

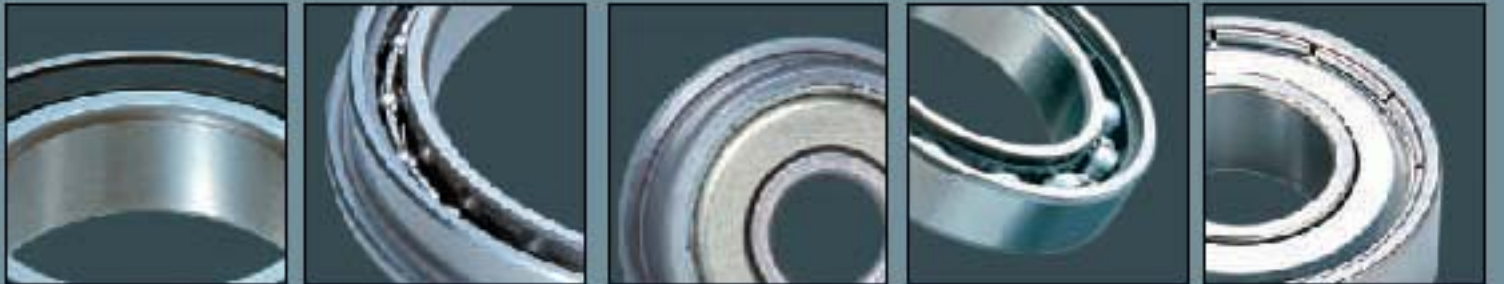
PRECISION BALL BEARINGS

HIGH PRECISION BALL BEARINGS

Extra Thin Type Bearings
Flanged Bearings
Stainless Bearings
Bore Dia. 0.6mm To 90mm



SAPPORO PRECISION BEARING

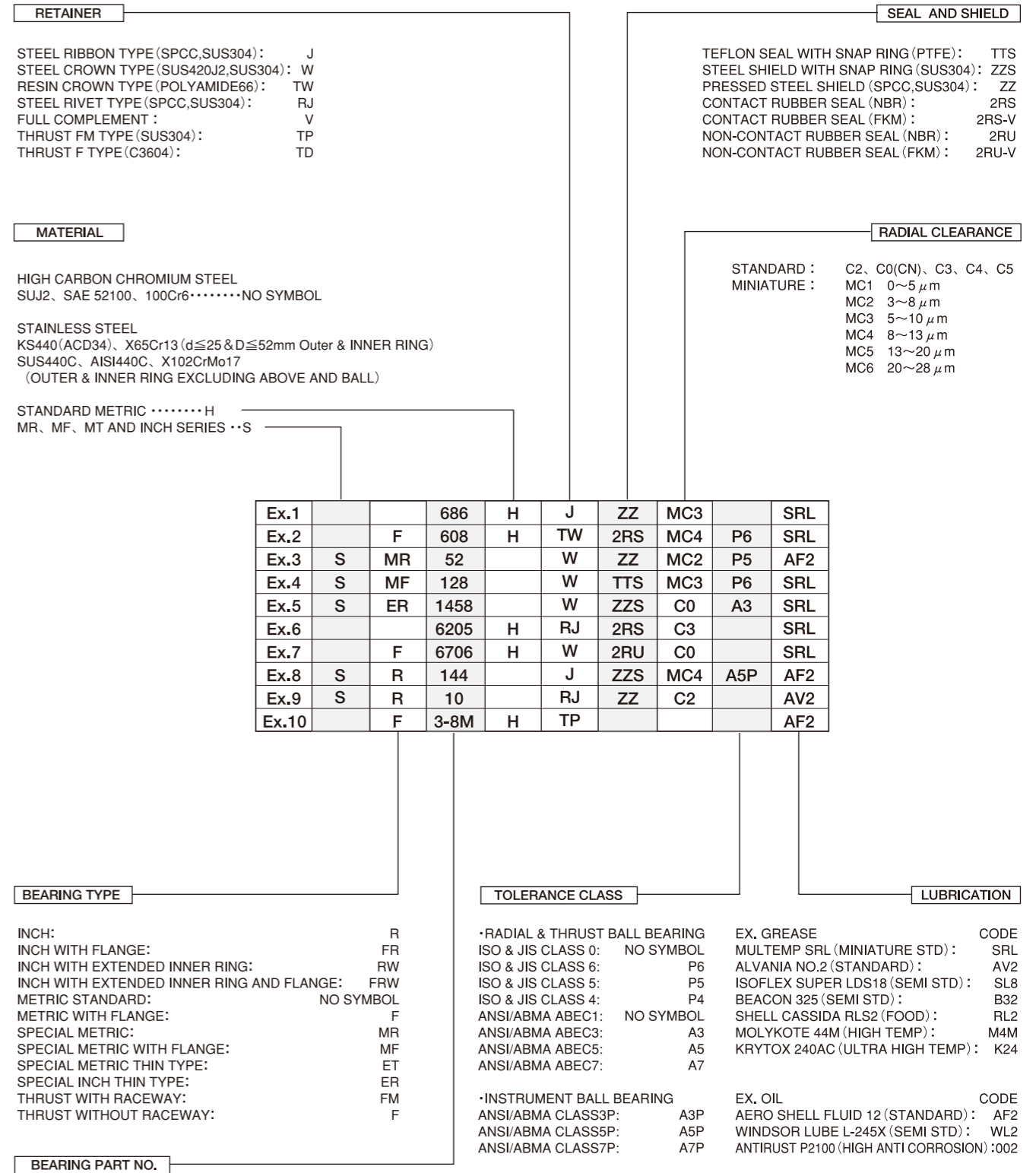


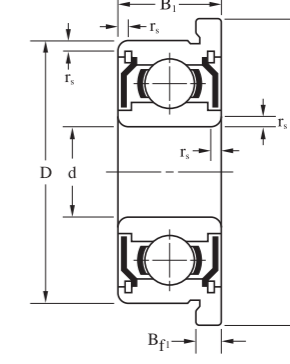
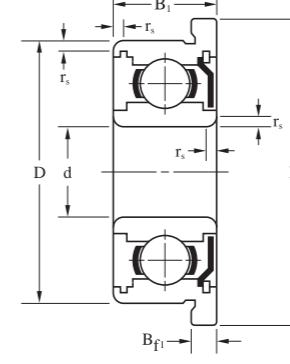
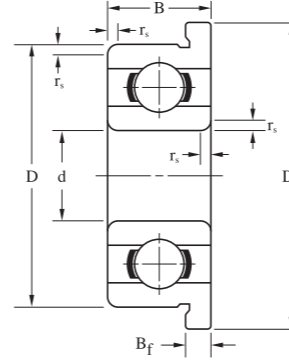
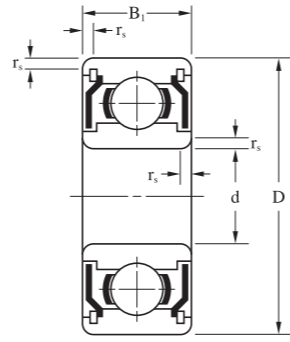
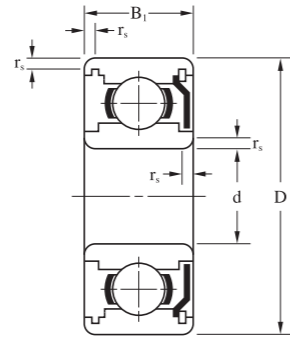
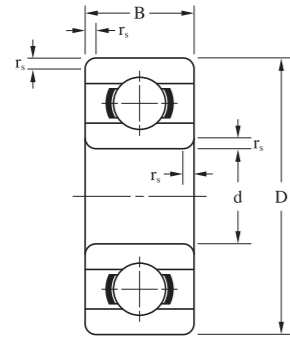


Dimension Contents

- Metric series24
- Inch series28
- Extra thin metric series30
- Large sized stainless series34
- Extra thin ET , ER series36
- Thrust series37

Bearing numbering system

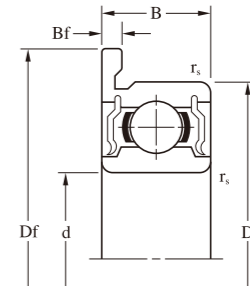
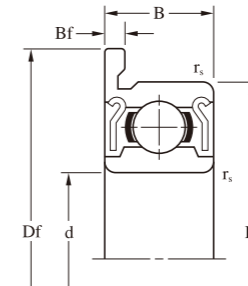
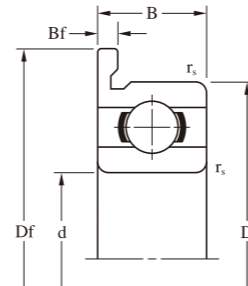
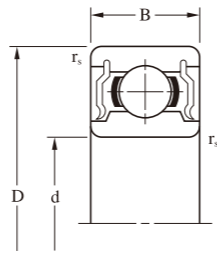
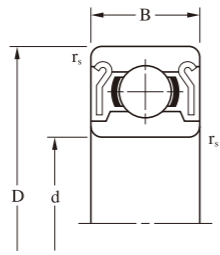
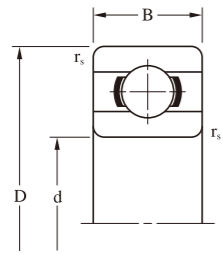




Bore Diameter: d		Outer Diameter: D		Flange Diameter: Df		Radius r _s (min)		Open Bearings				Seal, Shield Bearings						
								Width: B		Flange Width: Bf		Bearing Reference						
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	Open	Flange Open	Shield	Flange Shield	Seal		
																2RS	2RU	TTS
0.0400	1.016	0.1250	3.175	0.1710	4.343	0.0039	0.10	0.0469	1.191	0.0130	0.330	R09	—	FR09	—	—	—	—
0.0469	1.191	0.1562	3.967	0.2030	5.156	0.0039	0.10	0.0625	1.588	0.0130	0.330	R0*	FR0*	R0ZZ*	FR0ZZ*	—	—	—
0.0550	1.397	0.1875	4.762	0.2340	5.944	0.0039	0.10	0.0781	1.984	0.0230	0.584	R1*	FR1*	R1ZZ*	FR1ZZ*	—	—	—
0.0781	1.984	0.2500	6.350	0.2960	7.518	0.0039	0.10	0.0937	2.380	0.0230	0.584	R1-4*	FR1-4*	R1-4ZZ*	FR1-4ZZ*	—	—	TTS
0.0937	2.380	0.1875	4.762	0.2340	5.944	0.0039	0.10	0.0625	1.588	0.0180	0.457	R133	FR133	—	—	—	—	—
		0.1875	4.762	0.2340	5.944	0.0039	0.10	—	—	—	—	—	—	R133ZZS*	FR133ZZS*	—	—	—
		0.3125	7.938	0.3590	9.119	0.0059	0.15	0.1094	2.779	0.0230	0.584	R1-5*	FR1-5*	R1-5ZZS*	FR1-5ZZS*	—	—	TTS
0.1250	3.175	0.2500	6.350	0.2960	7.518	0.0039	0.10	0.0937	2.380	0.0230	0.584	R144J*	FR144J*	R144JZZ*	FR144JZZ*	—	—	TTS
		0.2500	6.350	0.2960	7.518	0.0039	0.10	0.0937	2.380	0.0230	0.584	R144*	FR144*	R144ZZ*	FR144ZZ*	—	—	TTS
		0.3125	7.938	0.3590	9.119	0.0039	0.10	0.1094	2.779	0.0230	0.584	R2-5*	FR2-5*	R2-5ZZ*	FR2-5ZZ*	—	—	TTS
		0.3750	9.525	0.4220	10.719	0.0059	0.15	0.1094	2.779	0.0230	0.584	R2-6*	FR2-6*	R2-6ZZ*	FR2-6ZZ*	2RS	2RU	TTS
		0.3750	9.525	0.4400	11.176	0.0118	0.30	0.1562	3.967	0.0300	0.762	R2*	FR2*	R2ZZ*	FR2ZZ*	2RS	2RU	—
		0.5000	12.700	—	—	0.0118	0.30	0.1719	4.366	—	—	R2A	—	R2AZZ	—	—	—	—
0.1562	3.967	0.3125	7.938	0.3590	9.119	0.0039	0.10	0.1094	2.779	0.0230	0.584	R155*	FR155*	R155ZZS*	FR155ZZS*	—	—	—
0.1875	4.762	0.3125	7.938	0.3590	9.119	0.0039	0.10	0.1094	2.779	0.0230	0.584	R156*	FR156*	R156ZZS*	FR156ZZS*	—	—	TTS
		0.3750	9.525	0.4220	10.719	0.0039	0.10	0.1250	3.175	0.0230	0.584	R166*	FR166*	R166ZZ*	FR166ZZ*	—	—	TTS
		0.5000	12.700	0.5650	14.351	0.0118	0.30	0.1960	4.978	0.0420	1.067	—	FR3*	—	—	—	—	—
		0.5000	12.700	0.5650	14.351	0.0118	0.30	0.1562	3.967	—	—	R3*	—	R3ZZ*	FR3ZZ*	2RS	2RU	TTS
		0.6250	15.875	—	—	0.0118	0.30	0.1960	4.978	—	—	R3A	—	R3AZZ	—	2RS	2RU	—
0.2500	6.350	0.3750	9.525	0.4220	10.719	0.0039	0.10	0.1250	3.175	0.0230	0.584	R168*	FR168*	R168ZZS*	FR168ZZS*	—	—	TTS
		0.5000	12.700	0.5470	13.894	0.0059	0.15	0.1250	3.175	0.0230	0.584	R188*	FR188*	R188ZZ*	FR188ZZ*	2RS	2RU	TTS
		0.6250	15.875	0.6900	17.526	0.0118	0.30	0.1960	4.978	0.0420	1.067	R4*	FR4*	R4ZZ*	FR4ZZ*	2RS	2RU	TTS
		0.7500	19.050	—	—	0.0157	0.40	0.2188	5.558	—	—	R4A	—	R4AZZ	—	2RS	2RU	—
0.3125	7.938	0.5000	12.700	0.5470	13.894	0.0059	0.15	0.1562	3.967	0.0310	0.787	R1810*	FR1810	R1810ZZS	FR1810ZZS*	—	—	TTS
0.3750	9.525	0.8750	22.225	0.9690	24.613	0.0157	0.40	0.2188	5.558	0.0620	1.575	R6	FR6*	R6ZZ	FR6ZZ*	2RS	2RU	TTS
0.5000	12.700	1.1250	28.575	1.2252	31.120	0.0157	0.40	0.2500	6.350	0.0620	1.575	R8	FR8*	R8ZZ	FR8ZZ*	2RS	2RU	TTS
0.6250	15.875	1.3750	34.925	1.4900	37.846	0.0315	0.80	0.2812	7.142	—	—	R10	—	R10ZZ	FR10ZZ	2RS	2RU	—
0.7500	19.050	1.6250	41.275	—	—	0.0315	0.80	0.3125	7.938	—	—	R12	—	R12ZZ	—	2RS	2RU	—

Width: B ₁		Flange Width: Bf ₁		Load Rating		Max. Speed		Cage Type	Ball Complement			Weight (Reference)					
				Cr(N)	Cor(N)	Grease	Oil		Qty.:Z	Size:Dw		Open	Flange Open	Shield	Flange Shield		
inch	mm	inch	mm			x1000rpm			pcs.	inch	mm	g					
—	—	—	—	106	28	130	150	W	6	0.0250	0.635	0.05	0.07	—	—	—	—
0.0937	2.380	0.0310	0.787	112	33	110	130	W	7	0.0236	0.600	0.10	0.12	0.15	0.20	—	—
0.1094	2.779	0.0310	0.787	232	67	90	110	W	6	0.0394	1.000	0.15	0.19	0.19	0.25	—	—
0.1406	3.571	0.0310	0.787	284	96	67	80	W	7	0.0394	1.000	0.40	0.46	0.53	0.61	—	—
—	—	—	—	189	60	80	95	W	7	0.0315	0.800	0.10	0.13	—	—	—	—
0.0937	2.380	0.0310	0.787	144	53	80	95	W	10	0.0236	0.600	—	—	0.15	0.21	—	—
0.1406	3.571	0.0310	0.787	552	176	60	71	W	6	0.0625	1.588	0.60	0.67	1.15	1.25	—	—
0.1094	2.779	0.0310	0.787	311	110	67	80	J	8	0.0394	1.000	0.27	0.33	0.32	0.40	—	—
0.1094	2.779	0.0310	0.787	284	96	67	80	W	7	0.0394	1.000	0.27	0.33	0.40	0.48	—	—
0.1406	3.571	0.0310	0.787	558	180	60	67	W,J	6	0.0625	1.588	0.50	0.57	0.74	0.84	—	—
0.1406	3.571	0.0310	0.787	640	227	53	63	J	7	0.0625	1.588	0.96	1.05	1.23	1.35	—	—
0.1562	3.967	0.0300	0.762	631	219	56	67	J	7	0.0625	1.588	1.04	1.20	1.37	1.53	—	—
0.1719	4.366	—	—	640	227	53	63	J	7	0.0625	1.588	3.30	—	3.30	—	—	—
0.1250	3.175	0.0360	0.914	359	150	53	63	W	10	0.0394	1.000	0.51	0.58	0.61	0.72	—	—
0.1250	3.175	0.0360	0.914	359	150	53	63	W	10	0.0394	1.000	0.40	0.47	0.45	0.56	—	—
0.1250	3.175	0.0310	0.787	709	272	50	60	J	8	0.0625	1.588	0.81	0.90	0.85	0.97	—	—
—	—	—	—	1301	488	43	53	J	7	0.0937	2.381	—	2.50	—	—	—	—
0.1960	4.978	0.0420	1.067	1301	488	43	53	J	7	0.0937	2.381	2.21	—	2.95	3.24	—	—
0.1960	4.978	—	—	1480	621	38	45	J	8	0.0937	2.381	4.75	—	5.08	—	—	—
0.1250	3.175	0.0360	0.914	373	172	48	56	W	11	0.0394	1.000	0.57	0.66	0.60	0.73	—	—
0.1875	4.762	0.0450	1.143	1082	442	40	50	J	8	0.0787	2.000	1.60	1.71	2.32	2.54	—	—
0.1960	4.978	0.0420	1.067	1480	621	38	45	J	8	0.0937	2.381	4.46	4.82	4.54	4.90	—	—
0.2812	7.142	—	—	2336	896	36	43	J	6	0.1378	3.500	7.48	—	10.0	—	—	—
0.1562	3.967	0.0310	0.787	542	276	40	48	W	12	0.0472	1.200	1.39	1.54	1.57	1.72	—	—
0.2812	7.142	0.0620	1.575	3332	1411	32	38	J	7	0.1563	3.969	9.02	9.71	11.7	12.4	—	—
0.3125	7.938	0.0620	1.575	5108	2413	27	32	J	8	0.1875	4.762	11.6	13.0	24.1	25.6	—	—
0.3438	8.733	0.0687	1.745	5999	3265	21	25	RJ	10	0.1875	4.762	23.5	—	38.1	40.40	—	—
0.4375	11.113	—	—	9384	5057	17	21	RJ,TW	9	0.2500	6.350	53.1	—	69.3	—	—	—

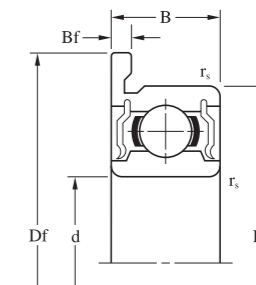
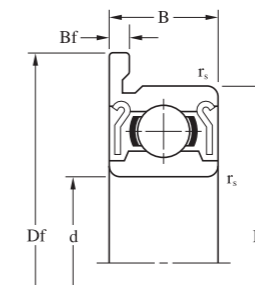
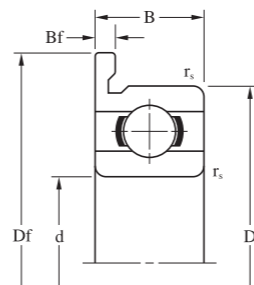
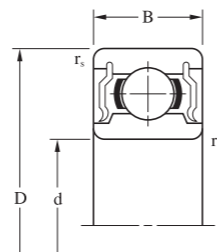
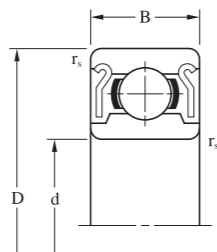
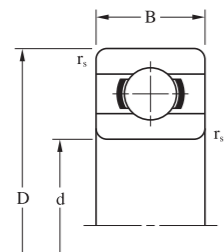
1) *Available with inner ring width extended by 0.015"(0.3962mm) each side.
 2) Bearings also available with single shield or seal : suffix Z, RS, RU or TS
 3) Bearings also available with stainless material : suffix S or H



Bore Diameter: d		Outer Diameter: D		Flange Diameter: Df		Radius r _s (min)		Width: B		Flange Width: Bf		Bearing Reference			
												Open	Flange Open	Shield	Flange Shield
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch				
10	0.3937	15	0.5906	16.5	0.6496	0.15	0.0059	3	0.1181	0.8	0.0315	6700	F6700	—	—
		15	0.5906	16.5	0.6496	0.15	0.0059	4	0.1575	0.8	0.0315	—	—	6700ZZS	F6700ZZS
		19	0.7480	21.0	0.8268	0.30	0.0118	5	0.1969	1.0	0.0394	6800	F6800	6800ZZ	F6800ZZ
		19	0.7480	21.0	0.8268	0.30	0.0118	7	0.2756	1.5	0.0591	63800	F63800	63800ZZ	F63800ZZ
		22	0.8661	25.0	0.9843	0.30	0.0118	6	0.2362	1.5	0.0591	6900	F6900	6900ZZ	F6900ZZ
12	0.4724	18	0.7087	19.5	0.7677	0.20	0.0079	4	0.1575	0.8	0.0315	6701	F6701	6701ZZS	F6701ZZS
		21	0.8268	23.0	0.9055	0.30	0.0118	5	0.1969	1.1	0.0433	6801	F6801	6801ZZ	F6801ZZ
		21	0.8268	23.0	0.9055	0.30	0.0118	7	0.2756	1.5	0.0591	63801	F63801	63801ZZ	F63801ZZ
		24	0.9449	26.5	1.0433	0.30	0.0118	6	0.2362	1.5	0.0591	6901	F6901	6901ZZ	F6901ZZ
15	0.5906	21	0.8268	22.5	0.8858	0.20	0.0079	4	0.1575	0.8	0.0315	6702	F6702	6702ZZS	F6702ZZS
		24	0.9449	26.0	1.0236	0.30	0.0118	5	0.1969	1.1	0.0433	6802	F6802	6802ZZ	F6802ZZ
		24	0.9449	26.0	1.0236	0.30	0.0118	7	0.2756	1.5	0.0591	63802	F63802	63802ZZ	F63802ZZ
		28	1.1024	30.5	1.2008	0.30	0.0118	7	0.2756	1.5	0.0591	6902	F6902	6902ZZ	F6902ZZ
17	0.6693	23	0.9055	24.5	0.9646	0.20	0.0079	4	0.1575	0.8	0.0315	6703	F6703	6703ZZS	F6703ZZS
		26	1.0236	28.0	1.1024	0.30	0.0118	5	0.1969	1.1	0.0433	6803	F6803	6803ZZ	F6803ZZ
		26	1.0236	28.0	1.1024	0.30	0.0118	7	0.2756	1.5	0.0591	63803	F63803	63803ZZ	F63803ZZ
		30	1.1811	32.5	1.2795	0.30	0.0118	7	0.2756	1.5	0.0591	6903	F6903	6903ZZ	F6903ZZ
20	0.7874	27	1.0630	28.5	1.1220	0.20	0.0079	4	0.1575	0.8	0.0315	6704	F6704	6704ZZS	F6704ZZS
		32	1.2598	35.0	1.3780	0.30	0.0118	7	0.2756	1.5	0.0591	6804	F6804	6804ZZ	F6804ZZ
		32	1.2598	35.0	1.3780	0.30	0.0118	10	0.3937	2.0	0.0787	63804	F63804	63804ZZ	F63804ZZ
		37	1.4567	40.0	1.5748	0.30	0.0118	9	0.3543	2.0	0.0787	6904	F6904	6904ZZ	F6904ZZ
25	0.9843	32	1.2598	34.0	1.3386	0.20	0.0079	4	0.1575	1.0	0.0394	6705	F6705	—	—
		37	1.4567	40.0	1.5748	0.30	0.0118	7	0.2756	1.5	0.0591	6805	F6805	6805ZZ	F6805ZZ
		37	1.4567	40.0	1.5748	0.30	0.0118	10	0.3937	2.0	0.0787	63805	F63805	63805ZZ	F63805ZZ
		42	1.6535	45.0	1.7717	0.30	0.0118	9	0.3543	2.0	0.0787	6905	F6905	6905ZZ	F6905ZZ
30	1.1811	37	1.4567	39.0	1.5354	0.20	0.0079	4	0.1575	1.0	0.0394	6706	F6706	—	—
		42	1.6535	45.0	1.7717	0.30	0.0118	7	0.2756	1.5	0.0591	6806	F6806	6806ZZ	F6806ZZ
		42	1.6535	45.0	1.7717	0.30	0.0118	10	0.3937	2.0	0.0787	63806	F63806	63806ZZ	F63806ZZ
		47	1.8504	50.0	1.9685	0.30	0.0118	9	0.3543	2.0	0.0787	6906	F6906	6906ZZ	F6906ZZ

1) Bearings also available with single shield or seal : suffix Z, RS, RU or TS
 2) Bearings also available with stainless material : suffix H
 3) SUJ2 bearings use RJ type retainer, stainless bearings use J type retainer.

Seal			Load Rating		Max. Speed		Cage Type	Ball Complement			Weight (Ref.)	
			Cr(N)	Cor(N)	Grease	Oil		Qty.:Z	Size:Dw		Shield	Flange Shield
2RS	2RU	TTS			x1000rpm			pcs.	mm	inch	g	
—	—	—	855	435	15	17	W	11	1.588	0.0625	1.4	1.6
2RS	—	TTS	855	435	15	17	W	11	1.588	0.0625	1.9	2.1
2RS	2RU	—	1716	840	37	43	J,TW	10	2.381	0.0937	5.6	6.1
2RS	2RU	—	1716	840	37	43	J,TW	10	2.381	0.0937	7.4	8.1
2RS	2RU	—	2695	1273	34	41	J	9	3.175	0.1250	10.0	11.3
2RS	—	TTS	926	530	13	15	W	13	1.588	0.0625	3.1	3.4
2RS	2RU	—	1915	1041	33	39	J,TW	12	2.381	0.0937	6.5	7.1
2RS	2RU	—	1915	1041	33	39	J,TW	12	2.381	0.0937	8.5	9.3
2RS	2RU	—	2886	1466	31	36	J	10	3.175	0.1250	12.0	13.2
2RS	—	TTS	937	582	11	13	W	14	1.588	0.0625	3.6	3.9
2RS	2RU	—	2073	1253	28	33	J,TW	14	2.381	0.0937	7.6	8.3
2RS	2RU	—	2073	1253	28	33	J,TW	14	2.381	0.0937	10.0	10.9
2RS	2RU	—	4321	2259	26	30	J	10	3.969	0.1563	19.0	19.9
2RS	—	TTS	1000	658	9.5	11	W	16	1.588	0.0625	4.0	4.4
2RS	2RU	—	2233	1456	26	30	J,TW	16	2.381	0.0937	8.2	8.9
2RS	2RU	—	2233	1456	26	30	J,TW	16	2.381	0.0937	11.0	12.0
2RS	2RU	—	4588	2565	23	38	J	11	3.969	0.1563	20.0	21.4
2RS	—	TTS	1402	729	8.5	10	W	18	1.588	0.0625	5.9	6.3
2RS	2RU	—	4015	2462	21	25	J,RJ ³⁾	13	3.500	0.1378	18.0	19.8
2RS	2RU	—	4015	2462	21	25	J,RJ ³⁾	13	3.500	0.1378	24.0	26.5
2RS	2RU	—	6381	3682	19	23	RJ	11	4.762	0.1875	40.0	42.8
2RS	—	—	1091	838	7	8	W	21	1.588	0.0625	7.1	7.9
2RS	2RU	—	4303	2932	18	21	J,RJ ³⁾	15	3.500	0.1378	24.0	26.1
2RS	2RU	—	4303	2932	18	21	J,RJ ³⁾	15	3.500	0.1378	32.0	34.1
2RS	2RU	—	7001	4540	16	19	RJ	13	4.762	0.1875	47.0	50.2
—	2RU	—	1143	947	5.5	7	W	24	1.588	0.0625	8.3	9.2
2RS	2RU	—	4538	3402	15	18	J,RJ ³⁾	17	3.500	0.1378	27.0	29.4
2RS	2RU	—	4538	3402	15	18	J,RJ ³⁾	17	3.500	0.1378	36.0	39.2
2RS	2RU	—	7242	5003	14	17	RJ	14	4.762	0.1875	53.0	56.6



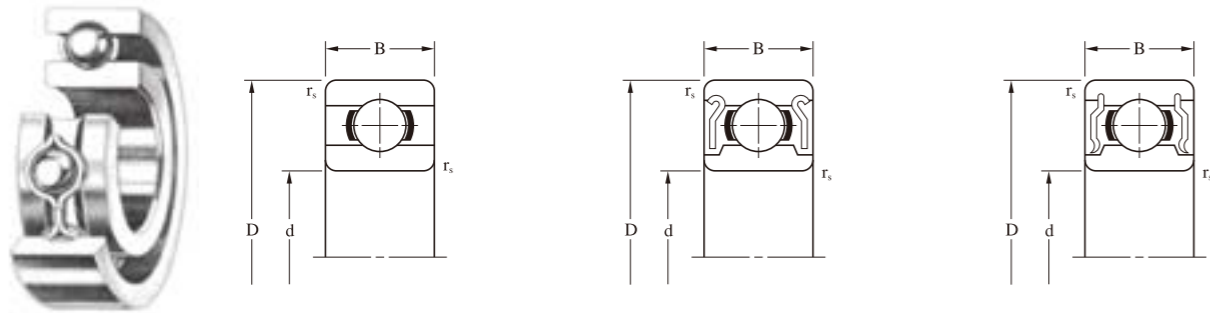
Technical

Dimension

Bore Diameter: d		Outer Diameter: D		Flange Diameter: Df		Radius r _s (min)		Width: B		Flange Width: Bf		Bearing Reference			
												Open	Flange Open	Shield	Flange Shield
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch				
35	1.3780	44	1.7323	—	—	0.30	0.0118	5	0.1969	—	—	6707	—	—	—
		47	1.8504	50.0	1.9685	0.30	0.0118	7	0.2756	1.5	0.0591	6807	F6807	6807ZZ	F6807ZZ
		55	2.1654	58.0	2.2835	0.60	0.0236	10	0.3937	2.5	0.0984	6907	F6907	6907ZZ	F6907ZZ
40	1.5748	50	1.9685	—	—	0.30	0.0118	6	0.2362	—	—	6708	—	—	—
		52	2.0472	55.0	2.1654	0.30	0.0118	7	0.2756	1.5	0.0591	6808	F6808	6808ZZ	F6808ZZ
		62	2.4409	65.0	2.5591	0.60	0.0236	12	0.4724	2.5	0.0984	6908	F6908	6908ZZ	F6908ZZ
45	1.7717	55	2.1654	—	—	0.3	0.0118	6	0.2362	—	—	6709	—	—	—
		58	2.2835	61	2.4016	0.3	0.0118	7	0.2756	1.5	0.0591	6809	F6809	6809ZZ	F6809ZZ
		68	2.6772	71	2.7953	0.6	0.0236	12	0.4724	2.5	0.0984	6909	F6909	6909ZZ	F6909ZZ
50	1.9685	62	2.4409	—	—	0.3	0.0118	6	0.2362	—	—	6710	—	—	—
		65	2.5591	68	2.6772	0.3	0.0118	7	0.2756	1.5	0.0591	6810	F6810	6810ZZ	F6810ZZ
		72	2.8346	75	2.9528	0.6	0.0236	12	0.4724	2.5	0.0984	6910	F6910	6910ZZ	F6910ZZ
55	2.1654	72	2.8346	—	—	0.3	0.0118	9	0.3543	—	—	6811	—	6811ZZ	—
		80	3.1496	—	—	1.0	0.0394	13	0.5118	—	—	6911	—	6911ZZ	—
60	2.3622	78	3.0709	—	—	0.3	0.0118	10	0.3937	—	—	6812	—	6812ZZ	—
		85	3.3465	—	—	1.0	0.0394	13	0.5118	—	—	6912	—	6912ZZ	—
65	2.5591	85	3.3465	—	—	0.6	0.0236	10	0.3937	—	—	6813	—	6813ZZ	—
		90	3.5433	—	—	1.0	0.0394	13	0.5118	—	—	6913	—	6913ZZ	—
70	2.7559	90	3.5433	—	—	0.6	0.0236	10	0.3937	—	—	6814	—	6814ZZ	—
		100	3.9370	—	—	1.0	0.0394	16	0.6299	—	—	6914	—	6914ZZ	—
75	2.9528	95	3.7402	—	—	0.6	0.0236	10	0.3937	—	—	6815	—	6815ZZ	—
		105	4.1339	—	—	1.0	0.0394	16	0.6299	—	—	6915	—	6915ZZ	—
80	3.1496	100	3.9370	—	—	0.6	0.0236	10	0.3937	—	—	6816	—	6816ZZ	—
		110	4.3307	—	—	1.0	0.0394	16	0.6299	—	—	6916	—	6916ZZ	—
85	3.3465	110	4.3307	—	—	1.0	0.0394	13	0.5118	—	—	6817	—	6817ZZ	—
		120	4.7244	—	—	1.1	0.0433	18	0.7087	—	—	6917	—	6917ZZ	—
90	3.5433	115	4.5276	—	—	1.0	0.0394	13	0.5118	—	—	6818	—	6818ZZ	—
		125	4.9213	—	—	1.1	0.0433	18	0.7087	—	—	6918	—	6918ZZ	—

1) Bearings also available with single shield or seal : suffix Z, RS, RU or TS
 2) Bearings also available with stainless material : suffix H
 3) SUJ2 bearings use RJ type retainer, stainless bearings use J type retainer.

Seal			Load Rating		Max. Speed		Cage Type	Ball Complement			Weight (Ref.)	
			Cr(N)	Cor(N)	Grease	Oil		Qty.:Z	Size:Dw		Shield	Flange Shield
2RS	2RU	TTS			x1000rpm			pcs.	mm	inch	g	
2RS	—	—	1866	1635	4.9	6	W	26	2.000	0.0787	15.0	—
2RS	2RU	—	4729	3821	13	16	J,RJ ³⁾	19	3.500	0.1378	32.0	34.7
2RS	2RU	—	10900	7818	12	14	RJ	14	5.953	0.2344	87.0	92.2
2RS	—	—	2516	2233	4.3	5	W	25	2.381	0.0937	23.0	—
2RS	2RU	—	4923	4178	12	14	J,RJ ³⁾	21	3.500	0.1378	35.0	38.0
2RS	2RU	—	13678	9968	11	13	RJ	14	6.747	0.2656	131	137
2RS	—	—	2580	2397	3.9	4.6	W	27	2.381	0.0937	25.0	—
2RS	2RU	—	6187	5381	11.0	13.0	J	21	3.969	0.1563	42.0	45.3
2RS	2RU	—	14100	10830	9.7	11.0	RJ	15	6.747	0.2656	147	153
2RS	—	—	2670	2640	3.5	4.1	W	30	2.381	0.0937	64.0	—
2RS	2RU	—	6610	6090	9.6	11.0	J,RJ ³⁾	24	3.969	0.1563	52.0	—
2RS	2RU	—	14540	11710	9.0	11.0	RJ	16	6.747	0.2656	133	—
2RS	2RU	—	8800	8100	8.7	10.0	RJ	22	4.762	0.1875	83.0	—
2RS	—	—	16600	14100	8.1	9.6	RJ	17	7.144	0.2813	185	—
2RS	—	—	11500	10600	8.0	9.4	RJ	21	5.556	0.2187	104	—
2RS	—	—	20200	17300	7.5	8.9	RJ	17	7.938	0.3125	192	—
2RS	—	—	11900	11500	7.3	8.6	RJ	23	5.556	0.2187	126	—
2RS	—	—	17400	16100	7.1	8.4	RJ	19	7.144	0.2813	211	—
2RS	—	—	12100	11900	6.8	8.1	RJ	24	5.556	0.2187	134	—
2RS	—	—	23700	21200	6.4	7.6	RJ	17	8.731	0.3437	342	—
2RS	—	—	12500	12900	12.5	12.9	RJ	26	5.556	0.2187	142	—
2RS	—	—	24400	22600	6.1	7.2	RJ	18	8.731	0.3437	363	—
2RS	2RU	—	12700	13300	12.7	13.3	RJ	27	5.556	0.2187	150	—
2RS	—	—	25000	24000	5.7	6.8	RJ	19	8.731	0.3437	382	—
2RS	—	—	18700	19000	5.6	6.6	RJ	23	7.144	0.2813	266	—
2RS	—	—	31900	29600	5.3	6.3	RJ	17	10.319	0.4063	535	—
2RS	—	—	19000	19700	5.3	6.3	RJ	24	7.144	0.2813	279	—
2RS	—	—	32800	31600	5.1	6.0	RJ	18	10.319	0.4063	565	—

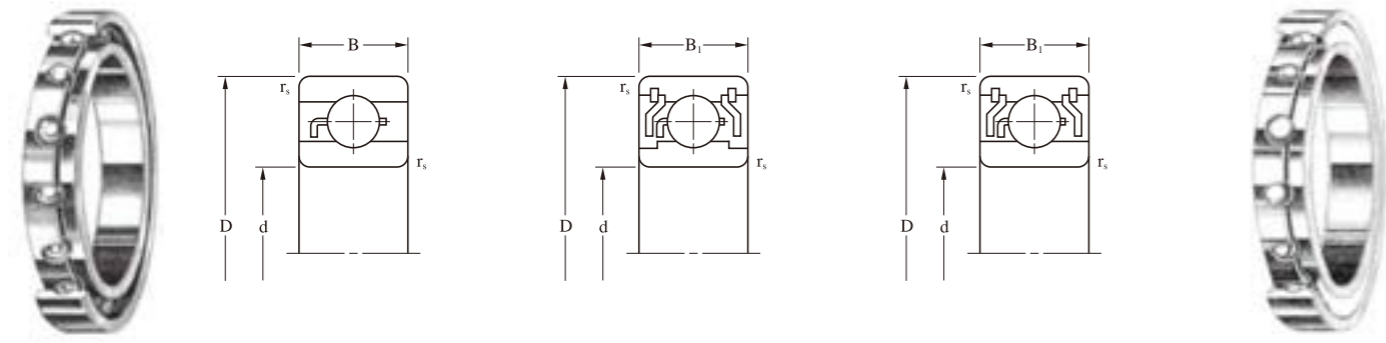


Bore Diameter:		Outer Diameter:		Width: B		Radius:		Bearing Reference				
d		D				rs(min)		Open	Shield	Seal		
mm	inch	mm	inch	mm	inch	mm	inch			ZZ	2RS	2RU
10	0.3937	26	1.0236	8	0.3150	0.3	0.0118	6000H*	ZZ	2RS	2RU	TTS
		30	1.1811	9	0.3543	0.6	0.0236	6200H*	ZZ	2RS	2RU	-
		35	1.3780	11	0.4331	0.6	0.0236	6300H	ZZ	2RS	2RU	-
12	0.4724	28	1.1024	8	0.3150	0.3	0.0118	6001H*	ZZ	2RS	2RU	TTS
		32	1.2598	10	0.3937	0.6	0.0236	6201H	ZZ	2RS	2RU	-
		37	1.4567	12	0.4724	1.0	0.0394	6301H	ZZ	2RS	2RU	-
15	0.5906	32	1.2598	9	0.3543	0.3	0.0118	6002H*	ZZ	2RS	2RU	-
		35	1.3780	11	0.4331	0.6	0.0236	6202H	ZZ	2RS	2RU	-
		42	1.6535	13	0.5118	1.0	0.0394	6302H	ZZ	2RS	2RU	-
17	0.6693	35	1.3780	10	0.3937	0.3	0.0118	6003H	ZZ	2RS	2RU	-
		40	1.5748	12	0.4724	0.6	0.0236	6203H	ZZ	2RS	2RU	-
		47	1.8504	14	0.5512	1.0	0.0394	6303H	ZZ	2RS	2RU	-
20	0.7874	42	1.6535	12	0.4724	0.6	0.0236	6004H	ZZ	2RS	2RU	-
		47	1.8504	14	0.5512	1.0	0.0394	6204H	ZZ	2RS	2RU	-
		52	2.0472	15	0.5906	1.1	0.0433	6304H	ZZ	2RS	2RU	-
25	0.9843	47	1.8504	12	0.4724	0.6	0.0236	6005H	ZZ	2RS	2RU	-
		52	2.0472	15	0.5906	1.0	0.0394	6205H	ZZ	2RS	2RU	-
		62	2.4409	17	0.6693	1.1	0.0433	6305H	ZZ	2RS	2RU	-
30	1.1811	55	2.1654	13	0.5118	1.0	0.0394	6006H	ZZ	2RS	2RU	-
		62	2.4409	16	0.6299	1.0	0.0394	6206H	ZZ	2RS	2RU	-
		72	2.8346	19	0.7480	1.1	0.0433	6306H	ZZ	2RS	2RU	-
35	1.3780	62	2.4409	14	0.5512	1.0	0.0394	6007H	ZZ	2RS	2RU	-
		72	2.8346	17	0.6693	1.1	0.0433	6207H	ZZ	2RS	2RU	-
		80	3.1496	21	0.8268	1.5	0.0591	6307H	ZZ	2RS	2RU	-
40	1.5748	68	2.6772	15	0.5906	1.0	0.0394	6008H	ZZ	2RS	2RU	-
		80	3.1496	18	0.7087	1.1	0.0433	6208H	ZZ	2RS	2RU	-
45	1.7717	75	2.9528	16	0.6299	1.0	0.0394	6009H	ZZ	2RS	2RU	-
		85	3.3465	19	0.7480	1.1	0.0433	6209H	ZZ	2RS	2RU	-
50	1.9685	80	3.1496	16	0.6299	1.0	0.0394	6010H	ZZ	2RS	2RU	-
		90	3.5433	20	0.7874	1.1	0.0433	6210H	ZZ	2RS	2RU	-

Load Rating		Max. Speed		Cage Type	Ball Complement			Weight (Ref.)
Cr(N)	Cor(N)	Grease	Oil		Qty.:Z	Size: Dw		Shield
		x1000rpm				pcs.	mm	
3860	1570	31	36	J	7	4.762	0.1875	19
4340	1920	24	29	RJ,TW	8	4.762	0.1875	32
6870	2750	22	27	RJ	6	7.144	0.2813	53
4340	1910	27	32	J,TW	8	4.762	0.1875	22
5770	2450	22	27	RJ,TW	7	5.953	0.2344	37
8240	3360	20	25	RJ	6	7.938	0.3125	60
4750	2270	23	27	RJ,TW	9	4.762	0.1875	30
6490	3000	20	24	RJ,TW	8	5.953	0.2344	45
9710	4370	17	20	RJ	7	7.938	0.3125	82
5090	2630	21	25	RJ,TW	10	4.762	0.1875	39
8130	3850	17	21	RJ,TW	8	6.747	0.2656	65
11550	5330	15	18	RJ	7	8.731	0.3437	115
7960	4050	17	21	RJ,TW	9	6.350	0.2500	69
10910	5360	15	17	RJ,TW	8	7.938	0.3125	106
13490	6310	14	17	RJ	7	9.525	0.3750	144
8550	4690	15	18	RJ,TW	10	6.350	0.2500	80
11900	7390	13	15	RJ,TW	9	7.938	0.3125	128
17490	9060	11	13	RJ	8	10.319	0.4063	232
11240	6610	13	15	RJ,TW	11	7.144	0.2813	116
16530	9080	11	13	RJ,TW	9	9.525	0.3750	199
22630	12080	9.6	12	RJ	8	11.906	0.4687	346
13560	8250	11	13	RJ	11	7.938	0.3125	155
21810	12360	9.2	11	RJ	9	11.112	0.4375	288
28290	15270	8.5	10	RJ	8	13.494	0.5313	457
14250	9220	10	12	RJ	12	7.938	0.3125	192
24730	14330	8.3	10	RJ	9	11.906	0.4687	366
15150	9660	9.2	11	RJ	13	8.731	0.3437	245
27790	16300	7.7	9.2	RJ	9	12.700	0.5000	407
18510	13260	8.4	9.9	RJ	14	8.731	0.3437	261
29800	18610	7.1	8.5	RJ	10	12.700	0.5000	463

1) *Bearings also available with SAE52100 material : suffix without H
 2) Bearings also available with single shield or seal : suffix Z, RS, RU or TS

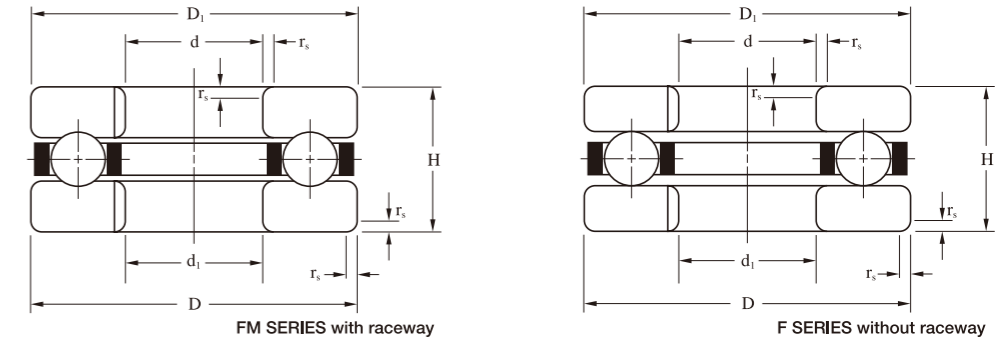
Extra thin metric, inch series : ET, ER



Bore Diameter: d	Outer Diameter: D		Open Type Width: B		Seal/Shield Type Width: B1		Radius: rs(min)		Bearing References			Load Rating		Max. Speed		Cage Type	Ball Complement		Weight(Ref.)			
	mm	inch	mm	inch	mm	inch	mm	inch	Open	Shield	Seal	Cr (N)	Cor (N)	Grease	Oil		Qty.: Z	Size: Dw	Shield	Flange Shield	g	
ET series																						
15	0.5906	20	0.7874	3.5	0.1378	-	-	0.15	0.0059	ET2015	-	-	942	582	22	26	W	14	1.588	0.0625	2.10	-
		21	0.8268	3.5	0.1378	-	-	0.15	0.0059	ET2115	-	-	939	581	22	26	W	14	1.588	0.0625	2.43	-
16	0.6299	22	0.8661	4.0	0.1575	-	-	0.15	0.0059	ET2216	-	-	968	619	20	24	W	15	1.588	0.0625	3.04	-
		23	0.9055	4.5	0.1772	4.5	0.1772	0.15	0.0059	ET2316	ZZS	TTS	968	619	20	24	W	15	1.588	0.0625	4.03	5.48
18	0.7087	24	0.9445	4.0	0.1575	-	-	0.15	0.0059	ET2418	-	-	988	654	18	21	W	16	1.588	0.0625	4.25	-
20	0.7874	25	0.9843	4.0	0.1575	4.0	0.1575	0.15	0.0059	ET2520	ZZS	TTS	1011	691	17	20	W	17	1.588	0.0625	3.55	4.12
ER series																						
9.525	0.3750	15.875	0.6250	3.967	0.1562	3.967	0.1562	0.25	0.0098	ER1038	ZZS	TTS	856	435	30	35	W	11	1.588	0.0625	2.71	2.98
12.700	0.5000	19.050	0.7500	3.967	0.1562	3.967	0.1562	0.25	0.0098	ER1212	ZZS	TTS	918	542	24	28	W	13	1.588	0.0625	3.49	3.84
15.875	0.6250	22.225	0.8750	3.967	0.1562	3.967	0.1562	0.25	0.0098	ER1458	ZZS	TTS	968	619	20	24	W	15	1.588	0.0625	4.18	4.60
19.050	0.7500	25.400	1.0000	3.967	0.1562	3.967	0.1562	0.25	0.0098	ER1634	ZZS	TTS	1011	691	17	20	W	17	1.588	0.0625	5.02	5.52

1) Bearings also available with single shield or seal : suffix ZS or TS
2) Bearings also available with stainless material : suffix S

Thrust series : FM, F



FM series with raceway

Bearing Reference e	Inner Ring Bore Dia.		Outer Ring Outer Dia.		Outer Ring Bore Dia.		Inner Ring Outer Dia.		Radius		Hight		Load Rating		Max Speed (x1000rpm)		Cage Type	Ball Complement		Weight (Ref.)	
	d	D	d1	D1	rs(min)	H	Ca(N)	Coa(N)	Grease	Oil	Qty.: Z	Size:Dw	mm	inch	g						
F3-8M	3	0.1181	8	0.3150	3.2	0.1260	7.8	0.3071	0.15	0.0059	3.5	0.1378	993	590	19	28	TP	6	1.588	0.0625	0.9
F4-9M	4	0.1575	9	0.3543	4.2	0.1654	8.8	0.3465	0.15	0.0059	4.0	0.1575	944	640	17	25	TP	6	1.588	0.0625	1.2
F4-10M	4	0.1575	10	0.3937	4.2	0.1654	9.8	0.3858	0.15	0.0059	4.0	0.1575	925	661	16	24	TP	6	1.588	0.0625	1.5
F5-12M	5	0.1969	12	0.4724	5.2	0.2047	11.8	0.4646	0.20	0.0079	4.0	0.1575	1056	942	14	22	TP	8	1.588	0.0625	2.1
F6-12M	6	0.2362	12	0.4724	6.2	0.2441	11.8	0.4646	0.20	0.0079	4.5	0.1772	1819	1588	14	20	TP	9	2.000	0.0787	2.2
F6-14M	6	0.2362	14	0.5512	6.25	0.2461	13.8	0.5433	0.20	0.0079	5.0	0.1969	2155	1701	12	18	TP	7	2.381	0.0937	3.5
F7-13M	7	0.2756	13	0.5118	7.2	0.2835	12.8	0.6614	0.20	0.0079	4.5	0.1772	1767	1645	13	20	TP	9	2.000	0.0787	2.6
F7-17M	7	0.2756	17	0.6693	7.2	0.2835	16.8	0.6614	0.30	0.0118	6.0	0.2362	3086	2675	10	15	TP	8	2.778	0.1094	6.5
F8-16M	8	0.3150	16	0.6299	8.2	0.3228	15.8	0.6220	0.30	0.0118	5.0	0.1969	3917	3394	11	17	TP	9	3.000	0.1181	4.5
F8-19M	8	0.3150	19	0.7480	8.2	0.3228	18.8	0.7402	0.30	0.0118	7.0	0.2756	3939	3476	9	13	TP	8	3.175	0.1250	9.1
F9-20M	9	0.3543	20	0.7874	9.2	0.3622	19.8	0.7795	0.30	0.0118	7.0	0.2756	3855	3571	8	13	TP	8	3.175	0.1250	9.9
F10-18M	10	0.3937	18	0.7087	10.2	0.4016	17.8	0.7008	0.30	0.0118	5.5	0.2165	2470	2721	10	15	TP	10	2.381	0.0937	5.4

1) Bearings also available with stainless material : suffix H

F series without raceway

Bearing Reference	Inner Ring Bore Dia.		Outer Ring Outer Dia.		Outer Ring Bore Dia.		Inner Ring Outer Dia.		Radius		Hight		Load Rating		Cage Type	Ball Complement		Weight (Ref.)	
	d	D	d1	D1	rs(min)	H	Ca(N)	Coa(N)	Qty.: Z	Size:Dw	mm	inch	g						
F2-6	2.0	0.0787	6	0.2362	2.0	0.0787	6	0.2362	0.10	0.0039	3.0	0.1181	117	83	TD	6	1.000	0.0394	0.6
F2X-7	2.5	0.0984	7	0.2756	2.5	0.0984	7	0.2756	0.10	0.0039	3.5	0.1378	156	117	TD	6	1.200	0.0472	0.9
F3-8	3.0	0.1181	8	0.3150	3.0	0.1181	8	0.3150	0.10	0.0039	3.5	0.1378	166	137	TD	7	1.200	0.0472	0.6
F4-9	4.0	0.1575	9	0.3543	4.0	0.1575	9	0.3543	0.15	0.0059	4.0	0.1575	166	156	TD	8	1.200	0.0472	1.5
F4-10	4.0	0.1575	10	0.3937	4.0	0.1575	10	0.3937	0.15	0.0059	4.5	0.1772	274	245	TD	7	1.588	0.0625	2.0
F5-11	5.0	0.1969	11	0.4331	5.0	0.1969	11	0.4331	0.15	0.0059	4.5	0.1772	284	284	TD	7	1.588	0.0625	2.4
F6-12	6.0	0.2362	12	0.4724	6.0	0.2362	12	0.4724	0.15	0.0059	4.5	0.1772	274	284	TD	9	1.588	0.0625	2.5
F7-15	7.0	0.2756	15	0.5906	7.0	0.2756	15	0.5906	0.20	0.0079	5.0	0.1969	558	548	TD	8	2.381	0.0937	4.4
F8-16	8.0	0.3150	16	0.6299	8.0	0.3150	16	0.9299	0.20	0.0079	5.0	0.1969	597	627	TD	8	2.000	0.0787	5.0
F9-17	9.0	0.3543	17	0.6693	9.0	0.3543	17	0.6693	0.20	0.0079	5.0	0.1969	437	542	TD	9	2.000	0.0787	5.1
F10-18	10.0	0.3937	18	0.7087	10.0	0.3937	18	0.7087	0.20	0.0079	5.5	0.2165	617	705	TD	9	2.381	0.0937	6.0

1) Bearings also available with stainless material : suffix H (Cage material : Brass)

Technical Dimension

Lubrication

COMMON OIL BRANDS AND EFFICIENCY

Manufacturer	Brand	Code	Lubricant Base	Flash Point (°C)	Viscosity (m ² /s)	Operating Temperature (°C)	Approved Standard
Shell Oil Co.	Aero Shell Fluid 31	AF1	Diester	237	14.33 (40°C)	-40~+204	MIL-PRF-83282D
	Aero Shell Fluid 12	AF2	Diester	220	8.9 (54.4°C)	-54~+135	MIL-PRF-6085D
	Aero Shell Fluid 3	AF3	Mineral	155	10.0 (38°C)	-47~+115	MIL-PRF-7870C
Anderson Oil Co.	Windsor Lube L-245X	WL2	Diester	215	14.0 (38°C)	-55~+175	MIL-PRF-6085D
Dupont,E.I.	Krytox 143AZ	KAZ	Fluorinated	-	12.4 (40°C)	-54~+149	-
Kluber Lub.	Isoflex PDB38	PD8	Diester	210	12.0 (40°C)	-55~+100	-
Anderol Co.	Anderol 402	A42	Diester	227	12.4 (40°C)	-54~+177	MIL-PRF-6085D
JX Nippon Oil Energy.	Antirust P2100	002	Mineral	166	13.0 (40°C)	-20~+115	VV-L-800c

COMMON GREASE BRANDS AND EFFICIENCY

Manufacturer	Brand	Code	Thickening Agent	Lubricant Base	Drop Point (°C)	Cone Penetration: Worked (60 strokes)	Operating Temperature (°C)	Approved Standard
Shell Oil Co.	Alvania 1S	AV1	Lithium	Mineral	182	323	-35~+120	-
	Alvania 2S	AV2	Lithium	Mineral	185	275	-25~+120	-
	Alvania 3S	AV3	Lithium	Mineral	185	242	-20~+135	-
	Alvania RLQ2	AQ2	Lithium	Mineral	195	275	-30~+120	-
	Aero Shell NO.7	AG7	Microgel	Diester	260	296	-73~+149	MIL-PRF-83282D
	Aero Shell NO.14	AG4	Calsium	Diester	148	273	-54~+93	MIL-G-25537C
	Aero Shell NO.15	AG5	Fluorotelomer	Silicone	260	290	-73~+232	MIL-G-25013E
	Aero Shell NO.22	AG2	Microgel	Synthetic Hydrocarbon	260	275	-65~+204	MIL-PRF-81322F
	Aero Shell NO.33MS	A3S	Lithium	Synthetic Hydrocarbon Ester	234	281	-73~+121	MIL-G-21164D
	Alvania EP2	AE2	Lithium	Mineral	184	284	-20~+110	-
	Shell Cassida HDS2	HS2	Aluminum Complex	PAO	240	280	-30~+120	NSF(USDA)H1
	Shell Cassida RLS2	RL2	Aluminum Complex	PAO	240	275	-35~+120	NSF(USDA)H1
Kyodo Yushi	Multemp PS NO.2	PS2	Lithium	Diester,Mineral	190	275	-55~+130	-
	Multemp SRL	SRL	Lithium	Diester,Mineral	191	245	-50~+150	-
Kluber Lub.	Staburags NBU12	NB2	Barium	Mineral	220	270	-35~+150	NSF(USDA)H2
	Staburags NBU12/300KP	NB3	Barium	Mineral	220	300	-35~+150	-
	Staburags NBU8 EP	NB8	Barium	Mineral	220	280	-35~+150	NSF(USDA)H2
	Isoflex NBU15	NB5	Barium	Diester,Mineral	200	280	-40~+130	MIL-G-25760A
	Isoflex TOPAS NB52	B52	Barium	Synthetic Hydrocarbon	220	280	-60~+160	-
	Isoflex Alltime SL2	AS2	Lithium	Diester	180	280	-70~+150	-
	Isoflex LDS18 Special A	L8A	Lithium	Diester	190	280	-60~+130	MIL-G-23827B
	Isoflex Super LDS18	SL8	Lithium	Diester	190	280	-60~+130	MIL-G-7118A
	Isoflex PDB38 CX2000	PDC	Lithium	Synthetic	-	-	-70~+120	-
	Barielta IEL	IEL	PTFE	Fluorinated	-	280	-35~+220	-
	Barielta IEL/V	IEV	PTFE	Fluorinated	-	280	-65~+200	-
	Barielta IMI	IMI	PTFE	Fluorinated	-	280	-50~+220	-
	Barielta IMI/V	IMV	PTFE	Fluorinated	-	280	-50~+220	-
	Barielta L55/2 H1	L55	PTFE	Fluorinated	-	280	-35~+260	NSF(USDA)H2
	Barielta IS	BSI	PTFE	Fluorinated	-	280	-35~+260	-
Klubersynth UH1 64-62	UH6	Silicate	Synthetic Hydrocarbon	-	280	-40~+150	NSF(USDA)H1	
Dow Corning Co.	Molykote 33M	M3M	Lithium	Silicone	200	260	-70~+180	-
	Molykote 33L	M3L	Lithium	Silicone	200	300	-70~+180	-
	Molykote 44M	M4M	Lithium	Silicone	210	260	-40~+200	-
	Molykote BR2 Plus	BR2	Lithium	Mineral	180	280	-30~+150	-
	Molykote FS3451	F35	PTFE	Fluorinated	232	310	-40~+200	-
Dupont,E.I.	Krytox 240AC	K24	PFPE	Fluorinated	-	282	-35~+288	MIL-G-27617
	Krytox 240AZ	K2Z	PFPE	Fluorinated	-	285	-54~+149	MIL-G-27617
Esso Standard	Beacon325	B32	Lithium	Diester	190	274	-60~+120	-
	Templex N3	TX3	Lithium Complex	Mineral	260	230	-30~+160	-
Mobil Oil Co.	Mobil NO.28	MG2	Bentnite	Synthetic Hydrocarbon	262	280	-62~+204	MIL-G-81322E
	Mobilux EP2	ME2	Lithium	Mineral	202	280	-30~+130	-
Nippon Grease Co.	Nig Ace W	NAW	Diurea	Synthetic	268	256	-30~+150	-
Shinetsu Chemical Co.	Silicolube G40M	G40	Lithium	Silicone	210	260	-30~+200	MIL-L-15719A



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Scope of Registration: Production of Miniature Bearings



SAPPORO PRECISION INC.

8-2 South 1, East 2, Chuo-ku
Sapporo, Hokkaido 060-0051 Japan
PHONE:81- (0)11-251-9261 FAX:81- (0)11-251-9266

URL: <http://www.sppc.co.jp>

E-mail : info@sppc.co.jp



YKA 4003532



YKA 4003532

KITANIHON SEIKI CO.,LTD.

26-23 Kamiashibetsu-Cho
Ashibetsu, Hokkaido 079-1397 Japan
PHONE:81- (0)124-22-1250 FAX:81- (0)124-22-1038

URL: <http://www.ezo-brg.co.jp>



YKA 4003532



YKA 4003532



JQA-EM0554

SHANGHAI PRECISION BEARING CO.,LTD.

345 Minshen Road , Songjiang
Industrial Zone , Shanghai , 201612 China
PHONE:86- (0)21-67600758 FAX:86- (0)21-67600777

URL: <http://www.spb.com.cn>



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