NEW DEPARTURE
HAND BOOK

VOL. I

DIMENSIONS
LOAD RATINGS
BEARING FITS
LIST PRICES

NEW DEPARTURE · PIONEERS FOR FIFTY YEARS

NEW DEPARTURE

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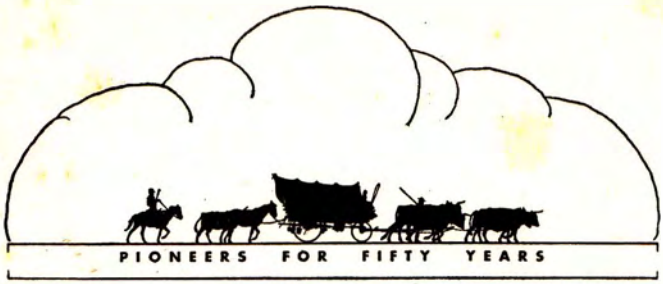

This edition of the Handbook, Volume I, marks New Departure's fiftieth year of pioneering in the realm of precision manufacture. For, just as New Departure pioneered in inventing and developing such early products as the bicycle coaster brake and the first multiple duty double row ball bearing, it has continued through the years to pioneer more and better new departures, many of which are listed in this book.

Today, after long experience in bearing manufacture, the objective at New Departure remains unalterably the same—to make good bearings better. Now, or in the future when you specify New Departure

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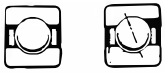	Extra Large - - - - Types 3000 and 20,000 (Type 20,000 Replaces Former Type O)	30-33
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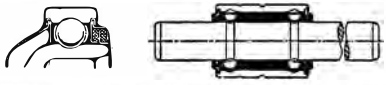	Conveyor B'r'g - - Type 88,105 Fan & Pump B'r'g - Type 885,100	76-77 78-79
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BALL BEARING LOAD RATINGS

Fatigue in General

Establishment of the load capacity of a mechanical structure often requires determination only of that limiting load beyond which some permanent deformation or rupture of the material will occur.

However, if a load is applied repeatedly so as to cause a rapid alternation of stresses, a gradual deterioration of the material will take place, even though the stress range be well within the elastic limit. But this deterioration or loss of molecular strength called fatigue does not in any way impair the usefulness or operation of the machine element until after a sufficient repetition of the stress an actual breaking down of the material structure occurs, which is known as fatigue failure.

It is obvious, therefore, that determination of the load capacity of any mechanical device subject to fatigue must involve consideration not only of the load, but also of the length of service such a device may be expected to deliver before fatigue failure occurs.

Fatigue in Ball Bearings

Ball bearings do not suddenly break down for no apparent reason, nor do they wear out in the sense of loss of dimension and accurate positioning characteristics. In a ball bearing running under load the balls and raceways are subjected to a continuous repetition of stresses. After long and carefree service they may begin to show the effect of that fatigue common to all structural material subject to repeated stresses.

This is normal life. All other causes of failure are premature and can definitely be prevented by correct design, mounting and maintenance practice, which is the province of the bearing engineer.

The principal factors affecting the length of time that a bearing will function normally, are, therefore; load, which determines the *magnitude* of stress, and speed, which determines *frequency* of stress repetition.

Various details of design also are important, their handling being correlative to the experience and judgment of the bearing manufacturer in achieving the most desirable balance between

BALL BEARING LOAD RATINGS

Fatigue — Continued

capacity, endurance and reliability. For instance, the magnitude of the stress is affected by ball diameter, number of balls and curvature of the raceways, while frequency of the stress is affected by number and size of balls and the pitch circle. But, the thoroughly experienced manufacturer knows that extra ball size or number, if overemphasized, can result in weaknesses which may more than offset any actual gain to the user.

Under a given load the life of a ball bearing is a certain number of revolutions or a certain number of stress cycles. Therefore, this life may be shortened or lengthened by increasing or decreasing the bearing speed.

Long series of tests have shown that the fatigue life of a ball bearing varies inversely as the cube of the load and inversely as the speed. In other words, if the load is reduced by one-half with the speed unchanged, bearing life will be increased eight times. Also, if the load is unchanged but the speed is doubled, the life is reduced one-half.

Thus, it is evident that the load rating of a ball bearing must be stated in terms of load at speeds corresponding to a certain expected life.

Expected Life

No matter how much care is devoted to the selection of materials and their fabrication into a device, a certain variation in the lives of apparently identical individuals, subjected to the same service, will inevitably occur.

No material is more uniform than the steel used for ball bearings. No other commercial product is so uniformly accurate in dimension, yet this variation in individual bearings still occurs. The expected life of a ball bearing must, therefore, be the average life of identical bearings subjected to the same load and speed conditions. Also, sufficiently large groups of bearings must be considered in order to assure the reliability of this average life. With this established, it is clear that the constancy of the average is maintained by the uniformity which the manufacturer achieves in producing bearings of any type or size.

BALL BEARING LOAD RATINGS

Uniformity of Life Distribution

Although the fatigue life of apparently identical bearings shows a variation, tests of sufficiently large groups of bearings of any type or size demonstrate that the *uniformity of life distribution* is remarkable. In other words, regardless of make, type or size, the number of fatigue failures that can be anticipated at any given percentage of the average life, either above or below it, have been shown to conform to a definite and uniform pattern. Thus, though a variation in the *average life* of different makes or sizes of bearings may be obtained, the *distribution* of fatigue failures from which each average is derived, remains characteristic for all groups.

This fact is of decided importance in the determination of a bearing size requirement. Considered alone, it would tend to induce the use of extravagantly large sizes, but an experienced bearing engineer, in arriving at his recommendation, balances variation in life against continuity of loading and speed and variable mounting conditions, as dictated by his experience in similar cases.

Load Ratings

In developing a system of bearing ratings, New Departure has considered it most satisfactory to establish one basic load rating corresponding to a given average or expected life. Thus, the ratings tabulated in this and other New Departure catalogs correspond to an average bearing life of 3800 hours at the speeds listed.

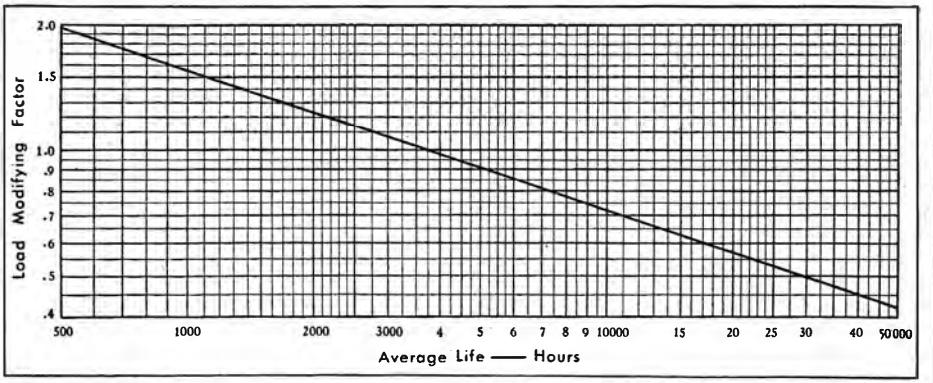
If another average life is desired the catalog load ratings must be modified by multiplying with the corresponding factor found at the left in the graph on the next page.

Application

Ball bearing application engineering is a highly specialized field, demanding of its exponent not only a broad and intimate knowledge of the many details involved in bearing design, manufacture and installation, but also of a great many other subjects, directly or indirectly associated.

BALL BEARING LOAD RATINGS

Graph Giving Load Modifying Factors for Desired Average Life in Hours.



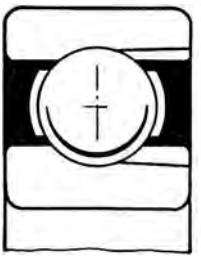
New Departure load ratings, with the constant life reference point for all bearing types, represent a vast amount of research work and mathematical analysis, with many years of endurance testing of bearings alone, reinforced by a very broad experience with field, as well as laboratory tests of bearings in actual installations.

The scientific aspects of results from such involved programs of research are impressive, including as they do, investigation of the many variables, each of which must be considered in relation to others. However, it is realized that the presentation of data of such wide scope, in the abbreviated form unavoidable in any book of this nature would be subject to serious misinterpretation through incompleteness.

For such reasons, it is believed that a statement of principles to act as a guide in the preliminary stages of design is more desirable than any attempt to present an extensive technical discussion which could be mistaken for a substitute for the services of a skilled bearing engineer.

SINGLE ROW RADIAL BEARINGS — TYPE 1000

Design and Load Characteristics



Section—Type 1000

Single Row Radial bearings, Type 1000, are designed to provide the maximum radial capacity that can be efficiently obtained in a bearing having one row of balls.

These bearings contain the largest number and diameter of balls that can be safely introduced into the bearing cross section and, at the same time, maintain the strength and endurance of the raceways.

In Type 1000 bearings it is necessary to use a filling notch for the introduction of the last three or four balls. Extremely accurate gauging in manufacture assures that this notch does not approach the bottom of the ball raceway, so that, under load, the contact areas of the balls with the raceways do not impinge upon it.

Single Row Radial bearings are normally made with a very small radial clearance between balls and raceways. This increases with the size of the balls, varying from practically a line-in-line fit to several ten-thousandths of an inch total in the larger sizes. This radial fit-up is necessary to assure correct bearing operation, since the press fits employed in mounting decrease radial clearance in the bearings. End play, which bears a definite relation to radial play, and lends itself to quick and accurate determination, is employed as a measure of radial clearance. Type 1000 bearings are normally assembled to have from .002" to .010" end play, depending upon bearing size. When installed end play will vary according to the tightness of mounting fit and also to a slight degree with the natural deformation of parts under load.

While these bearings are designed to resist heavy radial loads, they may be used to locate parts axially, where such location need not be held strictly within the normal end play limits of the bearings.

Type 1000 bearings may be obtained shielded for protection against foreign matter, as described under "Shielded Bearings."

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and radial load ratings of Type 1000 bearings at various speeds, see pages immediately following.

SINGLE ROW RADIAL BEARINGS — TYPE 1000

Typical Mountings

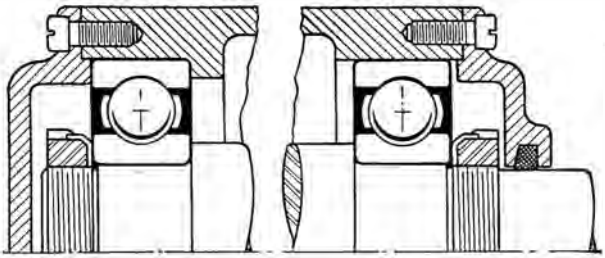


Figure 1.

Where two Single Row bearings of the Type 1000 are to be used, it is frequently desirable to locate the shaft axially by clamping one of the bearings both on the shaft and in the housing. When this is done, the other bearing should have an unrestricted axial clearance in the housing of from .010" to .015", as indicated in figure 1. In this way, shaft expansion and variations in housing and shaft machining cannot so combine as to place the bearings under a possible heavy thrust which would not be provided for in the mounting.

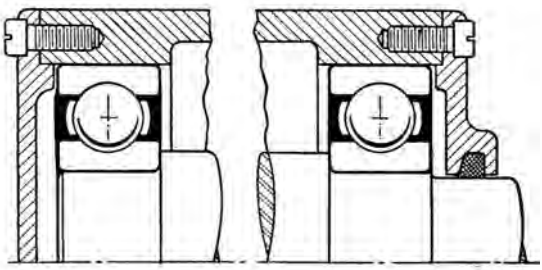


Figure 2.

In many cases where axial location of the shaft need not be as closely maintained as where one bearing is clamped both on shaft and in housing, it is entirely practicable to bore both housings straight through without shoulders, as in figure 2, and so machine the closure caps that the bearings have a *total* axial movement in the housing of from .015" to .020".

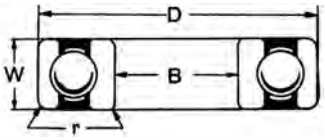
If both bearings are press fitted on the shaft, it is not necessary in such a mounting to clamp the inner rings. Therefore, the expense incident to threading the shaft is eliminated, together with the locknuts and lockwashers, which would otherwise be necessary.

SINGLE ROW RADIAL BEARINGS — TYPE 1000

Principal Dimensions

Provide maximum single row capacity for radial loads. May be used for combined loads when chosen in accordance with factors "F" given under "Bearing Selection."

Note: For sizes below 4 bore medium and 6 bore light series use Type 3,000 listed on page 16.



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
1304	20	.7874	52	2.0472	15	.5906	13/32	9	.04	$ 3.50
1404			72	2.8346	19	.7480	9/16	8		5.20
1305	25	.9843	62	2.4409	17	.6693	7/16	10	.04	4.10
1405			80	3.1496	21	.8268	5/8	8	.06	6.00
1206	30	1.1811	62	2.4409	16	.6299	3/8	12	.04	4.00
1306			72	2.8346	19	.7480	15/32	11	.04	5.20
1406			90	3.5433	23	.9055	11/16	9	.06	7.30
1207	35	1.3780	72	2.8346	17	.6693	7/16	12	.04	4.60
1307			80	3.1496	21	.8268	17/32	11	.06	6.00
1407			100	3.9370	25	.9843	3/4	9	.06	8.70
1208	40	1.5748	80	3.1496	18	.7087	15/32	13	.04	5.40
1308			90	3.5433	23	.9055	19/32	11	.06	6.80
1408			110	4.3307	27	1.0630	13/16	9	.08	10.50
1209	45	1.7717	85	3.3465	19	.7480	15/32	14	.04	6.00
1309			100	3.9370	25	.9843	21/32	12	.06	8.50
1409			120	4.7244	29	1.1417	7/8	10	.08	13.00
1210	50	1.9685	90	3.5433	20	.7874	15/32	15	.04	7.00
1310			110	4.3307	27	1.0630	23/32	12	.08	10.00
1410			130	5.1181	31	1.2205	15/16	10	.08	16.00
1211	55	2.1654	100	3.9370	21	.8268	17/32	15	.06	8.00
1311			120	4.7244	29	1.1417	25/32	12	.08	12.40
1411			140	5.5118	33	1.2992	1	10	.08	19.00
1212	60	2.3622	110	4.3307	22	.8661	19/32	15	.06	9.30
1312			130	5.1181	31	1.2205	27/32	12	.08	15.50
1412			150	5.9055	35	1.3780	1 1/16	10	.08	22.90

SINGLE ROW RADIAL BEARINGS — TYPE 1000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

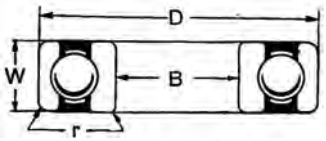
Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
1304	2480	1970	1565	1365	1240	1150	1085	982	915	800	726	635	535
1404	3430	2720	2160	1885	1720	1595	1500	1370	1265	1105	1005	875	740
1305	3300	2630	2085	1820	1650	1535	1450	1320	1220	1065	967	844	712
1405	4095	3250	2580	2250	2050	1900	1790	1625	1510	1315	1195	1045	883
1206	2845	2255	1785	1565	1420	1315	1240	1125	1045	917	829	727	611
1306	3950	3130	2490	2170	1970	1825	1720	1570	1450	1270	1150	1005	886
1406	5445	4310	3435	2990	2720	2525	2375	2145	2000	1750	1590	1390	1175
1207	4010	3180	2530	2210	2005	1865	1755	1595	1480	1290	1175	1025	865
1307	4530	3590	2855	2490	2265	2100	1980	1800	1670	1455	1325	1155	982
1407	6310	5015	3980	3475	3160	2935	2760	2520	2330	2030	1845	1610	1355
1208	4750	3770	2990	2610	2375	2205	2075	1885	1750	1530	1390	1210	1020
1308	5650	4490	3560	3110	2830	2625	2470	2245	2080	1820	1650	1440	1205
1408	7205	5725	4550	3970	3605	3350	3150	2870	2660	2320	2110	1840	1560
1209	5140	4075	3235	2825	2570	2385	2245	2010	1890	1650	1500	1310	1100
1309	6970	5540	4400	3835	3480	3240	3045	2770	2570	2245	2040	1780	1500
1409	8750	6950	5535	4825	4390	4075	3830	3470	3230	2820	2560	2240	
1210	5550	4400	3495	3055	2775	2580	2430	2195	2040	1785	1620	1415	
1310	8050	6375	5065	4410	4020	3730	3510	3190	2960	2580	2345	2050	
1410	9800	7790	6190	5400	4900	4550	4290	3900	3615	3155	2870	2505	
1211	6625	5260	4160	3650	3310	3075	2895	2625	2440	2135	1940	1695	
1311	9125	7250	5750	5010	4560	4245	3990	3605	3360	2935	2665	2325	
1411	10890	8655	6870	6000	5450	5060	4770	4320	4015	3510	3190	2785	
1212	7800	6200	4900	4300	3900	3615	3400	3100	2865	2515	2280	1995	
1312	10280	8165	6490	5655	5145	4780	4495	4100	3790	3310	3010	2620	
1412	12010	9540	7575	6600	6010	5585	5250	4780	4430	3870	3510	3065	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

SINGLE ROW RADIAL BEARINGS — TYPE 1000

Principal Dimensions

Provide maximum single row capacity for radial loads. May be used for combined loads when chosen in accordance with factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
1213			120	4.7244	23	.9055	21/32	15	.06	$11.50
1313	65	2.5591	140	5.5118	33	1.2992	29/32	12	.08	19.10
1413			160	6.2992	37	1.4567	1 1/8	10	.08	29.60
1214			125	4.9213	24	.9449	21/32	15	.06	12.50
1314	70	2.7559	150	5.9055	35	1.3780	31/32	12	.08	22.50
1414			180	7.0866	42	1.6535	1 1/4	10	.10	39.50
1215			130	5.1181	25	.9843	21/32	16	.06	13.70
1315	75	2.9528	160	6.2992	37	1.4567	1	13	.08	28.00
1415			190	7.4803	45	1.7717	1 3/8	10	.10	55.00
1216			140	5.5118	26	1.0236	11/16	17	.08	16.00
1316	80	3.1496	170	6.6929	39	1.5354	1 1/16	13	.08	32.20
1416			200	7.8740	48	1.8898	1 7/16	10	.10	65.00
1217			150	5.9055	28	1.1024	25/32	16	.08	19.80
1317	85	3.3465	180	7.0866	41	1.6142	1 1/8	13	.10	39.00
1417			210	8.2677	52	2.0472	1 1/2	10	.12	75.00
1218			160	6.2992	30	1.1811	27/32	15	.08	23.00
1318	90	3.5433	190	7.4803	43	1.6929	1 3/16	13	.10	47.20
1418			225	8.8583	54	2.1260	1 5/8	10	.12	85.00
1219	95	3.7402	170	6.6929	32	1.2598	29/32	15	.08	28.00
1319			200	7.8740	45	1.7717	1 1/4	13	.10	56.00
1220	100	3.9370	180	7.0866	34	1.3386	31/32	15	.08	36.00
1320			215	8.4646	47	1.8504	1 3/8	12	.10	66.00
1221	105	4.1339	190	7.4803	36	1.4173	1	16	.08	42.00
1321			225	8.8583	49	1.9291	1 7/16	12	.10	77.00
1222	110	4.3307	200	7.8740	38	1.4961	1 1/16	16	.08	47.00
1322			240	9.4488	50	1.9685	1 1/2	12	.10	96.00

SINGLE ROW RADIAL BEARINGS — TYPE 1000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

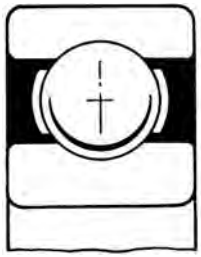
The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
1213	9010	7175	5675	4975	4500	4180	3940	3585	3315	2910	2640	2300	
1313	11450	9095	7210	6300	5730	5310	5000	4510	4215	3680	3350	2915	
1413	13150	10460	8295	7245	6580	6110	5750	5200	4850	4235	3850	3360	
1214	9190	7290	5770	5060	4575	4250	4005	3645	3375	2955	2680	2335	
1314	12700	10080	8000	6980	6350	5895	5550	5025	4675	4080	3710	3240	
1414	15410	12250	9720	8490	7800	7160	6740	6050	5685	4965	4510	3940	
1215	9730	7710	6100	5360	4850	4500	4240	3860	3580	3145	2845	2485	
1315	14300	11350	9010	7860	7150	6640	6250	5680	5260	4600	4180	3650	
1415	17450	13850	11010	9600	8740	8100	7625	6930	6430	5625	5110		
1216	10950	8700	6900	6025	5490	5090	4790	4360	4040	3525	3200	2800	
1316	15690	12450	9890	8635	7845	7290	6875	6220	5780	5050	4590		
1416	18820	14950	11880	10350	9420	8750	8235	7500	6945	6060	5510		
1217	12450	9890	7850	6880	6220	5780	5440	4940	4585	4020	3645		
1317	17050	13530	10750	9395	8530	7925	7465	6780	6290	5495	4990		
1417	20100	16000	12700	11090	10050	9350	8800	8010	7420	6475	5890		
1218	13350	10580	8400	7370	6680	6190	5820	5300	4920	4310	3900		
1318	18500	14720	11690	10200	9275	8605	8110	7380	6835	5970	5415		
1418	22550	17890	14200	12400	11280	10460	9850	8960	8300	7250	6590		
1219	14800	11725	9300	8150	7400	6850	6450	5880	5440	4770	4320		
1319	20000	15900	12600	11000	10000	9300	8745	7970	7360	6440	5850		
1220	16300	12900	10225	8975	8150	7540	7110	6480	5990	5250	4750		
1320	21500	17100	13550	11830	10750	10000	9410	8550	7930	6930	6295		
1221	18000	14290	11330	9900	9000	8350	7860	7130	6630	5785	5260		
1321	23050	18300	14510	12680	11510	10700	10080	9170	8495	7425	6735		
1222	19560	15550	12320	10780	9790	9100	8550	7750	7210	6300	5715		
1322	24450	19630	15400	13600	12250	11480	10700	9780	9105	7870	7160		

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

SINGLE ROW RADIAL BEARINGS — TYPE 3000

Design and Load Characteristics



Section—Type 3000

Single Row Radial bearings, Type 3000, do not employ a filling notch, but contain the maximum number and size balls that can be introduced by eccentric displacement of the rings.

Although, by reason of the fewer number of balls, these bearings do not have as great a radial capacity as Type 1000 bearings, they have a higher thrust capacity owing to the absence of a filling notch. By virtue of this thrust ability, Type 3000 bearings occupy a distinct sphere of usefulness in many positions where Single Row Radial bearings are to be preferred.

Ball bearings of the Type 3000 are especially useful in applications where the thrust loads are higher than would be recommended for Type 1000 bearings, but where parts do not need such positive axial location as to require the use of an angular contact bearing.

Where thrust in either direction is to be taken by one bearing, as in figure 1, axial movement of the shaft may not be held strictly within the normal Single Row Radial bearing end play limits, which vary from .002" to .010", depending upon the size, since shaft fits and the natural compression of parts under load will produce certain variations.

Where end play must be held to close limits and unusual radial rigidity is desired, as in certain types of precision mountings, Type 3000 bearings are furnished which have a greater initial looseness. This looseness permits the bearing rings to be slightly displaced from their normal radial position when preloaded, as in figure 2, and the bearings function as an angular contact type.

Type 3000 bearings may be obtained shielded for protection against foreign matter, as described under "Shielded Bearings."

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and radial load ratings of Type 3000 bearings at various speeds, see pages immediately following.

SINGLE ROW RADIAL BEARINGS — TYPE 3000

Typical Mountings

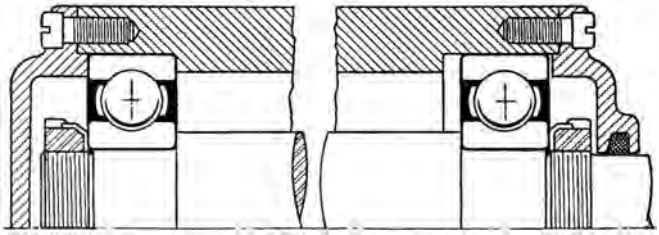


Figure 1.

In the majority of applications, Type 3000 bearings are mounted with one bearing tightly clamped both on the shaft and in the housing, so that thrust in either direction may be taken by the one bearing.

If the radial load is very much greater at the other end of the shaft, a Type 1000 bearing may be used as the companion bearing. The amount of endwise clearance allowed in the housing for the "floated" bearing depends upon the distance between bearings and is usually from .010" to .015".

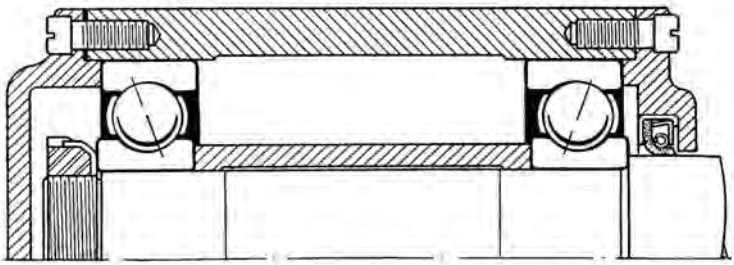


Figure 2.

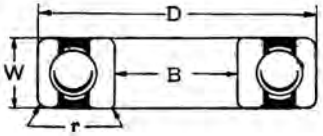
When Type 3000 bearings are to be used for applications requiring greater than usual rigidity, they are made initially looser than normal and must be mounted in such a way that the proper axial preload may be applied.

This may be accomplished either by a threaded adjusting member contacting with one of the bearing outer rings, or by means of shims of the correct thickness interposed between the bearing ring and housing end cap, as in figure 2.

SINGLE ROW RADIAL BEARINGS — TYPE 3000

Principal Dimensions

For radial or combined loads from either direction where thrust is to be resisted by a single bearing and is not great enough to require use of angular contact type. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
3200	10	.3937	30	1.1811	9	.3543	7/32	7	.025	$ 1.70
3300			35	1.3780	11	.4331	1/4	7		2.10
3201	12	.4724	32	1.2598	10	.3937	.210	8	.025	1.80
3301			37	1.4567	12	.4724	9/32	7	.04	2.30
3202	15	.5906	35	1.3780	11	.4331	.210	9	.025	1.90
3302			42	1.6535	13	.5118	5/16	7	.04	2.50
3203	17	.6693	40	1.5748	12	.4724	9/32	8	.025	2.10
3303			47	1.8504	14	.5512	11/32	7	.04	2.90
3204	20	.7874	47	1.8504	14	.5512	5/16	8	.04	2.60
3304			52	2.0472	15	.5906	13/32	7		3.50
3205	25	.9843	52	2.0472	15	.5906	5/16	9	.04	3.00
3305			62	2.4409	17	.6693	13/32	8		4.10
3206	30	1.1811	62	2.4409	16	.6299	3/8	9	.04	4.00
3306			72	2.8346	19	.7480	15/32	8		5.20
3207	35	1.3780	72	2.8346	17	.6693	7/16	9	.04	4.60
3307			80	3.1496	21	.8268	17/32	8	.06	6.00
3208	40	1.5748	80	3.1496	18	.7087	15/32	9	.04	5.40
3308			90	3.5433	23	.9055	19/32	8	.06	6.80
3209	45	1.7717	85	3.3465	19	.7480	15/32	10	.04	6.00
3309			100	3.9370	25	.9843	21/32	8	.06	8.50
3210	50	1.9685	90	3.5433	20	.7874	15/32	11	.04	7.00
3310			110	4.3307	27	1.0630	23/32	8	.08	10.00
3211	55	2.1654	100	3.9370	21	.8268	17/32	11	.06	8.00
3311			120	4.7244	29	1.1417	25/32	8	.08	12.40

Note: For sizes above 22 bore see Pages 30 and 31.

SINGLE ROW RADIAL BEARINGS — TYPE 3000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

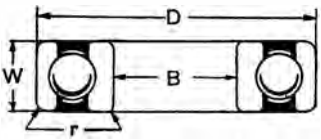
Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
3200	663	526	419	364	332	307	290	264	244	213	194	169	140
3300	763	630	481	419	381	356	333	305	281	245	223	195	163
3201	817	649	515	450	410	380	357	319	301	263	239	209	162
3301	955	750	603	523	479	441	419	379	352	307	281	244	209
3202	969	769	610	533	485	450	424	388	357	312	284	248	200
3302	1125	890	712	620	564	521	493	448	415	362	330	288	242
3203	1250	980	788	689	625	581	546	494	460	402	365	319	270
3303	1320	1040	832	729	660	612	578	523	486	425	386	337	284
3204	1495	1200	944	827	749	690	655	595	552	482	438	381	321
3304	1835	1460	1160	1010	917	851	802	726	677	593	537	470	398
3205	1775	1410	1120	976	889	825	775	700	655	571	520	454	383
3305	2470	1970	1560	1360	1235	1140	1080	988	910	795	724	631	534
3206	2350	1860	1475	1290	1175	1085	1025	930	865	758	683	600	506
3306	3100	2455	1955	1700	1545	1430	1350	1230	1140	996	902	788	695
3207	3315	2625	2090	1825	1655	1540	1450	1315	1220	1065	970	845	714
3307	3550	2815	2240	1950	1775	1650	1550	1410	1310	1140	1040	905	770
3208	3720	2950	2340	2040	1860	1725	1620	1475	1370	1200	1090	947	798
3308	4440	3520	2790	2440	2220	2060	1935	1760	1630	1430	1295	1130	945
3209	4100	3250	2580	2260	2045	1900	1790	1600	1510	1315	1200	1045	877
3309	5160	4100	3260	2840	2580	2400	2255	2055	1905	1660	1510	1320	1110
3210	4520	3580	2840	2485	2240	2100	1980	1780	1660	1450	1320	1150	
3310	5960	4715	3755	3270	2980	2830	2600	2360	2195	1910	1735	1520	
3211	5400	4280	3390	2965	2700	2500	2355	2140	1980	1735	1580	1380	
3311	6755	5370	4255	3715	3385	3140	2960	2675	2490	2175	1975	1725	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

SINGLE ROW RADIAL BEARINGS — TYPE 3000

Principal Dimensions

For radial or combined loads from either direction where thrust is to be resisted by a single bearing and is not great enough to require use of angular contact type. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
3212	60	2.3622	110	4.3307	22	.8661	19/32	10	.06	$ 9.30
3312			130	5.1181	31	1.2205	27/32	8	.08	15.50
3213	65	2.5591	120	4.7244	23	.9055	21/32	10	.06	11.50
3313			140	5.5118	33	1.2992	29/32	8	.08	19.10
3214	70	2.7559	125	4.9213	24	.9449	21/32	11	.06	12.50
3314			150	5.9055	35	1.3780	31/32	8	.08	22.50
3215	75	2.9528	130	5.1181	25	.9843	21/32	11	.06	13.70
3315			160	6.2992	37	1.4567	1	8	.08	28.00
3216	80	3.1496	140	5.5118	26	1.0236	1 1/16	11	.08	16.00
3316			170	6.6929	39	1.5354	1 1/16	8		32.20
3217	85	3.3465	150	5.9055	28	1.1024	25/32	11	.08	19.80
3317			180	7.0866	41	1.6142	1 1/8	8	.10	39.00
3218	90	3.5433	160	6.2992	30	1.1811	27/32	11	.08	23.00
3318			190	7.4803	43	1.6929	1 3/16	8	.10	47.20
3219	95	3.7402	170	6.6929	32	1.2598	29/32	11	.08	28.00
3319			200	7.8740	45	1.7717	1 1/4	8	.10	56.00
3220	100	3.9370	180	7.0866	34	1.3386	31/32	11	.08	36.00
3320			215	8.4646	47	1.8504	1 3/8	8	.10	66.00
3221	105	4.1339	190	7.4803	36	1.4173	1	11	.08	42.00
3321			225	8.8583	49	1.9291	1 7/16	8	.10	77.00
3222	110	4.3307	200	7.8740	38	1.4961	1 1/16	11	.08	47.00
3322			240	9.4488	50	1.9685	1 1/2	8	.10	96.00

Note: For sizes above 22 bore see Pages 30 and 31.

SINGLE ROW RADIAL BEARINGS — TYPE 3000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

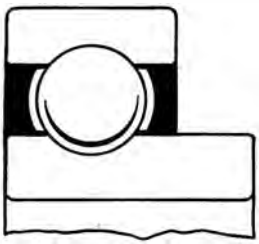
The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
3212	5950	4735	3750	3290	2970	2750	2595	2360	2180	1920	1735	1520	
3312	7615	6050	4805	4200	3815	3540	3330	3040	2810	2455	2230	1940	
3213	6890	5480	4325	3800	3435	3180	3000	2725	2525	2215	2010	1750	
3313	8490	6745	5350	4665	4250	3940	3705	3345	3130	2730	2485	2160	
3214	7465	5910	4700	4100	3720	3455	3250	2960	2745	2405	2180	1895	
3314	9415	7470	5930	5170	4705	4365	4110	3725	3465	3025	2750	2400	
3215	7580	6000	4770	4165	3780	3510	3300	3005	2790	2445	2210	1920	
3315	10050	7965	6325	5520	5020	4660	4395	3980	3700	3230	2935	2565	
3216	8185	6500	5155	4500	4100	3800	3575	3260	3020	2635	2390	2095	
3316	11100	8745	6945	6055	5505	5110	4825	4365	4055	3550	3220		
3217	9700	7700	6100	5340	4845	4500	4235	3845	3560	3135	2835		
3317	11980	9515	7550	6600	5990	5560	5250	4750	4410	3860	3500		
3218	10825	8625	6820	5990	5420	5010	4740	4310	4000	3500	3170		
3318	13000	10340	8205	7160	6510	6050	5700	5185	4800	4200	3810		
3219	12100	9520	7580	6620	6000	5570	5230	4785	4425	3880	3510		
3319	14040	11170	8845	7725	7020	6530	6135	5595	5160	4510	4100		
3220	13225	10470	8320	7300	6620	6130	5790	5260	4875	4265	3865		
3320	15910	12680	10040	8760	7960	7400	6970	6330	5880	5140	4660		
3221	13980	11080	8780	7700	6990	6480	6100	5530	5150	4480	4080		
3321	17100	13560	10750	9390	8535	7930	7460	6790	6295	5500	4985		
3222	15180	12050	9550	8390	7600	7075	6630	6010	5600	4890	4440		
3322	18110	14550	11410	10080	9070	8500	7925	7235	6745	5835	5305		

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

WIDE INNER RING BEARINGS — TYPE 4000

Design and Mounting



Section
Type 4000

Type 4000 Single Row bearings are identical in every respect with the Type 1000 or maximum capacity single row, except that the inner ring is extended on one side to a width equalling that of a standard double row bearing of the same bore size and series.

These bearings are produced in a limited range of bore sizes in the medium series only. Like the Type 1000, they provide the maximum radial capacity that may be safely obtained in a bearing having one row of balls, and may be used for combined loads when chosen in accordance with factors "F" for Type 4000 bearings given under "Bearing Selection."

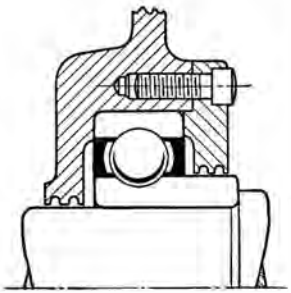


Figure 1.

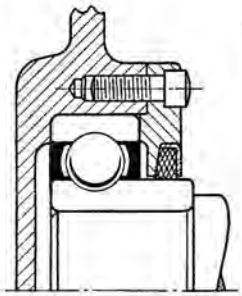


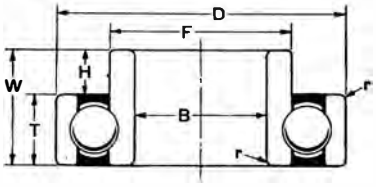
Figure 2.

Because of the width of the inner ring, it is possible to use Type 4000 bearings on certain shafts finished to take double row bearings. Also, because of the wide ring, where the bearings are press fitted as in conventional practice, it is frequently unnecessary to use locknuts, and threading of the shaft is thereby avoided. Figures 1 and 2 illustrate typical applications without locknuts and show how the outside diameter of the inner race may be used to give a smoothly finished, concentric surface for a felt or mechanical closure member.

WIDE INNER RING BEARINGS — TYPE 4000

Dimensions and Capacities

Maximum capacity Single Row Radial. Same as Type 1000, except wide inner ring.



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Cup Width T		Cone Projection H	F	Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	mm	inch			Diam.	No.		
4305	25	.9843	62	2.4409	25.4	1.0000	17	.6693	.3307	1.483	7/16	10	.04	$ 4.90
4306	30	1.1811	72	2.8346	30.2	1.1875	19	.7480	.4395	1.743	15/32	11	.04	6.25
4307	35	1.3780	80	3.1496	34.9	1.3750	21	.8268	.5482	1.963	17/32	11	.06	7.20
4308	40	1.5748	90	3.5433	36.5	1.4375	23	.9055	.5320	2.223	19/32	11	.06	8.15
4309	45	1.7717	100	3.9370	39.7	1.5625	25	.9843	.5782	2.482	21/32	12	.06	10.20
4310	50	1.9685	110	4.3307	44.4	1.7500	27	1.0630	.6870	2.740	23/32	12	.08	12.00
4311	55	2.1654	120	4.7244	49.2	1.9375	29	1.1417	.7958	3.001	25/32	12	.08	14.90

Load Ratings Based on Average Life of 3800 Hours

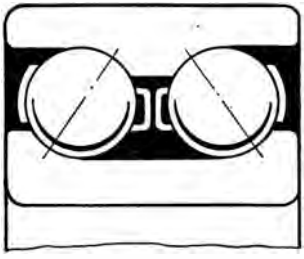
The capacities listed below are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be chosen by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	**100**	**200**	**300**	**400**	**500**	**600**	**800**	**1000**	**1500**	**2000**	**3000**	**5000**
4305	3300	2630	2085	1820	1650	1535	1450	1320	1220	1065	967	844	712
4306	3950	3130	2490	2170	1970	1825	1720	1560	1450	1270	1150	1005	886
4307	4530	3590	2855	2490	2265	2100	1980	1800	1670	1455	1325	1155	982
4308	5650	4490	3560	3110	2830	2625	2470	2245	2080	1820	1650	1440	1205
4309	6970	5540	4400	3835	3480	3240	3045	2770	2570	2245	2040	1780	1500
4310	8050	6375	5065	4410	4020	3730	3510	3190	2960	2580	2345	2050	
4311	9125	7250	5750	5010	4560	4245	3990	3620	3360	2935	2665	2325	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DOUBLE ROW BEARINGS — TYPE 5000

Design and Load Characteristics



Section—Type 5000

The New Departure Double Row is an extremely efficient dual purpose bearing, capable of resisting heavy combined radial and thrust loads with equal facility from any direction and in any combination.

Owing to its angular contact, internally preloaded construction, in which two rows of balls are opposed to each other under an accurately determined initial compression, this bearing is of particular value where combined loads must be resisted by a single unit and both radial and axial deflection must be controlled within very close limits.

New Departure not only was the originator of the Angular Contact Double Row bearing, but developed and perfected preloading as a means of increasing the resistance to misalignment or deflection of this inherently rigid design.

Since the preload in these bearings is exerted equally upon the two rows of balls, they are capable of extremely rigid radial support, and, though primarily intended for resistance to combined loads, are valuable in numerous instances for pure radial loads. Because of their unit construction, utilizing the maximum number and diameter of balls that can be introduced into the standard cross section for wide bearings without materially affecting the essential balance of strength and endurance between the various parts, radial loads are much better apportioned between the two rows of balls than in two Single Row bearings mounted side by side.

For determination of bearing size with reference to desired life under radial, thrust, or combined loads, and for limiting thrust loads, see "Bearing Selection."

For principal dimensions and load ratings at various speeds, see pages immediately following.

DOUBLE ROW BEARINGS — TYPE 5000

Typical Mountings

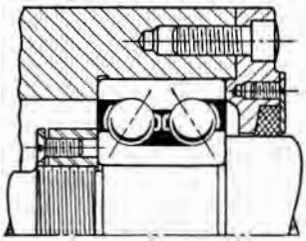


Figure 1.

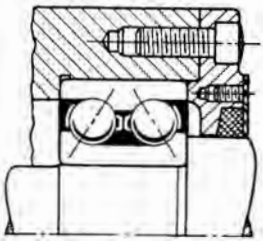


Figure 2.

When a Double Row bearing is to resist combined radial and thrust loads, where reversal of thrust will take place, it is necessary to clamp both rings securely, as in figure 1. If possible, the greatest thrust should be taken from shaft shoulder to housing shoulder, rather than from locknut to closure cap.

Where thrust is always in one direction, figure 2, it is not usually necessary to clamp the bearing inner ring, if the bearing is a firm press fit on the shaft.

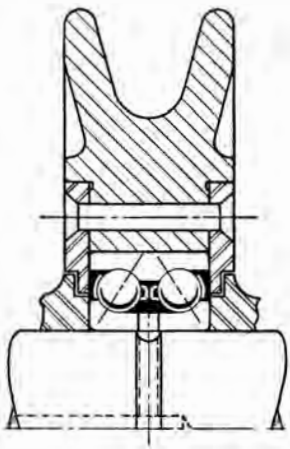


Figure 3.

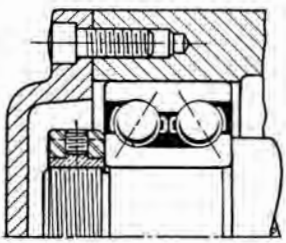


Figure 4.

The New Departure Double Row is an inherently rigid bearing, with resistance to deflection further enhanced by the preload built into it during manufacture. Because of this pronounced resistance to misalignment, wheels, pulleys, sheaves and similar parts, as in figure 3,* frequently require no more than one bearing for adequate support.

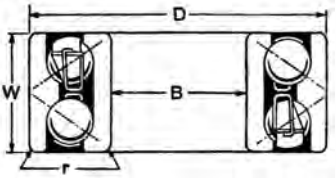
Where a Type 5000 bearing is employed to furnish rigid support under pure radial loads, it may be mounted axially free, or unclamped in the housing, as in figure 4. The use of two Double Row bearings on the same shaft, either free or clamped, should not be undertaken unless the application has received the approval of New Departure engineers.

*Information on sheave bearings with lubricant hole on request.

DOUBLE ROW BEARINGS — TYPE 5000

Principal Dimensions

Maximum capacity, angular contact bearings for combined loads from any direction. Solid inner and outer rings with two rows of balls permanently preloaded for greater rigidity. For capacities under thrust or combined loads, use factors "F" under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls Per Row		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
5200	10	.3937	30	1.1811		9/16	3/16	9	.025	$ 2.50
5300			35	1.3780	19.0	3/4	1/4	8		3.10
5201	12	.4724	32	1.2598	15.9	5/8	7/32	9	.025	2.70
5301			37	1.4567	19.0	3/4	1/4	9	.04	3.40
5202	15	.5906	35	1.3780	15.9	5/8	7/32	10	.025	2.80
5302			42	1.6535	19.0	3/4	9/32	10	.04	3.70
5203	17	.6693	40	1.5748	17.5	11/16	1/4	10	.04	3.10
5303			47	1.8504	22.2	7/8	5/16	10		4.30
5204	20	.7874	47	1.8504	20.6	13/16	9/32	11	.04	3.90
5304			52	2.0472	22.2	7/8	5/16	11		5.20
5205	25	.9843	52	2.0472	20.6	13/16	9/32	12	.04	4.50
5305			62	2.4409	25.4	1	3/8	12		6.10
5206	30	1.1811	62	2.4409	23.8	15/16	11/32	13	.04	6.00
5306			72	2.8346	30.2	1 3/16	7/16	12		7.80
5207	35	1.3780	72	2.8346	27.0	1 1/16	3/8	14	.04	6.90
5307			80	3.1496	34.9	1 3/8	1/2	12	.06	9.00
5208	40	1.5748	80	3.1496	30.2	1 3/16	7/16	14	.04	8.10
5308			90	3.5433	36.5	1 7/16	17/32	13	.06	10.20
5209	45	1.7717	85	3.3465	30.2	1 3/16	7/16	15	.04	9.00
5309			100	3.9370	39.7	1 9/16	19/32	13	.06	12.70
5210	50	1.9685	90	3.5433	30.2	1 3/16	7/16	16	.04	10.50
5310			110	4.3307	44.4	1 3/4	1 1/16	12	.08	15.00
5211	55	2.1654	100	3.9370	33.3	1 5/16	1/2	16	.06	12.00
5311			120	4.7244	49.2	1 15/16	3/4	12	.08	18.60
5212	60	2.3622	110	4.3307	36.5	1 7/16	1 7/32	16	.06	13.90
5312			130	5.1181	54.0	2 1/8	2 7/32	12	.08	23.20
5213	65	2.5591	120	4.7244	38.1	1 1/2	9/16	17	.06	17.20
5313			140	5.5118	58.7	2 5/16	29/32	12	.08	28.60
5214	70	2.7559	125	4.9213	39.7	1 9/16	19/32	17	.06	18.70
5314			150	5.9055	63.5	2 1/2	31/32	12	.08	33.70
5215	75	2.9528	130	5.1181	41.3	1 5/8	5/8	17	.06	20.50
5315			160	6.2992	68.3	2 11/16	1	12	.08	42.00
5216	80	3.1496	140	5.5118	44.4	1 3/4	1 1/16	16	.08	24.00
5316			170	6.6929	68.3	2 11/16	1 1/16	12	.08	48.30
5217	85	3.3465	150	5.9055	49.2	1 15/16	3/4	16	.08	29.70
5317			180	7.0866	73.0	2 7/8	1 1/8	12	.10	58.50
5218	90	3.5433	160	6.2992	52.4	2 1/16	13/16	16	.08	34.50
5219	95	3.7402	170	6.6929	55.6	2 3/16	7/8	16	.08	42.00
5220	100	3.9370	180	7.0866	60.3	2 3/8	15/16	16	.08	54.00
5222	110	4.3307	200	7.8740	69.8	2 3/4	15/16	18	.08	70.50

DOUBLE ROW BEARINGS — TYPE 5000

Radial Load Ratings

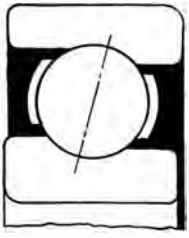
Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
5200	1260	990	785	685	623	579	545	498	459	400	364	318	268
5300	1595	1255	996	871	790	735	691	628	583	509	462	403	341
5201	1540	1215	964	842	764	710	669	606	563	491	446	390	329
5301	1865	1470	1165	1020	924	859	808	732	680	595	540	471	398
5202	1750	1380	1095	958	869	808	760	688	640	559	508	444	374
5302	2420	1905	1510	1320	1200	1115	1050	953	884	771	701	612	516
5203	2140	1685	1340	1170	1060	988	929	839	782	683	620	541	457
5303	2700	2125	1685	1470	1335	1240	1170	1060	985	860	782	683	576
5204	2595	2040	1620	1415	1280	1195	1120	1020	946	826	750	655	553
5304	3010	2370	1875	1640	1490	1385	1300	1180	1100	959	871	760	641
5205	2845	2270	1800	1570	1430	1330	1250	1135	1050	920	835	730	615
5305	4715	3715	2940	2575	2335	2170	2040	1850	1720	1500	1365	1190	1005
5206	4045	3210	2540	2220	2020	1875	1765	1590	1490	1300	1180	1030	870
5306	5950	4690	3715	3240	2945	2735	2575	2330	2170	1895	1720	1505	1270
5207	5595	4400	3490	3050	2770	2575	2420	2200	2040	1780	1620	1415	1190
5307	7240	5700	4515	3945	3580	3330	3135	2830	2640	2305	2095	1830	1545
5208	6950	5475	4340	3790	3440	3195	3010	2725	2535	2215	2010	1760	1480
5308	8540	6725	5330	4650	4230	3930	3695	3365	3115	2720	2470	2160	1820
5209	7430	5850	4640	4050	3680	3420	3215	2900	2710	2370	2150	1880	1585
5309	10090	7950	6300	5500	4995	4645	4365	3970	3680	3210	2920	2550	2150
5210	7900	6225	4925	4305	3910	3635	3420	3100	2880	2520	2285	2000	1685
5310	11660	9175	7275	6350	5775	5360	5050	4570	4250	3715	3375	2945	
5211	9575	7540	5970	5210	4740	4400	4145	3745	3490	3050	2770	2420	
5311	13300	10470	8295	7250	6585	6110	5750	5215	4850	4230	3845	3360	
5212	10490	8345	6605	5785	5245	4880	4595	4160	3860	3375	3065	2680	
5312	15700	12380	9800	8560	7785	7230	6800	6160	5725	5000	4550	3970	
5213	12110	9545	7560	6600	6000	5580	5250	4740	4415	3860	3510	3065	
5313	17450	13780	10900	9530	8650	8045	7565	6850	6375	5565	5050	4415	
5214	13100	10310	8175	7150	6490	6030	5670	5125	4775	4165	3790	3310	
5314	19280	15180	12020	10500	9540	8880	8345	7550	7030	6140	5585	4865	
5215	14120	11120	8800	7700	6995	6500	6110	5525	5150	4500	4090	3570	
5315	20500	16150	12800	11180	10150	9440	8890	8040	7485	6530	5935	5185	
5216	15600	12290	9740	8505	7725	7190	6750	6130	5695	4970	4510	3945	
5316	22430	17670	14000	12230	11100	10320	9710	8800	8185	7150	6500		
5217	17660	13900	11010	9640	8745	8130	7650	6930	6445	5630	5110		
5317	24500	19300	15280	13360	12110	11280	10600	9600	8940	7800	7095		
5218	19800	15600	12350	10800	9800	9115	8590	7780	7225	6305	5735		
5219	21950	17280	13690	11950	10870	10100	9500	8620	8000	6990	6350		
5220	24400	19220	15220	13300	12090	11230	10570	9580	8900	7775	7060		
5222	27150	21550	17120	14970	13580	12610	11870	10780	10000	8740	7950		

DIFRAX BEARINGS — TYPE 0100

Design and Load Characteristics



Section
Difrax—Type 0100

Difrax Single Row Angular Contact bearings, Type 0100, are designed to resist combined radial and thrust loads from one direction. They are particularly adapted to the support of automotive differentials and when mounted two bearings opposed, that is, with one bearing on each side of the differential case, they are capable of resisting combined loads from either direction. Difrax bearings have ample capacity to take the rear wheel thrust loads in axle designs requiring this duty.

These bearings are made with high thrust shoulders on one side for both inner and outer rings and somewhat lower shoulders on the other side, the latter, however, being much higher than in "snap" assembled single row angular contact bearings. As a result the ball races more nearly approach the conformation of the non-filling slot, single row radial bearing races. For this reason, Difrax bearings are less seriously affected by misalignment caused by deflection of the parts in which they are mounted. They are non-separable, that is, they cannot be taken apart for separate installation of the rings.

Since Difrax bearings are designed particularly for differential service, they are made in light series proportions only and in a limited range of sizes, which, however, is sufficient to accommodate all of the principal differential sizes.

In several instances Difrax bearings are made with one outside diameter and width, but with two different bore sizes, thus making possible a variation in differential or drive axle size without increase in the size of bearing housings.

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and load ratings of Difrax bearings, see pages immediately following.

DIFRAX BEARINGS — TYPE 0100

Typical Mounting

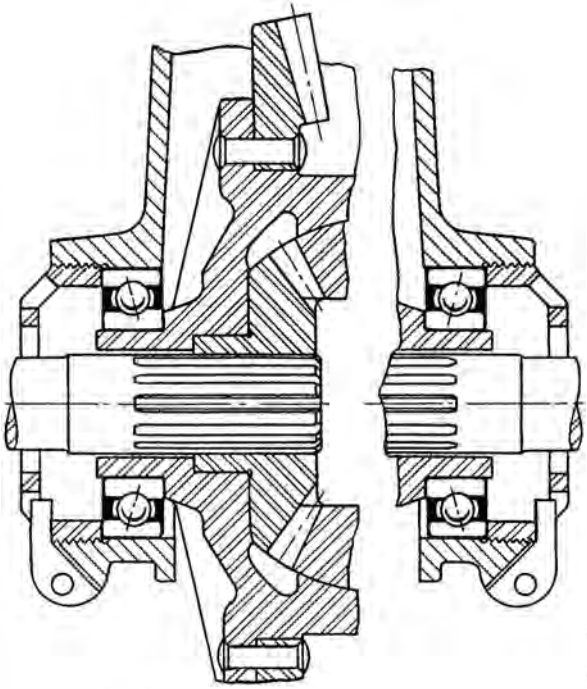


Figure 1.

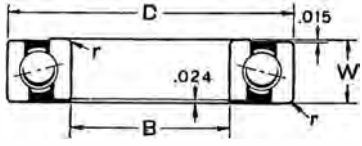
In the conventional differential the bearings are adjusted for the proper running set-up by means of threaded members contacting with the bearing outer rings, as in figure 1. The bearings, therefore, should always be pressed on the hubs of the differential case so that the large faces of the inner rings butt against the locating shoulders on the hub.

In order to assure maximum resistance to deflection under operating loads, Difrax bearings should always be set up under a moderate axial preload, that is, so that the balls and races are placed under a slight initial compression. Since the method of adjusting Difrax bearings and the most satisfactory amount of initial or preload vary with different types of axles, such data relative to any new design should be obtained direct from the New Departure Engineering Department.

DIFRAX BEARINGS — TYPE 0100

Principal Dimensions

Angular contact for single direction combined loads. Used two bearings opposed for loads from either direction. Especially adapted to support of automotive differentials. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
0103	41	1.6142	75	2.9528	17	.6693	3/8	11	.04	$5.00
0108	40	1.5748	80	3.1496	18	.7087	7/16	11	.04	5.40
0114	43	1.6929	75	2.9528	17	.6693	3/8	12	††	5.15
0100	43	1.6929	80	3.1496	18	.7087	7/16	11	.04	5.40
0113	43	1.6929	80	3.1496	18	.7087†	7/16	11	.04†	5.70
0109	45	1.7717	85	3.3465	19	.7480	15/32	10	.04	6.00
0110	50	1.9685	90	3.5433	20	.7874	15/32	11	.04	7.00
0111	55	2.1654	100	3.9370	21	.8268	1/2	11	.06	8.00
0101	58	2.2835	100	3.9370	21	.8268	1/2	11	.06	8.00

† Cone extended on .024 side; cone width 1.000 and cone bore radius .08.
†† Cone bore radius on thrust (overhung) side .06; on non-thrust (underhung) side .025. Cup radius both sides .025

DIFRAX BEARINGS — TYPE 0100

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

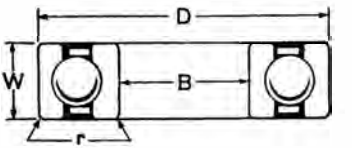
Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
0103	3185	2525	2005	1750	1590	1475	1390	1265	1170	1025	932	813	686
0108	3880	3080	2450	2135	1940	1800	1695	1540	1430	1250	1140	995	837
0114	3410	2710	2145	1880	1700	1580	1490	1350	1255	1095	995	871	733
0100	3880	3080	2450	2135	1940	1800	1695	1540	1430	1250	1140	995	837
0113	3880	3080	2450	2135	1940	1800	1695	1540	1430	1250	1140	995	837
0109	4020	3190	2535	2215	2010	1865	1755	1595	1480	1295	1175	1025	867
0110	4385	3480	2760	2415	2190	2035	1915	1740	1615	1410	1280	1120	945
0111	4920	3905	3100	2710	2460	2285	2150	1950	1810	1585	1440	1255	
0101	4920	3905	3100	2710	2460	2285	2150	1950	1810	1585	1440	1255	

Note: For load ratings below 50 r.p.m. see factors under "Bearing Selection."

EXTRA LARGE SINGLE ROW BEARINGS—TYPE 3000

Principal Dimensions

For radial or combined loads from either direction where thrust is to be resisted by a single bearing and is not great enough to require use of angular contact type. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
3224	120	4.7244	215	8.4646	40	1.5748	1 1/8	11	.08	Prices on Application
3324	120	4.7244	260	10.2362	55	2.1654	1 5/8	9	.10	
3226	130	5.1181	230	9.0551	40	1.5748	1 3/16	11	.10	
3326	130	5.1181	280	11.0236	58	2.2835	1 3/4	9	.12	
3228	140	5.5118	250	9.8425	42	1.6535	1 1/4	11	.10	
3328	140	5.5118	300	11.8110	62	2.4409	1 7/8	9	.12	
3230	150	5.9055	270	10.6299	45	1.7717	1 3/8	11	.10	
3330	150	5.9055	320	12.5984	65	2.5591	1 15/16	9	.12	
3232	160	6.2992	290	11.4173	48	1.8898	1 1/2	11	.10	
3332	160	6.2992	340	13.3858	68	2.6772	2 1/16	9	.12	
3234	170	6.6929	310	12.2047	52	2.0472	1 5/8	11	.12	
3334	170	6.6929	360	14.1732	72	2.8346	2 1/8	9	.12	
3236	180	7.0866	320	12.5984	52	2.0472	1 5/8	11	.12	
3336	180	7.0866	380	14.9606	75	2.9528	2 1/4	9	.12	
3238	190	7.4803	340	13.3858	55	2.1654	1 11/16	11	.12	
3338	190	7.4803	400	15.7480	78	3.0709	2 3/8	9	.16	
3240	200	7.8740	360	14.1732	58	2.2835	1 3/4	12	.12	
3340	200	7.8740	420	16.5354	80	3.1496	2 1/2	9	.16	
3244	220	8.6614	400	15.7480	65	2.5591	2	11	.12	
3344	220	8.6614	460	18.1102	88	3.4646	2 3/4	9	.16	
3248	240	9.4488	440	17.3228	72	2.8346	2 1/4	11	.12	
3348	240	9.4488	500	19.6850	95	3.7402	3	9	.16	
3252	260	10.2362	480	18.8976	80	3.1496	2 1/2	11	.16	
3352	260	10.2362	540	21.2598	102	4.0157	3	10	.20	
3256	280	11.0236	500	19.6850	80	3.1496	2 1/2	11	.16	
3356	280	11.0236	580	22.8346	108	4.2520	3 1/4	10	.20	
3260	300	11.8110	540	21.2598	85	3.3465	2 5/8	12	.16	
3264	320	12.5984	580	22.8346	92	3.6220	2 3/4	12	.16	

For sizes below 24 bore, see pages 16-19.

EXTRA LARGE SINGLE ROW BEARINGS—TYPE 3000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

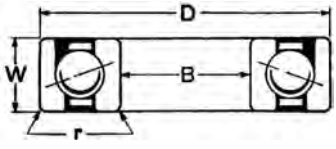
Brg. No.	Revolutions per Minute										
	50	100	200	300	400	500	600	800	1000	1500	2000
3224	16790	13300	10550	9225	8375	7775	7325	6650	6165	5385	4900
3324	23150	18375	14575	12750	11550	10750	10100	9180	8525	7450	6750
3226	18300	14530	11520	10090	9145	8495	8000	7260	6740	5880	5350
3326	25900	20550	16300	14250	12925	12000	11300	10275	9535	8325	
3228	20000	15850	12575	11000	9980	9270	8730	7925	7350	6415	
3328	28750	22800	18100	15825	14375	13325	12550	11400	10580	9245	
3230	22900	18175	14400	12600	11425	10610	10000	9075	8425	7360	
3330	30600	24250	19250	16825	15275	14200	13350	12125	11260	9825	
3232	25900	20550	16285	14240	12920	12000	11300	10275	9525	8315	
3332	33600	26600	21100	18450	16750	15550	14650	13300	12350	10775	
3234	28980	23000	18220	15950	14460	13430	12650	11495	10670	9310	
3334	35550	28200	22350	19550	17750	16475	15500	14100	13080	11425	
3236	29500	23400	18570	16230	14725	13690	12890	11700	10860		
3336	38700	30700	24350	21300	19325	17950	16875	15350	14250		
3238	31450	24975	19800	17325	15725	14600	13750	12490	11585		
3338	42000	33300	26400	23100	20975	19450	18325	16650	15450		
3240	35475	28125	22325	19525	17700	16450	15475	14075	13045		
3340	45250	35900	28500	24900	22600	21000	19750	17950	16650		
3244	40450	32075	25400	22220	20180	18760	17650	16025	14875		
3344	52250	41400	32800	28700	26075	24200	22775	20700	19200		
3248	47675	37825	30000	26250	23800	22120	20810	18910			
3348	59350	47050	37350	32650	29650	27500	25900	23525			
3252	55300	43925	34800	30450	27625	25650	24175	21950			
3352	65500	51900	41250	36050	32700	30350	28575	25950			
3256	56650	44950	35625	31200	28300	26300	24750	22450			
3356	73650	58350	46350	40500	36750	34125	32150	29200			
3260	65100	51600	41000	35800	32500	30200	28425	25800			
3264	70300	55800	44200	38675	35075	32575	30700				

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

EXTRA LARGE RADAX BEARINGS—TYPE 20,000

Principal Dimensions

Single row angular contact, for one-direction combined loads. Mounted two bearings opposed for maximum rigidity and support of loads from either direction. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
20224	120	4.7244	215	8.4646	40	1.5748	1 1/8	16	.08	Prices on Application
20324	120	4.7244	260	10.2362	55	2.1654	1 5/8	13	.10	
20226	130	5.1181	230	9.0551	40	1.5748	1 3/16	16	.10	
20326	130	5.1181	280	11.0236	58	2.2835	1 3/4	13	.12	
20228	140	5.5118	250	9.8425	42	1.6535	1 1/4	17	.10	
20328	140	5.5118	300	11.8110	62	2.4409	1 7/8	13	.12	
20230	150	5.9055	270	10.6299	45	1.7717	1 3/8	17	.10	
20330	150	5.9055	320	12.5984	65	2.5591	1 15/16	14	.12	
20232	160	6.2992	290	11.4173	48	1.8898	1 1/2	17	.10	
20332	160	6.2992	340	13.3858	68	2.6772	2 1/16	14	.12	
20234	170	6.6929	310	12.2047	52	2.0472	1 5/8	16	.12	
20334	170	6.6929	360	14.1732	72	2.8346	2 1/8	14	.12	
20236	180	7.0866	320	12.5984	52	2.0472	1 5/8	17	.12	
20336	180	7.0866	380	14.9606	75	2.9528	2 1/4	14	.12	
20238	190	7.4803	340	13.3858	55	2.1654	1 11/16	18	.12	
20338	190	7.4803	400	15.7480	78	3.0709	2 3/8	14	.16	
20240	200	7.8740	360	14.1732	58	2.2835	1 3/4	18	.12	
20340	200	7.8740	420	16.5354	80	3.1496	2 1/2	14	.16	
20244	220	8.6614	400	15.7480	65	2.5591	2	17	.12	
20344	220	8.6614	460	18.1102	88	3.4646	2 3/4	14	.16	
20248	240	9.4488	440	17.3228	72	2.8346	2 1/4	17	.12	
20348	240	9.4488	500	19.6850	95	3.7402	3	14	.16	
20252	260	10.2362	480	18.8976	80	3.1496	2 1/2	17	.16	
20352	260	10.2362	540	21.2598	102	4.0157	3	15	.20	
20256	280	11.0236	500	19.6850	80	3.1496	2 1/2	18	.16	
20356	280	11.0236	580	22.8346	108	4.2520	3 1/4	15	.20	
20260	300	11.8110	540	21.2598	85	3.3465	2 5/8	18	.16	
20264	320	12.5984	580	22.8346	92	3.6220	2 3/4	18	.16	

For sizes below 24 bore, see pages 36-39.

EXTRA LARGE RADAX BEARINGS—TYPE 20,000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

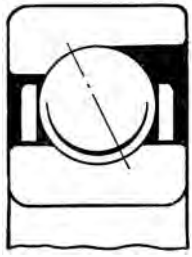
The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute										
	50	100	200	300	400	500	600	800	1000	1500	2000
20224	21100	16750	13250	11600	10525	9775	9200	8370	7760	6775	6150
20324	29000	23000	18250	15950	14475	13450	12660	11500	10675	9325	8475
20226	23025	18275	14500	12675	11500	10675	10050	9125	8475	7400	6725
20326	32450	25700	20400	17850	16175	15050	14150	12850	11930	10425	
20228	26150	20750	16450	14400	13050	12125	11400	10375	9620	8400	
20328	36000	28500	22625	19850	17975	16700	15725	14275	13240	11575	
20230	30000	23800	18850	16500	14950	13900	13100	11875	11030	9625	
20330	40250	31950	25300	22150	20100	18650	17550	15950	14800	12925	
20232	33900	26900	21300	18650	16900	15700	14800	13450	12475	10900	
20332	44200	35000	27750	24300	22050	20475	19275	17500	16250	14200	
20234	36500	29000	23000	20100	18200	16925	15950	14475	13430	11725	
20334	46700	37000	29350	25700	23300	21625	20375	18525	17180	15000	
20236	38600	30600	24300	21200	19275	17875	16850	15300	14200		
20336	50800	40300	31950	27950	25350	23600	22200	20175	18700		
20238	42700	33800	26800	23500	21300	19750	18625	16900	15700		
20338	55100	43650	34650	30350	27500	25550	24100	21850	20275		
20240	45400	36000	28550	25125	22650	21050	19800	18000	16700		
20340	59450	47150	37450	32700	29700	27550	25950	23600	21875		
20244	52800	41800	33200	29100	26400	24500	23100	20975	19435		
20344	68500	54350	43150	37750	34200	31800	29950	27200	25225		
20248	62400	49500	39250	34300	31200	28925	27250	24750			
20348	77900	61900	49000	43000	38950	36200	34100	31000			
20252	72500	57500	45700	39950	36250	33600	31700	28750			
20352	84000	66600	52800	46250	41900	38900	36650	33300			
20256	76750	61000	48300	42250	38300	35600	33500	30450			
20356	94450	74900	59400	52000	47200	43750	41250	37450			
20260	83250	66000	52300	45750	41600	38500	36300	33000			
20264	89800	71250	56500	49450	44800	41600	39200				

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

RADAX BEARINGS — TYPE 20,000

Design and Load Characteristics



Section
Radax—Type 20,000

Radax Single Row Angular Contact bearings, Type 20,000, are designed to resist heavy combined radial and thrust loads from one direction, particularly where the thrust component is large and close axial location is essential. When applied two bearings opposed, either duplex or at opposite ends of a shaft, heavy combined loads with thrust from either direction are readily sustained.

These bearings are made with a high thrust shoulder on one side of the outer ring and sufficient "snap" or shoulder on the other to render them non-separable. With heat expansion of the outer rings, this construction permits introduction of the maximum number and size of balls.

Type 20,000 bearings made for duplex mounting have the inner and outer ring faces ground with sufficient offset so that when clamped with the faces firmly abutting the bearings are placed in a correctly preloaded condition. Bearings for duplex mounting are always furnished in matched pairs.

Radax bearings, Type 20,000, may be obtained to "Perfex" limits at higher cost than standard for applications requiring exceptional accuracy, such as precision spindles. When furnished for purposes of this nature, Type 20,000 bearings are marked on the outer rings to identify the "high point" and amount of eccentricity, thus permitting them to be so mounted as to give minimum spindle runout.

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and load ratings of Type 20,000 Radax bearings, see pages immediately following.

RADAX BEARINGS — TYPE 20,000

Typical Mountings

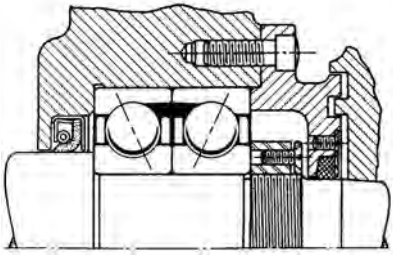


Figure 1.
Duplex DF.

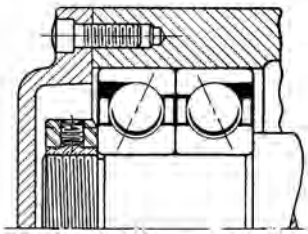


Figure 2.
Duplex DB.

Radax bearings, Type 20,000, when used for spindles or shafts requiring a high degree of rigidity are always preloaded either by means of spacers or an adjustable sleeve by which one of the bearings may be moved to obtain the correct axial preload.

When mounted Duplex DF, as in figure 1, or Duplex DB, as in figure 2, the offset with which the inner and outer rings are ground is taken up and the bearings are automatically preloaded the correct amount when clamped together.

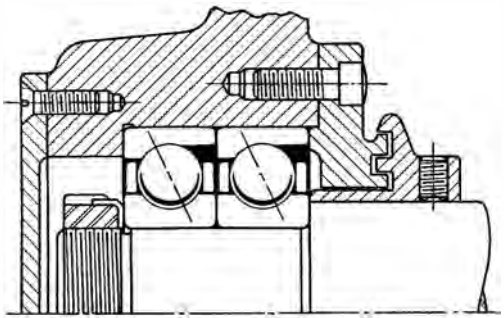


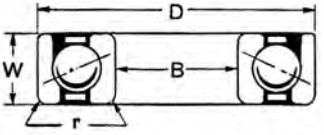
Figure 3.
Duplex DT.

When used for thrust or combined loads in either direction, the DF arrangement, figure 1, is used. When intended for rigid radial support only, the DB mounting, figure 2, is employed, with the outer rings floated in the housing. Where very heavy thrust in one direction is to be resisted, as in figure 3, the bearings may be obtained with the faces ground flush for DT or tandem mounting. In this case the thrust capacity of a duplex bearing may be taken as approximately 1.9 times that of a single Type 20,000 bearing.

RADAX BEARINGS — TYPE 20,000

Principal Dimensions

Single row angular contact, for one-direction combined loads. Mounted two bearings opposed for maximum rigidity and support of loads from either direction. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
20201	12	.4724	32	1.2598	10	.3937	7/32	9	.025	$ 2.00
20202	15	.5906	35	1.3780	11	.4331	7/32	10	.025	2.10
20203	17	.6693	40	1.5748	12	.4724	1/4	10	.04	2.30
20303			47	1.8504	14	.5512	5/16	10	.04	3.20
20204			47	1.8504	14	.5512	11/32	10		2.90
20304	20	.7874	52	2.0472	15	.5906	3/8	10	.04	3.90
20404			72	2.8346	19	.7480	9/16	8		5.70
20205			52	2.0472	15	.5906	11/32	11	.04	3.30
20305	25	.9843	62	2.4409	17	.6693	7/16	10	.04	4.50
20405			80	3.1496	21	.8268	5/8	9	.06	6.60
20206			62	2.4409	16	.6299	3/8	12	.04	4.40
20306	30	1.1811	72	2.8346	19	.7480	1/2	10	.04	5.70
20406			90	3.5433	23	.9055	1 1/16	9	.06	8.10
20207			72	2.8346	17	.6693	7/16	12	.04	5.10
20307	35	1.3780	80	3.1496	21	.8268	9/16	11	.06	6.60
20407			100	3.9370	25	.9843	3/4	9	.06	9.60
20208			80	3.1496	18	.7087	1/2	12	.04	6.00
20308	40	1.5748	90	3.5433	23	.9055	5/8	11	.06	7.50
20408			110	4.3307	27	1.0630	13/16	10	.08	11.60
20209			85	3.3465	19	.7480	1/2	13	.04	6.60
20309	45	1.7717	100	3.9370	25	.9843	11/16	11	.06	9.40
20409			120	4.7244	29	1.1417	7/8	10	.08	14.30
20210			90	3.5433	20	.7874	1/2	14	.04	7.70
20310	50	1.9685	110	4.3307	27	1.0630	3/4	11	.08	11.00
20410			130	5.1181	31	1.2205	15/16	10	.08	17.60
20211			100	3.9370	21	.8268	9/16	14	.06	8.80
20311	55	2.1654	120	4.7244	29	1.1417	13/16	12	.08	13.70
20411			140	5.5118	33	1.2992	1	10	.08	20.90
20212			110	4.3307	22	.8661	5/8	14	.06	10.30
20312	60	2.3622	130	5.1181	31	1.2205	7/8	12	.08	17.10
20412			150	5.9055	35	1.3780	1 1/16	10	.08	25.20

Note: For sizes above 22 bore, see Pages 32 and 33.

RADAX BEARINGS — TYPE 20,000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

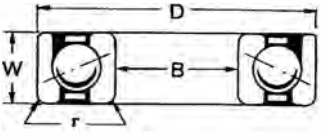
Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
20201	931	739	586	512	465	431	406	369	343	300	272	238	200
20202	1060	842	669	585	530	492	463	420	390	342	310	271	228
20203	1395	1105	877	769	697	646	609	553	512	450	408	356	300
20303	2065	1640	1300	1140	1035	959	900	821	761	668	603	528	445
20204	1870	1485	1180	1030	935	869	818	746	690	602	548	478	396
20304	2380	1895	1500	1310	1190	1105	1040	945	876	765	695	607	512
20404	3435	2735	2165	1890	1720	1595	1505	1370	1270	1105	1005	878	742
20205	2130	1695	1340	1170	1065	989	930	848	785	685	622	543	459
20305	3045	2420	1920	1675	1520	1415	1330	1210	1120	980	891	778	658
20405	4420	3515	2785	2435	2210	2055	1930	1780	1630	1420	1290	1130	935
20206	2995	2380	1890	1650	1500	1390	1310	1190	1105	965	876	765	645
20306	3760	2990	2375	2070	1880	1750	1645	1500	1385	1210	1100	961	804
20406	5230	4150	3295	2880	2615	2435	2285	2080	1925	1685	1530	1335	1110
20207	3770	2995	2380	2075	1885	1755	1650	1500	1390	1210	1100	963	804
20307	4795	3810	3020	2640	2395	2230	2095	1900	1765	1540	1400	1225	1045
20407	6050	4805	3815	3330	3030	2815	2650	2410	2230	1950	1770	1545	1300
20208	4565	3630	2880	2515	2285	2120	2000	1820	1680	1470	1335	1165	992
20308	5655	4500	3565	3120	2830	2630	2475	2250	2085	1820	1655	1445	1225
20408	7145	5685	4500	3930	3570	3320	3125	2830	2635	2300	2085	1825	1530
20209	4955	3940	3130	2730	2480	2305	2170	1980	1830	1595	1450	1265	1075
20309	6590	5240	4150	3630	3290	3060	2880	2610	2425	2120	1925	1680	1415
20409	8360	6650	5280	4600	4190	3880	3655	3310	3080	2690	2450	2135	
20210	5340	4250	3370	2940	2670	2480	2340	2130	1970	1720	1560	1365	1155
20310	7520	5980	4740	4140	3760	3495	3290	2995	2770	2420	2200	1920	
20410	9395	7470	5915	5175	4695	4365	4100	3725	3460	3025	2750	2400	
20211	6325	5035	3985	3485	3160	2940	2765	2510	2330	2035	1850	1615	
20311	9025	7180	5695	4970	4510	4200	3945	3590	3325	2905	2640	2305	
20411	10460	8340	6600	5770	5240	4870	4585	4170	3860	3370	3065	2675	
20212	7390	5875	4650	4070	3690	3435	3230	2940	2720	2380	2160	1885	
20312	10100	8040	6380	5570	5055	4700	4425	4025	3725	3255	2960	2585	
20412	11490	9140	7240	6325	5750	5340	5025	4560	4235	3695	3355	2930	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

RADAX BEARINGS — TYPE 20,000

Principal Dimensions

Single row angular contact, for one-direction combined loads. Mounted two bearings opposed for maximum rigidity and support of loads from either direction. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
20213			120	4.7244	23	.9055	1 1/16	14	.06	$ 12.70
20313	65	2.5591	140	5.5118	33	1.2992	1 5/16	12	.08	21.00
20413			160	6.2992	37	1.4567	1 3/16	10	.08	32.60
20214			125	4.9213	24	.9449	1 1/16	15	.06	13.80
20314	70	2.7559	150	5.9055	35	1.3780	1	12	.08	24.80
20414			180	7.0866	42	1.6535	1 5/16	10	.10	43.50
20215			130	5.1181	25	.9843	1 1/16	16	.06	15.10
20315	75	2.9528	160	6.2992	37	1.4567	1 1/16	12	.08	30.80
20415			190	7.4803	45	1.7717	1 7/16	10	.10	60.50
20216			140	5.5118	26	1.0236	3/4	16	.08	17.60
20316	80	3.1496	170	6.6929	39	1.5354	1 1/8	12	.08	35.50
20416			200	7.8740	48	1.8898	1 1/2	10	.10	71.50
20217			150	5.9055	28	1.1024	13/16	15	.08	21.80
20317	85	3.3465	180	7.0866	41	1.6142	1 3/16	12	.10	42.90
20417			210	8.2677	52	2.0472	1 9/16	10	.12	82.50
20218			160	6.2992	30	1.1811	7/8	15	.08	25.30
20318	90	3.5433	190	7.4803	43	1.6929	1 1/4	12	.10	52.00
20418			225	8.8583	54	2.1260	1 11/16	10	.12	93.50
20219	95	3.7402	170	6.6929	32	1.2598	1 5/16	15	.08	30.80
20319			200	7.8740	45	1.7717	1 5/16	12	.10	61.60
20220	100	3.9370	180	7.0866	34	1.3386	1	15	.08	39.60
20320			215	8.4646	47	1.8504	1 7/16	12	.10	72.60
20221	105	4.1339	190	7.4803	36	1.4173	1 1/16	15	.08	46.20
20321			225	8.8583	49	1.9291	1 1/2	12	.10	84.70
20222	110	4.3307	200	7.8740	38	1.4961	1 1/8	15	.08	51.70
20322			240	9.4488	50	1.9685	1 5/8	12	.10	105.60

Note: For sizes above 22 bore, see Pages 32 and 33.

RADAX BEARINGS — TYPE 20,000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

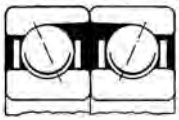
The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
20213	8490	6750	5350	4675	4245	3940	3710	3360	3125	2730	2480	2165	
20313	11280	8975	7110	6210	5645	5250	4940	4470	4155	3630	3300	2880	
20413	13290	10560	8370	7310	6645	6175	5800	5290	4895	4270	3885	3390	
20214	9040	7190	5700	4980	4520	4200	3950	3600	3330	2910	2640	2310	
20314	12410	9880	7835	6845	6200	5785	5435	4915	4580	4000	3635	3170	
20414	15430	12280	9735	8500	7720	7180	6750	6100	5690	4960	4505		
20215	9610	7640	6060	5295	4800	4470	4200	3830	3540	3090	2810	2455	
20315	13630	10840	8600	7510	6815	6340	5960	5400	5020	4390	3990	3480	
20415	17460	13870	11000	9610	8730	8110	7630	6910	6435	5610	5100		
20216	10890	8655	6860	5995	5445	5055	4760	4325	4005	3505	3185	2780	
20316	14900	11860	9400	8215	7450	6930	6520	5920	5495	4800	4360		
20416	18710	14890	11800	10300	9355	8700	8190	7410	6900	6020	5475		
20217	11710	9315	7390	6450	5850	5450	5125	4650	4310	3770	3425		
20317	16160	12850	10200	8910	8090	7520	7080	6400	5955	5210	4735		
20417	20150	16020	12700	11100	10070	9360	8815	8000	7430	6480	5900		
20218	13020	10480	8210	7190	6510	6050	5700	5190	4800	4195	3810		
20318	17500	13900	11030	9640	8750	8130	7650	6950	6445	5630	5115		
20418	22320	17760	14080	12300	11180	10380	9760	8880	8230	7190	6530		
20219	14400	11450	9070	7925	7195	6695	6295	5700	5300	4625	4205		
20319	18880	15000	11900	10400	9445	8775	8250	7500	6950	6070	5515		
20220	15800	12580	9950	8700	7900	7350	6910	6280	5815	5090	4620		
20320	21400	17000	13480	11790	10690	9945	9350	8490	7880	6885	6250		
20221	17290	13750	10900	9525	8640	8040	7555	6825	6360	5555	5050		
20321	22800	18150	14380	12550	11400	10600	9980	9030	8400	7340	6670		
20222	18750	14910	11820	10330	9390	8720	8200	7410	6910	6040	5495		
20322	25500	20300	16100	14060	12750	11860	11160	10170	9400	8205	7460		

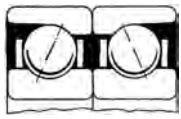
Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DUPLEX BEARINGS — TYPE 20,000 DF, DB or DT

Principal Dimensions



Duplex
20,000 DF



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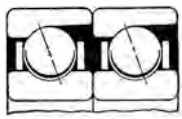
20,000 DB



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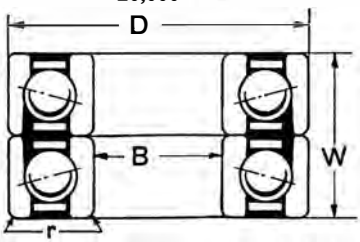
20,000 DT



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing Number			Bore B		Diameter D		Width W		Balls Per Row		* Radius r	Price
Type DF	Type DB	Type DT	mm	inch	mm	inch	mm	inch	Diam.	No.		
20201-DF	**20201-DB**	**20201-DT**	12	.4724	32	1.2598	20	.7874	7/32	9	.025	$ 4.00
20202-DF	**20202-DB**	**20202-DT**	15	.5906	35	1.3780	22	.8661	7/32	10	.025	4.20
20203-DF	**20203-DB**	**20203-DT**	17	.6693	40	1.5748	24	.9449	1/4	10	.04	4.60
20303-DF	**20303-DB**	**20303-DT**			47	1.8504	28	1.1024	5/16	10	.04	6.40
20204-DF	**20204-DB**	**20204-DT**			47	1.8504	28	1.1024	11/32	10		5.80
20304-DF	**20304-DB**	**20304-DT**	20	.7874	52	2.0472	30	1.1811	3/8	10	.04	7.80
20404-DF	**20404-DB**	**20404-DT**			72	2.8346	38	1.4961	9/16	8		11.40
20205-DF	**20205-DB**	**20205-DT**			52	2.0472	30	1.1811	11/32	11	.04	6 60
20305-DF	**20305-DB**	**20305-DT**	25	.9843	62	2.4409	34	1.3386	7/16	10	.04	9 00
20405-DF	**20405-DB**	**20405-DT**			80	3.1496	42	1.6535	5/8	9	.06	13 20
20206-DF	**20206-DB**	**20206-DT**			62	2.4409	32	1.2598	3/8	12	.04	8.80
20306-DF	**20306-DB**	**20306-DT**	30	1.1811	72	2 8346	38	1.4961	1/2	10	.04	11.40
20406-DF	**20406-DB**	**20406-DT**			90	3.5433	46	1.8110	11/16	9	.06	16.20
20207-DF	**20207-DB**	**20207-DT**			72	2.8346	34	1.3386	7/16	12	.04	10.20
20307-DF	**20307-DB**	**20307-DT**	35	1.3780	80	3.1496	42	1.6535	9/16	11	.06	13.20
20407-DF	**20407-DB**	**20407-DT**			100	3.9370	50	1.9685	3/4	9	.06	19.20
20208-DF	**20208-DB**	**20208-DT**			80	3.1496	36	1.4173	1/2	12	.04	12.00
20308-DF	**20308-DB**	**20308-DT**	40	1.5748	90	3.5433	46	1.8110	5/8	11	.06	15.00
20408-DF	**20408-DB**	**20408-DT**			110	4.3307	54	2.1260	13/16	10	.08	23.20
20209-DF	**20209-DB**	**20209-DT**			85	3.3465	38	1.4961	1/2	13	.04	13.20
20309-DF	**20309-DB**	**20309-DT**	45	1.7717	100	3.9370	50	1.9685	11/16	11	.06	18.80
20409-DF	**20409-DB**	**20409-DT**			120	4.7244	58	2.2835	7/8	10	.08	28.60
20210-DF	**20210-DB**	**20210-DT**			90	3.5433	40	1.5748	1/2	14	.04	15.40
20310-DF	**20310-DB**	**20310-DT**	50	1.9685	110	4.3307	54	2.1260	3/4	11	.08	22.00
20410-DF	**20410-DB**	**20410-DT**			130	5.1181	62	2.4409	15/16	10	.08	35.20
20211-DF	**20211-DB**	**20211-DT**			100	3.9370	42	1.6535	9/16	14	.06	17.60
20311-DF	**20311-DB**	**20311-DT**	55	2.1654	120	4.7244	58	2.2835	13/16	12	.08	27.40
20411-DF	**20411-DB**	**20411-DT**			140	5.5118	66	2.5984	1	10	.08	41.80
20212-DF	**20212-DB**	**20212-DT**			110	4.3307	44	1.7323	5/8	14	.06	20.60
20312-DF	**20312-DB**	**20312-DT**	60	2.3622	130	5.1181	62	2.4409	7/8	12	.08	34.20
20412-DF	**20412-DB**	**20412-DT**			150	5.9055	70	2.7559	1 1/16	10	08	50.40

DUPLEX BEARINGS — TYPE 20,000 DF, DB or DT

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

Duplex bearings are furnished matched with the abutting faces ground for three kinds of mounting. The Type 20,000 DF is intended for combined loads with thrust from either direction. Type 20,000 DB is used where radial rigidity is required and the bearings are allowed an axial "float" in the housing. Type 20,000 DT is for heavy thrust loads where the housing diameter is limited, but the length permits the use of two or more bearings butted together. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

Bearing Number			Revolutions per Minute											
Type DF	Type DB	Type DT	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
20201-DF	20201-DB	20201-DT	1580	1260	997	869	789	732	689	628	583	510	462	404	340
20202-DF	20202-DB	20202-DT	1800	1430	1140	993	901	837	787	713	662	581	528	461	387
20203-DF	20203-DB	20203-DT	2370	1875	1490	1305	1185	1100	1035	940	870	767	692	604	510
20303-DF	20303-DB	20303-DT	3520	2785	2210	1940	1760	1630	1530	1400	1295	1135	1025	897	757
20204-DF	20204-DB	20204-DT	3180	2525	2005	1750	1590	1480	1390	1270	1175	1020	932	813	673
20304-DF	20304-DB	20304-DT	4040	3220	2550	2225	2025	1880	1770	1610	1490	1300	1180	1030	870
20404-DF	20404-DB	20404-DT	5840	4650	3680	3215	2925	2710	2560	2330	2160	1880	1710	1492	1260
20205-DF	20205-DB	20205-DT	3620	2880	2280	1990	1810	1680	1580	1440	1335	1165	1060	923	780
20305-DF	20305-DB	20305-DT	5170	4120	3260	2845	2585	2405	2260	2060	1905	1665	1515	1325	1120
20405-DF	20405-DB	20405-DT	7510	5980	4730	4140	3760	3500	3280	3025	2770	2415	2195	1920	1590
20206-DF	20206-DB	20206-DT	5090	4040	3215	2800	2560	2360	2225	2025	1880	1640	1490	1300	1100
20306-DF	20306-DB	20306-DT	6390	5080	4040	3520	3195	2975	2795	2550	2355	2055	1870	1635	1370
20406-DF	20406-DB	20406-DT	8900	7050	5600	4890	4450	4140	3880	3540	3270	2865	2600	2270	1890
20207-DF	20207-DB	20207-DT	6410	5090	4040	3530	3200	2980	2800	2550	2360	2060	1870	1640	1370
20307-DF	20307-DB	20307-DT	8150	6470	5130	4490	4070	3790	3560	3230	3000	2620	2380	2085	1780
20407-DF	20407-DB	20407-DT	10300	8160	6480	5660	5150	4780	4510	4100	3795	3315	3010	2625	2210
20208-DF	20208-DB	20208-DT	7760	6160	4900	4280	3880	3600	3400	3100	2855	2500	2270	1980	1685
20308-DF	20308-DB	20308-DT	9600	7650	6060	5300	4810	4460	4210	3820	3540	3095	2815	2455	2085
20408-DF	20408-DB	20408-DT	12150	9650	7650	6680	6060	5650	5320	4820	4480	3910	3540	3100	2600
20209-DF	20209-DB	20209-DT	8430	6700	5320	4640	4220	3920	3690	3365	3115	2715	2465	2150	1830
20309-DF	20309-DB	20309-DT	11210	8900	7050	6170	5590	5200	4880	4430	4120	3600	3270	2855	2405
20409-DF	20409-DB	20409-DT	14200	11300	8980	7820	7125	6600	6210	5625	5240	4570	4160	3630	
20210-DF	20210-DB	20210-DT	9070	7220	5730	5000	4540	4220	3975	3620	3345	2920	2650	2320	1965
20310-DF	20310-DB	20310-DT	12790	10200	8050	7040	6380	5940	5590	5090	4710	4120	3740	3265	
20410-DF	20410-DB	20410-DT	15990	12700	10050	8800	7980	7440	6970	6330	5880	5130	4670	4075	
20211-DF	20211-DB	20211-DT	10750	8550	6770	5920	5370	5000	4700	4270	3900	3460	3145	2745	
20311-DF	20311-DB	20311-DT	15350	12220	9680	8460	7660	7140	6700	6100	5650	4940	4480	3915	
20411-DF	20411-DB	20411-DT	17780	14180	11230	9820	8920	8280	7780	7100	6560	5730	5210	4550	
20212-DF	20212-DB	20212-DT	12580	9990	7900	6920	6270	5840	5500	5000	4620	4040	3670	3205	
20312-DF	20312-DB	20312-DT	17200	13680	10700	9470	8590	7990	7530	6840	6330	5530	5030	4390	
20412-DF	20412-DB	20412-DT	19520	15550	12320	10750	9770	9090	8540	7750	7190	6280	5700	4980	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DUPLEX BEARINGS — TYPE 20,000 DF, DB or DT

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

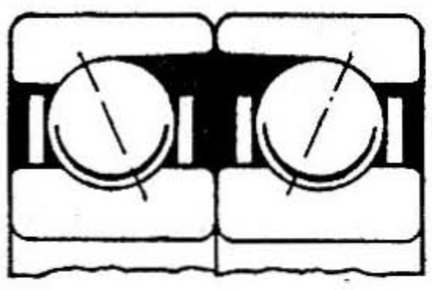
Duplex bearings are furnished matched with the abutting faces ground for three kinds of mounting. The Type 20,000 DF is intended for combined loads with thrust from either direction. Type 20,000 DB is used where radial rigidity is required and the bearings are allowed an axial "float" in the housing. Type 20,000 DT is for heavy thrust loads where the housing diameter is limited, but the length permits the use of two or more bearings butted together. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

Bearing Number			Revolutions per Minute											
Type DF	Type DB	Type DT	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
20201-DF	**20201-DB**	**20201-DT**	1580	1260	997	869	789	732	689	628	583	510	462	404	340
20202-DF	**20202-DB**	**20202-DT**	1800	1430	1140	993	901	837	787	713	662	581	528	461	387
20203-DF	**20203-DB**	**20203-DT**	2370	1875	1490	1305	1185	1100	1035	940	870	767	692	604	510
20303-DF	**20303-DB**	**20303-DT**	3520	2785	2210	1940	1760	1630	1530	1400	1295	1135	1025	897	757
20204-DF	**20204-DB**	**20204-DT**	3180	2525	2005	1750	1590	1480	1390	1270	1175	1020	932	813	673
20304-DF	**20304-DB**	**20304-DT**	4040	3220	2550	2225	2025	1880	1770	1610	1490	1300	1180	1030	870
20404-DF	**20404-DB**	**20404-DT**	5840	4650	3680	3215	2925	2710	2560	2330	2160	1880	1710	1492	1260
20205-DF	**20205-DB**	**20205-DT**	3620	2880	2280	1990	1810	1680	1580	1440	1335	1165	1060	923	780
20305-DF	**20305-DB**	**20305-DT**	5170	4120	3260	2845	2585	2405	2260	2060	1905	1665	1515	1325	1120
20405-DF	**20405-DB**	**20405-DT**	7510	5980	4730	4140	3760	3500	3280	3025	2770	2415	2195	1920	1590
20206-DF	**20206-DB**	**20206-DT**	5090	4040	3215	2800	2560	2360	2225	2025	1880	1640	1490	1300	1100
20306-DF	**20306-DB**	**20306-DT**	6390	5080	4040	3520	3195	2975	2795	2550	2355	2055	1870	1635	1370
20406-DF	**20406-DB**	**20406-DT**	8900	7050	5600	4890	4450	4140	3880	3540	3270	2865	2600	2270	1890
20207-DF	**20207-DB**	**20207-DT**	6410	5090	4040	3530	3200	2980	2800	2550	2360	2060	1870	1640	1370
20307-DF	**20307-DB**	**20307-DT**	8150	6470	5130	4490	4070	3790	3560	3230	3000	2620	2380	2085	1780
20407-DF	**20407-DB**	**20407-DT**	10300	8160	6480	5660	5150	4780	4510	4100	3795	3315	3010	2625	2210
20208-DF	**20208-DB**	**20208-DT**	7760	6160	4900	4280	3880	3600	3400	3100	2855	2500	2270	1980	1685
20308-DF	**20308-DB**	**20308-DT**	9600	7650	6060	5300	4810	4460	4210	3820	3540	3095	2815	2455	2085
20408-DF	**20408-DB**	**20408-DT**	12150	9650	7650	6680	6060	5650	5320	4820	4480	3910	3540	3100	2600
20209-DF	**20209-DB**	**20209-DT**	8430	6700	5320	4640	4220	3920	3690	3365	3115	2715	2465	2150	1830
20309-DF	**20309-DB**	**20309-DT**	11210	8900	7050	6170	5590	5200	4880	4430	4120	3600	3270	2855	2405
20409-DF	**20409-DB**	**20409-DT**	14200	11300	8980	7820	7125	6600	6210	5625	5240	4570	4160	3630	
20210-DF	**20210-DB**	**20210-DT**	9070	7220	5730	5000	4540	4220	3975	3620	3345	2920	2650	2320	1965
20310-DF	**20310-DB**	**20310-DT**	12790	10200	8050	7040	6380	5940	5590	5090	4710	4120	3740	3265	
20410-DF	**20410-DB**	**20410-DT**	15990	12700	10050	8800	7980	7440	6970	6330	5880	5130	4670	4075	
20211-DF	**20211-DB**	**20211-DT**	10750	8550	6770	5920	5370	5000	4700	4270	3900	3460	3145	2745	
20311-DF	**20311-DB**	**20311-DT**	15350	12220	9680	8460	7660	7140	6700	6100	5650	4940	4480	3915	
20411-DF	**20411-DB**	**20411-DT**	17780	14180	11230	9820	8920	8280	7780	7100	6560	5730	5210	4550	
20212-DF	**20212-DB**	**20212-DT**	12580	9990	7900	6920	6270	5840	5500	5000	4620	4040	3670	3205	
20312-DF	**20312-DB**	**20312-DT**	17200	13680	10700	9470	8590	7990	7530	6840	6330	5530	5030	4390	
20412-DF	**20412-DB**	**20412-DT**	19520	15550	12320	10750	9770	9090	8540	7750	7190	6280	5700	4980	

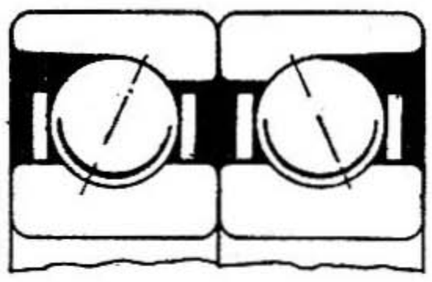
Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DUPLEX BEARINGS — TYPE 20,000 DF, DB or DT

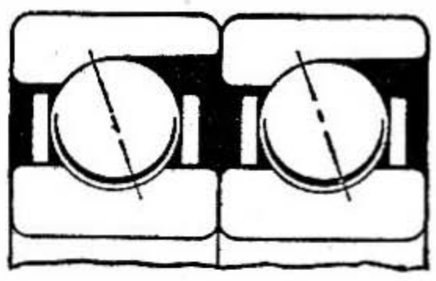
Principal Dimensions



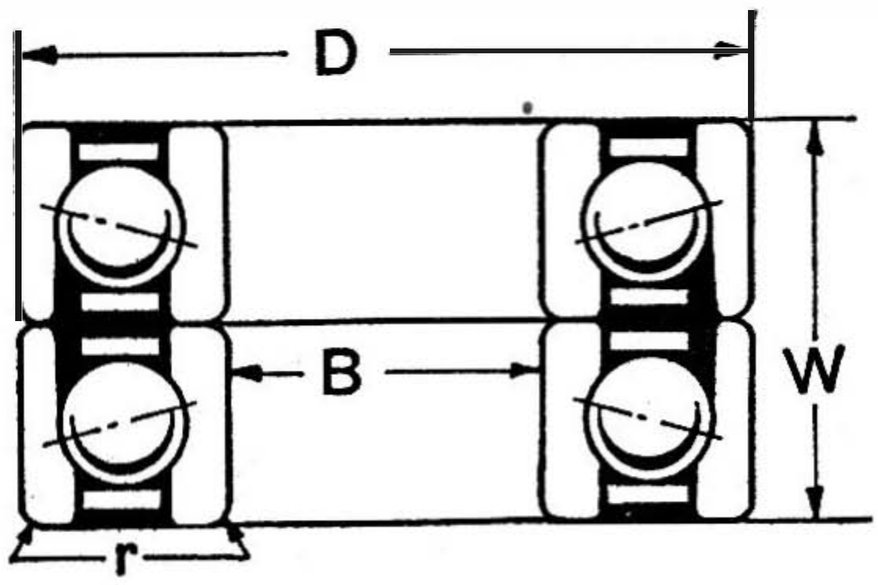
Duplex 20,000 DF



Duplex 20,000 DB



Duplex 20,000 DT



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing Number			Bore B		Diameter D		Width W		Balls Per Row		* Radius r	Price
Type DF	Type DB	Type DT	mm	inch	mm	inch	mm	inch	Diam.	No.		
20213-DF	**20213-DB**	**20213-DT**			120	4.7244	46	1.8110	11/16	14	.06	$ 25.40
20313-DF	**20313-DB**	**20313-DT**	65	2.5591	140	5.5118	66	2.5984	15/16	12	.08	42.00
20413-DF	**20413-DB**	**20413-DT**			160	6.2992	74	2.9134	1 3/16	10	.08	65.20
20214-DF	**20214-DB**	**20214-DT**			125	4.9213	48	1.8898	11/16	15	.06	27.60
20314-DF	**20314-DB**	**20314-DT**	70	2.7559	150	5.9055	70	2.7559	1	12	.08	49.60
20414-DF	**20414-DB**	**20414-DT**			180	7.0866	84	3.3071	1 5/16	10	.10	87.00
20215-DF	**29215-DB**	**20215-DT**			130	5.1181	50	1.9685	11/16	16	.06	30.20
20315-DF	**20315-DB**	**20316-DT**	75	2.9528	160	6.2992	74	2.9134	1 1/16	12	.08	61.60
20415-DF	**20415-DB**	**20415-DT**			190	7.4803	90	3.5433	1 7/16	10	.10	121.00
20216-DF	**20216-DB**	**20216-DT**			140	5.5118	52	2.0472	3/4	16	.08	35.20
20316-DF	**20316-DB**	**20316-DT**	80	3.1496	170	6.6929	78	3.0709	1 1/8	12	.08	71.00
20416-DF	**20416-DB**	**20416-DT**			200	7.8740	96	3.7795	1 1/2	10	.10	143.00
20217-DF	**20217-DB**	**20217-DT**			150	5.9055	56	2.2047	13/16	15	.08	43.60
20317-DF	**20317-DB**	**20317-DT**	85	3.3465	180	7.0866	82	3.2283	1 3/16	12	.10	85.80
20417-DF	**20417-DB**	**20417-DT**			210	8.2677	104	4.0945	1 9/16	10	.12	165.00
20218-DF	**20218-DB**	**20218-DT**			160	6.2992	60	2.3622	7/8	15	.08	50.60
20318-DF	**20318-DB**	**20318-DT**	90	3.5433	190	7.4803	86	3.3858	1 1/4	12	.10	104.00
20418-DF	**20418-DB**	**20418-DT**			225	8.8583	108	4.2520	1 11/16	10	.12	187.00
20219-DF	**20219-DB**	**20219-DT**	95	3.7402	170	6.6929	64	2.5197	15/16	15	.08	61.60
20319-DF	**20319-DB**	**20319-DT**			200	7.8740	90	3.5433	1 5/16	12	.10	123.20
20220-DF	**20220-DB**	**20220-DT**	100	3.9370	180	7.0866	68	2.6772	1	15	.08	79.20
20320-DF	**20320-DB**	**20320-DT**			215	8.4646	94	3.7008	1 7/16	12	.10	145.20
20221-DF	**20221-DB**	**20221-DT**	105	4.1339	190	7.4803	72	2.8346	1 1/16	15	.08	92.40
20321-DF	**20321-DB**	**20321-DT**			225	8.8583	98	3.8583	1 1/2	12	.10	169.40
20222-DF	**20222-DB**	**20222-DT**	110	4.3307	200	7.8740	76	2.9921	1 1/8	15	.08	103.40
20322-DF	**20322-DB**	**20322-DT**			240	9.4488	100	3.9370	1 5/8	12	.10	211.20

DUPLEX BEARINGS — TYPE 20,000 DF, DB or DT

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

Duplex bearings are furnished matched with the abutting faces ground for three kinds of mounting. The Type 20,000 DF is intended for combined loads with thrust from either direction. Type 20,000 DB is used where radial rigidity is required and the bearings are allowed an axial "float" in the housing. Type 20,000 DT is for heavy thrust loads where the housing diameter is limited, but the length permits the use of two or more bearings butted together. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

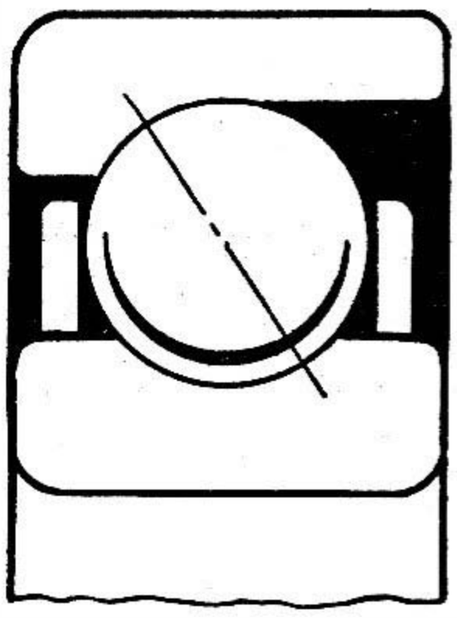
Bearing Number			Revolutions per Minute										
Type DF	Type DB	Type DT	50	100	200	300	400	500	600	800	1000	1500	2000	3000
20213-DF	**20213-DB**	**20213-DT**	14420	11490	9090	7940	7210	6700	6300	5710	5310	4640	4210	3675
20313-DF	**20313-DB**	**20313-DT**	19160	15250	12100	10570	9600	8920	8400	7600	7060	6170	5610	4890
20413-DF	**20413-DB**	**20413-DT**	22550	17930	14220	12420	11300	10500	9860	9000	8320	7250	6600	5760
20214-DF	**20214-DB**	**20214-DT**	15380	12210	9680	8480	7670	7130	6710	6120	5660	4940	4480	3925
20314-DF	**20314-DB**	**20314-DT**	21100	16800	13320	11630	10530	9830	9240	8350	7800	6800	6180	5380
20414-DF	**20414-DB**	**20414-DT**	26200	20900	16550	14440	13120	12220	11490	10380	9680	8430	7650	
20215-DF	**20215-DB**	**20215-DT**	16320	13000	10300	9000	8160	7580	7140	6520	6020	5250	4775	4180
20315-DF	**20315-DB**	**20315-DT**	23200	18420	14620	12780	11600	10780	10120	9175	8530	7475	6780	5920
20415-DF	**20415-DB**	**20415-DT**	29650	23600	18700	16330	14850	13800	12990	11750	10950	9540	8670	
20216-DF	**20216-DB**	**20216-DT**	18500	14720	11680	10200	9250	8580	8090	7350	6800	5950	5410	4725
20316-DF	**20316-DB**	**20316-DT**	25300	20150	16000	13960	12680	11790	11090	10700	9340	8150	7400	
20416-DF	**20416-DB**	**20416-DT**	31800	25300	20050	17500	15900	14800	13920	12600	11720	10220	9310	
20217-DF	**20217-DB**	**20217-DT**	19910	15820	12580	10980	9950	9270	8710	7900	7320	6400	5820	
20317-DF	**20317-DB**	**20317-DT**	27450	21850	17330	15150	13780	12780	12050	10890	10120	8850	8060	
20417-DF	**20417-DB**	**20417-DT**	34300	27250	21600	18880	17100	15900	14980	13600	12630	11020	10030	
20218-DF	**20218-DB**	**20218-DT**	22150	17800	13980	12230	11050	10280	9680	8825	8150	7130	6475	
20318-DF	**20318-DB**	**20318-DT**	29750	23600	18780	16390	14890	13820	13000	11820	10970	9570	8700	
20418-DF	**20418-DB**	**20418-DT**	37950	30200	23950	20950	19000	17630	16600	15100	14000	12230	11100	
20219-DF	**20219-DB**	**20219-DT**	24450	19450	15420	13490	12240	11390	10700	9700	9010	7850	7140	
20319-DF	**20319-DB**	**20319-DT**	32100	25500	20250	17700	16080	14920	14030	12750	11820	10320	9350	
20220-DF	**20220-DB**	**20220-DT**	26850	21400	16910	14800	13420	12500	11730	10700	9880	8660	7850	
20320-DF	**20320-DB**	**20320-DT**	36400	28900	22900	20000	18200	16900	15900	14450	13400	11700	10625	
20221-DF	**20221-DB**	**20221-DT**	29400	23400	18520	16200	14700	13680	12830	11600	10800	9440	8580	
20321-DF	**20321-DB**	**20321-DT**	38750	30850	24450	21300	19400	18020	16980	15350	14280	12490	11320	
20222-DF	**20222-DB**	**20222-DT**	31850	25400	20100	17580	15970	14820	13940	12600	11750	10280	9340	
20322-DF	**20322-DB**	**20322-DT**	43400	34550	27400	23900	21650	20150	18980	17280	16000	13950	12700	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

RADAX BEARINGS — TYPE 30,000

Design and Load Characteristics

Radax bearings, Type 30,000, are designed for very heavy, single direction thrust loads and when so used with the loads not subject to reversal of direction, are usually applied either singly or for exceptionally heavy loads with two or more butted together, as in the Duplex DT mounting, shown on the next page. The thrust capacity of a Duplex DT bearing may be taken as approximately 1.9 times that of a single Type 30,000 bearing.



Section
Radax—Type 30,000

When Type 30,000 Radax bearings are to be mounted Duplex DF; that is, with the small faces of the outer rings clamped together, they are automatically preloaded and are effective for combined loads in either direction, particularly when the proportion of thrust to radial load is high.

Type 30,000 bearings, used singly or duplex for location of parts against one-direction or reversing thrust loads, assure a minimum of axial deflection and permit close fitting of stationary and rotating machine parts without danger of interference.

In order to assure the full rigidity of support of which these bearings are capable, care should be observed in machining clamping members, locating shoulders and spacers, so as to obtain minimum runout of faces, which, if not accurately made, would be likely to result in serious misalignment, especially where clamped tight.

When to be used for duplex mounting, Type 30,000 bearings are always furnished in matched pairs.

The outer rings of these bearings are made with a high thrust shoulder on one side and enough "snap" or shoulder on the other to make them non-separable. This construction, together with heat expansion of the outer rings, makes it possible to utilize the maximum number and size of balls that can safely be introduced into the bearing cross section.

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and load ratings of Type 30,000 bearings at various speeds, see pages immediately following.

RADAX BEARINGS — TYPE 30,000

Typical Mountings

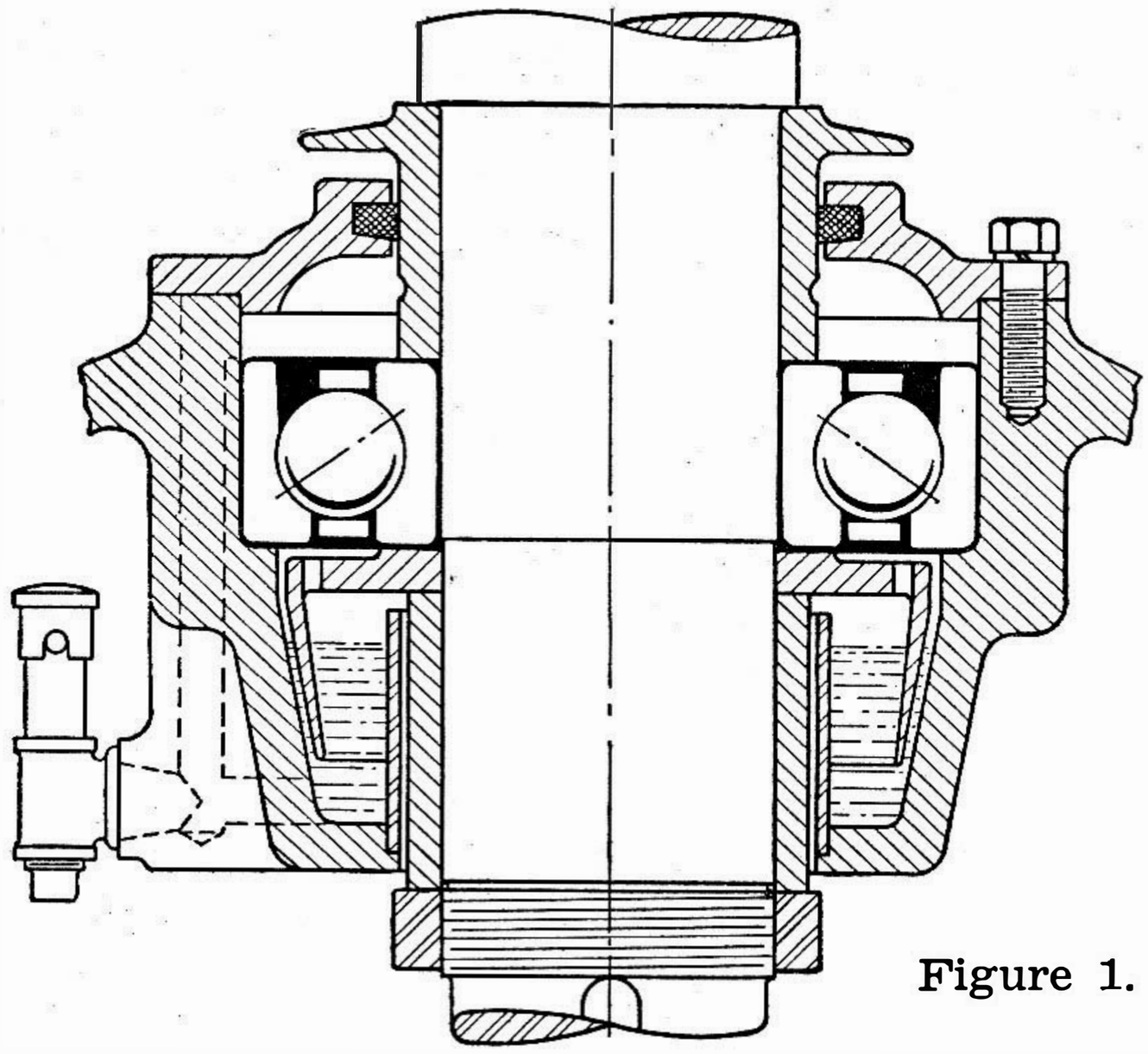


Figure 1.

Because of their thrust capacity, Radax bearings, Type 30,000, are frequently used in deep well pumps and other applications requiring vertical mounting. In such installations, figure 1, the thrust is usually in one direction and is either not in combination with or is much greater than the radial load. Since the lubricant recommended for these bearings is oil rather than grease, some form of splash feed or a simple oil-circulating system is usually employed. The design illustrated is satisfactory and requires infrequent attention.

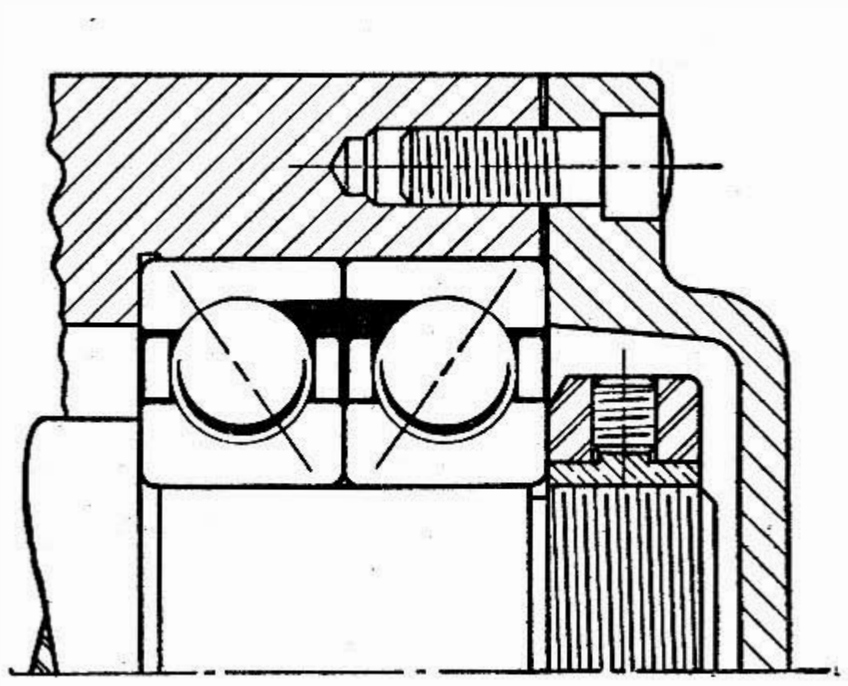


Figure 2

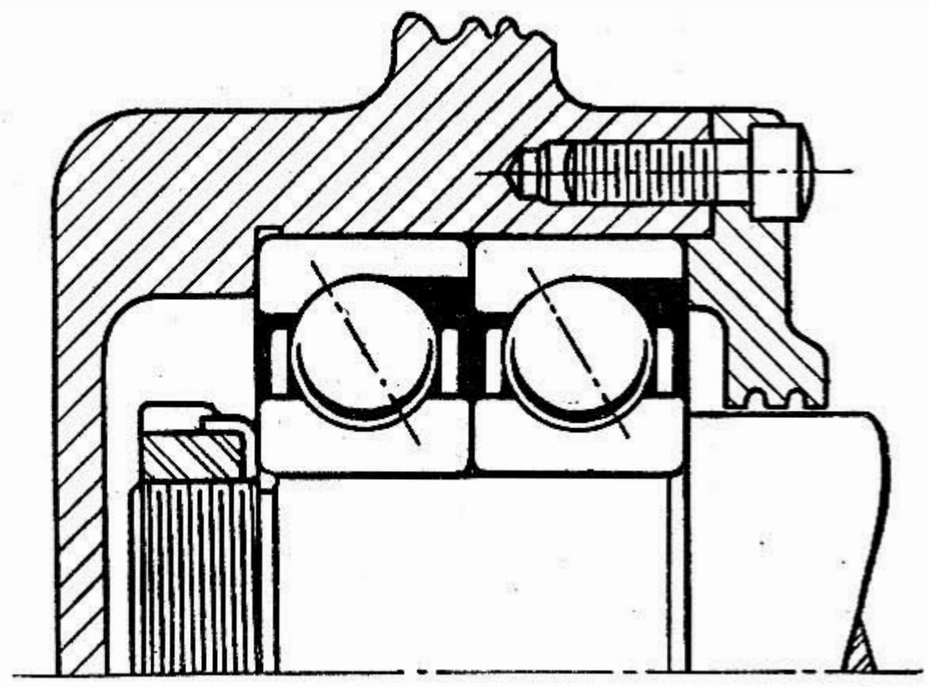


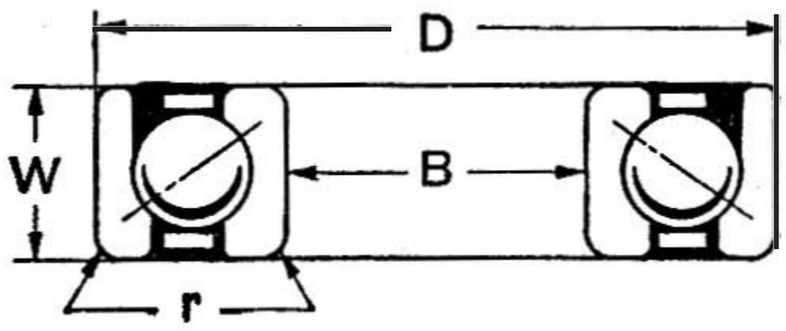
Figure 3.

Type 30,000 bearings being used for thrust and not floated in the housing, as may be done in the case of Type 20,000 bearings, are, when mounted duplex, applied either DF, as in figure 2, for two-way thrust or combined loads in either direction where the proportion of thrust to radial load is high, or DT, with bearings in tandem for one-direction thrust, as in figure 3.

RADAX BEARINGS — TYPE 30,000

Principal Dimensions

Single row angular contact; provide maximum capacity for one-direction thrust loads. Mounted two bearings opposed for combined loads or thrust from either direction. For capacities under these loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
30204			47	1.8504	14	.5512	11/32	10		$ 2.90
30304	20	.7874	52	2.0472	15	.5906	3/8	10	.04	3.90
30404			72	2.8346	19	.7480	9/16	8		5.70
30205			52	2.0472	15	.5906	11/32	11	.04	3.30
30305	25	.9843	62	2.4409	17	.6693	7/16	10	.04	4.50
30405			80	3.1496	21	.8268	5/8	9	.06	6.60
30206			62	2.4409	16	.6299	3/8	12	.04	4.40
30306	30	1.1811	72	2.8346	19	.7480	1/2	10	.04	5.70
30406			90	3.5433	23	.9055	11/16	9	.06	8.10
30207			72	2.8346	17	.6693	7/16	12	.04	5.10
30307	35	1.3780	80	3.1496	21	.8268	9/16	11	.06	6.60
30407			100	3.9370	25	.9843	3/4	9	.06	9.60
30208			80	3.1496	18	.7087	1/2	12	.04	6.00
30308	40	1.5748	90	3.5433	23	.9055	5/8	11	.06	7.50
30408			110	4.3307	27	1.0630	13/16	10	.08	11.60
30209			85	3.3465	19	.7480	1/2	13	.04	6.60
30309	45	1.7717	100	3.9370	25	.9843	11/16	11	.06	9.40
30409			120	4.7244	29	1.1417	7/8	10	.08	14.30
30210			90	3.5433	20	.7874	1/2	14	.04	7.70
30310	50	1.9685	110	4.3307	27	1.0630	3/4	11	.08	11.00
30410			130	5.1181	31	1.2205	15/16	10	.08	17.60
30211			100	3.9370	21	.8268	9/16	14	.06	8.80
30311	55	2.1654	120	4.7244	29	1.1417	13/16	12	.08	13.70
30411			140	5.5118	33	1.2992	1	10	.08	20.90
30212			110	4.3307	22	.8661	5/8	14	.06	10.30
30312	60	2.3622	130	5.1181	31	1.2205	7/8	12	.08	17.10
30412			150	5.9055	35	1.3780	1 1/16	10	.08	25.20

RADAX BEARINGS — TYPE 30,000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

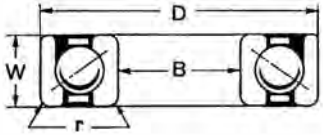
Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
30204	1790	1410	1115	976	887	824	775	700	653	570	519	453	390
30304	2280	1790	1420	1240	1125	1050	985	897	830	725	659	575	490
30404	3225	2540	2015	1760	1595	1485	1400	1275	1180	1030	934	816	675
30205	2000	1590	1260	1105	1000	931	877	779	738	645	585	511	431
30305	2900	2285	1810	1580	1435	1335	1260	1145	1060	925	840	734	620
30405	4260	3355	2660	2330	2110	1960	1845	1675	1555	1360	1235	1080	905
30206	2840	2235	1770	1550	1405	1305	1230	1110	1035	905	821	718	600
30306	3590	2835	2240	1960	1780	1650	1555	1410	1310	1145	1040	910	760
30406	5035	3960	3140	2740	2490	2315	2180	1975	1835	1600	1460	1270	1080
30207	3550	2800	2220	1940	1760	1635	1540	1400	1295	1130	1030	899	751
30307	4565	3595	2850	2490	2260	2100	1980	1795	1665	1455	1320	1155	980
30407	5825	4590	3640	3175	2880	2680	2520	2290	2125	1855	1690	1470	1245
30208	4325	3400	2700	2360	2140	1990	1870	1700	1580	1380	1250	1090	930
30308	5400	4250	3370	2950	2675	2480	2340	2120	1970	1720	1565	1365	1155
30408	7100	5600	4440	3880	3520	3270	3080	2790	2595	2265	2060	1800	1510
30209	4680	3685	2920	2550	2320	2155	2030	1850	1710	1490	1355	1180	1000
30309	6250	4925	3900	3410	3095	2875	2705	2450	2280	1990	1810	1580	1340
30409	8050	6340	5035	4395	3980	3700	3480	3160	2935	2565	2330	2030	
30210	5030	3960	3140	2740	2490	2315	2180	1980	1835	1600	1460	1270	1080
30310	7150	5635	4460	3900	3540	3293	3100	2820	2610	2280	2070	1810	
30410	8990	7085	5600	4900	4450	4140	3900	3530	3280	2870	2600	2275	
30211	5970	4700	3720	3260	2955	2745	2585	2350	2180	1900	1730	1510	
30311	8595	6750	5350	4685	4250	3950	3715	3370	3130	2735	2480	2170	
30411	9945	7830	6200	5420	4920	4580	4300	3900	3625	3165	2880	2510	
30212	6960	5485	4350	3800	3450	3200	3015	2730	2540	2220	2020	1760	
30312	9610	7575	6000	5250	4760	4430	4160	3785	3510	3065	2785	2430	
30412	11000	8650	6850	6000	5445	5060	4755	4325	4005	3500	3180	2780	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

RADAX BEARINGS — TYPE 30,000

Principal Dimensions

Single row angular contact; provide maximum capacity for one-direction thrust loads. Mounted two bearings opposed for combined loads or thrust from either direction. For capacities under these loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
30213			120	4.7244	23	.9055	1 1/16	14	.06	$ 12.70
30313	65	2.5591	140	5.5118	33	1.2992	15/16	12	.08	21.00
30413			160	6.2992	37	1.4567	1 3/16	10	.08	32.60
30214			125	4.9213	24	.9449	1 1/16	15	.06	13.80
30314	70	2.7559	150	5.9055	35	1.3780	1	12	.08	24.80
30414			180	7.0866	42	1.6535	1 5/16	10	.10	43.50
30215			130	5.1181	25	.9843	1 1/16	16	.06	15.10
30315	75	2.9528	160	6.2992	37	1.4567	1 1/16	12	.08	30.80
30415			190	7.4803	45	1.7717	1 7/16	10	.10	60.50
30216			140	5.5118	26	1.0236	3/4	16	.08	17.60
30316	80	3.1496	170	6.6929	39	1.5354	1 1/8	12	.08	35.50
30416			200	7.8740	48	1.8898	1 1/2	10	.10	71.50
30217			150	5.9055	28	1.1024	13/16	15	.08	21.80
30317	85	3.3465	180	7.0866	41	1.6142	1 3/16	12	.10	42.90
30417			210	8.2677	52	2.0472	1 9/16	10	.12	82.50
30218			160	6.2992	30	1.1811	7/8	15	.08	25.30
30318	90	3.5433	190	7.4803	43	1.6929	1 1/4	12	.10	52.00
30418			225	8.8583	54	2.1260	1 11/16	10	.12	93.50
30219	95	3.7402	170	6.6929	32	1.2598	15/16	15	.08	30.80
30319			200	7.8740	45	1.7717	1 5/16	12	.10	61.60
30220	100	3.9370	180	7.0866	34	1.3386	1	15	.08	39.60
30320			215	8.4646	47	1.8504	1 7/16	12	.10	72.60
30221	105	4.1339	190	7.4803	36	1.4173	1 1/16	15	.08	46.20
30321			225	8.8583	49	1.9291	1 1/2	12	.10	84.70
30222	110	4.3307	200	7.8740	38	1.4961	1 1/8	15	.08	51.70
30322			240	9.4488	50	1.9685	1 5/8	12	.10	105.60

RADAX BEARINGS — TYPE 30,000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

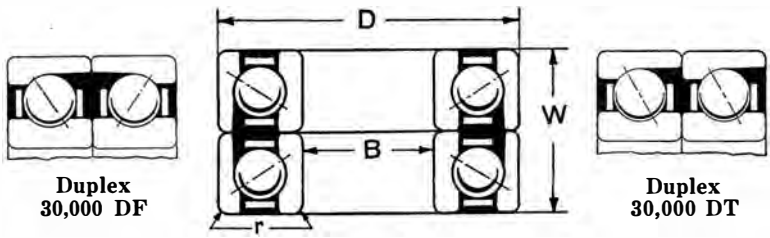
Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
30213	8000	6300	5000	4360	3960	3680	3460	3140	2920	2550	2320	2020	
30313	10720	8450	6700	5855	5320	4950	4650	4225	3920	3430	3105	2715	
30413	12710	10010	7940	6945	6300	5850	5500	5000	4645	4050	3680	3215	
30214	8525	6705	5320	4650	4220	3920	3690	3350	3110	2720	2465	2155	
30314	11860	9340	7400	6460	5865	5450	5140	4640	4325	3775	3430	3000	
30414	14850	11700	9260	8100	7350	6830	6430	5820	5410	4730	4300		
30215	9025	7100	5635	4920	4465	4150	3905	3480	3295	2875	2610	2280	
30315	12950	10200	8095	7070	6410	5965	5605	5100	4735	4135	3755	3280	
30415	16700	13150	10410	9100	8260	7690	7240	6570	6095	5320	4835		
30216	10230	8065	6400	5590	5065	4705	4440	4025	3735	3265	2965	2585	
30316	14200	11170	8855	7745	7025	6530	6150	5570	5175	4520	4105		
30416	17970	14150	11200	9800	8900	8265	7780	7030	6550	5710	5200		
30217	11010	8695	6890	6015	5460	5080	4780	4330	4020	3515	3185		
30317	15420	12150	9640	8415	7640	7100	6690	6070	5630	4910	4465		
30417	19220	15110	12000	10490	9515	8850	8330	7540	7005	6125	5560		
30218	12275	9655	7650	6695	6070	5650	5305	4810	4470	3910	3550		
30318	16625	13100	10390	9080	8240	7650	7200	6550	6070	5300	4810		
30418	21390	16840	13350	11680	10590	9850	9255	8410	7800	6810	6195		
30219	13600	10710	8495	7410	6740	6255	5895	5330	4955	4340	3940		
30319	17910	14110	11200	9790	8890	8250	7760	7070	6545	5710	5190		
30220	14900	11710	9300	8125	7380	6850	6450	5850	5440	4750	4320		
30320	20400	16050	12730	11120	10100	9400	8840	8030	7445	6500	5900		
30221	16310	12840	10180	8900	8085	7500	7070	6400	5950	5200	4720		
30321	21750	17130	13570	11875	10780	10000	9420	8575	7940	6925	6300		
30222	17700	13940	11040	9650	8765	8145	7665	6940	6455	5640	5120		
30322	24270	19110	15140	13230	12000	11180	10500	9510	8850	7735	7025		

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DUPLEX BEARINGS — TYPE 30,000 DF or DT

Principal Dimensions

Duplex bearings, Type 30,000 DF, are intended for heavy thrust loads from either direction or for combined loads where the major component is thrust. Type 30,000 DT is used for heavy thrust in one direction where the load is beyond the capacity of a single bearing and change to a larger size is not desired.



Duplex 30,000 DF

Duplex 30,000 DT

* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing Number		Bore B		Diameter D		Width W		Balls Per Row		* Radius r	Price
Type DF	Type DT	mm	inch	mm	inch	mm	inch	Diam.	No.		
30204-DF	**30204-DT**			47	1.8504	28	1.1024	11/32	10		$ 5.80
30304-DF	**30304-DT**	20	.7874	52	2.0472	30	1.1811	3/8	10	.04	7.80
30404-DF	**30404-DT**			72	2.8346	38	1.4961	9/16	8		11.40
30205-DF	**30205-DT**			52	2.0472	30	1.1811	11/32	11	.04	6.60
30305-DF	**30305-DT**	25	.9843	62	2.4409	34	1.3386	7/16	10	.04	9.00
30405-DF	**30405-DT**			80	3.1496	42	1.6535	5/8	9	.06	13.20
30206-DF	**30206-DT**			62	2.4409	32	1.2598	3/8	12	.04	8.80
30306-DF	**30306-DT**	30	1.1811	72	2.8346	38	1.4961	1/2	10	.04	11.40
30406-DF	**30406-DT**			90	3.5433	46	1.8110	11/16	9	.06	16.20
30207-DF	**30207-DT**			72	2.8346	34	1.3386	7/16	12	.04	10.20
30307-DF	**30307-DT**	35	1.3780	80	3.1496	42	1.6535	9/16	11	.06	13.20
30407-DF	**30407-DT**			100	3.9370	50	1.9685	3/4	9	.06	19.20
30208-DF	**30208-DT**			80	3.1496	36	1.4173	1/2	12	.04	12.00
30308-DF	**30308-DT**	40	1.5748	90	3.5433	46	1.8110	5/8	11	.06	15.00
30408-DF	**30408-DT**			110	4.3307	54	2.1260	13/16	10	.08	23.20
30209-DF	**30209-DT**			85	3.3465	38	1.4961	1/2	13	.04	13.20
30309-DF	**30309-DT**	45	1.7717	100	3.9370	50	1.9685	11/16	11	.06	18.80
30409-DF	**30409-DT**			120	4.7244	58	2.2835	7/8	10	.08	28.60
30210-DF	**30210-DT**			90	3.5433	40	1.5748	1/2	14	.04	15.40
30310-DF	**30310-DT**	50	1.9685	110	4.3307	54	2.1260	3/4	11	.08	22.00
30410-DF	**30410-DT**			130	5.1181	62	2.4409	15/16	10	.08	35.20
30211-DF	**30211-DT**			100	3.9370	42	1.6535	9/16	14	.06	17.60
30311-DF	**30311-DT**	55	2.1654	120	4.7244	58	2.2835	13/16	12	.08	27.40
30411-DF	**30411-DT**			140	5.5118	66	2.5984	1	10	.08	41.80
30212-DF	**30212-DT**			110	4.3307	44	1.7323	5/8	14	.06	20.60
30312-DF	**30312-DT**	60	2.3622	130	5.1181	62	2.4409	7/8	12	.08	34.20
30412-DF	**30412-DT**			150	5.9055	70	2.7559	1 1/16	10	.08	50.40

DUPLEX BEARINGS — TYPE 30,000 DF or DT

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

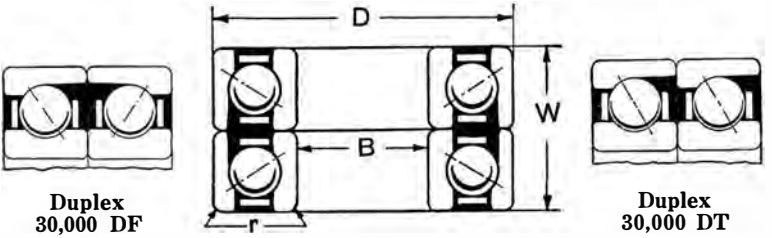
Bearing Number		Revolutions per Minute												
Type DF	Type DT	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
30204-DF	**30204-DT**	3045	2395	1895	1660	1510	1400	1320	1190	1110	970	885	770	665
30304-DF	**30304-DT**	3875	3045	2415	2110	1910	1785	1675	1525	1410	1230	1120	975	835
30404-DF	**30404-DT**	5480	4320	3425	2990	2710	2525	2380	2165	2005	1750	1590	1390	1150
30205-DF	**30205-DT**	3400	2705	2140	1880	1700	1585	1490	1325	1255	1095	995	867	732
30305-DF	**30305-DT**	4930	3880	3075	2685	2440	2270	2140	1945	1805	1570	1430	1250	1055
30405-DF	**30405-DT**	7235	5700	4520	3960	3585	3330	3135	2845	2640	2310	2100	1835	1540
30206-DF	**30206-DT**	4825	3795	3010	2635	2385	2220	2090	1885	1760	1540	1395	1220	1020
30306-DF	**30306-DT**	6100	4820	3805	3330	3025	2805	2640	2395	2225	1950	1770	1550	1290
30406-DF	**30406-DT**	8560	6725	5340	4655	4230	3935	3700	3355	3120	2720	2480	2155	1835
30207-DF	**30207-DT**	6040	4760	3770	3300	2990	2780	2615	2380	2200	1920	1750	1530	1275
30307-DF	**30307-DT**	7755	6110	4840	4230	3840	3570	3365	3050	2830	2475	2245	1965	1665
30407-DF	**30407-DT**	9900	7800	6180	5395	4890	4560	4280	3890	3610	3150	2870	2500	2115
30208-DF	**30208-DT**	7350	5775	4585	4010	3635	3380	3175	2890	2685	2345	2125	1850	1580
30308-DF	**30308-DT**	9175	7225	5725	5020	4550	4220	3980	3605	3350	2925	2660	2320	1965
30408-DF	**30408-DT**	12070	9520	7550	6590	5980	5560	5235	4740	4410	3850	3500	3060	2565
30209-DF	**30209-DT**	7960	6260	4960	4335	3945	3665	3450	3145	2905	2530	2305	2005	1700
30309-DF	**30309-DT**	10630	8370	6625	5790	5260	4880	4595	4165	3875	3380	3075	2685	2275
30409-DF	**30409-DT**	13700	10780	8550	7470	6760	6280	5920	5370	4990	4360	3960	3450	
30210-DF	**30210-DT**	8550	6730	5335	4660	4230	3935	3705	3365	3120	2720	2480	2160	1835
30310-DF	**30310-DT**	12160	9575	7575	6625	6020	5590	5270	4790	4440	3875	3520	3075	
30410-DF	**30410-DT**	15280	12050	9520	8325	7560	7040	6625	6000	5575	4875	4420	3865	
30211-DF	**30211-DT**	10130	7980	6320	5540	5025	4670	4385	3995	3705	3230	2940	2565	
30311-DF	**30311-DT**	14610	11470	9090	7970	7225	6720	6315	5730	5320	4650	4220	3690	
30411-DF	**30411-DT**	16900	13320	10530	9210	8350	7785	7310	6630	6160	5380	4890	4270	
30212-DF	**30212-DT**	11830	9330	7385	6460	5860	5440	5120	4640	4320	3770	3435	2990	
30312-DF	**30312-DT**	16330	12880	10200	8920	8080	7530	7065	6430	5965	5210	4730	4130	
30412-DF	**30412-DT**	18700	14720	11650	10200	9260	8600	8080	7350	6810	5950	5405	4725	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DUPLEX BEARINGS — TYPE 30,000 DF or DT

Principal Dimensions

Duplex bearings, Type 30,000 DF, are intended for heavy thrust loads from either direction or for combined loads where the major component is thrust. Type 30,000 DT is used for heavy thrust in one direction where the load is beyond the capacity of a single bearing and change to a larger size is not desired.



Duplex 30,000 DF **Duplex 30,000 DT**

* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing Number		Bore B		Diameter D		Width W		Balls Per Row		* Radius r	Price
Type DF	Type DT	mm	inch	mm	inch	mm	inch	Diam.	No.		
30213-DF	**30213-DT**			120	4.7244	46	1.8110	1 1/16	14	.06	$ 25.40
30313-DF	**30313-DT**	65	2.5591	140	5.5118	66	2.5984	15/16	12	.08	42.00
30413-DF	**30413-DT**			160	6.2992	74	2.9134	1 3/16	10	.08	65.20
30214-DF	**30214-DT**			125	4.9213	48	1.8898	1 1/16	15	.06	27.60
30314-DF	**30314-DT**	70	2.7559	150	5.9055	70	2.7559	1	12	.08	49.60
30414-DF	**30414-DT**			180	7.0866	84	3.3071	1 5/16	10	.10	87.00
30215-DF	**30215-DT**			130	5.1181	50	1.9685	1 1/16	16	.06	30.20
30315-DF	**30315-DT**	75	2.9528	160	6.2992	74	2.9134	1 1/16	12	.08	61.60
30415-DF	**30415-DT**			190	7.4803	90	3.5433	1 7/16	10	.10	121.00
30216-DF	**30216-DT**			140	5.5118	52	2.0472	3/4	16	.08	35.20
30316-DF	**30316-DT**	80	3.1496	170	6.6929	78	3.0709	1 1/8	12	.08	71.00
30416-DF	**30416-DT**			200	7.8740	96	3.7795	1 1/2	10	.10	143.00
30217-DF	**30217-DT**			150	5.9055	56	2.2047	1 3/16	15	.08	43.60
30317-DF	**30317-DT**	85	3.3465	180	7.0866	82	3.2283	1 3/16	12	.10	85.80
30417-DF	**30417-DT**			210	8.2677	104	4.0945	1 9/16	10	.12	165.00
30218-DF	**30218-DT**			160	6.2992	60	2.3622	7/8	15	.08	50.60
30318-DF	**30318-DT**	90	3.5433	190	7.4803	86	3.3858	1 1/4	12	.10	104.00
30418-DF	**30418-DT**			225	8.8583	108	4.2520	1 11/16	10	.12	187.00
30219-DF	**30219-DT**	95	3.7402	170	6.6929	64	2.5197	15/16	15	.08	61.60
30319-DF	**30319-DT**			200	7.8740	90	3.5433	1 5/16	12	.10	123.20
30220-DF	**30220-DT**	100	3.9370	180	7.0866	68	2.6772	1	15	.08	79.20
30320-DF	**30320-DT**			215	8.4646	94	3.7008	1 7/16	12	.10	145.20
30221-DF	**30221-DT**	105	4.1339	190	7.4803	72	2.8346	1 1/16	15	.08	92.40
30321-DF	**30321-DT**			225	8.8583	98	3.8583	1 1/2	12	.10	169.40
30222-DF	**30222-DT**	110	4.3307	200	7.8740	76	2.9921	1 1/8	15	.08	103.40
30322-DF	**30322-DT**			240	9.4488	100	3.9370	1 5/8	12	.10	211.20

DUPLEX BEARINGS — TYPE 30,000 DF or DT

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Bearing Number		Revolutions per Minute											
Type DF	Type DT	50	100	200	300	400	500	600	800	1000	1500	2000	3000
30213-DF	**30213-DT**	13600	10720	8500	7410	6730	6260	5880	5340	4965	4340	3945	3435
30313-DF	**30313-DT**	18210	14380	11390	9950	9040	8420	7900	7180	6660	5830	5275	4620
30413-DF	**30413-DT**	21600	17010	13500	11810	10720	9950	9350	8500	7900	6880	6260	5470
30214-DF	**30214-DT**	14500	11400	9040	7900	7170	6660	6270	5690	5280	4620	4190	3665
30314-DF	**30314-DT**	20150	15880	12580	10980	9960	9270	8740	7885	7350	6420	5830	5100
30414-DF	**30414-DT**	25250	19900	15740	13780	12500	11620	10930	9880	9200	8040	7315	
30215-DF	**30215-DT**	15340	12070	9575	8360	7590	7060	6640	5920	5600	4885	4440	3875
30315-DF	**30315-DT**	22050	17350	13770	12020	10900	10135	9530	8670	8050	7040	6380	5575
30415-DF	**30415-DT**	28400	22350	17700	15470	14030	13080	12320	11180	10370	9045	8220	
30216-DF	**30216-DT**	17400	13720	10880	9515	8620	7990	7550	6840	6350	5550	5040	4390
30316-DF	**30316-DT**	24150	19000	15050	13180	11930	11100	10460	9470	8800	7690	6980	
30416-DF	**30416-DT**	30550	24050	19050	16660	15120	14050	13220	11960	11130	9710	8840	
30217-DF	**30217-DT**	18730	14780	11720	10220	9280	8640	8140	7360	6830	5970	5415	
30317-DF	**30317-DT**	26200	20650	16390	14310	12990	12070	11380	10320	9570	8340	7585	
30417-DF	**30417-DT**	32650	25700	20400	17804	16180	15050	14160	12820	11910	10410	9450	
30218-DF	**30218-DT**	20850	16420	13010	11380	10330	9610	9020	8175	7600	6650	6040	
30318-DF	**30318-DT**	28250	22250	17680	15430	14000	13010	12240	11130	10320	9010	8170	
30418-DF	**30418-DT**	36350	28650	22700	19850	18020	16750	15720	14300	13270	11570	10530	
30219-DF	**30219-DT**	23100	18220	14440	12600	11470	10630	10020	9060	8420	7375	6695	
30319-DF	**30319-DT**	30450	23980	11905	16650	15120	14030	13190	12020	11120	9705	8830	
30220-DF	**30220-DT**	25350	19900	15820	13820	12550	11650	10970	9940	9250	8075	7345	
30320-DF	**30320-DT**	34650	27300	21650	18900	17170	15980	15030	13660	12660	11050	10030	
30221-DF	**30221-DT**	27750	21850	17320	15130	13750	12750	12020	10880	10120	8840	8020	
30321-DF	**30321-DT**	37000	29100	23050	20185	18350	17000	16010	14580	13500	11770	10720	
30222-DF	**30222-DT**	30100	23700	18800	16410	14910	13850	13030	11800	10970	9590	8700	
30322-DF	**30322-DT**	41250	32470	25750	22500	20400	19005	17860	16175	15050	13150	11940	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

MAGNETO BEARINGS — TYPE ND-5-25

Design and Load Characteristics

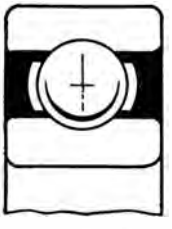
Section
Type ND–5–25

Magneto bearings are of the separable type; that is, they are so made that they may be disassembled and the rings applied separately to housings or shafts. This facilitates manufacture and assembly of magnetos or other devices in which they are used. These bearings are made in a series of sizes having bores ranging from 5 to 26 millimeters diameter.

For capacities under thrust or combined thrust and radial loads, use factors "F" given under "Bearing Selection."

EXTRA SMALL BEARINGS — TYPE 30

Design and Load Characteristics



Section
Type 30

Extra Small Single Row Radial bearings, Type 30, are practically identical in design with non-loading groove bearings of the Type 3000. They are made in a range of six standard sizes of from 4 to 9 millimeters bore, inclusive. Radial and thrust capacities are ample for support of any of the small shafts for which they are intended.

For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

Type 30 bearings may be obtained with permanent shields attached, either on one or both sides, as described under "Shielded Bearings."

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and load ratings of both Type 30 and Magneto bearings at various speeds, see pages immediately following.

MAGNETO BEARINGS — TYPE ND-5-25

Typical Mounting

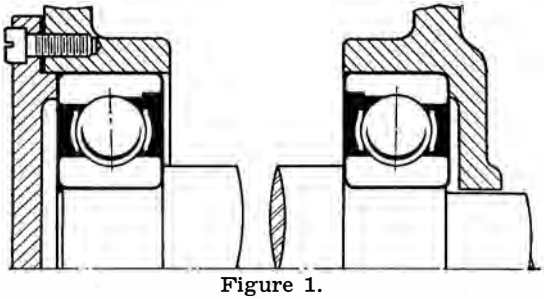


Figure 1.

Magneto bearings may be applied in pairs, opposed, under a light load sufficient to assure positive contact of balls with races. Also, since the inner rings are practically always press fitted, locknuts on the shaft are seldom required. As a rule, the most inexpensive method of obtaining the proper operating adjustment at assembly is by means of shims inserted between end cap and housing face, as in figure 1.

EXTRA SMALL BEARINGS — TYPE 30

Typical Mounting

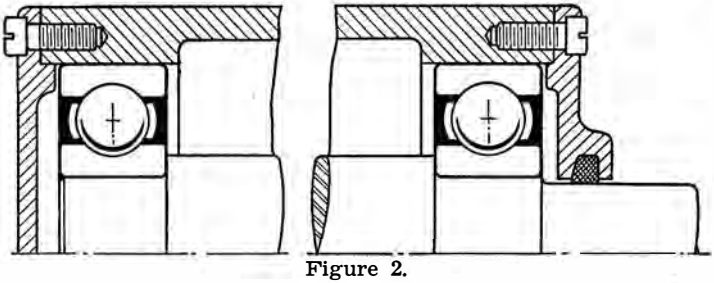


Figure 2.

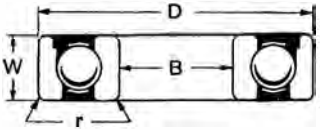
Extra Small Single Row Radial bearings, Type 30, are generally applied in the same manner as Type 1000 bearings. When one bearing is to be clamped both in the housing and on the shaft, so as to locate parts axially, endwise movement of the shaft may be held quite close to the normal bearing end play limits of from .002" to .003", though this will vary, depending upon the tightness of the shaft fits and also the slight compression of parts under load.

Where axial movement need not be as closely restricted, the bearings may be "floated" in the housing, as in figure 2, the total movement allowed being usually no more than necessary to avoid excessive endwise pressure on the rings due to possible accumulation of machining errors. When so applied the shaft requires no threading for locknuts.

MAGNETO BEARINGS — TYPE ND-5-25

Principal Dimensions

For radial and light thrust loads. Mounted two bearings opposed. Made separable to facilitate assembly of mechanisms in which they are used. For capacities under combined loads, use factors "F" given under "Bearing Selection."



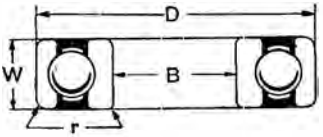
* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing No.	Nearest Old No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
		mm	inch	mm	inch	mm	inch	Diam.	No.		
N.D. 5		5	.1969	16	.6299	5	.1969	1/8	6	.008	$2.20
N.D. 8-6		6	.2362								
N.D. 8-7		7	.2756	24	.9449	7	.2756	3/16	8	.012	1.60
N.D. 8		8	.3150								
N.D. 10-9		9	.3543								
N.D. 10	01	10	.3937	28	1.1024	8	.3150	7/32	8	.012	1.70
N.D. 12-11		11	.4331	32	1.2598	7	.2756	3/16	10	.016	1.80
N.D. 12	02	12	.4724								
N.D. 13	021	13	.5118	30	1.1811	7	.2756	3/16	10	.012	1.80
N.D. 15	03	15	.5906	35	1.3780	8	.3150	7/32	11	.020	1.90
N.D. 16		16	.6299	38	1.4961	10	.3937	1/4	10	.040	2.05
N.D. 17	05	17	.6693	44	1.7323	11	.4331	1/4	11	.040	2.15
N.D. 20	06	20	.7874	47	1.8504	14	.5512	5/16	11	.040	2.60
N.D. 25		25	.9843	52	2.0472	15	.5906	5/16	12	.040	3.00
N.D. 25-26		26	1.0236								

EXTRA SMALL BEARINGS — TYPE 30

Principal Dimensions

Single row radial bearings, for the light radial or combined load duty required of bearings below 10 mm. bore. For capacities under combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
34	4	.1575	16	.6299	5	.1969	1/8	6	.016	$1.75
35	5	.1969	19	.7480	6	.2362	9/64	6	.016	1.75
36	6	.2362	19	.7480	6	.2362	9/64	6	.016	1.75
37	7	.2756	22	.8661	7	.2756	5/32	7	.016	1.75
38	8	.3150	22	.8661	7	.2756	5/32	7	.016	1.80
39	9	.3543	26	1.0236	8	.3150	3/16	7	.025	1.90

MAGNETO BEARINGS — TYPE ND-5-25

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
N.D. 5	194	154	122	107	97	90	84	77	71	63	57	50	42
N.D. 8-6 N.D. 8-7 N.D. 8	612	482	381	333	302	281	264	242	223	195	177	154	130
N.D. 10-9 N.D. 10	780	615	487	425	386	359	338	308	285	248	226	197	164
N.D. 12-11 N.D. 12 N.D. 13	860	678	537	470	426	396	373	340	314	274	249	218	183
N.D. 15	1160	913	724	633	574	534	502	458	423	370	336	293	248
N.D. 16	1290	1015	805	702	638	593	558	508	470	410	373	326	276
N.D. 17	1435	1130	895	782	710	660	621	565	524	457	415	363	307
N.D. 20	1905	1500	1190	1040	943	878	825	750	695	606	551	481	408
N.D. 25 N.D. 25-26	2160	1700	1350	1180	1070	994	935	846	787	683	625	545	462

EXTRA SMALL BEARINGS — TYPE 30

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

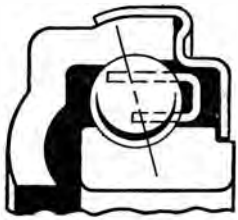
The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
34	195	155	123	108	98	91	85	78	72	63	57	50	42
35	252	200	158	138	126	117	110	99	93	81	74	64	54
36	252	200	158	138	126	117	110	99	93	81	74	64	54
37	412	327	260	227	206	191	180	164	152	133	121	105	89
38	412	327	260	227	206	191	180	164	152	133	121	105	89
39	532	422	335	293	266	247	232	211	196	171	156	136	115

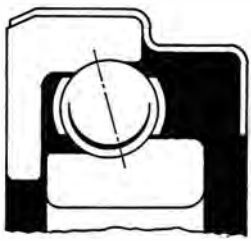
Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

CLUTCH THROWOUT BEARINGS — TYPES CT 27-40

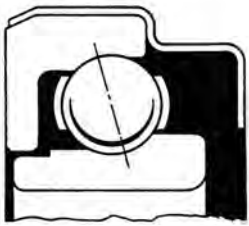
Design and Load Characteristics



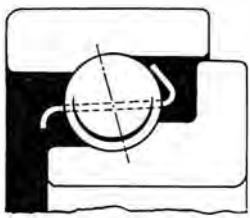
Section
CT 27–30 F



Section
CT 30–34



Section
CT 36



Section
CT 38–40

New Departure clutch throwout bearings are designed especially for the load and mounting conditions peculiar to automotive clutch service. They are available in four series having certain exterior differences in design to suit various kinds of clutches, but the internal design or ball and race relationship is alike.

These bearings are made with the correct angle of contact to operate efficiently under full thrust loads, but are non-separable and will not loosen and rattle when the thrust load is released.

Bearings CT 27 to CT 36, inclusive, are provided with a wide face on one side of the outer ring, giving ample surface for contact with the clutch operating fingers.

A steel shell permanently fixed to the outer ring extends out beyond the large face of the inner ring and is cupped inward to form a lubricant closure over the clutch sleeve.

Bearings CT 38–40 have the wide face on one side of the inner race for clutches whose release mechanism requires this construction.

With the increasing use of automatic clutches of various types in which the release bearings are required to operate a much greater part of the time than is the case with the conventional foot-pedal operated release mechanism, the advantages of the CT 27 to 40 bearings are especially important. Not only are they quiet and smooth running under thrust, but they are not adversely affected by centrifugal force, and the increased proportion of time that the clutch is held in the released position is inconsequential so far as the bearings are concerned.

CLUTCH THROWOUT BEARINGS — TYPES CT 27-40

Typical Mountings

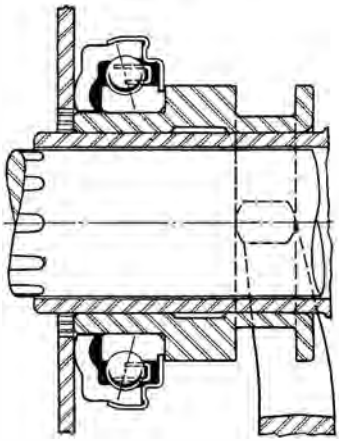


Figure 1.

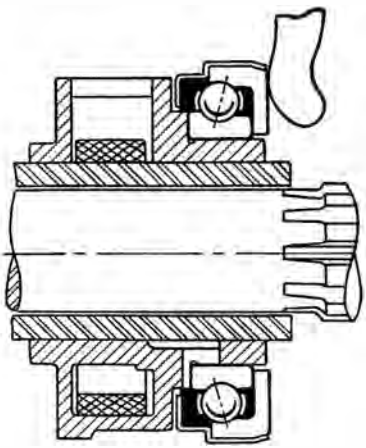


Figure 2.

Clutch throwout bearings of Types CT 27 to 36, inclusive, should always be mounted with a press fit of the cone on the clutch sleeve, preferably with a fit on the order of .001" tight. A reasonably close running clearance between the enclosing shell and the sleeve should be obtained so as to assure proper lubricant retention — figures 1 and 2.

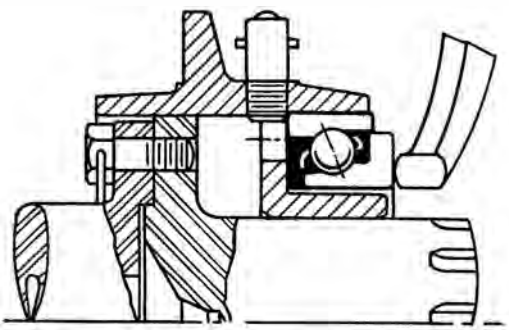


Figure 3.

With bearings of the Type 38–40, the inner race has a clearance over the sleeve and the outer race requires a press fit in the throwout collar, since the application is the reverse of that for the other types, as shown in figure 3.

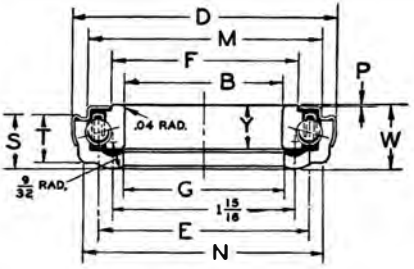
With Type 38–40 bearings the outer race extends over the large outside diameter of the inner race in such a manner as to retain the lubricant within the bearing.

CLUTCH THROWOUT BEARINGS — TYPES CT 27-34

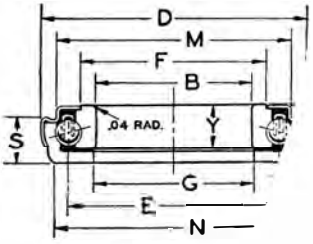
Principal Dimensions

Self-contained, non-separable bearings especially designed for the principal kinds of automotive clutches. Radial capacities of all three types are equal to the thrust ratings.

Type CT-27

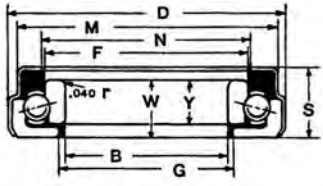


Type CT-30 F



Brg. No.	Bore B		Diameter D	Diameter M	Width W		Width S	Width T	Width Y	Balls Dia.	Balls No.	F	G	√	Price
	mm	inch	inch	inch	mm	inch	inch	inch	inch						
CT 27	42.96	1.6915	2 13/16	2 1/2	17.46	.6875	.558	.495	.469	9/32	10	2	1.	2 17/32	On
CT 30-F	47.63	1.8750	3 1/8	2 3/4	17.45	.687	.566		.484	5/16	12	2.192	1.:	2 11/16	applic.

Types CT 30-34

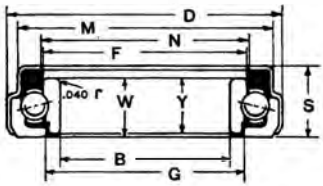


Brg. No.	Bore B		Diameter D	Diameter M	Width W		Width S	Width Y	Balls Dia.	Balls No.	F	G	N	Price
	mm	inch	inch	inch	mm	inch	inch	inch						
CT 30	47.63	1.8750	3.237	3.031	17.45	.687	.797	.518	11/32	13	2.388	2.035	2.437	On applic.
CT 32	50.80	2.0000	3.237	3.031	17.45	.687	.797	.518	11/32	13	2.388	2.035	2.437	
CT 34	54.24	2.1355	3.487	3.281	19.05	.750	.906	.580	11/32	14	2.638	2.250	2.687	
CT 34-36	57.15	2.2500	3.487	3.281	19.05	.750	.906	.580	11/32	14	2.638	2.270	2.687	

CLUTCH THROWOUT BEARINGS — TYPES CT 36-40

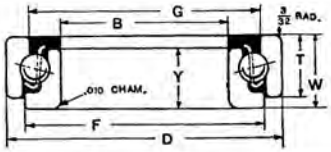
Principal Dimensions

Type CT 36



Brg. No.	Bore B		Diameter		Width				Balls		F	G	N	Price
			D	M	W		S	Y						
	mm	inch	inch	inch	mm	inch	inch	inch	Dia.	No.				
CT 36	57.15	2.2500	3.487	3.281	19.05	.750	.906	.735	11/32	14	2.638	2.530	2.687	On applic.

Types CT 38-40



Brg. No.	Bore B		Diameter D		Width W		T	Y	Balls		F	G	Price
	mm	inch	mm	inch	mm	inch	inch	inch	Dia.	No.			
CT 38	60.33	2.3750	98.43	3.875	22.23	.875	.750	.781	3/8	18	3.425	3.250	On applic.
CT 40	63.50	2.5000	103.51	4.075	26.99	1.0625	.906	.875	13/32	15	3.648	3.437	

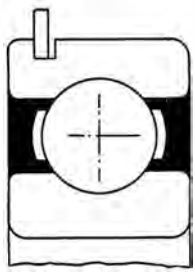
Thrust Load Ratings—Based on 3800 Hours Average Life

Brg. No.	Revolutions per Minute			
	500	**1000**	**2000**	**3000**
CT 27	647	514	408	356
CT 30-F	855	679	539	471
CT 30	1025	817	648	567
CT 32	1025	817	648	567
CT 34	1100	874	694	607
CT 34-36	1100	874	694	607
CT 36	1100	874	694	607
CT 38	1750	1390	1105	962
CT 40	1740	1380	1095	958

SNAP RING BEARINGS — TYPE 40,000

Design and Load Characteristics

Snap Ring
Series 47200–47300
and 47500–47600



Snap Ring
Series 41200–41300
and 43200–43300

Snap ring bearings are designed primarily to simplify the machining of bearing housings and the installation of the bearings themselves, with particular reference to such units as automotive transmissions. Internally the bearings are identical with either the Type 1000 or 3000 single row radial bearings. The outer races are grooved on the outside diameter near one face so as to accommodate a split steel locating ring which has sufficient spring to snap into place without radial clearance in the groove. The rings have sufficient shearing strength to locate the races under such axial loads as are normally imposed upon single row radial bearings.

Snap ring bearings, based upon either the Type 1000 or 3000 bearings, may be obtained with shields on one side. Where the internal construction is the same as Type 1000, the snap ring is located on the same side as the filling notch, and the shield on the opposite side.

Snap ring bearings are numbered according to the bearing type on which they are based and whether or not they are provided with shields. The numbers by which they may be identified for ordering are tabulated below:

Based on Type 1000				Based on Type 3000			
Series 41200-41300 Without Shield		Series 47200-47300 With Shield		Series 43200-43300 Without Shield		Series 47500-47600 With Shield	
Light	Medium	Light	Medium	Light	Medium	Light	Medium
41200 41201 41202 41203 Etc.	41300 41301 41302 41303 Etc.	47200 47201 47202 47203 Etc.	47300 47301 47302 47303 Etc.	43200 43201 43202 43203 Etc.	43300 43301 43302 43303 Etc.	47500 47501 47502 47503 Etc.	47600 47601 47602 47603 Etc.

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and load ratings at various speeds, see pages immediately following.

SNAP RING BEARINGS — TYPE 40,000

Typical Mounting

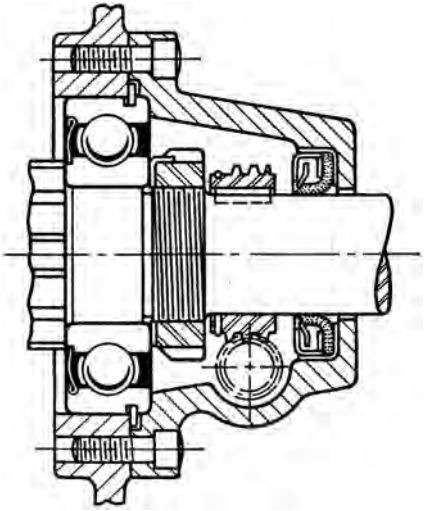


Figure 1.

Where a bearing is to be clamped in the housing so as to provide a definite axial location for the supported shaft, it has been necessary to either make a shoulder as an integral part of the housing, or to mount the bearing in an adapter sleeve equipped with a shoulder or flange. In various types of gear boxes and particularly in the conventional automotive transmission, the mainshaft rear bearing and the transmission driveshaft rear bearing must both be clamped axially. Snap ring bearings provide a means for doing this and yet make it possible to bore both bearing housings straight through at one setup.

When installed, the snap ring contacts with the housing face and the closure cap or clamping member may be piloted on the bearing outside diameter, as shown in figure 1. To assure an ample piloting surface, the bearing corner radius on the side nearest the snap ring is made to clear a .020" fillet radius in the closure cap.

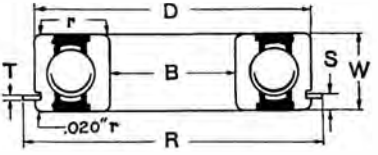
When mounted as illustrated, axial movement of the bearing race is stopped in one direction by the closure cap and in the other direction by the snap ring which is clamped between one side of the ring groove and the housing face.

SNAP RING BEARINGS — TYPE 40,000

Series 41200-41300 and 47200-47300 (with and without shields)

Principal Dimensions

Same as Type 1000 but with snap ring on bearing O. D. for axial location. Provide maximum single row capacity for radial loads. May be used for combined loads when chosen in accordance with factors "F" given for the Type 1000 under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing No.		Bore B		Diameter D		Width W		Balls		R	T	S	* Radius r	Price	
With Shield	Without Shield	mm	inch	mm	inch	mm	inch	Dia.	No.					With Shield	Without Shield
47304	**41304**	20	.7874	52	2.0472	15	.5906	13/32	9	2 17/64	.042	.136	.04	$ 3.95	$ 3.85
47305	**41305**	25	.9843	62	2.4409	17	.6693	7/16	10	2 21/32	.065	.190	.04	4.55	4.45
47206	**41206**	30	1.1811	62	2.4409	16	.6299	3/8	12	2 21/32	.065	.190	.04	4.45	4.35
47306	**41306**			72	2.8346	19	.7480	15/32	11	3 5/64	.065	.190		5.70	5.55
47207	**41207**	35	1.3780	72	2.8346	17	.6693	7/16	12	3 5/64	.065	.190	.04	5.15	4.95
47307	**41307**			80	3.1496	21	.8268	17/32	11	3 13/32	.065	.190	.06	6.65	6.40
47208	**41208**	40	1.5748	80	3.1496	18	.7087	15/32	13	3 13/32	.065	.190	.04	6.05	5.80
47308	**41308**			90	3.5433	23	.9055	19/32	11	3 51/64	.095	.220	.06	7.55	7.25
47209	**41209**	45	1.7717	85	3.3465	19	.7480	15/32	14	3 19/32	.065	.190	.04	6.75	6.40
47309	**41309**			100	3.9370	25	.9843	21/32	12	4 3/16	.095	.220	.06	9.35	9.10
47210	**41210**	50	1.9685	90	3.5433	20	.7874	15/32	15	3 51/64	.095	.220	.04	7.75	7.50
47310	**41310**			110	4.3307	27	1.0630	23/32	12	4 37/64	.095	.220	.08	11.00	10.70
47211	**41211**	55	2.1654	100	3.9370	21	.8268	17/32	15	4 3/16	.095	.220	.06	8.80	8.55
47311	**41311**			120	4.7244	29	1.1417	25/32	12	5 3/32	.109	.265	.08	13.60	13.20
47212	**41212**	60	2.3622	110	4.3307	22	.8661	1 9/32	15	4 37/64	.095	.220	.06	10.25	9.95

SNAP RING BEARINGS — TYPE 40,000

Series 41200-41300 and 47200-47300 (with and without shields)

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data for Type 1000 bearings given under "Bearing Selection."

Bearing No.		Revolutions per Minute												
With Shield	Without Shield	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
47304	**41304**	2480	1970	1565	1365	1240	1160	1085	982	915	800	726	635	535
47305	**41305**	3300	2630	2085	1820	1650	1535	1450	1320	1220	1065	967	844	712
47206	**41206**	2845	2255	1785	1565	1420	1315	1240	1125	1045	917	829	727	611
47306	**41306**	3950	3130	2490	2170	1970	1825	1720	1570	1450	1270	1150	1005	886
47207	**41207**	4010	3180	2530	2210	2005	1865	1755	1595	1480	1290	1175	1025	865
47307	**41307**	4530	3590	2855	2490	2265	2100	1980	1800	1670	1455	1325	1155	982
47208	**41208**	4750	3770	2990	2610	2375	2205	2075	1885	1750	1530	1390	1210	1020
47308	**41308**	5650	4490	3560	3110	2830	2625	2470	2245	2080	1820	1650	1440	1205
47209	**41209**	5140	4075	3235	2825	2570	2385	2245	2010	1890	1650	1500	1310	1100
47309	**41309**	6970	5540	4400	3835	3480	3240	3045	2770	2570	2245	2040	1780	150
47210	**41210**	5550	4400	3495	3055	2775	2580	2430	2195	2040	1785	1620	1415	
47310	**41310**	8050	6375	5065	4410	4020	3730	3510	3190	2960	2580	2345	2050	
47211	**41211**	6625	5260	4160	3650	3310	3075	2895	2625	2440	2135	1940	1695	
47311	**41311**	9125	7250	5750	5010	4560	4245	3990	3605	3360	2935	2665	2325	
47212	**41212**	7800	6200	4900	4300	3900	3615	3400	3100	2865	2515	2280	1995	

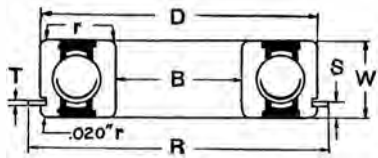
Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

SNAP RING BEARINGS — TYPE 40,000

Series 43200-43300 and 47500-47600 (with and without shields)

Principal Dimensions

Same as Type 3000 but with snap ring on bearing O. D. for axial location. For radial or combined loads in either direction where thrust is to be resisted by a single bearing and is not great enough to require use of angular contact type. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing No.		Bore B		Diameter D		Width W		Balls		R	T	S	* Radius r	Price	
With Shield	Without Shield	mm	inch	mm	inch	mm	inch	Dia.	No.					With Shield	Without Shield
47500	**43200**	10	.3937	30	1.1811	9	.3543	7/32	7	1 23/64	.042	.120	.025	$ 2.15	$ 2.05
47501	**43201**	12	.4724	32	1.2598	10	.3937	.210	8	1 7/16	.042	.120	.025	2.25	2.15
47502	**43202**	15	.5906	35	1.3780	11	.4331	.210	9	1 35/64	.042	.120	.025	2.35	2 25
47503	**43203**	17	.6693	40	1.5748	12	.4724	9/32	8	1 3/4	.042	.120	.025	2.55	2.45
47504	**43204**	20	.7874	47	1.8504	14	.5512	5/16	8	2 1/16	.042	.136	.04	3.05	2.95
47604	**43304**			52	2.0472	15	.5906	13/32	7	2 17/64	.042	.136	.04	3.95	3.85
47505	**43205**	25	.9843	52	2.0472	15	.5906	5/16	9	2 17/64	.042	.136	.04	3.45	3.35
47605	**43305**			62	2.4409	17	.6693	13/32	8	2 21/32	.065	.190		4.55	4.45
47506	**43206**	30	1.1811	62	2.4409	16	.6299	3/8	9	2 21/32	.065	.190	.04	4.45	4.35
47606	**43306**			72	2.8346	19	.7480	15/32	8	3 5/64	.065	.190		5.70	5.55
47507	**43207**	35	1.3780	72	2.8346	17	.6693	7/16	9	3 5/64	.065	.190	.04	5.15	4.95
47607	**43307**			80	3.1496	21	.8268	17/32	8	3 13/32	.065	.190	.06	6.65	6.40
47508	**43208**	40	1.5748	80	3.1496	18	.7087	15/32	9	3 13/32	.065	.190	.04	6.05	5.80
47608	**43308**			90	3.5433	23	.9055	19/32	8	3 51/64	.095	.220	.06	7.55	7.25
47509	**43209**	45	1.7717	85	3.3465	19	.7480	15/32	10	3 19/32	.065	.190	.04	6.75	6.40
47609	**43309**			100	3.9370	25	.9843	21/32	8	4 3/16	.095	.220	.06	9.35	9.10
47510	**43210**	50	1.9685	90	3.5433	20	.7874	15/32	11	3 51/64	.095	.220	.04	7.75	7.50
47610	**43310**			110	4.3307	27	1.0630	23/32	8	4 37/64	.095	.220	.08	11.00	10.70
47511	**43211**	55	2.1654	100	3.9370	21	.8268	17/32	11	4 3/16	.095	.220	.06	8.80	8.55
47611	**43311**			120	4.7244	29	1.1417	25/32	8	5 3/32	.109	.265	.08	13.60	13.20
47512	**43212**	60	2.3622	110	4.3307	22	.8661	19/32	10	4 37/64	.095	.220	.06	10.25	9.95

SNAP RING BEARINGS — TYPE 40,000

Series 43200-43300 and 47500-47600 (with and without shields)

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data for Type 3000 bearings given under "Bearing Selection."

Bearing No.		Revolutions per Minute												
With Shield	Without Shield	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
47500	**43200**	663	526	419	364	332	307	290	264	244	213	194	169	140
47501	**43201**	817	649	515	450	410	380	357	319	301	263	239	209	162
47502	**43202**	969	769	610	533	485	450	424	388	357	312	284	248	200
47503	**43203**	1250	980	788	689	625	581	546	494	460	402	365	319	270
47504	**43204**	1495	1200	944	827	749	690	655	595	552	482	438	381	321
47604	**43304**	1835	1460	1160	1010	917	851	802	726	677	593	537	470	398
47505	**43205**	1775	1410	1120	976	889	825	775	700	655	571	520	454	383
47605	**43305**	2470	1970	1560	1360	1235	1140	1080	988	910	795	724	631	534
47506	**43206**	2350	1860	1475	1290	1175	1085	1025	930	865	758	683	600	506
47606	**43306**	3100	2455	1955	1700	1545	1430	1350	1230	1140	996	902	788	695
47507	**43207**	3315	2625	2090	1825	1655	1540	1450	1315	1220	1065	970	845	714
47607	**43307**	3550	2815	2240	1950	1775	1650	1550	1410	1310	1140	1040	905	770
47508	**43208**	3720	2950	2340	2040	1860	1725	1620	1475	1370	1200	1090	947	798
47608	**43308**	4440	3520	2790	2440	2220	2060	1935	1760	1630	1430	1295	1130	945
47509	**43209**	4100	3250	2580	2260	2045	1900	1790	1600	1510	1315	1200	1045	877
47609	**43309**	5160	4100	3260	2840	2580	2400	2255	2055	1905	1660	1510	1320	1110
47510	**43210**	4520	3580	2840	2485	2240	2100	1980	1780	1660	1450	1320	1150	
47610	**43310**	5960	4715	3755	3270	2980	2830	2600	2360	2195	1910	1735	1520	
47511	**43211**	5400	4280	3390	2965	2700	2500	2355	2140	1980	1735	1580	1380	
47611	**43311**	6755	5370	4255	3715	3385	3140	2960	2675	2490	2175	1975	1725	
47512	**43212**	5950	4735	3750	3290	2970	2750	2595	2360	2180	1920	1735	1520	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

SHIELDED BEARINGS — TYPE 7000

Design and Load Characteristics

Section
Type 7000

Single Row Radial Shielded bearings, Type 7000, are made in three series, the first of which, except for the addition of the shield, is identical with Type 1000 bearings; the second with Type 3000, and the third with Extra Small, Type 30, bearings.

The shields are permanently fixed to the outer ring of Type 7000 bearings and are inset from the face of the rings so as to provide ample clearance over locknuts or other parts applied against the bearings. The shields fit with a suitable running clearance into a notch or recess in the inner ring, thus forming a labyrinth closure against dirt, metal chips and other foreign matter.

Double Shielded Bearings

Bearings of the above three series may also be obtained with shields on both sides. When either double or single shielded bearings are required, they should be ordered according to the numbers as explained in the following tables:

SINGLE SHIELDED BEARINGS				
Based on Type 1000		Based on Type 3000		Based on Type 30
Light	Medium	Light	Medium	
7200	7300	7500	7600	7034
7201	7301	7501	7601	7035
7202	7302	7502	7602	7036
7203	7303	7503	7603	7037
Etc.	Etc.	Etc.	Etc.	Etc.
DOUBLE SHIELDED BEARINGS				
77200	77300	77500	77600	77034
77201	77301	77501	77601	77035
77202	77302	77502	77602	77036
77203	77303	77503	77603	77037
Etc.	Etc.	Etc.	Etc.	Etc.

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and load ratings at various speeds of the three series above, see pages immediately following.

SHIELDED BEARINGS — TYPE 7000

Typical Mounting

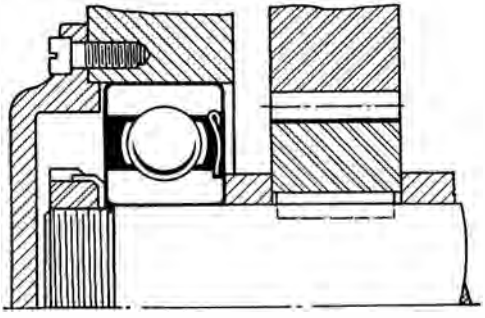


Figure 1.

Most gear boxes, or other mechanisms containing numerous moving parts, utilize the same lubricant for the bearings as for the gears, and it is very desirable that the bearings to be applied in such cases be protected from the metal chips and bits of abrasive matter usually found in the lubricant after periods of use.

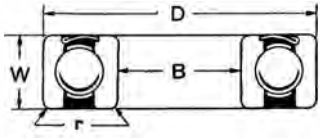
Shielded bearings are designed for installations of this nature, and since the metal shield attached to the outer ring is inset from the bearing face, they may be mounted in exactly the same manner as any Single Row Radial bearing.

Shielded bearings should always be applied, as in figure 1, with the shield on the side nearest the gears or other parts from which chips and foreign matter may originate. It is advisable in such a mounting to make the spacer or shaft shoulder, against which the bearing is clamped, either of larger or smaller diameter than the shield notch in the inner ring, since metal chips will be thrown off at the step caused by the difference in diameters.

Where oil is used for the lubricant, a sufficient amount will find its way past the shield to take care of the bearings, especially where adjacent parts dip into the oil and distribute it thoroughly to all sections of the case.

SHIELDED BEARINGS — TYPE 7000

Principal Dimensions



Series 7200-7300
Maximum Capacity Single Row Radial

Same dimensions and capacities as Type 1000 bearings, but provided with a steel shield for protection against foreign matter.

* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No. Single Shield	Brg. No. Double Shield	Bore B		Diameter D		Width W		Balls		* Radius r	Price Single Shield	Price Double Shield
		mm	inch	mm	inch	mm	inch	Dia.	No.			
7304	**77304**	20	.7874	52	2.0472	15	.5906	13/32	9	.04	$ 3.60	$ 3.70
7305	**77305**	25	.9843	62	2.4409	17	.6693	7/16	10	.04	4.20	4.30
7206	**77206**	30	1.1811	62	2.4409	16	.6299	3/8	12	.04	4.10	4.20
7306	**77306**			72	2.8346	19	.7480	15/32	11	.04	5.35	5.50
7207	**77207**	35	1.3780	72	2.8346	17	.6693	7/16	12	.04	4.75	4.90
7307	**77307**			80	3.1496	21	.8268	17/32	11	.06	6.20	6.40
7208	**77208**	40	1.5748	80	3.1496	18	.7087	15/32	13	.04	5.60	5.80
7308	**77308**			90	3.5433	23	.9055	19/32	11	.06	7.05	7.30
7209	**77209**	45	1.7717	85	3.3465	19	.7480	15/32	14	.04	6.20	6.40
7309	**77309**			100	3.9370	25	.9843	21/32	12	.06	8.75	9.00
7210	**77210**	50	1.9685	90	3.5433	20	.7874	15/32	15	.04	7.25	7.50
7310	**77310**			110	4.3307	27	1.0630	23/32	12	.08	10.30	10.60
7211	**77211**	55	2.1654	100	3.9370	21	.8268	17/32	15	.06	8.25	8.50
7311	**77311**			120	4.7244	29	1.1417	25/32	12	.08	12.80	13.20
7212	**77212**	60	2.3622	110	4.3307	22	.8661	19/32	15	.06	9.60	9.90
7312	**77312**			130	5.1181	31	1.2205	27/32	12	.08	16.00	16.50
7213	**77213**	65	2.5591	120	4.7244	23	.9055	21/32	15	.06	11.85	12.20
7313	**77313**			140	5.5118	33	1.2992	29/32	12	.08	19.80	20.50
7214	**77214**	70	2.7559	125	4.9213	24	.9449	21/32	15	.06	12.90	13.30
7314	**77314**			150	5.9055	35	1.3780	31/32	12	.08	23.60	24.70
7215	**77215**	75	2.9528	130	5.1181	25	.9843	21/32	16	.06	14.20	14.70
7315	**77315**			160	6.2992	37	1.4567	1	13	.08	29.60	31.20
7216	**77216**	80	3.1496	140	5.5118	26	1.0236	11/16	17	.08	16.90	17.80
7217	**77217**	85	3.3465	150	5.9055	28	1.1024	25/32	16	.08	20.50	21.20
7317	**77317**			180	7.0866	41	1.6142	1 1/8	13	.10	41.00	43.00
7218	**77218**	90	3.5433	160	6.2992	30	1.1811	27/32	15	.08	24.00	25.00
7219	**77219**	95	3.7402	170	6.6929	32	1.2598	29/32	15	.08	29.50	31.00
7220	**77220**	100	3.9370	180	7.0866	34	1.3386	31/32	15	.08	37.60	39.20
7221	**77221**	105	4.1339	190	7.4803	36	1.4173	1	16	.08	44.10	46.20

Series 7034-7039
Extra Small Single Row Radial

Same dimensions and capacities as Type 30 bearings, but provided with a steel shield for protection against foreign matter.

* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No. Single Shield	Brg. No. Double Shield	Bore B		Diameter D		Width W		Balls		* Radius r	Price Single Shield	Price Double Shield
		mm	inch	mm	inch	mm	inch	Dia.	No.			
7034	**77034**	4	.1575	16	.6299	5	.1969	1/8	6	.016	$1.85	$1.95
7035	**77035**	5	.1969	19	.7480	6	.2362	9/64	6	.016	1.85	1.95
7036	**77036**	6	.2362	19	.7480	6	.2362	9/64	6	.016	1.85	1.95
7037	**77037**	7	.2756	22	.8661	7	.2756	5/32	7	.016	1.85	1.95
7038	**77038**	8	.3150	22	.8661	7	.2756	5/32	7	.016	1.90	2.00
7039	**77039**	9	.3543	26	1.0236	8	.3150	3/16	7	.025	2.00	2.10

SHIELDED BEARINGS — TYPE 7000

Radial Load Ratings

Series 7200-7300
Maximum Capacity Single Row Radial

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No. Single Shield	Brg. No. Double Shield	Revolutions per Minute												
		50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
7304	77304	2480	1970	1565	1365	1240	1150	1085	982	915	800	726	635	535
7305	77305	3300	2630	2085	1820	1650	1535	1450	1320	1220	1065	967	844	712
7306	77306	2845	2255	1785	1565	1420	1315	1240	1125	1045	917	829	727	611
7306	77306	3950	3130	2490	2170	1970	1825	1720	1570	1450	1270	1150	1005	886
7307	77307	4010	3180	2530	2210	2005	1865	1755	1595	1480	1290	1175	1025	865
7307	77307	4530	3590	2855	2490	2265	2100	1980	1800	1670	1455	1325	1155	982
7308	77308	4750	3770	2990	2610	2375	2205	2075	1885	1750	1530	1390	1210	1020
7308	77308	5650	4490	3560	3110	2830	2625	2470	2245	2080	1820	1650	1440	1205
7309	77309	5140	4075	3235	2825	2570	2385	2245	2010	1890	1650	1500	1310	1100
7309	77309	6970	5540	4400	3835	3480	3240	3045	2770	2570	2245	2040	1780	1500
7310	77310	5550	4400	3495	3055	2775	2580	2430	2195	2040	1785	1620	1415	
7310	77310	8050	6375	5065	4410	4020	3730	3510	3190	2960	2580	2345	2050	
7311	77311	6625	5260	4160	3650	3310	3075	2895	2625	2440	2135	1940	1695	
7311	77311	9125	7250	5750	5010	4560	4245	3990	3605	3360	2935	2665	2325	
7312	77312	7800	6200	4900	4300	3900	3615	3400	3100	2865	2515	2280	1995	
7312	77312	10280	8165	6490	5655	5145	4780	4495	4100	3790	3310	3010	2620	
7313	77313	9010	7175	5675	4975	4500	4180	3940	3585	3315	2910	2640	2300	
7313	77313	11450	9095	7210	6300	5730	5310	5000	4510	4215	3680	3350	2915	
7314	77314	9190	7290	5770	5060	4575	4250	4005	3645	3375	2955	2680	2335	
7314	77314	12700	10080	8000	6980	6350	5895	5550	5025	4675	4080	3710	3240	
7315	77315	9730	7710	6100	5360	4850	4500	4240	3860	3580	3145	2845	2485	
7315	77315	14300	11350	9010	7860	7150	6640	6250	5680	5260	4600	4180	3650	
7316	77316	10950	8700	6900	6025	5490	5090	4790	4360	4040	3525	3200	2800	
7317	77317	12450	9890	7850	6880	6220	5780	5440	4940	4585	4020	3645		
7317	77317	17050	13530	10750	9395	8530	7925	7465	6780	6290	5495	4990		
7318	77318	13350	10580	8400	7370	6680	6190	5820	5300	4920	4310	3900		
7319	77319	14800	11725	9300	8150	7400	6850	6450	5880	5440	4770	4320		
7320	77320	16300	12900	10225	8975	8150	7540	7110	6480	5990	5250	4750		
7321	77321	18000	14290	11330	9900	9000	8350	7860	7130	6630	5785	5260		

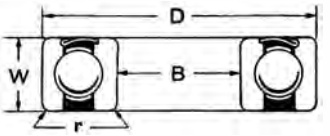
Series 7034-7039
Extra Small Single Row Radial

Brg. No. Single Shield	Brg. No. Double Shield	Revolutions per Minute												
		50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
7034	77034	196	162	123	109	98	90	85	77	72	63	57	50	40
7035	77035	252	203	159	138	126	116	110	102	93	81	74	64	50
7036	77036	252	203	159	138	126	116	110	102	93	81	74	64	50
7037	77037	412	321	259	228	206	190	180	164	152	132	120	105	88
7038	77038	412	321	259	228	206	190	180	164	152	132	120	105	88
7039	77039	533	400	325	292	266	248	233	211	196	171	156	136	114

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

SHIELDED BEARINGS — TYPE 7000

Principal Dimensions



Series 7500-7600
Single Row Radial Bearings

Same dimensions and capacities as Type 3000 bearings, but provided with a steel shield for protection against foreign matter.

* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No. Single Shield	Brg. No. Double Shield	Bore B		Diameter D		Width W		Balls		* Radius r	Price Single Shield	Price Double Shield
		mm	inch	mm	inch	mm	inch	Dia.	No.			
7500	**77500**	10	.3937	30	1.1811	9	.3543	7/32	7	.025	$ 1.80	$ 1.90
7600	**77600**			35	1.3780	11	.4331	1/4	7	.025	2.20	2.30
7501	**77501**	12	.4724	32	1.2598	10	.3937	.210	8	.025	1.90	2.00
7601	**77601**			37	1.4567	12	.4724	9/32	7	.04	2.40	2.50
7502	**77502**	15	.5906	35	1.3780	11	.4331	.210	9	.025	2.00	2.10
7602	**77602**			42	1.6535	13	.5118	5/16	7	.04	2.60	2.70
7503	**77503**	17	.6693	40	1.5748	12	.4724	9/32	8	.025	2.20	2.30
7603	**77603**			47	1.8504	14	.5512	11/32	7	.04	3.00	3.10
7504	**77504**	20	.7874	47	1.8504	14	.5512	5/16	8	.04	2.70	2.80
7604	**77604**			52	2.0472	15	.5906	13/32	7	.04	3.60	3.70
7505	**77505**	25	.9843	52	2.0472	15	.5906	5/16	9	.04	3.10	3.20
7605	**77605**			62	2.4409	17	.6693	13/32	8	.04	4.20	4.30
7506	**77506**	30	1.1811	62	2.4409	16	.6299	3/8	9	.04	4.10	4.20
7606	**77606**			72	2.8346	19	.7480	15/32	8	.04	5.35	5.50
7507	**77507**	35	1.3780	72	2.8346	17	.6693	7/16	9	.04	4.75	4.90
7607	**77607**			80	3.1496	21	.8268	17/32	8	.06	6.20	6.40
7508	**77508**	40	1.5748	80	3.1496	18	.7087	15/32	9	.04	5.60	5.80
7608	**77608**			90	3.5433	23	.9055	19/32	8	.06	7.05	7.30
7509	**77509**	45	1.7717	85	3.3465	19	.7480	15/32	10	.04	6.20	6.40
7609	**77609**			100	3.9370	25	.9843	21/32	8	.06	8.75	9.00
7510	**77510**	50	1.9685	90	3.5433	20	.7874	15/32	10	.04	7.25	7.50
7610	**77610**			110	4.3307	27	1.0630	23/32	8	.08	10.30	10.60
7511	**77511**	55	2.1654	100	3.9370	21	.8268	17/32	11	.06	8.25	8.50
7611	**77611**			120	4.7244	29	1.1417	25/32	8	.08	12.80	13.20
7512	**77512**	60	2.3622	110	4.3307	22	.8661	19/32	10	.06	9.60	9.90
7612	**77612**			130	5.1181	31	1.2205	27/32	8	.08	16.00	16.50
7513	**77513**	65	2.5591	120	4.7244	23	.9055	21/32	10	.06	11.85	12.20
7613	**77613**			140	5.5118	33	1.2992	29/32	8	.08	19.80	20.50
7514	**77514**	70	2.7559	125	4.9213	24	.9449	21/32	11	.06	12.90	13.30
7614	**77614**			150	5.9055	35	1.3780	31/32	8	.08	23.60	24.70
7515	**77515**	75	2.9528	130	5.1181	25	.9843	21/32	11	.06	14.20	14.70
7615	**77615**			160	6.2992	37	1.4567	1	8	.08	29.60	31.20
7516	**77516**	80	3.1496	140	5.5118	26	1.0236	11/16	11	.08	16.90	17.80
7517	**77517**	85	3.3465	150	5.9055	28	1.1024	25/32	11	.08	20.50	21.20
7518	**77518**	90	3.5433	160	6.2992	30	1.1811	27/32	11	.08	24.00	25.00
7519	**77519**	95	3.7402	170	6.6929	32	1.2598	29/32	11	.08	29.50	31.00
7520	**77520**	100	3.9370	180	7.0866	34	1.3386	31/32	11	.08	37.60	39.20

SHIELDED BEARINGS — TYPE 7000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

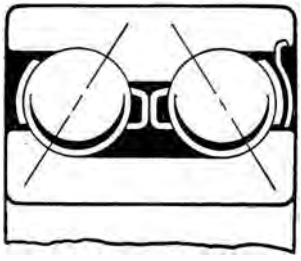
The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Series 7500-7600
Single Row Radial Bearings

Brg. No. Single Shield	Brg. No. Double Shield	Revolutions per Minute												
		50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
7500	77500	663	526	419	364	332	307	290	264	244	213	194	169	140
7600	77600	763	630	481	419	381	356	333	305	281	245	223	195	163
7501	77501	817	649	515	450	410	380	357	319	301	263	239	209	162
7601	77601	955	750	603	523	479	441	419	379	352	307	281	244	209
7502	77502	969	769	610	533	485	450	424	388	357	312	284	248	200
7602	77602	1125	890	712	620	564	521	493	448	415	362	330	288	242
7503	77503	1250	980	788	689	625	581	546	494	460	402	365	319	270
7603	77603	1320	1040	832	729	660	612	578	523	486	425	386	337	284
7504	77504	1495	1200	944	827	749	690	655	595	552	482	438	381	321
7604	77604	1835	1460	1160	1010	917	851	802	726	677	593	537	470	398
7505	77505	1775	1410	1120	976	889	825	775	700	655	571	520	454	383
7605	77605	2470	1970	1560	1360	1235	1140	1080	988	910	795	724	631	534
7506	77506	2350	1860	1475	1290	1175	1085	1025	930	865	758	683	600	506
7606	77606	3100	2455	1955	1700	1545	1430	1350	1230	1140	996	902	788	695
7507	77507	3315	2625	2090	1825	1655	1540	1450	1315	1220	1065	970	845	714
7607	77607	3550	2815	2240	1950	1775	1650	1550	1410	1310	1140	1040	905	770
7508	77508	3720	2950	2340	2040	1860	1725	1620	1475	1370	1200	1090	947	798
7608	77608	4440	3520	2790	2440	2220	2060	1935	1760	1630	1430	1295	1130	945
7509	77509	4100	3250	2580	2260	2045	1900	1790	1600	1510	1315	1200	1045	877
7609	77609	5160	4100	3260	2840	2580	2400	2255	2055	1905	1660	1510	1320	1110
7510	77510	4520	3580	2840	2485	2240	2100	1980	1780	1660	1450	1320	1150	
7610	77610	5960	4715	3755	3270	2980	2830	2600	2360	2195	1910	1735	1520	
7511	77511	5400	4280	3390	2965	2700	2500	2355	2140	1980	1735	1580	1380	
7611	77611	6755	5370	4255	3715	3385	3140	2960	2675	2490	2175	1975	1725	
7512	77512	5950	4735	3750	3290	2970	2750	2595	2360	2180	1920	1735	1520	
7612	77612	7615	6050	4805	4200	3815	3540	3330	3040	2810	2455	2230	1940	
7513	77513	6890	5480	4325	3800	3435	3180	3000	2725	2525	2215	2010	1750	
7613	77613	8490	6745	5350	4665	4250	3940	3705	3345	3130	2730	2485	2160	
7514	77514	7465	5910	4700	4100	3720	3455	3250	2960	2745	2405	2180	1895	
7614	77614	9415	7470	5930	5170	4705	4365	4110	3725	3465	3025	2750	2400	
7515	77515	7580	6000	4770	4165	3780	3510	3300	3005	2790	2445	2210	1920	
7615	77615	10050	7965	6325	5520	5020	4660	4395	3980	3700	3230	2935	2565	
7516	77516	8185	6500	5155	4500	4100	3800	3575	3260	3020	2635	2390	2095	
7517	77517	9700	7700	6100	5340	4845	4500	4235	3845	3560	3135	2835		
7518	77518	10825	8625	6820	5990	5420	5010	4740	4310	4000	3500	3170		
7519	77519	12100	9520	7580	6620	6000	5570	5230	4785	4425	3880	3510		
7520	77520	13225	10470	8320	7300	6620	6130	5790	5260	4875	4265	3865		

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DOUBLE ROW SHIELDED — SERIES 5500-5600



Design

Double Row Shielded bearings of the Series 5500-5600 are identical with Double Row Type 5000 bearings except that a plate shield is permanently attached to one side of the outer ring and fits with a running clearance over the shoulder of the inner ring.

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

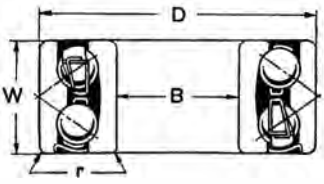
Bearing No.		Revolutions per Minute												
Single Shield	Double Shield	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
5500	**55500**	1260	990	785	685	623	579	545	498	459	400	364	318	268
5600	**55600**	1595	1255	996	871	790	735	691	628	583	509	462	403	341
5501	**55501**	1540	1215	964	842	764	710	669	606	563	491	446	390	329
5601	**55601**	1865	1470	1165	1020	924	859	808	732	680	595	540	471	398
5502	**55502**	1750	1380	1095	958	869	808	760	689	640	559	508	444	374
5602	**55602**	2420	1905	1510	1320	1200	1115	1050	953	884	771	701	612	516
5503	**55503**	2140	1685	1340	1170	1060	988	929	839	782	683	620	541	457
5603	**55603**	2700	2125	1685	1470	1335	1240	1170	1060	985	860	782	683	576
5504	**55504**	2595	2040	1620	1415	1280	1195	1120	1020	946	826	750	655	553
5604	**55604**	3010	2370	1875	1640	1490	1385	1300	1185	1100	959	871	760	641
5505	**55505**	2845	2270	1800	1570	1430	1330	1250	1135	1050	920	835	730	615
5605		4715	3715	2940	2575	2335	2170	2040	1855	1720	1500	1365	1190	1005
5506		4045	3210	2540	2220	2020	1875	1765	1605	1490	1300	1180	1030	870
5606		5950	4690	3715	3240	2945	2735	2575	2330	2170	1895	1720	1505	1270
5507		5595	4400	3490	3050	2770	2575	2420	2200	2040	1780	1620	1415	1190
5607		7240	5700	4515	3945	3580	3330	3135	2830	2640	2305	2095	1830	1545
5608		8540	6725	5330	4650	4230	3930	3695	3365	3115	2720	2470	2160	1820
5509	**55509**	7430	5850	4640	4050	3680	3420	3215	2900	2710	2370	2150	1880	1585
5609		10090	7950	6300	5500	4995	4645	4365	3970	3680	3210	2920	2550	2150
5510	**55510**	7900	6225	4925	4305	3910	3635	3420	3100	2880	2520	2285	2000	1685
5610		11660	9175	7275	6350	5775	5360	5050	4570	4250	3715	3375	2945	
5511		9575	7540	5970	5210	4740	4400	4145	3745	3490	3050	2770	2420	
5611		13300	10470	8295	7250	6585	6110	5750	5215	4850	4230	3845	3360	
5512	**55512**	10490	8345	6605	5785	5245	4880	4595	4160	3860	3375	3065	2680	
5514	**55514**	13100	10310	8175	7150	6490	6030	5670	5125	4775	4165	3790	3310	
5516		15600	12290	9740	8505	7725	7190	6750	6130	5695	4970	4510	3945	
5518		19800	15600	12350	10800	9800	9115	8590	7780	7225	6305	5735		
5520	**55520**	24400	19220	15220	13300	12090	11230	10570	9580	8900	7775	7060		
5522		27150	21550	17120	14970	13580	12610	11870	10780	10000	8740	7950		

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

DOUBLE ROW SHIELDED — SERIES 5500-5600

Principal Dimensions

Maximum capacity, angular contact bearings for combined loads from any direction. Solid inner and outer rings with two rows of balls permanently preloaded for greater rigidity. For capacities under thrust or combined loads, use factors "F" under "Bearing Selection."



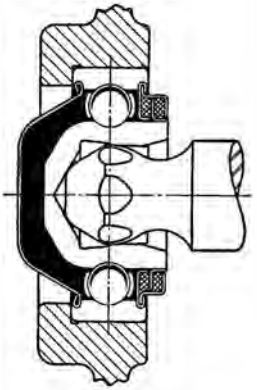
* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing No.		Bore B		Diameter D		Width W		Balls Per Row		* Radius r	Shield Inset	Price	
Single Shield	Double Shield	mm	inch	mm	inch	mm	inch	Dia.	No.			Single Shield	Double Shield
5500	**55500**	10	.3937	30	1.1811		9/16	3/16	9	.025	.005	$ 2.70	$ 2.90
5600	**55600**			35	1.3780	19.0	3/4	1/4	8	.025	.005	3.30	3.50
5501	**55501**	12	.4724	32	1.2598	15.9	5/8	7/32	9	.025	.005	2.90	3.10
5601	**55601**			37	1.4567	19.0	3/4	1/4	9	.04	.005	3.60	3.80
5502	**55502**	15	.5906	35	1.3780	15.9	5/8	7/32	10	.025	.005	3.00	3.20
5602	**55602**			42	1.6535	19.0	3/4	9/32	10	.04	.005	3.90	4.10
5503	**55503**	17	.6693	40	1.5748	17.5	11/16	1/4	10	.04	.005	3.35	3.60
5603	**55603**			47	1.8504	22.2	7/8	5/16	10	.04	.010	4.55	4.80
5504	**55504**	20	.7874	47	1.8504	20.6	13/16	9/32	11	.04	.010	4.15	4.40
5604	**55604**			52	2.0472	22.2	7/8	5/16	11	.04	.010	5.45	5.70
5505	**55505**	25	.9843	52	2.0472	20.6	13/16	9/32	12	.04	.010	4.85	5.20
5605				62	2.4409	25.4	1	3/8	12	.04	+.010‡	6.45	
5506		30	1.1811	62	2.4409	23.8	15/16	11/32	13	.04	+.010‡	6.30	
5606				72	2.8346	30.2	1 3/16	7/16	12	.04	.007	8.20	
5507		35	1.3780	72	2.8346	27.0	1 1/16	3/8	14	.04	.005	7.25	
5607				80	3.1496	34.9	1 3/8	1/2	12	.06	.015	9.45	
5608		40	1.5748	90	3.5433	36.5	1 7/16	17/32	13	.06	.010	10.75	
5509	**55509**	45	1.7717	85	3.3465	30.2	1 3/16	7/16	15	.04	flush	9.45	9.90
5609				100	3.9370	39.7	1 9/16	19/32	13	.06	.007	13.35	
5510	**55510**	50	1.9685	90	3.5433	30.2	1 3/16	7/16	16	.04	flush	11.00	11.45
5610				110	4.3307	44.4	1 3/4	11/16	12	.08	.002	15.75	
5511		55	2.1654	100	3.9370	33.3	1 5/16	1/2	16	.06	flush	12.50	
5611				120	4.7244	49.2	1 15/16	3/4	12	.08	.015	19.55	
5512	**55512**	60	2.3622	110	4.3307	36.5	1 7/16	17/32	16	.06	.010	14.55	15.20
5514	**55514**	70	2.7559	125	4.9213	39.7	1 9/16	19/32	17	.06	.005	19.65	20.60
5516		80	3.1496	140	5.5118	44.4	1 3/4	11/16	16	.08	.010	25.20	
5518		90	3.5433	160	6.2992	52.4	2 1/16	13/16	16	.08	flush	36.25	
5520	**55520**	100	3.9370	180	7.0866	60.3	2 3/8	15/16	16	.08	.012	56.70	59.40
5522		110	4.3307	200	7.8740	69.8	2 3/4	15/16	18	.08	.015	†	

‡ Shield protrudes .010". † Furnished on application.

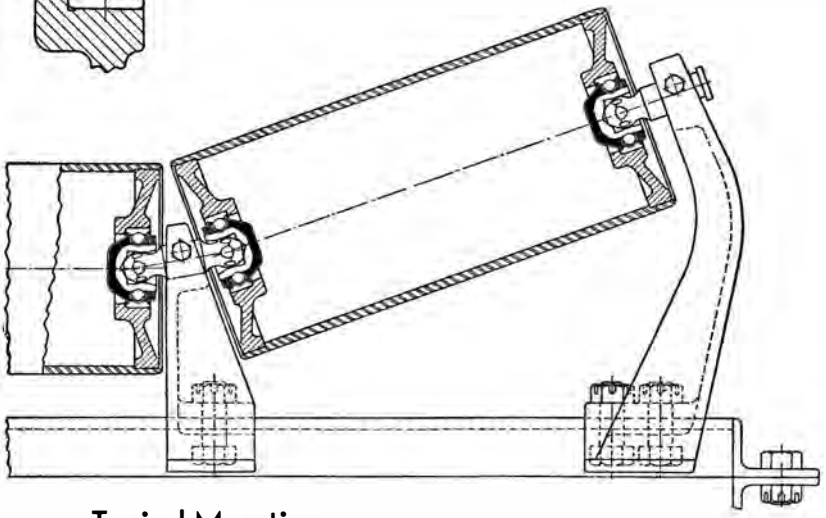
CONVEYOR ROLL BEARINGS — TYPE CB-504

Design and Mounting

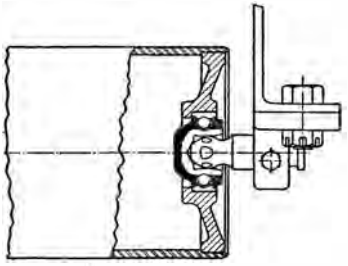


The New Departure Conveyor Bearing is permanently sealed, thereby eliminating all need for separate closure parts. Furthermore, adjusting nuts, springs, collars, long center shafts and other miscellaneous items are no longer required.

The unique shape of the inner ring, together with hexagonal flats on the end of the stub shaft, provide a positive, self-aligning union between roll and supporting brackets.



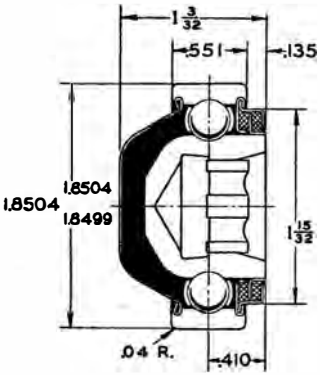
Typical Mounting



The New Departure Conveyor Roll bearing inspires genuine simplicity in conveyor design. Conveyor roll units constructed around it require remarkably few parts, so that they may be assembled quickly and easily by anyone who can handle a wrench. Such simplicity not only enables the conveyor manufacturer to produce economically, but it results in units which are extremely easy for the operator to set up in the field.

CONVEYOR ROLL BEARINGS — TYPE CB-504

Dimensions and Load Ratings



The New Departure Conveyor Bearing is a complete, self-contained unit, requiring none of the auxiliary parts commonly associated with such equipment. To guard against the entrance of foreign matter, a dual seal is provided, using stainless steel metal parts.

Economies, resulting from the elimination of lubricating costs and adjustments, make this the ideal bearing from the standpoint of both conveyor manufacturer and operator.

Load Ratings Based on Average Life of 3800 Hours

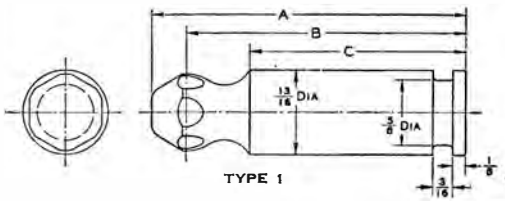
The capacities listed in this table are radial load ratings in pounds, with rotating outer ring.

Revolutions per Minute with Rotating Outer Ring								
50	**100**	**200**	**300**	**400**	**500**	**600**	**700**	**800**
1280	1015	800	704	640	594	560	530	506

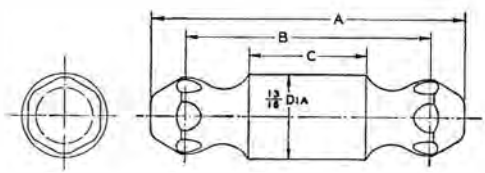
Recommended Dimensions for Stub Shafts*

Part No.	A	B	C
1-CS-2½	2 ½	2 11/64	1 9/16
1-CS-1 5/16	1 15/16	1 39/64	1
1-CS-3	3	2 43/64	2 1/16

Part No.	A	B	C
1-CS-4⅛	4⅛	3 51/64	3 3/16
2-CS-2½	2½	1 27/32	5/8
2-CS-2 9/16	2 9/16	1 29/32	1 1/16
2-CS-3 3/32	3 3/32	2 7/16	1 7/32
2-CS-3	3	2 11/32	1 ⅛



TYPE 1



TYPE 2

* Parts listed above available from New Departure. Prices on Application.

FAN & PUMP SHAFT BEARINGS — TYPE 885,100

Design and Mounting

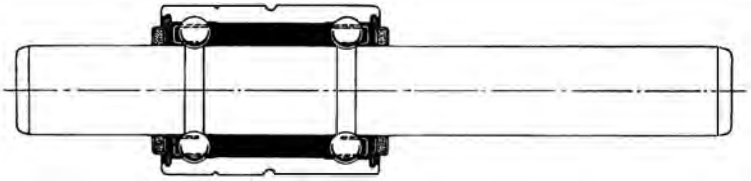


Figure 1.

This development by New Departure very definitely simplifies the mounting of the pump and fan, where these units are of the type carried on a single shaft.

In this design the pump and fan shaft and supporting bearings are made in one simple, compact unit as shown in figure 1. The accurately ground shaft has raceways for the two rows of balls formed integrally, thereby eliminating inner rings and keeping the bearing outside diameter correspondingly small.

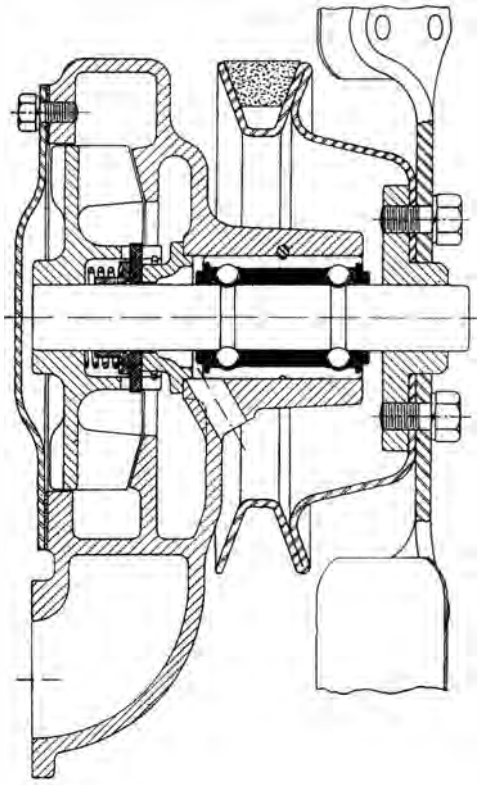


Figure 2.

The outer race is a solid steel cylinder fitted with permanent, close fitting seals at both ends. An ample supply of lubricant is provided for the life of the bearing, thus eliminating any need for lubricating fixtures.

The advantages of this unit shaft and bearing are illustrated in figure 2. It will be observed that the bearing housing is simply a straight hole bored through without locating shoulders and requiring facing on one side only.

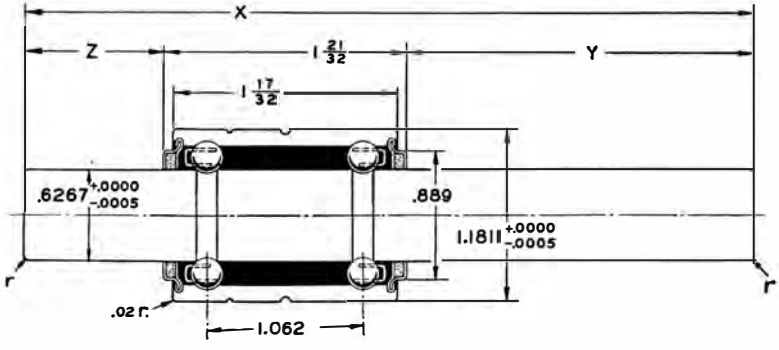
Bearing closure caps requiring drilled and tapped screw holes are eliminated.

Both impeller and fan are securely press fitted on the shaft, thereby eliminating threads, nut, pin, keys or keyways. The entire assembly is located by one pin registering with a continuous groove in the bearing outer ring.

There is a smaller number of parts, easier, more accurate machining, simpler, quicker assembly, with service requirements practically zero.

FAN & PUMP SHAFT BEARINGS — TYPE 885,100

Principal Dimensions



Upon receipt of necessary details of proposed use for this bearing, the Engineering Department, Bristol, Conn., will gladly submit a recommended layout.

Brg. No.	X	Y	Z	Radius r	Price	** Shedding Groove Location on Shaft
885140	4 1/16	55/64	1 35/64	.050	On Application	Center line of groove 3/16" from seal at Z end
885141	5 1/32	2 27/64	61/64	.050		Center line of groove 3/16" from seal at Y end
885144	5 5/8	2 29/64	1 33/64	.050		No groove
885146	4 33/64	1/32	2 49/64	.050		No groove
885147	4 1/32	1 5/8‡	1 3/16	.050		No groove
885154	2 27/64	1/32	1 9/64	.050†		No groove
885155	4 29/64	1 3/16	1 39/64	.030		Center line of groove 3/16" from seal at Z end
885156	4 15/32	1 1/64	1 51/64	.050		No groove

† 45° chamfer, 1/32" on flat at Y extension end.
** Shedding groove radius .11", depth .018", width .12".
‡ Diam. of shaft for 1 1/2" at Y end is .4990". Shoulder radius .06".

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The capacities given in this table are for each row of balls. In determining the ultimate loads, therefore, the bearing is considered as two single row radial bearings spaced apart the distance 1.062".

The pure thrust capacity of the bearing may be taken as 30% of the radial capacity per row given below.

Revolutions per Minute							
500	**600**	**800**	**1000**	**1500**	**2000**	**3000**	**5000**
307	290	264	244	213	194	169	140

N-D-SEAL BEARINGS — TYPE 8000

Design and Load Characteristics

Typical Section Type 8000

N-D-Seal bearings are of the non-loading groove type, containing the maximum number and size of balls that can be introduced by eccentric displacement of the rings. The capacity for radial or combined loads is ample for the requirements of the small shafts for which the bearings are designed, the number and size of balls used being identical with equivalent sizes of Type 3000 bearings.

In N-D-Seal bearings the inner ring is extended on one side so as to form a smooth contacting surface for the felt seal which is permanently fitted to the outer ring. The end of the inner ring contains a notch or recess in which the outer side of the felt retainer is fitted with a suitable running clearance, thus forming a labyrinth closure in addition to the felt seal. The opposite end of the inner ring is inset from the face of the outer ring by such an amount that the bearing may be applied in a blind housing without necessity of counterboring to prevent interference of the inner ring and end wall of the housing.

In small, high-speed applications the fit of ordinary felt rings is important, since too tight a felt will drag and is likely to cause overheating. With N-D-Seals, the fit of the felts is accurately controlled by the bearing manufacturer and the machine builder is assured uniform protection against grease leakage from or entrance of dirt into the bearings.

N-D-Seal bearings are made to standard dimensions for bores, outside diameters and outer ring widths, but average about 15% greater overall width than regular Single Row bearings.

For determination of bearing size with reference to desired life under radial, thrust, or combined radial and thrust loads, see "Bearing Selection."

For principal dimensions and load ratings of N-D-Seal bearings at various speeds, see pages immediately following.

For description, prices and dimensions of N-D-Seal bearings with seals on both sides, see pages following.

N-D-SEAL BEARINGS — TYPE 8000

Typical Mountings

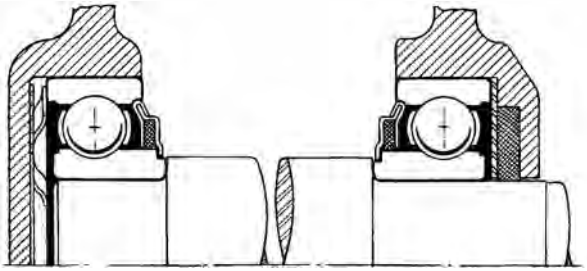


Figure 1.

Where N-D-Seals are to run at high speeds, it is usually desirable to have them operate under a light thrust load, so as to assure positive contact of balls and raceways at all times, thus avoiding any possibility of slippage. Bearings so applied, figure 1, require the use of a small, unitary steel spring to exert the necessary axial load; also, a thin metal washer and felt ring to complete the closure at the shaft extension end.

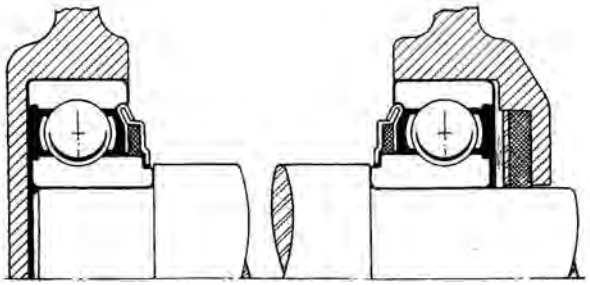


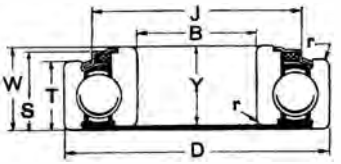
Figure 2.

Under medium or low speeds, as in standard, fractional horsepower, electric motors, N-D-Seal bearings may be mounted with a small clearance between housing shoulder and bearing face, figure 2, sufficient to ensure that machining tolerances will not result in an excessive thrust load being placed upon the bearings at assembly. The clearance should not exceed the maximum axial "float" of from .015" to .020". This is to prevent too much grease being pumped out of the bearing into the housing space.

N-D-SEAL BEARINGS — TYPE 8000

Principal Dimensions

For radial or combined loads in either direction. Self-contained closure or seal. Furnished completely lubricated, ready for service. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."



* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W	Balls		J	S	T	Y	* Radius r	Price
	mm	inch	mm	inch		Dia.	No.						
8035	5	.1969	19	.7480	.406	9/64	6	.572	.365	.315	.386	.016	$1.95
8036	6	.2362	19	.7480	.406	9/64	6	.572	.365	.315	.386	.016	1.95
8006			24	.9449	.406	5/32	7	.717	.365	.315	.386	.016	1.95
8102	7	.2756	22	.8661	.406	5/32	7	.671	.386	.315	.386	.016	1.95
8007			24	.9449	.406	5/32	7	.717	.365	.315	.386	.016	1.95
8103	8	.3150	22	.8661	.406	5/32	7	.671	.386	.315	.386	.016	1.95
8008			24	.9449	.406	5/32	7	.717	.365	.315	.386	.016	1.95
8039	9	.3543	26	1.0236	.406	5/32	7	.717	.365	.315	.386	.025	2.00
8009			30	1.1811	.500	7/32	7	.889	.445	.354	.480	.025	1.90
8500	10	.3937	30	1.1811	.500	7/32	7	.889	.445	.354	.480	.025	1.90
8011	11	.4331											
8501	12	.4724	32	1.2598	.500	.210	8	.968	.451	.394	.480	.025	2.00
8013	13	.5118											
8014	14	.5512											
8502	15	.5906	35	1.3780	.500	.210	9	1.080	.464	.433	.480	.025	2.10
8016	16	.6299											
8503	17	.6693	40	1.5748	.563	9/32	8	1.248	.518	.472	.538	.025	2.40
8603	17	.6693	47	1.8504	.630	11/32	7	1.405	.592	.551	.591	.04	3.20
8504	20	.7874	47	1.8504	.625	5/16	8	1.468	.582	.551	.600	.04	2.90
8604	20	.7874	52	2.0472	.748	13/32	7	1.602	.708	.591	.709	.04	3.90
8505	25	.9843	52	2.0472	.625	5/16	9	1.624	.582	.591	.600	.04	3.30
8605	25	.9843	62	2.4409	.827	13/32	8	1.852	.807	.669	.827	.04	4.70
8026	26	1.0236	52	2.0472	.625	5/16	9	1.624	.582	.591	.600	.04	3.30
8506	30	1.1811	62	2.4409	.787	11/32	9	1.946	.737	.630	.748	.04	4.60
8507	35	1.3780	72	2.8346	.827	7/16	9	2.290	.770	.669	.787	.04	5.30
8508	40	1.5748	80	3.1496	.945	7/16	10	2.616	.935	.827	.945	.04	6.20

N-D-SEAL BEARINGS — TYPE 8000

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
8035 8036	252	200	158	138	126	117	110	99	93	81	74	64	54
8102 8103	412	327	260	227	206	191	180	164	152	133	121	105	89
8006 8007 8008 8039	422	335	266	232	211	196	184	168	156	136	124	108	91
8009 8500	663	526	419	364	332	307	290	264	244	213	194	169	140
8011 8501 8013	817	649	515	450	410	380	357	319	301	263	239	209	162
8014 8502 8016	969	769	610	533	485	450	424	388	357	312	284	248	200
8503 8603	1250 1320	980 1040	788 832	689 729	625 660	581 612	546 578	494 525	460 486	402 425	365 386	319 337	270 284
8504 8604	1495 1835	1200 1460	944 1160	827 1010	749 917	690 851	655 802	595 730	552 677	482 593	438 537	381 470	321 398
8505 8605	1775 2470	1410 1970	1120 1560	976 1360	889 1235	825 1140	775 1080	700 980	655 910	571 795	520 724	454 631	383 534
8026	1775	1410	1120	976	889	825	775	700	655	571	520	454	383
8506	2120	1680	1340	1165	1060	985	926	842	781	682	620	540	455
8507	3315	2625	2090	1825	1655	1540	1450	1315	1220	1065	970	845	714
8508	3680	2925	2320	2030	1840	1710	1610	1460	1350	1185	1080	940	793

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

N-D-SEAL BEARINGS — TYPE 87,000

Design

Section Type 87,000

N-D-Seal bearings of the Type 87,000 are identical in every way with the Type 8000, or single seal bearings, except that they incorporate a steel shield on the side opposite the felt enclosure. Thus, the bearings may be mounted with the shield next to gears or other internal machine parts and the felt closure on the side where the shaft protrudes, thus, in many designs making it unnecessary to use slingers on the one side or separate housing closure caps on the other.

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

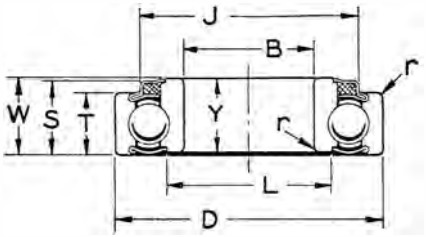
Brg. No.	Revolutions per Minute												
	50	**100**	**200**	**300**	**400**	**500**	**600**	**800**	**1000**	**1500**	**2000**	**3000**	**5000**
87035 **87036**	252	200	158	138	126	117	110	99	93	81	74	64	54
87102 **87103**	412	327	260	227	206	191	180	164	152	133	121	105	89
87006 **87007** **87008** **87039**	422	335	266	232	211	196	184	168	156	136	124	108	91
87009 **87500**	663	526	419	364	332	307	290	264	244	213	194	169	140
87011 **87501** **87013**	817	649	515	450	410	380	357	319	301	263	239	209	162
87014 **87502** **87016**	969	769	610	533	485	450	424	388	357	312	284	248	200
87503	1250	980	788	689	625	581	546	494	460	402	365	319	270
87603	1320	1040	832	729	660	612	578	523	486	425	386	337	284
87504	1495	1200	944	827	749	690	655	595	552	482	438	381	321
87604	1835	1460	1160	1010	917	851	802	726	677	593	537	470	398
87505	1775	1410	1120	976	889	825	775	700	655	571	520	454	383
87605	2470	1970	1560	1360	1235	1140	1080	988	910	795	724	631	
87026	1775	1410	1120	976	889	825	775	700	655	571	520	454	383
87506	2120	1680	1340	1165	1060	985	926	842	781	682	620	540	
87507	3315	2625	2090	1825	1655	1540	1450	1315	1220	1065	970	845	
87508	3680	2925	2320	2030	1840	1710	1610	1460	1350	1185	1080	940	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

N-D-SEAL BEARINGS — TYPE 87,000

Principal Dimensions

For radial or combined loads in either direction. Self-contained closure or seal. Furnished completely lubricated, ready for service. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

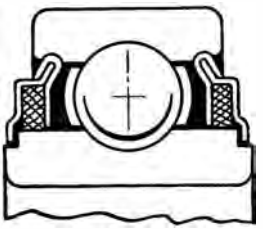


* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W	Balls		J	L	S	T	Y	* Radius r	Price
	mm	inch	mm	inch		Dia.	No.							
87035	5	.1969	19	.7480	.406	9/64	6	.572	.350	.365	.315	.386	.02	$2.05
87036	6	.2362	19	.7480	.406	9/64	6	.572	.350	.365	.315	.386	.02	2.05
87006			24	.9449	.406	5/32	7	.717	.468	.365	.315	.386	.02	2.05
87102	7	.2756	22	.8661	.406	5/32	7	.671	.437	.386	.315	.386	.02	2.05
87007			24	.9449	.406	5/32	7	.717	.468	.365	.315	.386	.02	2.05
87103	8	.3150	22	.8661	.406	5/32	7	.671	.437	.386	.315	.386	.02	2.05
87008			24	.9449	.406	5/32	7	.717	.468	.365	.315	.386	.02	2.05
87039	9	.3543	26	1.0236	.406	5/32	7	.717	.513	.365	.315	.386	.025	2.10
87009			30	1.1811	.500	7/32	7	.889	.591	.445	.354	.480	.025	2.00
87500	10	.3937	30	1.1811	.500	7/32	7	.889	.591	.445	.354	.480	.025	2.00
87011	11	.4331												
87501	12	.4724	32	1.2598	.500	.210	8	.968	.684	.451	.394	.480	.025	2.10
87013	13	.5118												
87014	14	.5512												
87502	15	.5906	35	1.3780	.500	.210	9	1.080	.802	.464	.433	.480	.025	2.20
87016	16	.6299												
87503	17	.6693	40	1.5748	.563	9/32	8	1.248	.888	.518	.472	.538	.025	2.50
87603	17	.6693	47	1.8504	.630	11/32	7	1.405	.974	.592	.551	.591	.04	3.30
87504	20	.7874	47	1.8504	.625	5/16	8	1.468	1.056	.582	.551	.600	.04	3.00
87604	20	.7874	52	2.0472	.748	13/32	7	1.602	1.116	.708	.591	.709	.04	4.00
87505	25	.9843	52	2.0472	.625	5/16	9	1.624	1.252	.582	.591	.600	.04	3.40
87605	25	.9843	62	2.4409	.827	13/32	8	1.852	1.413	.807	.669	.827	.04	4.80
87026	26	1.0236	52	2.0472	.625	5/16	9	1.624	1.252	.582	.591	.600	.04	3.40
87506	30	1.1811	62	2.4409	.787	11/32	9	1.946	1.548	.737	.630	.748	.04	4.70
87507	35	1.3780	72	2.8346	.827	7/16	9	2.290	1.880	.770	.669	.787	.04	5.45
87508	40	1.5748	80	3.1496	.945	7/16	10	2.616	2.051	.935	.827	.945	.04	6.40

N-D-SEAL BEARINGS — TYPE 88,000

Design



Section
Type 88,000

N-D-Seal bearings of the Type 88,000 carry closely fitting seals on both sides so that it is not necessary for the machine-builder to provide enclosures or seals of any kind to prevent entrance of dirt or escape of lubricant. Also, since these bearings are ready packed with the correct amount and grade of grease, the machine-builder or user is relieved of the problem of lubrication.

Because of the efficiency of the seals, it is possible to mount double N-D-Seal bearings in any position up to vertical without danger of grease leakage.

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

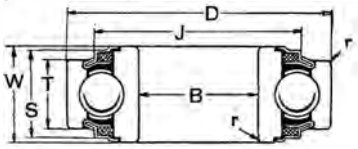
Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
88035 88036	252	200	158	138	126	117	110	99	93	81	74	64	54
88102 88103	412	327	260	227	206	191	180	164	152	133	121	105	89
88006 88007 88008 88039	422	335	266	232	211	196	184	168	156	136	124	108	91
88009 88500	663	526	419	364	332	307	290	264	244	213	194	169	140
88011 88501 88013	817	649	515	450	410	380	357	319	301	263	239	209	162
88014 88502 88016	969	769	610	533	485	450	424	388	357	312	284	248	200
88503 88603	1250 1320	980 1040	788 832	689 729	625 660	581 612	546 578	494 523	460 486	402 425	365 386	319 337	270 284
88504 88604	1495 1835	1200 1460	944 1160	827 1010	749 917	690 851	655 802	595 726	552 677	482 593	438 537	381 470	321 398
88505 88605	1775 2470	1410 1970	1120 1560	976 1360	889 1235	825 1140	775 1080	700 988	655 910	571 795	520 724	454 631	383
88026	1775	1410	1120	976	889	825	775	700	655	571	520	454	383
88506	2120	1680	1340	1165	1060	985	926	842	781	682	620	540	
88507	3315	2625	2090	1825	1655	1540	1450	1315	1220	1065	970	845	
88508	3680	2925	2320	2030	1840	1710	1610	1460	1350	1185	1080	940	

Note: For load ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."

N-D-SEAL BEARINGS — TYPE 88,000

Principal Dimensions

For radial or combined loads in either direction. Completely sealed and lubricated for life. For capacities under thrust or combined loads, use factors "F" given for N-D-Seal under "Bearing Selection."



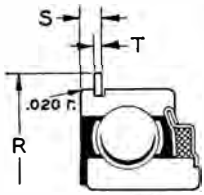
* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		J	S	T	* Radius r	Price
	mm	inch	mm	inch	mm	inch	Dia.	No.					
88035	5	.1969	19	.7480	12.6	.4970	9/64	6	.572	.415	.315	.02	$2.10
88036	6	.2362	19	.7480	12.6	.4970	9/64	6	.572	.415	.315	.02	2.10
88006			24	.9449	12.6	.4970	5/32	7	.717	.415	.315	.02	2.10
88102	7	.2756	22	.8661	12.6	.4970	5/32	7	.671	.457	.315	.02	2.10
88007			24	.9449	12.6	.4970	5/32	7	.717	.415	.315	.02	2.10
88103	8	.3150	22	.8661	12.6	.4970	5/32	7	.671	.457	.315	.02	2.10
88008			24	.9449	12.6	.4970	5/32	7	.717	.415	.315	.02	2.10
88039	9	.3543	26	1.0236	12.6	.4970	5/32	7	.717	.415	.315	.025	2.20
88009			30	1.1811	16.4	.6457	7/32	7	.889	.534	.354	.025	2.10
88500	10	.3937	30	1.1811	16.4	.6457	7/32	7	.889	.534	.354	.025	2.10
88011	11	.4331											
88501	12	.4724	32	1.2598	15.4	.6063	.210	8	.968	.506	.394	.025	2.20
88013	13	.5118											
88014	14	.5512					.210	9		.493			
88502	15	.5906	35	1.3780	14.4	.5669	.210	9	1.080	.493	.433	.025	2.30
88016	16	.6299					.235	8		.547			
88503	17	.6693	40	1.5748	16.6	.6536	3/32	8	1.248	.562	.472	.025	2.70
88603	17	.6693	47	1.8504	18	.7087	11/32	7	1.405	.633	.551	.04	3.50
88504	20	.7874	47	1.8504	17.8	.6988	5/16	8	1.468	.611	.551	.04	3.20
88604	20	.7874	52	2.0472	23	.9055	13/32	7	1.602	.828	.591	.04	4.30
88505	25	.9843	52	2.0472	16.8	.6594	5/16	9	1.624	.572	.591	.04	3.60
88605	25	.9843	62	2.4409	25	.9843	13/32	8	1.852	.944	.669	.04	5.30
88026	26	1.0236	52	2.0472	16.8	.6594	5/16	9	1.624	.572	.591	.04	3.60
88506	30	1.1811	62	2.4409	24	.9449	11/32	9	1.946	.844	.630	.04	5.20
88507	35	1.3780	72	2.8346	25	.9843	7/16	9	2.290	.964	.669	.04	6.00
88508	40	1.5748	80	3.1496	27	1.0630	7/16	10	2.616	1.043	.827	.04	7.00

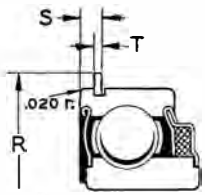
N-D-SEAL BEARINGS WITH SNAP RING

Types 48000, 487000 and 488000

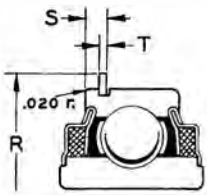
Except for the Snap Ring these bearings are identical in every way with equivalent N-D-Seal bearings, types 8000, 87000 and 88000 shown on pages 82, 85 and 87 respectively. For dimensions and capacities see these pages. Method of mounting is same as for regular non-sealed snap ring bearings shown on page 63.



Type 48000



Type 487000



Type 488000

Bearing Number			R	T	S	Price		
Single Seal	Shield and Seal	Double Seal				Type 48000	Type 487000	Type 488000
48009	**487009**	**488009**	1 23/64	.042	.120	$2.25	$2.35	$2.45
48500	**487500**	**488500**						
48011	**487011**	**488011**						
48501	**487501**	**488501**	1 7/16	.042	.120	2.35	2.45	2.55
48013	**487013**	**488013**						
48014	**487014**	**488014**						
48502	**487502**	**488502**	1 35/64	.042	.120	2.45	2.55	2.65
48016	**487016**	**488016**						
48503	**487503**	**488503**	1 3/4	.042	.120	2.75	2.85	3.05
48504	**487504**	**488504**	2 1/16	.042	.136	3.25	3.35	3.55
48505	**487505**	**488505**	2 17/64	.042	.136	3.65	3.75	3.95
48605	**487605**	**488605**	2 21/32	.065	.190	5.05	5.15	5.65
48026	**487026**	**488026**	2 17/64	.042	.136	3.65	3.75	3.95
48506	**487506**	**488506**	2 21/32	.065	.190	4.95	5.05	5.55
48507	**487507**	**488507**	3 5/64	.065	.190	5.65	5.80	6.35
48508	**487508**	**488508**	3 13/32	.065	.190	6.60	6.80	7.40

N-D-SEAL BEARINGS — TYPES WC-8000, 87,000 & 88,000

WC-8000

WC-87000

WC-88000

For dimensions of type WC-88000, see page 95

These bearings are similar to the N-D-Seal bearings shown on pages 84, 88 and 90 except that the outer ring is extended on the seal side to be flush with the inner ring. The outer ring is therefore, not standard single row bearing width, but gives maximum support in soft metal housings.

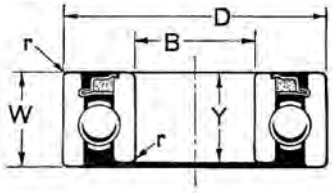
Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

Bearing Number			Revolutions per Minute												
WC-8000	WC-87000	WC-88,000	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
WC-8035 WC-8036	WC-87035 WC-87036	WC-88035 WC-88036	252	200	158	138	126	117	110	99	93	81	74	64	54
WC-8102 WC-8103	WC-87102 WC-87103	WC-88102 WC-88103	412	327	260	227	206	191	180	164	152	133	121	105	89
WC-8006 WC-8007 WC-8008 WC-8039	WC-87006 WC-87007 WC-87008 WC-87039	WC-88006 WC-88007 WC-88008 WC-88039	422	335	266	232	211	196	184	168	156	136	124	108	91
WC-8009 WC-8500	WC-87009 WC-87500	WC-88009 WC-88500	663	526	419	364	332	307	290	264	244	213	194	169	140
WC-8011 WC-8501 WC-8013	WC-87011 WC-87501 WC-87013	WC-88011 WC-88501 WC-88013	817	649	515	450	410	380	357	319	301	263	239	209	162
WC-8014 WC-8502 WC-8016	WC-87014 WC-87502 WC-87016	WC-88014 WC-88502 WC-88016	969	769	610	533	485	450	424	388	357	312	284	248	200
WC-8503 WC-8603	WC-87503 WC-87603	WC-88503 WC-88603	1250 1320	980 1040	788 832	689 729	625 660	581 612	546 578	494 523	460 486	402 425	365 386	319 337	270 284
WC-8504 WC-8604	WC-87504 WC-87604	WC-88504 WC-88604	1495 1835	1200 1460	944 1160	827 1010	749 917	690 851	655 802	595 726	552 677	482 593	438 537	381 470	321 398
WC-8505 WC-8605	WC-87505 WC-87605	WC-88505 WC-88605	1775 2470	1410 1970	1120 1560	976 1360	889 1235	825 1140	775 1080	700 988	655 910	571 795	520 724	454 631	383
WC-8026 WC-8506	WC-87026 WC-87506	WC-88026 WC-88506	1775 2120	1410 1680	1120 1340	976 1165	889 1060	825 985	775 926	700 842	655 781	571 682	520 620	454 540	383
WC-8507 WC-8508	WC-87507 WC-87508	WC-88507 WC-88508	3315 3680	2625 2925	2090 2320	1825 2030	1655 1840	1540 1710	1450 1610	1315 1460	1220 1350	1065 1185	970 1080	845 940	

N-D-SEAL BEARINGS — TYPES WC-8000 & WC-87,000

Principal Dimensions



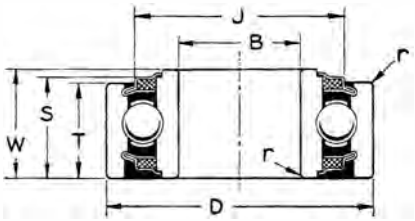
(For dimensions of WC-88000 see page 95)

*Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Bearing Number		Bore B		Diameter D		Width		Balls		* Radius r	Price	
WC-8000	WC-87000	mm	inch	mm	inch	W	Y	Dia.	No.		WC-8000	WC-87000
WC-8035	**WC-87035**	5	.1969	19	7480	.406	.386	9/64	6	.02	$1.95	$2.05
WC-8036	**WC-87036**	6	.2362	19	.7480	.406	.386	9/64	6	.02	1.95	2.05
WC-8006	**WC-87006**			24	.9449	.406	.386	5/32	7	.02	1.95	2.05
WC-8102	**WC-87102**	7	.2756	22	.8661	.406	.386	5/32	7	.02	1.95	2.05
WC-8007	**WC-87007**			24	.9449	.406	.386	5/32	7	.02	1.95	2.05
WC-8103	**WC-87103**	8	.3150	22	.8661	.406	.386	5/32	7	.02	1.95	2.05
WC-8008	**WC-87008**			24	.9449	.406	.386	5/32	7	.02	1.95	2.05
WC-8039	**WC-87039**	9	.3543	26	1.0236	.406	.386	5/32	7	.025	2.00	2.10
WC-8009	**WC-87009**			30	1.1811	.500	.480	7/32	7	.025	1.90	2.00
WC-8500	**WC-87500**	10	.3937	30	1.1811	.500	.480	7/32	7	.025	1.90	2.00
WC-8011	**WC-87011**	11	.4331									
WC-8501	**WC-87501**	12	.4724	32	1.2598	.500	.480	.210	8	.025	2.00	2.10
WC-8013	**WC-87013**	13	.5118									
WC-8014	**WC-87014**	14	.5512									
WC-8502	**WC-87502**	15	.5906	35	1.3780	.500	.480	.210	9	.025	2.10	2.20
WC-8016	**WC-87016**	16	.6299									
WC-8503	**WC-87503**	17	.6693	40	1.5748	.563	.538	9/32	8	.025	2.40	2.50
WC-8603	**WC-87603**			47	1.8504	.630	.591	11/32	7	.04	3.20	3.30
WC-8504	**WC-87504**	20	.7874	47	1.8504	.625	.600	5/16	8	.04	2.90	3.00
WC-8604	**WC-87604**			52	2.0472	.748	.709	13/32	7	.04	3.90	4.00
WC-8505	**WC-87505**	25	.9843	52	2.0472	.625	.600	5/16	9	.04	3.30	3.40
WC-8605	**WC-87605**			62	2.4409	.827	.827	13/32	8	.04	4.70	4.80
WC-8026	**WC-87026**	26	1.0236	52	2.0472	.625	.600	5/16	9	.04	3.30	3.40
WC-8506	**WC-87506**	30	1.1811	62	2.4409	.787	.748	11/32	9	.04	4.60	4.70
WC-8507	**WC-87507**	35	1.3780	72	2.8346	.827	.787	7/16	9	.04	5.30	5.45
WC-8508	**WC-87508**	40	1.5748	80	3.1496	.945	.945	7/16	10	.04	6.20	6.40

N-D-SEAL BEARINGS — TYPE WC-88,000

Principal Dimensions

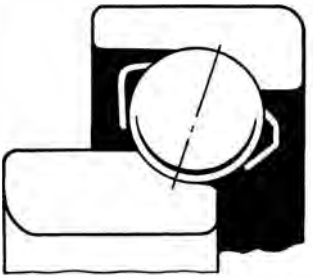


*Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

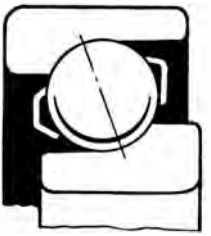
Brg. No.	Bore B		Diameter D		Width W	Balls		J	S	T	* Radius r	Price
	mm	inch	mm	inch		Dia.	No.					
WC-88035	5	.1969	19	.7480	.4970	9/64	6	.572	.456	.406	.02	$2.10
WC-88036	6	.2362	19	7480	.4970	9/64	6	.572	.456	.406	.02	2.10
WC-88006			24	.9449	.4970	5/32	7	.717	.456	.406	.02	2.10
WC-88102	7	.2756	22	.8661	.4970	5/32	7	.671	.477	.406	.02	2.10
WC-88007			24	.9449	.4970	5/32	7	.717	.456	.406	.02	2.10
WC-88103	8	.3150	22	.8661	.4970	5/32	7	.671	.477	.406	.02	2.10
WC-88008			24	.9449	.4970	5/32	7	.717	.456	.406	.02	2.10
WC-88039	9	.3543	26	1.0236	.4970	5/32	7	.717	.456	.406	.025	2.20
WC-88009			30	1.1811	.6457	7/32	7	.889	.590	.500	.025	2.10
WC-88500	10	.3937	30	1.1811	.6457	7/32	7	.889	.590	.500	.025	2.10
WC-88011	11	.4331										
WC-88501	12	.4724	32	1.2598	.6063	.210	8	.968	.556	.500	.025	2.20
WC-88013	13	.5118										
WC-88014	14	.5512				.210	9		.530			
WC-88502	15	.5906	35	1.3780	.5669	.210	9	1.080	.530	.500	.025	2.30
WC-88016	16	.6299				.235	8		.557			
WC-88503	17	.6693	40	1.5748	.6536	9/32	8	1.248	.608	.563	.025	2.70
WC-88603			47	1.8504	.7087	11/32	7	1.405	.671	.630	.04	3.50
WC-88504	20	.7874	47	1.8504	.6988	5/16	8	1.468	.655	.625	.04	3.20
WC-88604			52	2.0472	.9055	13/32	7	1.602	.867	.748	.04	4.30
WC-88505	25	.9843	52	2.0472	.6594	5/16	9	1.624	.616	.625	.04	3.60
WC-88605			62	2.4409	.9843	13/32	8	1.852	.964	.827	.04	5.30
WC-88026	26	1.0236	52	2.0472	.6594	5/16	9	1.624	.616	.625	.04	3.60
WC-88506	30	1.1811	62	2.4409	.9449	11/32	9	1.946	.894	.787	.04	5.20
WC-88507	35	1.3780	72	2.8346	.9843	7/16	9	2.290	.974	.827	.04	6.00
WC-88508	40	1.5748	80	3.1496	1.0630	7/16	10	2.616	1.053	.945	.04	7.00

FRONT WHEEL BEARINGS — TYPE 9000

Design and Load Characteristics



Inner Bearing



Outer Bearing

Typical Sections — Type 9000

Type 9000 bearings are designed especially for the load conditions peculiar to front wheel service, where heavy radial and thrust loads, imposed when turning corners sharply or at high speeds, may alternate with severe pounding or vibratory loads set up when traveling rough or rutted roads.

These bearings are of the angular contact type and are made in pairs for application to the inner and outer front wheel positions, the larger in each pair being made with a wide or extended inner ring, so as to furnish a smoothly ground surface for the felt seal customarily employed.

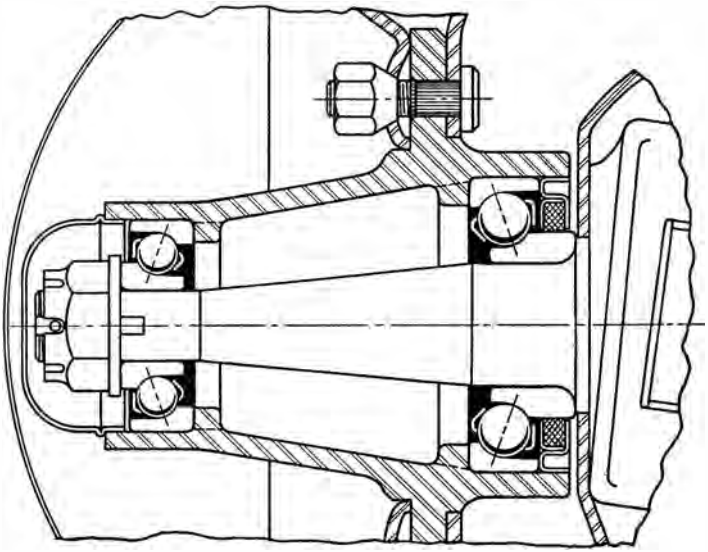
New Departure Front Wheel bearings are separable, thus facilitating assembly or removal of the wheels from the spindles. Since the outer rings rotate, they are press fitted in the hubs and the inner rings are an easy push fit.

Front Wheel bearings are set up in the correct running adjustment by means of a nut on the end of the spindle and in this way are so opposed, with balls and races in firm angular contact, that the wheels are securely held against combined loads with thrust from either direction.

For part numbers of assembled bearings or of component parts, see pages following.

FRONT WHEEL BEARINGS — TYPE 9000

Typical Mounting



Since New Departure Front Wheel bearings are to be mounted on the spindle with a push fit, so that the inner rings may have a slight creep, the heavy washer interposed between the outer bearing ring and the locknut should be keyed to the spindle. The usual method is to use a washer having a tongue fitting into a groove or keyway in the end of the spindle. In this way, should the cotter pin shear or come out, the inner ring creep cannot rotate the nut.

Although one cotter pin hole in the spindle may be used, a better bearing adjustment can be obtained where two holes are provided, drilled 90° apart.

Front Wheel bearings should be lubricated with a firm sodium base grease having a consistency equivalent to a No. 3 cup grease. The separator only should be packed full, and the space in the hub between bearings left open.

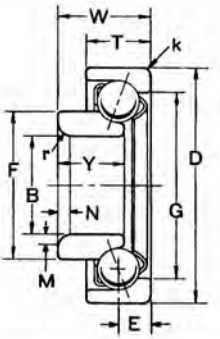
For bearing dimensions and Front Hub and Spindle machining limits, see next page.

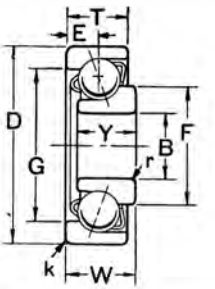
FRONT WHEEL BEARINGS — TYPE 9000

Principal Dimensions* and Load Ratings

Angular contact, separable bearings, particularly adapted to the radial and thrust loads encountered in front wheel service. Recommended spindle limits are in all cases .0009" to .0014" smaller than nominal bearing bore, producing shaft fits of .0004" loose to .0015" loose. Recommended housing bore limits are .0010" to .0020" smaller than nominal bearing outer diameter, dimension D, producing bearing fits of .0005" tight to .0025" tight. The indicated capacities are Radial Load Ratings. For capacities under thrust or combined loads, see "Bearing Selection."

Load Ratings Based on Average Life of 3800 Hours





Brg. No.	Bore B	Diameters D	F	G	Widths W	T	Y	Balls Dia.	No.	Radii k	r	E	M	N	Capacity 300 R.P.M.	600 R.P.M.
INNER BEARINGS																
909022	1.1250	2.5000	1.688	2.015	.984	.625	.844	13/32	11	.090	.190	.313	.200	.205	1735	1375
909002	1.1904	2.963	1.803	2.333	1.145	.770	.870	1/2	11	.090	.200	.400	.200	.220	2280	1810
909032	1.2500	2.9630	1.875	2.333	1.145	.770	.870	1/2	11	.090	†	.400	.175	.250	2295	1820
909042	1.2815	2.9630	1.875	2.333	1.145	.770	.870	1/2	11	.090	.300	.400	.172	.250	2295	1820
909004	1.2815	3.375	2.050	2.611	1.308	.933	.964	5/8	10	.130	.200	.500	.200	.210	2820	2240
909024	1.3128	3.1496	1.990	2.500	1.226	.851	.917	9/16	11	.130	.200	.450	.200	.220	2655	2110
909026	1.4065	3.1496	2.100	2.543	1.226	.851	.917	17/32	12	.090	.190	.450	.190	.207	2690	2135
909008	1.4384	3.930	2.396	3.065	1.470	1.095	1.058	3/4	10	.130	.200	.600	.200	.210	3640	2890
909028	1.5000	3.750	2.332	2.970	1.450	1.015	1.070	11/16	10	.130	.200	.550	.200	.210	3300	2620
909030	1.625	4.0625	2.552	3.217	1.562	1.095	1.187	3/4	11	.130	.200	.600	.200	.210	4000	3180
909010	1.625	4.2375	2.552	3.349	1.551	1.176	1.104	13/16	10	.130	.200	.650	.200	.210	4150	3300
OUTER BEARINGS																
909021	.6875	1.8750	1.157	1.453	.688	.563	.563	11/32	9	.060	.035	.313			1090	865
909001	.7503	2.080	1.274	1.614	.708	.608	.595	3/8	10	.090	.035	.300			1325	1050
909023	.7503	2.250	1.340	1.733	.790	.690	.659	15/32	9	.090	.035	.375			1570	1245
909003	.8128	2.437	1.450	1.868	.829	.729	.688	15/32	9	.130	.035	.375			1650	1305
909025	.8440	2.2500	1.406	1.765	.790	.690	.659	7/16	10	.090	.030	.375			1615	1280
909035	.9379	2.3750	1.500	1.859	.790	.690	.659	7/16	10	.090	.030	.375			1685	1335
909027	.9379	2.8125	1.700	2.156	.910	.850	.800	9/16	9	.130	.035	.450			2120	1680
909007	.9379	3.030	1.700	2.321	1.031	.931	.844	5/8	9	.130	.035	.500			2415	1920
909009	1.000	3.1425	1.844	2.416	1.073	.973	.876	21/32	9	.130	.035	.525			2595	2060
909029	1.125	3.1875	1.937	2.483	1.073	.973	.875	21/32	9	.130	.035	.525			2640	2095

* All dimensions in inches. † 35° Chamfer.

ENGINEERING SERVICE

In a publication of the size of this Data Book, it is impossible to give as complete and detailed information as is frequently found desirable. No matter how well ball bearings may be made, their performance can be seriously affected by improperly designed mountings. In other words, no bearing is better than the method in which it is applied. For this reason, if you have not already taken advantage of New Departure's complete and expert engineering service, we would suggest that you do so at the first opportunity.

This service is yours for a telephone call or a letter and involves not the slightest obligation. It may save you time, trouble or expense.

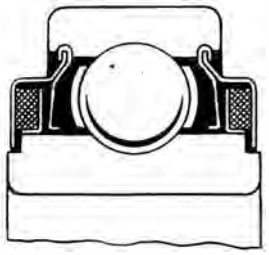
FRONT WHEEL BEARINGS — TYPE 9000

Parts List

Position	Complete Assembly		Cup		Cone		Separator and Ball Assembly	
	Part No.	Price	Part No.	Price	Part No.	Price	Part No.	Price
Outer	909021	On Application	909621	On Application	909521	On Application	909721	On Application
Inner	909022		909622		909522		909722	
Outer	909001		909601		909501		909701	
Inner	909002		909602		909502		909702	
Outer	909023		909623		909523		909723	
Inner	909024		909624		909524		909724	
Outer	909003		909603		909503		909703	
Inner	909004		909604		909504		909704	
Outer	909025		909625		909525		909725	
Inner	909032		909602		909532		909702	
Outer	909035		909635		909535		909735	
Inner	909042		909602		909542		909702	
Inner	909026		909626		909526		909726	
Outer	909027		909627		909527		909727	
Inner	909028		909628		909528		909728	
Outer	909007		909607		909507		909707	
Inner	909008		909608		909508		909708	
Outer	909029		909629		909529		909729	
Inner	909030		909630		909530		909730	
Outer	909009		909609		909509		909709	
Inner	909010		909610		909510		909710	

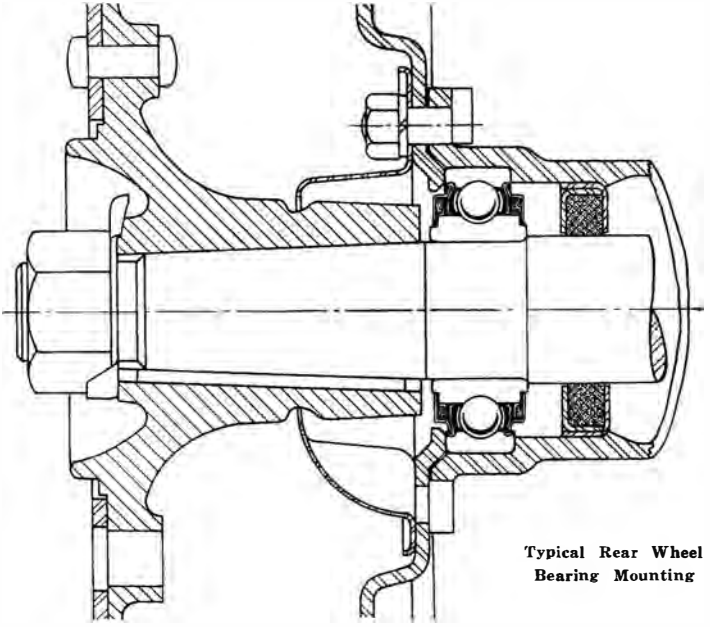
REAR WHEEL BEARINGS — TYPE 88,100

Design and Mounting



New Departure Rear Wheel bearings are lubricated for life with their own special grease and are completely enclosed on both sides with seals that are permanently efficient. These bearings are proof against maladjustment or neglect. No dirt or abrasives can ever get in to cause looseness or to shorten their life. No grease can escape to cause slipping brakes.

New Departure Rear Wheel bearings permit the axle engineer to use the simplest, strongest and most fool-proof mounting yet devised. One bearing locates each axle shaft perfectly and being mounted without locknuts, it gives the strongest possible shaft with no threads or grooves to cause weakness. Though demountable, the bearing is press-fitted to its seat and during assembly or removal of driveshaft the bearing is, in effect, an integral part of the shaft.

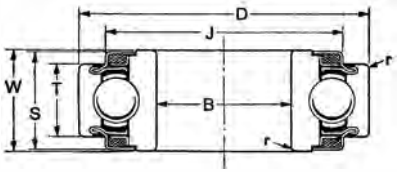


Typical Rear Wheel Bearing Mounting

Not only does an exceptionally strong wheel mounting result, but the elimination of grease cups or gun fittings and the absence of felt washers or washer retainers on the wheel side, with no finishing of hub for felt seal contact, means a mounting of definitely lowered cost.

REAR WHEEL BEARINGS — TYPE 88,100

Dimensions and Load Ratings



For radial or combined loads with thrust from either direction. Especially adapted to loads occurring in the automotive rear wheel position, where axle shaft location is by a single bearing.

* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

Brg. No.	Bore B		Diameter D		Width W		Balls		J	S	T	* Radius r	Price
	mm	inch	mm	inch	mm	inch	Dia.	No.					
88136		1.3120	67	2.6378	24	.9449	3/8	10	2.215	.905	.669	.04	$ 5.75
88107	35	1.3780	72	2.8346	25	.9843	7/16	9	2.290	.964	.669	.04	6.00
88127E	35	1.3780		2.9688		1.0455	15/32	9	2.434	1.026	.740	.04	6.90
88108E		1.4995	80	3.1496	27	1.063	1/2	9	2.616	1.053	.827	.04	7.00
88128		1.5312	80	3.1496		1.083	1/2	9	2.616	1.053	.827	.04†	7.00
88109		1.6557	85	3.3465	27	1.063	15/32	10	2.813	1.023	.827	.04	7.80
88110		1.6557	90	3.5433	30	1.1811	15/32	11	3.031	1.161	.866	.04	9.10
D88609	45	1.7717	100	3.9370	35	1.3780	21/32	8	3.236	1.358	.984	.06	11.10

† Has outer ring corner radius of .04, but inner ring radius is .09.

Radial Load Ratings

Load Ratings Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds, with rotating inner ring. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute										
	50	**100**	**200**	**300**	**400**	**500**	**600**	**800**	**1000**	**1500**	**2000**
88136	2920	2315	1835	1605	1460	1355	1275	1160	1075	942	853
88107	3315	2625	2090	1825	1655	1540	1450	1315	1220	1065	970
88127E	3615	2875	2275	1990	1805	1680	1580	1435	1330	1160	1055
88108E	3975	3150	2500	2190	1980	1840	1735	1575	1460	1275	1160
88128	3975	3150	2500	2190	1980	1840	1735	1575	1460	1275	1160
88109	4100	3255	2580	2260	2050	1900	1790	1630	1510	1325	1200
88110	4520	3580	2840	2485	2240	2100	1980	1790	1660	1450	1320
D88609	5160	4100	3260	2840	2580	2400	2255	2055	1905	1660	1510

Table 1 Combined Load Factors F, for Conversion to Radial Equivalent

CORRECTION FACTORS — F

Thrust ÷ Radial T/R	Single Row 1000, 4000 and Magneto	Single Row 3000, 30, N-D-Seal and Rear Wheel	Double Row		Front Wheel 9000	Difrax, One Row
			Smaller than 4 bore light 3 bore med.	Larger than 3 bore light 2 bore med.		
.05	.99	.99	.98	1.00	1.00	1.00
.10	1.00	.99	.97	1.00	.99	.99
.15	1.02	.99	.97	1.00	.99	.99
.20	1.04	1.00	.97	1.00	.99	.99
.25	1.06	1.00	.97	1.00	.99	.99
.30	1.10	1.01	.97	1.01	.99	1.00
.35	1.14	1.02	.98	1.01	.99	1.01
.40	1.19	1.04	.98	1.02	1.00	1.02
.45	1.24	1.06	.99	1.03	1.01	1.04
.50	1.30	1.09	1.00	1.05	1.02	1.06
.60		1.14	1.06	1.10	1.07	1.11
.70		1.21	1.19	1.15	1.13	1.17
.80		1.28	1.33	1.21	1.20	1.24
.90		1.35	1.48	1.28	1.27	1.31
1.00		1.44	1.64	1.34	1.36	1.39
1.25		1.66	2.10	1.52	1.56	1.62
1.50		1.90	2.58	1.73	1.80	1.85
1.75		2.17	3.13	1.97	2.05	2.11
2.00		2.45	3.61	2.20	2.30	2.39
3.00		3.62	5.26	3.18	3.31	3.47
4.00		4.65	6.77	4.18	4.25	4.46
5.00		5.63	8.26	5.20	5.18	5.41
7.50		8.07	11.98	7.74	7.45	7.78
10.00		10.57	15.69	10.37	9.74	10.20
Pure Thrust		1.00	1.45	1.00	.92	.96

Thrust ÷ Radial T/R	Radax 20,000			Radax 30,000		
	One Row	Duplex DF and DB	Duplex DT	One Row	Duplex DF	Duplex DT
.05	.99	.98		.99	1.00	
.10	.98	.97		.98	1.00	
.15	.98	.97		.97	1.00	
.20	.97	.97		.96	1.00	
.25	.97	.97		.96	1.00	
.30	.98	.97		.96	1.01	
.35	.98	.98		.96	1.01	
.40	.98	.98		.96	1.02	
.45	.98	.99		.96	1.03	
.50	.99	1.00		.96	1.05	
.60	1.01	1.06		.97	1.10	
.70	1.07	1.19		.99	1.15	
.80	1.14	1.33		1.01	1.21	
.90	1.21	1.48		1.04	1.28	
1.00	1.29	1.64		1.07	1.34	
1.25	1.49	2.10		1.16	1.52	
1.50	1.71	2.58		1.27	1.73	
1.75	1.94	3.13		1.38	1.97	
2.00	2.17	3.61		1.50	2.20	
3.00	3.09	5.26		2.05	3.18	
4.00	3.98	6.77		2.60	4.18	
5.00	4.84	8.26		3.17	5.20	
7.50	7.05	11.98		4.60	7.74	
10.00	9.23	15.69		6.08	10.37	
Pure Thrust	.86	1.45	.77	.59	1.00	.53

Table 2 Computed Radial Load, Life Modifiers L, for giving Desired Bearing Life

Bearing Life Modifiers, $L = \frac{\text{Rated capacity}}{\text{Load on bearing}}$

Service	1 year	2 years	3 years	5 years	10 years
10 hours a day	.88	1.10	1.26	1.50	1.89
24 hours a day	1.17	1.48	1.69	2.00	2.52

For limiting thrust Loads, see Page 101.

BEARING SELECTION

In the majority of applications, ball bearings are required to resist some combination of thrust and radial loads. Since such combinations may vary over a wide range, it is manifestly impracticable to list bearing capacities for such extremely diversified conditions.

In order, therefore, to bring the selection of bearing size to the most straightforward method, directions are here given whereby thrust or combined loads may be converted to their equivalents in radial load. After use of the proper life modifier, as explained below, direct reference may be made to the basic radial load ratings for determination of the correct bearing size.

R = Computed radial load on bearing.
T = Computed thrust load on bearing.
S = Revolutions per minute of bearing.
F = Radial equivalent conversion factor, Table 1.
L = Life modifier, Table 2.
C = Radial, or equivalent radial capacity, modified to give desired bearing life.

Then, for bearings under radial load, $C = R \times L$.

For bearings under thrust and radial load, divide thrust by radial load. From the quotient thus obtained, read across Table 1 to factor "F" under type of bearing required. Then, $C = R \times F \times L$.

For bearings under pure thrust, $C = T \times F \times L$.

To Determine Bearing Size with Rotating Inner Ring

Enter load rating tables with load "C" obtained above and under proper revolutions per minute, find nearest tabulated capacity and at side read bearing number.

Final selection of bearing will be governed by most important controlling dimension, either shaft or housing.

To Determine Bearing Size with Rotating Outer Ring

Bearing capacity is reduced because of higher ball speed; therefore, in addition to capacity "C" obtained above, the speed "S" must be corrected by modifier "M," Table 3, in order to obtain same endurance as with inner ring rotating.

Then, $S \times M$ = Corrected speed for outer ring rotating.

Use corrected speed in entering load rating tables.

Table 3 Outer Ring Rotating, Speed Correctors **M**, for Modification of Bearing Operating Speed

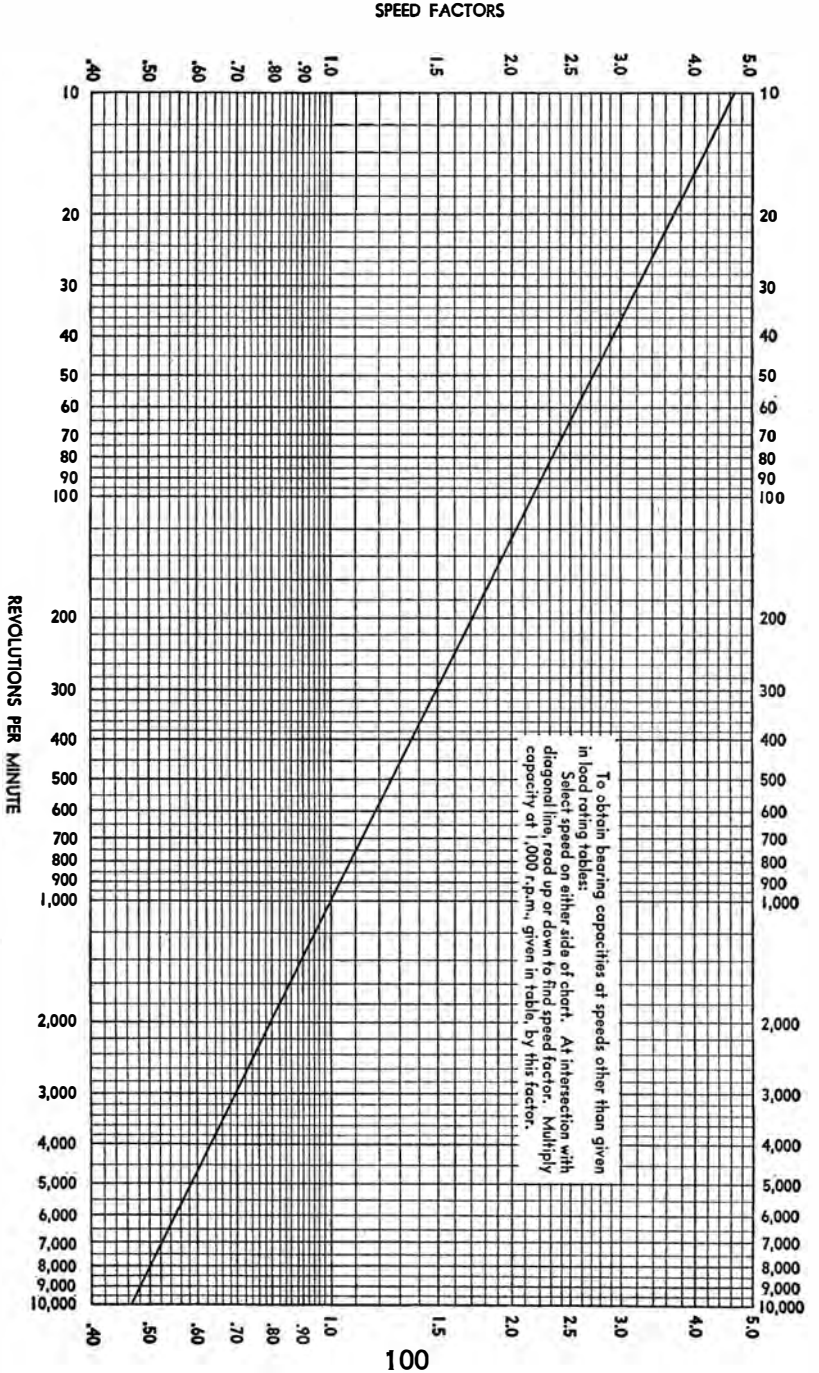
Bearing Series	Bore Sizes	S. Row 1000 S. Row 3000 Shielded Bearings	D. Row 5000 Radax 30,000	Difrax Flan. Pr.	Radax 20,000	Bore Sizes	S. Row 30	Magneto ND 8-25	ND Seal	Front Wheel
Light	0	1.46	1.37	1.42	1.42					
Medium	to	1.61	1.48	1.57	1.54	All	1.79	1.62	1.64	1.7
Heavy	22	1.74	1.54	1.76	1.66					

Table 4 Load ratings below 50 r.p.m. = capacity at 50 r.p.m. × N
Load ratings at 850 r.p.m., up = capacity at 1000 r.p.m. × N

R.P.M.	10	15	20	25	30	35	40	45	850	1150	1750	3500
Factor N	1.710	1.494	1.357	1.260	1.186	1.126	1.077	1.035	1.06	.95	.83	.66

For determination of load ratings at other speeds not given in load rating tables in this book, see next page.

Bearing Capacities at Speeds Not Given in Load Rating Tables



BEARING SELECTION

Limiting Thrust Loads

Single Row Bearings. Types 3000, 30 and N-D-Seal, Double Row bearings, Type 5000, and Radax, Types 20,000 and 30,000 subjected to pure thrust loads should be selected in accordance with the pure thrust factors given in Table 1 on Page 98, but in no case should the thrust exceed the limiting loads given below.

Basic Brg. No.	Single Row 3000, 30 N-D-Seal and Rear Wheel	Double Row	Radax Type 20,000	Radax Type 30,000	Basic Brg. No.	Single Row 3000, 30 N-D-Seal and Rear Wheel	Double Row	Radax Type 20,000	Radax Type 30,000
34	48				**213**	2190	11250	9000	10000
35	60				**313**	4130	20105	14700	16350
36	60				**413**			19660	21875
37	87				**214**	2440	12530	9640	10725
38	87				**314**	4720	22970	16730	18600
39	126				**414**			24010	26700
200	171	541	468		**215**	2700	13890	10285	11425
300	224	1060			**315**	5030	24480	18890	21000
					415			28810	32050
201	180	695	637						
301	282	1100			**216**	3270	15810	12240	13600
					316	5680	27635	21170	23550
202	202	773	927		**416**			31365	34900
302	349	1150							
					217	4400	18820	13470	15000
203	323	1320	1210		**317**	6370	30980	23590	26200
303	422	1990	1850		**417**			34030	37850
204	399	1820	1610	1790	**218**	4500	22090	15620	17375
304	727	2190	1960	2180	**318**	7100	33560	26140	29025
404			3530	3925	**418**			39700	44100
205	448	1985	1770	1970	**219**	5200	25615	17930	19950
305	830	3010	2670	2970	**319**	7860	37400	28820	32050
405			5100	5450					
					220	5530	29405	20400	22675
206	1020	3210	2295	2550	**320**	9510		34570	38400
306	1110	4690	3485	3875					
406			5200	6600	**221**	6290		23030	25600
					321	10400		37640	41850
207	1390	4120	3120	3475					
307	1420	6120	4850	5400	**222**	7100	33080	25820	28700
407			7200	7850	**322**	11320		44170	49100
208	1530	5600	4080	4540	**224**	7810		28770	32000
308	1775	7485	5990	6650	**324**	13375		51230	56950
408			9200	10250					
					226	8760		34000	37800
209	1700	6000	4220	4900	**326**	15410		58810	65300
309	2170	9350	7250	8050					
409			10670	11900	**228**	9760		37485	41600
					328			66910	74350
210	1720	6400	4760	5300					
310	2600	11570	8630	9600	**230**			41140	45750
410			12250	13625	**330**			75540	83950
211	1780	8360	6025	6700					
311	3070	13770	11040	12275					
411			13940	15500					
212	1950	9440	7440	8275					
312	3580	17430	12810	14225					
412			15740	17500					

EXPLANATION OF FITS

Shaft and Housing Fits

In the majority of ball bearing applications, the shaft rotates and the housing is stationary. In some instances, however, such as various pulley and wheel mountings, the shaft is the stationary member. The following rule covers the fits to be used for both cases.

In general, ball bearings should be applied with the rotating ring a firm press or interference fit, and the stationary ring a close push fit, the degree of tightness or looseness depending upon the service for which the bearings are intended. This rule is founded upon the following essential facts:

1. Under normal load conditions, a press-fitted ring will not slip or turn on or in a rotating shaft or housing, and wear in the latter parts is thereby avoided.

2. A ring fitted with the recommended amount of looseness to a stationary shaft or housing is allowed to creep very slowly, with the result that fresh portions of the ball raceway are continually brought into the heaviest loaded area, thus avoiding prolonged stressing of one part only of the raceway.

3. A bearing having one ring push-fitted and not clamped can move axially so as to avoid the imposition of excessive thrust loads, such as might be caused by changes in shaft length due to expansion.

4. General machine assembly may be accomplished with greater ease where one of the bearing rings is a push fit.

The principal exception to the general fit rule above is to be noted in the case of Flanged Precision bearings, where a relatively tight press fit may be used on the shaft and a light press or tap fit in the housing. In such cases, however, the bearings are not adversely affected, since they are usually of generous size in proportion to the load, being selected for spindles of extra diameter for rigidity, and being axially preloaded, all of the balls share to a considerable extent in the load. The tighter housing fits employed for these bearings do not affect assembly, since the bearings are made separable.

Tolerances

Manufacturing tolerances for the bores, outside diameters, widths and eccentricity of ball bearings as standardized by the Society of Automotive Engineers are given on one of the next pages and the fit tables for standard bearings following are based upon them.

EXPLANATION OF FITS

Tolerances—Continued

The "Theoretical fit" given in these tables represents the maximum of either tightness or looseness that could be obtained in practice *were the bearings, housings or shafts to vary the full extent of the limits indicated.*

However, in actual practice, the fits obtained are very much more uniform, since extremes in either bearings, or shafts and housings, rarely occur. In more than 95% of bearing installations the fits obtained are equal to those listed in tables under "Expected fit."

The reason for this uniformity in practice may best be explained by an example:

For a 7 bore bearing, the standard bore tolerance is +.0000" —.0005", giving limits of 1.3780" —1.3775". The shaft limits for this size bearing are 1.3784" —1.3779"; therefore, if bearing and shaft both ran to the extreme limits, it would be possible to obtain fits either .0009" tight or .0001" loose.

With modern precision grinding machines, which very nearly eliminate the human element, bearing bores are held uniformly close to the low limit, in the case of a standard New Departure 7 bore bearing, averaging within 1.3778" —1.3776".

In grinding a shaft, the operator normally stops as soon as the diameter comes to or just within the shaft high limit, averaging for the seat to take a 7 bore bearing, 1.3783" —1.3779". With these averages uniformly maintained in good practice, the actual fits obtained would be from .0001" to .0007" tight.

Tight and Loose Bearings

When a bearing is mounted on a shaft with a press fit, the inner ring expands a certain amount, depending upon the tightness of the fit. As a result, the bearing has less end play or internal looseness after mounting.

For average conditions, New Departure bearings are supplied with sufficient internal looseness so that, using the recommended press fit, the correct bearing operating fit-up will be uniformly obtained.

There are various applications, however, where ball bearings are required to be either tighter or looser than ordinarily supplied. In such cases it is very undesirable to attempt to achieve this difference by mounting the bearing tighter or looser on the shaft. To do so would, in many instances, result in mounting fits which would adversely affect bearing performance. Therefore, in ordering bearings where greater than normal tightness or looseness is indicated, complete details of the application should be stated so that bearings of suitable internal characteristics may be furnished.

BEARING TOLERANCES

*S. A. E. or A. B. E. C.–1 Standard

(Formerly New Departure "X")

New Departure Ball Bearings for general application are held to within the limits of the S. A. E. Standard tolerances indicated in the table below. Bearings made to smaller tolerances for applications requiring closer mounting limits or greater precision are given on pages 106, 109 and 112.

BORE				OUTSIDE DIAMETER				
Type of Bearings	Bore No.	Insp. Limits		Bore Numbers			Insp. Limits	
		Plus	Minus	Light	Medium	Heavy	Plus	Minus
Type 30	34–39	.0000	.0003	34.39			.0000	.0004
	0–3	.0000	.0003	0			.0000	.0004
Single Row,	4–6	.0000	.0004	1–4	0–3		.0000	.0005
Double Row,	7–10	.0000	.0005	5–8	4–7	3–5	.0000	.0006
Radax,	11–16	.0000	.0006	9–13	8–11	6–9	.0000	.0008
Duplex*,	17–24	.0000	.0008	14–20	12–17	10–14	.0000	.0010
Difrax,	26–36	.0000	.0010	21–28	18–24	15–20	.0000	.0012
N-D-Seal	38–52	.0000	.0012	30–40	26–34		.0000	.0016
	56–64	.0000	.0016	44–64	36–56		.0000	.0024
N-D-Seal	8006–16	.0000	.0003	8006–8009			.0000	.0004
	8026	.0000	.0004	8011–8016			.0000	.0005
				8026			.0000	.0006
Front Wheel	all	.0001	.0005	all			.0005	.0005
	8–17	.0000	.0003	8–10			.0004	.0000
Magneto	20–25	.0000	.0004	12–25			.0005	.0000

WIDTH				ECCENTRICITY			
Type of Bearings	Bore No.	Insp. Limits		Type of Bearings	Bore No.	Insp. Limits	
		Plus	Minus			Cup	Cone
Type 30 individual rings	34–39	.000	.005	Type 30	34–39	.0006	.0003
Single Row, Double Row, Radax, Difrax, N-D-Seal, individual rings	0–16	.000	.005				
	17–36	.000	.005				
	38–64	.000	.010	Single Row,	0–5	.0008	.0004
				Double Row,	6–8	.0012	.0008
				Radax,	9–15	.0016	.0010
				Duplex,	16–22	.0018	.0012
				Difrax,	24–40	.0020	.0014
Radax assembled	0–12	.003	.003	N-D-Seal	44–64	.0024	.0018
	13–16	.005	.005				
	17–34	.010	.010				
				N-D-Seal	8006–9	.0008	.0003
					8011–26	.0008	.0004
				Front Wheel	all	.0010	.0005
Magneto assembled	all	.002	.002	Magneto	8–25	.0008	.0004

* Society of Automotive Engineers and Annular Bearing Engineers Committee.

SHAFT MOUNTING FITS

For S. A. E. or A. B. E. C.–1 Standard Bearings

The *"theoretical fits"* given in this table are those which could result if the shaft diameters and bearing bores were to vary the full limits of their respective tolerances. Actually, bearing bores are ground uniformly close to the minimum limit and investigation by the Annular Bearing Engineers Committee has proved that well over 95% of actual installations result in the *"expected fits"* given below.

Bearing and Bore Numbers	BEARING BORE		SHAFT REVOLVING						SHAFT STATIONARY					
	Diameters		Diameters		Expected Fit		Theoret. Fit		Diameters		Expected Fit		Theoret. Fit	
	Max.	Min.	Max.	Min.	Loose or Tight	Tight	Loose	Tight	Max.	Min.	Max. Loose	Min. Loose	Loose	Tight
34	.1575	.1572	.1576	.1573					.1573	.1570				
35	.1969	.1966	.1970	.1967	.0001L	.0003	.0002	.0004	.1967	.1964	.0004	.0000	.0005	.0001
36	.2362	.2359	.2363	.2360					.2360	.2357				
37	.2756	.2753	.2757	.2754					.2754	.2751				
38	.3150	.3147	.3151	.3148	.0001L	.0003	.0002	.0004	.3148	.3145	.0004	.0000	.0005	.0001
39	.3543	.3540	.3544	.3541					.3541	.3538				
8006	.2362	.2359	.2363	.2360					.2360	.2357				
8007, 8102	.2756	.2753	.2757	.2754	.0001L	.0003	.0002	.0004	.2754	.2751	.0004	.0000	.0005	.0001
8008, 8103	.3150	.3147	.3151	.3148					.3148	.3145				
8009	.3543	.3540	.3544	.3541	.0001L	.0003	.0002	.0004	.3541	.3538				
8011	.4331	.4328	.4333	.4330	.0000L	.0004	.0001	.0005	.4329	.4326	.0004	.0000	.0005	.0001
8013	.5118	.5115	.5120	.5117	.0000L	.0004	.0001	.0005	.5116	.5113				
8014	.5512	.5509	.5514	.5511	.0000L	.0004	.0001	.0005	.5510	.5507	.0004	.0000	.0005	.0001
8016	.6299	.6296	.6301	.6298	.0000L	.0004	.0001	.0005	.6297	.6294	.0004	.0000	.0005	.0001
8026	1.0236	1.0232	1.0239	1.0235	.0000L	.0006	.0001	.0007	1.0233	1.0229	.0006	.0000	.0007	.0001
N.D. 8-6	.2362	.2359	.2363	.2360					.2360	.2357				
N.D. 8-7	.2756	.2753	.2757	.2754	.0001L	.0003	.0002	.0004	.2754	.2751	.0004	.0000	.0005	.0001
N.D. 8	.3150	.3147	.3151	.3148					.3148	.3145				
N.D. 10-9	.3543	.3540	.3544	.3541	.0001L	.0003	.0002	.0004	.3541	.3538				
N.D. 10	.3937	.3934	.3939	.3936	.0000L	.0004	.0001	.0005	.3935	.3932				
N.D. 12-11	.4331	.4328	.4333	.4330	.0000L	.0004	.0001	.0005	.4329	.4326	.0004	.0000	.0005	.0001
N.D. 12	.4724	.4721	.4726	.4723	.0000L	.0004	.0001	.0005	.4722	.4719				
N.D. 13	.5118	.5115	.5120	.5117					.5116	.5113				
N.D. 15	.5906	.5903	.5908	.5905	.0000L	.0004	.0001	.0005	.5904	.5901	.0004	.0000	.0005	.0001
N.D. 16	.6299	.6296	.6301	.6298					.6297	.6294				
N.D. 17	.6693	.6690	.6695	.6692	.0000L	.0004	.0001	.0005	.6691	.6688	.0004	.0000	.0005	.0001
N.D. 20	.7874	.7870	.7877	.7873	.0000L	.0006	.0001	.0007	.7871	.7867	.0006	.0000	.0007	.0001
N.D. 25	.9843	.9839	.9846	.9842	.0000L	.0006	.0001	.0007	.9840	.9836	.0006	.0000	.0007	.0001
0	.3937	.3934	.3939	.3936					.3935	.3932				
1	.4724	.4721	.4726	.4723	.0000L	.0004	.0001	.0005	.4722	.4719	.0004	.0000	.0005	.0001
2	.5906	.5903	.5908	.5905					.5904	.5901				
3	.6693	.6690	.6695	.6692	.0000L	.0004	.0001	.0005	.6691	.6688	.0004	.0000	.0005	.0001
4	.7874	.7870	.7877	.7873	.0000L	.0006	.0001	.0007	.7871	.7867	.0006	.0000	.0007	.0001
5	.9843	.9839	.9846	.9842	.0000L	.0006	.0001	.0007	.9840	.9836	.0006	.0000	.0007	.0001
6	1.1811	1.1807	1.1814	1.1810	.0000L	.0006	.0001	.0007	1.1808	1.1804	.0006	.0000	.0007	.0001
7	1.3780	1.3775	1.3784	1.3779	.0001T	.0007	.0001	.0009	1.3776	1.3771	.0007	.0001	.0009	.0001
8	1.5748	1.5743	1.5752	1.5747	.0001T	.0007	.0001	.0009	1.5744	1.5739	.0007	.0001	.0009	.0001
9	1.7717	1.7712	1.7721	1.7716	.0001T	.0007	.0001	.0009	1.7713	1.7708	.0007	.0001	.0009	.0001
10	1.9685	1.9680	1.9689	1.9684	.0001T	.0007	.0001	.0009	1.9681	1.9676	.0007	.0001	.0009	.0001
11	2.1654	2.1648	2.1659	2.1653	.0001T	.0009	.0001	.0011	2.1649	2.1643	.0009	.0001	.0011	.0001
12	2.3622	2.3616	2.3627	2.3621					2.3617	2.3611				
13	2.5591	2.5585	2.5596	2.5590	.0001T	.0009	.0001	.0011	2.5586	2.5580	.0009	.0001	.0011	.0001
14	2.7559	2.7553	2.7564	2.7558					2.7554	2.7548				
15	2.9528	2.9522	2.9533	2.9527	.0001T	.0009	.0001	.0011	2.9523	2.9517	.0009	.0001	.0011	.0001
16	3.1496	3.1490	3.1501	3.1495	.0001T	.0009	.0001	.0011	3.1491	3.1485	.0009	.0001	.0011	.0001
17	3.3465	3.3457	3.3471	3.3464	.0002T	.0012	.0001	.0014	3.3458	3.3451	.0012	.0002	.0014	.0001
18	3.5433	3.5425	3.5439	3.5432					3.5426	3.5419				
19	3.7402	3.7394	3.7408	3.7401	.0002T	.0012	.0001	.0014	3.7395	3.7388	.0012	.0002	.0014	.0001
20	3.9370	3.9362	3.9376	3.9369					3.9363	3.9356				
21	4.1339	4.1331	4.1345	4.1338	.0002T	.0012	.0001	.0014	4.1332	4.1325	.0012	.0002	.0014	.0001
22	4.3307	4.3299	4.3313	4.3306					4.3300	4.3293				

For Housing fits for A. B. E. C-1. Brgs. see Page 108.

BEARING TOLERANCES

A. B. E. C.–2

(Formerly New Departure "Z")

Where smaller tolerances are required for inner ring mounting than may ordinarily be obtained with bearings made to the standard tolerances given on page 108, bearings of the types listed below may be obtained with the closer bore limits given in this specification.

BORE				OUTSIDE DIAMETER				
Type of Bearings	Bore No.	Insp. Limits		Bore Numbers			Insp. Limits	
		Plus	Minus	Light	Medium	Heavy	Plus	Minus
Type 30	34–39	.0000	.0002	34–39			.0000	.0004
				0			.0000	.0004
Single Row,	0–6	.0000	.0002	1–4	0–3		.0000	.0005
Double Row,	7–16	.0000	.0003	5–8	4–7	3–5	.0000	.0006
Radax,	17–24	.0000	.0005	9–13	8–11	6–9	.0000	.0008
Duplex,	26–36	.0000	.0007	14–20	12–17	10–14	.0000	.0010
N-D-Seal	38–52	.0000	.0009	21–28	18–24	15–20	.0000	.0012
	56–64	.0000	.0012	30–40	26–34		.0000	.0016
				44–64	36–56		.0000	.0024
N-D-Seal	8006–26	.0000	.0002	8006–8009 8011–8016 8026			.0000 .0000 .0000	.0004 .0005 .0006
Magneto	8–25	.0000	.0002	8–10 12–25			.0004 .0005	.0000 .0000

WIDTH				ECCENTRICITY			
Type of Bearings	Bore No.	Insp. Limits		Type of Bearings	Bore No.	Insp. Limits	
		Plus	Minus			Cup	Cone
Type 30 individual rings	34–39	.000	.005	Type 30	34–39	.0006	.0003
Single Row, Double Row, N-D-Seal, Individual rings	0–16 17–36 38–64	.000 .000 .000	.005 .005 .010	Single Row, Double Row, Radax, Duplex, N-D-Seal	0–5 6–8 9–15 16–22 24–40 44–64	.0008 .0012 .0016 .0018 .0020 .0024	.0004 .0008 .0010 .0012 .0014 .0018
Radax assembled	0–12 13–16 17–34	.003 .005 .010	.003 .005 .010				
				N-D-Seal	8006–9 8011–26	.0008 .0008	.0003 .0004
Magneto assembled	all	.002	.002	Magneto	8–25	.0008	.0004

SHAFT MOUNTING FITS

For A. B. E. C.–2 Bearings

The *"theoretical fits"* given in this table are those which could result if the shaft diameters and bearing bores were to vary the full limits of their respective tolerances. Actually, bearing bores are ground uniformly close to the minimum limit and investigation by the Annular Bearing Engineers Committee has proved that over 95% of installations result in closer fit limits than given below.

Bearing and Bore Numbers	BEARING BORE		SHAFT REVOLVING				SHAFT STATIONARY			
	Diameters		Diameters		Theoret. Fit		Diameters		Theoret. Fit	
	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
34	.1575	.1573	.1577	.1574			.1574	.1571		
35	.1969	.1967	.1971	.1968	.0004	.0001	.1968	.1965	.0001	.0004
36	.2362	.2360	.2364	.2361			.2361	.2358		
37	.2756	.2754	.2758	.2755			.2755	.2752		
38	.3150	.3148	.3152	.3149	.0004	.0001	.3149	.3146	.0001	.0004
39	.3543	.3541	.3545	.3542			.3542	.3539		
8006	.2362	.2360	.2364	.2361			.2361	.2358		
8007, 8102	.2756	.2754	.2758	.2755	.0004	.0001	.2755	.2752	.0001	.0004
8008, 8103	.3150	.3148	.3152	.3149			.3149	.3146		
8009	.3543	.3541	.3545	.3542			.3542	.3539		
8011	.4331	.4329	.4333	.4330	.0004	.0001	.4330	.4327	.0001	.0004
8013	.5118	.5116	.5120	.5117			.5117	.5114		
8014	.5512	.5510	.5514	.5511			.5511	.5508		
8016	.6299	.6297	.6301	.6298	.0004	.0001	.6298	.6295	.0001	.0004
8026	1.0236	1.0234	1.0238	1.0235			1.0235	1.0232		
N.D. **8-6**	.2362	.2360	.2364	.2361			.2361	.2358		
N.D. **8-7**	.2756	.2754	.2758	.2755	.0004	.0001	.2755	.2752	.0001	.0004
N.D. **8**	.3150	.3148	.3152	.3149			.3149	.3146		
N.D. **10-9**	.3543	.3541	.3545	.3542			.3542	.3539		
N.D. **10**	.3937	.3935	.3939	.3936	.0004	.0001	.3936	.3933	.0001	.0004
N.D. **12-11**	.4331	.4329	.4333	.4330			.4330	.4327		
N.D. **12**	.4724	.4722	.4726	.4723			.4723	.4720		
N.D. **13**	.5118	.5116	.5120	.5117			.5117	.5114		
N.D. **15**	.5906	.5904	.5908	.5905	.0004	.0001	.5905	.5902	.0001	.0004
N.D. **16**	.6299	.6297	.6301	.6298			.6298	.6295		
N.D. **17**	.6693	.6691	.6695	.6692			.6692	.6689		
N.D. **20**	.7874	.7872	.7876	.7873	.0004	.0001	.7873	.7870	.0001	.0004
N.D. **25**	.9843	.9841	.9845	.9842			.9842	.9839		
0	.3937	.3935	.3939	.3936			.3936	.3933		
1	.4724	.4722	.4726	.4723	.0004	.0001	.4723	.4720	.0001	.0004
2	.5906	.5904	.5908	.5905			.5905	.5902		
3	.6693	.6691	.6695	.6692			.6692	.6689		
4	.7874	.7872	.7876	.7873	.0004	.0001	.7873	.7870	.0001	.0004
5	.9843	.9841	.9845	.9842			.9842	.9839		
6	1.1811	1.1809	1.1813	1.1810	.0004	.0001	1.1810	1.1807	.0001	.0004
7	1.3780	1.3777	1.3782	1.3779	.0005	.0001	1.3778	1.3775	.0001	.0005
8	1.5748	1.5745	1.5750	1.5747	.0005	.0001	1.5746	1.5743	.0001	.0005
9	1.7717	1.7714	1.7719	1.7716	.0005	.0001	1.7715	1.7712	.0001	.0005
10	1.9685	1.9682	1.9687	1.9684	.0005	.0001	1.9683	1.9680	.0001	.0005
11	2.1654	2.1651	2.1657	2.1653	.0006	.0001	2.1652	2.1648	.0001	.0006
12	2.3622	2.3619	2.3625	2.3621			2.3620	2.3616		
13	2.5591	2.5588	2.5594	2.5590	.0006	.0001	2.5589	2.5585	.0001	.0006
14	2.7559	2.7556	2.7562	2.7558			2.7557	2.7553		
15	2.9528	2.9525	2.9531	2.9527	.0006	.0001	2.9526	2.9522	.0001	.0006
16	3.1496	3.1493	3.1499	3.1495	0006	.0001	3.1494	3.1490	.0001	.0006
17	3.3465	3.3460	3.3469	3.3464	.0009	.0001	3.3461	3.3456	.0001	.0009
18	3.5433	3.5428	3.5437	3.5432			3.5429	3.5424		
19	3.7402	3.7397	3.7406	3.7401	.0009	.0001	3.7398	3.7393	.0001	.0009
20	3.9370	3.9365	3.9374	3.9369			3.9366	3.9361		
21	4.1339	4.1334	4.1343	4.1338	.0009	.0001	4.1335	4.1330	.0001	.0009
22	4.3307	4.3302	4.3311	4.3306			4.3303	4.3298		

HOUSING MOUNTING FITS

For A. B. E. C.–1 and A. B. E. C.–2 Bearings

Since it is standard practice to hold the housing bore to the minimum recommended dimension and the bearing outer diameter conforms closely to its maximum or nominal dimension, the resultant fits will conform closely to the "Expected min. Loose" fit for stationary housing and "Expected Tight" fit for revolving housing.

Bearing and Bore Numbers			BEARING OUTER DIAM.		HOUSING STATIONARY						HOUSING REVOLVING					
Series			Diameters		Diameters		Expect. Fit		Theoret. Fit		Diameters		Expect. Fit		Theoret. Fit	
Lgt.	Med.	Hvy.	Max.	Min.	Max.	Min.	Min. Loose	Max. Loose	Tight	Loose	Max.	Min.	Tight	Loose	Tight	Loose
		34	.6299	.6295	.6303	.6298					.6298	.6293				
		35, 36	.7480	.7476	.7484	.7479	.0000	.0005	.0001	.0008	.7479	.7474	.0002	.0002	.0006	.0003
		37, 38	.8661	.8657	.8665	.8660					.8660	.8655				
		39	1.0236	1.0232	1.0240	1.0235					1.0235	1.0230				
		8102, 8103	.8661	.8657	.8665	.8660					.8660	.8655				
		8006, 7 & 8	.9449	.9445	.9453	.9448	.0000	.0005	.0001	.0008	.9448	.9443	.0002	.0002	.0006	.0003
		8009	1.1811	1.1807	1.1815	1.1810					1.1810	1.1805				
		8011, 8013	1.2598	1.2593	1.2603	1.2597	.0000	.0007	.0001	.0010	1.2597	1.2591	.0003	.0003	.0007	.0004
		8014, 8016	1.3780	1.3775	1.3785	1.3779	.0000	.0007	.0001	.0010	1.3779	1.3773	.0003	.0003	.0007	.0004
		8026	2.0472	2.0466	2.0479	2.0471	.0000	.0010	.0001	.0013	2.0472	2.0464	.0004	.0004	.0008	.0006
		N.D. 8-6, 8-7, 8	.9453	.9449	.9457	.9452	.0000	.0005	.0001	.0008	.9452	.9447	.0002	.0002	.0006	.0003
		N.D. 10-9, 10	1.1028	1.1024	1.1032	1.1027	.0000	.0005	.0001	.0008	1.1027	1.1022	.0002	.0002	.0006	.0003
		N.D. 12-11, 12	1.2603	1.2598	1.2608	1.2602	.0000	.0007	.0001	.0010	1.2602	1.2596	.0003	.0003	.0007	.0004
		N.D. 13	1.1816	1.1811	1.1821	1.1815					1.1815	1.1809				
		N.D. 15	1.3785	1.3780	1.3790	1.3784	.0000	.0007	.0001	.0010	1.3784	1.3778	.0003	.0003	.0007	.0004
		N.D. 16	1.4966	1.4961	1.4971	1.4965					1.4965	1.4959				
		N.D. 17	1.7328	1.7323	1.7333	1.7327					1.7327	1.7321				
		N.D. 20	1.8509	1.8504	1.8514	1.8508	.0000	.0007	.0001	.0010	1.8508	1.8502	.0003	.0003	.0007	.0004
		N.D. 25	2.0477	2.0472	2.0482	2.0476					2.0476	2.0470				
0			1.1811	1.1807	1.1815	1.1810	.0000	.0005	.0001	.0008	1.1810	1.1805	.0002	.0002	.0006	.0003
1			1.2598	1.2593	1.2603	1.2597	.0000	.0007	.0001	.0010	1.2597	1.2591	.0003	.0003	.0007	.0004
2	0		1.3780	1.3775	1.3785	1.3779	.0000	.0007	.0001	.0010	1.3779	1.3773	.0003	.0003	.0007	.0004
	1		1.4567	1.4562	1.4572	1.4566					1.4566	1.4560				
3			1.5748	1.5743	1.5753	1.5747	.0000	.0007	.0001	.0010	1.5747	1.5741	.0003	.0003	.0007	.0004
	2		1.6535	1.6530	1.6540	1.6534					1.6534	1.6528				
4	3		1.8504	1.8499	1.8509	1.8503	.0000	.0007	.0001	.0010	1.8503	1.8497	.0003	.0003	.0007	.0004
5	4		2.0472	2.0466	2.0479	2.0471	.0000	.0010	.0001	.0013	2.0472	2.0464	.0004	.0004	.0008	.0006
6	5		2.4409	2.4403	2.4416	2.4408	.0000	.0010	.0001	.0013	2.4409	2.4401	.0004	.0004	.0008	.0006
7	6	4	2.8346	2.8340	2.8353	2.8345	.0000	.0010	.0001	.0013	2.8346	2.8338	.0004	.0004	.0008	.0006
8	7	5	3.1496	3.1490	3.1503	3.1495	.0000	.0010	.0001	.0013	3.1496	3.1488	.0004	.0004	.0008	.0006
9			3.3465	3.3457	3.3473	3.3463	.0000	.0012	.0002	.0016	3.3466	3.3456	.0005	.0004	.0009	.0009
10	8	6	3.5433	3.5425	3.5441	3.5431					3.5434	3.5424				
11	9	7	3.9370	3.9362	3.9378	3.9368	.0000	.0012	.0002	.0016	3.9371	3.9361	.0005	.0004	.0009	.0009
12	10	8	4.3307	4.3299	4.3315	4.3305					4.3308	4.3298				
13	11	9	4.7244	4.7236	4.7252	4.7242	.0000	.0012	.0002	.0016	4.7245	4.7235	.0005	.0004	.0009	.0009
14			4.9213	4.9203	4.9223	4.9211	.0001	.0015	.0002	.0020	4.9214	4.9202	.0006	.0005	.0011	.0011
15	12	10	5.1181	5.1171	5.1191	5.1179	.0001	.0015	.0002	.0020	5.1182	5.1170	.0006	.0005	.0011	.0011
16	13	11	5.5118	5.5108	5.5128	5.5116					5.5119	5.5107				
17	14	12	5.9055	5.9045	5.9065	5.9053	.0001	.0015	.0002	.0020	5.9056	5.9044	.0006	.0005	.0011	.0011
18	15	13	6.2992	6.2982	6.3002	6.2990					6.2993	6.2981				
19	16		6.6929	6.6919	6.6939	6.6927	.0001	.0015	.0002	.0020	6.6930	6.6918	.0006	.0005	.0011	.0011
20	17	14	7.0866	7.0856	7.0876	7.0864	.0001	.0015	.0002	.0020	7.0867	7.0855	.0006	.0005	.0011	.0011
21	18	15	7.4803	7.4791	7.4815	7.4801	.0001	.0018	.0002	.0024	7.4804	7.4790	.0007	.0007	.0013	.0013
22	19	16	7.8740	7.8728	7.8752	7.8738					7.8741	7.8727				
		17	8.2677	8.2665	8.2689	8.2675	.0001	.0018	.0002	.0024	8.2678	8.2664	.0007	.0007	.0013	.0013
	20		8.4646	8.4634	8.4658	8.4644					8.4647	8.4633				
	21	18	8.8583	8.8571	8.8595	8.8581	.0001	.0018	.0002	.0024	8.8584	8.8570	.0007	.0007	.0013	.0013
	22		9.4488	9.4476	9.4500	9.4486					9.4489	9.4475				

Note: Satisfactory performance with the above mounting fits requires a smooth finish such as a ground or reamed hole. Closer tolerances will be required for unusual conditions, such as machine spindles, heavy shock or vibratory loads.

BEARING TOLERANCES

A. B. E. C.–3

(Formerly New Departure "W")

Where it is necessary to obtain a greater degree of accuracy in mounting both inner and outer rings than would ordinarily be secured with standard tolerances, bearings of the types listed below may be obtained with the closer bore, inner ring eccentricity and outside diameter limits given in this specification.

BORE				OUTSIDE DIAMETER				
Type of Bearings	Bore No.	Insp. Limits		Bore Numbers			Insp. Limits	
		Plus	Minus	Light	Medium	Heavy	Plus	Minus
Type 30	34–39	.0000	.0002	34–39			.0000	.0002
Single Row, Double Row, Radax, Duplex	0–6	.0000	.0002	0			.0000	.0003
	7–16	.0000	.0003	1–8	0–7	3–5	.0000	.0004
	17–24	.0000	.0005	9–13	8–11	6–9	.0000	.0005
	26–36	.0000	.0007	14–20	12–17	10–14	.0000	.0007
	38–52	.0000	.0009	21–28	18–24	15–20	.0000	.0009
	56–64	.0000	.0012	30–40	26–34		.0000	.0012
				44–64	36–56		.0000	.0018
Magneto	all	.0000	.0002	8–10			.0002	.0000
				12–25			.0003	.0000

WIDTH				ECCENTRICITY			
Type of Bearings	Bore No.	Insp. Limits		Type of Bearings	Bore No.	Insp. Limits	
		Plus	Minus			Cup	Cone
Type 30 individual rings	34–39	.000	.003	Type 30	34–39	.0006	.0002
Single Row, Double Row Radax, Individual rings	0–36	.000	.005				
	38–64	.000	.010				
Radax assembled				Single Row, Double Row, Radax, Duplex	0–5	.0008	.0002
	0–12	.003	.003		6–8	.0012	.0004
	13–16	.005	.005		9–15	.0016	.0005
	17–34	.010	.010		16–22	.0018	.0006
					24–40	.0020	.0007
					44–64	.0024	.0009
Magneto assembled	all	.002	.002	Magneto	all	.0008	.0002

SHAFT MOUNTING FITS

For A. B. E. C.–3 Bearings

The *"theoretical fits"* given in this table are those which could result if the shaft diameters and bearing bores were to vary the full limits of their respective tolerances. Actually, bearing bores are ground uniformly close to the minimum limit and investigation by the Annular Bearing Engineers Committee has proved that well over 95% of installations result in closer fit limits than given below.

Bearing and Bore Numbers	BEARING BORE		SHAFT REVOLVING				SHAFT STATIONARY			
	Diameters		Diameters		Theoret. Fit		Diameters		Theoret. Fit	
	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
34	.1575	.1573	.1577	.1574			.1574	.1571		
35	.1969	.1967	.1971	.1968	.0004	.0001	.1968	.1965	.0001	.0004
36	.2362	.2360	.2364	.2361			.2361	.2358		
37	.2756	.2754	.2758	.2755			.2755	.2752		
38	.3150	.3148	.3152	.3149	.0004	.0001	.3149	.3146	.0001	.0004
39	.3543	.3541	.3545	.3542			.3542	.3539		
N.D. 8-6	.2362	.2360	.2364	.2361			.2361	.2358		
N.D. 8-7	.2756	.2754	.2758	.2755	.0004	.0001	.2755	.2752	.0001	.0004
N.D. 8	.3150	.3148	.3152	.3149			.3149	.3146		
N.D. 10-9	.3543	.3541	.3545	.3542			.3542	.3539		
N.D. 10	.3937	.3935	.3939	.3936	.0004	.0001	.3936	.3933	.0001	.0004
N.D. 12-11	.4331	.4329	.4333	.4330			.4330	.4327		
N.D. 12	.4724	.4722	.4726	.4723			.4723	.4720		
N.D. 13	.5118	.5116	.5120	.5117			.5117	.5114		
N.D. 15	.5906	.5904	.5908	.5905	.0004	.0001	.5905	.5902	.0001	.0004
N.D. 16	.6299	.6297	.6301	.6298			.6298	.6295		
N.D. 17	.6693	.6691	.6695	.6692			.6692	.6689		
N.D. 20	.7874	.7872	.7876	.7873	.0004	.0001	.7873	.7870	.0001	.0004
N.D. 25	.9843	.9841	.9845	.9842			.9842	.9839		
0	.3937	.3935	.3939	.3936			.3936	.3933		
1	.4724	.4722	.4726	.4723	.0004	.0001	.4723	.4720	.0001	.0004
2	.5906	.5904	.5908	.5905			.5905	.5902		
3	.6693	.6691	.6695	.6692			.6692	.6689		
4	.7874	.7872	.7876	.7873	.0004	.0001	.7873	.7870	.0001	.0004
5	.9843	.9841	.9845	.9842			.9842	.9839		
6	1.1811	1.1809	1.1813	1.1810	.0004	.0001	1.1810	1.1807	.0001	.0004
7	1.3780	1.3777	1.3782	1.3779	.0005	.0001	1.3778	1.3775	.0001	.0005
8	1.5748	1.5745	1.5750	1.5747	.0005	.0001	1.5746	1.5743	.0001	.0005
9	1.7717	1.7714	1.7719	1.7716	.0005	.0001	1.7715	1.7712	.0001	.0005
10	1.9685	1.9682	1.9687	1.9684	.0005	.0001	1.9683	1.9680	.0001	.0005
11	2.1654	2.1651	2.1657	2.1653	.0006	.0001	2.1652	2.1648	.0001	.0006
12	2.3622	2.3619	2.3625	2.3621			2.3620	2.3616		
13	2.5591	2.5588	2.5594	2.5590	.0006	.0001	2.5589	2.5585	.0001	.0006
14	2.7559	2.7556	2.7562	2.7558			2.7557	2.7553		
15	2.9528	2.9525	2.9531	2.9527	.0006	.0001	2.9526	2.9522	.0001	.0006
16	3.1496	3.1493	3.1499	3.1495	.0006	.0001	3.1494	3.1490	.0001	.0006
17	3.3465	3.3460	3.3469	3.3464	.0009	.0001	3.3461	3.3456	.0001	.0009
18	3.5433	3.5428	3.5437	3.5432			3.5429	3.5424		
19	3.7402	3.7397	3.7406	3.7401	.0009	.0001	3.7398	3.7393	.0001	.0009
20	3.9370	3.9365	3.9374	3.9369			3.9366	3.9361		
21	4.1339	4.1334	4.1343	4.1338	.0009	.0001	4.1335	4.1330	.0001	.0009
22	4.3307	4.3302	4.3311	4.3306			4.3303	4.3298		

HOUSING MOUNTING FITS

For A. B. E. C.—3 Bearings

The housing fits given in this table are those which would result if the bearing diameters and housing bores were to vary the full allowable limits. Actually, bearing diameters are ground uniformly close to the maximum, and with housings properly bored, fits well within the limits given will be obtained in practice. Satisfactory performance requires a smooth finish, such as ground or reamed holes.

Bearing and Bore Numbers			BEARING OUTER DIAM		HOUSING STATIONARY				HOUSING REVOLVING			
Series			Diameters		Diameters		Theoret. Fit		Diameters		Theoret. Fit	
Lgt.	Med.	Hvy.	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
	34		.6299	.6297	.6301	.6298			.6298	.6295		
	35, 36		.7480	.7478	.7482	.7479	.0001	.0004	.7479	.7476	.0004	.0001
	37, 38		.8661	.8659	.8663	.8660			.8660	.8657		
	39		1.0236	.0234	1.0238	1.0235			1.0235	1.0232		
	N.D. 8-6, 8-7, 8		.9451	.9449	.9453	.9450	.0001	.0004	.9450	.9447	.0004	.0001
	N.D. 10-9, 10		1.1026	1.1024	1.1028	1.1025	.0001	.0004	1.1025	1.1022	.0004	.0001
	N.D. 12-11, 12		1.2601	1.2598	1.2604	1.2600	.0001	.0006	1.2600	1.2596	.0005	.0002
	N.D. 13		1.1814	1.1811	1.1817	1.1813			1.1813	1.1809		
	N.D. 15		1.3783	1.3780	1.3786	1.3782	.0001	.0006	1.3782	1.3778	.0005	.0002
	N.D. 16		1.4964	1.4961	1.4967	1.4963			1.4963	1.4959		
	N.D. 17		1.7326	1.7323	1.7329	1.7325			1.7325	1.7321		
	N.D. 20		1.8507	1.8504	1.8510	1.8506	.0001	.0006	1.8506	1.8502	.0005	.0002
	N.D. 25		2.0475	2.0472	2.0478	2.0474			2.0474	2.0470		
0			1.1811	1.1808	1.1814	1.1810	.0001	.0006	1.1810	1.1806	.0005	.0002
1			1.2598	1.2594	1.2601	1.2596	.0002	.0007	1.2597	1.2592	.0006	.0003
2	0		1.3780	1.3776	1.3783	1.3778	.0002	.0007	1.3779	1.3774	.0006	.0003
	1		1.4567	1.4563	1.4570	1.4565			1.4566	1.4561		
3			1.5748	1.5744	1.5751	1.5746	.0002	.0007	1.5747	1.5742	.0006	.0003
	2		1.6535	1.6531	1.6538	1.6533			1.6534	1.6529		
4	3		1.8504	1.8500	1.8507	1.8502			1.8503	1.8498		
5	4		2.0472	2.0468	2.0475	2.0470	.0002	.0007	2.0471	2.0466	.0006	.0003
6	5		2.4409	2.4405	2.4412	2.4407			2.4408	2.4403		
7	6	4	2.8346	2.8342	2.8349	2.8344	.0002	.0007	2.8345	2.8340	.0006	.0003
8	7	5	3.1496	3.1492	3.1499	3.1494	.0002	.0007	3.1495	3.1490	.0006	.0003
9			3.3465	3.3460	3.3469	3.3463	.0002	.0009	3.3464	3.3458	.0007	.0004
10	8	6	3.5433	3.5428	3.5437	3.5431			3.5432	3.5426		
11	9	7	3.9370	3.9365	3.9374	3.9368	.0002	.0009	3.9369	3.9363	.0007	.0004
12	10	8	4.3307	4.3302	4.3311	4.3305			4.3306	4.3300		
13	11	9	4.7244	4.7239	4.7248	4.7242	.0002	.0009	4.7243	4.7237	.0007	.0004
14			4.9213	4.9206	4.9218	4.9210	.0003	.0012	4.9212	4.9204	.0009	.0006
15	12	10	5.1181	5.1174	5.1186	5.1178	.0003	.0012	5.1180	5.1172	.0009	.0006
16	13	11	5.5118	5.5111	5.5123	5.5115			5.5117	5.5109		
17	14	12	5.9055	5.9048	5.9060	5.9052	.0003	.0012	5.9054	5.9046	.0009	.0006
18	15	13	6.2992	6.2985	6.2997	6.2989			6.2991	6.2983		
19	16		6.6929	6.6922	6.6934	6.6926	.0003	.0012	6.6928	6.6920	.0009	.0006
20	17	14	7.0866	7.0859	7.0871	7.0863	.0003	.0012	7.0865	7.0857	.0009	.0006
21	18	15	7.4803	7.4794	7.4809	7.4799	.0004	.0015	7.4802	7.4792	.0011	.0008
22	19	16	7.8740	7.8731	7.8746	7.8736			7.8739	7.8729		
		17	8.2677	8.2668	8.2683	8.2673	.0004	.0015	8.2676	8.2666	.0011	.0008
	20		8.4646	8.4637	8.4652	8.4642			8.4645	8.4635		
	21	18	8.8583	8.8574	8.8589	8.8579	.0004	.0015	8.8582	8.8572	.0011	.0008
	22		9.4488	9.4479	9.4494	9.4484			9.4487	9.4477		

BEARING TOLERANCES

A. B. E. C.–4

(Formerly New Departure "Precision")

New Departure Ball Bearings of the Single Row, Radax, Duplex and Magneto types only will be furnished to the Precision tolerances given below, for applications requiring greater accuracy than can be obtained with standard bearings.

BORE				OUTSIDE DIAMETER				
Type of Bearings	Bore No.	Insp. Limits		Bore Numbers			Insp. Limits	
		Plus	Minus	Light	Medium	Heavy	Plus	Minus
Type 30	34–39	.0000	.0002	34–39			.0000	.0002
Single Row, Radax, Duplex	0–6 7–16 17–24 26–36 38–40	.0000 .0000 .0000 .0000 .0000	.0002 .0003 .0004 .0005 .0006	0 1–8 9–16 17–20 21–28 30–40	0–7 8–13 14–17 18–24 26–34	3–5 6–11 12–14 15–20	.0000 .0000 .0000 .0000 .0000 .0000	.0002 .0003 .0004 .0005 .0006 .0007
Magneto	all	.0000	.0002	8–25			.0002	.0000

ECCENTRICITY					WIDTH			
Bore Numbers			Insp. Limits		Type of Bearings	Bore No.	Insp. Limits	
Light	Medium	Heavy	Cup	Cone			Plus	Minus
34–39			.0003	.0002	Individual rings	34–39	.000	.002
						0–16	.000	.002
0			.0003	.0002		17–36	.000	.003
1–6	0–6	3–5	.0004	.0002				
		6	.0005	.0002				
7–8	7		.0004	.0003				
9–13	8–11	7–9	.0005	.0003		0–12	.003	.003
14–16	12–16	10–14	.0006	.0003	Radax assembled	13–16	.005	.005
		15–16	.0008	.0003		17–34	.010	.010
17–20	17		.0006	.0004				
21–24	18–24	17–20	.0008	.0004				
26–28			.0008	.0005				
30–36	26–34		.0010	.0005				
all			.0003	.0002	Magneto assembled	all	.001	.001

RUN-OUT of ball race and OUT-of-SQUARENESS of faces in all types of bearings					
CONES		CUPS			
Bore Numbers	Insp. Limits	Bore Numbers			Insp. Limits
		Light	Medium	Heavy	
16 and smaller	.0003	0–4	0–3		.0003
17 to 24	.0005	5–13	4–11	4–9	.0004
26 and larger	.0008	14–20	12–17	10–14	.0006
		21–40	18–34	15–20	.0008

SHAFT MOUNTING FITS

For A. B. E. C.–4 Bearings

The small tolerances to which precision bearings are made require correspondingly close shaft and housing limits in order to avoid excessively tight or loose fits which would affect the internal fit-up of the bearings. The tolerances given in the table below should be adhered to in order to assure correct mounting of precision bearings and full benefit of their accuracy.

Bearing and Bore Numbers	BEARING BORE		SHAFT REVOLVING				SHAFT STATIONARY			
	Diameters		Diameters		Theoret. Fit		Diameters		Theoret. Fit	
	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
34	.1575	.1573	.1576	.1574			.1574	.1572		
35	.1969	.1967	.1970	.1968	.0003	.0001	.1968	.1966	.0001	.0003
36	.2362	.2360	.2363	.2361			.2361	.2359		
37	.2756	.2754	.2757	.2755			.2755	.2753		
38	.3150	.3148	.3151	.3149	.0003	.0001	.3149	.3147	.0001	.0003
39	.3543	.3541	.3544	.3542			.3542	.3540		
N.D. 8-6	.2362	.2360	.2363	.2361			.2361	.2359		
N.D. 8-7	.2756	.2754	.2757	.2755	.0003	.0001	.2755	.2753	.0001	.0003
N.D. 8	.3150	.3148	.3151	.3149			.3149	.3147		
N.D. 10-9	.3543	.3541	.3544	.3542			.3542	.3540		
N.D. 10	.3937	.3935	.3938	.3936	.0003	.0001	.3936	.3934	.0001	.0003
N.D. 12-11	.4331	.4329	.4332	.4330			.4330	.4328		
N.D. 12	.4724	.4722	.4725	.4723			.4723	.4721		
N.D. 13	.5118	.5116	.5119	.5117			.5117	.5115		
N.D. 15	.5906	.5904	.5907	.5905	.0003	.0001	.5905	.5903	.0001	.0003
N.D. 16	.6299	.6297	.6300	.6298			.6298	.6296		
N.D. 17	.6693	.6691	.6694	.6692			.6692	.6690		
N.D. 20	.7874	.7872	.7875	.7873	.0003	.0001	.7873	.7871	.0001	.0003
N.D. 25	.9843	.9841	.9844	.9842			.9842	.9840		
0	.3937	.3935	.3938	.3936			.3936	.3934		
1	.4724	.4722	.4725	.4723	.0003	.0001	.4723	.4721	.0001	.0003
2	.5906	.5904	.5907	.5905			.5905	.5903		
3	.6693	.6691	.6694	.6692			.6692	.6690		
4	.7874	.7872	.7875	.7873	.0003	.0001	.7873	.7871	.0001	.0003
5	.9843	.9841	.9844	.9842			.9842	.9840		
6	1.1811	1.1809	1.1812	1.1810	.0003	.0001	1.1810	1.1808	.0001	.0003
7	1.3780	1.3777	1.3782	1.3779	.0005	.0001	1.3778	1.3775	.0001	.0005
8	1.5748	1.5745	1.5750	1.5747	.0005	.0001	1.5746	1.5743	.0001	.0005
9	1.7717	1.7714	1.7719	1.7716			1.7715	1.7712		
10	1.9685	1.9682	1.9687	1.9684	.0005	.0001	1.9683	1.9680	.0001	.0005
11	2.1654	2.1651	2.1656	2.1653			2.1652	2.1649		
12	2.3622	2.3619	2.3624	2.3621			2.3620	2.3617		
13	2.5591	2.5588	2.5593	2.5590	.0005	.0001	2.5589	2.5586	.0001	.0005
14	2.7559	2.7556	2.7561	2.7558			2.7557	2.7554		
15	2.9528	2.9525	2.9530	2.9527	.0005	.0001	2.9526	2.9523	.0001	.0005
16	3.1496	3.1493	3.1498	3.1495	.0005	.0001	3.1494	3.1491	.0001	.0005
17	3.3465	3.3461	3.3468	3.3464	.0007	.0001	3.3462	3.3458	.0001	.0007
18	3.5433	3.5429	3.5436	3.5432			3.5430	3.5426		
19	3.7402	3.7398	3.7405	3.7401	.0007	.0001	3.7399	3.7395	.0001	.0007
20	3.9370	3.9366	3.9373	3.9369			3.9367	3.9363		
21	4.1339	4.1335	4.1342	4.1338	.0007	.0001	4.1336	4.1332	.0001	.0007
22	4.3307	4.3303	4.3310	4.3306			4.3304	4.3300		

HOUSING MOUNTING FITS

For A. B. E. C.–4 Bearings

The small tolerances to which precision bearings are made require correspondingly close shaft and housing limits in order to avoid excessively tight or loose fits which would affect the internal fit-up of the bearings. The tolerances given in the table below should be adhered to in order to assure correct mounting of precision bearings and full benefit of their accuracy.

Bearing and Bore Numbers			BEARING OUTER DIAM.		HOUSING STATIONARY				HOUSING REVOLVING			
Series			Diameters		Diameters		Theoret. Fit		Diameters		Theoret. Fit	
Lgt.	Med.	Hvy.	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
	34		.6299	.6297	.6301	.6299			.6299	.6297		
	35, 36		.7480	.7478	.7482	.7480	.0000	.0004	.7480	.7478	.0002	.0002
	37, 38		.8661	.8659	.8663	.8661			.8661	.8659		
	39		1.0236	1.0234	1.0238	1.0236			1.0236	1.0234		
	N.D. 8-6, 8-7, 8		.9451	.9449	.9453	.9451			.9451	.9449		
	N.D. 10-9, 10		1.1026	1.1024	1.1028	1.1026	.0000	.0004	1.1026	1.1024	.0002	.0002
	N.D. 12-11, 12		1.2600	1.2598	1.2602	1.2600			1.2600	1.2598		
	N.D. 13		1.1813	1.1811	1.1815	1.1813			1.1813	1.1811		
	N.D. 15		1.3782	1.3780	1.3784	1.3782	.0000	.0004	1.3782	1.3780	.0002	.0002
	N.D. 16		1.4963	1.4961	1.4965	1.4963			1.4963	1.4961		
	N.D. 17		1.7325	1.7323	1.7327	1.7325			1.7325	1.7323		
	N.D. 20		1.8506	1.8504	1.8508	1.8506	.0000	.0004	1.8506	1.8504	.0002	.0002
	N.D. 25		2.0474	2.0472	2.0476	2.0474			2.0474	2.0472		
0			1.1811	1.1809	1.1813	1.1811	.0000	.0004	1.1811	1.1809	.0002	.0002
1			1.2598	1.2595	1.2601	1.2598	.0000	.0006	1.2598	1.2595	.0003	.0003
2	0		1.3780	1.3777	1.3783	1.3780	.0000	.0006	1.3780	1.3777	.0003	.0003
	1		1.4567	1.4564	1.4570	1.4567			1.4567	1.4564		
3			1.5748	1.5745	1.5751	1.5748	.0000	.0006	1.5748	1.5745	.0003	.0003
	2		1.6535	1.6532	1.6538	1.6535			1.6535	1.6532		
4	3		1.8504	1.8501	1.8507	1.8504			1.8504	1.8501		
5	4		2.0472	2.0469	2.0475	2.0472	.0000	.0006	2.0472	2.0469	.0003	.0003
6	5		2.4409	2.4406	2.4412	2.4409			2.4409	2.4406		
7	6	4	2.8346	2.8343	2.8349	2.8346	.0000	.0006	2.8346	2.8343	.0003	.0003
8	7	5	3.1496	3.1493	3.1499	3.1496	.0000	.0006	3.1496	3.1493	.0003	.0003
9			3.3465	3.3461	3.3468	3.3464	.0001	.0007	3.3464	3.3460	.0005	.0003
10	8	6	3.5433	3.5429	3.5436	3.5432			3.5432	3.5428		
11	9	7	3.9370	3.9366	3.9373	3.9369	.0001	.0007	3.9369	3.9365	.0005	.0003
12	10	8	4.3307	4.3303	4.3310	4.3306			4.3306	4.3302		
13	11	9	4.7244	4.7240	4.7247	4.7243			4.7243	4.7239		
14			4.9213	4.9209	4.9216	4.9212	.0001	.0007	4.9212	4.9208	.0005	.0003
15	12	10	5.1181	5.1177	5.1184	5.1180			5.1180	5.1176		
16	13	11	5.5118	5.5114	5.5121	5.5117	.0001	.0007	5.5117	5.5113	.0005	.0003
17	14	12	5.9055	5.9050	5.9058	5.9053	.0002	.0008	5.9054	5.9049	.0006	.0004
18	15	13	6.2992	6.2987	6.2995	6.2990	.0002	.0008	6.2991	6.2986	.0006	.0004
19	16		6.6929	6.6924	6.6932	6.6927	.0002	.0008	6.6928	6.6923	.0006	.0004
20	17	14	7.0866	7.0861	7.0869	7.0864	.0002	.0008	7.0865	7.0860	.0006	.0004
21	18	15	7.4803	7.4797	7.4807	7.4801	.0002	.0010	7.4802	7.4796	.0007	.0005
22	19	16	7.8740	7.8734	7.8744	7.8738			7.8739	7.8733		
		17	8.2677	8.2671	8.2681	8.2675	.0002	.0010	8.2676	8.2670	.0007	.0005
	20		8.4646	8.4640	8.4650	8.4644			8.4645	8.4639		
	21	18	8.8583	8.8577	8.8587	8.8581			8.8582	8.8576		
	22		9.4488	9.4482	9.4492	9.4486	.0002	.0010	9.4487	9.4481	.0007	.0005

BEARING TOLERANCES

A. B. E. C.—5

(Formerly New Departure "P" or "Perfex")

For spindle applications requiring exceptional rigidity, and accuracy in all dimensions, Single Row, Radax, Duplex and Magneto bearings will be furnished to the "Perfex" tolerances given below.

BORE				OUTSIDE DIAMETER				
Type of Bearings	Bore No.	Insp. Limits		Bore Numbers			Insp. Limits	
		Plus	Minus	Light	Medium	Heavy	Plus	Minus
Type 30	34–39	.0000	.0002	34–39			.0000	.0002
Single Row, Radax, Duplex	0–10 11–36	.0000 .0000	.0002 .0003	0–4 5–16 17–40	0–3 4–13 14–34	3–11 12–20	.0000 .0000 .0000	.0002 .0003 .0004
Magneto	all	.0000	.0002	8–25			.0002	.0000

ECCENTRICITY					WIDTH			
Bore Numbers			Insp. Limits		Type of Bearings	Bore No.	Insp. Limits	
Light	Medium	Heavy	Cup	Cone			Plus	Minus
34–39			.0002	.0002	Individual rings	all	.000	.002
0–5 6–16 17–36	0–4 5–13 14–34	3–11 12–20	.0002 .0003 .0004	.0002 .0002 .0002	Radax assembled	0–12 13–16 17–34	.003 .005 .010	.003 .005 .010
all			.0002	.0002	Magneto assembled	all	.001	.001

SHAFT MOUNTING FITS

A. B. E. C.—5 Bearings

The extremely small tolerances used in the manufacture of A.B.E.C. – 5 bearings require corresponding care and perfection in the preparation of shaft seats. The following dimensions must therefore, not be exceeded and will produce the fits tabulated below.

Bearing and Bore Numbers	BEARING BORE		SHAFT REVOLVING				SHAFT STATIONARY			
	Diameters		Diameters		Theoret. Fit		Diameters		Theoret. Fit	
	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
34	.1575	.1573	.1576	.1574			.1574	.1572		
35	.1969	.1967	.1970	.1968	.0003	.0001	.1968	.1966	.0001	.0003
36	.2362	.2360	.2363	.2361			.2361	.2359		
37	.2756	.2754	.2757	.2755			.2755	.2753		
38	.3150	.3148	.3151	.3149	.0003	.0001	.3149	.3147	.0001	.0003
39	.3543	.3541	.3544	.3542			.3542	.3540		
N.D. 8- 6	.2362	.2360	.2363	.2361			.2361	.2359		
N.D. 8- 7	.2756	.2754	.2757	.2755	.0003	.0001	.2755	.2753	.0001	.0003
N.D. 8	.3150	.3148	.3151	.3149			.3149	.3147		
N.D. 10- 9	.3543	.3541	.3544	.3542			.3542	.3540		
N.D. 10	.3937	.3935	.3938	.3936	.0003	.0001	.3936	.3934	.0001	.0003
N.D. 12-11	.4331	.4329	.4332	.4330			.4330	.4328		
N.D. 12	.4724	.4722	.4725	.4723			.4723	.4721		
N.D. 13	.5118	.5116	.5119	.5117			.5117	.5115		
N.D. 15	.5906	.5904	.5907	.5905	.0003	.0001	.5905	.5903	.0001	.0003
N.D. 16	.6299	.6297	.6300	.6298			.6298	.6296		
N.D. 17	.6693	.6691	.6694	.6692			.6692	.6690		
N.D. 20	.7874	.7872	.7875	.7873	.0003	.0001	.7873	.7871	.0001	.0003
N.D. 25	.9843	.9841	.9844	.9840			.9842	.9840		
0	.3937	.3935	.3938	.3936			.3936	.3934		
1	.4724	.4722	.4725	.4723	.0003	.0001	.4723	.4721	.0001	.0003
2	.5906	.5904	.5907	.5905			.5905	.5903		
3	.6693	.6691	.6694	.6692			.6692	.6690		
4	.7874	.7872	.7875	.7873	.0003	.0001	.7873	.7871	.0001	.0003
5	.9843	.9841	.9844	.9842			.9842	.9840		
6	1.1811	1.1809	1.1812	1.1810			1.1810	1.1808		
7	1.3780	1.3778	1.3781	1.3779	.0003	.0001	1.3779	1.3777	.0001	.0003
8	1.5748	1.5746	1.5749	1.5747			1.5747	1.5745		
9	1.7717	1.7715	1.7718	1.7716	.0003	.0001	1.7716	1.7714	.0001	.0003
10	1.9685	1.9683	1.9686	1.9684	.0003	.0001	1.9684	1.9682	.0001	.0003
11	2.1654	2.1651	2.1655	2.1653	.0004	.0001	2.1652	2.1650	.0001	.0004
12	2.3622	2.3619	2.3623	2.3621			2.3620	2.3618		
13	2.5591	2.5588	2.5592	2.5590	.0004	.0001	2.5589	2.5587	.0001	.0004
14	2.7559	2.7556	2.7560	2.7558			2.7557	2.7555		
15	2.9528	2.9525	2.9529	2.9527			2.9526	2.9524		
16	3.1496	3.1493	3.1497	3.1495	.0004	.0001	3.1494	3.1492	.0001	.0004
17	3.3465	3.3462	3.3466	3.3464			3.3463	3.3461		
18	3.5433	3.5430	3.5434	3.5432			3.5431	3.5429		
19	3.7402	3.7399	3.7403	3.7401	.0004	.0001	3.7400	3.7398	.0001	.0004
20	3.9370	3.9367	3.9371	3.9369			3.9368	3.9366		
21	4.1339	4.1336	4.1340	4.1338	.0004	.0001	4.1337	4.1335	.0001	.0004
22	4.3307	4.3304	4.3308	4.3306			4.3305	4.3303		

HOUSING MOUNTING FITS

A. B. E. C.—5 Bearings

The extremely small tolerances used in the manufacture of the A.B.E.C. – 5 bearings require corresponding care and perfection in the preparation of housing seats. The following dimensions must therefore, not be exceeded and will produce the fits tabulated below.

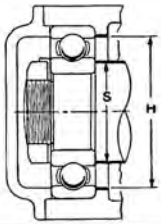
Bearing and Bore Numbers			BEARING OUTER DIAM.		HOUSING STATIONARY				HOUSING REVOLVING			
Series			Diameters		Diameters		Theoret. Fit		Diameters		Theoret. Fit	
Lgt.	Med.	Hvy.	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
	34		.6299	.6297	.6301	.6299			.6299	.6297		
	35, 36		.7480	.7478	.7482	.7480	.0000	.0004	.7480	.7478	.0002	.0002
	37, 38		.8661	.8659	.8663	.8661			.8661	.8659		
	39		1.0236	1.0234	1.0238	1.0236			1.0236	1.0234		
	N.D. 8-6, 8-7, 8		.9451	.9449	.9453	.9451			.9451	.9449		
	N.D. 10-9, 10		1.1026	1.1024	1 1028	1.1026	.0000	.0004	1.1026	1.1024	.0002	.0002
	N.D. 12-11, 12		1.2600	1.2598	1.2602	1.2600			1.2600	1.2598		
	N.D. 13		1.1813	1.1811	1.1815	1.1813			1.1813	1.1811		
	N.D. 15		1.3782	1.3780	1.3784	1.3782	.0000	.0004	1.3782	1.3780	.0002	.0002
	N.D. 16		1.4963	1.4961	1.4965	1.4963			1.4963	1.4961		
	N.D. 17		1.7325	1.7323	1.7327	1.7325			1.7325	1.7323		
	N.D. 20		1.8506	1.8504	1.8508	1.8506	.0000	.0004	1.8506	1.8504	.0002	.0002
	N.D. 25		2.0474	2.0472	2.0476	2.0474			2.0474	2.0472		
0			1.1811	1.1809	1.1813	1.1811			1.1811	1.1809		
1			1.2598	1.2596	1.2600	1.2598	.0000	.0004	1.2598	1.2596	.0002	.0002
2	0		1.3780	1.3778	1.3782	1.3780			1.3780	1.3778		
	1		1.4567	1.4565	1.4569	1.4567			1.4567	1.4565		
3			1.5748	1.5746	1.5750	1.5748	.0000	.0004	1.5748	1.5746	.0002	.0002
	2		1.6535	1.6533	1.6537	1.6535			1.6535	1.6533		
4	3		1.8504	1.8502	1.8506	1.8504	.0000	.0004	1.8504	1.8502	.0002	.0002
5	4		2.0472	2.0469	2.0475	2.0472	.0000	.0006	2.0472	2.0469	.0003	.0003
6	5		2.4409	2.4406	2.4412	2.4409	.0000	.0006	2.4409	2.4406	.0003	.0003
7	6	4	2.8346	2.8343	2.8349	2.8346			2.8346	2.8343		
8	7	5	3.1496	3.1493	3.1499	3.1496	.0000	.0006	3.1496	3.1493	.0003	.0003
9			3.3465	3.3462	3.3468	3.3465			3.3465	3.3462		
10	8	6	3.5433	3.5430	3.5436	3.5433			3.5433	3.5430		
11	9	7	3.9370	3.9367	3.9373	3.9370	.0000	.0006	3.9370	3.9367	.0003	.0003
12	10	8	4.3307	4.3304	4.3310	4.3307			4.3307	4.3304		
13	11	9	4.7244	4.7241	4.7247	4.7244			4.7244	4.7241		
14			4.9213	4.9210	4.9216	4.9213	.0000	.0006	4.9213	4.9210	.0003	.0003
15	12	10	5.1181	5.1178	5.1184	5.1181			5.1181	5.1178		
16	13	11	5.5118	5.5115	5.5121	5.5118	.0000	.0006	5.5118	5.5115	.0003	.0003
17	14	12	5.9055	5.9051	5.9058	5.9054	.0001	.0007	5.9054	5.9050	.0005	.0003
18	15	13	6.2992	6.2988	6.2995	6.2991	.0001	.0007	6.2991	6.2987	.0005	.0003
19	16		6.6929	6.6925	6.6932	6.6928			6.6928	6.6924		
20	17	14	7.0866	7.0862	7.0869	7.0865	.0001	.0007	7.0865	7.0861	.0005	.0003
21	18	15	7.4803	7.4799	7.4806	7.4802			7.4802	7.4798		
22	19	16	7.8740	7.8736	7.8743	7.8739			7.8739	7.8735		
		17	8.2677	8.2673	8.2680	8.2676	.0001	.0007	8.2676	8.2672	.0005	.0003
	20		8.4646	8.4642	8.4649	8.4645			8.4645	8.4641		
	21	18	8.8583	8.8579	8.8586	8.8582	.0001	.0007	8.8582	8.8578	.0005	.0003
	22		9.4488	9.4484	9.4491	9.4487			9.4487	9.4483		

SHAFT SHOULDER HEIGHTS

Minimum diameters provide enough flat area for proper bearing location under light thrust loads.

Average diameters leave inner ring projecting enough to make removal possible without damage to closure of sealed or shielded bearings and give satisfactory support under ordinary thrust loads.

Maximum diameters are intended for very heavy thrust loads requiring angular contact bearings whose shoulders under such conditions must have maximum support.



EXTRA SMALL SINGLE ROW		
Bearing No.	Shoulder Dia. "S"	
	Ave.	Min.
34	15/64	15/64
35	9/32	9/32
36	5/16	5/16
37	25/64	23/64
38	25/64	25/64
39	15/32	29/64

MAGNETO AND N-D-SEAL BEARINGS							
Bearing Nos.		Shoulder Dia. "S"		Bearing Nos.		Shoulder Dia. "S"	
Magneto	N-D-Seal	Ave.	Min.	Magneto	N.D. Seal	Ave.	Min.
N.D. 5		1/4			8016	23/32	23/32
N.D. 8-6	8006	13/32	5/16	N.D. 15		3/4	11/16
N.D. 8-7	8007	13/32	23/64	N.D. 16		13/16	49/64
	8102	13/32	23/64		8503	51/64	51/64
N.D. 8	8008	13/32	25/64	N.D. 17		29/32	61/64
	8103	13/32	25/64		8504	15/16	59/64
N.D. 10-9		1/2	7/16	N.D. 20		1	59/64
N.D. 10		1/2	15/32		8505	1 1/8	1 1/8
	8009	1/2	29/64		8026	1 5/32	1 5/32
	8500	1/2	31/64	N.D. 25		1 7/32	1 1/8
N.D. 12-11		5/8	33/64	N.D. 25-26		1 7/32	1 5/32
	8011	37/64	33/64		8506	1 3/8	1 11/32
	8501	37/64	9/16		8507	1 5/8	1 9/16
	8013	37/64	37/64		8508	1 13/16	1 3/4
N.D. 12		5/8	9/16		8603	27/32	53/64
N.D. 13		5/8	19/32		8604	31/32	15/16
	8014	11/16	11/16		8605	1 7/32	1 5/32
	8502	11/16	11/16				

SINGLE ROW, DOUBLE ROW, RADAX AND SHIELDED BEARINGS										
Light Series				Medium Series				Heavy Series			
Basic Brg. No.	Shoulder Dia. "S"			Basic Brg. No.	Shoulder Dia. "S"			Basic Brg. No.	Shoulder Dia. "S"		
	Ave.	Max.	Min.		Ave.	Max.	Min.		Ave.	Max.	Min.
200	1/2	19/32	31/64	300	17/32	21/32	33/64				
201	37/64	21/32	9/16	301	39/64	3/4	5/8				
202	11/16	25/32	11/16	302	47/64	7/8	47/64				
203	51/64	29/32	51/64	303	27/32	1	53/64	403	15/16	1	7/8
204	15/16	1 3/32	59/64	304	31/32	1 3/16	15/16	404	1 3/64	1 7/16	1 1/32
205	1 1/8	1 5/16	1 1/8	305	1 7/32	1 7/16	1 5/32	405	1 1/4	1 11/16	1 1/4
206	1 3/8	1 9/16	1 11/32	306	1 7/16	1 11/16	1 3/8	406	1 31/64	1 15/16	1 15/32
207	1 5/8	1 53/64	1 9/16	307	1 21/32	1 29/32	1 19/32	407	1 23/32	2 9/64	1 11/16
208	1 13/16	2	1 3/4	308	1 29/32	2 5/32	1 27/32	408	1 15/16	2 25/64	1 15/16
209	2	2 7/32	1 15/16	309	2 5/64	2 13/32	2 1/32	409	2 5/32	2 5/8	2 5/32
210	2 3/64	2 13/32	2 3/64	310	2 17/64	2 19/32	2 17/64	410	2 25/64	2 13/16	2 11/32
211	2 7/16	2 21/32	2 13/32	311	2 3/16	2 27/32	2 15/32	411	2 11/16	3 1/16	2 3/16
212	2 19/32	2 29/32	2 19/32	312	2 25/32	3 1/16	2 11/16	412	2 15/16	3 5/16	2 13/16
213	2 29/32	3 3/16	2 27/32	313	3 3/32	3 5/16	2 31/32	413	3 5/32	3 1/2	3 1/32
214	3 3/32	3 11/32	3 1/32	314	3 9/32	3 9/16	3 5/32	414	3 17/32	3 15/16	3 9/32
215	3 9/32	3 17/32	3 7/32	315	3 1/2	3 27/32	3 3/8	415	3 21/32		3 1/2
216	3 9/16	3 25/32	3 15/32	316	3 3/4	4 3/32	3 19/32	416	3 15/16		3 3/4
217	3 25/32	4	3 11/16	317	3 31/32	4 5/16	3 27/32	417	4 3/16		3 31/32
218	4	4 1/4	3 15/16	318	4 3/16	4 5/8	4 1/16	418	4 3/8		4 3/16
219	4 3/16	4 1/2	4 1/8	319	4 1/2	4 7/8	4 5/16				
220	4 7/16	4 3/4	4 5/16	320	4 11/16	5 1/16	4 1/2				
221	4 5/8	5 1/8	4 1/2	321	4 15/16	5 3/8	4 3/4				
222	4 7/8	5 17/32	4 3/4	322	5 3/16	5 3/4	5				

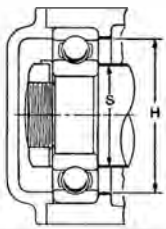
HOUSING SHOULDER HEIGHTS

Minimum diameters are intended for very heavy thrust loads requiring angular contact bearings which under such conditions must have maximum support.

Average diameters leave the outer ring projecting enough to make removal possible without damage to closures of sealed or shielded bearings and give satisfactory bearing support for ordinary thrust loads.

Maximum diameters provide enough flat area for bearing location under light thrust loads.

MAGNETO AND N-D-SEAL BEARINGS							
Bearing Nos.		Shoulder Dia. "H"		Bearing Nos.		Shoulder Dia. "H"	
Magneto	N-D-Seal	Ave.	Max.	Magneto	N-D-Seal	Ave.	Max.
N.D. 5			37/64		8502	1 9/32	1 9/32
	8102	25/32	25/32		8016	1 9/32	1 9/32
	8103	25/32	25/32	N.D. 16		1 5/16	1 23/64
N.D. 8-5	8006	1 3/16	7/8		8503	1 7/16	1 7/16
N.D. 8-7	8007	1 3/16	7/8	N.D. 17		1 7/16	1 19/32
N.D. 8	8008	1 3/16	7/8	N.D. 20		1 19/32	1 23/32
N.D. 10-9		61/64	1 1/32		8504	1 11/16	1 23/32
N.D. 10		61/64	1 1/32		8505	1 7/8	1 29/32
N.D. 12-11		1 1/32	1 3/16	N.D. 25		1 13/16	1 29/32
N.D. 12		1 1/32	1 3/16	N.D. 25-26		1 13/16	1 29/32
N.D. 13		1 1/32	1 7/64		8026	1 7/8	1 29/32
	8009	1 3/32	1 3/32		8506	2 1/4	2 9/32
	8500	1 3/32	1 3/32		8507	2 5/8	2 21/32
	8011	1 5/32	1 5/32		8508	2 29/32	2 31/32
	8501	1 5/32	1 5/32		8603	1 21/32	1 11/16
	8013	1 5/32	1 5/32		8604	1 7/8	1 7/8
N.D. 15		1 13/64	1 9/32		8605	2 7/32	2 9/32
	8014	1 9/32	1 9/32				

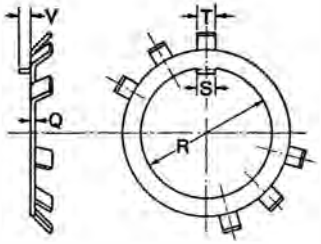


EXTRA SMALL SINGLE ROW		
Bearing No.	Shoulder Dia. "H"	
	Ave.	Max.
34	35/64	35/64
35	21/32	21/32
36	21/32	21/32
37	25/32	25/32
38	25/32	25/32
39	59/64	59/64

SINGLE ROW, DOUBLE ROW, RADAX AND SHIELDED BEARINGS										
Light Series				Medium Series				Heavy Series			
Basic Brg. No.	Shoulder Dia. "H"			Basic Brg. No.	Shoulder Dia. "H"			Basic Brg. No.	Shoulder Dia. "H"		
	Ave.	Max.	Min.		Ave.	Max.	Min.		Ave.	Max.	Min.
200	1 3/32	1 3/32	1	300	1 7/32	1 1/4	1 3/16				
201	1 5/32	1 5/32	1 1/16	301	1 11/32	1 11/32	1 7/32				
202	1 9/32	1 9/32	1 3/16	302	1 1/2	1 17/32	1 27/64				
203	1 7/16	1 7/16	1 3/8	303	1 21/32	1 11/16	1 39/64	403	2 5/32	2 7/32	2 3/32
204	1 11/16	1 23/32	1 5/8	304	1 7/8	1 7/8	1 49/64	404	2 1/2	2 9/16	2 13/32
205	1 7/8	1 29/32	1 7/8	305	2 7/32	2 9/32	2 11/64	405	2 25/32	2 7/8	2 11/16
206	2 1/4	2 9/32	2 7/32	306	2 9/16	2 5/8	2 1/2	406	3 5/32	3 1/4	3 1/16
207	2 5/8	2 21/32	2 9/16	307	2 29/32	2 15/16	2 51/64	407	3 1/2	3 5/8	3 13/32
208	2 29/32	2 31/32	2 7/8	308	3 1/4	3 5/16	3 3/16	408	3 29/32	4	3 13/16
209	3 9/64	3 5/32	3 5/64	309	3 43/64	3 45/64	3 1/2	409	4 1/4	4 3/8	4 3/16
210	3 23/64	3 3/8	3 17/64	310	3 29/32	4	3 27/32	410	4 9/16	4 11/16	4 7/16
211	3 5/8	3 11/16	3 37/64	311	4 5/16	4 3/8	4 3/16	411	4 15/16	5 1/16	4 13/16
212	4	4 1/16	3 63/64	312	4 11/16	4 3/4	4 9/16	412	5 5/16	5 1/2	5 3/16
213	4 5/16	4 7/16	4 5/16	313	5 1/8	5 3/16	5	413	5 3/4	5 7/8	5 5/8
214	4 9/16	4 5/8	4 9/16	314	5 7/16	5 9/16	5 5/16	414	6 7/16	6 9/16	6 1/4
215	4 13/16	4 13/16	4 49/64	315	5 13/16	5 15/16	5 11/16	415	6 11/16	6 15/16	6 1/2
216	5 3/16	5 1/4	5 1/8	316	6 1/8	6 1/4	6	416	7 3/16	7 3/8	7
217	5 1/2	5 9/16	5 1/2	317	6 1/2	6 5/8	6 3/8	417	7 1/2	7 11/16	7 5/16
218	5 7/8	6	5 7/8	318	6 7/8	7	6 3/4	418	8	8 1/4	7 3/4
219	6 3/16	6 5/16	6 3/16	319	7 1/4	7 3/8	7 1/8				
220	6 9/16	6 11/16	6 9/16	320	7 13/16	7 15/16	7 5/8				
221	6 15/16	7 1/16	6 15/16	321	8 1/8	8 3/8	8				
222	7 1/4	7 7/16	7 1/4	322	8 11/16	8 7/8	8 1/2				

LOCKWASHER DIMENSIONS

Standard and Heavy Duty



(6 tangs minimum)

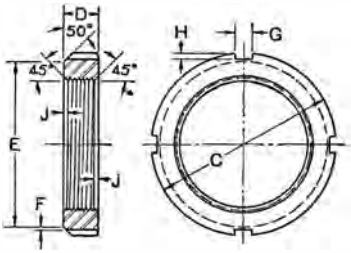
For Standard and Heavy Duty Locknuts, see following pages.

Lock Washer No.	Locknut No.		Brg. No.	Bore R Min.	Width S Min.	Projection V Min.	Width T Min.	Thickness Q	
	ABEC Std.	Heavy Duty						S.A.E. Std.	Heavy Duty
W-00	N-00		0	.406	.115	1/16	.094	.042	
W-01	N-01		1	.489	.115	1/16	.094	.042	
W-02	N-02		2	.606	.115	1/16	.115	.042	
W-03	N-03		3	.684	.115	1/16	.115	.042	
W-04	N-04		4	.801	.156	1/16	.156	.042	
W-05	N-05		5	.989	.156	3/32	.156	.050	
W-06	N-06		6	1.199	.156	3/32	.156	.050	
W-07	N-07		7	1.406	.156	3/32	.156	.050	
W-08	N-08	N-108	8	1.625	.250	3/32	.219	.058	.072
W-09	N-09	N-109	9	1.813	.250	1/8	.219	.058	.072
W-10	N-10	N-110	10	2.000	.250	1/8	.219	.058	.072
W-11	N-11	N-111	11	2.188	.250	1/8	.219	.063	.072
W-12	N-12	N-112	12	2.406	.250	1/8	.219	.063	.082
W-13	N-13	N-113	13	2.594	.250	1/8	.219	.063	.082
W-14	N-14	N-114	14	2.813	.250	3/16	.219	.063	.082
W-15	AN-15	AN-115	15	3.000	.250	3/16	.313	.072	.095
W-16	AN-16	AN-116	16	3.188	.313	3/16	.313	.072	.095
W-17	AN-17	AN-117	17	3.406	.313	3/16	.313	.072	.095
W-18	AN-18	AN-118	18	3.594	.313	3/16	.313	.094	.125
W-19	AN-19	AN-119	19	3.781	.313	3/16	.313	.094	.125
W-20	AN-20	AN-120	20	4.000	.313	1/4	.313	.094	.125
W-21	AN-21		21	4.219	.313	1/4	.375	.094	
W-22	AN-22	AN-122	22	4.406	.313	1/4	.375	.125	.140
W-24	AN-24	AN-124	24	4.813	.313	1/4	.375	.125	.165
W-26	AN-26	AN-126	26	5.219	.375	1/4	.500	.125	.165
W-28	AN-28	AN-128	28	5.594	.500	1/4	.500	.125	.165
W-30	AN-30	AN-130	30	6.000	.500	5/16	.500	.156	.203
W-32	AN-32	AN-132	32	6.375	.500	5/16	.500	.156	.203
W-34	AN-34	AN-134	34	6.781	.625	5/16	.500	.156	.203
W-36	AN-36	AN-136	36	7.156	.625	5/16	.625	.156	.203
W-38	AN-38	AN-138	38	7.563	.625	5/16	.625	.156	.203
W-40	AN-40	AN-140	40	8.000	.750	5/16	.625	.156	.203

Sizes AN-128 to AN-140 inclusive are A.B.E.C. Standard.

LOCKNUT DIMENSIONS

A. B. E. C.* Standard



For Locknut Thread Dimensions, see next page.

Note: Prefix "A" before a locknut number indicates that this size was previously supplied with 11 threads per inch. Prices on application.

Lock Nut No.	Lock Washer No.	Brg. Bore No.	Diam. C +.005 −.015	Width D ±.010	Diam. E +.000 −.020	F	Width G ±.005	Depth H +.000 −.020	Depth J +.015 −.000	Brg. Bore No.
N-00	W-00	0	3/4	7/32	3/8	0	1/8	1/16	1/32	0
N-01	W-01	1	7/8	5/16	23/32	1/64	1/8	1/16	1/32	1
N-02	W-02	2	1	5/16	13/16	0	1/8	3/32	1/32	2
N-03	W-03	3	1 1/8	11/32	15/16	0	1/8	3/32	1/32	3
N-04	W-04	4	1 3/8	3/8	1 1/8	1/32	3/16	3/32	1/32	4
N-05	W-05	5	1 9/16	13/32	1 9/32	3/64	3/16	3/32	1/32	5
N-06	W-06	6	1 3/4	13/32	1 1/2	1/32	3/16	3/32	3/64	6
N-07	W-07	7	2 1/16	7/16	1 13/16	1/32	3/16	3/32	3/64	7
N-08	W-08	8	2 1/4	7/16	2	1/32	1/4	3/32	3/64	8
N-09	W-09	9	2 17/32	7/16	2 9/32	1/32	1/4	3/32	3/64	9
N-10	W-10	10	2 11/16	1/2	2 7/16	1/32	1/4	3/32	3/64	10
N-11	W-11	11	2 31/32	1/2	2 21/32	1/32	1/4	1/8	3/64	11
N-12	W-12	12	3 5/32	17/32	2 27/32	1/32	1/4	1/8	3/64	12
N-13	W-13	13	3 3/8	9/16	3 1/16	1/32	1/4	1/8	3/64	13
N-14	W-14	14	3 5/8	9/16	3 5/16	1/32	1/4	1/8	3/64	14
AN-15	W-15	15	3 7/8	19/32	3 9/16	1/32	3/8	1/8	5/64	15
AN-16	W-16	16	4 5/32	19/32	3 27/32	1/32	3/8	1/8	5/64	16
AN-17	W-17	17	4 13/32	3/8	4 1/32	1/32	3/8	5/32	3/64	17
AN-18	W-18	18	4 21/32	11/16	4 9/32	1/32	3/8	5/32	5/64	18
AN-19	W-19	19	4 15/16	23/32	4 7/16	1/32	3/8	5/32	5/64	19
AN-20	W-20	20	5 3/16	3/4	4 13/16	1/32	3/8	5/32	3/64	20
AN-21	W-21	21	5 7/16	3/4	5	1/32	1/2	3/16	5/64	21
AN-22	W-22	22	5 23/32	25/32	5 9/32	1/32	1/2	3/16	5/64	22
AN-24	W-24	24	6 1/8	13/16	5 11/16	1/32	1/2	3/16	5/64	24
AN-26	W-26	26	6 3/4	7/8	6 3/16	1/32	3/8	1/4	3/64	26
AN-28	W-28	28	7 3/32	15/16	6 17/32	1/32	3/8	1/4	3/64	28
AN-30	W-30	30	7 1/16	31/32	7 1/16	1/32	3/8	9/32	5/64	30
AN-32	W-32	32	8 1/16	1 1/32	7 7/16	1/32	3/8	9/32	3/32	32
AN-34	W-34	34	8 21/32	1 1/16	8 1/32	1/32	3/8	9/32	3/32	34
AN-36	W-36	36	9 1/16	1 3/32	8 3/8	1/32	3/4	5/16	3/32	36
AN-38	W-38	38	9 15/32	1 1/8	8 25/32	1/32	3/4	5/16	3/32	38
AN-40	W-40	40	9 27/32	1 3/16	9 5/32	1/32	3/4	5/16	3/32	40

* Annular Bearing Engineers Committee.
Locknuts may also be obtained with 8 slots identified by the prefix "8" before locknut number.

LOCKNUT THREAD DIMENSIONS

A. B. E. C. Standard

For Shaft Thread Dimensions, see next page.

Threads are American (National) Standard Fine, Class 3 fit.

Note: Prefix "A" before a locknut number indicates that this size was previously supplied with 11 threads per inch.

Lock Nut No.	Brg. Bore No.	THREADS							Lock Washer No.
		No. per inch	Minor Diam.			Pitch Diam.			Major Diam. Min.	
			Min.	Tol.	Max.	Min.	Tol.	Max.		
N-00	**0**	32	.3572	.0034	.3606	.3707	.0026	.3733	.391	**W-00**
N-01	**1**	32	.4352	.0034	.4386	.4487	.0026	.4513	.469	**W-01**
N-02	**2**	32	.5522	.0034	.5556	.5657	.0030	.5687	.586	**W-02**
N-03	**3**	32	.6302	.0034	.6336	.6437	.0030	.6467	.664	**W-03**
N-04	**4**	32	.7472	.0034	.7506	.7607	.0034	.7641	.781	**W-04**
N-05	**5**	32	.9352	.0034	.9386	.9487	.0034	.9521	.969	**W-05**
N-06	**6**	18	1.1129	.0060	1.1189	1.1369	.0040	1.1409	1.173	**W-06**
N-07	**7**	18	1.3159	.0060	1.3219	1.3399	.0040	1.3439	1.376	**W-07**
N-08	**8**	18	1.5029	.0060	1.5089	1.5269	.0045	1.5314	1.563	**W-08**
N-09	**9**	18	1.7069	.0060	1.7129	1.7309	.0045	1.7354	1.767	**W-09**
N-10	**10**	18	1.9069	.0060	1.9129	1.9309	.0045	1.9354	1.967	**W-10**
N-11	**11**	18	2.0969	.0060	2.1029	2.1209	.0051	2.1260	2.157	**W-11**
N-12	**12**	18	2.2999	.0060	2.3059	2.3239	.0051	2.3290	2.360	**W-12**
N-13	**13**	18	2.4879	.0060	2.4939	2.5119	.0051	2.5170	2.548	**W-13**
N-14	**14**	18	2.6909	.0060	2.6969	2.7149	.0051	2.7200	2.751	**W-14**
AN-15	**15**	12	2.8428	.0090	2.8518	2.8789	.0054	2.8843	2.933	**W-15**
AN-16	**16**	12	3.0468	.0090	3.0558	3.0829	.0059	3.0888	3.137	**W-16**
AN-17	**17**	12	3.2498	.0090	3.2588	3.2859	.0074	3.2933	3.340	**W-17**
AN-18	**18**	12	3.4368	.0090	3.4458	3.4729	.0074	3.4803	3.527	**W-18**
AN-19	**19**	12	3.6398	.0090	3.6488	3.6759	.0074	3.6833	3.730	**W-19**
AN-20	**20**	12	3.8278	.0090	3.8368	3.8639	.0074	3.8713	3.918	**W-20**
AN-21	**21**	12	4.0318	.0090	4.0408	4.0679	.0083	4.0762	4.122	**W-21**
AN-22	**22**	12	4.2348	.0090	4.2438	4.2709	.0083	4.2792	4.325	**W-22**
AN-24	**24**	12	4.6258	.0090	4.6348	4.6619	.0083	4.6702	4.716	**W-24**
AN-26	**26**	12	5.0158	.0090	5.0248	5.0519	.0083	5.0602	5.106	**W-26**
AN-28	**28**	12	5.4068	.0090	5.4158	5.4429	.0083	5.4512	5.497	**W-28**
AN-30	**30**	12	5.7978	.0090	5.8068	5.8339	.0083	5.8422	5.888	**W-30**
AN-32	**32**	8	6.1487	.0135	6.1622	6.2028	.0091	6.2119	6.284	**W-32**
AN-34	**34**	8	6.5237	.0135	6.5372	6.5778	.0091	6.5869	6.659	**W-34**
AN-36	**36**	8	6.9307	.0135	6.9442	6.9848	.0091	6.9939	7.066	**W-36**
AN-38	**38**	8	7.3367	.0135	7.3502	7.3908	.0091	7.3999	7.472	**W-38**
AN-40	**40**	8	7.7117	.0135	7.7252	7.7658	.0114	7.7772	7.847	**W-40**

SHAFT THREAD DIMENSIONS

For A. B. E. C. Standard Locknuts

For Shaft Machining Dimensions, see next page.

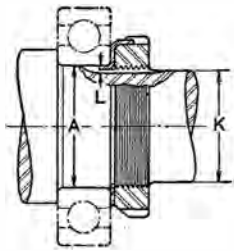
Threads are American (National) Standard Fine, Class 3 fit.

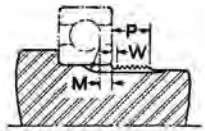
Prefix "A" before a locknut number indicates that this size was previously supplied with 11 threads per inch.

Lock Nut No.	THREADS								Brg. Bore No.
	No. per inch	Major Diam.			Pitch Diam.			Minor Diam. Max.	
		Max.	Tol.	Min.	Max.	Tol.	Min.		
N-00	32	.391	.0054	.3856	.3707	.0026	.3681	.3527	0
N-01	32	.469	.0054	.4636	.4487	.0026	.4461	.4307	1
N-02	32	.586	.0054	.5806	.5657	.0030	.5627	.5477	2
N-03	32	.664	.0054	.6586	.6437	.0030	.6407	.6257	3
N-04	32	.781	.0054	.7756	.7607	.0034	.7573	.7427	4
N-05	32	.969	.0054	.9636	.9487	.0034	.9453	.9307	5
N-06	18	1.173	.0082	1.1648	1.1369	.0040	1.1329	1.1048	6
N-07	18	1.376	.0082	1.3678	1.3399	.0040	1.3359	1.3078	7
N-08	18	1.563	.0082	1.5548	1.5269	.0045	1.5224	1.4948	8
N-09	18	1.767	.0082	1.7588	1.7309	.0045	1.7264	1.6988	9
N-10	18	1.967	.0082	1.9588	1.9309	.0045	1.9264	1.8998	10
N-11	18	2.157	.0082	2.1488	2.1209	.0051	2.1158	2.0888	11
N-12	18	2.360	.0082	2.3518	2.3239	.0051	2.3188	2.2918	12
N-13	18	2.548	.0082	2.5398	2.5119	.0051	2.5068	2.4798	13
N-14	18	2.751	.0082	2.7428	2.7149	.0051	2.7098	2.6828	14
AN-15	12	2.933	.0112	2.9218	2.8789	.0054	2.8735	2.8308	15
AN-16	12	3.137	.0112	3.1258	3.0829	.0059	3.0770	3.0348	16
AN-17	12	3.340	.0112	3.3288	3.2859	.0074	3.2785	3.2378	17
AN-18	12	3.527	.0112	3.5158	3.4729	.0074	3.4655	3.4248	18
AN-19	12	3.730	.0112	3.7188	3.6759	.0074	3.6685	3.6278	19
AN-20	12	3.918	.0112	3.9068	3.8639	.0074	3.8565	3.8158	20
AN-21	12	4.122	.0112	4.1108	4.0679	.0083	4.0596	4.0198	21
AN-22	12	4.325	.0112	4.3138	4.2709	.0083	4.2626	4.2228	22
AN-24	12	4.716	.0112	4.7048	4.6619	.0083	4.6536	4.6138	24
AN-26	12	5.106	.0112	5.0948	5.0519	.0083	5.0436	5.0038	26
AN-28	12	5.497	.0112	5.4858	5.4429	.0083	5.4346	5.3948	28
AN-30	12	5.888	.0112	5.8768	5.8339	.0083	5.8256	5.7858	30
AN-32	8	6.284	.0152	6.2688	6.2028	.0091	6.1937	6.1306	32
AN-34	8	6.659	.0152	6.6438	6.5778	.0091	6.5687	6.5056	34
AN-36	8	7.066	.0152	7.0508	6.9848	.0091	6.9757	6.9126	36
AN-38	8	7.472	.0152	7.4568	7.3908	.0091	7.3817	7.3186	38
AN-40	8	7.847	.0152	7.8318	7.7658	.0114	7.7544	7.6936	40

SHAFT DIMENSIONS

For A. B. E. C. Standard Locknuts





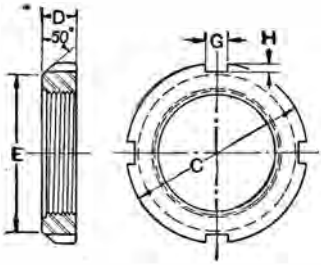
Keyway Width N

For Shaft Thread Dimensions, see preceding page.

Lock Nut No.	Brg. Bore No.	SHAFT DIAM.		KEY WAY			THREADS	
		Nominal or Brg. Bore A	Extension Max. K	Depth L	Width N	M	Relief W	Length P
N-00	**0**	.3937	5/16	1/16	1/8	3/32	1/16	9/32
N-01	**1**	.4724	13/32	1/16	1/8	3/32	1/16	3/8
N-02	**2**	.5906	1/2	5/64	1/8	3/32	1/16	3/8
N-03	**3**	.6693	9/16	5/64	1/8	3/32	1/16	13/32
N-04	**4**	.7874	23/32	5/64	3/16	3/32	1/16	7/16
N-05	**5**	.9843	7/8	3/32	3/16	1/8	1/16	15/32
N-06	**6**	1.1811	1 1/16	3/32	3/16	1/8	1/8	15/32
N-07	**7**	1.3780	1 1/4	3/32	3/16	1/8	1/8	1/2
N-08	**8**	1.5748	1 15/32	3/32	5/16	1/8	1/8	17/32
N-09	**9**	1.7717	1 11/16	3/32	5/16	5/32	1/8	17/32
N-10	**10**	1.9685	1 7/8	3/32	5/16	5/32	1/8	19/32
N-11	**11**	2.1654	2 1/16	1/8	5/16	5/32	1/8	19/32
N-12	**12**	2.3622	2 1/4	1/8	5/16	5/32	1/8	5/8
N-13	**13**	2.5591	2 7/16	1/8	5/16	5/32	1/8	21/32
N-14	**14**	2.7559	2 5/8	1/8	5/16	1/4	1/8	21/32
AN-15	**15**	2.9528	2 25/32	1/8	5/16	1/4	5/32	1 1/16
AN-16	**16**	3.1496	3	1/8	3/8	1/4	5/32	1 1/16
AN-17	**17**	3.3465	3 3/16	1/8	3/8	1/4	5/32	23/32
AN-18	**18**	3.5433	3 3/8	5/32	3/8	1/4	5/32	13/16
AN-19	**19**	3.7402	3 9/16	5/32	3/8	1/4	5/32	27/32
AN-20	**20**	3.9370	3 25/32	5/32	3/8	5/16	5/32	7/8
AN-21	**21**	4.1339	3 15/16	5/32	3/8	5/16	5/32	7/8
AN-22	**22**	4.3307	4 3/16	3/16	3/8	5/16	3/32	29/32
AN-24	**24**	4.7244	4 9/16	3/16	3/8	5/16	5/32	15/16
AN-26	**26**	5.1181	4 15/16	3/16	1/2	5/16	5/32	1
AN-28	**28**	5.5118	5 5/16	3/16	5/8	5/16	5/32	1 1/16
AN-30	**30**	5.9055	5 23/32	7/32	5/8	3/8	5/32	1 1/8
AN-32	**32**	6.2992	6 1/8	7/32	5/8	3/8	1/4	1 3/16
AN-34	**34**	6.6929	6 1/2	7/32	3/4	3/8	1/4	1 7/32
AN-36	**36**	7.0866	6 29/32	7/32	3/4	3/8	1/4	1 1/4
AN-38	**38**	7.4803	7 5/16	7/32	3/4	3/8	1/4	1 9/32
AN-40	**40**	7.8740	7 11/16	7/32	7/8	3/8	1/4	1 11/32

SHAFT THREAD AND LOCKNUT DIMENSIONS

Heavy Duty



For Heavy Duty Lockwashers, see page 120.

For Shaft Dimensions, see next page.

Threads are American (National) Standard Fine, Class 3 fit.

Sizes AN-128 to AN-140 inclusive are A. B. E. C. Standard.

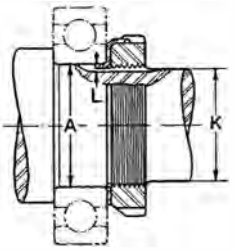
Note: Prefix "A" before a locknut number indicates that this size was previously supplied with 11 threads per inch. Prices on application.

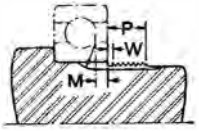
Brg. Bore No.	THREADS					Lock Nut No.	LOCKNUTS					Lock Washer No.
	No. per inch	Major Diam.		Pitch Diam.			Diam. C	Width D	Diam. E	Width G	Depth H	
		Max.	Min.	Max.	Min.							
8	18	1.563	1.555	1.527	1.522	**N-108**	2 1/4	9/16	2	1/4	1/8	**W-08**
9	18	1.767	1.759	1.731	1.726	**N-109**	2 17/32	9/16	2 9/32	1/4	1/8	**W-09**
10	18	1.968	1.960	1.932	1.927	**N-110**	2 11/16	3/8	2 7/16	1/4	1/8	**W-10**
11	18	2.157	2.149	2.121	2.116	**N-111**	2 31/32	3/8	2 21/32	1/4	5/32	**W-11**
12	18	2.360	2.352	2.324	2.319	**N-112**	3 5/32	21/32	2 27/32	1/4	5/32	**W-12**
13	18	2.548	2.540	2.512	2.507	**N-113**	3 3/8	23/32	3 1/16	1/4	5/32	**W-13**
14	18	2.751	2.743	2.715	2.710	**N-114**	3 3/8	23/32	3 5/16	1/4	5/32	**W-14**
15	12	2.933	2.922	2.879	2.874	**AN-115**	3 7/8	3/4	3 9/16	3/8	5/32	**W-15**
16	12	3.137	3.126	3.083	3.077	**AN-116**	4 5/32	3/4	3 27/32	3/8	5/32	**W-16**
17	12	3.340	3.329	3.286	3.279	**AN-117**	4 13/32	25/32	4 1/32	3/8	7/32	**W-17**
18	12	3.527	3.516	3.473	3.466	**AN-118**	4 21/32	7/8	4 9/32	3/8	7/32	**W-18**
19	12	3.730	3.719	3.676	3.669	**AN-119**	4 15/16	29/32	4 9/16	3/8	7/32	**W-19**
20	12	3.918	3.907	3.864	3.857	**AN-120**	5 3/16	15/16	4 13/16	3/8	7/32	**W-20**
22	12	4.325	4.314	4.271	4.263	**AN-122**	5 23/32	31/32	5 9/32	1/2	1/4	**W-22**
24	12	4.716	4.705	4.662	4.654	**AN-124**	6 1/8	1 1/32	5 11/16	1/2	1/4	**W-24**
26	12	5.106	5.095	5.052	5.044	**AN-126**	6 3/4	1 3/32	6 3/16	3/8	5/16	**W-26**
28	12	5.497	5.486	5.443	5.435	**AN-128**	7 3/32	1 3/16	6 17/32	5/8	5/16	**W-28**
30	12	5.888	5.877	5.834	5.826	**AN-130**	7 11/16	1 1/4	7 1/16	3/8	11/32	**W-30**
32	8	6.284	6.269	6.203	6.191	**AN-132**	8 1/16	1 9/32	7 7/16	3/8	11/32	**W-32**
34	8	6.659	6.644	6.578	6.566	**AN-134**	8 21/32	1 11/32	8 1/32	3/8	11/32	**W-34**
36	8	7.066	7.051	6.985	6.973	**AN-136**	9 1/16	1 13/32	8 3/8	3/4	3/8	**W-36**
38	8	7.472	7.457	7.391	7.379	**AN-138**	9 15/32	1 13/32	8 25/32	3/4	3/8	**W-38**
40	8	7.847	7.832	7.766	7.754	**AN-140**	9 27/32	1 1/2	9 5/32	3/4	3/8	**W-40**

A. B. E. C. Standard Locknuts may also be obtained with 8 slots identified by the prefix "8" before the locknut number.

SHAFT DIMENSIONS

For Heavy Duty Locknuts





Keyway Width N

For Heavy Duty Lockwashers, see page 120

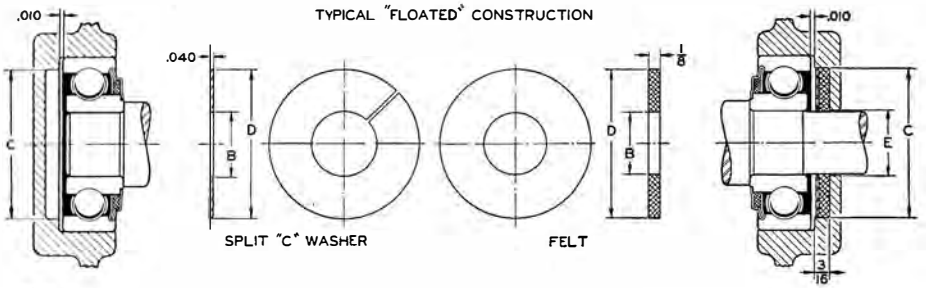
Note: Prefix "A" before a locknut number indicates that this size was previously supplied with 11 threads per inch. Prices on application.

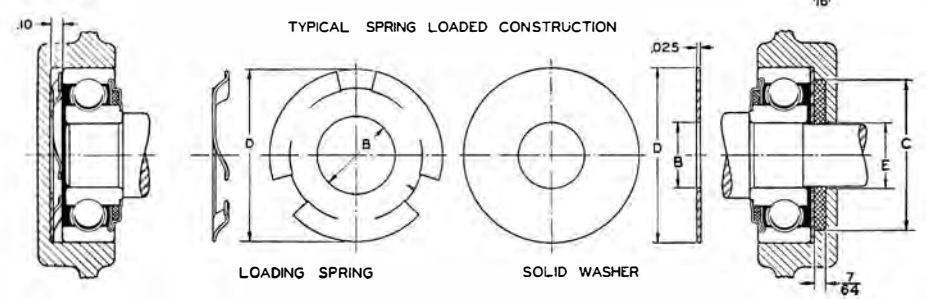
Brg. Bore No.	SHAFT DIAM.		KEY WAY			THREADS		Lock Washer No.	Lock Nut No.
	Nominal or Brg. Bore A	Extension Max. K	Depth L	Width N	M	Relief W	Length P		
8	1.5748	1 15/32	3/32	5/16	5/32	1/8	5/8	**W-08**	**N-108**
9	1.7717	1 11/16	3/32	5/16	3/16	1/8	5/8	**W-09**	**N-109**
10	1.9685	1 7/8	3/32	5/16	3/16	1/8	11/16	**W-10**	**N-110**
11	2.1654	2 1/16	1/8	5/16	3/16	1/8	1 1/16	**W-11**	**N-111**
12	2.3622	2 1/4	1/8	5/16	3/16	1/8	3/4	**W-12**	**N-112**
13	2.5591	2 7/16	1/8	5/16	3/16	1/8	1 3/16	**W-13**	**N-113**
14	2.7559	2 5/8	1/8	5/16	1/4	1/8	1 3/16	**W-14**	**N-114**
15	2.9528	2 25/32	1/8	5/16	5/16	5/32	7/8	**W-15**	**AN-115**
16	3.1496	3	1/8	3/8	5/16	5/32	7/8	**W-16**	**AN-116**
17	3.3465	3 3/16	1/8	3/8	5/16	5/32	7/8	**W-17**	**AN-117**
18	3.5433	3 3/8	5/32	3/8	5/16	5/32	1	**W-18**	**AN-118**
19	3.7402	3 9/16	5/32	3/8	5/16	5/32	1 1/16	**W-19**	**AN-119**
20	3.9370	3 25/32	5/32	3/8	7/16	5/32	1 1/16	**W-20**	**AN-120**
22	4.3307	4 3/16	3/16	3/8	7/16	5/32	1 1/8	**W-22**	**AN-122**
24	4.7244	4 9/16	3/16	3/8	7/16	5/32	1 3/16	**W-24**	**AN-124**
26	5.1181	4 15/16	3/16	1/2	7/16	5/32	1 1/4	**W-26**	**AN-126**
28	5.5118	5 5/16	3/16	5/8	7/16	5/32	1 3/8	**W-28**	**AN-128**
30	5.9055	5 23/32	7/32	5/8	7/16	5/32	1 7/16	**W-30**	**AN-130**
32	6.2992	6 1/16	7/32	5/8	7/16	1/4	1 1/2	**W-32**	**AN-132**
34	6.6929	6 7/16	7/32	3/4	7/16	1/4	1 9/16	**W-34**	**AN-134**
36	7.0866	6 7/8	7/32	3/4	7/16	1/4	1 5/8	**W-36**	**AN-136**
38	7.4803	7 1/4	7/32	3/4	7/16	1/4	1 5/8	**W-38**	**AN-138**
40	7.8740	7 5/8	7/32	7/8	1/2	1/4	1 11/16	**W-40**	**AN-140**

Sizes AN-128 to AN-140 inclusive are A.B.E.C. Standard.

N-D-SEAL FELTS, WASHERS AND SPRINGS

Dimensions and Prices





Brg. No.	Split Washer B	Split Washer D	Solid Washer B	Solid Washer D	Felt B	Felt D	Load. Spring B	Load. Spring D	Shaft Ext. Hole E	Split Washer Cat. No.	Split Washer Net Price per M	Solid Washer Cat. No.	Solid Washer Net Price per M	Load. Spring Cat. No.	Load. Spring Net Price per M	Felt Cat. No.	Felt Net Price per M
8035	.234	.628	.234	.746	.187	.625	.344	.728	.218	C-05	$3.00	P-05	$2.50	S-05	$10.00	F-05	$5.00
8036	.265	.628	.265	.746	.219	.625	.344	.728	.250	C-108	3.00	P-108	2.50	S-05	10.00	F-108	5.00
8006	.265	.753	.265	.943	.219	.750	.453	.926	.250	C-06	3.00	P-06	2.50	S-08	10.00	F-06	5.00
8102	.302	.753	.302	.864	.250	.750	.453	.846	.281	C-07	3.00	P-104	2.50	S-102	10.00	F-07	5.00
8007	.302	.753	.302	.943	.250	.750	.453	.926	.281	C-07	3.00	P-07	2.50	S-08	10.00	F-07	5.00
8103	.343	.753	.343	.864	.312	.750	.453	.846	.343	C-08	3.00	P-106	2.50	S-102	10.00	F-08	5.00
8008	.343	.753	.343	.943	.312	.750	.453	.926	.343	C-08	3.00	P-08	2.50	S-08	10.00	F-08	5.00
8039	.390	.878	.390	1.021	.343	.875	.516	1.004	.375	C-109	3.00	P-109	2.50	S-09	10.00	F-109	8.00
8009	.390	1.003	.390	1.179	.343	1.000	.688	1.164	.375	C-09	3.00	P-09	2.50	S-10	10.00	F-09	8.00
8500*	.421	1.003	.421	1.179	.375	1.000	.688	1.164	.406	C-10	3.00	P-10	2.50	S-10	10.00	F-10	8.00
8011	.469	1.065	.469	1.257	.406	1.062	.688	1.240	.437	C-11	3.00	P-11	2.50	S-12	10.00	F-11	9.00
8501	.500	1.065	.500	1.257	.437	1.062	.688	1.240	.468	C-12	3.00	P-12	2.50	S-12	10.00	F-12	9.00
8013	.547	1.065	.547	1.257	.500	1.062	.688	1.240	.531	C-13	3.00	P-13	2.50	S-12	10.00	F-13	9.00
8014	.594	1.191	.594	1.375	.531	1.188	.814	1.360	.562	C-14	3.50	P-14	3.00	S-15	10.00	F-14	12.00
8502	.625	1.191	.625	1.375	.562	1.188	.814	1.360	.593	C-15	3.50	P-15	3.00	S-15	10.00	F-15	12.00
8016	.656	1.191	.656	1.375	.625	1.188	.814	1.360	.656	C-16	3.50	P-16	3.00	S-15	10.00	F-16	12.00
8503	.695	1.378	.695	1.572	.625	1.375	.971	1.562	.656	C-17	3.50	P-17	3.00	S-17	12.50	F-17	15.00
8503	.695	1.612	.695	1.848	.625	1.609	1.189	1.842	.656	C-17-M	4.00	P-17-M	3.50	S-20	15.00	F-17-M	20.00
8504	.812	1.628	.812	1.848	.750	1.625	1.189	1.842	.781	C-20	4.00	P-20	3.50	S-20	15.00	F-20	20.00
8604	.812	1.769	.812	2.045	.750	1.766	1.359	2.022	.781	C-20-M	4.00	P-20-M	3.50	S-25	25.00	F-20-M	25.00
8505	1.015	1.878	1.015	2.045	.875	1.875	1.359	2.022	.906	C-25	4.00	P-25	3.50	S-25	25.00	F-25	25.00
8026	1.062	1.878	1.062	2.045	1.000	1.875	1.359	2.022	1.031	C-26	4.00	P-26	3.50	S-25	25.00	F-26	25.00

Note: Housing Bore dimension C is the same as Felt diameter D and Shaft Extension diameter the same as Felt diameter B. Shaft shoulder diameter is given on page 118, dimension S.

BEARING WEIGHTS

In Pounds

SINGLE ROW TYPE 1000	
Brg. No.	Wgt.
Light Series	
1206	.49
1207	.68
1208	.87
1209	.99
1210	1.08
1211	1.52
1212	2.01
1213	2.44
1214	2.62
1215	2.80
1216	3.32
1217	4.26
1218	5.12
1219	6.23
1220	8.70
1221	10.28
1222	12.13
Medium Series	
1304	.35
1305	.56
1306	.83
1307	1.07
1308	1.49
1309	2.02
1310	2.58
1311	3.30
1312	3.96
1313	5.00
1314	6.77
1315	8.47
1316	9.75
1317	11.47
1318	16.13
1319	17.47
1320	19.72
1321	22.06
1322	26.28

EXTRA SMALL — 30	
Brg. No.	Wgt.
34	.01
35	.02
36	.02
37	.03
38	.03
39	.04

SINGLE ROW TYPE 1000	
Brg. No.	Wgt.
Heavy Series	
1404	.93
1405	1.20
1406	1.70
1407	2.22
1408	2.81
1409	3.69
1410	4.53
1411	5.58
1412	6.53
1413	7.66
1414	13.34
1415	15.97
1416	18.34
1417	21.44
1418	26.13

MAGNETO — ND5-25	
Brg. No.	Wgt.
ND5	.01
ND8-6	.04
ND8-7	.04
ND8	.04
ND10-9	.06
ND10	.06
ND12-11	.06
ND12	.06
ND13	.05
ND15	.08
ND16	.09
ND17	.18
ND20	.23
ND25	.28
ND25-26	.26

SINGLE ROW TYPE 4000	
Wide Cone	
Brg. No.	Wgt.
4305	.65
4306	.97
4307	1.33
4308	1.78
4309	2.38
4310	3.13
4311	4.08

SINGLE ROW TYPE 3000	
Brg. No.	Wgt.
Light Series	
3200	.07
3201	.09
3202	.10
3203	.14
3204	.22
3205	.28
3206	.47
3207	.64
3208	.80
3209	.92
3210	1.00
3211	1.43
3212	1.88
3213	2.33
3214	2.54
3215	2.62
3216	3.08
3217	3.97
3218	4.84
3219	5.53
3220	7.17
3221	9.09
3222	11.56
Medium Series	
3300	.12
3301	.14
3302	.19
3303	.24
3304	.34
3305	.53
3306	.74
3307	.99
3308	1.41
3309	1.85
3310	2.39
3311	3.01
3312	3.69
3313	4.41
3314	5.47
3315	6.60
3316	9.05
3317	11.25
3318	12.63
3319	15.07
3320	15.80
3321	19.20
3322	24.58

SINGLE ROW TYPE 3000	
Brg. No.	Wgt.
Light Series	
3224	14.4
3226	15.8
3228	19.5
3230	27.7
3232	30.3
3234	37.7
3236	39.3
3238	47.1
3240	56.5
3244	78.2
3248	106
3252	141
3256	148
3260	185
3264	242
Medium Series	
3324	31.6
3326	38.5
3328	47.1
3330	56.1
3332	66.0
3334	78.2
3336	90.6
3338	104
3340	118
3344	155
3348	223
3352	246
3356	301

SINGLE ROW SHIELDED SERIES 7200-7300	
Brg. No.	Wgt.
Light Series	
7206	.49
7207	.68
7208	.87
7209	.99
7210	1.08
7211	1.52
7112	2.01
7213	2.44
7214	2.62
7215	2.80
7216	3.32
7217	4.26
7218	5.12
7219	6.23
Medium Series	
7304	.35
7305	.56
7306	.83
7307	1.07
7308	1.49
7309	2.02
7310	2.59
7311	3.30
7312	3.97
7313	5.01
7314	6.79
7315	8.50

SINGLE ROW SHIELDED SERIES 77200-77300	
Brg. No.	Wgt.
Light Series	
77206	.50
77207	.69
77208	.88
77209	1.00
77210	1.09
77211	1.53
77212	2.02
77213	2.45
77214	2.63
77215	2.81
77216	3.33
77217	4.27
77218	5.13
77219	6.25
Medium Series	
77304	.35
77305	.56
77306	.84
77307	1.08
77308	1.50
77309	2.03
77310	2.60
77311	3.31
77312	3.98
77313	5.02
77314	6.81
77315	8.52

EXTRA SMALL SHIELDED SERIES 7034-7039	
Brg. No.	Wgt.
7034	.010
7035	.020
7036	.020
7037	.030
7038	.030
7039	.040

EXTRA SMALL SHIELDED SERIES 77034-77039	
Brg. No.	Wgt.
77034	.010
77035	.020
77036	.020
77037	.030
77038	.030
77309	.040

BEARING WEIGHTS

In Pounds

SINGLE ROW SHIELDED SERIES 7500-7600

Brg. No.	Wgt.
Light Series	
7500	.07
7501	.09
7502	.10
7503	.14
7504	.22
7505	.28
7506	.47
7507	.64
7508	.80
7509	.92
7510	1.00
7511	1.43
7512	1.88
7513	2.33
7514	2.54
7515	2.62
7516	3.08
7517	3.98
7518	4.85
7519	5.55
7520	7.19
Medium Series	
7600	.12
7601	.14
7602	.19
7603	.24
7604	.34
7605	.53
7606	.74
7607	.99
7608	1.41
7609	1.85
7610	2.40
7611	3.01
7612	3.70
7613	4.42
7614	5.49
7615	6.62

SINGLE ROW SHIELDED SERIES 77500-77600

Brg. No.	Wgt.
Light Series	
77500	.07
77501	.09
77502	.10
77503	.14
77504	.22
77505	.28
77506	.48
77507	.65
77508	.81
77509	.93
77510	1.01
77511	1.44
77512	1.89
77513	2.34
77514	2.55
77515	2.63
77516	3.09
77517	3.99
77518	4.86
77519	5.57
77520	7.21
Medium Series	
77600	.12
77601	.14
77602	.19
77603	.24
77604	.34
77605	.53
77606	.75
77607	1.00
77608	1.42
77609	1.86
77610	2.41
77611	3.02
77612	3.71
77613	4.43
77614	5.51
77615	6.64

SNAP RING SHIELDED SERIES 47500-47600

Brg. No.	Wgt.
Light Series	
47500	.08
47501	.10
47502	.11
47503	.15
47504	.23
47505	.29
47506	.49
47507	.67
47508	.83
47509	.96
47510	1.05
47511	1.49
47512	1.95
Medium Series	
47604	.35
47605	.55
47606	.77
47607	1.03
47608	1.47
47609	1.92
47610	2.47
47611	3.10

SNAP RING SHIELDED SERIES 47200-47300

Brg. No.	Wgt.
Light Series	
47206	.51
47207	.71
47208	.90
47209	1.03
47210	1.13
47211	1.58
47212	2.08
Medium Series	
47304	.36
47305	.58
47306	.86
47307	1.11
47308	1.55
47309	2.09
47310	2.66
47311	3.48

SNAP RING NON-SHIELDED SERIES 43200-43300

Brg. No.	Wgt.
Light Series	
43205	.29
43206	.46
43207	.66
43208	.82
43209	.94
43210	1.03
43211	1.43
43212	1.85
Medium Series	
43304	.35
43305	.54
43306	.76
43307	1.01
43308	1.44
43309	1.89
43310	2.43
43311	3.05

SNAP RING NON-SHIELDED SERIES 41200-41300

Brg. No.	Wgt.
Light Series	
41206	.50
41207	.70
41208	.89
41209	1.01
41210	1.11
41211	1.56
41212	2.05
Medium Series	
41304	.36
41305	.57
41306	.85
41307	1.09
41308	1.52
41309	2.06
41310	2.62
41311	3.43

DOUBLE ROW TYPE 5000

Brg. No.	Wgt.
Light Series	
5200	.12
5201	.14
5202	.15
5203	.22
5204	.38
5205	.42
5206	.69
5207	1.06
5208	1.44
5209	1.56
5210	1.69
5211	2.33
5212	3.11
5213	3.94
5214	4.31
5215	4.63
5216	5.88
5217	7.50
5218	9.19
5219	11.25
5220	13.50
5222	18.90
Medium Series	
5300	.22
5301	.24
5302	.30
5303	.42
5304	.50
5305	.82
5306	1.32
5307	1.82
5308	2.38
5309	3.25
5310	4.25
5311	5.56
5312	7.06
5313	8.94
5314	10.63
5315	12.88
5316	15.95
5317	18.65

DOUBLE ROW SHIELDED SERIES 5500-5600

Brg. No.	Wgt.
Light Series	
5500	.12
5501	.15
5502	.16
5503	.23
5504	.39
5505	.43
5506	.70
5507	1.07
5508	1.45
5509	1.57
5510	1.70
5511	2.34
5512	3.12
5514	4.32
5516	5.89
5518	9.20
5520	13.52
5522	18.92
Medium Series	
5600	.22
5601	.25
5602	.31
5603	.43
5604	.52
5605	.84
5606	1.34
5607	1.84
5608	2.40
5609	3.27
5610	4.27
5611	5.58

BEARING WEIGHTS

In Pounds

DOUBLE ROW SHIELDED SERIES 55500-55600

Brg. No.	Wgt.
Light Series	
55500	.12
55501	.16
55502	.17
55503	.24
55504	.40
55505	.44
55509	1.58
55510	1.71
55512	3.13
55514	4.33
55520	13.54
Medium Series	
55600	.22
55601	.26
55602	.32
55603	.44
55604	.52

SINGLE N-D-SEAL TYPE WC-8000

Brg. No.	Wgt.
WC-8035	.030
WC-8036	.032
WC-8006	.049
WC-8007	.048
WC-8102	.039
WC-8008	.045
WC-8103	.036
WC-8039	.067
WC-8009	.092
WC-8500	.089
WC-8011	.103
WC-8501	.100
WC-8013	.096
WC-8014	.118
WC-8502	.113
WC-8016	.106
WC-8503	.163
WC-8504	.250
WC-8505	.296
WC-8026	.286
WC-8506	.557
WC-8507	.703
WC-8508	1.048
Medium Series	
WC-8603	.273
WC-8604	.390
WC-8605	.666

SHIELDED N-D-SEAL TYPE WC-87000

Brg. No.	Wgt.
WC-87035	.031
WC-87036	.033
WC-87006	.050
WC-87007	.049
WC-87102	.040
WC-87008	.047
WC-87103	.038
WC-87039	.070
WC-87009	.095
WC-87500	.092
WC-87011	.105
WC-87501	.102
WC-87013	.098
WC-87014	.120
WC-87502	.115
WC-87016	.108
WC-87503	.167
WC-87504	.254
WC-87505	.301
WC-87026	.291
WC-87506	.568
WC-87507	.716
WC-87508	1.063
Medium Series	
WC-87603	.276
WC-87604	.397
WC-87605	.676

SHIELDED N-D-SEAL TYPE WC-88000

Brg. No.	Wgt.
WC-88035	.034
WC-88036	.035
WC-88006	.058
WC-88102	.045
WC-88007	.054
WC-88103	.041
WC-88008	.050
WC-88039	.077
WC-88009	.109
WC-88500	.105
WC-88011	.108
WC-88501	.104
WC-88013	.100
WC-88014	.132
WC-88502	.126
WC-88016	.119
WC-88503	.179
WC-88504	.277
WC-88505	.313
WC-88026	.303
WC-88506	.633
WC-88507	.812
WC-88508	1.105
Medium Series	
WC-88603	.298
WC-88604	.443
WC-88605	.714

SINGLE N-D-SEAL TYPE 8000

Brg. No.	Wgt.
Light Series	
8035	.022
8036	.024
8006	.046
8007	.045
8102	.037
8008	.043
8103	.036
8039	.060
8009	.078
8500	.075
8011	.099
8501	.095
8013	.091
8014	.111
8502	.106
8016	.101
8503	.150
8504	.232
8505	.287
8026	.277
8506	.495
8507	.695
8508	1.033
Medium Series	
8603	.254
8604	.345
8605	.598

SHIELDED N-D-SEAL TYPE 87000

Brg. No.	Wgt.
Light Series	
87035	.023
87036	.025
87006	.048
87007	.047
87102	.039
87008	.044
87103	.038
87039	.063
87009	.095
87500	.077
87011	.101
87501	.097
87013	.093
87014	.115
87502	.108
87016	.105
87503	.154
87504	.237
87505	.292
87026	.282
87506	.506
87507	.708
87508	1.182
Medium Series	
87603	.257
87604	.352
87605	.608

DOUBLE N-D-SEAL TYPE 88000

Brg. No.	Wgt.
Light Series	
88035	.026
88036	.027
88006	.055
88007	.051
88102	.043
88008	.048
88103	.040
88039	.070
88009	.105
88500	.091
88011	.104
88501	.099
88013	.095
88014	.125
88502	.119
88016	.114
88503	.166
88504	.259
88505	.304
88026	.294
88506	.571
88507	.804
88508	1.182
Medium Series	
88603	.279
88604	.398
88605	.646

REAR WHEEL TYPE 88100

Brg. No.	Wgt.
88136	.69
88107	.81
88127E	1.0
88108E	1.23
88128	1.13
88109	1.31
88110	1.33
D88609	2.26

DIFRAX TYPE 0100

Brg. No.	Wgt.
0103	.61
0108	.79
0100	.76
0113	.85
0114	.59
0109	.97
0110	1.00
0111	1.26
0101	1.23

CONVEYOR BEARING TYPE 88105

Brg. No.	Wgt.
88105	.33

SNAP RING N-D-SEAL TYPE 48000

Brg. No.	Wgt.
48009	.083
48500	.080
48011	.104
48501	.100
48013	.096
48014	.116
48502	.111
48016	.106
48503	.156
48504	.241
48505	.297
48605	.62
48026	.287
48506	.52
48507	.73
48508	1.07

SNAP RING N-D-SEAL TYPE 487000

Brg. No.	Wgt.
487009	.100
487500	.082
487011	.106
487501	.102
487013	.098
487014	.120
487502	.113
487016	.110
487503	.160
487504	.246
487505	.302
487605	.63
487026	.292
487506	.53
487507	.74
487508	1.08

SNAP RING N-D-SEAL TYPE 488000

Brg. No.	Wgt.
488009	.110
488500	.096
488011	.108
488501	.104
488013	.100
488014	.130
488502	.124
488016	119
488503	.172
488504	.268
488505	.314
488605	.67
488026	.304
488506	.59
488507	.83
488508	1.12

CLUTCH THROWOUT CT27 TO 40

Brg. No.	Wgt.
CT27	.45
CT30-F	.62
CT30	.73
CT32	.69
CT34	.87
CT34-36	.79
CT36	.75
CT38	1.31
CT40	1.69

BEARING WEIGHTS

In Pounds

20,000 DUPLEX (2 BRGS.) TYPES DF, DB OR DT	
Brg. No.	Wgt.
Light Series	
20201	.20
20202	.24
20203	.32
20204	.52
20205	.66
20206	1.02
20207	1.46
20208	1.84
20209	1.96
20210	2.48
20211	3.20
20212	4.08
20213	5.12
20214	5.52
20215	6.14
20216	7.58
20217	9.76
20218	12.00
20219	14.50
20220	17.00
20221	20.64
20222	23.90
Medium Series	
20303	.52
20304	.64
20305	1.22
20306	1.76
20307	2.38
20308	3.26
20309	4.38
20310	5.56
20311	7.18
20312	9.00
20313	11.30
20314	13.44
20315	16.26
20316	18.72
20317	22.80
20318	26.64
20319	30.76
20320	35.76
20321	43.00
20322	60.38

30,000 DUPLEX (2 BRGS.) TYPE DF OR DT	
Brg. No.	Wgt.
Light Series	
30201	.20
30202	.24
30203	.32
30204	.52
30205	.66
30206	1.02
30207	1.46
30208	1.84
30209	1.96
30210	2.48
30211	3.20
30212	4.08
30213	5.12
30214	5.52
30215	6.14
30216	7.48
30217	9.78
30218	12.04
30219	14.54
30220	17.06
30221	20.70
30222	23.98
Medium Series	
30303	.52
30304	.74
30305	1.22
30306	1.76
30307	2.40
30308	3.28
30309	4.40
30310	5.58
30311	7.20
30312	9.02
30313	11.34
30314	13.48
30315	16.30
30316	18.76
30317	22.86
30318	26.70
30319	30.84
30320	35.84
30321	43.08
30322	60.48

RADAX TYPE 20,000			
Brg. No.	Wgt.	Brg. No.	Wgt.
Light Series		Medium Series	
20224	15.1	**20324**	33.3
20226	16.4	**20326**	40.5
20228	20.5	**20328**	49.6
20230	29.1	**20330**	59.0
20232	31.9	**20332**	69.4
20234	39.7	**20334**	82.3
20236	41.4	**20336**	95.4
20238	49.6	**20338**	110
20240	59.0	**20340**	124
20244	82.3	**20344**	163
20248	111	**20348**	234
20252	148	**20352**	259
20256	156	**20356**	316
20260	194		
20264	255		

PUMP SHAFT TYPE 885100	
Brg. No.	Wgt.
885140	.557
885141	.642
885144	.693
885146	.596
885147	.506
885154	.413
885155	.591
885156	.592

FRONT WHEEL TYPE 9000							
Brg. Complete	Wgt.	Separ. Assem. No.	Wgt.	Inner Race No.	Wgt.	Outer Race No.	Wgt.
909001	.37	**909701**	.11	**909501**	.09	**909601**	.17
909002	.97	**909702**	.26	**909502**	.29	**909602**	.41
909021	.29	**909721**	.08	**909521**	.08	**909621**	.13
909022	.58	**909722**	.15	**909522**	.22	**909622**	.21
909023	.50	**909723**	.18	**909523**	.11	**909623**	.21
909024	1.19	**909724**	.37	**909524**	.35	**909624**	.47
909003	.63	**909703**	.20	**909503**	.15	**909603**	.28
909004	1.47	**909704**	.46	**909504**	.42	**909604**	.59
909025	.48	**909725**	.16	**909525**	.13	**909625**	.23
909026	1.17	**909726**	.35	**909526**	.39	**909626**	.45
909027	.94	**909727**	.30	**909527**	.21	**909627**	.42
909028	2.05	**909728**	.63	**909528**	.59	**909628**	.82
909007	1.21	**909707**	.41	**909507**	.26	**909607**	.54
909008	2.44	**909708**	.75	**909508**	.65	**909608**	1.04
909029	1.34	**909729**	.47	**909529**	.30	**909629**	.57
909030	2.59	**909730**	.82	**909530**	.77	**909630**	1.02
909009	1.37	**909709**	.46	**909509**	.30	**909609**	.60
909019	2.88	**909710**	.95	**909510**	.71	**909610**	1.22
909032	.96	**909702**	.26	**909532**	.28	**909602**	.41
909035	.56	**909735**	.16	**909535**	.13	**909635**	.26
909042	.94	**909702**	.26	**909542**	.27	**909602**	.41

BEARING WEIGHTS

In Pounds

20,000 DUPLEX (2 BRGS.) TYPE DF, DB OR DT

Brg. No.	Wgt.
Heavy Series	
20404	1.82
20405	2.36
20406	2.96
20407	4.74
20408	6.08
20409	7.74
20410	9.60
20411	11.88
20412	14.50
20413	17.76
20414	25.36
20415	29.36
20416	35.00
20417	42.62
20418	49.50

30,000 DUPLEX (2 BRGS.) TYPE DF OR DT

Brg. No.	Wgt.
Heavy Series	
30404	1.82
30405	2.36
30406	2.98
30407	4.76
30408	6.10
30409	7.78
30410	9.64
30411	11.92
30412	14.54
30413	17.82
30414	25.32
30415	29.32
30416	35.08
30417	42.70
30418	49.60

RADAX TYPE 20,000

Brg. No.	Wgt.
Light Series	
20201	.10
20202	.12
20203	.16
20204	.26
20205	.33
20206	.51
20207	.73
20208	.92
20209	.98
20210	1.24
20211	1.60
20212	2.04
20213	2.56
20214	2.76
20215	3.07
20216	3.74
20217	4.88
20218	6.00
20219	7.25
20220	8.50
20221	10.32
20222	11.95
Medium Series	
20303	.26
20304	.37
20305	.61
20306	.88
20307	1.19
20308	1.63
20309	2.19
20310	2.78
20311	3.59
20312	4.50
20313	5.65
20314	6.72
20315	8.13
20316	9.36
20317	11.40
20318	13.32
20319	15.38
20320	17.88
20321	21.50
20322	30.19

RADAX TYPE 20,000

Brg. No.	Wgt.
Heavy Series	
20404	.91
20405	1.18
20406	1.48
20407	2.37
20408	3.04
20409	3.87
20410	4.80
20411	5.94
20412	7.25
20413	8.88
20414	12.63
20415	14.63
20416	17.50
20417	21.31
20418	24.75

RADAX TYPE 30,000

Brg. No.	Wgt.
Light Series	
30201	.10
30202	.12
30203	.16
30204	.26
30205	.33
30206	.51
30207	.73
30208	.92
30209	.98
30210	1.24
30211	1.60
30212	2.04
30213	2.56
30214	2.76
30215	3.07
30216	3.74
30217	4.89
30218	6.02
30219	7.27
30220	8.53
30221	10.35
30222	11.99

RADAX TYPE 30,000

Brg. No.	Wgt.
Medium Series	
30303	.26
30304	.37
30305	.61
30306	.88
30307	1.20
30308	1.64
30309	2.20
30310	2.79
30311	3.60
30312	4.51
30313	5.67
30314	6.74
30315	8.15
30316	9.38
30317	11.43
30318	13.35
30319	15.42
30320	17.92
30321	21.54
30322	30.24
Heavy Series	
30404	.91
30405	1.18
30406	1.49
30407	2.38
30408	3.05
30409	3.89
30410	4.82
30411	5.96
30412	7.27
30413	8.91
30414	12.66
30415	14.66
30416	17.54
30417	21.35
30418	24.80

EQUIVALENT TABLE

Single Row—Type 1000

Light, Medium and Heavy Series

N. D.	Fafnir	M. R. C.	Federal	Norma	C. J. B.	McGill
1206	206 W	206 M	1206 M	MT 206	3206	206 N
1207	207 W	207 M	1207 M	MT 207	3207	207 N
1208	208 W	208 M	1208 M	MT 208	3208	208 N
1209	209 W	209 M	1209 M	MT 209	3209	209 N
1210	210 W	210 M	1210 M	MT 210	3210	210 N
1211	211 W	211 M	1211 M	MT 211	3211	211 N
1212	212 W	212 M	1212 M	MT 212	3212	212 N
1213	213 W	213 M	1213 M	MT 213	3213	213 N
1214	214 W	214 M	1214 M	170 gap	3214	214 N
1215	215 W	215 M	1215 M	175 gap	3215	215 N
1216	216 W	216 M	1216 M	180 gap	3216	216 N
1217	217 W	217 M	1217 M	185 gap	3217	217 N
1218	218 W	218 M	1218 M	190 gap	3218	218 N
1219	219 W	219 M	1219 M	195 gap	3219	219 N
1220	220 W	220 M	1220 M	200 gap	3220	220 N
1221	221 W	221 M	1221 M	205 gap	3221	221 N
1222	222 W	222 M	1222 M	210 gap	3222	222 N
1304	304 W	304 M	1304 M	MT 304	3304	304 N
1305	305 W	305 M	1305 M	MT 305	3305	305 N
1306	306 W	306 M	1306 M	MT 306	3306	306 N
1307	307 W	307 M	1307 M	MT 307	3307	307 N
1308	308 W	308 M	1308 M	MT 308	3308	308 N
1309	309 W	309 M	1309 M	MT 309	3309	309 N
1310	310 W	310 M	1310 M	MT 310	3310	310 N
1311	311 W	311 M	1311 M	MT 311	3311	311 N
1312	312 W	312 M	1312 M	MT 312	3312	312 N
1313	313 W	313 M	1313 M	365 gap	3313	313 N
1314	314 W	314 M	1314 M	370 gap	3314	314 N
1315	315 W	315 M	1315 M	375 gap	3315	315 N
1316	316 W	316 M	1316 M	380 gap	3316	316 N
1317	317 W	317 M	1317 M	385 gap	3317	317 N
1318	318 W	318 M	1318 M	390 gap	3318	318 N
1319	319 W	319 M	1319 M	395 gap	3319	319 N
1320	320 W	320 M	1320 M	400 gap	3320	320 N
1321	321 W	321 M	1321 M	405 gap	3321	321 N
1322	322 W	322 M	1322 M	410 gap	3322	322 N
1404	404 W	404 M	1404 M		3404	404 N
1405	405 W	405 M	1405 M		3405	405 N
1406	406 W	406 M	1406 M		3406	406 N
1407	407 W	407 M	1407 M		3407	407 N
1408	408 W	408 M	1408 M		3408	408 N
1409	409 W	409 M	1409 M		3409	409 N
1410	410 W	410 M	1410 M		3410	410 N
1411	411 W	411 M	1411 M		3411	411 N
1412	412 W	412 M	1412 M		3412	412 N
1413	413 W	413 M	1413 M		3413	413 N
1414	414 W	414 M	1414 M		3414	414 N
1415	415 W	415 M	1415 M		3415	415 N
1416	416 W	416 M	1416 M		3416	416 N
1417	417 W	417 M	1417 M		3417	417 N
1418	418 W	418 M	1418 M		3418	418 N

EQUIVALENT TABLE

Single Row—Type 3000

Light Series

N. D.	M. R. C.	Federal	Norma	Fafnir	S. K. F. and C. J. B.
3200	200-S	1200	200	200 K	6200
3201	201-S	1201	201	201 K	6201
3202	202-S	1202	202	202 K	6202
3203	203-S	1203	203	203 K	6203
3204	204-S	1204	204	204 K	6204
3205	205-S	1205	205	205 K	6205
3206	206-S	1206	206	206 K	6206
3207	207-S	1207	207	207 K	6207
3208	208-S	1208	208	208 K	6208
3209	209-S	1209	209	209 K	6209
3210	210-S	1210	210	210 K	6210
3211	211-S	1211	211	211 K	6211
3212	212-S	1212	212	212 K	6212
3213	213-S	1213	213	213 K	6213
3214	214-S	1214	170	214 K	6214
3215	215-S	1215	175	215 K	6215
3216	216-S	1216	180	216 K	6216
3217	217-S	1217	185	217 K	6217
3218	218-S	1218	190	218 K	6218
3219	219-S	1219	195	219 K	6219
3220	220-S	1220	200 H	220 K	6220
3221	221-S	1221	205 H	221 K	6221
3222	222-S	1222	210 H	222 K	6222

Medium Series

N. D.	M. R. C.	Federal	Norma	Fafnir	S. K. F. and C. J. B.
3300	300-S	1300	300	300 K	6300
3301	301-S	1301	301	301 K	6301
3302	302-S	1302	302	302 K	6302
3303	303-S	1303	303	303 K	6303
3304	304-S	1304	304	304 K	6304
3305	305-S	1305	305	305 K	6305
3306	306-S	1306	306	306 K	6306
3307	307-S	1307	307	307 K	6307
3308	308-S	1308	308	308 K	6308
3309	309-S	1309	309	309 K	6309
3310	310-S	1310	310	310 K	6310
3311	311-S	1311	311	311 K	6311
3312	312-S	1312	312	312 K	6312
3313	313-S	1313	365	313 K	6313
3314	314-S	1314	370	314 K	6314
3315	315-S	1315	375	315 K	6315
3316	316-S	1316	380	316 K	6316
3317	317-S	1317	385	317 K	6317
3318	318-S	1318	390	318 K	6318
3319	319-S	1319	395	319 K	6319
3320	320-S	1320	400	320 K	6320
3321	321-S	1321	405 H	321 K	6321
3322	322-S	1322	410 H	322 K	6322

EQUIVALENT TABLE

Double Row—Type 5000

Light Series

N. D.	Federal	S. K. F.	McGill	Fafnir	C. J. B.	M. R. C.
5200	5200			5200	5200	5200-S
5201	5201			5201	5201	5201-S
5202	5202	5202	5202	5202	5202	5202-S
5203	5203	5203 R	5203	5203	5203	5203-S
5204	5204	5204 R	5204	5204	5204	5204 K
5205	5205	5205 R	5205	5205	5205	5205 K
5206	5206	5206 R	5206	5206	5206	5206 K
5207	5207	5207 R	5207	5207	5207	5207 K
5208	5208	5208 R	5208	5208	5208	5208 K
5209	5209	5209 R	5209	5209	5209	5209 K
5210	5210	5210 R	5210	5210	5210	5210 K
5211	5211	5211 R	5211	5211	5211	5211 K
5212	5212	5212 R	5212	5212	5212	5212 K
5213	5213	5213 R	5213	5213	5213	5213 K
5214	5214	5214 R	5214	5214	5214	5214 K
5215	5215	5215 R	5215	5215	5215	5215 K
5216	5216	5216 R	5216	5216	5216	5216 K
5217	5217	5217 R	5217	5217	5217	5217 K
5218	5218	5218 R	5218	5218	5218	5218 K
5219	5219	5219 R	5219	5219	5219	5219
5220	5220	5220 R	5220	5220	5220	5220
5222	5222	5222 R		5222	5222	5222

Medium Series

N. D.	Federal	S. K. F.	McGill	Fafnir	C. J. B.	M. R. C.
5300	5300					5300-S
5301	5301	5301		5301		5301-S
5302	5302	5302	5302	5302		5302-S
5303	5303	5303	5303	5303	5303	5303
5304	5304	5304	5304	5304	5304	5304
5305	5305	5305	5305	5305	5305	5305
5306	5306	5306	5306	5306	5306	5306
5307	5307	5307	5307	5307	5307	5307
5308	5308	5308	5308	5308	5308	5308
5309	5309	5309	5309	5309	5309	5309
5310	5310	5310	5310	5310	5310	5310
5311	5311	5311	5311	5311	5311	5311
5312	5312	5312	5312	5312	5312	5312
5313	5313	5313	5313	5313	5313	5313
5314	5314	5314	5314	5314	5314	5314
5315	5315	5315	5315	5315	5315	5315

EQUIVALENT TABLE

*Shielded Bearings—Type 7000

Series 7200

N. D.	Fafnir	M. R. C.	Federal	Norma
7206	206 WD	206 MF	1206 MF	MT206P
7207	207 WD	207 MF	1207 MF	MT207P
7208	208 WD	208 MF	1208 MF	MT208P
7209	209 WD	209 MF	1209 MF	MT209P
7210	210 WD	210 MF	1210 MF	MT210P
7211	211 WD	211 MF	1211 MF	MT211P
7212	212 WD	212 MF	1212 MF	MT212P
7213	213 WD	213 MF	1213 MF	MT213P
7214	214 WD	214 MF	1214 MF	
7215	215 WD	215 MF	1215 MF	
7216			1216 MF	
7217		217 MF	1217 MF	
7218			1218 MF	
7219			1219 MF	

Series 7300

N. D.	Fafnir	M. R. C.	Federal	Norma
7304	304 WD	304 MF	1304 MF	MT304P
7305	305 WD	305 MF	1305 MF	MT305P
7306	306 WD	306 MF	1306 MF	MT306P
7307	307 WD	307 MF	1307 MF	MT307P
7308	308 WD	308 MF	1308 MF	MT308P
7309	309 WD	309 MF	1309 MF	MT309P
7310	310 WD	310 MF	1310 MF	MT310P
7311	311 WD	311 MF	1311 MF	MT311P
7312	312 WD	312 MF	1312 MF	MT312P
7313	313 WD	313 MF	1313 MF	
7314	314 WD	314 MF	1314 MF	
7315	315 WD	315 MF	1315 MF	

Extra Small Series

N. D.	S. K. F.	Norma	Fafnir	M. R. C.
7034	34 Z	C 94 P	34 D	
7035	35 Z	C 95 P	35 D	
7036	36 Z	C 96 P	36 D	36 F
7037	37 Z	C 97 P	37 D	37 F
7038	38 Z	C 98 P	38 D	38 F
7039	39 Z	C 99 P	39 D	39 F

*New Departure with double shields — 77200-77300-77030. MRC with double shields 200MFF-300MFF-38FF. Federal 1200 MFF-1300MFF. Norma Hoffman MT200PP-MT300PP.

EQUIVALENT TABLE

*Shielded Bearings—Type 7000

Series 7500

N. D.	Fafnir	M. R. C.	Federal	Norma	McGill	S. K. F.
7500	200 KD	200 SF	1200 F	200 P	200 F	6200 Z
7501	201 KD	201 SF	1201 F	201 P	201 F	6201 Z
7502	202 KD	202 SF	1202 F	202 P	202 F	6202 Z
7503	203 KD	203 SF	1203 F	203 P	203 F	6203 Z
7504	204 KD	204 SF	1204 F	204 P	204 F	6204 Z
7505	205 KD	205 SF	1205 F	205 P	205 F	6205 Z
7506	206 KD	206 SF	1206 F	206 P	206 F	6206 Z
7507	207 KD	207 SF	1207 F	207 P	207 F	6207 Z
7508	208 KD	208 CF	1208 F	208 P	208 F	6208 Z
7509	209 KD	209 SF	1209 F	209 P	209 F	6209 Z
7510	210 KD	210 SF	1210 F	210 P	210 F	6210 Z
7511	211 KD	211 SF	1211 F	211 P		6211 Z
7512	212 KD	212 SF	1212 F	212 P	212 F	6212 Z
7513	213 KD	213 SF	1213 F	213 P	213 F	
7514	214 KD	214 SF	1214 F			
7515	215 KD	215 SF	1215 F		215 F	
7516			1216 F		216 F	
7517		217 SF	1217 F			
7518			1218 F			
7519			1219 F			

Series 7600

N. D.	Fafnir	M. R. C.	Federal	Norma	McGill	S. K. F.
7600	300 KD	300 SF	1300 F	300 P		6300 Z
7601	301 KD	301 SF	1301 F	301 P	301 F	6301 Z
7602	302 KD	302 SF	1302 F	302 P	302 F	6302 Z
7603	303 KD	303 SF	1303 F	303 P	303 F	6303 Z
7604	304 KD	304 SF	1304 F	304 P	304 F	6304 Z
7605	305 KD	305 SF	1305 F	305 P	305 F	6305 Z
7606	306 KD	306 SF	1306 F	306 P	306 F	6306 Z
7607	307 KD	307 SF	1307 F	307 P	307 F	6307 Z
7608	308 KD	308 SF	1308 F	308 P	308 F	6308 Z
7609	309 KD	309 SF	1309 F	309 P	309 F	6309 Z
7610	310 KD	310 SF	1310 F	310 P	310 F	6310 Z
7611	311 KD	311 SF	1311 F	311 P	311 F	6311 Z
7612	312 KD	312 SF	1312 F	312 P	312 F	6312 Z
7613	313 KD	313 SF	1313 F		313 F	
7614	314 KD	314 SF	1314 F			
7615	315 KD	315 SF	1315 F		315 F	

* New Departure with double shields — 77500-77600. MRC with double shields 200SFF-300SFF. Federal 1200FF-1300FF. Norma Hoffman, 200PP-300PP. SKF 6200ZZ-6300ZZ.

EQUIVALENT TABLE

Extra Large Bearings

Single Row
Type 3000

Angular Contact
Type 20000

Light Series

N. D.	S. K. F.	M. R. C.	Fafnir
3224	6224-X	224-R	224
3226	6226-X	226-R	226
3228	6228-X	228-R	228
3230	6230-X	230-R	230
3232	6232-X	232-R	232
3234	6234-X	234-R	234
3236	6236-X	236-R	236
3238	6238-X	238-R	238
3240	6240-X	240-R	240
3244		244-R	244
3248	6248-X	248-R	248
3252		252-R	252
3256		256-R	256
3260		260-R	260
3264		264-R	264

N. D.	S. K. F.	M. R. C.	Fafnir
20224	7224	7224	7224
20226	7226	7226	7226
20228	7228	7228	7228
20230	7230	7230	7230
20232	7232	7232	7232
20234	7234	7234	7234
20236	7236	7236	7236
20238	7238	7238	7238
20240	7240	7240	7240
20244		7244	7244
20248		7248	7248
20252		7252	7252
20256		7256	7256
20260		7260	7260
20264		7264	7264

Medium Series

N. D.	S. K. F.	M. R. C.	Fafnir
3324	6324-X	324-R	324
3326	6326-X	326-R	326
3328	6328-X	328-R	328
3330	6330-X	330-R	330
3332	6332-X	332-R	332
3334	6334-X	334-R	334
3336	6336-X	336-R	336
3338	6338-X	338-R	338
3340	6340-X	340-R	340
3344		344-R	344
3348	6348-X	348-R	348
3352	6352-X	352-R	352
3356		356-R	356

N. D.	S. K. F.	M. R. C.	Fafnir
20324	7324	7324	7324
20326	7326	7326	7326
20328	7328	7328	7328
20330	7330	7330	7330
20332	7332	7332	7332
20334	7334	7334	7334
20336	7336	7336	7336
20338	7338	7338	7338
20340	7340	7340	7340
20344		7344	7344
20348		7348	7348
20352		7352	7352
20356		7356	7356

EQUIVALENT TABLE

Radax—Types 20,000 and 30,000

Light Series

N. D.	S. K. F.	Norma	M. R. C.	N. D.	M. R. C.	McGill	Norma	Fafnir
20204	7204	120 AC	7204	**30204**	7204 P	7204	120 AC Star	
20205	7205	125 AC	7205	**30205**	7205 P	7205	125 AC Star	
20206	7206	130 AC	7206	**30206**	7206 P	7206	130 AC Star	
20207	7207	135 AC	7207	**30207**	7207 P	7207	135 AC Star	
20208	7208	140 AC	7208	**30208**	7208 P	7208	140 AC Star	
20209	7209	145 AC	7209	**30209**	7209 P	7209	145 AC Star	
20210	7210	150 AC	7210	**30210**	7210 P	7210	150 AC Star	
20211	7211	155 AC	7211	**30211**	7211 P	7211	155 AC Star	
20212	7212	160 AC	7212	**30212**	7212 P	7212	160 AC Star	7212 PW
20213	7213	165 AC	7213	**30213**	7213 P	7213	165 AC Star	7213 PW
20214	7214	170 AC	7214	**30214**	7214 P	7214	170 AC Star	7214 PW
20215	7215	175 AC	7215	**30215**	7215 P	7215	175 AC Star	7215 PW
20216	7216	180 AC	7216	**30216**	7216 P	7216	180 AC Star	7216 PW
20217	7217	185 AC	7217	**30217**	7217 P	7217	185 AC Star	7217 PW
20218	7218	190 AC	7218	**30218**	7218 P	7218	190 AC Star	7218 PW
20219	7219	195 AC	7219	**30219**	7219 P	7219	195 AC Star	7219 PW
20220	7220	200 AC	7220	**30220**	7220 P	7220	200 AC Star	7220 PW
20221	7221	205 AC	7221	**30221**	7221 P	7221	205 AC Star	
20222	7222	210 AC	7222	**30222**	7222 P		210 AC Star	7222 PW

Medium and Heavy Series

N. D.	S. K. F.	Norma	M. R. C.	N. D.	M. R. C.	McGill	Norma	Fafnir
20304	7304	320 AC	7304	**30304**	7304 P	7304	320 AC Star	
20305	7305	325 AC	7305	**30305**	7305 P	7305	325 AC Star	
20306	7306	330 AC	7306	**30306**	7306 P	7306	330 AC Star	
20307	7307	335 AC	7307	**30307**	7307 P	7307	335 AC Star	
20308	7308	340 AC	7308	**30308**	7308 P	7308	340 AC Star	
20309	7309	345 AC	7309	**30309**	7309 P	7309	345 AC Star	
20310	7310	350 AC	7310	**30310**	7310 P	7310	350 AC Star	7310 PW
20311	7311	355 AC	7311	**30311**	7311 P	7311	355 AC Star	7311 PW
20312	7312	360 AC	7312	**30312**	7312 P	7312	360 AC Star	7312 PW
20313	7313	365 AC	7313	**30313**	7313 P	7313	365 AC Star	7313 PW
20314	7314	370 AC	7314	**30314**	7314 P	7314	370 AC Star	7314 PW
20315	7315	375 AC	7315	**30315**	7315 P	7315	375 AC Star	7315 PW
20316	7316	380 AC	7316	**30316**	7316 P	7316	380 AC Star	7316 PW
20317	7317	385 AC	7317	**30317**	7317 P	7317	385 AC Star	7317 PW
20318	7318	390 AC	7318	**30318**	7318 P	7318	390 AC Star	7318 PW
20319	7319	395 AC	7319	**30319**	7319 P	7319	395 AC Star	7319 PW
20320	7320	400 AC	7320	**30320**	7320 P	7320	400 AC Star	7320 PW
20321	7321	405 AC	7321	**30321**	7321 P	7321	405 AC Star	7321 PW
20322	7322	410 AC	7322	**30322**	7322 P	7322	410 AC Star	7322 PW
20405	7405		7405	**30405**	7405 P	7405		
20406	7406		7406	**30406**	7406 P	7406		
20407	7407		7407	**30407**	7407 P	7407		
20408	7408		7408	**30408**	7408 P	7408		
20409	7409		7409	**30409**	7409 P	7409		
20410	7410		7410	**30410**	7410 P	7410		
20411	7411		7411	**30411**	7411 P	7411		
20412	7412		7412	**30412**	7412 P	7412		
20413	7413		7413	**30413**	7413 P	7413		
20414	7414		7414	**30414**	7414 P	7414		
20415	7415		7415	**30415**	7415 P	7415		
20416	7416		7416	**30416**	7416 P	7416		
20417	7417		7417	**30417**	7417 P	7417		
20418	7418		7418	**30418**	7418 P	7418		

EQUIVALENT TABLE

Magneto—Type ND 8-25

N. D.	Fafnir	Federal	Norma	S. K. F.	M. R. C.
ND 8-6		FB 8-6	E 8-6	E 8-6	E 8-6
ND 8-7	8E	FB 8-7	E 8-7	E 8-7	E 8-7
ND 8	8	FB 8	E 8	E 8	E 8
ND 10-9	9	FB 10-9	E 9	E 9	E 9
ND 10	10	FB 10	E 10	E 10	E 10
ND 12-11	11	FB 12-11	E 11	E 11	E 11
ND 12	12	FB 12	E 12	E 12	E 12
ND 13	13	FB 13	E 13	E 13	E 13
ND 15	15	FB 15	E 15	E 15	E 15
ND 16	16	FB 16	E 16	E 16	E 16
ND 17	17	FB 17	E 17	E 17	E 17
ND 20	L 20	FBL 20	L 20	L 20	L 20
ND 25	L 25	FBL 25	L 25	L 25	L 25

Extra Small Single Row—Type 30

N. D.	Fafnir	Federal	Norma	S. K. F.	M. R. C.
34	34	9430	C 94		34
35	35	9431	C 95	35	35
36	36	9432	C 96	36	36
37	37	9433	C 97	37	37
38	38	9434	C 98	38	38
39	39	9435	C 99	39	39

N-D-Seal—Type 8000

N. D.	S. K. F.	Federal	Norma	M. R. C.
8006	FL 6	7006 X5	7006	
8007	FL 7	7007 X5	7007	
8008	FL 8	7008 X5	7008	
8009	FL 9	7009 X5	7009	
8500	FL 10	7010 X5	7010	200 FS
8011	FL 11	7011 X5	7011	
8501	FL 12	7012 X5	7012	201 FS
8013	FL 13	7013 X5	7013	
8014	FL 14	7014 X5	7014	
8502	FL 15	7015 X5	7015	202 FS
8016	FL 16	7016 X5	7016	
8503	FL 17	7017 X5	7017	203 FS
8504	FL 20	7020 X5	7020	204 FS
8505	FL 25	7025 X5	7025	205 FS

Clutch Throwout—Type CT 30-40

N. D.	M. R. C.	Fafnir	S. K. F.	Federal	B. C. A.
CT 30	210 CTC			210 CTC	CWY-60
CT 32	210 CTQ	210 CT2		210 CTQ	CWY-64B
CT 34	211 CTC			211 CT4	CWY-68.32
CT 34-36					CWY-72
CT 36	211 CTQ		211 CTQ	211 CTQ	CY-72
CT 38	52G				C-76
CT 40	42G				C-80

EQUIVALENT TABLE

Snap Ring Bearings—Type 40,000

Series 41200-41300

N. D.	Fafnir	M. R. C.	Federal	N. D.	Fafnir	M. R. C.	Federal
				41304	304 WG	304 MG	1304 MG
41206	206 WG	206 MG	1206 MG	**41305**	305 WG	305 MG	1305 MG
41207	207 WG	207 MG	1207 MG	**41306**	306 WG	306 MG	1306 MG
41208	208 WG	208 MG	1208 MG	**41307**	307 WG	307 MG	1307 MG
41209	209 WG	209 MG	1209 MG	**41308**	308 WG	308 MG	1308 MG
41210	210 WG	210 MG	1210 MG	**41309**	309 WG	309 MG	1309 MG
41211	211 WG	211 MG	1211 MG	**41310**	310 WG	310 MG	1310 MG
41212	212 WG	212 MG	1212 MG	**41311**	311 WG	311 MG	1311 MG

Series 43200-43300

N. D.	Fafnir	M. R. C.	Federal	N. D.	Fafnir	M. R. C.	Federal
43205	205 KG	205 SG	1205 CG	**43304**	304 KG	304 SG	
43206	206 KG	206 CG	1206 CG	**43305**	305 KG	305 SG	1305 CG
43207	207 KG	207 SG	1207 CG	**43306**	306 KG	306 SG	1306 CG
43208	208 KG	208 CG	1208 CG	**43307**	307 KG	307 SG	1307 CG
43209	209 KG	209 CG	1209 CG	**43308**	308 KG	308 SG	1308 CG
43210	210 KG	210 SG	1210 CG	**43309**	309 KG	309 SG	1309 CG
43211	211 KG	211 SG	1211 CG	**43310**	310 KG	310 SG	1310 CG
43212	212 KG	212 CG	1212 CG	**43311**	311 KG	311 SG	1311 CG

Series 47500-47600

N. D.	Fafnir	M. R. C.	Federal	N. D.	Fafnir	M. R. C.	Federal
47505	205 KDG	205 SFG	1205 GF	**47604**	304 KDG		1304 GF
47506	206 KDG	206 SFG	1206 GF	**47605**	305 KDG	305 SFG	1305 GF
47507	207 KDG	207 SFG	1207 GF	**47606**	306 KDG	306 SFG	1306 GF
47508	208 KDG	208 CFG	1208 GF	**47607**	307 KDG	307 SFG	1307 GF
47509	209 KDG	209 CFG	1209 GF	**47608**	308 KDG	308 SFG	1308 GF
47510	210 KDG	210 CFG	1210 GF	**47609**	309 KDG	309 SFG	1309 GF
47511	211 KDG	211 SFG	1211 GF	**47610**	310 KDG	310 SFG	1310 GF
47512	212 KDG	212 CFG	1212 GF	**47611**	311 KDG	311 SFG	1311 GF

Series 47200-47300

N. D.	Fafnir	M. R. C.	Federal	N. D.	Fafnir	M .R. C.	Federal
47206	206 WDG	206 MFG	1206 MGF	**47304**	304 WDG	304 MFG	1304 MGF
47207	207 WDG	207 MFG	1207 MGF	**47305**	305 WDG	305 MFG	1305 MGF
47208	208 WDG	208 MFG	1208 MGF	**47306**	306 WDG	306 MFG	1306 MGF
47209	209 WDG	209 MFG	1209 MGF	**47307**	307 WDG	307 MFG	1307 MGF
47210	210 WDG	210 MFG	1210 MGF	**47308**	308 WDG	308 MFG	1308 MGF
47211	211 WDG	211 MFG	1211 MGF	**47309**	309 WDG	309 MFG	1309 MGF
47212	212 WDG	212 MFG	1212 MGF	**47310**	310 WDG	310 MFG	1310 MGF
				47311	311 WDG	311 MFG	1311 MGF

TELEGRAPHIC CODE

General Code

Ragair.....Ship air mail today
Ragarm.....Ship air express today
Ragasp.....Ship air mail special delivery today
Rags.....Apply on unfilled orders
Ragout.....Ship by parcel post today
Raillery.....When can you ship?
Ramify.....Will you accept order for.....?
Rapier.....Can you make shipments as follows?
Rapture.....Very important shipment must go today by freight
Rarity.....Very important shipment must go today by express
Ratchet.....What deliveries can you make?
Raven.....Wire customer direct when you will ship
Roofing.....Ship by freight at once
Roofless.....When will you ship order No.....?
Rooted .....Ship by express at once
Rosary.....Shipping today
Roseate.....Shipping by express today
Rosebay.....Shipping by parcel post today
Rosebush.....Shipping by parcel post special delivery today
Rosecold.....Shipping by parcel post special handling today
Rosewood.....Shipping by freight today
Rosiness.....Will ship as soon as possible
Rotary.....Advise by wire if you cannot ship
Rotate.....What quantity can you ship?
Rotated.....If not already shipped, wire when you will ship
Rotating.....Advise by wire when you will ship
Rounding.....Ship all possible immediately
Roundness.....Full type
Roving.....Separator type
Rowable.....Expect to ship not later than.....
Rowlock.....At what price and how soon can you ship?
Rubric.....Have you shipped our order? If not, when?
Rubrius.....Have not received shipment. Trace by wire
Rubules.....Will ship in.....days
Ruchbar.....Can ship immediately on receipt of order
Ruchetta.....Can ship.....days after receipt of order
Rucheur.....Impossible to explain by telegraph. Writing
Rucie.....Answering your telegram or letter of the....., cannot ship promptly. Writing today
Rucksack.....Cannot do much until we receive more definite information
Ruckweise.....Answering your letter or telegram of.....
Ruconium.....Shipping tomorrow
Ructamen.....Shipping by American Railway Express
Ructavit.....Shipped yesterday
Rudanier.....Shipped order complete
Ruddied.....When can you deliver?
Ruddily.....Send us the following bearings at once
Ruddiness.....Will do our utmost to shorten delivery but cannot make a definite promise
Ruddock.....This delivery is the shortest possible
Ruddy.....Impossible to deliver in the time mentioned
Ruddying.....Telegraph your best discount
Rudectus.....Make my order read.....instead of.....
Rudeese.....Our total weekly production of.....is.....beginning.....days
Ruderale.....New separator
Ruderboot.....Shall we ship any portion by express?
Ruderpost.....To accomplish this delivery we must have reply today, same conditions may not apply tomorrow
Rudeza.....Our total daily production of.....is.....beginning.....days
Rudiment.....Hold up order.....writing
Ruebe.....This production is all we can turn out with present facilities under the most favorable conditions, and from it must be supplied all customers calling for this bearing — How shall we divide?
Ruecto.....Duplicate our order No.....
Ruelo.....Ship parcel post special handling
Ruewort.....Ship parcel post special delivery
Ruff.....Ship National Car Loading
Ruffet.....Ship by Universal Car Loading
Ruffing.....Ship by Acme Fast Freight
Ruffman.....Advise car number and routing
Rufhood.....Do everything possible to better your promise

CODE FOR BEARINGS

Bearing	Code
SINGLE ROW Type 30	
34	Spaab
35	Spaby
36	Spaft
37	Spaks
38	Sparm
39	Spath
SINGLE ROW Type 3L00	
3L00	Clabl
3L01	Clacg
3L02	Cladm
3L03	Claen
3L04	Claff
3L05	Clags
3L06	Clahw
3L07	Clajk
3L08	Claka
3L09	Clalu
3L10	Clamv
3L11	Clanx
3L12	Clarb
3L13	Clasd
3L14	Clate
3L15	Claut
3L16	Clavh
3L17	Clayj
3L18	Clazq
3L19	Clbaa
3L20	Clbcy
3L21	Clbde
3L22	Clbef
3L24	Clbgi
3L26	Clbhk
3L28	Clblo
3L30	Clbmj
3L32	Clbnp
3L34	Clbqr
3L36	Clbst
3L38	Clcax
3L40	Clcby
3L44	Clccw
3L48	Clcdo
3L52	Clcet
3L56	Clcgv
3L60	Clchq
3L64	Clcim
SINGLE ROW Type 1000	
1206	Sabis
1207	Sabit
1208	Sal
1209	Salor
1210	Salis
1211	Salit
1212	Salve
1213	Salver
1214	Sash
1215	Saturn
1216	Satyr
1217	Sicinna
1218	Sicinos
1219	Sickens
1220	Sickern
1221	Sicklers
1222	Siclo

CODE FOR BEARINGS

Bearing	Code
SINGLE ROW Type 1000	
1304	Sano
1305	Sanol
1306	Sanon
1307	Sanop
1308	Sanore
1309	Sanos
1310	Sanott
1311	Sany
1312	Sapper
1313	Sappist
1314	Sapphic
1315	Savor
1316	Savory
1317	Sicordo
1318	Sicrano
1319	Sicrin
1320	Sicut
1321	Sicyma
1322	Sicyonic
1404	Sartor
1405	Sare
1406	Saretto
1407	Sarec
1408	Sareo
1409	Sardone
1410	Saret
1411	Sardine
1412	Sardonic
1413	Satchel
1414	Satiety
1415	Sienit
1416	Siepero
1417	Siepone
1418	Sierdene
SINGLE ROW Type 3000	
3200	Exaar
3201	Exabane
3202	Exabat
3203	Exacale
3204	Exacer
3205	Exacinate
3206	Exact
3207	Evade
3208	Exult
3209	Expand
3210	Excise
3211	Exert
3212	Excel
3213	Exempt
3214	Exemptible
3215	Exemption
3216	Exemptoll
3217	Eximare
3218	Eximavis
3219	Eximetc
3220	Eximo
3221	Eximoac
3222	Eximolis
3300	Exhabern
3301	Exhabin
3302	Exhagel
3303	Exhalet
3304	Exhale
3305	Exhort
3306	Exhume
3307	Expel
3308	Expellon
3309	Exploit
3310	Expose
3311	Expunge
3312	Exsind
3313	Exsect
3314	Exsero
3315	Exsiccus
3316	Exsider
3317	Exsifan
3318	Exsigurn
3319	Exsimmer
3320	Exsissing
3321	Exsoar
3322	Exsodos
SINGLE ROW Type 4000	
4305	Widnom
4306	Widnomin
4307	Widnona
4308	Widns
4309	Widnonen
4310	Widnoon
4311	Widnorm
DOUBLE ROW Type 5000	
5200	Vysdabo
5201	Vysdab
5202	Vysdabble
5203	Vysdabbling
5204	Vysdabei
5205	Vysdabis
5206	Vysdale
5207	Vysdally
5208	Vysdaylight
5209	Vysdaylos
5210	Vysdaylong
5211	Vysdaymaid
5212	Vysdayman
5213	Vysdach
5214	Vysdacher
5215	Vysdacti
5216	Vysdactile
5217	Vysdactish
5218	Vysdactee
5219	Vysdactiot
5220	Vysdactipp
5222	Vysdactose
5300	Vysdade
5301	Vysdader
5302	Vysdadess
5303	Vysdaddo
5304	Vysdaddy
5305	Vysdaynet
5306	Vysdayroom
5307	Vysdayshine
5308	Vysdaystar
5309	Vysdaytime
5310	Vysdaysor
5311	Vysdazed
5312	Vysdeck
5313	Vysdeckie
5314	Vysdecker
5315	Vysdecade
5316	Vysdecadis
5317	Vysdecamp
SHIELDED Type 7000	
7206	Wxsabis
7207	Wxsabit
7208	Wxsal
7209	Wxsalor
7210	Wxsalis
7211	Wxsalit
7212	Wxsalve
7213	Wxsalver
7214	Wxsash
7215	Wxsaturn
7216	Wxsatyr
7217	Wxicinno
7218	Wxicinos
7219	Wxicken
7220	Wxide
7221	Wxifg
7304	Wxsano
7305	Wxsanol
7306	Wxsanon
7307	Wxsanop
7308	Wxsanore
7309	Wxsanos
7310	Wxsanott
7311	Wxsany
7312	Wxsapper
7313	Wxsappist
7314	Wxsapphic
7315	Wxsavor
7500	Vexsate
7501	Vexsatire
7502	Vexsatin
7503	Vexsabel
7504	Vexsabeno
7505	Vexsaber
7506	Vexsabis
7507	Vexsabit
7508	Vexsal
7509	Vexsalor
7510	Vexsalis
7511	Vexsalit
7512	Vexsalve
7513	Vexsalver
7514	Vexsash
7515	Vexaturn
7516	Vexatyr
7517	Vexin
7518	Vexinos
7519	Vexicken
7520	Vexoc
7600	Vexsan
7601	Vexsaneff
7602	Vexsaner
7603	Vexsanins
7604	Vexsano
7605	Vexsanol
7606	Vexsanon
7607	Vexsanop
7608	Vexsanore
7609	Vexsanos
7610	Vexsanott
7611	Vexsany
7612	Vexsapper
7613	Vexsappist
7614	Vexsapphic
7615	Vexsor
DOUBLE SHIELDED Series 77500-77600	
77500	Presate
77501	Presatire
77502	Presatin
77503	Presabel
77504	Presabeno
77505	Presaber
77506	Presabis
77507	Presabit
77508	Presal
77509	Presalor
77510	Presalis
77511	Presalit
77512	Presalve
77513	Presalver
77514	Presash
77515	Presaturn
77516	Presatyr
77517	Presicno
77518	Presicos
77519	Presicken
77520	Preso
77600	Presan
77601	Presaneff
77602	Presaner
77603	Presanins
77604	Presano
77605	Presanol
77606	Presanon
77607	Presanop
77608	Presanore
77609	Presanos
77610	Presanott
77611	Presany
77612	Presapper
77613	Presappist
77614	Presapphic
77615	Presavor
N-D-SEAL Type 8000	
8035	Sigsa
8036	Sigtb
8006	Sigsabis
8007	Sigsabit
8102	Siger
8008	Sigsate
8103	Sigerme
8039	Siguc
8009	Sigsaler
8500	Sigsalis
8011	Sigsalite
8501	Sigsalve
8013	Sigsalver
8014	Sigsash
8502	Sigsaturn
8016	Sigsatyr
8503	Sigsicinn
8504	Sigsicker
8505	Sigmaxila
8026	Sigerns
8506	Sigaxilip
8507	Sigaxilor
8508	Sigsinap
8603	Sigsinc
8604	Sigsidt
8605	Sigsieu
SHIELDED N-D-SEAL Type 87000	
87035	Pensa
87036	Pentb
87006	Pensabis
87007	Pensabit
87102	Penser
87008	Pensate
87103	Penserme
87039	Penuc
87009	Pensalor
87500	Pensalis
87011	Pensalite
87501	Pensalve
87013	Pensalvert
87014	Pensash
87502	Pensaturn
87016	Pensatyr
87503	Pensicinn
87504	Pensicker
87505	Penmaxila
87026	Penserns
87506	Pensabisle
87507	Pensabiter

CODE FOR BEARINGS

Bearing	Code
SHIELDED N-D-SEAL Type 87000	
87508	Pensanas
87603	Pensanb
87604	Pensacu
87605	Pensacio
DOUBLE N-D-SEAL Type 88000	
88035	Sussa
88036	Sustb
88006	Susabis
88007	Susabite
88102	Susser
88008	Susabt
88103	Susserme
88039	Susuc
88009	Susalis
88500	Susalot
88011	Susalve
88501	Susalvert
88013	Susash
88014	Susatte
88502	Susaturn
88016	Susatyr
88503	Susaxen
88504	Susin
88505	Susire
88026	Susserns
88506	Susiroc
88507	Susite
88508	Susiub
88603	Susoab
88604	Susoakt
88605	Susoalm
DOUBLE SHIELDED Series 77200-77300	
77206	Parsabis
77207	Parsabit
77208	Parsal
77209	Parsalor
77210	Parsalis
77211	Parsalit
77212	Parsalve
77213	Parsalver
77214	Parsash
77215	Parsaturn
77216	Parsatyr
77217	Parsicno
77218	Parsicos
77219	Parsicken
77220	Parst
77221	Parva
77304	Parsano
77305	Parsanol
77306	Parsanon
77307	Parsanop
77308	Parsanore
77309	Parsanos
77310	Parsanott
77311	Parsany
77312	Parsapper
77313	Parsappist
77314	Parsapphic
77315	Parsavor
SINGLE SHIELDED Series 7030	
7034	Paltab
7035	Paltabys
7036	Paltaft
7037	Paltaks
7038	Paltarm
7039	Paltath
DOUBLE SHIELDED Series 77030	
77034	Prespab
77035	Prespaby
77036	Prespaft
77037	Prespaks
77038	Presparm
77039	Prespath
DOUBLE ROW Series 5500-5600	
5500	Wxdaafk
5501	Wxdaahl
5502	Wxdaat
5503	Wxdabbing
5504	Wxdabei
5505	Wxdabis
5506	Wxdaid
5507	Wxdale
5508	Wxdalit
5509	Wxdally
5510	Wxdalos
5511	Wxdang
5512	Wxden
5514	Wxdff
5516	Wxdgs
5518	Wxdjk
5520	Wxdlw
5522	Wxdnx
5600	Wxoaa
5601	Wxocy
5602	Wxode
5603	Wxohk
5604	Wxdole
5605	Wxdolor
5606	Wxdoom
5607	Wxdope
5608	Wxdoric
5609	Wxdorme
5610	Wxdorp
5611	Wxdorter
DOUBLE ROW Series 55500-55600	
55500	Xwxay
55501	Xwxbz
55502	Xwxdm
55503	Xwxen
55504	Xwxff
55505	Xwxgs
55509	Xwxlu
55510	Xwxmv
55512	Xwxrb
55514	Xwxte
55520	Xwxck
55600	Xwzoa
55601	Xwzcy
55602	Xwzde
55603	Xwzbn
55604	Xwzdt
SNAP RING Series 41200-41300	
41206	Snapalis
41207	Snapalite
41208	Snapalor
41209	Snapalver
41210	Snapand
41211	Snapanole
41212	Snapanon
41304	Snapanopt
41305	Snapanorb
41306	Snapanosh
41307	Snapanot
41308	Snapany
41309	Snapaze
41310	Snaper
41311	Snaperon
Series 43200-43300	
43205	Crexact
43206	Crexade
43207	Crexalf
43208	Crexand
43209	Crexel
43210	Crexella
43211	Crexelon
43212	Crexert
43304	Crexinate
43305	Crexindo
43306	Crexise
43307	Crexoild
43308	Crexorth
43309	Crexosec
43310	Crexult
43311	Crexuluc
Series 47200-47300	
47206	Logalis
47207	Logalite
47208	Logalor
47209	Logalver
47210	Logand
47211	Loganole
47212	Loganon
47304	Loganopt
47305	Loganorb
47306	Loganosh
47307	Loganot
47308	Logany
47309	Logaze
47310	Loger
47311	Logest
Series 47500-47600	
47500	Luxab
47501	Luxcg
47502	Luxdm
47503	Luxff
47504	Luxgs
47505	Luxact
47506	Luxade
47507	Luxalf
47508	Luxand
47509	Luxel
47510	Luxella
47511	Luxelon
47512	Luxert
47604	Luxinate
47605	Luxindo
47606	Luxise
47607	Luxoild
47608	Luxorth
47609	Luxosec
47610	Luxult
47611	Luxume
RADAX Type 0	
0200	Cadar
0201	Cadet
0202	Cadetto
0203	Cadent
0204	Cadif
0205	Cadiffo
0206	Cadice
0207	Cadite
0208	Cadon
0209	Cape
0210	Capper
0211	Cappell
0212	Caprice
0213	Capering
0214	Capias
0215	Capote
0216	Capsule
0217	Captain
0218	Capture
0219	Capuchin
0220	Caput
0303	Coals
0304	Coax
0305	Coaxing
0306	Cobalt
0307	Cobb
0308	Cobbler
0309	Cobweb
0310	Cock
0311	Cocoa
0312	Cod
0313	Coddle
0314	Code
0315	Codger
0404	Compose
0405	Compress
0406	Compute
0407	Comrade
0408	Conceit
0409	Concern
DIFRAX Type 0100	
0100	Difadon
0101	Difaditon
0103	Difapel
0108	Difal
0109	Difalit
0110	Difapper
0111	Difalor
0113	Difalud
RADAX Type 20,000	
20201	Besbl
20202	Bescg
20203	Besdm
20204	Besaban
20205	Besaber
20206	Besabis
20207	Besabot
20208	Besal
20209	Besalor
20210	Besaline
20211	Besalit
20212	Besalve
20213	Besalver
20214	Besash
20215	Besaturn
20216	Besatyr
20217	Besicin
20218	Besicos
20219	Besik
20220	Besikern
20221	Besikler
20222	Besilo
20303	Besna
20304	Besano
20305	Besanole

CODE FOR BEARINGS

Bearing	Code
RADAX Type 20,000	
20306	Besannon
20307	Besanop
20308	Besanore
20309	Besanoss
20310	Besanotty
20311	Besanny
20312	Besap
20313	Besapst
20314	Besapic
20315	Besavor
20316	Besavy
20317	Besirdo
20318	Besiren
20319	Besirip
20320	Besicut
20321	Besicym
20322	Besion
20404	Betart
20405	Betared
20406	Betatto
20407	Betareck
20408	Betaral
20409	Betardon
20410	Betarot
20411	Betadine
20412	Betadony
20413	Betatch
20414	Betatty
20415	Betinit
20416	Betepo
20417	Betepone
20418	Beterden
RADAX Type 30,000	
30204	Gamif
30205	Gamiffo
30206	Gamice
30207	Gamita
30208	Gamon
30209	Gamape
30210	Gamper
30211	Gampell
30212	Gamric
30213	Gamring
30214	Gamias
30215	Gamote
30216	Gamsul
30217	Gamain
30218	Gamure
30219	Gamucin
30220	Gamat
30221	Gamuva
30222	Gamuvin
30304	Gamoax
30305	Gamoaxin
30306	Gamoblo
30307	Gamobb
30308	Gamober
30309	Gamweb
30310	Gamock
30311	Gamocot
30312	Gamode
30313	Gamocler
30314	Gamodan
30315	Gamodger
30316	Gamoffer
30317	Gamokol
30318	Gamollen
30319	Gamollor
30320	Gamonen
30321	Gamopus
30322	Gamorra
30404	Gampose
30405	Gampress
30406	Gampute
30407	Gamport
30408	Gamrade
30409	Gamset
30410	Gamcern
30411	Gamclave
30412	Gamcrete
30413	Gamcur
30414	Gamcult
30415	Gamdene
30416	Gamdign
30417	Gamditto
30418	Gamdoling
DUPLEX Type 20,000 DF	
20201	Dfsbl
20202	Dfscg
20203	Dfsdm
20204	Dfsaban
20205	Dfsaber
20206	Dfsabis
20207	Dfsabot
20208	Dfsal
20209	Dfsalor
20210	Dfsaline
20211	Dfsalit
20212	Dfsalve
20213	Dfsalver
20214	Dfsash
20215	Dfsaturn
20216	Dfsatyr
20217	Dfsicin
20218	Dfsicos
20219	Dfsik
20220	Dfsikern
20221	Dfsikler
20222	Dfsilo
20303	Dfmna
20304	Dfsano
20305	Dfsanole
20306	Dfsannon
20307	Dfsanop
20308	Dfsanore
20309	Dfsanoss
20310	Dfsanotty
20311	Dfsanny
20312	Dfsap
20313	Dfsapst
20314	Dfsapic
20315	Dfsavor
20316	Dfsavy
20317	Dfsirdo
20318	Dfsiren
20319	Dfsirip
20320	Dfsicut
20321	Dfsicym
20322	Dfsion
20404	Dftart
20405	Dftared
20406	Dftatto
20407	Dftareck
20408	Dftarol
20409	Dftardon
20410	Dftarot
20411	Dftadine
20412	Dftadony
20413	Dftatch
20414	Dftatty
20415	Dftinit
20416	Dftepo
20417	Dftepone
20418	Dfterden
DUPLEX Type 20,000 DB	
20201	Dbsbl
20202	Dbscg
20203	Dbsdm
20204	Dbsaban
20205	Dbsaber
20206	Dbsabis
20207	Dbsabot
20208	Dbsal
20209	Dbsalor
20210	Dbsaline
20211	Dbsalit
20212	Dbsalve
20213	Dbsalver
20214	Dbsash
20215	Dbsaturn
20216	Dbsatyr
20217	Dbsicin
20218	Dbsicos
20219	Dbsik
20220	Dbsikern
20221	Dbsikler
20222	Dbsilo
20303	Dbmna
20304	Dbsano
20305	Dbsanole
20306	Dbsannon
20307	Dbsanop
20308	Dbsanore
20309	Dbsanoss
20310	Dbsanotty
20311	Dbsanny
20312	Dbsap
20313	Dbsapst
20314	Dbsapic
20315	Dbsavor
20316	Dbsavy
20317	Dbsirdo
20318	Dbsiren
20319	Dbsirip
20320	Dbsicut
20321	Dbsicym
20322	Dbsion
20404	Dbtart
20405	Dbtared
20406	Dbtatto
20407	Dbtareck
20408	Dbtaral
20409	Dbtardon
20410	Dbtarot
20411	Dbtadine
20412	Dbtadony
20413	Dbtatch
20414	Dbtatty
20415	Dbtinit
20416	Dbtepo
20417	Dbtepone
20418	Dbterden
DUPLEX Type 20,000 DT	
20201	Dtsbl
20202	Dtscg
20203	Dtsdm
20204	Dtsaban
20205	Dtsaber
20206	Dtsabis
20207	Dtsabot
20208	Dtsal
20209	Dtsalor
20210	Dtsaline
20211	Dtsalit
20212	Dtsalve
20213	Dtsalver
20214	Dtsash
20215	Dtsaturn
20216	Dtsatyr
20217	Dtsicin
20218	Dtsicos
20219	Dtsik
20220	Dtsikern
20221	Dtsikler
20222	Dtsilo
20303	Dtmna
20304	Dtsano
20305	Dtsanole
20306	Dtsannon
20307	Dtsanop
20308	Dtsanore
20309	Dtsanoss
20310	Dtsanotty
20311	Dtsanny
20312	Dtsap
20313	Dtsapst
20314	Dtsapic
20315	Dtsavor
20316	Dtsavy
20317	Dtsirdo
20318	Dtsiren
20319	Dtsirip
20320	Dtsicut
20321	Dtsicym
20322	Dtsion
20404	Dttart
20405	Dttared
20406	Dttatto
20407	Dttareck
20408	Dttaral
20409	Dttardon
20410	Dttarot
20411	Dttadine
20412	Dttadony
20413	Dttatch
20414	Dttatty
20415	Dttinit
20416	Dttepo
20417	Dttepone
20418	Dtterden
DUPLEX Type 30,000 DF	
30204	Dfmif
30205	Dfmiffo
30206	Dfmice
30207	Dfmita
30208	Dfmon
30209	Dfmape
30210	Dfmper
30211	Dfmpell
30212	Dfmric
30213	Dfmring
30214	Dfmias
30215	Dfmote
30216	Dfmsul
30217	Dfmain
30218	Dfmure
30219	Dfmucin
30220	Dfmat
30221	Dfmuva
30222	Dfmuvin
30304	Dfmoax
30305	Dfmoaxin
30306	Dfmoblo
30307	Dfmobb
30308	Dfmober
30309	Dfmweb
30310	Dfmock
30311	Dfmocot
30312	Dfmode
30313	Dfmocler
30314	Dfmodan
30315	Dfmodger
30316	Dfmoffer

CODE FOR BEARINGS

Bearing	Code
DUPLEX Type 30,000 DF	
30317	Dfmokol
30318	Dfmollen
30319	Dfmollor
30320	Dfmonen
30321	Dfmopus
30322	Dfmorra
30404	Dfmpose
30405	Dfmpress
30406	Dfmpute
30407	Dfmport
30408	Dfmrade
30409	Dfmcet
30410	Dfmcern
30411	Dfmclave
30412	Dfmcrete
30413	Dfmcur
30414	Dfmcult
30415	Dfmdene
30416	Dfmdign
30417	Dfmditto
30418	Dfmdoling
DUPLEX Type 30,000 DT	
30204	Dtmif
30205	Dtmiffo
30206	Dtmice
30207	Dtmita
30208	Dtmon
30209	Dtmape
30210	Dtmper
30211	Dtmpell
30212	Dtmric
30213	Dtmring
30214	Dtmias
30215	Dtmote
30216	Dtmsul
30217	Dtmain
30218	Dtmure
30219	Dtmucin
30220	Dtmat
20221	Dtmuva
30222	Dtmuvin
30304	Dtmoax
30305	Dtmoaxin
30306	Dtmoblo
30307	Dtmobb
30308	Dtmober
30309	Dtmweb
30310	Dtmock
30311	Dtmocot
30312	Dtmode
30313	Dtmocler
30314	Dtmodan
30315	Dtmodger
30316	Dtmoffer
30317	Dtmokol
30318	Dtmollen
30319	Dtmollor
30320	Dtmonen
30321	Dtmopus
30322	Dtmorra
30404	Dtmpose
30405	Dtmpress
30406	Dtmpute
30407	Dtmport
30408	Dtmrade

Bearing	Code
30409	Dtmcet
30410	Dtmcern
30411	Dtmclave
30412	Dtmcrete
30413	Dtmcur
30414	Dtmcult
30415	Dtmdene
30416	Dtmdign
30417	Dtmditto
30418	Dtmdoling
EX. LIGHT SERIES Type 0L00	
0L00	Dlfbl
0L01	Dlfcg
0L02	Dlfdm
0L03	Dlfen
0L04	Dlfff
0L05	Dlfgs
0L06	Dlfhw
0L07	Dlfjk
0L08	Dlfka
0L09	Dlflu
0L10	Dlfmv
0L11	Dlfnx
0L12	Dlfrb
0L13	Dlfsd
0L14	Dlfte
0L15	Dlfut
0L16	Dlfvh
0L17	Dlfyj
0L18	Dlfzq
0L19	Dlgaa
0L20	Dlgcy
0L21	Dlgde
0L22	Dlgef
0L24	Dlggi
0L26	Dlghk
0L28	Dlglo
0L30	Dlgmj
0L32	Dlgnp
0L34	Dlgqr
0L36	Dlgst
0L38	Dlhax
0L40	Dlhby
0L44	Dlhcw
0L48	Dlhdo
0L52	Dlhet
0L56	Dlhgv
0L60	Dlhhq
0L64	Dlhim
SNAP RING N-D-SEAL Type 48,000	
48009	Srkbl
48500	Srkcg
48011	Srkdm
48501	Srken
48013	Srkff
48014	Srkgs
48502	Srkbw
48016	Srkjk
48503	Srkka
48504	Srklu
48505	Srkmv
48605	Srknx
48026	Srkrb
48506	Srksd
48507	Srkte
48508	Srkut

Bearing	Code
SNAP RING N-D-SEAL Type 487,000	
487009	Sndbl
487500	Sndcg
487011	Snddm
487501	Snden
487013	Sndff
487014	Sndgs
487502	Sndhw
487016	Sndjk
487503	Sndka
487504	Sndlu
487505	Sndmv
487605	Sndnx
487026	Sndrb
487506	Sndsd
487507	Sndte
487508	Sndut
SNAP RING N-D-SEAL Type 488,000	
488009	Sdsbl
488500	Sdsgg
488011	Sdsdm
488501	Sdsen
488013	Sdsff
488014	Sdsgs
488502	Sdshw
488016	Sdsjk
488503	Sdska
488504	Sdslu
488505	Sdsmv
488605	Sdsnx
488026	Sdsrb
488506	Sdssd
488507	Sdste
488508	Sdsut
N-D-SEAL Type WC-8000	
WC-8035	Wssa
WC-8036	Wsstb
WC-8102	Wsscg
WC-8103	Wssom
WC-8006	Wsszz
WC-8007	Wssff
WC-8008	Wssgs
WC-8039	Wssuc
WC-8009	Wsshw
WC-8500	Wssjk
WC-8011	Wssmv
WC-8501	Wssyj
WC-8013	Wssiq
WC-8014	Wsskd
WC-8502	Wssle
WC-8016	Wssph
WC-8503	Wssqo
WC-8603	Wssbn
WC-8504	Wssri
WC-8604	Wssdt
WC-8505	Wssvy
WC-8605	Wsseu
WC-8026	Wsswr
WC-8506	Wssax
WC-8507	Wssxl
WC-8508	Wssnp
N-D-SEAL Type WC-87000	
WC-87035	Wppsa
WC-87036	Wpptb
WC-87102	Wppcg
WC-87103	Wppom

Bearing	Code
WC-87006	Wppzz
WC-87007	Wppff
WC-87008	Wppgs
WC-87039	Wppuc
WC-87009	Wpphw
WC-87500	Wppjk
WC-87011	Wppmv
WC-87501	Wppyj
WC-87013	Wppiq
WC-87014	Wppkd
WC-87502	Wpple
WC-87016	Wppph
WC-87503	Wppqo
WC-87603	Wppbn
WC-87504	Wppri
WC-87604	Wppdt
WC-87505	Wppvy
WC-87605	Wppeu
WC-87026	Wppwr
WC-87506	Wppax
WC-87507	Wppxl
WC-87508	Wppnp
N-D-SEAL Type WC-88000	
WC-88035	Wbusa
WC-88036	Wbutb
WC-88102	Wbucg
WC-88103	Wbuom
WC-88006	Wbuzz
WC-88007	Wbuff
WC-88008	Wbugs
WC-88039	Wbuuc
WC-88009	Wbuhw
WC-88500	Wbujk
WC-88011	Wbumv
WC-88501	Wbuyj
WC-88013	Wbuiq
WC-88014	Wbukd
WC-88502	Wbule
WC-88016	Wbuph
WC-88503	Wbuqo
WC-88603	Wbubn
WC-88504	Wburi
WC-88604	Wbudt
WC-88505	Wbuvy
WC-88605	Wbueu
WC-88026	Wbuwr
WC-88506	Wbuax
WC-88507	Wbuxl
WC-88508	Wbunp
FRONT WHEEL Type 9000	
909001	Smallout
909002	Smallin
909003	Briskout
909004	Briskin
909005	Standout
909006	Standin
909007	Buckout
909008	Buckin
909009	Truckout
909010	Truckin
909021	Chevout
909022	Chevin
909023	Oldout
909024	Oldin
909025	Brushout
909026	Brushin
909027	Buildout
909028	Buildin
909029	Kadyout
909030	Kadyin

CODE FOR BEARINGS

Bearing	Code
FRONT WHEEL Type 9000	
909032	Oldish
909035	Buckle
909042	Buklet
CLUTCH THROWOUT Types CT 27 to 40	
CT 27	Clute
CT 30-F	Clutrua
CT 30	Clutrant
CT 32	Clutrate
CT 34	Clutreux
CT 36	Clutruit
CT 38	Clutrix
CT 40	Clutro
CT 34-36	Clutrite
CONVEYOR	
CB-504 (Formerly 88105)	Suscar
MAGNETO Type ND 5-25	
ND 5	Mahee
ND 8-6	Magtex
ND 8-7	Mageben
ND 8	Magnet
ND10-9	Magneun
ND10	Magune
ND12-11	Mackelf
ND12	Mackerel
ND13	Mahogany
ND15	Magos
ND16	Mallard
ND17	Marigold
ND20	Mattock
ND25	Mattress
ND25-26	Maket
PUMP SHAFT Type 885,100	
885140	Jabot
885141	Jacamar
885144	Jacinth
885146	Jack
885147	Jackal
885154	Jacket
885155	Jackobin
885156	Jackonet
REAR WHEEL Type 88,100	
88107	Suscater
88127E	Suscalper
88108E	Suscavan
88136	Susceat
88128	Suscavy
88109	Suscauf
D-88609	Suscazo
88110	Suscalpel

Bearing	Code
EXTRA LARGE Type 3000	
3224	Exmah
3226	Exmbi
3228	Exmek
3230	Exmho
3232	Exmip
3234	Exmnu
3236	Exmov
3238	Exmry
3240	Exmta
3242	Exmub
3244	Exmyf
3246	Exnem
3248	Exngo
3250	Exnow
3252	Exnsa
3256	Exnuc
3260	Exnwe
3264	Exnyg
3324	Exsan
3326	Exsbo
3328	Exscp
3330	Exshn
3332	Exsiv
3334	Exsly
3336	Exsna
3338	Exsob
3340	Exsre
3342	Exsvi
3344	Exsyl
3348	Exswm
3352	Exsxy
3356	Exszz
EXTRA LARGE Type 20,000	
20224	Beseh
20226	Besjb
20228	Besri
20230	Besxo
20232	Besew
20234	Besgy
20236	Besme
20238	Besoc
20240	Besuf
20242	Beswn
20244	Besys
20246	Bitab
20248	Bitde
20250	Bitef
20252	Bithi
20256	Bitku
20260	Bitno
20264	Bitop
20324	Botdu
20326	Botjb
20328	Botri
20330	Botxo
20332	Botew
20334	Botgy
20336	Botme
20338	Botoc
20340	Botuh
20342	Botwn
20344	Botys
20348	Boxan
20352	Boxbu
20356	Boxcy

CODE FOR NUMERALS

Penal	1	Pertly	62	Pinkroot	350
Pencase	2	Pertness	63	Pinskter	375
Pencraft	3	Perturb	64	Pinnage	400
Pendence	4	Perusal	65	Pinnock	425
Pendicle	5	Peruse	66	Pinnule	450
Pendule	6	Pervade	67	Pintado	475
Penfish	7	Pervert	68	Pintail	500
Penfold	8	Pestle	69	Pious	525
Penguin	9	Pestling	70	Piously	550
Penitent	10	Petal	71	Pique	575
Pennage	11	Petalite	72	Piracy	600
Pennant	12	Petard	73	Pirate	625
Pennate	13	Petong	74	Pistol	650
Pennon	14	Petrel	75	Pitfall	675
Pennock	15	Petrify	76	Pithole	700
Penrack	16	Petrine	77	Pithless	725
Pensive	17	Petrous	78	Pitiable	750
Penstock	18	Pettifog	79	Pitsaw	775
Pentacle	19	Pettish	80	Pity	800
Pentagon	20	Pettycoy	81	Pivotal	825
Pentecost	21	Pewter	82	Placard	850
Penthouse	22	Pexity	83	Placate	875
Pentroof	23	Phallic	84	Placeful	900
Penult	24	Phial	85	Placid	925
Penury	25	Philter	86	Placidly	950
Peonage	26	Piano	87	Placita	975
Peony	27	Piazza	88	Plaid	1000
Peperine	28	Picamer	89	Planet	1500
Pepper	29	Pickle	90	Planitoid	2000
Pepperbox	30	Picture	91	Plaintree	2500
Peppering	31	Pieman	92	Planked	3000
Pepsin	32	Pieplant	93	Plankroad	3500
Peptic	33	Pietism	94	Plantation	4000
Peracute	34	Piety	95	Plantless	4500
Perch	35	Pigeon	96	Plaster	5000
Percher	36	Piglead	97	Plasterly	5500
Percuss	37	Pigment	98	Plating	6000
Perdue	38	Pigmy	99	Platonic	6500
Peregal	39	Pignut	100	Platoon	7000
Perfector	40	Pikelin	120	Playful	7500
Perfidy	41	Pikeman	125	Playmate	8000
Perforce	42	Pilaster	130	Plaything	8500
Perform	43	Pilcrow	135	Pleading	9000
Perfume	44	Pilement	140	Pleurisy	9500
Perfusive	45	Pilfer	145	Plighted	10000
Peridot	46	Pillage	150	Plodding	11000
Perigone	47	Pillar	155	Ploughing	12000
Period	48	Pillion	160	Plumage	13000
Perish	49	Pillwort	165	Plumbing	14000
Perwig	50	Pimple	170	Pneumatic	15000
Perjury	51	Pinax	175	Pocket	16000
Perk	52	Pincase	180	Poem	17000
Perky	53	Pincers	185	Poetess	18000
Permitter	54	Pindast	190	Poetry	19000
Peronate	55	Pineclad	195	Pointer	20000
Peroxide	56	Pineful	200	Poker	25000
Perplex	57	Pinery	225	Polecat	30000
Persian	58	Pinetree	250	Polestar	40000
Persic	59	Pinion	275	Polisher	50000
Pert	60	Pink	300	Poodle	75000
Pertain	61	Pinkeye	325	Porcupine	100000

CODE FOR DATES

Day of Month	January	February	March	April	May	June
1st	Sagrado	Saltspring	Sarcasm	Savageness	Scarecrow	Scimetar
2d	Sailmaker	Saltworks	Sarcastic	Saving	Scarified	Scissors
3d	Saintlike	Salubrious	Sarcenet	Sawdust	Scarufying	Scoff
4th	Saintly	Salubrity	Sardinny	Sawmill	Scarlet	Scoffed
5th	Saintship	Salute	Sardoniss	Sawpit	Scathed	Scoffingly
6th	Salad	Saluting	Sardonical	Scabbard	Scatheless	Scooping
7th	Salamander	Salvage	Sassafras	Scaffold	Scatter	Scorch
8th	Salaried	Salvo	Satanic	Scaldhead	Scattering	Scorched
9th	Salable	Samaritan	Satellite	Scaldingly	Scavenger	Scorching
10th	Salesman	Sanatory	Satiable	Scaliness	Scenery	Scordium
11th	Saleswoman	Sanctified	Satiated	Scallop	Scenes	Scorned
12th	Salework	Sanctify	Saturate	Scalloping	Scented	Scornful
13th	Salicylic	Sanction	Satirical	Scalped	Scentless	Scornfully
14th	Saline	Sanctuary	Satirized	Scalping	Sceptic	Scorning
15th	Salineness	Sandals	Satirist	Scalps	Scepticism	Scorpion
16th	Salivary	Sandbags	Satisfying	Scamper	Sceptered	Scoundrel
17th	Salivated	Sandbank	Satrap	Scamping	Schedule	Scour
18th	Salivating	Sandblind	Saturable	Scandal	Schemer	Scourge
19th	Sallowness	Sandiness	Saturated	Scandalize	Scheming	Scourging
20th	Sallyport	Sanguinary	Saturnalia	Scandalous	Schism	Scourings
21st	Salmagundi	Sanguine	Sauce	Scantily	Schismatic	Scouted
22d	Salmon	Sanhedrim	Saucebox	Scantiness	Scholar	Scouting
23d	Saltated	Sanscrit	Saucepan	Scantlet	School	Scowled
24th	Saltation	Sapient	Saucer	Scantling	Schoolboy	Scowling
25th	Saltatory	Sapling	Saucily	Scapegoat	Schooldame	Scraggy
26th	Saltcellar	Saponary	Sauciness	Scapegrace	Schooldays	Scramble
27th	Salted	Sappering	Saunter	Scapement	Schoolgirl	Scraped
28th	Salting	Sapphikos	Sauntering	Scapular	Schooling	Scraping
29th	Saltless	Sapphires	Saurian	Scared	Sciatica	Scratch
30th	Saltmine	.....	Sausage	Scarceness	Science	Scratched
31st	Saltpan	.....	Savagely	.....	Scientific	.....

Day of Month	July	August	September	October	November	December
1st	Scratching	Scurrile	Seconded	Seldom	Sepulchral	Shaker
2d	Scream	Scurrility	Seconding	Selecting	Serfdom	Shakiness
3d	Screamer	Scurrilous	Secretions	Selfsame	Sergeant	Shallow
4th	Screaming	Scurviness	Sectarian	Semaphore	Series	Shambles
5th	Screech	Scurvy	Sectarism	Semblance	Seriously	Shamefaced
6th	Screecher	Scutch	Section	Semicircle	Sermon	Shampoo
7th	Screeching	Scutiform	Sectional	Semicolon	Sermonize	Shamrock
8th	Screechowl	Scuttle	Secular	Seminary	Serpent	Shanty
9th	Screw	Scymeter	Secularism	Semipedal	Serpentine	Shapeless
10th	Screwblade	Scythe	Secularity	Semiquaver	Service	Shapely
11th	Screwed	Seagirt	Securable	Semitone	Servingman	Sharpen
12th	Scribbler	Seagull	Secureness	Senatorial	Servitor	Sharpening
13th	Scribbling	Seahorse	Security	Senile	Settee	Shaveling
14th	Scribe	Sealing	Sedate	Senior	Severely	Shawl
15th	Scriptural	Sealingwax	Sedateness	Seniority	Sewage	Sheaf
16th	Scripture	Seaman	Sedative	Sensation	Sexagenary	Shearing
17th	Scrivener	Seamanship	Sedentary	Senseless	Sextant	Shedding
18th	Scrofula	Seamstress	Sediment	Sensitive	Sextillius	Sheepcot
19th	Scroll	Seaport	Sedition	Sensorium	Sexton	Sheepfold
20th	Scrollwork	Searcher	Sedulity	Sensual	Sextonship	Sheepish
21st	Scrubbed	Searchable	Sedulous	Sensualism	Sextupal	Sheepwalk
22d	Scrubbing	Searcloth	Seedling	Sensuality	Shabbily	Shellfish
23d	Scruple	Seashore	Seedpearl	Sentencing	Shackled	Shellwork
24th	Scrupulous	Seaside	Seedplot	Sentiments	Shackling	Sheltering
25th	Scudding	Seated	Seedsman	Sentinel	Shaded	Shepherd
26th	Scuffle	Seaworthy	Seedtime	Sentry	Shading	Sherbert
27th	Scuffing	Seceder	Seemliness	Separable	Shadow	Shielded
28th	Sculler	Seceding	Seemly	Separatist	Shadowing	Shielding
29th	Scullion	Secession	Seesaw	Septenary	Shagginess	Shingles
30th	Sculptor	Secluded	Segment	Septennial	Shaggy	Shingling
31st	Scupper	Secondary	.....	Sensible	.....	Shinleaf

NEW DEPARTURE BEARING NUMBERING

Most standard New Departure Ball Bearings conform to a system of numbering, which, once understood, makes it possible to identify the principal characteristics of a bearing by the digits in the number.

Reading from the right, the first two digits give the bore size, the third digit shows the series, while the fourth, fifth and sixth digits indicate the basic bearing type and identify additional features, such as shields or snap rings.

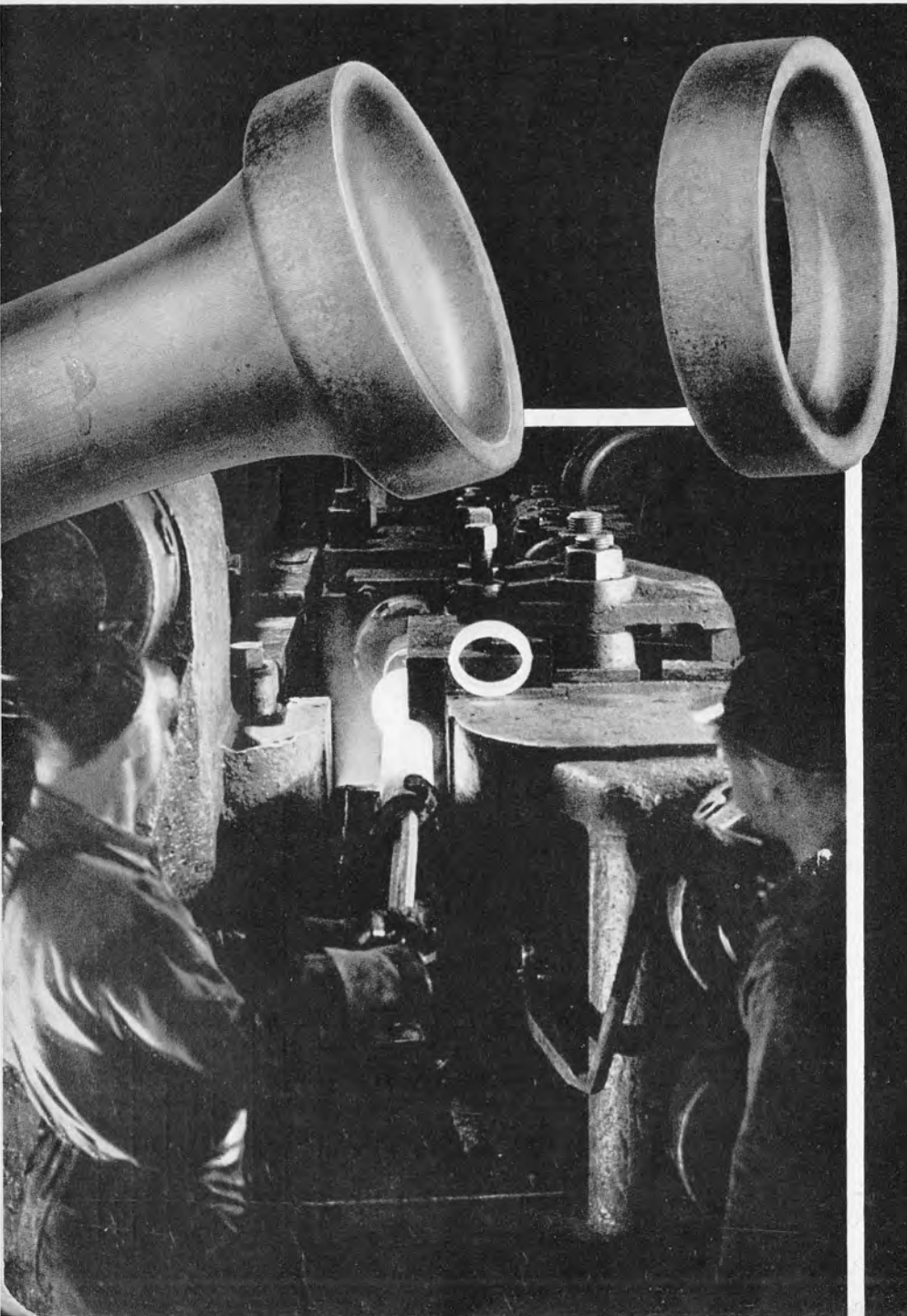
For instance, L in the third digit place means extra-light series; 2, means light series; 3, medium series; 4, heavy series; 5, non-loading groove light series; 6, non-loading groove medium series.

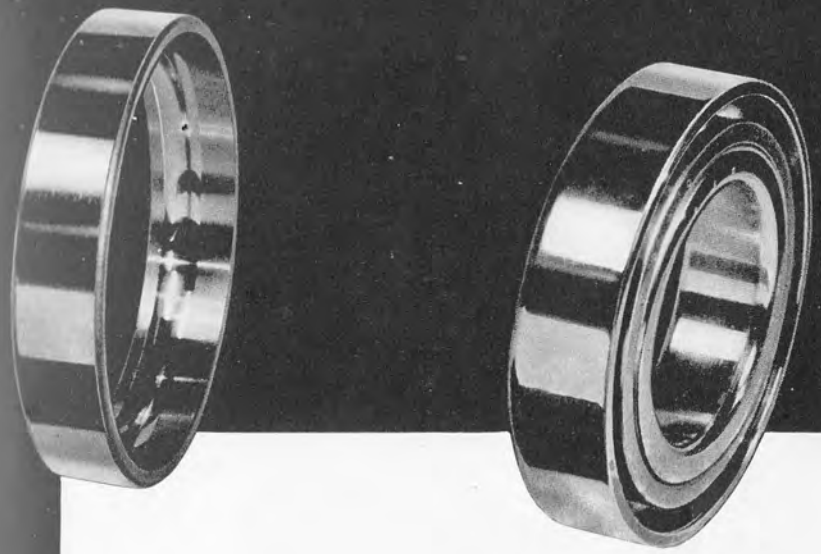
For the fourth digit, O, means angular contact type; 1, means single row maximum capacity type; 3, single row non-loading groove; 5, double row; 7, shielded type and 8, N-D-Seal type, etc.

As a typical example, the number 8506 indicates a 6 bore, light series, N-D-Seal bearing. Number 88506 is the same, but with seals on both sides, while number 488506 is the latter bearing with a snap ring added. In the case of double row bearings, 5 or 6 as the third digit indicates shielded, light or medium series.

DESCRIPTION	BEARING NUMBER					
	Type			Series	Bore	
	6th	5th	4th	3rd	2nd	1st
Angular contact, extra light series, 12 bore			0	L	1	2
Angular contact, light series, 6 bore			0	2	0	6
Maximum capacity single row radial, light series, 6 bore			1	2	0	6
Maximum capacity single row radial, medium series, 6 bore			1	3	0	6
Maximum capacity single row radial, heavy series, 6 bore			1	4	0	6
Non-loading groove, single row radial, extra light series, 7 bore			3	L	0	7
Non-loading groove, single row radial, light series, 7 bore			3	2	0	7
Non-loading groove, single row radial, medium series, 7 bore			3	3	0	7
Wide inner ring, maximum capacity single row, medium series, 8 bore			4	3	0	8
Double row, light series, 10 bore			5	2	1	0
Double row, medium series, 10 bore			5	3	1	0
Single shielded, maximum capacity, single row radial, light series, 12 bore			7	2	1	2
Double shielded, maximum capacity, single row radial, light series, 12 bore		7	7	2	1	2
Single shielded, non-loading groove, single row, light series, 9 bore			7	5	0	9
Double shielded, non-loading groove, single row, medium series, 9 bore		7	7	6	0	9
Snap ring, maximum capacity single row radial, light series, 7 bore		4	1	2	0	7
Snap ring, single shielded, maximum capacity single row, light series, 7 bore		4	7	2	0	7
Snap ring, single shielded, non-loading groove, single row, light series, 7 bore		4	7	5	0	7
Single seal, non-loading groove, single row, light series, 6 bore			8	5	0	6
Sealed and shielded, non-loading groove, single row, light series, 6 bore		8	7	5	0	6
Double sealed, non-loading groove, single row, light series, 6 bore		8	8	5	0	6
Snap ring, single sealed, non-loading groove, single row, light series, 6 bore		4	8	5	0	6
Snap ring, sealed and shielded, non-load. groove, single row, light series, 6 bore	4	8	7	5	0	6
Snap ring, double sealed, non-loading groove, single row, light series, 6 bore	4	8	8	5	0	6
Single shielded, double row, light series, 7 bore			5	5	0	7
Single shielded, double row, medium series, 7 bore			5	6	0	7
Double shielded, double row, medium series, 7 bore		5	5	6	0	7

NEW DEPARTURE . . . . THE **FORGED STEEL** BEARING



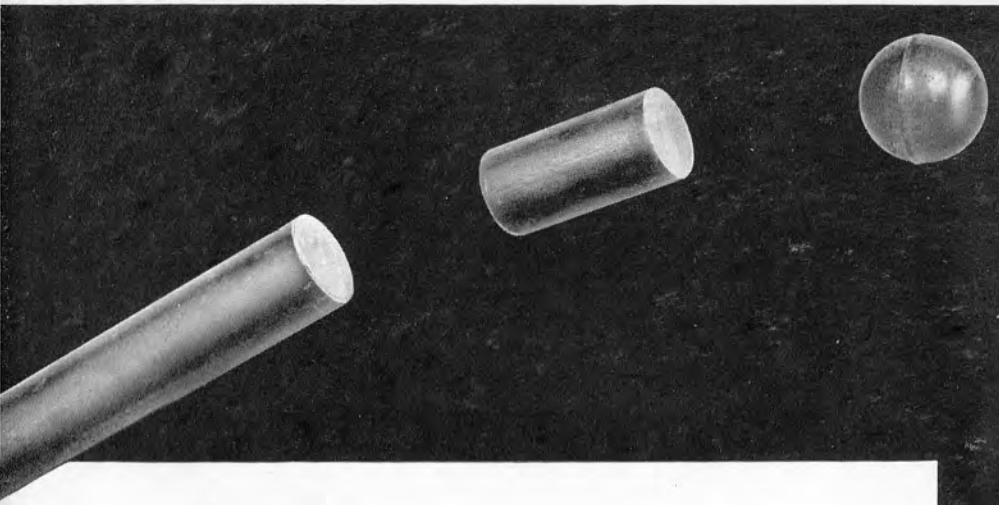


FORGED FOR ENDURANCE

Using the very finest alloy steel that can be made for the purpose, New Departure shapes its principal bearing parts by *forging* — operates the largest and most modern Forge Plant of its kind for the sole purpose of producing parts having the greatest possible strength and endurance.

Forging works the hot steel into an even finer, stronger metal — a metal that is tougher and more resistant to wear. It permits definite control of grain flow through modification of forging dies. And this shaping of the steel while hot and plastic increases the uniformity of its structure — assures *uniform* long life for the finished product.

NEW DEPARTURE . . . . . THE **FORGED STEEL** BEARING



FORGED FOR STRENGTH

Nature invented the sphere — the strongest form — but it has remained to man to produce it in steel, incredibly hard and tough.

To match the forged-in strength of its race rings, New Departure rough shapes the balls by *forging* — compressing the metal between forging dies — making it finer and stronger — changing the direction of grain so that it conforms to the shape of the ball.

Having passed through the various stages of heat treating, grinding and polishing, New Departure steel balls emerge the strongest and most accurate parts that can be produced commercially today.

Forged of the world's finest steel, finished to roundness so perfect as to be beyond the ability of most ultra-precision gauges to test, only service remains to prove again and again that *"Nothing Rolls Like A Ball — No Other Form So Strong."*

Unretouched photographs giving indisputable evidence of the enormous strength of New Departure alloy steel balls.

1. New Departure steel ball and solid steel block.

2. Applying pressure with hydraulic ram. Ball on its way into block.

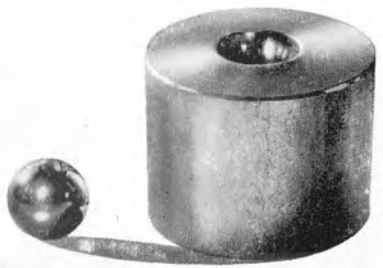
3. Pressure reaches 90 tons — nearly the capacity of the testing machine.

4. Out. Round and good for more tests like this. Block swelled and cracked.

1

2

3



4

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NEW DEPARTURE

At Your Service

THE successful application of anti-friction bearings requires specialized knowledge not only of mechanical features of installation, but of the many types of bearings and their performance possibilities.

Since the average machine-builder could not be expected to have this knowledge constantly available within his own organization, New Departure has developed an engineering service which is unusually complete. Through this service the prospective user of ball bearings may receive without charge or obligation the individual attention of ball bearing specialists.

Where personal contact in the discussion of bearing problems is desirable, New Departure engineers are always ready for any assistance or advice—***their ideas are at your service.***

●

DECIMAL EQUIVALENTS

1/64 .0156	17/64 .2656	33/64 .5156	49/64 .7656
1/32 .0312	9/32 .2812	17/32 .5312	25/32 .7812
3/64 .0468	19/64 .2969	35/64 .5469	51/64 .7969
1/16 .0625	5/16 .3125	9/16 .5625	13/16 .8125
5/64 .0781	21/64 .3281	37/64 .5781	63/64 .8281
3/32 .0937	11/32 .3437	19/32 .5937	27/32 .8437
7/64 .1094	23/64 .3594	39/64 .6094	55/64 .8594
1/8 .125	3/8 .375	5/8 .625	7/8 .875
9/64 .1406	25/64 .3906	41/64 .6406	57/64 .8906
5/32 .1562	13/32 .4062	21/32 .6562	29/32 .9062
11/64 .1719	27/64 .4219	43/64 .6719	59/64 .9219
3/16 .1875	7/16 .4375	11/16 .6875	15/16 .9375
13/64 .2031	29/64 .4531	45/64 .7031	61/64 .9531
7/32 .2187	15/32 .4687	23/32 .7187	31/32 .9687
15/64 .2344	31/64 .4844	47/64 .7344	63/64 .9843
1/4 .25	1/2 .5	3/4 .75	1 1.0

Nothing Rolls Like a Ball