



LINEAR BEARING

SAIBO is one of world recognized manufacturers of precision power transmission components. SAIBO group has two divisions, bearing division and linear motion division.

SAIBO Bearing Division produce precision deep groove ball bearing, high speed angular contact ball bearing, thin section bearing and linear bearing etc. Mainly supplies for the manufactures of automobile, household appliances, motors, machine tools, automation equipment and other industries. Our 60% sales are exported to European, North American and Asian markets.

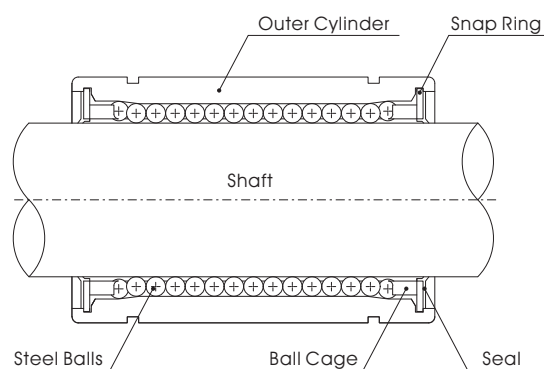
SAIBO has over 33,000 square meters producing facilities totally and 350 employees with annual production capacity of 35 million bearings. SAIBO has all kinds of testing instruments, including metallographic microscope, video measuring instrument, steel ball vibration measuring instrument, roundness instrument, roughness instrument, groove curvature instrument, length measuring instrument, three coordinate measuring instrument, life testing instrument, velocity and acceleration type vibration measuring instrument. All of these provide an effective guarantee for producing high quality products.

SAIBO means aim for greatness, focus on details. We seek to work with you and promise the following:

- The right product from your application
- A quality product you can trust
- Engineering assistance that is proven and world renown

Linear Bearing / Linear Bushing

SAIBO Linear Bearing / Linear bushing is the simplest and most economic elements for linear motion. It consists of an outer cylinder, a ball cage, steel balls and seals etc. Linear bearing can be used in a wide variety of applications such as automation equipment, food and package equipment, semiconductor and electronic equipment, transportation equipment.



1. Features

Compact structure

Linear bearing's motion is very simple. Linear bearing moves on a round linear shaft. This enable its mechanism structure to be very compact.

Accuracy and Rigidity

Raceway, steel ball and linear shaft are all hardened, with proper tolerance fit, linear bearing's motion have the characteristics of high precision and high rigidity.

Low friction and quiet

The raceway surface is ground precisely. The contact surface between balls and raceway is minimize-designed. So friction is very small. Running is quiet.

Standard size and interchangeable

All SAIBO linear bearings are designed with international standard. By strict accuracy control, all linear bearings are interchangeable

Variety of type

To meet different applications, SAIBO produces a full of types including standard type, clearance adjustable type, open type, flange type and double-length type etc. Furthermore imperial size products are available.

2. Basic rated static load and safety factor

When a bearing subject to an excessive load or a strong impact load, the bearing may incur a local permanent deformation of the rolling elements and raceway surface if the elastic limit is exceeded. The nonelastic deformation increases in area and depth as the load increases, and when the load exceeds a certain limit, the smooth running of the bearing is impeded. The basic rated static load refers to the static load capacity by the bearing when the total permanent deformation of 0.0001 times the diameter of the rolling body occurs in the center of the contact surface between the rolling body and the raceway.

The safety factor refers to the ratio of the basic rated static load to the equivalent static load. Higher factor indicate more security. In preliminary selection, if the bearing only subjects to radial load, the equivalent static load can be replaced by radial load. The safety factor is equal to the ratio of the radial basic rated static load to the radial load. The selection of the safety factor can refer to below table

Table 2.1 Safety factor (fs)

Application	Load condition	Min. fs
General Industry machine	None vibration or shock	1.0~1.3
	Vibration or/and shock	2.0~3.0
Machine tool	None vibration or shock	1.0~1.5
	Vibration or/and shock	2.5~7.0

3. Basic dynamic load rating and rated life

The rated life can be calculated according to below formula:

$$L = \left(\frac{C}{P} \right)^3 \times 50$$

L: Rated life (km)

C: Basic static load rating (N)

P: Actual load (N)

Under actual working conditions, various factors will affect the service life of the bearing, which needs to be calculated through the correction coefficient. Please see below formula. Each correction factor can be selected from the charts.

$$L = \left(\frac{f_H \times f_T \times f_C}{f_W} \times \frac{C}{P} \right)^3 \times 50$$

L: Rated life (km)

C: Basic dynamic load rating (N)

P: Actual load (N)

f_H: Hardness factor (Chart 3.1)

f_T: Temperature factor (Chart 3.2)

f_C: Contact factor (Table 3.1)

f_W: Load factor (Table 3.2)

Hardness factor f_H

In order to achieve the best bearing capacity of the linear bearing, the hardness of the matching shaft should reach 58-62HRC. If the hardness of the shaft decreases, the load capacity of the system also decreases. Please refer to below chart:

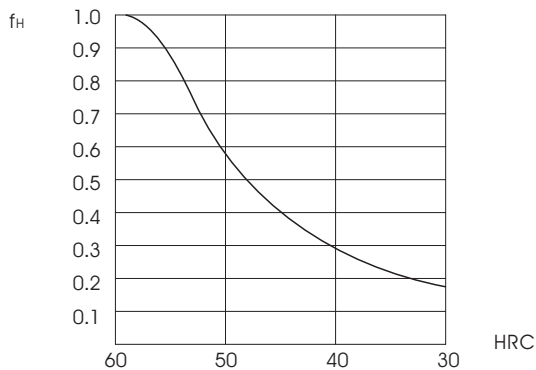


Chart 3.1

Temperature factor f_t

The normal working temperature of the linear bearing is in the range of -20°C to 80°C. When it exceeds 80°C, the seal and cage must be replaced with high temperature-resistant types. If the working temperature is higher than 100°C, it is necessary to consider the influence of temperature on the performance of the product material. Please refer to below chart.

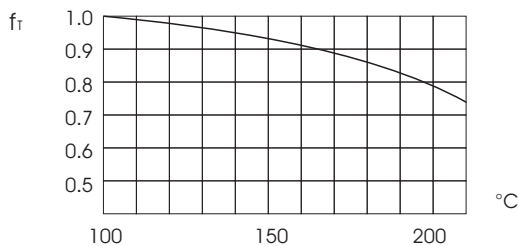


Chart 3.2

Contact factor f_c

When multiple linear bearings are used on one shaft, it is difficult to achieve consistent load distribution for each linear bearing due to assembly accuracy. The life of the most loaded linear bearing will be reduced, and therefore the life of the entire system will also be reduced. The contact coefficients in the table below can be used for calculation. When installing multiple bearings on one shaft, it is better to enlarge the difference between each bearing.

Number of linear bushings on a shaft	
2	0.81
3	0.72
4	0.66
5	0.61
Over 6	0.6
In normal use	1.0

Table 3.1

Load factor f_w

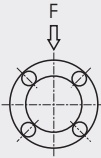
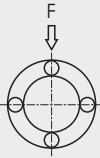
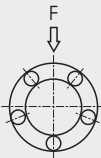
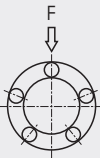

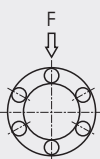
Shock, vibration, and high-frequency start-stop will also affect the service life. Please refer to below table.

Working condition		f_w
Loading	Speed	
None vibration or shock	15m/min under	1.0~1.5
Slight vibration or/and shock	60m/min under	1.5~2.0
Strong vibration or/and shock	60m/min over	2.0~4.0

Table 3.2

4. Load capacity and steel ball distribution

If linear bearing inside steel balls are symmetrically distributed relative to the load, the loading capacity of the linear bearing will be improved, and the service life will also be increased. Please refer to below

Number of Ball rows	Position	
	Max. Load	Min. Load
4		
	$F=1.41 \times C$	$F=C$
5		
	$F=1.46 \times C$	$F=C$
6		
	$F=1.26 \times C$	$F=C$

C: Basic Dynamic rating

Chart 4.1

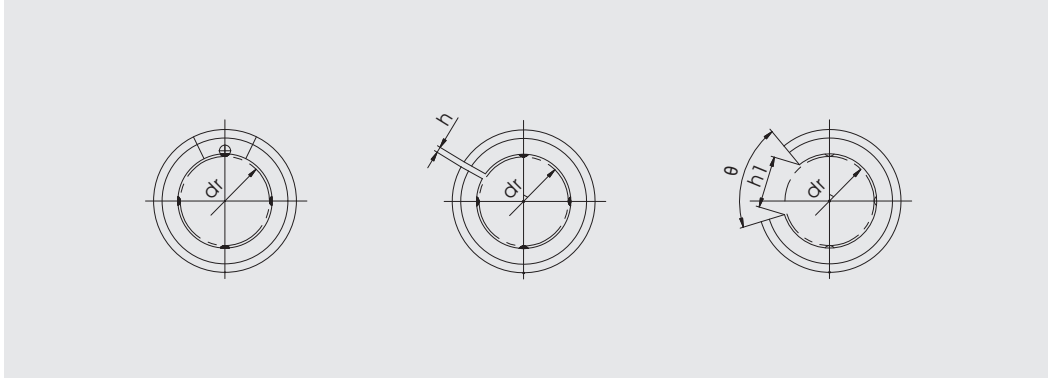
5. Lubrication

Linear bearings are treated with anti-rust oil before packing. Lubricants need to be filled in the linear bearing when application. Before fill grease, it needs to remove anti-rust oil with kerosene or another organic solvent, then dry the linear bearing. It is better to fill the grease directly onto the steel balls inside.

LM Linear Bearing



Model No.	Number of Ball Rows	Model No.	Number of Ball Rows	Model No.	Number of Ball Rows	Main Dimensions					
						Nominal Shaft Dia		Outer Diameter		Length	
						dr	Tolerance	D	Tolerance	L	Tolerance
LM3	4					3	0 -0.008	7	0 -0.009	10	0 -0.12
LM4	4				4	8		12			
LM5	4				5	10		15			
LM6	4	LM6AJ	4			6	0 -0.009	12	0 -0.011	19	0 -0.20
LM8S	4	LM8SAJ	4			8		15		17	
LM8	4	LM8AJ	4			8		15		24	
LM10	4	LM10AJ	4	LM10OP	3	10	0 -0.013	19	0 -0.013	29	0 -0.20
LM12	4	LM12AJ	4	LM12OP	3	12		21		30	
LM13	4	LM13AJ	4	LM13OP	3	13		23		32	
LM16	5	LM16AJ	5	LM16OP	4	16		28		37	
LM20	5	LM20AJ	5	LM20OP	4	20	0 -0.010	32	0 -0.016	42	0 -0.30
LM25	6	LM25AJ	6	LM25OP	5	25		40		59	
LM30	6	LM30AJ	6	LM30OP	5	30	0 -0.012	45	0 -0.019	64	0 -0.30
LM35	6	LM35AJ	6	LM35OP	5	35		52		70	
LM40	6	LM40AJ	6	LM40OP	5	40		60		80	
LM50	6	LM50AJ	6	LM50OP	5	50	0 -0.015	80	0 -0.022	100	0 -0.30
LM60	6	LM60AJ	6	LM60OP	5	60		90		110	

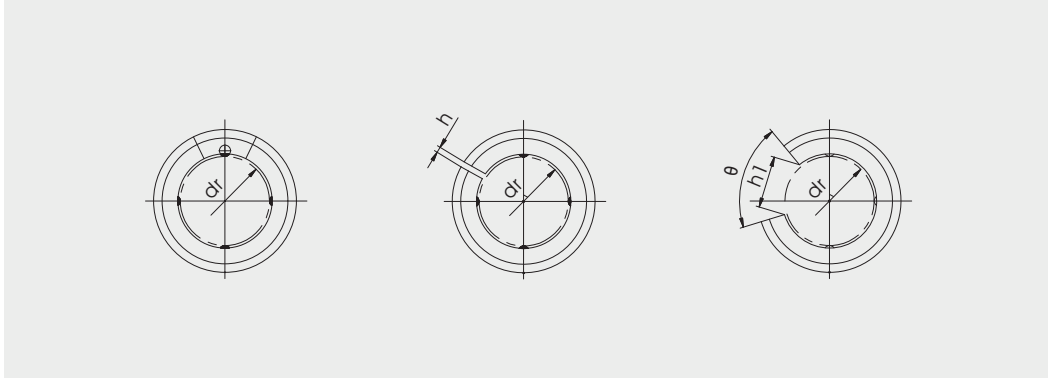


Main Dimensions							Eccentricity (MAX.)	Basic Load Rating				
Snap Ring Groove			W	h	h1	θ		Dynamic C (kgf)	Static Co (kgf)	Weight (g)		
B	Tolerance	D1										
	0 -0.20						0.008	7	11			
								9	13	3		
10.2		9.6	1.1					17	21	4		
13.5		11.5	1.1	1			0.012	21	27	6	6	
11.5		14.3	1.1	1				18	23	9		
17.5		14.3	1.1	1				27	41	14	14	
22		18	1.3	1	6.8	80°		38	56	28	27	
23		20	1.3	1.5	8	80°		42	61	32	31	24
23		22	1.3	1.5	9	80°		52	79	38	39	32
26.5		27	1.6	1.5	11	80°		79	120	74	73	58
30.5	30.5	1.6	1.5	11	60°	0.015	88	140	80	80	72	
41	38	1.85	2	12	50°		100	160	206	205	177	
44.5	43	1.85	2.5	15	50°		160	220	240	230	196	
49.5	0 -0.30	49	2.1	2.5	17	50°	0.020	170	320	370	366	320
60.5		57	2.1	3	20	50°		220	410	589	549	464
74		76.5	2.6	3	25	50°	0.025	390	810	1480	1440	1180
85		86.5	3.15	3	30	50°		480	1020	1750	1740	1700

KB Linear Bearing

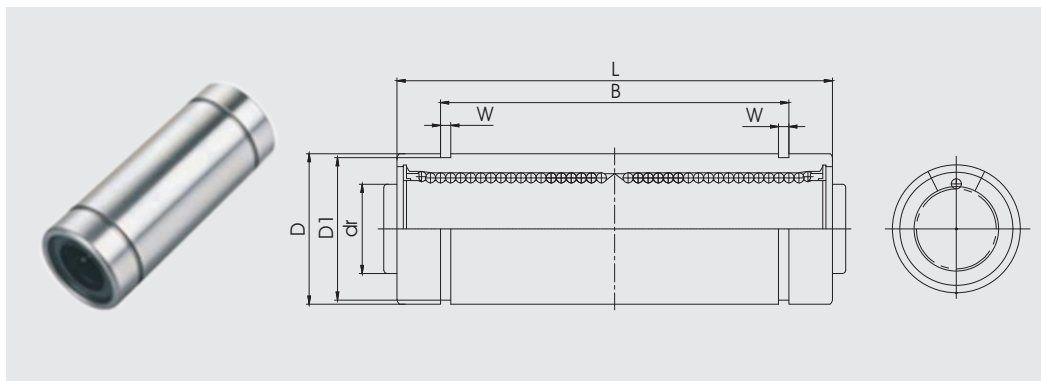


Model No.	Number of Ball Rows	Model No.	Number of Ball Rows	Model No.	Number of Ball Rows	Main Dimensions						
						Nominal Shaft Dia		Outer Diameter		Length		
						dr	Tolerance	D	Tolerance	L	Tolerance	
KB3	4					3	+0.008 0	7	0 -0.008	10	0	
KB4	4				4	8		12		-0.12		
KB5	4	KB5AJ	4			5		12		22	0 -0.20	
KB8	4	KB8AJ	4			8		16	25			
KB10	4	KB10AJ	4	KB10OP	3	10		19	29			
KB12	4	KB12AJ	4	KB12OP	3	12		22	32			
KB16	5	KB16AJ	5	KB16OP	4	16		26	36			
KB20	5	KB20AJ	5	KB20OP	4	20		+0.009 -0.001	32	0	45	0 -0.30
KB25	6	KB25AJ	6	KB25OP	5	25		40	-0.011	58		
KB30	6	KB30AJ	6	KB30OP	5	30		-0.001	47	68		
KB40	6	KB40AJ	6	KB40OP	5	40	+0.013 -0.002	62	0	80		
KB50	6	KB50AJ	6	KB50OP	5	50		75	-0.013	100		
KB60	6	KB60AJ	6	KB60OP	5	60	90	0 -0.015	125	0 -0.40		



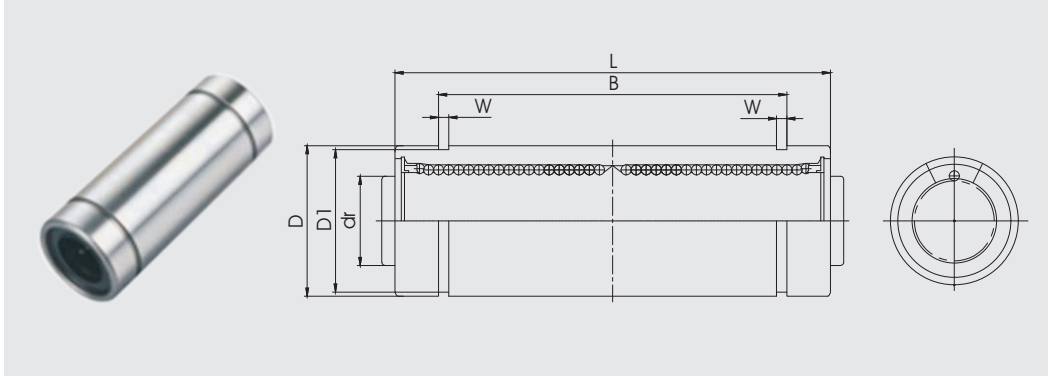
Main Dimensions							Eccentricity (MAX.)	Basic Load Rating				
Snap Ring Groove			W	h	h1	θ		Dynamic C (kgf)	Static Co (kgf)	Weight (g)		
B	Tolerance	D1										
							0.010	7	11			
								9	13			
14.5	0 -0.20	11.5	1.1	1			0.012	21	27	14		
16.5		15.2	1.1	1				27	41	20	20	
22		18	1.3	1.5	6.8	80°		38	47	30	29	22.5
22.9		21	1.3	1.5	7.5	78°		52	79	40	39	35
24.9		24.9	1.3	1.5	10	78°		59	91	50	49	38
31.5		30.3	1.6	2	10	60°		88	140	90	88	72
44.1	0 -0.30	37.5	1.85	2	12.5	60°	0.015	100	160	207	205	173
52.1		44.5	1.85	2	12.5	50°		160	280	320	319	267
60.6		59	2.15	3	16.8	50°	0.017	220	400	674	650	558
77.6		72	2.65	3	21	50°		390	810	1170	1160	990
101.7	0 -0.40	86.5	3.15	3	27.2	54°	0.020	480	1020	1950	1910	1700

LM Long Type Linear Bearing



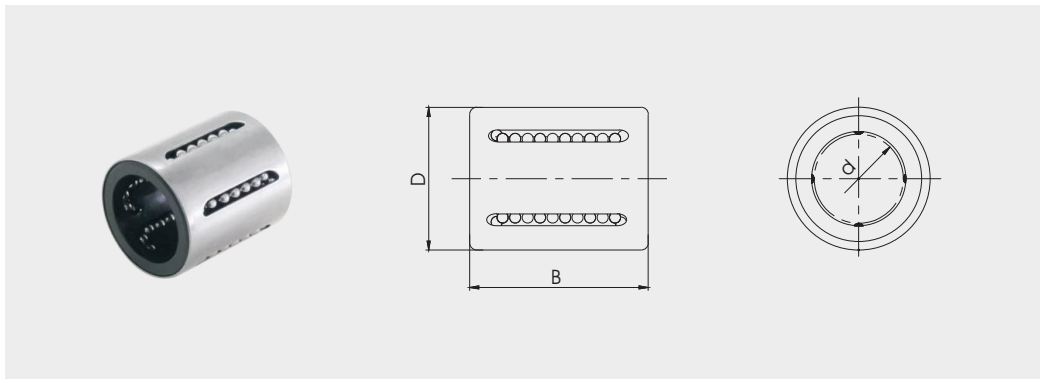
Model No.	Number of Ball Rows	Main Dimensions										Eccentricity (MAX.)	Basic Load Rating		Weight (kg)			
		Nominal Shaft Dia		Outer Diameter		Length		Snap Ring Groove		W	Dynamic C (kgf)		Static Co (kgf)					
		dr	Tolerance	D	Tolerance	L	Tolerance	B	Tolerance					D1				
LM6L	4	6	0	12	0	35	0	27	0	11.5	1.1	0.015	33	54	14			
LM8L	4	8		15	-0.013	45		35		14.3	1.1		44	80	26			
LM10L	4	10		19	0	55		44		18	1.3		60	112	55			
LM12L	4	12		21		0		57		-0.30	46		-0.30	20	1.3	83	160	58
LM13L	5	13		23		-0.016		61		46	22		1.3	83	160	77		
LM16L	5	16		28	0	70		53		27	1.6		126	240	147			
LM20L	6	20	32	0		80	61	30.5	1.6	143	280	171						
LM25L	6	25	40	0		112	82	38	1.85	159	320	400						
LM30L	6	30	45	-0.019		123	89	43	1.85	254	560	472						
LM35L	6	35	52	0		135	99	49	2.1	270	640	708						
LM40L	6	40	60			0	151/154	0	57	2.1	350	820	1090					
LM50L	6	50	80		-0.022	192	148	76.5	2.6	620	1622	2800						
LM60L	6	60	90		0	209	170	86.5	3.15	770	2040	3800						
			0		-0.020													

KB Long Type Linear Bearing



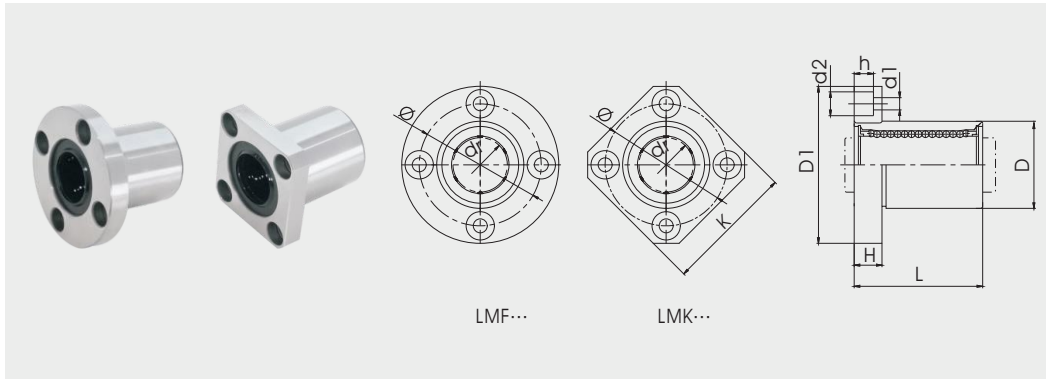
Model No.	Number of Ball Rows	Main Dimensions										Eccen- tricity (MAX.)	Basic Load Rating		Weight (kg)
		Nominal Shaft Dia		Outer Diameter		Length		Snap Ring Groove		W	Dynamic C (kgf)		Static Co (kgf)		
		dr	Tolerance	D	Tolerance	L	Tolerance	B	Tolerance					D1	
KB8L	4	8		16	0 -0.009	46		33		15.2	1.1	0.015	43	82	36
Kb10L	4	10	+0.009 -0.001	19	0 -0.011	55	0 -0.30	44	0 -0.30	18	1.3		60	112	59
KB12L	4	12		22		61		45.8		21	1.3		83	160	78
KB16L	5	16	+0.011	26	68	49.8		24.9		1.3	94	182	97		
KB20L	5	20	-0.001	32	0 -0.013	80	0 -0.40	61	0 -0.40	30.5	1.6	0.017	140	280	169*
KB25L	6	25	+0.013	40		112		82		38	1.85		160	320	414
KB30L	6	30	-0.002	47	123	104.2		44.5		1.85		255	560	586	
KB40L	6	40	+0.016 -0.004	62	0	151	0 -0.40	121.2	0 -0.40	59	2.15	0.020	350	820	1310
KB50L	6	50		75	-0.015	192		155.2		72	2.65		620	1622	2500
KB60L	6	60		90	0 -0.020	209		170		86.5	3.15	0.025	770	2040	3700

KH Linear Bearing



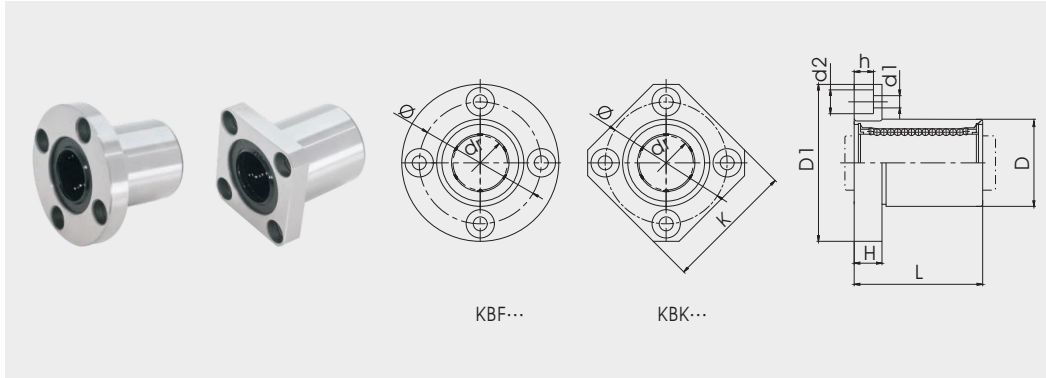
Model No.	Number of Ball Rows	Main Dimensions			Basic Load Rating		Weight (g)
		d	D	B	Dynamic C (kgf)	Static Co (kgf)	
KH0824	4	8	15	24	44	29	11.3
KH1026	4	10	17	26	51	38	14.4
KH1228	5	12	19	28	63	52	18.1
KH1428	5	14	21	28	63	52	20.6
KH1630	5	16	24	30	82	63	27.2
KH2030	6	20	28	30	97	81	32.7
KH2540	6	25	35	40	203	170	66
KH3050	7	30	40	50	286	276	95
KH4060	8	40	52	60	449	454	180
KH5070	9	50	62	70	561	643	250

LMF/LMK Flange Type Linear Bearing



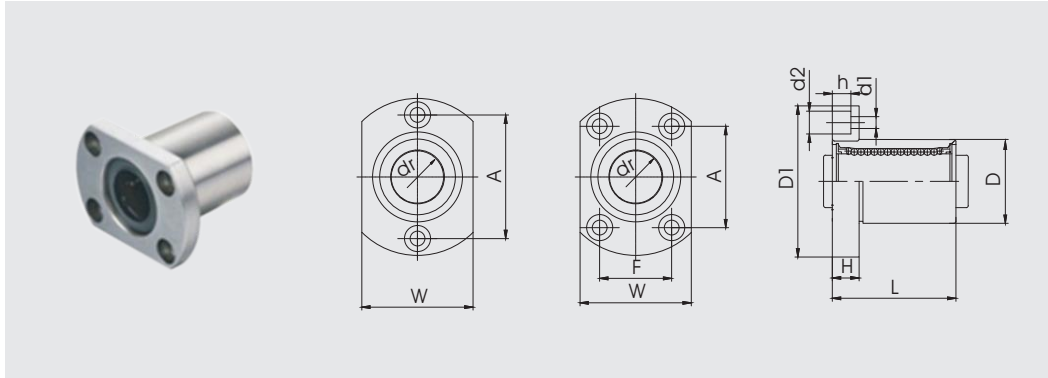
Model No.	Model No.	Number of Ball Rows	Main Dimensions											Squar-Eness	Eccen-Tricity (MAX.)	Basic Load Rating		Weight (kg)			
			Nominal Shaft Dia		Outer Diameter		Length		Flange				Mounting Holes			Dynamic C (kgf)	Static Co (kgf)				
			d	tolerance	D	tolerance	L	tolerance	D1	K	H	φ	d1					d2	h		
LMF6	LMK6	4	6	0 -0.009	12	0	19	0 -0.20	28	22	5	20	3.5	6	3.1	0.012	0.012	21	27	0.022	0.017
LMF8S	LMK8S	4	8		15		17		32	25	5	24	3.5	6	3.1			18	22		
LMF8	LMK8	4	8		15	24	32		25	5	24	3.5	6	3.1	28			40	0.035	0.027	
LMF10	LMK10	4	10		19	29	40		30	6	29	4.5	7.5	4.1	38			56	0.066	0.047	
LMF12	LMK12	4	12		21	30	42		32	6	32	4.5	7.5	4.1	52			80	0.070	0.053	
LMF13	LMK13	4	13		23	32	43		34	6	33	4.5	7.5	4.1	52			80	0.079	0.064	
LMF16	LMK16	5	16		28	37	48		37	6	38	4.5	7.5	4.1	79			120	0.122	0.102	
LMF20	LMK20	5	20	32	42	54	42	8	43	5.5	9	5.1	90	140	0.163	0.12					
LMF25	LMK25	6	25	40	59	62	50	8	51	5.5	9	5.1	100	160	0.311	0.272					
LMF30	LMK30	6	30	45	64	74	58	10	60	6.6	11	6.1	160	280	0.42	0.34					
LMF35	LMK35	6	35	52	70	82	64	10	67	6.6	11	6.1	170	320	0.60	0.496					
LMF40	LMK40	6	40	60	80	96	75	13	78	9	14	8.1	220	410	0.749	0.773					
LMF50	LMK50	6	50	80	100	116	92	13	98	9	14	8.1	390	810	1.96	1.72					
LMF60	LMK60	6	60	90	100	134	106	18	112	11	17.5	10.8	480	1020	2.70	2.25					

KBF/KBK Flange Type Linear Bearing



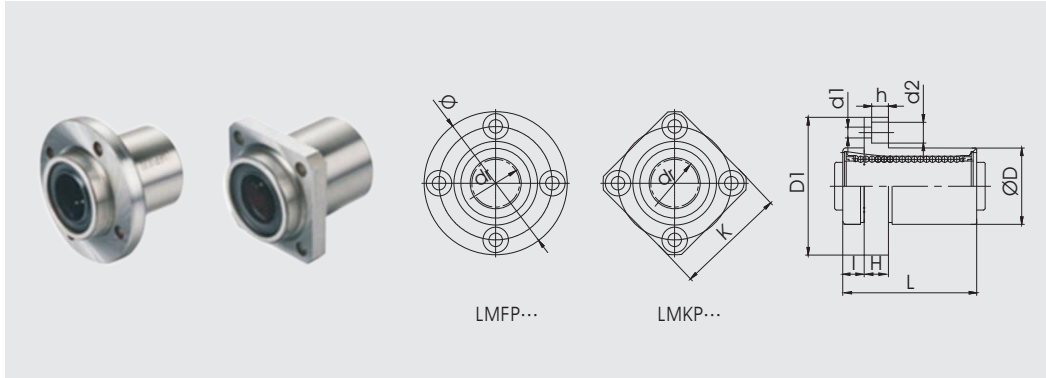
Model No.	Model No.	Number of Ball Rows	Main Dimensions												Squariness	Eccentricity (MAX.)	Basic Load Rating		Weight (kg)		
			Nominal Shaft Dia		Outer Diameter		Length		Flange				Mounting Holes				Dynamic C (kgf)	Static Co (kgf)			
			d _r	Tolerance	D	Tolerance	L	Tolerance	D1	K	H	φ	d1	d2							h
KBF5	KBK5	4	5	+0.008	12	0	22	0	28	22	5	20	3.5	6	3.1	0.012	0.012	21	27		
KBF8	KBK8	4	8		16	-0.008	25		32	25	5	24	3.5	6	3.1			27	41	0.039	0.032
KBF10	KBK10	4	10		19	0	29		40	30	6	29	4.5	7.5	4.1			38	56	0.055	0.048
KBF12	KBK12	4	12		22	-0.009	32		42	32	6	32	4.5	7.5	4.1			52	80	0.079	0.062
KBF16	KBK16	5	16	+0.009	26	0	36	46	35	6	36	4.5	7.5	4.1	0.015	0.015	59	91	0.106	0.074	
KBF20	KBK20	5	20	-0.001	32		45	54	42	8	43	5.5	9	5.1			88	140	0.171	0.137	
KBF25	KBK25	6	25	+0.011	40	0	58	62	50	8	51	5.5	9	5.1	0.017	0.017	100	160	0.308	0.265	
KBF30	KBK30	6	30	-0.001	47	68	78	60	10	62	6.6	11	6.1	160			280	0.594	0.43		
KBF40	KBK40	6	40	+0.013 -0.002	62	0	80	98	75	13	80	9	14	8.1	0.020	0.020	220	410	1.098	0.88	
KBF50	KBK50	6	50		75	-0.013	100	112	88	13	94	9	14	8.1			390	810	1.67	1.46	
KBF60	KBK60	6	60		90	0 -0.015	125	0 -0.40	134	106	18	112	11	17.5			10.8	480	1000	300	2.60

LMT Flange Type Linear Bearing



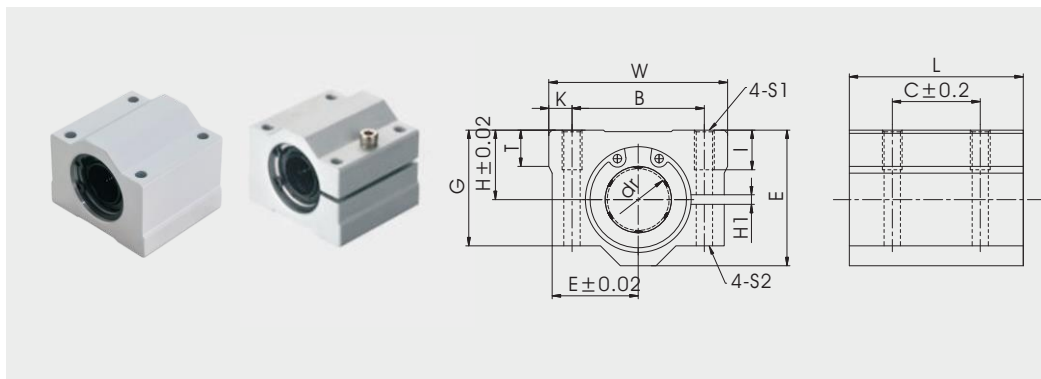
Model No.	Number of Ball Rows	Main Dimensions													Squar - Eness	Eccen - Tircity (MAX.)	Basic Load Rating		Weight (kg)	
		Nominal Shaft Dia		Outer Diameter		Length		Flange					Mounting Hloes				Dynamic C (kgf)	Static Co (kgf)		
		dr	Tolerance	D	Tolerance	L	Tolerance	D1	W	H	A	F	d1	d2						h
LMT6	4	6	0 -0.009	12	0	19	0 -0.20	28	18	5	20		3.5	6	3.1	0.012	0.012	21	27	0.019
LMT8	4	8		15	-0.011	24		32	21	5	24		3.5	6	3.1			27	41	0.029
LMT10	4	10		19		29		40	25	6	29		4.5	7.5	4.1			38	56	0.054
LMT12	4	12		21	0	30		42	27	6	32		4.5	7.5	4.1			42	61	0.058
LMT13	4	13		23	-0.013	32		43	29	6	33		4.5	7.5	4.1			52	79	0.072
LMT16	5	16		28		37		48	34	6	31	22	4.5	7.5	4.1			79	120	0.109
LMT20	5	20	32		42	54	38	8	36	24	5.5	9	5.1	0.015	0.015	88	140	0.135		
LMT25	6	25	40	0 -0.010	59	62	46	8	40	32	5.5	9	5.1			100	160	0.28		
LMT30	6	30	45		64	74	51	10	49	35	6.6	11	6.1			160	280	0.35		
LMT35	6	35	52	0	70	82	60	10	55	38	6.6	11	6.1	0.020	0.020	170	320	0.524		
LMT40	6	40	60	-0.012	80	96	70	13	64	45	9	14	6.1			220	410	0.836		

LMFP/LMKP Flange Type Linear Bearing



Model No.	Model No.	Number of Ball Rows	Main Dimensions												Squar - Eness	Eccen - Tricity (MAX.)	Basic Load Rating		Weight (kg)			
			Nominal Shaft Dia		Outer Diameter		Length		l	Flange				Mounting Holes			Dynamic C (kgf)	Static Co (kgf)				
			dr	Tolerance	D	Tolerance	L	Tolerance		D1	K	H	φ	d1						d2	h	
LMFP6	LMKP6	4	6		12	0	19		5	28	22	5	20	3.5	6	3.1	0.012	0.012	21	27	0.022	0.017
LMFP8	LMKP8	4	8		15	-0.013	24		5	32	25	5	24	3.5	6	3.1			28	40	0.035	0.027
LMFP10	LMKP10	4	10	0	19		29	0	6	40	30	6	29	4.5	7.5	3.1			38	56	0.065	0.047
LMFP12	LMKP12	4	12	-0.009	21	0	30	-0.20	6	42	32	6	32	4.5	7.5	4.1			52	80	0.072	0.053
LMFP13	LMKP13	4	13		23	-0.016	32		6	43	34	6	33	4.5	7.5	4.1			52	80	0.079	0.064
LMFP16	LMKP16	5	16		28		37		6	48	37	6	38	4.5	7.5	4.1			79	120	0.123	0.102
LMFP20	LMKP20	5	20		32		42		8	54	42	8	43	5.5	9	4.1	90	140	0.161	0.129		
LMFP25	LMKP25	6	25	0	40	0	59		8	62	50	8	51	5.5	9	5.1	0.015	0.015	100	160	0.309	0.272
LMFP30	LMKP30	6	30	-0.010	45	-0.019	64		10	74	58	10	60	6.6	11	5.1			160	280	0.42	0.34
LMFP35	LMKP35	6	35		52		70	0	10	82	64	10	67	6.6	11	6.1			170	320	0.60	0.496
LMFP40	LMKP40	6	40	0	60	0	80	-0.30	13	96	75	13	78	9	14	6.1	0.020	0.020	220	410	0.749	0.773
LMFP50	LMKP50	6	50	-0.012	80	-0.022	100		13	116	92	13	98	9	14	8.1			390	810	1.96	1.72
LMFP60	LMKP60	6	60	0	90	0	110		18	134	106	18	112	11	17.5	10.8	0.025	0.025	480	1020	280	2.70

SMA Series Bearing Housing

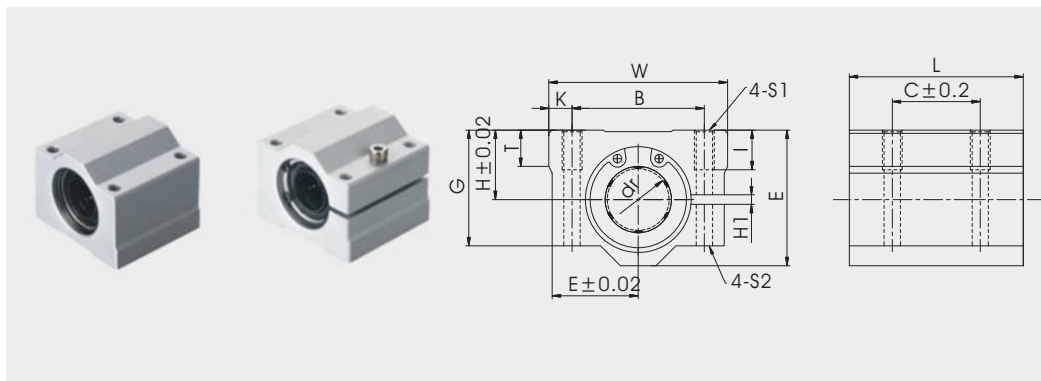


Model No.		Shaft Diameter	Main Dimensions							Mounting Dimensions						Weight (kg)
			H	E	W	L	F	G	H1	B	C	K	S1	S2	I	
SMA8	SMA8AJ	8	11	17	34	30	22	18	1.5	24	18	5	M4	3.4	8	0.052
SMA10	SMA10AJ	10	13	20	40	35	26	21	1.5	28	21	6	M5	4.3	12	0.092
SMA12	SMA12AJ	12	15	21	42	36	28	24	1.5	30.5	26	5.75	M5	4.3	12	0.102
SMA13	SMA13AJ	13	15	22	44	39	30	24.5	1.5	33	26	5.5	M5	4.3	12	0.120
SMA16	SMA16AJ	16	19	25	50	44	38.5	32.5	2	36	34	7	M5	4.3	12	0.200
SMA20	SMA20AJ	20	21	27	54	50	41	35	2	40	40	7	M6	5.2	12	0.255
SMA25	SMA25AJ	25	26	38	76	67	51.5	42	2	54	50	11	M8	7	18	0.600
SMA30	SMA30AJ	30	30	39	78	72	59.5	49	2	58	58	10	M8	7	18	0.735
SMA35	SMA35AJ	35	34	45	90	80	68	54	2	70	60	10	M8	7	18	1.100
SMA40	SMA40AJ	40	40	51	102	90	78	62	2	80	60	11	M10	8.7	25	1.590
SMA50	SMA50AJ	50	52	61	122	110	102	80	2	100	80	11	M10	8.7	25	3.340
SMA60	SMA60AJ	60	58	66	132	122	114	94	2	108	90	12	M12	10.7	25	4.72

Notes: SMA use the LM series bearing

SMA...AJ use the LM...AJ series bearing

KBA Series Bearing Housing

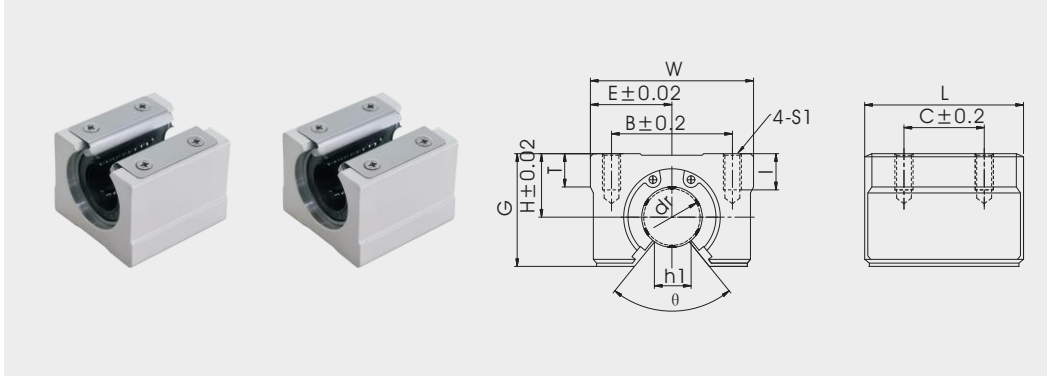


Model No.		Shaft Diameter	Main Dimensions							Mounting Dimensions					Weight (kg)	
			H	E	W	L	F	G	H1	B	C	K	S1	S2		I
KBA8	KBA8AJ	8	11	17	34	30	22	18	1.5	6	18	5	M4	3.4	8	0.052
KBA10	KBA10AJ	10	13	20	40	35	26	21	1.5	8	21	6	M5	4.3	12	0.092
KBA12	KBA12AJ	12	15	22	44	39	30	24.5	1.5	8	26	5.5	M5	4.3	12	0.120
KBA16	KBA16AJ	16	19	25	50	44	38.5	32.5	2	9	34	7	M5	4.3	12	0.200
KBA20	KBA20AJ	20	21	27	54	53	41	35	2	11	40	7	M6	5.2	12	0.270
KBA25	KBA25AJ	25	26	38	76	67	51.5	42	2	12	50	11	M8	7	18	0.600
KBA30	KBA30AJ	30	30	39	78	76	59.5	49	2	15	58	10	M8	7	18	0.776
KBA40	KBA40AJ	40	40	51	102	90	78	62	2	20	60	11	M10	8.7	25	1.590
KBA50	KBA50AJ	50	52	61	122	100	102	80	2	25	80	11	M10	8.7	25	3.340
KBA60	KBA60AJ	60	58	66	132	137	114	94	2	30	90	12	M12	10.7	25	4.800

Notes: KBA use the KB series bearing

KBA...AJ use the KB...AJ series bearing

SME/KBE Series Bearing Housing

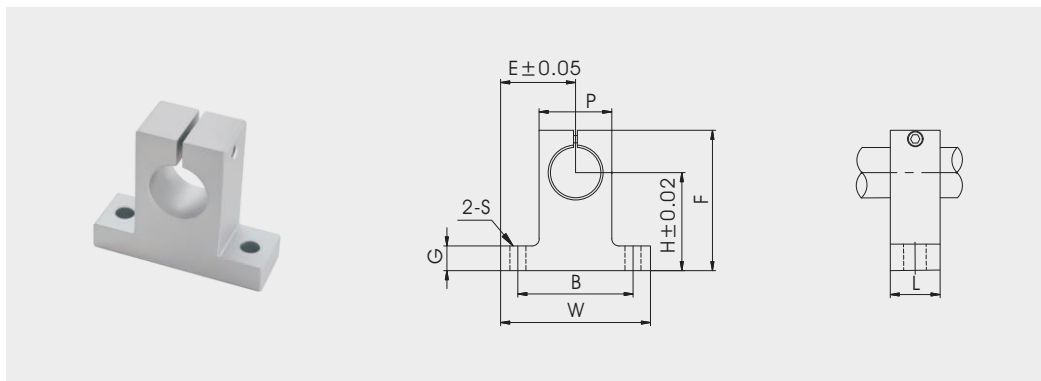


Model No.		Shaft Diameter	Main Dimensions								Mounting Dimensions				Dynamic C (kgf)	Static Co (kgf)	Weight (kg)	
			H	E	W	L	F	T	h1	θ		B	C	S				I
										SME	KBE							
SME10	KBE10	10	15	18	36	32	24	7	6	80°	80°	25	20	M5	10	38	56	0.065
SME12	KBE12	12	17	20	40	39	27.6	8	8.5	80°	80°	28	26	M5	10	42(52)	61(79)	0.100
SME13		13	17	20	40	39	27.6	8	8.5	80°		28	26	M5	10	52	80	0.100
SME16	KBE16	16	20	22.5	45	45	33	9	10	80°	80°	32	30	M5	12	59	91	0.150
SME20	KBE20	20	23	24	48	50	39	11	10	60°	60°	35	35	M6	12	88	140	0.200
SME25	KBE25	25	27	30	60	65	47	14	11.5	50°	60°	40	40	M6	12	100	160	0.450
SME30	KBE30	30	33	35	70	70	56	15	14	50°	60°	50	50	M8	18	160	280	0.630
SME35		35	37	40	80	80	63	18	16	50°		55	55	M8	18	170	320	0.920
SME40	KBE40	40	42	45	90	90	72	20	19	50°	60°	65	65	M10	20	220	410	1.330
SME50	KBE50	50	53	60	120	110	92	25	23	50°	60°	94	80	M10	20	390	810	3.000

Notes: SME use the LM...OP series bearing

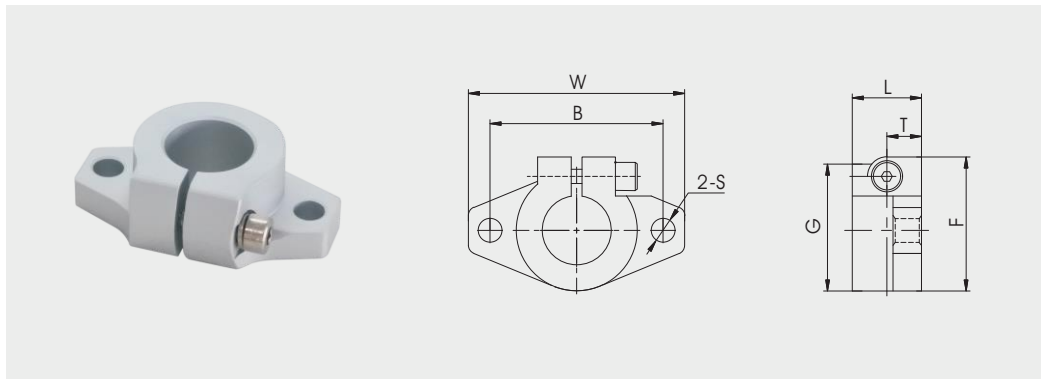
KBE...AJ use the KB...OP series bearing

SK Shaft Support



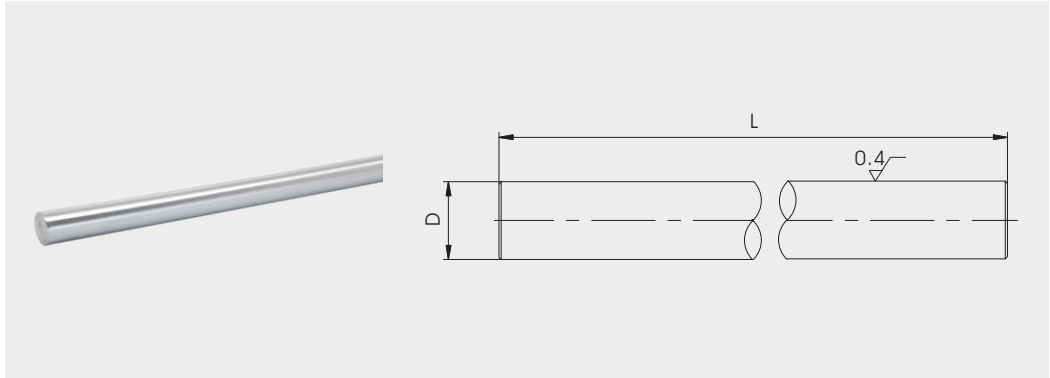
Model No.	Shaft Diameter	Main Dimensions									Designation of Clamping Bolt	Designation of Mounting Bolt	Weight (kg)
		H	E	W	L	F	G	P	B	S			
SK3	3	20	21	42	14	33	6	18	32	5.5	M4	M5	0.024
SK4	4	20	21	42	14	33	6	18	32	5.5	M4	M5	0.024
SK5	5	20	21	42	14	33	6	18	32	5.5	M4	M5	0.024
SK6	6	20	21	42	14	33	6	18	32	5.5	M4	M5	0.024
SK8	8	20	21	42	14	33	6	18	32	5.5	M4	M5	0.024
SK10	10	20	21	42	14	33	6	18	32	5.5	M4	M5	0.024
SK12	12	23	21	42	14	37.5	6	20	32	5.5	M4	M5	0.030
SK13	13	23	21	42	14	37.5	6	20	32	5.5	M4	M5	0.030
SK16	16	27	24	48	16	44	8	25	38	5.5	M4	M5	0.040
SK20	20	31	30	60	20	51	10	30	45	6.6	M5	M6	0.070
SK25	25	35	35	70	24	60	12	38	56	6.6	M6	M6	0.130
SK30	30	42	42	84	28	70	12	44	64	9	M6	M8	0.180
SK35	35	50	49	98	32	82	15	50	74	11	M8	M10	0.270
SK40	40	60	57	114	36	96	15	60	92	11	M8	M10	0.420
SK50	50	70	63	126	40	120	18	74	100	14	M10	M12	0.750

SHF Shaft Support



Model No.	Shaft Diameter	Main Dimensions							Designation of Clamping Bolt	Designation of Mounting Bolt	Weight (kg)
		W	L	T	F	G	B	S			
SHF3	3	43	10	5	24	20	32	5.5	M4	M5	0.013
SHF4	4	43	10	5	24	20	32	5.5	M4	M5	0.013
SHF5	5	43	10	5	24	20	32	5.5	M4	M5	0.013
SHF6	6	43	10	5	24	20	32	5.5	M4	M5	0.013
SHF8	8	43	10	5	24	20	32	5.5	M4	M5	0.013
SHF10	10	43	10	5	24	20	32	5.5	M4	M5	0.013
SHF12	12	47	13	7	28	25	36	5.5	M4	M5	0.020
SHF13	13	47	13	7	28	25	36	5.5	M4	M5	0.020
SHF16	16	50	16	8	31	28	40	5.5	M4	M5	0.027
SHF20	20	60	20	8	37	34	48	7	M5	M6	0.040
SHF25	25	70	25	10	42	40	56	7	M6	M6	0.060
SHF30	30	80	30	12	50	46	64	9	M6	M8	0.110
SHF35	35	92	35	14	58	50	72	12	M8	M10	0.380
SHF40	40	102	40	16	67	56	80	12	M8	M10	0.510
SHF50	50	122	50	19	83	70	96	14	M10	M12	0.890

S/SI Shaft



Metric Size

Model No.	Outer Diameter D	Dimeter Tolerance		Effective Depth of Hardend Layer	Weight (kg/m)
		g6	h6		
S6	6	-0.004 -0.012	0 -0.008	0.4~1.0	0.22
S8	8	-0.005 -0.014	0 -0.009		0.40
S10	10	-0.005 -0.014	0 -0.009	0.6~1.5	0.62
S12	12	-0.006 -0.017	0 -0.011		0.89
S13	13				1.04
S16	16	-0.007 -0.020	0 -0.013	0.8~2.0	1.58
S20	20				2.48
S25	25			3.85	
S30	30	-0.009 -0.025	0 -0.016	0.8~3.0	5.55
S35	35				7.55
S40	40				9.87
S50	50				15.4

Imperial Size

Model No.	Outer Diameter D	Dimeter Tolerance		Depth of Effective Hardend Layer	Weight (kg/m)	
		g6	h6			
SI-04	6.35	-0.004 -0.012	-0.013 -0.026	0.4~1.0	0.25	
SI-06	9.525	-0.005 -0.014		0.6~1.5	0.56	
SI-08	12.7	-0.006 -0.017		0.8~2.0	1.0	
SI-10	15.875				1.55	
SI-12	19.05	-0.007 -0.020		0.8~3.0	2.24	
SI-16	25.4				4.0	
SI-20	31.75				6.21	
SI-24	38.1	-0.009		-0.015 -0.028	0.8~3.0	8.95
SI-32	50.8	-0.025		-0.015 -0.033		15.9

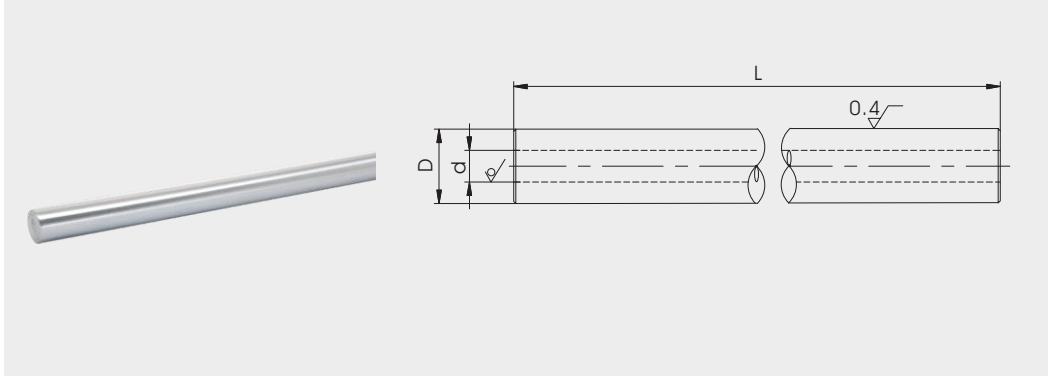
Notes: S45C, rigidity: more than HRC58

GCr15(SUJ2), rigidity: more than HRC60

9Cr18(SUS440), rigidity: more than HRC52

The surface have hard chromic plating and no hard chromic plating

SP Hollow Shaft

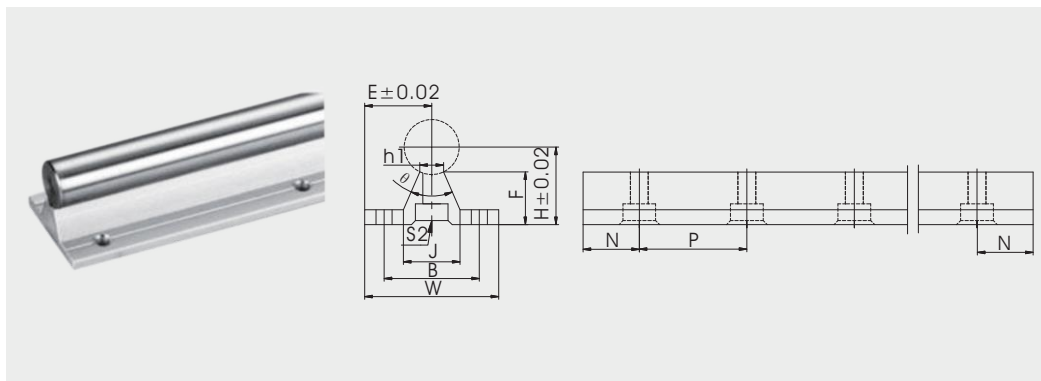


Model No.	Inscribed Circle Diameter	Outer Diameter D	Dimeter Tolerance		Depth of Effective Hardend Layer	Weight (kg/m)
			g6	h6		
SP16	7.5	16	-0.006 -0.017	0 -0.011	0.6~1.2	1.23
SP20	14	20	-0.007 -0.020	0 -0.013		1.26
SP25	19	25				1.68
SP30	16	30	-0.009 -0.025	0 -0.016	0.8~2.0	3.97
SP35	19	35				5.44
SP40	27	40				5.37
SP50	36	50				742

Notes: GCr15 SUJ2 rigidity more than HRC60

ID have several size. Please affirm first

SBR Shaft Support Rail

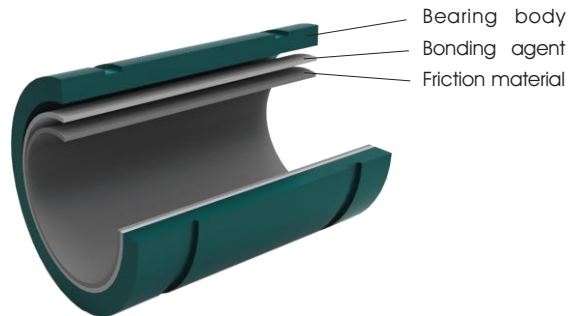


Model No.	Shaft Diameter	Dimensions													Weight (kg)
		H	E	W	F	T	J	h1	θ	B	N	P	S1	S2	
SBR10	10	18	16	32	13.5	4	12.4	4.7	80°	22	50	100	4.5	M4	1.2
SBR12	12	20.46	17	34	15	4.5	15	6	80°	25	50	100	4.5	M4	1.8
SBR13	13	21	17	34	15	4.5	15	6	80°	25	50	100	4.5	M4	2.1
SBR16	16	25	20	40	17.8	5	18.5	8	80°	30	50	150	5.5	M5	2.4
SBR20	20	27	22.5	45	17.7	5	19	8	50°	30	50	150	5.5	M6	3.3
SBR25	25	33	27.5	55	21	6	21.5	8	50°	35	100	200	6.5	M6	5.31
SBR30	30	37	30	60	22.8	7	26.5	10.3	50°	40		200	6.5	M8	7.83
SBR35	35	43	32.5	65	26.5	8	28	13	50°	45		200	9	M8	9.88
SBR40	40	48	37.5	75	29.4	9	38	15.5	50°	55		300	9	M8	13.15
SBR50	50	62	47.5	92	38.8	11	45	20	50°	70		300	11	M10	20.4

Self-lubricate Linear Bearing

SAIBO self-lubricate linear bearings' application includes a wide range of industries, such as medical equipment, food and package equipment, fitness equipment and precision punch machine.

Structure



1. Bearing body: Colored anodized aluminum alloy
2. Bonding agent: Excellent bonding performance, resist high temperature.
3. Friction material: PTFE and filled anti-friction material

PTFE features

PTFE's excellent physical and chemical performance have been approved after several decades' application. In linear motion, SAIBO selects PTFE to be friction material according to below advantages.

- Self-lubricate
- Resist high and low temperature (-240°C ~ +260°C)
- Soft and can absorb vibration
- Non-toxic and harmless to the human body.

Friction material feature

After many years' research and explore, SAIBO develops this mixed friction material's performance and quality to the top in the world. PTFE and its mixture have below features:

- Anti-friction
- Good load capacity
- Excellent bonding performance with PTFE

Advantage

Here we compare SAIBO self-lubricate linear bearing with traditional steel ball linear bearing.

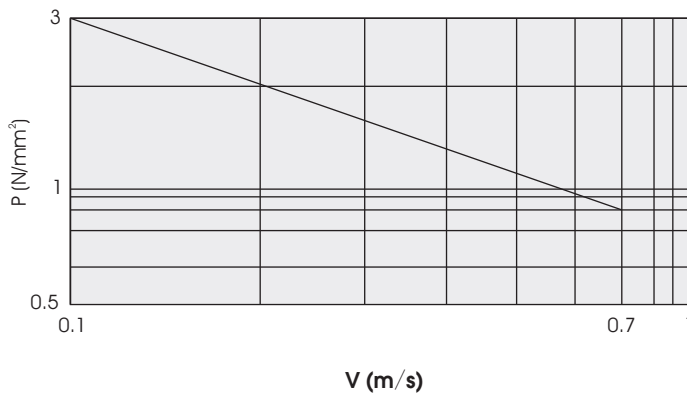
	SAIBO Self-lubricate linear bearing	Steel ball linear bearing
Load capacity	4-20 times load capacity than steel ball linear bearing	Fit for light load
Speed	Low and middle speed	Middle and high speed
Friction Coefficient	0.03-0.20	0.002-0.003
Noise	Quiet	Big noise
Lubrication	Without	Necessary
Anti-Corrosion	Good	None
Anti-vibration and shock	Good	None
Interchangeability	Good	Good
Running ways	Linear, Rotary or combination	Only linear
Acceptable shaft	harden or soft shaft	harden shaft
Machining	Hole can be machined	Can not

PV character

The Pressure Velocity (PV) factor is a key parameter during design and selection of SAIBO self-lubricate linear bearing. PV can define the friction performance between system's pressure and velocity. PTFE's mixture has an intrinsic limiting PV rating while the system running under certain conditions. Put simply, the more load applied to system, the slower it must move to avoid exceeding PV limit. The reverse is also true, more speed, less available load capacity. Overload and exceeding Max speed will cause frictional heat and accelerate wear.

- Max PV value: 0.7 N/mm² × m/s
- Load capacity: 20 N/ mm² (MPa)
- Max speed: 1.5m/s
- Working temperature: -50°C ~ +260°C
- Friction Coefficient: 0.03~0.2

Blow table shows SAIBO self-lubricate linear bearing PV limit at 20°C working conditions.



Lubrication

PTFE and its mixture have self-lubricate character. This is its main application reason where application's environment request without additional oil. But if conditions permit, fill lubrication can reduce friction at least 30%. This is very helpful for extending bearing's life.

Recommended lubricate: Petroleum base oil or grease

Note: PTFE lubrication is forbidden.

Acceptable shaft

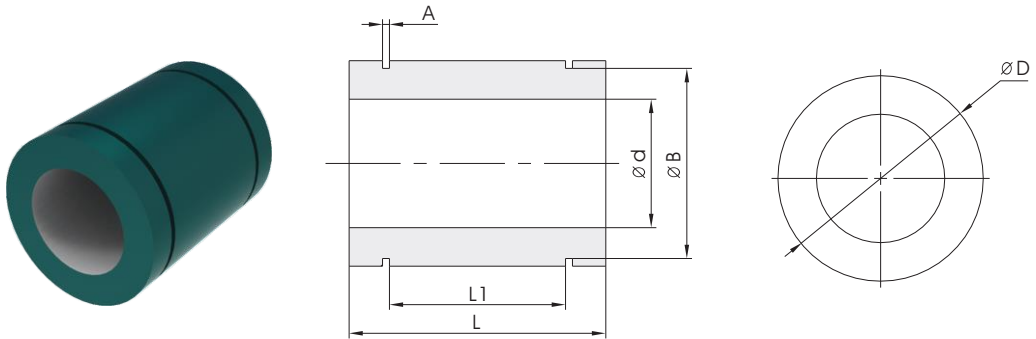
SAIBO Self-lubricate linear bearing's acceptable conditions are not captious to shaft. But considering wear rate, we recommend the best shaft's performance as below:

Surface roughness: Ra 0.4

Hardness: 55HRC

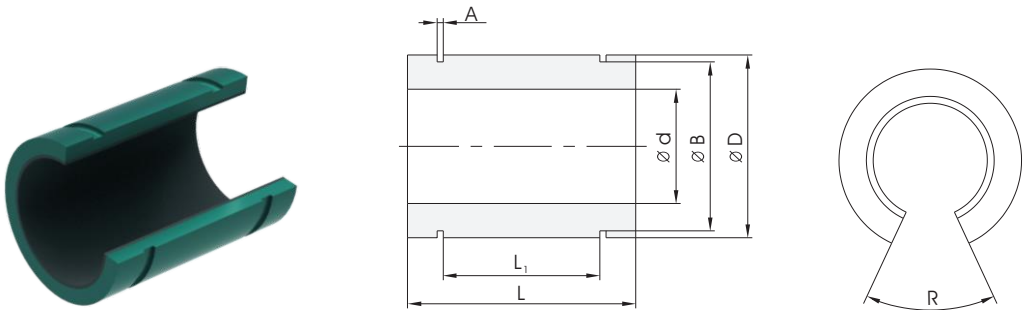


Standard type



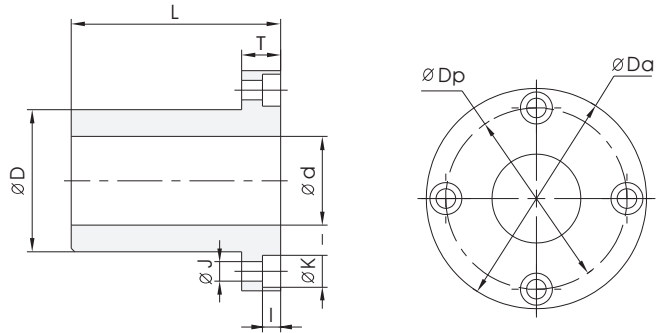
Type	Dimension						Load capacity (N)
	d	D	L	A	B	L1	
SLL06	6	12	19	1.15	11.50	11.30	2280
SLL08	8	15	24	1.15	14.30	15.20	3840
SLL10	10	19	29	1.35	18.00	19.30	5800
SLL12	12	21	30	1.35	20.00	20.30	7200
SLL13	13	23	32	1.35	22.00	20.30	8320
SLL16	16	28	37	1.65	26.60	23.20	11840
SLL20	20	32	42	1.65	30.30	27.20	16800
SLL25	25	40	59	1.85	38.00	37.20	29500
SLL30	30	45	64	1.85	42.50	40.70	38400
SLL35	35	52	70	2.20	49.00	44.80	49000
SLL38	38	57	76	2.20	54.50	54.30	57760
SLL40	40	60	80	2.20	57.00	56.10	64000
SLL50	50	80	100	2.70	76.50	68.60	100000
SLL60	60	90	110	3.15	86.50	78.70	132000
SLL80	80	120	140	4.15	116.00	97.20	224000
SLL100	100	150	175	4.15	145.00	117.20	350000
SLL120	120	180	200	4.15	175.00	150.30	480000
SLL150	150	210	240	5.15	204.00	160.30	720000

Open type



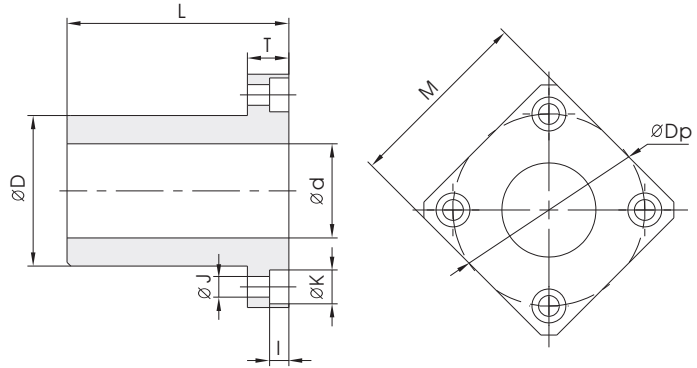
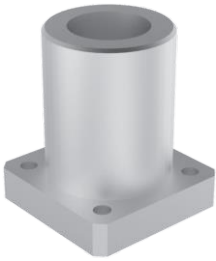
Type	Dimension							Load capacity (N)
	d	D	L	A	B	L1	R	
SLL06 OP	6	12	19	1.15	11.50	11.30	60°	2280
SLL08 OP	8	15	24	1.15	14.30	15.20	60°	3840
SLL10 OP	10	19	29	1.35	18.00	19.30	80°	5800
SLL12 OP	12	21	30	1.35	20.00	20.30	80°	7200
SLL13 OP	13	23	32	1.35	22.00	20.30	80°	8320
SLL16 OP	16	28	37	1.65	26.60	23.20	80°	11840
SLL20 OP	20	32	42	1.65	30.30	27.20	60°	16800
SLL25 OP	25	40	59	1.85	38.00	37.20	50°	29500
SLL30 OP	30	45	64	1.85	42.50	40.70	50°	38400
SLL35 OP	35	52	70	2.20	49.00	44.80	50°	49000
SLL38 OP	38	57	76	2.20	54.50	54.30	50°	57760
SLL40 OP	40	60	80	2.20	57.00	56.10	50°	64000
SLL50 OP	50	80	100	2.70	76.50	68.60	50°	100000
SLL60 OP	60	90	110	3.15	86.50	78.70	50°	132000
SLL80 OP	80	120	140	4.15	116.00	97.20	50°	224000
SLL100 OP	100	150	175	4.15	145.00	117.20	50°	350000
SLL120 OP	120	180	200	4.15	175.00	150.30	80°	480000
SLL150 OP	150	210	240	5.15	204.00	160.30	80°	720000

Flange type



Type	Dimension									Load capacity (N)
	d	D	L	Da	T	Dp	J	K	I	
SLL06 FC	6	12	19	28	8	20	3.50	6.00	3.10	2280
SLL08 FC	8	15	24	32	8	24	3.50	6.00	3.10	3840
SLL10 FC	10	19	29	40	9	29	4.50	7.50	4.10	5800
SLL12 FC	12	21	30	42	9	32	4.50	7.50	4.10	7200
SLL13 FC	13	23	32	43	9	33	4.50	7.50	4.10	8320
SLL16 FC	16	28	37	48	9	38	4.50	7.50	4.10	11840
SLL20 FC	20	32	42	54	11	43	5.50	9.00	5.10	16800
SLL25 FC	25	40	59	62	11	51	5.50	9.00	5.10	29500
SLL30 FC	30	45	64	74	14	60	6.60	11.00	6.10	38400
SLL35 FC	35	52	70	82	14	67	6.60	11.00	6.10	49000
SLL40 FC	40	60	80	96	18	78	9.00	14.00	8.10	64000
SLL50 FC	50	80	100	116	18	98	9.00	14.00	8.10	100000
SLL60 FC	60	90	110	134	24	112	11.00	17.00	11.10	132000
SLL80 FC	80	120	140	164	24	142	11.00	17.00	11.10	224000

Square flange type



Type	Dimension									Load capacity (N)
	d	D	L	T	M	Dp	J	K	I	
SLL06 FN	6	12	19	8	22	20	3.50	6.00	3.10	2280
SLL08 FN	8	15	24	8	25	24	3.50	6.00	3.10	3840
SLL10 FN	10	19	29	9	30	29	4.50	7.50	4.10	5800
SLL12 FN	12	21	30	9	32	32	4.50	7.50	4.10	7200
SLL13 FN	13	23	32	9	34	33	4.50	7.50	4.10	8320
SLL16 FN	16	28	37	9	37	38	4.50	7.50	4.10	11840
SLL20 FN	20	32	42	11	42	43	5.50	9.00	5.10	16800
SLL25 FN	25	40	59	11	50	51	5.50	9.00	5.10	29500
SLL30 FN	30	45	64	14	58	60	6.60	11.00	6.10	38400
SLL35 FN	35	52	70	14	64	67	6.60	11.00	6.10	49000
SLL40 FN	40	60	80	18	75	78	9.00	14.00	8.10	64000
SLL50 FN	50	80	100	18	92	98	9.00	14.00	8.10	100000
SLL60 FN	60	90	110	24	106	112	11.00	17.00	11.10	132000
SLL80 FN	80	120	140	24	136	142	11.00	17.00	11.10	224000

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