

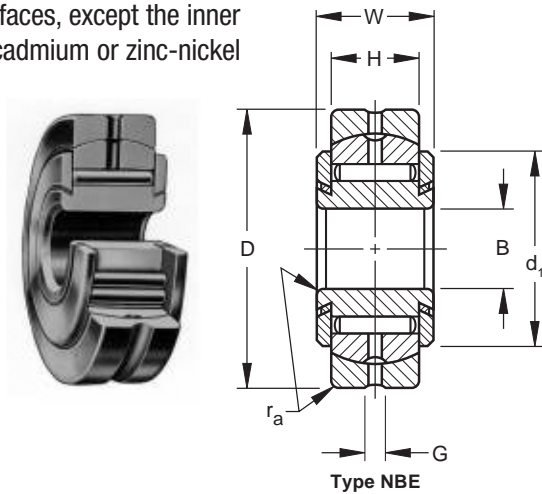
CONSTRUCTION

A non-separable, self-aligning unit consisting of inner ring, needle rollers, outer ring with spherical O.D., retaining washers and housing ring with spherical I.D. The end washers are fastened to the inner ring. Type NBE has a single row of rollers, and type NBK has two rows of rollers.

Lubrication grooves and holes in the inner ring, outer ring and housing ring are provided in the type NBK bearing. The type NBE bearing is similarly designed except groove and holes in the inner ring are omitted.

The self-aligning bearing outer ring and its housing ring are a matched assembly that must be kept together.

External surfaces, except the inner ring bore, are cadmium or zinc-nickel plated.

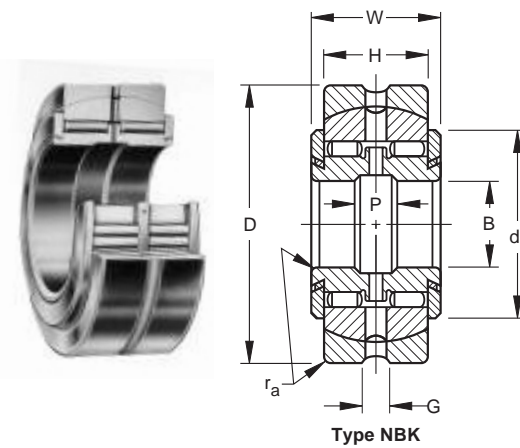


DIMENSIONS

Dimensions listed are for the finished bearing after plating.

Bearings are made to ISO and U.S. Military Specifications, and are constructed to have low radial clearance when mounted to minimize vibration and backlash.

The shaft diameter and housing bore dimensions necessary to mount these bearings properly are listed on the facing page.



MOUNTING

The housing bore dimensions shown below are applicable to bearings mounted in steel. These dimensions should be decreased .0002" (.005mm) when aluminum alloy housings are used.

The end washers are fastened to the inner ring in a manner only to maintain the integrity of the assembly while handling and installing the bearing. Therefore, when mounted they should be firmly backed up by washers or other clamping surfaces which are flat and square with the shaft center line. To provide sufficient washer support, the outside diameter of the clamping surfaces should be at least as large as the minimum clamping diameter (d_a) listed below. The maximum clamping diameter is also given to assure that a misalignment of $\pm 5^\circ$ can be accommodated.

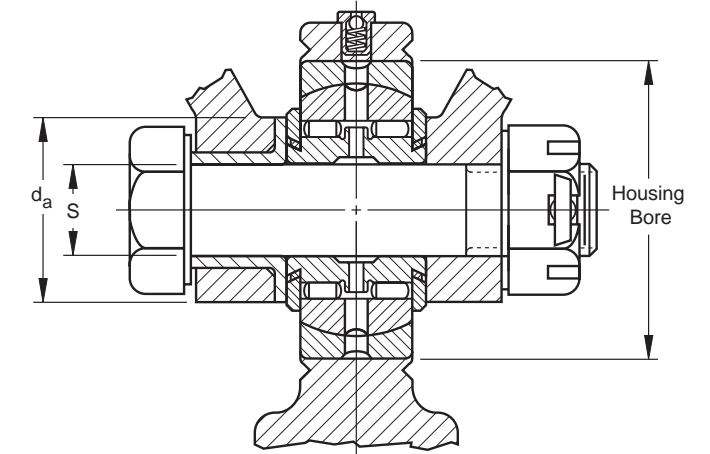
LOAD RATINGS

The limit load ratings (also called "allowable working load ratings") of the bearings are listed below. The ultimate load ratings are not less than 1.5 times the limit load ratings. The ultimate load ratings correspond to the Aircraft Static Capacity ratings.

When the application requires dynamic self-alignment, additional bearing loads (due to the friction of dynamic self-alignment) must be taken into account.

For additional data refer to page XX. Before final bearing selection is made, please consult our Engineering Group.

Load ratings are given in pounds-force:
1 lbf = 0.454 kgf = 4.448 N



SPECIFICATIONS AND ORDERING INFORMATION

BEARING DIMENSIONS

Bearing Designation	MS24463 MS24464 Dash No.	B Bore		D* O.D.		W Widths		H Shaft Fillet r_a (max.)	d ₁ End Washer Diameter (ref.)
		max.	min.	max.	min.	inch	inch		
3NBE514ZP	MS24463-3	0.1900	0.1893	0.8750	0.8745	0.312	0.218	0.022	0.625
4NBE615ZP	MS24463-4	0.2500	0.2493	0.9375	0.9370	0.375	0.281	0.022	0.688
5NBE717ZP	MS24463-5	0.3125	0.3118	1.0625	1.0620	0.437	0.344	0.022	0.750
6NBK919YZP	MS24464-6	0.3750	0.3743	1.1875	1.1870	0.562	0.469	0.022	0.812
7NBK1021YZP	MS24464-7	0.4375	0.4368	1.3125	1.3120	0.625	0.531	0.032	0.875
8NBK1224YZP	MS24464-8	0.5000	0.4993	1.5000	1.4995	0.750	0.656	0.032	1.031
9NBK1427YZP	MS24464-9	0.5625	0.5618	1.6875	1.6870	0.875	0.781	0.032	1.094
10NBK1628YZP	MS24464-10	0.6250	0.6243	1.7500	1.7495	1.000	0.906	0.032	1.156
12NBK1830YZP	MS24464-12	0.7500	0.7493	1.8750	1.8745	1.125	1.000	0.032	1.281
14NBK2034YZP	MS24464-14	0.8750	0.8743	2.1250	2.1244	1.250	1.125	0.032	1.500
16NBK2036YZP	MS24464-16	1.0000	0.9993	2.2500	2.2494	1.250	1.125	0.032	1.625
20NBK2040YZP	MS24464-20	1.2500	1.2493	2.5000	2.4994	1.250	1.049	0.032	1.906
24NBK2044YZP	MS24464-24	1.5000	1.4993	2.7500	2.7494	1.250	1.049	0.032	2.156
32NBK2052YZP	MS24464-32	2.0000	1.9993	3.2500	3.2492	1.250	1.049	0.032	2.656
40NBK2060YZP	MS24464-40	2.5000	2.4993	3.7500	3.7492	1.250	1.049	0.032	3.156
48NBK2068YZP	MS24464-48	3.0000	2.9993	4.2500	4.2492	1.250	1.049	0.032	3.656
56NBK2078YZP	MS24464-56	3.5000	3.4992	4.8750	4.8740	1.250	1.049	0.044	4.219

*Bore and o.d. tolerance limits correspond to the single mean diameter (the arithmetical mean of the largest and smallest diameters in a single radial plane).

§Equal to minimum inner bore chamfers.

SPECIFICATIONS AND ORDERING INFORMATION

MOUNTING DIMENSIONS

G Outer Ring Groove Width (ref.)	P Inner Ring Groove Width (ref.)	Mass (appr.)	S Shaft Diameter				Housing Bore				d _a Clamping Diameter (inches)		Clamping Force (lbf)	Limit Load Rating (lbf)
			Transition Fits (loose range) inches		Transition Fits (tight range) inches		Transition Fits (tight range) inches		Transition Fits (loose range) inches		max.	min.		
0.062	—	0.041	0.1894	0.1889	0.1902	0.1897	0.8742	0.8747	0.8749	0.8754	0.625	0.438	480	1800
0.094	—	0.053	0.2494	0.2489	0.2502	0.2497	0.9367	0.9372	0.9374	0.9379	0.688	0.516	870	2870
0.125	0.188	0.079	0.3119	0.3114	0.3127	0.3122	1.0617	1.0622	1.0624	1.0629	0.734	0.578	1400	4070
0.125	0.188	0.130	0.3744	0.3739	0.3752	0.3747	1.1867	1.1872	1.1874	1.1879	0.781	0.641	2100	4530
0.125	0.188	0.174	0.4369	0.4364	0.4377	0.4372	1.3116	1.3122	1.3124	1.313	0.844	0.703	2850	5870
0.125	0.188	0.293	0.4994	0.4989	0.5002	0.4997	1.4991	1.4997	1.4999	1.5005	1.000	0.844	3840	8670
0.156	0.188	0.420	0.5619	0.5614	0.5627	0.5622	1.6866	1.6872	1.6874	1.688	1.062	0.891	4870	11800
0.156	0.250	0.520	0.6244	0.6239	0.6252	0.6247	1.7491	1.7497	1.7499	1.7505	1.094	0.953	6150	15500
0.156	0.250	0.630	0.7494	0.7489	0.7502	0.7497	1.8741	1.8747	1.8749	1.8755	1.156	1.078	8950	20000
0.156	0.375	0.870	0.8744	0.8739	0.8752	0.8747	2.1238	2.1246	2.1249	2.1257	1.375	1.250	12200	25800
0.156	0.375	0.960	0.9994	0.9989	1.0002	0.9997	2.2488	2.2496	2.2499	2.2507	1.500	1.375	16300	28700
0.156	0.375	1.070	1.2494	1.2488	1.2503	1.2497	2.4988	2.4996	2.4999	2.5007	1.781	1.625	25800	31400
0.156	0.375	1.230	1.4994	1.4988	1.5003	1.4997	2.7488	2.7496	2.7499	2.7507	2.062	1.875	25800	36600
0.156	0.375	1.490	1.9994	1.9987	2.0003	1.9996	3.2485	3.2495	3.2498	3.2508	2.594	2.375	25800	47100
0.156	0.375	1.780	2.4994	2.4987	2.5003	2.4996	3.7485	3.7495	3.7498	3.7508	3.062	2.875	25800	57500
0.156	0.375	2.060	2.9994	2.9987	3.0003	2.9996	4.2485	4.2495	4.2498	4.2508	3.562	3.375	25800	67900
0.156	0.375	2.650	3.4994	3.4986	3.5004	3.4996	4.8735	4.8745	4.8748	4.8758	4.141	3.969	25800	80100