



WIND POWER BEARINGS

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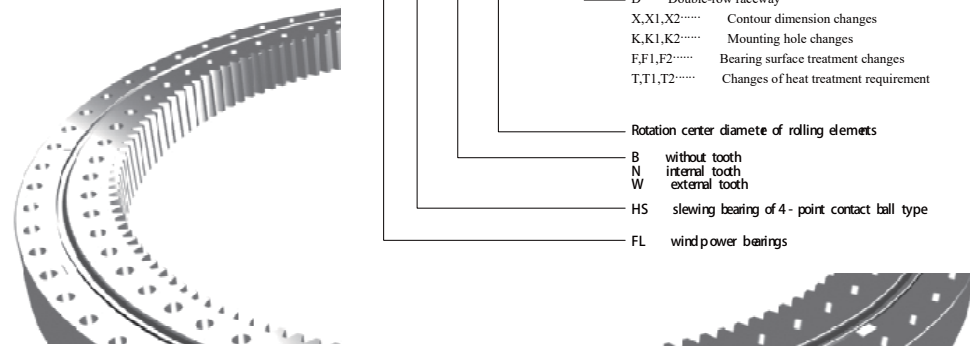
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1. Preparation method of Wind power bearing code compilation method

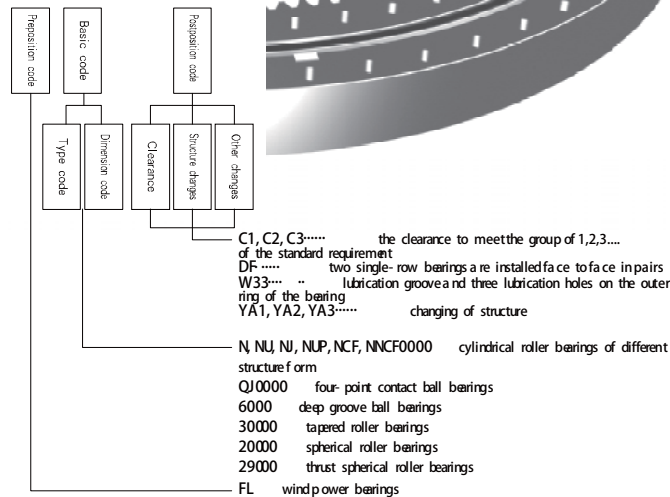
1.1 Code of Yaw bearing and Pitch bearing

The code of yaw bearing and pitch bearing consists of preposition code, basic code and postposition code.



1.2 Code of transmission system bearing

Transmission system bearings include main shaft bearings, gearbox bearings, driving device bearings and generator bearings. C&H transmission system bearing code consists of preposition code, basic code and postposition.



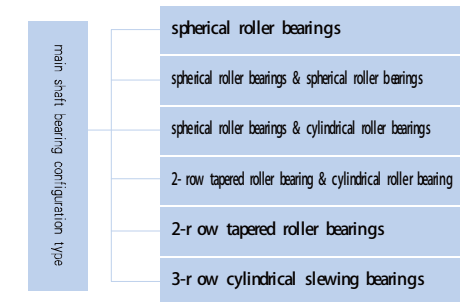
2. The structural characteristics of wind power bearings

2.1 The structural characteristics of yaw bearings and blade bearings

The structure of the yaw bearing and blade bearings are single-row or double-row four-point contact ball slewing bearings. The blade bearings endure the axial force, radial force and enen turning moment produced by both the blade and wind swept blade, and though the adjustment of the blade structure, it can ensure the inclination angle of the blade relative to the different wind speed. The yaw bearings are in the top of the tower, which support the entire cabin of the wind turbine and bear the axial force, radial force and overturning moment produced by wind swept blade, and though the yaw adjustment of the yaw driving structure, it can ensure the directionality of the pod on the positive wind power.

2.2 The structural characteristics of main bearings

Due to different design of the turbine transmission system, the main bearings have a lot of structure style.



2.2 The structural characteristics of gearbox bearings

According to the using position, the gearbox bearings can divide into low speed bearings, intermediate shaft bearings and high speed end bearings. The product structure type contains cylindrical roller bearings, tapered roller bearings, spherical roller bearings, Self-aligning thrust roller bearings and four-point contact ball bearings.

2.3 The structural characteristics of dive device bearings

The diving device includes the yaw driven and pitch driven. The bearing structure type contains tapered roller bearings, spherical roller bearings, cylindrical roller bearings and deep groove ball bearings.

2.4 The structural characteristics of generator bearings

C&H generator bearings is insulation bearings, including deep groove ball bearings which rolling elements made by ceramic balls and cylindrical roller bearings which ring surface has performed insulated treatment.

3. The calculation of the wind power bearings type selection

Due to the wind power bearings need to ensure the high reliability and long life, C&H calculate every wind turbine for the bearing type selection, which includes strength calculation, life calculation, bolt strength calculations, and tooth strength calculation. C&H can execute synchronous design to the bearing selection with customer's turbine design. Before customers select the bearings, they need to provide bearing working load (static load, fatigue load spectrum), load coordinate system and driveline structure layout and other information to C&H. C&H calculates the bearing type selection based on the bearing application condition.

4. The assembly and maintenance of the wind power bearings

Due to the individual design of the wind power bearings, C&H will provide customers with detailed bearing assembly maintenance instructions to the customers when customers select C&H bearings.

BEARING MODEL CONTENTS



Rotor bearings



Blade bearings



Yaw bearings



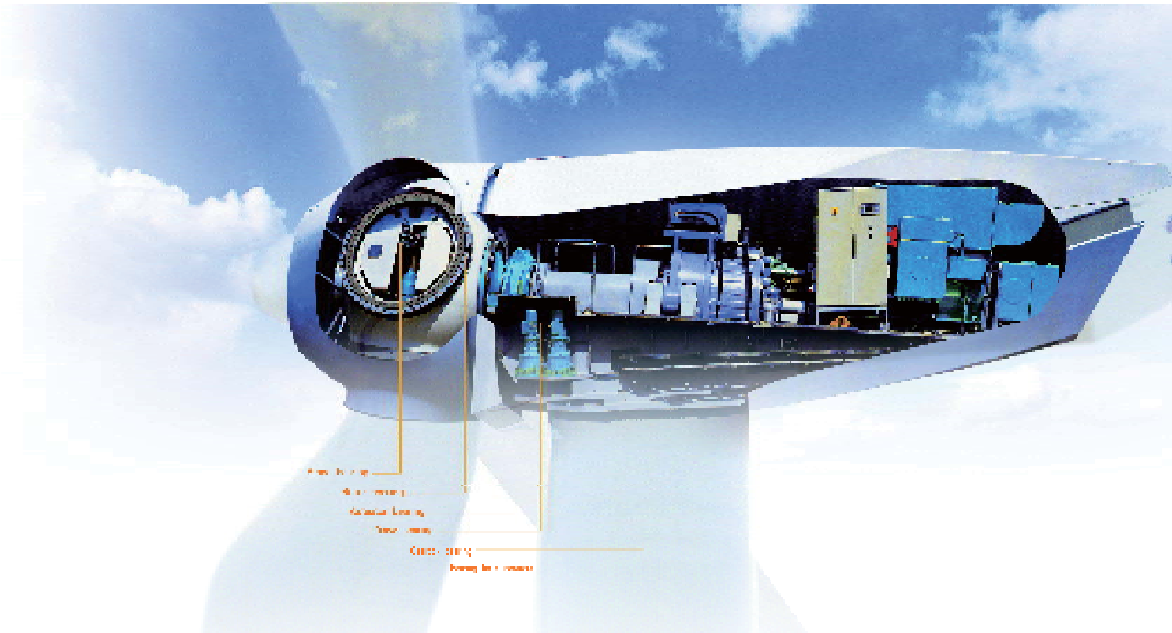
Actuator bearings



Gearbox bearings



Bearings for Generators

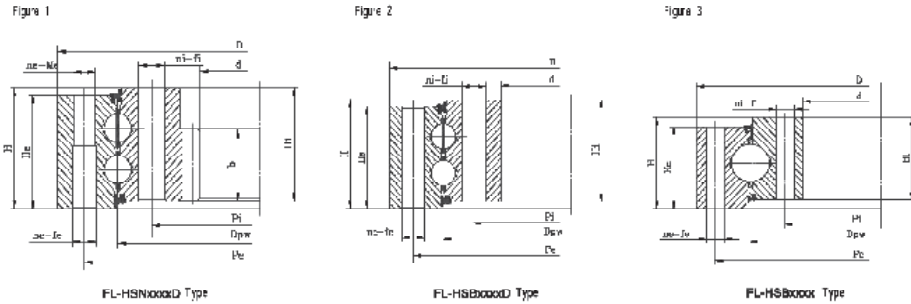


Yaw bearings

Yaw bearings are mostly single line or two lines four-point contact ball bearings with internal or external teeth, which support the main carriage of wind power generators located on the top of towers. They can ensure the proper directivity of the cabin against the positive wind by the adjustment of the yaw drive mechanism.

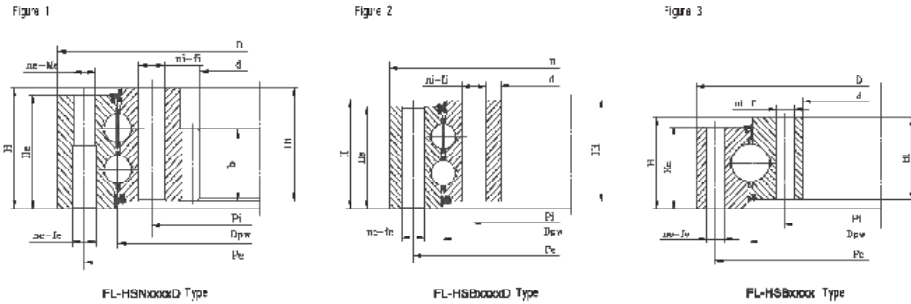
Blade bearings

Blade bearings are single line four point contact ball slewing bearings or two lines four point contact ball slewing bearings with same diameter. These bearings have internal teeth or no teeth, connecting blades and hubs. They can carry axial force, radial force and overturning moment produced by the blades together with the passing wind through them. They can ensure a proper slope angle of the blades against different wind speed by the adjustment of the blade mechanism.



Bearing Model	Boundary Dimension						Mounting Dimension									Gear Parameter				Weight Kg	WT 60kW
	d	D	H	Hi	He	Dpw	Pi	Pe	ni	fi	Mi	ne	fe	Me	b	m	z	x			
	mm						mm									mm					
FL-HSN420FT1	325	495	58	48	48	420	375	469	24		12	24	14		48	5	67	0	36.6	60kW	
FL-HSB1100FT	945	1255	130	117	117	1100	1000	1200	52	26		47	26		407				407	850KW	
FL-HSN1715FT1	1454	1905	140	126	113	1715	1600	1830	50	33		50	33		90	12	122	+0.5	918	1.0MW	
FL-HSN1700DFT1	1470	1870	142	132	134	1700	1600	1800	50	33		50	33		100	10	148	+0.5	878	1.25MW	
FL-HSB1697DF	1524	1895	182	169	169	1697	1590	1800	54	33		54	33						1110	1.5MW	
FL-HSB1697DX1F	1524	1895	182	169	169	1697	1590	1800	54	33		64	33						1100	1.5MW	
FL-HSB1697DKF	1524	1895	182	169	169	1697	1590	1800	60	33		64	33						1113	1.5MW	
FL-HSN1900DFT	1657.3	2080	144	135	133	1900	1800	2000	54	33		48	33		135	12	139	+0.5	1180	1.5MW	
FL-HSN1900DXFT1	1657.3	2080	169	159	159	1900	1800	2000	54	33		54	33		100	12	139	+0.5	1240	1.5MW	
FL-HSN1900DX1FT1	1657.3	2080	168	158	158	1900.5	1800	2000	54	32		54	33		100	12	139	+0.5	1250	1.5MW	
FL-HSN1900DX2FT1	1657.3	2080	168	158	158	1900.5	1800	2000	54	32		54	33		100	12	139	+0.5	1230	1.5MW	
FL-HSN1900DX2KFT1	1657.3	2080	168	158	158	1900.5	1800	2000	54	33		54	33		100	12	139	+0.5	1230	1.5MW	
FL-HSN1900DX3FT1	1657.3	2080	168	158	158	1900.5	1800	2000	54	33		54	33		100	12	139	+0.5	1235	1.5MW	
FL-HSN1900DX4FT1	1657.3	2080	182	169	169	1900	1800	2000	54	33		54	33		100	12	139	+0.5	1293	1.5MW	
FL-HSN1900DX4KFT1	1657.3	2080	182	169	169	1900	1800	2000	54	33		54	33		100	12	139	+0.5	1293	1.5MW	
FL-HSN1900DX5FT1	1657.3	2080	168	158	158	1900.5	1800	2000	54	33		54	33		100	12	139	+0.5	1235	1.5MW	
FL-HSN1900DX6FT1	1657.3	2080	168	158	158	1900.5	1800	2000	54	33		54	33		100	12	139	+0.5	1230	1.5MW	
FL-HSN1900DX6FT2	1657.3	2080	168	158	158	1900.5	1800	2000	54	33		54	33		100	12	139	+0.5	1230	1.5MW	
FL-HSN1900DX6KFT2	1657.3	2080	168	158	158	1900.5	1800	2000	54	33		54	33		100	12	139	+0.5	1230	1.5MW	
FL-HSN1900DX8FT1	1657.3	2080	168	158	158	1900.5	1800	2000	54	33		54	34		100	12	139	+0.5	1230	1.5MW	
FL-HSN1901DFT1	1657.2	2080	170	159	159	1901	1800	2000	54	39		68	36		100	12	139	+0.5	1170	1.5MW	
FL-HSN1890DFT1	1652	2053	150	138	138	1890	1800	1984	54	33		60	33		120	14	119	+0.5	1030	2.0MW	
FL-HSN1892DFT1	1652	2053	160	148	150	1892	1800	1984	54	33		60	33		120	14	119	+0.5	1040	2.0MW	

Notes: d, inner d. ameter, D, Outer diameter, H, Width of bearing, Dpw, Center diameter of roller, Pi, Center diameter of mounting holes, n, No. of mounting holes, fi, Diameter of mounting holes, Mi, Diameter of screw holes, b, Sear width, m, Module, z, No. of gears, x, Addendum.
 Euffix: e, Outer ring, i, Inner ring

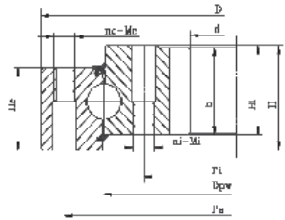


Bearing Model	Boundary Dimension						Mounting Dimension								Gear Parameter				Weight Kg	WT
	d	D	H	Hi	He	Dpw	Pi	Pe	ni	fi	Mi	ne	fe	Me	b	m	z	x		
	mm						mm								mm					
FL-HSN1900DX7FT1	1652	2060	188	179	175	1900	1800	2000	64	30		72	30		120	14	119	+0.5	1252	2.0MW
FL-HSN2217DFT1	1896	2404	199	189	159	2217	2110	2324	60	39		80	39		120	12	159	+0.5	1900	2.0MW
FL-HSN2221DX4FT1	1920	2418	191	181	181	2221	2110	2332	64	33		64	33		120	12	161	+0.5	1940	2.0MW
FL-HSN2221DFT1	1944	2410	179	169	169	2215	2110	2332	60	39		60	39		120	12	163	+0.5	1680	2.0MW
FL-HSN2221DX1FT1	1944	2410	199	189	189	2221	2110	2332	60	39		60	39		120	12	163	+0.5	1850	2.0MW
FL-HSN2221DX1FT1-B	1944	2410	199	189	189	2221	2110	2332	60	39		60	39		120	12	163	+0.5	1850	2.0MW
FL-HSN2221DX1KFT1	1944	2410	199	189	189	2221	2110	2332	60	39		60	39		120	12	163	+0.5	1850	2.0MW
FL-HSN2221DX1K2FT1	1944	2410	199	189	189	2221	2110	2332	60	39		60	39		120	12	163	+0.5	1850	2.0MW
FL-HSN2221DX3FT1	1944	2410	199	189	189	2221	2110	2332	60	39		60	39		120	12	163	+0.5	1850	2.0MW
FL-HSN2221DX3KFT1	1944	2410	199	189	189	2221	2110	2332	60	39		60	39		120	12	163	+0.5	1850	2.0MW
FL-HSN2221DX5FT1	1946.4	2410	178	168	168	2221	2110	2332	64	33		80	33		120	12	163	+0.5	1610	2.0MW
FL-HSN2221DX2FT1	1956	2410	200	191	189	2221	2110	2330	60	39		60	39		100	12	164	+0.5	1800	2.0MW
FL-HSN2225DFT1	1960	2420	196	184	184	2225	2110	2340	60	39		60	39	36	125	14	141	0.5	1790	2.0MW
FL-HSN2225DKF1T1	1960	2420	196	184	184	2225	2110	2340	64	33		60	39	36	125	14	141	0.5	1810	2.0MW
FL-HSN2225DX1FT1	1960	2420	192	182	182	2225	2110	2340	60	39		60	39		125	14	141	0.5	1740	2.0MW
FL-HSN2203DFT1	1956	2392	181	171	171	2203	2100	2306	60	39		60	39		100	12	164	+0.5	1450	2.1MW
FL-HSB2421DFT	2226	2647	237	224	224	2421	2300	2552	54	39		54	39						2400	2.3MW
FL-HSN2410DX1FT2	2144	2615	197	184	184	2410	2300	2520	64	39		92	39		135	16	135	+0.5	1955	3.0MW
FL-HSN2410DFT1	2147	2620	195	182	182	2410	2300	2520	64	39		82	39		135	16	135	+0.5	1930	3.0MW
FL-HSB2640DFT	2420	2920	282	259	280	2640	2500	2780	72	39	100	39							3780	3.6MW
FL-HSN3350DFT1	2964	3620	264	251	251	3350	3127	3500	128	39		126	39		160	20	149	+0.5	5160	5.0MW
FL-HSN3340DFT1	2988	3675	272	259	259	3340	3139	3480	96	45		112	45		120	18	167	+0.5	5700	6.0MW

Notes: d: inner diameter, D: Outer diameter, H: Width of bearing, Dpw: Center diameter of roller, Pi: Center diameter of mounting holes, n: No. of mounting holes, fi: Diameter of mounting holes, M: Diameter of screw holes, b: Gear width, m: Module, z: No. of gears, x: Addendum.
 Suffix: e: Outer ring, i: Inner ring

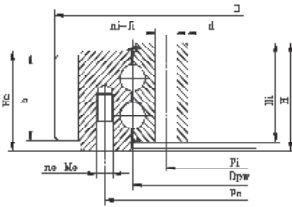
WIND POWER BEARING • YAW BEARINGS

Figure 1



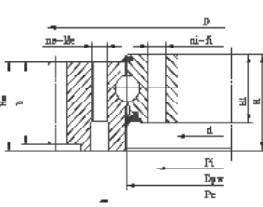
FL-HSNbaax Type

Figure 2



FL-HSWbaaxD Type

Figure 3



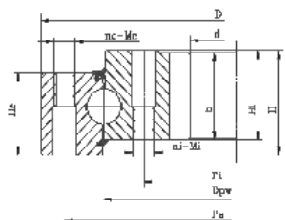
FL-HSWbaax Type

Bearing Model	Boundary Dimension						Mounting Dimension									Gear Parameter				Weight Kg	WT
	d	D	H	Hi	He	Dpw	Pi	Pe	ni	fi	Mi	ne	fe	Me	b	m	z	x			
	mm						mm									mm				Kg	
FL-HSW800FT1	710	924	67	58	58	800	744	854	30	13		30		12	58	6	152	0	108	60kW	
FL-HSN1872FT1	1628	2051	140	120	110	1872	1759	1985	48	33	30	48	33	30	120	14	118	0	931	1.0MW	
FL-HSN2182FT	1988	2299	109	100	72	2182	2108	2255	60	22	20	16	22	44-M20	99.5	14	143	+0.5	595	1.0MW	
FL-HSW2330DFT1	2137	2616	183	169	169	2330	2215	2436	68	39		64	33	30.3	145	20	128	+0.5	1830	1.5MW	
FL-HSW2330DX1FT1	2135	2616	185	170	170	2330	2215	2436	68	39		64	33	30	145	20	128	+0.5	1830	1.5MW	
FL-HSW2330DX2FT1	2135	2616	185	170	170	2330	2215	2436	68	39		64	33	30	145	20	128	+0.5	1830	1.5MW	
FL-HSW2330DX3FT1	2135	266	185	170	171	2330	2215	2436	68	39		64	33	30	147	20	128	+0.5	1900	1.5MW	
FL-HSW2330DX5FT1	2135	2616	185	170	170	2330	2215	2436	68	39		64	33	30	147	20	128	+0.5	1890	1.5MW	
FL-HSW2330DX6FT1	2135	2636	204	169	190	2330	2215	2436	68	39		64	33	30	145	20	129	+0.5	2110	1.5MW	
FL-HSW2355FT1	2184	2626.9	130	109	121	2355	2250	2460	75	33		76	33	30	120	18	143	+0.5	1211	1.5MW	
FL-HSW2355X1FT1	2184	2626.4	159	109	150	2355	2250	2460	75	33		76	33	30	120	18	143	+0.5	1360	1.5MW	
FL-HSW2600FT1	2422	2858	151	116	135	2600	2496	2706	84	33		84	39	36	135	16	177	+0.5	1470	1.5MW	
FL-HSN2718FT1	2469.6	2908	137	124	95	2718	2615	2830	90	30	27	90	30		120	18	138	+0.5	1240	1.5MW	
FL-HSN2718FT1S	2469.6	2908	137	124	95	2718	2615	2830	90	30	27	90	30		120	18	138	+0.5	1240	1.5MW	
FL-HSN2718FT1T	2469.6	2908	137	124	95	2718	2615	2830	90	30	27	90	30		120	18	138	+0.5	1240	1.5MW	
FL-HSW2718FT1	2560	3020.4	137	97	125	2718	2630	2806	100	26		100	26	24	120	18	165	+0.5	1550	1.5MW	
FL-HSW2765FT1T2	2617	3002.4	137	92	125	2765	2677	2850	84	30		84	30	27	120	18	164	+0.5	1187	1.5MW	
FL-HSW2765FT1	2617	3002.4	137	92	125	2765	2677	2850	84	30		84	30	27	120	18	164	+0.5	1190	1.5MW	
FL-HSN2297FT1	2034	2500	170	160	120	2297	2194	2441	72	33	30	72	33	30	149	18	114	+0.5	1500	2.0MW	
FL-HSW2462DFT1	2274	2750	170	160	150	2462	2354	2568	60	39		60	39	36	125	20	135	+0.5	1660	2.0MW	
FL-HSN2690FT1	2380	2900	162	150	140	2690	2560	2820	90	36	33	84	36	33	140	20	120	+0.5	2000	2.0MW	
FL-HSN2690X1FT1	2380	2900	189	175	140	2690	2560	2820	90	36	33	84	36	33	165	20	120	+0.5	2190	2.0MW	

Notes: d: inner diameter, D: Outer diameter, H: Width of bearing, Dpw: Center diameter of roller, Pi: Center diameter of mounting holes, ni: No. of mounting holes, fi: Diameter of mounting holes, Mi: Diameter of screw holes, b: Sear width, m: Module, z: No. of gears, x: Addendum.
 Prefix: e: Outer ring, i: Inner ring

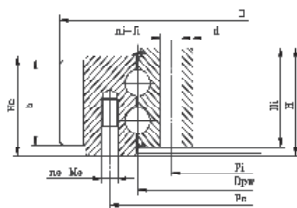
WIND POWER BEARING • YAW BEARINGS

Figure 1



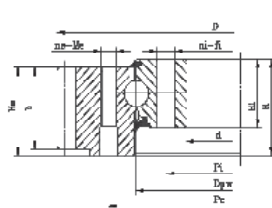
FL-HSNxxxx Type

Figure 2



FL-HSWxxxxD Type

Figure 3

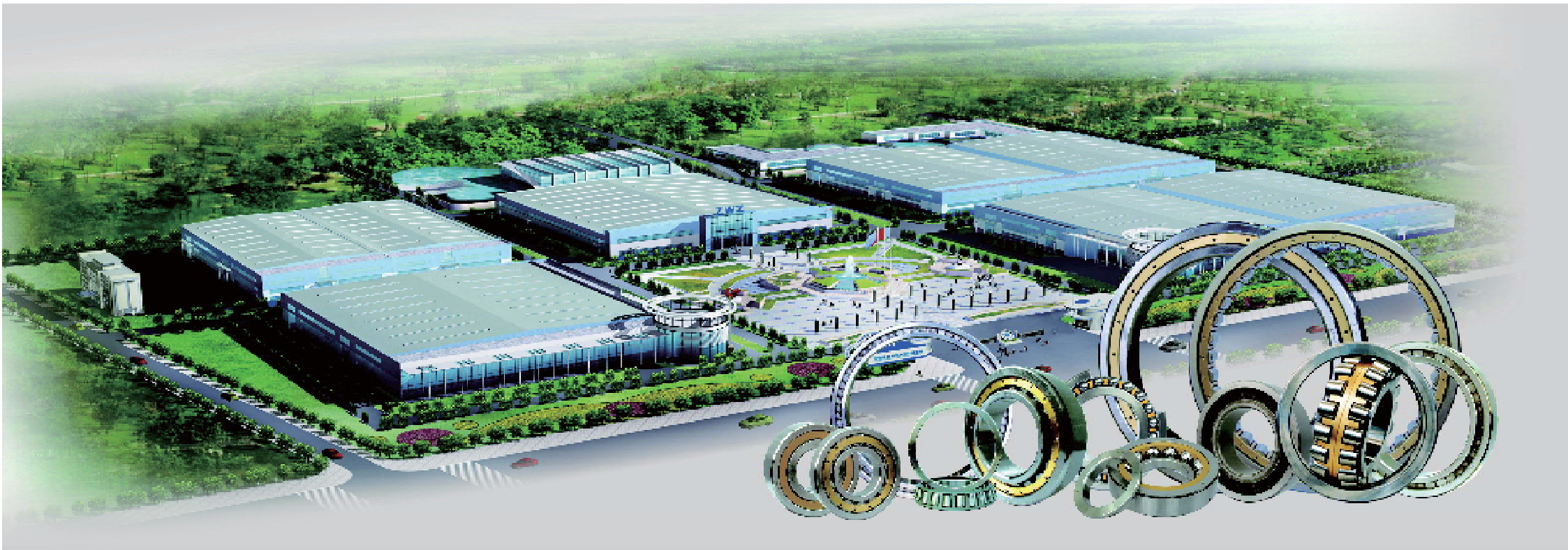


FL-HSWxxxx Type

Bearing Model	Boundary Dimension						Mounting Dimension									Gear Parameter				Weight	WT
	d	D	H	Hi	He	Dpw	Pi	Pe	ni	fi	Mi	ne	fe	Me	b	m	z	x			
	mm						mm									mm				Kg	
FL-HSW2775FT1	2520	3136	160	125	145	2775	2665	2885	96	39		96	39	36	135	20	154	+0.5	2396	2.0MW	
FL-HSW2804FT1	2617	3096	159	124	149	2804	2698	2908	64	39		64	39	36	135	20	152	+0.5	1870	2.0MW	
FL-HSW2849FT1	2657	3136	140	116	125	2849	2743	2955	96	39		96	39	36	125	20	154	+0.5	1600	2.0MW	
FL-HSN2980FT1	2664	3180	144	134	123	2980	2860	3100	72	39	36	72	39	36	125	20	134	+0.5	1960	2.0MW	
FL-HSN2980F1T1	2664	3180	144	134	123	2980	2860	3100	72	39	36	72	39	36	125	20	134	+0.5	1960	2.0MW	
FL-HSN2980X1FT1	2664	3180	144	134	123	2980	2860	3100	72	39	36	72	39	36	125	20	134	+0.5	1960	2.0MW	
FL-HSN2980X2FT1	2664	3180	193	179	127	2980	2860	3100	72	39	36	72	39	36	170	20	134	+0.5	2410	2.0MW	
FL-HSN2980X3FT1	2664	3280	144	132	125	2980	2860	3100	72	39	36	72	39	36	120	20	134	+0.5	1960	2.0MW	
FL-HSW2775DFT1	2560	3141.6	212	185	199	2775	2660	2890	96	39		96		36	189	22	140	+0.5	3200	3.0MW	
FL-HSN3040FT1	2757.6	3250	135	126	132	3040	2920	3160	100	33	30	99	33	30	125.5	18	154	+0.5	1940	3.0MW	
FL-HSN3035FT1	2757.6	3240	135	126	122	3035	2920	3150	116	33	30	118	33	30	125	18	154	+0.5	1840	3.6MW	
FL-HSW4340DFT1	4100	4703.6	219	205	205	4340	4200	4480	120	42		120	42	39	190	22	211	+0.5	5400	5.0MW	
FL-HSW4652DFT1	4420	5011.2	204	191	190	4652	4514	4790	130	42		132	42	39	174	24	206	+0.5	5170	5.0MW	
FL-HSW3960DFT1	3712	4387.2	220	207	210	3960	3832	4089	108	39		108	39	36	200	24	180	+0.5	5810	6.0MW	

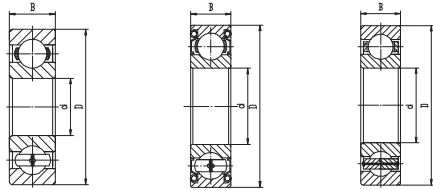
Notes: d: inner diameter, D: Outer diameter, H: Width of bearing, Dpw: Center diameter of roller, Pi: Center diameter of mounting holes, n: No. of mounting holes, fi: Diameter of mounting holes, Mi: Diameter of screw holes, b: Sear width, m: Module, z: No. of gears, x: Addendum.
 Euffix: e: Outer ring, i: Inner ring

BEARING MODEL CONTENTS

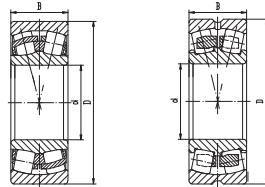


Gearbox bearings

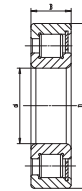
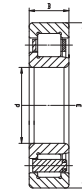
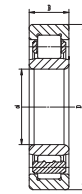
There are many kinds of bearings for gearbox including spherical roller bearings, cylindrical roller bearings, thrust roller bearings, four point contact ball bearings and tapered roller bearings, etc.



Bearing Model	Boundary Dimension				Basic load rating		Speed ratings rpm		Weight Kg
	d	D	B	rsmin	Cr	Cor	Grease r/min	Oil	
	mm				KN		r/min		
FL-6005/C3	25	47	12	0.6	10	5.85	31000	37000	0.0787
FL-6010	50	80	16	1	20.8	15.4	17500	21000	0.255
FL-6210	50	90	20	1.1	33.0	21.8	14000	18000	0.474
FL-6216-2Z	80	140	26	2	66	50	3600	4500	1.50
FL-6026	130	200	33	2	100	94	5800	7000	3.29
FL-61984MA/C3	420	560	65	4	320	520	1800	2100	46.2



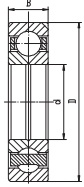
Bearing Model	Boundary Dimension			Basic load rating		Weight Kg	WT
	d	D	B	Cr	Cor		
	mm			KN			
FL-23226C/W33	130	230	80	580	910	14.9	800KW
FL-23232C/W33	160	290	104	1020	1600	36.1	800KW
FL-23134C/W33	170	280	88	870	1450	22.8	800KW
FL-23964C/W33	320	440	90	1219	2650	39.5	800KW
FL-23140C/W33	200	340	112	1340	2240	41.6	1.5MW
FL-22340C/W33	200	420	138	2000	2870	92.0	1.5MW
FL-23060C/W33	300	460	118	1770	3450	69.5	1.5MW
FL-23072C/W33	360	540	134	2280	4800	124	1.5MW
FL-23240/W33	200	360	128	1490	2370	56.5	2.0MW
FL-22344/W33	220	460	145	2120	3160	122	2.0MW
FL-23068/W33	340	520	133	2070	3870	107	2.0MW
FL-23992/W33	460	620	118	2040	4570	105	2.0MW



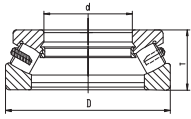
Bearing Model	Boundary Dimension			Basic load rating		Weight Kg	WT
	d	D	B	Cr	Cor		
	mm			KN			
FL-NU1016M	80	125	22	60	80	1.1	800KW
FL-NU2222EM	110	200	53	370	500	7.63	800KW
FL-NJ2232EM	160	290	80	810	1190	24.7	800KW
FL-NCF1868V	340	420	38	440	940	11.5	800KW
FL-NCF1892V	460	580	56	1050	2100	34.4	800KW
FL-NJ2324EQ1A	120	260	86	860	1040	24.1	1.5MW
FL-NU1026M	120	260	86	860	1040	24.1	1.5MW
FL-NU2226EMA/C3	130	200	33	192	274	4.64	1.5MW
FL-NU2326EMA	130	280	93	920	1230	28.7	1.5MW
FL-NU326EMA	130	280	58	595	795	18.7	1.5MW
FL-NU2228EMA/C3	140	250	68	574	836	14.2	1.5MW
FL-NJ2330V	150	320	108	1380	1930	42.7	1.5MW
FL-NNCF5034V/C3	170	260	122	1060	2120	21.4	1.5MW
FL-NU234EM	170	310	52	640	870	18.4	1.5MW
FL-NJ334M	170	360	72	857	1040	38.4	1.5MW
FL-NJ2334V	170	360	120	1700	2410	59.9	1.5MW
FL-NU2236EM	180	320	86	1040	1580	31.1	1.5MW
FL-NJ2240EM	200	360	98	1120	1900	44.1	1.5MW
FL-NNCF5044V/C3	220	340	160	1750	3650	53.1	1.5MW
FL-NJ244M	220	400	65	839	1220	35.4	1.5MW
FL-NCF2244V	220	400	108	1710	2530	53.1	1.5MW
FL-NCF2952V/C3	260	360	60	730	1390	17.0	1.5MW
FL-NU1964EMA	320	440	56	670	1150	24.7	1.5MW
FL-NU1072M	360	540	82	1450	2080	64.8	1.5MW
FL-NCF2888V	440	540	60	1020	2550	28.9	1.5MW
FL-NCF29/530V	530	710	106	2600	5600	110	1.5MW
FL-NCF18/530V	530	650	56	1020	2320	33.9	1.5MW
FL-NCF18/600V/HCEC9	600	730	60	1180	2950	50.5	1.5MW
FL-NCF18/670V	670	820	69	1320	3230	72.2	1.5MW
FL-NU1028M	140	210	33	183	263	3.89	2.0MW
FL-NU2330EMA	150	320	108	1140	1570	42.6	2.0MW
FL-NU332EMA	160	340	68	870	1080	31.4	2.0MW
FL-NNCF5052V/C3	260	400	190	2370	4950	85.9	2.0MW
FL-NJ2980/HCEC9	400	540	82	1340	2780	56.2	2.0MW
FL-NJ2892/HCEC9	460	580	72	1090	2480	46.1	2.0MW
FL-NU29/560/C3	560	750	112	2470	5570	146	2.0MW
FL-NCF18/600V	600	730	60	1180	2950	50.5	2.0MW
FL-NCF18/530V/CNL	530	650	56	1020	2320	33.9	2.0MW
FL-NCF18/600V/CNL	600	730	60	1180	2950	50.5	2.0MW
FL-NCF28/800V/HCEC9	800	980	106	2860	7900	168	2.0MW
FL-NCF28/750V	750	920	100	2720	6590	140	2.0MW

WIND POWER BEARING GEARBOX BEARINGS

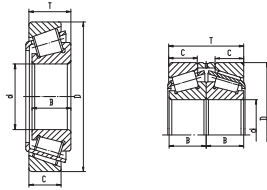
BEARING MODEL CONTENTS



Bearing Model	Boundary Dimension			Basic load rating		Weight	WT
	d	D	B	Cr	Cor		
	mm			KN		Kg	
FL- QJ222N2	110	200	38	250	285	5.37	800KW
FL- QJ324N2	120	260	55	310	515	15.2	1.5 MW
FL- QJ226N2	130	230	40	290	370	7.5	1.5 MW
FL- QJ326N2	130	280	58	420	560	20.1	1.5 MW
FL- QJ228N2	140	250	42	315	410	9.63	1.5 MW
FL- QJ332N2	160	340	68	540	785	32.7	2.0 MW



Bearing Model	Boundary Dimension			Basic load rating		Weight	WT
	d	D	T	Cr	Cor		
	mm			KN		Kg	
FL- 29268	340	460	73	1380	6450	34.7	1.5 MW



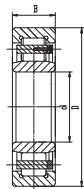
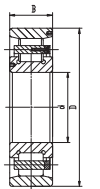
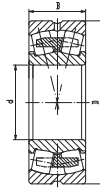
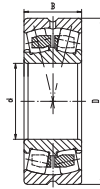
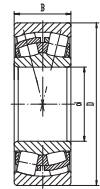
Bearing Model	Boundary Dimension					Basic load rating		Weight	WT			
	d	D	B	T	C	Cr	Cor					
	mm					KN		Kg				
FL-3 1328/ DF	140	300	70	154	47	1100	1850	50.3	1.5 MW			
FL-3 0230	150	270	45	49	38	465	630	10.6	1.5 MW			
FL-3 2230	150	270	73	77	60	750	1230	18.4	1.5 MW			
FL-3 2234/ DF	170	310	86	182	71	1700	3250	62.4	1.5 MW			
FL-3 2044	220	340	76	76	57	850	1520	24.2	1.5 MW			
FL-3 2948X2A	240	320	48	51	41	395	790	10.8	1.5 MW			
FL-3 2056	280	420	87	87	65	1200	2300	40.4	1.5 MW			
FL-3 2964X2A	320	440	72	76	62	960	1940	32.1	1.5 MW			
FL- KHM262749/ KM262710	346.0	75	488.95	95.250	95.2	50	74.6	12	1420	2900	52.1	1.5 MW
FL-3 2972	360	480	76	76	57	1020	2390	38.5	1.5 MW			
FL-3 2972/ DF	360	480	76	152	57	1570	4780	79.2	1.5 MW			
FL- KM270749/ KM270710	447.6	75	635	120.65	120.65	95.25	2150	4830	118	1.5 MW		
FL- KEE649240/ K649310	609.6	787.4	93.662	93.6	62	69.85	1920	4750	110	1.5 MW		
FL- KLL481448/ KLL481411	673.1	793.75	61.912	66.6	75	49.2	1040	2960	52.3	1.5 MW		
FL- KEE763330/ K763410	838.2	1041.4	88.9	93.6	62	66.6	75	2230	5460	158	1.5 MW	
FL-3 2956	280	380	63.5	63.5	48	740	1540	20.1	2.0 MW			
FL-3 2972/ YA5	360	480	76	76	57	1100	2540	37.4	2.0 MW			
FL-3 06/ 500	500	640	80	80	60	1350	3260	60.7	2.0 MW			
FL-3 506/ 938X4	938.2	12	1270	169.1	406.2	266.5	9040	29000	1440	2.0 MW		



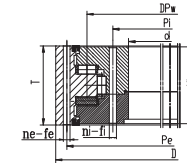
Rotor bearings

Rotor bearings support the blades, hubs and blade system of wind power equipments by the Rotor and transmit the torque produced by the passing wind through the blades. Rotor bearings are mostly spherical roller bearings and taper roller bearings.

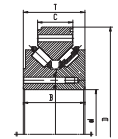
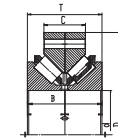
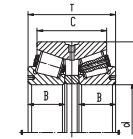
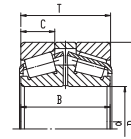
WIND POWER BEARING • GEARBOX BEARINGS



Bearing Model	Boundary Dimension			Basic load rating		Weight	WT
	d	D	B	Cr	Cor		
	mm			KN		Kg	
FL-23064/W33	320	480	121	1870	3560	78.1	850KW
FL-23160C/W33	300	500	160	2710	4900	128	850KW
FL-240/560/W33	560	820	258	5950	13500	472	1.0MW
FL-230/630CA/W33	630	920	212	5900	12800	473	1.25MW
FL-240/530/W33	530	780	250	5300	12100	416	1.5MW
FL-240/600/W33	600	870	272	7690	15900	550	1.5MW
FL-240/600/W33-DQ	600	870	272	7690	15900	550	1.5MW
FL-240/600/CNMW33	600	870	272	7690	15900	550	1.5MW
FL-240/630/W33	630	920	290	7350	17100	661	1.5MW
FL-239/670CA/W33	670	900	170	4370	10600	315	1.5MW
FL-230/800/YAD	800	1150	258	9110	19000	899	1.5MW
FL-239/800/CA	800	1060	195	5750	14200	481	1.5MW
FL-240/800/W520	800	1150	345	11000	26000	1200	1.5MW
FL-24188/W33	440	720	280	6500	12100	460	2.0MW
FL-230/630CA/W33	630	920	212	5900	12800	473	2.0MW
FL-240/600/W33	600	870	272	7690	15900	550	2.0MW
FL-240/710/W33	710	1030	315	8970	21200	888	2.0MW
FL-239/750CA/W33	750	1000	185	5730	12900	414	2.0MW
FL-240/750/W33	750	1090	335	11800	25000	1072	2.0MW
FL-230/800/W33	800	1150	258	9110	19000	904	2.0MW
FL-239/900CA/W33	900	1180	206	6850	16400	616	2.0MW
FL-230/800-SMS	800	1150	258	9300	19500	899	2.3MW
FL-240/710/W33	710	1030	315	8970	21200	888	3.0MW
FL-240/850CA/W33	850	1220	365	11400	29700	1416	3.0MW
FL-240/900/W26	900	1280	375	11700	32100	1610	3.0MW



Bearing Model	Boundary Dimension					Mounting Dimension						Weight	WT
	d	D	H	Hi	Dpw	Pi	Pe	ni	fi	ne	fe		
	mm											Kg	
FL-HYB1590FT	1220	1870	352	340	1590	1360	1770	60	30	60	30	3760	2.0MW



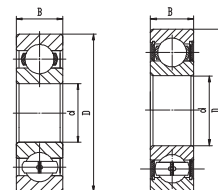
Bearing Model	Boundary Dimension					Basic load rating		Weight	WT
	d	D	B	T	C	Cr	Cor		
	mm					KN		Kg	
FL-3706/530	530	730	250	250	104	4600	13400	324	1.5MW
FL-3519/710X2	710	950	112	112	180	5000	14400	471	1.5MW
FL-3519/800X2	800	1060	130	130	216	6670	19600	664	1.5MW
FL-3506/1810	1810	2530	355	355	202	8260	35500	4804	3.0MW
FL-3506/2000	2000	2500	320	320	180	8020	34600	3130	3.0MW
FL-3506/2620	2620	3200	485	485	250	16460	65880	6720	6.0MW

BEARING MODEL CONTENTS

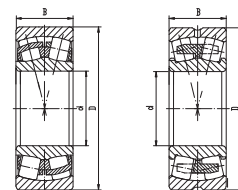


Actuator bearings

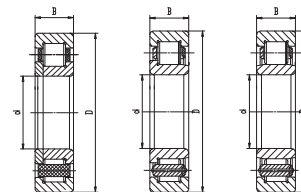
The characteristics of series of bearings for actuators gear are of low-speed and heavy-load, these bearings include spherical roller bearings, cylindrical roller bearings, four point contact ball bearings and tapered roller bearings, etc.



Bearing Model	Boundary Dimension			Basic load rating		Weight	WT
	d	D	B	Cr	Cor		
	mm			KN		Kg	
FL-6305	25	62	17	22.4	11.5	0.214	1.5MW
FL-6012-2RS	60	95	18	25.2	20.1	0.446	1.5MW
FL-6010	50	80	16	20.8	15.4	0.255	1.5MW
FL-6012	60	95	18	25.2	20.1	0.416	1.5MW
FL-6212-2RS	60	110	22	47.8	33	0.8	1.5MW
FL-6215-2RS	75	130	25	61	46	1.22	1.5MW
FL-6010	60	95	18	25.2	20.1	0.416	2.0MW
FL-6012/C3	60	95	18	25.2	20.1	0.416	2.0MW
FL-6213	60	95	18	25.2	20.1	0.416	2.0MW
FL-6016	80	125	22	42.6	35.5	0.845	3.0MW

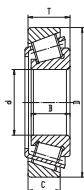


Bearing Model	Boundary Dimension			Basic load rating		Weight	WT
	d	D	B	Cr	Cor		
	mm			KN		Kg	
FL-21315CA	75	160	37	236	278	3.89	1.5MW
FL-22316CA	80	170	58	399	500	6.54	1.5MW
FL-24126C/W33	130	210	80	580	980	10.5	1.5MW
FL-23030CA/W33	150	225	56	460	795	7.95	1.5MW
FL-23032CA/W33	160	240	60	585	880	9.9	1.5MW
FL-23034CA/W33	170	260	67	700	1140	13.9	1.5MW
FL-23032CA/W33	160	240	60	585	880	9.9	2.0MW
FL-22324CA/W33	120	260	86	850	1130	23.2	5.0MW



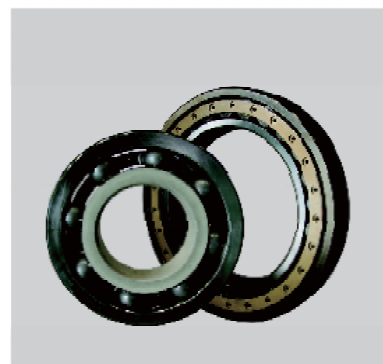
Bearing Model	Boundary Dimension			Basic load rating		Weight	WT
	d	D	B	Cr	Cor		
	mm			KN		Kg	
FL-NUP203ETN1	17	40	12	17.4	14.4	0.0706	1.5MW
FL-NUP205ETN1	25	52	15	32	31	0.14	1.5MW
FL-NUP204ETN1	20	47	14	28.2	25.5	0.113	2.0MW
FL-NUP2206ETN1	30	62	20	52	54	0.263	2.0MW
FL-NJ2228M	140	250	68	480	700	14.8	3.0MW
FL-NJ2322EM	110	240	80	684	897	18.6	5.0MW
FL-NJ2240EMA	200	360	98	1240	1900	46.7	5.0MW

WIND POWER BEARING ACTUATOR BEARINGS



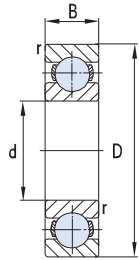
Bearing Model	Boundary Dimension					Basic load rating		Weight	WT
	d	D	B	T	C	Cr	Cor		
	mm					KN		Kg	
FL-3 2910	50	72	15	15	12	38	62	0.194	1.5MW
FL-3 2912	60	85	17	17	14	40	65	0.284	1.5MW
FL-3 0216	80	140	26	28.25	22	163	205	1.56	1.5MW
FL-3 0217	85	150	28	30.5	24	184	234	2.05	1.5MW
FL-3 2217	85	150	36	38.5	30	230	315	2.7	1.5MW
FL-3 3117	85	140	41	41	32	214	354	2.43	1.5MW
FL-3 2220	100	180	46	49	39	370	540	5.31	1.5MW
FL-3 3220	100	180	63	63	48	431	655	6.58	1.5MW
FL- T2EE100	100	165	46	47	39	310	480	3.8	1.5MW
FL-3 2221	105	190	50	53	43	395	572	6.26	1.5MW
FL-3 2024	120	180	38	38	29	237	395	3.27	1.5MW
FL-3 2026	130	200	45	45	34	340	580	5.06	1.5MW
FL-3 2028	140	210	45	45	34	330	580	5.41	1.5MW
FL-3 2228	140	250	68	71.75	58	670	1035	14.7	1.5MW
FL-3 2030	150	225	48	48	36	365	635	6.4	1.5MW
FL-3 3030	150	225	59	59	46	450	840	8.06	1.5MW
FL-3 2032	160	240	51	51	38	420	760	7.7	1.5MW
FL-3 2232	160	290	80	84	67	910	1450	23.7	1.5MW
FL-3 2232/ YA8	160	290	80	84	67	880	1400	23.5	1.5MW
FL-3 2034	170	260	57	57	43	500	870	10.6	1.5MW
FL-3 2036	180	280	64	64	48	605	1060	13.9	1.5MW
FL-3 2240	200	360	98	104	82	1370	2170	42.6	1.5MW
FL-3 0217- QD	85	150	28	30.5	24	184	234	2.05	2.0MW
FL-3 0218	90	160	30	32.5	26	222	291	2.73	2.0MW
FL-3 2219	95	170	43	45.5	37	298	415	4.34	2.0MW
FL-3 0319- QD	95	200	45	49.5	38	380	468	6.91	2.0MW
FL-3 2020- QD	100	150	32	32	24	172	280	1.87	2.0MW
FL-3 3124 QD	120	200	62	62	48	440	770	7.74	2.0MW
FL-3 2030- QD	150	225	48	48	36	365	635	6.4	2.0MW
FL-3 2032- QD	160	240	51	51	38	420	760	7.7	2.0MW
FL-3 2034- QD	170	260	57	57	43	500	870	10.6	2.0MW
FL-3 2036- QD	180	280	64	64	48	605	1060	13.9	2.0MW
FL-3 2038- QD	190	290	64	64	48	628	1121	14.5	2.0MW
FL-3 2222	110	200	53	56	46	445	655	7.4	3.0MW
FL-3 2224	120	215	58	61.5	50	495	750	9.25	3.0MW
FL-3 0228	140	250	42	45.75	36	428	578	8.8	3.0MW
FL-3 2234	170	310	86	91	71	1005	1615	30	3.0MW
FL-3 2236	180	320	86	91	71	1040	1700	30	3.0MW
FL-3 2238	190	340	92	97	75	1170	1890	36.1	3.0MW
FL-3 2248	240	440	120	127	100	1900	3200	81.4	3.0MW
FL-3 2226	130	230	64	67.75	54	572	880	11.5	6.0MW
FL-3 2036	180	280	64	64	48	605	1060	13.9	6.0MW
FL-3 2244	220	400	10	114	90	1600	2670	62.7	6.0MW

BEARING MODEL CONTENTS

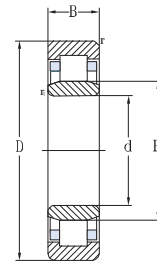
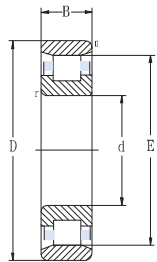


Bearing for Generators

The bearings for generators are required to own the characteristics of high speed, low vibration and good insulating property. These bearings are mostly deep groove ball bearings and cylindrical roller bearings.



Bearing Model	Boundary Dimension			Basic load rating		Speed ratings rpm		Weight	WT
	d	D	B	Cr	Cor	Grease	Oil		
	mm			KN		r/min		Kg	
FL-6326/HQ1	130	280	58	240	226	2600	3200	13.5	1.5MW
FL-6328/HQ1	140	300	62	329	246	2400	3000	16.7	1.5MW
FL-6330/HQ1	150	320	65	360	280	2200	2800	18.3	1.5MW



Bearing Model	Boundary Dimension			Basic load rating		Speed ratings rpm		Weight	WT
	d	D	B	Cr	Cor	Grease	Oil		
	mm			KN		r/min		Kg	
FL-IS-N317EM	85	180	41	271	208	3000	3600	5.2	1.5MW
FL-IS-NU230M/C3	150	270	45	405	550	1900	2400	11.8	1.5MW
FL-IS-NU2230EM	150	270	73	590	890	1900	2400	18.5	1.5MW
FL-IS-N234EM	170	310	52	500	780	1800	2200	18.2	1.5MW

