

# Linear Bearing

Technical Information





## Semiconductor Subsystem

- Semiconductor/LED/Panel
- EFEM (Equipment Front End Module)
  - Wafer Robot
  - Load Port
  - Wafer Aligner



## Multi-Axis Robot

- Pick-and-Place / Assembly / Array and Packaging / Semiconductor / Electro-Optical Industry / Automotive Industry / Food Industry
- Articulated Robot
  - SCARA Robot
  - Electric Gripper
  - Integrated Electric Gripper



## Single-Axis Robot

- Precision / Semiconductor / Medical / FPD
- KK, SK
  - KS, KA
  - KU, KE, KC



## Torque Motor Rotary Table

- Medical / Automotive Industry / Machine Tools / Machinery Industry
- RAB Series
  - RAS Series
  - RCV Series
  - RCH Series



## Ball screw

- Precision Ground / Rolled
- Super S Series
  - Super T Series
  - Mini Roller
  - Ecological & Economical Lubrication Module E2
  - Rotating Nut (R1)
  - Energy-Saving & Thermal-Controlling (Cool Type)
  - Heavy Load Series (RD)
  - Ball Spline



## Linear Guideway

- Automation / Semiconductor / Medical
- Ball Type--HG, EG, WE, MG, CG
  - Quiet Type--QH, QE, QW, QR
  - Other--RG, E2, PG, SE, RC



## Bearing

- Machine Tools / Robot
- Crossed Roller Bearing
  - Ballscrew Bearing
  - Support Unit



## DATORKER® Strain Wave Gear

- Robot / Automation Equipment / Semiconductor Equipment / Machine Tools
- DSC Type
  - DSH Type
  - DGC Type
  - DGH Type
  - DLC Type



## AC Servo Motor & Drive

- Semiconductor / Packaging Machine / SMT / Food Industry / LCD
- Drives--D1, D2T/D2T-LM, E1
  - Motors--FR, E1



## Medical Equipment

- Hospital / Rehabilitation Centers / Nursing Homes
- Robotic Gait Training System
  - Robotic Endoscope Holder



## Linear Motor Stage

- Automated Transport / AOI Application / Precision / Semiconductor
- Iron-core Linear Motor
  - Coreless Linear Motor
  - Linear Turbo Motor LMT
  - Planar Servo Motor
  - Air Bearing Platform
  - X-Y Stage • Gantry Systems
  - Single-Axis Linear Motor Stage



## Torque Motor & Direct Drive Motor

- Machine Tools
- Torque Motor--TM-2/IM-2, TMRW Series
- Inspection / Testing Equipment / Robot
- Direct Drive Motor--DMS, DMY, DMN, DMT Series

# **HIWIN®**

## **Linear Bearing**

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\* The specifications in this catalogue are subject to change without notification.

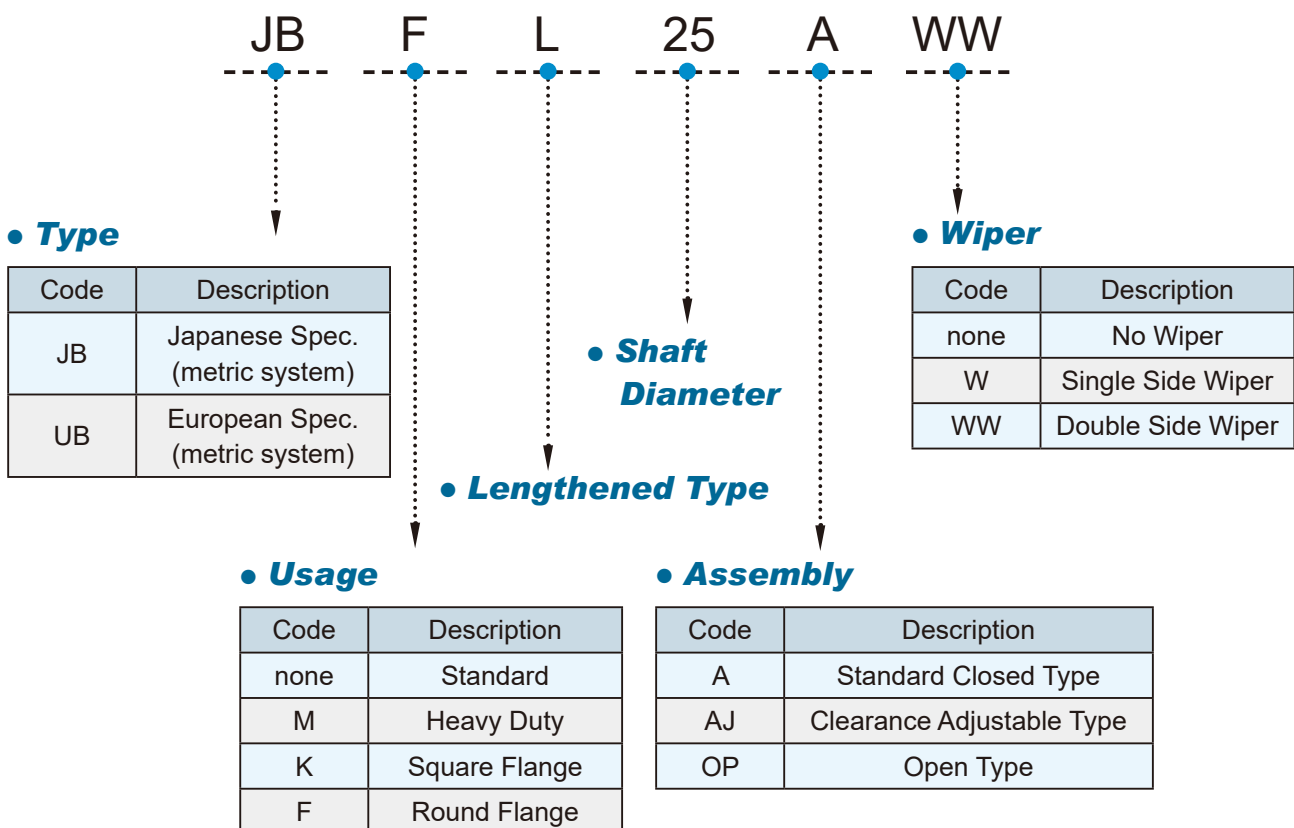
# 1

## HIWIN Linear Bearing General Information

### 1-1 Characteristics of HIWIN Linear Bearing

- **HIWIN linear bearings** enable high precision linear motion on round shafts by utilizing recirculating ball pathways.
- The recirculation curve enables HIWIN's linear bearing to sustain heavy loads with low noise and high stiffness.
- HIWIN's diverse line of linear bearings perform under almost any conditions and load capacities to satisfy a wide range of applications.

### 1-2 Description



**1-3 Fitting**

● Table 1. Recommended fitting tolerance

Type		Shaft		(Housing)	
Model	Accuracy	Normal clearance	Close clearance	Loose fit	Transition fit
JB	General grade	g6	h6	H7	J7
	Precision grade	g5	h5	H6	J6
UB	General grade	g6	j6	H7	J7

Note: In general fitting condition shaft is clearance fit

● **Installation:**

1. Standard Closed Type Installation:

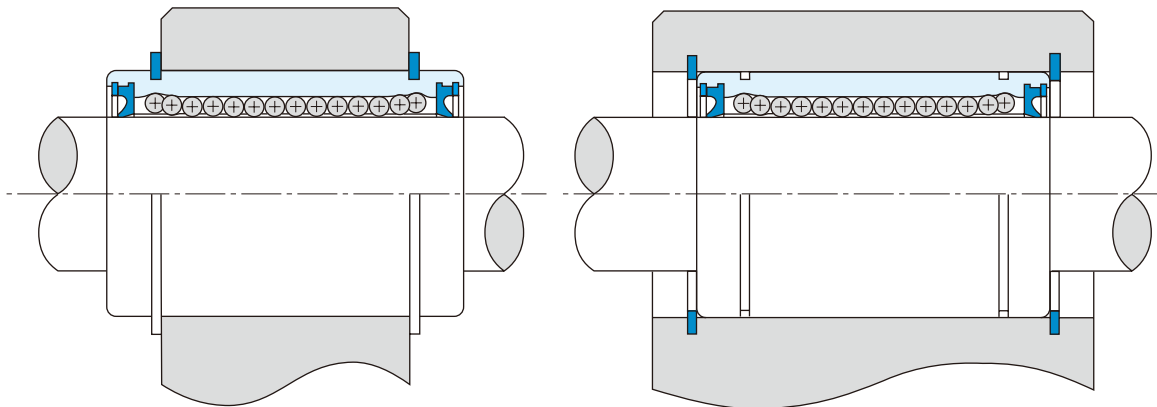


Fig. 1 Installation with snap-rings.

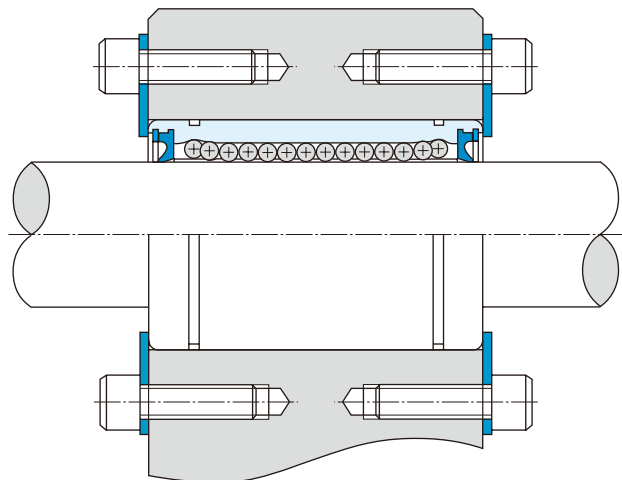


Fig. 2 Installation with setting plate.

## 2. Installation of the Clearance Adjustment Type

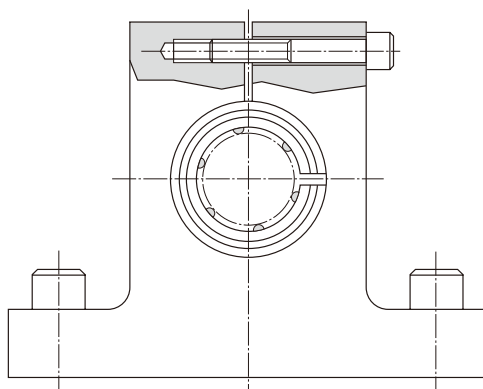


Fig. 3

## 3. Installation of the Open Type

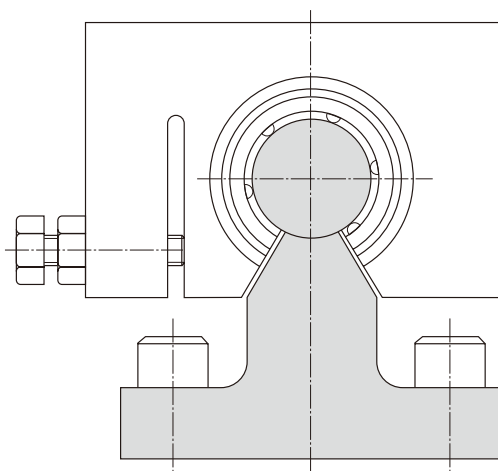


Fig. 4

## 4. Installation of the Flanged Type

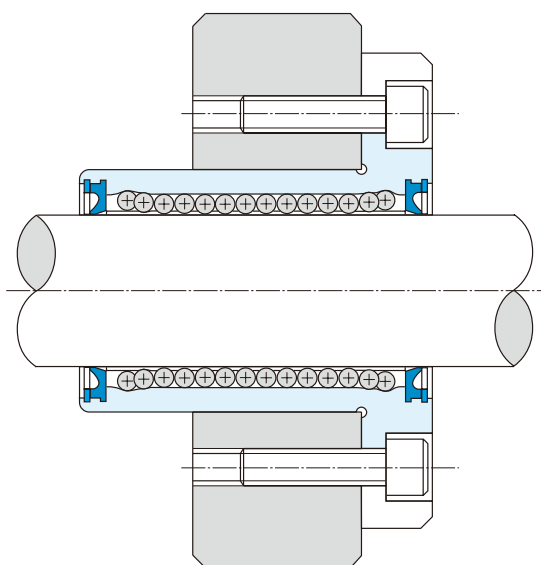
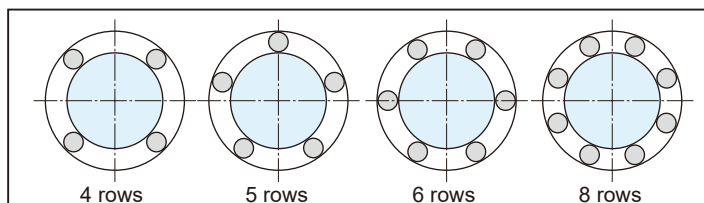


Fig. 5

**Note:** To achieve optimal life performance it is recommended that installation follow the diagram below according to the corresponding number of ball rows and load directions.

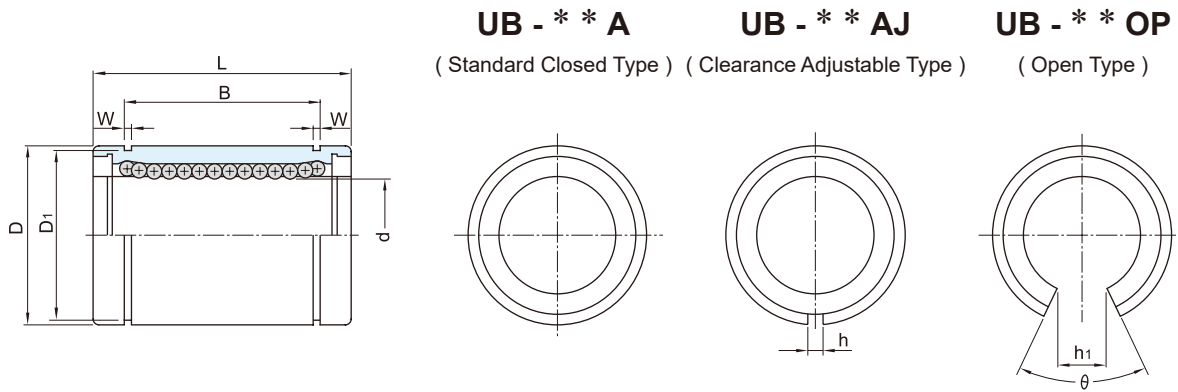


# 2

## Configuration and Specifications

### 2-1 Metric Dimension

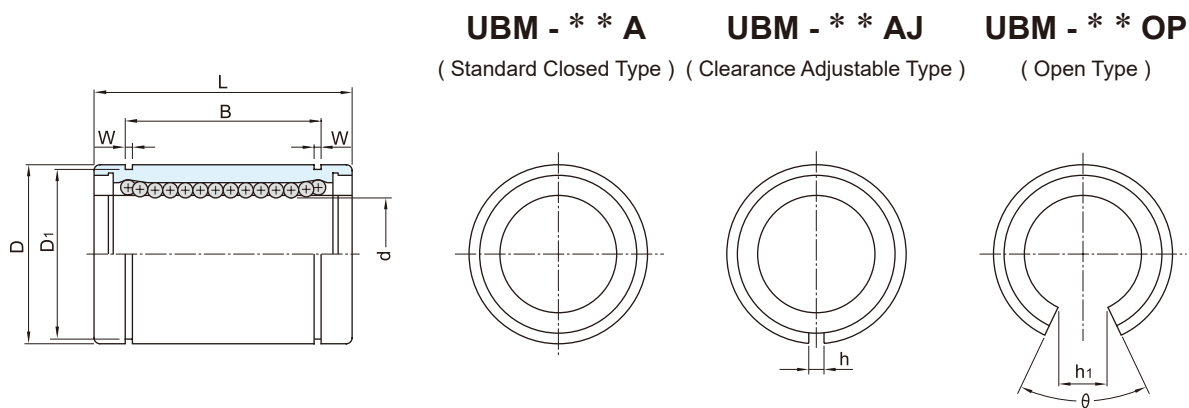
#### 2-1-1 UB Series: Metric Dimension Series Used Most Frequently in Europe



Shaft Diameter d mm	Model						Major Dimensions and Tolerance										Load Capacity				
	Standard Closed Type	Ball Circuit	Clearance Adjustable Type	Ball Circuit	Open Type	Ball Circuit	d mm	Tolerance $\mu$ m	D mm	Tolerance $\mu$ m	L mm	Tolerance $\mu$ m	B mm	Tolerance $\mu$ m	W mm	D1 mm	h mm	h1 mm	$\theta$	Basic Dynamic Load Rating C(N)	Basic Static Load Rating Co(N)
8	UB-08A	4	UB-08AJ	4	-	-	8	+8 0	16	0 -8	25	0 -200	16.5	0 -200	1.1	15.2	1	-	-	280	420
12	UB-12A	5	UB-12AJ	5	UB-12OP	4	12	0 -9	22	32	22.9		1.3		21	1.5	7	54°	640	950	
16	UB-16A	5	UB-16AJ	5	UB-16OP	4	16	+9 -1	26	36	24.9	0 -300	0 -300	1.3	24.9	1.5	9.6	60°	720	1120	
20	UB-20A	5	UB-20AJ	5	UB-20OP	4	20	0 -11	32	45	31.5			1.6	30.3	2	11.7	60°	920	1480	
25	UB-25A	6	UB-25AJ	6	UB-25OP	5	25	+11 -1	40	58	44.1	0 -300	0 -300	1.85	37.5	2	12.5	60°	1070	1670	
30	UB-30A	6	UB-30AJ	6	UB-30OP	5	30	0 -13	47	68	52.1			1.85	44.5	2	16.9	60°	1630	2850	
40	UB-40A	6	UB-40AJ	6	UB-40OP	5	40	+13 -2	62	80	60.6	0 -300	0 -300	2.15	59	3	22	60°	2250	4200	
50	UB-50A	6	UB-50AJ	6	UB-50OP	5	50	0 -13	75	100	77.6			2.65	72	3	21	50°	3950	8200	

- Note:**
- Both Linear bearing with single side wiper (UB.....W) and with double side wiper (UB.....WW) are available.
  - 1 Kgf=9.81 N=2.2046 Lbf
  - The tolerances stated above are valid for the "Standard Closed Type".

## 2-1-2 UBM Series: Metric Dimension Series Used Most Frequently in Europe



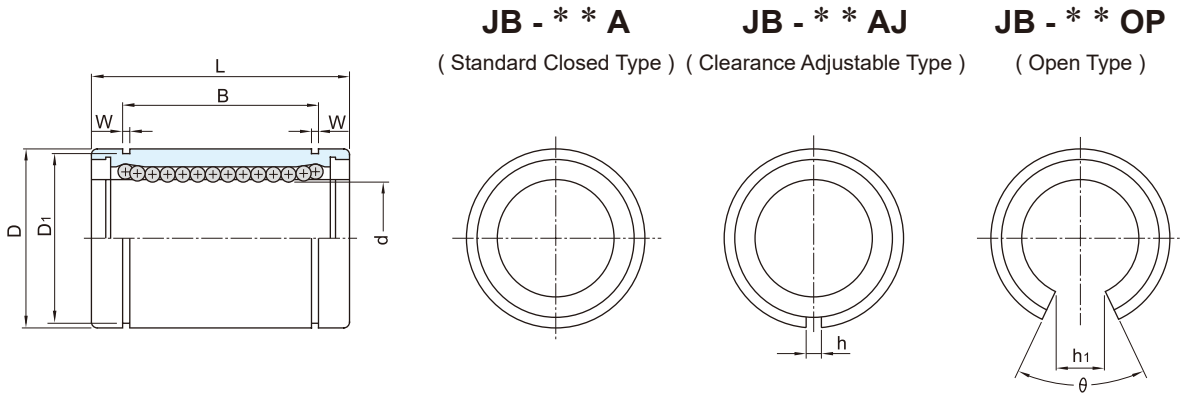
Shaft Diameter d mm	Model						Major Dimensions and Tolerance											Load Capacity			
	Standard Closed Type	Ball Circuit	Clearance Adjustable Type	Ball Circuit	Open Type	Ball Circuit	d		D		L		B		W mm	D1 mm	h mm	h1 mm	θ	Basic Dynamic Load Rating C(N)	Basic Static Load Rating Co(N)
							mm	Tolerance μm	mm	Tolerance μm	mm	Tolerance μm	mm	Tolerance μm							
12	UBM-12A	6	UBM-12AJ	6	UBM-12OP	4	12	+8 0	22	0	32	0	22.9	0	1.3	21	1.5	10	90°	660	1310
16	UBM-16A	6	UBM-16AJ	6	UBM-16OP	4	16	+9 -1	26	-9	36	0 -200	24.9	0 -200	1.3	24.9	1.5	13.5	100°	800	1480
20	UBM-20A	6	UBM-20AJ	6	UBM-20OP	4	20	+9 -1	32	0	45	0	31.5	0	1.6	30.3	2	16.8	100°	1050	2280
25	UBM-25A	8	UBM-25AJ	8	UBM-25OP	6	25	+11 -1	40	-11	58	0	44.1	0	1.85	37.5	2	16.9	74°	1370	3470
30	UBM-30A	8	UBM-30AJ	8	UBM-30OP	6	30	+11 -1	47	0	68	0 -300	52.1	0 -300	1.85	44.5	2	21.1	80°	2100	5920
40	UBM-40A	8	UBM-40AJ	8	UBM-40OP	6	40	+13 -2	62	-13	80	0	60.6	0	2.15	59	3	27.8	80°	3820	9250

- Note:** 1. Both Linear bearing with single side wiper (UBM.....W) and with double side wiper (UBM.....WW) are available.  
 2. 1 Kg<sub>f</sub>=9.81 N=2.2046 Lbf  
 3. The tolerances stated above are valid for the "Standard Closed Type".



**2-2 Metric Dimension - Japanese Exclusive**

**2-2-1 JB Series: Metric Dimension Series Used Most Frequently in Japan**



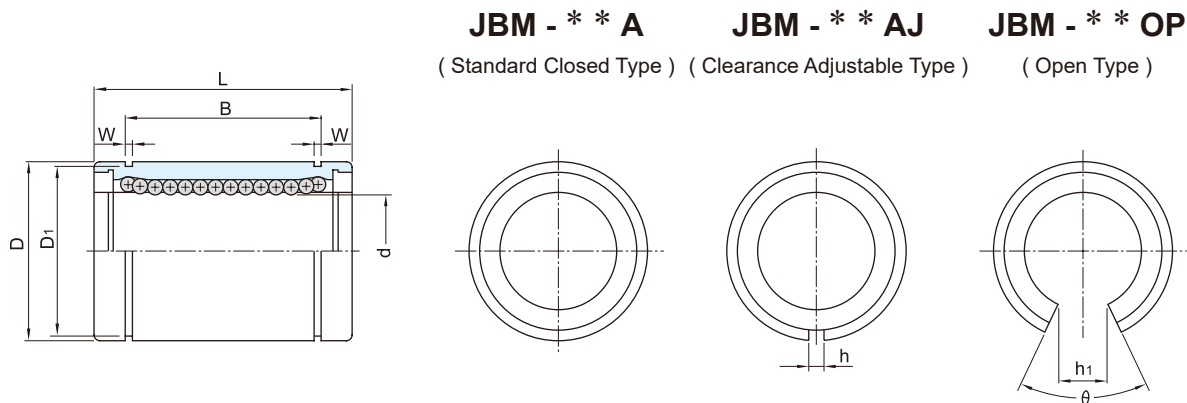
Shaft Diameter d mm	Model						Major Dimensions and Tolerance										Load Capacity					
	Standard Closed Type	Ball Circuit	Clearance Adjustable Type	Ball Circuit	Open Type	Ball Circuit	d		D		L		B		W mm	D1 mm	h mm	h1 mm	$\theta$	Basic Dynamic Load Rating C(N)	Basic Static Load Rating Co(N)	
							mm	Tolerance $\mu$ m Precision General	mm	Tolerance $\mu$ m	mm	Tolerance $\mu$ m	mm	Tolerance $\mu$ m								
6	JB-06A	4	-	-	-	-	6	0 -6	0 -9	12	0	19	0 -200	13.5	0 -200	1.1	11.5	-	-	-	206	265
8	JB-08A	4	JB-08AJ	4	-	-	8			15	-11	24		17.5		1.1	14.3	1	-	-	274	392
10	JB-10A	4	JB-10AJ	4	-	-	10			19	0	29		22		1.3	18	1	-	-	372	549
12	JB-12A	4	JB-12AJ	4	JB-12OP	3	12			21	-13	30		23		1.3	20	1.5	9.1	80°	412	598
16	JB-16A	4	JB-16AJ	4	JB-16OP	3	16			28		37		26.5		1.6	27	1.5	11.7	80°	782	1176
20	JB-20A	5	JB-20AJ	5	JB-20OP	4	20			32		42		30.5		1.6	30.5	1.5	11.6	60°	882	1382
25	JB-25A	6	JB-25AJ	6	JB-25OP	5	25	0	0	40	-16	59	41	1.85	38	2	12.5	60°	980	1568		
30	JB-30A	6	JB-30AJ	6	JB-30OP	5	30	45		64	44.5	1.85	43	2.5	16.8	60°	1568	2744				
35	JB-35A	6	JB-35AJ	6	JB-35OP	5	35	52		70	0	-300	49.5	0	-300	2.1	49	2.5	17	50°	1666	3136
40	JB-40A	6	JB-40AJ	6	JB-40OP	5	40	0	0	60	-19	80	60.5	2.1	57	3	22	60°	2156	4018		
50	JB-50A	6	JB-50AJ	6	JB-50OP	5	50	80		100	74	2.6	76.5	3	25	50°	3820	7938				

**Note:** 1. Both Linear bearing with single side wiper (JB.....W) and with double side wiper (JB.....WW) are available.

2. 1 Kgf=9.81 N=2.2046 Lbf

3. The tolerances stated above are valid for the "Standard Closed Type".

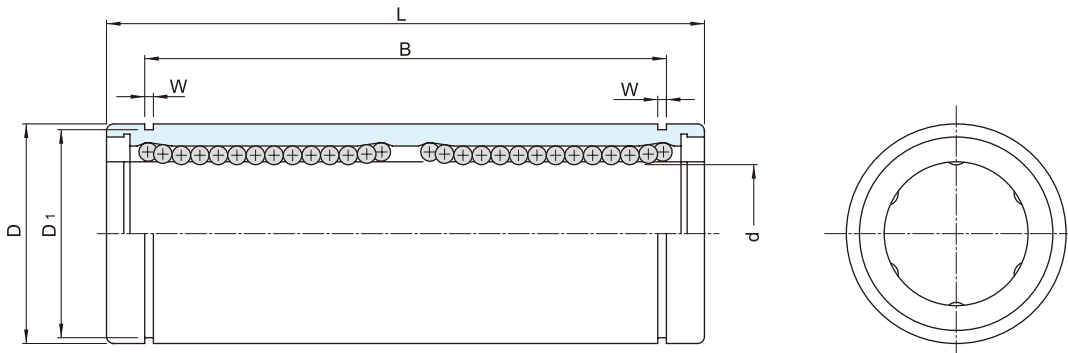
## 2-2-2 JBM Series: Metric Dimension Series Used Most Frequently in Japan



Shaft Diameter d mm	Model						Major Dimensions and Tolerance											Load Capacity				
	Standard Closed Type	Ball Circuit	Clearance Adjustable Type	Ball Circuit	Open Type	Ball Circuit	d		D		L		B		W	D1	h	h1	$\theta$	Basic Dynamic Load Rating C(N)	Basic Static Load Rating Co(N)	
							mm	Tolerance $\mu$ m	mm	Tolerance $\mu$ m	mm	Tolerance $\mu$ m	mm	Tolerance $\mu$ m								
10	JBM-10A	6	JBM-10AJ	6	-	-	10		19		29		22		1.3	18	1	-	-	451	970	
12	JBM-12A	6	JBM-12AJ	6	JBM-12OP	4	12	0 -6	0 -9	21	0 -13	30	0 -200	23	0 -200	1.3	20	1.5	10.4	100°	500	1049
16	JBM-16A	6	JBM-16AJ	6	JBM-16OP	4	16			28		37		26.5		1.6	27	1.5	13.5	100°	941	2068
20	JBM-20A	6	JBM-20AJ	6	JBM-20OP	4	20			32		42		30.5		1.6	30.5	1.5	16.6	100°	1049	2421
25	JBM-25A	8	JBM-25AJ	8	JBM-25OP	6	25	0 -7	0 -10	40	0 -16	59	0 -300	41	0 -300	1.85	38	2	17.9	80°	1176	2754
30	JBM-30A	8	JBM-30AJ	8	JBM-30OP	6	30			45		64		44.5		1.85	43	2.5	21	80°	1882	4822
40	JBM-40A	8	JBM-40AJ	8	JBM-40OP	6	40	0 -8	0 -12	60	0 -19	80	0 -300	60.5	0 -300	2.1	57	3	27.8	80°	2587	7056

- Note:** 1. Both Linear bearing with single side wiper (JBM.....W) and with double side wiper (JBM.....WW) are available.  
 2. 1 Kgf=9.81 N=2.2046 Lbf  
 3. The tolerances stated above are valid for the "Standard Closed Type".

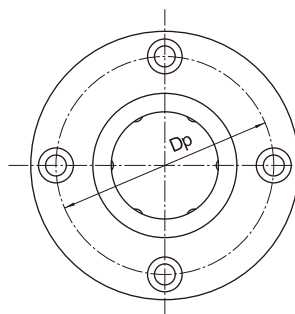
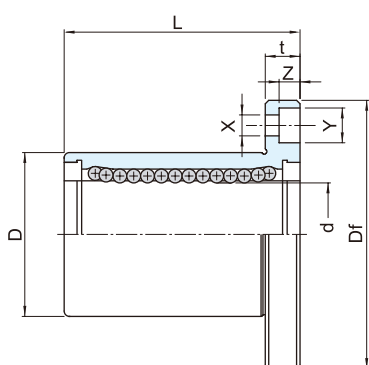
### 2-2-3 JBL Series: Metric Dimension Series Used Most Frequently in Japan



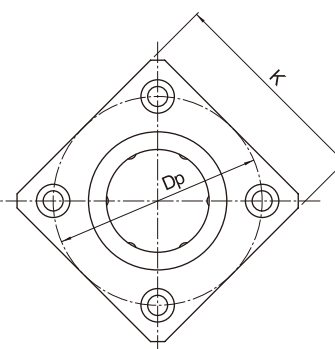
Shaft Diameter d mm	Model JBL Type	Major Dimensions and Tolerance								Load Capacity			
		d mm	Tolerance μm	D mm	Tolerance μm	L mm	Tolerance μm	B mm	Tolerance μm	W mm	D1 mm	Basic Dynamic Load Rating C(N)	Basic Static Load Rating Co(N)
8	JBL-08A	8	0 -9	15	0 -11	45	0 -200	35	0 -200	1.1	14.3	441	804
10	JBL-10A	10		19	55	44		1.3		18	608	1127	
12	JBL-12A	12		21	57	46		1.3		20	823	1588	
16	JBL-16A	16		28	70	53		1.6		27	1245	2352	
20	JBL-20A	20	0 -10	32	0 -16	80	0 -300	61	0 -300	1.6	30.5	1401	2764
25	JBL-25A	25		40		112		82		1.85	38	1558	3136
30	JBL-30A	30		45		123		89		1.85	43	2450	5488
35	JBL-35A	35		52		135		99		2.1	49	2646	6272
40	JBL-40A	40	0 -12	60	0 -19	151	121	2.1	57	3479	8232		

**Note:** 1. Both Linear bearing with single side wiper (JBL.....W) and with double side wiper (JBL.....WW) are available.  
2. 1 Kgf=9.81 N=2.2046 Lbf

## 2-2-4 JBF&JBK Series: Metric Dimension Series Used Most Frequently in Japan



JBF TYPE

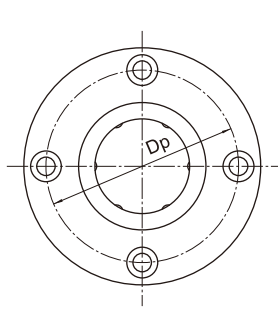
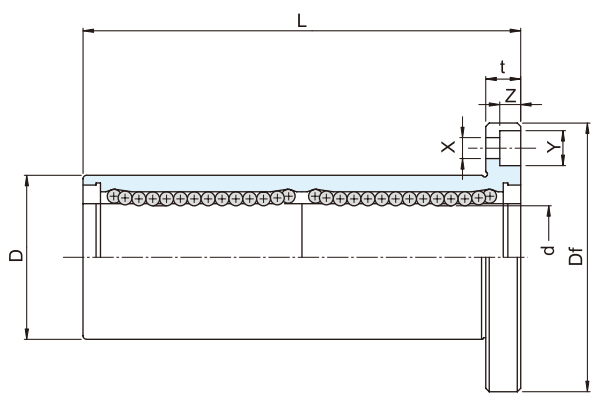


JBK TYPE

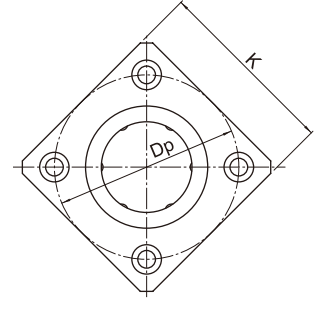
Shaft Diameter d mm	Model		Major Dimensions and Tolerance													Load Capacity			
	JBF Type	JBK Type	mm	d Tolerance μm	D Tolerance μm	L Tolerance μm	Df mm	K mm	t mm	Dp mm	X mm	Y mm	Z mm	Concentricity μm	Perpendicularity μm	Basic Dynamic Load Rating C(N)	Basic Static Load Rating Co(N)		
8	JBF-08A	JBK-08A	8	0 -9	15	0 -11	24	±300	32	25	5	24	3.5	6	3.1	12	12	274	392
10	JBF-10A	JBK-10A	10		19	0 -13	29		40	30	6	29	4.5	7.5	4.1			372	549
12	JBF-12A	JBK-12A	12		21		30	0 -200	42	32	6	32	4.5	7.5	4.4			412	598
16	JBF-16A	JBK-16A	16		28		37		48	37	6	38	4.5	7.5	4.1			782	1176
20	JBF-20A	JBK-20A	20	0 -10	32	0 -16	42	0 -300	54	42	8	43	5.5	9	5.1	15	15	882	1382
25	JBF-25A	JBK-25A	25		40		59		62	50	8	51	5.5	9	5.1			980	1568
30	JBF-30A	JBK-30A	30		45		64		74	58	10	60	6.6	11	6.1			1568	2744
35	JBF-35A	JBK-35A	35		52		70		82	64	10	67	6.6	11	6.1			1666	3136
40	JBF-40A	JBK-40A	40	0 -12	60	0 -19	80	96	75	13	78	9	14	8.1	20	20	2156	4018	

**Note:** 1. Both Linear bearing with single side wiper (JBF/JBK.....W) and with double side wiper (JBF/JBK.....WW) are available.  
2. 1 Kgf=9.81 N=2.2046 Lbf

## 2-2-5 JBFL&JBKL Series: Metric Dimension Series Used Most Frequently in Japan



**JBFL TYPE**



**JBKL TYPE**

Shaft Diameter d mm	Model		Major Dimensions and Tolerance													Load Capacity			
	JBFL Type	JBKL Type	d mm	Tolerance μm	D mm	Tolerance μm	L mm	Tolerance μm	Df mm	K mm	t mm	Dp mm	X mm	Y mm	Z mm	Concentricity μm	Perpendicularity μm	Basic Dynamic Load Rating C(d)	Basic Static Load Rating Co(d)
8	JBFL-08A	JBKL-08A	8	0 -9	15	0 -11	45	±300	32	25	5	24	3.5	6	3.1	12	12	441	804
10	JBFL-10A	JBKL-10A	10		19	0 -13	55		40	30	6	29	4.5	7.5	4.1			608	1127
12	JBFL-12A	JBKL-12A	12		21		57	0 -200	42	32	6	32	4.5	7.5	4.4			823	1588
16	JBFL-16A	JBKL-16A	16		28		70		48	37	6	38	4.5	7.5	4.1			1245	2352
20	JBFL-20A	JBKL-20A	20	0 -10	32	0 -16	80	0 -300	54	42	8	43	5.5	9	5.1	15	15	1401	2764
25	JBFL-25A	JBKL-25A	25		40		112		62	50	8	51	5.5	9	5.1			1558	3136
30	JBFL-30A	JBKL-30A	30		45		123		74	58	10	60	6.6	11	6.1			2450	5488
35	JBFL-35A	JBKL-35A	35	0 -12	52	0 -19	135		0 -300	82	64	10	67	6.6	11	6.1	20	20	2646
40	JBFL-40A	JBKL-40A	40		60		151	96		75	13	78	9	14	8.1	3479			8232

**Note:** 1. Both Linear bearing with single side wiper (JBFL/JBKL.....W) and with double side wiper (JBF/JBK.....WW) are available.  
2. 1 Kg=9.81 N=2.2046 Lbf

## Linear Bearing Technical Information

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-



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