NEW DEPARTURE
HAND BOOK

16th Edition

PREFERRED SIZES
DIMENSIONS
LOAD RATINGS
MOUNTING FITS

VOL. I

General Motors Sales Corporation
New Departure Division

NEW DEPARTURE

Division General Motors Corporation

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Preferred Bearing Sizes

Under war conditions now in effect, the demand for ball bearings for fighting equipment and for the machines to produce it, taxes the bearing manufacturers facilities to the utmost. Everything possible is done to direct the expenditure of time, materials and energy in such a manner as to produce the maximum results.

This picture is of the pattern now familiar to manufacturers of every kind throughout the nation. In the bearing business it means that various types or sizes of bearings not essential to the war effort cannot be available as in peace times. It means that sizes for which there is urgent demand must be given preference over small quantity production and over types of lesser immediate importance to the country. It means that many specialties in bearings, whose tooling and set-up consume much precious time, cannot be obtained as in the previous unrestricted period.

The pages of this catalog distinguish between preferred and non-preferred types and sizes of bearings, non-preferred being printed in Italics. Deliveries of the latter may not be assured to an extent equal to preferred sizes, where production is sustained and at a much higher rate.

Under such unavoidable restrictions, it is suggested that the services of New Departure engineers, with their intimate knowledge of bearing types, application, capacities, and possible substitutions be called in to your service even more than in the past. It is the earnest desire of New Departure to continue to help you to the best of its ability.

Keep them rolling — Keep them flying — Keep them fighting

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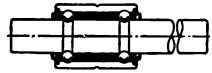
BASIC TYPE	TYPICAL SECTION	SIZE OR SERIES
SINGLE ROW RADIAL		Extra Small — Bores 4 to 9 millimeters
		Extra Light Series Non-Loading Groove
		Light and Medium Series Non-Loading Groove
		Light and Medium Series with Loading Groove
	 R	Inch Series R, Retainer Type
DOUBLE ROW		Light and Medium Series Angular Contact
SINGLE ROW ANGULAR CONTACT		Magneto Bearings Separable Type — Bores, 5 to 17 MM.
		Extra Light Series
	 20,000  30,000	Light and Medium Series Light and Medium Series
	 Clutch  Front Wheel	Clutch Release Bearings Front Wheel Bearings
SELF-SEALED	 8000  WC-8000	ND-Seal — Light & Medium Series ND-Seal with wide outer Ring
	 Rear Wheel  Conveyor  Pump Shaft	Double Sealed For Specific Service

TYPE NUMBER	CUTS BELOW SHOW ADDITIONAL FEATURES AVAILABLE					
	One Closure	Two Closures	Snap Ring	S.Ring&Shield	Duplex	
30						13
3L00						14–17
3000						18–23
1000						24–29
R						31
5000						32–35
ND 5-25						37
0L00						38–41
20,000 30,000						42–49 50–55
CT 22 to 44 9000						56–59 60–63
8000 WC-8000						64–67 68–69
Rear Wheel 88100 Conveyor CB-504 Pump Shaft 885100						71 73 75

BEARING SELECTION

Basis of 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

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 4th power 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 sixteen 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.

Basis of 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.

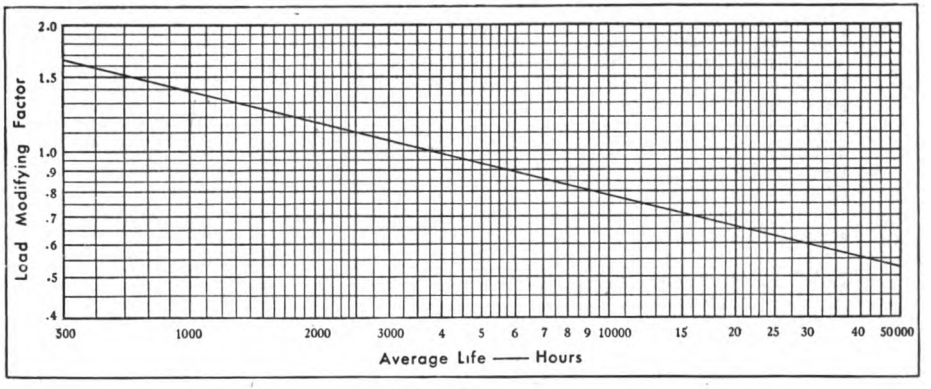
Application

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.

BEARING SELECTION

Basis of 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.

BEARING SELECTION

Determination of Bearing Size

After the desired *type* of bearing has been selected, i. e., single row radial, type 3000, double row, type 5000, etc., it is necessary to choose a size of the type selected that will give the desired hours of operation under given conditions of load and speed.

In the majority of applications, ball bearings are subjected to some combination of thrust and radial loads. It is impracticable to list bearing capacities for extremely diversified conditions. Therefore catalog load ratings are given for radial loads only and it becomes necessary to convert all other loads to their radial equivalent.

The use of combined load factors F shown on page 10 makes it possible to convert the computed thrust or combined loads into an "equivalent radial load." This "equivalent radial load" is that radial load which would result in the same average bearing life as would the actual thrust or combined loads. Thus, this "equivalent" load allows the use of the radial capacity tables for all conditions of load that may actually exist.

Other factors that may be directly considered in choosing a bearing are operating speed and desired life or hours of operation. By using life modifiers L, Graph 1, page 9, and speed factors N, Graph 2, page 11, it is possible to select a bearing size to give any average life desired (in addition to the 3800 hours for which capacities are computed), when operating under any constant conditions of load and speed.

To make this selection, the following procedure and example should be followed:

	Assumed Example
Let C=Equivalent radial load for desired bearing life.	("C" to be solved for)
R=Computed radial load or radial load component.	800#
T=Computed thrust load or thrust load component.	1000#
S=Effective operating speed in r.p.m. (See paragraph "Determination of Effective Operating Speed" on page 9	2500 r.p.m.

F=Combined load factor, (conversion to equivalent radial load). (From page 10 and assuming a Type 3000 bearing)

$$\frac{T}{R}=\frac{1000}{800}=1.25 \qquad F=2.02$$

L=Life modifying factor (assuming 18,000 hours of operation and using Graph 1, page 9 L=1.48

The equivalent radial load may be computed as shown below:

$$C = R \times F \times L = 800 \times 2.02 \times 1.48 = 2390\#$$

For bearings under radial load (T = 0), no conversion is necessary and: $C = R \times L$

For bearings under thrust load only (R = 0), select F from page 10 for T/R = pure thrust and use the formula:

$$C = T \times F \times L$$

With the equivalent radial load thus obtained, the problem is now to find a bearing of a size whose capacity most nearly equals the equivalent radial load. The radial capacity tables (in this case for the 3000 Series, page 22) can be entered directly for this selection if the operating speed is one for which capacities are listed. If the operating speed is one for which the capacities are not listed, the equivalent radial load must be modified so that capacities at 1000 r.p.m. may be used for selection of bearing size. In the example the speed chosen, that is, 2500 r.p.m., is not listed. Therefore, it is necessary to modify the equivalent radial load obtained above. To modify C it is necessary to divide it by the speed factor N obtained

Determination of Bearing Size

from Graph 2, page 11. Entering this Graph at 2500 on the line listed 1000 to 10,000 r.p.m., we find N to be equal to .795. Using the formula below:

$$\text{Equivalent radial load at 1000 r.p.m.} = \frac{C}{N} = \frac{2390}{.795} = 3005$$

The capacity tables may now be entered at 1000 r.p.m. and it is found that the capacities of the 3213 or 3310 bearing most nearly equal the equivalent radial load. Either of these bearings, then, should operate at the assumed loads and speeds for an average of 18,000 hours. The final selection of the bearing will be governed by most important controlling dimension — either shaft or housing diameters or width.

Determination of Effective Operating Speed — S

The effective operating speed S is the inner or outer ring r.p.m. when *only one* is rotating. In cases where both rotate in same direction

S = r.p.m. inner − r.p.m. outer

In cases where both rotate in opposite direction

S = r.p.m. inner + r.p.m. outer

No decrease in capacity for outer ring rotating is necessary.

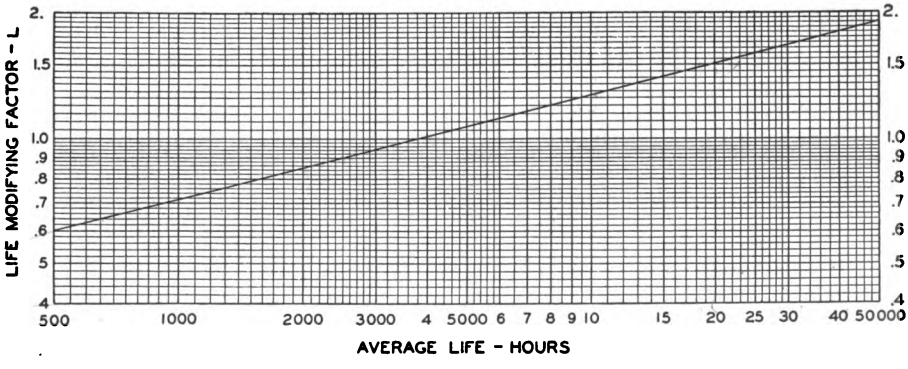
Limiting Loads to Which Bearings May Be Subjected

There are some applications where heavy loads at low or zero speeds are encountered. The amount of load that may be imposed on a given bearing without permanent damage cannot be definitely stated, since it is dependent on several factors. If any application is encountered in which the radial component exceeds the radial capacity at 10 r.p.m. or the thrust component exceeds the *radial* capacity at 50 r.p.m., the New Departure Engineering Dept. should be consulted. As noted on page 10, type 1000 bearings are not intended for pure thrust loads or heavy thrust components of combined loads where T/R exceeds .6.

Abnormal Conditions

Applications are sometimes found in which abnormal conditions exist. These conditions include vibratory or oscillatory loads or motions, very high or low operating temperatures (or a great range of operating temperatures), excessive humidity or contaminated atmospheres, and cyclic variations of load and speed. Success of any installation depends on serious consideration of these factors if they exist.

GRAPH 1



BEARING SELECTION

Load Conversion Factors

Combined Load Factors F, for Conversion to Equivalent Radial Load

Bearing Type	Pure Thrust Factor	Combined Load Factor, F
Single Row Radial Bearings Types 1000 Open or Shielded, and Magneto	Not Recommended for Pure Thrust	Column A T For — values R between .6 and 1.0 inclusive, consult New Departure Engineering Department
Single Row Bearings Types 30, 3000 Open or Shielded, N-D Seal Bearings, Inch Series Bearings Type R, Front and Rear Wheel, Type 20000 One Row, Type 30000 Duplex DF and DB Mounting	1.0	Column A
Double Row Bearings Type 5000 Open or Shielded	1.16	Column B
Radax Type 20000 Duplex DF and DB Mounting	1.7	Column C
Type 30000 One Row	.59	Column D
Type 20000 Duplex DT Mounting for Pure Thrust Only	.95	Consult New Departure Engineering Department
Type 30000 Duplex DT Mounting for Pure Thrust Only	.53	Consult New Departure Engineering Department

T/R	A	B
.05	1.01	1.03
.10	1.02	1.07
.15	1.04	1.10
.20	1.06	1.14
.25	1.09	1.17
.30	1.12	1.21
.35	1.16	1.25
.40	1.20	1.29
.45	1.24	1.33
.50	1.28	1.37
.60	1.37	1.46
.70	1.46	1.55
.80	1.56	1.64
.90	1.67	1.74
1.00	1.77	1.83
1.25	2.02	2.07
1.50	2.27	2.31
1.75	2.52	2.56
2.00	2.77	2.83
3.00	3.77	3.91
4.00	4.76	5.03
5.00	5.77	6.17
7.50	8.27	9.02
10.00	10.77	11.90

T/R	C	D
.05	1.04	.99
.10	1.09	.99
.15	1.14	.99
.20	1.19	.99
.25	1.24	1.00
.30	1.30	1.02
.35	1.37	1.04
.40	1.44	1.06
.45	1.51	1.09
.50	1.58	1.12
.60	1.73	1.16
.70	1.88	1.21
.80	2.04	1.27
.90	2.21	1.34
1.00	2.39	1.41
1.25	2.80	1.56
1.50	3.22	1.71
1.75	3.64	1.86
2.00	4.06	2.02
3.00	5.75	2.61
4.00	7.44	3.20
5.00	9.14	3.80
7.50	13.39	5.28
10.00	17.62	6.75

BEARING SELECTION

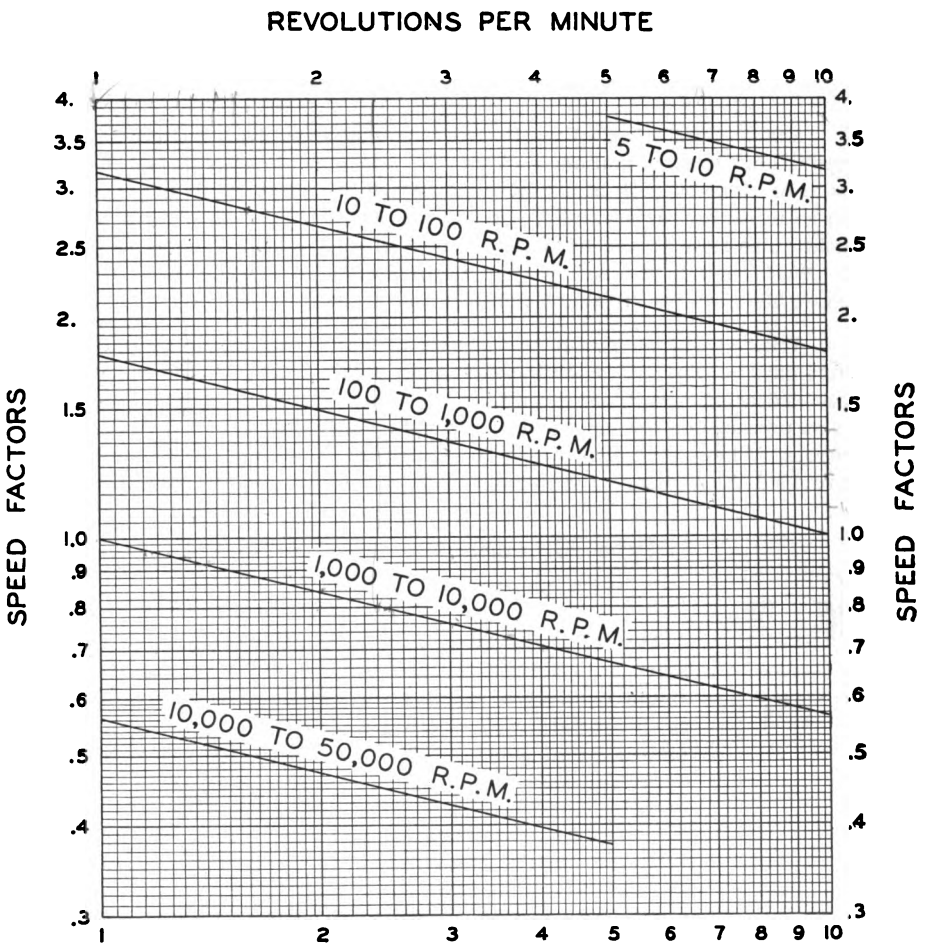
Factors For Speeds Not Tabulated

Radial Capacities at Speeds Not Given in Load Rating Tables

In addition to modification of the equivalent radial load "C" the speed factor "N" may be used to obtain capacities of an already selected bearing at speeds not given in load rating tables.

To obtain bearing capacities at speeds other than given in load rating tables:

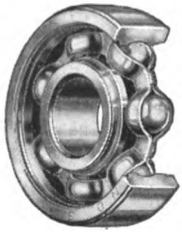
Select the speed on the diagonal line whose range contains the desired speed. At intersection with horizontal lines read across to either side to obtain speed factor. Multiply capacity at 1000 r.p.m. given in load rating table, by this factor.



GRAPH 2

EXTRA SMALL BEARINGS — TYPE 30

Design and Mounting



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.

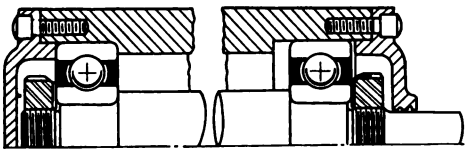


Fig. 1

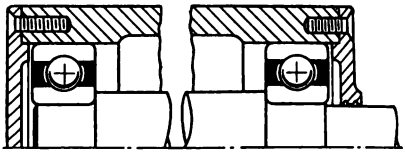


Fig. 2

Extra Small Single Row Radial bearings, Type 30, are generally applied in the same manner as Type 3000 bearings. When one bearing is to be clamped both in the housing and on the shaft, as in figure 1, 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 provided the bearings are given a normal press fit on the shaft.

Type 30 Bearings with shields

Single Shield 7030

Double Shield 77030

Any of these bearings may be obtained either single or double shielded as indicated at the left, and as listed on the next page. The shields are inset from the faces of the bearings and do not interfere with the normal methods of mounting mentioned above. The purpose of the shields is to prevent the entrance of grit or metal particles (as in figure 3) which would be highly injurious to the bearings.

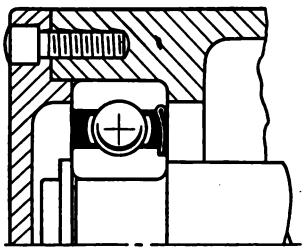
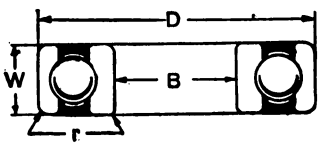


Fig. 3

EXTRA SMALL BEARINGS — TYPE 30

Dimensions and Load Ratings



PLAIN

SINGLE SHIELD

DOUBLE SHIELD

* 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	List Price	Brg. No. Single Shield	List Price	Brg. No. Double Shield	List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.						
34	4	.1575	16	.6299	5	.1969	1/8	6	.016	$1.35	**7034**	$1.45	**77034**	$1.55
35	5	.1969	19	.7480	6	.2362	5/64	6	.016	1.30	**7035**	1.40	**77035**	1.50
36	6	.2362	19	.7480	6	.2362	5/64	6	.016	1.30	**7036**	1.40	**77036**	1.50
37	7	.2756	22	.8661	7	.2756	5/32	7	.016	1.25	**7037**	1.35	**77037**	1.45
38	8	.3150	22	.8661	7	.2756	5/32	7	.016	1.25	**7038**	1.35	**77038**	1.45
39	9	.3543	26	1.0236	8	.3150	3/16	7	.025	1.30	**7039**	1.40	**77039**	1.50

Radial Load Ratings

Based on Average Life of 3800 Hours

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

Brg. No.	Revolutions per Minute												
	50	**100**	**200**	**300**	**400**	**500**	**600**	**800**	**1000**	**1500**	**2000**	**3000**	**5000**
34	175	147	124	112	104	99	94	88	83	75	70	63	55
35	210	175	149	135	125	119	113	105	100	90	84	76	67
36	210	175	149	135	125	119	113	105	100	90	84	76	67
37	280	235	200	180	165	160	150	140	133	120	112	101	89
38	280	235	200	180	165	160	150	140	133	120	112	101	89
39	410	345	290	265	245	230	220	205	195	175	165	148	130

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

EXTRA-LIGHT SINGLE ROW — TYPE 3L00

Design

Typical Section Type 3L00

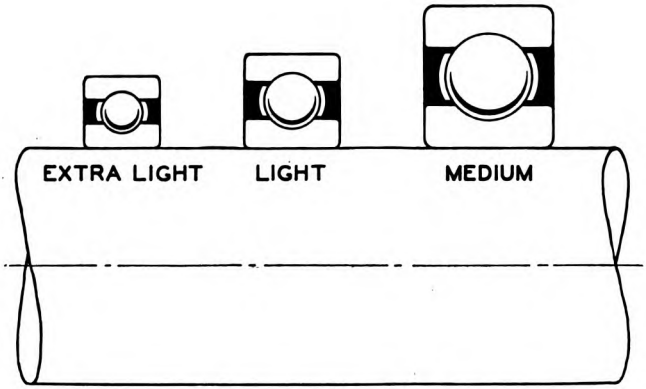


Figure 1.

Relative proportions of the extra light series as compared with light and medium series single row bearings of the same bore size.

New Departure extra light series ball bearings are narrower in width and have smaller outside diameters than light series bearings of corresponding bore sizes. In the smaller sizes, with few exceptions, the outside diameters are equal to or smaller than those of light series bearings of the next smaller bore size.

As a result of this it is possible not only to materially increase the shaft diameter without increasing the size of the housing bore, but in many cases to reduce the size of the housing. Extra light series bearings, therefore, are especially suitable where large shaft size is desired but where the housing diameter is definitely restricted.

Series 73L00

Shield on one side

The numeral 7 preceding the regular bearing number indicates a bearing with one shield, thus the Type 3L00 bearings with one shield become the Series 73L00 as listed on page 16.

Series 773L00

Shields on both sides

Bearings with shields on both sides, or Series 773L00, are made in the same range of sizes as the single shielded. In all cases the overall widths of these bearings are the same as those without shields.

Mounting

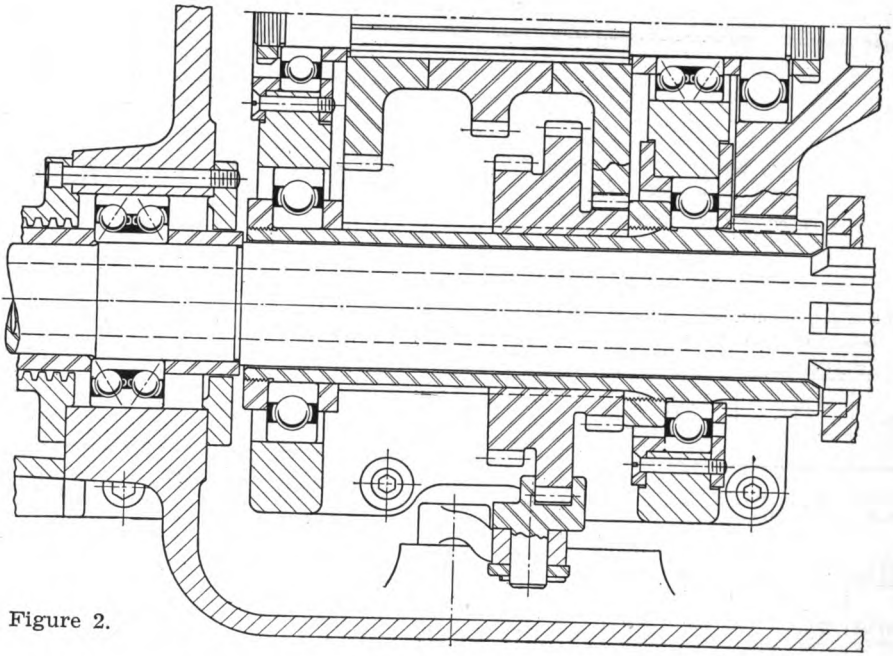


Figure 2.

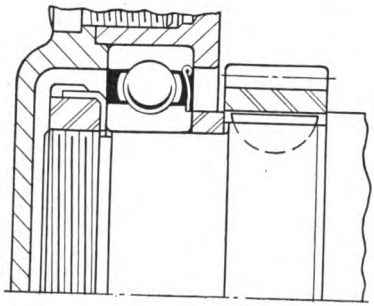


Figure 3.

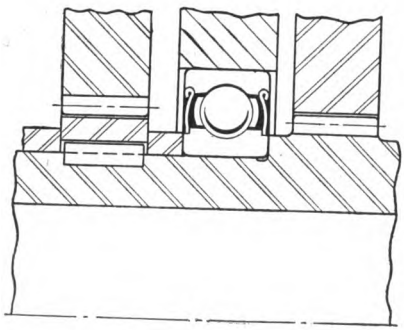


Figure 4.

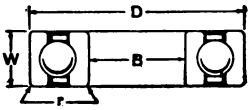
Being made with deep ball raceways, without a filling notch, extra-light, Type 3L00 bearings are in general mounted in a manner similar to Type 3000 non-loading groove bearings, page 19. Smaller outside diameters for corresponding bore sizes as indicated in figure 1, are an especial aid to design where housing diameters must be kept within certain limits and the capacity of light or medium series bearings is not required.

Also, where it is desired to have two housings the same diameter for accurate boring, the use of a Type 3L00 bearing for one position permits an increase in shaft diameter at this point, as illustrated in the hollow shaft mounting, figure 2.

Application of single and double shielded bearings is the same as for Type 3000 bearings shown on page 19, and in figures 3 and 4 at the left. Shields are primarily for protection against relatively coarse grit or metal particles.

EXTRA-LIGHT SERIES — TYPE 3L00

Principal Dimensions



PLAIN

SINGLE SHIELD

DOUBLE SHIELD

* 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	List Price	Brg. No.	List Price	Brg. No.	List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.						
3L00	10	.3937	26	1.0236	8	.3150	3/16	7	.016	$1.55	*773L00*	*$1.65*	*773L00*	*$1.75*
3L01	12	.4724	28	1.1024	8	.3150	3/16	8	.016	1.60	*773L01*	*1.70*	*773L01*	*1.80*
3L02	15	.5906	32	1.2598	9	.3543	3/16	9	.016	1.65	*773L02*	*1.75*	*773L02*	*1.85*
3L03	17	.6693	35	1.3780	10	.3937	3/16	10	.016	1.80	*773L03*	*1.90*	*773L03*	*2.00*
3L04	20	.7874	42	1.6535	12	.4724	1/4	9	.025	2.05	*773L04*	*2.15*	*773L04*	*2.25*
3L05	25	.9843	47	1.8504	12	.4724	1/4	10	.025	2.25	*773L05*	*2.35*	*773L05*	*2.45*
3L06	30	1.1811	55	2.1654	13	.5118	9/32	11	.040	2.65	*773L06*	*2.75*	*773L06*	*2.85*
3L07	35	1.3780	62	2.4409	14	.5512	5/16	11	.040	3.05	★*773L07*	*3.20*	★*773L07*	*3.35*
3L08	40	1.5748	68	2.6772	15	.5906	5/16	12	.040	3.45	★*773L08*	*3.60*	★*773L08*	*3.75*
3L09	45	1.7717	75	2.9528	16	.6299	11/32	13	.040	4.00	★*773L09*	*4.20*	★*773L09*	*4.40*
3L10	50	1.9685	80	3.1496	16	.6299	11/32	14	.040	4.35	*773L10*	*4.55*	*773L10*	*4.75*
3L11	55	2.1654	90	3.5433	18	.7087	13/32	13	.040	5.40	★*773L11*	*5.65*	★*773L11*	*5.90*
3L12	60	2.3622	95	3.7402	18	.7087	13/32	14	.040	5 95	*773L12*	*6.20*	*773L12*	*6.45*
3L13	65	2.5591	100	3.9370	18	.7087	13/32	15	.040	6.55	*773L13*	*6.80*	*773L13*	*7.05*
3L14	70	2.7559	110	4.3307	20	.7874	15/32	14	.040	8.10	★*773L14*	*8.40*	★*773L14*	*8.70*
3L16	80	3.1496	125	4.9213	22	.8661	17/32	14	.040	10 85	★*773L16*	*11.30*	★*773L16*	*11.75*
3L18	90	3.5433	140	5.5118	24	.9449	19/32	14	.060	14 75	*773L18*	*15.35*	*773L18*	*15.95*
3L20	100	3.9370	150	5.9055	24	.9449	19/32	15	.060	18.05	★*773L20*	*18.75*	★*773L20*	*19.45*
3L22	*110*	*4.3307*	*170*	*6.6929*	*28*	*1.1024*	23/32	*14*	*.080*	*26.80*	★*773L22*	*27.90*	*773L22*	*29.00*
3L24	*120*	*4.7244*	*180*	*7.0866*	*28*	*1.1024*	23/32	*15*	*.080*	*32.20*	*773L24*	*33.50*	*773L24*	*34.80*
3L26	*130*	*5.1181*	*200*	*7.8740*	*33*	*1.2992*	13/16	*15*	*.080*	*44.05*				
3L28	*140*	*5.5118*	*210*	*8.2677*	*33*	*1.2992*	13/16	*16*	*.080*	*50.75*				
3L30	*150*	*5.9055*	*225*	*8.8583*	*35*	*1.3780*	7/8	*16*	*.080*	*62.25*				
3L34	*170*	*6.6929*	*260*	*10.2362*	*42*	*1.6535*	1 1/16	*15*	*.080*	*102.00*				
3L36	*180*	*7.0866*	*280*	*11.0236*	*46*	*1.8110*	1 1/8	*15*	*.080*	*130.00*				
3L38	*190*	*7.4803*	*290*	*11.4173*	*46*	*1.8110*	1 1/8	*16*	*.080*	*145.00*				

Bearings in italics are non-preferred sizes, see page 1.
★ Consult New Departure before ordering or laying out in any design.

EXTRA-LIGHT SERIES — TYPE 3L00

Radial Load Ratings

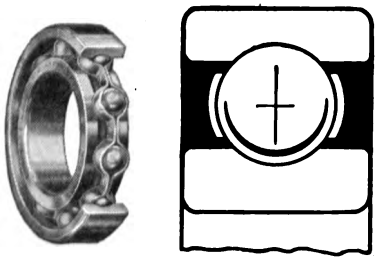
Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection." For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
3L00	410	345	290	265	245	230	220	205	195	175	165	148	130
3L01	450	380	320	285	265	255	240	225	215	190	180	160	140
3L02	485	410	345	310	290	275	260	245	230	210	195	175	155
3L03	520	440	370	335	310	295	280	260	245	225	210	190	165
3L04	900	755	635	575	535	505	485	450	425	385	360	325	285
3L05	965	810	680	615	575	545	520	480	455	410	385	345	305
3L06	1330	1120	940	850	790	750	715	665	630	570	530	480	420
3L07	1660	1400	1180	1060	990	935	895	830	785	710	660	600	525
3L08	1760	1480	1250	1130	1050	990	950	880	835	755	700	635	560
3L09	2270	1910	1600	1450	1350	1270	1220	1130	1070	970	900	815	715
3L10	2380	2000	1680	1520	1420	1340	1280	1190	1130	1020	945	855	755
3L11	3240	2730	2290	2070	1930	1820	1740	1620	1530	1390	1290	1170	
3L12	3410	2870	2410	2180	2030	1920	1830	1700	1610	1460	1350	1220	
3L13	3570	3000	2520	2280	2120	2010	1920	1780	1690	1520	1420	1280	
3L14	4520	3800	3200	2890	2690	2540	2430	2270	2140	1930	1800	1620	
3L16	5590	4700	3950	3570	3330	3150	3010	2800	2640	2390	2220	2010	
3L18	6750	5680	4770	4310	4010	3800	3630	3370	3190	2880	2680		
3L20	7070	5940	5000	4520	4200	3970	3800	3530	3340	3020	2810		
3L22	*9220*	*7750*	*6520*	*5890*	*5480*	*5180*	*4950*	*4610*	*4360*	*3940*	*3660*		
3L24	*9650*	*8120*	*6820*	*6170*	*5740*	*5430*	*5190*	*4830*	*4560*	*4120*	*3840*		
3L26	*11475*	*9650*	*8120*	*7340*	*6830*	*6460*	*6170*	*5740*	*5430*	*4910*	*4560*		
3L28	*11975*	*10075*	*8480*	*7660*	*7130*	*6740*	*6440*	*5990*	*5670*	*5120*			
3L30	*13375*	*11250*	*9460*	*8550*	*7950*	*7520*	*7190*	*6690*	*6320*	*5710*			
3L34	*16925*	*14225*	*11975*	*10825*	*10075*	*9520*	*9100*	*8460*	*8000*	*7230*			
3L36	*18325*	*15400*	*12950*	*11700*	*10900*	*10300*	*9850*	*9160*	*8660*				
3L38	*19125*	*16075*	*13525*	*12225*	*11375*	*10750*	*10275*	*9560*	*9040*				

For speeds higher than listed, consult New Departure Engineering Department.
Bearings in italics are non-preferred sizes, see page 1.

Design



Typical Sections—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 loading groove type 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.

Single Row Radial bearings are normally made with small radial clearance between balls and races. The radial clearance in the unmounted bearing is so proportioned with respect to recommended press fits that proper radial fitup for correct operation is obtained after mounting. Press fitting a bearing race member reduces the amount of radial clearance originally built into the bearing.

Series 7500-7600

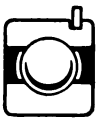
Shield on one side

Type 3000 bearings with a protecting shield on one side are available in a certain range of sizes in both light and medium series (7500 and 7600 respectively) as listed on page 20. The shield fits into a notch in the inner ring, forming a barrier against chips or grit from one side.

Series 77500-77600

Shields on both sides

Similar sizes of Type 3000 bearings are also made with shields on both sides, for use where dirt or grit may get into the lubricating system and extra protection is required to prevent abrasive wear in the bearings. Shields are not intended as complete protection against very fine matter and are usually supplemental to other closures.



Series 43200-43300

With Snap Ring

Snap rings are designed primarily to simplify the machining of bearing housings and the installation of the bearings themselves. The rings fit without radial clearance into grooves in the bearings and provide sufficient shearing strength to locate the races under such axial loads as are normally imposed upon single row bearings of this type.

Series 47500-47600

Snap Ring and Shield

These bearings combine the functions of the various series listed above and are available in the same range of sizes as the plain snap ring. For sizes and dimensions, see page 21.

Mounting

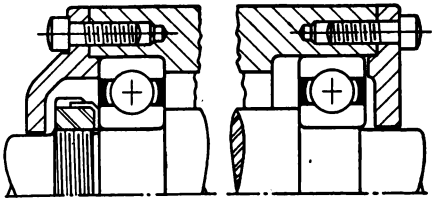


Figure 1.

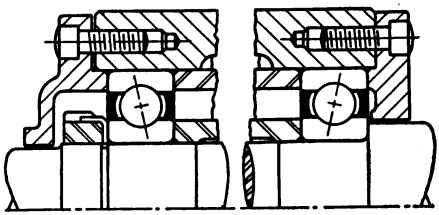


Figure 2.

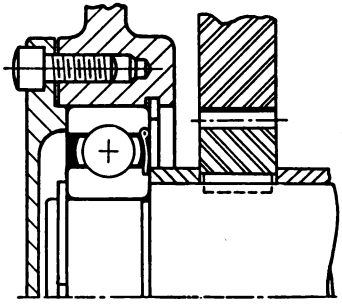


Figure 3.

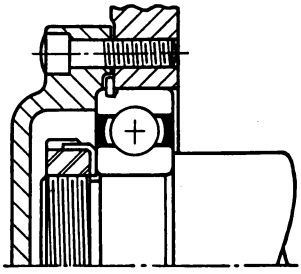


Figure 4.

Where two Type 3000 bearings are used to support a shaft, location close to the normal mounted endplay of the bearings is obtained if one is clamped both in the housing and on the shaft, while the other is unrestrained in the housing as in figure 1. Where greater endplay can be allowed, both bearings may be "floated" in the housing, with the total axial movement limited by the end caps to from .015" to .020". This amount is dependent, however, upon the length of the shaft and the maximum change in length likely to occur in operation.

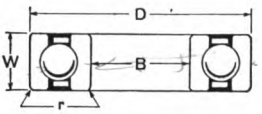
Where endplay must be closely controlled, Type 3000 bearings may be mounted opposed, in a preloaded condition. This is usually best accomplished by means of spacers ground to a predetermined difference in length, as indicated in figure 2. Such mounts should be discussed with bearing engineers and their recommendations followed.

Single shielded bearings should always be applied with the shield toward the side from which dirt or metal particles may be expected, as from gears or rubbing parts likely to release abrasive or clogging matter over lengthy periods of operation. Double shielded bearings are employed where dirt of a like nature is possible from either side.

In applying snap ring bearings, it is important to note that the bearing outer corner radius on the snap ring side is small enough to leave some straight surface to guide the clamping member radially. A slight clearance should be left between clamping piece and housing to be sure that pressure is against the snap ring face, figure 4.

SINGLE ROW RADIAL — TYPE 3000

Principal Dimensions



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

PLAIN

SINGLE SHIELD

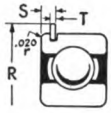
DOUBLE SHIELD

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	List Price	Brg. No.	List Price	Brg. No.	List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.						
3200	10	.3937	30	1.1811	9	.3543	7/32	7	.025	$ 1.35	**7500**	$ 1.45	**77500**	$ 1.55
3201	12	.4724	32	1.2598	10	.3937	.210	8	.025	1.40	**7501**	1.50	**77501**	1.60
3202	15	.5906	35	1.3780	11	.4331	.235	8	.025	1.50	**7502**	1.60	**77502**	1.70
3203	17	.6693	40	1.5748	12	.4724	9/32	8	.025	1.60	**7503**	1.70	**77503**	1.80
3303			47	1.8504	14	.5512	11/32	7	.04	2.25	**7603**	2.35	**77603**	2.45
3204	20	.7874	47	1.8504	14	.5512	5/16	8	.04	1.90	**7504**	2.00	**77504**	2.10
3304			52	2.0472	15	.5906	13/32	7		2.50	**7604**	2.60	**77604**	2.70
3205	25	.9843	52	2.0472	15	.5906	5/16	9	.04	2.05	**7505**	2.15	**77505**	2.25
3305			62	2.4409	17	.6693	13/32	8		3.05	**7605**	3.20	**77605**	3.35
3206	30	1.1811	62	2.4409	16	.6299	3/8	9	.04	2.55	**7506**	2.65	**77506**	2.75
3306			72	2.8346	19	.7480	15/32	8		3.80	**7606**	3.95	**77606**	4.10
3207	35	1.3780	72	2.8346	17	.6693	7/16	9	.04	3.15	**7507**	3.30	**77507**	3.45
3307			80	3.1496	21	.8268	17/32	8	.06	4.35	**7607**	4.55	**77607**	4.75
3208	40	1.5748	80	3.1496	18	.7087	15/32	9	.04	3.65	**7508**	3.80	**77508**	3.95
3308			90	3.5433	23	.9055	19/32	8	.06	5.40	**7608**	5.65	**77608**	5.90
3209	45	1.7717	85	3.3465	19	.7480	15/32	10	.04	4.05	**7509**	4.25	**77509**	4.45
3309			100	3.9370	25	.9843	21/32	8	.06	6.55	**7609**	6.80	**77609**	7.05
3210	50	1.9685	90	3.5433	20	.7874	15/32	11	.04	4.50	**7510**	4.70	**77510**	4.90
3310			110	4.3307	27	1.0630	23/32	8	.08	8.10	**7610**	8.40	**77610**	8.70
3211	55	2.1654	100	3.9370	21	.8268	17/32	11	.06	5.45	**7511**	5.70	**77511**	5.95
3311			120	4.7244	29	1.1417	25/32	8	.08	9.80	**7611**	10.20	**77611**	10.60
3212	60	2.3622	110	4.3307	22	.8661	19/32	10	.06	6.75	**7512**	7.00	**77512**	7.25
3312			130	5.1181	31	1.2205	27/32	8	.08	12.05	**7612**	12.55	**77612**	13.05
3213	65	2.5591	120	4.7244	23	.9055	21/32	10	.06	8.20	**7513**	8.50	**77513**	8.80
3313			140	5.5118	33	1.2992	29/32	8	.08	14.75	**7613**	15.35	**77613**	15.95
3214	70	2.7559	125	4.9213	24	.9449	21/32	11	.06	9.05	**7514**	9.40	**77514**	9.75
3314			150	5.9055	35	1.3780	31/32	8	.08	18.05	**7614**	18.75	**77614**	19.45
3215	75	2.9528	130	5.1181	25	.9843	21/32	11	.06	10.05				
3315			160	6.2992	37	1.4567	1	8	.08	22.05				
3216	80	3.1496	140	5.5118	26	1.0236	1 1/16	11	.08	12.30				
3316			170	6.6929	39	1.5354	1 1/16	8		26.80				
3217	85	3.3465	150	5.9055	28	1.1024	25/32	11	.08	15.05				
3317			180	7.0866	41	1.6142	1 1/8	8	.10	32.20				
3218	90	3.5433	160	6.2992	30	1.1811	27/32	11	.08	18.35				
3318			190	7.4803	43	1.6929	1 3/16	8	.10	37.80				
3219	95	3.7402	170	6.6929	32	1.2598	29/32	11	.08	22.30				
3319			200	7.8740	45	1.7717	1 5/16	8	.10	44.05				
3220	100	3.9370	180	7.0866	34	1.3386	31/32	11	.08	26.85				
3320			215	8.4646	47	1.8504	1 3/8	8	.10	54.05				
3222	110	4.3307	200	7.8740	38	1.4961	1 1/16	11	.08	36.70				
3322			240	9.4488	50	1.9685	1 1/2	8	.10	76.50				

SINGLE ROW RADIAL — TYPE 3000

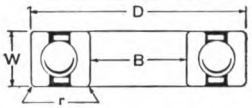
Principal Dimensions

WITH SNAP RING



SNAP RING SHIELDED

EXTRA LARGE SIZES



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

Brg. No.	R	T	S	List Price	Brg. No.	List Price	Brg. No.	Bore B mm	Bore B inch	Diameter D mm	Diameter D inch	Width W mm	Width W inch	Balls Dia.	Balls No.	* Radius r	List Price
43200	1 23/64	.042	.120	$1.45	**47500**	$1.55	*V3224*	*120*	*4.7244*	*215*	*8.4646*	*40*	*1.5748*	1 1/8	*11*	*.08*	*$ 54.75*
							★3324			*260*	*10.2362*	*55*	*2.1654*	1 5/8	*9*	*.10*	*102.00*
43201	1 7/16	.042	.120	1.50	**47501**	1.60											
							V3226	*130*	*5.1181*	*230*	*9.0551*	*40*	*1.5748*	1 3/16	*11*	*.10*	*67.00*
43202	1 35/64	.042	.120	1.60	**47502**	1.70	*V3326*			*280*	*11.0236*	*58*	*2.2835*	1 3/4	*9*	*.12*	*161.15*
43203	1 3/4	.042	.120	1.70	**47503**	1.80	*3228*	*140*	*5.5118*	*250*	*9.8425*	*42*	*1.6535*	1 5/16	*11*	*.10*	*73.95*
43303	2 1/16	.042	.136	2.35	**47603**	2.45	*★3328*			*300*	*11.8110*	*62*	*2.4409*	1 7/8	*9*	*.12*	*179.50*
43204	2 1/16	.042	.136	2.00	**47504**	2.10	*★3230*	*150*	*5.9055*	*270*	*10.6299*	*45*	*1.7717*	1 3/8	*11*	*.10*	†
43304	2 17/64	.042	.136	2.60	**47604**	2.70	*★3330*			*320*	*12.5984*	*65*	*2.5591*	1 15/16	*9*	*.12*	
43205	2 17/64	.042	.136	2.15	**47505**	2.25	*★3232*	*160*	*6.2992*	*290*	*11.4173*	*48*	*1.8898*	1 1/2	*11*	*.10*	†
43305	2 21/32	.065	.190	3.20	**47605**	3.35	*★3332*			*340*	*13.3858*	*68*	*2.6772*	2 1/16	*9*	*.12*	
43206	2 21/32	.065	.190	2.70	**47506**	2.80	*★3234*	*170*	*6.6929*	*310*	*12.2047*	*52*	*2.0472*	1 5/8	*11*	*.12*	†
43306	3 5/64	.065	.190	4.00	**47606**	4.15	*★3334*			*360*	*14.1732*	*72*	*2.8346*	2 1/8	*9*	*.12*	
43207	3 5/64	.065	.190	3.35	**47507**	3.50	*★3236*	*180*	*7.0866*	*320*	*12.5984*	*52*	*2.0472*	1 5/8	*11*	*.12*	†
43307	3 13/32	.065	.190	4.55	**47607**	4.75											
43208	3 13/32	.065	.190	3.85	**47508**	4.00											
43308	3 51/64	.095	.220	5.65	**47608**	5.90											
43209	3 19/32	.065	.190	4.30	**47509**	4.50											
43309	4 3/16	.095	.220	6.80	**47609**	7.05											
43210	3 51/64	.095	.220	4.75	**47510**	4.95											
43310	4 37/64	.095	.220	8.45	**47610**	8.75											
43211	4 3/16	.095	.220	5.70	**47511**	5.95											

Bearings in italics are non-preferred sizes, see page 1.

★ Consult New Departure before ordering or laying out in any design.

† Price on application. **V indicates bronze separator.**

SINGLE ROW RADIAL — TYPE 3000

Radial 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
3200	570	480	405	365	340	320	305	285	270	245	225	205	180
3201	570	480	405	365	340	320	305	285	270	245	225	205	180
3202	725	610	515	465	430	410	390	360	345	310	290	260	230
3203	1080	905	760	685	640	605	580	540	510	460	430	385	340
3303	1500	1260	1060	960	890	845	805	750	710	640	595	540	475
3204	1350	1130	950	860	800	755	725	675	635	575	535	485	425
3304	2150	1800	1520	1370	1280	1210	1150	1070	1010	915	855	770	680
3205	1460	1220	1030	930	865	820	785	730	690	620	580	525	460
3305	2350	1970	1660	1500	1400	1320	1260	1170	1110	1000	935	845	740
3206	2150	1810	1520	1370	1280	1210	1150	1070	1020	920	855	770	680
3306	3110	2620	2200	1990	1850	1750	1670	1560	1470	1330	1240	1120	985
3207	2940	2480	2080	1880	1750	1660	1580	1470	1390	1260	1170	1060	930
3307	3850	3240	2720	2460	2290	2170	2070	1930	1820	1650	1530	1380	1220
3208	3370	2830	2380	2150	2000	1890	1810	1680	1590	1440	1340	1210	1060
3308	4650	3910	3290	2970	2760	2610	2500	2320	2200	1990	1850	1670	1470
3209	3610	3040	2560	2310	2150	2030	1940	1810	1710	1540	1440	1300	1140
3309	5440	4580	3850	3480	3240	3060	2930	2720	2570	2330	2160	1960	1720
3210	3850	3240	2720	2460	2290	2170	2070	1920	1820	1650	1530	1380	
3310	6350	5340	4490	4060	3770	3570	3410	3170	3000	2710	2520	2280	
3211	4760	4000	3370	3040	2830	2680	2560	2380	2250	2030	1890	1710	
3311	7170	6030	5070	4580	4270	4040	3860	3590	3390	3070	2850	2580	
3212	5390	4540	3810	3450	3210	3030	2900	2700	2550	2310	2140	1940	
3312	7990	6720	5650	5100	4750	4490	4290	3990	3780	3410	3180	2870	
3213	6320	5310	4470	4040	3760	3550	3400	3160	2990	2700	2510	2270	
3313	8860	7450	6260	5660	5270	4980	4760	4430	4190	3790	3520	3180	
3214	6730	5660	4760	4300	4000	3790	3620	3370	3180	2880	2680	2420	
3314	9760	8210	6900	6240	5800	5490	5250	4880	4620	4170	3880	3510	
3215	6730	5660	4760	4300	4000	3790	3620	3370	3180	2880	2680	2420	
3315	10175	8560	7200	6510	6060	5730	5470	5090	4810	4350	4050	3660	
3216	7250	6100	5130	4640	4310	4080	3900	3630	3430	3100	2880	2610	
3316	11125	9360	7870	7110	6620	6260	5980	5560	5260	4760	4430		
3217	8870	7460	6270	5670	5280	4990	4770	4440	4190	3790	3530		
3317	12050	10125	8520	7700	7160	6780	6480	6020	5700	5150	4790		
3218	9870	8300	6980	6310	5870	5550	5310	4940	4670	4220	3930		
3318	13050	10975	9230	8340	7760	7340	7020	6530	6170	5580	5190		
3219	10950	9210	7750	7000	6510	6160	5890	5480	5180	4680	4360		
3319	15125	12700	10700	9660	8990	8500	8120	7560	7150	6460	6010		
3220	12075	10150	8540	7710	7180	6790	6490	6030	5710	5160	4800		
3320	16100	13525	11375	10275	9570	9050	8650	8050	7610	6880	6400		
3222	13750	11575	9730	8790	8180	7740	7400	6880	6510	5880	5470		
3322	18350	15425	12975	11725	10900	10325	9860	9170	8680	7840	7300		

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

EXTRA LARGE SINGLE ROW — TYPE 3000

Radial Load Ratings

Based on Average Life of 3800 Hours

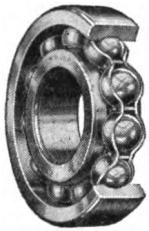
The bearing capacities listed here and on the preceding page are basic radial load ratings in pounds. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

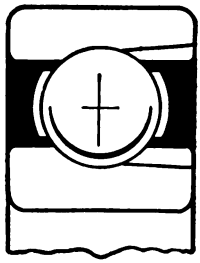
Brg. No.	Revolutions per Minute										
	50	100	200	300	400	500	600	800	1000	1500	2000
V3224	*14900*	*12525*	*10525*	*9520*	*8860*	*8380*	*8010*	*7450*	*7040*	*6370*	*5920*
★3324	*22125*	*18600*	*15650*	*14150*	*13150*	*12450*	*11900*	*11075*	*10475*	*9460*	*8800*
V3226	*16150*	*13575*	*11425*	*10325*	*9600*	*9080*	*8680*	*8070*	*7630*	*6900*	*6420*
V3326	*25225*	*21200*	*17825*	*16125*	*15000*	*14175*	*13550*	*12600*	*11925*	*10775*	
3228	*18700*	*15725*	*13225*	*11950*	*11125*	*10525*	*10050*	*9340*	*8840*	*7990*	
★3328	*27975*	*23525*	*19800*	*17875*	*16650*	*15750*	*15050*	*14000*	*13225*	*11950*	
★3230	*19900*	*16725*	*14075*	*12725*	*11825*	*11200*	*10700*	*9950*	*9410*	*8500*	
★3330	*29375*	*24700*	*20775*	*18775*	*17475*	*16525*	*15775*	*14675*	*13875*	*12550*	
★3232	*22700*	*19075*	*16050*	*14500*	*13500*	*12750*	*12200*	*11350*	*10725*	*9700*	
★3332	*32375*	*27225*	*22900*	*20700*	*19250*	*18200*	*17400*	*16200*	*15300*	*13825*	
★3234	*25300*	*21275*	*17875*	*16175*	*15050*	*14225*	*13600*	*12650*	*11950*	*10800*	
★3334	*33675*	*28325*	*23825*	*21525*	*20025*	*18950*	*18100*	*16850*	*15925*	*14400*	
★3236	*25300*	*21275*	*17875*	*16175*	*15050*	*14225*	*13600*	*12650*	*11950*		

Note: For ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."
★ Consult New Departure before ordering or laying out in any design.
Bearings in italics are non-preferred sizes, see page 1.
V indicates bronze separator.

SINGLE ROW RADIAL — TYPE 1000

Design





Typical Sections—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.

While Type 1000 bearings are designed primarily for radial loads, they may also be used to locate parts axially and to resist light thrust components *in combination with* heavy radial loads.

Series 7200-7300

Shield on one side

Where Type 1000 bearings are made with one shield (Series 7200-7300) the shield is always located on the side of the bearing opposite the loading groove.

Series 77200-77300

Shield on both sides

With double shielded bearings, the shield on the loading groove side very nearly fills the grooves or filling slots, and when mounted, shaft and housing shoulders usually form a cover for the remaining portions.

Series 41200-41300

With Snap Ring

Snap rings are located on the same side as the filling slot, thereby in most cases placing it on the side nearest the clamping member or cover, as in figure 4.

Series 47200-47300

Snap Ring and Shield

Snap ring bearings with shields are usually used for gear boxes or similar installations where grit or metal chips are often prevelant. The range of sizes for all of the above series are given on page 26.

SINGLE ROW RADIAL — TYPE 1000

Mounting

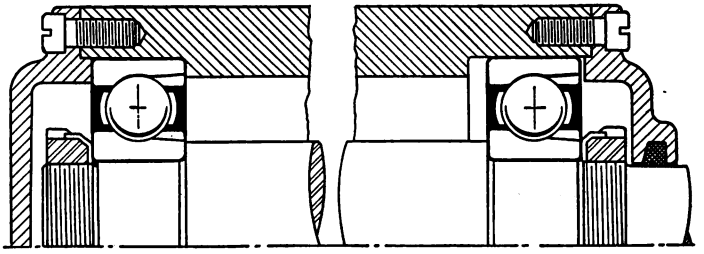


Figure 1.

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.

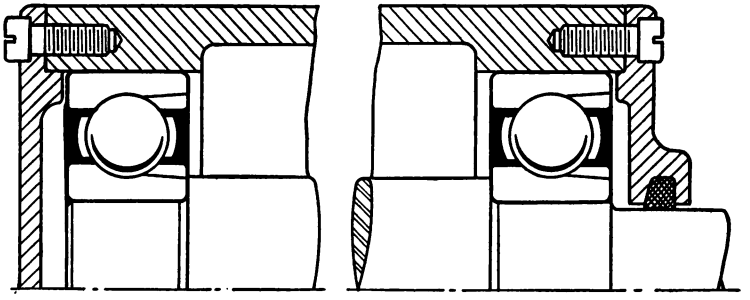


Figure 2.

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.

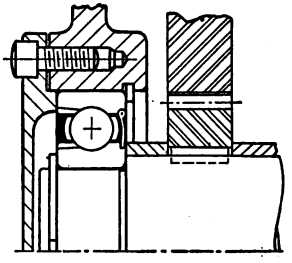


Figure 3.

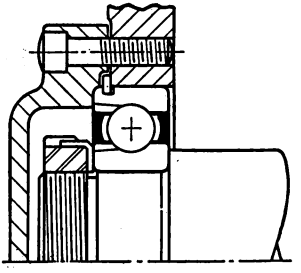
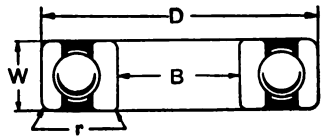


Figure 4.

SINGLE ROW RADIAL — TYPE 1000

Principal Dimensions

Note: For sizes below 4 bore medium and 6 bore light series use Type 3,000 listed on page 20.



PLAIN

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

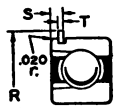
Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
1304	*20*	*.7874*	*52*	*2.0472*	*15*	*.5906*	*13/32*	*9*	*.04*	*$ 2.85*
1305	*25*	*.9843*	*62*	*2.4409*	*17*	*.6693*	*7/16*	*10*	*.04*	*3.50*
1306	*30*	*1.1811*	*62*	*2.4409*	*16*	*.6299*	*3/8*	*12*	*.04*	*3.05*
1306			*72*	*2.8346*	*19*	*.7480*	*15/32*	*11*	*.04*	*4.35*
1307	*35*	*1.3780*	*72*	*2.8346*	*17*	*.6693*	*7/16*	*12*	*.04*	*3.80*
1307			*80*	*3.1496*	*21*	*.8268*	*17/32*	*11*	*.06*	*5.05*
1308	*40*	*1.5748*	*80*	*3.1496*	*18*	*.7087*	*15/32*	*13*	*.04*	*4.35*
1308			*90*	*3.5433*	*23*	*.9055*	*19/32*	*11*	*.06*	*6.20*
1309	*45*	*1.7717*	*85*	*3.3465*	*19*	*.7480*	*15/32*	*14*	*.04*	*4.85*
1309			*100*	*3.9370*	*25*	*.9843*	*21/32*	*12*	*.06*	*7.50*
1310	*50*	*1.9685*	*90*	*3.5433*	*20*	*.7874*	*15/32*	*15*	*.04*	*5.40*
1310			*110*	*4.3307*	*27*	*1.0630*	*23/32*	*12*	*.08*	*9.30*
1311	*55*	*2.1654*	*100*	*3.9370*	*21*	*.8268*	*17/32*	*15*	*.06*	*6.55*
1311			*120*	*4.7244*	*29*	*1.1417*	*25/32*	*12*	*.08*	*11.30*
1312	*60*	*2.3622*	*110*	*4.3307*	*22*	*.8661*	*19/32*	*15*	*.06*	*8.10*
1312			*130*	*5.1181*	*31*	*1.2205*	*27/32*	*12*	*.08*	*13.85*
1313	*65*	*2.5591*	*120*	*4.7244*	*23*	*.9055*	*21/32*	*15*	*.06*	*9.80*
1313			*140*	*5.5118*	*33*	*1.2992*	*29/32*	*12*	*.08*	*16.95*
1314	*70*	*2.7559*	*125*	*4.9213*	*24*	*.9449*	*21/32*	*15*	*.06*	*10.85*
1314			*150*	*5.9055*	*35*	*1.3780*	*31/32*	*12*	*.08*	*20.75*
1315	*75*	*2.9528*	*130*	*5.1181*	*25*	*.9843*	*21/32*	*16*	*.06*	*12.05*
1315			*061*	*6.2992*	*37*	*1.4567*	*1*	*13*	*.08*	*25.40*
1316	*80*	*3.1496*	*140*	*5.5118*	*26*	*1.0236*	*11/16*	*17*	*.08*	*14.75*
1316			*170*	*6.6929*	*39*	*1.5354*	*1 1/16*	*13*	*.08*	*30.80*
1317	*85*	*3.3465*	*150*	*5.9055*	*28*	*1.1024*	*25/32*	*16*	*.08*	*18.05*
1317			*180*	*7.0866*	*41*	*1.6142*	*1 1/8*	*13*	*.10*	*37.05*
1318	*90*	*3.5433*	*160*	*6.2992*	*30*	*1.1811*	*27/32*	*15*	*.08*	*22.05*
1318			*190*	*7.4803*	*43*	*1.6929*	*1 3/16*	*13*	*.10*	*45.45*
1319	*95*	*3.7402*	*170*	*6.6929*	*32*	*1.2598*	*29/32*	*15*	*.08*	*26.80*
1319			*200*	*7.8740*	*45*	*1.7717*	*1 5/16*	*12*	*.10*	*50.65*
1320	*100*	*3.9370*	*180*	*7.0866*	*34*	*1.3386*	*31/32*	*15*	*.08*	*32.20*
1320			*215*	*8.4646*	*47*	*1.8504*	*1 3/8*	*12*	*.10*	*62.15*
1322	*110*	*4.3307*	*200*	*7.8740*	*38*	*1.4961*	*1 1/16*	*16*	*.08*	*44.05*
V1322			*240*	*9.4488*	*50*	*1.9685*	*1 1/2*	*12*	*.10*	*96.00*

Bearings in italics are non-preferred sizes, see page 1.

"V" Indicates Bronze Separator.

SINGLE ROW RADIAL — TYPE 1000

Principal Dimensions

SINGLE SHIELD		DOUBLE SHIELD		WITH SNAP RING					SNAP RING AND SHIELD	
										
Bearing No.	List Price	Bearing No.	List Price	Bearing No.	R	T	S	List Price	Bearing No.	List Price
7304	*$ 2.95*	*77304*	*$ 3.05*	*41304*	*2 17/64*	*.042*	*.136*	*$ 2.95*	*47304*	*$ 3.05*
7305	*3.65*	*77305*	*3.80*	*41305*	*2 21/32*	*.065*	*.190*	*3.65*	*47305*	*3.80*
7306	*3.15*	*77306*	*3.25*	*41206*	*2 21/32*	*.065*	*.190*	*3.20*	*47206*	*3.30*
7306	*4.50*	*77306*	*4.65*	*41306*	*3 5/64*	*.065*	*.190*	*4.55*	*47306*	*4.70*
7307	*3.95*	*77307*	*4.10*	*41207*	*3 5/64*	*.065*	*.190*	*4.00*	*47207*	*4.15*
7307	*5.25*	*77307*	*5.45*	*41307*	*3 13/32*	*.065*	*.190*	*5.25*	*47307*	*5.45*
7308	*4.50*	*77308*	*4.65*	*41208*	*3 13/32*	*.065*	*.190*	*4.55*	*47208*	*4.70*
7308	*6.45*	*77308*	*6.70*	*41308*	*3 51/64*	*.095*	*.220*	*6.45*	*47308*	*6.70*
7309	*5.05*	*77309*	*5.25*	*41209*	*3 19/32*	*.065*	*.190*	*5.10*	*47209*	*5.30*
7309	*7.75*	*77309*	*8.00*	*41309*	*4 3/16*	*.095*	*.220*	*7.75*	*47309*	*8.00*
7310	*5.60*	*77310*	*5.80*	*41210*	*3 51/64*	*.095*	*.220*	*5.65*	*47210*	*5.85*
7310	*9.60*	*77310*	*9.90*	*41310*	*4 37/64*	*.095*	*.220*	*9.65*	*47310*	*9.95*
7311	*6.80*	*77311*	*7.05*	*41211*	*4 3/16*	*.095*	*.220*	*6.80*	*47211*	*7.05*
7311	*11.70*	*77311*	*12.10*							
7312	*8.35*	*77312*	*8.60*							
7312	*14.35*	*77312*	*14.85*							
7313	*10.10*	*77313*	*10.40*							
7313	*17.55*	*77313*	*18.15*							
7314	*11.20*	*77314*	*11.55*							
7314	*21.45*	*77314*	*22.15*							

Bearings in italics are non-preferred sizes, see page 1.

SINGLE ROW RADIAL — TYPE 1000

Radial Load Ratings

For dimensions of Type 1000 bearings see pages 26 and 27.

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
1304	*2540*	*2130*	*1790*	*1620*	*1510*	*1430*	*1360*	*1270*	*1200*	*1080*	*1010*	*910*	*805*
1305	*3160*	*2660*	*2230*	*2020*	*1880*	*1780*	*1700*	*1580*	*1490*	*1350*	*1260*	*1140*	*1000*
1206	*2600*	*2190*	*1840*	*1660*	*1550*	*1460*	*1400*	*1300*	*1230*	*1110*	*1030*	*935*	*825*
1306	*3850*	*3240*	*2720*	*2460*	*2290*	*2170*	*2070*	*1920*	*1820*	*1650*	*1530*	*1380*	*1220*
1207	*3570*	*3000*	*2520*	*2280*	*2120*	*2010*	*1920*	*1780*	*1690*	*1520*	*1420*	*1280*	*1130*
1307	*4760*	*4000*	*3370*	*3040*	*2830*	*2680*	*2560*	*2380*	*2250*	*2030*	*1890*	*1710*	*1510*
1208	*4300*	*3620*	*3040*	*2750*	*2560*	*2420*	*2310*	*2150*	*2030*	*1840*	*1710*	*1550*	*1360*
1308	*5750*	*4830*	*4060*	*3670*	*3420*	*3230*	*3090*	*2870*	*2720*	*2460*	*2280*	*2060*	*1820*
1209	*4520*	*3800*	*3200*	*2890*	*2690*	*2540*	*2430*	*2260*	*2140*	*1930*	*1800*	*1620*	*1430*
1309	*7130*	*6000*	*5040*	*4560*	*4240*	*4010*	*3830*	*3570*	*3370*	*3050*	*2840*	*2560*	*2260*
1210	*4730*	*3980*	*3350*	*3030*	*2820*	*2660*	*2540*	*2370*	*2240*	*2020*	*1880*	*1700*	
1310	*8320*	*6990*	*5880*	*5310*	*4950*	*4680*	*4470*	*4160*	*3930*	*3550*	*3310*	*2990*	
1211	*5850*	*4920*	*4140*	*3740*	*3480*	*3290*	*3150*	*2930*	*2770*	*2500*	*2330*	*2100*	
1311	*9400*	*7900*	*6650*	*6010*	*5590*	*5290*	*5050*	*4700*	*4440*	*4020*	*3740*	*3380*	
1212	*7070*	*5940*	*5000*	*4520*	*4200*	*3970*	*3800*	*3530*	*3340*	*3020*	*2810*	*2540*	
1312	*10475*	*8800*	*7400*	*6690*	*6220*	*5890*	*5620*	*5230*	*4950*	*4470*	*4160*	*3760*	
1213	*8280*	*6960*	*5850*	*5290*	*4920*	*4660*	*4450*	*4140*	*3910*	*3540*	*3290*	*2970*	
1313	*11600*	*9760*	*8210*	*7420*	*6900*	*6530*	*6240*	*5800*	*5490*	*4960*	*4610*	*4170*	
1214	*8280*	*6960*	*5850*	*5290*	*4920*	*4660*	*4450*	*4140*	*3910*	*3540*	*3290*	*2970*	
1314	*12800*	*10750*	*9040*	*8180*	*7610*	*7200*	*6870*	*6390*	*6050*	*5470*	*5090*	*4600*	
1215	*8640*	*7270*	*6110*	*5520*	*5140*	*4860*	*4650*	*4320*	*4090*	*3690*	*3440*	*3110*	
1315	*14075*	*11825*	*9950*	*8990*	*8370*	*7920*	*7560*	*7040*	*6660*	*6020*	*5600*	*5060*	
1216	*9690*	*8150*	*6860*	*6200*	*5770*	*5450*	*5210*	*4850*	*4580*	*4140*	*3850*	*3480*	
1316	*15375*	*12925*	*10875*	*9830*	*9150*	*8650*	*8270*	*7690*	*7270*	*6580*	*6120*		

Bearings in italics are non-preferred sizes, see page 1.

SINGLE ROW RADIAL — TYPE 1000

Radial Load Ratings

Based on Average Life of 3800 Hours

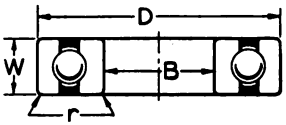
The bearing capacities listed on this page are basic radial load ratings in pounds. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
1217	11400	9580	8050	7280	6770	6410	6120	5690	5390	4870	4530		
1317	16650	14000	11775	10650	9900	9370	8950	8330	7870	7120	6620		
1218	12150	10200	8590	7760	7220	6830	6530	6070	5740	5190	4830		
1318	18050	15175	12750	11525	10725	10150	9700	9020	8530	7710	7170		
1219	13475	11325	9530	8610	8010	7580	7240	6730	6370	5760	5360		
1319	19800	16650	14000	12650	11775	11150	10650	9900	9370	8460	7870		
1220	14850	12475	10500	9490	8830	8350	7980	7420	7020	6340	5900		
1320	21075	17725	14900	13475	12550	11850	11325	10550	9970	9010	8380		
1222	17675	14850	12500	11300	10500	9940	9500	8830	8350	7550	7020		
1322	24050	20225	17000	15375	14300	13525	12925	12025	11375	10275	9560		

Note: For ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection." For speeds higher than those listed, consult New Departure Engineering Dept.

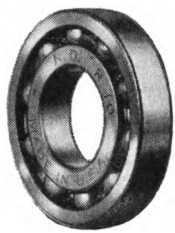
INCH SERIES BEARINGS — TYPE R

Design and Dimensions



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

Brg. No.	Bore B		Diam. D		Width W		* Radius r	Balls		List Price
	Fraction	Decimal	Fraction	Decimal	Fraction	Decimal		Diam.	No.	
R-2	1/8	.1250	3/8	.3750	5/32	.1562	.012	1/16	7	$2.10
R-2-A	1/8	.1250	1/2	.500	11/64	.1719	.012	1/16	7	1.80
R-3	3/16	*.1875*	1/2	*.500*	5/32	*.1562*	*.012*	3/32	*7*	*1.80*
R-4	1/4	.250	5/8	.6250		.1969	.012	3/32	8	1.60
R-4-A	1/4	*.250*	3/4	*.750*	7/32	*.2188*	*.016*	9/64	*6*	*1.55*
R-6	3/8	*.3750*	7/8	*.8750*	7/32	*.2188*	*.016*	5/32	*7*	*1.50*
R-8	1/2	*.500*	1 1/8	*1.1250*	1/4	*.250*	*.016*	3/16	*8*	*1.55*
R-10	5/8	*.6250*	1 3/8	*1.3750*	9/32	*.2812*	*.031*	7/16	*10*	*1.65*
R-12	3/4	*.750*	1 5/8	*1.6250*	5/16	*.3125*	*.031*	1/4	*9*	*1.90*
R-14	7/8	*.8750*	1 7/8	*1.8750*	3/8	*.3750*	*.031*	1/4	*10*	*2.10*
R-16	1	*1.000*	2	*2.000*	3/8	*.3750*	*.031*	1/4	*10*	*2.30*
R-18	1 1/8	*1.1250*	2 1/8	*2.1250*	3/8	*.3750*	*.031*	9/32	*11*	*2.45*



Type R

Inch series Type R are single row, non-loading groove bearings designed to approximately extra-light series proportions. Having uninterrupted ball raceways in both inner and outer rings, they may be used for radial, thrust or combined loads according to their recommended capacities. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

Because of the narrow width in relation to bores and outside diameters, it is necessary to slightly increase the regular widths where shields are fitted. This will be noted in the width column for single or double shielded bearings on Page 31.

Type R bearings may be mounted by any of the methods employed for Type 3L00, page 15, or Type 3000, Page 19, either plain or shielded.

Bearings in italics are non-preferred sizes, see page 1.

INCH SERIES BEARINGS — TYPE R

Dimensions and Capacities

SINGLE SHIELD		DOUBLE SHIELD		SINGLE OR DOUBLE SHIELD	
					
Brg. No.	List Price	Brg. No.	List Price	Width W Fraction	Width W Decimal
7-R-2	$2.20	**77-R-2**	$2.30	5/32	.1562
7-R-2-A	1.90	**77-R-2-A**	2.00	11/64	.1719
7-R-3	*1.90*	*77-R-3*	*2.00*		*.1969*
7-R-4	1.70	**77-R-4**	1.80		.1969
7-R-4-A	*1.65*	*77-R-4-A*	*1.75*	9/32	*.2812*
7-R-6	*1.60*	*77-R-6*	*1.70*	9/32	*.2812*
7-R-8	*1.65*	*77-R-8*	*1.75*	5/16	*.3125*
7-R-10	*1.75*	*77-R-10*	*1.85*	11/32	*.3438*
7-R-12	*2.00*	*77-R-12*	*2.10*	7/16	*.4375*
7-R-14	*2.20*	*77-R-14*	*2.30*	1/2	*.500*
7-R-16	*2.40*	*77-R-16*	*2.50*	1/2	*.500*
7-R-18	*2.55*	*77-R-18*	*2.65*	1/2	*.500*

Radial Load Ratings

Based on Average Life of 3800 Hours

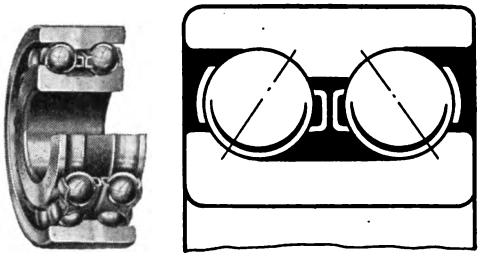
The bearing capacities listed on this page are basic radial load ratings in pounds. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
R-2	55	46	38	35	32	31	29	27	26	23	21	19	18
R-2-A	55	46	38	35	32	31	29	27	26	23	21	19	18
R-3	*86*	*72*	*60*	*55*	*51*	*48*	*46*	*43*	*40*	*36*	*34*	*31*	*27*
R-4	93	79	66	60	56	53	51	47	44	40	37	34	30
R-4-A	*165*	*139*	*118*	*107*	*99*	*95*	*90*	*83*	*80*	*72*	*67*	*60*	*53*
R-6	*225*	*185*	*160*	*143*	*131*	*127*	*119*	*111*	*106*	*95*	*89*	*80*	*71*
R-8	*450*	*380*	*320*	*285*	*265*	*255*	*240*	*225*	*215*	*190*	*180*	*160*	*142*
R-10	*520*	*440*	*370*	*335*	*310*	*295*	*280*	*260*	*245*	*225*	*210*	*190*	*165*
R-12	*900*	*755*	*635*	*575*	*535*	*505*	*485*	*450*	*425*	*385*	*360*	*325*	*285*
R-14	*965*	*810*	*680*	*615*	*575*	*545*	*520*	*480*	*455*	*415*	*385*	*345*	*305*
R-16	*965*	*810*	*680*	*615*	*575*	*545*	*520*	*480*	*455*	*415*	*385*	*345*	*305*
R-18	*1330*	*1120*	*940*	*850*	*790*	*750*	*715*	*665*	*630*	*570*	*530*	*480*	*420*

Bearings in italics are non-preferred sizes.

DOUBLE ROW — TYPE 5000

Design

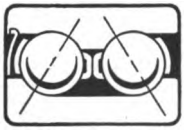


Typical Sections — Type 5000

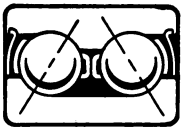
The New Departure Double Row is an extremely efficient dual purpose bearing, capable of resisting heavy combined radial and thrust loads with equal facility from any direction and in any combination.

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.

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.



Series 5500-5600



Series 55500-55600

Bearings with shields

Type 5000 bearings are available in certain sizes with a metal shield on one or both sides as listed on page 34. This shield is not intended to make a leakproof closure, but to prevent the entrance into the bearing of grit or metal chips which would damage or interfere with bearing operation. The shield does function, however, to retain a desirable amount of lubricant in the bearing and therefore avoids the possibility of underlubrication to a greater extent than with non-shielded types. In identifying these bearings, note that the third digit from the right indicates the series; viz. 5500 is the light and 5600 the medium.

Mounting

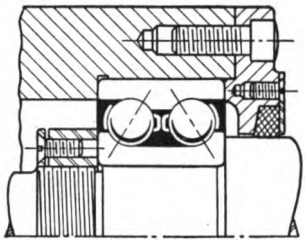


Figure 1.

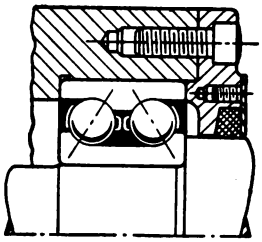


Figure 2.

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.

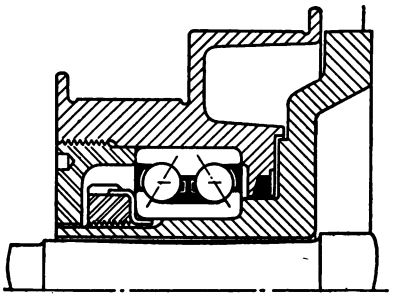


Figure 3.

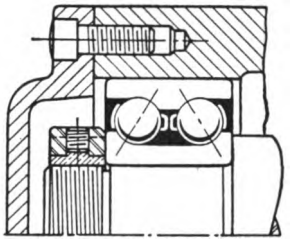


Figure 4.

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.

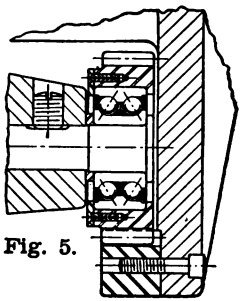


Fig. 5.

Figure 5 is a typical mounting for a double shielded bearing, grease lubricated because of its relatively inaccessible location.

Figure 6 shows a single shielded bearing acting as the thrust bearing in a vertical drilling machine.

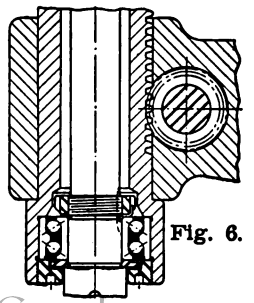
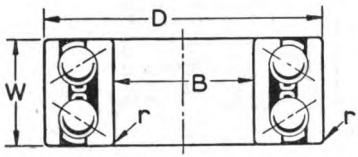


Fig. 6.

DOUBLE ROW — TYPE 5000

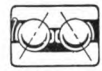
Principal Dimensions



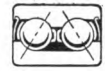
* Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.

PLAIN

SINGLE SHIELD



DOUBLE SHIELD



Brg. No.	Bore B		Diameter D		Width W		Balls Per Row		* Radius r	List Price	Brg. No.	List Price	Brg. No.	List Price	Shield Inset From Brg. Face
	mm	inch	mm	inch	mm	inch	Diam.	No.							
5200	10	.3937	30	1.1811		9/16	3/16	9	.025	$2.50	*5500*	*$2.70*	*55500*	*$2.90*	*.005*
5201	12	.4724	32	1.2598	15.9	5/8	7/32	9	.025	2.70	*5501*	*2.90*	*55501*	*3.10*	*.005*
5202	15	.5906	35	1.3780	15.9	5/8	7/32	10	.025	2.80	*5502*	*3.00*	*55502*	*3.20*	*.005*
5203	17	.6693	40	1.5748	17.5	11/16	1/4	10	.04	3.10	*5503*	*3.35*	*55503*	*3.60*	*.005*
5303			47	1.8504	22.2	7/8	5/16	10		4.30	*5603*	*4.55*	*55603*	*4.80*	*.010*
5204	20	.7874	47	1.8504	20.6	13/16	9/32	11	.04	3.90	*5504*	*4.15*	*55504*	*4.40*	*.010*
5304			52	2.0472	22.2	7/8	5/16	11		5.20	*5604*	*5.45*	*55604*	*5.70*	*.010*
5205	25	.9843	52	2.0472	20.6	13/16	9/32	12	.04	4.50	*5505*	*4.85*	*55505*	*5.20*	*.010*
5305			62	2.4409	25.4	1	3/8	12		6.10	*5605*	*6.50*	*55605*	*6.90*	+.010†
5206	30	1.1811	62	2.4409	23.8	15/16	11/32	13	.04	6.00	*5506*	*6.40*	*55506*	*6.80*	+.010†
5306			72	2.8346	30.2	1 3/16	7/16	12		7.80	*5606*	*8.20*	*55606*	*8.60*	*.007*
5207	35	1.3780	72	2.8346	27.0	1 1/16	3/8	14	.04	6.90	*5507*	*7.30*	*55507*	*7.70*	*.005*
5307			80	3.1496	34.9	1 3/8	1/2	12	.06	9.00	*5607*	*9.45*	*55607*	*9.90*	*.015*
5208	40	1.5748	80	3.1496	30.2	1 3/16	7/16	14	.04	8.10	*5508*	*8.55*	*55508*	*9.00*	*.005*
5308			90	3.5433	36.5	1 7/16	17/32	13	.06	10.20	*5608*	*10.75*	*55608*	*11.30*	*.010*
5209	45	1.7717	85	3.3465	30.2	1 3/16	7/16	15	.04	9.00	*5509*	*9.45*	*55509*	*9.90*	*flush*
5309			100	3.9370	39.7	1 9/16	19/32	13	.06	12.70	*5609*	*13.35*	*55609*	*14.00*	*.007*
5210	50	1.9685	90	3.5433	30.2	1 3/16	7/16	16	.04	10.50	*5510*	*11.00*	*55510*	*11.50*	*flush*
5310			110	4.3307	44.4	1 3/4	11/16	12	.08	15.00	*5610*	*15.75*	*55610*	*16.50*	*.002*
5211	55	2.1654	100	3.9370	33.3	1 5/16	1/2	16	.06	12.00	*5511*	*12.50*	*55511*	*13.00*	*flush*
5311			120	4.7244	49.2	1 15/16	3/4	12	.08	18.60	*5611*	*19.55*	*55611*	*20.50*	*.015*
5212	60	2.3622	110	4.3307	36.5	1 7/16	17/32	16	.06	13.90	*5512*	*14.55*	*55512*	*15.20*	*.010*
5312			130	5.1181	54.0	2 1/8	27/32	12	.08	23.20	*5612*	*24.15*	*55612*	*25.10*	*flush*
5213	65	2.5591	120	4.7244	38.1	1 1/2	9/16	17	.06	17.20	*5513*	*18.05*	*55513*	*18.90*	*.015*
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	*5514*	*19.65*	*55514*	*20.60*	*.005*
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 1/16	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 1/16	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					
5318			190	7.4803	73.0	2 7/8	1 1/8	13	.10	70.80					
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					

Bearings in italics are non-preferred sizes, see page 1.

† Shield protrudes .010".

DOUBLE ROW — TYPE 5000

Radial Load Ratings

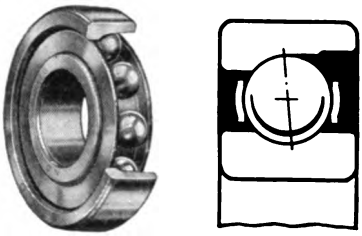
Based on Average Life of 3800 Hours

The bearing capacities listed on this page are basic radial load ratings in pounds. 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	750	630	530	480	445	420	405	375	355	320	300	270	235
5201	1040	875	735	665	620	585	560	520	490	445	415	375	330
5202	1120	940	790	715	665	630	600	560	530	475	445	400	355
5203	1490	1250	1050	950	885	835	800	745	705	635	590	535	470
5303	2410	2020	1700	1540	1430	1350	1290	1200	1140	1030	955	865	760
5204	2050	1720	1450	1310	1220	1150	1100	1020	970	875	815	735	650
5304	2570	2160	1810	1640	1520	1440	1380	1280	1210	1100	1020	920	810
5205	2170	1830	1540	1390	1290	1220	1170	1090	1030	925	865	780	685
5305	4010	3370	2830	2560	2380	2250	2150	2000	1890	1710	1590	1440	1270
5206	3490	2940	2470	2230	2080	1960	1880	1750	1650	1490	1390	1250	1100
5306	5500	4620	3890	3510	3270	3090	2950	2750	2600	2350	2190	1970	1740
5207	4440	3740	3140	2840	2640	2500	2390	2220	2100	1900	1770	1600	1410
5307	6980	5870	4940	4460	4150	3930	3750	3490	3300	2980	2780	2510	2210
5208	6090	5120	4310	3890	3620	3430	3270	3050	2880	2600	2420	2190	1930
5308	8200	6900	5800	5240	4870	4610	4410	4100	3880	3500	3260	2950	2590
5209	6380	5360	4510	4080	3790	3590	3430	3190	3020	2720	2540	2290	2020
5309	9900	8320	7000	6330	5880	5570	5320	4950	4680	4230	3940	3560	3130
5210	6660	5600	4710	4260	3960	3750	3580	3330	3150	2840	2650	2390	2110
5310	11850	9960	8370	7570	7040	6660	6370	5920	5600	5060	4710	4250	
5211	8460	7120	5980	5410	5030	4760	4550	4230	4000	3610	3360	3040	
5311	13675	11500	9660	8730	8120	7690	7340	6830	6460	5840	5430	4910	
5212	9420	7920	6660	6020	5600	5300	5060	4710	4450	4020	3750	3380	
5312	16125	13550	11400	10300	9580	9070	8670	8060	7620	6890	6410	5790	
5213	10800	9080	7640	6900	6420	6080	5810	5400	5110	4610	4300	3880	
5313	17875	15050	12650	11425	10625	10050	9610	8940	8460	7640	7110	6420	
5214	11825	9950	8370	7560	7040	6660	6360	5920	5600	5060	4710	4250	
5314	19700	16575	13925	12600	11725	11075	10600	9850	9320	8420	7840	7080	
5215	12825	10800	9070	8200	7630	7220	6900	6420	6070	5480	5100	4610	
5315	20550	17275	14525	13150	12225	11575	11050	10275	9720	8780	8180	7380	
5216	14350	12075	10150	9170	8530	8070	7710	7170	6780	6130	5710	5150	
5316	22475	18900	15900	14350	13350	12650	12075	11225	10625	9600	8940		
5217	16550	13925	11700	10575	9840	9310	8900	8280	7830	7070	6580		
5317	24325	20450	17200	15550	14450	13675	13075	12150	11500	10400	9670		
5218	18475	15525	13050	11800	10975	10400	9930	9230	8730	7890	7340		
5318	25650	21575	18150	16400	15250	14425	13800	12825	12125	10950	10200		
5219	20600	17325	14575	13175	12250	11600	11075	10300	9740	8800	8190		
5220	22775	19150	16100	14550	13525	12800	12250	11375	10775	9730	9060		
5222	24625	20700	17425	15750	14650	13850	13250	12325	11650	10525	9790		

MAGNETO BEARINGS — TYPE ND-5-25

Design and Mounting



Magneto Bearing
Typical Sections

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 17 millimeters diameter.

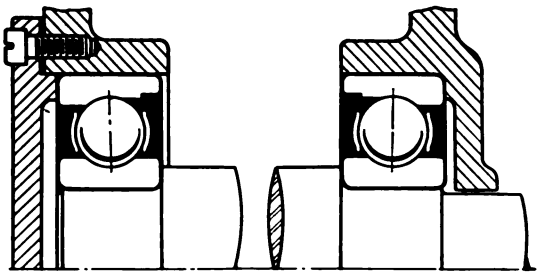


Figure 1.

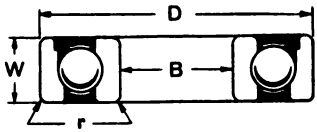
Magneto bearings are designed to have a small angle of contact between the balls and raceways when assembled and are therefore applied in pairs, opposed to each other under a light thrust load sufficient to assure positive contact of the balls with the raceways.

In some instances the initial load is applied to the bearings by turning a threaded member against one of the outer rings. This method is more expensive and requires great care to assure perfect squareness between the face of such a member and the bore of the bearing housing.

For most applications the best and most inexpensive method of obtaining proper operating adjustment is by means of suitable shims inserted between the end cap and housing face, as shown in figure 1. Since the inner rings are normally a tight fit on the shaft, lock nuts are seldom required.

MAGNETO BEARINGS — TYPE ND-5-25

Dimensions and Load Ratings



* 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		* Radius r	List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
N.D. 5	5	.1969	16	.6299	5	.1969	1/8	6	.008	$1.80
N.D. 8-6	6	.2362								1.35
N.D. 8-7	7	.2756	24	.9449	7	.2756	3/16	8	.012	1.35
N.D. 8	8	.3150								1.35
N.D. 10	10	.3937	28	1.1024	8	.3150	7/32	8	.012	1.30
N.D. 12	12	.4724	32	1.2598	7	.2756	3/16	10	.016	1.35
N.D. 13	13	.5118	30	1.1811	7	.2756	3/16	10	.012	1.35
N.D. 15	15	.5906	35	1.3780	8	.3150	7/32	11	.020	1.40
N.D. 16	16	.6299	38	1.4961	10	.3937	1/4	10	.040	1.50
N.D. 17	17	.6693	44	1.7323	11	.4331	1/4	11	.040	1.75

Radial Load Ratings

Based on Average Life of 3800 Hours

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

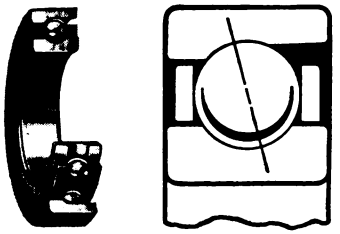
For capacities under combined loads, use factors "F" given under "Bearing Selection."

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
N.D. 5	169	142	119	108	100	95	91	84	80	72	67	61	54
N.D. 8-6	400	335	280	260	240	225	215	200	190	170	160	143	126
N.D. 8-7	400	335	280	260	240	225	215	200	190	170	160	143	126
N.D. 8	400	335	280	260	240	225	215	200	190	170	160	143	126
N.D. 10	555	465	390	355	330	315	300	275	260	240	220	200	175
N.D. 12	465	390	325	295	275	260	250	230	220	200	185	165	147
N.D. 13	465	390	325	295	275	260	250	230	220	200	185	165	147
N.D. 15	685	575	485	435	410	385	370	345	325	295	270	250	215
N.D. 16	855	720	605	545	510	485	460	430	405	370	340	310	270
N.D. 17	915	770	645	585	545	515	490	455	430	390	365	325	290

For speeds higher than listed, consult New Departure Engineering Department.

EXTRA-LIGHT ANGULAR CONTACT — TYPE 0L00

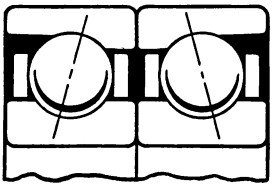
Design



Typical Sections — Type 0L00

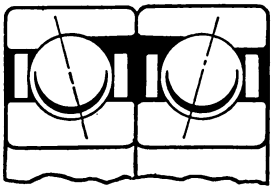
New Departure Extra Light Angular Contact bearings, Type 0L00, are designed to resist combined radial and thrust loads from one direction and when as usually applied, two bearings opposed, either duplex or at opposite ends of a shaft, will resist combined loads with thrust from either direction. In these bearings the inner rings are made with continuous high shoulders on both sides, but the outer rings have a high shoulder on the thrust side and sufficient shoulder or "snap" on the non-thrust side to render them non-separable. This construction permits introduction of the maximum number and size of balls.

These Extra Light Series bearings are narrower in width than Light Series Single Row bearings of corresponding bore sizes. In the smaller sizes, with few exceptions, the outside diameters are equal to or smaller than those of Light Series bearings of the next smaller bore size. This difference becomes even greater in the larger bore sizes. As a result of this, it is possible not only to materially increase the shaft diameter and thereby assure greater rigidity without increasing the housing bore, but in many cases to reduce the size of the housing.



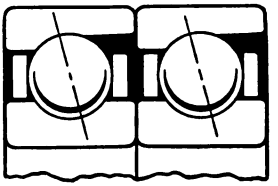
Duplex DB

When two Type 0L00 bearings are clamped firmly together in the Duplex DB mountings as illustrated at the left, and in figure 2 on the next page, maximum resistance to misalignment is obtained. This calls for very accurate alignment of housing bores and accurate machining of all locating shoulders.



Duplex DF

The DF mounting will allow somewhat more misalignment than the DB, but should, nevertheless, be applied with precision if precision is to be expected of the machine in which it is used. It is not intended as a mounting to allow for inferior workmanship.



Duplex DT

The DT mounting is used with two or more bearings, and in general, when correctly applied, two such bearings very nearly divide the thrust load, their capacity being approximately 1.9 that of a Single Type 0L00 bearing.

Mounting

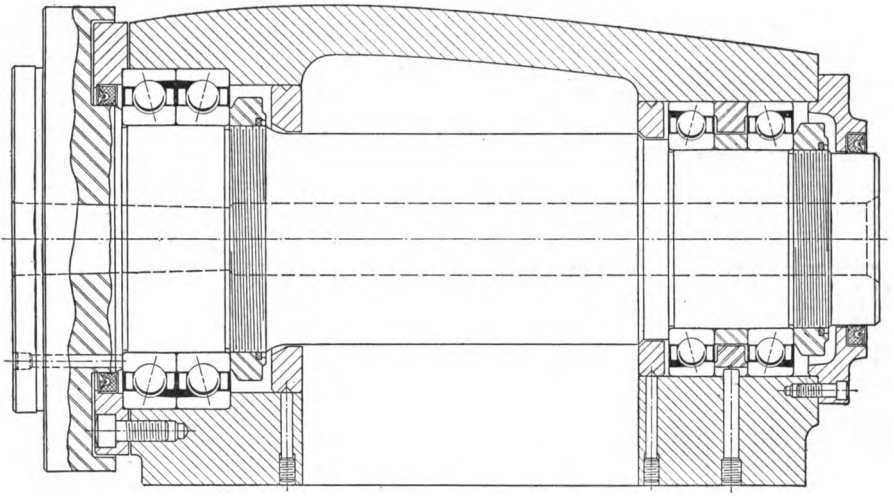


Figure 1.

Extra Light Angular Contact bearings are normally used for spindles or shafts requiring a high degree of rigidity and are therefore usually preloaded either when spaced apart, as on the rear end of the heavy spindle above or abutted as in the duplex mounting at the forward end of the same spindle. In both cases the amount of preload is predetermined by the offset with which the inner and outer races of duplex bearings are ground and which is taken up when the bearings are clamped in mounting.

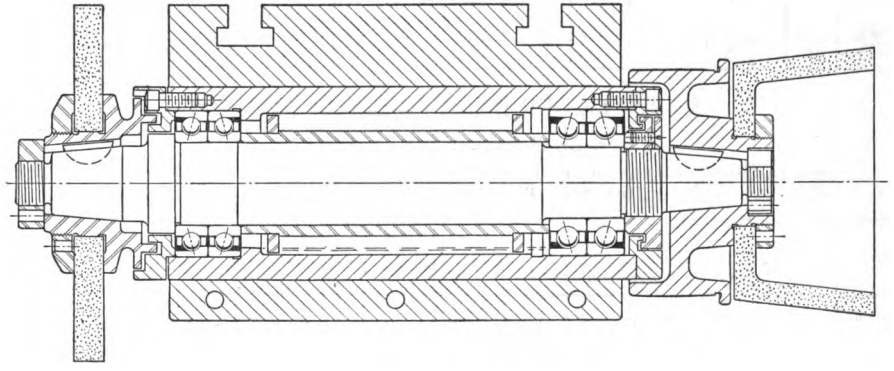
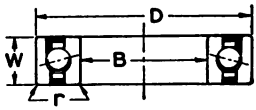


Figure 2.

When employed for thrust or combined loads in either direction, Type 0L00 Duplex bearings are mounted in the DF arrangement, as on the front of the spindle above. When used for rigid radial support, they are applied DB or back to back, as in figure 2, and the outer rings not definitely restricted axially in the housing. Heavier thrust loads sometimes warrant the use of the duplex tandem or DT mount shown on page 38, where the bearings face in the same direction so as to share the thrust load.

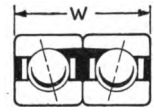
EXTRA-LIGHT ANGULAR CONTACT — TYPE 0L00

Principal Dimensions — Single and Duplex



SINGLE

DUPLEX



DF, DB or DT Mtg.

Note: Outside corner radius at small face of outer ring is one-half radius "r."

* 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	List Price	Width W		List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.			mm	inch	
0L00	10	.3937	26	1.0236	8	.3150	3/16	9	.016	$ 1.90	16	.6299	$ 3.80
0L01	12	.4724	28	1.1024	8	.3150	3/16	10	.016	2.00	16	.6299	4.00
0L02	15	.5906	32	1.2598	9	.3543	3/16	12	.016	2.10	18	.7087	4.20
0L03	17	.6693	35	1.3780	10	.3937	3/16	13	.016	2.30	20	.7874	4.60
0L04	20	.7874	42	1.6535	12	.4724	1/4	12	.025	2.90	24	.9449	5.80
0L05	25	.9843	47	1.8504	12	.4724	1/4	14	.025	3.30	24	.9449	6.60
0L06	30	1.1811	55	2.1654	13	.5118	9/32	15	.040	3.60	26	1.0236	8.80
0L07	35	1.3780	62	2.4409	14	.5512	5/16	15	.040	4.10	28	1.1024	10.20
0L08	40	1.5748	68	2.6772	15	.5906	5/16	17	.040	4.55	30	1.1811	11.70
0L09	45	1.7717	75	2.9528	16	.6299	11/32	17	.040	5.20	32	1.2598	13.10
0L10	50	1.9685	80	3.1496	16	.6299	11/32	19	.040	5.70	32	1.2598	14.15
0L11	55	2.1654	90	3.5433	18	.7087	13/32	17	.040	6.90	36	1.4173	16.90
0L12	60	2.3622	95	3.7402	18	.7087	13/32	19	.040	7.50	36	1.4173	18.20
0L13	65	2.5591	100	3.9370	18	.7087	13/32	21	.040	8.25	36	1.4173	19.70
0L14	70	2.7559	110	4.3307	20	.7874	15/32	20	.040	10.10	40	1.5748	23.70
0L16	80	3.1496	125	4.9213	22	.8661	17/32	20	.040	13.20	44	1.7323	30.40
0L18	90	3.5433	140	5.5118	24	.9449	19/32	20	.060	17.55	48	1.8898	39.70
0L20	100	3.9370	150	5.9055	24	.9449	19/32	22	.060	21.30	48	1.8898	47.70
0L22	*110*	*4.3307*	*170*	*6.6929*	*28*	*1.1024*	23/32	*20*	*.080*	*31.45*	*56*	*2.2047*	*68.95*
0L24	*120*	*4.7244*	*180*	*7.0866*	*28*	*1.1024*	23/32	*21*	*.080*	*37.85*	*56*	*2.2047*	*82.40*
0L26	*130*	*5.1181*	*200*	*7.8740*	*33*	*1.2992*	13/16	*21*	*.080*	*51.70*	*66*	*2.5984*	*111.50*
0L28	*140*	*5.5118*	*210*	*8.2677*	*33*	*1.2992*	13/16	*22*	*.080*	*59.55*	*66*	*2.5984*	*128.10*
0L30	*150*	*5.9055*	*225*	*8.8583*	*35*	*1.3780*	7/8	*22*	*.080*	*73.05*	*70*	*2.7559*	*156.50*
0L36	*180*	*7.0866*	*280*	*11.0236*	*46*	*1.8110*	1 1/8	*21*	*.080*	*143.00*	*92*	*3.6220*	*286.00*

Radial Load Ratings — Single Bearings

Based on Average Life of 3800 Hours

From these ratings bearings of the proper size for the service desired can 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
0L00	470	395	330	300	280	265	255	235	220	200	185	170	150
0L01	505	425	355	320	300	285	270	250	240	215	200	180	160
0L02	570	480	400	365	340	320	305	285	270	245	225	205	180
0L03	600	505	425	385	355	340	325	300	285	255	240	215	190
0L04	1050	885	745	675	625	590	565	525	500	450	420	380	335
0L05	1170	980	825	745	695	655	625	585	550	500	465	420	370
0L06	1580	1330	1120	1010	940	890	850	790	745	675	630	570	500
0L07	1980	1660	1400	1260	1180	1110	1060	990	935	845	785	710	625
0L08	2150	1810	1520	1370	1280	1210	1150	1070	1020	920	855	770	680
0L09	2620	2200	1850	1670	1560	1470	1410	1310	1240	1120	1040	940	825
0L10	2820	2370	1990	1800	1680	1590	1510	1410	1330	1200	1120	1010	890
0L11	3890	3270	2750	2490	2310	2190	2090	1950	1840	1660	1550	1400	

Bearings in italics are non-preferred sizes.

EXTRA-LIGHT ANGULAR CONTACT — TYPE 0L00

Radial Load Ratings — Single and Duplex

Single Bearings — Cont'd

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
0L12	4030	3390	2850	2580	2400	2270	2170	2020	1910	1720	1600	1450	
0L13	4310	3630	3050	2760	2560	2430	2320	2160	2040	1840	1710	1550	
0L14	5540	4660	3920	3540	3290	3120	2980	2770	2620	2370	2200	1990	
0L16	6850	5760	4840	4380	4070	3850	3680	3430	3240	2930	2720	2460	
0L18	8270	6950	5850	5280	4920	4650	4440	4130	3910	3530	3290		
0L20	8810	7410	6230	5630	5240	4960	4740	4410	4170	3770	3500		
0L22	*11500*	*9500*	*7980*	*7220*	*6720*	*6350*	*6070*	*5650*	*5340*	*4830*	*4490*		
0L24	*11700*	*9870*	*8220*	*7440*	*6890*	*6560*	*6290*	*5840*	*5510*	*4960*	*4630*		
0L26	*13875*	*11675*	*9810*	*8870*	*8250*	*7810*	*7460*	*6940*	*6560*	*5930*	*5520*		
0L28	*14325*	*12025*	*10125*	*9150*	*8510*	*8050*	*7690*	*7160*	*6770*	*6120*			
0L30	*15975*	*13425*	*11300*	*10200*	*9500*	*8980*	*8580*	*7980*	*7550*	*6820*			
0L36	*22150*	*18625*	*15650*	*14150*	*13175*	*12460*	*11900*	*11075*	*10475*				

Radial Load Ratings — Duplex Bearings

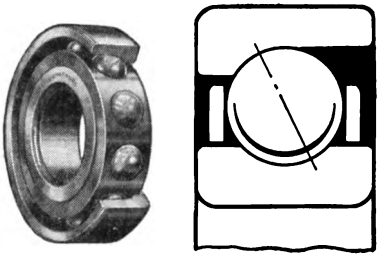
Based on Average Life of 3800 Hours

Brg. No. DF, DB or DT Mounting	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
0L00	800	670	560	510	475	450	435	400	375	340	315	290	255
0L01	860	725	605	545	510	485	460	425	410	365	340	305	270
0L02	970	815	680	620	580	545	520	485	460	415	385	350	305
0L03	1020	860	725	655	605	580	555	510	485	435	410	365	325
0L04	1780	1500	1270	1150	1060	1000	960	895	850	765	715	645	570
0L05	1990	1670	1400	1270	1180	1110	1060	995	935	850	790	715	630
0L06	2690	2260	1900	1720	1600	1510	1450	1340	1270	1150	1070	970	850
0L07	3370	2820	2380	2140	2010	1890	1800	1680	1590	1440	1330	1210	1060
0L08	3660	3080	2580	2330	2180	2060	1960	1820	1730	1560	1450	1310	1160
0L09	4450	3740	3140	2840	2650	2500	2400	2230	2110	1900	1770	1600	1400
0L10	4790	4030	3380	3060	2860	2700	2570	2400	2260	2040	1900	1720	1510
0L11	6610	5560	4680	4230	3930	3720	3550	3320	3130	2820	2640	2380	
0L12	6850	5760	4840	4390	4080	3860	3690	3430	3250	2920	2720	2460	
0L13	7330	6170	5180	4690	4350	4130	3940	3670	3470	3130	2910	2640	
0L14	9420	7920	6660	6020	5590	5300	5070	4710	4450	4030	3740	3380	
0L16	11650	9790	8230	7450	6920	6540	6260	5830	5510	4980	4620	4180	
0L18	14050	11825	9940	8980	8360	7910	7550	7020	6650	6000	5590		
0L20	14975	12600	10600	9570	8910	8430	8060	7500	7090	6410	5950		
0L22	*19200*	*16150*	*13575*	*12275*	*11425*	*10800*	*10325*	*9610*	*9080*	*8210*	*7630*		
0L24	*19900*	*16800*	*14000*	*12650*	*11700*	*11150*	*10700*	*9930*	*9380*	*8440*	*7880*		
0L26	*23600*	*19850*	*16675*	*15075*	*14025*	*13275*	*12675*	*11800*	*11150*	*10075*	*9380*		
0L28	*24350*	*20450*	*17225*	*15550*	*14475*	*13675*	*13075*	*12175*	*11500*	*10400*			
0L30	*27150*	*22825*	*19200*	*17350*	*16150*	*15275*	*14575*	*13575*	*12825*	*11600*			
0L36	*37650*	*31675*	*26600*	*24050*	*22400*	*21175*	*20225*	*18825*	*17800*				

Bearings in italics are non-preferred sizes.

ANGULAR CONTACT — TYPE 20,000

Design



Typical Sections — 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.

When Radax bearings, Type 20,000, are furnished for applications requiring exceptional accuracy, such as precision spindles, they 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.

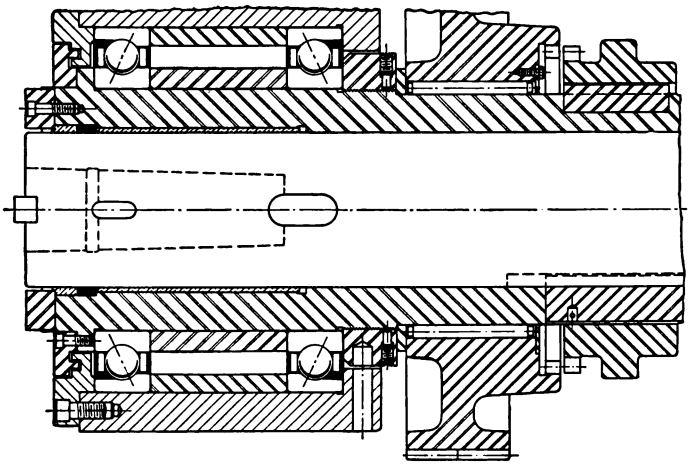


Fig. 1.

Typical application of Type 20,000 bearings in a precision machine tool, with preload obtained by means of accurately face-ground spacers. For high speeds these bearings may be obtained with non-metallic or machined [illegible]ators.

Mounting

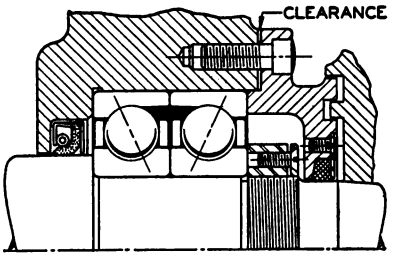


Figure 2.
Duplex DF

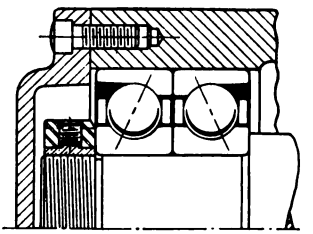


Figure 3.
Duplex DB

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 2, or Duplex DB, as in figure 3, 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.

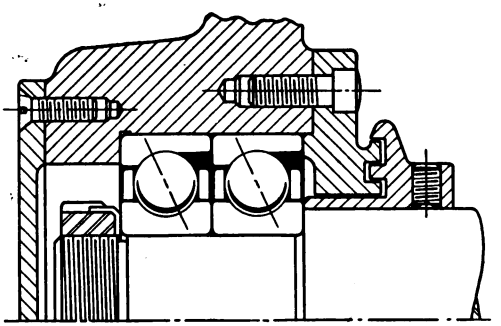


Figure 4.
Duplex DT

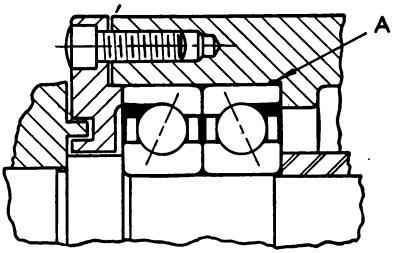


Figure 5.

When used for thrust or combined loads in either direction, the DF arrangement, figure 2, is used. When intended for rigid radial support only, the DB mounting, figure 3, is employed, with the outer rings floated in the housing. Where very heavy thrust in one direction is to be resisted, as in figure 4, 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.

It should be noted that on Single Row Angular Contact bearings, the corner radius on the narrow face side of the outer ring is one-half that of the opposite face (radius "r" in the dimension tables). Therefore, if to contact a shoulder, as in figure 5, either a smaller housing corner should be formed or a relief cut as at "A", to avoid interference of bearing corner.

ANGULAR CONTACT — TYPE 20,000

Principal Dimensions — Single and Duplex

Note: Outside corner radius at small face of outer ring is one-half radius r.

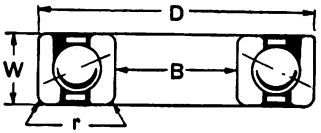
*** Radius r indicates maximum fillet radius in housing or on shaft which bearing radius will clear.**

Brg. No.	Bore B		Diameter D		Width W		Balls		* Radius r	List Price	DUPLEX		
											Width W		List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.			mm	inch	
20200	10	.3937	30	1.1811	9	.3543	3/16	9	.025	$ 1.90	18	.7087	$ 3.80
20201	12	.4724	32	1.2598	10	.3937	7/32	9	.025	2.00	20	.7874	4.00
20202	15	.5906	35	1.3780	11	.4331	7/32	10	.025	2.10	22	.8661	4.20
20203	17	.6693	40	1.5748	12	.4724	1/4	10	.04	2.30	24	.9449	4.60
20303			47	1.8504	14	.5512	5/16	10	.04	3.20	28	1.1024	6.40
20204	20	.7874	47	1.8504	14	.5512	9/32	11	.04	2.70	28	1.1024	5.80
20304			52	2.0472	15	.5906	13/32	9		3.45	30	1.1811	7.80
20205	25	.9843	52	2.0472	15	.5906	9/32	12	.04	2.90	30	1.1811	6.60
20305			62	2.4409	17	.6693	7/16	10	.04	4.10	34	1.3386	9.00
20206	30	1.1811	62	2.4409	16	.6299	3/8	12	.04	3.45	32	1.2598	8.80
20306			72	2.8346	19	.7480	15/32	11	.04	5.00	38	1.4961	11.40
20207	35	1.3780	72	2.8346	17	.6693	7/16	12	.04	4.15	34	1.3386	10.20
20307			80	3.1496	21	.8268	17/32	11	.06	5.70	42	1.6535	13.20
20208	40	1.5748	80	3.1496	18	.7087	15/32	13	.04	4.70	36	1.4173	12.00
20308			90	3.5433	23	.9055	19/32	11	.06	6.90	46	1.8110	15.00
20209	45	1.7717	85	3.3465	19	.7480	15/32	14	.04	5.25	38	1.4961	13.20
20309			100	3.9370	25	.9843	21/32	12	.06	8.25	50	1.9685	18.80
20210	50	1.9685	90	3.5433	20	.7874	15/32	15	.04	5.75	40	1.5748	14.55
20310			110	4.3307	27	1.0630	23/32	12	.08	10.10	54	2.1260	22.00
20211	55	2.1654	100	3.9370	21	.8268	17/32	15	.06	6.90	42	1.6535	17.00
20311			*120*	*4.7244*	*29*	*1.1417*	25/32	*12*	*.08*	*12.05*	*58*	*2.2835*	*27.40*
20212	60	2.3622	110	4.3307	22	.8661	19/32	15	.06	8.40	44	1.7323	20.30
20312			*130*	*5.1181*	*31*	*1.2205*	27/32	*12*	*.08*	*14.55*	*62*	*2.4409*	*33.30*
20213	65	2.5591	120	4.7244	23	.9055	21/32	15	.06	10.05	46	1.8110	23.90
20313			*140*	*5.5118*	*33*	*1.2992*	29/32	*12*	*.08*	*17.55*	*66*	*2.5984*	*39.70*
20214	70	2.7559	125	4.9213	24	.9449	21/32	15	.06	11.00	48	1.8898	26.00
20314			*150*	*5.9055*	*35*	*1.3780*	31/32	*12*	*.08*	*21.30*	*70*	*2.7559*	*47.70*
20215	75	2.9528	130	5.1181	25	.9843	21/32	16	.06	12.10	50	1.9685	28.45
20315			*160*	*6.2992*	*37*	*1.4567*	*1*	*13*	*.08*	*25.90*	*74*	*2.9134*	*57.30*
20216	80	3.1496	140	5.5118	26	1.0236	11/16	17	.08	14.65	52	2.0472	33.90
20316			*170*	*6.6929*	*39*	*1.5354*	*1 1/16*	*13*	*.08*	*31.45*	*78*	*3.0709*	*68.95*
20217	85	3.3465	150	5.9055	28	1.1024	25/32	16	.08	17.75	56	2.2047	40.55
20317			*180*	*7.0866*	*41*	*1.6142*	*1 1/8*	*13*	*.10*	*37.85*	*82*	*3.2283*	*82.40*
20218	*90*	*3.5433*	*160*	*6.2992*	*30*	*1.1811*	27/32	*15*	*.08*	*21.55*	*60*	*2.3622*	*48.70*
20318			*190*	*7.4803*	*43*	*1.6929*	*1 3/16*	*13*	*.10*	*44.35*	*86*	*3.3858*	*96.10*
20219	*95*	*3.7402*	*170*	*6.6929*	*32*	*1.2598*	29/32	*15*	*.08*	*26.20*	*64*	*2.5197*	*58.50*
20319			*200*	*7.8740*	*45*	*1.7717*	*1 5/16*	*12*	*.10*	*51.70*	*90*	*3.5433*	*111.50*
20220	*100*	*3.9370*	*180*	*7.0866*	*34*	*1.3386*	31/32	*15*	*.08*	*31.50*	*68*	*2.6772*	*69.75*
20320			*215*	*8.4646*	*47*	*1.8504*	*1 3/8*	*12*	*.10*	*63.40*	*94*	*3.7008*	*136.25*
20222	*110*	*4.3307*	*200*	*7.8740*	*38*	*1.4961*	*1 1/16*	*16*	*.08*	*43.10*	*76*	*2.9921*	*94.30*
20322			*240*	*9.4488*	*50*	*1.9685*	*1 1/2*	*12*	*.10*	*89.75*	*100*	*3.9370*	*191.50*

Bearings in italics are non-preferred sizes, see page 1.

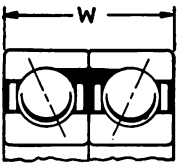
EXTRA LARGE ANGULAR CONTACT — TYPE 20,000

Principal Dimensions — Single and Duplex

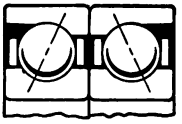


Single row angular contact bearings for one-direction thrust or combined loads. Mounted two bearings opposed for maximum rigidity and support of loads from either direction. For capacities under thrust or combined loads, use factors "F" given under "Bearing Selection."

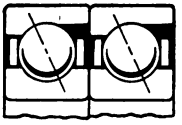
When applied as Duplex, the DF mounting is usually employed for thrust or combined loads in either direction. The DB mounting provides rigid radial support where the bearings are allowed an axial "float" in the housing. The DT mounting is for very heavy thrust and may employ more than the two bearings shown. For description and mounting, see pages 42 and 43. For radial load ratings for single bearings, see pages 46 and 47. For Duplex ratings, pages 48 and 49.



DF Mounting



DB Mounting



DT Mounting

Note: Outside corner radius at small face of outer ring is one-half radius "r."

* 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	List Price	DUPLEX		
											Width W		List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.			mm	inch	
20224	*120*	*4.7244*	*215*	*8.4646*	*40*	*1.5748*	1 1/8	16	.08	$ 52.85	*80*	*3.1496*	$ 115.10
20324	*120*	*4.7244*	*260*	*10.2362*	*55*	*2.1654*	1 5/8	13	.10	119.70	*110*	*4.3307*	254.15
20226	*130*	*5.1181*	*230*	*9.0551*	*40*	*1.5748*	1 3/16	16	.10	65.50	*80*	*3.1496*	141.90
20326	*130*	*5.1181*	*280*	*11.0236*	*58*	*2.2835*	1 3/4	13	.12	157.90	*116*	*4.5669*	333.75
20228	*140*	*5.5118*	*250*	*9.8425*	*42*	*1.6535*	1 5/16	16	.10	86.75	*84*	*3.3071*	186.85
20328	*140*	*5.5118*	*300*	*11.8110*	*62*	*2.4409*	1 7/8	13	.12	210.65	*124*	*4.8819*	443.50
20230	*150*	*5.9055*	*270*	*10.6299*	*45*	*1.7717*	1 3/8	17	.10	115.65	*90*	*3.5433*	247.55
20330	*150*	*5.9055*	*320*	*12.5984*	*65*	*2.5591*	1 11/16	14	.12	277.50	*130*	*5.1181*	582.25
★*20232*	*160*	*6.2992*	*290*	*11.4173*	*48*	*1.8898*	1 1/2	17	.10	†	*96*	*3.7795*	†
★*20332*	*160*	*6.2992*	*340*	*13.3858*	*68*	*2.6772*	2 1/16	14	.12		*136*	*5.3543*	
★*20234*	*170*	*6.6929*	*310*	*12.2047*	*52*	*2.0472*	1 5/8	16	.12	†	*104*	*4.0945*	†
★*20334*	*170*	*6.6929*	*360*	*14.1732*	*72*	*2.8346*	2 1/8	14	.12		*144*	*5.6693*	
★*20236*	*180*	*7.0866*	*320*	*12.5984*	*52*	*2.0472*	1 5/8	17	.12	†	*104*	*4.0945*	†
★*20240*	*200*	*7.8740*	*360*	*14.1732*	*58*	*2.2835*	1 3/4	18	.12		*116*	*4.5670*	

Bearings in italics are non-preferred sizes, see page 1.

★ Consult New Departure before ordering or laying out in any design. † Price on application.

ANGULAR CONTACT — TYPE 20,000

Radial Load Ratings

Based on Average Life of 3800 Hours

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	700	1000	1200	2000	3000	5000
20200	470	395	330	300	280	265	255	235	220	200	185	170	150
20201	650	550	460	415	390	365	350	325	310	280	260	235	205
20202	700	590	495	445	415	395	375	350	330	300	280	250	220
20203	930	785	660	595	555	525	500	465	440	400	370	335	295
20303	1510	1270	1070	965	895	850	810	755	715	645	600	540	475
20204	1280	1080	910	820	765	720	690	640	605	550	510	460	405
20304	2450	2060	1730	1570	1460	1380	1320	1230	1160	1050	975	880	775
20205	1360	1140	960	870	810	765	730	680	645	580	540	490	430
20305	3050	2570	2160	1950	1810	1720	1640	1530	1440	1300	1210	1100	965
20206	2510	2110	1780	1610	1490	1410	1350	1260	1190	1070	1000	905	795
20306	3720	3130	2630	2380	2210	2090	2000	1860	1760	1590	1480	1340	1180
20207	3450	2900	2440	2200	2050	1940	1850	1720	1630	1470	1370	1240	1090
20307	4600	3870	3250	2940	2730	2590	2470	2300	2170	1970	1830	1650	1450
20208	4160	3500	2940	2660	2470	2340	2230	2080	1970	1780	1650	1490	1310
20308	5550	4670	3920	3550	3300	3120	2980	2780	2620	2370	2210	1990	1750
20209	4370	3670	3090	2790	2600	2460	2350	2180	2060	1870	1740	1570	1380
20309	6890	5790	4870	4400	4100	3880	3700	3450	3260	2940	2740	2480	2180
20210	4570	3840	3230	2920	2720	2570	2460	2290	2160	1950	1820	1640	1450
20310	8030	6750	5680	5130	4780	4520	4320	4020	3800	3430	3190	2890	
20211	5660	4760	4000	3610	3360	3180	3040	2830	2670	2420	2250	2030	
20311	*9080*	*7630*	*6420*	*5800*	*5400*	*5110*	*4880*	*4540*	*4290*	*3880*	*3610*	*3260*	
20212	6830	5740	4830	4360	4060	3840	3670	3410	3230	2920	2710	2450	
20312	*10100*	*8500*	*7150*	*6460*	*6010*	*5690*	*5430*	*5050*	*4780*	*4320*	*4020*	*3630*	
20213	8000	6720	5650	5110	4760	4500	4300	4000	3780	3420	3180	2870	
20313	*11200*	*9430*	*7930*	*7160*	*6670*	*6310*	*6030*	*5610*	*5300*	*4790*	*4460*	*4030*	
20214	8000	6720	5650	5110	4760	4500	4300	4000	3780	3420	3180	2870	
20314	*12350*	*10400*	*8730*	*7890*	*7350*	*6950*	*6640*	*6180*	*5840*	*5280*	*4910*	*4440*	
20215	8350	7020	5900	5340	4970	4700	4490	4170	3950	3570	3320	3000	
20315	*13600*	*11425*	*9610*	*8690*	*8090*	*7650*	*7310*	*6800*	*6430*	*5810*	*5410*	*4880*	
20216	9360	7870	6620	5980	5570	5270	5030	4680	4430	4000	3720	3360	
20316	*14850*	*12500*	*10500*	*9500*	*8840*	*8360*	*7990*	*7430*	*7030*	*6350*	*5910*		
20217	11000	9250	7780	7030	6540	6190	5910	5500	5200	4700	4370		
20317	*16075*	*13525*	*11375*	*10275*	*9570*	*9050*	*8640*	*8040*	*7600*	*6870*	*6400*		
20218	*11725*	*9860*	*8290*	*7500*	*6980*	*6600*	*6300*	*5860*	*5550*	*5010*	*4660*		
20318	*17425*	*14650*	*12325*	*11150*	*10375*	*9800*	*9370*	*8720*	*8240*	*7450*	*6930*		
20219	*13000*	*10950*	*9200*	*8310*	*7740*	*7320*	*6990*	*6510*	*6150*	*5560*	*5170*		
20319	*19125*	*16075*	*13525*	*12225*	*11375*	*10750*	*10275*	*9570*	*9040*	*8170*	*7610*		
20220	*14325*	*12050*	*10125*	*9160*	*8530*	*8060*	*7700*	*7170*	*6780*	*6130*	*5700*		
20320	*20375*	*17125*	*14400*	*13025*	*12125*	*11450*	*10950*	*10175*	*9630*	*8700*	*8100*		
20222	*17075*	*14350*	*12075*	*10900*	*10150*	*9600*	*9170*	*8530*	*8070*	*7290*	*6790*		
20322	*23225*	*19525*	*16425*	*14850*	*13800*	*13075*	*12475*	*11600*	*10975*	*9920*	*9230*		

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

Bearings in italics are non-preferred sizes, see page 1.

Duplex load ratings on page 48.

EXTRA LARGE ANGULAR CONTACT — TYPE 20,000

Radial Load Ratings

Based on Average Life of 3800 Hours

The bearing capacities listed on this and on opposite page are basic radial load ratings in pounds. 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	*18475*	*15525*	*13050*	*11800*	*10975*	*10400*	*9930*	*9240*	*8730*	*7890*	*7340*
20324	*27300*	*22975*	*19300*	*17450*	*16250*	*15350*	*14675*	*13650*	*12900*	*11675*	*10850*
20226	*20025*	*16825*	*14150*	*12800*	*11900*	*11250*	*10750*	*10000*	*9460*	*8550*	*7960*
20326	*31125*	*26175*	*22000*	*19900*	*18500*	*17500*	*16725*	*15575*	*14725*	*13300*	
20228	*23175*	*19500*	*16400*	*14800*	*13775*	*13050*	*12450*	*11600*	*10950*	*9900*	
20328	*34550*	*29050*	*24425*	*22075*	*20550*	*19425*	*18575*	*17275*	*16325*	*14750*	
20230	*25700*	*21600*	*18175*	*16425*	*15275*	*14450*	*13800*	*12850*	*12150*	*10975*	
20330	*38075*	*32025*	*26925*	*24325*	*22650*	*21425*	*20475*	*19050*	*18000*	*16275*	
★*20232*	*29300*	*24625*	*20700*	*18725*	*17425*	*16475*	*15750*	*14650*	*13850*	*12525*	
★*20332*	*41975*	*35300*	*29675*	*26825*	*24975*	*23625*	*22575*	*21000*	*19850*	*17950*	
★*20234*	*31375*	*26375*	*22175*	*20050*	*18650*	*17650*	*16850*	*15675*	*14825*	*13400*	
★*20334*	*43675*	*36725*	*30875*	*27900*	*25975*	*24575*	*23475*	*21825*	*20650*	*18650*	
★*20236*	*32650*	*27450*	*23100*	*20875*	*19425*	*18375*	*17550*	*16325*	*15450*		
★*20240*	*38675*	*32500*	*27325*	*24700*	*23000*	*21750*	*20775*	*19325*	*18275*		

Note: For ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."
Load ratings for Extra Large Duplex on page 49.
Bearings in italics are non-preferred sizes, see page 1.
★ Consult New Departure before ordering or laying out in any design.

DUPLEX BEARINGS — TYPE 20,000

Radial Load Ratings

Based on Average Life of 3800 Hours

Brg. No. DF, DB or DT Mounting	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
20200	800	670	565	510	475	450	430	400	380	340	320	285	255
20201	1110	930	785	710	660	625	595	555	525	475	440	400	350
20202	1190	1000	840	760	710	670	640	595	560	510	475	425	375
20203	1580	1330	1120	1010	945	890	850	790	750	675	630	570	500
20303	2570	2160	1810	1640	1530	1440	1380	1280	1210	1100	1020	920	810
20204	2180	1840	1540	1400	1300	1230	1170	1090	1030	935	870	785	690
20304	4170	3500	2950	2660	2480	2340	2240	2080	1970	1780	1660	1500	1320
20205	2310	1950	1640	1480	1380	1300	1240	1160	1090	990	920	830	730
20305	5190	4360	3670	3320	3090	2920	2790	2590	2450	2220	2060	1860	1640
20206	4270	3590	3020	2730	2540	2400	2300	2140	2020	1820	1700	1530	1350
20306	6320	5320	4470	4040	3760	3560	3400	3160	2990	2700	2510	2270	2000
20207	5860	4930	4140	3740	3480	3290	3150	2930	2770	2500	2330	2100	1850
20307	8030	6750	5680	5130	4780	4520	4320	4020	3800	3430	3190	2880	2540
20208	7070	5940	5000	4520	4200	3970	3800	3530	3340	3020	2810	2540	2230
20308	9740	8190	6890	6230	5790	5480	5230	4870	4610	4160	3870	3500	3080
20209	7420	6240	5250	4750	4420	4180	3990	3710	3510	3170	2950	2670	2350
20309	12000	10100	8490	7670	7140	6750	6450	6000	5680	5130	4770	4310	3800
20210	7770	6540	5500	4970	4620	4370	4180	3890	3680	3320	3090	2790	2460
20310	13650	11475	9660	8730	8120	7680	7340	6830	6460	5830	5430	4910	
20211	9880	8310	6980	6310	5870	5560	5310	4940	4670	4220	3930	3550	
20311	*15425*	*12975*	*10925*	*9860*	*9180*	*8680*	*8300*	*7720*	*7300*	*6600*	*6140*	*5540*	
20212	11975	10075	8470	7660	7120	6740	6440	5990	5660	5120	4760	4300	
20312	*17175*	*14450*	*12150*	*10975*	*10225*	*9670*	*9230*	*8590*	*8120*	*7340*	*6830*	*6170*	
20213	13925	11725	9850	8900	8290	7840	7490	6970	6590	5950	5540	5000	
20313	*19050*	*16025*	*13475*	*12175*	*11325*	*10725*	*10250*	*9530*	*9010*	*8140*	*7580*	*6850*	
20214	13925	11725	9850	8900	8290	7840	7490	6970	6590	5950	5540	5000	
20314	*21000*	*17650*	*14850*	*13425*	*12500*	*11825*	*11275*	*10500*	*9930*	*8970*	*8350*	*7540*	
20215	14550	12225	10275	9300	8650	8180	7820	7270	6880	6210	5780	5230	
20315	*23100*	*19425*	*16350*	*14775*	*13750*	*13000*	*12425*	*11550*	*10925*	*9870*	*9190*	*8300*	
20216	16275	13700	11525	10400	9690	9160	8750	8140	7700	6960	6480	5850	
20316	*25850*	*21750*	*17875*	*16150*	*15025*	*14200*	*13575*	*12625*	*11950*	*10800*	*10050*		
20217	18700	15725	13225	11950	11125	10525	10050	9350	8840	7990	7440		
20317	*27350*	*23000*	*19325*	*17475*	*16250*	*15375*	*14700*	*13675*	*12925*	*11675*	*10875*		
20218	*19950*	*16775*	*14100*	*12750*	*11850*	*11225*	*10725*	*9970*	*9450*	*8520*	*7930*		
20318	*29625*	*24925*	*20950*	*18950*	*17625*	*16675*	*15925*	*14825*	*14000*	*12650*	*11775*		
20219	*22125*	*18600*	*15650*	*14125*	*13150*	*12450*	*11875*	*11050*	*10450*	*9450*	*8790*		
20319	*32525*	*27350*	*23000*	*20775*	*19350*	*18300*	*17475*	*16250*	*15375*	*13900*	*12925*		
20220	*24375*	*20500*	*17225*	*15575*	*14500*	*13700*	*13100*	*12175*	*11525*	*10425*	*9690*		
20320	*34625*	*29125*	*24475*	*22125*	*20600*	*19475*	*18600*	*17300*	*16375*	*14800*	*13775*		
20222	*29000*	*24400*	*20525*	*18550*	*17250*	*16325*	*15600*	*14500*	*13725*	*12400*	*11525*		
20322	*39475*	*33200*	*27925*	*25225*	*23475*	*22200*	*21225*	*19750*	*18675*	*16875*	*15700*		

Note: For ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection." Bearings in italics are non-preferred sizes, see page 1.

EXTRA LARGE DUPLEX — TYPE 20,000

Radial Load Ratings

Based on Average Life of 3800 Hours

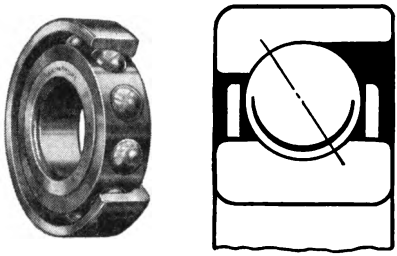
Duplex bearings are furnished matched with the abutting faces ground for three kinds of mounting. The DF mounting is intended for combined loads with thrust from either direction. The DB mounting is used where radial rigidity is required and bearings are allowed an axial "float" in housing. The DT mounting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

Brg. No. DF, DB or DT Mounting	Revolutions per Minute										
	50	100	200	300	400	500	600	800	1000	1500	2000
20224	*31400*	*26400*	*22200*	*20075*	*18675*	*17675*	*16875*	*15700*	*14850*	*13425*	*12475*
20324	*46425*	*39050*	*32825*	*29675*	*27600*	*26125*	*24950*	*23200*	*21950*	*19825*	*18450*
20226	*34025*	*28625*	*24075*	*21750*	*20250*	*19150*	*18300*	*17025*	*16100*	*14550*	*13525*
20326	*52900*	*44500*	*37425*	*33825*	*31475*	*29775*	*28425*	*26450*	*25025*	*22600*	
20228	*39400*	*33125*	*27875*	*25175*	*23425*	*22175*	*21175*	*19700*	*18625*	*16825*	
20328	*58725*	*49375*	*41525*	*37525*	*34925*	*33025*	*31550*	*29350*	*27750*	*25075*	
20230	*43675*	*36725*	*30875*	*27925*	*25975*	*24575*	*23475*	*21825*	*20650*	*18650*	
20330	*64725*	*54450*	*45775*	*41375*	*38500*	*36425*	*34800*	*32375*	*30600*	*27650*	
★20232	*49800*	*41875*	*35225*	*31825*	*29625*	*28000*	*26750*	*24900*	*23550*	*21275*	
★20332	*71370*	*60025*	*50475*	*45625*	*42450*	*40150*	*38350*	*35675*	*33750*	*30500*	
★20234	*53325*	*44850*	*37700*	*34075*	*31700*	*30000*	*28650*	*26650*	*25200*	*22775*	
★20334	*74250*	*62425*	*52500*	*47450*	*44150*	*41750*	*39900*	*37125*	*35100*	*31725*	
★20236	*55500*	*46675*	*39250*	*35475*	*33025*	*31225*	*29825*	*27750*	*26250*		
★20240	*66750*	*55250*	*46450*	*42000*	*39100*	*36975*	*35325*	*32850*	*31050*		

Note: For ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection." For speeds higher than listed, consult New Departure Engineering Department.
Bearings in italics are non-preferred sizes, see page 1.
★ Consult New Departure before ordering or laying out in any design.

ANGULAR CONTACT — TYPE 30,000

Design



Typical Sections — Type 30,000

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.

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.

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.

Although not so illustrated, Type 30,000 bearings may be mounted Duplex DB, with the outer ring thrust faces abutting, as shown for Type 20,000 bearings on page 43. This mounting, however, is not as desirable for heavy thrust loads since it brings the narrow face of the outer rings in contact with the softer metal of the housing shoulder and clamping member or closure cap. Being principally thrust carriers Type 30,000 are usually used where thrust loads are so heavy as to render use of the 20,000 series inadvisable.

ANGULAR CONTACT — TYPE 30,000

Mounting

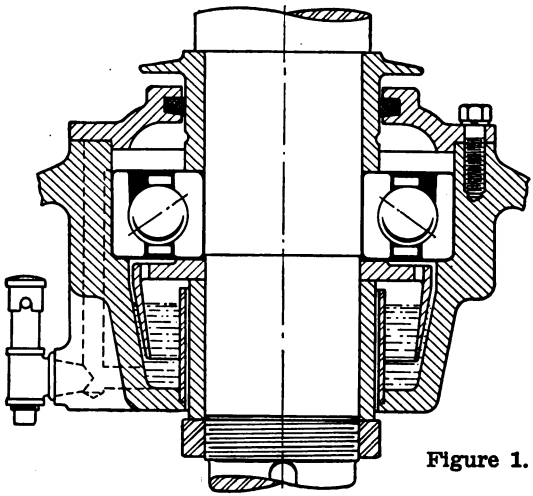


Figure 1.

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.

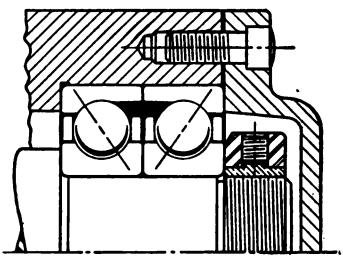


Figure 2.

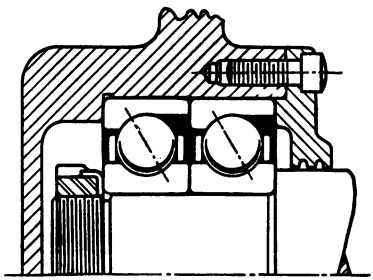
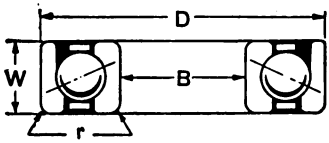


Figure 3.

Type 30,000 bearings being used primarily for thrust and not floated in the housing to obtain greater radial rigidity, 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.

ANGULAR CONTACT — TYPE 30,000

Principal Dimensions



Note: Outside corner radius at small face of outer ring is one-half radius r.

These bearings now available only with non-metallic or machined bronze separators.

* 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	List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
Q30204 Q30304	20	.7874	47 52	1.8504 2.0472	14 15	.5512 .5906	11/32 3/8	10 10	.04 .04	
Q30205 Q30305	25	.9843	52 62	2.0472 2.4409	15 17	.5906 .6693	11/32 7/16	11 10	.04 .04	
Q30206 Q30306	30	1.1811	62 72	2.4409 2.8346	16 19	.6299 .7480	3/8 1/2	12 10	.04 .04	
Q30207 Q30307	35	1.3780	72 80	2.8346 3.1496	17 21	.6693 .8268	7/16 9/16	12 11	.04 .06	
Q30208 Q30308	40	1.5748	80 90	3.1496 3.5433	18 23	.7087 .9055	1/2 5/8	12 11	.04 .06	
Q30209 Q30309	45	1.7717	85 100	3.3465 3.9370	19 25	.7480 .9843	1/2 11/16	13 11	.04 .06	
Q30210 Q30310	50	1.9685	90 110	3.5433 4.3307	20 27	.7874 1.0630	1/2 3/4	14 11	.04 .08	
Q30211 Q30311	55	2.1654	100 120	3.9370 4.7244	21 29	.8268 1.1417	9/16 13/16	14 12	.06 .08	
Q30212 Q30312	60	2.3622	110 130	4.3307 5.1181	22 31	.8661 1.2205	5/8 7/8	14 12	.06 .08	
Q30213 V30313	65	2.5591	120 140	4.7244 5.5118	23 33	.9055 1.2992	11/16 15/16	14 12	.06 .08	
Q30214 V30314	70	2.7559	125 150	4.9213 5.9055	24 35	.9449 1.3780	11/16 1	15 12	.06 .08	
Q30215 V30315	75	2.9528	130 160	5.1181 6.2992	25 37	.9843 1.4567	11/16 1 1/16	16 12	.06 .08	On Application
Q30216 V30316	80	3.1496	140 170	5.5118 6.6929	26 39	1.0236 1.5354	3/4 1 1/8	16 12	.08 .08	
Q30217 V30317	85	3.3465	150 180	5.9055 7.0866	28 41	1.1024 1.6142	13/16 1 5/16	15 12	.08 .10	
Q30218 V30318	90	3.5433	160 190	6.2992 7.4803	30 43	1.1811 1.6929	7/8 1 1/4	15 12	.08 .10	
V30219 V30319	95	3.7402	170 200	6.6929 7.8740	32 45	1.2598 1.7717	1 1/16 1 5/16	15 12	.08 .10	
V30220 V30320	100	3.9370	180 215	7.0866 8.4646	34 47	1.3386 1.8504	1 1 7/16	15 12	.08 .10	
V30222 V30322	110	4.3307	200 240	7.8740 9.4488	38 50	1.4961 1.9685	1 1/8 1 5/8	15 12	.08 .10	
V30224 V30324	120	4.7244	215 260	8.4646 10.2362	40 55	1.5748 2.1654	1 3/16 1 3/4	15 12	.08 .10	
V30226 V30326	130	5.1181	230 280	9.0551 11.0236	40 58	1.5748 2.2835	1 1/4 1 7/8	16 12	.10 .12	
V30228 V30328	140	5.5118	250 300	9.8425 11.8110	42 62	1.6535 2.4409	1 5/16 2	16 12	.10 .12	

Bearings in italics are non-preferred sizes, see page 1. Q indicates non-metallic, V indicates bronze separators

ANGULAR CONTACT — TYPE 30,000

Radial Load Ratings

Based on Average Life of 3800 Hours

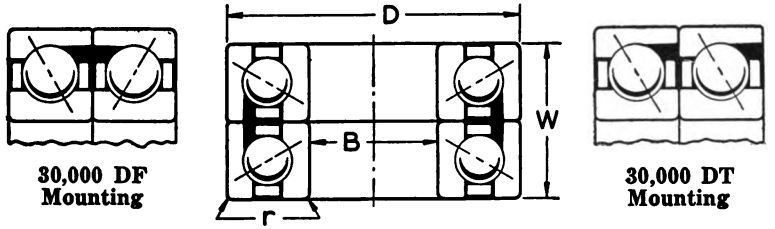
The bearing capacities listed on this page are basic radial load ratings in pounds. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection." For duplex capacities see page 55.

Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
Q30204	*1560*	*1310*	*1100*	*995*	*925*	*875*	*840*	*780*	*735*	*665*	*620*	*560*	*495*
Q30304	*1890*	*1590*	*1330*	*1210*	*1120*	*1060*	*1010*	*945*	*895*	*805*	*750*	*680*	*595*
Q30205	*1660*	*1400*	*1170*	*1060*	*990*	*935*	*895*	*830*	*785*	*710*	*660*	*595*	*525*
Q30305	*2590*	*2180*	*1830*	*1650*	*1540*	*1460*	*1390*	*1290*	*1220*	*1110*	*1030*	*930*	*820*
Q30206	*2130*	*1790*	*1510*	*1360*	*1270*	*1200*	*1150*	*1070*	*1010*	*910*	*845*	*765*	*675*
Q30306	*3290*	*2770*	*2330*	*2100*	*1960*	*1850*	*1770*	*1640*	*1560*	*1410*	*1310*	*1180*	*1040*
Q30207	*2920*	*2460*	*2070*	*1870*	*1740*	*1640*	*1570*	*1460*	*1380*	*1250*	*1160*	*1050*	*925*
Q30307	*4300*	*3610*	*3040*	*2750*	*2560*	*2420*	*2310*	*2150*	*2030*	*1840*	*1710*	*1540*	*1360*
Q30208	*3710*	*3120*	*2630*	*2370*	*2210*	*2090*	*2000*	*1860*	*1760*	*1590*	*1480*	*1330*	*1170*
Q30308	*5100*	*4290*	*3610*	*3260*	*3040*	*2870*	*2740*	*2550*	*2410*	*2180*	*2030*	*1830*	*1610*
Q30209	*3920*	*3290*	*2770*	*2500*	*2330*	*2200*	*2110*	*1960*	*1850*	*1670*	*1560*	*1410*	*1240*
Q30309	*5940*	*5000*	*4200*	*3800*	*3530*	*3340*	*3190*	*2970*	*2810*	*2540*	*2360*	*2140*	*1880*
Q30210	*4120*	*3460*	*2910*	*2630*	*2450*	*2320*	*2210*	*2060*	*1950*	*1760*	*1640*	*1480*	*1300*
Q30310	*6860*	*5760*	*4850*	*4380*	*4080*	*3860*	*3690*	*3430*	*3240*	*2930*	*2730*	*2460*	
Q30211	*5050*	*4240*	*3570*	*3230*	*3000*	*2840*	*2710*	*2520*	*2390*	*2160*	*2010*	*1810*	
Q30311	*8100*	*6810*	*5730*	*5180*	*4820*	*4560*	*4360*	*4050*	*3850*	*3480*	*3220*	*2910*	
Q30212	*5990*	*5040*	*4240*	*3830*	*3570*	*3370*	*3220*	*3000*	*2840*	*2560*	*2380*	*2150*	
Q30312	*9040*	*7600*	*6390*	*5780*	*5380*	*5090*	*4860*	*4520*	*4280*	*3860*	*3600*	*3250*	
Q30213	*6980*	*5870*	*4930*	*4460*	*4150*	*3930*	*3750*	*3490*	*3300*	*2980*	*2780*	*2510*	
V30313	*9990*	*8400*	*7070*	*6390*	*5940*	*5620*	*5370*	*5000*	*4730*	*4270*	*3970*	*3590*	
Q30214	*7310*	*6140*	*5170*	*4670*	*4350*	*4110*	*3930*	*3650*	*3460*	*3120*	*2910*	*2630*	
V30314	*10925*	*9190*	*7730*	*6990*	*6500*	*6150*	*5880*	*5460*	*5170*	*4670*	*4350*	*3930*	
Q30215	*7630*	*6410*	*5390*	*4880*	*4540*	*4290*	*4100*	*3810*	*3610*	*3260*	*3030*	*2740*	
V30315	*11950*	*10050*	*8450*	*7640*	*7110*	*6720*	*6420*	*5970*	*5650*	*5100*	*4750*	*4290*	
Q30216	*8800*	*7400*	*6220*	*5630*	*5230*	*4950*	*4730*	*4400*	*4160*	*3760*	*3500*	*3160*	
V30316	*13925*	*10875*	*9140*	*8270*	*7690*	*7280*	*6950*	*6460*	*6120*	*5520*	*5140*		
Q30217	*9400*	*7910*	*6650*	*6010*	*5590*	*5290*	*5060*	*4700*	*4450*	*4020*	*3740*		
V30317	*14000*	*11775*	*9910*	*8960*	*8330*	*7880*	*7530*	*7010*	*6630*	*5990*	*5570*		
Q30218	*10500*	*8820*	*7420*	*6710*	*6240*	*5900*	*5640*	*5250*	*4960*	*4480*	*4170*		
V30318	*16125*	*12725*	*10700*	*9670*	*9000*	*8510*	*8130*	*7560*	*7160*	*6460*	*6020*		
V30219	*11600*	*9750*	*8200*	*7410*	*6900*	*6520*	*6230*	*5800*	*5490*	*4950*	*4610*		
V30319	*16225*	*13650*	*11475*	*10375*	*9650*	*9130*	*8720*	*8110*	*7670*	*6930*	*6450*		
V30220	*12675*	*10675*	*8970*	*8110*	*7540*	*7140*	*6820*	*6340*	*6000*	*5420*	*5040*		
V30320	*18575*	*15600*	*13125*	*11875*	*11050*	*10450*	*9980*	*9280*	*8780*	*7930*	*7380*		
V30222	*15000*	*12625*	*10600*	*9590*	*8920*	*8440*	*8070*	*7500*	*7100*	*6410*	*5970*		
V30322	*22275*	*18725*	*15750*	*14250*	*13250*	*12525*	*11975*	*11150*	*10550*	*9520*	*8860*		
V30224	*16275*	*13675*	*11500*	*10375*	*9670*	*9150*	*8740*	*8130*	*7690*	*6950*	*6470*		
V30324	*26025*	*21050*	*17700*	*15975*	*14875*	*14075*	*13450*	*12500*	*11825*	*10700*	*9950*		
V30226	*18525*	*15400*	*12950*	*11700*	*10900*	*10300*	*9840*	*9160*	*8670*	*7830*	*7290*		
V30326	*27775*	*23350*	*19625*	*17725*	*16500*	*15625*	*14925*	*13875*	*13125*	*11875*			
V30228	*19650*	*16525*	*13900*	*12550*	*11675*	*11050*	*10550*	*9830*	*9300*	*8400*			
V30328	*30575*	*25725*	*21625*	*19525*	*18200*	*17200*	*16425*	*15300*	*14475*	*13075*			

Note: For ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection. Bearings in italics are non-preferred sizes, see page 1.

DUPLEX BEARINGS — TYPE 30,000

Principal Dimensions



30,000 DF Mounting

30,000 DT Mounting

Note: Outside corner radius at small face of outer ring is one-half radius r.

These bearings now available only with non-metallic or machined bronze separators.

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

Brg. No. DF, DB or DT Mounting	Bore B		Diameter D		Width W		Balls Per Row		* Radius r	List Price
	mm	inch	mm	inch	mm	inch	Diam.	No.		
Q30204	*20*	*.7874*	*47*	*1.8504*	*28*	*1.1024*	*11/32*	*10*	*.04*	On Application
Q30304			*52*	*2.0472*	*30*	*1.1811*	*3/8*	*10*	*.04*	
Q30205	*25*	*.9843*	*52*	*2.0472*	*30*	*1.1811*	*11/32*	*11*	*.04*	
Q30305			*62*	*2.4409*	*34*	*1.3386*	*7/16*	*10*	*.04*	
Q30206	*30*	*1.1811*	*62*	*2.4409*	*32*	*1.2598*	*3/8*	*12*	*.04*	
Q30306			*72*	*2.8346*	*38*	*1.4961*	*1/2*	*10*	*.04*	
Q30207	*35*	*1.3780*	*72*	*2.8346*	*34*	*1.3386*	*7/16*	*12*	*.04*	
Q30307			*80*	*3.1496*	*42*	*1.6535*	*9/16*	*11*	*.06*	
Q30208	*40*	*1.5748*	*80*	*3.1496*	*36*	*1.4173*	*1/2*	*12*	*.04*	
Q30308			*90*	*3.5433*	*46*	*1.8110*	*5/8*	*11*	*.06*	
Q30209	*45*	*1.7717*	*85*	*3.3465*	*38*	*1.4961*	*1/2*	*13*	*.04*	
Q30309			*100*	*3.9370*	*50*	*1.9685*	*11/16*	*11*	*.06*	
Q30210	*50*	*1.9685*	*90*	*3.5433*	*40*	*1.5748*	*1/2*	*14*	*.04*	
Q30310			*110*	*4.3307*	*54*	*2.1260*	*3/4*	*11*	*.08*	
Q30211	*55*	*2.1654*	*100*	*3.9370*	*42*	*1.6535*	*9/16*	*14*	*.06*	
Q30311			*120*	*4.7244*	*58*	*2.2835*	*13/16*	*12*	*.08*	
Q30212	*60*	*2.3622*	*110*	*4.3307*	*44*	*1.7323*	*5/8*	*14*	*.06*	
Q30312			*130*	*5.1181*	*62*	*2.4409*	*7/8*	*12*	*.08*	
Q30213	*65*	*2.5591*	*120*	*4.7244*	*46*	*1.8110*	*11/16*	*14*	*.06*	
V30313			*140*	*5.5118*	*66*	*2.5984*	*15/16*	*12*	*.08*	
Q30214	*70*	*2.7559*	*125*	*4.9213*	*48*	*1.8898*	*11/16*	*15*	*.06*	
V30314			*150*	*5.9055*	*70*	*2.7559*	*1*	*12*	*.08*	
Q30215	*75*	*2.9528*	*130*	*5.1181*	*50*	*1.9685*	*11/16*	*16*	*.06*	
V30315			*160*	*6.2992*	*74*	*2.9134*	*1 1/16*	*12*	*.08*	
Q30216	*80*	*3.1496*	*140*	*5.5118*	*52*	*2.0472*	*3/4*	*16*	*.08*	
V30316			*170*	*6.6929*	*78*	*3.0709*	*1 1/8*	*12*	*.08*	
Q30217	*85*	*3.3465*	*150*	*5.9055*	*56*	*2.2047*	*13/16*	*15*	*.08*	
V30317			*180*	*7.0866*	*82*	*3.2283*	*1 3/16*	*12*	*.10*	
Q30218	*90*	*3.5433*	*160*	*6.2992*	*60*	*2.3622*	*7/8*	*15*	*.08*	
V30318			*190*	*7.4803*	*86*	*3.3858*	*1 1/4*	*12*	*.10*	
V30219	*95*	*3.7402*	*170*	*6.6929*	*64*	*2.5197*	*15/16*	*15*	*.08*	
V30319			*200*	*7.8740*	*90*	*3.5433*	*1 5/16*	*12*	*.10*	
V30220	*100*	*3.9370*	*180*	*7.0866*	*68*	*2.6772*	*1*	*15*	*.08*	
V30320			*215*	*8.4646*	*94*	*3.7008*	*1 7/16*	*12*	*.10*	
V30222	*110*	*4.3307*	*200*	*7.8740*	*76*	*2.9921*	*1 1/8*	*15*	*.08*	
V30322			*240*	*9.4488*	*100*	*3.9370*	*1 5/8*	*12*	*.10*	
V30224	*120*	*4.7244*	*215*	*8.4646*	*80*	*3.1496*	*1 3/16*	*15*	*.08*	
V30324			*260*	*10.2362*	*110*	*4.3308*	*1 3/4*	*12*	*.10*	
V30226	*130*	*5.1181*	*230*	*9.0551*	*80*	*3.1496*	*1 1/4*	*16*	*.10*	
V30326			*280*	*11.0236*	*116*	*4.5670*	*1 7/8*	*12*	*.12*	
V30228	*140*	*5.5118*	*250*	*9.8425*	*84*	*3.3070*	*1 5/16*	*16*	*.10*	
V30328			*300*	*11.8110*	*124*	*4.8818*	*2*	*12*	*.12*	

Bearings in italics are non-preferred sizes, see page 1. Q indicates non-metallic, V indicates bronze separators.

DUPLEX BEARINGS — TYPE 30,000

Radial Load Ratings

Based on Average Life of 3800 Hours

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

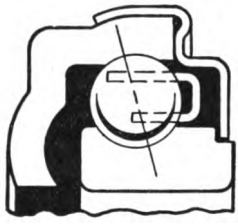
DF mounting is intended for heavy thrust loads from either direction or for combined loads where the major component is thrust. DT mounting is used for heavy thrust in one direction where the load is beyond the capacity of a single bearing and change to a larger size is not desired. Can also be mounted DB same as Type 20,000, page 43.

Brg. No. DF, DB or DT Mounting	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
Q30204	2650	2230	1870	1690	1580	1490	1420	1320	1240	1130	1050	950	840
Q30304	3210	2700	2270	2050	1910	1810	1720	1600	1520	1370	1280	1150	1010
Q30205	2820	2370	2000	1800	1680	1590	1520	1410	1340	1210	1120	1010	895
Q30305	4400	3700	3110	2810	2620	2480	2370	2200	2080	1880	1750	1580	1390
Q30206	3620	3050	2560	2320	2150	2040	1950	1810	1710	1550	1440	1300	1150
Q30306	5590	4700	3950	3570	3320	3150	3010	2800	2640	2390	2220	2010	1770
Q30207	4970	4180	3510	3170	2950	2790	2670	2480	2350	2120	1970	1790	1570
Q30307	7300	6140	5160	4670	4340	4110	3930	3650	3450	3120	2900	2630	2310
Q30208	6310	5310	4460	4030	3750	3550	3390	3160	2990	2700	2510	2270	2000
Q30308	8680	7300	6140	5550	5160	4880	4660	4340	4100	3710	3450	3120	2740
Q30209	6660	5600	4710	4260	3960	3750	3580	3330	3150	2840	2650	2390	2110
Q30309	10100	8490	7140	6460	6010	5680	5430	5050	4780	4310	4020	3630	3190
Q30210	7000	5880	4950	4470	4160	3940	3760	3500	3310	2990	2780	2510	2210
Q30310	11650	9800	8240	7450	6930	6560	6270	5830	5510	4980	4630	4190	
Q30211	8580	7210	6070	5480	5100	4830	4610	4290	4060	3660	3410	3080	
Q30311	13775	11575	9740	8810	8190	7750	7410	6890	6520	5890	5480	4950	
Q30212	10200	8570	7210	6510	6060	5730	5480	5090	4820	4350	4050	3660	
Q30312	16375	12925	10875	9820	9140	8650	8260	7680	7270	6570	6110	5520	
Q30213	11850	9970	8390	7580	7050	6670	6380	5930	5610	5070	4720	4260	
V30313	16975	14275	12025	10850	10100	9560	9130	8490	8040	7260	6750	6110	
Q30214	12425	10450	8780	7940	7390	6990	6680	6210	5880	5310	4940	4460	
V30314	18575	15625	13150	11875	11050	10450	9990	9290	8790	7940	7390	6680	
Q30215	12975	10900	9170	8290	7710	7300	6970	6480	6130	5540	5160	4660	
V30315	20300	17075	14350	12975	12075	11425	10925	10150	9610	8680	8070	7300	
Q30216	14950	12575	10575	9560	8900	8420	8040	7480	7080	6390	5950	5380	
V30316	21975	18475	15550	14050	13075	12375	11825	11000	10400	9390	8740		
Q30217	15975	13450	11300	10225	9500	9000	8590	7990	7560	6830	6360		
V30317	23825	20025	16850	15225	14175	13400	12800	11900	11275	10175	9470		
Q30218	17825	15000	12600	11400	10600	10025	9590	8920	8440	7620	7090		
V30318	25725	21625	18175	16425	15300	14475	13825	12850	12175	10975	10225		
V30219	19700	16575	13950	12600	11725	11100	10600	9860	9330	8420	7840		
V30319	27575	23200	19500	17625	16400	15525	14825	13800	13050	11775	10975		
V30220	21550	18125	15250	13775	12825	12125	11600	10775	10200	9210	8570		
V30320	31550	26550	22325	20175	18775	17750	16975	15775	14925	13475	12550		
V30222	25500	21450	18050	16300	15175	14350	13725	12750	12075	10900	10150		
V30322	37875	31850	26775	24200	22525	21300	20350	18925	17925	16175	15050		
V30224	27650	23250	19550	17650	16450	15550	14850	13825	13075	11825	11000		
V30324	42525	35775	30075	27150	25275	23925	22850	21275	20125	18175	16925		
V30226	31150	26200	22025	19900	18525	17525	16725	15575	14725	13325	12400		
V30326	47200	39700	33375	30150	28075	26550	25375	23600	22325	20175	18775		
V30228	33400	28100	23625	21325	19875	18800	17950	16700	15800	14275	13300		
V30328	52000	43725	36775	33200	30925	29250	27950	26000	24600	22225	20675		

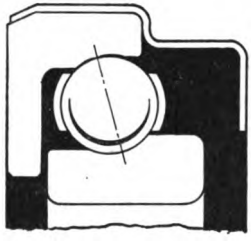
Note: For ratings below 50 r.p.m. and for ratings at electric motor speeds see factors under "Bearing Selection."
Bearings in italics are non-preferred sizes, see page 1.

CLUTCH THROWOUT BEARINGS — TYPES CT 22 to 44

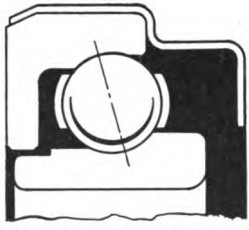
Design and Load Characteristics



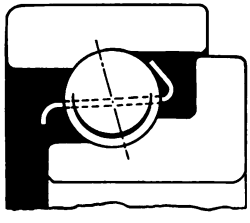
Section
CT 24-A & 30-F



Section CT 34



Section
CT 36 & 44



Section CT 40

New Departure clutch throwout bearings are designed especially for the load and mounting conditions peculiar to automotive clutch service. They are available in several 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 22 to 36, inclusive, and CT 44 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.

Bearing CT 40 has 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 22 to 44 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 22 to 44

Typical Mountings

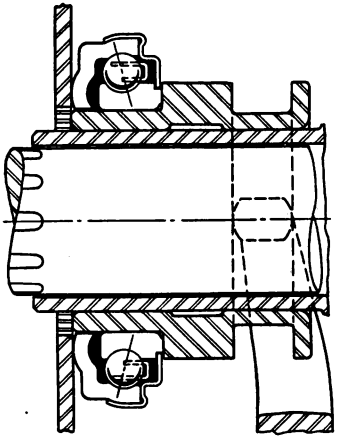


Figure 1.

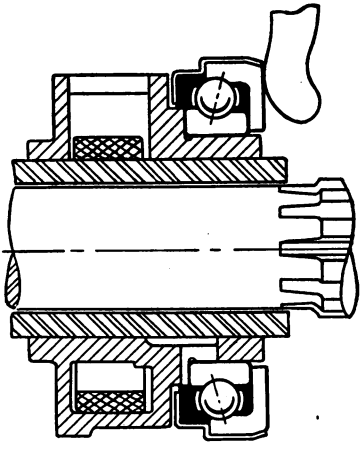


Figure 2.

Clutch throwout bearings of Types CT 24-A to 36, inclusive, and CT 44 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. In Type CT 22 the inner race is also the clutch sleeve whose bore is a sliding fit.

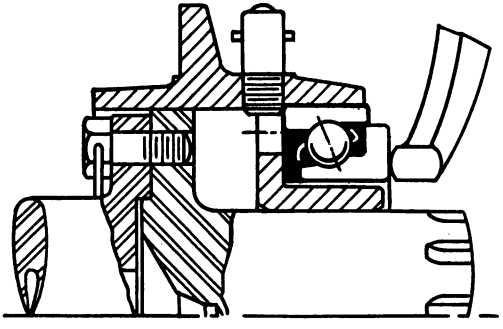


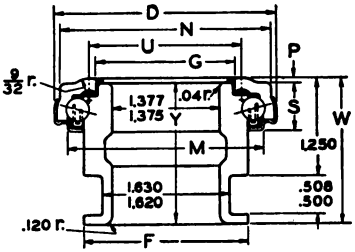
Figure 3.

With bearings of the Type CT 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.

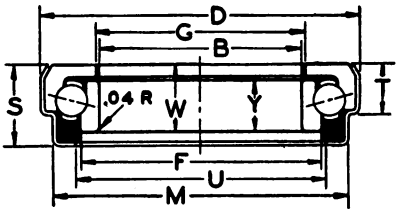
With Type CT 40 bearings the outer race extends over the large outside diameter of the inner race in such a manner as to retain the lubricant within the bearing.

CLUTCH THROWOUT BEARINGS — TYPES CT 22 to 44

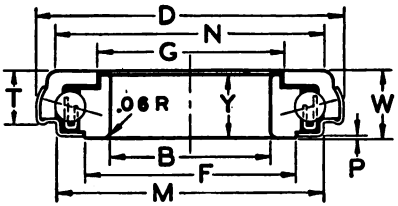
Principal Dimensions



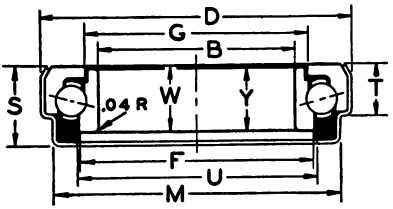
Type CT-22



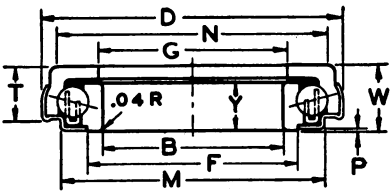
Type CT 34



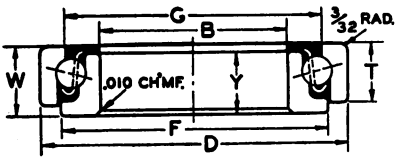
Type CT 24-A



Types CT 36 & 44



Type CT 30-F



Type CT 40

CLUTCH THROWOUT BEARINGS — TYPES CT 22 to 44

Dimensions and Load Ratings

Brg. No.	Bore B		Diameters						Widths						Balls	
			D	F	G	M	N	U	W		S	T	Y	P		
	mm	inch	inch	inch	inch	inch	inch	inch	mm	inch	inch	inch	inch	inch	Dia.	No.
CT22			2 13/16	2.085	1.732	2 1/2	2 11/16	1 15/16		1 7/8	.605		1 13/16	.063	9/32	10
CT24-A	38.10	1.5000	2 13/16	2	1.750	2 1/2	2 1/2		15.88	.625		.495	.594	.020	9/32	10
CT30-F	47.63	1.8750	3 1/8	2.192	1.915	2 3/4	2 11/16		17.45	.687		.566	.484	.015	5/16	12
CT34	54.24	2.1355	3.487	2.638	2.270	3.281		2.687	19.05	.750	.906	.531	.580		11/32	14
CT36	57.15	2.2500	3.487	2.638	2.530	3.281		2.687	19.05	.750	.906	.531	.735		11/32	14
CT40	63.50	2.5000	4.075 103.51mm	3.648	3.437				26.99	1.0625		.906	.875		13/32	15
CT44	69.85	2.7500	4.070	3.182	3.030	3.344		3.203	20.64	.813	1.000	.720	.793		3/8	16

Prices on application.

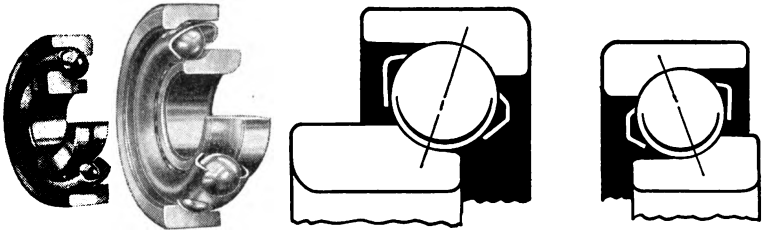
Thrust Load Ratings—Based on 3800 Hours Average Life

Radial capacities of all types are equal to the thrust ratings.

Brg. No.	Revolutions per Minute			
	500	1000	2000	3000
CT22	690	580	490	440
CT24-A	690	580	490	440
CT30-F	975	820	690	625
CT34	1320	1110	930	840
CT36	1320	1110	930	840
CT40	1980	1660	1400	1260
CT44	1750	1470	1230	1110

FRONT WHEEL BEARINGS — TYPE 9000

Design and Load Characteristics



Typical Sections — Type 9000
Inner and Outer Bearings

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.

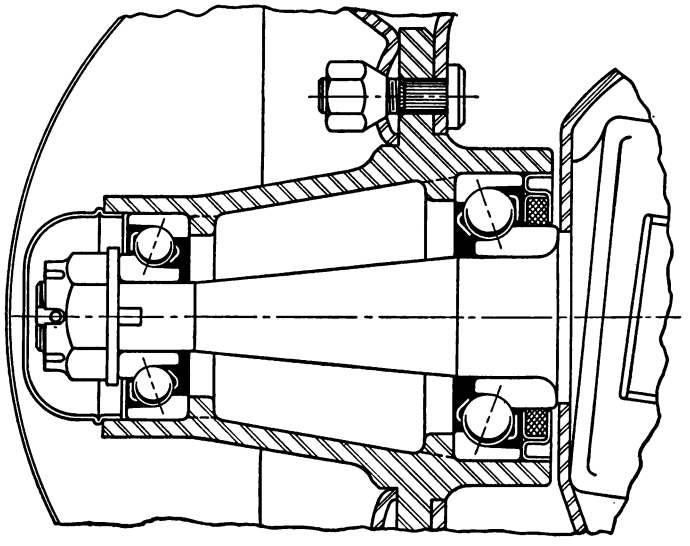
New Departure Front Wheel bearings are separable, thus facilitating assembly or removal of the wheels from the spindles. Since the outer rings rotate, they are press fitted in the hubs and the inner rings are an easy push fit.

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 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.

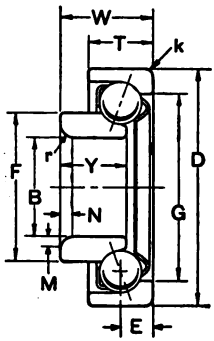
For bearing dimensions and Front Hub and Spindle machining limits, see next page.

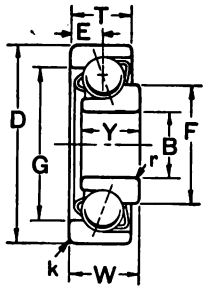
FRONT WHEEL BEARINGS — TYPE 9000

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			Widths			Balls		Radii		E	M	N	Capacity	
		D	F	G	W	T	Y	Dia.	No.	k	r				300 R.P.M.	600 R.P.M.
INNER BEARINGS																
909052	1.2815	2.9630	1.875	2.333	1.145	.770	.870	½	11	.090	†	.400	.196	.281	2480	2080
909062	1.3750	2.9630	2.000	2.403	1.145	.770	.870	15/32	13	.090	†	.400	.180	.257	2490	2100
909026	1.4065	3.1496	2.100	2.543	1.226	.851	.917	17/32	12	.090	.190	.450	.190	.207	3030	2550
909028	1.5000	3.750	2.332	2.970	1.450	1.015	1.070	1 1/16	10	.130	.200	.550	.200	.210	4090	3440
OUTER BEARINGS																
909001	.7503	2.080	1.274	1.614	.708	.608	.595	3/8	10	.090	.035	.300			1380	1160
909025	.8440	2.2500	1.406	1.765	.790	.690	.659	7/16	10	.090	.030	.375			1900	1600
909027	.9379	2.8125	1.700	2.156	.910	.850	.800	9/16	9	.130	.035	.450			2760	2320

* All dimensions in inches. † 35° Chamfer.

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	909001	On Application	909601	On Application	909501	On Application	909701	On Application
Outer	909025		909625		909525		909725	
Outer	909027		909627		909527		909727	
Inner	909026		909626		909526		909726	
Inner	909028		909628		909528		909728	
Inner	909052		909652		909552		909752	
Inner	909062		909662		909562		909762	

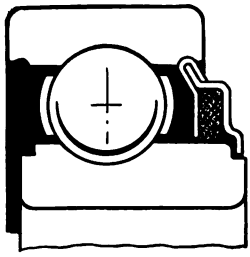
ENGINEERING SERVICE

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.

N-D-SEAL BEARINGS — TYPES 8000 and WC-8000

Design



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. They are similar to the Type 3000 and in most cases are identical therewith as to number and size of balls.

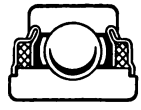
In N-D-Seal bearings the inner ring is extended on one side so as to form a smooth contacting surface for the felt seal which is permanently fitted to the outer ring. The end of the inner ring contains a notch or recess in which the outer side of the felt retainer is fitted with a suitable running clearance, thus forming a labyrinth closure in addition to the felt seal. In most sizes 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 some larger sizes these ring faces are flush.

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.

8000

87000



88000

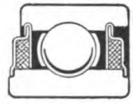
In Type 8000 bearings, above, the outer rings are the standard widths of non-sealed single row bearings.

48000

Except in the smaller sizes, most N-D-Seal bearings, Type 8000 are produced with snap rings, as above, in single seal, shield and seal or double seal series, as listed on page 67.

WC-8000

WC-87000



WC-88000

In Type WC-8000 bearings the outer ring width is equal to the total overall width of similar size Type 8000 bearings. Both rings are flush on one side as shown above.

Mounting

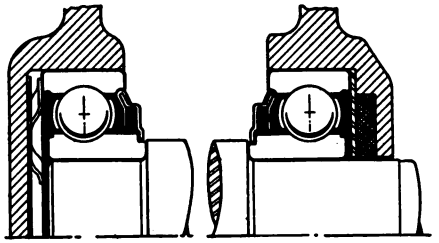


Figure 1.

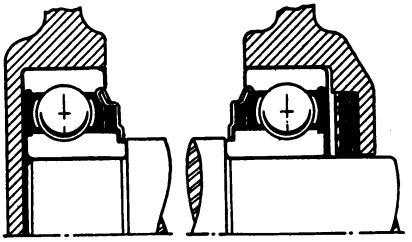


Figure 2.

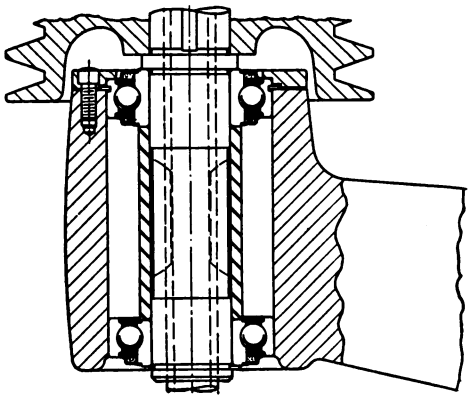


Figure 3.

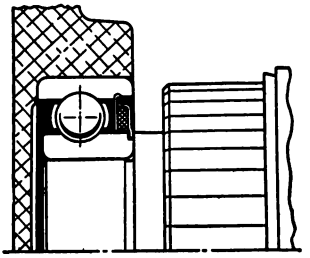


Figure 4.

Where N-D-Seals, particularly in the smaller sizes, 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.

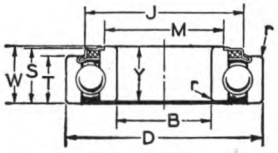
Under medium or low speeds, as in standard, fractional horsepower, electric motors, N-D-Seal bearings may be mounted with a small clearance between housing shoulder and bearing face, figure 2, sufficient to ensure that machining tolerances will not result in an excessive thrust load being placed upon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

Snap rings on N-D-Seal bearings are in many cases responsible for much simplification in design and manufacturing. An example is the quill mount for a light drilling machine, figure 3. Here, the housing need only be bored straight through and faced on one end. No separate seals or locating shoulders are required.

N-D-Seal bearings of the WC-8000 type are particularly suited for mounting directly into housings of soft metal such as aluminum alloy. The greater ring area in contact with the housing prevents peening or enlargement of the housing bore with consequent excessive loosening of ring fit.

N-D-SEAL BEARINGS — TYPE 8000

Principal Dimensions



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

SINGLE SEAL

Series 8000

SHIELD AND SEAL

Series 87000

Brg. No.	Bore B mm	Bore B inch	Diameter D mm	Diameter D inch	Width W	Balls Dia.	Balls No.	J	Seal Notch M	S	T	Y	* Radius r	List Price	Brg. No.	Shield Notch L	List Price
8035	*5*	*.1969*	*19*	*.7480*	*.406*	*9/64*	*6*	*.572*	*.336*	*.365*	*.315*	*.386*	*.016*	*$1.60*	*87035*	*.350*	*$1.70*
8036	*6*	*.2362*	*19*	*.7480*	*.406*	*9/64*	*6*	*.572*	*.336*	*.365*	*.315*	*.386*	*.016*	*1.60*	*87036*	*.350*	*1.70*
8006	6	.2362	24	.9449	.406	5/32	7	.717	.448	.365	.315	.386	.016	1.60	**87006**	.468	1.70
***8037**	7	.2756	22	.8661	.406	5/32	7	.671	.413	.386	.315	.386	.016	1.55	**87037**	.433	1.65
8007	7	.2756	24	.9449	.406	5/32	7	.717	.448	.365	.315	.386	.016	1.60	**87007**	.468	1.70
***8038**	8	.3150	22	.8661	.406	5/32	7	.671	.413	.386	.315	.386	.016	1.55	**87038**	.433	1.65
8008	8	.3150	24	.9449	.406	5/32	7	.717	.448	.365	.315	.386	.016	1.60	**87008**	.468	1.70
8039	9	.3543	26	1.0236	.406	5/32	7	.717	.448	.365	.315	.386	.025	1.60	**87039**	.513	1.70
8009	9	.3543	30	1.1811	.500	7/32	7	.889	.553	.445	.354	.480	.025	1.55	**87009**	.591	1.65
8500	10	.3937	30	1.1811	.500	7/32	7	.889	.553	.445	.354	.480	.025	1.65	**87500**	.591	1.75
8011	11	.4331												1.60	**87011**		1.70
8501	12	.4724	32	1.2598	.500	.210	8	.968	.640	.451	.394	.480	.025	1.70	**87501**	.684	1.80
8013	13	.5118												1.60	**87013**		1.70
8014	*14*	*.5512*												*1.65*	*87014*		*1.75*
8502	15	.5906	35	1.3780	.500	.235	8	1.080	.752	.464	.433	.480	.025	1.80	**87502**	.802	1.90
8016	16	.6299												1.65	**87016**		1.75
8503	17	.6693	40	1.5748	.563	9/32	8	1.248	.848	.518	.472	.538	.025	1.95	**87503**	.888	2.05
8603	*17*	*.6693*	*47*	*1.8504*	*.630*	*11/32*	*7*	*1.405*	*.896*	*.592*	*.551*	*.591*	.04	*2.75*	*87603*	*.974*	*2.85*
8504	20	.7874	47	1.8504	.625	5/16	8	1.468	.994	.583	.551	.600	.04	2.30	**87504**	1.056	2.40
8604	*20*	*.7874*	*52*	*2.0472*	*.748*	*13/32*	*7*	*1.602*	*1.054*	*.708*	*.591*	*.709*	*.04*	*3.05*	*87604*	*1.116*	*3.15*
8505	25	.9843	52	2.0472	.625	5/16	9	1.624	1.190	.582	.591	.600	.04	2.50	**87505**	1.252	2.60
8026	*26*	*1.0236*	*52*	*2.0472*	*.625*	*5/16*	*9*	*1.624*	*1.190*	*.582*	*.591*	*.600*	*.04*	*2.30*	*87026*	*1.190*	*2.40*
8506	30	1.1811	62	2.4409	.787	3/8	9	1.946	1.462	.737	.630	.748	.04	3.15	**87506**	1.548	3.25
8507	35	1.3780	72	2.8346	.827	7/16	9	2.290	1.713	.770	.669	.787	.04	3.85	**87507**	1.880	4.00
8508	*40*	*1.5748*	*80*	*3.1496*	*.945†*	*7/16*	*10*	*2.616*	*1.950*	*.935*	*.827*	*.945†*	*.04*	*4.45*	*‡87508*	*2.051*	*4.60*
8509	*45*	*1.7717*	*85*	*3.3465*	*.945†*	*15/32*	*10*	*2.813*	*2.147*	*.925*	*.827*	*.945†*	*.04*	*4.95*	*87509*	*2.243*	*5.15*

† These bearings have flush faces on open side. ‡ These bearings have flush faces on shielded side.

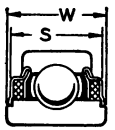
For Load Ratings, see page 69.

* Formerly 8102 and 8103. Bearings in italics are non-preferred sizes.

N-D-SEAL BEARINGS — TYPE 8000

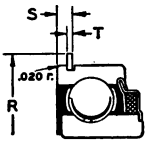
Principal Dimensions

DOUBLE SEAL



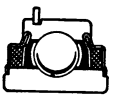
Series 88000

WITH SNAP RING



Series 48000

Series 487000



Series 488000

Brg. No.	Width W		Seal Width S	List Price	Bearing Number			R	T	S	List Price		
	mm	inch			Single Seal	Shield and Seal	Double Seal				48000	487000	488000
88035	*12.6*	*.4970*	*.415*	*1.90*									
88036 **88006**	*12.6* 12.6	*.4970* .4970	*.415* .415	*1.90* 1.90									
***88037** **88007**	12.6 12.6	.4970 .4970	.457 .415	1.85 1.90									
***88038** **88008**	12.6 12.6	.4970 .4970	.457 .415	1.85 1.90									
88039 **88009** **88500**	*12.6* 16.4 16.4	*.4970* .6457 .6457	*.415* .534 .534	*1.90* 1.85 1.95	**48009** **48500**	**487009** **487500**	**488009** **488500**	1 23/64	.042	.120	$1.65 1.75	$1.75 1.85	$1.95 2.05
88011 **88501** **88013**	15.4	.6063	.506	*1.90* 2.00 1.90	*48011* **48501** **48013**	*487011* **487501** **487013**	*488011* **488501** **488013**	1 7/16	.042	.120	*1.70* 1.80 1.70	*1.80* 1.90 1.80	*2.00* 2.10 2.00
88014 **88502** **88016**	14.4	.5669	*.493* .493 .547	*1.95* 2.10 1.95	*48014* **48502** **48016**	*487014* **487502** **487016**	*488014* **488502** **488016**	1 35/64	.042	.120	*1.75* 1.90 1.75	*1.85* 2.00 1.85	*2.05* 2.20 2.05
88503 *88603*	16.6 *18*	.6536 *.7087*	.562 *.633*	2.30 *3.25*	**48503** *48603*	**487503** *487603*	**488503** *488603*	1 3/4 2 1/16	.042 *.042*	.120 *.136*	2.05 *2.85*	2.15 *2.95*	2.40 *3.35*
88504 *88604*	17.8 *23*	.6988 *.9055*	.611 *.828*	2.70 *3.60*	**48504** *48604*	**487504** *487604*	**488504** *488604*	2 1/16 2 17/64	.042 *.042*	.136 *.136*	2.40 *3.15*	2.50 *3.25*	2.80 *3.70*
88505	16.8	.6594	.572	2.95	**48505**	**487505**	**488505**	2 17/64	.042	.136	2.60	2.70	3.05
88026	*16.8*	*.6594*	*.572*	*2.70*	*48026*	*487026*	*488026*	2 17/64	*.042*	*.136*	*2.40*	*2.50*	*2.80*
88506	24	.9449	.844	3.75	**48506**	**487506**	**488506**	2 21/32	.065	.190	3.30	3.40	3.90
88507	25	.9843	.964	4.55	**48507**	**487507**	**488507**	3 5/64	.065	.190	4.05	4.20	4.75
88508	*27*	*1.0630*	*1.043*	*5.25*	*48508*	*487508*	*488508*	3 13/32	*.065*	*.190*	*4.65*	*4.80*	*5.45*
88509	27	1.0630	1.023	5.85									

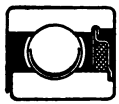
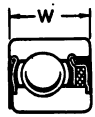
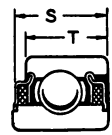
* Formerly 88102 and 88103.

Bearings in italics are non-preferred sizes. For Load Ratings, see page 69.

N-D-SEAL BEARINGS — TYPE WC-8000

Dimensions and List Prices

Type WC-8000 bearings are identical with Type 8000 on pages 66 and 67 except that the outer ring is extended so as to be flush with the inner ring on one face. For all dimensions not given on this page, refer to similar series and sizes of Type 8000 on preceding pages.

SINGLE SEAL		SHIELD AND SEAL			DOUBLE SEAL			
 WC-8000		 WC-87000			 WC-88000			
SINGLE SEAL		SHIELD AND SEAL		Width W Single Seal or Seal and Shield	DOUBLE SEAL			
Brg. No.	List Price	Brg. No.	List Price		Brg. No.	S	T	List Price
WC-8035	*$1.70*	*WC-87035*	*$1.80*	*.406*	*WC-88035*	*.456*	*.406*	*$2.00*
WC-8036 *WC-8006*	1.70 *1.70*	**WC-87036** *WC-87006*	1.80 *1.80*	.406 *.406*	*WC-88036* *WC-88006*	*.456* *.456*	*.406* *.406*	*2.00* *2.00*
***WC-8037** **WC-8007**	1.65 1.70	**WC-87037** **WC-87007**	1.75 1.80	.406 .406	*WC-88037* *WC-88007*	*.477* *.456*	*.406* *.406*	*1.95* *2.00*
***WC-8038** **WC-8008**	*1.65* 1.70	*WC-87038* **WC-87008**	*1.75* 1.80	*.406* .406	*WC-88038* **WC-88008**	*.477* .456	*.406* .406	*1.95* 2.00
WC-8039 **WC-8009** **WC-8500**	1.70 1.65 1.60	**WC-87039** **WC-87009** **WC-87500**	1.80 1.75 1.70	.406 .500 .500	*WC-88039* **WC-88009** **WC-85500**	*.456* .590 .590	*.406* .500 .500	*2.00* 1.95 1.90
WC-8011 **WC-8501** **WC-8013**	*1.70* 1.65 1.70	*WC-87011* **WC-87501** **WC-87013**	*1.80* 1.75 1.80	 .500 	*WC-88011* *WC-88501* **WC-88013**	 *.556* 	 *.500* 	*2.00* *1.95* 2.00
WC-8014 **WC-8502** *WC-8016*	1.75 1.70 *1.75*	**WC-87014** **WC-87502** *WC-87016*	1.85 1.80 *1.85*	 .500 	*WC-88014* **WC-88502**	*.530* .530	 .500	*2.05* 2.00
WC-8503 **WC-8603**	1.85 2.60	**WC-87503** **WC-87603**	1.95 2.70	.563 .630				
WC-8504 **WC-8604**	2.15 2.85	**WC-87504** **WC-87604**	2.25 2.95	.625 .748				
WC-8505	2.40	**WC-87505**	2.50	.625				
WC-8026	*2.45*	*WC-87026*	*2.55*	*.625*				
WC-8506	*3.00*	*WC-87506*	*3.10*	*.787*				
WC-8507	*3.65*	*WC-87507*	*3.75*	*.827*				
WC-8508	*4.20*	*WC-87508*	*4.30*	*.945*				

*Formerly WC-8102 and WC-8103.
Bearings in italics are non-preferred sizes.

N-D-SEAL BEARINGS — TYPES 8000 & WC-8000

Radial Load Ratings

Based on Average Life of 3800 Hours

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

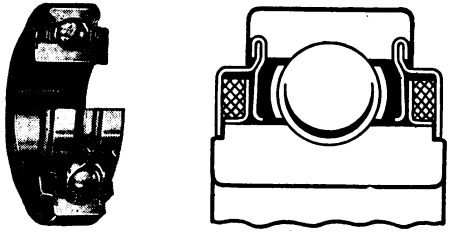
These ratings are for all ND-Seal bearings, either single seal, shield and seal or double seal, in both Types 8000 and WC-8000.

Basic Brg. No.	Revolutions per Minute												
	50	100	200	300	400	500	600	800	1000	1500	2000	3000	5000
8035	210	175	149	135	125	119	113	105	100	90	84	76	67
8036	210	175	149	135	125	119	113	105	100	90	84	76	67
8006	280	235	200	180	165	160	150	140	133	120	112	101	89
8037	280	235	200	180	165	160	150	140	133	120	112	101	89
8007													
8038	280	235	200	180	165	160	150	140	133	120	112	101	89
8008													
8039	280	235	200	180	165	160	150	140	133	120	112	101	89
8009	570	480	405	365	340	320	305	285	270	245	225	205	180
8500	570	480	405	365	340	320	305	285	270	245	225	205	180
8011													
8501	570	480	405	365	340	320	305	285	270	245	225	205	180
8013													
8014													
8502	725	610	515	465	430	410	390	360	345	310	290	260	230
8016													
8503	1080	905	760	685	640	605	580	540	510	460	430	385	340
8603	1500	1260	1060	960	890	845	805	750	710	640	595	540	475
8504	1350	1130	950	860	800	755	725	675	635	575	535	485	425
8604	2150	1800	1520	1370	1280	1210	1150	1070	1010	915	855	770	680
8026	1460	1220	1030	930	865	820	785	730	690	620	580	525	460
8506	1770	1490	1250	1130	1050	995	950	885	840	760	705	635	560
8507	2940	2480	2080	1880	1750	1660	1580	1470	1390	1260	1170	1060	930
8508	3160	2660	2230	2020	1880	1780	1700	1580	1490	1350	1260	1140	1000
8509	3610	3040	2560	2310	2150	2030	1940	1810	1710	1540	1440	1300	1140

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

REAR WHEEL BEARINGS — TYPE 88,100

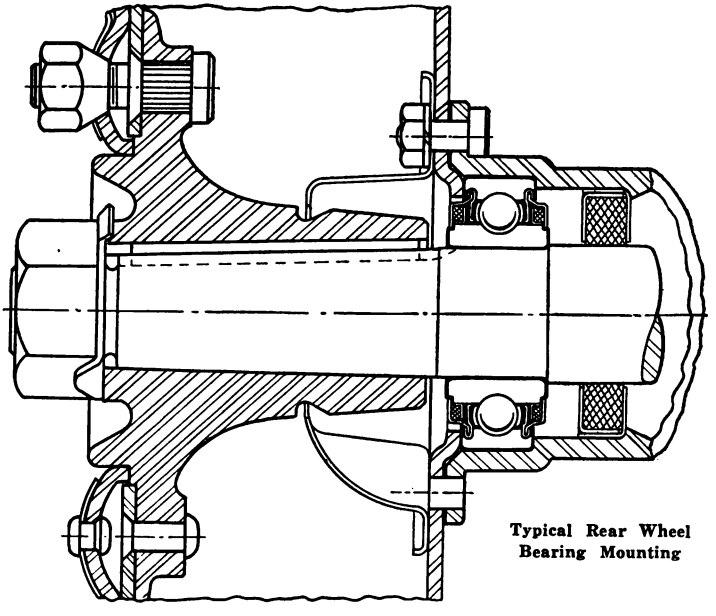
Design and Mounting



Typical Sections — Type 88,100

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.

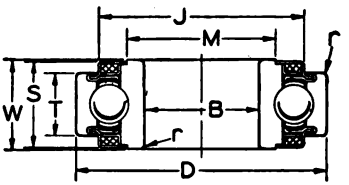


Typical Rear Wheel Bearing Mounting

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	Cone Notch Dia. M	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*	*1.656*	*.905*	*.669*	*.04*	On Application
88107	35	1.3780	72	2.8346	25	.9843	7/16	9	2.290	1.713	.964	.669	.04	
88127E	35	1.3780		2.9688		1.0455	15/32	9	2.434	1.785	1.026	.740	.04	
88108E		*1.4995*	*80*	*3.1496*	*27*	*1.063*	1/2	*9*	*2.616*	*1.896*	*1.053*	*.827*	*.04*	
88128		1.5312	80	3.1496		1.083	1/2	9	2.616	1.896	1.053	.827	.04†	
88109		*1.6557*	*85*	*3.3465*	*27*	*1.063*	15/32	*10*	*2.813*	*2.147*	*1.023*	*.827*	*.04*	
88110		*1.6557*	*90*	*3.5433*	*30*	*1.1811*	15/32	*11*	*3.031*	*2.281*	*1.161*	*.866*	*.04*	
D88609	*45*	*1.7717*	*100*	*3.9370*	*35*	*1.3780*	21/32	*8*	*3.236*	*2.188*	*1.368*	*.984*	*.06*	

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

Radial Load Ratings

Based on Average Life of 3800 Hours

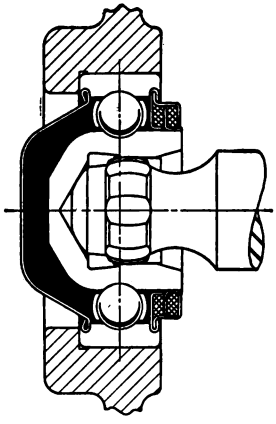
The bearing capacities listed on this page are basic radial load ratings in pounds. From these ratings bearings of the proper size for the service desired can readily be selected by use of data given under "Bearing Selection."

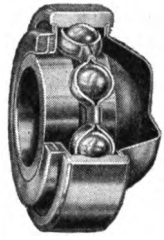
Brg. No.	Revolutions per Minute										
	50	100	200	300	400	500	600	800	1000	1500	2000
88136	*2300*	*1940*	*1630*	*1470*	*1370*	*1300*	*1240*	*1150*	*1090*	*985*	*915*
88107	2940	2480	2080	1880	1750	1660	1580	1470	1390	1260	1170
88127E	3370	2830	2380	2150	2000	1890	1810	1680	1590	1440	1340
88108E	*3740*	*3150*	*2650*	*2390*	*2230*	*2100*	*2010*	*1870*	*1770*	*1600*	*1490*
88128	3740	3150	2650	2390	2230	2100	2010	1870	1770	1600	1490
88109	*3610*	*3040*	*2560*	*2310*	*2150*	*2030*	*1940*	*1810*	*1710*	*1540*	*1440*
88110	*3850*	*3240*	*2720*	*2460*	*2290*	*2170*	*2070*	*1920*	*1820*	*1650*	*1530*
D88609	*5440*	*4580*	*3850*	*3480*	*3240*	*3060*	*2930*	*2720*	*2570*	*2330*	*2160*

Bearings in italics are non-preferred sizes, see page 1.

CONVEYOR ROLL BEARINGS — TYPE CB-504

Design and Mounting

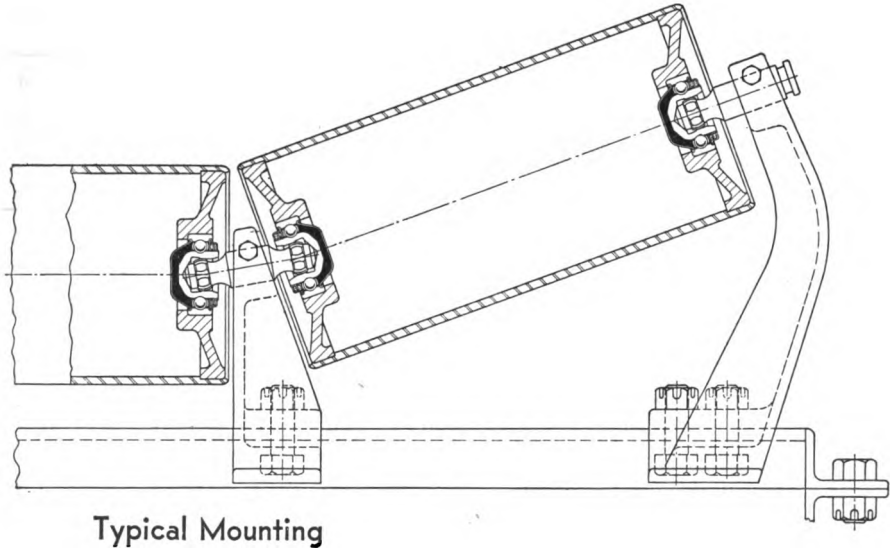




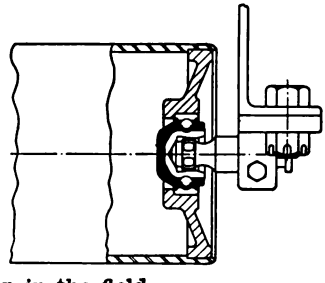
The New Departure Conveyor Bearing is permanently sealed, thereby eliminating all need for separate closure parts. Furthermore, adjusting nuts, springs, collars, long center shafts and other miscellaneous items are no longer required.

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

Typical Sections
Type CB-504



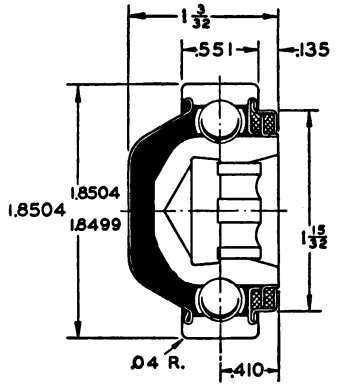
Typical Mounting



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 felt in conjunction with 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.

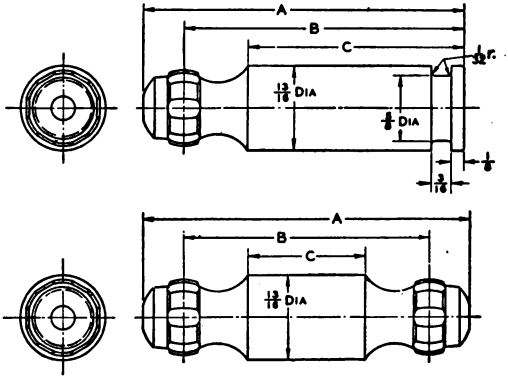
Revolutions per Minute								
50	100	200	300	400	500	600	700	800
1350	1130	950	860	800	755	725	695	675

Stub Shaft Dimensions

TYPE 1			
Part No.	A	B	C
1-CS-1 3/8	1 3/8	6 63/64	3/8
1-CS-1 15/16	1 15/16	1 35/64	15/16
1-CS-2 1/2	2 1/2	2 7/64	1 1/2
1-CS-3	3	2 39/64	2
1-CS-4 1/8	4 1/8	3 47/64	3 1/8

TYPE 2			
Part No.	A	B	C
2-CS-2 1/2	2 1/2	1 23/32	1/2
2-CS-2 9/16	2 9/16	1 25/32	9/16
2-CS-2 5/8	2 5/8	1 27/32	5/8
2-CS-3	3	2 7/32	1
2-CS-3 3/32	3 3/32	2 5/16	1 3/32
2-CS-4	4	3 7/32	2
2-CS-4 5/32	4 5/32	3 3/8	2 5/32

Prices on Application



FAN & PUMP SHAFT BEARINGS — TYPE 885,100

Design and Mounting

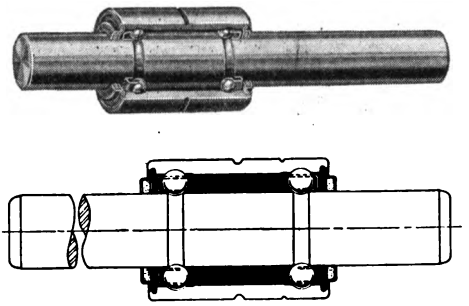


Figure 1.
Typical Sections
Type 885,100

This development by New Departure very definitely simplifies the mounting of the automotive 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.

The outer ring is 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.

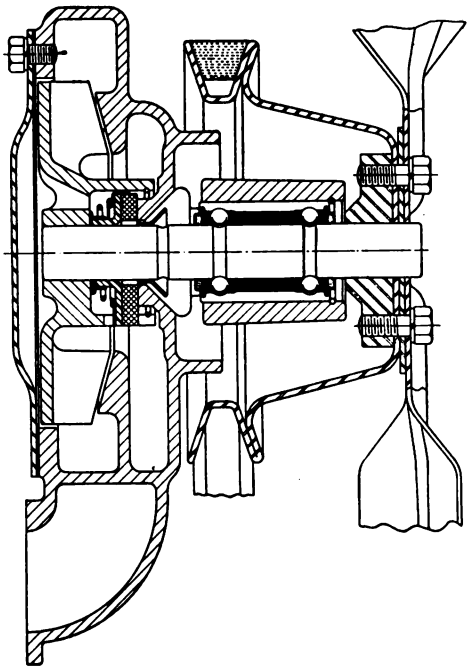


Figure 2.

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 to a locating shoulder and requiring no facing.

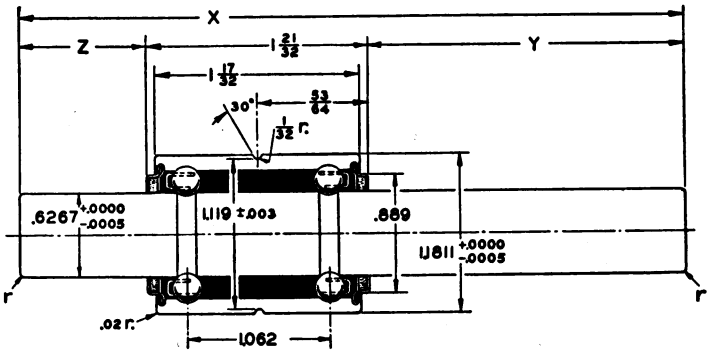
Bearing closure caps requiring drilled and tapped screw holes are eliminated.

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 a snap ring registering with a continuous groove in the housing bore.

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

Dimensions and Load Ratings



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
885140	4 1/16	55/64	1 35/64	.030	
885141-C	5 1/32	2 27/64	61/64	*.030*	
885144	5 5/8	2 29/64	1 33/64	*.030*	
885146	4 33/64	3/32	2 49/64	.030	
885154	2 57/64	3/32	1 9/64	*.030*	Prices On Application
885155	4 29/64	1 3/16	1 39/64	.030	
885156	4 15/32	1 1/64	1 51/64	.030	
885158	5 7/16	1 33/64	2 15/64	.030	
885159	4 9/64	1 39/64	7/8	.030	
885160	4 1/8	33/64	1 61/64	.030	
885167	4 25/64	7/8	1 55/64	.030	

Radial 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**
320	305	285	270	245	225	205	180

Bearings in italics are non-preferred sizes, see page 1.

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.

Tolerances

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

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.*

Tolerances — Continued

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, 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

New Departure Standard (A.B.E.C.-1), Trifex (A.B.E.C.-3) and Perfex (A.B.E.C.-5)

New Departure ball bearings for general application are held to within the limits of the Standard (A.B.E.C.-1) tolerances below.

Where it is necessary to obtain a greater degree of accuracy in mounting both inner and outer rings, bearings may be obtained with the closer bore, inner ring eccentricity and outside diameter limits of the Trifex (A.B.E.C.-3) tolerances.

For spindles and other applications requiring exceptional rigidity, and accuracy in all dimensions, Single Row Radial, Single Row Angular Contact, Duplex and Magneto bearings are furnished to Perfex (A.B.E.C.-5) tolerances.

Type of Bearings	INNER RINGS						
	Bore Number	Bore Diameter +.0000			Eccentricity		
		A.B.E.C. Specification No.			A.B.E.C. Specification No.		
		1	3	5	1	3	5
Type 30	34–39	−.0003	−.0002	−.0002	.0003	.0002	.0002
Single Row, *Double Row, Single Row Angular Contact, Duplex, N-D-Seal	0–3	−.0003	−.0002	−.0002	.0004	.0003	.0002
	4–6	−.0004	−.0002	−.0002	.0005	.0003	.0002
	7–10	−.0005	−.0003	−.0002	.0006	.0004	.0002
	11–16	−.0006	−.0004	−.0003	.0008	.0004	.0002
	17–24	−.0008	−.0005	−.0003	.0010	.0005	.0003
	26–36	−.0010	−.0006	−.0004	.0012	.0006	.0003
	38–40	−.0012	−.0007	−.0005	.0016	.0008	.0004
N-D-Seal	8006–9	−.0003	−.0002		.0003	.0002	
	8011–16	−.0003	−.0002		.0004	.0003	
	8026	−.0004	−.0002		.0005	.0003	
Magneto	5–8	−.0003	−.0002	−.0002	.0003	.0002	.0002
	10–17	−.0003	−.0002	−.0002	.0004	.0003	.0002

Type of Bearings	OUTER RINGS								
	Bore Numbers			Outside Diameter +.0000			Eccentricity		
	Extra Light	Light	Medium	A.B.E.C. Specification No.			A.B.E.C. Specification No.		
				1	3	5	1	3	5
Type 30		34–39		−.0004	−.0003	−.0002	.0006	.0004	.0002
Single Row, *Double Row, Single Row Angular Contact, Duplex, N-D-Seal	0–1	0		−.0004	−.0003	−.0002	.0006	.0004	.0002
	2–5	1–4	0–3	−.0005	−.0003	−.0002	.0008	.0004	.0002
	6–10	5–8	4–7	−.0005	−.0004	−.0003	.0010	.0005	.0003
	11–15	9–13	8–11	−.0006	−.0004	−.0003	.0014	.0007	.0004
	16–20	14–17	12–14	−.0008	−.0005	−.0004	.0016	.0008	.0004
	21–24	18–20	15–17	−.0010	−.0006	−.0005	.0018	.0009	.0005
	26–32	21–28	18–22	−.0012	−.0007	−.0005	.0020	.0010	.0005
	34–40	30–34	24–28	−.0014	−.0008	−.0005	.0024	.0012	.0006
N-D-Seal		8006–9		−.0004	−.0003		.0006	.0004	
		8011–16		−.0005	−.0003		.0008	.0004	
		8026		−.0005	−.0004		.0010	.0005	
Magneto		5–13		+.0004	+.0003	+.0002	.0006	.0004	.0002
		15–17		+.0005	+.0003	+.0002	.0008	.0004	.0002

WIDTH OF INDIVIDUAL RINGS — A.B.E.C.-1, 3 and 5		
Bearing Type	Bore Numbers	Inspection Limit +.000
Type 30	34–39	−.005
Single Row, *Double Row, Single Row Angular Contact, Duplex, N-D-Seal	0–36	−.005
	38–60	−.010
N-D-Seal	All	−.005
	All	−.005
Magneto	Assembled Width	
	All	±.005

* Double Row bearings not furnished to A.B.E.C.-5 tolerances.

SHAFT MOUNTING FITS

For A. B. E. C. — 1 Tolerances

New Departure "Standard"

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. However, investigation 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, 8037	.2756	.2753	.2757	.2754	.0001L	.0003	.0002	.0004	.2754	.2751	.0004	.0000	.0005	.0001
8008, 8038	.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. 5	.1969	.1966	.1970	.1967	.0001L	.0003	.0002	.0004	.1967	.1964	.0004	.0000	.0005	.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	1.3777	1.3772	.0006	.0000	.0008	.0002
8	1.5748	1.5743	1.5752	1.5747	.0001T	.0007	.0001	.0009	1.5745	1.5740	.0006	.0000	.0008	.0002
9	1.7717	1.7712	1.7721	1.7716	.0001T	.0007	.0001	.0009	1.7714	1.7709	.0006	.0000	.0008	.0002
10	1.9685	1.9680	1.9689	1.9684	.0001T	.0007	.0001	.0009	1.9682	1.9677	.0006	.0000	.0008	.0002
11	2.1654	2.1648	2.1659	2.1653	.0001T	.0009	.0001	.0011	2.1650	2.1644	.0008	.0000	.0010	.0002
12	2.3622	2.3616	2.3627	2.3621					2.3618	2.3612				
13	2.5591	2.5585	2.5596	2.5590	.0001T	.0009	.0001	.0011	2.5587	2.5581	.0008	.0000	.0010	.0002
14	2.7559	2.7553	2.7564	2.7558					2.7555	2.7549				
15	2.9528	2.9522	2.9533	2.9527	.0001T	.0009	.0001	.0011	2.9524	2.9518	.0008	.0000	.0010	.0002
16	3.1496	3.1490	3.1501	3.1495	.0001T	.0009	.0001	.0011	3.1492	3.1486	.0008	.0000	.0010	0002
17	3.3465	3.3457	3.3471	3.3464	.0002T	.0012	.0001	.0014	3.3459	3.3452	.0011	.0001	.0013	.0002
18	3.5433	3.5425	3.5439	3.5432					3.5427	3.5420				
19	3.7402	3.7394	3.7408	3.7401	.0002T	.0012	.0001	.0014	3.7396	3.7389	.0011	.0001	.0013	.0002
20	3.9370	3.9362	3.9376	3.9369					3.9364	3.9357				
21	4.1339	4.1331	4.1345	4.1338	.0002T	.0012	.0001	.0014	4.1333	4.1326	.0011	.0001	.0013	.0002
22	4.3307	4.3299	4.3313	4.3306					4.3301	4.3294				

For Housing fits for A. B. E. C.-1 Brgs. see Page 80.

HOUSING MOUNTING FITS

For A. B. E. C. — 1 Tolerances

New Departure "Standard"

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	
E. L.	L.	M.	H.	Max.	Min.	Max.	Min.	Min. Loose	Max. Loose	Tight	Loose	Max.	Min.	Tight	Loose	Tight	Loose
				.6299	.6295	.6303	.6298					.6299	.6294				
	34			.7480	.7476	.7484	.7479	.0000L	.0005	.0001	.0008	.7480	.7475	.0003	.0002	.0005	.0004
	35, 36			.8661	.8657	.8665	.8660					.8661	.8656				
	37, 38			1.0236	1.0232	1.0240	1.0235					1.0236	1.0231				
	39																
				.8661	.8657	.8665	.8660					.8661	.8656				
	8037, 8038			.9449	.9445	.9453	.9448	.0000L	.0005	.0001	.0008	.9449	.9444	.0003	.0002	.0005	.0004
	8006, 7 & 8			1.1811	1.1807	1.1815	1.1810					1.1811	1.1806				
	8009																
	8011, 8013			1.2598	1.2593	1.2603	1.2597	.0000L	.0007	.0001	.0010	1.2598	1.2592	.0004	.0003	.0006	.0005
	8014, 8016			1.3780	1.3775	1.3785	1.3779	.0000L	.0007	.0001	.0010	1.3780	1.3774	.0004	.0003	.0006	.0005
	8026			2.0472	2.0467	2.0479	2.0471	.0000L	.0009	.0001	.0012	2.0473	2.0465	.0004	.0004	.0007	.0006
	N.D. 5			.6303	.6299	.6306	.6301	.0001T	.0004	.0002	.0007	.6303	.6298	.0003	.0002	.0005	.0004
	N.D. 8-6, 8-7, 8			.9453	.9449	.9456	.9451	.0001T	.0004	.0002	.0007	.9453	.9448	.0003	.0002	.0005	.0004
	N.D. 10-9, 10			1.1028	1.1024	1.1031	1.1026	.0001T	.0004	.0002	.0007	1.1028	1.1023	.0003	.0002	.0005	.0004
	N.D. 12-11, 12			1.2603	1.2598	1.2606	1.2600	.0001T	.0006	.0003	.0008	1.2603	1.2597	.0004	.0003	.0006	.0005
	N.D. 13			1.1815	1.1811	1.1818	1.1813	.0001T	.0004	.0002	.0007	1.1815	1.1810	.0003	.0002	.0005	.0004
	N.D. 15			1.3785	1.3780	1.3788	1.3782	.0001T	.0006	.0003	.0008	1.3785	1.3779	.0004	.0003	.0006	.0005
	N.D. 16			1.4966	1.4961	1.4969	1.4963	.0001T	.0006	.0003	.0008	1.4966	1.4960	.0004	.0003	.0006	.0005
	N.D. 17			1.7328	1.7323	1.7331	1.7325	.0001T	.0006	.0003	.0008	1.7328	1.7322	.0004	.0003	.0006	.0005
	N.D. 20			1.8509	1.8504	1.8512	1.8506	.0001T	.0006	.0003	.0008	1.8509	1.8503	.0004	.0003	.0006	.0005
	N.D. 25			2.0477	2.0472	2.0482	2.0474	.0001T	.0008	.0003	.0010	2.0478	2.0470	.0004	.0004	.0007	.0006
0				1.0236	1.0232	1.0240	1.0235					1.0236	1.0231				
1				1.1024	1.1020	1.1028	1.1023	.0000L	.0005	.0001	.0008	1.1024	1.1019	.0003	.0002	.0005	.0004
	0			1.1811	1.1807	1.1815	1.1810					1.1811	1.1806				
2	**1**			1.2598	1.2593	1.2603	1.2597					1.2598	1.2592				
3	**2**	**0**		1.3780	1.3775	1.3785	1.3779	.0000L	.0007	.0001	.0010	1.3780	1.3774	.0004	.0003	.0006	.0005
		1		1.4567	1.4562	1.4572	1.4566					1.4567	1.4561				
	3			1.5748	1.5743	1.5753	1.5747					1.5748	1.5742				
4		**2**		1.6535	1.6530	1.6540	1.6534	.0000L	.0007	.0001	.0010	1.6535	1.6529	.0004	.0003	.0006	.0005
5	**4**	**3**		1.8504	1.8499	1.8509	1.8503					1.8504	1.8498				
	5	**4**		2.0472	2.0467	2.0479	2.0471					2.0473	2.0465				
6				2.1654	2.1649	2.1661	2.1653	.0000L	.0009	.0001	.0012	2.1655	2.1647	.0004	.0004	.0007	.0006
7	**6**	**5**		2.4409	2.4404	2.4416	2.4408					2.4410	2.4402				
8				2.6772	2.6767	2.6779	2.6771					2.6773	2.6765				
	7	**6**	**4**	2.8346	2.8341	2.8353	2.8345	.0000L	.0009	.0001	.0012	2.8347	2.8339	.0004	.0004	.0007	.0006
9				2.9528	2.9523	2.9535	2.9527					2.9529	2.9521				
10	**8**	**7**	**5**	3.1496	3.1491	3.1503	3.1495	.0000L	.0009	.0001	.0012	3.1497	3.1489	.0004	.0004	.0007	.0006
	9			3.3465	3.3459	3.3473	3.3463	.0000L	.0010	.0002	.0014	3.3467	3.3457	.0005	.0004	.0008	.0008
11	**10**	**8**	**6**	3.5433	3.5427	3.5441	3.5431	.0000L	.0010	.0002	.0014	3.5435	3.5425	.0005	.0004	.0008	.0008
12				3.7402	3.7396	3.7410	3.7400					3.7404	3.7394				
13	**11**	**9**	**7**	3.9370	3.9364	3.9378	3.9368	.0000L	.0010	.0002	.0014	3.9372	3.9362	.0005	.0004	.0008	.0008
14	**12**	**10**	**8**	4.3307	4.3301	4.3315	4.3305					4.3309	4.3299				
15				4.5276	4.5270	4.5284	4.5274	.0000L	.0010	.0002	.0014	4.5278	4.5268	.0005	.0004	.0008	.0008
	13	**11**	**9**	4.7244	4.7238	4.7252	4.7242	.0000L	.0010	.0002	.0014	4.7246	4.7236	.0005	.0004	.0008	.0008
16	**14**			4.9213	4.9205	4.9223	4.9211	.0001L	.0014	.0002	.0018	4.9215	4.9203	.0006	.0004	.0010	.0010
17	**15**	**12**	**10**	5.1181	5.1173	5.1191	5.1179					5.1183	5.1171				
18	**16**	**13**	**11**	5.5118	5.5110	5.5128	5.5116	.0001L	.0014	.0002	.0018	5.5120	5.5108	.0006	.0004	.0010	.0010
19				5.7087	5.7079	5.7097	5.7085					5.7089	5.7077				
20	**17**	**14**	**12**	5.9055	5.9047	5.9065	5.9053	.0000L	.0014	.0002	.0018	5.9057	5.9045	.0006	.0004	.0010	.0010
21	**18**	**15**	**13**	6.2992	6.2982	6.3002	6.2990	.0001L	.0015	.0002	.0020	6.2993	6.2981	.0007	.0005	.0011	.0011
22	**19**	**16**		6.6929	6.6919	6.6939	6.6927	.0001L	.0015	.0002	.0020	6.6930	6.6918	.0007	.0005	.0011	.0011
	20	**17**	**14**	7.0866	7.0856	7.0876	7.0864	.0001L	.0015	.0002	.0020	7.0867	7.0855	.0007	.0005	.0011	.0011
	21	**18**	**15**	7.4803	7.4791	7.4815	7.4801	.0001L	.0018	.0002	.0024	7.4805	7.4791	.0008	.0005	.0012	.0014
	22	**19**	**16**	7.8740	7.8728	7.8752	7.8738	.0001L	.0018	.0002	.0024	7.8742	7.8728	.0008	.0005	.0012	.0014
			17	8.2677	8.2665	8.2689	8.2675	.0001L	.0018	.0002	.0024	8.2679	8.2665	.0008	.0005	.0012	.0014
		20		8.4646	8.4634	8.4658	8.4644					8.4648	8.4634				
		21	**18**	8.8583	8.8571	8.8595	8.8581	.0001L	.0018	.0002	.0024	8.8585	8.8571	.0008	.0005	.0012	.0014
		22		9.4488	9.4476	9.4500	9.4486					9.4490	9.4476				

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. Whenever bearings are to be spring loaded through the outer ring, housing fits must be from .0002" to .0005" loose.

SHAFT MOUNTING FITS

For A. B. E. C. — 3 Tolerances

New Departure "Trifex"

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. However, investigation 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	.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. 5	.1969	.1967	.1970	.1968	.0003	.0001	.1968	.1966	.0001	.0003
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	.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	2.1650	2.1656	2.1652	.0006	.0002	2.1652	2.1648	.0002	.0006
12	2.3622	2.3618	2.3624	2.3620			2.3620	2.3616		
13	2.5591	2.5587	2.5593	2.5589	.0006	.0002	2.5589	2.5585	.0002	.0006
14	2.7559	2.7555	2.7561	2.7557			2.7557	2.7553		
15	2.9528	2.9524	2.9530	2.9526	.0006	.0002	2.9526	2.9522	.0002	.0006
16	3.1496	3.1492	3.1498	3.1494	.0006	.0002	3.1494	3.1490	.0002	.0006
17	3.3465	3.3460	3.3468	3.3463	.0008	.0002	3.3462	3.3457	.0002	.0008
18	3.5433	3.5428	3.5436	3.5431			3.5430	3.5425		
19	3.7402	3.7397	3.7405	3.7400	.0008	.0002	3.7399	3.7394	.0002	.0008
20	3.9370	3.9365	3.9373	3.9368			3.9367	3.9362		
21	4.1339	4.1334	4.1342	4.1337	.0008	.0002	4.1336	4.1331	.0002	.0008
22	4.3307	4.3302	4.3310	4.3305			4.3304	4.3299		

HOUSING MOUNTING FITS

For A. B. E. C. — 3 Tolerances

New Departure "Trifex"

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. Investigation has proved that 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	
Ex. Lgt.	Lgt.	Med.	Hvy.	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
		34		.6299	.6296	.6301	.6298			.6298	.6295		
		35, 36		.7480	.7477	.7482	.7479	.0001	.0005	.7479	.7476	.0004	.0002
		37, 38		.8661	.8658	.8663	.8660			.8660	.8657		
		39		1.0236	1.0233	1.0238	1.0235			1.0235	1.0232		
		N.D. 5		.6302	.6299	.6303	.6300	.0002	.0004	.6301	.6298	.0004	.0002
		N.D. 8-6, 8-7, 8		.9452	.9449	.9453	.9450	.0002	.0004	.9451	.9448	.0004	.0002
		N.D. 10-9, 10		1.1027	1.1024	1.1028	1.1025	.0002	.0004	1.1026	1.1023	.0004	.0002
		N.D. 12-11, 12		1.2601	1.2598	1.2603	1.2599	.0002	.0005	1.2600	1.2596	.0005	.0002
		N.D. 13		1.1814	1.1811	1.1815	1.1812	.0002	.0004	1.1813	1.1810	.0004	.0002
		N.D. 15		1.3783	1.3780	1.3785	1.3781	.0002	.0005	1.3782	1.3778	.0005	.0002
		N.D. 16		1.4964	1.4961	1.4966	1.4962	.0002	.0005	1.4963	1.4959	.0005	.0002
		N.D. 17		1.7326	1.7323	1.7328	1.7324	.0002	.0005	1.7325	1.7321	.0005	.0002
		N.D. 20		1.8507	1.8504	1.8509	1.8505	.0002	.0005	1.8506	1.8502	.0005	.0002
		N.D. 25		2.0476	2.0472	2.0479	2.0474	.0002	.0007	2.0475	2.0470	.0006	.0003
0				1.0236	1.0233	1.0238	1.0235			1.0235	1.0232		
1				1.1024	1.1021	1.1026	1.1023	.0001	.0005	1.1023	1.1020	.0004	.0002
	0			1.1811	1.1808	1.1813	1.1810			1.1810	1.1807		
2	1			1.2598	1.2595	1.2601	1.2597			1.2597	1.2593		
3	2	0		1.3780	1.3777	1.3783	1.3779	.0001	.0006	1.3779	1.3775	.0005	.0002
		1		1.4567	1.4564	1.4570	1.4566			1.4566	1.4562		
	3			1.5748	1.5745	1.5751	1.5747			1.5747	1.5743		
4		2		1.6535	1.6532	1.6538	1.6534	.0001	.0006	1.6534	1.6530	.0005	.0002
5	4	3		1.8504	1.8501	1.8507	1.8503			1.8503	1.8499		
	5	4		2.0472	2.0468	2.0475	2.0470			2.0471	2.0466		
6				2.1654	2.1650	2.1657	2.1652	.0002	.0007	2.1653	2.1648	.0006	.0003
7	6	5		2.4409	2.4405	2.4412	2.4407			2.4408	2.4403		
8				2.6772	2.6768	2.6775	2.6770			2.6771	2.6766		
	7	6	4	2.8346	2.8342	2.8349	2.8344	.0002	.0007	2.8345	2.8340	.0006	.0003
9				2.9528	2.9524	2.9531	2.9526			2.9527	2.9522		
10	8	7	5	3.1496	3.1492	3.1499	3.1494	.0002	.0007	3.1495	3.1490	.0006	.0003
	9			3.3465	3.3461	3.3469	3.3463	.0002	.0008	3.3465	3.3459	.0006	.0004
11	10	8	6	3.5433	3.5429	3.5437	3.5431	.0002	.0008	3.5433	3.5427	.0006	.0004
12				3.7402	3.7398	3.7406	3.7400			3.7402	3.7396		
13	11	9	7	3.9370	3.9366	3.9374	3.9368	.0002	.0008	3.9370	3.9364	.0006	.0004
14	12	10	8	4.3307	4.3303	4.3311	4.3305			4.3307	4.3301		
15				4.5276	4.5272	4.5280	4.5274	.0002	.0008	4.5276	4.5270	.0006	.0004
	13	11	9	4.7244	4.7240	4.7248	4.7242	.0002	.0008	4.7244	4.7238	.0006	.0004
16	14			4.9213	4.9208	4.9218	4.9211	.0002	.0010	4.9213	4.9206	.0007	.0005
17	15	12	10	5.1181	5.1176	5.1186	5.1179			5.1181	5.1174		
18	16	13	11	5.5118	5.5113	5.5123	5.5116	.0002	.0010	5.5118	5.5111	.0007	.0005
19				5.7087	5.7082	5.7092	5.7085			5.7087	5.7080		
20	17	14	12	5.9055	5.9050	5.9060	5.9053	.0002	.0010	5.9055	5.9048	.0007	.0005
21	18	15	13	6.2992	6.2986	6.2997	6.2989	.0003	.0011	6.2992	6.2984	.0008	.0006
22	19	16		6.6929	6.6923	6.6934	6.6926	.0003	.0011	6.6929	6.6921	.0008	.0006
	20	17	14	7.0866	7.0860	7.0871	7.0863	.0003	.0011	7.0866	7.0858	.0008	.0006
	21	18	15	7.4803	7.4796	7.4809	7.4800	.0003	.0013	7.4803	7.4794	.0009	.0007
	22	19	16	7.8740	7.8733	7.8746	7.8737	.0003	.0013	7.8740	7.8731	.0009	.0007
			17	8.2677	8.2670	8.2683	8.2674	.0003	.0013	8.2677	8.2668	.0009	.0007
		20		8.4646	8.4639	8.4652	8.4643			8.4646	8.4637		
		21	18	8.8583	8.8576	8.8589	8.8580	.0003	.0013	8.8583	8.8574	.0009	.0007
		22		9.4488	9.4481	9.4494	9.4485			9.4488	9.4479		

SHAFT MOUNTING FITS

For A. B. E. C. — 5 Tolerances

New Departure "Perfex"

The extremely small tolerances used in the manufacture of Perfex 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. 5	.1969	.1967	.1970	.1968	.0003	.0001	.1968	.1966	.0001	.0003
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			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

For A. B. E. C. — 5 Tolerances

New Departure "Perfex"

The extremely small tolerances used in the manufacture of Perfex 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	
Ex. Lgt.	Lgt.	Med.	Hvy.	Max.	Min.	Max.	Min.	Tight	Loose	Max.	Min.	Tight	Loose
		34		.6299	.6297	.6300	.6298			.6299	.6297		
		35, 36		.7480	.7478	.7481	.7479	.0001	.0003	.7480	.7478	.0002	.0002
		37, 38		.8661	.8659	.8662	.8660			.8661	.8659		
		39		1.0236	1.0234	1.0237	1.0235			1.0236	1.0234		
		N.D. 5		.6301	.6299	.6302	.6300	.0001	.0003	.6301	.6299	.0002	.0002
		N.D. 8-6, 8-7, 8		.9451	.9449	.9452	.9450			.9451	.9449		
		N.D. 10-9, 10		1.1026	1.1024	1.1027	1.1025	.0001	.0003	1.1026	1.1024	.0002	.0002
		N.D. 12-11, 12		1.2600	1.2598	1.2601	1.2599			1.2600	1.2598		
		N.D. 13		1.1813	1.1811	1.1814	1.1812			1.1813	1.1811		
		N.D. 15		1.3782	1.3780	1.3783	1.3781	.0001	.0003	1.3782	1.3780	.0002	.0002
		N.D. 16		1.4963	1.4961	1.4964	1.4962			1.4963	1.4961		
		N.D. 17		1.7325	1.7323	1.7326	1.7324	.0001	.0003	1.7325	1.7323	.0002	.0002
		N.D. 20		1.8506	1.8504	1.8507	1.8505	.0001	.0003	1.8506	1.8504	.0002	.0002
		N.D. 25		2.0475	2.0472	2.0477	2.0474	.0001	.0005	2.0475	2.0472	.0003	.0003
0				1.0236	1.0234	1.0237	1.0235			1.0236	1.0234		
1				1.1024	1.1022	1.1025	1.1023	.0001	.0003	1.1024	1.1022	.0002	.0002
	0			1.1811	1.1809	1.1812	1.1810			1.1811	1.1809		
2	1			1.2598	1.2596	1.2599	1.2597			1.2598	1.2596		
3	2	0		1.3780	1.3778	1.3781	1.3779	.0001	.0003	1.3780	1.3778	.0002	.0002
		1		1.4567	1.4565	1.4568	1.4566			1.4567	1.4565		
	3			1.5748	1.5746	1.5749	1.5747			1.5748	1.5746		
4		2		1.6535	1.6533	1.6536	1.6534	.0001	.0003	1.6535	1.6533	.0002	.0002
5	4	3		1.8504	1.8502	1.8505	1.8503			1.8504	1.8502		
	5	4		2.0472	2.0469	2.0474	2.0471			2.0472	2.0469		
6				2.1654	2.1651	2.1656	2.1653	.0001	.0005	2.1654	2.1651	.0003	.0003
7	6	5		2.4409	2.4406	2.4411	2.4408			2.4409	2.4406		
8				2.6772	2.6769	2.6774	2.6771			2.6772	2.6769		
	7	6	4	2.8346	2.8343	2.8348	2.8345	.0001	.0005	2.8346	2.8343	.0003	.0003
9				2.9528	2.9525	2.9530	2.9527			2.9528	2.9525		
10	8	7	5	3.1496	3.1493	3.1498	3.1495			3.1496	3.1493		
	9			3.3465	3.3462	3.3467	3.3464	.0001	.0005	3.3465	3.3462	.0003	.0003
11	10	8	6	3.5433	3.5430	3.5435	3.5432			3.5433	3.5430		
12				3.7402	3.7399	3.7404	3.7401			3.7402	3.7399		
13	11	9	7	3.9370	3.9367	3.9372	3.9369	.0001	.0005	3.9370	3.9367	.0003	.0003
14	12	10	8	4.3307	4.3304	4.3309	4.3306			4.3307	4.3304		
15				4.5276	4.5273	4.5278	4.5275	.0001	.0005	4.5276	4.5273	.0003	.0003
	13	11	9	4.7244	4.7241	4.7246	4.7243	.0001	.0005	4.7244	4.7241	.0003	.0003
16	14			4.9213	4.9209	4.9216	4.9212	.0001	.0007	4.9213	4.9209	.0004	.0004
17	15	12	10	5.1181	5.1177	5.1184	5.1180			5.1181	5.1177		
18	16	13	11	5.5118	5.5114	5.5121	5.5117	.0001	.0007	5.5118	5.5114	.0004	.0004
19				5.7087	5.7083	5.7090	5.7086			5.7087	5.7083		
20	17	14	12	5.9055	5.9051	5.9058	5.9054	.0001	.0007	5.9055	5.9051	.0004	.0004
21	18	15	13	6.2992	6.2987	6.2995	6.2990	.0002	.0008	6.2992	6.2987	.0005	.0005
22	19	16		6.6929	6.6924	6.6932	6.6927	.0002	.0008	6.6929	6.6924	.0005	.0005
	20	17	14	7.0866	7.0861	7.0869	7.0864			7.0866	7.0861		
	21	18	15	7.4803	7.4798	7.4806	7.4801	.0002	.0008	7.4803	7.4798	.0005	.0005
	22	19	16	7.8740	7.8735	7.8743	7.8738			7.8740	7.8735		
			17	8.2677	8.2672	8.2680	8.2675	.0002	.0008	8.2677	8.2672	.0005	.0005
		20		8.4646	8.4641	8.4649	8.4644			8.4646	8.4641		
		21	18	8.8583	8.8578	8.8586	8.8581	.0002	.0008	8.8583	8.8578	.0005	.0005
		22		9.4488	9.4483	9.4491	9.4486			9.4488	9.4483		

TOLERANCES AND FITS FOR INCH SERIES BEARINGS

For A. B. E. C. — 1 Tolerances

New Departure "Standard"

Bearing Number	INNER RING		OUTER RING		WIDTH
	Bore Diameter +.0000	Eccentricity	Outer Diameter +.0000	Eccentricity	Individual Rings +.000
2	−.0003	.0003	−.0004	.0006	−.005
2-A	−.0003	.0003	−.0004	.0006	−.005
3	−.0003	.0003	−.0004	.0006	−.005
4	−.0003	.0003	−.0004	.0006	−.005
4-A	−.0003	.0003	−.0004	.0006	−.005
6	−.0003	.0004	−.0004	.0006	−.005
8	−.0003	.0004	−.0004	.0006	−.005
10	−.0003	.0004	−.0005	.0008	−.005
12	−.0004	.0005	−.0005	.0008	−.005
14	−.0004	.0005	−.0005	.0008	−.005
16	−.0004	.0005	−.0005	.0010	−.005
18	−.0004	.0005	−.0005	.0010	−.005
20	−.0005	.0006	−.0005	.0010	−.005
22	−.0005	.0006	−.0005	.0010	−.005
24	−.0005	.0006	−.0005	.0010	−.005

Shaft Mounting Fits

Brg. No.	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
2	.1250	.1247	.1251	.1248	.0001L	.0003	.0002	.0004	.1248	.1245	.0004	.0000	.0005	.0001
2-A	.1250	.1247	.1251	.1248	.0001L	.0003	.0002	.0004	.1248	.1245	.0004	.0000	.0005	.0001
3	.1875	.1872	.1876	.1873	.0001L	.0003	.0002	.0004	.1873	.1870	.0004	.0000	.0005	.0001
4	.2500	.2497	.2501	.2498	.0001L	.0003	.0002	.0004	.2498	.2495	.0004	.0000	.0005	.0001
4-A	.2500	.2497	.2501	.2498	.0001L	.0003	.0002	.0004	.2498	.2495	.0004	.0000	.0005	.0001
6	.3750	.3747	.3752	.3749	.0000L	.0004	.0001	.0005	.3748	.3745	.0004	.0000	.0005	.0001
8	.5000	.4997	.5002	.4999	.0000L	.0004	.0001	.0005	.4998	.4995	.0004	.0000	.0005	.0001
10	.6250	.6247	.6252	.6249	.0000L	.0004	.0001	.0005	.6248	.6245	.0004	.0000	.0005	.0001
12	.7500	.7496	.7503	.7499	.0000L	.0006	.0001	.0007	.7497	.7493	.0006	.0000	.0007	.0001
14	.8750	.8746	.8753	.8749	.0000L	.0006	.0001	.0007	.8747	.8743	.0006	.0000	.0007	.0001
16	1.0000	.9996	1.0003	.9999	.0000L	.0006	.0001	.0007	.9997	.9993	.0006	.0000	.0007	.0001
18	1.1250	1.1246	1.1253	1.1249	.0000L	.0006	.0001	.0007	1.1247	1.1243	.0006	.0000	.0007	.0001
20	1.2500	1.2495	1.2504	1.2499	.0001T	.0007	.0001	.0009	1.2496	1.2491	.0007	.0001	.0009	.0001
22	1.3750	1.3745	1.3754	1.3749	.0001T	.0007	.0001	.0009	1.3746	1.3741	.0007	.0001	.0009	.0001
24	1.5000	1.4995	1.5004	1.4999	.0001T	.0007	.0001	.0009	1.4996	1.4991	.0007	.0001	.0009	.0001

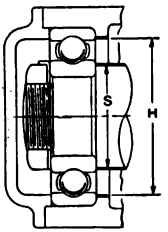
Housing Mounting Fits

Brg. No.	BEARING OUTER DIA.		HOUSING STATIONARY						HOUSING REVOLVING					
	Diameters		Diameters		Expect. Fit		Theoret. Fit		Diameters		Expected Fit		Theoret. Fit	
	Max.	Min.	Max.	Min.	Min. Loose	Max. Loose	Tight	Loose	Max.	Min.	Tight	Loose	Tight	Loose
2	.3750	.3746	.3754	.3749	.0000	.0005	.0001	.0008	.3749	.3744	.0002	.0002	.0006	.0003
2-A	.5000	.4996	.5004	.4999	.0000	.0005	.0001	.0008	.4999	.4994	.0002	.0002	.0006	.0003
3	.5000	.4996	.5004	.4999	.0000	.0005	.0001	.0008	.4999	.4994	.0002	.0002	.0006	.0003
4	.6250	.6246	.6254	.6249	.0000	.0005	.0001	.0008	.6249	.6244	.0002	.0002	.0006	.0003
4-A	.7500	.7496	.7504	.7499	.0000	.0005	.0001	.0008	.7499	.7494	.0002	.0002	.0006	.0003
6	.8750	.8746	.8754	.8749	.0000	.0005	.0001	.0008	.8749	.8744	.0002	.0002	.0006	.0003
8	1.1250	1.1246	1.1254	1.1249	.0000	.0005	.0001	.0008	1.1249	1.1244	.0002	.0002	.0006	.0003
10	1.3750	1.3745	1.3755	1.3749	.0000	.0007	.0001	.0010	1.3749	1.3743	.0003	.0003	.0007	.0004
12	1.6250	1.6245	1.6255	1.6249	.0000	.0007	.0001	.0010	1.6249	1.6243	.0003	.0003	.0007	.0004
14	1.8750	1.8745	1.8755	1.8749	.0000	.0007	.0001	.0010	1.8749	1.8743	.0003	.0003	.0007	.0004
16	2.0000	1.9995	2.0007	1.9999	.0000	.0009	.0001	.0012	2.0000	1.9992	.0004	.0003	.0008	.0005
18	2.1250	2.1245	2.1257	2.1249	.0000	.0009	.0001	.0012	2.1250	2.1242	.0004	.0003	.0008	.0005
20	2.2500	2.2495	2.2507	2.2499	.0000	.0009	.0001	.0012	2.2500	2.2492	.0004	.0003	.0008	.0005
22	2.5000	2.4995	2.5007	2.4999	.0000	.0009	.0001	.0012	2.5000	2.4992	.0004	.0003	.0008	.0005
24	2.6250	2.6245	2.6257	2.6249	.0000	.0009	.0001	.0012	2.6250	2.6242	.0004	.0003	.0008	.0005

SHAFT AND HOUSING SHOULDER HEIGHTS

Small and Extra-Light Single Row, Magneto and ND-Seal

Shaft Shoulders



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

Average diameters leave inner ring projecting enough to allow removal without damage to sealed or shielded bearings and give satisfactory support under ordinary thrust.

Maximum diameters are for very heavy thrust requiring angular contact bearings whose shoulders must have maximum support.

Housing Shoulders

Minimum diameters are for heavy thrust loads requiring angular contact bearings which must have maximum support.

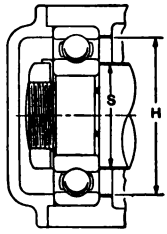
Average diameters leave enough outer ring exposed to make removal possible without damage to sealed or shielded bearings and give support for ordinary thrust loads.

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

EXTRA LIGHT SINGLE ROW				EXTRA SMALL SINGLE ROW			EXTRA SMALL SINGLE ROW			EXTRA LIGHT SINGLE ROW			
Basic Brg. No.	Shoulder Dia. "S" Ave.	Max.	Min.	Bearing No.	Shoulder Ave.	Dia. "S" Min.	Bearing No.	Shoulder Ave.	Dia. "H" Max.	Basic Brg. No.	Shoulder Dia. " H" Ave.	Max.	Min.
L00	35/64	37/64	31/64	34	15/64	15/64	34	35/64	35/64	L00	7/8	15/16	55/64
L01	5/8	21/32	9/16	35	5/16	9/32	35	21/32	21/32	L01	61/64	1	15/16
L02	3/4	51/64	11/16	36	5/16	5/16	36	21/32	21/32	L02	1 3/32	1 5/32	1 5/64
				37	25/64	23/64	37	25/32	25/32				
L03	55/64	57/64	25/32	38	25/64	25/64	38	25/32	25/32	L03	1 3/16	1 1/4	1 3/16
L04	1	1 1/16	15/16	39	15/32	29/64	39	59/64	59/64	L04	1 7/16	1 1/2	1 27/64
L05	1 3/16	1 1/4	1 1/8							L05	1 5/8	1 11/16	1 39/64
				MAGNETO AND N-D-SEAL			MAGNETO AND N-D-SEAL						
L06	1 13/32	1 15/32	1 3/8	Bearing Nos.		Shoulder Dia. "S"	Bearing Nos.		Shoulder Dia. "H"	L06	1 15/16	1 31/32	1 57/64
L07	1 5/8	1 11/16	1 9/16							L07	2 3/16	2 1/4	2 5/32
L08	1 27/32	1 29/32	1 3/4							L08	2 13/32	2 15/32	2 23/64
				Magneto	N-D-Seal	Ave. Min.	Magneto	N-D-Seal	Ave. Max.				
L09	2 1/16	2 1/8	1 31/32							L09	2 11/16	2 3/4	2 5/8
L10	2 1/4	2 5/16	2 5/32							L10	2 7/8	2 15/16	2 13/16
L11	2 1/2	2 9/16	2 13/32	N.D. 5		1/4	N.D. 5		37/64	L11	3 1/4	3 5/16	3 5/32
				N.D. 8-6	8006	13/32 5/16		8037	25/32 25/32				
				N.D. 8-7	8007	13/32 23/64		8038	25/32 25/32				
L12	2 11/16	2 3/4	2 19/32		8037	13/32 23/64	N.D. 8-6	8006	13/16 7/8	L12	3 7/16	3 1/2	3 11/32
L13	2 7/8	2 31/32	2 25/32	N.D. 8	8008	13/32 25/64	N.D. 8-7	8007	13/16 7/8	L13	3 5/8	3 11/16	3 17/32
L14	3 1/8	3 7/32	3		8038	13/32 25/64	N.D. 8	8008	13/16 7/8	L14	3 31/32	4 3/32	3 7/8
				N.D. 10-9		1/2 7/16	N.D. 10-9		61/64 1 1/32				
				N.D. 10		1/2 15/32	N.D. 10		61/64 1 1/32				
L15	3 5/16	3 13/32	3 3/16		8009	1/2 29/64	N.D. 12		1 1/32 1 3/16	L15	4 3/16	4 9/32	4 3/32
L16	3 9/16	3 21/32	3 3/8		8500	1/2 31/64	N.D. 13		1 1/32 1 7/64	L16	4 17/32	4 11/16	4 7/16
L17	3 3/4	3 27/32	3 19/32		8011	37/64 33/64		8009	1 3/32 1 3/32	L17	4 23/32	4 7/8	4 5/8
					8501	37/64 9/16		8500	1 3/32 1 3/32				
					8013	37/64 37/64		8011	1 5/32 1 5/32				
L18	4	4 3/32	3 27/32							L18	5 1/16	5 3/16	4 31/32
L19	4 3/16	4 9/32	4 1/32			5/8 9/16		8501	1 5/32 1 5/32	L19	5 1/4	5 13/32	5 5/32
L20	4 3/8	4 1/2	4 5/16	N.D. 12		5/8 19/32		8013	1 5/32 1 5/32	L20	5 15/32	5 1/2	5 3/8
				N.D. 13		5/8 19/32			1 13/64 1 9/32				
					8014	11/16 11/16	N.D. 15	8014	1 3/32 1 9/32				
L21	4 5/8	4 3/4	4 1/2		8502	11/16 11/16		8502	1 9/32 1 9/32	L21	5 13/16	5 29/32	5 11/16
L22	4 27/32	5	4 11/16		8016	23/32 23/32		8016	1 9/32 1 9/32	L22	6 3/16	6 5/16	6 1/32
L24	5 1/4	5 3/8	5 3/32	N.D. 15		3/4 11/16			1 5/16 1 23/64	L24	6 9/16	6 11/16	6 7/16
				N.D. 16		13/16 49/64	N.D. 16	8503	1 7/16 1 7/16				
					8503	51/64 51/64	N.D. 17		1 7/16 1 19/32				
				N.D. 17		29/32 51/64	N.D. 20		1 19/32 1 23/32	L26	7 1/4	7 15/32	7 3/32
L26	5 3/4	5 29/32	5 1/2		8504	15/16 59/64		8504	1 11/16 1 23/32	L28	7 5/8	7 7/8	7 1/2
L28	6 5/32	6 9/32	5 7/8	N.D. 20		1 59/64		8505	1 7/8 1 29/32	L30	8 3/16	8 7/16	8 1/32
L30	6 9/16	6 3/4	6 9/32		8505	1 1/8 1 1/8	N.D. 25		1 13/16 1 29/32				
					8026	1 5/32 1 5/32		8026	1 7/8 1 29/32	L32	8 3/4	9 1/16	8 9/16
				N.D. 25		1 7/32 1 1/8		8506	2 1/4 2 9/32	L34	9 7/16	9 13/16	9 1/4
L32	7	7 3/16	6 21/32		8506	1 3/8 1 11/32		8507	2 5/8 2 21/32	L36	10 1/16	10 5/8	9 15/16
L34	7 1/2	7 11/16	7 1/16		8507	1 5/8 1 9/16		8508	2 29/32 2 31/32				
L36	8	8 1/4	7 15/32		8508	1 13/16 1 3/4		8509	3 9/64 3 5/32				
					8509	2 1 15/16		8510	3 23/64 3 3/8				
					8510	2 9/64 1 15/16		8603	1 21/32 1 11/16	L38	10 1/2	11	10 1/4
L38	8 7/16	8 5/8	7 27/32		8603	27/32 53/64		8604	1 7/8 1 7/8	L40	11 3/16	11 13/16	10 15/16
L40	8 7/8	9 1/8	8 1/4		8604	31/32 15/16		8605	2 7/32 2 9/32	L44	12 5/16	12 7/8	12 1/16
L44	9 3/4	10	9 1/8		8605	1 7/32 1 5/32							

SHAFT SHOULDER HEIGHTS

Single Row Radial, Angular Contact and Double Row Bearings



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.

Light Series				Medium Series				Heavy Series			
Basic Brg. No.	Shoulder Diam. "S"			Basic Brg. No.	Shoulder Diam. "S"			Basic Brg. No.	Shoulder Diam. "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 3/64	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 3/8	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 9/16	2 27/32	2 15/32	411	2 11/16	3 1/16	2 9/16
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 15/32	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				
224	5 9/32	5 27/32	5 5/32	324	5 3/8	6 7/32	5 13/32				
226	5 3/4	6 11/32	5 19/32	326	6 1/8	6 3/4	5 7/8				
228	6 7/32	6 13/16	6 1/16	328	6 19/32	7 1/4	6 9/32				
230	6 5/8	7 5/16	6 15/32	330	7 1/16	7 3/4	6 11/16				
232	7 1/16	7 3/4	6 7/8	332	7 1/2	8 7/32	7 1/8				
234	7 1/2	8 9/32	7 11/32	334	8	8 23/32	7 9/16				
236	7 31/32	8 3/4	7 3/4	336	8 7/16	9 1/16	7 31/32				
238	8 13/32	9 1/4	8 3/16	338	8 15/16	9 3/4	8 7/16				
240	8 7/8	9 23/32	8 5/8	340	9 13/32	10 3/16	8 7/8				
244	9 3/4	10 23/32	9 15/32	344	10 5/16	11 3/16	9 11/16				
248	10 19/32	11 5/8	10 5/16	348	11 1/4	12 3/16	10 9/16				
252	11 1/2	12 21/32	11 3/16	352	12 3/16	13 5/32	11 7/16				
256	12 13/32	13 5/8	12 1/16	356	13 1/8	14 1/8	12 1/4				
260	13 9/32	14 19/32	12 29/32								
264	14 5/32	15 9/16	13 3/4								

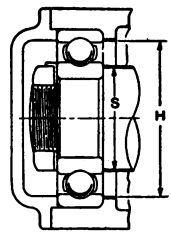
HOUSING SHOULDER HEIGHTS

Single Row Radial, Angular Contact and Double Row Bearings

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.

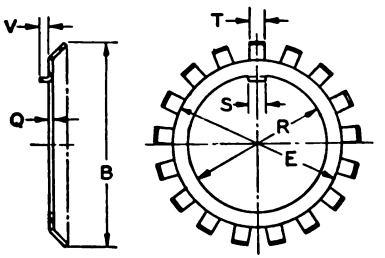


Light Series				Medium Series				Heavy Series			
Basic Brg. No.	Shoulder Diam. "H"			Basic Brg. No.	Shoulder Diam. "H"			Basic Brg. No.	Shoulder Diam. "H"		
	Ave.	Max.	Min.		Ave.	Max.	Min.		Ave.	Max.	Min.
200	1 3/32	1 3/32	1	300	1 7/32	1 1/4	1 3/16				
201	1 5/32	1 5/32	1 1/16	301	1 11/32	1 11/32	1 7/32				
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				
204	1 11/16	1 23/32	1 5/8	304	1 7/8	1 7/8	1 49/64	403	2 5/32	2 7/32	2 3/32
								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 5/16
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				
224	7 29/32	8 1/32	7 11/32	324	9 11/32	9 9/16	8 3/4				
226	8 7/16	8 9/16	7 13/16	326	10	10 1/4	9 13/32				
228	9 1/8	9 5/16	8 17/32	328	10 23/32	11 1/32	10 1/16				
230	9 29/32	10 1/16	9 7/32	330	11 7/16	11 13/16	10 3/4				
232	10 21/32	10 27/32	9 31/32	332	12 3/16	12 9/16	11 15/32				
234	11 13/32	11 9/16	10 5/8	334	12 7/8	13 5/16	12 5/32				
236	11 23/32	11 15/16	10 15/16	336	13 5/8	14 1/16	12 7/8				
238	12 15/32	12 11/16	11 5/8	338	14 9/32	14 25/32	13 15/32				
240	13 3/16	13 7/16	12 5/16	340	15	15 17/32	14 7/32				
244	14 21/32	14 15/16	13 11/16	344	16 15/32	17 3/32	15 19/32				
248	16 3/16	16 15/32	15 5/32	348	17 7/8	18 9/16	16 15/16				
252	17 5/8	17 15/16	16 15/32	352	19 5/16	20 1/16	18 1/32				
256	18 5/16	18 21/32	17 3/32	356	20 3/4	21 19/32	19 3/4				
260	19 25/32	20 5/32	18 15/32								
264	21 1/4	21 11/16	19 7/8								

LOCKWASHER DIMENSIONS

*A. B. E. C. Standard

Locknuts and Lockwashers are not made by New Departure, but may be obtained from The Whittet-Higgins Co., Providence, R. I.



For Standard Locknuts, see following pages.

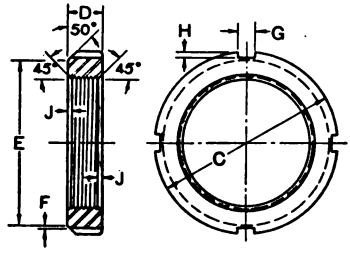
Lock Washer No.	Locknut No.	Brg. No.	Bore R Min.	Width S Min.	Dia. B Max.	Dia. E	Projection V Min.	Width T Min.	No. of Tangs	Thickness Q S.A.E. Std.
W-00	N-00	0	.406	.115	7/8	5/8	1/16	.115	9	.042
W-01	N-01	1	.489	.115	1 1/64	23/32	1/16	.115	9	.042
W-02	N-02	2	.606	.115	1 5/32	13/16	1/16	.115	11	.042
W-03	N-03	3	.684	.115	1 21/64	15/16	1/16	.115	11	.042
W-04	N-04	4	.801	.156	1 17/32	1 1/8	1/16	.156	11	.042
W-05	N-05	5	.989	.156	1 23/32	1 9/32	3/32	.156	13	.050
W-06	N-06	6	1.199	.156	1 59/64	1 1/2	3/32	.156	13	.050
W-07	N-07	7	1.406	.156	2 1/4	1 13/16	3/32	.156	15	.050
W-08	N-08	8	1.625	.250	2 15/32	2	3/32	.219	15	.058
W-09	N-09	9	1.813	.250	2 47/64	2 9/32	1/8	.219	17	.058
W-10	N-10	10	2.000	.250	2 59/64	2 7/16	1/8	.219	17	.058
W-11	N-11	11	2.188	.250	3 7/64	2 21/32	1/8	.219	17	.063
W-12	N-12	12	2.406	.250	3 11/32	2 27/32	1/8	.219	17	.063
W-13	N-13	13	2.594	.250	3 37/64	3 1/16	1/8	.219	19	.063
W-14	N-14	14	2.813	.250	3 53/64	3 5/16	3/16	.219	19	.063
W-15	AN-15	15	3.000	.250	4 1/64	3 9/16	3/16	.313	19	.072
W-16	AN-16	16	3.188	.313	4 3/8	3 27/32	3/16	.313	19	.072
W-17	AN-17	17	3.406	.313	4 5/8	4 1/32	3/16	.313	19	.072
W-18	AN-18	18	3.594	.313	4 15/16	4 9/32	3/16	.313	19	.094
W-19	AN-19	19	3.781	.313	5 7/32	4 9/16	3/16	.313	19	.094
W-20	AN-20	20	4.000	.313	5 1/2	4 13/16	1/4	.313	19	.094
W-21	AN-21	21	4.219	.313	5 45/64	5	1/4	.375	19	094
W-22	AN-22	22	4.406	.313	6 1/16	5 9/32	1/4	.375	19	.125
W-24	AN-24	24	4.813	.313	6 15/32	5 11/16	1/4	.375	19	.125
W-26	AN-26	26	5.219	.375	7 1/32	6 3/16	1/4	.500	19	.125
W-28	AN-28	28	5.594	.500	7 7/16	6 17/32	1/4	.500	19	.125
W-30	AN-30	30	6.000	.500	8 1/16	7 1/16	5/16	.500	19	.156
W-32	AN-32	32	6.375	.500	8 7/16	7 7/16	5/16	.500	19	.156
W-34	AN-34	34	6.781	.625	9 1/16	8 1/32	5/16	.500	19	.156
W-36	AN-36	36	7.156	.625	9 7/16	8 3/8	5/16	.625	19	.156
W-38	AN-38	38	7.563	.625	9 7/8	8 25/32	5/16	.625	19	.156
W-40	AN-40	40	8.000	.750	10 5/16	9 5/32	5/16	.625	19	.156

*Annular Bearing Engineers Committee.

LOCKNUT DIMENSIONS

*A. B. E. C. Standard

Locknuts and Lockwashers are not made by New Departure, but may be obtained from The Whittet-Higgins Co., Providence, R. I.



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	5/8	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 5/16	13/32	1 5/32	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 5/32	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	5/8	4 1/32	1/32	3/8	5/32	5/64	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 9/16	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	5/64	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	5/8	1/4	5/64	26
AN-28	W-28	28	7 3/32	15/16	6 17/32	1/32	5/8	1/4	5/64	28
AN-30	W-30	30	7 11/16	31/32	7 1/16	1/32	5/8	9/32	5/64	30
AN-32	W-32	32	8 1/16	1 1/32	7 7/16	1/32	5/8	9/32	3/32	32
AN-34	W-34	34	8 21/32	1 1/16	8 1/32	1/32	5/8	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

1.967 = 1 15/16

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.

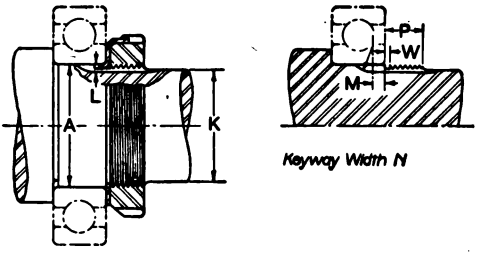
Threads are American (National) Standard Fine, Class 3 fit.

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

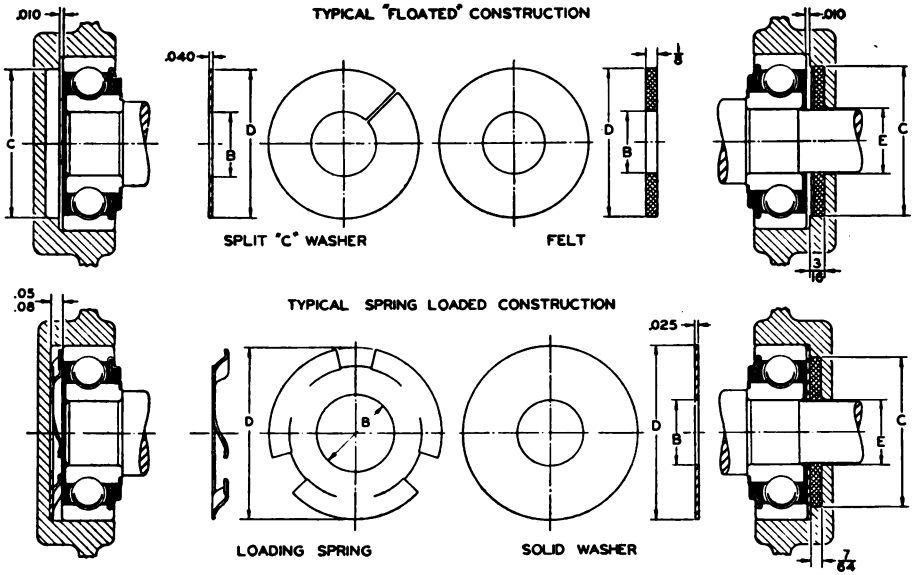


For Shaft Thread Dimensions, see preceding page.

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	11/16
AN-16	16	3.1496	3	1/8	3/8	1/4	5/32	11/16
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	5/32	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

N-D-SEAL FELTS, WASHERS AND SPRINGS

Dimensions and Prices



Brg. No.	Split Washer		Solid Washer		Felt		Load. Spring		Shaft Ext. Hole	Split Washer		Solid Washer		Load. Spring		Felt	
	B	D	B	D	B	D	B	D	E	Cat. No.	Net Price per M	Cat. No.	Net Price per M	Cat. No.	Net Price per M	Cat. No.	Net Price per M
8035	.234	.628	.234	.746	.187	.625	.344	.728	.218	C-05	Prices on Application	P-05	Prices on Application	S-05	Prices On Application	F-05	Prices on Application
8036	.265	.628	.265	.746	.219	.625	.344	.728	.250	C-108		P-108		S-05		F-108	
8006	.265	.753	.265	.943	.219	.750	.453	.926	.250	C-06		P-06		S-08		F-06	
8037	.302	.753	.302	.864	.250	.750	.453	.846	.281	C-07		P-104		S-102		F-07	
8007	.302	.753	.302	.943	.250	.750	.453	.926	.281	C-07		P-07		S-08		F-07	
8038	.343	.753	.343	.864	.312	.750	.453	.846	.343	C-08		P-106		S-102		F-08	
8008	.343	.753	.343	.943	.312	.750	.453	.926	.343	C-08		P-08		S-08		F-08	
8039	.390	.878	.390	1.021	.343	.875	.516	1.004	.375	C-109		P-109		S-09		F-109	
8009	.390	1.003	.390	1.179	.343	1.000	.688	1.164	.375	C-09		P-09		S-10		F-09	
8500	.421	1.003	.421	1.179	.375	1.000	.688	1.164	.406	C-10		P-10		S-10		F-10	
8011	.469	1.065	.469	1.257	.406	1.062	.688	1.240	.437	C-11		P-11		S-12		F-11	
8501	.500	1.065	.500	1.257	.437	1.062	.688	1.240	.468	C-12		P-12		S-12		F-12	
8013	.547	1.065	.547	1.257	.500	1.062	.688	1.240	.531	C-13		P-13		S-12		F-13	
8014	.594	1.191	.594	1.375	.531	1.188	.814	1.360	.562	C-14		P-14		S-15		F-14	
8502	.625	1.191	.625	1.375	.562	1.188	.814	1.360	.593	C-15		P-15		S-15		F-15	
8016	.656	1.191	.656	1.375	.625	1.188	.814	1.360	.656	C-16		P-16		S-15		F-16	
8503	.695	1.378	.695	1.572	.625	1.375	.971	1.562	.656	C-17		P-17		S-17		F-17	
8603	.695	1.612	.695	1.848	.625	1.609	1.189	1.842	.656	C-17-M		P-17-M		S-20		F-17-M	
8504	.812	1.628	.812	1.848	.750	1.625	1.189	1.842	.781	C-20		P-20		S-20		F-20	
8604	.812	1.769	.812	2.045	.750	1.766	1.359	2.022	.781	C-20-M		P-20-M		S-25		F-20-M	
8505	1.015	1.878	1.015	2.045	.875	1.875	1.359	2.022	.906	C-25		P-25		S-25		F-25	
8026	1.062	1.878	1.062	2.045	1.000	1.875	1.359	2.022	1.031	C-26		P-26		S-25		F-26	

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 86 dimension S. Bearings, spring loaded through the outer ring, must be from .0002" to .0005" loose in the housing.

BEARING WEIGHTS

In Pounds

EXTRA LIGHT SINGLE ROW — 3L00					
Plain		One Shield		Two Shields	
3L00	.04	73L00	.05	773L00	.05
3L01	.05	73L01	.05	773L01	.06
3L02	.07	73L02	.08	773L02	.08
3L03	.09	73L03	.10	773L03	.10
3L04	.16	73L04	.16	773L04	.16
3L05	.18	73L05	.19	773L05	.19
3L06	.26	73L06	.26	773L06	.26
3L07	.35	73L07	.35	773L07	.35
3L08	.44	73L08	.44	773L08	.44
3L09	.54	73L09	.54	773L09	.54
3L10	.58	73L10	.59	773L10	.59
3L11	.86	73L11	.86	773L11	.87
3L12	.92	73L12	.93	773L12	.93
3L13	.98	73L13	.98	773L13	.99
3L14	1.36	73L14	1.37	773L14	1.37
3L15	1.45	73L15	1.45	773L15	1.46
3L16	1.92	73L16	1.92	773L16	1.93
3L17	2.05	73L17	2.05	773L17	2.05
3L18	2.58	73L18	2.58	773L18	2.58
3L19	2.67	73L19	2.70	773L19	2.72
3L20	2.78	73L20	2.83	773L20	2.88
3L22	4.34	73L22	4.42	773L22	4.50
3L24	4.73	73L24	4.81	773L24	4.89
3L26	7.19				
3L28	7.66				
3L30	8.61				
3L32	10.63				
3L34	15.42				
3L36	20.36				
3L38	21.27				

EXTRA LIGHT ANGULAR CONTACT — 0L00			
Single		Duplex	
0L00	.05	0L00	.10
0L01	.06	0L01	.12
0L02	.08	0L02	.16
0L03	.08	0L03	.17
0L04	.15	0L04	.30
0L05	.17	0L05	.35
0L06	.26	0L06	.51
0L07	.34	0L07	.67
0L08	.43	0L08	.87
0L09	.53	0L09	1.07
0L10	.58	0L10	1.16
0L11	.82	0L11	1.65
0L12	.92	0L12	1.85
0L13	.97	0L13	1.94
0L14	1.34	0L14	2.69
0L15	1.42	0L15	2.84
0L16	1.91	0L16	3.81
0L17	2.02	0L17	4.03
0L18	2.59	0L18	5.19
0L19	2.69	0L19	5.38
0L20	2.83	0L20	5.66
0L22	4.36	0L22	8.72
0L24	4.73	0L24	9.47
0L26	7.20	0L26	14.41
0L28	7.61	0L28	15.22
0L30	8.56	0L30	17.11
0L32	10.57	0L32	21.14
0L34	15.33	0L34	30.65
0L36	20.23	0L36	40.47

SINGLE ROW — 3000 — LIGHT SERIES									
Plain		One Shield		Two Shields		Snap Ring		Snap Ring and Shield	
3200	.07	7500	.07	77500	.07	43200	.07	47500	.08
3201	.09	7501	.09	77501	.09	43201	.09	47501	.10
3202	.10	7502	.10	77502	.10	43202	.10	47502	.11
3203	.14	7503	.14	77503	.14	43203	.14	47503	.15
3204	.22	7504	.22	77504	.22	43204	.23	47504	.23
3205	.28	7505	.28	77505	.28	43205	.29	47505	.29
3206	.47	7506	.47	77506	.48	43206	.46	47506	.49
3207	.64	7507	.64	77507	.65	43207	.66	47507	.67
3208	.80	7508	.80	77508	.81	43208	.82	47508	.83
3209	.92	7509	.92	77509	.93	43209	.94	47509	.96
3210	1.00	7510	1.00	77510	1.01	43210	1.03	47510	1.05
3211	1.43	7511	1.43	77511	1.44	43211	1.43	47511	1.49
3212	1.88	7512	1.88	77512	1.89				
3213	2.33	7513	2.33	77513	2.34				
3214	2.54	7514	2.54	77514	2.55				
3215	2.62								
3216	3.08								
3217	3.97								
3218	4.84								
3219	5.53								
3220	7.17								
3221	9.09								
3222	11.56								
3224	14.4								
3226	15.8								
3228	19.5								

BEARING WEIGHTS

In Pounds

SINGLE ROW — 3000 — MEDIUM SERIES

Plain		One Shield		Two Shields		Snap Ring		Snap Ring and Shield	
3303	.24	7603	.24	77603	.24				
3304	.34	7604	.34	77604	.34	43304	.35	47604	.35
3305	.53	7605	.53	77605	.53	43305	.54	47605	.55
3306	.74	7606	.74	77606	.75	43306	.76	47606	.77
3307	.99	7607	.99	77607	1.00	43307	1.01	47607	1.03
3308	1.41	7608	1.41	77608	1.42	43308	1.44	47608	1.47
3309	1.85	7609	1.85	77609	1.86	43309	1.89	47609	1.92
3310	2.39	7610	2.40	77610	2.41	43310	2.43	47610	2.47
3311	3.01	7611	3.01	77611	3.02				
3312	3.69	7612	3.70	77612	3.71				
3313	4.41	7613	4.42	77613	4.43				
3314	5.47	7614	5.49	77614	5.51				
3315	6.60								
3316	9.05								
3317	11.25								
3318	12.63								
3319	15.07								
3320	15.80								
3321	19.20								
3322	24.58								
3324	31.6								
3326	38.5								
3328	47.1								

SINGLE ROW — 1000 — LIGHT SERIES

Plain		One Shield		Two Shields		Snap Ring		Snap Ring and Shield	
1206	.49	7206	.49	77206	.50	41206	.50	47206	.51
1207	.68	7207	.68	77207	.69	41207	.70	47207	.71
1208	.87	7208	.87	77208	.88	41208	.89	47208	.90
1209	.99	7209	.99	77209	1.00	41209	1.01	47209	1.03
1210	1.08	7210	1.08	77210	1.09	41210	1.11	47210	1.13
1211	1.52	7211	1.52	77211	1.53	41211	1.56	47211	1.58
1212	2.01	7212	2.01	77212	2.02				
1213	2.44	7213	2.44	77213	2.45				
1214	2.62	7214	2.62	77214	2.63				
1215	2.80								
1216	3.32								
1217	4.26								
1218	5.12								
1219	6.23								
1220	8.70								
1221	10.28								
1222	12.13								

SINGLE ROW — 1000 — MEDIUM SERIES

1304	.35	7304	.35	77304	.35	41304	.36	47304	.36
1305	.56	7305	.56	77305	.56	41305	.57	47305	.58
1306	.83	7306	.83	77306	.84	41306	.85	47306	.86
1307	1.07	7307	1.07	77307	1.08	41307	1.09	47307	1.11
1308	1.49	7308	1.49	77308	1.50	41308	1.52	47308	1.55
1309	2.02	7309	2.02	77309	2.03	41309	2.06	47309	2.09
1310	2.58	7310	2.59	77310	2.60	41310	2.62	47310	2.66
1311	3.30	7311	3.30	77311	3.31				
1312	3.96	7312	3.97	77312	3.98				
1313	5.00	7313	5.01	77313	5.02				
1314	6.77	7314	6.79	77314	6.81				
1315	8.47								
1316	9.75								
1317	11.47								
1318	16.13								
1319	17.47								
1320	19.72								
1321	22.06								
1322	26.28								

BEARING WEIGHTS

In Pounds*

EXTRA SMALL SINGLE ROW — TYPE 30					
Plain		One Shield		Two Shields	
34	.01	7034	.01	77034	.01
35	.02	7035	.02	77035	.02
36	.02	7036	.02	77036	.02
37	.03	7037	.03	77037	.03
38	.03	7038	.03	77038	.03
39	.04	7039	.04	77039	.04

MAGNETO	
ND 5	.01
ND 5-6	.04
ND 5-7	.04
ND 8	.04
ND10	.06
ND12	.06
ND13	.05
ND15	.08
ND16	.09
ND17	.18

DOUBLE ROW — 5000 — LIGHT SERIES					
Plain		One Shield		Two Shields	
5200	.12	5500	.12	55500	.12
5201	.14	5501	.15	55501	.16
5202	.15	5502	.16	55502	.17
5203	.22	5503	.23	55503	.24
5204	.38	5504	.39	55504	.40
5205	.42	5505	.43	55505	.44
5206	.69	5506	.70	55506	.71
5207	1.06	5507	1.07	55507	1.08
5208	1.44	5508	1.45	55508	1.46
5209	1.56	5509	1.57	55509	1.58
5210	1.69	5510	1.70	55510	1.71
5211	2.33	5511	2.34	55511	2.35
5212	3.11	5512	3.12	55512	3.13
5213	3.94				
5214	4.31	5514	4.32	55514	4.33
5215	4.63				
5216	5.88				
5217	7.50				
5218	9.19				
5219	11.25				
5220	13.50				
5222	18.90				

DOUBLE ROW — 5000 — MEDIUM SERIES					
Plain		One Shield		Two Shields	
5303	.42	5603	.43	55603	.44
5304	.50	5604	.52	55604	.52
5305	.82	5605	.84	55605	.86
5306	1.32	5606	1.34	55606	1.36
5307	1.82	5607	1.84	55607	1.86
5308	2.38	5608	2 40	55608	2.42
5309	3.25	5609	3.27	55609	3.29
5310	4.25	5610	4.27	55610	4.29
5311	5.56	5611	5.58	55611	5.60
5312	7.06	5612	7.08	55612	7.10
5313	8.94				
5314	10.63				
5315	12.88				
5316	15.95				
5317	18.65				
5318	22.85				

INCH SERIES — TYPE R *(Weight in ounces)					
Plain		One Shield		Two Shields	
R-2	.05	7-R-2	.05	77-R-2	.06
R-2-A	.12	7-R-2-A	.13	77-R-2-A	.15
R-3	.08	7-R-3	.09	77-R-3	.10
R-4	.16	7-R-4	.18	77-R-4	.21
R-4-A	.26	7-R-4-A	.30	77-R-4-A	.33
R-6	.30	7-R-6	.35	77-R-6	.39
R-8	.63	7-R-8	.72	77-R-8	.80
R-10	1.29	7-R-10	1.47	77-R-10	1.65
R-12	1.67	7-R-12	1.95	77-R-12	2.22
R-14	2.75	7-R-14	3.14	77-R-14	3.52
R-16	3.06	7-R-16	3.49	77-R-16	3.92
R-18	3.18	7-R-18	3.59	77-R-18	4.00

BEARING WEIGHTS

In Pounds

ANGULAR CONTACT — 20,000

Light Series		Medium Series	
20201	.10	20301	.15
20202	.12	20302	.20
20203	.16	20303	.26
20204	.26	20304	.37
20205	.33	20305	.61
20206	.51	20306	.88
20207	.73	20307	1.19
20208	.92	20308	1.63
20209	.98	20309	2.19
20210	1.24	20310	2.78
20211	1.60	20311	3.59
20212	2.04	20312	4.50
20213	2.56	20313	5.65
20214	2.76	20314	6.72
20215	3.07	20315	8.13
20216	3.74	20316	9.36
20217	4.88	20317	11.40
20218	6.00	20318	13.32
20219	7.25	20319	15.38
20220	8.50	20320	17.88
20221	10.32	20321	21.50
20222	11.95	20322	30.19
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
		20336	95.4
20236	41.4		
20238	49.6		
20240	59.0		

DUPLEX ANGULAR CONTACT — 20,000

Light Series		Medium Series	
20201	.20		
20202	.24		
20203	.32	20303	.52
20204	.52	20304	.64
20205	.66	20305	1.22
20206	1.02	20306	1.76
20207	1.46	20307	2.38
20208	.84	20308	3.26
20209	1.96	20309	4.38
20210	2.48	20310	5.56
20211	3.20	20311	7.18
20212	4.08	20312	9.00
20213	5.12	20313	11.30
20214	5.52	30214	13.44
20215	6.14	20315	16.26
20216	7.58	20316	18.72
20217	9.76	20317	22.80
20218	12.00	20318	26.64
20219	14.50	20319	30.76
20220	17.00	30320	35.76
20221	20.64	20321	43.00
20222	23.90	20322	60.38

ANGULAR CONTACT — 30,000

Light Series		Medium Series	
30204	.26	30304	.37
30205	.33	30305	.61
30206	.51	30306	.88
30207	.73	30307	1.20
30208	.92	30308	1.64
30209	.98	30309	2.20
30210	1.24	30310	2.79
30211	1.60	30311	3.60
30212	2.04	30312	4.51
30213	2.56	30313	5.67
30214	2.76	30314	6.74
30215	3.07	30315	8.15
30216	3.74	30316	9.38
30217	4.89	30317	11.43
30218	6.02	30318	13.35
30219	7.27	30319	15.42
30220	8.53	30320	17.92
30221	10.35	30321	21.54
30222	11.99	30322	30.24
30224	14.30		
30226	16.12		
30228	20.36		

DUPLEX ANGULAR CONTACT — 30,000

Light Series		Medium Series	
30204	.52	30304	.74
30205	.66	30305	1.22
30206	1.02	30306	1.76
30207	1.46	30307	2.40
30208	1.84	30308	3.28
30209	1.96	30309	4.40
30210	2.48	30310	5.58
30211	3.20	30311	7.20
30212	4.08	30312	9.02
30213	5.12	30313	11.34
30214	5.52	30314	13.48
30215	6.14	30315	16.30
30216	7.48	30316	18.76
30217	9.78	30317	22.86
30218	12.04	30318	26.70
30219	14.54	30319	30.84
30220	17.06	30320	35.84
30221	20.70	30321	43.08
30222	23.98	30322	60.48
30224	28.60		
30226	32.25		
30228	40.72		

BEARING WEIGHTS

In Pounds

N-D-SEAL — 8000						SNAP RING N-D-SEAL — 8000					
One Seal		Shield and Seal		Double Seal		One Seal		Shield and Seal		Double Seal	
8035	.022	87035	.023	88035	.026						
8036	.024	87036	.025	88036	.027						
8006	.046	87006	.048	88006	.055						
8007	.045	87007	.047	88007	.051						
8037	.037	87037	.039	88037	.043						
8008	.043	87008	.044	88008	.048						
8038	.036	87038	.038	88038	.040						
8039	.060	87039	.063	88039	.070						
8009	.078	87009	.095	88009	.105	48009	.083	487009	.100	488009	.110
8500	.075	87500	.077	88500	.091	48500	.080	487500	.082	488500	.096
8011	.099	87011	.101	88011	.104	48011	.104	487011	.106	488011	.108
8501	.095	87501	.097	88501	.099	48501	.100	487501	.102	488501	.104
8013	.091	87013	.093	88013	.095	48013	.096	487013	.098	488013	.100
8014	.111	87014	.115	88014	.125	48014	.116	487014	.120	488014	.130
8502	.106	87502	.108	88502	.119	48502	.111	487502	.113	488502	.124
8016	.101	87016	.105	88016	.114	48016	.106	487016	.110	488016	.119
8503	.150	87503	.154	88503	.166	48503	.156	487503	.160	488503	.172
8504	.232	87504	.237	88504	.259	48504	.241	487504	.246	488504	.268
8505	.287	87505	.292	88505	.304	48505	.297	487505	.302	488505	.314
8026	.277	87026	.282	88026	.294	48026	.287	487026	.292	488026	.304
8506	.495	87506	.506	88506	.571	48506	.52	487506	.53	488506	.59
8507	.695	87507	.708	88507	.804	48507	.73	487507	.74	488507	.83
8508	1.033	87508	1.182	88508	1.182	48508	1.07	487508	1.08	488508	1.12
8509	1.19	87509	1.20	88509	1.22						
Medium Series						Medium Series					
8603	.254	87603	.257	88603	.279	48603	.26	487603	.26	488603	.28
8604	.345	87604	.352	88604	.398	48604	.35	487604	.36	488604	.40

N-D-SEAL — WC-8000					
One Seal		Shield and Seal		Double Seal	
WC-8035	.030	WC-87035	.031	WC-88035	.034
WC-8036	.032	WC-87036	.033	WC-88036	.035
WC-8006	.049	WC-87006	.050	WC-88006	.058
WC-8007	.048	WC-87007	.049	WC-88007	.045
WC-8037	.039	WC-87037	.040	WC-88037	.054
WC-8008	.045	WC-87008	.047	WC-88008	.041
WC-8038	.036	WC-87038	.038	WC-88038	.050
WC-8039	.067	WC-87039	.070	WC-88039	.077
WC-8009	.092	WC-87009	.095	WC-88009	.109
WC-8500	.089	WC-87500	.092	WC-88500	.105
WC-8011	.103	WC-87011	.105	WC-88011	.108
WC-8501	.100	WC-87501	.102	WC-88501	.104
WC-8013	.096	WC-87013	.098	WC-88013	.100
WC-8014	.118	WC-87014	.120	WC-88014	.132
WC-8502	.113	WC-87502	.115	WC-88502	.126
WC-8016	.106	WC-87016	.108	WC-88016	.119
WC-8503	.163	WC-87503	.167	WC-88503	.179
WC-8504	.250	WC-87504	.254	WC-88504	.277
WC-8505	.296	WC-87505	.301	WC-88505	.313
WC-8026	.286	WC-87026	.291	WC-88026	.303
WC-8506	.557	WC-87506	.568	WC-88506	.633
WC-8507	.703	WC-87507	.716	WC-88507	.812
WC-8508	1.048	WC-87508	1.063	WC-88508	1.105

REAR WHEEL 88100	
88136	.69
88107	.81
88127E	1.0
88108E	1.23
88128	1.13
88109	1.31
88110	1.33
D88609	2.26
CONVEYOR CB-504	
CB-504	.38

CLUTCH RELEASE CT22-44	
CT22	.97
CT24-A	.53
CT27	.45
CT30-F	.62
CT30	.73
CT32	.69
CT34	.87
CT34-36	.79
CT36	.75
CT38	1.31
CT40	1.69

PUMP SHAFT 885100	
885140	.557
885141	.642
885144	.693
885146	.596
885154	.413
885155	.591
885156	.592
885158	.704
885159	.656
885160	.564
885167	.584

FRONT WHEEL — 9000							
Comp. Brg.	Wt.	Sep. Assem.	Wt.	Inner Race	Wt.	Outer Race	Wt.
909001	.37	909701	.11	909501	.09	909601	.17
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
909052	.95	909752	.26	909552	.25	909652	.54

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

Single Row—Type 3000—with Shields*

Light Series

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			

Medium Series

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.

INTERCHANGEABLE BEARINGS

Single Row—Type 1000

Light Series

N. D.	Fafnir	M. R. C.	Federal	Norma	C. J. B.	McGill
1206	206 W	206 M	1206 M	MT 206	M-6206	206 N
1207	207 W	207 M	1207 M	MT 207	M-6207	207 N
1208	208 W	208 M	1208 M	MT 208	M-6208	208 N
1209	209 W	209 M	1209 M	MT 209	M-6209	209 N
1210	210 W	210 M	1210 M	MT 210	M-6210	210 N
1211	211 W	211 M	1211 M	MT 211	M-6211	211 N
1212	212 W	212 M	1212 M	MT 212	M-6212	212 N
1213	213 W	213 M	1213 M	MT 213	M-6213	213 N
1214	214 W	214 M	1214 M	170 gap	M-6214	214 N
1215	215 W	215 M	1215 M	175 gap	M-6215	215 N
1216	216 W	216 M	1216 M	180 gap	M-6216	216 N
1217	217 W	217 M	1217 M	185 gap	M-6217	217 N
1218	218 W	218 M	1218 M	190 gap	M-6218	218 N
1219	219 W	219 M	1219 M	195 gap	M-6219	219 N
1220	220 W	220 M	1220 M	200 gap	M-6220	220 N
1221	221 W	221 M	1221 M	205 gap	M-6221	221 N
1222	222 W	222 M	1222 M	210 gap	M-6222	222 N

Medium Series

N. D.	Fafnir	M. R. C.	Federal	Norma	C. J. B.	McGill
1304	304 W	304 M	1304 M	MT 304	M-6304	304 N
1305	305 W	305 M	1305 M	MT 305	M-6305	305 N
1306	306 W	306 M	1306 M	MT 306	M-6306	306 N
1307	307 W	307 M	1307 M	MT 307	M-6307	307 N
1308	308 W	308 M	1308 M	MT 308	M-6308	308 N
1309	309 W	309 M	1309 M	MT 309	M-6309	309 N
1310	310 W	310 M	1310 M	MT 310	M-6310	310 N
1311	311 W	311 M	1311 M	MT 311	M-6311	311 N
1312	312 W	312 M	1312 M	MT 312	M-6312	312 N
1313	313 W	313 M	1313 M	365 gap	M-6313	313 N
1314	314 W	314 M	1314 M	370 gap	M-6314	314 N
1315	315 W	315 M	1315 M	375 gap	M-6315	315 N
1316	316 W	316 M	1316 M	380 gap	M-6316	316 N
1317	317 W	317 M	1317 M	385 gap	M-6317	317 N
1318	318 W	318 M	1318 M	390 gap	M-6318	318 N
1319	319 W	319 M	1319 M	395 gap	M-6319	319 N
1320	320 W	320 M	1320 M	400 gap	M-6320	320 N
1321	321 W	321 M	1321 M	405 gap	M-6321	321 N
1322	322 W	322 M	1322 M	410 gap	M-6322	322 N

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

INTERCHANGEABLE BEARINGS

Single Row—Type 1000—with Shields*

Light Series

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	

Medium Series

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 Single Row—Type 30—with Shields*

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 200M[illegible]FF. Federal 1200MFF-1300MFF. Norma Hoffman MT200PP-MT300PP.

INTERCHANGEABLE BEARINGS

Single Row—Type 1000—with Snap Ring

Light Series

N. D.	Fafnir	M. R. C.	Federal
41206	206 WG	206 MG	1206 MG
41207	207 WG	207 MG	1207 MG
41208	208 WG	208 MG	1208 MG
41209	209 WG	209 MG	1209 MG
41210	210 WG	210 MG	1210 MG
41211	211 WG	211 MG	1211 MG
41212	212 WG	212 MG	1212 MG

Medium Series

N. D.	Fafnir	M. R. C.	Federal
41304	304 WG	304 MG	1304 MG
41305	305 WG	305 MG	1305 MG
41306	306 WG	306 MG	1306 MG
41307	307 WG	307 MG	1307 MG
41308	308 WG	308 MG	1308 MG
41309	309 WG	309 MG	1309 MG
41310	310 WG	310 MG	1310 MG
41311	311 WG	311 MG	1311 MG

Type 1000—with Snap Ring and Shield

Light Series

N. D.	Fafnir	M. R. C.	Federal
47206	206 WDG	206 MFG	1206 MGF
47207	207 WDG	207 MFG	1207 MGF
47208	208 WDG	208 MFG	1208 MGF
47209	209 WDG	209 MFG	1209 MGF
47210	210 WDG	210 MFG	1210 MGF
47211	211 WDG	211 MFG	1211 MGF
47212	212 WDG	212 MFG	1212 MGF

Medium Series

N. D.	Fafnir	M. R. C.	Federal
47304	304 WDG	304 MFG	1304 MGF
47305	305 WDG	305 MFG	1305 MGF
47306	306 WDG	306 MFG	1306 MGF
47307	307 WDG	307 MFG	1307 MGF
47308	308 WDG	308 MFG	1308 MGF
47309	309 WDG	309 MFG	1309 MGF
47310	310 WDG	310 MFG	1310 MGF
47311	311 WDG	311 MFG	1311 MGF

Single Row—Type 3000—with Snap Ring

Light Series

N. D.	Fafnir	M. R. C.	Federal
43205	205 KG	205 SG	1205 CG
43206	206 KG	206 CG	1206 CG
43207	207 KG	207 SG	1207 CG
43208	208 KG	208 CG	1208 CG
43209	209 KG	209 CG	1209 CG
43210	210 KG	210 SG	1210 CG
43211	211 KG	211 SG	1211 CG
43212	212 KG	212 CG	1212 CG

Medium Series

N. D.	Fafnir	M. R. C.	Federal
43304	304 KG	304 SG	
43305	305 KG	305 SG	1305 CG
43306	306 KG	306 SG	1306 CG
43307	307 KG	307 SG	1307 CG
43308	308 KG	308 SG	1308 CG
43309	309 KG	309 SG	1309 CG
43310	310 KG	310 SG	1310 CG
43311	311 KG	311 SG	1311 CG

Type 3000—with Snap Ring and Shield

Light Series

N. D.	Fafnir	M. R. C.	Federal
47505	205 KDG	205 SFG	1205 GF
47506	206 KDG	206 SFG	1206 GF
47507	207 KDG	207 SFG	1207 GF
47508	208 KDG	208 CFG	1208 GF
47509	209 KDG	209 CFG	1209 GF
47510	210 KDG	210 CFG	1210 GF
47511	211 KDG	211 SFG	1211 GF
47512	212 KDG	212 CFG	1212 GF

Medium Series

N. D.	Fafnir	M. R. C.	Federal
47604	304 KDG		1304 GF
47605	305 KDG	305 SFG	1305 GF
47606	306 KDG	306 SFG	1306 GF
47607	307 KDG	307 SFG	1307 GF
47608	308 KDG	308 SFG	1308 GF
47609	309 KDG	309 SFG	1309 GF
47610	310 KDG	310 SFG	1310 GF
47611	311 KDG	311 SFG	1311 GF

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

INTERCHANGEABLE BEARINGS

Angular Contact—Type 20,000

Light Series

N. D.	S. K. F.	Norma	M. R. C.	Fafnir
20204	7204	120 AC	7204	7204
20205	7205	125 AC	7205	7205
20206	7206	130 AC	7206	7206
20207	7207	135 AC	7207	7207
20208	7208	140 AC	7208	7208
20209	7209	145 AC	7209	7209
20210	7210	150 AC	7210	7210
29211	7211	155 AC	7211	7211
20212	7212	160 AC	7212	7212
20213	7213	165 AC	7213	7213
20214	7214	170 AC	7214	7214
20215	7215	175 AC	7215	7215
20216	7216	180 AC	7216	7216
20217	7217	185 AC	7217	7217
20218	7218	190 AC	7218	7218
20219	7219	195 AC	7219	7219
20220	7220	200 AC	7220	7220
20221	7221		7221	7221
20222	7222		7222	7222

Medium Series

N. D.	S. K. F.	Norma	M. R. C.	Fafnir
20304	7304	320 AC	7304	7304
20305	7305	325 AC	7305	7305
20306	7306	330 AC	7306	7306
20307	7307	335 AC	7307	7307
20308	7308	340 AC	7308	7308
20309	7309	345 AC	7309	7309
30310	7310	350 AC	7310	7310
20311	7311	355 AC	7311	7311
20312	7312	360 AC	7312	7312
20313	7313	365 AC	7313	7313
20314	7314	370 AC	7314	7314
20315	7315	375 AC	7315	7315
20316	7316	380 AC	7316	7316
20317	7317	385 AC	7317	7317
20318	7318	390 AC	7318	7318
20319	7319	395 AC	7319	7319
20320	7320	400 AC	7320	7320
20321	7321		7321	7321
20322	7322	410 AC	7322	7322

Extra-Large Angular Contact—Type 20,000

Light Series

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

Medium Series

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

Angular Contact—Type 30,000

Light Series

N. D.	M. R. C.	McGill	Fafnir
30204	7204 P	7204	
30205	7205 P	7205	
30206	7206 P	7206	
30207	7207 P	7207	
30208	7208 P	7208	
30209	7209 P	7209	
30210	7210 P	7210	
30211	7211 P	7211	
30212	7212 P	7212	7212 PW
30213	7213 P	7213	7213 PW
30214	7214 P	7214	7214 PW
30215	7215 P	7215	7215 PW
30216	7216 P	7216	7216 PW
30217	7217 P	7217	7217 PW
30218	7218 P	7218	7218 PW
30219	7219 P	7219	7219 PW
30220	7220 P	7220	7220 PW
30221	7221 P	7221	
30222	7222 P		7222 PW

Medium Series

N. D.	M. R. C.	McGill	Fafnir
30304	7304 P	7304	
30305	7305 P	7305	
30306	7306 P	7306	
30307	7307 P	7307	
30308	7308 P	7308	
30309	7309 P	7309	
30310	7310 P	7310	7310 PW
30311	7311 P	7311	7311 PW
30312	7312 P	7312	7312 PW
30313	7313 P	7313	7313 PW
30314	7314 P	7314	7314 PW
30315	7315 P	7315	7315 PW
30316	7316 P	7316	7316 PW
30317	7317 P	7317	7317 PW
30318	7318 P	7318	7318 PW
30319	7319 P	7319	7319 PW
30320	7320 P	7320	7320 PW
30321	7321 P	7321	7321 PW
30322	7322 P	7322	7322 PW

INTERCHANGEABLE BEARINGS

Extra-Large Single Row—Type 3000

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

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

Magneto Bearings

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	10	**FB 10**	**E 10**	**E 10**	**E 10**
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**

N-D-Seal—Type 8000

N. D.	Hoover	Federal	Norma	M. R. C.
8006	8006	7006 X5	7006	
8007	8007	7007 X5	7007	
8008	8008	7008 X5	7008	
8009	8009	7009 X5	7009	
8500	8500	7010 X5	7010	200 FS
8011	8011	7011 X5	7011	
8501	8501	7012 X5	7012	201 FS
8013	8013	7013 X5	7013	
8014	8014	7014 X5	7014	
8502	8502	7015 X5	7015	202 FS
8016	8016	7016 X5	7016	
8503	8503	7017 X5	7017	203 FS
8504	8504	7020 X5	7020	204 FS
8505	8505	7025 X5	7025	205 FS

Clutch Release Bearings

N. D.	M. R. C.	S. K. F.	Federal	B. C. A.
CT 34	211 CTC	211 CTQ	211 CT4	CWY-68.32
CT 36	211 CTQ		211 CTQ	CY-72
CT 40	42G			C-80

INTERCHANGEABLE BEARINGS

Inch Series—Type R

N. D.	Federal	Fafnir	Norma	Torrington
R- 2	N-463-R			
R- 2A	33-4		S- 0-R	
R- 3				
R- 4	XA-134-R			
R- 4A	S- 1-R	S- 1	S- 1-R	TR-1
R- 6	S- 3-R	S- 3	S- 3-R	TR-3
R- 8	S- 5-R	S- 5	S- 5-R	
R-10	S- 7-R	S- 7	S- 7-R	TR-7
R-12	S- 8-R	S- 8	S- 8-R	
R-14	S- 9-R		S- 9-R	
R-16	S-10-R	S-10	S-10-R	
R-18	S-11-R		S-11-R	

Inch Series—Type R—One Shield

N. D.	Federal		Norma	Torrington
7R- 2				
7R- 2A				
7R- 3				
7R- 4				
7R- 4A	S- 1-RF		S- 1-R-P	TR-71
7R- 6	S- 3-RF		S- 3-R-P	TR-73
7R- 8	S- 5-RF		S- 5-R-P	
7R-10	S- 7-RF		S- 7-R-P	TR-77
7R-12	S- 8-RF		S- 8-R-P	
7R-14	S- 9-RF		S- 9-R-P	
7R-16	S-10-RF		S-10-R-P	
7R-18	S-11-RF		S-11-R-P	

Inch Series—Type R—Two Shields

N. D.	Federal		Norma	Torrington
77R- 2				
77R- 2A				
77R- 3				
77R- 4				
77R- 4A	S- 1-RFF		S- 1-R-PP	TR-771
77R- 6	S- 3-RFF		S- 3-R-PP	TR-773
77R- 8	S- 5-RFF		S- 5-R-PP	
77R-10	S- 7-RFF		S- 7-R-PP	TR-777
77R-12	S- 8-RFF		S- 8-R-PP	
77R-14	S- 9-RFF		S- 9-R-PP	
77R-16	S-10-RFF		S-10-R-PP	
77R-18	S-11-RFF		S-11-R-PP	

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.....Out 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

Type 30 EXTRA SMALL

34	Spaab
35	Spaby
36	Spaft
37	Spaks
38	Sparm
39	Spath

SINGLE SHIELD

7034	Paltab
7035	Paltabys
7036	Paltaft
7037	Paltaks
7038	Paltarm
7039	Paltath

DOUBLE SHIELD

77034	Prespab
77035	Prespaby
77036	Prespaft
77037	Prespaks
77038	Presparm
77039	Prespath

MAGNETO

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

INCH SERIES Type F

F-2	Insdm
F-2-A	Insoy
F-3	Insen
F-4	Insff
F-4-A	Insag
F-6	Inshw
F-8	Inska
F-10	Insmv
F-12	Insrb
F-14	Inste
F-16	Insvh
F-18	Inszq

SINGLE SHIELD

7F-2	Iledm
7F-2-A	Ileoy
7F-3	Ileen
7F-4	Ileff
7F-4-A	Ileag
7F-6	Ilehw
7F-8	Ileka
7F-10	Ilemv
7F-12	Ilerb
7F-14	Ilete
7F-16	Ilevh
7F-18	Ilezq

DOUBLE SHIELD

77F-2	Imgdm
77F-2-A	Imgoy
77F-3	Imgen
77F-4	Imgff
77F-4-A	Imgag
77F-6	Imghw
77F-8	Imgka
77F-10	Imgmv
77F-12	Imgrb
77F-14	Imgte
77F-16	Imgvh
77F-18	Imgzq

INCH SERIES Type R

R-2	Itrdm
R-2-A	Itroy
R-3	Itren
R 4	Itrff
R-4-A	Itrag
R-6	Itrhw
R-8	Itrka
R-10	Itrmv
R-12	Itrrb
R-14	Itrte
R-16	Itrvh
R-18	Itrzq

SINGLE SHIELD

7R-2	Iwtdm
7R-2-A	Iwtoy
7R-3	Iwten
7R-4	Iwtff
7R-4-A	Iwtag
7R-6	Iwthw
7R-8	Iwtka
7R-10	Iwtmv
7R-12	Iwtrb
7R-14	Iwtte
7R-16	Iwtvh
7R-18	Iwtzq

DOUBLE SHIELD

77R-2	Ixxdm
77R-2-A	Ixxoy
77R-3	Ixxen
77R-4	Ixxff
77R-4-A	Ixxag
77R-6	Ixxhw
77R-8	Ixxka
77R-10	Ixxmv
77R-12	Ixxrb
77R-14	Ixxte
77R-16	Ixxvh
77R-18	Ixxzq

Type 3L00 EXTRA LIGHT

3L00	Ckabl
3L01	Ckacg
3L02	Ckadm
3L03	Ckaen
3L04	Ckaff
3L05	Ckags
3L06	Ckahw
3L07	Ckajk
3L08	Ckaka
3L09	Ckalu
3L10	Ckamv
3L11	Ckanx
3L12	Ckarb
3L13	Ckasd
3L14	Ckate
3L16	Ckavh
3L18	Ckazq
3L20	Ckbcy
3L22	Ckbef
3L24	Ckbgi
3L26	Ckbhk
3L28	Ckblo
3L30	Ckbmj
3L34	Ckbqr
3L36	Ckbst
3L38	Ckcax

SINGLE SHIELD

73L00	Chcbl
73L01	Chccg
73L02	Chcdm
73L03	Chcen
73L04	Chcff
73L05	Chcgs
73L06	Chchw
73L07	Chcjk
73L08	Chcka
73L09	Chclu
73L10	Chcmv
73L11	Chcnx
73L12	Chcrb
73L13	Chcsd
73L14	Chcte
73L15	Chcut
73L16	Chcvh
73L17	Chcyj
73L18	Chczq
73L19	Chdaa
73L20	Chdcy
73L21	Chdde
73L22	Chdef
73L24	Chdgi

DOUBLE SHIELD

773L00	Ciebl
773L01	Ciecg
773L02	Ciedm
773L03	Cieen
773L04	Cieff
773L05	Ciegs
773L06	Ciehw
773L07	Cieik
773L08	Cieka
773L09	Cielu
773L10	Ciemv
773L11	Cienx
773L12	Cierb
773L13	Ciesd
773L14	Ciete
773L15	Cieut
773L16	Cievh
773L17	Cieyj
773L18	Ciezq
773L19	Cifaa
773L20	Cifcy
773L21	Cifde
773L22	Cifef
773L24	Cifgi

Type 3000 LIGHT SERIES

3200	Exaar
3201	Exabane
3202	Exabat
3203	Exacale
3204	Exacer
3205	Exacinate
3206	Exact
3207	Exade
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
3222	Eximolis
3224	Exmah
3226	Exmbi
3228	Exmek

SINGLE SHIELD LIGHT SERIES

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

DOUBLE SHIELD LIGHT SERIES

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

SNAP RING LIGHT SERIES

43200	Crxhu
43201	Crxip
43202	Crxly
43203	Crxnr
43204	Crxow
43205	Crexact
43206	Crexade
43207	Crexalf
43208	Crexand
43209	Crexel
43210	Crexella
43211	Crexelon

SNAP RING AND SHIELD LIGHT SERIES

47500	Luxab
47501	Luxcg
47502	Luxdm
47503	Luxff
47504	Luxgs
47505	Luxact
47506	Luxade
47507	Luxalf
47508	Luxand
47509	Luxel
47510	Luxella
47511	Luxelon

CODE FOR BEARINGS

Bearing	Code

Type 3000 MEDIUM SERIES

3303	Exhalet
3304	Exhale
3305	Exhort
3306	Exhume
33u7	Expel
33u8	Expellon
33u9	Exploit
3310	Expose
3311	Expunge
3312	Exsind
3313	Exsect
3314	Exsero
3315	Exsiccus
3316	Exsider
3317	Exsifan
3318	Exsigurn
3319	Exsimmer
3320	Exsissing
3322	Exsodos
3326	Exsbo

SINGLE SHIELD MEDIUM SERIES

7603	Vexsanins
7604	Vexsano
7605	Vexsanol
7606	Vexsanon
7607	Vexsanop
7608	Vexsanore
7609	Vexsanos
7610	Vexsanott
7611	Vexsany
7612	Vexsapper
7613	Vexsappist
7614	Vexsapphic

DOUBLE SHIELD MEDIUM SERIES

77603	Presanins
77604	Presano
77605	Presanol
77606	Presanon
77607	Presanop
77608	Presanore
77609	Presanos
77610	Presanott
77611	Presany
77612	Presapper
77613	Presappist
77614	Presapphic

SNAP RING MEDIUM SERIES

43303	Crexift
43304	Crexinate
43305	Crexindo
43306	Crexise
43307	Crexoild
43308	Crexorth
43309	Crexosec
43310	Crexult

SNAP RING AND SHIELD MEDIUM SERIES

47603	Luxift
47604	Luxinate
47605	Luxindo
47606	Luxise
47607	Luxoild
47608	Luxorth
47609	Luxosec
47610	Luxult

Type 1000 LIGHT SERIES

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
1222	Siclo

SINGLE SHIELD LIGHT SERIES

7206	Wxsabis
7207	Wxsabit
7208	Wxsal
7209	Wxsalor
7210	Wxsalis
7211	Wxsalit
7212	Wxsalve
7213	Wxsalver
7214	Wxsash

DOUBLE SHIELD LIGHT SERIES

77206	Parsabis
77207	Parsabit
77208	Parsal
77209	Parsalor
77210	Parsalis
77211	Parsalit
77212	Parsalve
77213	Parsalver
77214	Parsash

SNAP RING LIGHT SERIES

41206	Snapalis
41207	Snapalite
41208	Snapalor
41209	Snapalver
41210	Snapand
41211	Snapanole

SNAP RING AND SHIELD LIGHT SERIES

47206	Logalis
47207	Logalite
47208	Logalor
47209	Logalver
47210	Logand
47211	Loganole

Type 1000 MEDIUM SERIES

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
1322	Sicyonic

SINGLE SHIELD MEDIUM SERIES

7304	Wxsano
7305	Wxsanol
7306	Wxsanon
7307	Wxsanop
7308	Wxsanore
7309	Wxsanos
7310	Wxsanott
7311	Wxsany
7312	Wxsapper
7313	Wxsappist
7314	Wxsapphic

DOUBLE SHIELD MEDIUM SERIES

77304	Parsano
77305	Parsanol
77306	Parsanon
77307	Parsanop
77308	Parsanore
77309	Parsanos
77310	Parsanott
77311	Parsany
77312	Parsapper
77313	Parsappist
77314	Parsapphic

SNAP RING MEDIUM SERIES

41304	Snapanopt
41305	Snapanorb
41306	Snapanosh
41307	Snapanot
41308	Snapany
41309	Snapaze
41310	Snaper

SNAP RING AND SHIELD MEDIUM SERIES

47304	Loganopt
47305	Loganorb
47306	Loganosh
47307	Loganot
47308	Logany
47309	Logaze
47310	Loger

Type 5000 LIGHT SERIES

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

SINGLE SHIELD LIGHT SERIES

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

DOUBLE SHIELD LIGHT SERIES

55500	Xwxay
55501	Xwxbz
55502	Xwxdm
55503	Xwxen
55504	Xwxff
55505	Xwxgs
55506	Xwxie
55507	Xwxol
55508	Xwxpd
55509	Xwxlu
55510	Xwxmv
55512	Xwxrb
55514	Xwxte

Type 5000 MEDIUM SERIES

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
5318	Vysoq

CODE FOR BEARINGS

Bearing	Code

Type 5000
MEDIUM SERIES
SINGLE SHIELD

5603	Wxohk
5604	Wxdole
5605	Wxdolor
5606	Wxdoom
5607	Wxdope
5608	Wxdoric
5609	Wxdorme
5610	Wxdorp
5611	Wxdorter
5612	Wxdwo

MEDIUM SERIES
DOUBLE SHIELD

55603	Xwzbn
55604	Xwzft
55605	Xwzeh
55606	Xwzuz
55607	Xwzzb
55608	Xwzgi
55609	Xwzsw
55610	Xwzho
55611	Xwznu
55612	Xwzrx

Type 0L00
SINGLE

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
0L16	Dltvh
0L18	Dlfzq
0L20	Dlgcy
0L22	Dlgef
0L24	Dlggi
0L26	Dlghk
0L28	Dlglo
0L30	Dlgmj
0L36	Dlgst

DUPLEX DF

0L00	Daobl
0L01	Daocg
0L02	Daodm
0L03	Daoen
0L04	Daoff
0L05	Daogs
0L06	Daohw
0L07	Daojk
0L08	Daoka
0L09	Daolu
0L10	Daomv
0L11	Daonx
0L12	Daorb
0L13	Daosd
0L14	Daote
0L16	Daovh
0L18	Daozq
0L20	Dapcy
0L22	Dapet
0L24	Dapgi
0L26	Daphk
0L28	Daplo
0L30	Dapmj
0L36	Dapsw

DUPLEX DB

0L00	Obbbl
0L01	Obbcg
0L02	Obbdm
0L03	Obben
0L04	Obbff
0L05	Obbgs
0L06	Obbhw
0L07	Obbjk
0L08	Obbka
0L09	Obblu
0L10	Obbmv
0L11	Obbnx
0L12	Obbrb
0L13	Obbsd
0L14	Obbte
0L16	Obbvh
0L18	Obbzq
0L20	Obccy
0L22	Obcet
0L24	Obcgi
0L26	Obchk
0L28	Obclo
0L30	Obcmj
0L36	Obcsw

DUPLEX DT

0L00	Lttbl
0L01	Lttcg
0L02	Lttdm
0L03	Ltten
0L04	Lttff
0L05	Lttgs
0L06	Ltthw
0L07	Lttjk
0L08	Lttka
0L09	Lttlu
0L10	Lttmv
0L11	Lttnx
0L12	Lttrb
0L13	Lttsd
0L14	Ltttc
0L16	Lttvh
0L18	Lttzq
0L20	Ltvcy
0L22	Ltvet
0L24	Ltvgi
0L26	Ltvhk
0L28	Ltvlo
0L30	Ltvmj
0L36	Ltvsw

Type 20,000
LIGHT SERIES
SINGLE

20200	Besate
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
20222	Besilo
20224	Beseh
20226	Besjb
20228	Besri
20230	Besxo

LIGHT SERIES
DUPLEX DF

20200	Dfate
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
20222	Dfsilo
20224	Dfseh
20226	Dfsjb
20228	Dfsri
20230	Dfsxo

LIGHT SERIES
DUPLEX DB

20200	Dbate
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
20222	Dbsilo
20224	Dbteh
20226	Dbtjb
20228	Dbtri
20230	Dbtxo

LIGHT SERIES
DUPLEX DT

20200	Dtate
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
20222	Dtsilo
20224	Dtxeh
20226	Dtxjb
20228	Dtxri
20230	Dtxxo

CODE FOR BEARINGS

Bearing	Code
Type 20,000 MEDIUM SERIES SINGLE	
20303	Besna
20304	Besano
20305	Besanole
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
20322	Besion
20324	Botdu
20326	Botjb
20328	Botri
20330	Botxo
MEDIUM SERIES DUPLEX DF	
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
20322	Dfsion
20324	Dfotd
20326	Dfoue
20328	Dfovf
20330	Dfowg
MEDIUM SERIES DUPLEX DB	
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
20322	Dbsion
20324	Dbhud
20326	Dbhve
20328	Dbhwf
20330	Dbhxg

Bearing	Code
MEDIUM SERIES DUPLEX DT	
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
20322	Dtsion
20324	Dtjvd
20326	Dtjwe
20328	Dtjxf
20330	Dtjyg
Type 30,000 LIGHT SERIES SINGLE	
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
30222	Gamuvin
30224	Gameh
30226	Gamgg
30228	Gamym
LIGHT SERIES DUPLEX 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
30222	Dfmuvin
30224	Dfmeh
30226	Dfmgg
30228	Dfmym
LIGHT SERIES DUPLEX DT	
30204	Dtmif
30205	Dtmiffo
30206	Dtmice
30207	Dtmita
30208	Dtmon
30209	Dtmape
30210	Dtmper
30211	Dtmpell

Bearing	Code
LIGHT SERIES DUPLEX DT cont.	
30212	Dtmric
30213	Dtmring
30214	Dtmias
30215	Dtmote
30216	Dtmsul
30217	Dtmain
30218	Dtmure
30219	Dtmucin
30220	Dtmat
30222	Dtmuvin
30224	Dtmgl
30226	Dtmhj
30228	Dtmkm
MEDIUM SERIES SINGLE	
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
30322	Gamorra
30324	Gamjj
30326	Gamkt
30328	Gamol
MEDIUM SERIES DUPLEX DF	
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
30317	Dfmokol
30318	Dfmollen
30319	Dfmollor
30320	Dfmonen
30322	Dfmorra
30324	Dfmjj
30326	Dfmkt
30328	Dfmol
MEDIUM SERIES DUPLEX DT	
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
30322	Dtmorra
30324	Dtmbd
30326	Dtmpo
30328	Dtmqs

CODE FOR BEARINGS

Bearing	Code
ND SEAL 8000 SINGLE SEAL	
8035	Sigsa
8036	Sigtb
8006	Sigsabis
8007	Sigsabite
8037	Siger
8008	Sigsate
8038	Sigerme
8039	Siguc
8009	Sigsaler
8500	Sigsalis
8011	Sigsalite
8501	Sigsalve
8013	Sigsalver
8014	Sigsash
8502	Sigsaturn
8602	Sigsial
8016	Sigsatyr
8503	Sigsicinn
8504	Sigsicker
8505	Sigmaxila
8026	Sigerns
8506	Sigaxilip
8507	Sigaxilor
8508	Sigsinap
8509	Sigog
8510	Sigum
8603	Sigsinc
8604	Sigsidt
8605	Sigsieu
SHIELD AND SEAL	
87035	Pensa
87036	Pentb
87006	Pensabis
87007	Pensabit
87037	Penser
87008	Pensate
87038	Penserme
87039	Penuc
87009	Pensalor
87500	Pensalis
87011	Pensalite
87501	Pensalve
87013	Pensalvert
87014	Pensash
87502	Pensaturn
87016	Pensatyr
87602	Pensanct
87503	Pensicinn
87603	Pensanb
87504	Pensicker
87604	Pensacu
87505	Penmaxila
87605	Pensacio
87026	Penserns
87506	Pensabisle
87507	Pensabiter
87508	Pensanas
87509	Penir
87510	Penly
DOUBLE SEAL	
88035	Sussa
88036	Sustb
88006	Susabis
88007	Susabite
88037	Susser
88008	Susabt
88038	Susserme
88039	Susuc
88009	Susalis
88500	Susalot
88011	Susalve
88501	Susalvert
88013	Susash
88014	Susatte
88502	Susaturn
88016	Susatyr
88602	Susobc
88503	Susaxen
DOUBLE SEAL cont.	
88504	Susin
88505	Susire
88026	Susserns
88506	Susiroc
88507	Susite
88508	Susiub
88603	Susoab
88604	Susoakt
88605	Susoalm
SNAP RING AND SEAL	
48009	Srkbl
48500	Srkcg
48011	Srkdm
48501	Srken
48013	Srkff
48014	Srkgs
48502	Srkhw
48016	Srkjk
48602	Skaba
48503	Srkka
48603	Skafe
48504	Srklu
48604	Skaji
48505	Srkmv
48605	Srknx
48026	Srkrb
48506	Srksd
48507	Srkte
48508	Srkut
SNAP RING SHIELD AND SEAL	
487009	Sndbl
487500	Sndcg
487011	Snddm
487501	Snden
487013	Sndff
487014	Sndgs
487502	Sndhw
487016	Sndjk
487602	Sncba
487503	Sndka
487603	Snefe
487504	Sndlu
487604	Sneji
487505	Sndmv
487605	Sndnx
487026	Sndrb
487506	Sndsd
487507	Sndte
487508	Sndut
SNAP RING DOUBLE SEAL	
488009	Sdsbl
488500	Sdsgg
488011	Sdsdm
488501	Sdsen
488013	Sdsff
488014	Sdsgs
488502	Sdshw
488602	Sdiba
488016	Sdsjk
488503	Sdska
488603	Sdifo
488504	Sdslu
488604	Sdiji
488505	Sdsmv
488605	Sdsnx
488026	Sdsrb
488506	Sdssd
488507	Sdste
488508	Sdsut
ND SEAL WC-8000 SINGLE SEAL	
WC-8037	Wsseg
WC-8038	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-8602	Wsamc
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
SHIELD AND SEAL	
WC-87C36	Wpptb
WC-87037	Wppeg
WC-87038	Wppom
WC-87006	Wppzz
WC-87007	Wppff
WC-87008	Wppgs
WC-87039	Wppue
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-87602	Wpauw
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
DOUBLE SEAL	
WC-88036	Wbutb
WC-88037	Wbueg
WC-88038	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-88602	Wbang
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
CLUTCH RELEASE CT 22-44	
CT 22	Clubber
CT 24-A	Clujk
CT 24-B	Clumv
CT 24-C	Cluys
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
CT 44	Cluwr
CONVEYOR	
CB-504	Suscar (Formerly 88105)
PUMP SHAFT 885100	
885140	Jabot
885146	Jack
885155	Jackobin
885156	Jackonet
885158	Jacid
885159	Jacqe
885160	Jacni
885167	Jacom
REAR WHEEL 88100	
88107	Suscater
88127E	Suscalper
88128	Suscavy
FRONT WHEEL 9000	
909001	Smallout
909002	Smallin
909003	Briskout
909004	Briskin
909007	Buckout
909008	Buckin
909021	Chevout
909022	Chevin
909023	Oldout
909024	Oldin
909025	Brushout
909026	Brushin
909027	Buildout
909028	Buildin
909029	Kadyout
909030	Kadyin
909052	Bunci
909062	Bundo
909032	Oldish
909035	Buckle
909042	Buklet

CODE FOR NUMERALS

Penal....1
Pencase....2
Pencraft....3

Pendence....4
Pendicle....5
Pendule....6

Penfish....7
Penfold....8
Penguin....9

Penitent....10
Pennage....11
Pennant....12

Pennate....13
Pennon....14
Pennock....15

Penrack....16
Pensive....17
Penstock....18

Pentacle....19
Pentagon....20
Pentecost....21

Penthouse....22
Pentroof....23
Penult....24

Penury....25
Peonage....26
Peony....27

Peperine....28
Pepper....29
Pepperbox....30

Peppering....31
Pepsin....32
Peptic....33

Peracute....34
Perch....35
Percher....36

Percuss....37
Perdue....38
Peregal....39

Perfector....40
Perfidy....41
Perforce....42

Perform....43
Perfume....44
Pertusive....45

Peridot....46
Perigone....47
Period....48

Perish....49
Perwig....50
Perjury....51

Perk....52
Perky....53
Permitter....54

Peronate....55
Peroxide....56
Perplex....57

Persian....58
Persic....59
Pert....60

Pertain....61
Pertly....62
Pertness....63

Perturb....64
Perusal....65
Peruse....66

Pervade....67
Pervert....68
Pestle....69

Pestling....70
Petal....71
Petalite....72

Petard....73
Petong....74
Petrel....75

Petrity....76
Petrine....77
Petrous....78

Pettifog....79
Pettish....80
Pettycoy....81

Pewter....82
Pexity....83
Phallic....84

Phial....85
Philter....86
Piano....87

Piazza....88
Picamer....89
Pickle....90

Picture....91
Pieman....92
Pieplant....93

Pietism....94
Piety....95
Pigeon....96

Piglead....97
Pigment....98
Pigmy....99

Pignut....100
Pikelin....120
Pikeman....125

Pilaster....130
Pilcrow....135
Pilement....140

Pilfer....145
Pillage....150
Pillar....155

Pillion....160
Pillwort....165
Pimple....170

Pinax....175
Pincase....180
Pincers....185

Pindast....190
Pineclad....195
Pineful....200

Pinery....225
Pinetree....250
Pinion....275

Pink....300
Pinkeye....325
Pinkroot....350

Pinkster....375
Pinnage....400
Pinnock....425

Pinnule....450
Pintado....475
Pintail....500

Pious....525
Piously....550
Pique....575

Piracy....600
Pirate....625
Pistol....650

Pitfall....675
Pithole....700
Pithless....725

Pitiable....750
Pitsaw....775
Pity....800

Pivotal....825
Placard....850
Placate....875

Placeful....900
Placid....925
Placidly....950

Placita....975
Plaid....1000
Planet....1500

Planitoid....2000
Plaintree....2500
Planked....3000

Plankroad....3500
Plantation....4000
Plantless....4500

Plaster....5000
Plasterly....5500
Plating....6000

Platonic....6500
Platoon....7000
Playful....7500

Playmate....8000
Plaything....8500
Pleading....9000

Pleurisy....9500
Plighted....10000
Plodding....11000

Ploughing....12000
Plumage....13000
Plumbing....14000

Pneumatic....15000
Pocket....16000
Poem....17000

Poetess....18000
Poetry....19000
Pointer....20000

Poker....25000
Polecat....30000
Polestar....40000

Polisher....50000
Poodle....75000
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	Scounted
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	Sepulcharl	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, 2, in the third digit place 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, 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
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, light series, 7 bore			3	2	0	7
Non-loading groove, single row radial, medium series, 7 bore			3	3	0	7
Non-loading groove, single row radial, extra-light series 6 bore			3	L	0	6
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-loading 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 Bearing Specification Code

Internal Fit-up

New Departure ball bearings, *except* Duplex and single angular contact bearings, are normally furnished with standard internal fit between balls and races, but when so specified may be furnished with either looser or tighter internal fit according to the nature of the application. The code letters which indicate the internal fit are placed immediately after the bearing number and are as follows:

Standard = X Loose = L Tight = T Special = S

Preload

Duplex angular contact bearings are regularly furnished to a basic standard preload but when so specified may be furnished with heavier preloads for different service. Preload specification is indicated by the following code letters:

Standard = L Medium = X Heavy = T Special = S

For *single* angular contact bearings no variations in internal fit or preload are necessary and for these the code letter indicating same is replaced by the sign #.

Noise Test

Noise testing at high speed is, in general, a basic requirement and is not, therefore, included in the code. If *low speed* noise testing is to be specified, it is indicated by the letter Y placed after the internal fit-up letter.

Tolerances

New Departure ball bearings are made to the three standard tolerance specifications given in this catalog and the following code numbers indicate each as follows:

1 = New Departure Standard = A.B.E.C.–1
3 = New Departure Trifex = A.B.E.C.–3
5 = New Departure Perfex = A.B.E.C.–5

Lubrication

Standard lubrication requirements are indicated by letters suffixed last to the bearing code number. Standard lubrication treatment depends on various factors, such as bearing size, type, or operating conditions. The following code letters indicating standard lubrication are typical examples. Further data may be obtained from New Departure Engineering Department.

A = Rust Prevention Compound.

C = High Melting Point Grease, lubrication from sub-zero to 200° F.

Anti-Friction Bearing Manufacturers Association Ball Bearing Standard Specification

Recognizing the very definite need for an *industry standard* specification covering the various types of ball and roller bearings and a uniform basic numbering system for them, the A.F.B.M.A. (Anti-Friction Bearing Manufacturers Association) consisting of the principal Ball Bearing, Roller Bearing and Steel Ball Manufacturers has developed such a specification. That part of it relating to the numbering of the standardized ball bearings listed in this catalog is described briefly in the following. Other data may be obtained from the Association at 60 East 42nd Street, New York City.

Under this specification, these standard types of ball bearings have been assigned TYPE letters as follows:

Type BA = Single Row Angular Contact, Singly Mounted.
Type BC = Single Row Radial, Non-loading Groove Assembly.
Type BD = Double Row Angular Contact.
Type BL = Single Row Radial, Loading Groove Assembly.
Type BM = Single Row Separable Bearings (Magneto).
Type BIC = Single Row Radial, Non-Loading Groove, to inch dimensions.

In addition to TYPE letters, Suffix letters have been assigned to identify additional standard features available with certain of the above bearings, as follows:

G = Snap Ring. P = Shield on one side.
PP = Shields on both sides. F = Single Row Angular Contact, Duplex.

Using these TYPE letters, Industry Standard Numbers conform to a code which gives, except in the case of magneto bearings and bearings to inch dimensions, identification for each in the following order:

Bearing Bore Size in Millimeters.
Bearing Type letters.
Two numerical digits identifying the bearing SERIES proportions, the first indicating Width and the second, Outer Diameter.

In the case of inch dimension bearings, the Bore and Outer Diameter sizes are given in sixteenths of an inch. For Magneto the Bore and Outer Diameter are given in millimeters.

EXAMPLES:

Number 50BC02 indicates a ball bearing having a 50 mm. bore, of single row radial, non-loading groove construction, with standard light series Width and O.D. proportions, i.e., 20 mm. width and 90 mm. outer diameter.

Number 50BC03 indicates the same, except that the digits 03 show it to be a medium series bearing whose standardized width and outside diameter are 27 mm. and 110 mm. respectively for a bore size of 50 mm.

Number 50BC03GP indicates the same as preceding except that a snap ring and one shield have been added.

Number 12BIC26 indicates a bearing of single row radial, non-loading groove construction, made to inch dimensions and having a bore of 12 sixteenths or ¾" and an O.D. of 26 sixteenths or 1⅝".

Bearing Internal Fit-up

Unless otherwise specified, ball bearings will be furnished with the manufacturers' standard internal fit between balls and races. When specified, bearings may be supplied with a looser than standard internal fit, indicated by the code letter "L," or a tighter fit indicated by the letter "T." These letters to be suffixed to the bearing numbers and letters previously described. For example, 50BC03GPT.

Tolerances

Bearings may be obtained to three standard tolerance specifications which are the same as the A.B.E.C. 1, 3 and 5 (New Departure Standard, Trifex and Perfex) given in this catalog.

Tolerance specification will not be indicated in the bearing code number for bearings to standard tolerance No. 1. Where No. 3 or 5 tolerances apply, the tolerance specification number will be appended to the bearing code number, but separated therefrom by a dash. Example: 50BC03PT-3.

New Departure and Equivalent Industry Standard Ball Bearing Numbers

SINGLE ROW RADIAL NON-LOADING GROOVE

PLAIN

N.D.	Ind. Std.	N.D.	Ind. Std.
34	4BC03	3218	90BC02
35	5BC03	3318	90BC03
36	6BC02	3418	90BC04
37	7BC02	3219	95BC02
38	8BC10	3319	95BC03
39	9BC02	3220	100BC02
3200	10BC02	3320	100BC03
3300	10BC03	3221	105BC02
3201	12BC02	3321	105BC03
3301	12BC03	3222	110BC02
3202	15BC02	3322	110BC03
3302	15BC03	3224	120BC02
3203	17BC02	3324	120BC03
3303	17BC03	3226	130BC02
3204	20BC02	3326	130BC03
3304	20BC03	3228	140BC02
3404	20BC04	3328	140BC03
3205	25BC02	3230	150BC02
3305	25BC03	3330	150BC03
3405	25BC04	3232	160BC02
3206	30BC02	3332	160BC03
3306	30BC03	3234	170BC02
3406	30BC04	3334	170BC03
3207	35BC02	3236	180BC02
3307	35BC03	3336	180BC03
3407	35BC04	3238	190BC02
3208	40BC02	3338	190BC03
3308	40BC03	3240	200BC02
3408	40BC04	3340	200BC03
3209	45BC02	3244	220BC02
3309	45BC03	3344	220BC03
3409	45BC04	3248	240BC02
3210	50BC02	3348	240BC03
3310	50BC03	3252	260BC02
3410	50BC04	3352	260BC03
3211	55BC02	3256	280BC02
3311	55BC03	3356	280BC03
3411	55BC04	3260	300BC02
3212	60BC02	3264	320BC02
3312	60BC03		
3412	60BC04		
3213	65BC02		
3313	65BC03		
3413	65BC04		
3214	70BC02		
3314	70BC03		
3414	70BC04		
3215	75BC02		
3315	75BC03		
3415	75BC04		
3216	80BC02		
3316	80BC03		
3416	80BC04		
3217	85BC02		
3317	85BC03		
3417	85BC04		

ONE SHIELD

N.D.	Ind. Std.
7034	4BC03P
7035	5BC03P
7036	6BC02P
7037	7BC02P
7038	8BC10P
7039	9BC02P
7500	10BC02P
7600	10BC03P
7501	12BC02P
7601	12BC03P
7502	15BC02P
7602	15BC03P
7503	17BC02P
7603	17BC03P
7504	20BC02P
7604	20BC03P
7505	25BC02P
7605	25BC03P
7506	30BC02P
7606	30BC03P
7507	35BC02P
7607	35BC03P
7508	40BC02P
7608	40BC03P
7509	45BC02P
7609	45BC03P
7510	50BC02P
7610	50BC03P
7511	55BC02P
7611	55BC03P
7512	60BC02P
7612	60BC03P
7513	65BC02P
7613	65BC03P
7514	70BC02P
7614	70BC03P
7515	75BC02P
7615	75BC03P
7516	80BC02P
7517	85BC02P
7518	90BC02P
7519	95BC02P
7520	100BC02P

TWO SHIELDS

N.D.	Ind. Std.
77034	4BC03PP
77035	5BC03PP
77036	6BC02PP
77037	7BC02PP
77038	8BC10PP
77039	9BC02PP
77500	10BC02PP
77600	10BC03PP
77501	12BC02PP
77601	12BC03PP
77502	15BC02PP
77602	15BC03PP
77503	17BC02PP
77603	17BC03PP
77504	20BC02PP
77604	20BC03PP
77505	25BC02PP
77605	25BC03PP
77506	30BC02PP
77606	30BC03PP
77507	35BC02PP
77607	35BC03PP
77508	40BC02PP
77608	40BC03PP
77509	45BC02PP
77609	45BC03PP
77510	50BC02PP
77610	50BC03PP
77511	55BC02PP
77611	55BC03PP
77512	60BC02PP
77612	60BC03PP
77513	65BC02PP
77613	65BC03PP
77514	70BC02PP
77614	70BC03PP
77515	75BC02PP
77615	75BC03PP
77516	80BC02PP
77517	85BC02PP
77518	90BC02PP
77519	95BC02PP
77520	100BC02PP

New Departure and Equivalent Industry Standard Ball Bearing Numbers

SINGLE ROW RADIAL NON-LOADING GROOVE					
SNAP RING		SNAP RING AND ONE SHIELD		SNAP RING AND TWO SHIELDS	
					
N.D.	Ind. Std.	N.D.	Ind. Std.	N.D.	Ind. Std.
43200	10BC02G	47500	10BC02GP	477500	10BC02GPP
43300	10BC03G	47500	10BC03GP	477600	10BC03GPP
43201	12BC02G	47501	12BC02GP	477501	12BC02GPP
43301	12BC03G	47601	12BC03GP	477601	12BC03GPP
43202	15BC02G	47502	15BC02GP	477502	15BC02GPP
43302	15BC03G	47602	15BC03GP	477602	15BC03GPP
43203	17BC02G	47503	17BC02GP	477503	17BC02GPP
43303	17BC03G	47603	17BC03GP	477603	17BC03GPP
43204	20BC02G	47504	20BC02GP	477504	20BC02GPP
43304	20BC03G	47504	20BC03GP	477504	20BC03GPP
43205	25BC02G	47505	25BC02GP	477505	25BC02GPP
43305	25BC03G	47605	25BC03GP	477605	25BC03GPP
43206	30BC02G	47506	30BC02GP	477506	30BC02GPP
43306	30BC03G	47606	30BC03GP	477606	30BC03GPP
43207	35BC02G	47507	35BC02GP	477507	35BC02GPP
43307	35BC03G	47507	35BC03GP	477607	35BC03GPP
43208	40BC02G	47508	40BC02GP	477508	40BC02GPP
43308	40BC03G	47608	40BC03GP	477508	40BC03GPP
43209	45BC02G	47509	45BC02GP	477509	45BC02GPP
43309	45BC03G	47609	45BC03GP	477609	45BC03GPP
43210	50BC02G	47510	50BC02GP	477510	50BC02GPP
43310	50BC03G	47610	50BC03GP	477610	50BC03GPP
43211	55BC02G	47511	55BC02GP	477511	55BC02GPP
43212	60BC02G	47512	60BC02GP	477512	60BC02GPP

New Departure and Equivalent Industry Standard Ball Bearing Numbers

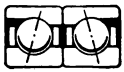
SINGLE ROW RADIAL LOADING GROOVE

PLAIN		ONE SHIELD		TWO SHIELDS		SNAP RING		SNAP RING AND ONE SHIELD	
									
N.D.	Ind. Std.	N.D.	Ind. Std.	N.D.	Ind. Std.	N.D.	Ind. Std.	N.D.	Ind. Std.
1304	20BL03	7304	20BL03P	77304	20BL03PP	41304	20BL03G	47304	20BL03GP
1404	20BL04	7305	25BL03P	77305	25BL03PP	41305	25BL03G	47305	25BL03GP
1305	25BL03	7206	30BL02P	77206	30BL02PP	41206	30BL02G	47206	30BL02GP
1405	25BL04	7306	30BL03P	77306	30BL03PP	41306	30BL03G	47306	30BL03GP
1206	30BL02	7207	35BL02P	77207	35BL02PP	41207	35BL02G	47207	35BL02GP
1306	30BL03	7307	35BL03P	77307	35BL03PP	41307	35BL03G	47307	35BL03GP
1406	30BL04								
		7208	40BL02P	77208	40BL02PP	41208	40BL02G	47208	40BL02GP
1207	35BL02	7308	40BL03P	77308	40BL03PP	41308	40BL03G	47308	40BL03GP
1307	35BL03								
1407	35BL04	7209	45BL02P	77209	45BL02PP	41209	45BL02G	47209	45BL02GP
		7309	45BL03P	77309	45BL03PP	41309	45BL03G	47309	45BL03GP
1208	40BL02								
1308	40BL03	7210	50BL02P	77210	50BL02PP	41210	50BL02G	47210	50BL02GP
1408	40BL04	7310	50BL03P	77310	50BL03PP	41310	50BL03G	47310	50BL03GP
1209	45BL02	7211	55BL02P	77211	55BL02PP	41211	55BL02G	47211	55BL02GP
1309	45BL03	7311	55BL03P	77311	55BL03PP	41212	60BL02G	47212	60BL02GP
1409	45BL04								
		7212	60BL02P	77212	60BL02PP				
1210	50BL02	7312	60BL03P	77312	60BL03PP				
1310	50BL03								
1410	50BL04	7213	65BL02P	77213	65BL02PP				
		7313	65BL03P	77313	65BL03PP				
1211	55BL02								
1311	55BL03	7214	70BL02P	77214	70BL02PP				
1411	55BL04	7314	70BL03P	77314	70BL03PP				
1212	60BL02	7215	75BL02P	77215	75BL02PP				
1312	60BL03	7315	75BL03P	77315	75BL03PP				
1412	60BL04								
		7216	80BL02P	77216	80BL02PP				
1213	65BL02	7316	80BL03P	77316	80BL03PP				
1313	65BL03								
1413	65BL04	7217	85BL02P	77217	85BL02PP				
		7317	85BL03P	77317	85BL03PP				
1214	70BL02								
1314	70BL03	7218	90BL02P	77218	90BL02PP				
1414	70BL04	7219	95BL03P	77219	95BL02PP				
1215	75BL02	7220	100BL02P	77220	100BL02PP				
1315	75BL03	7221	105BL02P	77221	105BL02PP				
1415	75BL04	7222	110BL02P	77222	110BL02PP				
1216	80BL02								
1316	80BL03								
1416	80BL04								
1217	85BL02								
1317	85BL03								
1417	85BL04								
1218	90BL02								
1318	90BL03								
1418	90BL04								
1219	95BL02								
1319	95BL03								
1220	100BL02								
1221	105BL02								
1222	110BL02								

New Departure and Equivalent Industry Standard Ball Bearing Numbers

DOUBLE ROW ANGULAR CONTACT		MAGNETO		INCH SERIES	
					
N.D.	Ind. Std.	N.D.	Ind. Std.	N.D.	Ind. Std.
5200	10BD32	N.D. 5	5BM16	R-2	2BIC6
5300	10BD33	N.D. 5-6	6BM24	R-2-A	2BIC8
		N.D. 5-7	7BM24	R-3	3BIC8
5201	12BD32				
5301	12BD33	N.D. 8	8BM24	R-4	4BIC10
		N.D. 9	9BM28	R-4-A	4BIC12
5202	15BD32	N.D.10	10BM28	R-6	6BIC14
5302	15BD33				
		N.D.11	11BM32	R-8	8BIC18
5203	17BD32	N.D.12	12BM32	R-10	10BIC22
5303	17BD33	N.D.13	13BM30	R-12	12BIC26
5204	20BD32	N.D.14	14BM35	R-14	14BIC30
5304	20BD33	N.D.15	15BM35	R-16	16BIC32
		N.D.16	16BM38	R-18	18BIC34
5205	25BD32	N.D.17	17BM44		
5305	25BD33			R-20	20BIC36
				R-22	22BIC40
5206	30BD32			R-24	24BIC42
5306	30BD33				
5207	35BD32				
5307	35BD33				
5208	40BD32				
5308	40BD33				
5209	45BD32				
5309	45BD33				
5210	50BD32				
5310	50BD33				
5211	55BD32				
5311	55BD33				
5212	60BD32				
5312	60BD33				
5213	65BD32				
5313	65BD33				
5214	70BD32				
5314	70BD33				
5215	75BD32				
5315	75BD33				
5216	80BD32				
5316	80BD33				
5217	85BD32				
5317	85BD33				
5218	90BD32				
5318	90BD33				
5219	95BD32				
5220	100BD32				
5222	110BD32				

New Departure and Equivalent Industry Standard Ball Bearing Numbers

SINGLE ROW ANGULAR CONTACT				SINGLE ROW ANG. CONTACT DUPLEX DF, DB or DT			
				DF	DB	DT	
							
N.D.	Ind. Std.	N.D.	Ind. Std.	N.D.	Ind. Std.	N.D.	Ind. Std.
20200	10BA02	20218	90BA02	20200	10BA02F	20218	90BA02F
20300	10BA03	20318	90BA03	20300	10BA03F	20318	90BA03F
		20418	90BA04			20418	90BA04F
20201	12BA02			20201	12BA02F		
20301	12BA03	20219	95BA02	20301	12BA03F	20219	95BA02F
		20319	95BA03			20319	95BA03F
20202	15BA02			20202	15BA02F		
20302	15BA03	20220	100BA02	20302	15BA03F	20220	100BA02F
		20320	100BA03			20320	100BA03F
20203	17BA02			20203	17BA02F		
20303	17BA03	20221	105BA02	20303	17BA03F	20221	105BA02F
		20321	105BA03			20321	105BA03F
20204	20BA02			20204	20BA02F		
20304	20BA03	20222	110BA02	20304	20BA03F	20222	110BA02F
20404	20BA04	20322	110BA03	20404	20BA04F	20322	110BA03F
20205	25BA02	20224	120BA02	20205	25BA02F		
20305	25BA03	20324	120BA03	20305	25BA03F		
20405	25BA04			20405	25BA04F		
		20226	130BA02				
20206	30BA02	20326	130BA03	20206	30BA02F		
20306	30BA03			20306	30BA03F		
20406	30BA04	20228	140BA02	20405	30BA04F		
		30328	140BA03				
20207	35BA02			20207	35BA02F		
20307	35BA03	20230	150BA02	20307	35BA03F		
20407	35BA04	20330	150BA03	20407	35BA04F		
20208	40BA02	20232	160BA02	20208	40BA02F		
20308	40BA03	20332	160BA03	20308	40BA03F		
20408	40BA04			20408	40BA04F		
		20234	170BA02				
20209	45BA02	20334	170BA03	20209	45BA02F		
20309	45BA03			20309	45BA03F		
20409	45BA04	20236	180BA02	20409	45BA04F		
		20336	180BA03				
20210	50BA02			20210	50BA02F		
20310	50BA03	20238	190BA02	20310	50BA03F		
20410	50BA04	20338	190BA03	20410	50BA04F		
20211	55BA02	20240	200BA02	20211	55BA02F		
20311	55BA03	20340	200BA03	20311	55BA03F		
20411	55BA04			20411	55BA04F		
		20244	220BA02				
20212	60BA02	20344	220BA03	20212	60BA02F		
20312	60BA03			20312	60BA03F		
20412	60BA04	20248	240BA02	20412	60BA04F		
		20348	240BA03				
20213	65BA02			20213	65BA02F		
20313	65BA03	20252	260BA02	20313	65BA03F		
20413	65BA04	20352	260BA03	20413	65BA04F		
20214	70BA02	20256	280BA02	20214	70BA02F		
20314	70BA03	20356	280BA03	20314	70BA03F		
20414	70BA04			20414	70BA04F		
		20260	300BA02				
20215	75BA02			20215	75BA02F		
20315	75BA03	20264	320BA02	20315	75BA03F		
20415	75BA04			20415	75BA04F		
20216	80BA02			20216	80BA02F		
20316	80BA03			20316	80BA03F		
20416	80BA04			20416	80BA04F		
20217	85BA02			20217	85BA02F		
20317	85BA03			20317	85BA03F		
20417	85BA04			20417	85BA04F		

INCH—MILLIMETER EQUIVALENTS

Inches		M/M	Inches		M/M	Inches		M/M
Fractions	Decimals		Fractions	Decimals		Fractions	Decimals	
	.003 94	.1	11/64	.171 875	4.3656	11/32	.343 75	8.7312
	.007 87	.2		.173 23	4.4		.346 46	8.8
	.01	.254		.177 17	4.5		.35	8.89
	.011 81	.3		.18	4.572		.350 39	8.9
				.181 10	4.6		.354 33	9.0
1/64	.015 625	.3969		.185 04	4.7		.358 27	9.1
	.015 75	.4						
	.019 69	.5	3/16	.187 5	4.7625	23/64	.359 375	9.1281
	.02	.508		.188 98	4.8		.36	9.144
	.023 62	.6		.19	4.826		.362 20	9.2
	.027 56	.7		.192 91	4.9		.366 14	9.3
	.03	.762		.196 85	5.0		.37	9.398
				.2	5.08		.370 08	9.4
1/32	.031 25	.7938		.200 79	5.1		.374 02	9.5
	.031 5	.8						
	.035 43	.9	13/64	.203 125	5.1594	3/8	.375	9.525
	.039 37	1.0		.204 72	5.2		.377 95	9.6
	.04	1.016		.208 66	5.3		.38	9.652
	.043 31	1.1		.21	5.334		.381 89	9.7
				.212 60	5.4		.385 83	9.8
3/64	.046 875	1.1906		.216 54	5.5		.389 76	9.9
	.047 24	1.2					.39	9.906
	.05	1.27	7/32	.218 75	5.5562			
	.051 18	1.3		.22	5.588	25/64	.390 625	9.9219
	.055 12	1.4		.220 47	5.6		.393 70	10.0
	.059 06	1.5		.224 41	5.7		.397 64	10.1
	.06	1.524		.228 35	5.8		.40	10.16
				.23	5.842		.401 57	10.2
1/16	.0625	1.5875		.232 28	5.9		.405 51	10.3
	.062 99	1.6						
	.066 93	1.7	15/64	.234 375	5.9531	13/32	.406 25	10.3188
	.07	1.778		.236 22	6.0		.409 45	10.4
	.070 87	1.8		.24	6.096		.41	10.414
	.074 80	1.9		.240 16	6.1		.413 39	10.5
				.244 09	6.2		.417 32	10.6
5/64	.078 125	1.9844		.248 03	6.3		.42	10.668
	.078 74	2.0					.421 26	10.7
	.08	2.032	1/4	.25	6.35			
	.082 68	2.1		.251 97	6.4	27/64	.421 875	10.7156
	.086 61	2.2		.255 91	6.5		.425 20	10.8
	.09	2.286		.259 84	6.6		.429 13	10.9
	.090 55	2.3		.26	6.604		.43	10.922
				.263 78	6.7		.433 07	11.0
3/32	.093 75	2.3812					.437 01	11.1
	.094 49	2.4	17/64	.265 625	6.7469			
	.098 43	2.5		.267 72	6.8	7/16	.437 5	11.1125
	.1	2.54		.27	6.858		.44	11.176
	.102 36	2.6		.271 65	6.9		.440 94	11.2
	.106 30	2.7		.275 59	7.0		.444 88	11.3
				.279 53	7.1		.448 82	11.4
7/64	.109 375	2.7781		.28	7.112		.45	11.430
	.11	2.794					.452 76	11.5
	.110 24	2.8	9/32	.281 25	7.1438			
	.114 17	2.9		.283 46	7.2	29/64	.453 125	11.5094
	.118 11	3.0		.287 40	7.3		.456 69	11.6
	.12	3.048		.29	7.366		.46	11.684
	.122 05	3.1		.291 34	7.4		.460 63	11.7
				.295 28	7.5		.464 57	11.8
1/8	.125	3.175	19/64	.296 875	7.5406		.468 50	11.9
	.125 98	3.2		.299 21	7.6			
	.129 92	3.3		.30	7.62	15/32	.468 75	11.9062
	.13	3.302		.303 15	7.7		.47	11.938
	.133 86	3.4		.307 09	7.8		.472 44	12.0
	.137 80	3.5		.31	7.874		.476 38	12.1
	.14	3.556		.311 02	7.9		.48	12.192
							.480 31	12.2
9/64	.140 625	3.5719	5/16	.312 5	7.9375		.484 25	12.3
	.141 73	3.6		.314 96	8.0			
	.145 67	3.7		.318 90	8.1	31/64	.484 375	12.3031
	.149 61	3.8		.32	8.128		.488 19	12.4
	.15	3.810		.322 83	8.2		.49	12.446
	.15 354	3.9		.326 77	8.3		.492 13	12.5
							.496 06	12.6
5/32	.156 25	3.9688	21/64	.328 125	8.3344			
	.157 48	4.0		.33	8.382	1/2	.50	12.7
	.16	4.064		.330 71	8.4		.503 94	12.8
	.161 42	4.1		.334 65	8.5		.507 87	12.9
	.165 35	4.2		.338 58	8.6		.51	12.954
	.169 29	4.3		.34	8.636		.511 81	13.0
	.17	4.318		.342 52	8.7			

INCH—MILLIMETER EQUIVALENTS

Inches		M/M	Inches		M/M	Inches		M/M
Fractions	Decimals		Fractions	Decimals		Fractions	Decimals	
33/64	.515 625	13.0969	1 1/16	.687 5	17.4625	55/64	.859 375	21.8281
	.515 75	13.1		.688 98	17.5		.86	21.844
	.519 68	13.2		.69	17.526		.862 20	21.9
	.52	13.208		.692 91	17.6		.866 14	22.0
	.523 62	13.3		.696 85	17.7		.87	22.098
	.527 56	13.4		.70	17.78		.870 08	22.1
	.53	13.462		.700 79	17.8		.874 01	22.2
17/32	.531 25	13.4938	45/64	.703 125	17.8594	7/8	.875	22.225
	.531 50	13.5		.704 72	17.9		.877 95	22.3
	.535 43	13.6		.708 66	18.0		.88	22.352
	.539 37	13.7		.71	18.034		.881 89	22.4
	.54	13.716		.712 60	18.1		.885 83	22.5
	.543 31	13.8		.716 53	18.2		.889 76	22.6
							.89	22.606
35/64	.546 875	13.8906	23/32	.718 75	18.2562	57/64	.890 625	22.6219
	.547 24	13.9		.72	18.288		.893 70	22.7
	.55	13.970		.720 47	18.3		.897 64	22.8
	.551 18	14.0		.724 41	18.4		.90	22.860
	.555 12	14.1		.728 35	18.5		.901 57	22.9
	.559 05	14.2		.73	18.542		.905 51	23.0
	56	14.224		.732 28	18.6			
						29/32	.906 25	23.0188
9/16	.562 5	14.2875	47/64	.734 375	18.6531		.909 45	23.1
	.562 99	14.3		.736 22	18.7		.91	23.114
	.566 93	14.4		.74	18.796		.913 38	23.2
	.57	14.478		.740 16	18.8		.917 32	23.3
	.570 87	14.5		.744 09	18.9		.92	23.368
	.574 80	14.6		.748 03	19.0		.921 26	23.4
37/64	.578 125	14.6844	3/4	.75	19.050	59/64	.921 875	23.4156
	.578 74	14.7		.751 97	19.1		.925 20	23.5
	.58	14.732		.755 90	19.2		.929 13	23.6
	.582 68	14.8		.759 84	19.3		.93	23.622
	.586 61	14.9		.76	19.304		.933 07	23.7
	.59	14.986		.763 78	19.4		.937 01	23.8
	.590 55	15.0						
			49/64	.765 625	19.4469	15/16	.937 5	23.8125
19/32	.593 75	15.0812		.767 72	19.5		.94	23.876
	.594 49	15.1		.77	19.558		.940 94	23.9
	.598 42	15.2		.771 65	19.6		.944 88	24.0
	.60	15.24		.775 59	19.7		.948 82	24.1
	.602 36	15.3		.779 53	19.8		.95	24.130
	.606 30	15.4		.78	19.812		.952 75	24.2
39/64	.609 375	15.4781	25/32	.781 25	19.8438	61/64	.953 125	24.2094
	.61	15.494		.783 46	19.9		.956 69	24.3
	.610 24	15.5		.787 40	20.0		.96	24.384
	.614 17	15.6		.79	20.066		.960 63	24.4
	.618 11	15.7		.791 34	20.1		.964 57	24.5
	.62	15.748		.795 27	20.2		.968 50	24.6
	.622 05	15.8						
			51/64	.796 875	20.2406	31/32	.968 75	24.6062
5/8	.625	15.875		.799 21	20.3		.97	24.638
	.625 98	15.9		.80	20.320		.972 44	24.7
	.629 92	16.0		.803 15	20.4		.976 38	24.8
	.63	16.002		.807 09	20.5		.98	24.892
	.633 86	16.1		.81	20.574		.980 31	24.9
	.637 79	16.2		.811 02	20.6		.984 25	25.0
	.64	16.256						
			13/16	.812 5	20.6375	63/64	.984 375	25.0031
41/64	.640 625	16.2719		.814 96	20.7		.988 19	25.1
	.641 73	16.3		.818 90	20.8		.99	25.146
	.645 67	16.4		.82	20.828		.992 12	25.2
	.649 61	16.5		.822 83	20.9		.996 06	25.3
	.65	16.510		.826 77	21.0			
	.653 54	16.6				1"	1.000 00	25.4000
						1 1/4	1.25	31.7500
21/32	.656 25	16.6688	53/64	.828 125	21.0344	1 1/2	1.5	38.1000
	.657 48	16.7		.83	21.082	1 3/4	1.75	44.4500
	.66	16.764		.830 71	21.1	2"	2.000 00	50.8000
	.661 42	16.8		.834 64	21.2	2 1/2	2.5	63.5000
	.665 35	16.9		.838 58	21.3	3"	3.000 00	76.2000
	.669 29	17.0		.84	21.336	3 1/2	3.5	88.9000
	.67	17.018		.842 52	21.4	4"	4.000 00	101.6000
						4 1/2	4.5	114.3000
43/64	.671 875	17.0656	27/32	.843 75	21.4312	5"	5.000 00	127.0000
	.673 23	17.1		.846 46	21.5	6"	6.000 00	152.4000
	.677 16	17.2		.85	21.590	7"	7.000 00	177.8000
	.68	17.272		.850 39	21.6	8"	8.000 00	203.2000
	.681 10	17.3		.854 33	21.7	9"	9.000 00	228.6000
	.685 04	17.4		.858 27	21.8	10"	10.000 00	254.0000

DECIMAL EQUIVALENTS

Fractions of one inch

1/64 .015625	17/64 .265625	33/64 .515625	49/64 .765625
1/32 .031250	9/32 .281250	17/32 .531250	25/32 .781250
3/64 .046875	19/64 .296875	35/64 .546875	51/64 .796875
1/16 .06250	5/16 .31250	9/16 .56250	13/16 .81250
5/64 .078125	21/64 .328125	37/64 .578125	53/64 .828125
3/32 .093750	11/32 .343750	19/32 .593750	27/32 .843750
7/64 .109375	23/64 .359375	39/64 .609375	55/64 .859375
1/8 .1250	3/8 .3750	5/8 .6250	7/8 .8750
9/64 .140625	25/64 .390625	41/64 .640625	57/64 .890625
5/32 .156250	13/32 .406250	21/32 .656250	29/32 .906250
11/64 .171875	27/64 .421875	43/64 .671875	59/64 .921875
3/16 .18750	7/16 .43750	11/16 .68750	15/16 .93750
13/64 .203125	29/64 .453125	45/64 .703125	61/64 .953125
7/32 .218750	15/32 .468750	23/32 .718750	31/32 .968750
15/64 .234375	31/64 .484375	47/64 .734375	63/64 .984375
1/4 .250	1/2 .50	3/4 .750	1 1.0

GENERAL INDEX

Nothing Rolls Like a Ball