	Bearing number standard steel retainer	standard resin retainer	standard steel retainer	standard resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
5	**LM5A-AJ**	**LM5-AJ**	**LM5A UU-AJ**	**LM5 UU-AJ**	4	5	(0/-8)	10	(0/-9)	15	(0/-0.2)
6	**LM6A-AJ**	**LM6-AJ**	**LM6A UU-AJ**	**LM6 UU-AJ**	4	6	(0/-9)	12	(0/-11)	19	(0/-0.2)
8	**LM8SA-AJ**	**LM8S-AJ**	**LM8SA UU-AJ**	**LM8S UU-AJ**	4	8	(0/-9)	15	(0/-11)	17	(0/-0.2)
8	**LM8A-AJ**	**LM8-AJ**	**LM8A UU-AJ**	**LM8 UU-AJ**	4	8	(0/-9)	15	(0/-11)	24	(0/-0.2)
10	**LM10A-AJ**	**LM10-AJ**	**LM10A UU-AJ**	**LM10 UU-AJ**	4	10	(0/-9)	19	(0/-13)	29	(0/-0.2)
12	**LM12A-AJ**	**LM12-AJ**	**LM12A UU-AJ**	**LM12 UU-AJ**	4	12	(0/-9)	21	(0/-13)	30	(0/-0.2)
13	**LM13A-AJ**	**LM13-AJ**	**LM13A UU-AJ**	**LM13 UU-AJ**	4	13	(0/-9)	23	(0/-13)	32	(0/-0.2)
16	**LM16A-AJ**	**LM16-AJ**	**LM16A UU-AJ**	**LM16 UU-AJ**	5	16	(0/-9)	28	(0/-13)	37	(0/-0.2)
20	**LM20A-AJ**	**LM20-AJ**	**LM20A UU-AJ**	**LM20 UU-AJ**	5	20	(0/-10)	32	(0/-16)	42	(0/-0.2)
25	**LM25A-AJ**	**LM25-AJ**	**LM25A UU-AJ**	**LM25 UU-AJ**	6	25	(0/-10)	40	(0/-16)	59	(0/-0.3)
30	**LM30A-AJ**	**LM30-AJ**	**LM30A UU-AJ**	**LM30 UU-AJ**	6	30	(0/-10)	45	(0/-16)	64	(0/-0.3)
35	**LM35A-AJ**	**LM35-AJ**	**LM35A UU-AJ**	**LM35 UU-AJ**	6	35	(0/-12)	52	(0/-16)	70	(0/-0.3)
40	**LM40A-AJ**	**LM40-AJ**	**LM40A UU-AJ**	**LM40 UU-AJ**	6	40	(0/-12)	60	(0/-16)	80	(0/-0.3)
50	**LM50A-AJ**	**LM50-AJ**	**LM50A UU-AJ**	**LM50 UU-AJ**	6	50	(0/-12)	80	(0/-19)	100	(0/-0.3)
60	**LM60A-AJ**	**LM60-AJ**	**LM60A UU-AJ**	**LM60 UU-AJ**	6	60	(0/-15)	90	(0/-19)	110	(0/-0.3)

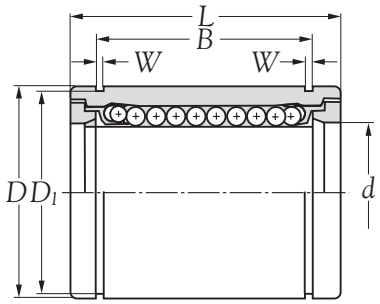
Linear Ball Bearings
series LM..AJ

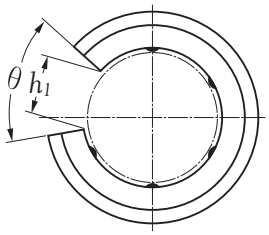




Principal dimensions				Roundness	Steel retainer	Load ratings		Mass
B tolerance	W	D_1	h		maximum radial clearance	dynamic C	static C_o	kg
mm				0.001mm	0.001mm	N		(approx.)
10.2 (0/-0.2)	1.10	9.6	-	8	-3	17	21	0.004
13.5 (0/-0.2)	1.10	11.5	1.0	12	-5	21	27	0.008
11.5 (0/-0.2)	1.10	14.3	1.0	12	-5	18	23	0.011
17.5 (0/-0.2)	1.10	14.3	1.0	12	-5	27	41	0.016
22.0 (0/-0.2)	1.30	18.0	1.0	12	-5	38	56	0.030
23.0 (0/-0.2)	1.30	20.0	1.5	12	-5	42	61	0.032
23.0 (0/-0.2)	1.30	22.0	1.5	12	-7	52	79	0.043
26.5 (0/-0.2)	1.60	27.0	1.5	12	-7	79	120	0.069
30.5 (0/-0.2)	1.60	30.5	1.5	15	-9	88	140	0.087
41.0 (0/-0.3)	1.85	38.0	2.0	15	-9	100	160	0.220
44.5 (0/-0.3)	1.85	43.0	2.5	15	-9	160	280	0.250
49.5 (0/-0.3)	2.10	49.0	2.5	20	-13	170	320	0.390
60.5 (0/-0.3)	2.10	57.0	3.0	20	-13	220	410	0.585
74.0 (0/-0.3)	2.60	76.5	3.0	20	-13	390	810	1.580
85.0 (0/-0.3)	3.15	86.5	3.0	25	-16	480	1020	2.000

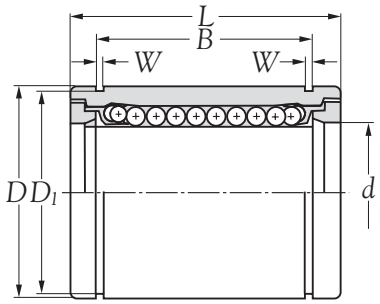
Linear Ball Bearings
series LM..OP

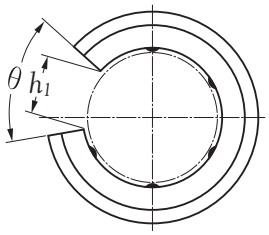




Boundary dimensions d mm	Bearing number standard steel retainer	standard resin retainer	standard steel retainer	standard resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
12	LM12A-OP	LM12-OP	LM12A UU-OP	LM12 UU-OP	3	12	(0/-9)	21	(0/-13)	30	(0/-0.2)
13	LM13A-OP	LM13-OP	LM13A UU-OP	LM13 UU-OP	3	13	(0/-9)	23	(0/-13)	32	(0/-0.2)
16	LM16A-OP	LM16-OP	LM16A UU-OP	LM16 UU-OP	4	16	(0/-9)	28	(0/-13)	37	(0/-0.2)
20	LM20A-OP	LM20-OP	LM20A UU-OP	LM20 UU-OP	4	20	(0/-10)	32	(0/-16)	42	(0/-0.2)
25	LM25A-OP	LM25-OP	LM25A UU-OP	LM25 UU-OP	5	25	(0/-10)	40	(0/-16)	59	(0/-0.3)
30	LM30A-OP	LM30-OP	LM30A UU-OP	LM30 UU-OP	5	30	(0/-10)	45	(0/-16)	64	(0/-0.3)
35	LM35A-OP	LM35-OP	LM35A UU-OP	LM35 UU-OP	5	35	(0/-12)	52	(0/-16)	70	(0/-0.3)
40	LM40A-OP	LM40-OP	LM40A UU-OP	LM40 UU-OP	5	40	(0/-12)	60	(0/-16)	80	(0/-0.3)
50	LM50A-OP	LM50-OP	LM50A UU-OP	LM50 UU-OP	5	50	(0/-12)	80	(0/-9)	100	(0/-0.3)
60	LM60A-OP	LM60-OP	LM60A UU-OP	LM60 UU-OP	5	60	(0/-15)	90	(0/-9)	110	(0/-0.3)

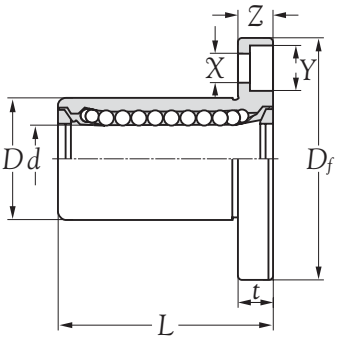
Linear Ball Bearings
series LM..OP

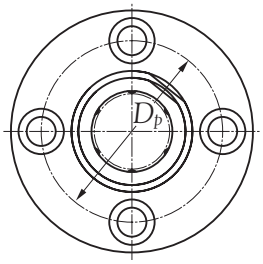




Principal dimensions						Roundness	Steel retainer	Load ratings		Mass
B	tolerance	W	D_1	h_1	θ		maximum radial clearance	dynamic C	static C_o	kg
mm						0.001mm	0.001mm	N		(approx.)
23.0	(0/-0.2)	1.30	20.0	8	80°	12	-5	42	61	0.032
23.0	(0/-0.2)	1.30	22.0	9	80°	12	-7	52	79	0.043
26.5	(0/-0.2)	1.60	27.0	11	60°	12	-7	79	120	0.069
30.5	(0/-0.2)	1.60	30.5	11	60°	15	-9	88	140	0.087
41.0	(0/-0.3)	1.85	38.0	12	50°	15	-9	100	160	0.220
44.5	(0/-0.3)	1.85	43.0	15	50°	15	-9	160	280	0.250
49.5	(0/-0.3)	2.10	49.0	17	50°	20	-13	170	320	0.390
60.5	(0/-0.3)	2.10	57.0	20	50°	20	-13	220	410	0.585
74.0	(0/-0.3)	2.60	76.5	25	50°	20	-13	390	810	1.580
85.0	(0/-0.3)	3.15	86.5	30	50°	25	-16	480	1020	2.000

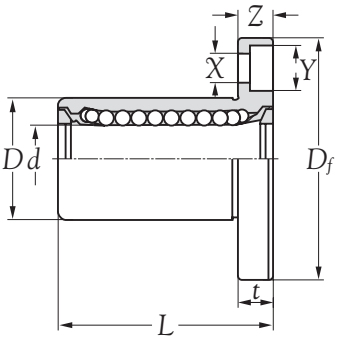
Linear Ball Bearings
series LM..F

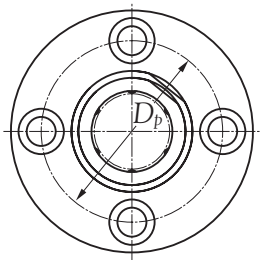




Boundary dimensions d mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	d tolerance 0.001mm	D tolerance mm	D tolerance 0.001mm	L tolerance mm	L tolerance mm
8	**LMF8**	**LMF8 UU**	4	8	(+8/0)	16	(0/-13)	25	(±0.3)
12	**LMF12**	**LMF12 UU**	4	12	(+8/0)	22	(0/-16)	32	(±0.3)
16	**LMF16**	**LMF16 UU**	5	16	(+9/-1)	26	(0/-16)	36	(±0.3)
20	**LMF20**	**LMF20 UU**	5	20	(+9/-1)	32	(0/-19)	45	(±0.3)
25	**LMF25**	**LMF25 UU**	6	25	(+11/-1)	40	(0/-19)	58	(±0.3)
30	**LMF30**	**LMF30 UU**	6	30	(+11/-1)	47	(0/-19)	68	(±0.3)
40	**LMF40**	**LMF40 UU**	6	40	(+13/-2)	62	(0/-22)	80	(±0.3)
50	**LMF50**	**LMF50 UU**	6	50	(+13/-2)	75	(0/-22)	100	(±0.3)
60	**LMF60**	**LMF60 UU**	6	60	(+13/-2)	90	(0/-25)	125	(±0.3)

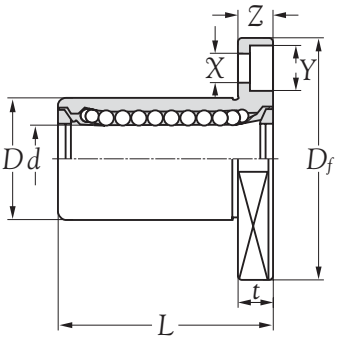
Linear Ball Bearings
series LM..F

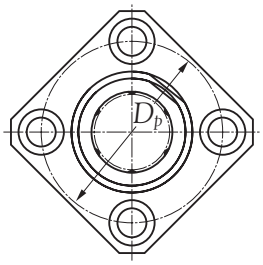




Principal dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	XxYxZ			dynamic C	static C_o	kg
mm				0.001mm	0.001mm	N		(approx.)
32	5	24	3.5 x 6.0 x 3.1	12	12	265	402	0.041
42	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.080
46	6	36	4.5 x 7.5 x 4.1	12	12	578	892	0.103
54	8	43	5.5 x 9.0 x 5.1	15	15	862	1370	0.182
62	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.335
76	10	62	6.6 x 11 x 6.1	15	15	1570	2740	0.560
98	13	80	9.0 x 14 x 8.1	17	17	2160	4020	1.175
112	13	94	9.0 x 14 x 8.1	17	17	3820	7940	1.745
134	18	112	11.0 x 17 x 11.1	20	20	4700	9800	3.220

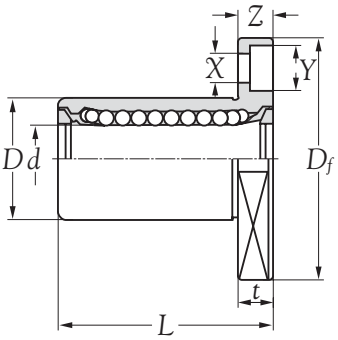
Linear Ball Bearings
series LM..K

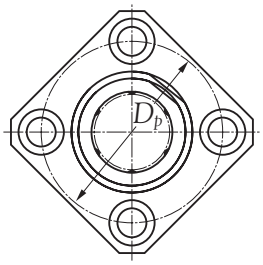




Boundary dimensions d mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	d tolerance 0.001mm	D tolerance mm	D tolerance 0.001mm	L tolerance mm	L tolerance mm
8	**LMK8**	**LMK8 UU**	4	8	(+8/0)	16	(0/-13)	25	(±0.3)
12	**LMK12**	**LMK12 UU**	4	12	(+8/0)	22	(0/-16)	32	(±0.3)
16	**LMK16**	**LMK16 UU**	5	16	(+9/-1)	26	(0/-16)	36	(±0.3)
20	**LMK20**	**LMK20 UU**	5	20	(+9/-1)	32	(0/-19)	45	(±0.3)
25	**LMK25**	**LMK25 UU**	6	25	(+11/-1)	40	(0/-19)	58	(±0.3)
30	**LMK30**	**LMK30 UU**	6	30	(+11/-1)	47	(0/-19)	68	(±0.3)
40	**LMK40**	**LMK40 UU**	6	40	(+13/-2)	62	(0/-22)	80	(±0.3)
50	**LMK50**	**LMK50 UU**	6	50	(+13/-2)	75	(0/-22)	100	(±0.3)
60	**LMK60**	**LMK60 UU**	6	60	(+13/-2)	90	(0/-25)	125	(±0.3)

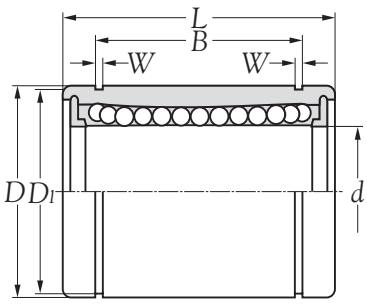
Linear Ball Bearings
series LM..K

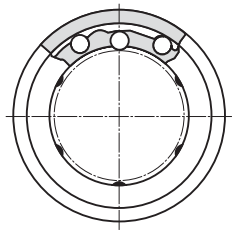




Principal dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	XxYxZ			dynamic C	static C_o	kg
mm				0.001mm	0.001mm	N		(approx.)
32	5	24	3.5 x 6.0 x 3.1	12	12	265	402	0.041
42	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.080
46	6	36	4.5 x 7.5 x 4.1	12	12	578	892	0.103
54	8	43	5.5 x 9.0 x 5.1	15	15	862	1370	0.182
62	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.335
76	10	62	6.6 x 11 x 6.1	15	15	1570	2740	0.560
98	13	80	9.0 x 14 x 8.1	17	17	2160	4020	1.175
112	13	94	9.0 x 14 x 8.1	17	17	3820	7940	1.745
134	18	112	11.0 x 17 x 11.1	20	20	4700	9800	3.220

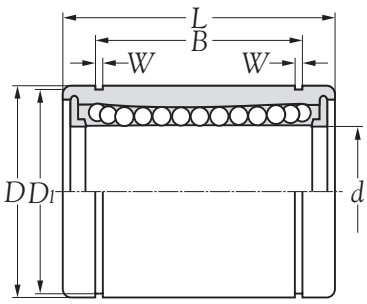
Linear Ball Bearings
series LMB

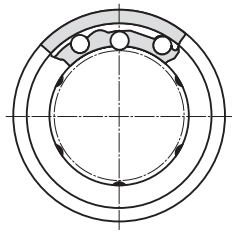




Boundary dimensions d mm/inch	Bearing number standard steel retainer	standard resin retainer	standard steel retainer	standard resin retainer	Number of ball tracks	Principal dimensions d tolerance mm/inch	0.001mm/inch	D tolerance mm/inch	0.001mm/inch	L tolerance mm/inch
6.350 1/4	-	LMB4	-	LMB4 UU	4	6.350 (0/-6) 0.250 (0/-0.25)	(0/-9) (0/-0.4)	12.7000 (0/-11) 0.5000 (0/-0.45)		19.050 (0/-0.2) 0.750 (0/-0.008)
9.525 3/8	LMB6A	LMB6	LMB6A UU	LMB6 UU	4	9.525 (0/-6) 0.375 (0/-0.25)	(0/-9) (0/-0.4)	15.8750 (0/-13) 0.6250 (0/-0.50)		22.225 (0/-0.2) 0.875 (0/-0.008)
12.700 1/2	LMB8A	LMB8	LMB8A UU	LMB8 UU	4	12.700 (0/-6) 0.500 (0/-0.25)	(0/-9) (0/-0.4)	22.2250 (0/-13) 0.8750 (0/-0.50)		31.750 (0/-0.2) 1.250 (0/-0.008)
15.875 5/8	LMB10A	LMB10	LMB10A UU	LMB10 UU	4	15.875 (0/-6) 0.625 (0/-0.25)	(0/-9) (0/-0.4)	28.5750 (0/-13) 1.1250 (0/-0.50)		38.100 (0/-0.2) 1.500 (0/-0.008)
19.050 3/4	LMB12A	LMB12	LMB12A UU	LMB12 UU	5	19.050 (0/-7) 0.750 (0/-0.3)	(0/-10) (0/-0.4)	31.7500 (0/-16) 1.2500 (0/-0.65)		41.275 (0/-0.2) 1.625 (0/-0.008)
25.400 1	LMB16A	LMB16	LMB16A UU	LMB16 UU	6	25.400 (0/-7) 1.000 (0/-0.3)	(0/-10) (0/-0.4)	39.6880 (0/-16) 1.5625 (0/-0.65)		57.150 (0/-0.3) 2.250 (0/-0.012)
31.750 1-1/4	LMB20A	LMB20	LMB20A UU	LMB20 UU	6	31.750 (0/-8) 1.250 (0/-0.35)	(0/-12) (0/-0.5)	50.8000 (0/-19) 2.0000 (0/-0.75)		66.675 (0/-0.3) 2.625 (0/-0.012)
38.100 1-1/2	LMB24A	LMB24	LMB24A UU	LMB24 UU	6	38.100 (0/-8) 1.500 (0/-0.35)	(0/-12) (0/-0.5)	60.3250 (0/-19) 2.3750 (0/-0.75)		76.200 (0/-0.3) 3.000 (0/-0.012)
50.800 2	LMB32A	LMB32	LMB32A UU	LMB32 UU	6	50.800 (0/-8) 2.000 (0/-0.35)	(0/-12) (0/-0.5)	76.2000 (0/-22) 3.0000 (0/-0.90)		101.600 (0/-0.3) 4.000 (0/-0.012)

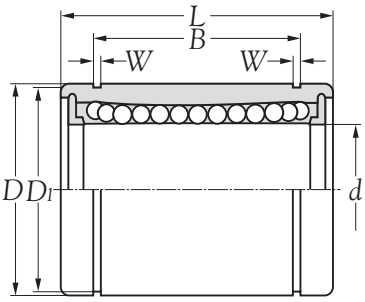
Linear Ball Bearings
series LMB

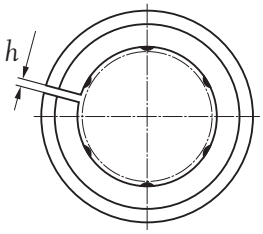




Principal dimensions				Roundness		Steel retainer maximum radial clearance	Resin retainer maximum radial clearance	Load ratings		Mass	
B tolerance		W	D_1					dynamic C	static C_o	steel retainer	resin retainer
mm/inch				0.001mm/inch		0.001mm/inch	0.001mm/inch	N		kg	
12.9800 0.5110	(0/-0.2) (0/-0.008)	0.9920 0.0390	11.9060 0.4687	8 0.3	12 0.5	-	-3 -0.1	206	265	-	0.008
16.1500 0.6358	(0/-0.2) (0/-0.008)	0.9920 0.0390	14.9350 0.5880	8 0.3	12 0.5	-3 -0.1	-3 -0.1	225	314	0.015	0.014
24.4600 0.9625	(0/-0.2) (0/-0.008)	1.1680 0.0459	20.8530 0.8209	10 0.4	15 0.6	-4 -0.1	-4 -0.1	510	784	0.042	0.037
28.0400 1.1039	(0/-0.2) (0/-0.008)	1.4220 0.0559	26.8990 1.0590	10 0.4	15 0.6	-4 -0.1	-4 -0.1	774	1180	0.085	0.076
29.6100 1.1657	(0/-0.2) (0/-0.008)	1.4220 0.0599	29.8700 1.1760	8 0.3	12 0.5	-6 -0.2	-6 -0.2	862	1370	0.104	0.095
44.5700 1.7547	(0/-0.3) (0/-0.012)	1.7270 0.0679	37.3060 1.4687	8 0.3	12 0.5	-6 -0.2	-6 -0.2	980	1570	0.220	0.200
2.0047 50.9200	(0/-0.3) (0/-0.012)	1.7270 0.0679	47.9040 1.8859	12 0.5	20 0.8	-8 -0.3	-8 -0.3	1570	2740	0.465	0.440
61.2600 2.4118	(0/-0.3) (0/-0.012)	2.1840 0.0859	56.8700 2.2389	12 0.5	20 0.8	-8 -0.3	-8 -0.3	2180	4020	0.720	0.670
81.0700 3.1917	(0/-0.3) (0/-0.012)	2.6160 0.1029	72.0850 2.8379	17 0.7	25 1.0	-13 -0.5	-13 -0.5	3820	7940	1.310	1.140

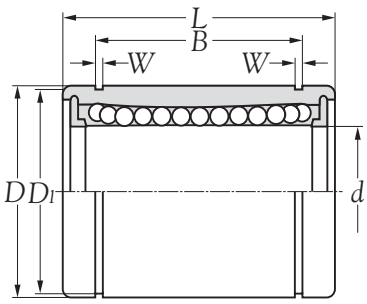
Linear Ball Bearings
series LMB..AJ

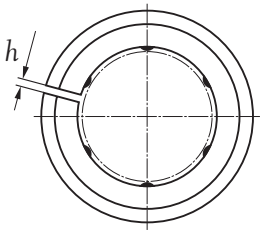




Boundary dimensions d mm/inch	Bearing number standard steel retainer	standard resin retainer	standard steel retainer	standard resin retainer	Number of ball tracks	Principal dimensions d tolerance mm/inch	0.001mm/inch	D tolerance mm/inch	0.001mm/inch	L tolerance mm/inch
6.350 1/4	-	LMB4-AJ	-	LMB4 UU-AJ	4	6.350 (0/-6) 0.250 (0/-0.25)	(0/-9) (0/-0.4)	12.7000 (0/-11) 0.5000 (0/-0.45)		19.050 (0/-0.2) 0.750 (0/-0.008)
9.525 3/8	-	LMB6-AJ	-	LMB6 UU-AJ	4	9.525 (0/-6) 0.375 (0/-0.25)	(0/-9) (0/-0.4)	15.8750 (0/-13) 0.6250 (0/-0.50)		22.225 (0/-0.2) 0.875 (0/-0.008)
12.700 1/2	LMB8A-AJ	LMB8-AJ	LMB8A UU-AJ	LMB8 UU-AJ	4	12.700 (0/-6) 0.500 (0/-0.25)	(0/-9) (0/-0.4)	22.2250 (0/-13) 0.8750 (0/-0.50)		31.750 (0/-0.2) 1.250 (0/-0.008)
15.875 5/8	LMB10A-AJ	LMB10-AJ	LMB10A UU-AJ	LMB10 UU-AJ	4	15.875 (0/-6) 0.625 (0/-0.25)	(0/-9) (0/-0.4)	28.5750 (0/-13) 1.1250 (0/-0.50)		38.100 (0/-0.2) 1.500 (0/-0.008)
19.050 3/4	LMB12A-AJ	LMB12-AJ	LMB12A UU-AJ	LMB12 UU-AJ	5	19.050 (0/-7) 0.750 (0/-0.30)	(0/-10) (0/-0.4)	31.7500 (0/-16) 1.2500 (0/-0.65)		41.275 (0/-0.2) 1.625 (0/-0.008)
25.400 1	LMB16A-AJ	LMB16-AJ	LMB16A UU-AJ	LMB16 UU-AJ	6	25.400 (0/-7) 1.000 (0/-0.30)	(0/-10) (0/-0.4)	39.6880 (0/-16) 1.5625 (0/-0.65)		57.150 (0/-0.3) 2.250 (0/-0.012)
31.750 1-1/4	LMB20A-AJ	LMB20-AJ	LMB20A UU-AJ	LMB20 UU-AJ	6	31.750 (0/-8) 1.250 (0/-0.35)	(0/-12) (0/-0.5)	50.8000 (0/-19) 2.0000 (0/-0.75)		66.675 (0/-0.3) 2.625 (0/-0.012)
38.100 1-1/2	LMB24A-AJ	LMB24-AJ	LMB24A UU-AJ	LMB24 UU-AJ	6	38.100 (0/-8) 1.500 (0/-0.35)	(0/-12) (0/-0.5)	60.3250 (0/-19) 2.3750 (0/-0.75)		76.200 (0/-0.3) 3.000 (0/-0.012)
50.800 2	LMB32A-AJ	LMB32-AJ	LMB32A UU-AJ	LMB32 UU-AJ	6	50.800 (0/-8) 2.000 (0/-0.35)	(0/-12) (0/-0.5)	76.2000 (0/-22) 3.0000 (0/-0.90)		101.600 (0/-0.3) 4.000 (0/-0.012)

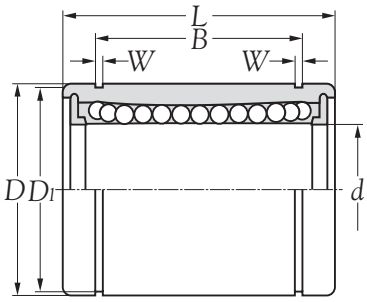
Linear Ball Bearings
series LMB..AJ

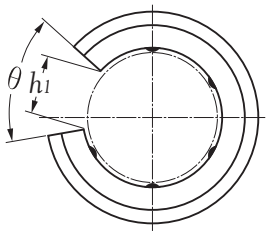




Principal dimensions					Roundness		Steel retainer	Resin retainer	Load ratings		Mass	
B tolerance		W	D_1	h			maximum radial clearance	maximum radial clearance	dynamic C	static C_o	steel retainer	resin retainer
mm/inch					0.001mm/inch		0.001mm/inch	0.001mm/inch	N		kg	
12.9800	(0/-0.2)	0.9920	11.9060	1.00	8	12	-	-3	206	265	-	0.0080
0.5110	(0/-0.008)	0.0390	0.4687	0.04	0.3	0.5		-0.1				
16.1500	(0/-0.2)	0.9920	14.9350	1.00	8	12	-3	-3	225	314	0.015	0.0140
0.6358	(0/-0.008)	0.0390	0.5880	0.04	0.3	0.5	-0.1	-0.1				
24.4600	(0/-0.2)	1.1680	20.8530	1.50	8	12	-4	-4	510	784	0.042	0.0370
0.9625	(0/-0.008)	0.0459	0.8209	0.06	0.3	0.5	-0.1	-0.1				
28.0400	(0/-0.2)	1.4220	26.8990	0.06	8	12	-4	-4	774	1180	0.085	0.0760
1.1039	(0/-0.008)	0.0559	1.0590	1.50	0.3	0.5	-0.1	-0.1				
29.6100	(0/-0.2)	1.4220	29.8700	0.06	10	15	-6	-6	862	1370	0.104	0.0950
1.1657	(0/-0.008)	0.0599	1.1760	1.50	0.4	0.6	-0.2	-0.2				
44.5700	(0/-0.3)	1.7270	37.3060	1.50	10	15	-6	-6	980	1570	0.220	0.2000
1.7547	(0/-0.012)	0.0679	1.4687	0.06	0.4	0.6	-0.2	-0.2				
50.9200	(0/-0.3)	1.7270	47.9040	2.50	12	20/-8	-8	-8	1570	2740	0.465	0.4400
2.0047	(0/-0.012)	0.0679	1.8859	0.10	0.5	0.8	-0.3	-0.3				
61.2600	(0/-0.3)	2.1840	56.8700	3.00	12	20/-8	-8	-8	4020	720	0.670	0.0381
2.4118	(0/-0.012)	0.0859	2.2389	0.12	0.5	0.8	-0.3	-0.3				
81.0700	(0/-0.3)	2.6160	72.0850	3.00	17	25	-13	-13	3820	7940	1.310	1.1400
3.1917	(0/-0.012)	0.1029	2.8379	0.12	0.7	1.0	-0.5	-0.5				

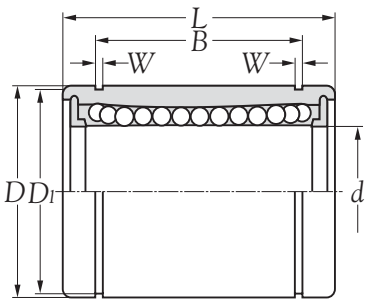
Linear Ball Bearings
series LMB..OP

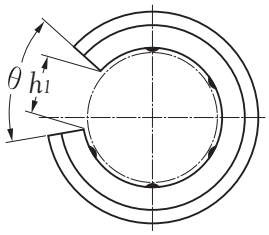




Boundary dimensions d mm/inch	Bearing number standard steel retainer	standard resin retainer	standard steel retainer	standard resin retainer	Number of ball tracks	Principal dimensions d tolerance mm/inch	0.001mm/inch	D tolerance mm/inch	0.001mm/inch	L tolerance mm/inch
12.700 1/2	LMB8A-OP	LMB 8-OP	LMB 8A UU-OP	LMB8 UU-OP	3	12.700 0.500	(0/-6) (0/-0.25)	(0/-9) (0/-0.4)	22.2250 0.8750	(0/-13) (0/-0.50)	31.750 1.250	(0/-0.2) (0/-0.008)
15.875 5/8	LMB10A-OP	LMB10-OP	LMB10A UU-OP	LMB10 UU-OP	3	15.875 0.625	(0/-6) (0/-0.25)	(0/-9) (0/-0.4)	28.5750 1.1250	(0/-13) (0/-0.50)	38.100 1.500	(0/-0.2) (0/-0.008)
19.050 3/4	LMB12A-OP	LMB12-OP	LMB12A UU-OP	LMB12 UU-OP	4	19.050 0.750	(0/-7) (0/-0.30)	(0/-10) (0/-0.4)	31.7500 1.2500	(0/-16) (0/-0.65)	41.275 1.625	(0/-0.2) (0/-0.008)
25.400 1	LMB16A-OP	LMB16-OP	LMB16A UU-OP	LMB16 UU-OP	5	25.400 1.000	(0/-7) (0/-0.30)	(0/-10) (0/-0.4)	39.6880 1.5625	(0/-16) (0/-0.65)	57.150 2.250	(0/-0.3) (0/-0.012)
31.750 1-1/4	LMB20A-OP	LMB20-OP	LMB20A UU-OP	LMB20 UU-OP	5	31.750 1.250	(0/-8) (0/-0.35)	(0/-12) (0/-0.5)	50.8000 2.0000	(0/-19) (0/-0.75)	66.675 2.625	(0/-0.3) (0/-0.012)
38.100 1-1/2	LMB24A-OP	LMB24-OP	LMB24A UU-OP	LMB24 UU-OP	5	38.100 1.500	(0/-8) (0/-0.35)	(0/-12) (0/-0.5)	60.3250 2.3750	(0/-19) (0/-0.75)	76.200 3.000	(0/-0.3) (0/-0.012)
50.800 2	LMB32A-OP	LMB32-OP	LMB32A UU-OP	LMB32 UU-OP	5	50.800 2.000	(0/-8) (0/-0.35)	(0/-12) (0/-0.5)	76.2000 3.0000	(0/-22) (0/-0.90)	101.600 4.000	(0/-0.3) (0/-0.012)

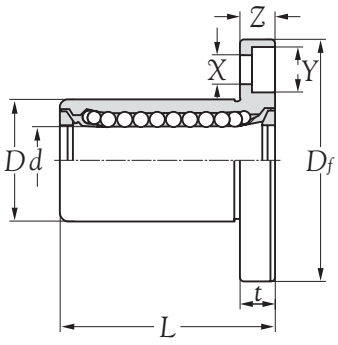
Linear Ball Bearings
series LMB..OP

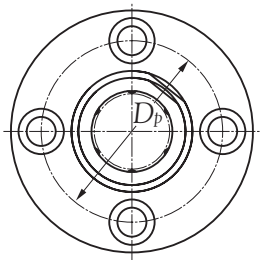




Principal dimensions					Roundness		Steel retainer maximum radial clearance	Resin retainer maximum radial clearance	Load ratings		Mass	
B tolerance	W	D1	h1	θ					dynamic C	static Co	steel retainer	resin retainer
mm/inch					0.001mm/inch		0.001mm/inch	0.001mm/inch	N		kg	
24.4600 (0/-0.2)	1.1680	20.8530	7.9375	80°	8	12	-4	-4	510	784	0.042	0.037
0.9625 (0/-0.008)	0.0459	0.8209	0.3400	80°	0.3	0.5	-0.1	-0.1				
28.0400 (0/-0.2)	1.4220	26.8990	9.5250	80°	8	12	-4	-4	774	1180	0.085	0.076
1.1039 (0/-0.008)	0.0559	1.0590	0.3750	80°	0.3	0.5	-0.1	-0.1				
29.6100 (0/-0.2)	1.4220	29.8700	11.1125	60°	10	15	-6	-6	862	1370	0.104	0.095
1.1657 (0/-0.008)	0.0599	1.1760	0.4375	60°	0.4	0.6	-0.2	-0.2				
44.5700 (0/-0.3)	1.7270	37.3060	14.2875	50°	10	15	-6	-6	980	1570	0.220	0.200
1.7547 (0/-0.012)	0.0679	1.4687	0.5625	50°	0.4	0.6	-0.2	-0.2				
50.9200 (0/-0.3)	1.7270	47.9040	15.8750	50°	12	20	-8	-8	1570	2740	0.465	0.440
2.0047 (0/-0.012)	0.0679	1.8859	0.6250	50°	0.5	0.8	-0.3	-0.3				
61.2600 (0/-0.3)	2.1840	56.8700	19.0500	50°	12	20	-8	-8	2180	4020	0.720	0.670
2.4118 (0/-0.012)	0.0859	2.2389	0.7500	50°	0.5	0.8	-0.3	-0.3				
3.1917 (0/-0.3)	2.6160	72.0850	2.5400	50°	17	25	-13	-13	3820	7940	1.310	1.140
81.0700 (0/-0.012)	0.1029	2.8379	1.0000	50°	0.7	1.0	-0.5	-0.5				

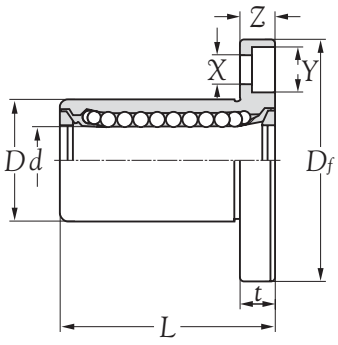
Linear Ball Bearings
series LMB..F

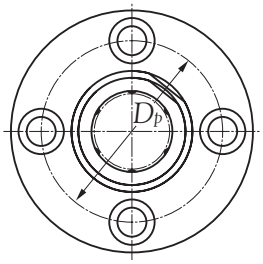




Boundary dimensions d mm/inch	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm/inch	0.001mm/Inch	D tolerance mm/inch	0.001mm/Inch	L tolerance mm/inch
6.350 1/4	**LMBF4**	**LMBF4 UU**	4	6.350 (0/-9) 0.250 (0/-0.4)		12.7000 (0/-13) 0.5000 (0/-0.50)		19.050 (±0.3) 0.750 (±0.012)
9.525 3/8	**LMBF6**	**LMBF6 UU**	4	9.525 (0/-9) 0.375 (0/-0.4)		15.8750 (0/-16) 0.6250 (0/-0.65)		22.225 (±0.3) 0.875 (±0.012)
12.700 1/2	**LMBF8**	**LMBF8 UU**	4	12.700 (0/-9) 0.500 (0/-0.4)		22.2250 (0/-16) 0.8750 (0/-0.65)		31.750 (±0.3) 1.250 (±0.012)
15.875 5/8	**LMBF10**	**LMBF10 UU**	4	15.875 (0/-9) 0.625 (0/-0.4)		28.5750 (0/-16) 1.1250 (0/-0.65)		38.100 (±0.3) 1.500 (±0.012)
19.050 3/4	**LMBF12**	**LMBF12 UU**	4	19.050 (0/-1) 0.750 (0/-0.4)		31.7500 (0/-19) 1.2500 (0/-0.75)		41.275 (±0.3) 1.625 (±0.012)
25.400 1	**LMBF16**	**LMBF16 UU**	5	25.400 (0/-1) 1.000 (0/-0.4)		39.6880 (0/-19) 1.5625 (0/-0.75)		57.150 (±0.3) 2.250 (±0.012)
31.750 1-1/4	**LMBF20**	**LMBF20 UU**	5	31.750 (0/-12) 1.250 (0/-0.5)		50.8000 (0/-22) 2.0000 (0/-0.90)		66.675 (±0.3) 2.625 (±0.012)
38.100 1-1/2	**LMBF24**	**LMBF24 UU**	6	38.100 (0/-12) 1.500 (0/-0.5)		60.3250 (0/-22) 2.3750 (0/-0.90)		76.200 (±0.3) 3.000 (±0.012)
50.800 2	**LMBF32**	**LMBF32 UU**	6	50.800 (0/-12) 2.000 (0/-0.5)		76.2000 (0/-25) 3.0000 (0/-1.00)		101.600 (±0.3) 4.000 (±0.012)
63.500 2-1/2	**LMBF40**	**LMBF40 UU**	6	63.500 (0/-15) 2.500 (0/-0.6)		95.2500 (0/-25) 3.7500 (0/-1.00)		127.000 (±0.3) 5.000 (±0.012)
76.200 3	**LMBF48**	**LMBF48 UU**	6	76.200 (0/-15) 3.000 (0/-0.6)		114.3000 (0/-25) 4.5000 (0/-1.00)		152.400 (±0.3) 6.000 (±0.012)
101.600 4	**LMBF64**	**LMBF64 UU**	6	101.600 (0/-20) 4.000 (0/-0.8)		152.4000 (0/-29) 6.0000 (0/-1.15)		203.200 (±0.3) 8.000 (±0.012)

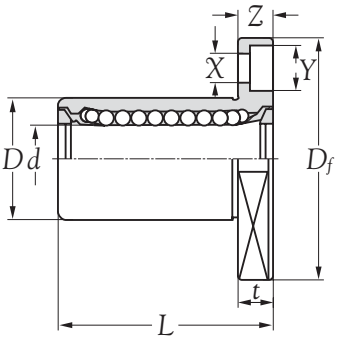
Linear Ball Bearings
series LMB..F

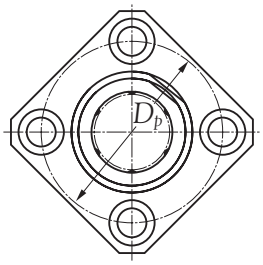




Principal dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	$XxYxZ$			dynamic C	static C_o	kg
mm/inch				0.001mm/Inch	0.001mm/Inch	N		(approx.)
31.7500 1.2500	5.5560 0.2190	22.2250 0.8750	3.9690 x 6.3500 x 3.5720 0.1560 x 0.2500 x 0.1410	12 0.5	12 0.5	206	265	0.032
38.1000 1.5000	6.3500 0.2500	26.9880 1.0620	4.7630 x 7.5410 x 4.3660 0.1875 x 0.2970 x 0.1720	12 0.5	12 0.5	225	314	0.047
44.4500 1.7500	6.3500 0.2500	33.3380 1.3120	4.7630 x 7.5410 x 4.3660 0.1875 x 0.2970 x 0.1720	12 0.5	12 0.5	510	784	0.088
50.8000 2.0000	6.3500 0.2500	39.6888 1.5620	4.7630 x 7.5410 x 4.3660 0.1875 x 0.2970 x 0.1720	15 0.6	15 0.6	774	1180	0.140
55.5630 2.1875	7.9380 0.3125	43.6600 1.7180	5.5560 x 8.7310 x 5.1590 0.2187 x 0.3440 x 0.2030	15 0.6	15 0.6	862	1370	0.190
63.5000 2.5000	7.9380 0.3125	51.5940 2.0310	5.5560 x 8.7310 x 5.1590 0.2187 x 0.3440 x 0.2030	15 0.6	15 0.6	980	1570	0.325
79.3750 3.1250	9.5250 0.3750	65.0880 2.5625	7.1440 x 10.319 x 6.7470 0.2812 x 0.4060 x 0.2656	20 0.8	20 0.8	1570	2740	0.665
95.2500 3.7500	12.7000 0.5000	77.7880 3.0625	8.7310 x 12.700 x 8.3340 0.3440 x 0.5000 x 0.3280	25 1.0	25 1.0	2180	4020	1.100
111.1250 4.3750	12.7000 0.5000	93.6620 3.6875	8.7310 x 12.700 x 8.3340 0.3440 x 0.5000 x 0.3280	25 1.0	25 1.0	3820	7940	1.760
136.5250 5.3750	19.0500 0.7500	115.8870 4.5625	10.319 x 15.875 x 9.5500 0.4062 x 0.6250 x 0.3750	25 1.0	25 1.0	4700	10000	3.570
155.5750 6.1250	19.0500 0.7500	134.9370 5.3125	10.319 x 15.875 x 9.5250 0.4062 x 0.6250 x 0.3750	25 1.0	25 1.0	7350	16000	5.600
203.2000 8.0000	22.2250 0.8750	177.8000 7.0000	12.700 x 18.097 x 12.700 0.5000 x 0.7125 x 0.5000	30 1.2	30 1.2	14100	34800	12.000

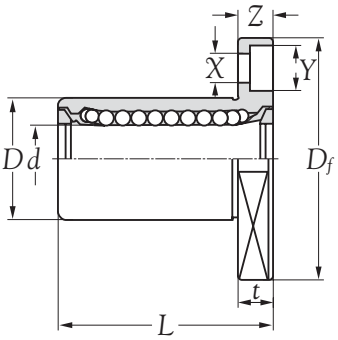
Linear Ball Bearings
series LMB..K

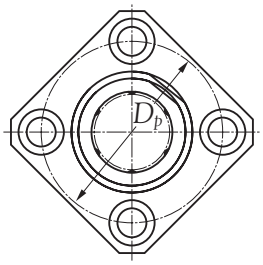




Boundary dimensions d mm/inch	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d mm/inch	d tolerance	D mm/inch	D tolerance	L mm/inch	L tolerance
6.350	**LMBK4**	**LMBK4 UU**	4	6.350	(0/-9)	12.7000	(0/-13)	19.050	(±0.3)
1/4				0.250	(0/-0.4)	0.5000	(0/-0.50)	0.750	(±0.012)
9.525	**LMBK6**	**LMBK6 UU**	4	9.525	(0/-9)	15.8750	(0/-16)	22.225	(±0.3)
3/8				0.375	(0/-0.4)	0.6250	(0/-0.65)	0.875	(±0.012)
12.700	**LMBK8**	**LMBK8 UU**	4	12.700	(0/-9)	22.2250	(0/-16)	31.750	(±0.3)
1/2				0.500	(0/-0.4)	0.8750	(0/-0.65)	1.250	(±0.012)
15.875	**LMBK10**	**LMBK10 UU**	4	15.875	(0/-9)	28.5750	(0/-16)	38.100	(±0.3)
5/8				0.625	(0/-0.4)	1.1250	(0/-0.65)	1.500	(±0.012)
19.050	**LMBK12**	**LMBK12 UU**	4	19.050	(0/-1)	31.7500	(0/-19)	41.275	(±0.3)
3/4				0.750	(0/-0.4)	1.2500	(0/-0.75)	1.625	(±0.012)
25.400	**LMBK16**	**LMBK16 UU**	5	25.400	(0/-1)	39.6880	(0/-19)	57.150	(±0.3)
1				1.000	(0/-0.4)	1.5625	(0/-0.75)	2.250	(±0.012)
31.750	**LMBK20**	**LMBK20 UU**	5	31.750	(0/-12)	50.8000	(0/-22)	66.675	(±0.3)
1-1/4				1.250	(0/-0.5)	2.0000	(0/-0.90)	2.625	(±0.012)
38.100	**LMBK24**	**LMBK24 UU**	6	38.100	(0/-12)	60.3250	(0/-22)	76.200	(±0.3)
1-1/2				1.500	(0/-0.5)	2.3750	(0/-0.90)	3.000	(±0.012)
50.800	**LMBK32**	**LMBK32 UU**	6	50.800	(0/-12)	76.2000	(0/-0.25)	101.600	(±0.3)
2				2.000	(0/-0.5)	3.0000	(0/-1.00)	4.000	(±0.012)
63.500	**LMBK40**	**LMBK40 UU**	6	63.500	(0/-15)	95.2500	(0/-0.25)	127.000	(±0.3)
2-1/2				2.500	(0/-0.6)	3.7500	(0/-1.00)	5.000	(±0.012)
76.200	**LMBK48**	**LMBK48 UU**	6	76.200	(0/-15)	114.3000	(0/-0.25)	152.400	(±0.3)
3				3.000	(0/-0.6)	4.5000	(0/-1.00)	6.000	(±0.012)
101.600	**LMBK64**	**LMBK64 UU**	6	101.600	(0/-20)	152.4000	(0/-29)	203.200	(±0.3)
4				4.000	(0/-0.8)	6.0000	(0/-1.15)	8.000	(±0.012)

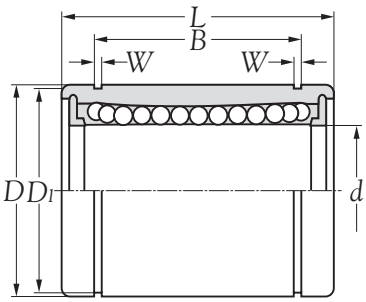
Linear Ball Bearings
series LMB..K

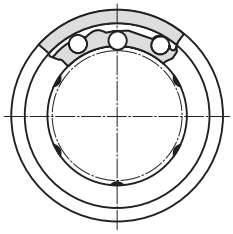




Principal dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	$XxYxZ$			dynamic C	static C_o	kg
mm/inch				0.001mm/inch	0.001mm/inch	N		(approx.)
31.7500 1.2500	5.5560 0.2190	22.2250 0.8750	3.9690 x 6.3500 x 3.5720 0.1560 x 0.2500 x 0.1410	12 0.5	12 0.5	206	265	0.032
38.1000 1.5000	6.3500 0.2500	26.9880 1.0620	4.7630 x 7.5410 x 4.3660 0.1875 x 0.2970 x 0.1720	12 0.5	12 0.5	225	314	0.047
44.4500 1.7500	6.3500 0.2500	33.3380 1.3120	4.7630 x 7.5410 x 4.3660 0.1875 x 0.2970 x 0.1720	12 0.5	12 0.5	510	784	0.088
50.8000 2.0000	6.3500 0.2500	39.6888 1.5620	4.7630 x 7.5410 x 4.3660 0.1875 x 0.2970 x 0.1720	15 0.6	15 0.6	774	1180	0.140
55.5630 2.1875	7.9380 0.3125	43.6600 1.7180	5.5560 x 8.7310 x 5.1590 0.2187 x 0.3440 x 0.2030	15 0.6	15 0.6	862	1370	0.190
63.5000 2.5000	7.9380 0.3125	51.5940 2.0310	5.5560 x 8.7310 x 5.1590 0.2187 x 0.3440 x 0.2030	15 0.6	15 0.6	980	1570	0.325
79.3750 3.1250	9.5250 0.3750	65.0880 2.5625	7.1440 x 10.319 x 6.7470 0.2812 x 0.4060 x 0.2656	20 0.8	20 0.8	1570	2740	0.665
95.2500 3.7500	12.7000 0.5000	77.7880 3.0625	8.7310 x 12.700 x 8.3340 0.3440 x 0.5000 x 0.3280	25 1.0	25 1.0	2180	4020	1.100
111.1250 4.3750	12.7000 0.5000	93.6620 3.6875	8.7310 x 12.700 x 8.3340 0.3440 x 0.5000 x 0.3280	25 1.0	25 1.0	3820	7940	1.760
136.5250 5.3750	19.0500 0.7500	115.8870 4.5625	10.319 x 15.875 x 9.5500 0.4062 x 0.6250 x 0.3750	25 1.0	25 1.0	4700	10000	3.570
155.5750 6.1250	19.0500 0.7500	134.9370 5.3125	10.319 x 15.875 x 9.5250 0.4062 x 0.6250 x 0.3750	25 1.0	25 1.0	7350	16000	5.600
203.2000 8.0000	22.2250 0.8750	177.8000 7.0000	12.700 x 18.097 x 12.700 0.5000 x 0.7125 x 0.5000	30 1.2	30 1.2	14100	34800	12.000

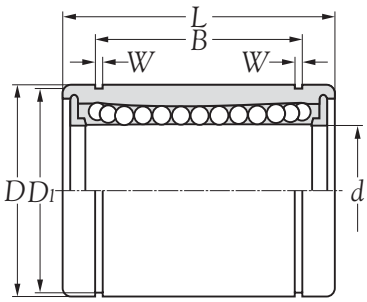
Linear Ball Bearings
series LME..

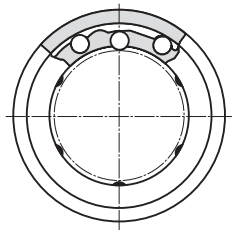




Boundary dimensions d mm	Bearing number standard steel retainer	standard resin retainer	with seals steel retainer	with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
5	-	LME5	-	LME5 UU	3	5	(+8/0)	12	(0/-8)	22	(0/-0.2)
8	LME8A	LME8	LME8A UU	LME8 UU	4	8	(+8/0)	16	(0/-8)	25	(0/-0.2)
10	LME10A	-	LME10A UU	-	4	10	(+8/0)	19	(0/-9)	29	(0/-0.2)
12	LME12A	LME12	LME12A UU	LME12 UU	4	12	(+8/0)	22	(0/-9)	32	(0/-0.2)
16	LME16A	LME16	LME16A UU	LME16 UU	5	16	(+9/-1)	26	(0/-9)	36	(0/-0.2)
20	LME20A	LME20	LME20A UU	LME20 UU	5	20	(+9/-1)	32	(0/-11)	45	(0/-0.2)
25	LME25A	LME25	LME25A UU	LME25 UU	6	25	(+11/-1)	40	(0/-11)	58	(0/-0.3)
30	LME30A	LME30	LME30A UU	LME30 UU	6	30	(+11/-1)	47	(0/-11)	68	(0/-0.3)
40	LME40A	LME40	LME40A UU	LME40 UU	6	40	(+13/-2)	62	(0/-13)	80	(0/-0.3)
50	LME50A	LME50	LME50A UU	LME50 UU	6	50	(+13/-2)	75	(0/-13)	100	(0/-0.3)
60	LME60A	LME60	LME60A UU	LME60 UU	6	60	(+13/-2)	90	(0/-15)	125	(0/-0.4)

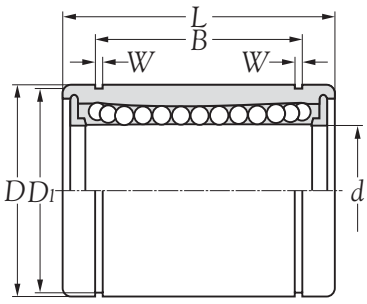
Linear Ball Bearings
series LME..

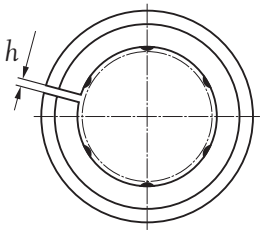




Principal dimensions				Roundness	Steel retainer maximum radial clearance	Resin retainer maximum radial clearance	Load ratings		Mass	
B tolerance		W	D_1				dynamic C	static C_o	steel retainer	resin retainer
mm				0.001mm	0.001mm	0.001mm	N		kg	
14.5	(0/-0.2)	1.10	11.5	12	-	-5	206	265	-	0.011
16.5	(0/-0.2)	1.10	15.2	12	-3	-5	265	402	0.022	0.020
22.0	(0/-0.2)	1.30	18.0	12	-4	-	372	549	0.036	-
22.9	(0/-0.2)	1.30	21.0	12	-4	-7	510	784	0.045	0.041
24.9	(0/-0.2)	1.30	24.9	12	-4	-7	578	892	0.060	0.065
31.5	(0/-0.2)	1.60	30.3	15	-6	-9	862	1370	0.102	0.091
44.1	(0/-0.3)	1.85	37.5	15	-6	-9	980	1570	0.235	0.215
52.1	(0/-0.3)	1.85	44.5	15	-8	-9	1570	2740	0.360	0.325
60.6	(0/-0.3)	2.15	59.0	17	-8	-13	2160	4020	0.770	0.705
77.6	(0/-0.3)	2.65	72.0	17	-13	-13	3820	7940	1.250	1.130
101.7	(0/-0.4)	3.15	86.5	20	-13	-16	4700	9800	2.220	2.220

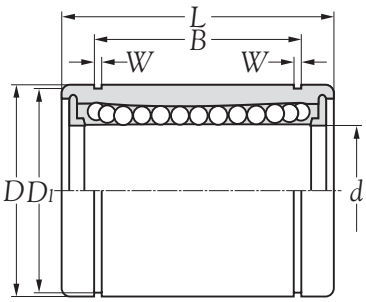
Linear Ball Bearings
series LME..AJ

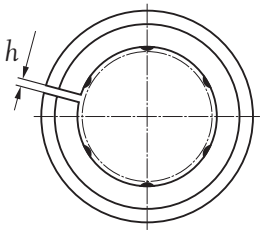




Boundary dimensions d mm	Bearing number standard steel retainer	standard resin retainer	with seals steel retainer	with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
5	-	**LME5-AJ**	-	**LME5 UU-AJ**	3	5	(+8/0)	12	(0/-8)	22	(0/-0.2)
8	-	**LME8-AJ**	-	**LME8 UU-AJ**	4	8	(+8/0)	16	(0/-8)	25	(0/-0.2)
12	**LME12A-AJ**	**LME12-AJ**	**LME12A UU-AJ**	**LME12 UU-AJ**	4	12	(+8/0)	22	(0/-9)	32	(0/-0.2)
16	**LME16A-AJ**	**LME16-AJ**	**LME16A UU-AJ**	**LME16 UU-AJ**	5	16	(+9/-1)	26	(0/-9)	36	(0/-0.2)
20	**LME20A-AJ**	**LME20-AJ**	**LME20A UU-AJ**	**LME20 UU-AJ**	5	20	(+9/-1)	32	(0/-11)	45	(0/-0.2)
25	**LME25A-AJ**	**LME25-AJ**	**LME25A UU-AJ**	**LME25 UU-AJ**	6	25	(+11/-1)	40	(0/-11)	58	(0/-0.3)
30	**LME30A-AJ**	**LME30-AJ**	**LME30A UU-AJ**	**LME30 UU-AJ**	6	30	(+11/-1)	47	(0/-11)	68	(0/-0.3)
40	**LME40A-AJ**	**LME40-AJ**	**LME40A UU-AJ**	**LME40 UU-AJ**	6	40	(+13/-2)	62	(0/-13)	80	(0/-0.3)
50	**LME50A-AJ**	**LME50-AJ**	**LME50A UU-AJ**	**LME50 UU-AJ**	6	50	(+13/-2)	75	(0/-13)	100	(0/-0.3)
60	**LME60A-AJ**	**LME60-AJ**	**LME60A UU-AJ**	**LME60 UU-AJ**	6	60	(+13/-2)	90	(0/-15)	125	(0/-0.4)

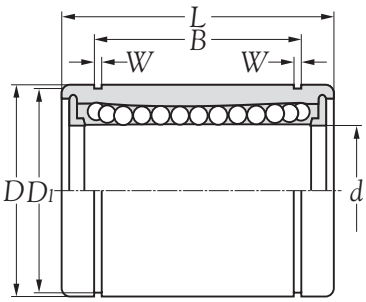
Linear Ball Bearings
series LME..AJ

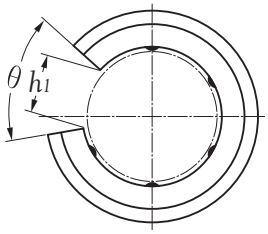




Principal dimensions					Roundness	Steel retainer maximum radial clearance	Resin retainer maximum radial clearance	Load ratings dynamic	Load ratings static	Mass steel retainer	Mass resin retainer
B	tolerance	W	D_1	h				C	C_o		
		mm			0.001mm	0.001mm	0.001mm	N		kg	
14.5	(0/-0.2)	1.10	11.5	1.0	12	-	-5	206	265	0.011	-
16.5	(0/-0.2)	1.10	15.2	1.0	12	-3	-5	265	402	0.020	0.022
22.9	(0/-0.2)	1.30	21.0	1.5	12	-4	-7	510	784	0.041	0.045
24.9	(0/-0.2)	1.30	24.9	1.5	12	-4	-7	578	892	0.065	0.060
31.5	(0/-0.2)	1.60	30.3	2.0	15	-6	-9	862	1370	0.091	0.102
44.1	(0/-0.3)	1.85	37.5	2.0	15	-6	-9	980	1570	0.215	0.235
52.1	(0/-0.3)	1.85	44.5	2.0	15	-8	-9	1570	2740	0.325	0.360
60.6	(0/-0.3)	2.15	59.0	3.0	17	-8	-13	2160	4020	0.705	0.770
77.6	(0/-0.3)	2.65	72.0	3.0	17	-13	-13	3820	7940	1.130	1.250
101.7	(0/-0.4)	3.15	86.5	3.0	20	-13	-16	4700	9800	2.220	2.220

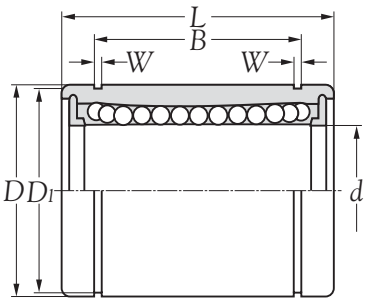
Linear Ball Bearings
series LME..OP

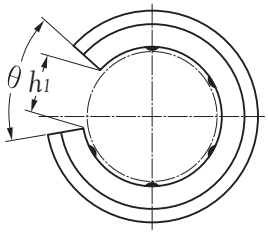




Boundary dimensions d mm	Bearing number standard steel retainer	standard resin retainer	with seals steel retainer	with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
12	**LME12A-OP**	**LME12-OP**	**LME12A UU-OP**	**LME12 UU-OP**	3	12	(+8/0)	22	(0/-9)	32	(0/-0.2)
16	**LME16A-OP**	**LME16-OP**	**LME16A UU-OP**	**LME16 UU-OP**	4	16	(+9/-1)	26	(0/-9)	36	(0/-0.2)
20	**LME20A-OP**	**LME20-OP**	**LME20A UU-OP**	**LME20 UU-OP**	4	20	(+9/-1)	32	(0/-11)	45	(0/-0.2)
25	**LME25A-OP**	**LME25-OP**	**LME25A UU-OP**	**LME25 UU-OP**	5	25	(+11/-1)	40	(0/-11)	58	(0/-0.3)
30	**LME30A-OP**	**LME30-OP**	**LME30A UU-OP**	**LME30 UU-OP**	5	30	(+11/-1)	47	(0/-11)	68	(0/-0.3)
40	**LME40A-OP**	**LME40-OP**	**LME40A UU-OP**	**LME40 UU-OP**	5	40	(+13/-2)	62	(0/-13)	80	(0/-0.3)
50	**LME50A-OP**	**LME50-OP**	**LME50A UU-OP**	**LME50 UU-OP**	5	50	(+13/-2)	75	(0/-13)	100	(0/-0.4)
60	**LME60A-OP**	**LME60-OP**	**LME60A UU-OP**	**LME60 UU-OP**	5	60	(+13/-2)	90	(0/-15)	125	(0/-0.4)

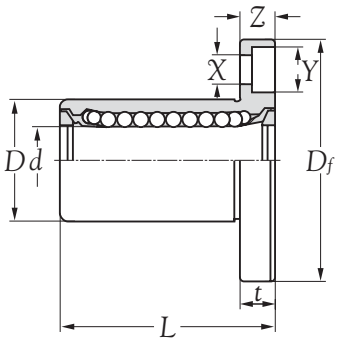
Linear Ball Bearings
series LME..OP

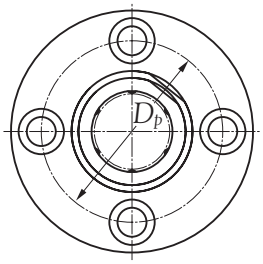




Principal dimensions					Roundness	Steel retainer maximum radial clearance	Resin retainer maximum radial clearance	Load ratings		Mass	
B tolerance	W	D_1	h_1	θ				dynamic C	static C_o	steel retainer	resin retainer
mm					0.001mm	0.001mm	0.001mm	N		kg	
22.9 (0/-0.2)	1.30	21.0	7.5	78°	12	-4	-7	510	784	0.045	0.041
24.9 (0/-0.2)	1.30	24.9	10.0	78°	12	-4	-7	578	892	0.060	0.065
31.5 (0/-0.2)	1.60	30.3	10.0	60°	15	-6	-9	862	1370	0.102	0.091
44.1 (0/-0.3)	1.85	37.5	12.5	60°	15	-6	-9	980	1570	0.235	0.215
52.1 (0/-0.3)	1.85	44.5	12.5	50°	15	-8	-9	1570	2740	0.360	0.325
60.6 (0/-0.3)	2.15	59.0	16.8	50°	17	-8	-13	2160	4020	0.770	0.705
77.6 (0/-0.4)	2.65	72.0	21.0	50°	17	-13	-13	3820	7940	1.250	1.130
101.7 (0/-0.4)	3.15	86.5	27.2	54°	20	-13	-16	4700	9800	2.220	2.220

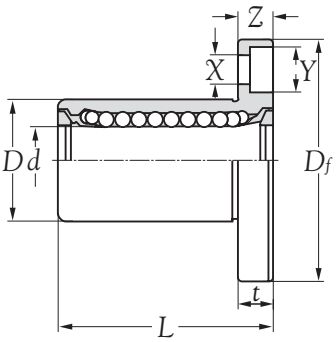
Linear Ball Bearings
series LME..F

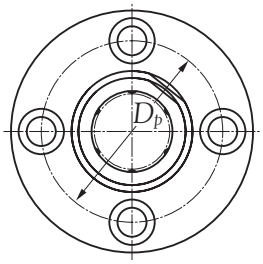




Boundary dimensions d mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	d tolerance 0.001mm	D tolerance mm	D tolerance 0.001mm	L tolerance mm	L tolerance mm
8	**LMEF8**	**LMEF8 UU**	4	8	(+8/0)	16	(0/-13)	25	(±0.3)
12	**LMEF12**	**LMEF12 UU**	4	12	(+8/0)	22	(0/-16)	32	(±0.3)
16	**LMEF16**	**LMEF16 UU**	5	16	(+9/-1)	26	(0/-16)	36	(±0.3)
20	**LMEF20**	**LMEF20 UU**	5	20	(+9/-1)	32	(0/-19)	45	(±0.3)
25	**LMEF25**	**LMEF25 UU**	6	25	(+11/-1)	40	(0/-19)	58	(±0.3)
30	**LMEF30**	**LMEF30 UU**	6	30	(+11/-1)	47	(0/-19)	68	(±0.3)
40	**LMEF40**	**LMEF40 UU**	6	40	(+13/-2)	62	(0/-22)	80	(±0.3)
50	**LMEF50**	**LMEF50 UU**	6	50	(+13/-2)	75	(0/-22)	100	(±0.3)
60	**LMEF60**	**LMEF60 UU**	6	60	(+13/-2)	90	(0/-25)	125	(±0.3)

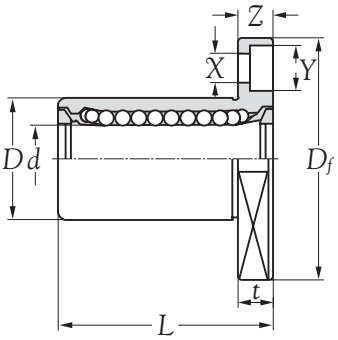
Linear Ball Bearings
series LME..F

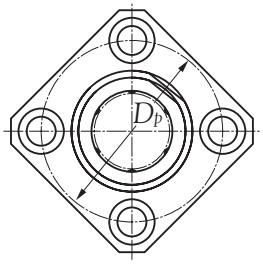




Principa dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	XxYxZ			dynamic C	static C_o	kg
		mm		0.001mm	0.001mm	N		(approx.)
32	5	24	3.5 x 6.0 x 3.1	12	12	265	402	0.041
42	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.080
46	6	36	4.5 x 7.5 x 4.1	12	12	578	892	0.103
54	8	43	5.5 x 9.0 x 5.1	15	15	862	1370	0.182
62	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.335
76	10	62	6.6 x 11 x 6.1	15	15	1570	2740	0.560
98	13	80	9.0 x 14 x 8.1	17	17	2160	4020	1.175
112	13	94	9.0 x 14 x 8.1	17	17	3820	7940	1.745
134	18	112	11 x 17 x 11.1	20	20	4700	9800	3.220

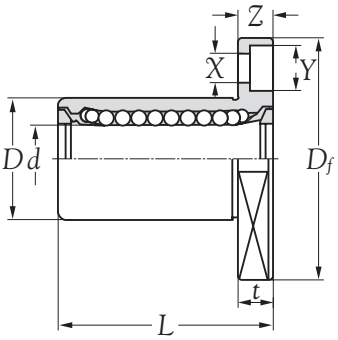
Linear Ball Bearings
series LME..K

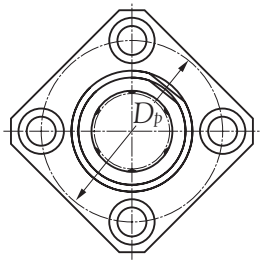




Boundary dimensions mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
8	**LMEK8**	**LMEK8 UU**	4	8	(+8/0)	16	(0/-13)	25	(±0.3)
12	**LMEK12**	**LMEK12 UU**	4	12	(+8/0)	22	(0/-16)	32	(±0.3)
16	**LMEK16**	**LMEK16 UU**	5	16	(+9/-1)	26	(0/-16)	36	(±0.3)
20	**LMEK20**	**LMEK20 UU**	5	20	(+9/-1)	32	(0/-19)	45	(±0.3)
25	**LMEK25**	**LMEK25 UU**	6	25	(+11/-1)	40	(0/-19)	58	(±0.3)
30	**LMEK30**	**LMEK30 UU**	6	30	(+11/-1)	47	(0/-19)	68	(±0.3)
40	**LMEK40**	**LMEK40 UU**	6	40	(+13/-2)	62	(0/-22)	80	(±0.3)
50	**LMEK50**	**LMEK50 UU**	6	50	(+13/-2)	75	(0/-22)	100	(±0.3)
60	**LMEK60**	**LMEK60 UU**	6	60	(+13/-2)	90	(0/-25)	125	(±0.3)

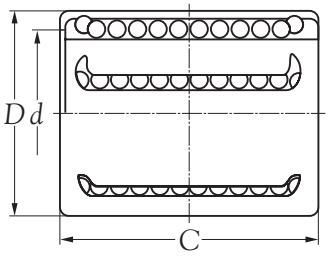
Linear Ball Bearings
series LME..K

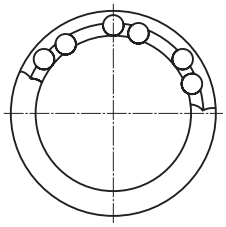




Principa dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	XxYxZ			dynamic C	static C_o	kg
		mm		0.001mm	0.001mm	N		(approx.)
32	5	24	3.5 x 6.0 x 3.1	12	12	265	402	0.041
42	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.080
46	6	36	4.5 x 7.5 x 4.1	12	12	578	892	0.103
54	8	43	5.5 x 9.0 x 5.1	15	15	862	1370	0.182
62	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.335
76	10	62	6.6 x 11 x 6.1	15	15	1570	2740	0.560
98	13	80	9.0 x 14 x 8.1	17	17	2160	4020	1.175
112	13	94	9.0 x 14 x 8.1	17	17	3820	7940	1.745
134	18	112	11.0 x 17 x 11.1	20	20	4700	9800	3.220

Linear Ball Bearings
series KH





Boundary dimensions d mm	Bearing number	Number of ball tracks	Principal dimensions D mm	C mm	Basic load ratings dynamic C N	static Co N	Max runout speed grease r/min	oil r/min	Mass kg (approx.)
6	**KH0622**	4	12	22	400	239	41	24	0.0070
6	**KH0622 PP**	4	12	22	400	239	41	24	0.0070
8	**KH0824**	4	15	24	435	280	44	29	0.0120
8	**KH0824 PP**	4	15	24	435	280	44	29	0.0120
10	**KH1026**	4	17	26	500	370	51	38	0.0145
10	**KH1026 PP**	4	17	26	500	370	51	38	0.0145
12	**KH1228**	5	19	28	620	510	63	52	0.0185
12	**KH1228 PP**	5	19	28	620	510	63	52	0.0185
14	**KH1428**	5	21	28	620	520	63	53	0.0205
14	**KH1428 PP**	5	21	28	620	520	63	53	0.0205
16	**KH1630**	5	24	30	800	620	82	63	0.0275
16	**KH1630 PP**	5	24	30	800	620	82	63	0.0275
20	**KH2030**	6	28	30	950	790	97	81	0.0325
20	**KH2030 PP**	6	28	30	950	790	97	81	0.0325
25	**KH2540**	6	35	40	1990	1670	203	170	0.0660
25	**KH2540 PP**	6	35	40	1990	1670	203	170	0.0660
30	**KH3050**	7	40	50	2800	2700	285	275	0.0950
30	**KH3050 PP**	7	40	50	2800	2700	285	275	0.0950
40	**KH4060**	8	52	60	4400	4450	449	454	0.1820
40	**KH4060 PP**	8	52	60	4400	4450	449	454	0.1820
50	**KH5070**	9	62	70	5500	6300	561	642	0.2520
50	**KH5070 PP**	9	62	70	5500	6300	561	642	0.2520

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