



**Shaft & Support Rail Unit:**

High Carbon Bearing cylindrical steel shaft to provide minimal friction while movement. Different type of Aluminium shaft support are also available for easy mounting of shaft.

**Part Number:**

**Support Rail Unit**

**SBR\*\* / TBR\*\***

**Shaft Support**

**SK\*\* / SHF \*\***

**Shaft**

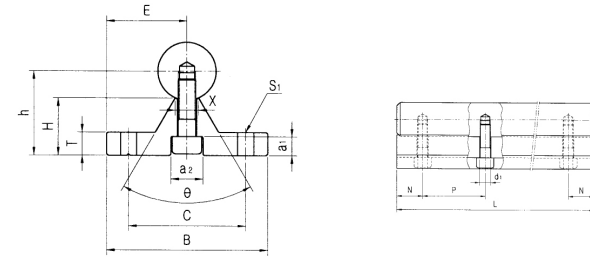
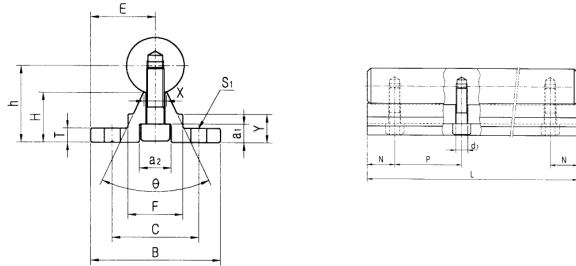
**SF\*\***

Prefix and Corresponding Description for Support Rail Unit, Shaft Support, Shaft	
Prefix	Description of Prefix
SBR	Support Rail Unit for SBR
TBR	Support Rail Unit for SBR
SK	T Type Shaft Support
SHF	Horizontal Shaft Support
SF	LM Shaft
Suffix and Corresponding Description for Support Rail Unit, Shaft Support, Shaft	
Suffix	Description of Suffix
xxx mm	Indicates Length of Rail
g6	Asian Standard g6 Tolerance
h6	European Standard h6 Tolerance

# Support Rail Unit SBR\*\*



# Support Rail Unit TBR\*\*



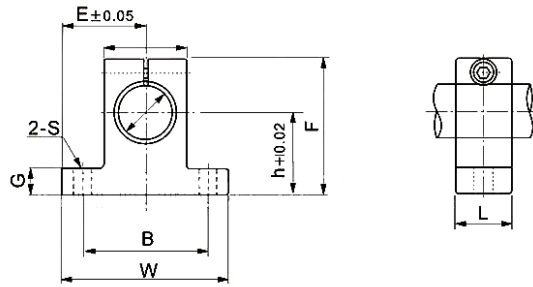
PART NUMBER	Shaft Outer Diameter	E	h	B	H	T	F	X	Y	C	θ	S <sub>1</sub>	a <sub>1</sub>	a <sub>2</sub>	d <sub>1</sub>	WEIGHT
																(kgf/m)
SBR10	10	16	16.5	32	13	4	12	6	8.5	22	80°	4.5	4.5	8	4.5	0.8
SBR12	12	16	17.5	32	13	4	12	6	8.5	22	80°	4.5	4.5	8	4.5	0.8
SBR13	13	16	18	32	13	4	12	6	8.5	22	80°	4.5	4.5	8	4.5	0.8
SBR16	16	20	25	40	17.79	5	18.5	8	11.7	30	80°	5.5	6	9.5	5.5	2.56
SBR20	20	22.5	27	45	17.72	5	19	8	10	30	50°	5.5	6.5	11	6.6	3.50
SBR25	25	27.5	33	55	21.13	6	21.5	8	12	35	50°	6.6	6.5	11	6.6	5.30
SBR30	30	30	37	60	22.85	7	26.5	10.3	13	40	50°	6.6	8.5	14	9	7.38
SBR35	35	32.5	43	65	26.62	8	28	13	15.5	45	50°	9	8.5	14	9	9.68
SBR40	40	37.5	48	75	29.43	9	38	16	17	55	50°	9	8.5	14	9	12.69
SBR50	50	47.5	62	95	38.79	11	45	20	21	70	50°	11	12.5	19	11	20.46

PART NUMBER	OUTER DIAMETER	E	h	B	H	T	X	C	θ	S <sub>1</sub>	a <sub>1</sub>	a <sub>2</sub>	d <sub>1</sub>	WEIGHT
														(kgf/m)
TBR16	Φ16	25	22	50	14.79	6	8	37	60°	Φ5.5	6	9.5	5.5	2.66
TBR20	Φ20	27.5	29	55	19.72	8	8	40	50°	Φ5.5	6.5	11	6.6	4.23
TBR25	Φ25	32.5	32	65	20.13	10	8	45	50°	Φ6.6	6.5	11	6.6	5.85
TBR30	Φ30	37.5	36.5	75	22.35	12	10.3	55	50°	Φ6.6	8.5	14	9	8.28

PART NUMBER	Max. Length (mm)	P	NXNH												
			500	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	3000
			SBR16	3000	150	25×3	75×3	100×4	50×6	75×7	25×9	50×10	75×11	25×13	50×14
SBR20	3000	150	25×3	75×3	100×4	50×6	75×7	25×9	50×10	75×11	25×13	50×14	75×15	25×17	75×19
SBR25	3000	200	50×2	100×2	100×3	100×4	100×5	100×6	100×7	75×11	25×13	50×14	75×15	25×17	75×19
SBR30	3000	200	50×2	100×2	100×3	100×4	100×5	100×6	100×7	75×11	25×13	50×14	75×15	25×17	75×19
SBR35	3000	200	50×2	100×2	100×3	100×4	100×5	100×6	100×7	75×11	25×13	50×14	75×15	25×17	75×19
SBR40	3000	200	50×2	100×2	100×3	100×4	100×5	100×6	100×7	75×11	25×13	50×14	75×15	25×17	75×19
SBR50	3000	200	50×2	100×2	100×3	100×4	100×5	100×6	100×7	75×11	25×13	50×14	75×15	25×17	75×19

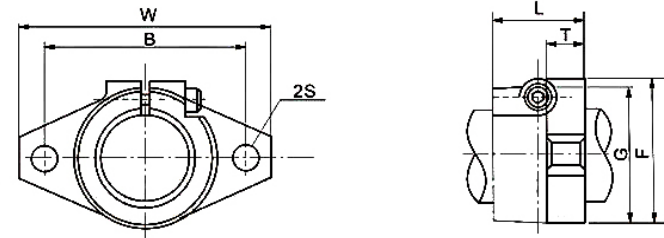
PART NUMBER	Max. Length (mm)	P	NXNH												
			500	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	3000
			TBR16A	3000	150	25×3	75×3	100×4	50×6	75×7	25×9	50×10	75×11	25×13	50×14
TBR20A	3000	150	25×3	75×3	100×4	50×6	75×7	25×9	50×10	75×11	25×13	50×14	75×15	25×17	75×19
TBR25A	3000	200	50×2	100×2	100×3	100×4	100×5	100×6	100×7	100×8	100×9	100×10	100×11	100×12	100×14
TBR30A	3000	200	50×2	100×2	100×3	100×4	100×5	100×6	100×7	100×8	100×9	100×10	100×11	100×12	100×14

# Shaft Support SK\*\*

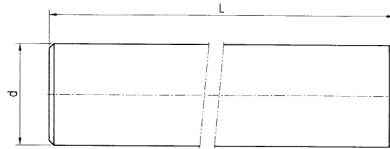


PART NUMBER	Shaft Outer Diameter	h	E	W	L	F	G	P	B	S	Locking Bolt	Clamping Bolt	WEIGHT
													(gf)
SK8	8	20	21	42	14	32.8	6	18	32	5.5	M4	M5	24
SK10	10	20	21	42	14	32.8	6	18	32	5.5	M4	M5	24
SK12	12	23	21	42	14	37.5	6	20	32	5.5	M4	M5	30
SK13	13	23	21	42	14	37.5	6	20	32	5.5	M4	M5	30
SK16	16	27	24	48	16	44	8	25	38	5.5	M4	M5	40
SK20	20	31	30	60	20	51	10	30	45	6.6	M5	M6	70
SK25	25	35	35	70	24	60	12	38	56	6.6	M6	M6	130
SK30	30	42	42	84	28	70	12	44	64	9	M6	M8	180
SK35	35	50	49	98	32	82	15	50	74	11	M8	M10	270
SK40	40	60	57	114	36	96	15	60	90	11	M8	M10	420
SK50	50	70	63	126	40	120	18	74	100	14	M12	M12	750
SK60	60	80	74	148	45	136	18	90	120	14	M12	M12	1100

# Shaft Support SHF\*\*



PART NUMBER	Shaft Outer Diameter	W	L	T	F	G	B	S	Locking Bolt	Clamping Bolt	WEIGHT
											(gf)
SHF8	8	43	10	5	24	20	32	5.5	M4	M5	13
SHF10	10	43	10	5	24	20	32	5.5	M4	M5	13
SHF12	12	47	13	7	28	25	36	5.5	M4	M5	20
SHF13	13	47	13	7	28	25	36	5.5	M4	M5	20
SHF16	16	50	16	8	31	28	40	5.5	M4	M5	27
SHF20	20	60	20	8	37	34	48	7	M5	M6	40
SHF25	25	70	25	10	42	40	56	7	M5	M6	60
SHF30	30	80	30	12	50	46	64	9	M6	M8	110
SHF35	35	92	35	14	58	50	72	12	M8	M10	380
SHF40	40	102	40	16	67	56	80	12	M10	M10	510
SHF50	50	122	50	19	83	70	96	14	M12	M12	890
SHF60	60	140	60	23	95	82	112	14	M12	M12	1500



Diameter	6	8	10	12	13	16	20	25	30	35	40	50	60	80
Diametertolerance	-0.004	-0.005		-0.006		-0.007		-0.007		-0.009		-0.010		
(g6)	-0.012	-0.014		-0.017		-0.02		-0.025		-0.025		-0.029		
WEIGHT														
(kg/m)	0.22	0.39	0.62	0.89	1.04	1.58	2.46	3.85	5.55	7.55	9.86	15.41	22.18	39.44
Max length														
(mm)	500	500	2000	2000	2000	3000	3000	3000	3000	3000	3000	3000	3000	3000

**Housing:**

For SUPERBALL'S application, Housing is required. Tolerance of Housing bore will affect the life and the accuracy of application. See the below Table However, if the tolerance of housing is H7, tight fitting can be occurred at both ends of outer - sleeves in case of LMES type

**Housing and tight fitting:**

Part number(mm)	LMES10	LMES12	LMES16	LMES20	LMES25	LMES30	LMES40	LMES50	
Inner diameter(mm)	19	22	26	32	40	47	62	75	
Tolerance(H7)	+0.021 0			+0.025 0			+0.030 0		
Part number(Inch)	LMBS4	LMBS6	LMBS8	LMBS10	LMBS12	LMBS16	LMBS20	LMBS24	LMBS32
Inner diameter(Inch)	0.5	0.625	0.875	1.125	1.25	1.5625	2	2.375	3
Tolerance(H7)	0 +0.007	0 +0.007	0 +0.008	0 +0.008	0 +0.010	0 +0.010	0 +0.012	0 +0.012	0 +0.012

**Shaft:**

Because the balls in BMD SUPERBALL as rolling elements are running directly on the shaft, the hardness, surface finish, and tolerance of shaft will largely affect on the travelling performance of SUPERBALL. The shaft must be manufactured with following conditions:

**1. Hardness:**

The hardness must be H<sub>R</sub>C 58 to 64. The shaft with hardness less than H<sub>R</sub>C58 Will lead decreasing of travel life and permissible load.

**2. Surface Finishing:**

The Surface finishing must be 1.6S or better for smooth operation.

**3. Tolerance:**

The correct tolerance of the shaft diameter is recommended. See the below table.

**Shaft and tight fitting:**

Part number(mm)	LMES10	LMES12	LMES16	LMES20	LMES25	LMES30	LMES40	LMES50	
diameter(mm)	10	12	16	20	25	30	40	50	
Tolerance(h6)	0 -0.009	0 -0.011	0 -0.011	0 -0.013	0 -0.013	0 -0.013	0 -0.016	0 -0.016	
Part number(Inch)	LMBS4	LMBS6	LMBS8	LMBS10	LMBS12	LMBS16	LMBS20	LMBS24	LMBS32
diameter(Inch)	0.25	0.375	0.500	0.625	0.750	1.000	1.250	1.500	2.000
Part number(g6)	-0.0002 -0.0006	-0.0002 -0.0006	-0.0002 -0.0007	-0.0002 -0.0007	-0.0003 -0.0008	-0.0003 -0.0008	-0.0004 -0.0010	-0.0004 -0.0010	-0.0004 -0.0012

Fitting Tolerances for Shaft and Housing  
Bore Diameter (Metric Series)



Fitting Tolerances for Shaft and Housing  
Bore Diameter (Inch Series)



Tolerance of Housing Bore:

Nominal Diameter (mm)	Tolerance of Shaft Diameter												Tolerance of Housing Bore Diameter																												
	f			g			h			js			j			k			H		JS		J		K		M														
over	incl	f5	f6	f7	g5	g6	g7	h5	h6	h7	h8	js5	js6	js7	j5	j6	j7	k5	k6	k7	H5	H6	H7	H8	JS5	JS6	JS7	JS8	J5	J6	J7	J8	K5	K6	K7	K8	M5	M6	M7	M8	
-	3	-6 -10	-12	-16	-2 -6	-8	-12	0 -4	-6	-10	-14	±2	±3	±5	+2	+4	-2	+6	+4	+10	+4	+6	+10	+14	±2	±3	±5	±7	+2	+4	+6	0	0	0	-2	-2	-2	-2	-2	-2	-2
3	6	-10 -15	-18	-22	-4 -9	-12	-16	0 -5	-8	-12	-18	±2.5	±4	±5	+3	+6	-2	+8	+6	+13	+5	+8	+12	+18	±2.5	±4	±6	±9	+5	+6	+10	+2	+3	+5	-1	0	+1	0	+2	0	+2
6	10	-6 -19	-12	-23	-5 -11	-14	-20	0 -6	-9	-15	-22	±3	±4.5	±7	+4	+7	-2	+10	+7	+16	+6	+9	+15	+22	±3	±4.5	±7	±11	+5	+8	+12	+2	+5	+6	-3	0	+1	0	+1	0	+1
10	14	-6 -24	-12	-34	-6 -14	-17	-24	0 -8	-11	-18	-27	±4	±5.5	±9	+5	+8	-3	+12	+9	+19	+8	+11	+18	+27	±4	±5.5	±9	±13	+6	+10	+15	+2	+6	+8	-4	0	+2	0	+2	0	+2
14	18	-16 -28	-27	-41	-6 -16	-20	-28	0 -9	-13	-21	-33	±4.5	±6.5	±10	+5	+9	-4	+13	+11	+23	+9	+13	+21	+33	±4.5	±6.5	±10	±16	+8	+12	+20	+2	+6	+10	-4	0	+4	0	+4	0	+4
18	24	-20 -38	-33	-41	-7 -20	-28	-41	0 -11	-16	-25	-39	±5.5	±8	±12	+6	+11	-5	+15	+13	+27	+11	+16	+25	+39	±5.5	±8	±12	±19	+10	+14	+24	+3	+7	+12	-4	0	+5	0	+5	0	+5
24	30	-28 -43	-33	-41	-9 -23	-34	-41	0 -13	-19	-30	-46	±5.5	±9.5	±15	+6	+12	-7	+18	+15	+32	+13	+19	+30	+46	±6.5	±9.5	±15	±23	+13	+18	+28	+4	+9	+14	-5	0	+5	0	+5	0	+5
30	40	-36 -51	-41	-50	-9 -27	-40	-50	0 -15	-22	-35	-54	±7.5	±11	±17	+6	+13	-9	+20	+18	+38	+15	+22	+35	+54	±7.5	±11	±17	±27	+16	+22	+34	+4	+10	+16	-6	0	+6	0	+6	0	+6
40	50	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8
50	65	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8
65	80	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8
80	100	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8
100	120	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8
120	140	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8
140	160	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8
160	180	-43 -61	-49	-60	-10 -32	-49	-60	0 -18	-25	-40	-63	±9	±12.5	±20	+7	+14	-11	+22	+21	+43	+18	+25	+40	+63	±9	±12.5	±20	±31	+18	+26	+41	+4	+12	+20	-8	0	+8	0	+8	0	+8

	SIZE		H5		H6		H7		H8	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
OVER	0.1181	3	0.0002	0.005	0.0003	0.008	0.0004	0.012	0.0007	0.018
BELOW	0.2362	6	0	0	0	0	0	0	0	0
OVER	0.2362	6	0.0002	0.006	0.0003	0.009	0.0003	0.015	0.0008	0.022
BELOW	0.3937	10	0	0	0	0	0	0	0	0
OVER	0.3937	10	0.0003	0.008	0.0004	0.011	0.0007	0.018	0.0010	0.027
BELOW	0.7087	18	0	0	0	0	0	0	0	0
OVER	0.7087	18	0.0003	0.009	0.0005	0.013	0.0008	0.021	0.0013	0.033
BELOW	1.1811	30	0	0	0	0	0	0	0	0
OVER	1.1811	30	0.0004	0.011	0.0006	0.016	0.0009	0.025	0.0015	0.039
BELOW	1.9685	50	0	0	0	0	0	0	0	0
OVER	1.9685	50	0.0005	0.013	0.0007	0.019	0.0011	0.030	0.0018	0.046
BELOW	3.1496	80	0	0	0	0	0	0	0	0
OVER	3.1496	80	0.0005	0.015	0.0008	0.022	0.0013	0.035	0.0021	0.054
BELOW	4.7244	120	0	0	0	0	0	0	0	0

Tolerance of Shaft:

	SIZE		g5		g6		g7		h5		h6		h7	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
OVER	0.1181	3	-0.0001	-0.004	-0.0001	-0.004	-0.0001	-0.004	0	0	0	0	0	0
BELOW	0.2362	6	-0.0003	-0.009	-0.0004	-0.012	-0.0006	-0.016	-0.0002	-0.005	-0.0003	-0.008	-0.0004	-0.012
OVER	0.2362	6	-0.0002	-0.005	-0.0002	-0.005	-0.0002	-0.005	0	0	0	0	0	0
BELOW	0.3937	10	-0.0004	-0.011	-0.0005	-0.014	-0.0007	-0.020	-0.0002	-0.006	-0.0003	-0.009	-0.0006	-0.015
OVER	0.3937	10	-0.0002	-0.006	-0.0002	-0.006	-0.0002	-0.006	0	0	0	0	0	0
BELOW	0.7087	18	-0.0005	-0.014	-0.0006	-0.017	-0.0009	-0.024	-0.0003	-0.008	-0.0004	-0.011	-0.0007	-0.018
OVER	0.7087	18	-0.0002	-0.007	-0.0002	-0.007	-0.0002	-0.007	0	0	0	0	0	0
BELOW	1.1811	30	-0.0006	-0.016	-0.0007	-0.020	-0.0011	-0.028	-0.0003	-0.009	-0.0005	-0.013	-0.0008	-0.021
OVER	1.1811	30	-0.0003	-0.009	-0.0003	-0.009	-0.0003	-0.009	0	0	0	0	0	0
BELOW	1.9685	50	-0.0007	-0.020	-0.0009	-0.025	-0.0013	-0.034	-0.0004	-0.011	-0.0006	-0.016	-0.0009	-0.025
OVER	1.9685	50	-0.0004	-0.010	-0.0004	-0.010	-0.0004	-0.010	0	0	0	0	0	0
BELOW	3.1496	80	-0.0009	-0.023	-0.0011	-0.029	-0.0015	-0.04	-0.0005	-0.013	-0.0007	-0.019	-0.011	-0.030
OVER	3.1496	80	-0.0004	-0.012	-0.0004	-0.012	-0.0004	-0.012	0	0	0	0	0	0
BELOW	4.7244	120	-0.0010	-0.027	-0.0013	-0.034	-0.0018	-0.047	-0.0006	-0.015	-0.0008	-0.022	-0.013	-0.035