CAGEROL® cage type heavy-duty roller bearings

Cage type CAGEROL® bearings from McGill are designed especially to meet the performance requirements of applications where greater shaft misalignment and higher speeds exceed the capabilities of ordinary full complement needle roller bearings. Bearing life can often be extended up to ten times that of ordinary end guided needle bearings.

In this McGill design, a precision tubular cage spaces and locates specially heat treated crowned rollers. They are positively controlled to insure concentricity and prevent temperature increases at higher speeds.

MR series CAGEROL® bearings are interchangeable dimensionally with all heavy-duty needle bearings. They are available with or without separable inner races.

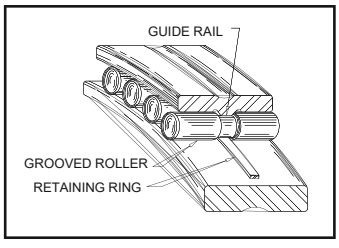
Built for the tougher applications, CAGEROL® bearings feature many design and construction advantages. The McGill engineering department can make helpful recommendations.

The application of CAGEROL® bearings from McGill involves many factors other than those listed in the dimensional tables. Typical of these factors would be: metallurgy, types of fit requirements, lubrication, types of load, etc. This information is also covered in detail in the general Engineering Section beginning on page 2.

GUIDEROL® heavy-duty needle bearings with center-guided rollers

Incorporating the first practical application of roller guiding - in full complement needle-type roller bearings

GUIDEROL® bearings is the trademarked designation for McGILL® bearings having a full complement of rollers extending the complete width of the races for maximum support. These rollers are undercut on the O.D. to a determined dimension each side of center to form a circumferential groove. This groove is designed to fit a rectangular matching guide rail extending below the bore of the outer race. Action of the rollers against the rail limits skewing and eliminates any tendency for the bearing to bind under limited misalignment.



Greater static capacity and angular rigidity

The extra long rollers give support to the full width of the races. This, in addition to the full complement of rollers, assures maximum static capacity in a given size. Such wide support is particularly valuable in such single unit applications as gears, rollers, sheaves, levers, etc.

CAGEROL® - GUIDEROL® bearing engineering section

Type selection

Ordinarily, the equipment and operating conditions definitely limit the type of bearing which should be incorporated in an application. Likewise, the designer often has a preference due to previous experience. However, to further assist in making selection, the following points will serve as a general guide should there be any question as to whether a CAGEROL® or GUIDEROL® bearing would be the proper type bearing for the application.

CAGEROL® roller bearing should be used when:

(1) Radial space is limited.
(2) Maximum radial load rating within space limitation is required.
(3) Higher speeds are present.
(4) Thrust load is non-existent, or if existent, supported by means other than the CAGEROL® bearing.

(5) Greater misalignment is present.
(6) Lower internal friction is required.
(7) Greater lubrication reservoir is required.

GUIDEROL roller bearing should be used when:

(1) Radial rigidity is required. GUIDEROL® bearings may be applied with little or no internal looseness as well as for applications requiring normal looseness.
(2) Maximum radial load rating within space limitation is required.
(3) Thrust load is non-existent, or if existent, is supported by means other than the GUIDEROL® bearing.
(4) Speed is in the lower range, i.e., lower than ordinarily associated with ball bearing speeds. GUIDEROL® bearings are ideally suited for oscillating motion.
(5) Slightly greater internal friction as compared with ball bearings is not detrimental.

Shaft materials and their treatment

In order to obtain the performance built into needle and radial roller bearings when applied without inner races, it is important that the bearing user employ the best possible shaft material and heat treatment.

This is especially critical in cases of outer race rotation where the shaft becomes the weakest member of the bearing assembly. Sheave applications would be typical and are shown in Fig. 1, and additional applications are shown on Figs. 2 and 3 (next page). Manufacturing simplicity as well as reduced operating clearances can be obtained by omission of inner races with their extra expense, as well as build-up of tolerances. This construction is employed frequently in the application of needle bearings and to a somewhat lesser degree in radial roller bearings.

With the conventional application using inner races, the selection of shaft material is principally a matter of manufacturing economy coupled with proper bending and tensile strength, and in most cases surface heat treatments of shafts are dispensed with. However, when the inner race is eliminated, the shaft then becomes an integral member of the bearing and the three following areas must be accurately and correctly covered for best bearing performance:

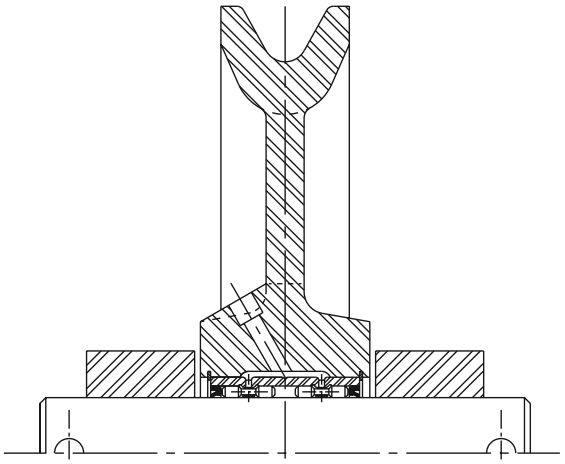
1) Shaft material selection.
2) Shaft heat treatment.
3) Shaft surface finish.

Under item 1, there are a number of satisfactory shaft materials which can be employed and they can be broken down into two groups as follows:

1) Thru-hardening or induction hardening material.
2) Case hardening material.

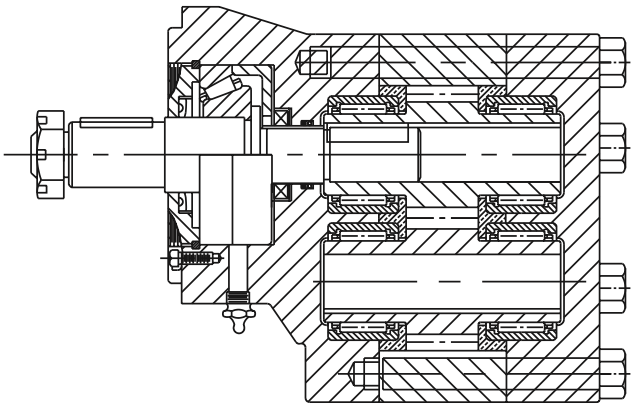
Where thru-hardening or induction hardening materials are employed, a sound material would be SAE 52100 steel, such as employed by the bearing manufacturers. This material may be induction zone hardened, or thru-hardened in accordance with the dictates of the application. However, as shaft material in the thru-hardened state, the high core hardness of the 52100 steel causes brittleness that may be objectionable.

Zone hardening or induction hardening that provides a tougher core is usually more satisfactory for shaft applications. Alternate materials, such as SAE 1050, SAE 1150 may be used, employing the induction or flame hardening process. While these steels will induction harden satisfactorily to give the proper hardness ranges, they will not offer the fatigue resistance of the higher alloy content steels.



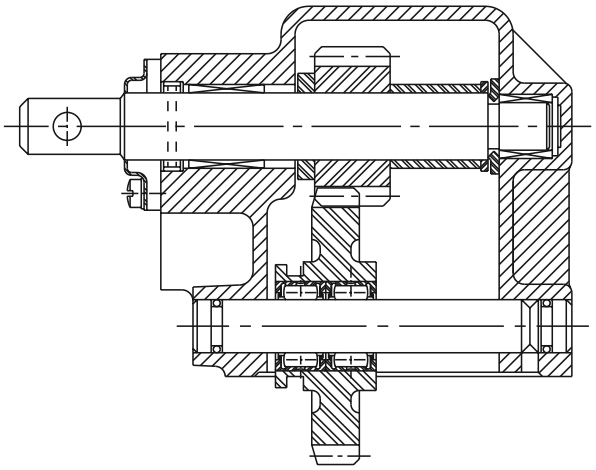
SHEAVE APPLICATION
RS Duplex Mounting

Fig. 1



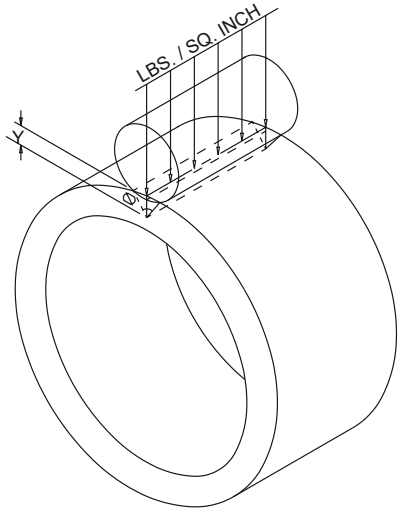
GEAR PUMP APPLICATION

Fig. 2



POWER TAKE-OFF APPLICATION

Fig. 3



INNER RACE or SHAFT

Examples of higher alloy steels are SAE 4650, SAE 8650, etc. These materials do not require carburization for induction hardening. However, as mentioned above, the absence of excess carbides in the surface structure of the material after heat treatment reduces the fatigue life of the material correspondingly. Hardnesses in the range of R_C 60 should be maintained under all circumstances.

For case hardening, any number of materials can be employed, ranging from the plain carbon SAE 1010 to 1020 up through SAE 4615, 4620, 8615 and 8620. Shafts can be completely carburized and case hardened or zone hardened by masking or copper plating areas desired left in soft state. A minimum hardness of R_C 58 should be employed. For the best quality of heat treatment, it is imperative that the hardening temperature in both the induction and thru-hardening process be held to rather close limits, in order to avoid the formation of retained austenite. In water quenching of induction hardened steels, the cracking of shafts after treatment should be avoided by immediate tempering.

A practical maximum surface finish for shafts being used as inner races would be 12 AA. Rougher surface finishes can be employed; however, the user will run the risk of more erratic performance due to the wearing in of the shaft as well as a lesser control of dimensional accuracy of the mounted bearing. All bearings wear in to a certain extent and the amount of "wear-in" depends directly upon the surface finish of the mating parts. The rougher the surface the greater the "wear-in" and the greater range of resultant clearance which would ensue.

Another major factor which is sometimes incorrectly specified or ignored by the bearing user is the establishment of proper carburizing case depths. Since the determination of the case depth of carburized parts can have an effect both on the unit cost of such parts as well as the fatigue performance of bearing components, it is advantageous to have some method of calculation for case depths.

Since the depth of case on shaft surfaces which are used in conjunction with anti-friction bearings is a function of the sub-surface shear stress set up by the roller in contact with the shaft, this is the first consideration for case depth calculation. It has been determined empirically that the case depth should be a minimum of four times the depth to the point of maximum sub-surface shear stress.

$$Y_I = .000427 \sqrt{\frac{F_R}{ZL\left(\frac{1}{D_R} + \frac{1}{D_I}\right)}}$$

$$Y_O = .000427 \sqrt{\frac{F_R}{ZL\left(\frac{1}{D_R} - \frac{1}{D_O}\right)}}$$

It is often advantageous to know whether or not the maximum loading to which bearing component is subjected will not exceed the allowable values set for sub-surface shear, and in order to evaluate these loads, the following formulae will apply:

$$(S_S \text{ Maximum})_O = 2645 \sqrt{\frac{F_R}{ZL}\left[\frac{1}{D_R} - \frac{1}{D_O}\right]}$$

Where:
$(S_S \text{ Maximum})_0$ = Maximum sub-surface shear stress outer race (Pounds per square inch).

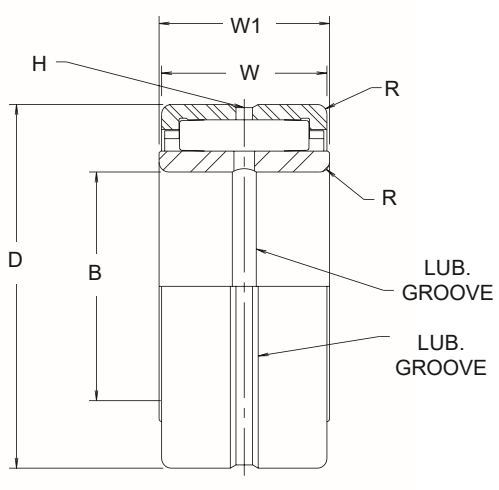
$$(S_S \text{ Maximum})_I = 2645 \sqrt{\frac{F_R}{ZL}\left[\frac{1}{D_R} + \frac{1}{D_1}\right]}$$

Where:
$(S_S \text{ Maximum})_I$ = Maximum sub-surface shear stress inner race (Pounds per square inch).
Where:
Y_I = Depth to point of maximum sub-surface shear stress inner race (inches).
Y_O = Depth to point of maximum sub-surface shear stress outer race (inches).
F_R = Estimated radial load on bearing (pounds).
Z = Number of rollers.
L = Effective roller length (inches).
D_R = Roller diameter (inches).
D_I = Inner race diameter (inches).
D_O = Outer race diameter (inches).

MR SERIES

Outer ring and roller assembly with separable inner ring

Outer ring and roller assemblies and associated inner rings are packed and shipped separately. For a complete bearing, specify both outer and inner numbers desired.



McGILL NUMBER outer ring & roller assy.	McGILL NUMBER inner ring only	MILITARY STANDARD NUMBER	B		D		W	W1	H	R	SHAFT DIA.				HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
			+.0000	TOL.	+.0000	TOL.	+.000 -.005	+.000 -.005	HOLE DIA.	MAX. FILLET for shaft & hsg.	ROTAT. SHAFT	TOL. +.0000	STAT. SHAFT	TOL. +.0000	ROTAT. HSG.	TOL. +.0000	STAT. HSG.	TOL. +.0000		
MR-10-N	MI-6-N	MS 500072-1	.3750	-.0004	1.1250	-.0005	.750	.760	5/64	.025	.3755	-.0005	.3747	-.0005	1.1247	-.0007	1.1257	-.0007	4300	4320
MR-10-N	MI-7-N		.4375		1.1250		.750	.760	5/64	.025	.4380		.4372		1.1247		1.1257		4300	4320
MR-10	MI-6		.3750		1.1250		1.000	1.010	5/64	.025	.3755		.3747		1.1247		1.1257		6500	5930
MR-12-N	MI-8-N	MS 500072-2	.5000		1.2500		.750	.760	5/64	.040	.5005		.4997		1.2497		1.2507		5400	4990
MR-12-N	MI-9-N		.5625		1.2500		.750	.760	5/64	.040	.5630		.5623		1.2497		1.2507		5400	4990
MR-12	MI-8	MS 500072-3	.5000		1.2500		1.000	1.010	5/64	.040	.5005		.4997		1.2497		1.2507		8100	6830
MR-14-N	MI-10-N	MS 500072-4	.6250		1.3750		.750	.760	5/64	.040	.6255		.6247		1.3747		1.3757		6000	5280
MR-14-N	MI-11-N		.6875		1.3750		.750	.760	5/64	.040	.6880		.6872		1.3747		1.3757		6000	5280
MR-14	MI-10		.6250		1.3750		1.000	1.010	5/64	.040	.6255		.6247		1.3747		1.3757		9000	7240
MR-16-N	MI-12-N	MS 500072-5	.7500		1.5000		.750	.760	5/64	.040	.7505		.7497		1.4997		1.5007		7100	5840
MR-16-N	MI-13-N	MS 500072-6	.8125		1.5000		.750	.760	5/64	.040	.8129		.8121		1.4997		1.5007		7100	5840
MR-16	MI-12		.7500		1.5000		1.000	1.010	5/64	.040	.7505		.7497		1.4997		1.5007		10600	8000
MR-16	MI-13	MS 500072-7	.8125		1.5000		1.000	1.010	5/64	.040	.8129		.8121		1.4997		1.5007		10600	8000
MR-18-N	MI-14-N	MS 500072-8	.8750	-.0005	1.6250		1.000	1.010	3/32	.040	.8754		.8746		1.6247		1.6257		12200	8720
MR-18-N	MI-15-N	MR 500072-9	.9375		1.6250		1.000	1.010	3/32	.040	.9379		.9371		1.6247		1.6257		12200	8720
MR-18	MI-14		.8750		1.6250		1.250	1.260	3/32	.040	.8754		.8746		1.6247		1.6257		16300	10900
MR-18	MI-15		.9375		1.6250		1.250	1.260	3/32	.040	.9379		.9371		1.6247		1.6257		16300	10900
MR-20-N	MI-16-N	MS 500072-10	1.0000		1.7500		1.000	1.010	3/32	.040	1.0004		.9996		1.7497		1.7507		13100	9020
MR-20	MI-16	MS 500072-11	1.0000		1.7500		1.250	1.260	3/32	.040	1.0004		.9996		1.7497		1.7507		17500	11300
MR-22-N	MI-18-N	MS 500072-12	1.1250	-.0005	1.8750		1.000	1.010	3/32	.040	1.1255		1.1246		1.8747		1.8757		14700	9640
MR-22	MI-17		1.0625		1.8750		1.250	1.260	3/32	.040	1.0630		1.0621		1.8747		1.8757		19700	12100
MR-22	MI-18	MS 500072-13	1.1250		1.8750		1.250	1.260	3/32	.040	1.1255		1.1246		1.8747		1.8757		19700	12100
MR-24-N	MI-20-N	MS 500072-15	1.2500		2.0625	-.0006	1.000	1.010	3/32	.060	1.2505		1.2496		2.0621		2.0632		15500	10300
MR-24	MI-19	MS 500072-14	1.1875		2.0625		1.250	1.260	3/32	.060	1.1880		1.1871		2.0621		2.0632		20800	13000
MR-24	MI-20	MS 500072-16	1.2500		2.0625		1.250	1.260	3/32	.060	1.2505		1.2496		2.0621		2.0632		20800	13000
MR-26-N	MI-21-N	MS 500072-17	1.3125		2.1875		1.000	1.010	3/32	.060	1.3130		1.3121		2.1871		2.1882		16400	10600
MR-26	MI-21		1.3125		2.1875		1.250	1.260	3/32	.060	1.3130		1.3121		2.1871		2.1882		22100	13300
MR-26	MI-22-4S	MS 500072-18	1.3750		2.1875		1.250	1.260	3/32	.060	1.3755		1.3746		2.1871		2.1882		22100	13300
MR-28-N	MI-24-N	MS 500072-21	1.5000		2.3125		1.000	1.010	3/32	.060	1.5005		1.4996		2.3121		2.3132		18100	11200
MR-28	MI-22	MS 500072-19	1.3750		2.3125		1.250	1.260	3/32	.060	1.3755		1.3746		2.3121		2.3132		24400	14100
MR-28	MI-23	MS 500072-20	1.4375		2.3125		1.250	1.260	3/32	.060	1.4380		1.4371		2.3121		2.3132		24400	14100
MR-28	MI-24	MS 500072-22	1.5000		2.3125		1.250	1.260	3/32	.060	1.5005		1.4996		2.3121		2.3132		24400	14400

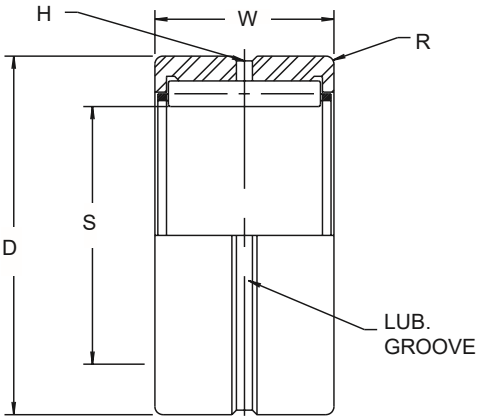
McGILL NUMBER outer ring & roller assy.	McGILL NUMBER inner ring only	MILITARY STANDARD NUMBER	B		D		W	W1	H	R	SHAFT DIA.				HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
			+.0000	TOL.	+.0000	TOL.	+.000 -.005	+.000 -.005	HOLE DIA.	MAX. FILLET for shaft & hsg.	ROTAT. SHAFT	TOL. +.0000	STAT. SHAFT	TOL. +.0000	ROTAT. HSG.	TOL. +.0000	STAT. HSG.	TOL. +.0000		
MR-30	MI-25-4S		1.5625		2.4375		1.250	1.260	3/32	.060	1.5630		1.5621		2.4371		2.4382		25600	14400
MR-31	MI-26-2S		1.6250		2.5000		1.250	1.260	3/32	.060	1.6255		1.6246		2.4996		2.5007		22400	12400
MR-32-N	MI-26-N		1.6250		2.5625		1.000	1.010	3/32	.060	1.6255		1.6246		2.5621		2.5632		20700	12000
MR-32	MI-25		1.5625		2.5625		1.250	1.260	3/32	.060	1.5630		1.5621		2.5621		2.5632		27900	15200
MR-32	MI-26	MS 500072-23	1.6250		2.5625		1.250	1.260	3/32	.060	1.6255		1.6246		2.5621		2.5632		27900	15200
MR-32	MI-27		1.6875	-.0005	2.5625	-.0006	1.250	1.260	3/32	.060	1.6880	-.0005	1.6871	-.0005	2.5621	-.0007	2.5632	-.0007	27900	15200
MR-36-N	MI-28-N	MS 500072-24	1.7500		3.0000		1.500	1.510	1/8	.060	1.7505		1.7496		2.9996		3.0007		39100	22400
MR-36	MI-28	MS 500072-25	1.7500		3.0000		1.750	1.760	1/8	.060	1.7505		1.7496		2.9996		3.0007		47400	26000
MR-36	MI-30		1.8750		3.0000		1.750	1.760	1/8	.060	1.8755		1.8746		2.9996		3.0007		47400	26000
MR-40-N	MI-32-N	MS 500072-27	2.0000		3.2500		1.500	1.510	1/8	.080	2.0005		1.9996		3.2496		3.2507		42900	23400
MR-40	MI-31	MS 500072-26	1.9375		3.2500		1.750	1.760	1/8	.080	1.9380		1.9371		3.2496		3.2507		52100	27200
MR-40	MI-32		2.0000		3.2500		1.750	1.760	1/8	.080	2.0005		1.9996		3.2496		3.2507		52100	27200
MR-40	MI-34		2.1250		3.2500		1.750	1.760	1/8	.080	2.1258		2.1247		3.2496		3.2507		52100	27200
MR-44-N	MI-36-N	MS 500072-29	2.2500		3.5000		1.500	1.510	1/8	.080	2.2508		2.2497		3.4995		3.5008		46700	24500
MR-44	MI-35	MS 500072-28	2.1875		3.5000		1.750	1.760	1/8	.080	2.1883		2.1872		3.4995		3.5008		56700	28400
MR-44	MI-36		2.2500		3.5000		1.750	1.760	1/8	.080	2.2508		2.2497		3.4995		3.5008		56700	28400
MR-48-N	MI-40-N	MS 500072-31	2.5000		3.7500		1.500	1.510	1/8	.080	2.5008		2.4997		3.7495		3.7508		52300	26100
MR-48	MI-38	MS 500072-30	2.3750		3.7500		1.750	1.760	1/8	.080	2.3758		2.3747		3.7495		3.7508		63400	30300
MR-48	MI-39		2.4375		3.7500		1.750	1.760	1/8	.080	2.4383		2.4372		3.7495		3.7508		63400	30300
MR-48	MI-40		2.5000		3.7500		1.750	1.760	1/8	.080	2.5008	-.0008	2.4997	-.0008	3.7495	-.0010	3.7508	-.0010	63400	30300
MR-52	MI-42		2.6250	-.0006	4.2500	-.0008	1.750	1.760	3/16	.080	2.6258		2.6247		4.2495		4.2508		64400	29900
MR-52	MI-44	MS 500072-32	2.7500		4.2500		1.750	1.760	3/16	.080	2.7508		2.7497		4.2495		4.2508		64400	29900
MR-56-N	MI-48-N		3.0000		4.5000		1.750	1.760	3/16	.080	3.0008		2.9997		4.4995		4.5008		71600	31300
MR-56	MI-46		2.8750		4.5000		2.000	2.010	3/16	.080	2.8758		2.8747		4.4995		4.5008		83500	35900
MR-56	MI-47	MS 500072-34	2.9375		4.5000		2.000	2.010	3/16	.080	2.9383		2.9372		4.4995		4.5008		83500	35900
MR-56	MI-48		3.0000		4.5000		2.000	2.010	3/16	.080	3.0008		2.9997		4.4995		4.5008		83500	35900
MR-60	MI-50	MS 500072-35	3.1250		4.7500		2.000	2.010	3/16	.100	3.1260		3.1246		4.7495		4.7508		87100	36500
MR-60	MI-52	MS 500072-36	3.2500		4.7500		2.000	2.010	3/16	.100	3.2510		3.2496		4.7495		4.7508		87100	36500
MR-64	MI-54	MS 500072-38	3.3750		5.0000		2.000	2.010	3/16	.100	3.3758		3.3746		4.9999		5.0011		93800	38000
MR-64	MI-56		3.5000		5.0000		2.000	2.010	3/16	.100	3.5008		3.4996		4.9999		5.0011		93800	38000
MR-68	MI-58		3.6250		5.2500		2.000	2.010	3/16	.100	3.6258		3.6246		5.2499		5.2511		101000	39500
MR-68	MI-60	MS 500072-40	3.7500		5.2500		2.000	2.010	3/16	.100	3.7508		3.7496		5.2499		5.2511		101000	39500
MR-72	MI-62		3.8750	-.0008	6.0000	-.0010	2.250	2.260	3/16	.100	3.8758		3.8746		5.9999		6.0011		130000	60300
MR-80	MI-64		4.0000		6.5000		2.250	2.260	3/16	.100	4.0008	-.0010	3.9996	-.0010	6.4999		6.5011		148000	64600
MR-80	MI-68		4.2500		6.5000		2.250	2.260	3/16	.100	4.2508		4.2496		6.4999		6.5011		148000	64600
MR-88-N	MI-72-N	MS 500072-43	4.5000		7.0000		2.500	2.515	3/16	.100	4.5008		4.4996		6.9999	-.0015	7.0011	-.0015	169800	70200
MR-88	MI-72	MS 500072-44	4.5000		7.0000		3.000	3.015	3/16	.100	4.5008		4.4996		6.9999		7.0011		220000	85700
MR-96-N	MI-80-N	MS 500072-46	5.0000		7.5000		2.500	2.515	1/4	.120	5.0010		4.9995		7.4998		7.5011		177000	71000
MR-96	MI-80	MS 500072-47	5.0000		7.5000		3.000	3.015	1/4	.120	5.0010		4.9995		7.4998		7.5011		228000	86600
MR-104-N	MI-88-N	MS 500072-48	5.5000		8.0000		2.500	2.515	1/4	.120	5.5010		5.4995		7.9998		8.0011		183000	71700
*MR-104	MI-88	MS 500072-49	5.5000	-.0010	8.0000	-.0012	3.000	3.015	1/4	.120	5.5010		5.4995		7.9998		8.0011		237000	87500
MR-116	MI-96	MS 500072-50	6.0000		9.1250		3.000	3.015	1/4	.120	6.0012		5.9995		9.1248		9.1261		234000	95200
*MR-124	MI-104		6.5000		9.6250		3.000	3.015	1/4	.120	6.5012		6.4995		9.6250		9.6265		252000	99100
*MR-132	MI-112		7.0000		10.1250		3.000	3.015	1/4	.120	7.0012	-.0012	6.9995	-.0012	10.1250	-.0020	10.1265	-.0020	270000	103000
*MR-140	MI-120		7.5000	-.0012	10.6250	-.0014	3.000	3.015	1/4	.160	7.5010		7.4995		10.6250		10.6265		280000	104000
MR-148	MI-128		8.0000		11.1250		3.000	3.015	1/4	.160	8.0010		7.9995		11.1250		11.1265		292000	108000

*Not available from stock. Consult McGill Customer Service for availability.

MR SERIES

Outer ring and roller assembly without separable inner ring

The outer ring and roller assemblies (MR) shown in this table are for use without inner rings on a ground shaft for which a minimum hardness of 58 Rockwell "C" scale is recommended.



S equals shaft diameter

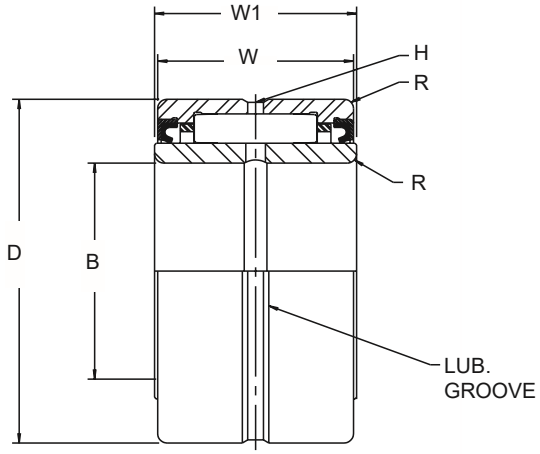
McGILL NUMBER outer ring & roller assy.	MILITARY STANDARD NUMBER	S SHAFT DIA.		D		W	H	R	HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
		+.0000	TOL.	+.0000	TOL.	+.000 -.005	HOLE DIA.	MAX. FILLET FOR HOUSING	ROTATING HOUSING	TOL. +.000- 0	STATIONARY HOUSING	TOL. +.000- 0		
MR-10-N MR-10	MS 51961-1	.6250	-.0005	1.1250	-.0005	.750 1.000	5/64	.025	1.1247	-.0007	1.1257	-.0007	4300 6500	4320 5930
MR-12-N MR-12	MS 51961-2 MS 51961-3	.7500		1.2500		.750 1.000	5/64	.040	1.2497		1.2507		5400 8100	4990 6830
MR-14-N MR-14	MS 51961-5 MS 51961-6	.8750		1.3750		.750 1.000	5/64	.040	1.3747		1.3757		6000 9000	5280 7240
MR-16-N MR-16	MS 51961-8 MS 51961-9	1.0000		1.5000		.750 1.000	5/64	.040	1.4997		1.5007		7100 10600	5840 8000
MR-18N MR-18	MS 51961-11 MS 51961-12	1.1250		1.6250		1.000 1.250	3/32	.040	1.6247		1.6257		12200 16300	8720 10900
MR-20-N MR-20	MS 51961-14 MS 51961-15	1.2500		1.7500		1.000 1.250	3/32	.040	1.7497		1.7507		13100 17500	9020 11300
MR-22-N MR-22	MS 51961-18 MS 51961-19	1.3750		1.8750	-.0006	1.000 1.250	3/32	.040	1.8747		1.8757		14700 19700	9640 12100
MR-24-N MR-24	MS 51961-21 MS 51961-22	1.5000		2.0625		1.000 1.250	3/32	.060	2.0621		2.0632		15500 20800	10300 13000
MR-26-N MR-26	MS 51961-24 MS 51961-25	1.6250		2.1875		1.000 1.250	3/32	.060	2.1871		2.1882		16400 22100	10600 13300
MR-28-N MR-28	MS 51961-27 MS 51961-28	1.7500		2.3125		1.000 1.250	3/32	.060	2.3121		2.3132		18100 24400	11200 14100
MR-30-N MR-30	MS 51961-29	1.8750		2.4375		1.000 1.250	3/32	.060	2.4371		2.4382		19000 25600	11400 14400
MR-31		1.9375		2.5000		1.250	3/32	.060	2.4996		2.5007		22400	12400
MR-32-N MR-32	MS 51961-30	2.0000		2.5625		1.000 1.250	3/32	.060	2.5621		2.5632		20700 27900	12000 15200
MR-36-N MR-36	MS 51961-31 MS 51961-32	2.2500		3.0000		1.500 1.750	1/8	.060	2.9996		3.0007		39100 47400	22400 26000
MR-40-N MR-40	MS 51961-33 MS 51961-34	2.5000		3.2500		1.500 1.750	1/8	.080	3.2496		3.2507		42900 52100	23400 27200
MR-44-N MR-44	MS 51961-35 MS 51961-36	2.7500		3.5000	-.0008	1.500 1.750	1/8	.080	3.4995	-.0010	3.5008	-.0010	46700 56700	24500 28400
MR-48-N MR-48	1961-37 MS 51961-38	3.0000		3.7500		1.500 1.750	1/8	.080	3.7495		3.7508		52300 63400	26100 30300
MR-52	MS 51961-39	3.2500		4.2500		1.750	3/16	.080	4.2495		4.2508		64400	29900
MR-56-N MR-56	MS 51961-41 MS 51961-42	3.5000		4.5000		1.750 2.000	3/16	.080	4.4995		4.5008		71600 83500	31300 35900
MR-60	MS 51961-43	3.7500		4.7500		2.000	3/16	.100	4.7495		4.7508		87100	36500
MR-64	MS 51961-45	4.0000	-.0007	5.0000	-.0010	2.000	3/16	.100	4.9999	-.0015	5.0011	-.0015	93800	38000
MR-68	MS 51961-46	4.2500		5.2500		2.000	3/16	.100	5.2499		5.2511		101000	39500
MR-72	MS 51961-48	4.5000		6.0000		2.250	3/16	.100	5.9999		6.0011		130000	60300
MR-80		5.0000		6.5000		2.250	3/16	.100	6.4999		6.5011		148000	64600
MR-88-N MR-88	MS 51961-52 MS 51961-53	5.5000		7.0000		2.500 3.000	3/16	.100	6.9999		7.0011		169800 222000	70200 85700
MR-96-N MR-96	MS 51961-55 MS 51961-56	6.0000	-.0010	7.5000	-.0012	2.500 3.000	1/4	.120	7.4998		7.5011		177000 228000	71000 86600
MR-104-N *MR-104	MS 51961-57 MS 51961-58	6.5000		8.0000		2.500 3.000	1/4	.120	7.9998		8.0011		183000 237000	71700 87500
MR-116	MS 51961-59	7.2500		9.1250		3.000	1/4	.120	9.1248		9.1261		234000	95200
*MR-124		7.7500		9.6250		3.000	1/4	.120	9.6250	-.0020	9.6265	-.0020	252000	99100
*MR-132		8.2500		10.1250		3.000	1/4	.120	10.1250		10.1265		270000	103000
*MR-140		8.7500		10.6250	-.0014	3.000	1/4	.160	10.6250		10.6265		280000	104000
MR-148		9.2500		11.1250		3.000	1/4	.160	11.1250		11.1265		292000	108000

*Not available from stock. Consult McGill Customer Service for availability.

Outer ring and roller assembly with separable inner ring

Available in 5 seal combinations (see page 69 also)

For a complete bearing, specify both outer and inner, as each is packed and shipped separately. Consult McGill Engineering Department for additional information on CAGEROL® bearing sizes not listed as available with seals. The suffix "SS" indicates double seals with lips turned in (illustrated at right). This construction is most common and is intended primarily for lubrication retention. For other seal combinations, see page 69.



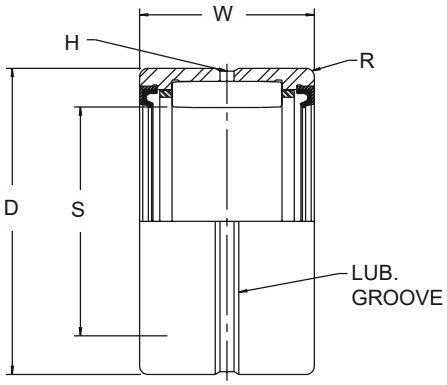
McGILL NUMBER outer ring & roller assy.	McGILL NUMBER inner ring only	B		D*		W	W1	H	R	SHAFT DIA.				HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
		+.0000	TOL.	+.0000	TOL.	+.000 -.005	+.000 -.005	HOLE DIA.	MAX. FILLET for shaft & hsg.	ROTAT. SHAFT	TOL. +.0000	STAT. SHAFT	TOL. +.0000	ROTAT. HSG.	TOL. +.0000	STAT. HSG.	TOL. +.0000		
MR-10-SS	MI-6	.3750	-.0004	1.1250	-.0005	1.000	1.010	5/64	.025	.3755	-.0005	.3747	-.0005	1.1247	-.0007	1.1257	-.0007	4300	4320
MR-12-SS	MI-8	.5000		1.2500		1.000	1.010	5/64	.040	.5005		.4997		1.2497		1.2507		5400	4990
MR-14-SS	MI-10	.6250		1.3750		1.000	1.010	5/64	.040	.6255		.6247		1.3747		1.3757		6000	5280
MR-16-SS	MI-12 MI-13	.7500 .8125	-.0005	1.5000 1.5000		1.000 1.000	1.010 1.010	5/64	.040	.7505 .8129		.7497 .8121		1.4997 1.4997		1.5007 1.5007		7100 7100	5840 5840
MR-18-SS	MI-14 MI-15	.8750 .9375		1.6250 1.6250		1.250 1.250	1.260 1.260	3/32	.040	.8754 .9379		.8746 .9371		1.6247 1.6247		1.6257 1.6257		12200 12200	8720 8720
MR-20-SS	MI-16	1.0000		1.7500		1.250	1.260	3/32	.040	1.0004		.9996		1.7497		1.7507		13100	9020
MR-22-SS	MI-17 MI-18	1.0625 1.1250		1.8750 1.8750		1.250 1.250	1.260 1.260	3/32	.040	1.0630 1.1255		1.0621 1.1246		1.8747 1.8747		1.8757 1.8757		14700 14700	9640 9640
MR-24-SS	MI-19 MI-20	1.1875 1.2500	-.0005	2.0625 2.0625	-.0006	1.250 1.250	1.260 1.260	3/32	.060	1.1880 1.2505		1.1871 1.2496		2.0621 2.0621		2.0632 2.0632		15500 15500	10300 10300
MR-26-SS	MI-21 MI-22-4S	1.3125 1.3750		2.1875 2.1875		1.250 1.250	1.260 1.260	3/32	.060	1.3130 1.3755		1.3121 1.3746		2.1871 2.1871		2.1882 2.1882		16400 16400	10600 10600
MR-28-SS	MI-22 MI-23 MI-24	1.3750 1.4375 1.5000		2.3125 2.3125 2.3125		1.250 1.250 1.250	1.260 1.260 1.260	3/32	.060	1.3755 1.4380 1.5005		1.3746 1.4371 1.4996		2.3121 2.3121 2.3121		2.3132 2.3132 2.3132		18100 18100 18100	11200 11200 11200
MR-30-SS	MI-25-4S	1.5625		2.4375		1.250	1.260	3/32	.060	1.5630		1.5621		2.4371		2.4382		19000	11400
MR-32-SS	MI-25 MI-26 MI-27	1.5625 1.6250 1.6875		2.5625 2.5625 2.5625		1.250 1.250 1.250	1.260 1.260 1.260	3/32	.060	1.5630 1.6255 1.6880		1.5621 1.6246 1.6871		2.5621 2.5621 2.5621		2.5632 2.5632 2.5632		20700 20700 20700	12000 12000 12000
MR-36-SS	MI-28 MI-30	1.7500 1.8750		3.0000 3.0000		1.750 1.750	1.760 1.760	1/8	.060	1.7505 1.8755		1.7496 1.8746		2.9996 2.9996		3.0007 3.0007		39100 39100	22400 22400
MR-40-SS	MI-31 MI-32	1.9375 2.0000		3.2500 3.2500		1.750 1.750	1.760 1.760	1/8	.080	1.9380 2.0005		1.9371 1.9996		3.2496 3.2496		3.2507 3.2507		42900 42900	23400 23400
	MI-34	2.1250	-.0006	3.2500	-.0008	1.750	1.760			2.1258	-.0008	2.1247	-.0008	3.2496	-.0010	3.2507	-.0010	42900	23400
MR-44-SS	MI-35 MI-36	2.1875 2.2500		3.5000 3.5000		1.750 1.750	1.760 1.760	1/8	.080	2.1883 2.2508		2.1872 2.2497		3.4995 3.4995		3.5008 3.5008		46700 46700	24500 24500
MR-48-SS	MI-38 MI-39 MI-40	2.3750 2.4375 2.5000		3.7500 3.7500 3.7500		1.750 1.750 1.750	1.760 1.760 1.760	1/8	.080	2.3758 2.4383 2.5008		2.3747 2.4372 2.4997		3.7495 3.7495 3.7495		3.7508 3.7508 3.7508		52300 52300 52300	26100 26100 26100
†MR-52-SS	MI-42 MI-44	2.6250 2.7500		4.2500 4.2500		1.750 1.750	1.760 1.760	3/16	.080	2.6258 2.7508		2.6247 2.7497		4.2495 4.2495		4.2508 4.2508		54300 54300	25100 25100
MR-56-SS	MI-46 MI-47 MI-48	2.8750 2.9375 3.0000		4.5000 4.5000 4.5000		2.000 2.000 2.000	2.010 2.010 2.010	3/16	.080	2.8758 2.9383 3.0008		2.8747 2.9372 2.9997		4.4995 4.4995 4.4995		4.5008 4.5008 4.5008		71600 71600 71600	31300 31300 31300
†MR-60-SS	MI-50 MI-52	3.1250 3.2500		4.7500 4.7500		2.000 2.000	2.010 2.010	3/16	.100	3.1260 3.2510		3.1246 3.2496		4.7495 4.7495		4.7508 4.7508		74700 74700	31600 31600
†MR-64-SS	MI-54 MI-56	3.3750 3.5000	-.0008	5.0000 5.0000	-.0010	2.000 2.000	2.010 2.010	3/16	.100	3.3758 3.5008	-.0010	3.3746 3.4996	-.0010	4.9999 4.9999	-.0015	5.0011 5.0011	-.0015	80400 80400	32800 32800
†MR-68-SS	MI-58 MI-60	3.6250 3.7500		5.2500 5.2500		2.000 2.000	2.010 2.010	3/16	.100	3.6258 3.7508		3.6246 3.7496		5.2499 5.2499		5.2511 5.2511		86200 86200	34000 34000

† These sizes are not available from stock. Consult McGill Customer Service for availability.
* This dimension may be slightly oversize due to seal press fit.

Outer ring and roller assembly without separable inner ring

Available in 5 seal combinations (see page 69 also)

The outer ring and roller assemblies are for use without inner rings on a ground shaft for which a minimum hardness of 58 Rockwell "C" scale is recommended. The suffix "SS" indicates double seals with lips turned in (illustrated at right). This construction is most common and is intended primarily for lubrication retention. For other seal combinations, see page 69.



S equals shaft diameter

McGILL NUMBER outer ring & roller assy.	S SHAFT DIA.		D*		W	H	R	HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
	+.0000	TOL.	+.0000	TOL.	+.000 -.005	HOLE DIA.	MAX. FILLET FOR HOUSING	ROTATING HOUSING	TOL. +.0000	STATIONARY HOUSING	TOL. +.0000		
MR-10-SS	.6250		1.1250		1.000	5/64	.025	1.1247		1.1257		4300	4320
MR-12-SS	.7500		1.2500		1.000	5/64	.040	1.2497		1.2507		5400	4990
MR-14-SS	.8750		1.3750		1.000	5/64	.040	1.3747		1.3757		6000	5280
MR-16-SS	1.0000		1.5000	-.0005	1.000	5/64	.040	1.4997		1.5007		7100	5840
MR-18-SS	1.1250		1.6250		1.250	3/32	.040	1.6247		1.6257		12200	8720
MR-20-SS	1.2500		1.7500		1.250	3/32	.040	1.7497		1.7507		13100	9020
MR-22-SS	1.3750		1.8750		1.250	3/32	.040	1.8747	-.0007	1.8757	-.0007	14700	9640
MR-24-SS	1.5000		2.0625		1.250	3/32	.060	2.0621		2.0632		15500	10300
MR-26-SS	1.6250		2.1875		1.250	3/32	.060	2.1871		2.1882		16400	10600
MR-28-SS	1.7500	-.0005	2.3125		1.250	3/32	.060	2.3121		2.3132		18100	11200
MR-30-SS	1.8750		2.4375	-.0006	1.250	3/32	.060	2.4371		2.4382		19000	11400
MR-32-SS	2.0000		2.5625		1.250	3/32	.060	2.5621		2.5632		20700	12000
MR-36-SS	2.2500		3.0000		1.750	1/8	.060	2.9996		3.0007		39100	22400
MR-40-SS	2.5000		3.2500		1.750	1/8	.080	3.2496		3.2507		42900	23400
MR-44-SS	2.7500		3.5000		1.750	1/8	.080	3.4995		3.5008		46700	24500
MR-48-SS	3.0000		3.7500		1.750	1/8	.080	3.7495		3.7508		52300	26100
†MR-52-SS	3.2500		4.2500	-.0008	1.750	3/16	.080	4.2495	-.0010	4.2508	-.0010	54300	25100
MR-56-SS	3.5000		4.5000		2.000	3/16	.080	4.4995		4.5008		71600	31300
†MR-60-SS	3.7500		4.7500		2.000	3/16	.100	4.7495		4.7508		74700	31600
†MR-64-SS	4.0000	-.0007	5.0000	-.0010	2.000	3/16	.100	4.9999	-.0015	5.0011	-.0015	80400	32800
†MR-68-SS	4.2500		5.2500		2.000	3/16	.100	5.2499		5.2511		86200	34000

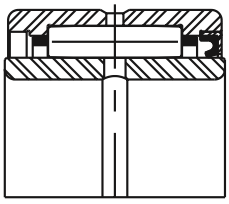
† These sizes are not available from stock. Consult McGill Customer Service for availability.
* This dimension may be slightly oversize due to seal press fit.

Seal operating information

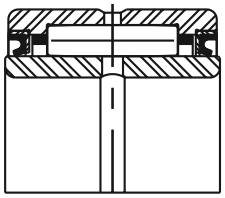
Maximum peripheral shaft speed should not exceed 1000 feet per minute. Maximum operation temperature should not exceed 250°F. constant, 300°F. intermittent. Provision for lead or radius should be made on shaft corner to facilitate assembly of sealed bearings of the RS or SRS configuration. Venting of relubrication pressure is required to avoid displacement of seals in the S or SS configuration.

Other seal combinations and suffixes

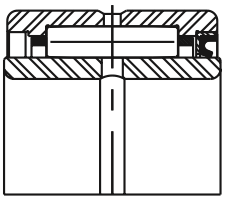
Depending on the type of sealing to be accomplished, the seals for the SMR CAGEROL® Bearing may be applied to the bearing with the lips turned in or out or in combination. With single and double sealed bearings, this means five methods are possible. The arrangements are identified by adding the proper suffix to the standard CAGEROL® bearing number, as explained below.



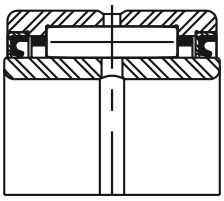
Suffix "S" indicates single seal with lip turned in. Normally, it would be used in conjunction with another sealed bearing on opposite end of shaft and would be intended for lubricant retention.



Suffix "RSS" is the designation for double-sealed bearing with both seal lips turned out. Primary function of "RSS" seals would be to help prevent entry of foreign material from either end.



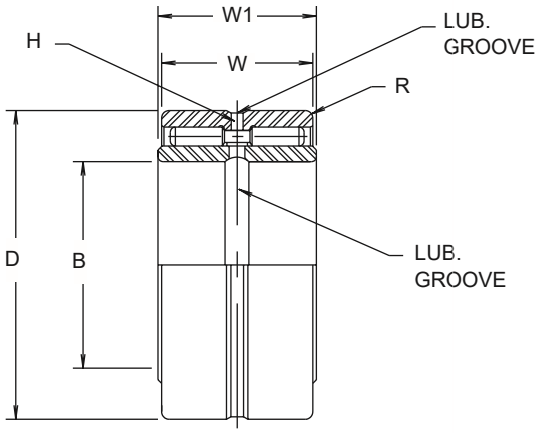
Suffix "RS" indicates single seal with lip turned out. Seal location would be intended primarily to help prevent entry of foreign material. Application is similar to that listed for "S" listings.



Suffix "SRS" indicates double seal with one lip turned in to retain lubricant and one turned out to help prevent entry of foreign material. Permits relubrication without displacing seal due to grease pressure.

Outer ring and roller assembly with separable inner ring

Outer ring and roller assemblies and associated inner rings are packed and shipped separately. For a complete bearing, specify both outer and inner numbers desired.

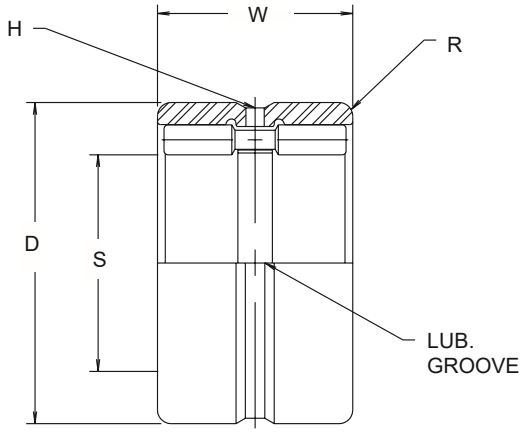


McGILL NUMBER outer ring & roller assy.	McGILL NUMBER inner ring only	ABMA NUMBER	B		D		W	W1	H	R	SHAFT DIA.				HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
			+.0000	TOL.	+.0000	TOL.	+.00-0 -.005	+.00-0 -.005	HOLE DIA.	MAX. FILLET for shaft & hsg.	ROTAT. SHAFT	TOL. +.000-0	STAT. SHAF-T	TOL. +.0000	ROTAT. HSG.	TOL. +.0000	STAT. HSG.	TOL. +.0000		
GR-10-N	MI-6-N	6NAS1218	.3750		1.1250		.750	.760	5/64	.025	.3755		.3747		1.1247		1.1257		6400	3400
GR-10-N	MI-7-N	7NAS1218	.4375		1.1250		.750	.760	5/64	.025	.4380		.4372		1.1247		1.1257		6400	3400
GR-10	MI-6	6NAS1618	.3750		1.1250		1.000	1.010	5/64	.025	.3755		.3747		1.1247		1.1257		9100	4700
GR-12-N	MI-8-N	8NAS1220	.5000		1.2500		.750	.760	5/64	.040	.5005		.4997		1.2497		1.2507		7200	3700
GR-12-N	MI-9-N	9NAS1220	.5625		1.2500		.750	.760	5/64	.040	.5630		.5623		1.2497		1.2507		7200	3700
GR-12	MI-8	8NAS1620	.5000	-.0004	1.2500		1.000	1.010	5/64	.040	.5005		.4997		1.2497		1.2507		10900	5100
GR-14-N	MI-10-N	10NAS1222	.6250		1.3750		.750	.760	5/64	.040	.6255		.6247		1.3747		1.3757		8400	4150
GR-14-N	MI-11-N	11NAS1222	.6875		1.3750		.750	.760	5/64	.040	.6880		.6872		1.3747		1.3757		8400	4150
GR-14	MI-10	10NAS1622	.6250		1.3750		1.000	1.010	5/64	.040	.6255		.6247		1.3747		1.3757		12800	5700
GR-16-N	MI-12-N	12NAS1224	.7500		1.5000		.750	.760	5/64	.040	.7505		.7497		1.4997		1.5007		9600	4350
GR-16-N	MI-13-N		.8125		1.5000		.750	.760	5/64	.040	.8129		.8121		1.4997		1.5007		9600	4350
GR-16	MI-12	12NAS1624	.7500		1.5000	-.0005	1.000	1.010	5/64	.040	.7505		.7497		1.4997		1.5007		14500	6050
GR-16	MI-13	13NAS1624	.8125		1.5000		1.000	1.010	5/64	.040	.8129		.8121		1.4997		1.5007		14500	6050
GR-18-N	MI-14-N	14NAS1626	.8750		1.6250		1.000	1.010	3/32	.040	.8754		.8746		1.6247		1.6257		15200	6250
GR-18-N	MI-15-N	15NAS1626	.9375		1.6250		1.000	1.010	3/32	.040	.9379		.9371		1.6247		1.6257		15200	6250
GR-18	MI-14	14NAS2026	.8750		1.6250		1.250	1.260	3/32	.040	.8754	-.0005	.8746	-.0005	1.6247	-.0007	1.6257	-.0007	20900	7900
GR-18	MI-15	15NAS2026	.9375		1.6250		1.250	1.260	3/32	.040	.9379		.9371		1.6247		1.6257		20900	7900
GR-20-N	MI-16-N	16NAS1628	1.0000		1.7500		1.000	1.010	3/32	.040	1.0004		.9996		1.7497		1.7507		17000	6500
GR-20	MI-16	16NAS2028	1.0000		1.7500		1.250	1.260	3/32	.040	1.0004		.9996		1.7497		1.7507		23100	8300
GR-22-N	MI-18-N	18NAS1630	1.1250		1.8750		1.000	1.010	3/32	.040	1.1255		1.1246		1.8747		1.8757		18600	7100
GR-22	MI-17	17NAS2030	1.0625		1.8750		1.250	1.260	3/32	.040	1.0630		1.0621		1.8747		1.8757		25500	9050
GR-22	MI-18	18NAS2030	1.1250	-.0005	1.8750		1.250	1.260	3/32	.040	1.1255		1.1246		1.8747		1.8757		25500	9050
GR-24-N	MI-20-N	20NAS1633	1.2500		2.0625		1.000	1.010	3/32	.060	1.2505		1.2496		2.0621		2.0632		20200	7150
GR-24	MI-19	19NAS2033	1.1875		2.0625		1.250	1.260	3/32	.060	1.1880		1.1871		2.0621		2.0632		27800	9150
GR-24	MI-20	20NAS2033	1.2500		2.0625		1.250	1.260	3/32	.060	1.2505		1.2496		2.0621		2.0632		27800	9150
GR-26-N	MI-21-N	21NAS1635	1.3125		2.1875		1.000	1.010	3/32	.060	1.3130		1.3121		2.1871		2.1882		21700	7500
GR-26	MI-21	21NAS2035	1.3125		2.1875	-.0006	1.250	1.260	3/32	.060	1.3130		1.3121		2.1871		2.1882		29800	9600
GR-26	MI-22-4S	21NAS2035	1.3750		2.1875		1.250	1.260	3/32	.060	1.3755		1.3746		2.1871		2.1882		29800	9600
GR-28	MI-22	22NAS2037	1.3750		2.3125		1.250	1.260	3/32	.060	1.3755		1.3746		2.3121		2.3132		32100	9850
GR-28	MI-23	23NAS2037	1.4375		2.3125		1.250	1.260	3/32	.060	1.4380		1.4371		2.3121		2.3132		32100	9850
GR-28	MI-24	24NAS2037	1.5000		2.3125		1.250	1.260	3/32	.060	1.5005		1.4996		2.3121		2.3132		32100	9850

McGILL NUMBER outer ring & roller assy.	McGILL NUMBER inner ring only	ABMA NUMBER	B		D		W	W1	H	R	SHAFT DIA.				HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
			+.0000	TOL.	+.0000	TOL.	+.000 -.005	+.000 -.005	HOLE DIA.	MAX. FILLET for shaft & hsg.	ROTAT. SHAFT	TOL. +.0000	STAT. SHAFT	TOL. +.0000	ROTAT. HSG.	TOL. +.0000	STAT. HSG.	TOL. +.0000		
GR-30	MI-25-4S	25NAS2039	1.5625	-.0005	2.4375	-.0006	1.250	1.260	3/32	.060	1.5630	-.0005	1.5621	-.0005	2.4371	-.0007	2.4382	-.0007	34600	10450
GR-32-N	MI-26-N	26NAS1641	1.6250		2.5625		1.000	1.010	3/32	.060	1.6255		1.6246		2.5621		2.5632		26700	8000
GR-32	MI-25	25NAS2041	1.5625		2.5625		1.250	1.260	3/32	.060	1.5630		1.5621		2.5621		2.5632		36700	10250
GR-32	MI-26	26NAS2041	1.6250		2.5625		1.250	1.260	3/32	.060	1.6255		1.6246		2.5621		2.5632		36700	10250
GR-32	MI-27	27NAS2041	1.6875		2.5625		1.250	1.260	3/32	.060	1.6880		1.6871		2.5621		2.5632		36700	10250
GR-36-N	MI-28-N	28NAS2448	1.7500		3.0000		1.500	1.510	1/8	.060	1.7505		1.7496		2.9996		3.0007		49100	15250
GR-36	MI-28	28NAS2848	1.7500		3.0000		1.750	1.760	1/8	.060	1.7505		1.7496		2.9996		3.0007		60200	18450
GR-36	MI-30	30NAS2848	1.8750		3.0000		1.750	1.760	1/8	.060	1.8755		1.8746		2.9996		3.0007		60200	18450
GR-40-N	MI-32-N	32NAS2452	2.0000		3.2500		1.500	1.510	1/8	.080	2.0005		1.9996		3.2496		3.2507		54500	16200
GR-40	MI-31	31NAS2852	1.9375		3.2500		1.750	1.760	1/8	.080	1.9380		1.9371		3.2496		3.2507		66800	19800
GR-40	MI-32	32NAS2852	2.0000		3.2500		1.750	1.760	1/8	.080	2.0005		1.9996		3.2496		3.2507		66800	19800
GR-40	MI-34	34NAS2852	2.1250		3.2500		1.750	1.760	1/8	.080	2.1258		2.1247		3.2496		3.2507		66800	19800
GR-44-N	MI-36-N	36NAS2546	2.2500	-.0006	3.5000	-.0008	1.500	1.510	1/8	.080	2.2508	-.0008	2.2497	-.0008	3.4995	-.0010	3.5008	-.0010	59900	16800
GR-44	MI-35	35NAS2856	2.1875		3.5000		1.750	1.760	1/8	.080	2.1883		2.1872		3.4995		3.5008		73400	20350
GR-44	MI-36	36NAS2856	2.2500		3.5000		1.750	1.760	1/8	.080	2.2508		2.2497		3.4995		3.5008		73400	20350
GR-48-N	MI-40-N	40NAS2460	2.5000		3.7500		1.500	1.510	1/8	.080	2.5008		2.4997		3.7495		3.7508		65400	17350
GR-48	MI-38	38NAS2860	2.3750		3.7500		1.750	1.760	1/8	.080	2.3758		2.3747		3.7495		3.7508		80200	20600
GR-48	MI-39	39NAS2860	2.4375		3.7500		1.750	1.760	1/8	.080	2.4383		2.4372		3.7495		3.7508		80200	20600
GR-48	MI-40	40NAS2860	2.5000		3.7500		1.750	1.760	1/8	.080	2.5008		2.4997		3.7495		3.7508		80200	20600
GR-52	MI-42	42NAS2868	2.6250		4.2500		1.750	1.760	3/16	.080	2.6258		2.6247		4.2495		4.2508		80100	23950
GR-52	MI-44	44NAS2868	2.7500		4.2500		1.750	1.760	3/16	.080	2.7508		2.7497		4.2495		4.2508		80100	23950
GR-56-N	MI-48-N	48NAS2872	3.0000		4.5000		1.750	1.760	3/16	.080	3.0008		2.9997		4.4995		4.5008		86500	25100
GR-56	MI-46	46NAS3272	2.8750		4.5000		2.000	2.010	3/16	.080	2.8758		2.8747		4.4995		4.5008		104000	28900
GR-56	MI-47	47NAS3272	2.9375		4.5000		2.000	2.010	3/16	.080	2.9383		2.9372		4.4995		4.5008		104000	28900
GR-56	MI-48	48NAS3272	3.0000		4.5000		2.000	2.010	3/16	.080	3.0008		2.9997		4.4995		4.5008		104000	28900
GR-60	MI-50	50NAS3276	3.1250	-.0008	4.7500	-.0010	2.000	2.010	3/16	.100	3.1260	-.0010	3.1246	-.0010	4.7495	-.0015	4.7508	-.0015	111000	29300
GR-60	MI-52	52NAS3276	3.2500		4.7500		2.000	2.010	3/16	.100	3.2510		3.2496		4.7495		4.7508		111000	29300
GR-64	MI-54	54NAS3280	3.3750		5.0000		2.000	2.010	3/16	.100	3.3758		3.3746		4.9999		5.0011		119000	30100
GR-64	MI-56	56NAS3280	3.5000		5.0000		2.000	2.010	3/16	.100	3.5008		3.4996		4.9999		5.0011		119000	30100
GR-68	MI-58	58NAS3284	3.6250		5.2500		2.000	2.010	3/16	.100	3.6258		3.6246		5.2499		5.2511		126000	31500
GR-68	MI-60	60NAS3284	3.7500		5.2500		2.000	2.010	3/16	.100	3.7508		3.7496		5.2499		5.2511		126000	31500
GR-72	MI-62	62NAS3696	3.8750		6.0000		2.250	2.260	1/4	.100	3.8758		3.8746		5.9999		6.0011		145000	43400
GR-80	MI-64	64NAS36104	4.0000		6.5000		2.250	2.260	1/4	.100	4.0008		3.9996		6.4999		6.5011		161000	48800
GR-80	MI-68	68NAS36104	4.2500		6.5000		2.250	2.260	1/4	.100	4.2508		4.2496		6.4999		6.5011		161000	48800
GR-88-N	MI-72-N	72NAS40112	4.5000		7.0000		2.500	2.515	1/4	.100	4.5008		4.4996		6.9999		7.0011		171000	60700
GR-88	MI-72	72NAS48112	4.5000		7.0000		3.000	3.015	1/4	.100	4.5008		4.4996		6.9999		7.0011		205000	65000
GR-96-N	MI-80-N	80NAS40120	5.0000	-.0010	7.5000	-.0012	2.500	2.515	1/4	.120	5.0010		4.9995		7.4998		7.5011		223000	65700
GR-96	MI-80	80NAS48120	5.0000		7.5000		3.000	3.015	1/4	.120	5.0010		4.9995		7.4998		7.5011		283000	71400
GR-104-N	MI-88-N	88NAS40128	5.5000		8.0000		2.500	2.515	1/4	.120	5.5010		5.4995		7.9998		8.0011		242000	68900
GR-104	MI-88	88NAS48128	5.5000		8.0000		3.000	3.015	1/4	.120	5.5010		5.4995		7.9998		8.0011		308000	75000
GR-116	MI-96	96NAS48146	6.0000		9.1250		3.000	3.015	1/4	.120	6.0012		5.9995		9.1248		9.1261		332000	83900
GR-124	MI-104	104NAS48154	6.5000		9.6250		3.000	3.015	1/4	.120	6.5012		6.4995		9.6250		9.6265		355000	86200
GR-132	MI-112	112NAS48162	7.0000		10.1250		3.000	3.015	1/4	.120	7.0012	-.0012	6.9995	-.0012	10.1250	-.0020	10.1265	-.0020	378000	88700
GR-140	MI-120	120NAS48170	7.5000	-.0012	10.6250	-.0014	3.000	3.015	1/4	.160	7.5010		7.4995		10.6250		10.6265		401000	91500
GR-148	MI-128	128NAS48170	8.0000		11.1250		3.000	3.015	1/4	.160	8.0010		7.9995		11.1250		11.1265		423000	93500

Outer ring and roller assembly without separable inner ring

The outer ring and roller assemblies (GR) shown in this table are for use without inner rings on a ground shaft for which a minimum hardness of 58 Rockwell "C" scale is recommended.



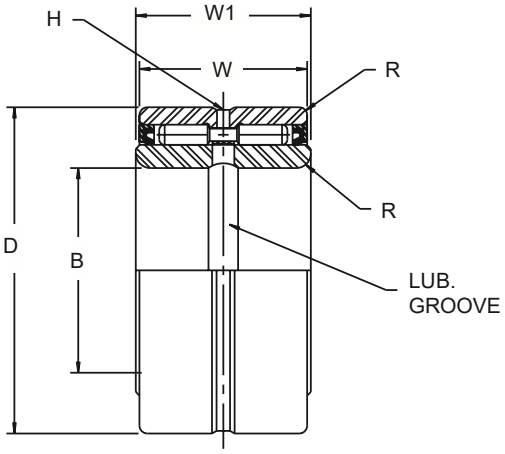
McGILL NUMBER outer ring & roller assy.	ABMA NUMBER	S SHAFT DIA.		D		W	H	R	HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
		+.0000	TOL.	+.0000	TOL.	+.000 -.005	HOLE DIA.	MAX. FILLET FOR HOUSING	ROTATING HOUSING	TOL. +.0000	STATIONARY HOUSING	TOL. +.0000		
GR-8-N	8NAR1216	.5000	-.0005	1.0000	-.0005	.750	5/64	.025	.9997	-.0007	1.0007	-.0007	4500	2600
GR-10-N	10NAR1218	.6250		1.1250		.750	5/64	.025	1.1247		1.1257		6400	3400
GR-10	10NAR1618					1.000							9100	4700
GR-12-N	12NAR1220	.7500		1.2500		.750	5/64	.040	1.2497		1.2507		7200	3700
GR-12	12NAR1620					1.000							10900	5100
GR-14-N	14NAR1222	.8750		1.3750		.750	5/64	.040	1.3747		1.3757		8400	4150
GR-14	14NAR1622					1.000							12800	5700
GR-16-N	16NAR1224	1.0000		1.5000		.750	5/64	.040	1.4997		1.5007		9600	4350
GR-16	16NAR1624					1.000							14500	6050
GR-18-N	18NAR1626	1.1250		1.6250		1.000	3/32	.040	1.6247		1.6257		15200	6250
GR-18	18NAR2026					1.250							20900	7900
GR-20-N	20NAR1628	1.2500		1.7500		1.000	3/32	.040	1.7497		1.7507		17000	6500
GR-20	20NAR2028					1.250							23100	8300
GR-22-N	22NAR1630	1.3750		1.8750		1.000	3/32	.040	1.8747		1.8757		18600	7100
GR-22	22NAR2030					1.250							25500	9050
GR-24-N	24NAR1633	1.5000		2.0625	-.0006	1.000	3/32	.060	2.0621		2.0632		20200	7150
GR-24	24NAR2033					1.250							27800	9150
GR-26-N	26NAR1635	1.6250		2.1875		1.000	3/32	.060	2.1871		2.1882		21700	7500
GR-26	26NAR2035					1.250							29800	9600
GR-28	28NAR2037	1.7500		2.3125		1.250	3/32	.060	2.3121		2.3132		32100	9850
GR-30	30NAR2039	1.8750		2.4375		1.250	3/32	.060	2.4371		2.4382		34600	10450
GR-32-N	32NAR1641	2.0000		2.5625		1.000	3/32	.060	2.5621		2.5632		26700	8000
GR-32	32NAR2041					1.250							36700	10250
GR-36-N	36NAR2448	2.2500		3.0000		1.500	1/8	.060	2.9996		3.0007		49100	15250
GR-36	36NAR2848					1.750							60200	18450
GR-40-N	40NAR2452	2.5000		3.2500		1.500	1/8	.080	3.2496		3.2507		54500	16200
GR-40	40NAR2852					1.750							66800	19800
GR-44-N	44NAR2456	2.7500		3.5000	-.0008	1.500	1/8	.080	3.4995	-.0010	3.5008	-.0010	59900	16800
GR-44	44NAR2856					1.750							73400	20350
GR-48-N	48NAR2460	3.0000		3.7500		1.500	1/8	.080	3.7495		3.7508		65400	17350
GR-48	48NAR2860					1.750							80200	20600
GR-52	52NAR2868	3.2500		4.2500		1.750	3/16	.080	4.2495		4.2508		80100	23950
GR-56-N	56NAR2872	3.5000		4.5000		1.750	3/16	.080	4.4995		4.5008		86500	25100
GR-56	56NAR3272					2.000							104000	28900
GR-60	60NAR3276	3.7500		4.7500		2.000	3/16	.100	4.7495		4.7508		111000	29300
GR-64	64NAR3280	4.0000	-.0007	5.0000	-.0010	2.000	3/16	.100	4.9999	-.0015	5.0011	-.0015	119000	30900
GR-68	68NAR3284	4.2500		5.2500		2.000	3/16	.100	5.2499		5.2511		126000	31500
GR-72	72NAR3696	4.5000		6.0000		2.250	1/4	.100	5.9999		6.0011		145000	43400
GR-80	80NAR36104	5.0000		6.5000		2.250	1/4	.100	6.4999		6.5011		161000	48800
GR-88-N	88NAR40112	5.5000		7.0000		2.500	1/4	.100	6.9999		7.0011		171000	60700
GR-88	88NAR48112					3.000							205000	65000
GR-96-N	96NAR40120	6.0000	-.0010	7.5000	-.0012	2.500	1/4	.120	7.4998		7.5011		223000	65700
GR-96	96NAR48120					3.000							283000	71400
GR-104-N	104NAR40128	6.5000		8.0000		2.500	1/4	.120	7.9998		8.0011		242000	68900
GR-104	104NAR48128					3.000							308000	75000
GR-116	116NAR48146	7.2500		9.1250		3.000	1/4	.120	9.1248		9.1261		332000	83900
GR-124	124NAR48154	7.7500		9.6250		3.000	1/4	.120	9.6250	-.0020	9.6265	-.0020	355000	86200
GR-132	132NAR48162	8.2500		10.1250		3.000	1/4	.120	10.1250		10.1265		378000	88700
GR-140	140NAR48170	8.7500		10.6250	-.0014	3.000	1/4	.160	10.6250		10.6265		401000	91500
GR-148	148NAR48178	9.2500		11.1250		3.000	1/4	.160	11.1250		11.1265		423000	93500

NOTE: Some larger sizes not available from stock. Consult McGill Customer Service for availability.

Outer ring and roller assembly with separate inner ring

Available in 5 seal combinations (see page 75 also)

For a complete bearing, specify both outer and inner, as each is packed and shipped separately. Consult McGill Engineering Department for additional information on GUIDEROL® bearing sizes not listed as available with seals. The suffix "SS" indicates double seals with lips turned in (illustrated at right). This construction is most common and is intended primarily for lubrication retention. For other seal combinations, see page 75.



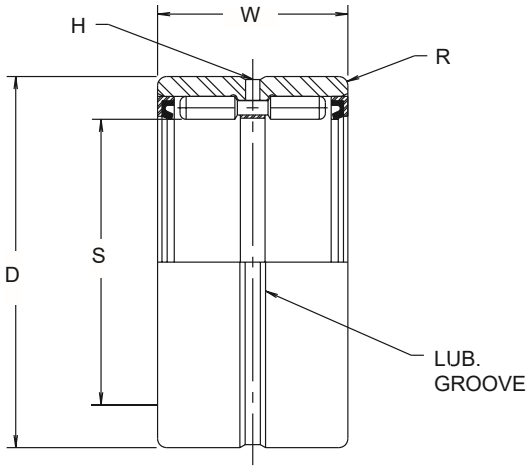
McGILL NUMBER outer ring & roller assy.	McGILL NUMBER inner ring only	B		D*		W	W1	H	R	SHAFT DIA.				HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
		+.0000	TOL.	+.0000	TOL.	+.000 -.005	+.000 -.005	HOLE DIA.	MAX. FILLET for shaft & hsg.	ROTAT. SHAFT	TOL. +.0000	STAT. SHAFT	TOL. +.0000	ROTAT. HSG.	TOL. +.0000	STAT. HSG.	TOL. +.0000		
GR-10-SS	MI-6	.3750	-.0004	1.1250	-.0005	1.000	1.010	5/64	.025	.3755	-.0005	.3747	-.0005	1.1247	-.0007	1.1257	-.0007	6400	3400
GR-12-SS	MI-8	.5000		1.2500		1.000	1.010	5/64	.040	.5005		.4997		1.2497		1.2497		7200	3700
GR-14-SS	MI-10	.6250		1.3750		1.000	1.010	5/64	.040	.6255		.6247		1.3747		1.3757		8400	4150
GR-16-SS	MI-12	.7500		1.5000		1.000	1.010	5/64	.040	.7505		.7497		1.4997		1.5007		9600	4350
	MI-13	.8125	-.0005	1.5000		1.000	1.010			.8129		.8121		1.4997		1.5007		9600	4350
GR-18-SS	MI-14	.8750		1.6250		1.250	1.260	3/32	.040	.8754		.8746		1.6247		1.6257		15200	6250
	MI-15	.9375		1.6250		1.250	1.260			.9379		.9371		1.6247		1.6257		15200	6250
GR-20-SS	MI-16	1.0000		1.7500		1.250	1.260	3/32	.040	1.0004		.9996		1.7497		1.7507		17000	6500
GR-22-SS	MI-17	1.0625		1.8750		1.250	1.260	3/32	.040	1.0630		1.0621		1.8747		1.8757		18600	7100
	MI-18	1.1250		1.8750		1.250	1.260			1.1255		1.1246		1.8747		1.8757		18600	7100
GR-24-SS	MI-19	1.1875		2.0625	-.0006	1.250	1.260	3/32	.060	1.1880		1.1871		2.0621		2.0632		20200	7150
	MI-20	1.2500		2.0625		1.250	1.260			1.2505		1.2496		2.0621		2.0632		20200	7150
GR-26-SS	MI-21	1.3125		2.1875		1.250	1.260	3/32	.060	1.3130		1.3121		2.1871		2.1882		21700	7500
	MI-22-4S	1.3750		2.1875		1.250	1.260			1.3755		1.3746		2.1871		2.1882		21700	7500
GR-28-SS	MI-22	1.3750	-.0005	2.3125		1.250	1.260	3/32	.060	1.3755		1.3746		2.3121		2.3132		23300	7750
	MI-23	1.4375		2.3125		1.250	1.260			1.4380		1.4371		2.3121		2.3132		23300	7750
	MI-24	1.5000		2.3125		1.250	1.260			1.5005		1.4996		2.3121		2.3132		23300	7750
GR-30-SS	MI-25-4S	1.5625		2.4375		1.250	1.260	3/32	.060	1.5630		1.5621		2.4371		2.4382		25200	8150
GR-32-SS	MI-25	1.5625		2.5625		1.250	1.260	3/32	.060	1.5630		1.5621		2.5621		2.5632		26700	8000
	MI-26	1.6250		2.5625		1.250	1.260			1.6255		1.6246		2.5621		2.5632		26700	8000
	MI-27	1.6875		2.5625		1.250	1.260			1.6880		1.6871		2.5621		2.5632		26700	8000
GR-36-SS	MI-28	1.7500		3.0000		1.750	1.760	1/8	.060	1.7505		1.7496		2.9996		3.0007		49100	15250
	MI-30	1.8750		3.0000		1.750	1.760			1.8755		1.8746		2.9996		3.0007		49100	15250
GR-40-SS	MI-31	1.9375		3.2500		1.750	1.760	1/8	.080	1.9380		1.9371		3.2496		3.2507		54500	16200
	MI-32	2.0000		3.2500		1.750	1.760			2.0005		1.9996		3.2496		3.2507		54500	16200
	MI-34	2.1250	-.0006	3.2500	-.0008	1.750	1.760			2.1258	-.0008	2.1247	-.0008	3.2496	-.0010	3.2507	-.0010	54500	16200
GR-44-SS	MI-35	2.1875		3.5000		1.750	1.760	1/8	.080	2.1883		1.1872		3.4995		3.5008		59900	16800
	MI-36	2.2500		3.5000		1.750	1.760			2.2508		2.2497		3.4995		3.5008		59900	16800
GR-48-SS	MI-38	2.3750		3.7500		1.750	1.760	1/8	.080	2.3758		2.3747		3.7495		3.7508		65400	17350
	MI-39	2.4375		3.7500		1.750	1.760			2.4383		2.4372		3.7495		3.7508		65400	17350
	MI-40	2.5000		3.7500		1.750	1.760			2.5008		2.4997		3.7495		3.7508		65400	17350
GR-52-SS	MI-42	2.6250		4.2500		1.750	1.760	3/16	.080	2.6258		2.6247		4.2495		4.2508		63800	20050
	MI-44	2.7500		4.2500		1.750	1.760			2.7508		2.7497		4.2495		4.2508		63800	20050
GR-56-SS	MI-46	2.8750		4.5000		2.000	2.010	3/16	.080	2.8758		2.8747		4.4995		4.5008		86500	25100
	MI-47	2.9375		4.5000		2.000	2.010			2.9383		2.9372		4.4995		4.5008		86500	25100
	MI-48	3.0000		4.5000		2.000	2.010			3.0008		2.9997		4.4995		4.5008		86500	25100
GR-60-SS	MI-50	3.1250		4.7500		2.000	2.010	3/16	.100	3.1260		3.1246		4.7495		4.7508		92300	25450
	MI-52	3.2500		4.7500		2.000	2.010			3.2510		3.2496		4.7495		4.7508		92300	25450
GR-64-SS	MI-54	3.3750	-.0008	5.0000	-.0010	2.000	2.010	3/16	.100	3.3758	-.0010	3.3746	-.0010	4.9999	-.0015	5.0011	-.0015	98800	26750
	MI-56	3.5000		5.0000		2.000	2.010			3.5008		3.4996		4.9999		5.0011		98800	26750
GR-68-SS	MI-58	3.6250		5.2500		2.000	2.010	3/16	.100	3.6258		3.6246		5.2499		5.2511		104000	27400
	MI-60	3.7500		5.2500		2.000	2.010			3.7508		3.7496		5.2499		5.2511		104000	27400

* This dimension may be slightly oversize due to seal press fit.

Outer ring and roller assembly without separable inner ring

Available in 5 seal combinations (see page 75 also)

The outer ring and roller assemblies are for use without inner rings on a ground shaft for which a minimum hardness of 58 Rockwell "C" scale is recommended. The suffix "SS" indicates double seals with lips turned in (illustrated at right). This construction is most common and is intended primarily for lubrication retention. For other seal combinations, see page 75.



McGILL NUMBER outer ring & roller assy.	S SHAFT DIA.		D*		W	H	R	HSG. BORE DIA.				STATIC LOAD RATING (LBS.)	BASIC DYNAMIC RATING (LBS.)
	+.0000	TOL.	+.0000	TOL.	+.000 -.005	HOLE DIA.	MAX. FILLET FOR HOUSING	ROTATING HOUSING	TOL. +.0000	STATIONARY HOUSING	TOL. +.0000		
GR-10-SS	.6250		1.1250		1.000	5/64	.025	1.1247		1.1257		6400	3400
GR-12-SS	.7500		1.2500		1.000	5/64	.040	1.2497		1.2507		7200	3700
GR-14-SS	.8750		1.3750		1.000	5/64	.040	1.3747		1.3757		8400	4150
GR-16-SS	1.0000		1.5000	-.0005	1.000	5/64	.040	1.4997		1.5007		9600	4350
GR-18-SS	1.1250		1.6250		1.250	3/32	.040	1.6247		1.6257		15200	6250
GR-20-SS	1.2500		1.7500		1.250	3/32	.040	1.7497		1.7507		17000	6500
GR-22-SS	1.3750		1.8750		1.250	3/32	.040	1.8747	-.0007	1.8757	-.0007	18600	7100
GR-24-SS	1.5000		2.0625		1.250	3/32	.060	2.0621		2.0632		20200	7150
GR-26-SS	1.6250		2.1875		1.250	3/32	.060	2.1871		2.1882		21700	7500
GR-28-SS	1.7500	-.0005	2.3125		1.250	3/32	.060	2.3121		2.3132		23300	7750
GR-30-SS	1.8750		2.4375	-.0006	1.250	3/32	.060	2.4371		2.4382		25200	8150
GR-32-SS	2.0000		2.5625		1.250	3/32	.060	2.5621		2.5632		26700	8000
GR-36-SS	2.2500		3.0000		1.750	1/8	.060	2.9996		3.0007		49100	15250
GR-40-SS	2.5000		3.2500		1.750	1/8	.080	3.2496		3.2507		54500	16200
GR-44-SS	2.7500		3.5000		1.750	1/8	.080	3.4995		3.5008		59900	16800
GR-48-SS	3.0000		3.7500		1.750	1/8	.080	3.7495		3.7508		65400	17350
GR-52-SS	3.2500		4.2500	-.0008	1.750	3/16	.080	4.2495	-.0010	4.2508	-.0010	63800	20050
GR-56-SS	3.5000		4.5000		2.000	3/16	.080	4.4995		4.5008		86500	25100
GR-60-SS	3.7500		4.7500		2.000	3/16	.100	4.7495		4.7508		92300	25450
GR-64-SS	4.0000	-.0007	5.0000	-.0010	2.000	3/16	.100	4.9999	-.0015	5.0011	-.0015	98800	26750
GR-68-SS	4.2500		5.2500		2.000	3/16	.100	5.2499		5.2511		104000	27400

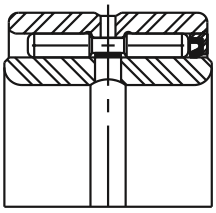
* This dimension may be slightly oversize due to seal press fit.

Seal operating information

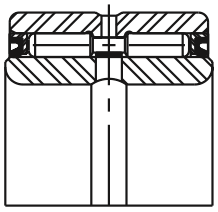
Maximum peripheral shaft speed should not exceed 1000 feet per minute. Maximum operation temperature should not exceed 250°F. constant, 300°F. intermittent. Provision for lead or radius should be made on shaft corner to facilitate assembly of sealed bearings of the RS or SRS configuration. Venting of relubrication pressure is required to avoid displacement of seals in the S or SS configuration.

Other seal combinations and suffixes

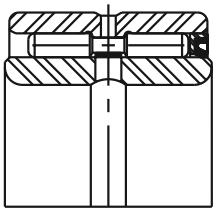
Depending on the type of sealing to be accomplished, the seals for the SG GUIDEROL® Bearing may be applied to the bearing with the lips turned in or out or in combination. With single and double sealed bearings, this means five methods are possible. The arrangements are identified by adding the proper suffix to the standard GUIDEROL® bearing number, as explained below.



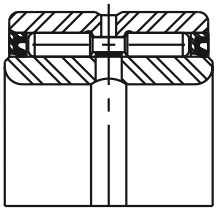
Suffix "S" indicates single seal with lip turned in. Normally, it would be used in conjunction with another sealed bearing on opposite end of shaft and would be intended for lubricant retention.



Suffix "RSS" is the designation for double-sealed bearing with both seal lips turned out. Primary function of "RSS" seals would be to help prevent entry of foreign material from either end.



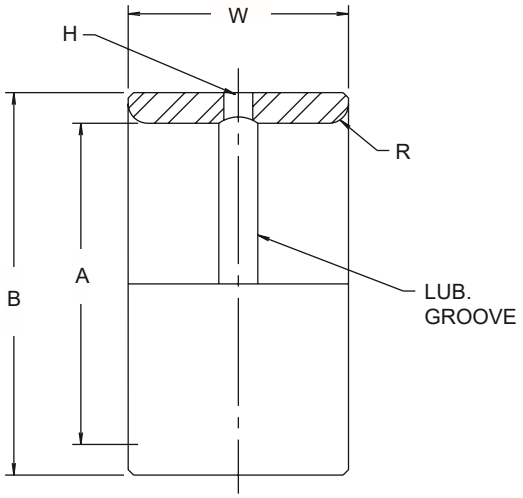
Suffix "RS" indicates single seal with lip turned out. Seal location would be intended primarily to help prevent entry of foreign material. Application is similar to that listed for "S" listings.



Suffix "SRS" indicates double seal with one lip turned in to retain lubricant and one turned out to help prevent entry of foreign material. Permits relubrication without displacing seal due to grease pressure.

MI INNER RACES

McGILL® MI series inner races, as shown in preceding pages with outer race and roller assemblies, are repeated below for convenience of application as hardened and ground steel bushings or sleeves. They are complete with radial oil holes and annular lubrication grooves. Inner races of special configurations and materials are available on special order to suit individual requirements.



McGILL INNER RING NUMBER	MILITARY STANDARD NUMBER	DIMENSIONS IN INCHES						
		A BORE DIA.		B INNER O.D.		W WIDTH +.000 -.005	H HOLE DIA.	R MAX. FILLET FOR SHAFT
		NOM.	TOL. +.0000	NOM.	TOL. +.0000			
MI-6		.3750	-.0004	.6245	-.0004	1.010	3/32	.025
MI-6-N	MS 51962-1	.3750	-.0004	.6245	-.0004	.760	3/32	.025
MI-7-N		.4375	-.0004	.6245	-.0004	.760	3/32	.025
MI-8	MS 51962-3	.5000	-.0004	.7493	-.0005	1.010	1/8	.040
MI-8-N	MS 51962-2	.5000	-.0004	.7493	-.0005	.760	1/8	.040
MI-9-N		.5625	-.0004	.7493	-.0005	.760	1/8	.040
MI-10		.6250	-.0004	.8743	-.0005	1.010	1/8	.040
MI-10-N	MS 51962-4	.6250	-.0004	.8743	-.0005	.760	1/8	.040
MI-11-N		.6875	-.0004	.8743	-.0005	.760	1/8	.040
MI-12		.7500	-.0004	.9993	-.0005	1.010	1/8	.040
MI-12-N	MS 51962-5	.7500	-.0004	.9993	-.0005	.760	1/8	.040
MI-13	MS 51962-7	.8125	-.0005	.9993	-.0005	1.010	1/8	.040
MI-13-N	MS 51962-6	.8125	-.0005	.9993	-.0005	.760	1/8	.040
MI-14		.8750	-.0005	1.1241	-.0005	1.260	1/8	.040
MI-14-N	MS 51962-8	.8750	-.0005	1.1241	-.0005	1.010	1/8	.040
MI-15		.9375	-.0005	1.1241	-.0005	1.260	1/8	.040
MI-15-N	MS 51962-9	.9375	-.0005	1.1241	-.0005	1.010	1/8	.040
MI-16	MS 51962-11	1.0000	-.0005	1.2491	-.0006	1.260	1/8	.040
MI-16-N	MS 51962-10	1.0000	-.0005	1.2491	-.0006	1.010	1/8	.040
MI-17		1.0625	-.0005	1.3741	-.0006	1.260	1/8	.040
MI-18	MS 51962-13	1.1250	-.0005	1.3741	-.0006	1.260	1/8	.040
MI-18-N	MS 51962-12	1.1250	-.0005	1.3741	-.0006	1.010	1/8	.040
MI-19	MS 51962-14	1.1875	-.0005	1.4990	-.0006	1.260	1/8	.060
MI-20	MS 51962-16	1.2500	-.0005	1.4990	-.0006	1.260	1/8	.060
MI-20-N	MS 51962-15	1.2500	-.0005	1.4990	-.0006	1.010	1/8	.060
MI-21		1.3125	-.0005	1.6240	-.0006	1.260	1/8	.060
MI-21-N	MS 51962-17	1.3125	-.0005	1.6240	-.0006	1.010	1/8	.060

MI INNER RACES

McGILL INNER RING NUMBER	MILITARY STANDARD NUMBER	DIMENSIONS IN INCHES						
		A BORE DIA.		B INNER O.D.		W WIDTH +.000 -.005	H HOLE DIA.	R MAX. FILLET FOR SHAFT
		NOM.	TOL. +.0000	NOM.	TOL. +.0000			
MI-22	MS 51962-19	1.3750	-.0005	1.7490	-.0006	1.260	1/8	.060
MI-22-4S	MS 51962-18	1.3750	-.0005	1.6240	-.0006	1.260	1/8	.060
MI-23	MS 51962-20	1.4375	-.0005	1.7490	-.0006	1.260	1/8	.060
MI-24	MS 51962-22	1.5000	-.0005	1.7490	-.0006	1.260	1/8	.060
MI-24-N	MS 51962-21	1.5000	-.0005	1.7490	-.0006	1.010	1/8	.060
MI-25		1.5625	-.0005	1.9989	-.0007	1.260	1/8	.060
MI-25-4S		1.5625	-.0005	1.8740	-.0006	1.260	1/8	.060
MI-26	MS 51962-23	1.6250	-.0005	1.9989	-.0007	1.260	1/8	.060
MI-26-2S		1.6250	-.0005	1.9364	-.0007	1.260	1/8	.060
MI-26-N		1.6250	-.0005	1.9989	-.0007	1.010	1/8	.060
MI-27		1.6875	-.0005	1.9989	-.0007	1.260	1/8	.060
MI-28	MS 51962-25	1.7500	-.0005	2.2489	-.0007	1.760	3/16	.060
MI-28-N	MS 51962-24	1.7500	-.0005	2.2489	-.0007	1.510	3/16	.060
MI-30		1.8750	-.0005	2.2489	-.0007	1.760	3/16	.060
MI-31	MS 51962-26	1.9375	-.0005	2.4989	-.0007	1.760	3/16	.080
MI-32		2.0000	-.0005	2.4989	-.0007	1.760	3/16	.080
MI-32-N	MS 51962-27	2.0000	-.0005	2.4989	-.0007	1.510	3/16	.080
MI-34		2.1250	-.0006	2.4989	-.0007	1.760	3/16	.080
MI-35	MS 51962-28	2.1875	-.0006	2.7489	-.0007	1.760	3/16	.080
MI-36		2.2500	-.0006	2.7489	-.0007	1.760	3/16	.080
MI-36-N	MS 51962-29	2.2500	-.0006	2.7489	-.0007	1.510	3/16	.080
MI-38	MS 51962-30	2.3750	-.0006	2.9989	-.0007	1.760	3/16	.080
MI-39		2.4375	-.0006	2.9989	-.0007	1.760	3/16	.080
MI-40		2.5000	-.0006	2.9989	-.0007	1.760	3/16	.080
MI-40-N	MS 51962-31	2.5000	-.0006	2.9989	-.0007	1.510	3/16	.080
MI-42		2.6250	-.0006	3.2487	-.0009	1.760	3/16	.080
MI-44	MS 51962-32	2.7500	-.0006	3.2487	-.0009	1.760	3/16	.080
MI-46		2.8750	-.0006	3.4987	-.0009	2.010	1/4	.080
MI-47	MS 51962-34	2.9375	-.0006	3.4987	-.0009	2.010	1/4	.080
MI-48		3.0000	-.0006	3.4987	-.0009	2.010	1/4	.080
MI-48-N		3.0000	-.0006	3.4987	-.0009	1.760	1/4	.080
MI-50	MS 51962-35	3.1250	-.0006	3.7487	-.0009	2.010	1/4	.100
MI-52	MS 51962-36	3.2500	-.0006	3.7487	-.0009	2.010	1/4	.100
MI-54	MS 51962-38	3.3750	-.0008	3.9985	-.0009	2.010	1/4	.100
MI-56		3.5000	-.0008	3.9985	-.0009	2.010	1/4	.100
MI-58		3.6250	-.0008	4.2485	-.0009	2.010	1/4	.100
MI-60	MS 51962-40	3.7500	-.0008	4.2485	-.0009	2.010	1/4	.100
MI-62		3.8750	-.0008	4.4985	-.0009	2.260	1/4	.100
MI-64		4.0000	-.0008	4.9985	-.0010	2.260	1/4	.100
MI-68		4.2500	-.0008	4.9985	-.0010	2.260	1/4	.100
MI-72	MS 51962-44	4.5000	-.0008	5.4985	-.0010	3.015	1/4	.100
MI-72-N	MS 51962-43	4.5000	-.0008	5.4985	-.0010	2.515	1/4	.100
MI-80	MS 51962-47	5.0000	-.0010	5.9983	-.0010	3.015	5/16	.120
MI-80-N	MS 51962-46	5.0000	-.0010	5.9983	-.0010	2.515	5/16	.120
MI-88	MS 51962-49	5.5000	-.0010	6.4983	-.0010	3.015	5/16	.120
MI-88-N	MS 51962-48	5.5000	-.0010	6.4983	-.0010	2.515	5/16	.120
MI-96	MS 51962-50	6.0000	-.0010	7.2481	-.0012	3.015	5/16	.120
MI-104		6.5000	-.0010	7.7481	-.0012	3.015	5/16	.120
MI-112		7.0000	-.0010	8.2481	-.0012	3.015	5/16	.120
MI-120		7.5000	-.0012	8.7480	-.0012	3.015	5/16	.160
MI-128		8.0000	-.0012	9.2480	-.0012	3.015	5/16	.160

INTERCHANGEABILITY CHART

Inner race only

* TORRINGTON®	R.B.C.	* INA®	McGILL	* TORRINGTON®	R.B.C.	* INA®	McGILL
IR-061012		PI-061012	**MI-6-N**		IR-8407-C1		**MI-30**
			MI-6	IR-314028	IR-8447		**MI-31**
			MI-7-N	IR-324024	IR-8446-C	PI-324024	**MI-32-N**
IR-081212	IR-7153	PI-081212	**MI-8-N**	IR-324028	IR-8447-C		**MI-32**
					IR-8447-C1		**MI-34**
IR-081216	IR-7154	PI-081216	**MI-8**	IR-354428	IR-8477		**MI-35**
	IR-7153-C		**MI-9-N**	IR-364424	IR-8476-C	PI-364424	**MI-36-N**
IR-101412	IR-7173	PI-101412	**MI-10-N**	IR-364428	IR-8477-C		**MI-36**
IR-101416	IR-7174	PI-101416	**MI-10**	IR-384828	IR-8517		**MI-38**
IR-111412	IR-7173-C		**MI-11-N**				**MI-39**
IR-121612	IR-7193	PI-121612	**MI-12-N**	IR-404824	IR-8516-C	PI-404824	**MI-40-N**
IR-121616	IR-7194	PI-121616	**MI-12**	IR-404828	IR-8517-C		**MI-40**
			MI-13-N		IR-9567-D		**MI-42**
IR-131616	IR-7194-C		**MI-13**	IR-445228	IR-9567	PI-445228	**MI-44**
IR-141816	IR-7214	PI-141816	**MI-14-N**				**MI-46**
IR-141820	IR-7215	PI-141820	**MI-14**				
IR-151816			**MI-15-N**	IR-475632	IR-9608		**MI-47**
IR-151820	IR-7215-C		**MI-15**				**MI-48-N**
IR-162016	IR-7234	PI-162016	**MI-16-N**	IR-485632	IR-9608-C	PI-485632	**MI-48**
IR-162020	IR-7235	PI-162020	**MI-16**	IR-506032	IR-9648		**MI-50**
	IR-7255-D		**MI-17**	IR-526032	IR-9648-C		**MI-52**
IR-182216	IR-7254	PI-182216	**MI-18-N**	IR-546432	IR-9688		**MI-54**
IR-182220	IR-7255	PI-182220	**MI-18**	IR-566432	IR-9688-C		**MI-56**
IR-192420	IR-7275		**MI-19**		IR-9728-C		**MI-58**
IR-202416		PI-202416	**MI-20-N**	IR-606832	IR-9728-C1		**MI-60**
IR-202420	IR-7275-C	PI-202420	**MI-20**		IR-6769-C		**MI-62**
IR-212616	IR-7294	PI-212616	**MI-21-N**	IR-648036	IR-6849		**MI-64**
IR-212620	IR-7295		**MI-21**	IR-688036	IR-6849-C		**MI-68**
IR-222620	IR-7295-C	PI-222620	**MI-22-4S**	IR-728840	IR-6918		**MI-72-N**
IR-222820			**MI-22**	IR-728848	IR-6919		**MI-72**
IR-232820	IR-7315	PI-232820	**MI-23**	IR-809640	IR-6925		**MI-80-N**
IR-242816		PI-242816	**MI-24-N**				
IR-242820	IR-7315-C	PI-242820	**MI-24**	IR-809648	IR-6926		**MI-80**
IR-253020	IR-7335	PI-253020	**MI-25-4S**	IR-8810440	IR-6935		**MI-88-N**
IR-253220			**MI-25**	IR-8810448	IR-6936		**MI-88**
	IR-7345		**MI-26-2S**	IR-9611648	IR-2326		**MI-96**
			MI-26-N				
IR-263220	IR-7355-D		**MI-26**	IR-10412448	IR-2426		**MI-104**
IR-273220	IR-7355	PI-273220	**MI-27**	IR-11213248	IR-2526		**MI-112**
IR-283624	IR-8406	PI-283264	**MI-28-N**	IR-12014048	IR-2626		**MI-120**
IR-283628	IR-8407	PI-283624	**MI-28**	IR-12814848	IR-2726		**MI-128**

Sealed

Outer ring, roller and inner ring assemblies only

* TORRINGTON®		R.B.C.		McGILL NUMBER	
OUTER	INNER	OUTER	INNER	OUTER RING AND ROLLER ASSEMBLY GUIDEROL® OR CAGEROL® BEARINGS	INNER RING ONLY
HJRR-101816		SJ-7134-RR		10-SS	MI-6
HJRR-122016	IR-081216	SJ-7154-RR	IR-7154	12-SS	MI-8
HJRR-142216	IR-101416	SJ-7174-RR	IR-7174	14-SS	MI-10
HJRR-162416	IR-121616	SJ-7194-RR	IR-7194	16-SS	MI-12
HJRR-162416	IR-131616	SJ-7194-RR	IR-7194-C	16-SS	MI-13
HJRR-182620	IR-141820	SJ-7215-RR	IR-7215	18-SS	MI-14
HJRR-182620	IR-151820	SJ-7215-RR	IR-7215-C	18-SS	MI-15
HJRR-202820	IR-162020	SJ-7235-RR	IR-7235	20-SS	MI-16
		SJ-7255-RR	IR-7255-D	22-SS	MI-17
HJRR-223020	IR-182220	SJ-7255-RR	IR-7255	22-SS	MI-18
HJRR-243320	IR-192420	SJ-7275-RR	IR-7275	24-SS	MI-19
HJRR-243320	IR-202420	SJ-7275-RR	IR-7275-C	24-SS	MI-20
HJRR-263520	IR-212620	SJ-7295-RR	IR-7295	26-SS	MI-21
HJRR-263520	IR-222620	SJ-7295-RR	IR-7295-C	26-SS	MI-22-4S
HJRR-283720	IR-222820			28-SS	MI-22
HJRR-283720	IR-232820	SJ-7315-RR	IR-7315	28-SS	MI-23
HJRR-283720	IR-242820	SJ-7315-RR	IR-7315-C	28-SS	MI-24
		SJ-7335-RR	IR-7335	30-SS	MI-25-4S
HJRR-324120	IR-253220			32-SS	MI-25
HJRR-324120	IR-263220	SJ-7355-RR	IR-7355-D	32-SS	MI-26
HJRR-324120	IR-273220	SJ-7355-RR	IR-7355	32-SS	MI-27
HJRR-364828	IR-283628	SJ-8407-RR	IR-8407 IR-8407--	36-SS	MI-28
		SJ-8407-RR	CI1	36-SS	MI-30
HJRR-405228	IR-314028	SJ-8447-RR	IR-8447	40-SS	MI-31
HJRR-405228	IR-324028	SJ-8447-RR	IR-8447-C	40-SS	MI-32
		SJ-8447-RR	IR-8447-- CI1	40-SS	MI-34
HJRR-445628	IR-354428	SJ-8477-RR	IR-8477	44-SS	MI-35
HJRR-445628	IR-364428	SJ-8477-RR	IR-8477-C	44-SS	MI-36
HJRR-486028	IR-384828	SJ-8517-RR	IR-8517	48-SS	MI-38
				48-SS	MI-39
HJRR-486028	IR-404828	SJ-8517-RR	IR-8517-C	48-SS	MI-40
				52-SS	MI-42
				52-SS	MI-44
				56-SS	MI-46
		SJ-9608-RR	IR-9608	56-SS	MI-47
		SJ-9608-RR	IR-9608-C	56-SS	MI-48
		SJ-9648-RR	RR-9648	60-SS	MI-50
		SJ-9648-RR	IR-9648-C	60-SS	MI-52
		SJ-9688-RR	IR-9688	64-SS	MI-54
		SJ-9688-RR	IR-9688-C	64-SS	MI-56
				68-SS	MI-58
				68-SS	MI-60

** GR prefix indicates center guide full complement construction.
MR prefix indicates retainer type construction.

Outer ring and roller assemblies only

* TORRINGTON®	R.B.C.	McGILL NUMBER **GR OR MR BEARINGS
HJRR-101816	SJ-7134-RR	10-SS
HJRR-122016	SJ-7154-RR	12-SS
HJRR-142216	SJ-7174-RR	14-SS
HJRR-162416	SJ-7194-RR	16-SS
HJRR-182620	SJ-7215-RR	18-SS
HJRR-202820	SJ-7235-RR	20-SS
HJRR-223020	SJ-7255-RR	22-SS
HJRR-243320	SJ-7275-RR	24-SS
HJRR-263520	SJ-7295-RR	26-SS
HJRR-283720	SJ-7315-RR	28-SS
	SJ-7335-RR	30-SS
HJRR-324120	SJ-7355-RR	32-SS
HJRR-364828	SJ-8407-RR	36-SS
HJRR-405228	SJ-8447-RR	40-SS
HJRR-445628	SJ-8477-RR	44-SS
HJRR-486028	SJ-8517-RR	48-SS
	SJ-9568-RR	52-SS
	SJ-9608-RR	56-SS
	SJ-9648-RR	60-SS
	SJ-9688-RR	68-SS
		64-SS

** GR prefix indicates center guide full complement construction.
MR prefix indicates retainer type construction.

Types of seal configurations

DESCRIPTION	* TORRINGTON®	R.B.C.	McGILL NUMBER
Double seal with lips turned inward	HJRR-	-RR	-SS
Double seal with lips turned outward	HJTT-	-SS	-RSS
Double seal with one lip turned outward and one lip turned inward	HJTR-	-SR	-SRS
Single seal with lip turned inward	HJR-	-R	-S
Single seal with lip turned outward	HJT-	-S	-RS

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INTERCHANGEABILITY CHART

Outer ring, roller and inner ring assemblies

* TORRINGTON®	R.B.C.	* INA®	McGILL	
			GUIDEROL MT	CAGEROL MR
HJ-101812		NCS-1012	**GR-10-N**	**MR-10-N**
IR-061012		PI-061012	**MI-6-N**	**MI-6-N**
			GR-10-N	**MR-10-N**
			MI-7-N	**MI-7-N**
			GR-10	**MR-10**
			MI-6	**MI-6**
HJ-122012	SJ-7153	NCS-1212	**GR-12-N**	**MR-12-N**
IR-081212	IR-7153	PI-081212	**MI-8-N**	**MI-8-N**
	SJ-7153		**GR-12-N**	**MR-12-N**
	IR-7153-C		**MI-9-N**	**MI-9-N**
HJ-122016	SJ-7154	NCS-1216	**GR-12**	**MR-12**
IR-081216	IR-7154	PI-081216	**MI-8**	**MI-8**
HJ-142212	SJ-7173	NCS-1412	**GR-14-N**	**MR-14-N**
IR-101412	IR-7173	PI-101412	**MI-10-N**	**MI-10-N**
HJ-142212	SJ-7173		**GR-14-N**	**MR-14-N**
IR-111412	IR-7173-C		**MI-11-N**	**MI-11-N**
HJ-142216	SJ-7174	NCS-1416	**GR-14**	**MR-14**
IR-101416	IR-7174	PI-101416	**MI-10**	**MI-10**
HJ-162412	SJ-7193	NCS-1612	**GR-16-N**	**MR-16-N**
IR-121612	IR-7193	PI-121612	**MI-12-N**	**MI-12-N**
HJ-162416	SJ-7194	NCS-1616	**GR-16**	**MR-16**
IR-121616	IR-7194	PI-121616	**MI-12**	**MI-12**
HJ-162416	SJ-7194		**GR-16**	**MR-16**
IR-131616	IR-7194-C		**MI-13**	**MI-13**
HJ-182616	SJ-7214	NCS-1816	**GR-18-N**	**MR-18-N**
IR-141816	IR-7214	PI-141816	**MI-14-N**	**MI-14-N**
HJ-182616			**GR-18-N**	**MR-18-N**
IR-151816			**MI-15-N**	**MI-15-N**
HJ-182620	SJ-7215	NCS-1820	**GR-18**	**MR-18**
IR-141820	IR-7215	PI-141820	**MI-14**	**MI-14**
HJ-182620	SJ-7215		**GR-18**	**MR-18**
IR-151820	IR-7215-C		**MI-15**	**MI-15**
HJ-202816	SJ-7234	NCS-2016	**GR-20-N**	**MR-20-N**
IR-162016	IR-7234	PI-162016	**MI-16-N**	**MI-16-N**
HJ-202820	SJ-7235	NCS-2020	**GR-20**	**MR-20**
IR-162020	IR-7235	PI-162020	**MI-16**	**MI-16**
HJ-223016	SJ-7254	NCS-2216	**GR-22-N**	**MR-22-N**
IR-182216	IR-7254	PI-182216	**MI-18-N**	**MI-18-N**
	SJ-7255		**GR-22**	**MR-22**
	IR-7255-D		**MI-17**	**MI-17**
HJ-223020	SJ-7255	NCS-2220	**GR-22**	**MR-22**
IR-182220	IR-7255	PI-182220	**MI-18**	**MI-18**
HJ-243316		NCS-2416	**GR-24-N**	**MR-24-N**
IR-202416		PI-202416	**MI-20-N**	**MI-20-N**
HJ-243320	SJ-7275		**GR-24**	**MR-24**
IR-192420	IR-7275		**MI-19**	**MI-19**
HJ-243320	SJ-7275	NCS-2420	**GR-24**	**MR-24**
IR-202420	IR-7275-C	PI-202420	**MI-20**	**MI-20**
HJ-263516	SJ-7294	NCS-2616	**GR-26-N**	**MR-26-N**
IR-212616	IR-7294	PI-212616	**MI-21-N**	**MI-21-N**
HJ-263520	SJ-7295		**GR-26**	**MR-26**
IR-212620	IR-7295		**MI-21**	**MI-21**
HJ-263520	SJ-7295	NCS-2620	**GR-26**	**MR-26**
IR-222620	IR-7295-C	PI-222620	**MI-22-4S**	**MI-22-4S**
HJ-283716		NCS-2816		**MR-28-N**
IR-242816		PI-242816		**MI-24-N**
HJ-283720			**GR-28**	**MR-28**
IR-222820			**MI-22**	**MI-22**
HJ-283720	SJ-7315	NCS-2820	**GR-28**	**MR-28**
IR-232820	IR-7315	PI-232820	**MI-23**	**MI-23**
HJ-283720	SJ-7315	NCS-2820	**GR-28**	**MR-28**
IR-242820	IR-7315-C	PI-242820	**MI-24**	**MI-24**

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The trademark INA is a registered trademark of Industriewerk Schaeffler, O. H. G.

Outer ring, roller and inner ring assemblies

* TORRINGTON®	R.B.C.	* INA®	McGILL	
			GUIDEROL MT	CAGEROL MR
HJ-303920	SJ-7335	NCS-3020	**GR-30**	**MR-30**
IR-253020	IR-7335	PI-253020	**MI-25-4S**	**MI-25-4S**
	SJ-7345		**GR-31**	**MR-31**
	IR-7345		**MI-26-2S**	**MI-26-2S**
			GR-32-N	**MR-32-N**
			MI-26-N	**MI-26-N**
HJ-324120			**GR-32**	**MR-32**
IR-253220			**MI-25**	**MI-25**
HJ-324120	SJ-7355		**GR-32**	**MR-32**
IR-263220	IR-7335-D		**MI-26**	**MI-26**
HJ-324120	SJ-7355	NCS-3220	**GR-32**	**MR-32**
IR-273220	IR-7355	PI-273220	**MI-27**	**MI-27**
HJ-364824	SJ-8406	NCS-3624	**GR-36-N**	**MR-36-N**
IR-283624	IR-8406	PI-283624	**MI-28-N**	**MI-28-N**
HJ-364828	SJ-8407		**GR-36**	**MR-36**
IR-283628	IR-8407		**MI-28**	**MI-28**
	SJ-8407		**GR-36**	**MR-36**
	IR-8407-C1		**MI-30**	**MI-30**
HJ-405224	SJ-8446	NCS-4024	**GR-40-N**	**MR-40-N**
IR-324024	IR-8446-C	PI-324024	**MI-32-N**	**MI-32-N**
HJ-405228	SJ-8447		**GR-40**	**MR-40**
IR-314028	IR-8479		**MI-31**	**MI-31**
HJ-405228	SJ-8447		**GR-40**	**MR-40**
IR-324028	IR-8447-C		**MI-32**	**MI-32**
	SJ-8447		**GR-40**	**MR-40**
	IR-8447-C1		**MI-34**	**MI-34**
HJ-445624	SJ-8476	NCS-4424	**GR-44-N**	**MR-44-N**
IR-364424	IR-8476-C	PI-364424	**MI-36-N**	**MI-36-N**
HJ-445628	SJ-8477		**GR-44**	**MR-44**
IR-354428	IR-8477		**MI-35**	**MI-35**
HJ-445628	SJ-8477		**GR-44**	**MR-44**
IR-364428	IR-8477-C		**MI-36**	**MI-36**
HJ-486024	SJ-8516	NCS-4824	**GR-48-N**	**MR-48-N**
IR-404824	IR-8516-C	PI-404824	**MI-40-N**	**MI-40-N**
HJ-486028	SJ-8517		**GR-48**	**MR-48**
IR-384828	IR-8517		**MI-38**	**MI-38**
			GR-48	**MR-48**
			MI-39	**MI-39**
HJ-486028	SJ-8517		**GR-48**	**MR-48**
IR-404828	IR-8517-C		**MI-40**	**MI-40**
	SJ-9567		**GR-52**	**MR-52**
	IR-9567-D		**MI-42**	**MI-42**
HJ-526828	SJ-9567	NCS-5228	**GR-52**	**MR-52**
IR-445228	IR-9567	PI-445228	**MI-44**	**MI-44**
			GR-56-N	**MR-56-N**
			MI-48-N	**MI-48-N**
			GR-56	**MR-56**
			MI-46	**MI-46**
HJ-567232	SJ-9608		**GR-56**	**MR-56**
IR-475632	IR-9608		**MI-47**	**MI-47**
HJ-567232	SJ-9608	NCS-5632	**GR-56**	**MR-56**
IR-485632	IR-9608-C	PI-485632	**MI-48**	**MI-48**
HJ-607632	SJ-9648		**GR-60**	**MR-60**
IR-506032	IR-9648		**MI-50**	**MI-50**
HJ-607632	SJ-9648		**GR-60**	**MR-60**
IR-526032	IR-9648-C		**MI-52**	**MI-52**
HJ-648032	SJ-9688		**GR-64**	**MR-64**
IR-546432	IR-9688		**MI-54**	**MI-54**
HJ-648032	SJ-9688		**GR-64**	**MR-64**
IR-566432	IR-9688-C		**MI-56**	**MI-56**
HJ-688432	SJ-9728		**GR-68**	**MR-68**
IR-606832	IR-9728-C1		**MI-60**	**MI-60**
	SJ-9728		**GR-68**	**MR-68**
	IR-9728-C		**MI-58**	**MI-58**

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INTERCHANGEABILITY CHART (Cont'd.)

Outer ring, roller and inner ring assemblies

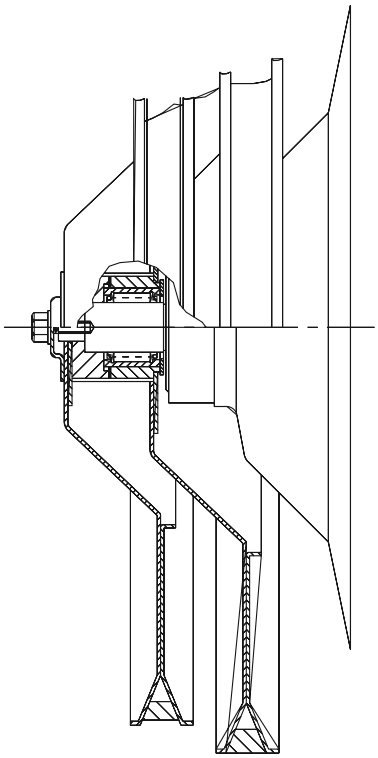
* TORRINGTON®	R.B.C.	* INA®	McGILL	
			GUIDEROL MT	CAGEROL MR
	SJ-6769		GR-72	MR-72
	IR-6769-C		MI-62	MI-62
HJ-8010436	SJ-6849		GR-80	MR-80
IR-648036	IR-6849		MI-64	MI-64
HJ-8010436	SJ-6849		GR-80	MR-80
IR-688036	IR-6849-C		MI-68	MI-68
HJ-8811240	SJ-6918		GR-88-N	MR-88-N
IR-728840	IR-6918		MI-72-N	MI-72-N
HJ-8811248	SJ-6919		GR-88	MR-88
IR-728848	IR-6919		MI-72	MI-72
HJ-9612040	SJ-6925		GR-96-N	MR-96-N
IR-809640	IR-6925		MI-80-N	MI-80-N
HJ-9612048	SJ-6926		GR-96	MR-96
IR-809648	IR-6926		MI-80	MI-80
HJ-10412840	SJ-6935		GR-104-N	MR-104-N
IR-8810440	IR-6935		MI-88-N	MI-88-N
HJ-10412848	SJ-6936		GR-104	MR-104
IR-8810448	IR-6936		MI-88	MI-88
HJ-11614648	SJ-2326		GR-116	MR-116
IR-9611648	IR-2326		MI-96	MI-96
HJ-12415448	SJ-2426		GR-124	MR-124
IR-10412448	IR-2426		MI-104	MI-104
HJ-13216248	SJ-2526		GR-132	MR-132
IR-11213248	IR-2526		MI-112	MI-112
HJ-14017048	SJ-2626		GR-140	MR-140
IR-12014048	IR-2626		MI-120	MI-120
HJ-14817848	SJ-2726		GR-148	MR-148
IR-12814848	IR-2726		MI-128	MI-128

Outer ring and roller assemblies only

*TORRINGTON®	R.B.C.	* INA®	McGILL	
			GUIDEROL MT	CAGEROL MR
HJ-101812	SJ-7133	NCS-1012	GR-10-N	MR-10-N
	SJ-7134	NCS-1016	GR-10	MR-10
HJ-122012	SJ-7153	NCS-1212	GR-12-N	MR-12-N
HJ-122016	SJ-7154	NCS-1216	GR-12	MR-12
HJ-142212	SJ-7173	NCS-1412	GR-14-N	MR-14-N
HJ-142216	SJ-7174	NCS-1416	GR-14	MR-14
HJ-162412	SJ-7193	NCS-1612	GR-16-N	MR-16-N
HJ-162416	SJ-7194	NCS-1616	GR-16	MR-16
HJ-182616	SJ-7214	NCS-1816	GR-18-N	MR-18-N
HJ-182620	SJ-7215	NCS-1820	GR-18	MR-18
HJ-202816	SJ-7234	NCS-2016	GR-20-N	MR-20-N
HJ-202820	SJ-7235	NCS-2020	GR-20	MR-20
HJ-223016	SJ-7254	NCS-2216	GR-22-N	MR-22-N
HJ-223020	SJ-7255	NCS-2220	GR-22	MR-22
HJ-243316	SJ-7274	NCS-2416	GR-24-N	MR-24-N
HJ-243320	SJ-7275	NCS-2420	GR-24	MR-24
HJ-263516	SJ-7294	NCS-2616	GR-26-N	MR-26-N
HJ-263520	SJ-7295	NCS-2620	GR-26	MR-26
HJ-283716	SJ-7314	NCS-2816		MR-28-N
HJ-283720	SJ-7315	NCS-2820	GR-28	MR-28
	SJ-7334	NCS-3016		MR-30-N
HJ-303920	SJ-7335	NCS-3020	GR-30	MR-30
	SJ-7345			MR-31
HJ-324116	SJ-7354	NCS-3216	GR-32-N	MR-32-N
HJ-324120	SJ-7355	NCS-3220	GR-32	MR-32
HJ-364824	SJ-8406	NCS-3624	GR-36-N	MR-36-N
HJ-364828	SJ-8407		GR-36	MR-36
HJ-405224	SJ-8446	NCS-4024	GR-40-N	MR-40-N
HJ-405228	SJ-8447		GR-40	MR-40
HJ-445624	SJ-8476	NCS-4424	GR-44-N	MR-44-N
HJ-445628	SJ-8477		GR-44	MR-44
HJ-486024	SJ-8516	NCS-4824	GR-48-N	MR-48-N
HJ-486028	SJ-8517		GR-48	MR-48
HJ-526828	SJ-9567	NCS-5228	GR-52	MR-52
	SJ-9607		GR-56-N	MR-56-N
HJ-567232	SJ-9608	NCS-5632	GR-56	MR-56
HJ-607632	SJ-9648		GR-60	MR-60
HJ-648032	SJ-9688		GR-64	MR-64
HJ-688432	SJ-9728	NCS-6832	GR-68	MR-68
HJ-729636	SJ-6769		GR-72	MR-72
HJ-8010436	SJ-6849		GR-80	MR-80
HJ-8811240	SJ-6918		GR-88-N	MR-88-N
HJ-8811248	SJ-6919		GR-88	MR-88
HJ-9612040	SJ-6925		GR-96-N	MR-96-N
HJ-9612048	SJ-6926		GR-96	MR-96
HJ-10412840	SJ-6935		GR-104-N	MR-104-N
HJ-10412848	SJ-6936		GR-104	MR-104
HJ-11614648	SJ-2326		GR-116	MR-116
HJ-12415448	SJ-2426		GR-124	MR-124
HJ-13216248	SJ-2526		GR-132	MR-132
HJ-14017048	SJ-2626		GR-140	MR-140
HJ-14817848	SJ-2726		GR-148	MR-148

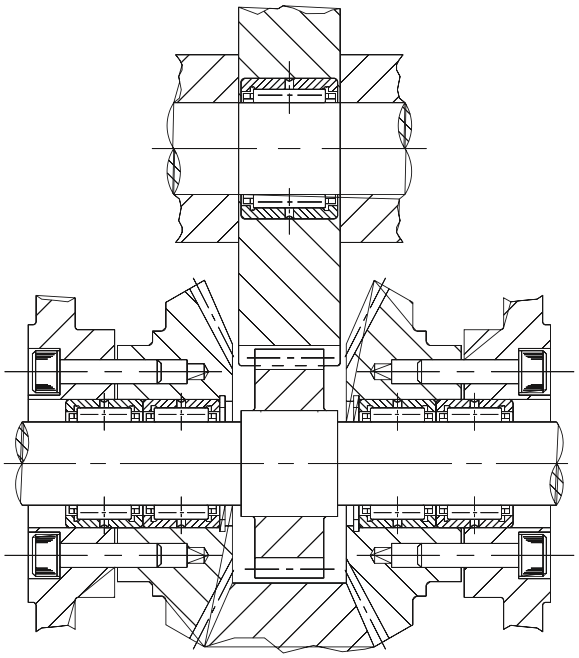
* The trademark TORRINGTON is a registered trademark of The Torrington Company.
The trademark INA is a registered trademark of Industriewerk Schaeffler, O. H. G.

BEARING APPLICATIONS



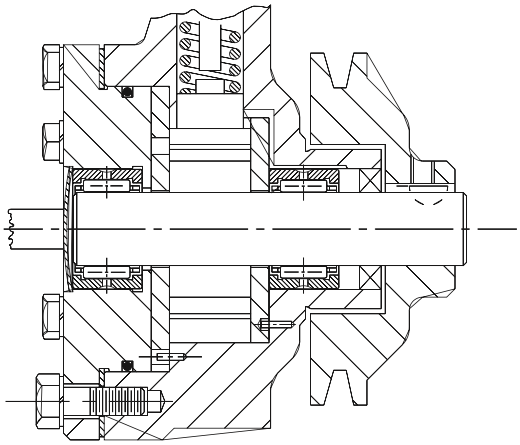
Domestic Washer Tub Shaft

Special CAGEROL® MR Series bearings applied to heavily loaded tub shaft support position on automatic clothes washer. Prepacked with lubricant and operating in restricted areas, this cage type bearing results in longer life.



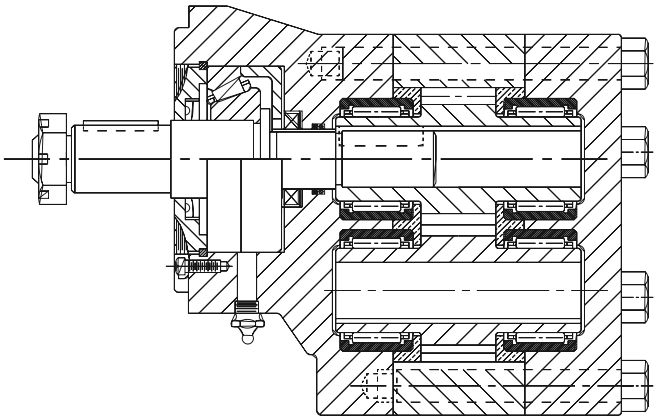
Industrial Equipment Transmission

CAGEROL® MR Series bearings applied to bevel pinion shaft and idler gear shaft. Used also for other transmission applications such as planetary gears, pilot shafts and forward and reverse clutch shafts.



Vane Pumps

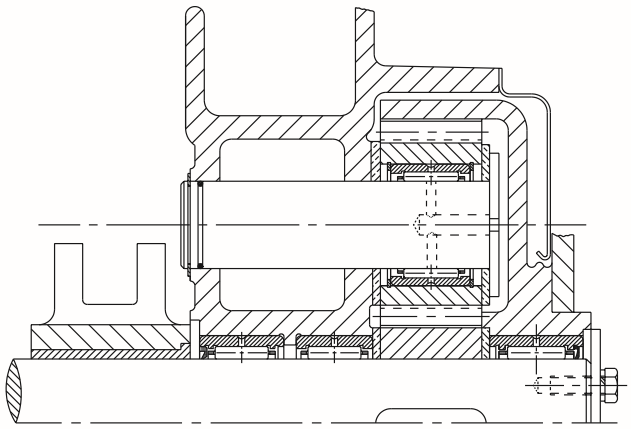
MR Series CAGEROL® bearings shown as rotor shaft bearings in vane pumps. Positive roller guidance with caged construction resists misalignment and eliminates rotor thrusting against wear plates.

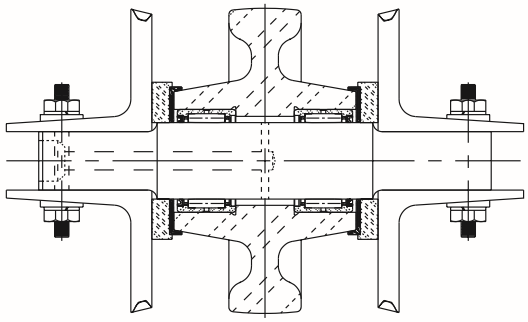


Hydraulic Gear Pump

CAGEROL® MR Series bearings support the drive and driven shafts in hydraulic gear pumps. Crowned rollers with sturdy retainer construction increases fatigue life in such applications.

BEARING APPLICATIONS



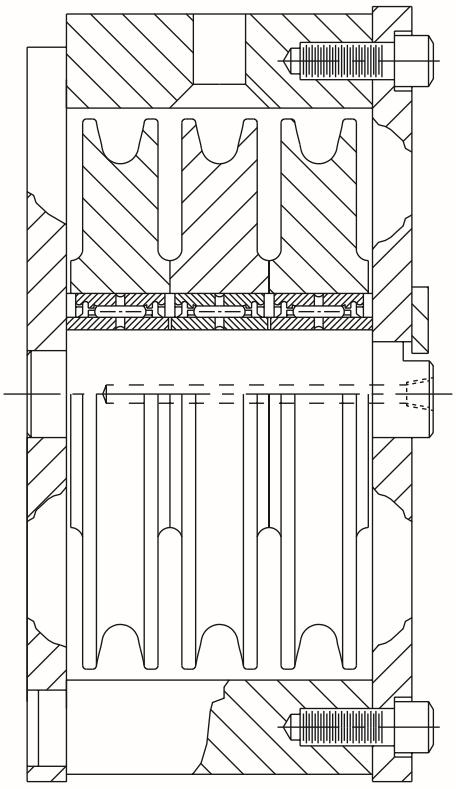


Power Shovel Boom Hoist Shaft

Sealed SMR and unsealed MR Series CAGEROL® bearings shown applied on boom shaft and planetary gear power shovel and crane applications.

Power Shovel Track Roller

Sealed SMR Series CAGEROL® bearings support this heavily loaded crawler track roller on cranes and power shovels.



Cable Control Sheaves

CAGEROL® SMR Series bearings shown in three part sheave for cable controls. These caged bearings offer resistance to misalignment and integral seals with integral grease reservoir reduce maintenance.