NIKO®

NIPPON KODO
AUTOMATION TECHNOLOGY

SINCE 2002

TRACK ROLLER BEARING

LINEAR BALL BUSHING

CATALOGUE

Linear Ball bushing

Track Roller Bearing

NIKO®

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Track Roller Bearings

LINEAR BALL BUSHING

1. Linear Ball Bushing, 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.

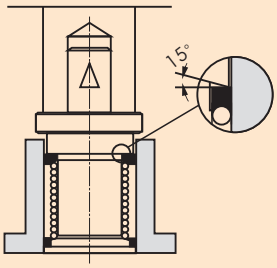


Fig.1

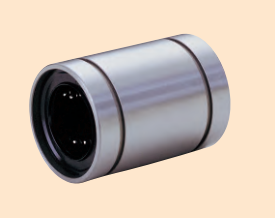

LINEAR
BALL BUSHING

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 Ball Bushing precision series type LM, LME

NIKO Linear Ball Bushing type LM, LME are composed by a cylindrical outer ring, by a cage that retains the balls, by two end rings to retain the cage and/or, whenrequired, 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 bushing 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 that 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 LM, LME can be supplied in the following versions:
-Without seals - LM, LME
-With contact seals - LM..UU, LME..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 Ball Bushing precision series type LM,LME

3.1 Lubrication
Linear bearings type LM, LME are supplied coated with rust inhibiting oil. Linear bearings type LM..UU,LME..UU..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
LM	g6	h6	H7	J7
LME	h6	j6	H7	J7

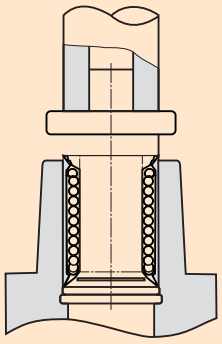
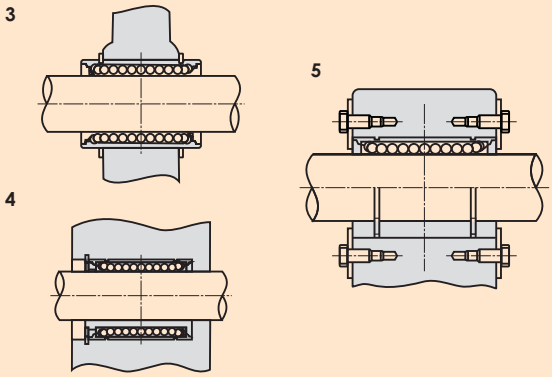


Fig. 2



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).

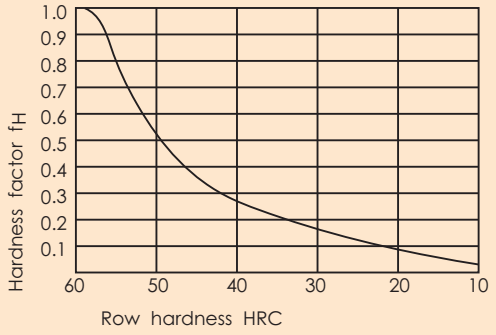


Fig. 8 Raceway hardness factor

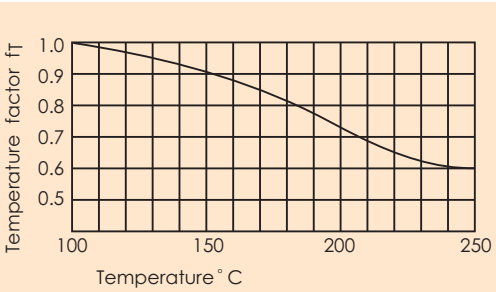


Fig. 9 Temperature factor

● 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
LM, LME	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 +80˚C
LM, LME	-20 to +80˚C

NIKO Linear Ball Bushing-Interchangeability List

Ball Bushing-Resin Retainer

THK	NIKO	NB	EASE
LM..	LM..	SM..G	SDM..
LM..UU	LM..UU	SM..GUU	SDM..UU
LM..AJ	LM..AJ	SM..GAJ	SDM..AJ
LM..UUAJ	LM..UUAJ	SM..GUUAJ	SDM..UUAJ
LM..OP	LM..OP	SM..GOP	SDM..OP
LM..UUOP	LM..UUOP	SM..GUUOP	SDM..UUOP

The above types are metric dimension series generally used Japan and other countries

THK	NIKO	NB	INA	SKF	IKO	EASE
LME..	LME..	KB..G	KB..G	LBAR/LBCR..	LBE..	SDE..
LME..UU	LME..UU	KB..GUU	KB..PP	LBAR/LBCR..2LS	LBE..UU	SDE..UU
LME..AJ	LME..AJ	KB..GAJ	KBS..	LBAS..	LBE..AJ	SDE..AJ
LME..UUAJ	LME..UUAJ	KB..GUUAJ	KBS..PP	LBAS..2LS	LBE..UUAJ	SDE..UUAJ
LME..OP	LME..OP	KB..GOP	KBO..	LBAT/LBCT..	LBE..OP	SDE..OP
LME..UUOP	LME..UUOP	KB..GUUOP	KBO..PP	LBAT/LBCT..2LS	LBE..UUOP	SDE..UUOP

The above types are metric dimension series generally used in Europe.

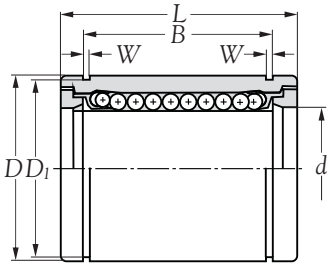
Linear
Ball Bushing

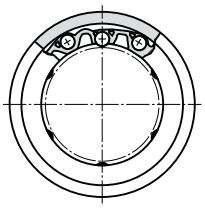
Ball Bushing-Compact Type

NIKO	NTN	STAR	INA	SKF	FAG
KH..	KH..	0658-0..-00	KH.. (LBBS..)	LBBR..	LNA.. (LNA)
KH.. PP	KH.. LL	0658-0..-00	KH.. PP (LBBS..2LS)	LBBR..2LS	LNA..2RS (LFA..2RS)

DIMENSION TABLES

Linear ball bushing
series LM..





Boundary dimensions d mm	Bearing number standard resin retainer	Bearing number standard resin retainer	Number of ball tracks	Principal dimensions d mm	d tolerance 0.001mm	D mm	D tolerance 0.001mm	L mm	L tolerance mm
3	LM3	LM3 UU	4	3	(0/-8)	7	(0/-9)	10	(0/-0.12)
4	LM4	LM4 UU	4	4	(0/-8)	8	(0/-9)	12	(0/-0.12)
5	LM5	LM5 UU	4	5	(0/-8)	10	(0/-9)	15	(0/-0.12)
6	LM6	LM6 UU	4	6	(0/-9)	12	(0/-11)	19	(0/-0.2)
8	LM8S	LM8S UU	4	8	(0/-9)	15	(0/-11)	17	(0/-0.2)
8	LM8	LM8 UU	4	8	(0/-9)	15	(0/-11)	24	(0/-0.2)
10	LM10	LM10 UU	4	10	(0/-9)	19	(0/-13)	29	(0/-0.2)
12	LM12	LM12 UU	4	12	(0/-9)	21	(0/-13)	30	(0/-0.2)
13	LM13	LM13 UU	4	13	(0/-9)	23	(0/-13)	32	(0/-0.2)
16	LM16	LM16 UU	5	16	(0/-9)	28	(0/-13)	37	(0/-0.2)
20	LM20	LM20 UU	5	20	(0/-10)	32	(0/-16)	42	(0/-0.2)
25	LM25	LM25 UU	6	25	(0/-10)	40	(0/-16)	59	(0/-0.3)
30	LM30	LM30 UU	6	30	(0/-10)	45	(0/-16)	64	(0/-0.3)
35	LM35	LM35 UU	6	35	(0/-12)	52	(0/-19)	70	(0/-0.3)
40	LM40	LM40 UU	6	40	(0/-12)	60	(0/-19)	80	(0/-0.3)
50	LM50	LM50 UU	6	50	(0/-12)	80	(0/-22)	100	(0/-0.3)
60	LM60	LM60 UU	6	60	(0/-15)	90	(0/-22)	110	(0/-0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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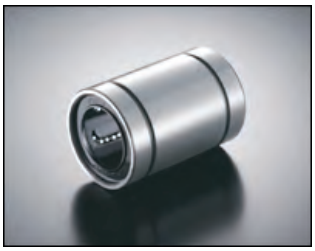
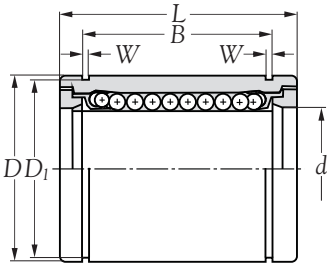
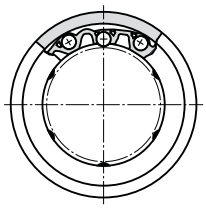
Linear ball bushing
series LM..







Principal dimensions				Roundness	Steel retainer	Load ratings		Mass
B tolerance		W	D1		maximum radial clearance	dynamic C	static Co	kg
mm				0.001mm	0.001mm	N		(approx.)
						69	105	0.0014
						88	127	0.0020
10.2	(0/-0.2)	1.10	9.6	8	-3	167	206	0.0040
13.5	(0/-0.2)	1.10	11.5	12	-3	206	265	0.0085
11.5	(0/-0.2)	1.10	14.3	12	-3	176	225	0.0110
17.5	(0/-0.2)	1.10	14.3	12	-3	265	402	0.0170
22.0	(0/-0.2)	1.30	18.0	12	-4	373	549	0.0360
23.0	(0/-0.2)	1.30	20.0	12	-4	412	590	0.0420
23.0	(0/-0.2)	1.30	22.0	12	-4	510	775	0.0490
26.5	(0/-0.2)	1.60	27.0	12	-6	775	1180	0.0790
30.5	(0/-0.2)	1.60	30.5	15	-6	863	1370	0.1000
41.0	(0/-0.3)	1.85	38.0	15	-6	980	1570	0.2400
44.5	(0/-0.3)	1.85	43.0	15	-8	1570	2750	0.2700
49.5	(0/-0.3)	2.10	49.0	20	-8	1670	3140	0.4250
60.5	(0/-0.3)	2.10	57.0	20	-10	2162	4020	0.6540
74.0	(0/-0.3)	2.60	76.5	20	-13	3820	7940	1.7000
85.0	(0/-0.3)	3.15	86.5	25	-13	4710	10000	2.0000

Remark: If you have more inquiry of technical, please inquire
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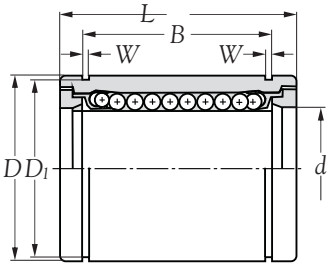
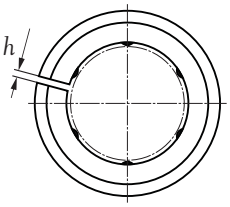
Linear ball bushing
series LM..AJ





Boundary dimensions d mm	Bearing number standard resin 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	LM5-AJ	LM5 UU-AJ	4	5	(0/-8)	10	(0/-9)	15	(0/-0.2)
6	LM6-AJ	LM6 UU-AJ	4	6	(0/-9)	12	(0/-11)	19	(0/-0.2)
8	LM8S-AJ	LM8S UU-AJ	4	8	(0/-9)	15	(0/-11)	17	(0/-0.2)
8	LM8-AJ	LM8 UU-AJ	4	8	(0/-9)	15	(0/-11)	24	(0/-0.2)
10	LM10-AJ	LM10 UU-AJ	4	10	(0/-9)	19	(0/-13)	29	(0/-0.2)
12	LM12-AJ	LM12 UU-AJ	4	12	(0/-9)	21	(0/-13)	30	(0/-0.2)
13	LM13-AJ	LM13 UU-AJ	4	13	(0/-9)	23	(0/-13)	32	(0/-0.2)
16	LM16-AJ	LM16 UU-AJ	5	16	(0/-9)	28	(0/-13)	37	(0/-0.2)
20	LM20-AJ	LM20 UU-AJ	5	20	(0/-10)	32	(0/-16)	42	(0/-0.2)
25	LM25-AJ	LM25 UU-AJ	6	25	(0/-10)	40	(0/-16)	59	(0/-0.3)
30	LM30-AJ	LM30 UU-AJ	6	30	(0/-10)	45	(0/-16)	64	(0/-0.3)
35	LM35-AJ	LM35 UU-AJ	6	35	(0/-12)	52	(0/-19)	70	(0/-0.3)
40	LM40-AJ	LM40 UU-AJ	6	40	(0/-12)	60	(0/-19)	80	(0/-0.3)
50	LM50-AJ	LM50 UU-AJ	6	50	(0/-12)	80	(0/-22)	100	(0/-0.3)
60	LM60-AJ	LM60 UU-AJ	6	60	(0/-15)	90	(0/-22)	110	(0/-0.3)

Linear
Ball Bushing

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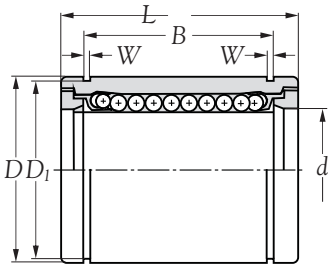
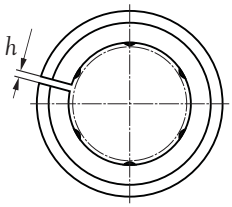
Linear ball bushing
series LM..AJ





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	167	206	0.0040
13.5	(0/-0.2)	1.10	11.5	1.0	12	-3	206	265	0.0085
11.5	(0/-0.2)	1.10	14.3	1.0	12	-3	176	225	0.0110
17.5	(0/-0.2)	1.10	14.3	1.0	12	-3	265	402	0.0170
22.0	(0/-0.2)	1.30	18.0	1.0	12	-4	373	549	0.0360
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41.0	(0/-0.3)	1.85	38.0	2.0	15	-6	980	1570	0.2400
44.5	(0/-0.3)	1.85	43.0	2.5	15	-8	1570	2750	0.2700
49.5	(0/-0.3)	2.10	49.0	2.5	20	-8	1670	3140	0.4250
60.5	(0/-0.3)	2.10	57.0	3.0	20	-10	2162	4020	0.6540
74.0	(0/-0.3)	2.60	76.5	3.0	20	-13	3820	7940	1.7000
85.0	(0/-0.3)	3.15	86.5	3.0	25	-13	4710	10000	2.0000

Remark: If you have more inquiry of technical, please inquire
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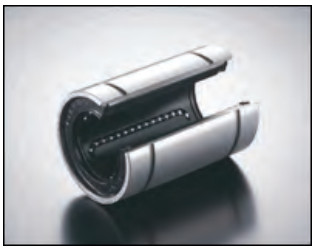
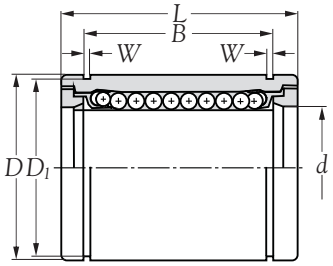
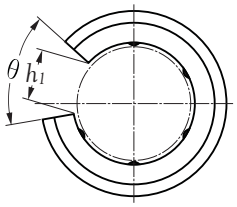
Linear Ball Bushing
series LM..OP







Boundary dimensions d mm	Bearing number standard resin retainer	Bearing number standard resin retainer	Number of ball tracks	Principal dimensions d mm	d tolerance 0.001mm	D mm	D tolerance 0.001mm	L mm	L tolerance mm
12	**LM12-OP**	**LM12 UU-OP**	4	12	(0/-9)	21	(0/-13)	30	(0/-0.2)
13	**LM13-OP**	**LM13 UU-OP**	4	13	(0/-9)	23	(0/-13)	32	(0/-0.2)
16	**LM16-OP**	**LM16 UU-OP**	5	16	(0/-9)	28	(0/-13)	37	(0/-0.2)
20	**LM20-OP**	**LM20 UU-OP**	5	20	(0/-10)	32	(0/-16)	42	(0/-0.2)
25	**LM25-OP**	**LM25 UU-OP**	6	25	(0/-10)	40	(0/-16)	59	(0/-0.3)
30	**LM30-OP**	**LM30 UU-OP**	6	30	(0/-10)	45	(0/-16)	64	(0/-0.3)
35	**LM35-OP**	**LM35 UU-OP**	6	35	(0/-12)	52	(0/-19)	70	(0/-0.3)
40	**LM40-OP**	**LM40 UU-OP**	6	40	(0/-12)	60	(0/-19)	80	(0/-0.3)
50	**LM50-OP**	**LM50 UU-OP**	6	50	(0/-12)	80	(0/-22)	100	(0/-0.3)
60	**LM60-OP**	**LM60 UU-OP**	6	60	(0/-15)	90	(0/-22)	110	(0/-0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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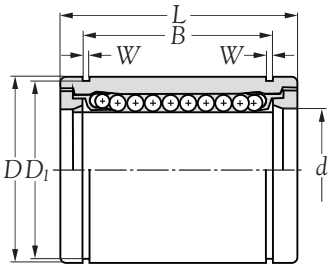
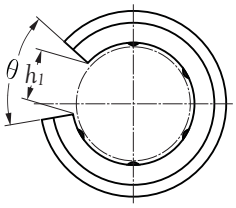
Linear ball bushing
series LM..OP





Principal dimensions						Roundness	Steel retainer maximum radial clearance	Load ratings dynamic	Load ratings static	Mass
B	tolerance	W	D_1	h_1	θ			C	C_o	kg
mm						0.001mm	0.001mm	N		(approx.)
23.0	(0/-0.2)	1.30	20.0	8	80°	12	-4	412	590	0.0420
23.0	(0/-0.2)	1.30	22.0	9	80°	12	-4	510	775	0.0490
26.5	(0/-0.2)	1.60	27.0	11	60°	12	-6	775	1180	0.0790
30.5	(0/-0.2)	1.60	30.5	11	60°	15	-6	863	1370	0.1000
41.0	(0/-0.3)	1.85	38.0	12	50°	15	-6	980	1570	0.2400
44.5	(0/-0.3)	1.85	43.0	15	50°	15	-8	1570	2750	0.2700
49.5	(0/-0.3)	2.10	49.0	17	50°	20	-8	1670	3140	0.4250
60.5	(0/-0.3)	2.10	57.0	20	50°	20	-10	2162	4020	0.6540
74.0	(0/-0.3)	2.60	76.5	25	50°	20	-13	3820	7940	1.7000
85.0	(0/-0.3)	3.15	86.5	30	50°	25	-13	4710	10000	2.0000

Remark: If you have more inquiry of technical, please inquire
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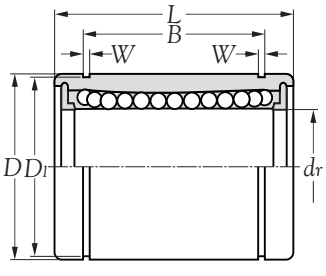
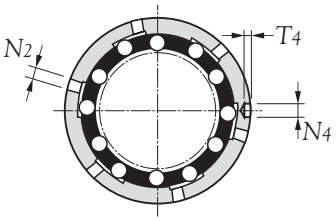
Linear ball bushing
series LME..





Boundary dimensions d_r mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d_r mm	d_r tolerance 0.001mm	D mm	D tolerance 0.001mm	L mm	L tolerance mm
5	**LME 5**	**LME 5 UU**	3	5	(+8/0)	12	(0/-8)	22	(0/-0.2)
8	**LME 8**	**LME 8 UU**	4	8	(+8/0)	16	(0/-8)	25	(0/-0.2)
10	-	-	4	10	(+8/0)	19	(0/-9)	29	(0/-0.2)
12	**LME 12**	**LME 12 UU**	4	12	(+8/0)	22	(0/-9)	32	(0/-0.2)
16	**LME 16**	**LME 16 UU**	5	16	(+9/-1)	26	(0/-9)	36	(0/-0.2)
20	**LME 20**	**LME 20 UU**	5	20	(+9/-1)	32	(0/-11)	45	(0/-0.2)
25	**LME 25**	**LME 25 UU**	6	25	(+11/-1)	40	(0/-11)	58	(0/-0.3)
30	**LME 30**	**LME 30 UU**	6	30	(+11/-1)	47	(0/-11)	68	(0/-0.3)
40	**LME 40**	**LME 40 UU**	6	40	(+13/-2)	62	(0/-13)	80	(0/-0.3)
50	**LME 50**	**LME 50 UU**	6	50	(+13/-2)	75	(0/-13)	100	(0/-0.3)
60	**LME 60**	**LME 60 UU**	6	60	(+13/-2)	90	(0/-15)	125	(0/-0.4)

Linear
Ball Bushing

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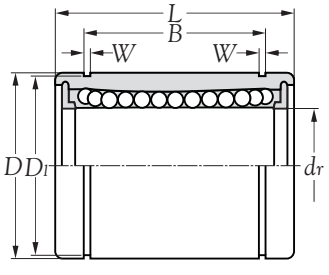
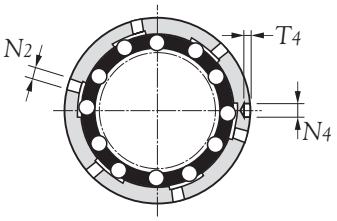
Linear ball bushing
series LME..





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(s).	
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 Bushing

Remark: If you have more inquiry of technical, please inquire
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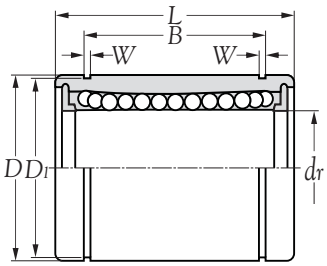
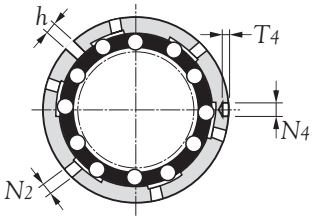
Linear ball bushing
series LME..AJ





Boundary dimensions dr mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions dr tolerance mm	Principal dimensions dr tolerance 0.001mm	Principal dimensions D tolerance mm	Principal dimensions D tolerance 0.001mm
5	**LME 5 AJ**	**LME 5 UUAJ**	3	5	(+8/0)	12	(0/-8)
8	**LME 8 AJ**	**LME 8 UUAJ**	4	8	(+8/0)	16	(0/-8)
12	**LME 12 AJ**	**LME 12 UUAJ**	4	12	(+8/0)	22	(0/-9)
16	**LME 16 AJ**	**LME 16 UUAJ**	5	16	(+9/-1)	26	(0/-9)
20	**LME 20 AJ**	**LME 20 UUAJ**	5	20	(+9/-1)	32	(0/-11)
25	**LME 25 AJ**	**LME 25 UUAJ**	6	25	(+11/-1)	40	(0/-11)
30	**LME 30 AJ**	**LME 30 UUAJ**	6	30	(+11/-1)	47	(0/-11)
40	**LME 40 AJ**	**LME 40 UUAJ**	6	40	(+13/-2)	62	(0/-13)
50	**LME 50 AJ**	**LME 50 UUAJ**	6	50	(+13/-2)	75	(0/-13)
60	**LME 60 AJ**	**LME 60 UUAJ**	6	60	(+13/-2)	90	(0/-15)

Linear
Ball Bushing

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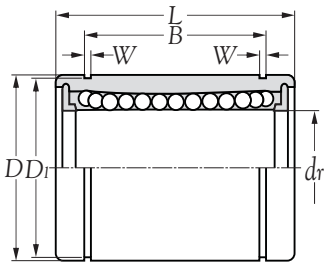
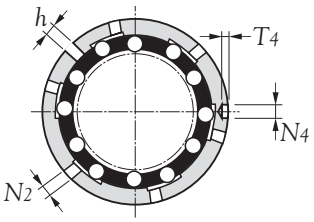
Linear ball bushing
series LME..AJ





Principal dimensions							Roundness	Steel retainer maximum radial clearance	Resin retainer maximum radial clearance	Load ratings		Mass	
L	tolerance	B	tolerance	W	D_1	h				dynamic C	static C_o	steel retainer	resin retainer
mm	mm	mm	mm		mm		0.001mm	0.001mm	0.001mm	N		kg(s).	
22	(0/-0.2)	14.5	(0/-0.2)	1.10	11.5	1.0	12	-	-5	206	265	0.011	-
25	(0/-0.2)	16.5	(0/-0.2)	1.10	15.2	1.0	12	-3	-5	265	402	0.020	0.022
32	(0/-0.2)	22.9	(0/-0.2)	1.30	21.0	1.5	12	-4	-7	510	784	0.041	0.045
36	(0/-0.2)	24.9	(0/-0.2)	1.30	24.9	1.5	12	-4	-7	578	892	0.065	0.060
45	(0/-0.2)	31.5	(0/-0.2)	1.60	30.3	2.0	15	-6	-9	862	1370	0.091	0.102
58	(0/-0.3)	44.1	(0/-0.3)	1.85	37.5	2.0	15	-6	-9	980	1570	0.215	0.235
68	(0/-0.3)	52.1	(0/-0.3)	1.85	44.5	2.0	15	-8	-9	1570	2740	0.325	0.360
80	(0/-0.3)	60.6	(0/-0.3)	2.15	59.0	3.0	17	-8	-13	2160	4020	0.705	0.770
100	(0/-0.3)	77.6	(0/-0.3)	2.65	72.0	3.0	17	-13	-13	3820	7940	1.130	1.250
125	(0/-0.4)	101.7	(0/-0.4)	3.15	86.5	3.0	20	-13	-16	4700	9800	2.220	2.220

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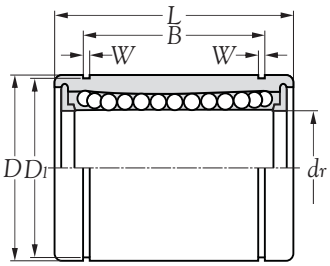
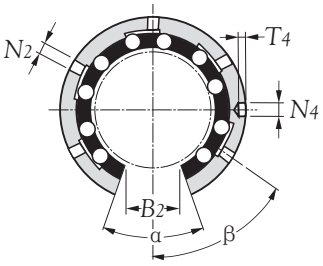
Linear ball bushing
series LME..OP





Boundary dimensions *dr* mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions *dr* tolerance mm	0.001mm	Principal dimensions *D* tolerance mm	0.001mm
12	**LME 12 OP**	**LME 12 UUOP**	3	12	(+8/0)	22	(0/-9)
16	**LME 16 OP**	**LME 16 UUOP**	4	16	(+9/-1)	26	(0/-9)
20	**LME 20 OP**	**LME 20 UUOP**	4	20	(+9/-1)	32	(0/-11)
25	**LME 25 OP**	**LME 25 UUOP**	5	25	(+11/-1)	40	(0/-11)
30	**LME 30 OP**	**LME 30 UUOP**	5	30	(+11/-1)	47	(0/-11)
40	**LME 40 OP**	**LME 40 UUOP**	5	40	(+13/-2)	62	(0/-13)
50	**LME 50 OP**	**LME 50 UUOP**	5	50	(+13/-2)	75	(0/-13)
60	**LME 60 OP**	**LME 60 UUOP**	5	60	(+13/-2)	90	(0/-15)

Linear
Ball Bushing

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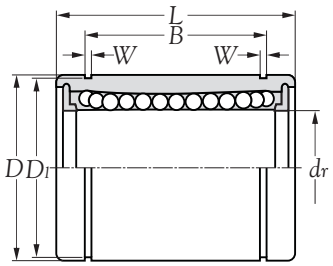
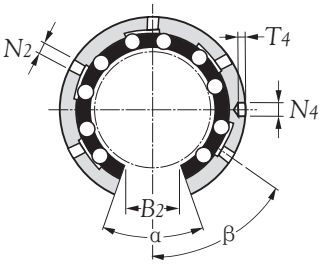
Linear ball bushing
series LME..OP





Principal dimensions								Roundness	Steel retainer maximum radial clearance	Resin retainer maximum radial clearance	Load ratings		Mass	
L	tolerance	B	tolerance	W	D_1	h_1	θ				dynamic C	static C_o	steel retainer	resin retainer
mm	mm	mm	mm	mm				0.001mm	0.001mm	0.001mm	N		kg(s).	
32	(0/-0.2)	22.9	(0/-0.2)	1.30	21.0	7.5	78°	12	-4	-7	510	784	0.045	0.041
36	(0/-0.2)	24.9	(0/-0.2)	1.30	24.9	10.0	78°	12	-4	-7	578	892	0.060	0.065
45	(0/-0.2)	31.5	(0/-0.2)	1.60	30.3	10.0	60°	15	-6	-9	862	1370	0.102	0.091
58	(0/-0.3)	44.1	(0/-0.3)	1.85	37.5	12.5	60°	15	-6	-9	980	1570	0.235	0.215
68	(0/-0.3)	52.1	(0/-0.3)	1.85	44.5	12.5	50°	15	-8	-9	1570	2740	0.360	0.325
80	(0/-0.3)	60.6	(0/-0.3)	2.15	59.0	16.8	50°	17	-8	-13	2160	4020	0.770	0.705
100	(0/-0.4)	77.6	(0/-0.4)	2.65	72.0	21.0	50°	17	-13	-13	3820	7940	1.250	1.130
125	(0/-0.4)	101.7	(0/-0.4)	3.15	86.5	27.2	54°	20	-13	-16	4700	9800	2.220	2.220

Remark: If you have more inquiry of technical, please inquire
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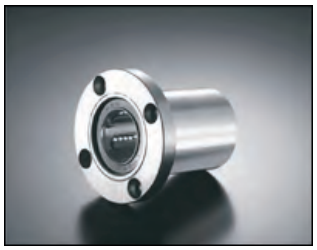
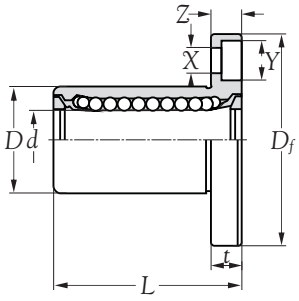
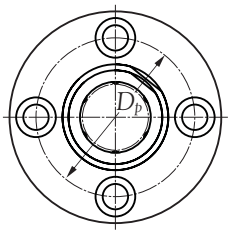
Linear ball bushing
series LMF..







Boundary dimensions d mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d mm	d tolerance 0.001mm	D mm	D tolerance 0.001mm	L mm	L tolerance mm
6	**LMF6**	**LMF6 UU**	4	6	(0/-9)	12	(0/-13)	19	(±0.3)
8	**LMF8S**	**LMF8S UU**	4	8	(0/-9)	15	(0/-13)	17	(±0.3)
8	**LMF8**	**LMF8 UU**	4	8	(0/-9)	15	(0/-13)	24	(±0.3)
10	**LMF10**	**LMF10 UU**	4	10	(0/-9)	19	(0/-16)	29	(±0.3)
12	**LMF12**	**LMF12 UU**	4	12	(0/-9)	21	(0/-16)	30	(±0.3)
13	**LMF13**	**LMF13 UU**	4	13	(0/-9)	23	(0/-16)	32	(±0.3)
16	**LMF16**	**LMF16 UU**	5	16	(0/-9)	28	(0/-16)	37	(±0.3)
20	**LMF20**	**LMF20 UU**	5	20	(0/-10)	32	(0/-19)	42	(±0.3)
25	**LMF25**	**LMF25 UU**	6	25	(0/-10)	40	(0/-19)	59	(±0.3)
30	**LMF30**	**LMF30 UU**	6	30	(0/-10)	45	(0/-19)	64	(±0.3)
35	**LMF35**	**LMF35 UU**	6	35	(0/-12)	52	(0/-22)	70	(±0.3)
40	**LMF40**	**LMF40 UU**	6	40	(0/-12)	60	(0/-22)	80	(±0.3)
50	**LMF50**	**LMF50 UU**	6	50	(0/-12)	80	(0/-22)	100	(±0.3)
60	**LMF60**	**LMF60 UU**	6	60	(0/-15)	90	(0/-25)	110	(±0.3)

Linear
Ball Bushing

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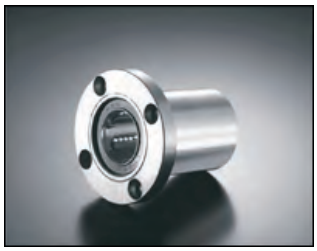
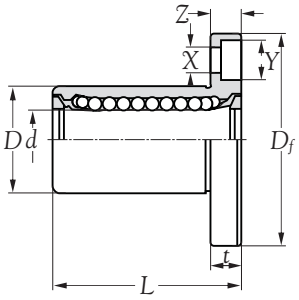
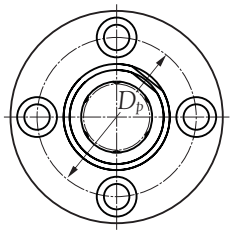
Linear ball bushing
series LMF..







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.)
28	5	20	3.5 x 6.0 x 3.1	12	12	206	265	0.024
32	5	24	3.5 x 6.0 x 3.1	12	12	176	216	0.032
32	5	24	3.5 x 6.0 x 3.1	12	12	274	392	0.037
40	6	29	4.5 x 7.5 x 4.1	12	12	372	549	0.072
42	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.076
43	6	33	4.5 x 7.5 x 4.1	12	12	510	784	0.088
48	6	38	4.5 x 7.5 x 4.1	12	12	774	1180	0.120
54	8	43	5.5 x 9.0 x 5.1	15	15	882	1370	0.180
62	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.340
74	10	60	6.6 x 11 x 6.1	15	15	1570	2740	0.470
82	10	67	6.6 x 11 x 6.1	20	20	1670	3140	0.650
96	13	78	9.0 x 14 x 8.1	20	20	2160	4020	1.060
116	13	98	9.0 x 14 x 8.1	20	20	3820	7940	2.200
134	18	112	11.0 x 17 x 11.1	25	25	4700	10000	3.000

Remark: If you have more inquiry of technical, please inquire
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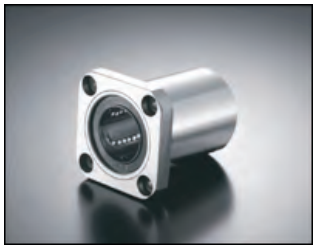
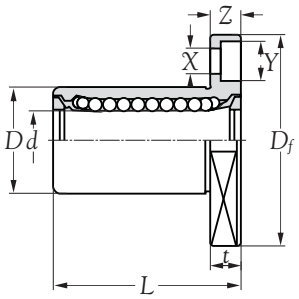
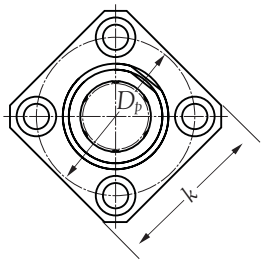
Linear ball bushing
series LMK..







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
6	**LMK6**	**LMK6 UU**	4	6	(0/-9)	12	(0/-13)	19	(±0.3)
8	**LMK8S**	**LMK8S UU**	4	8	(0/-9)	15	(0/-13)	17	(±0.3)
8	**LMK8**	**LMK8 UU**	4	8	(0/-9)	15	(0/-13)	24	(±0.3)
10	**LMK10**	**LMK10 UU**	4	10	(0/-9)	19	(0/-16)	29	(±0.3)
12	**LMK12**	**LMK12 UU**	4	12	(0/-9)	21	(0/-16)	30	(±0.3)
13	**LMK13**	**LMK13 UU**	4	13	(0/-9)	23	(0/-16)	32	(±0.3)
16	**LMK16**	**LMK16 UU**	5	16	(0/-9)	28	(0/-16)	37	(±0.3)
20	**LMK20**	**LMK20 UU**	5	20	(0/-10)	32	(0/-19)	42	(±0.3)
25	**LMK25**	**LMK25 UU**	6	25	(0/-10)	40	(0/-19)	59	(±0.3)
30	**LMK30**	**LMK30 UU**	6	30	(0/-10)	45	(0/-19)	64	(±0.3)
35	**LMK35**	**LMK35 UU**	6	35	(0/-12)	52	(0/-22)	70	(±0.3)
40	**LMK40**	**LMK40 UU**	6	40	(0/-12)	60	(0/-22)	80	(±0.3)
50	**LMK50**	**LMK50 UU**	6	50	(0/-12)	80	(0/-22)	100	(±0.3)
60	**LMK60**	**LMK60 UU**	6	60	(0/-15)	90	(0/-25)	110	(±0.3)

Linear Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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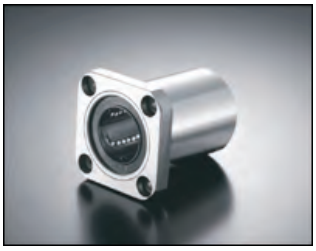
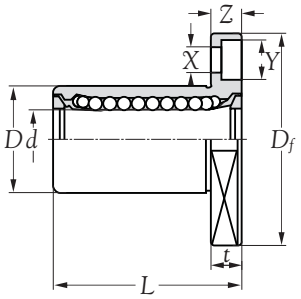
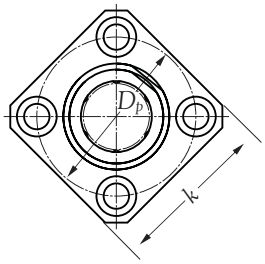
Linear ball bushing
series LMK..







Principal dimensions flange					Roundness	Squareness	Load ratings		Mass
D_f	k	t	D_p	$XxYxZ$			dynamic C	static C_o	kg
mm					0.001mm	0.001mm	N		(approx.)
28	22	5	20	3.5 x 6.0 x 3.1	12	12	206	265	0.018
32	25	5	24	3.5 x 6.0 x 3.1	12	12	176	216	0.024
32	25	5	24	3.5 x 6.0 x 3.1	12	12	274	392	0.029
40	30	6	29	4.5 x 7.5 x 4.1	12	12	372	549	0.052
42	32	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.057
43	34	6	33	4.5 x 7.5 x 4.1	12	12	510	784	0.072
48	37	6	38	4.5 x 7.5 x 4.1	12	12	774	1180	0.104
54	42	8	43	5.5 x 9.0 x 5.1	15	15	882	1370	0.145
62	52	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.300
74	58	10	60	6.6 x 11 x 6.1	15	15	1570	2740	0.375
82	64	10	67	6.6 x 11 x 6.1	20	20	1670	3140	0.560
96	75	13	78	9.0 x 14 x 8.1	20	20	2160	4020	0.880
116	92	13	98	9.0 x 14 x 8.1	20	20	3820	7940	2.000
134	106	18	112	11.0 x 17 x 11.1	25	25	4700	10000	2.560

Remark: If you have more inquiry of technical, please inquire
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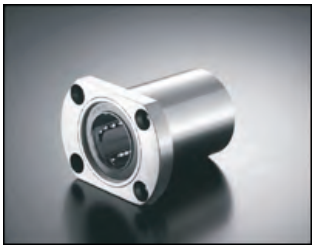
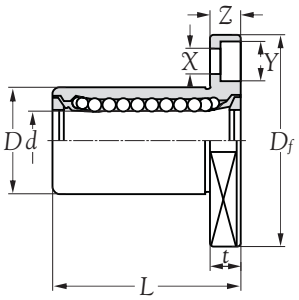
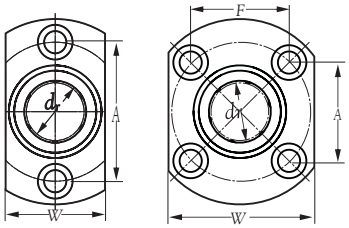
Linear ball bushing
series LMH..







LMH 13 or Less LMH 16 or more

Boundary dimensions mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d mm	d tolerance 0.001mm	D mm	D tolerance 0.001mm	L mm	L tolerance mm
6	**LMH6**	**LMH6 UU**	4	6	(0/-9)	12	(0/-13)	19	(±0.3)
8	**LMH8**	**LMH8 UU**	4	8	(0/-9)	15	(0/-13)	24	(±0.3)
10	**LMH10**	**LMH10 UU**	4	10	(0/-9)	19	(0/-13)	29	(±0.3)
12	**LMH12**	**LMH12 UU**	4	12	(0/-9)	21	(0/-16)	30	(±0.3)
13	**LMH13**	**LMH13 UU**	4	13	(0/-9)	23	(0/-16)	32	(±0.3)
16	**LMH16**	**LMH16 UU**	5	16	(0/-9)	28	(0/-16)	37	(±0.3)
20	**LMH20**	**LMH20 UU**	5	20	(0/-10)	32	(0/-19)	42	(±0.3)
25	**LMH25**	**LMH25 UU**	6	25	(0/-10)	40	(0/-19)	59	(±0.3)
30	**LMH30**	**LMH30 UU**	6	30	(0/-10)	45	(0/-19)	64	(±0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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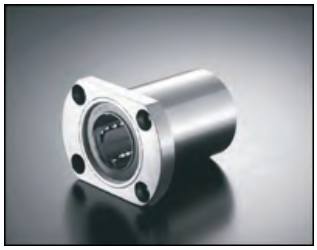
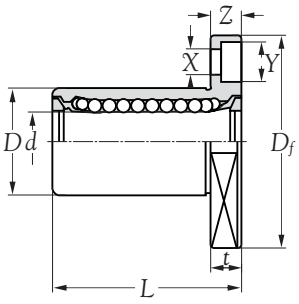
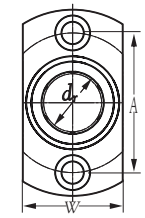
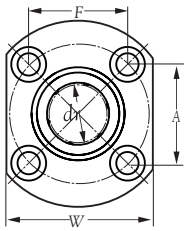
Linear ball bushing
series LMH..







LMH 13 or Less



LMH 16 or more

Principa dimensions flange						Roundness	Squareness	Load ratings		Mass
D_f	W	t	A	F	XxYxZ			dynamic C	static C_o	kg
mm						0.001mm	0.001mm	N		(approx.)
28	18	5	20	-	3.5 x 6.0 x 3.1	12	12	206	265	0.021
32	21	5	24	-	3.5 x 6.0 x 3.1	12	12	274	392	0.033
40	25	6	29	-	4.5 x 7.5 x 4.1	12	12	372	549	0.064
42	27	6	32	-	4.5 x 7.5 x 4.1	12	12	510	784	0.068
43	29	6	33	-	4.5 x 7.5 x 4.1	12	12	510	784	0.081
48	34	6	31	22	4.5 x 7.5 x 4.1	12	12	774	1180	0.112
54	38	8	36	24	5.5 x 9 x 5.1	15	15	882	1370	0.167
62	46	8	40	32	5.5 x 9 x 5.1	15	15	980	1570	0.325
74	51	10	49	35	6.6 x 11 x 6.1	15	15	1570	2740	0.388

Remark: If you have more inquiry of technical, please inquire
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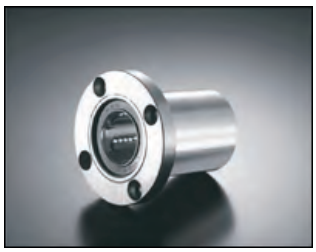
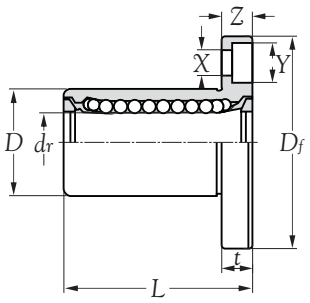
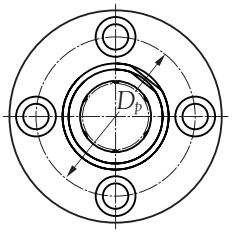
Linear ball bushing
series LMEF..







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

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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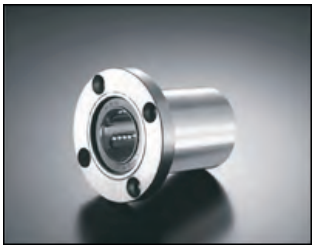
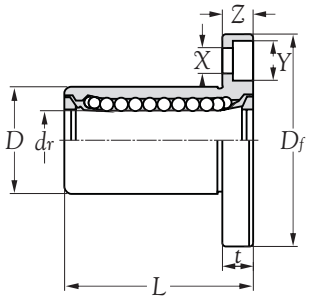
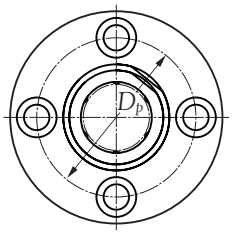
Linear ball bushing
series LMEF..







Principa dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	XxYxZ			dynamic C	static C_o	kg(s).
		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

Remark: If you have more inquiry of technical, please inquire
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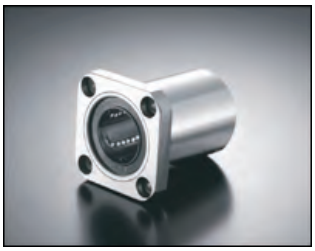
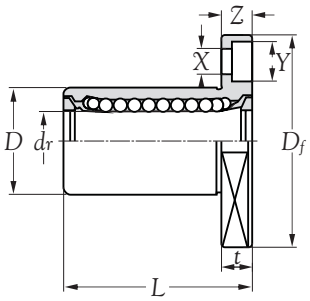
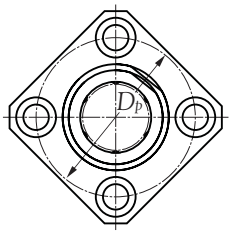
Linear ball bushing
series LMEK..







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

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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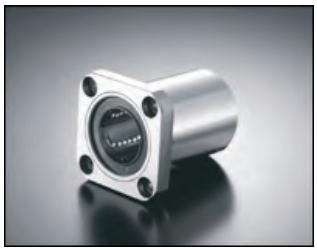
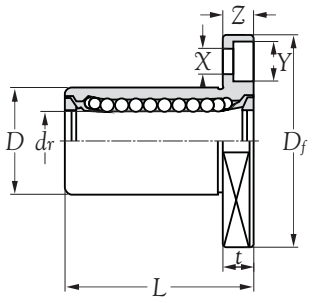
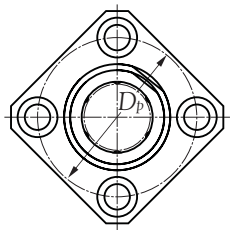
Linear ball bushing
series LMEK..



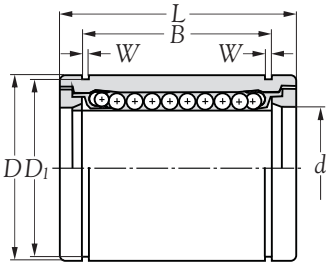


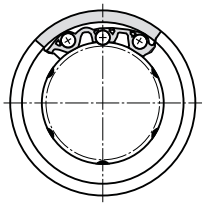


Principa dimensions flange					Roundness	Squareness	Load ratings		Mass
D_f	k	t	D_p	$XxYxZ$			dynamic C	static C_o	kg(s).
			mm		0.001mm	0.001mm	N		(approx.)
32	25	5	24	3.5 x 6.0 x 3.1	12	12	265	402	0.041
42	32	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.080
46	35	6	36	4.5 x 7.5 x 4.1	12	12	578	892	0.103
54	42	8	43	5.5 x 9.0 x 5.1	15	15	862	1370	0.182
62	50	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.335
76	60	10	62	6.6 x 11 x 6.1	15	15	1570	2740	0.560
98	75	13	80	9.0 x 14 x 8.1	17	17	2160	4020	1.175
112	88	13	94	9.0 x 14 x 8.1	17	17	3820	7940	1.745
134	106	18	112	11.0 x 17 x 11.1	20	20	4700	9800	3.220

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

LINEAR BALL BUSHING
SERIES LM-L



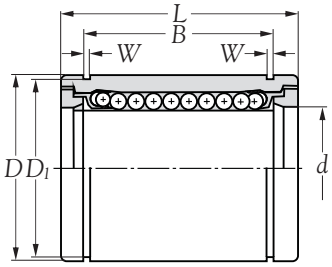


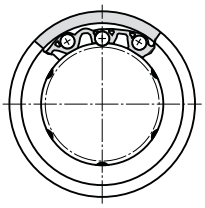
Boundary dimensions d mm	Bearing number standard resin retainer	standard resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
4	**LM4L**	**LM4L UU**	4	4	(0/-10)	8	(0/-11)	23	
5	**LM5L**	**LM5L UU**	4	5	(0/-10)	10	(0/-11)	28	
6	**LM6L**	**LM6L UU**	4	6	(0/-10)	12	(0/-13)	35	(0/-0.3)
8	**LM8L**	**LM8L UU**	4	8	(0/-10)	15	(0/-13)	45	(0/-0.3)
10	**LM10L**	**LM10L UU**	4	10	(0/-10)	19	(0/-16)	55	(0/-0.3)
12	**LM12L**	**LM12L UU**	4	12	(0/-10)	21	(0/-16)	57	(0/-0.3)
13	**LM13L**	**LM13L UU**	4	13	(0/-10)	23	(0/-16)	61	(0/-0.3)
16	**LM16L**	**LM16L UU**	5	16	(0/-10)	28	(0/-16)	70	(0/-0.3)
20	**LM20L**	**LM20L UU**	5	20	(0/-12)	32	(0/-19)	80	(0/-0.3)
25	**LM25L**	**LM25L UU**	6	25	(0/-12)	40	(0/-19)	112	(0/-0.4)
30	**LM30L**	**LM30L UU**	6	30	(0/-12)	45	(0/-19)	123	(0/-0.4)
35	**LM35L**	**LM35L UU**	6	35	(0/-15)	52	(0/-22)	135	(0/-0.4)
40	**LM40L**	**LM40L UU**	6	40	(0/-15)	60	(0/-22)	151	(0/-0.4)
50	**LM50L**	**LM50L UU**	6	50	(0/-15)	80	(0/-22)	192	(0/-0.4)
60	**LM60L**	**LM60L UU**	6	60	(0/-20)	90	(0/-25)	209	(0/-0.4)

LINEAR BALL BUSHING

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LM-L

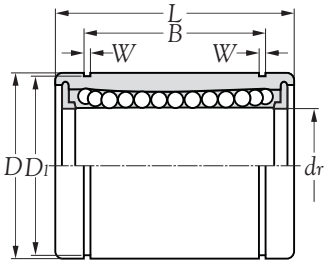


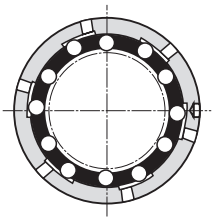


Principal dimensions				Roundness	Load ratings		Mass
B	tolerance	W	D1		dynamic C	static Co	kg
mm				0.001mm	N		(approx.)
				10	176	254	0.0048
20.4	(0/-0.3)	1.10	9.6	10	256	412	0.0110
27	(0/-0.3)	1.10	11.5	15	323	530	0.0160
35	(0/-0.3)	1.10	14.3	15	431	784	0.0310
44	(0/-0.3)	1.30	18.0	15	588	1100	0.0620
46	(0/-0.3)	1.30	20.0	15	813	1570	0.0800
46	(0/-0.3)	1.30	22.0	15	813	1570	0.0900
53	(0/-0.3)	1.60	27.0	15	1230	2350	0.1450
61	(0/-0.3)	1.60	30.5	20	1400	2740	0.1800
82	(0/-0.4)	1.85	38.0	20	1560	3140	0.4400
89	(0/-0.4)	1.85	43.0	20	2490	5490	0.4800
99	(0/-0.4)	2.10	49.0	25	2650	6270	0.7950
121	(0/-0.4)	2.10	57.0	25	3430	8040	1.1700
148	(0/-0.4)	2.60	76.5	25	6080	15900	3.1000
170	(0/-0.4)	3.15	86.5	30	7650	20000	3.5000

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LME-L



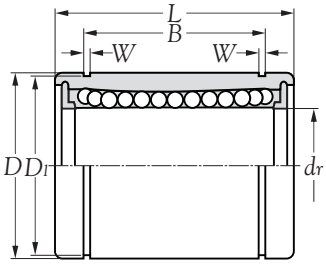


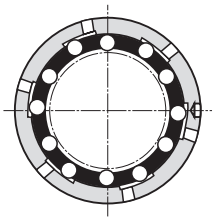
Boundary dimensions d_r mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d_r tolerance mm	d_r tolerance 0.001mm	Principal dimensions D tolerance mm	D tolerance 0.001mm	Principal dimensions L tolerance mm	L tolerance mm
8	**LME 8L**	**LME 8L UU**	4	8	(+9/-1)	16	(0/-9)	46	(0/-0.3)
12	**LME 12L**	**LME 12L UU**	4	12	(+9/-1)	22	(0/-11)	61	(0/-0.3)
16	**LME 16L**	**LME 16L UU**	5	16	(+11/-1)	26	(0/-11)	68	(0/-0.3)
20	**LME 20L**	**LME 20L UU**	5	20	(+11/-1)	32	(0/-13)	80	(0/-0.3)
25	**LME 25L**	**LME 25L UU**	6	25	(+13/-2)	40	(0/-13)	112	(0/-0.4)
30	**LME 30L**	**LME 30L UU**	6	30	(+13/-2)	47	(0/-13)	123	(0/-0.4)
40	**LME 40L**	**LME 40L UU**	6	40	(+16/-4)	62	(0/-15)	151	(0/-0.4)
50	**LME 50L**	**LME 50L UU**	6	50	(+16/-4)	75	(0/-15)	192	(0/-0.4)
60	**LME 60L**	**LME 60L UU**	6	60	(+16/-4)	90	(0/-20)	209	(0/-0.4)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LME-L

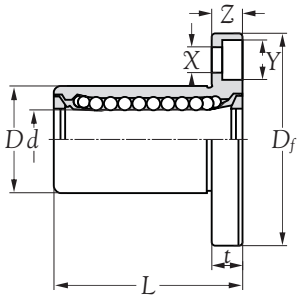


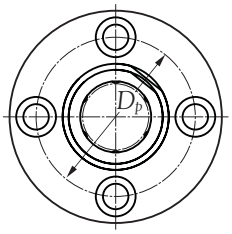


Principal dimensions B tolerance		W	D_1	Roundness	Load ratings dynamic C	static C_o	Mass resin retainer
mm				0.001mm	N		kg(s).
33	(0/-0.3)	1.10	15.2	15	421	804	0.040
45.8	(0/-0.3)	1.30	21.0	15	813	1570	0.080
49.8	(0/-0.3)	1.30	24.9	15	921	1780	0.115
61	(0/-0.3)	1.60	30.3	17	1370	2740	0.180
82	(0/-0.4)	1.85	37.5	17	1570	3140	0.430
104.2	(0/-0.4)	1.85	44.5	17	2500	5490	0.615
121.2	(0/-0.4)	2.15	59.0	20	3430	8040	1.400
155.2	(0/-0.4)	2.65	72.0	20	6080	15900	2.320
170	(0/-0.4)	3.15	86.5	25	7550	20000	3.500

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LMF-L





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
6	**LMF6L**	**LMF6L UU**	4	6	(0/-10)	12	(0/-13)	35	(±0.3)
8	**LMF8L**	**LMF8L UU**	4	8	(0/-10)	15	(0/-13)	45	(±0.3)
10	**LMF10L**	**LMF10L UU**	4	10	(0/-10)	19	(0/-16)	55	(±0.3)
12	**LMF12L**	**LMF12L UU**	4	12	(0/-10)	21	(0/-16)	57	(±0.3)
13	**LMF13L**	**LMF13L UU**	4	13	(0/-10)	23	(0/-16)	61	(±0.3)
16	**LMF16L**	**LMF16L UU**	5	16	(0/-10)	28	(0/-16)	70	(±0.3)
20	**LMF20L**	**LMF20L UU**	5	20	(0/-12)	32	(0/-19)	80	(±0.3)
25	**LMF25L**	**LMF25L UU**	6	25	(0/-12)	40	(0/-19)	112	(±0.3)
30	**LMF30L**	**LMF30L UU**	6	30	(0/-12)	45	(0/-19)	123	(±0.3)
35	**LMF35L**	**LMF35L UU**	6	35	(0/-15)	52	(0/-22)	135	(±0.3)
40	**LMF40L**	**LMF40L UU**	6	40	(0/-15)	60	(0/-22)	151	(±0.3)
50	**LMF50L**	**LMF50L UU**	6	50	(0/-20)	80	(0/-22)	192	(±0.3)
60	**LMF60L**	**LMF60L UU**	6	60	(0/-20)	90	(0/-25)	209	(±0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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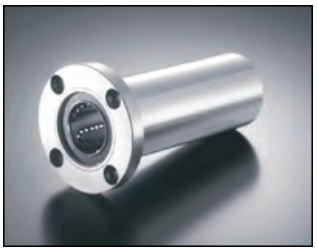
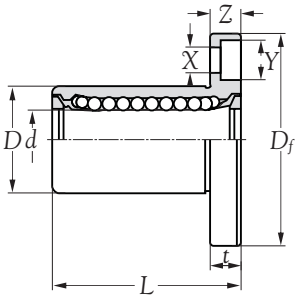
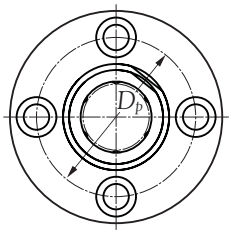
Linear ball bushing
series LMF-L







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.)
28	5	20	3.5 x 6.0 x 3.1	15	15	323	530	0.031
32	5	24	3.5 x 6.0 x 3.1	15	15	431	784	0.051
40	6	29	4.5 x 7.5 x 4.1	15	15	588	1100	0.098
42	6	32	4.5 x 7.5 x 4.1	15	15	813	1570	0.110
43	6	33	4.5 x 7.5 x 4.1	15	15	813	1570	0.130
48	6	38	4.5 x 7.5 x 4.1	15	15	1230	2350	0.190
54	8	43	5.5 x 9.0 x 5.1	20	20	1400	2740	0.260
62	8	51	5.5 x 9.0 x 5.1	20	20	1560	3140	0.540
74	10	60	6.6 x 11 x 6.1	20	20	2490	5490	0.680
82	10	67	6.6 x 11 x 6.1	25	25	2650	6270	1.020
96	13	78	9.0 x 14 x 8.1	25	25	3430	8040	1.570
116	13	98	9.0 x 14 x 8.1	25	25	6080	15900	3.600
134	18	112	11.0 x 17 x 11.1	30	30	7550	20000	4.500

Remark: If you have more inquiry of technical, please inquire
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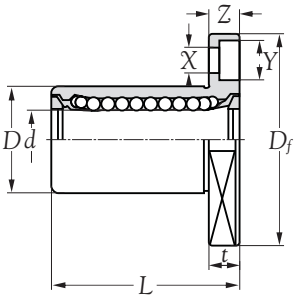
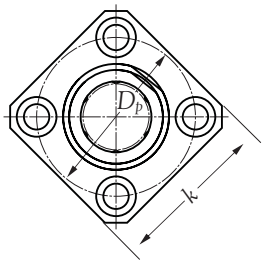
Linear ball bushing
series LMK-L





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
6	LMK6L	LMK6L UU	4	6	(0/-10)	12	(0/-13)	35	(±0.3)
8	LMK8L	LMK8L UU	4	8	(0/-10)	15	(0/-13)	45	(±0.3)
10	LMK10L	LMK10L UU	4	10	(0/-10)	19	(0/-16)	55	(±0.3)
12	LMK12L	LMK12L UU	4	12	(0/-10)	21	(0/-16)	57	(±0.3)
13	LMK13L	LMK13L UU	4	13	(0/-10)	23	(0/-16)	61	(±0.3)
16	LMK16L	LMK16L UU	5	16	(0/-10)	28	(0/-16)	70	(±0.3)
20	LMK20L	LMK20L UU	5	20	(0/-12)	32	(0/-19)	80	(±0.3)
25	LMK25L	LMK25L UU	6	25	(0/-12)	40	(0/-19)	112	(±0.3)
30	LMK30L	LMK30L UU	6	30	(0/-12)	45	(0/-19)	123	(±0.3)
35	LMK35L	LMK35L UU	6	35	(0/-15)	52	(0/-22)	135	(±0.3)
40	LMK40L	LMK40L UU	6	40	(0/-15)	60	(0/-22)	151	(±0.3)
50	LMK50L	LMK50L UU	6	50	(0/-20)	80	(0/-22)	192	(±0.3)
60	LMK60L	LMK60L UU	6	60	(0/-20)	90	(0/-25)	209	(±0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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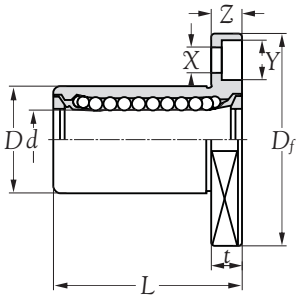
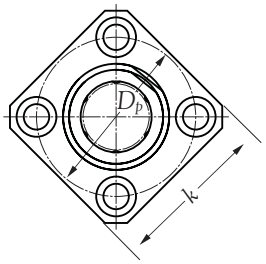
Linear ball bushing
series LMK-L

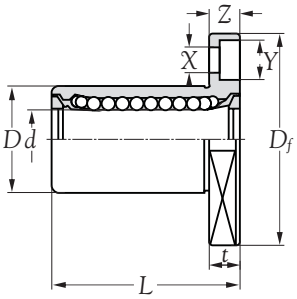


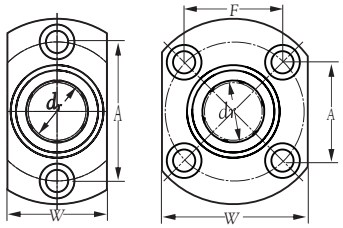


Principal dimensions flange					Roundness	Squareness	Load ratings		Mass
D_f	k	t	D_p	XxYxZ			dynamic C	static C_o	kg
mm					0.001mm	0.001mm	N		(approx.)
28	22	5	20	3.5 x 6.0 x 3.1	15	15	323	530	0.025
32	25	5	24	3.5 x 6.0 x 3.1	15	15	431	784	0.043
40	30	6	29	4.5 x 7.5 x 4.1	15	15	588	1100	0.078
42	32	6	32	4.5 x 7.5 x 4.1	15	15	813	1570	0.090
43	34	6	33	4.5 x 7.5 x 4.1	15	15	813	1570	0.180
48	37	6	38	4.5 x 7.5 x 4.1	15	15	1230	2350	0.165
54	42	8	43	5.5 x 9.0 x 5.1	20	20	1400	2740	0.225
62	52	8	51	5.5 x 9.0 x 5.1	20	20	1560	3140	0.500
74	58	10	60	6.6 x 11 x 6.1	20	20	2490	5490	0.590
82	64	10	67	6.6 x 11 x 6.1	25	25	2650	6270	0.930
96	75	13	78	9.0 x 14 x 8.1	25	25	3430	8040	1.380
116	92	13	98	9.0 x 14 x 8.1	25	25	6080	15900	3.400
134	106	18	112	11.0 x 17 x 11.1	30	30	7550	20000	4.060

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LMH-L





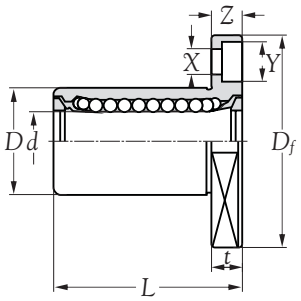
LMH 13 or Less LMH 16 or more

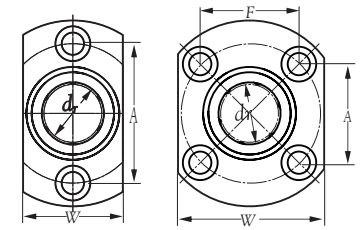
Boundary dimensions mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions d tolerance mm	0.001mm	D tolerance mm	0.001mm	L tolerance mm	mm
6	LMH6L	LMH6L UU	4	6	(0/-10)	12	(0/-13)	35	(±0.3)
8	LMH8L	LMH8L UU	4	8	(0/-10)	15	(0/-13)	45	(±0.3)
10	LMH10L	LMH10L UU	4	10	(0/-10)	19	(0/-13)	55	(±0.3)
12	LMH12L	LMH12L UU	4	12	(0/-10)	21	(0/-16)	57	(±0.3)
13	LMH13L	LMH13L UU	4	13	(0/-10)	23	(0/-16)	61	(±0.3)
16	LMH16L	LMH16L UU	5	16	(0/-10)	28	(0/-16)	70	(±0.3)
20	LMH20L	LMH20L UU	5	20	(0/-12)	32	(0/-19)	80	(±0.3)
25	LMH25L	LMH25L UU	6	25	(0/-12)	40	(0/-19)	112	(±0.3)
30	LMH30L	LMH30L UU	6	30	(0/-12)	45	(0/-19)	123	(±0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LMH-L



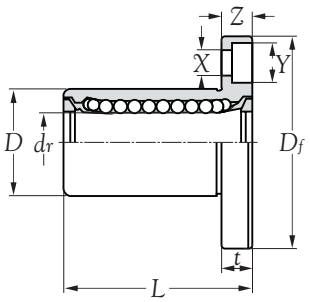


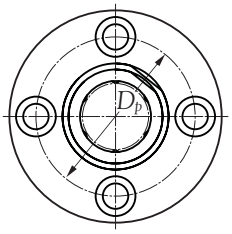
LMH 13 or Less LMH 16 or more

Principa dimensions flange						Roundness	Squareness	Load ratings		Mass
D_f	W	t	A	F	$XxYxZ$			dynamic C	static C_o	kg
mm						0.001mm	0.001mm	N		(approx.)
28	18	5	20	-	3.5 x 6.0 x 3.1	15	15	323	530	0.028
32	21	5	24	-	3.5 x 6.0 x 3.1	15	15	431	784	0.047
40	25	6	29	-	4.5 x 7.5 x 4.1	15	15	588	1100	0.090
42	27	6	32	-	4.5 x 7.5 x 4.1	15	15	813	1570	0.102
43	29	6	33	-	4.5 x 7.5 x 4.1	15	15	813	1570	0.123
48	34	6	31	22	4.5 x 7.5 x 4.1	15	15	1230	2350	0.182
54	38	8	36	24	5.5 x 9 x 5.1	20	20	1400	2740	0.247
62	46	8	40	32	5.5 x 9 x 5.1	20	20	1560	3140	0.525
74	51	10	49	35	6.6 x 11 x 6.1	20	20	2490	5490	0.645

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LMEF-L





Boundary dimensions dr mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions dr tolerance mm	dr tolerance 0.001mm	D tolerance mm	D tolerance 0.001mm	L tolerance mm	L tolerance mm
8	LMEF 8L	LMEF 8L UU	4	8	(+9/-1)	16	(0/-13)	46	(±0.3)
12	LMEF 12L	LMEF 12L UU	4	12	(+11/-1)	22	(0/-16)	61	(±0.3)
16	LMEF 16L	LMEF 16L UU	5	16	(+11/-1)	26	(0/-16)	68	(±0.3)
20	LMEF 20L	LMEF 20L UU	5	20	(+13/-2)	32	(0/-19)	80	(±0.3)
25	LMEF 25L	LMEF 25L UU	6	25	(+13/-2)	40	(0/-19)	112	(±0.3)
30	LMEF 30L	LMEF 30L UU	6	30	(+13/-2)	47	(0/-19)	123	(±0.3)
40	LMEF 40L	LMEF 40L UU	6	40	(+16/-4)	62	(0/-22)	151	(±0.3)
50	LMEF 50L	LMEF 50L UU	6	50	(+16/-4)	75	(0/-22)	192	(±0.3)
60	LMEF 60L	LMEF 60L UU	6	60	(+16/-4)	90	(0/-25)	209	(±0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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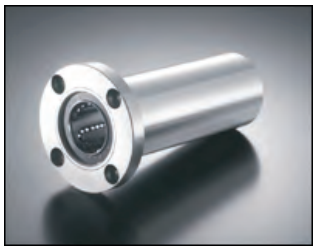
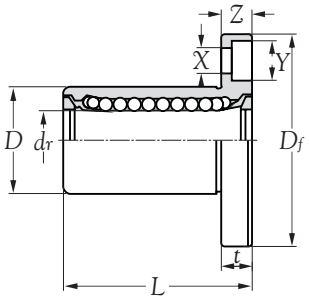
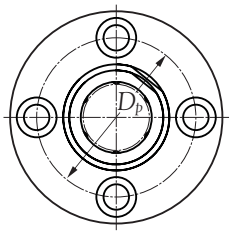
Linear ball bushing
series LMEF-L







Principa dimensions flange				Roundness	Squareness	Load ratings		Mass
D_f	t	D_p	$XxYxZ$			dynamic C	static C_o	kg(s).
		mm		0.001mm	0.001mm	N		(approx.)
32	5	24	3.5 x 6.0 x 3.1	15	15	421	804	0.059
42	6	32	4.5 x 7.5 x 4.1	15	15	813	1570	0.110
46	6	36	4.5 x 7.5 x 4.1	15	15	921	1780	0.160
54	8	43	5.5 x 9.0 x 5.1	17	17	1370	2740	0.260
62	8	51	5.5 x 9.0 x 5.1	17	17	1570	3140	0.540
76	10	62	6.6 x 11 x 6.1	17	17	2500	5490	0.815
98	13	80	9.0 x 14 x 8.1	20	20	3430	8040	1.805
112	13	94	9.0 x 14 x 8.1	20	20	6080	15900	2.820
134	18	112	11 x 17 x 11.1	25	25	7550	20000	4.920

Remark: If you have more inquiry of technical, please inquire
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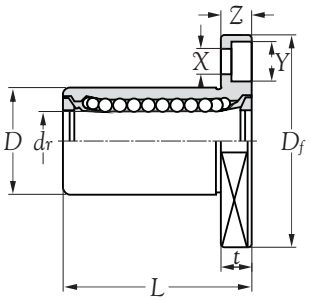
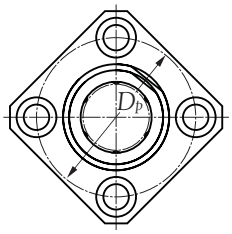
Linear ball bushing
series LMEK-L





Boundary dimensions dr mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions dr tolerance mm	dr tolerance 0.001mm	D tolerance mm	D tolerance 0.001mm	L tolerance mm	L tolerance mm
8	LMEK 8L	LMEK 8L UU	4	8	(+9/-1)	16	(0/-13)	46	(±0.3)
12	LMEK 12L	LMEK 12L UU	4	12	(+11/-1)	22	(0/-16)	61	(±0.3)
16	LMEK 16L	LMEK 16L UU	5	16	(+11/-1)	26	(0/-16)	68	(±0.3)
20	LMEK 20L	LMEK 20L UU	5	20	(+13/-2)	32	(0/-19)	80	(±0.3)
25	LMEK 25L	LMEK 25L UU	6	25	(+13/-2)	40	(0/-19)	112	(±0.3)
30	LMEK 30L	LMEK 30L UU	6	30	(+13/-2)	47	(0/-19)	123	(±0.3)
40	LMEK 40L	LMEK 40L UU	6	40	(+16/-4)	62	(0/-22)	151	(±0.3)
50	LMEK 50L	LMEK 50L UU	6	50	(+16/-4)	75	(0/-22)	192	(±0.3)
60	LMEK 60L	LMEK 60L UU	6	60	(+16/-4)	90	(0/-25)	209	(±0.3)

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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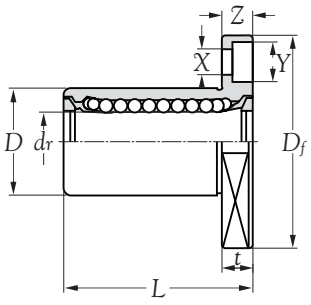
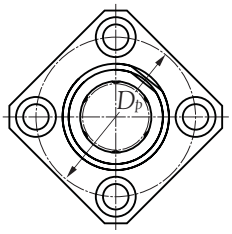
Linear ball bushing
series LMEK-L





Principa dimensions flange					Roundness	Squareness	Load ratings		Mass
D_f	k	t	D_p	$XxYxZ$			dynamic C	static C_o	kg(s).
			mm		0.001mm	0.001mm	N		(approx.)
32	25	5	24	3.5 x 6.0 x 3.1	15	15	421	804	0.051
42	32	6	32	4.5 x 7.5 x 4.1	15	15	813	1570	0.090
46	35	6	36	4.5 x 7.5 x 4.1	15	15	921	1780	0.135
54	42	8	43	5.5 x 9.0 x 5.1	17	17	1370	2740	0.225
62	50	8	51	5.5 x 9.0 x 5.1	17	17	1570	3140	0.500
76	60	10	62	6.6 x 11 x 6.1	17	17	2500	5490	0.720
98	75	13	80	9.0 x 14 x 8.1	20	20	3430	8040	1.600
112	88	13	94	9.0 x 14 x 8.1	20	20	6080	15900	2.620
134	106	18	112	11.0 x 17 x 11.1	25	25	7550	20000	4.480

Remark: If you have more inquiry of technical, please inquire
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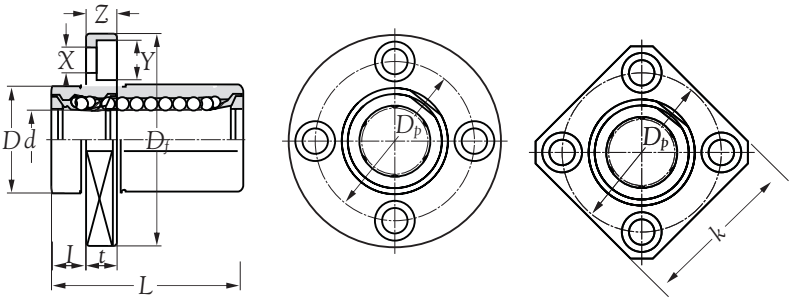
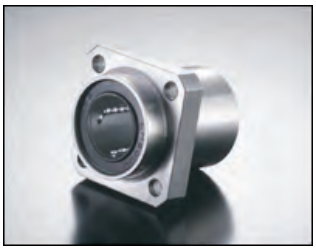
LINEAR BALL BUSHING
SERIES **LMF..UU E & LMK..UU E**





Boundary dimensions d 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	0.001mm	l mm
6	**LMF6 UU E**	**LMK6 UU E**	4	6	(0/-9)	12	(0/-13)	19	(±0.3)	5
8	**LMF8 UU E**	**LMK8 UU E**	4	8	(0/-9)	15	(0/-13)	24	(±0.3)	5
10	**LMF10 UU E**	**LMK10 UU E**	4	10	(0/-9)	19	(0/-13)	29	(±0.3)	6
12	**LMF12 UU E**	**LMK12 UU E**	4	12	(0/-9)	21	(0/-16)	30	(±0.3)	6
13	**LMF13 UU E**	**LMK13 UU E**	4	13	(0/-9)	23	(0/-16)	32	(±0.3)	6
16	**LMF16 UU E**	**LMK16 UU E**	5	16	(0/-9)	28	(0/-16)	37	(±0.3)	6
20	**LMF20 UU E**	**LMK20 UU E**	5	20	(0/-10)	32	(0/-16)	42	(±0.3)	8
25	**LMF25 UU E**	**LMK25 UU E**	6	25	(0/-10)	40	(0/-19)	59	(±0.3)	8
30	**LMF30 UU E**	**LMK30 UU E**	6	30	(0/-10)	45	(0/-19)	64	(±0.3)	10
35	**LMF35 UU E**	**LMK35 UU E**	6	35	(0/-12)	52	(0/-19)	70	(±0.3)	10
40	**LMF40 UU E**	**LMK40 UU E**	6	40	(0/-12)	60	(0/-22)	80	(±0.3)	13
50	**LMF50 UU E**	**LMK50 UU E**	6	50	(0/-12)	80	(0/-22)	100	(±0.3)	13
60	**LMF60 UU E**	**LMK60 UU E**	6	60	(0/-15)	90	(0/-22)	110	(±0.3)	18

LINEAR BALL BUSHING

Remark: If you have more inquiry of technical, please inquire
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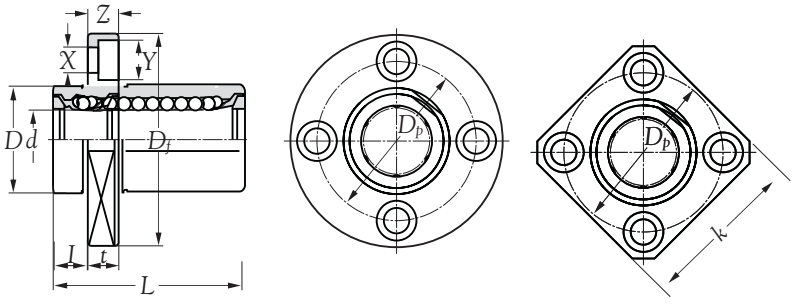
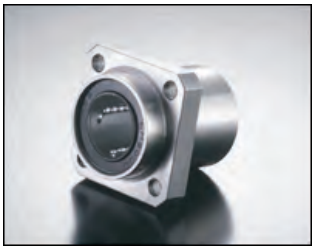
LINEAR BALL BUSHING

SERIES **LMF..UU E & LMK..UU E**





Principal dimensions flange					Roundness	Squareness	Load ratings		Mass	
							dynamic	static	kg	
D_f	K	t	D_p	XxYxZ			C	C_o	LM F..UU E	LM K..UU E
mm					0.001mm	0.001mm	N		(approx.)	
28	22	5	20	3.5 x 6.0 x 3.1	12	12	206	265	0.024	0.018
32	25	5	24	3.5 x 6.0 x 3.1	12	12	274	392	0.037	0.029
40	30	6	29	4.5 x 7.5 x 4.1	12	12	372	549	0.072	0.052
42	32	6	32	4.5 x 7.5 x 4.1	12	12	510	784	0.076	0.057
43	34	6	33	4.5 x 7.5 x 4.1	12	12	510	784	0.088	0.072
48	37	6	38	4.5 x 7.5 x 4.1	12	12	774	1180	0.120	0.104
54	42	8	43	5.5 x 9.0 x 5.1	15	15	882	1370	0.180	0.145
62	50	8	51	5.5 x 9.0 x 5.1	15	15	980	1570	0.340	0.300
74	58	10	60	6.6 x 11 x 6.1	15	15	1570	2740	0.470	0.375
82	64	10	67	6.6 x 11 x 6.1	20	20	1670	3140	0.650	0.560
96	75	13	78	9.0 x 14 x 8.1	20	20	2160	4020	1.060	0.880
116	92	13	98	9.0 x 14 x 8.1	20	20	3820	7940	2.200	2.000
134	106	18	112	11.0 x 17 x 11.1	25	25	4700	10000	3.000	2.560

LINEAR BALL BUSHING

Remark: If you have more inquiry of technical, please inquire
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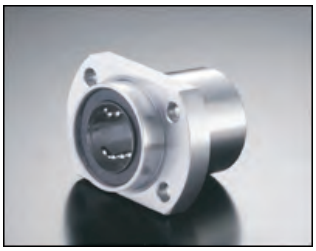
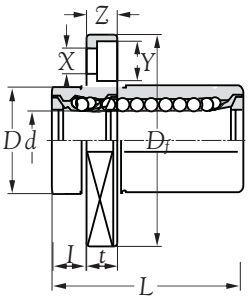
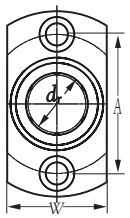
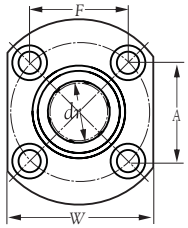
Linear ball bushing
series LMH..UU E







LMH 13 or Less



LMH 16 or more

Boundary dimensions mm	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	I mm
6	**LMH6 UU E**	4	6	(0/-9)	12	(0/-13)	19	(±0.3)	5
8	**LMH8 UU E**	4	8	(0/-9)	15	(0/-13)	24	(±0.3)	5
10	**LMH10 UU E**	4	10	(0/-9)	19	(0/-13)	29	(±0.3)	6
12	**LMH12 UU E**	4	12	(0/-9)	21	(0/-16)	30	(±0.3)	6
13	**LMH13 UU E**	4	13	(0/-9)	23	(0/-16)	32	(±0.3)	6
16	**LMH16 UU E**	5	16	(0/-9)	28	(0/-16)	37	(±0.3)	6
20	**LMH20 UU E**	5	20	(0/-10)	32	(0/-19)	42	(±0.3)	8
25	**LMH25 UU E**	6	25	(0/-10)	40	(0/-19)	59	(±0.3)	8
30	**LMH30 UU E**	6	30	(0/-10)	45	(0/-19)	64	(±0.3)	10

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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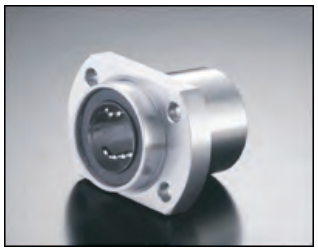
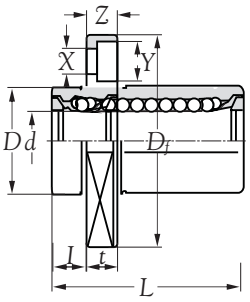
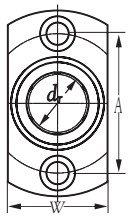
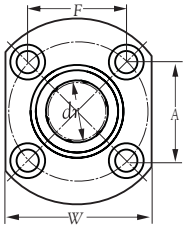
Linear ball bushing
series LMH..UU E







LMH 13 or Less



LMH 16 or more

Principa dimensions flange						Roundness	Squareness	Load ratings		Mass
D_f	W	t	A	F	$XxYxZ$			dynamic C	static C_o	kg
mm						0.001mm	0.001mm	N		(approx.)
28	18	5	20	-	3.5 x 6.0 x 3.1	12	12	206	265	0.021
32	21	5	24	-	3.5 x 6.0 x 3.1	12	12	274	392	0.033
40	25	6	29	-	4.5 x 7.5 x 4.1	12	12	372	549	0.064
42	27	6	32	-	4.5 x 7.5 x 4.1	12	12	510	784	0.068
43	29	6	33	-	4.5 x 7.5 x 4.1	12	12	510	784	0.081
48	34	6	31	22	4.5 x 7.5 x 4.1	12	12	774	1180	0.112
54	38	8	36	24	5.5 x 9 x 5.1	15	15	882	1370	0.167
62	46	8	40	32	5.5 x 9 x 5.1	15	15	980	1570	0.325
74	51	10	49	35	6.6 x 11 x 6.1	15	15	1570	2740	0.388

Remark: If you have more inquiry of technical, please inquire
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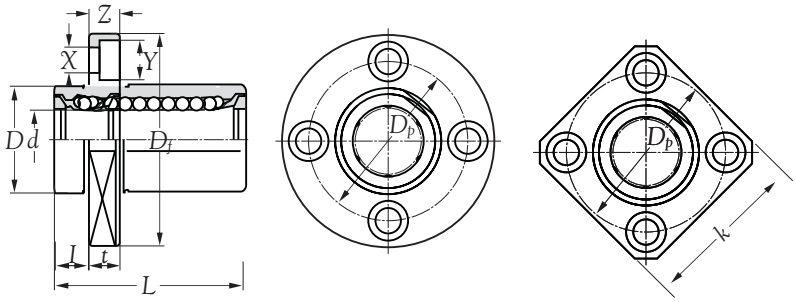
Linear ball bushing
series LMF..LUU E & LMK..LUU E



Boundary dimensions d mm	Principal dimensions Bearing number standard resin retainer	Bearing number with seals resin retainer	Roundness Number of ball tracks	Squareness d tolerance mm	0.001mm	D tolerance mm	0.001mm	Load ratings Principal dimensions L tolerance mm	0.001mm	Mass l mm
6	LMF6 LUU E	LMK6 LUU E	4	6	(0/-10)	12	(0/-13)	35	(±0.3)	5
8	LMF8 LUU E	LMK8 LUU E	4	8	(0/-10)	15	(0/-13)	45	(±0.3)	5
10	LMF10 LUU E	LMK10 LUU E	4	10	(0/-10)	19	(0/-16)	55	(±0.3)	6
12	LMF12 LUU E	LMK12 LUU E	4	12	(0/-10)	21	(0/-16)	57	(±0.3)	6
13	LMF13 LUU E	LMK13 LUU E	4	13	(0/-10)	23	(0/-16)	61	(±0.3)	6
16	LMF16 LUU E	LMK16 LUU E	5	16	(0/-10)	28	(0/-16)	70	(±0.3)	6
20	LMF20 LUU E	LMK20 LUU E	5	20	(0/-12)	32	(0/-19)	80	(±0.3)	8
25	LMF25 LUU E	LMK25 LUU E	6	25	(0/-12)	40	(0/-19)	112	(±0.3)	8
30	LMF30 LUU E	LMK30 LUU E	6	30	(0/-12)	45	(0/-19)	123	(±0.3)	10
35	LMF35 LUU E	LMK35 LUU E	6	35	(0/-15)	52	(0/-22)	135	(±0.3)	10
40	LMF40 LUU E	LMK40 LUU E	6	40	(0/-15)	60	(0/-22)	151	(±0.3)	13
50	LMF50 LUU E	LMK50 LUU E	6	50	(0/-15)	80	(0/-22)	192	(±0.3)	13
60	LMF60 LUU E	LMK60 LUU E	6	60	(0/-20)	90	(0/-25)	209	(±0.3)	18

Linear Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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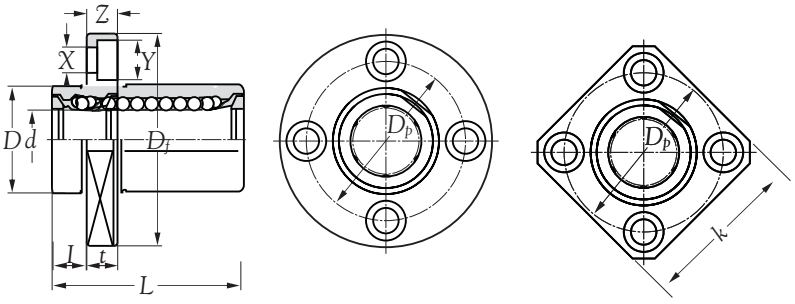
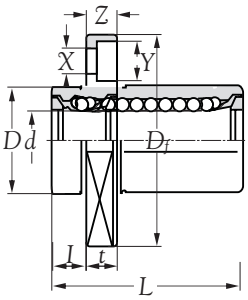
Linear ball bushing
series LMF..LUU E & LMK..LUU E

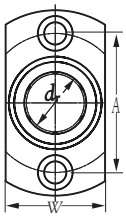


Principal dimensions flange					Roundness	Squareness	Load ratings		Mass	
							dynamic	static	kg	
D_f	K	t	D_p	XxYxZ			C	C_o	LM F..UU E	LM K..UU E
mm					0.001mm	0.001mm	N		(approx.)	
28	22	5	20	3.5 x 6.0 x 3.1	15	15	323	530	0.031	0.025
32	25	5	24	3.5 x 6.0 x 3.1	15	15	431	784	0.051	0.043
40	30	6	29	4.5 x 7.5 x 4.1	15	15	588	1100	0.098	0.078
42	32	6	32	4.5 x 7.5 x 4.1	15	15	813	1570	0.110	0.090
43	34	6	33	4.5 x 7.5 x 4.1	15	15	813	1570	0.130	0.108
48	37	6	38	4.5 x 7.5 x 4.1	15	15	1230	2350	0.190	0.165
54	42	8	43	5.5 x 9.0 x 5.1	20	20	1400	2740	0.260	0.225
62	50	8	51	5.5 x 9.0 x 5.1	20	20	1560	3140	0.540	0.500
74	58	10	60	6.6 x 11 x 6.1	20	20	2490	5490	0.680	0.590
82	64	10	67	6.6 x 11 x 6.1	25	25	2650	6270	1.020	0.930
96	75	13	78	9.0 x 14 x 8.1	25	25	3430	8040	1.570	1.380
116	92	13	98	9.0 x 14 x 8.1	25	25	6080	15900	3.600	3.400
134	106	18	112	11.0 x 17 x 11.1	30	30	7550	20000	4.500	4.060

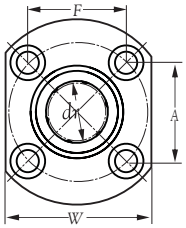
Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing
series LMH..LUU E





LMH 13 or Less



LMH 16 or more

Boundary dimensions mm	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	l mm
6	**LMH6 LUU E**	4	6 (0/-10)	12 (0/-13)	35 (±0.3)	5
8	**LMH8 LUU E**	4	8 (0/-10)	15 (0/-13)	45 (±0.3)	5
10	**LMH10 LUU E**	4	10 (0/-10)	19 (0/-13)	55 (±0.3)	6
12	**LMH12 LUU E**	4	12 (0/-10)	21 (0/-16)	57 (±0.3)	6
13	**LMH13 LUU E**	4	13 (0/-10)	23 (0/-16)	61 (±0.3)	6
16	**LMH16 LUU E**	5	16 (0/-10)	28 (0/-16)	70 (±0.3)	6
20	**LMH20 LUU E**	5	20 (0/-12)	32 (0/-19)	80 (±0.3)	8
25	**LMH25 LUU E**	6	25 (0/-12)	40 (0/-19)	112 (±0.3)	8
30	**LMH30 LUU E**	6	30 (0/-12)	45 (0/-19)	123 (±0.3)	10

Linear
Ball Bushing

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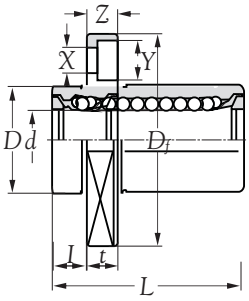
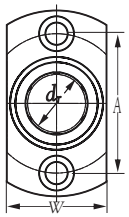
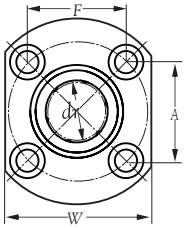
Linear ball bushing
series LMH..LUU E





LMH 13 or Less



LMH 16 or more

Principa dimensions flange D_f	W	t	A	F	$XxYxZ$	Roundness	Squareness	Load ratings dynamic C	Load ratings static C_o	Mass kg
mm						0.001mm	0.001mm	N		(approx.)
28	18	5	20	-	3.5 x 6.0 x 3.1	15	15	323	530	0.028
32	21	5	24	-	3.5 x 6.0 x 3.1	15	15	431	784	0.047
40	25	6	29	-	4.5 x 7.5 x 4.1	15	15	588	1100	0.090
42	27	6	32	-	4.5 x 7.5 x 4.1	15	15	813	1570	0.102
43	29	6	33	-	4.5 x 7.5 x 4.1	15	15	813	1570	0.123
48	34	6	31	22	4.5 x 7.5 x 4.1	15	15	1230	2350	0.182
54	38	8	36	24	5.5 x 9 x 5.1	20	20	1400	2740	0.247
62	46	8	40	32	5.5 x 9 x 5.1	20	20	1560	3140	0.525
74	51	10	49	35	6.6 x 11 x 6.1	20	20	2490	5490	0.645

Remark: If you have more inquiry of technical, please inquire
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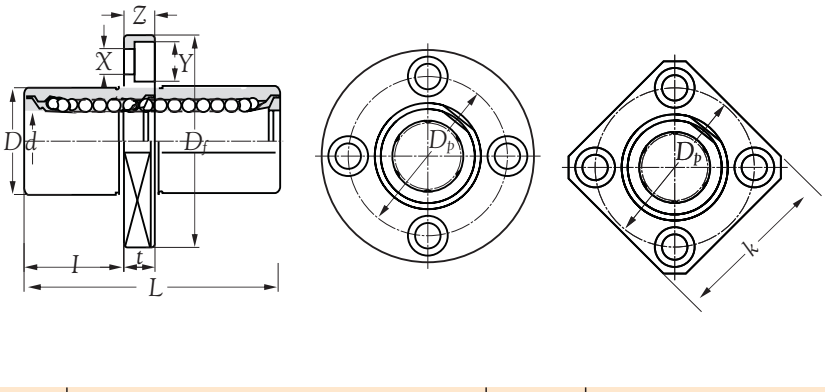
Linear ball bushing
series LMFC & LMKC



Boundary dimensions d 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	0.001mm	I mm
6	**LMFC6**	**LMKC6**	4	6	(0/-10)	12	(0/-13)	35	(±0.3)	15
8	**LMFC8**	**LMKC8**	4	8	(0/-10)	15	(0/-13)	45	(±0.3)	20
10	**LMFC10**	**LMKC10**	4	10	(0/-10)	19	(0/-16)	55	(±0.3)	24.5
12	**LMFC12**	**LMKC12**	4	12	(0/-10)	21	(0/-16)	57	(±0.3)	25.5
13	**LMFC13**	**LMKC13**	4	13	(0/-10)	23	(0/-16)	61	(±0.3)	27.5
16	**LMFC16**	**LMKC16**	5	16	(0/-10)	28	(0/-16)	70	(±0.3)	32
20	**LMFC20**	**LMKC20**	5	20	(0/-12)	32	(0/-19)	80	(±0.3)	36
25	**LMFC25**	**LMKC25**	6	25	(0/-12)	40	(0/-19)	112	(±0.3)	52
30	**LMFC30**	**LMKC30**	6	30	(0/-12)	45	(0/-19)	123	(±0.3)	56.5
35	**LMFC35**	**LMKC35**	6	35	(0/-15)	52	(0/-22)	135	(±0.3)	62.5
40	**LMFC40**	**LMKC40**	6	40	(0/-15)	60	(0/-22)	151	(±0.3)	69
50	**LMFC50**	**LMKC50**	6	50	(0/-15)	80	(0/-22)	192	(±0.3)	89.5
60	**LMFC60**	**LMKC60**	6	60	(0/-20)	90	(0/-25)	209	(±0.3)	95.5

Linear Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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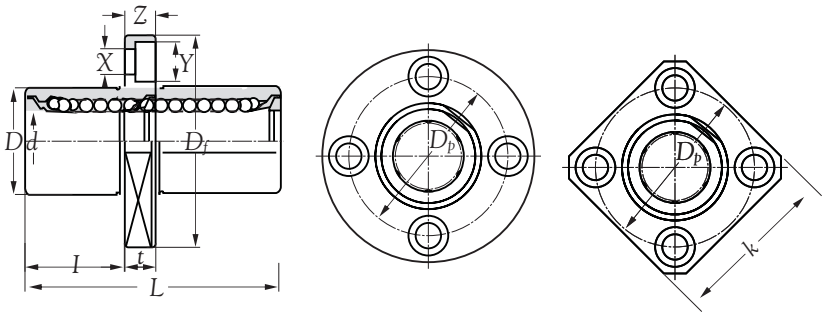
Linear ball bushing
series LMFC & LMKC



Principal dimensions flange					Roundness	Squareness	Load ratings		Mass	
							dynamic	static	kg	
D_f	K	t	D_p	XxYxZ			C	C_o	LM F..UU E	LM K..UU E
mm					0.001mm	0.001mm	N		(approx.)	
28	22	5	20	3.5 x 6.0 x 3.1	15	15	323	530	0.031	0.025
32	25	5	24	3.5 x 6.0 x 3.1	15	15	431	784	0.051	0.043
40	30	6	29	4.5 x 7.5 x 4.1	15	15	588	1100	0.098	0.078
42	32	6	32	4.5 x 7.5 x 4.1	15	15	813	1570	0.110	0.090
43	34	6	33	4.5 x 7.5 x 4.1	15	15	813	1570	0.130	0.108
48	37	6	38	4.5 x 7.5 x 4.1	15	15	1230	2350	0.190	0.165
54	42	8	43	5.5 x 9.0 x 5.1	20	20	1400	2740	0.260	0.225
62	50	8	51	5.5 x 9.0 x 5.1	20	20	1560	3140	0.540	0.500
74	58	10	60	6.6 x 11 x 6.1	20	20	2490	5490	0.680	0.590
82	64	10	67	6.6 x 11 x 6.1	25	25	2650	6270	1.020	0.930
96	75	13	78	9.0 x 14 x 8.1	25	25	3430	8040	1.570	1.380
116	92	13	98	9.0 x 14 x 8.1	25	25	6080	15900	3.600	3.400
134	106	18	112	11.0 x 17 x 11.1	30	30	7550	20000	4.500	4.060

Remark: If you have more inquiry of technical, please inquire
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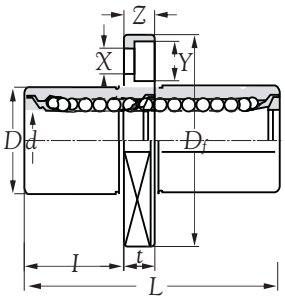
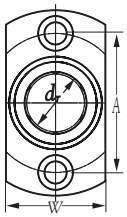
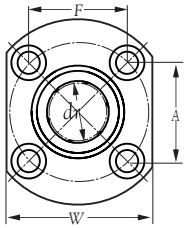
Linear ball bushing
series LMHC..





LMH 13 or Less



LMH 16 or more

Boundary dimensions mm	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	l mm
6	**LMHC6**	4	6 (0/-10)	12 (0/-13)	35 (±0.3)	15
8	**LMHC8**	4	8 (0/-10)	15 (0/-13)	45 (±0.3)	20
10	**LMHC10**	4	10 (0/-10)	19 (0/-13)	55 (±0.3)	24.5
12	**LMHC12**	4	12 (0/-10)	21 (0/-16)	57 (±0.3)	25.5
13	**LMHC13**	4	13 (0/-10)	23 (0/-16)	61 (±0.3)	27.5
16	**LMHC16**	5	16 (0/-10)	28 (0/-16)	70 (±0.3)	32
20	**LMHC20**	5	20 (0/-12)	32 (0/-19)	80 (±0.3)	36
25	**LMHC25**	6	25 (0/-12)	40 (0/-19)	112 (±0.3)	52
30	**LMHC30**	6	30 (0/-12)	45 (0/-19)	123 (±0.3)	56.5

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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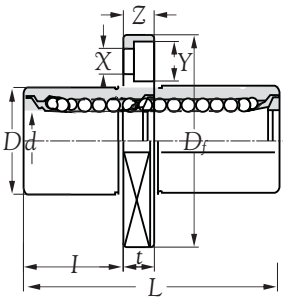
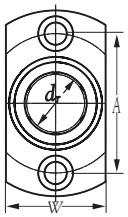
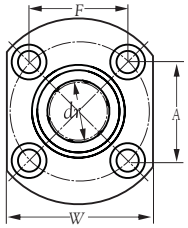
Linear ball bushing
series LMHC..





LMH 13 or Less



LMH 16 or more

Principa dimensions flange						Roundness	Squareness	Load ratings		Mass
D_f	W	t	A	F	XxYxZ			dynamic C	static C_o	kg
mm						0.001mm	0.001mm	N		(approx.)
28	18	5	20	-	3.5 x 6.0 x 3.1	15	15	323	530	0.028
32	21	5	24	-	3.5 x 6.0 x 3.1	15	15	431	784	0.047
40	25	6	29	-	4.5 x 7.5 x 4.1	15	15	588	1100	0.090
42	27	6	32	-	4.5 x 7.5 x 4.1	15	15	813	1570	0.102
43	29	6	33	-	4.5 x 7.5 x 4.1	15	15	813	1570	0.123
48	34	6	31	22	4.5 x 7.5 x 4.1	15	15	1230	2350	0.182
54	38	8	36	24	5.5 x 9 x 5.1	20	20	1400	2740	0.247
62	46	8	40	32	5.5 x 9 x 5.1	20	20	1560	3140	0.525
74	51	10	49	35	6.6 x 11 x 6.1	20	20	2490	5490	0.645

Remark: If you have more inquiry of technical, please inquire
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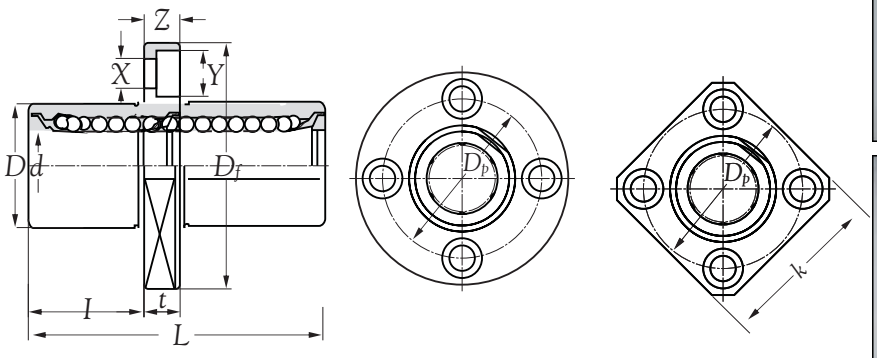
LINEAR BALL BUSHING
SERIES **LMEFC.. & LMEKC..**



Boundary dimensions *dr* mm	Bearing number standard resin retainer	Bearing number with seals resin retainer	Number of ball tracks	Principal dimensions *dr* tolerance mm	tolerance 0.001mm	*D* tolerance mm	tolerance 0.001mm	*L* tolerance mm	tolerance mm	*I* mm
8	**LMEFC 8**	**LMEKC 8**	4	8	(+9/-1)	16	(0/-13)	46	(±0.3)	20.5
12	**LMEFC 12**	**LMEKC 12**	4	12	(+9/-1)	22	(0/-16)	61	(±0.3)	27.5
16	**LMEFC 16**	**LMEKC 16**	5	16	(+11/-1)	26	(0/-16)	68	(±0.3)	31
20	**LMEFC 20**	**LMEKC 20**	5	20	(+11/-1)	32	(0/-19)	80	(±0.3)	36
25	**LMEFC 25**	**LMEKC 25**	6	25	(+13/-2)	40	(0/-19)	112	(±0.3)	52
30	**LMEFC 30**	**LMEKC 30**	6	30	(+13/-2)	47	(0/-19)	123	(±0.3)	56.5
40	**LMEFC 40**	**LMEKC 40**	6	40	(+16/-4)	62	(0/-22)	151	(±0.3)	69
50	**LMEFC 50**	**LMEKC 50**	6	50	(+16/-4)	75	(0/-22)	192	(±0.3)	89.5
60	**LMEFC 60**	**LMEKC 60**	6	60	(+16/-4)	90	(0/-25)	209	(±0.3)	95.5

LINEAR
BALL BUSHING

Remark: If you have more inquiry of technical, please inquire
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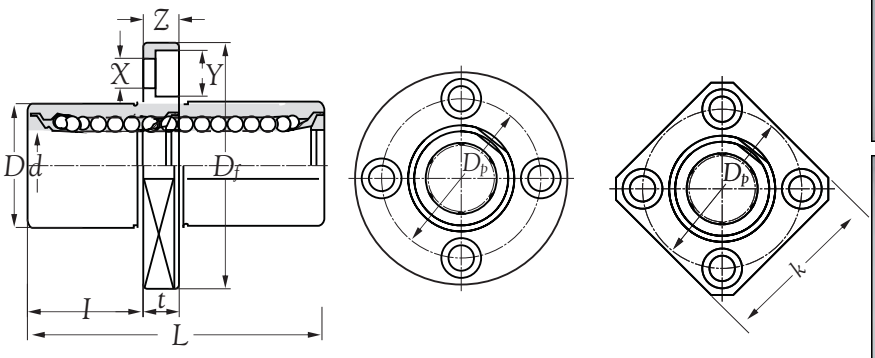
Linear ball bushing
series LMEFC.. & LMEKC..



Principa dimensions flange D_f	K	t	D_p	XxYxZ	Roundness	Squareness	Load ratings dynamic C	Load ratings static C_o	Mass kg(s). LMFC..	Mass kg(s). LMKC..
mm					0.001mm	0.001mm	N		(approx.)	
32	25	5	24	3.5 x 6.0 x 3.1	15	15	421	804	0.059	0.051
42	32	6	32	4.5 x 7.5 x 4.1	15	15	813	1570	0.110	0.090
46	35	6	36	4.5 x 7.5 x 4.1	15	15	921	1780	0.160	0.135
54	42	8	43	5.5 x 9.0 x 5.1	17	17	1370	2740	0.260	0.225
62	50	8	51	5.5 x 9.0 x 5.1	17	17	1570	3140	0.540	0.500
76	60	10	62	6.6 x 11 x 6.1	17	17	2500	5490	0.815	0.720
98	75	13	80	9.0 x 14 x 8.1	20	20	3430	8040	1.805	1.600
112	88	13	94	9.0 x 14 x 8.1	20	20	6080	15900	2.820	2.620
134	106	18	112	11 x 17 x 11.1	25	25	7550	20000	4.920	4.480

Remark: If you have more inquiry of technical, please inquire
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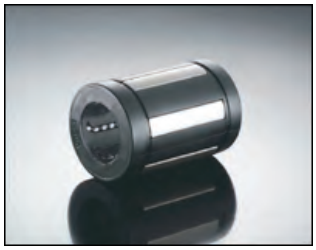
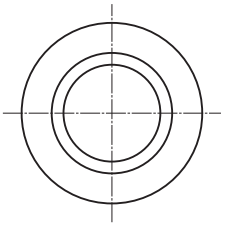
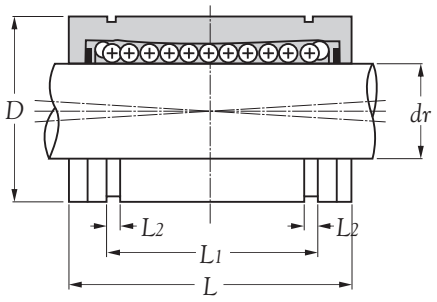
Super Ball bushing
series LMES





LMES..close, UU



Boundary dimensions d mm	Bearing number		Number of ball tracks	Principal dimensions d_r tolerance mm	0.001mm	D ±0.1	L ±0.2	L_1 ±0.2	L_2 min.	Load ratings dynamic C N	static C_o N	Mass kg. (approx.)
10	LMES 10	LMES 10 UU	5	10	+8 ~ 0	19	29	21.7	1.35	750	550	0.017
12	LMES 12	LMES 12 UU	5	12	+8 ~ 0	22	32	22.7	1.35	1230	1100	0.023
16	LMES 16	LMES 16 UU	5	16	+9 ~ 1	26	36	24.7	1.35	1550	1250	0.028
20	LMES 20	LMES 20 UU	6	20	+9 ~ 1	32	45	31.3	1.65	2580	1670	0.061
25	LMES 25	LMES 25 UU	6	25	+11 ~ 1	40	58	43.8	1.90	3800	2750	0.122
30	LMES 30	LMES 30 UU	6	30	+11 ~ 1	47	68	51.8	1.90	4710	2800	0.185
40	LMES 40	LMES 40 UU	6	40	+13 ~ 2	62	80	60.4	2.20	6500	5720	0.360
50	LMES 50	LMES 50 UU	6	50	+13 ~ 2	75	100	77.4	2.70	11460	7940	0.580

Linear
Ball Bushing

Remark: If you have more inquiry of technical, please inquire
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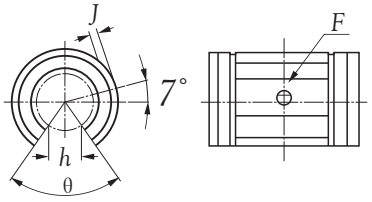
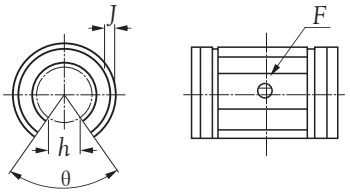
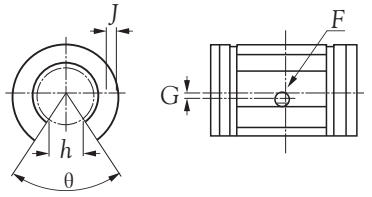
Super Ball bushing
series LMES..OP



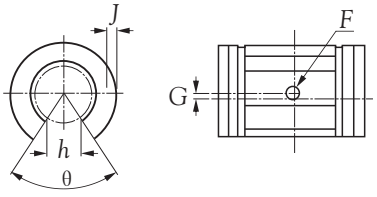
LMES 12 OP



LMES 16 OP, LMES 20 OP



LMES 25 OP



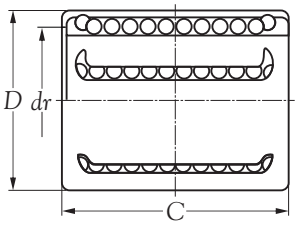
LMES 30 OP, LMES 40 OP, LMES 50 OP

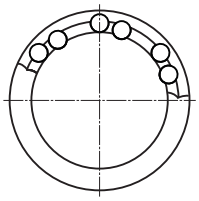
Boundary dimensions d mm	Bearing number	Number of ball tracks	Principal dimensions D ±0.1	L ±0.2	L2	h	θ°	F	G	J	Load ratings dynamic C N	Load ratings static Co N	Mass kg. (approx.)
12	**LMES 12OP LMES 12UUOP**	4	22	32	1.35	6.5	66	3.0	-	0.7	1290	1260	0.018
16	**LMES 16OP LMES 16UUOP**	4	26	36	1.35	9.0	68	3.0	-	0.7	1640	1320	0.022
20	**LMES 20OP LMES 20UUOP**	5	32	45	1.65	9.0	55	3.0	-	0.9	2630	1720	0.051
25	**LMES 25OP LMES 25UUOP**	5	40	58	1.90	11.5	57	3.0	1.5	1.4	3910	2850	0.102
30	**LMES 30OP LMES 30UUOP**	5	47	68	1.90	14.0	57	3.0	2.0	2.2	4850	2900	0.155
40	**LMES 40OP LMES 40UUOP**	5	62	80	2.20	19.5	56	3.0	1.5	2.7	6700	5900	0.300
50	**LMES 50OP LMES 50UUOP**	5	75	100	2.70	22.5	54	3.0	2.5	2.3	11700	8100	0.480

Linear Ball Bushing

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Linear ball bushing series KH





Boundary dimensions dr mm	Bearing number	Number of ball tracks	Principal dimensions D mm	C	Basic load ratings dynamic C N	static Co N	Max runout speed grease r/min	oil r/min	Mass kg. (approx.)
6	**KH 0622**	4	12	22	400	239	41	24	0.0070
6	**KH 0622 PP**	4	12	22	400	239	41	24	0.0070
8	**KH 0824**	4	15	24	435	280	44	29	0.0120
8	**KH 0824 PP**	4	15	24	435	280	44	29	0.0120
10	**KH 1026**	4	17	26	500	370	51	38	0.0145
10	**KH 1026 PP**	4	17	26	500	370	51	38	0.0145
12	**KH 1228**	5	19	28	620	510	63	52	0.0185
12	**KH 1228 PP**	5	19	28	620	510	63	52	0.0185
14	**KH 1428**	5	21	28	620	520	63	53	0.0205
14	**KH 1428 PP**	5	21	28	620	520	63	53	0.0205
16	**KH 1630**	5	24	30	800	620	82	63	0.0275
16	**KH 1630 PP**	5	24	30	800	620	82	63	0.0275
20	**KH 2030**	6	28	30	950	790	97	81	0.0325
20	**KH 2030 PP**	6	28	30	950	790	97	81	0.0325
25	**KH 2540**	6	35	40	1990	1670	203	170	0.0660
25	**KH 2540 PP**	6	35	40	1990	1670	203	170	0.0660
30	**KH 3050**	7	40	50	2800	2700	285	275	0.0950
30	**KH 3050 PP**	7	40	50	2800	2700	285	275	0.0950
40	**KH 4060**	8	52	60	4400	4450	449	454	0.1820
40	**KH 4060 PP**	8	52	60	4400	4450	449	454	0.1820
50	**KH 5070**	9	62	70	5500	6300	561	642	0.2520
50	**KH 5070 PP**	9	62	70	5500	6300	561	642	0.2520

Linear Ball Bushing

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NIKO web-site: Http://www.nipponkodobearings.com

Linear Ball Bushing-Resin Retainer


LM, LME


LM-AJ, LME-AJ


LM-OP, LME-OP


LM-L, LME-L

Flanged Type Linear Ball Bushing-Resin Retainer


LMK, LMEK


LMF, LMEF


LMH


LMK...UU E


LMF...UU E


LMH...UU E


LMKC, LMEKC


LMFC, LMEFC


LMHC

Flanged Long Type Linear Ball Bushing-Resin Retainer


LMK-L, LMEK-L


LMF-L, LMEF-L


LMH-L


LMK...LUU E


LMF...LUU E


LMH...LUU E

KH Bushing

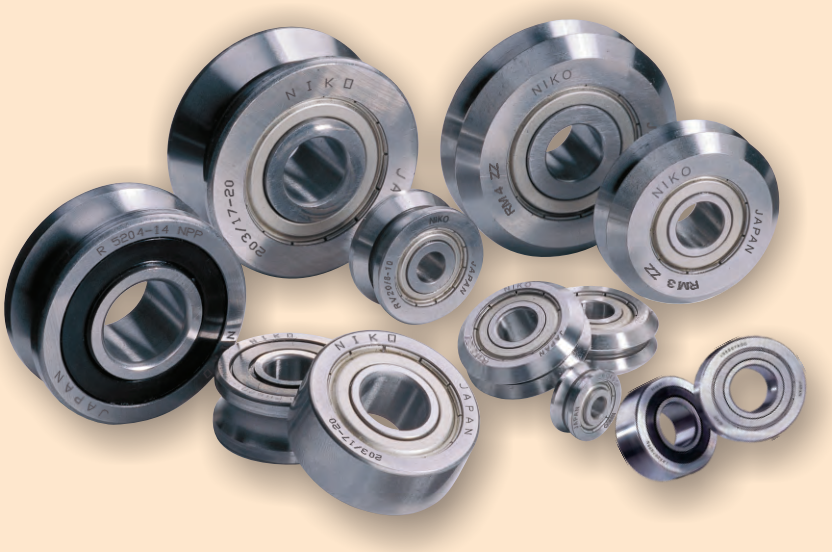

KH

Super Linear Ball Bushing


LMES


LMES-OP

TRACK ROLLER BEARING



1. Bearing materials

The internal design of NIKO track rollers is the same as in single row or Double-row Angular Contact Ball Bearings.
The units can carry axial loads in both directions and, due to the thickness of the outer ring, large radial loads.
The standard product are produced from high quality bearing steel, with a hardness of 58 to 62 HRC. Some types are also available in stainless steel (440C) with hardness>58 HRC.
The track rollers contained in this catalogue are produced with standard tolerances (ISO 492) and standard clearance (CN).
The track rollers are produced in two distinct families. Cylindrical or crowned outer ring and profiled outer ring.

These track rollers are available in single and double row design. They are available with straight cylindrical OD or crowned profile OD. The crowned OD is used to reduce the edge stresses caused by possible misalignment errors. The cylindrical OD can provide increased support due to the longer contact profile.

There products are used typically on flat surfaces. Some of the most common applications are:
-transfer rolls
-idler rollers
-Support rollers
-Straightening rolls

2. Shields and seals

2.1 Types
2.1.1 Track rollers LR 2..NPP, LR 2..RRU
These single row ball track rollers are available in two different versions.
-LR2..NPP: cylindrical OD, with contact seals protected by a metal shield.
-LR2..RRU: crowned OD with contact seals protected by a metal shield, inner ring with increased width to allow additional lubricant storage.

2.1.2 Track rollers LR 52-53..NPPU, LR 52-53..KDD
These are double rows angular contact ball track rollers. Due to their internal design, they can carry axial loads of large magnitude. They are available in two versions:
-LR52-53..NPPU: crowned OD, contact seals protected by a metal shield.
-LR52-53..KDD: cylindrical OD, with metal shields.

The track rollers with profiled outer ring are basically Double-rows Angular Contact Ball Bearings with a reinforced and profiled outer ring. The outer ring profile allows the units to operate on round shafts or other type of profiled raceways. The outer profile can have three different designs;

- Track rollers with gothic arch groove - type LFR
- Track rollers with “V” shaped groove - type RV
- Track rollers with “W” profile - type RM

Type RV and RW can be supplied with the pertinent mounting hardware.
The largest portion of these products are used as linear guides.

2.2 Types
2.2.1 Track rollers LFR, mounting bolts and studs RC/RE
The track rollers series LFR can be used on round shafts with diameter from 4 mm to 50 mm.
The contact between track roller gothic arch groove profile and shaft is on two points.
This allows the units to carry loads in both axial and radial direction.
The track rollers are available with either shields ZZ or contact seals 2RS.

2.2.2 Track rollers RV
The track rollers RV have a groove machined in the outer ring. The groove is "V" shaped with an included angle of 120 degrees. These units are predominantly used on shafts with diameters from 7 to 20 MM. The contact between track roller and shafts is on two points.
In special cases, the units can run on profiled ways.
The units are supplied with non contact shields.

2.2.3 Track rollers with "W" profile, type RM
The track rollers series RM have grooves machined in the outer ring of the unit with an included angle of 90 degree. They have been engineered to run on profiled steel elements that have identical shape. They can run on either the internal or the external surfaces of the outer ring.

They are available with either non-contacting shields ZZ or contact seals 2RS.

3. Bearing tolerances

3.1 Standard of tolerances
Track roller bearing "tolerances" or dimensional accuracy and running accuracy, are regulated by ISO and JIS standards (rolling bearing tolerances). For dimensional accuracy, these standards prescribe the tolerances necessary when installing bearings on shafts or in housings.
Running accuracy is defined as the allowable limits for bearing runout during operation.

Table 3.1 Comparison of tolerance classifications of national standards

Standard		Tolerance class				
Japanese industrial standard (JIS)	JIS	class 0,6X	class 6	class 5	class 4	class 2
International Organization for Standardization (ISO)	ISO	Normal class Class 6X	Class 6	Class 5	Class 4	Class 2
Deutsches Institut fur Normung(ISO)	DIN	P0	P6	P5	P4	P2
American National Standards Institute (ANSI)	ANSI/ABMA	ABEC-1	ABEC-3	ABEC-5	ABEC-7	ABEC-9

3.2 Tolerances for radial bearings

Table 3.2 Inner rings

(Unit : μm)

Nominal bore diameter d mm		Single plane mean bore diameter deviation △dmp										Single radial plane bore diameter variation Vdp									
		class 0		class 6		class 5		class 4 ❶		class 2 ❶		diameter series 9					maxdiameter series 0.1				
												class 0	class 6	class 5	class 4	class 2	class 0	class 6	class 5	class 4	class 2
over	incl.	high	low	high	low	high	low	high	low	high	low			max.					max.		
10	18	0	-8	0	-7	0	-5	0	-4	0	-2.5	10	9	5	4	2.5	8	7	4	3	2.5
18	30	0	-10	0	-8	0	-6	0	-5	0	-2.5	13	10	6	5	2.5	10	8	5	4	2.5
30	50	0	-12	0	-10	0	-8	0	-6	0	-2.5	15	13	8	6	2.5	12	10	6	5	2.5

Table 3.3 Inner rings

(Unit : μm)

Nominal bore diameter d mm		Single radial plane bore diameter variation Vdp maxdiameter series 2,3,4					Mean single plane bore diameter variation Vdmp					Inner ring radial runout Kia					Face runout with bore Sd		
		class 0	class 6	class 5	class 4	class 2	class 0	class 6	class 5	class 4	class 2	class 0	class 6	class 5	class 4	class 2	class 5	class 4	class 2
over	incl.			max.					max.					max.				max.	
10	18	6	5	4	3	2.5	6	5	3	2.0	1.5	10	7	4	2.5	1.5	7.0	3.0	1.5
18	30	8	6	5	4	2.5	8	6	3	2.5	1.5	13	8	4	3.0	2.5	8.0	4.0	1.5
30	50	9	8	6	5	2.5	9	8	4	3.0	1.5	15	10	5	4.0	2.5	8.0	4.0	1.5

Table 3.4 Inner rings

(Unit : μm)

Nominal bore diameter d mm		Inner ring axial runout (with side) Sia ❷			Inner ring width deviation △Bs										Inner ring width varietion VBs				
					normal						modified ❸								
		class 5	class 4	class 2	class 0,6		class 5,4		class 2		class 0,6		class 5,4		class 0	class 6	class 5	class 4	class 2
over	incl.				high	low	high	low	high	low	high	low	high	low			max.		
10	18	7	3	1.5	0	-120	0	- 80	0	- 80	0	- 250	0	- 250	20	20	5	2.5	1.5
18	30	8	4	2.5	0	-120	0	-120	0	-120	0	-250	0	-250	20	20	5	2.5	1.5
30	50	8	4	2.5	0	-120	0	-120	0	-120	0	-380	0	-250	20	20	5	3.0	1.5

Note: ❶ The dimensional difference △*ds* of bore diameter to applied for class 4 and 2 is the same as the tolerance of dimentional difference △*dmp* of average bore diameter. However, the dimensional difference is applied to diameter series 0, 1, 2, 3 and 4 against Class 4, and to all the diameter series against Class 2.
❷ To be applied for deep groove ball bearing and angular contact ball bearings.
❸ To be applied for individual raceway rings manufactured for combined bearing use.

Symbols: △dmp: deviation of the mean bore diameter from the nominal (△dmp = dmp − d).
Vdp: bore diameter variation; difference between the largest and smallest single bore diameters in one plane.
Vdmp: mean bore diameter variation; difference between the largest and smallest mean bore diameters of one ring or washer.
Kia: radial runout of assembled bearing inner ring and assembled bearing outer ring, respectively.
Sd: side face runout with reference to bore (of inner ring).
Sia: side face runout of assembled bearing inner ring and assembled bearing outer ring, respectively.
△Bs: deviation of single inner ring width or single outer ring width from the nominal (△Bs = Bs − B etc.)
VBs: ring width variation; difference between the largest and smallest single widths of inner ring and of outer ring, respectively.

Table 3.5 Outer rings (Unit : μm)

Nominal Outside diameter D mm over	incl.	Single plane mean outside diameter deviation ΔDmp class 0 high	low	class 6 high	low	class 5 high	low	class 4 ⑤ high	low	class 2 ⑤ high	low	Single radial plane outside diameter variation VDp diameter series 9 class 0	class 6	class 5 max.	class 4	class 2	maxdiameter series 0.1 class 0	class 6	class 5 max.	class 4	class 2
6	18	0	-8	0	-7	0	-5	0	-4	0	-2.5	10	9	5	4	2.5	8	7	4	3	2.5
18	30	0	-9	0	-8	0	-6	0	-5	0	-4.0	12	10	6	5	4.0	9	8	5	4	4.0
30	50	0	-11	0	-9	0	-7	0	-6	0	-4.0	14	11	7	6	4.0	11	9	5	5	4.0
50	80	0	-13	0	-11	0	-9	0	-7	0	-4.0	16	14	9	7	4.0	13	11	7	5	4.0
80	120	0	-15	0	-13	0	-10	0	-8	0	-5.0	19	16	10	8	5.0	19	16	8	6	5.0

Table 3.6 Outer rings (Unit : μm)

Nominal Outside diameter D mm over	incl.	Single radial plane outside diameter variation VDp maxdiameter series 2.3.4 class 0	class 6	class 5 max.	class 4	class 2	Single radial plane outside diameter variation VDp ⑥ capped bearings diameter series 2,3,4 class 0 max.	0,1,2,3,4 class 6	Mean single plane outside diameter variation VDmp class 0	class 6	class 5 max.	class 4	class 2
6	18	6	5	4	3	2.5	10	9	6	5	3	2.0	1.5
18	30	7	6	5	4	4.0	12	10	7	6	3	2.5	2.0
30	50	8	7	5	5	4.0	16	13	8	7	4	3.0	2.0
50	80	10	8	7	5	4.0	20	16	10	8	5	3.5	2.0
80	120	11	10	8	6	5.0	26	20	11	10	5	4.0	2.5

Symbols: ΔDmp: deviation of the mean outside diameter from the nominal (ΔDmp=Dmp − D).
VDp: outside diameter variation; difference between the largest and smallest single outside diameters in one plane.
VDmp: mean outside diameter variation; difference between the largest and smallest mean outside diameters of one ring or washer.

TRACK ROLLER BEARINGS

Table 3.7 Outer rings **(Unit : μm)**

Nominal Outside diameter D mm		Outer ring radial runout Kea					Outside surface inclination SD			Outside ring axial runout Sea⓱			Outer ring width deviation △Cs	Outer ring width variation Vcs			
over	incl.	class 0	class 6	class 5 max.	class 4	class 2	class 5	class 4 max.	class 2	class 5	class 4 max.	class 2	all type	class 0,6	class 5	class 4 max.	class 2
6	18	15	8	5	3	1.5	8	4	1.5	8	5	1.5	Identical to △Bs of inner ring of same bearing	Identical to △Bs and Vbs of inner ring of same bearing	5	2.5	1.5
18	30	15	9	6	4	2.5	8	4	1.5	8	5	2.5			5	2.5	1.5
30	50	20	10	7	5	2.5	8	4	1.5	8	5	2.5			5	2.5	1.5
50	80	25	13	8	5	4.0	8	4	1.5	10	5	4.0			6	3.0	1.5
80	120	35	18	10	6	5.0	9	5	2.5	11	6	5.0			8	4.0	2.5

Note: ❺ The dimensional difference △*Ds* of outer diameter to be applied for classes 4 and 2 is the same as the tolerance of dimensional difference △*Dmp* of average outer diameter. However, the dimensional difference is applied to diameter series 0,1.2.3 and 4 against Class 4, and also to all the diameter series against Cfass 2.
❻ To be applied in case snap rings are not installed on the bearings.
❼ To be applied for Track Roller Bearings.

Symbols: Kea: radial runout of assembled bearing inner ring and assembled bearing outer ring, respectively.
SD: outside inclination variation: variation in inclination of outside cylindrical surface to outer ring side face.
Sea: side face runout of assembled bearing inner ring and assembled bearing outer ring, respectively.
△Cs: deviation of single inner ring width or single outer ring width from the nominal (△Bs = Bs - B etc.)
VCs: ring width variation; difference between the largest and smallest single widths of inner ring and of outer ring, respectively.

4. Bearing fits

Track rollers are precision machine elements. These products must be very carefully handled before and during fitting. Their trouble-free operation depends largely on the care taken during fitting

4.1 Compatibility and miscibility

The anti-corrosive preservation oil used for rolling bearings is compatible and miscible with oils and greases with a mineral oil base. Compatibility should be checked if the following are used:
- synthetic lubricants
- thickeners other than lithium or lithium complex soaps.

If there is an incompatibility, the anti-corrosive oil should be washed out before greasing, particularly in the following cases:
- lubricants based on PTFE/alkoxyfluoroether
- lubricants with a polycarbamide thickener

and if
- the lubricant is changed
- the rolling bearings are contaminated.

If in doubt, please contact the relevant lubricant manufacturer.

4.2 Guidelines for fitting

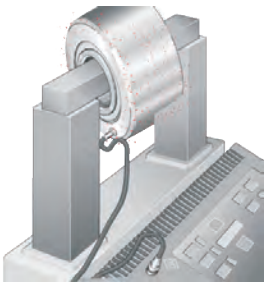
- The assembly area must be kept clean and free from dust
- Protect bearings from dust, contaminants and moisture
  - contaminants have a detrimental influence on the running and operating life of rolling bearings
- Inspect the housing bore and shaft/axis seating for
  - dimensional and geometrical tolerances
  - cleanliness

- Lightly oil the bearing ring seating surfaces or rub with solid lubricant
- Do not cool the bearings excessively
  - Moisture due to condensation can lead to corrosion in the bearings and bearing seatings
- After fitting
  - charge ungreased rolling bearings with lubricant
  - check the correct functioning of the bearing arrangement.

4.3 Fitting tools
- Induction heating device (see figure below)
- Heating cupboard
  - heating up to + 80 °C

Mechanical or hydraulic press
  - fitting sleeves should be used which cover the whole circumference of the bearing ring end faces
- Hammer and fitting sleeve
  - light hammer blows should be centrally directed on the fitting sleeve

Note: Fitting forces must never be directed through the rolling elements. Direct blows on the bearing rings must be avoided.

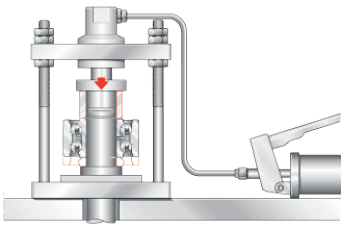


Heating with an induction heater

4.4 Dismantling guidelines
- Dismantling should be taken into consideration in the original design of the bearing location
- If the bearings are to be reused:
  - direct blows on the bearing rings should be avoided
  - dismantling forces should not be applied through the rolling elements
  - bearings should be carefully cleaned once dismantled
  - do not use a concentrated or hard flame.

4.5 Fitting and dismantling of yoke type track rollers (ball type)
- If the tolerance zone is unfavourable: the bearing should be pressed into place using a fitting press (see figure below)
  - The inner ring must be fitted such that the pressing-in force is distributed uniformly on theend face of the inner ring.

Note: Fitting forces must not be directed through the rolling elements.
It must be ensured that the seals are not damaged during fitting.
- Track rollers must be secured axially according to the advice given.

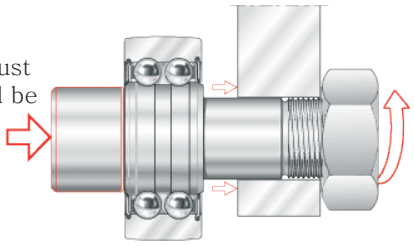


Fitting of the yoke type track roller using a fitting press

Note: Extraction forces must not be directed through the outer ring. This could damage the rolling elements and seals.

4.6 Fitting and dismantling of stud type track rollers (ball type)
Stud type track rollers are fitted and dismantled by methods similar to those used for yoke type track rollers (see figure below).
-

Note: The tightening torques given in the dimension table must be observed. Only then can the permissible radial load be ensured.
Screws and nuts of grade ≥ 8.8 must be used.



Fitting of a stud type track roller

5. Bearing intemal clearance

Track Roller Bearing internal clearance (initial clearance) is the amount of internal clearance a bearing has before being installed on a shaft or in a housing. The internal clearance valves for NIKO Track roller bearing classes are shown in tables 5.1

Table 5.1 Radial internal clearance of track roller bearings **(Unit : μm)**

Nominal bore diameter d (mm)		C2		Normal		C3		C4	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.
-	10	6	12	8	15	15	22	22	30
10	18	6	12	8	15	15	24	30	40
18	30	6	12	10	20	20	32	40	55
30	50	8	14	14	25	25	40	55	75

6. Lubrication

6.1 Track rollers series LR 2..are supplied grease filled. (The lithium soap grease).

6.2 Track rollers series LR 52..are supplied grease filled. (The lithium soap grease) .

6.3 Track rollers LFR, mounting bolts and studs RC/RE
The units are supplied with lifetime grease lubrication
The size with an outside diameter 52 mm or greater have a lubrication hole in the inner ring.
To prevent mixing of greases with different characteristics, please insure to perform the lubrication of the units with lubricants that have the same characteristics as the grease used at the factory. Mounting bolts are available in both eccentric RE and concentric RC versions.
The eccentric bolts RE and RE..A1 allow the adjustment of the operating clearance.
Bolts of series RE..A1 and RC..A1 have facilities that enable relubrication of the track rollers.
The mounting bolts of series RC hare supplied with the pertinent washer, while the one of series RE have both washer and nut.
The units RC..A1 and RE..A1 also incorporate the grease fitting and its relative cover plug.

6.4 Track rollers RV
The units are supplied with lifetime lubrication.

6.5 Track rollers with “W” profile, type RM
The units are supplied with lifetime grease lubrication.

7. Load rating and life

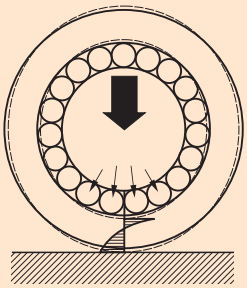


Fig. 1

If the track rollers operate on a flat surface/raceway, the outer ring deforms (fig.1)
When compared with a bearing mounted in a suitable housing, track rollers have the following characteristics:
- Modified load distribution
This is accounted for by using the load factors Cw and Cow when calculating the life.
- Alternating bending stress on the outer ring
This is taken into account by the load coefficients Frperm and Fro perm (see dimension tables). The stresses must not exceed the allowable limits.

7.1 Load ratings and life calculation
The dynamic load rating of the track roller is determined by the fatigue limit of the material.The life of the track roller is defined as the period of use before the ppearance of fatigue. The ability of a track roller to carry dynamic loads is statistically derived.

7.1.1 Life calculation
The formula to calculate the nominal life is as follows:

$$L = \left(\frac{CW}{P}\right)^3$$

$$L_h = \frac{833}{H.nosz}\left(\frac{CW}{P}\right)^3$$

$$L_h = \frac{1666}{Vm}\left(\frac{CW}{P}\right)^3$$

L = nominal life in 10^5 m reached by 90% of a statistically significant number of apparently identical bearing operating under the same loading condition before the onset of metal fatigue.
L_h [h] = nominal life in hours
C_w [N] = Dynamic load rating. Is the load that would yield a nominal life of 105 m.
P [N] = equivalent dynamic load
H [m] = stroke
n_{osz} [min^{-1}] = frequency of operation
V_m [m/min] = mean operating velocity

7.1.2 Radial dynamic limit load F_r perm
When selecting the product it is necessary to insure that no loading condition will exceed the allowable load.

8. Bearing handling

8.1 Storage
The bearings should be stored:
- in dry, clean rooms with the temperature as constant as possible
- at a relative humidity of max. 65%.
The storage period for greased and sealed bearings is limited by the shelf life of the grease.

8.2 Removal from packaging
Perspiration from handling leads to corrosion. Hands should be kept clean and dry and gloves worn if necessary.
Bearings should only be removed from their original packaging immediately before assembly. If only a few bearings are taken out of a multi-piece package preserved by volatile corrosion inhibitor paper, the package must be closed again immediately
- the protective vapour phase is only effective when the package is closed
- the bearings which have been taken out must be greased or oiled immediately.

9. Allowable speed

As bearing speed increases, the temperature of the bearing also increases due to friction heat generated in the bearing interior. If the temperature continues to rise and exceeds certain limits, the efficiency of the lubricant start to fail down drastically, and the bearing can no longer continue to operate in a stable manner. Therefore, the maximum speed at which it is possible for the bearing to continuously operate without the generation of excessive heat beyond specified limits, is called the allowable speed (r/min). The allowable speed of a bearing depends on the type of bearing, bearing dimensions, type of cage, load, lubricating conditions, and cooling conditions.

The allowable speeds listed in the bearing tables for grease and oil lubrication are for NIKO track roller under normal operating conditions, correctly installed, using the suitable lubricants with adequate supply and proper maintenance. Moreover, these values are based on normal load conditions ($P \leqslant 0.09C$, $Fa/Fr \leqslant 0.3$). For track roller with contact seals, the allowable speed is determined by the peripheral lip speed of the seal.

For track roller to be used under heavier than normal load conditions, the allowable speed values listed in the bearing tables must be multiplied by an adjustment factor. The adjustment factors f_L and f_C are given in Figs. 9.1 and 9.2.

Under such high speed operating conditions, when special care is taken, the standard allowable speeds given in the bearing tables can be adjusted upward. The maximum speed adjustment values, /B, by which the bearing table speeds can be multiplied, are shown in Table 9.1. However, for any application requiring speeds in excess of the standard allowable speed, please consult NIKO Engineering.

Fig.9.1 Value of adjustment factor FL depends on bearing load

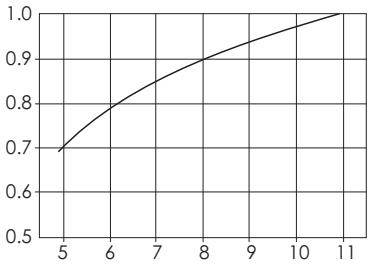


Fig.9.2 Value of adjustment factor Fc depends on combined load

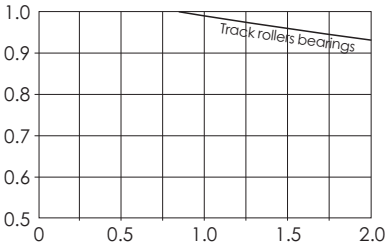


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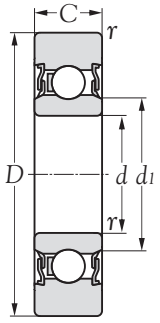
Table 9.1 Adjustment factor, f_B, for allowable number of revolutions

Type of bearing	Adjustment factor f_B
Track rollers bearings	2.0

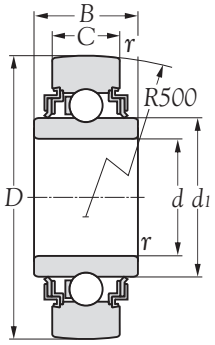
TRACK ROLLER BEARINGS

DIMENSION TABLES

TRACK ROLLER BEARINGS DOUBLE ROW
SERIES LR..NPP; LR..RRU



NPP



RRU

Boundary dimensions d mm	Bearing number	Boundary dimensions D	C	rs	d1	B	Basic load ratings dynamic C	static Co	Limiting speeds grease	oil	Mass kg. (approx.)
				mm			N		rpm		
10	**LR 200 NPP**	32	9	0.6	15.4	-	4,200	2,050	13,000	-	0.050
12	**LR 201 NPP**	35	10	0.6	17.1	-	5,500	2,600	15,000	-	0.050
15	**LR 202 NPP**	40	11	0.6	20.0	-	6,700	3,150	14,000	-	0.070
17	**LR 203 NPP**	47	12	0.6	22.5	-	9,100	4,200	11,000	-	0.110
20	**LR 204 NPP**	52	14	1.0	26.5	-	11,800	5,400	10,000	-	0.150
25	**LR 205 NPP**	62	15	1.0	30.3	-	14,900	6,800	9,000	-	0.230
30	**LR 206 NPP**	72	16	1.0	37.4	-	20,800	9,200	5,500	-	0.330
35	**LR 207 NPP**	80	17	1.1	42.4	-	26,100	11,400	4,500	-	0.400
45	**LR 209 NPP**	90	19	1.1	53.2	-	30,300	13,100	3,600	-	0.450
12	**LR 201 RRU**	35	10	0.6	18.5	15.0	5,500	3,000	15,000	-	0.070
15	**LR 202 RRU**	40	11	0.6	21.5	14.4	6,700	3,500	14,000	-	0.080

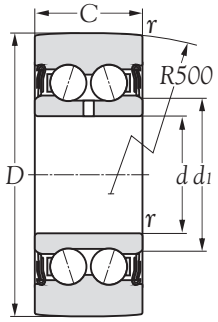
TRACK ROLLER BEARINGS

Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	√	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

Remark: If you have more inquiry of technical, please inquire NIKO web-site: Http://www.nipponkodobearings.com

Track roller bearings double row
series LR 50..



Type LR 50..NPPU
(Light-contact, double seals)

Boundary dimensions d mm	Bearing number	Boundary dimensions D	C	rs	d1	Basic load ratings dynamic C	static Co	Limiting speeds grease	oil	Mass kg. (approx.)
			mm			N		rpm		
5	**LR 50/5 NPP**	17	7	0.2	8.2	1,960	940	12,000	-	0.01
6	**LR 50/6 NPP**	19	9	0.3	9.3	2,700	1,370	11,000	-	0.02
7	**LR 50/7 NPP**	22	10	0.3	10.5	3,300	1,700	10,000	-	0.02
8	**LR 50/8 NPP**	24	11	0.3	10.5	4,300	2,390	10,000	-	0.03
10	**LR 5000 NPPU**	28	12	0.3	13.5	4,750	2,850	9,000	-	0.03
12	**LR 5001 NPPU**	30	12	0.3	15.5	5,100	3,100	8,500	-	0.03
15	**LR 5002 NPPU**	35	13	0.3	20.4	6,500	4,150	7,000	-	0.05
17	**LR 5003 NPPU**	40	14	0.3	21.6	7,800	5,300	6,000	-	0.07
20	**LR 5004 NPPU**	47	16	0.6	25.2	11,700	7,700	5,500	-	0.12
25	**LR 5005 NPPU**	52	16	0.6	29.8	11,800	8,200	4,700	-	0.15
30	**LR 5006 NPPU**	62	19	1.0	35.5	16,100	11,900	4,000	-	0.25
35	**LR 5007 NPPU**	68	20	1.0	41.7	17,800	13,300	4,300	-	0.30

Track Roller Bearings

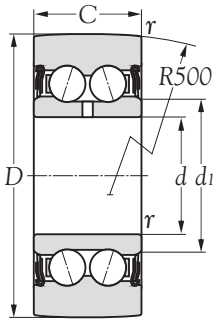
Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	√	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

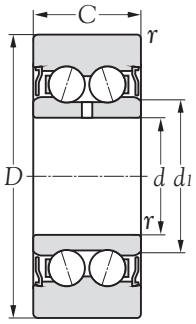
Remark: If you have more inquiry of technical, please inquire NIKO web-site: Http://www.nipponkodobearings.com

TRACK ROLLER BEARINGS DOUBLE ROW

SERIES LR 52..NPPU; LR 52..KDD



NPPU



KDD

Boundary dimensions d mm	Bearing number	Boundary dimensions D	C	rs	d1	Basic load ratings dynamic C	static Co	Limiting speeds grease	oil	Mass kg. (approx.)
		mm				N		rpm		
10	**LR 5200 NPPU**	32	14.0	0.6	15.4	6,500	3,900	8,000	-	0.070
12	**LR 5201 NPPU**	35	15.9	0.6	17.1	8,500	4,900	7,500	-	0.080
15	**LR 5202 NPPU**	40	15.9	0.6	20.0	10,100	5,900	7,000	-	0.110
17	**LR 5203 NPPU**	47	17.5	0.6	22.5	13,700	7,800	5,500	-	0.170
20	**LR 5204 NPPU**	52	20.6	1.0	26.5	17,700	10,000	5,000	-	0.230
25	**LR 5205 NPPU**	62	20.6	1.0	30.3	22,000	12,400	4,500	-	0.340
30	**LR 5206 NPPU**	72	23.8	1.0	37.4	30,700	20,400	3,500	-	0.510
35	**LR 5207 NPPU**	80	27.0	1.1	42.4	39,400	21,300	2,800	-	0.660
40	**LR 5208 NPPU**	85	30.2	1.1	48.4	45,500	24,300	2,500	-	0.750
10	**LR 5200 KDD**	32	14.0	0.6	15.4	6,500	3,900	11,000	-	0.070
12	**LR 5201 KDD**	35	15.9	0.6	17.1	8,500	4,900	10,000	-	0.080
15	**LR 5202 KDD**	40	15.9	0.6	20.0	10,100	5,900	10,000	-	0.110
17	**LR 5203 KDD**	47	17.5	0.6	22.5	13,700	7,800	7,500	-	0.170
20	**LR 5204 KDD**	52	20.6	1.0	26.5	17,700	10,000	7,000	-	0.230
25	**LR 5205 KDD**	62	20.6	1.0	30.3	22,000	12,400	6,500	-	0.340
30	**LR 5206 KDD**	72	23.8	1.0	37.4	30,700	20,400	5,000	-	0.510
35	**LR 5207 KDD**	80	27.0	1.1	42.4	39,400	21,300	3,900	-	0.660
40	**LR 5208 KDD**	85	30.2	1.1	48.4	45,500	24,300	3,500	-	0.750

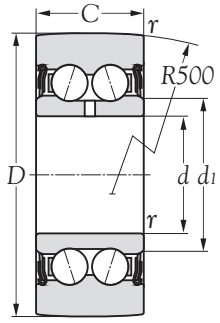
TRACK ROLLER BEARINGS

Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	√	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Track roller bearings double row
series LR 53.. NPPU



NPPU

Boundary dimensions d mm	Bearing number	Boundary dimensions mm D	C	rs	d1	Basic load ratings dynamic C N	static Co N	Limiting speeds grease rpm	oil rpm	Mass kg(s). (approx.)
17	**LR 5303 NPPU**	52	22.2	1.0	23.5	19,300	10,600	4,700	-	0.210
20	**LR 5304 NPPU**	62	22.2	1.1	29.0	25,100	13,800	4,500	-	0.340
25	**LR 5305 NPPU**	72	25.4	1.1	34.4	34,300	18,600	3,900	-	0.500
30	**LR 5306 NPPU**	80	30.2	1.1	41.4	47,200	25,200	3,100	-	0.670
35	**LR 5307 NPPU**	90	34.9	1.5	47.7	59,800	31,400	2,500	-	0.970
40	**LR 5308 NPPU**	100	36.5	1.5	52.4	78,000	39,900	2,300	-	1.200

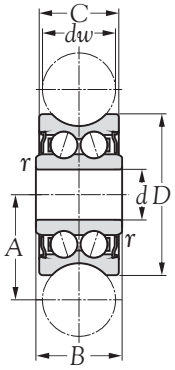
Track Roller Bearings

Remark:

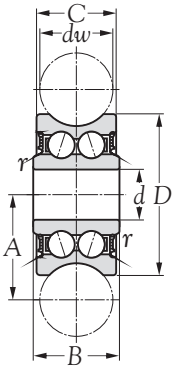
Cages		Precision	Grease
Steel -	X		
Polymid -	√	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

Remark: If you have more inquiry of technical, please inquire NIKO web-site: Http://www.nipponkodobearings.com

TRACK ROLLER BEARINGS DOUBLE ROW
SERIES LFR..ZZ; LFR..2RS



ZZ



2RS

Boundary dimensions d mm	Bearing number		Boundary dimensions dw	D	C	B	A	rs	Basic load ratings dynamic C N	static Co N	Limiting speeds grease rpm	oil rpm	Mass kg(s). (approx.)
4	LFR 50/4-4 ZZ	LFR 50/4-4 2RS	4	13.0	6.0	7.0	7.55	0.2	1050	850	1150	1600	0.007
5	LFR 50/5-4 ZZ	LFR 50/5-4 2RS	4	16.0	7.0	8.0	9.00	0.2	1200	860	1300	1780	0.009
5	LFR 50/5-6 ZZ	LFR 50/5-6 2RS	6	17.0	7.0	8.0	10.50	0.2	1270	820	1300	1780	0.010
8	LFR 50/8-6 ZZ	LFR 50/8-6 2RS	6	24.0	11.0	11.0	14.00	0.3	3670	2280	1300	4560	0.020
12	LFR 5201-10 ZZ	LFR 5201-10 2RS	10	35.0	15.9	15.9	20.65	0.3	8500	5100	5100	10200	0.080
12	LFR 5301-10 ZZ	LFR 5301-10 2RS	10	42.0	19.0	19.0	24.00	0.6	13000	7700	7500	14200	0.100
15	LFR 5302-10 ZZ	LFR 5302-10 2RS	10	47.0	19.0	19.0	26.65	1.0	16200	9200	6200	18400	0.170
12	LFR 5201-12 ZZ	LFR 5201-12 2RS	12	35.0	15.9	15.9	21.75	0.3	8400	5000	5100	10000	0.085
12	LFR 5201-14 ZZ	LFR 5201-14 2RS	14	39.9	18.0	20.0	24.00	0.3	8900	5000	6700	12100	0.095
20	LFR 5204-16 ZZ*	LFR 5204-16 2RS*	16	52.0	20.6	22.6	31.50	0.6	16800	9500	12100	16600	0.230
25	LFR 5206-20 ZZ*	LFR 5206-20 2RS*	20	72.0	23.8	25.8	41.00	0.6	29500	16600	20700	33200	0.250
25	LFR 5206-25 ZZ*	LFR 5206-25 2RS*	25	72.0	23.8	25.8	43.50	0.6	29200	16400	23100	32800	0.250
30	LFR 5207-30 ZZ*	LFR 5207-30 2RS*	30	80.0	27.0	29.0	51.00	1.0	38000	20800	21400	36200	0.660
40	LFR 5208-40 ZZ*	LFR 5208-40 2RS*	40	98.0	36.0	38.0	62.50	1.0	54800	29000	55000	58000	1.360
40	LFR 5308-50 ZZ*	LFR 5308-50 2RS*	50	110.0	44.0	46.0	72.50	1.1	53000	39500	69000	79000	1.400

TRACK ROLLER BEARINGS

Remark: * Standard with lubrication hole on inner ring

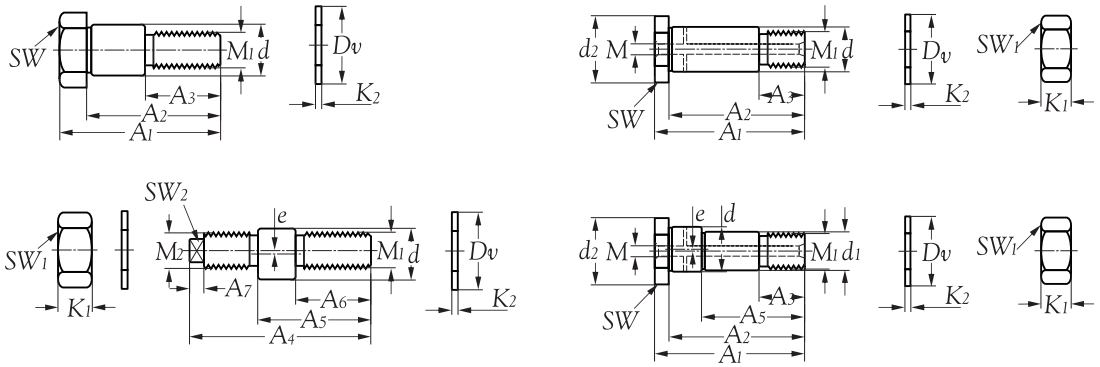
Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	√	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

TRACK ROLLER BEARINGS DOUBLE ROW

SERIES RC..; RE..



RC..; RE..

RC..A1; RE..A1

Bearing number	Boundary dimensions																		Mass
	A_1	A_2	A_3	A_4	A_5	A_6	A_7 h_9	d_1	d_2	M_1 mm	M_2	K_1	K_2	D_v	SW	SW_1	SW_2	e	M	kg(s). (approx.)
RC 5; RE 5-05	19.5	16.0	9.5	20.5	15.0	9.0	-	-	-	M4	M4	2.9	-	-	3	7	2	0.50	-	0.010
RC 8; RE 8-1	28.3	24.3	14.0	33.2	22.0	13.7	3.5	-	-	M8	M8x0.75	4.0	1.0	14	13	13	2	1.00	-	0.020
RC 12; RE 12-1	43.0	36.0	22.0	50.0	33.5	19.5	5.0	-	-	M10	M10	8.0	1.8	21	17	17	5	1.00	-	0.040
RC 12/M12; RE 12-1/M12	50.8	43.8	24.0	57.0	41.0	24.0	5.0	-	-	M12	M12	6.5	1.8	19	17	17	6	1.00	-	0.060
RC 15; RE 15-1	50.8	43.8	26.0	57.0	41.0	24.0	5.0	-	-	M12	M12	6.5	1.8	21	19	19	6	1.00	-	0.060
RC 12X45 A1; RE 12X45 A1	50.0	45.0	16.0	-	30.0	-	-	10	20	M10x1.5	-	8.0	2.0	21	17	17	6	0.75	5.9	0.040
RC 20X67 A1; RE 20X67 A1	75.0	67.0	23.0	-	45.0	-	-	17	30	M16x1.5	-	13.0	3.0	30	27	24	-	1.00	5.9	0.200
RC 25X82 A1; RE 25X82 A1	92.0	82.0	30.0	-	57.0	-	-	22	40	M20x1.5	-	16.0	3.0	37	36	30	-	1.00	5.9	0.400
RC 30X95 A1; RE 30X95 A1	107.0	95.0	32.0	-	67.0	-	-	27	45	M24x1.5	-	19.0	4.0	44	41	36	-	1.00	5.9	0.620
RC 40X107 A1; RE 40X107 A1	117.0	107.0	42.0	-	72.0	-	-	36	55	M30x1.5	-	24.0	4.0	56	46	46	-	1.00	5.9	1.100
RC 40X115 A1; RE 40X115 A1	125.0	115.0	42.0	-	72.0	-	-	36	55	M30x1.5	-	24.0	4.0	56	46	46	-	1.00	5.9	1.200

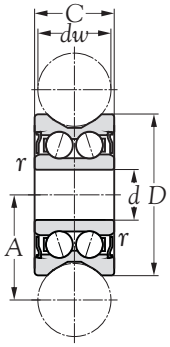
TRACK ROLLER BEARINGS

Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	X	Nil	Nil
Brass -	X		

Remark: If you have more inquiry of technical, please inquire NIKO web-site: Http://www.nipponkodobearings.com

TRACK ROLLER BEARINGS DOUBLE ROW
SERIES RV



Boundary dimensions d mm	Bearing number	Boundary dimensions dw	D	C	A	rs	Basic load ratings dynamic C	static Co	Limiting speeds grease	oil	Mass kg. (approx.)
				mm			N		rpm		
7	**RV 20/7-10**	10	22	11	14.50	0.3	2,450	1,620	2,350	4,150	0.017
8	**RV 20/8-10**	10	30	14	18.10	0.3	4,490	2,700	11,000	19,800	0.062
15	**RV 202/15.38-10**	10	38	17	22.25	0.5	7,290	4,550	10,200	17,900	0.086
15	**RV 20/15.40-10**	10	40	18	22.00	0.5	7,950	4,950	14,500	26,500	0.110
12	**RV 201/12-20**	20	41	20	28.00	0.3	8,180	5,100	17,200	31,500	0.130
15	**RV 202/15.41-20**	20	41	20	28.00	0.5	8,180	5,100	17,200	31,500	0.120
17	**RV 203/17-20**	20	58	25	35.00	0.5	16,580	9,200	47,000	86,000	0.325
20	**RV 204/20.57-30**	30	57	22	41.00	0.6	16,910	9,200	47,000	86,000	0.290
20	**RV 204/20.58-30**	30	58	25	41.00	0.6	16,790	9,200	40,000	72,000	0.310

Remark: * The unit contamination protection is provided by side shields 2Z.

TRACK ROLLER BEARINGS

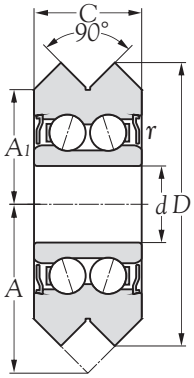
Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	√	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

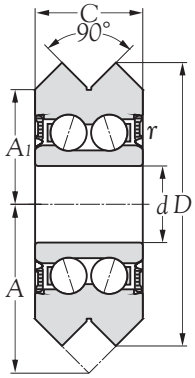
Remark: If you have more inquiry of technical, please inquire
NIKO web-site: Http://www.nipponkodobearings.com

Track roller bearings double row

series RM..2Z; RM..2RS



2Z



2RS

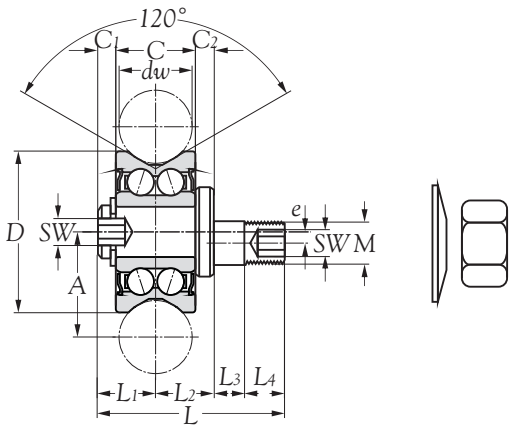
Boundary dimensions d mm	Bearing number		Boundary dimensions D	A	C	A1	rs	Basic load ratings dynamic C	static Co	Limiting speeds grease	oil	Mass kg. (approx.)
			mm					N		rpm		
4.763	RM 1 2Z	RM 1 2RS	19.56	11.86	7.87	7.93	0.3	1,650	1,140	4,150	7,500	0.012
9.525	RM 2 2Z	RM 2 2RS	30.73	18.24	11.10	12.70	0.3	8,260	2,650	6,500	11,700	0.040
11.999	RM 3 2Z	RM 3 2RS	45.72	26.98	15.88	19.05	0.6	5,530	5,200	31,000	55,000	0.136
15.001	RM 4 2Z	RM 4 2RS	59.94	34.93	19.05	25.40	1.0	16,250	9,200	39,500	72,000	0.285

Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	√	Class 0 (JIS)	Alvania S2 -25℃~ +120℃
Brass -	X		

Remark: If you have more inquiry of technical, please inquire NIKO web-site: Http://www.nipponkodobearings.com

TRACK ROLLER BEARINGS DOUBLE ROW
SERIES RV..C; RV..E



Boundary dimensions dw mm	Bearing number concentric	Bearing number eccentric	Boundary dimensions D	C	A	L	L1	L2	L3	L4	C1	C2	e	SW	M	Basic load ratings dynamic C N	Basic load ratings static Co N	Limiting speeds rpm grease	Limiting speeds rpm oil	Mass kg. (approx.)
			mm																	
10	**RV 22 C**	**RV 22 E**	22	11	14.5	26	8.5	8	4	5.5	3	3.0	1.5	3	M 6	2,450	1,620	2,350	4,150	0.028
10	**RV 30 C**	**RV 30 E**	30	14	18.1	33	9.5	9	6	8.0	2	2.5	1.5	4	M 8	4,490	2,700	11,000	19,800	0.069
10	**RV 38 C**	**RV 38 E**	38	17	22.3	42	11.0	11	8	12.0	3	2.5	2.0	5	M 10	7,290	4,550	10,200	17,900	0.145
20	**RV 41 C**	**RV 41 E**	41	20	28.0	47	15.0	13	6	13.0	3	5.0	2.0	6	M 12	8,180	5,100	17,200	31,500	0.190
20	**RV 58 C**	**RV 58 E**	58	25	35.0	59	17.0	19	11	13.0	6	4.0	2.5	6	M 16	16,580	9,200	47,000	86,000	0.460

Remark: * Track rollers with integral studs are supplied with split washer and nut.
* The unit contamination protection is provided by side shields 2Z.

TRACK ROLLER BEARINGS

Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	X	Class 0 (JIS)	Alvania S2 -25℃ ~ +120℃
Brass -	X		

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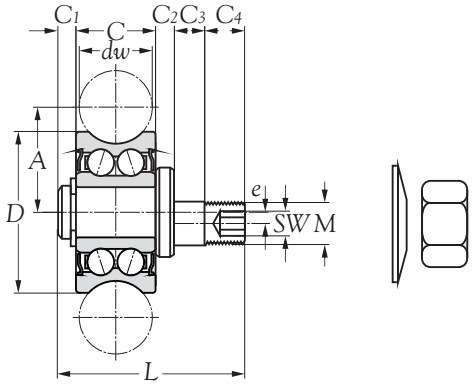
TRACKROLLERBEARINGSDOUBLEROW

SERIES RPC; RPE



Boundary dimensions dw mm	Bearing number concentric	Bearing number eccentric	Boundary dimensions D	C	A	L	C1	C2	C3	C4	e	SW	M	Basic load ratings dynamic C N	Basic load ratings static Co N	Limiting speeds rpm grease	Limiting speeds rpm oil	Mass kg. (approx.)
			mm															
6	RPC 17	RPE 17	17	7.0	10.50	23	1.5	1.5	5	5.5	0.50	2.5	M5	1,250	850	1,250	1,700	0.015
6	RPC 24	RPE 24	24	11.0	14.00	29	3.0	2.0	6	7.0	0.50	4.0	M8	3,500	2,200	1,250	4,350	0.042
10	RPC 35	RPE 35	35	15.9	20.65	44	3.2	2.0	10	13.0	0.75	5.0	M10	8,100	8,100	4,900	9,700	0.120

Remark: * Track rollers with integral studs are supplied with split washer and nut.

TRACK ROLLER BEARINGS

Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	X	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

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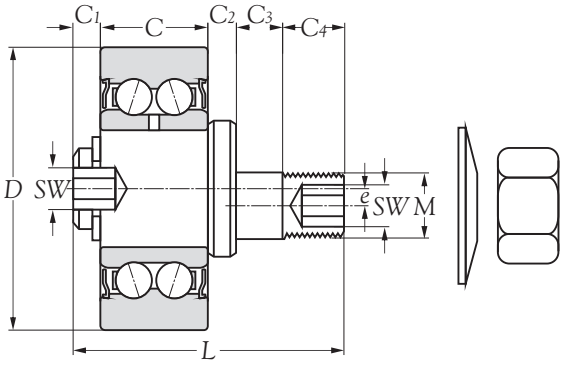
TRACK ROLLER BEARINGS DOUBLE ROW
SERIES RA..A



Bearing number	Boundary dimensions										Basic load ratings dynamic	static	Limiting speeds		Mass
	D	C	*L*	C_1	C_2	C_3	C_4	*e*	*SW*	M	C	C_o	grease	oil	kg.
	mm										N		rpm		(approx.)
RA 35 A	35	15.9	42	2.1	5	6.0	13	1.0	5	M 12	8,100	4,900	4,900	9,700	0.150
RA 52 A	52	22.2	57	3.3	8	9.5	14	1.5	6	M 16	16,000	9,100	11,500	15,800	0.345

Remark: * Track rollers with integral studs are supplied with split washer and nut.
* The unit contamination protection is provided by side shields 2Z.

TRACK ROLLER BEARINGS

Remark:

Cages		Precision	Grease
Steel -	X		
Polymid -	X	Class 0 (JIS)	Alvania S2 -25℃~+120℃
Brass -	X		

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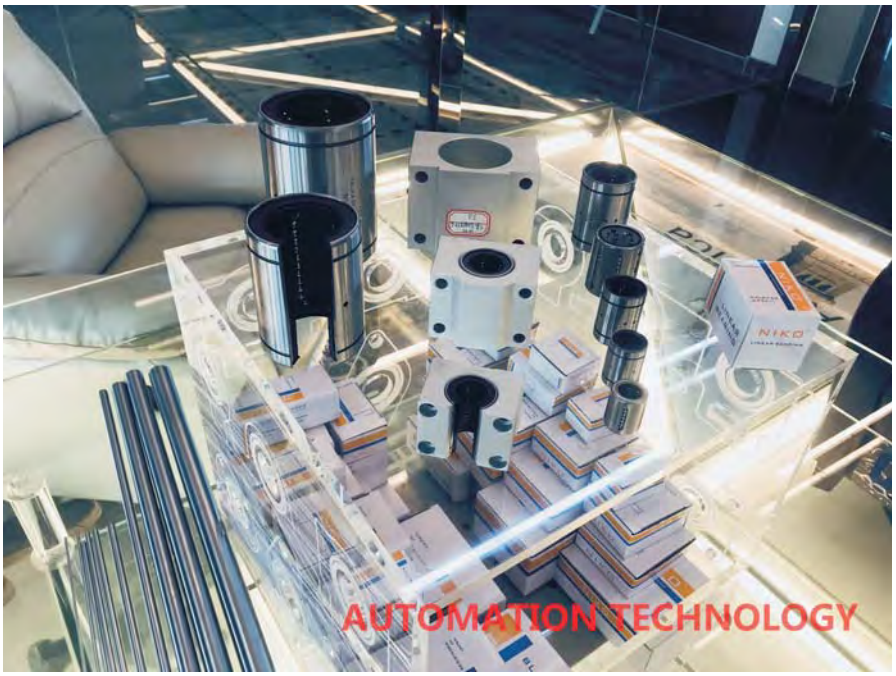

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