KingCole

PIVOTING PAD LEG® BEARINGS

TABLE OF CONTENTS

Kingsbury and Coleherne have joined forces to provide the most significant advance in bearing technology in over 80 years. Internationally recognized as the most trusted name in fluid film bearings, Kingsbury brings its engineering leadership to Coleherne, one of Europe's most familiar bearing service providers. The result is a crowning achievement of technical innovation we call the KingCole bearing.

KingCole incorporates Kingsbury's efficient Leading Edge Groove (LEG) lubrication system with a bearing style familiar to all of Europe. The LEG system lowers frictional losses and lube oil requirements with accompanying reduction in oil film temperatures — features which contribute to overall installation economy.

Important design features, such as Kingsbury's 360° pad pivot arrangement as well as conservative load ratings, allow you to confidently specify the KingCole in even the toughest applications.

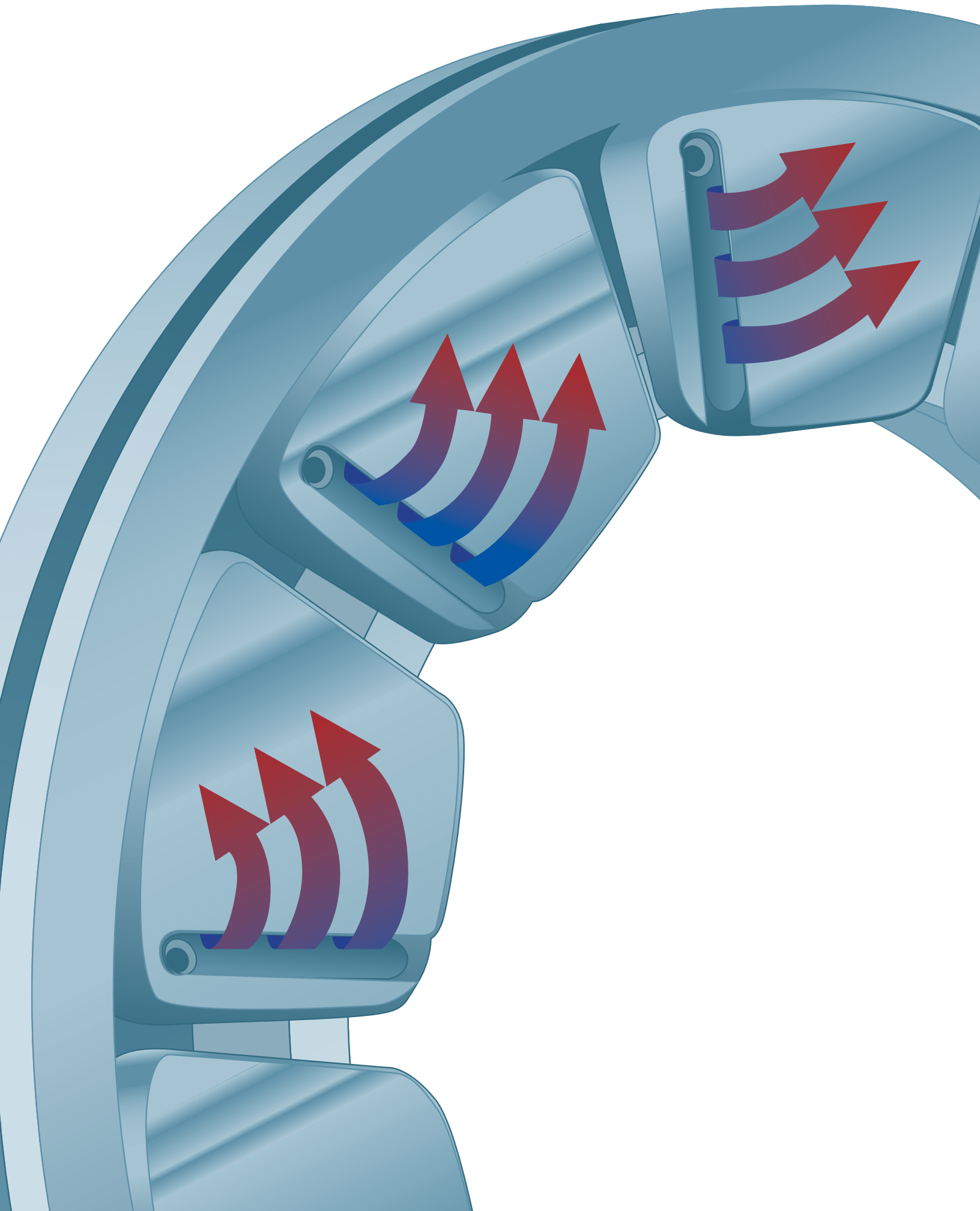
Perfect for retrofit, the KingCole can be specified for one-to-one replacement in existing applications, reducing downtime and ensuring an exact fit. ISO standards are used for all dimensional tolerances.

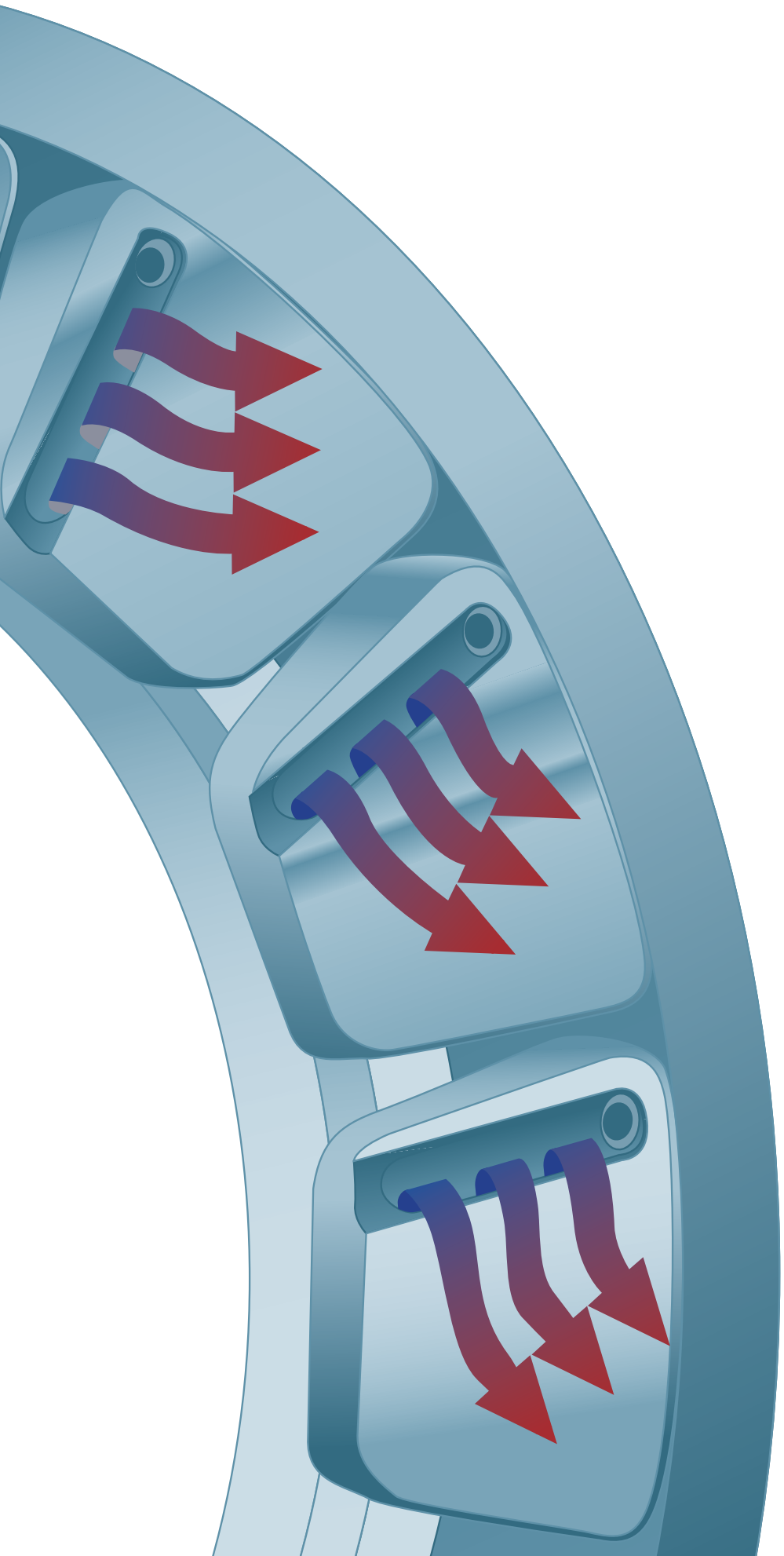
A true manufacturing and service alliance, KingCole is assembled and shipped from Coleherne's UK facility in Cheshire, England. Engineering assistance can be obtained from either Kingsbury or Coleherne and site services originate directly from Cheshire. Please see the back cover of this catalogue for contact details.

QUALITY STANDARDS:

KINGSBURY, INC.
ISO 9001/94 Registered

COLEHERNE LTD.
ISO 9002/94 Registered





THE ADVANTAGES OF LEG TECHNOLOGY

Leading Edge Groove (LEG) technology, introduced by Kingsbury in 1984, has revolutionized the world of thrust bearings. The creation of these new thrust bearings has made it possible for the world's leading equipment manufacturers to simultaneously increase bearing capacity, reduce friction losses and hold white metal temperatures within acceptable limits. When compared to a standard thrust bearing, the advanced design KingCole LEG bearing can:

- Reduce operating temperatures at the 75/75 location by 8° to 27° C, depending on shaft speed.
- Provide a load carrying capacity increase of 15-20%, based on that temperature reduction.
- Operate at oil flow rates as much as 60% lower, with an accompanying reduction in friction losses of 40%.

GENERAL DESCRIPTION

While the general arrangement of the KingCole appears to be very familiar, certain key features make it superior to the more common tilt-pad bearings in use today.

Pads

All KingCole bearing pads are provided with Leading Edge Groove (LEG) lubrication grooves to improve oil flow, reduce power loss, reduce friction and reduce pad temperature. Bearings are designed to the proper rotation direction rather than the "all-in-one" style which accommodates either CW or CCW rotation. This feature means that performance is assured according to design tolerances rather than on averages.

Standard materials of construction of pad body are low carbon steel with high tin content white metal face, although material selection can be engineered to meet unusual applications.

KingCole utilizes a distinctive raised "button" on the back of the pad to allow full 360° pivot, rather than the more familiar strip which allows pad tilt in only one

direction. Pad buttons are made of carbon tool steel, heated to 52 to 57 Rockwell C to ensure no flattening of the sphere. Kingsbury tests indicate that this feature lowers the spread of temperatures from pad to pad.

Carrier Rings

Carrier rings, manufactured by Coleherne, are constructed to exacting ISO tolerances and are normally provided in halves to allow simple installation in tough-to-reach applications.

Standard material of construction is low carbon steel with tensile strength of 483 MPA.

Lubrication ports from the carrier ring provide oil directly into the bearing pads, ensuring even pressure and distribution.

Pad Retention

Pads are held in position by a retaining fastener which can be removed easily to facilitate service or replacement. This is similar to designs common in most European bearing applications.

Oil Feed Tube

The oil feed tube, connecting the base ring and pad, is uniquely designed so that the pad is free to pivot. This allows freedom of movement in the pad and eliminates the possibility of leakage as all oil is fed directly to the pad face.

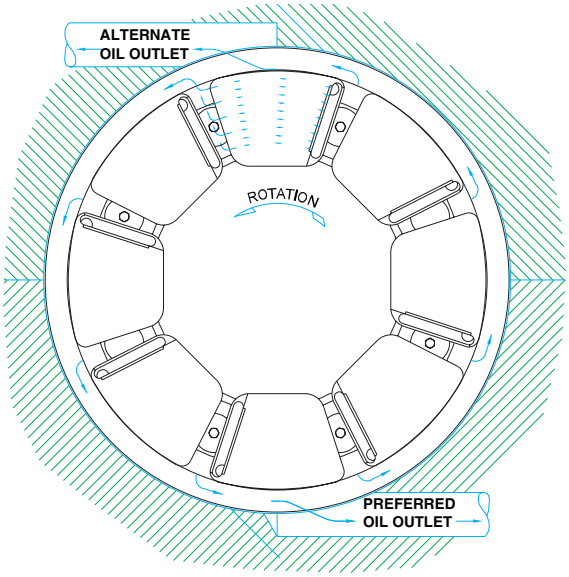
LEG BEARING HOUSING REQUIREMENTS

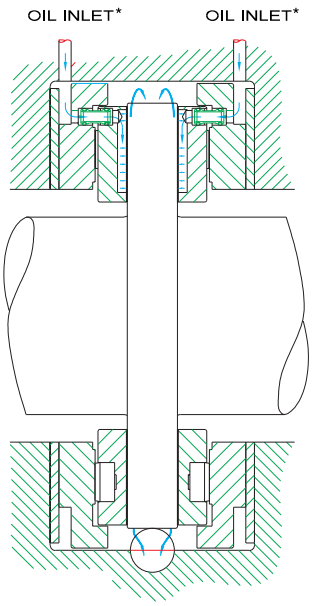
The bearing housing requirements for the KingCole LEG bearing are similar to those of standard thrust bearings. Oil seals at the back of the carrier rings are not required as the inlet oil is confined to passages within the base ring assembly. Fresh oil enters the bearing through an annulus located at the bottom of the base ring. The discharge space should be large enough to minimize contact between the discharged oil and the rotating collar. The discharge oil outlet should be amply sized so that oil can flow freely from the bearing cavity.

We recommend a tangential discharge opening, equal in diameter to 80% of the recommended collar thickness. If possible, the discharge outlet should be located in the bottom of the bearing housing. Alternately, it should be located tangential to collar rotation.

KingCole's unique split-ring design makes installation easier than standard bearings.

OIL DISCHARGE CONFIGURATION

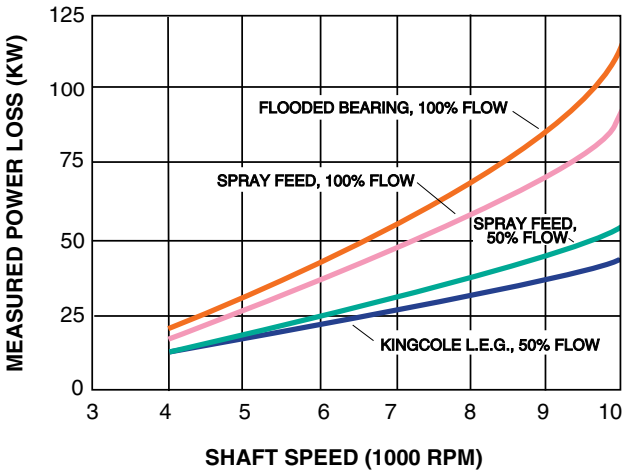


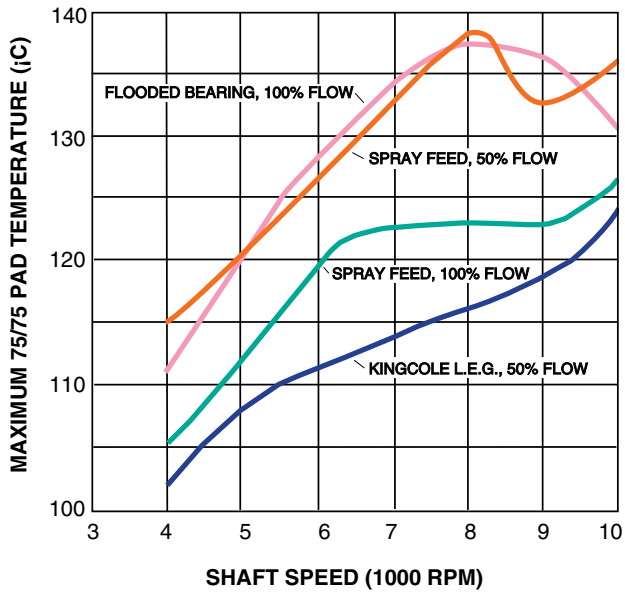


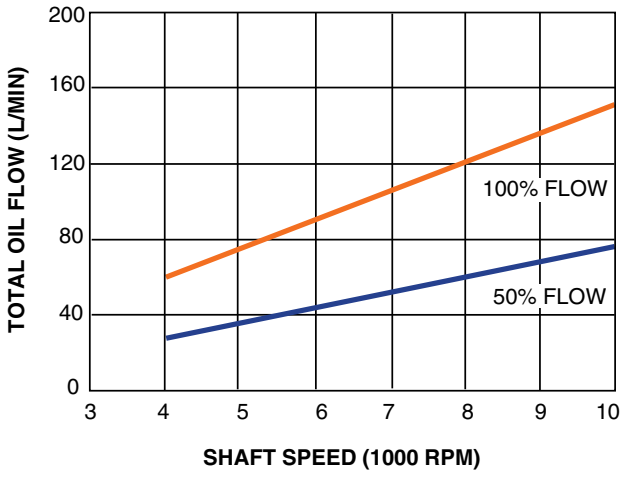
*Note:
Size inlet orifices for required oil flow at 0.5 atmosphere pressure.

TANGENTIAL OIL OUTLET
IN CUSTOMER'S HOUSING

LEG BEARINGS VS. STANDARD FLOODED BEARINGS AND SPRAY-FED BEARINGS







LEG— DESIGNED TO OUTPERFORM FLOODED AND SPRAY FEED BEARING TECHNOLOGY

The KingCole's LEG bearing design has proven itself through exhaustive testing and field research to represent the ultimate in directed lubrication technology. Yet the design concept is remarkably — and elegantly — simple.

The bearing pads and carrier ring are constructed so that cool undiluted inlet oil flows from the leading edge groove in the bearing pad directly into the oil film. The cool oil in the oil film wedge insulates the white metal face from the hot oil carryover that adheres to the rotating collar.

In contrast to the KingCole LEG bearing, the oil for spray-fed bearings is injected not directly onto the bearing surfaces but between them. This can result in uneven bearing lubrication and the need to supply impractically high pressure to get true effective scouring of the hot oil carryover adhering to the thrust collar. There is also a tendency of the small jet holes to clog with foreign material, further hampering distribution. Greater friction, higher operating temperatures and more power loss are the ultimate results.

Friction power loss is lower than both flooded and spray feed bearings due to the reduced oil flow. The flow of cool oil over the leading edge lowers pad surface temperatures, increasing the KingCole's capacity.

The resulting performance improvements are shown in these graphs.

BEARING SELECTION

Thrust load, shaft RPM, oil viscosity and shaft diameter through the bearing determine the bearing size to be selected.

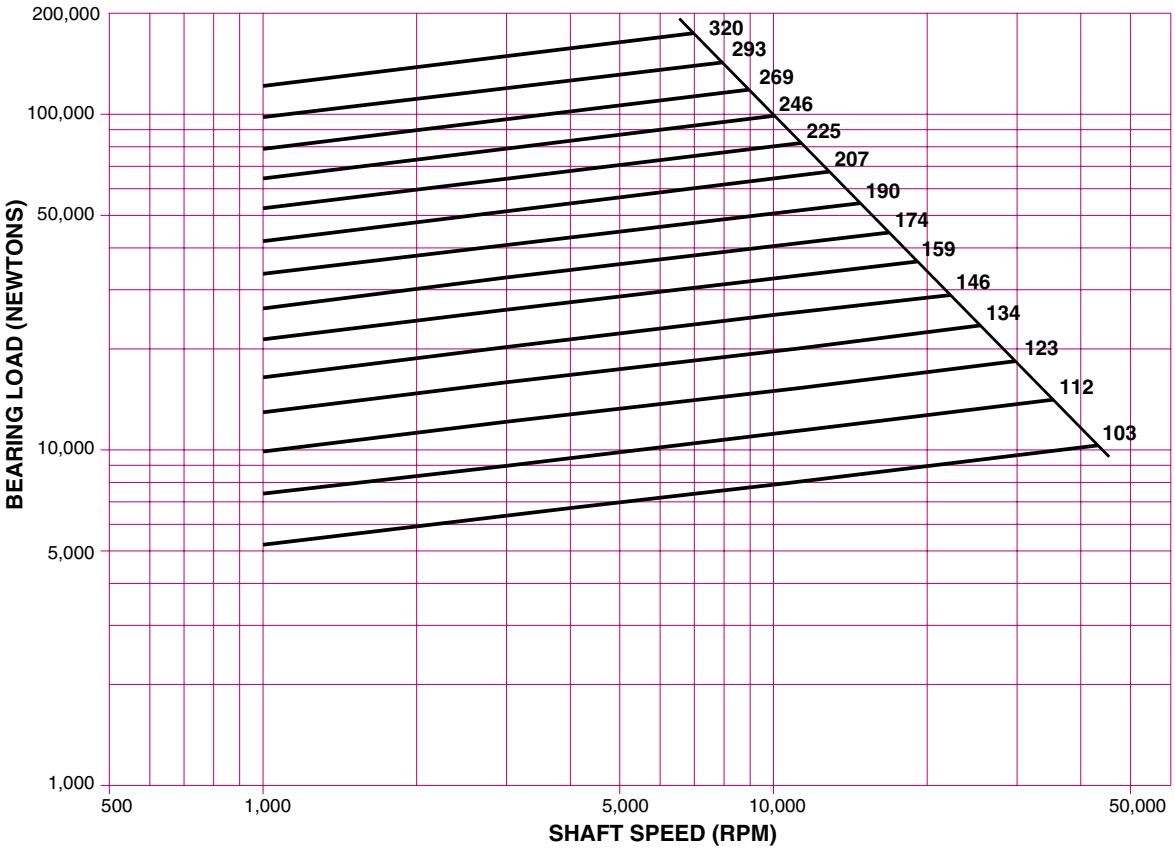
Size the bearing for normal load and speed when transient load and speed are within 20% of normal conditions. If transients exceed 120% of normal, please consult our Engineering Department for specific recommendations.

Friction losses are based on recommended flow rates and an evacuated drain cavity. To calculate friction losses for double element bearings, add 10% to the values in these graphs to accommodate the slack-side bearing.

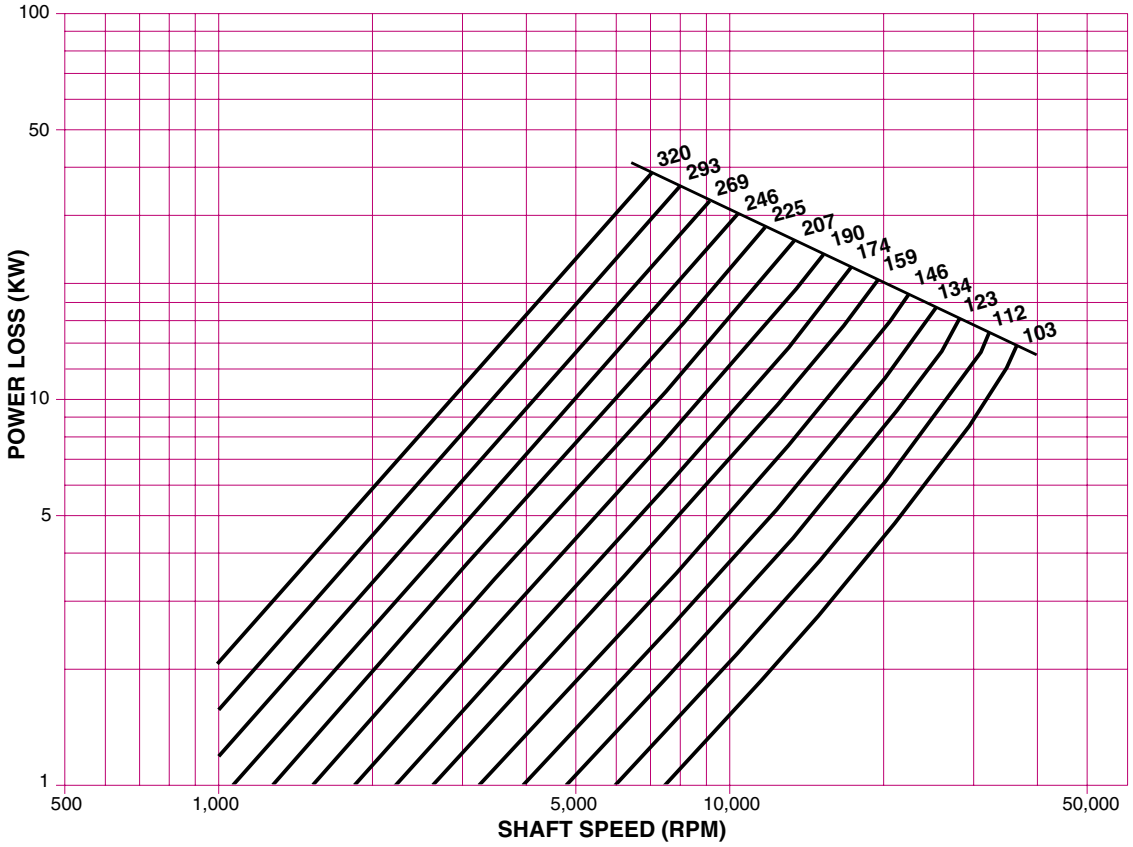
To calculate lubricant supply for double element bearings, add 20% to the values in these graphs.

All curves are based on an oil viscosity of ISO VG32, with an inlet oil temperature of 50° C. We recommend ISO VG32 oil viscosity for moderate through high speed applications. For other oil viscosities, consult our Engineering Department for assistance in bearing selection, frictional losses and oil flow requirements.

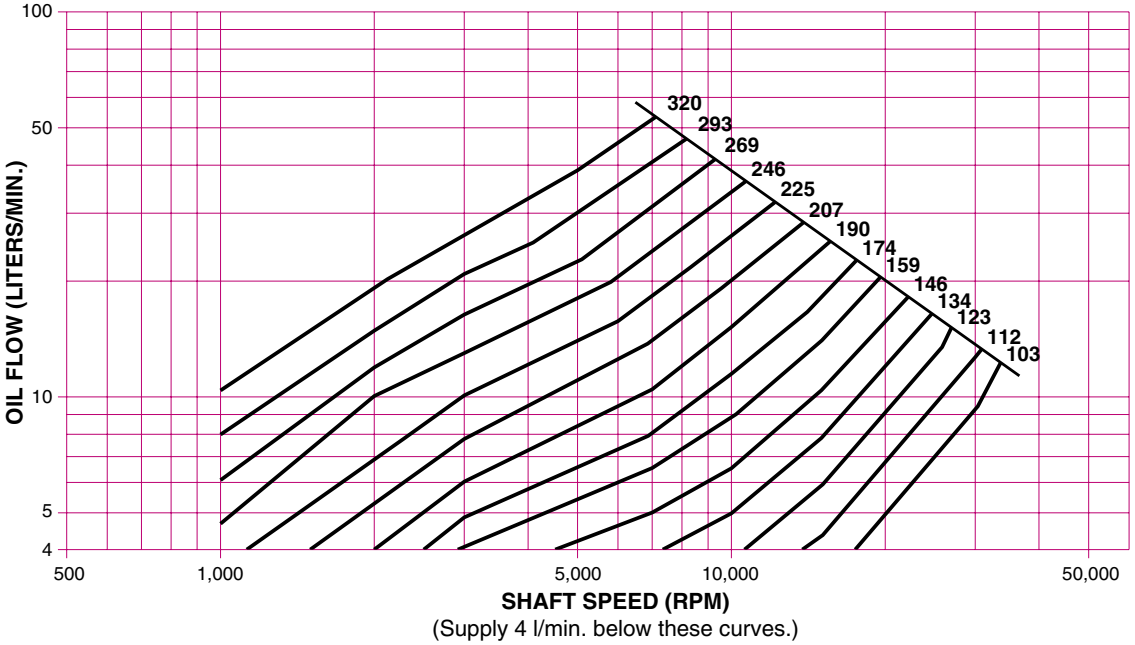
RATED LOAD FOR 6-PAD LEG BEARINGS



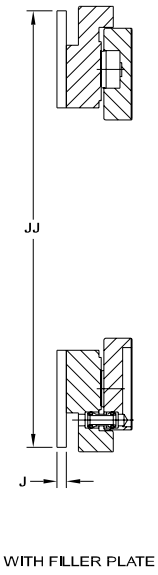
FRICTIONAL LOSS FOR SINGLE ELEMENT 6-PAD LEG BEARINGS



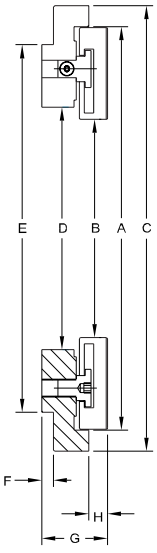
RECOMMENDED LUBRICANT SUPPLY FOR SINGLE ELEMENT 6-PAD LEG BEARINGS



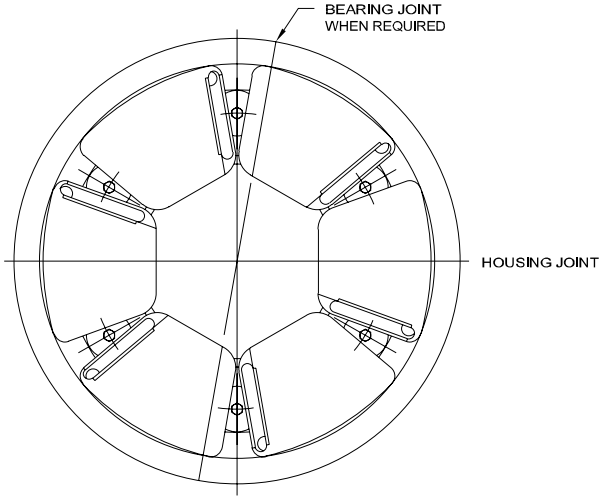
(Supply 4 l/min. below these curves.)



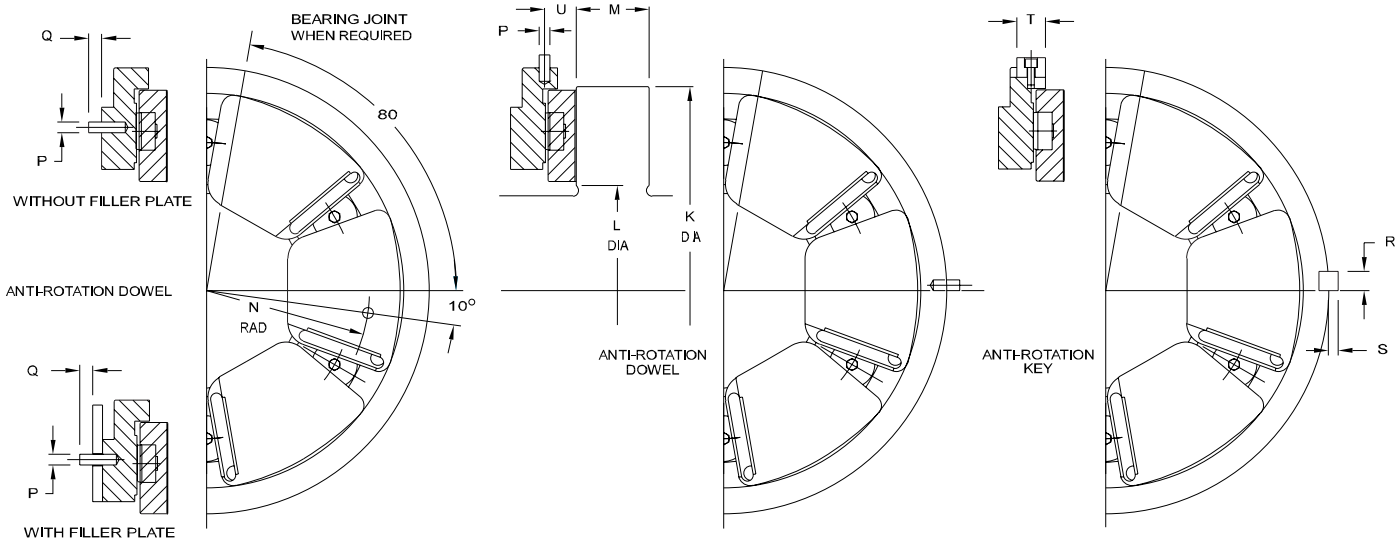
WITH FILLER PLATE



WITHOUT FILLER PLATE



BEARING SERIES "6" PAD			ALL DIMENSIONS ARE IN MM							
Pad Series	Thrust Pad		Bearing Area Sq. MM	Base Ring					Thickness	
	Dia "A"	Dia "B"		Dia "C" Bearing	Dia "C" Housing	Dia "D"	Dia "E"	Dim "F"	Dim "G"	Dim "H"
103	92	38.4	3858	107.91/107.88	107.99/107.95	44	74.6	4	20.650/20.610	4.6
112	100	41.7	4613	115.85/115.82	115.93/115.89	49	82.5	5	22.243/22.187	5.2
123	110	46.2	5452	126.96/126.92	127.04/127.00	54	92.9	3.5	23.823/23.767	6.8
134	119	49.3	6633	139.66/139.62	139.74/139.70	59	103.1	5	25.413/25.357	6.4
146	130	53.8	7833	147.60/147.56	147.68/147.64	63	114.3	6	27.003/26.947	7.0
159	143	59.9	9639	165.06/165.02	165.14/165.10	70	127.0	6	28.593/28.537	7.6
174	155	64.3	11388	179.35/179.31	179.43/179.39	76	135.6	5.5	31.763/31.707	9.7
190	168	69.6	14123	193.63/193.58	193.73/193.68	83	146.0	8	34.943/34.887	9.9
207	184	76.5	16898	209.50/209.45	209.60/209.55	89	162.8	9	38.113/38.057	11.1
225	200	81.0	20569	228.55/228.50	228.65/228.60	98	176.2	10	41.295/41.224	11.3
246	219	90.4	23750	247.60/247.55	247.70/247.65	108	196.0	10.5	44.465/44.394	12.4
269	240	99.8	27879	266.64/266.59	266.75/266.70	117	215.9	10.5	47.645/47.574	14.6
293	261	108.2	33460	292.04/291.99	292.15/292.10	129	234.9	10.5	50.815/50.744	15.8
320	286	119.1	39622	317.44/317.38	317.56/317.50	140	257.0	13.0	57.165/57.094	17.1



BEARING SERIES "6" PAD **ALL DIMENSIONS ARE IN MM**

Pad Series	Filler Plate		Collar			Anti Rotation Dowel/Key							Total End Play	Approx. Weight Less Filler Plate kg
	Dia "JJ"	Dim "J" Min	Dia "K" O.D.	Dia "L" Undercut	Dim "M" Width	Rad "N" Dowel P.C.	Dia "P" Dowel	Dim "Q" Dowel Out	Dim "R" Key-Width	Dim "S" Key-Out	Dim "T" Key-Length	Dim "U"		
103	102	4.8	95	35	17	33.3	4.8	5	-	-	-	9.6	0.30	.87
112	109	4.8	105	38	19	36.6	5.6	6	-	-	-	10.2	0.30	1.07
123	120	4.8	113	43	21	39.7	5.6	6	-	-	-	11.7	0.30	1.38
134	133	4.8	122	46	22	42.9	6.4	7	-	-	-	12.4	0.35	1.80
146	141	4.8	134	51	25	46.0	7.9	8	-	-	-	14.0	0.35	2.09
159	158	4.8	146	56	27	50.8	7.9	8	-	-	-	14.5	0.35	3.58
174	172	4.8	159	61	30	55.6	9.5	8	-	-	-	15.7	0.40	4.04
190	186	6.4	171	66	32	60.3	9.5	8	-	-	-	18.9	0.40	4.84
207	203	6.4	189	72	35	66.7	11.1	8	-	-	-	19.1	0.40	6.19
225	222	6.4	203	78	38	71.4	11.1	8	-	-	-	22.2	0.50	8.14
246	241	6.4	224	87	43	79.4	12.7	10	-	-	-	22.4	0.50	10.50
269	260	6.4	243	96	48	87.3	12.7	10	-	-	-	25.6	0.50	12.40
293	286	6.4	265	104	53	95.3	12.7	10	15.9	5.6	28.6	-	0.50	16.90
320	311	6.4	289	116	56	103.2	15.9	13	15.9	5.6	31.8	-	0.60	21.81

BEARING SELECTION

Thrust load, shaft RPM, oil viscosity and shaft diameter through the bearing determine the bearing size to be selected.

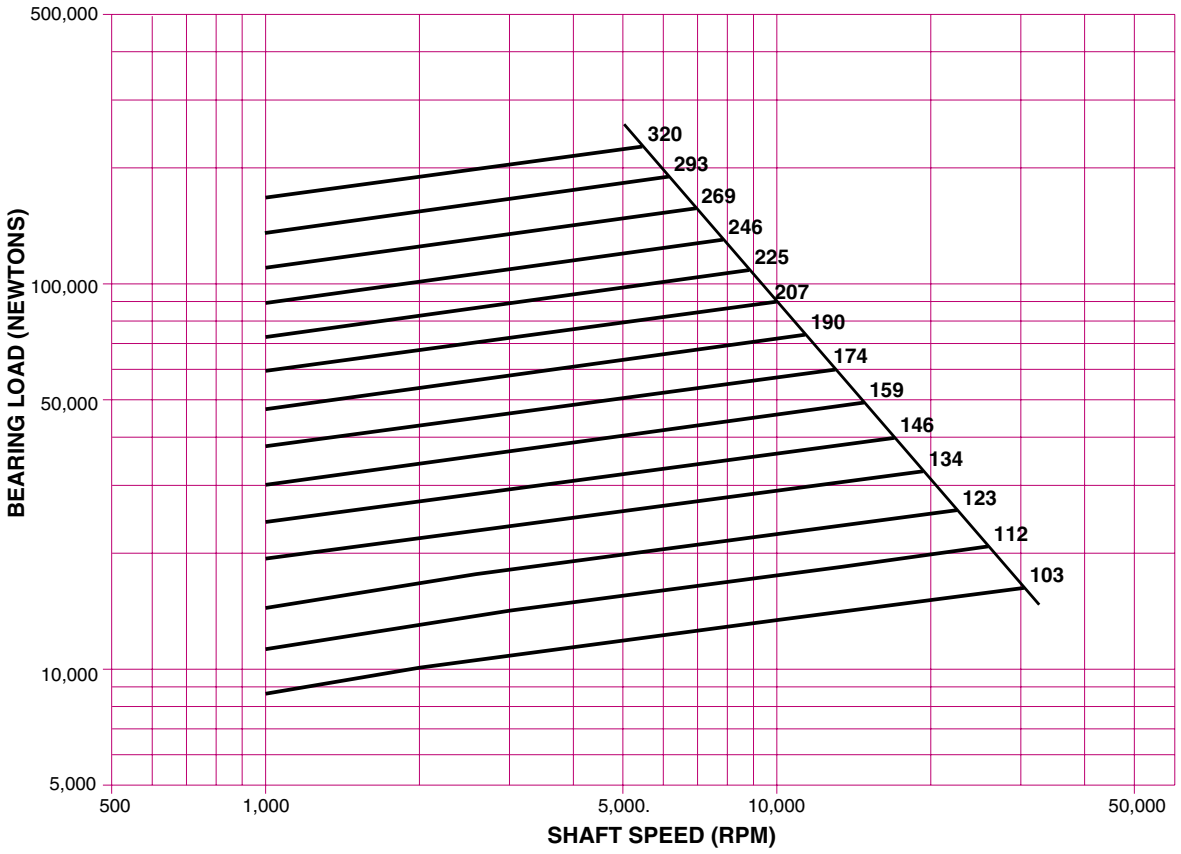
Size the bearing for normal load and speed when transient load and speed are within 20% of normal conditions. If transients exceed 120% of normal, please consult our Engineering Department for specific recommendations.

Friction losses are based on recommended flow rates and an evacuated drain cavity. To calculate friction losses for double element bearings, add 10% to the values in these graphs to accommodate the slack-side bearing.

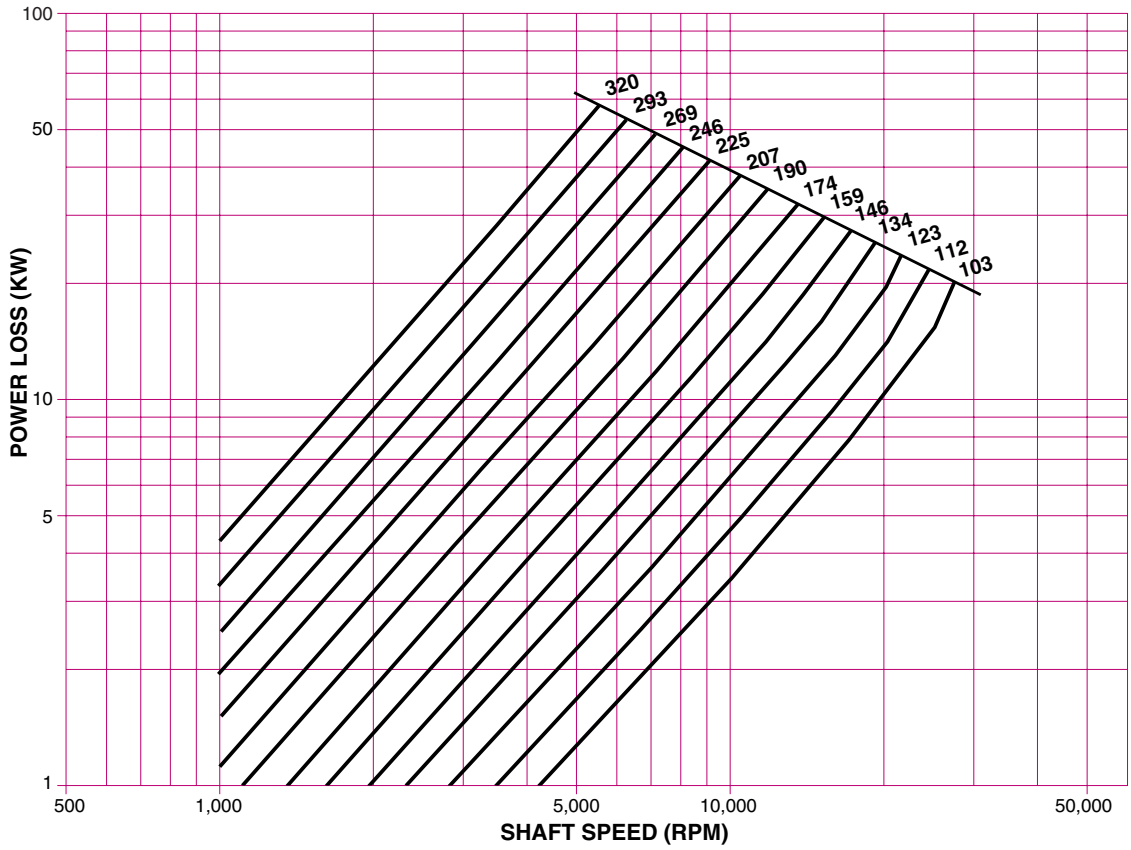
To calculate lubricant supply for double element bearings, add 20% to the values in these graphs.

All curves are based on an oil viscosity of ISO VG32, with an inlet oil temperature of 50° C. We recommend ISO VG32 oil viscosity for moderate through high speed applications. For other oil viscosities, consult our Engineering Department for assistance in bearing selection, frictional losses and oil flow requirements.

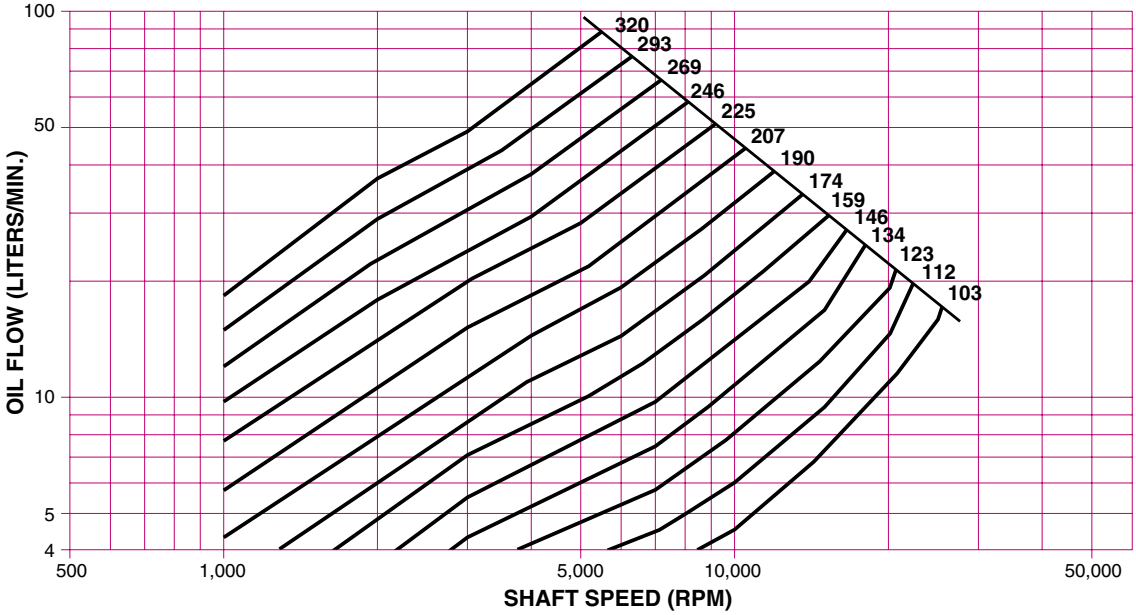
RATED LOAD FOR 8-PAD LEG BEARINGS



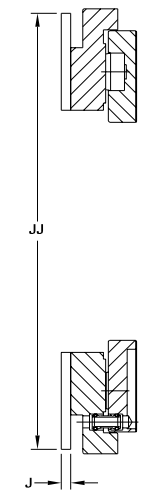
FRICTIONAL LOSS FOR SINGLE ELEMENT 8-PAD LEG BEARINGS



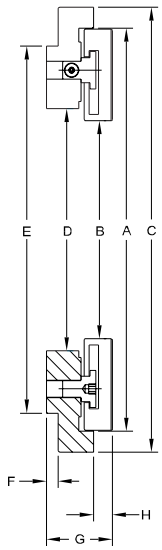
RECOMMENDED LUBRICANT SUPPLY FOR SINGLE ELEMENT 8-PAD LEG BEARINGS



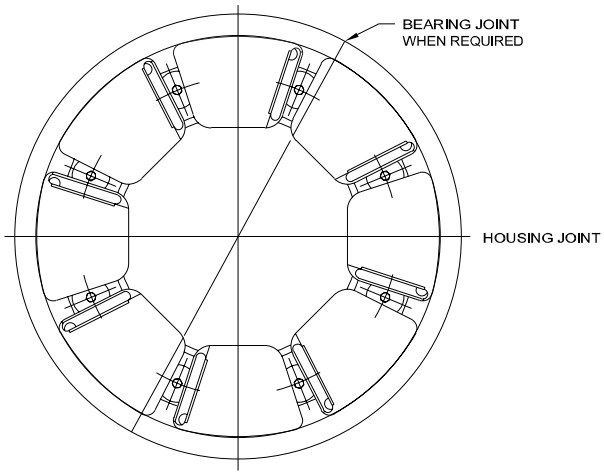
(Supply 4 l/min. below these curves.)



WITH FILLER PLATE

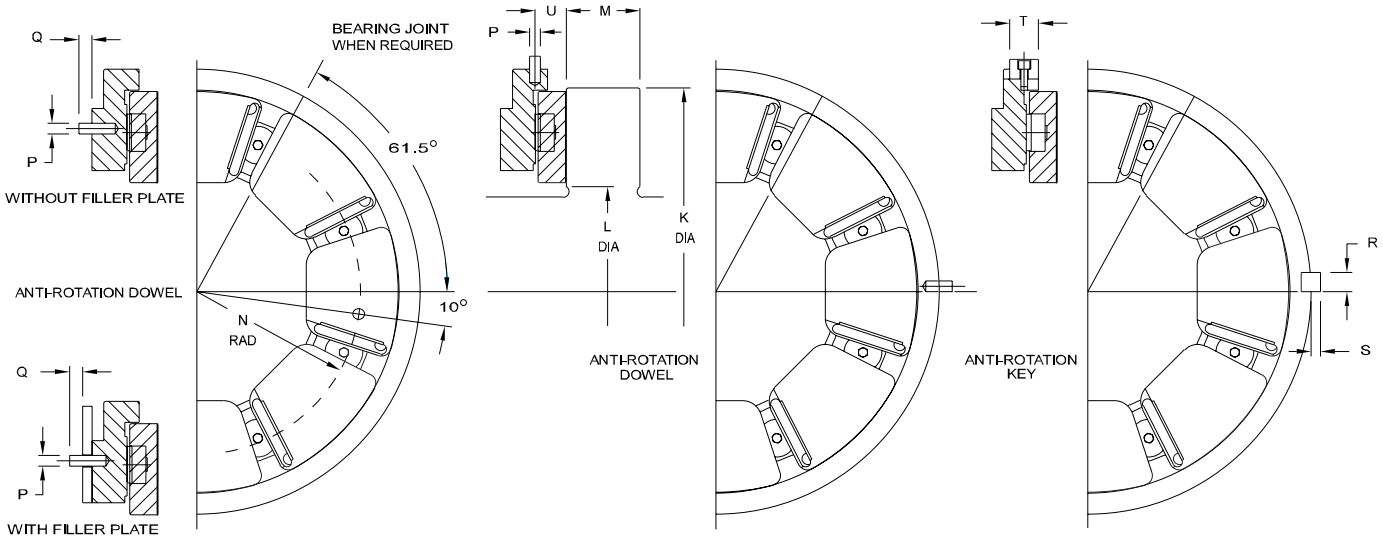


WITHOUT FILLER PLATE



BEARING SERIES "8" PAD **ALL DIMENSIONS ARE IN MM**

Pad Series	Thrust Pad		Bearing Area Sq. MM	Base Ring					Thickness	
	Dia "A"	Dia "B"		Dia "C" Bearing	Dia "C" Housing	Dia "D"	Dia "E"	Dim "F"	Dim "G"	Dim "H"
103	114	61.7	5142	130.14/130.10	130.22/130.18	67	98.6	4	20.650/20.610	4.6
112	124	66.5	6155	139.66/139.62	139.74/139.70	74	108.0	5	22.243/22.187	5.2
123	137	74.4	7265	152.36/152.32	152.44/152.40	82	120.7	3.5	23.823/23.767	6.8
134	149	81.0	8846	168.24/168.20	168.32/168.28	90	133.4	5	25.413/25.357	6.4
146	162	87.6	10446	180.91/180.86	181.01/180.96	98	146.0	6	27.003/26.947	7.0
159	176	95.3	12859	196.80/196.75	196.90/196.85	105	160.3	6	28.593/28.537	7.6
174	192	103.6	15188	215.85/215.80	215.95/215.90	115	173.0	5.5	31.763/31.707	9.7
190	210	112.8	18833	234.90/234.85	235.00/234.95	126	187.5	8	34.943/34.887	9.9
207	229	123.2	22530	253.94/253.89	254.05/254.00	138	206.3	9	38.113/38.057	11.1
225	251	136.7	27428	279.34/279.29	279.45/279.40	150	228.6	10	41.295/41.224	11.3
246	273	147.6	31666	301.57/301.52	301.68/301.63	164	251.0	10.5	44.465/44.394	12.4
269	297	160.0	37176	323.79/323.73	323.91/323.85	179	272.3	10.5	47.645/47.574	14.6
293	324	174.8	44616	355.54/355.48	355.66/355.60	195	298.5	10.5	50.815/50.744	15.8
320	354	191.0	52835	384.12/384.06	384.24/384.18	213	325.4	13.0	57.165/57.094	17.1



BEARING SERIES "8" PAD			ALL DIMENSIONS ARE IN MM											
Pad Series	Filler Plate		Collar			Anti Rotation Dowel/Key							Total End Play	Approx. Weight Less Filler Plate kg
	Dia "JJ"	Dim "J" Min	Dia "K" O.D.	Dia "L" Undercut	Dim "M" Width	Rad "N" Dowel P.C.	Dia "P" Dowel	Dim "Q" Dowel Out	Dim "R" Key-Width	Dim "S" Key-Out	Dim "T" Key-Length	Dim "U"		
103	124	4.8	117	59	17	44.5	6.4	7	-	-	-	10.6	0.30	1.13
112	133	4.8	127	64	19	48.4	6.4	7	-	-	-	12.2	0.30	1.38
123	146	4.8	140	70	21	53.2	6.4	7	-	-	-	12.8	0.30	1.75
134	162	4.8	152	76	22	57.9	7.9	8	-	-	-	12.4	0.35	2.32
146	174	4.8	165	84	25	63.5	7.9	8	-	-	-	14.0	0.35	2.80
159	190	4.8	179	92	27	69.9	7.9	8	-	-	-	15.5	0.35	3.60
174	209	4.8	195	100	30	76.2	9.5	8	-	-	-	17.7	0.40	4.68
190	229	6.4	213	110	32	82.6	9.5	8	-	-	-	17.9	0.40	6.30
207	248	6.4	232	119	35	88.9	11.1	8	-	-	-	21.1	0.40	8.01
225	273	6.4	254	132	38	98.4	12.7	10	-	-	-	22.3	0.50	10.76
246	295	6.4	276	141	43	106.4	12.7	10	15.9	5.6	25.4	-	0.50	13.20
269	317	6.4	300	156	48	115.9	15.9	13	15.9	5.6	28.6	-	0.50	16.10
293	349	9.5	327	170	51	127.0	15.9	13	15.9	5.6	28.6	-	0.50	21.11
320	378	9.5	357	187	56	138.1	19.1	13	15.9	5.6	31.8	-	0.60	28.06

BEARING SELECTION

Thrust load, shaft RPM, oil viscosity and shaft diameter through the bearing determine the bearing size to be selected.

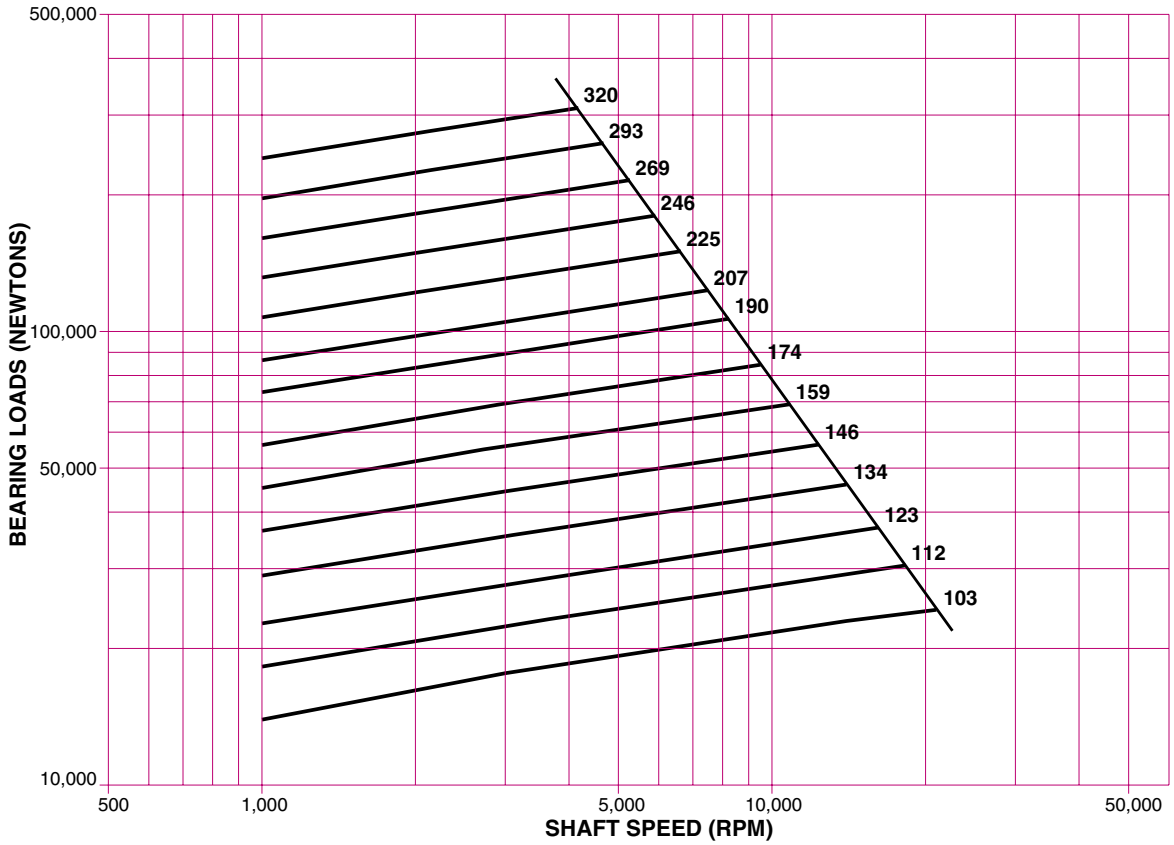
Size the bearing for normal load and speed when transient load and speed are within 20% of normal conditions. If transients exceed 120% of normal, please consult our Engineering Department for specific recommendations.

Friction losses are based on recommended flow rates and an evacuated drain cavity. To calculate friction losses for double element bearings, add 10% to the values in these graphs to accommodate the slack-side bearing.

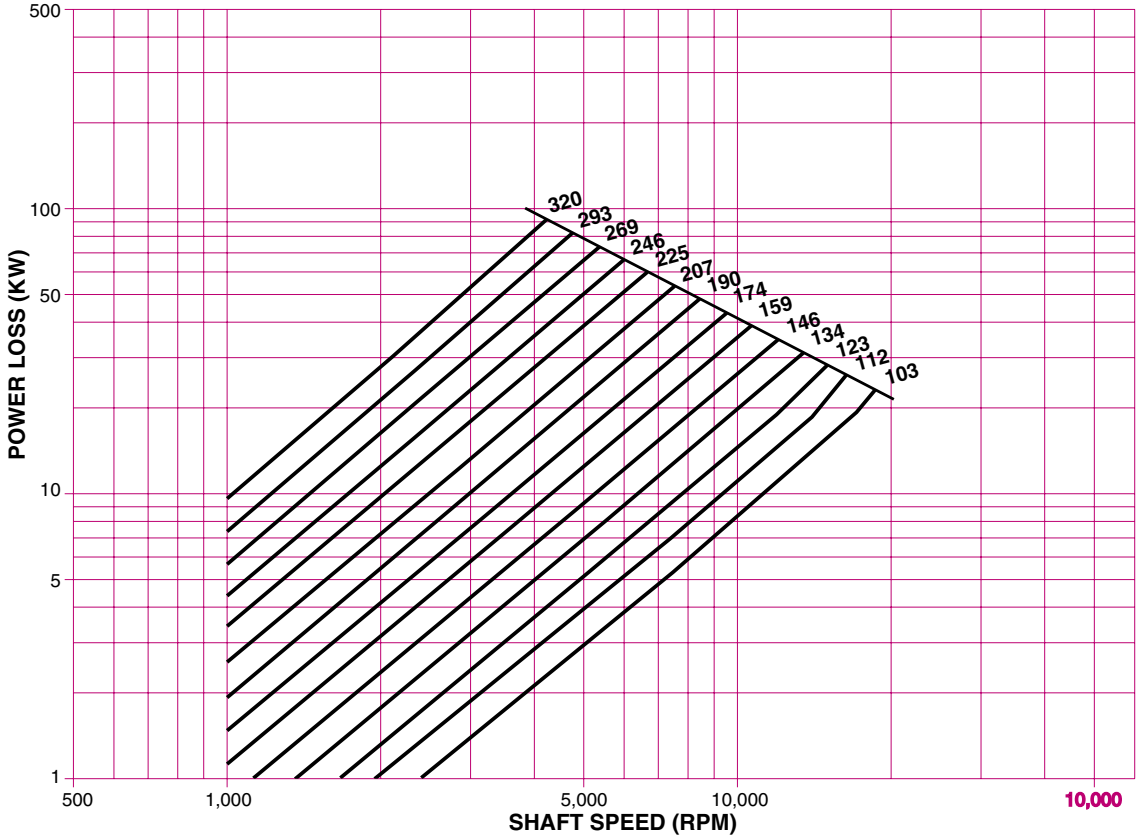
To calculate lubricant supply for double element bearings, add 20% to the values in these graphs.

All curves are based on an oil viscosity of ISO VG32, with an inlet oil temperature of 50° C. We recommend ISO VG32 oil viscosity for moderate through high speed applications. For other oil viscosities, consult our Engineering Department for assistance in bearing selection, frictional losses and oil flow requirements.

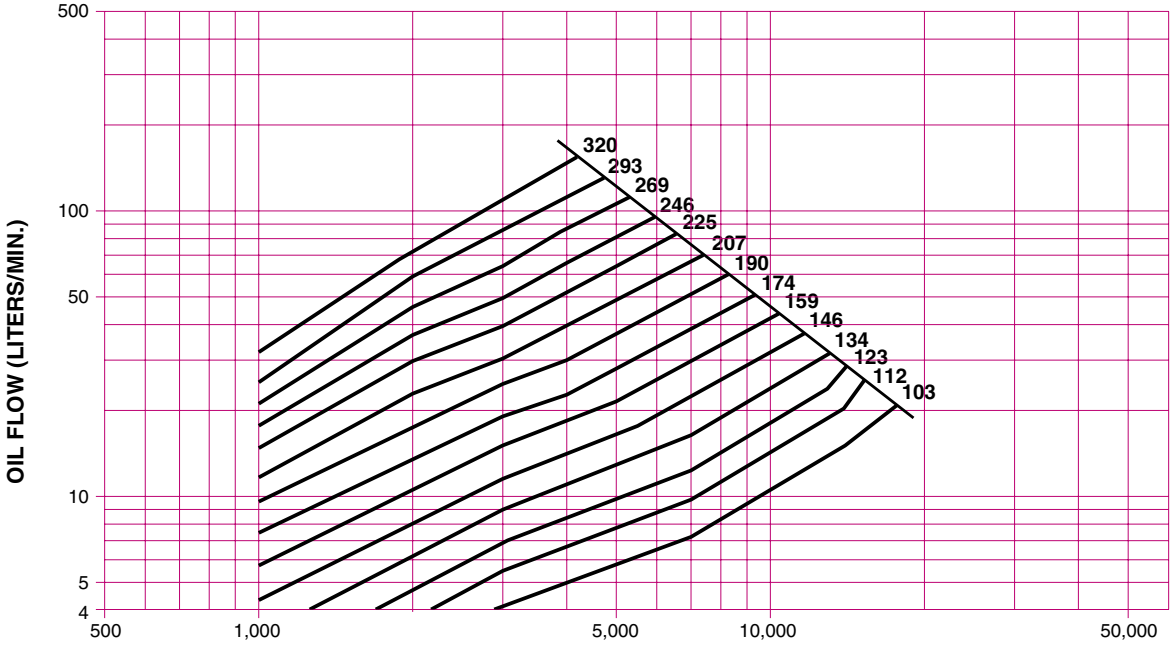
RATED LOAD FOR 11-PAD LEG BEARINGS

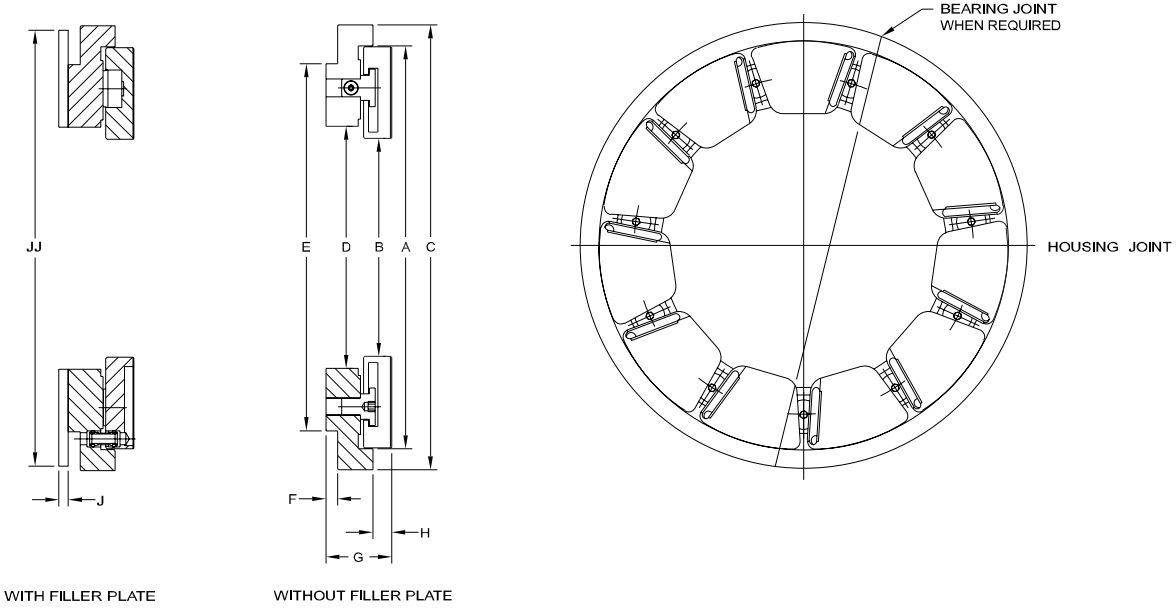


FRICTIONAL LOSS FOR SINGLE ELEMENT 11-PAD LEG BEARINGS



RECOMMENDED LUBRICANT SUPPLY FOR SINGLE ELEMENT 11-PAD LEG BEARINGS



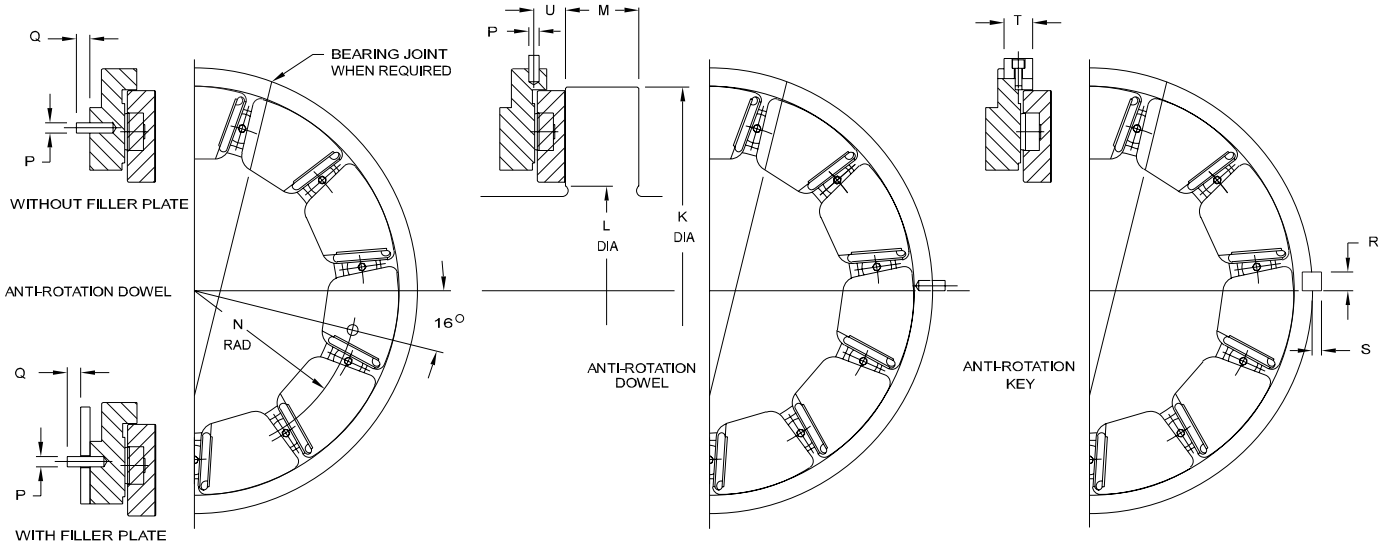


WITH FILLER PLATE

WITHOUT FILLER PLATE

BEARING SERIES "11" PAD **ALL DIMENSIONS ARE IN MM**

Pad Series	Thrust Pad		Bearing Area Sq. MM	Base Ring					Thickness	
	Dia "A"	Dia "B"		Dia "C" Bearing	Dia "C" Housing	Dia "D"	Dia "E"	Dim "F"	Dim "G"	Dim "H"
103	148	95.2	7071	168.24/168.20	168.32/168.28	102	131.1	5.8	22.243/22.187	5.2
112	162	105.1	8459	180.93/180.88	181.03/180.98	112	145.3	6.8	23.823/23.767	4.8
123	175	112.8	9988	196.80/196.75	196.90/196.85	121	157.2	5.8	25.413/25.357	6.4
134	191	122.4	12162	212.68/212.63	212.78/212.73	133	174.8	6.7	27.003/26.947	6.0
146	210	135.4	14362	234.90/234.85	235.00/234.95	146	192.8	6.7	28.593/28.537	7.6
159	229	147.8	17678	253.94/253.89	254.05/254.00	159	211.1	7.2	30.173/30.117	8.1
174	249	160.8	20885	279.34/279.29	279.45/279.40	173	228.6	5.3	31.763/31.707	9.7
190	271	175	25892	301.57/301.52	301.68/301.63	188	247.7	7.5	34.943/34.887	9.9
207	295	190.2	30983	323.79/323.73	323.91/323.85	206	271.5	9.1	38.113/38.057	11.1
225	324	209.5	37712	355.54/355.48	355.66/355.60	223	300.0	8.0	41.295/41.224	12.3
246	352	227.6	43545	384.12/384.06	384.24/384.18	245	327.2	10.4	44.465/44.394	12.4
269	384	247.6	51113	415.86/415.80	415.99/415.93	267	357.1	10.4	47.645/47.574	14.6
293	419	270.2	61346	453.96/453.90	454.09/454.03	291	390.7	9.6	50.815/50.744	15.8
320	457	294.6	72643	495.23/495.17	495.36/495.30	317	425.5	13.0	57.165/57.094	17.1



BEARING SERIES "11" PAD **ALL DIMENSIONS ARE IN MM**

Pad Series	Filler Plate		Collar			Anti Rotation Dowel/Key							Total End Play	Approx. Weight Less Filler Plate kg
	Dia "JJ"	Dim "J" Min	Dia "K" O.D.	Dia "L" Undercut	Dim "M" Width	Rad "N" Dowel P.C.	Dia "P" Dowel	Dim "Q" Dowel Out	Dim "R" Key-Width	Dim "S" Key-Out	Dim "T" Key-Length	Dim "U"		
103	162	4.8	151	92	17	61.0	6.4	7	-	-	-	11.2	0.30	1.75
112	175	4.8	165	102	19	67.0	6.4	7	-	-	-	10.7	0.30	2.18
123	190	4.8	178	110	21	72.0	7.9	8	-	-	-	12.4	0.30	2.73
134	206	4.8	194	119	22	79.0	7.9	8	-	-	-	14.0	0.35	3.34
146	228	6.4	213	132	25	87.0	9.5	8	-	-	-	15.6	0.35	4.34
159	248	6.4	232	144	27	95.0	9.5	8	-	-	-	16.1	0.35	5.38
174	273	6.4	252	157	30	105.0	9.5	8	-	-	-	17.7	0.40	6.73
190	295	6.4	275	171	32	113.0	11.1	8	-	-	-	17.9	0.40	8.98
207	317	6.4	298	187	35	122.0	12.7	10	15.9	5.6	22.2	-	0.40	11.11
225	349	9.5	327	206	38	135.0	15.9	13	15.9	5.6	22.2	-	0.50	14.62
246	378	9.5	356	224	43	146.0	15.9	13	15.9	5.6	25.4	-	0.50	19.45
269	409	9.5	391	241	48	160.0	15.9	13	19.1	6.4	28.6	-	0.50	22.59
293	448	9.5	425	264	51	175.0	19.1	13	19.1	6.4	28.6	-	0.50	28.90
320	489	9.5	464	289	56	191.0	19.1	13	19.1	6.4	31.8	-	0.60	39.56

BEARING SELECTION

Thrust load, shaft RPM, oil viscosity and shaft diameter through the bearing determine the bearing size to be selected.

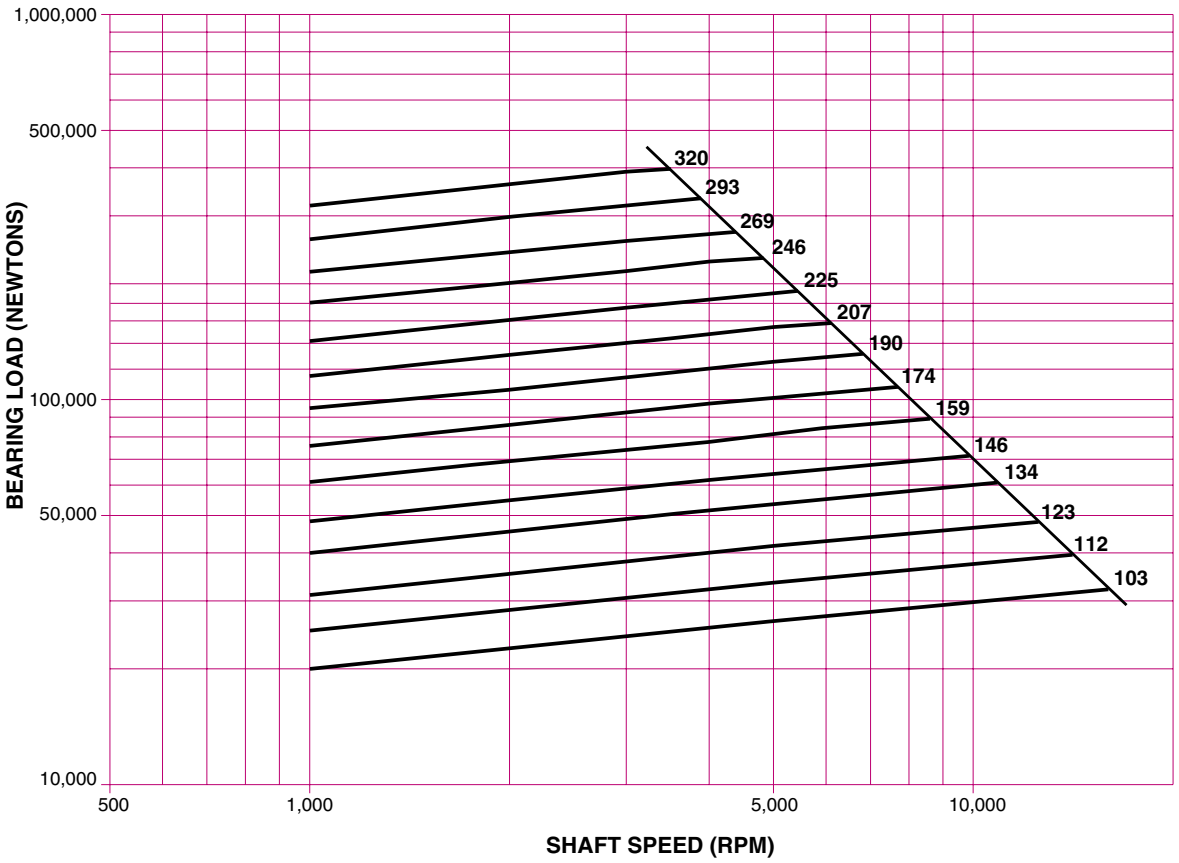
Size the bearing for normal load and speed when transient load and speed are within 20% of normal conditions. If transients exceed 120% of normal, please consult our Engineering Department for specific recommendations.

Friction losses are based on recommended flow rates and an evacuated drain cavity. To calculate friction losses for double element bearings, add 10% to the values in these graphs to accommodate the slack-side bearing.

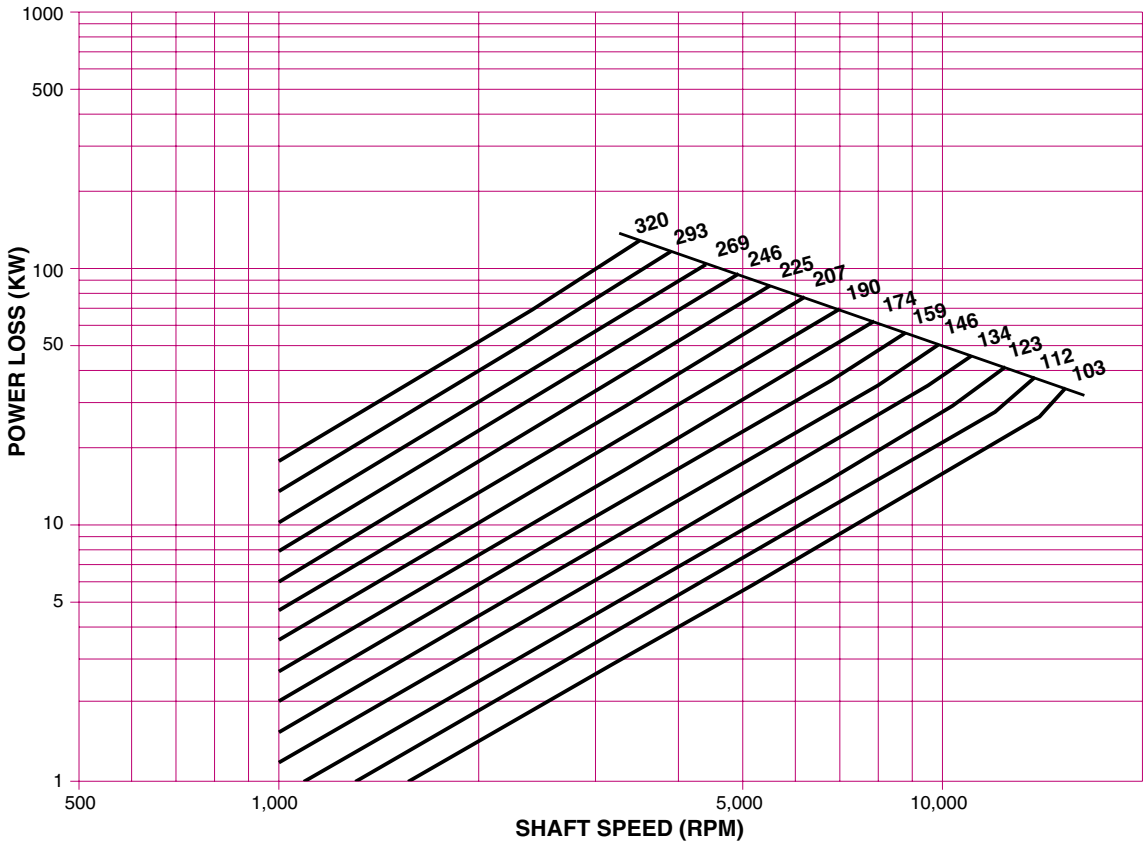
To calculate lubricant supply for double element bearings, add 20% to the values in these graphs.

All curves are based on an oil viscosity of ISO VG32, with an inlet oil temperature of 50° C. We recommend ISO VG32 oil viscosity for moderate through high speed applications. For other oil viscosities, consult our Engineering Department for assistance in bearing selection, frictional losses and oil flow requirements.

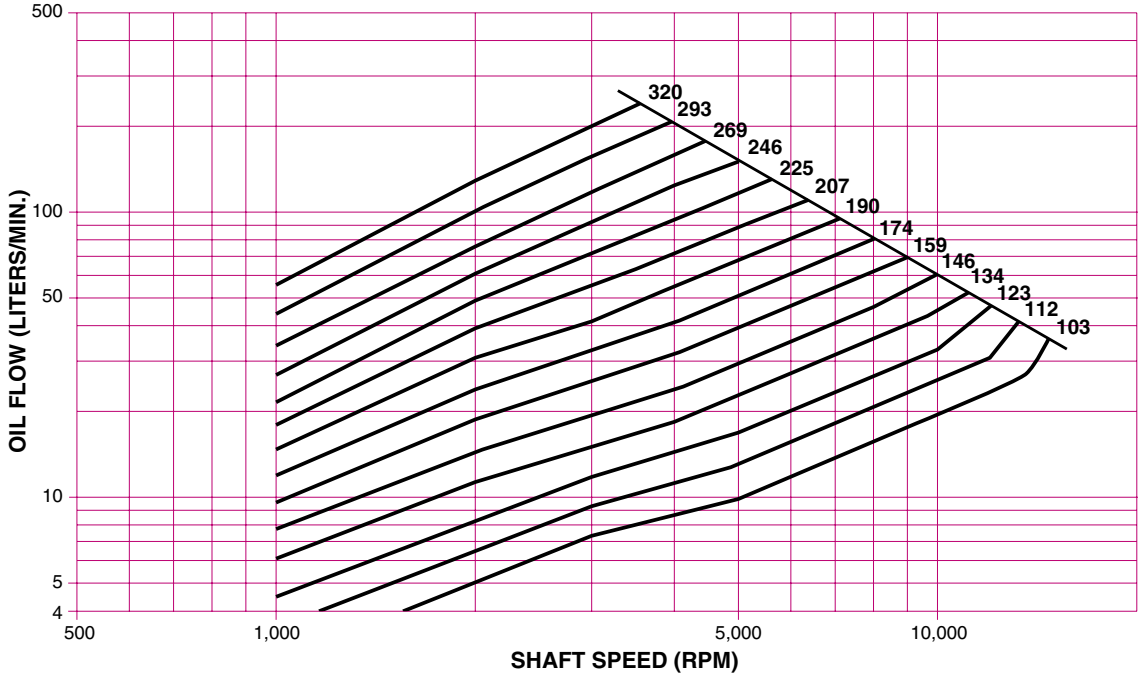
RATED LOAD FOR 14-PAD LEG BEARINGS



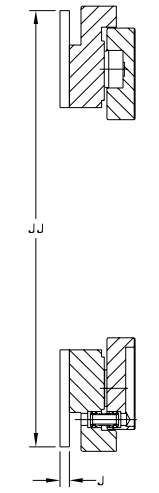
FRICTIONAL LOSS FOR SINGLE ELEMENT 14-PAD LEG BEARINGS



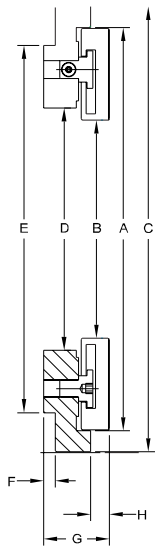
RECOMMENDED LUBRICANT SUPPLY FOR SINGLE ELEMENT 14-PAD LEG BEARINGS



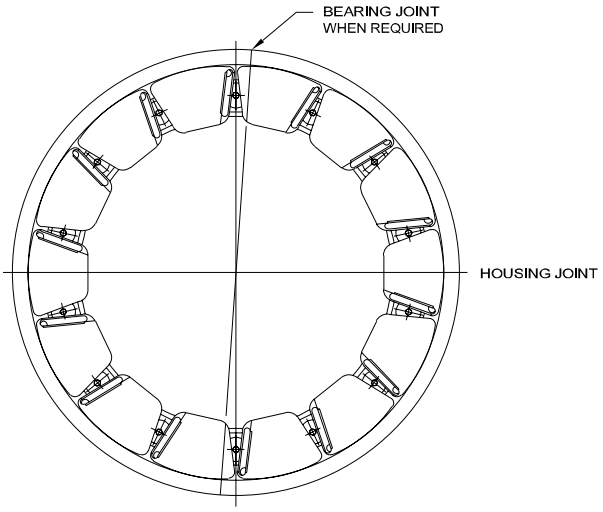
(Supply 4 l/min. below these curves.)



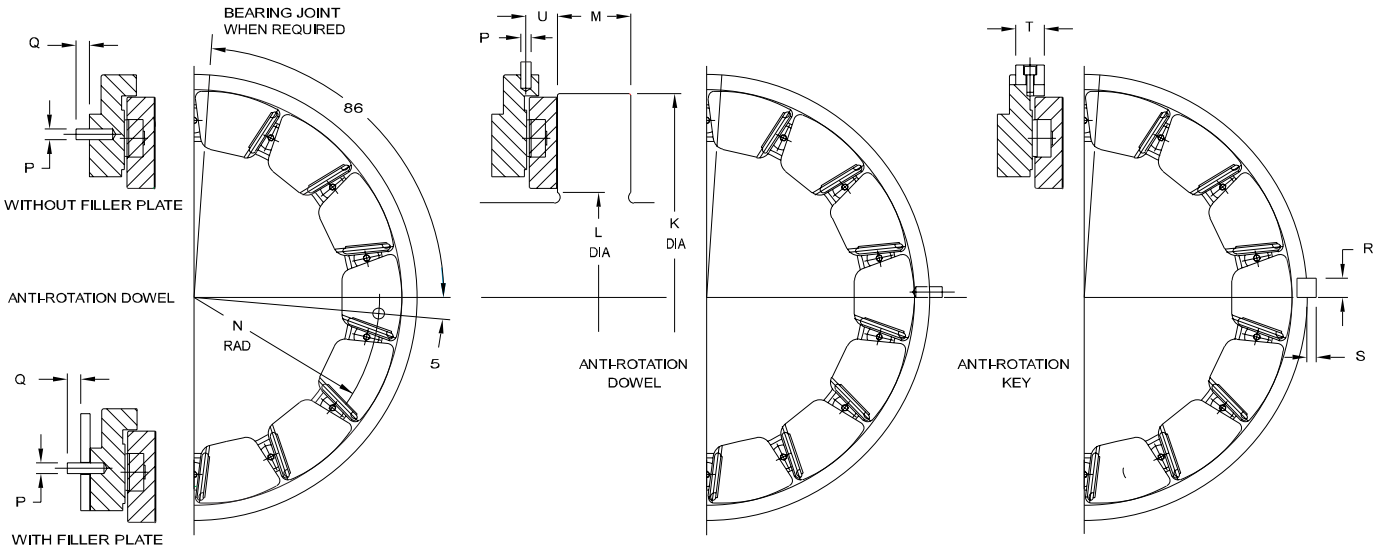
WITH FILLER PLATE



WITHOUT FILLER PLATE



BEARING SERIES "14" PAD			ALL DIMENSIONS ARE IN MM							
Pad Series	Thrust Pad		Bearing Area Sq. MM	Base Ring					Thickness	
	Dia "A"	Dia "B"		Dia "C" Bearing	Dia "C" Housing	Dia "D"	Dia "E"	Dim "F"	Dim "G"	Dim "H"
103	181	128.5	9001	199.98/199.93	200.08/200.03	135	164.3	5.9	22.243/22.187	5.2
112	197	139.9	10768	219.03/218.98	219.13/219.08	148	179.3	6.7	23.823/23.767	4.7
123	214	152.4	12717	238.08/238.03	238.18/238.13	161	196.8	5.5	25.413/25.357	6.4
134	235	166.9	15478	260.29/260.24	260.40/260.35	176	217.4	6.7	27.003/26.947	6.0
146	257	183.1	18279	282.52/282.47	282.63/282.58	192	239.8	7.7	28.593/28.537	6.5
159	279	198.6	22498	307.92/307.87	308.03/307.98	209	261.9	9.2	31.763/31.707	6.1
174	305	216.4	26576	333.32/333.26	333.44/333.38	229	282.4	8.3	34.943/34.887	6.7
190	332	235.2	32957	361.89/361.83	362.01/361.95	249	307.8	11.5	38.113/38.057	5.9
207	362	256.8	39428	393.64/393.58	393.76/393.70	272	337.3	12.0	41.295/41.224	8.1
225	394	279.4	48003	425.38/425.32	425.51/425.45	297	368.3	12.0	44.465/44.394	8.2
246	432	306.8	55423	463.48/463.42	463.61/463.55	324	404.9	13.4	47.645/47.574	9.4
269	470	333.5	65056	501.57/501.50	501.72/501.65	353	441.5	14.4	50.815/50.744	10.6
293	514	365.5	78082	546.02/545.95	546.17/546.10	385	484.1	14.6	53.995/53.924	10.8
320	558	396.2	92457	596.82/596.75	596.97/596.90	420	525.5	16.0	60.345/60.274	14.1



BEARING SERIES "14" PAD			ALL DIMENSIONS ARE IN MM											
Pad Series	Filler Plate		Collar			Anti Rotation Dowel/Key							Total End Play	Approx. Weight Less Filler Plate kg
	Dia "JJ"	Dim "J" Min	Dia "K" O.D.	Dia "L" Undercut	Dim "M" Width	Rad "N" Dowel P.C.	Dia "P" Dowel	Dim "Q" Dowel Out	Dim "R" Key-Width	Dim "S" Key-Out	Dim "T" Key-Length	Dim "U"		
103	193	4.8	184	125	17	77.8	7.9	8	-	-	-	12.2	0.30	2.21
112	212	4.8	200	137	19	85.7	7.9	8	-	-	-	11.8	0.30	2.90
123	231	4.8	217	149	21	93.7	9.5	8	-	-	-	12.4	0.30	3.59
134	253	6.4	238	164	22	101.6	9.5	8	-	-	-	14.0	0.35	4.55
146	276	6.4	260	179	24	111.1	11.1	8	-	-	-	15.6	0.35	5.76
159	300	6.4	283	195	27	120.7	11.1	8	-	-	-	16.7	0.35	7.61
174	327	6.4	308	213	30	131.8	12.7	10	15.9	5.6	22.2	-	0.40	9.31
190	355	6.4	335	232	32	142.9	12.7	10	15.9	5.6	22.2	-	0.40	12.11
207	387	9.5	365	254	35	157.2	15.9	13	15.9	5.6	22.2	-	0.40	15.71
225	419	9.5	400	273	38	169.9	15.9	13	19.1	6.4	25.4	-	0.50	19.87
246	457	9.5	438	302	43	185.7	19.1	13	19.1	6.4	25.4	-	0.50	25.04
269	495	9.5	476	327	48	203.2	19.1	13	19.1	6.4	28.6	-	0.50	30.49
293	539	9.5	521	359	51	222.3	22.2	16	22.2	8	31.8	-	0.50	38.76
320	590	9.5	565	391	54	241.3	22.2	16	22.2	8	34.9	-	0.60	52.93

BEARING SELECTION

Thrust load, shaft RPM, oil viscosity and shaft diameter through the bearing determine the bearing size to be selected.

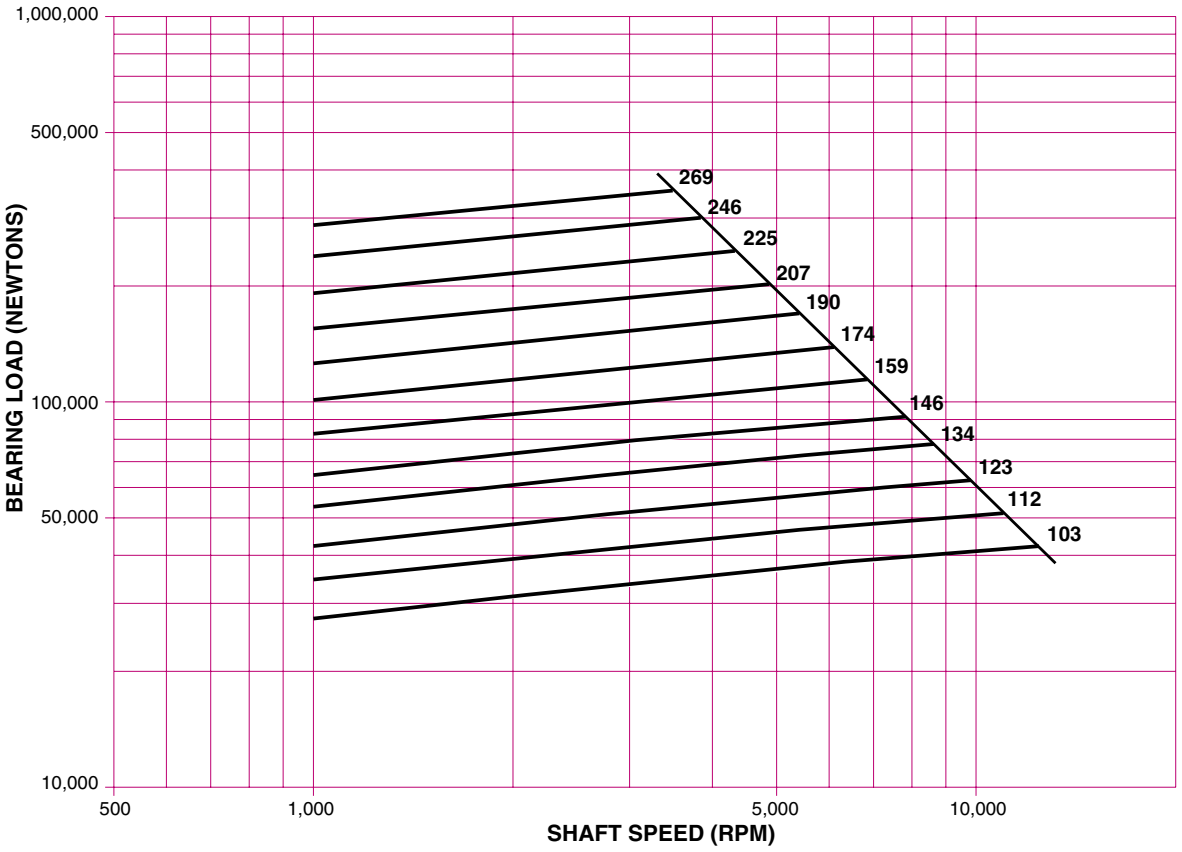
Size the bearing for normal load and speed when transient load and speed are within 20% of normal conditions. If transients exceed 120% of normal, please consult our Engineering Department for specific recommendations.

Friction losses are based on recommended flow rates and an evacuated drain cavity. To calculate friction losses for double element bearings, add 10% to the values in these graphs to accommodate the slack-side bearing.

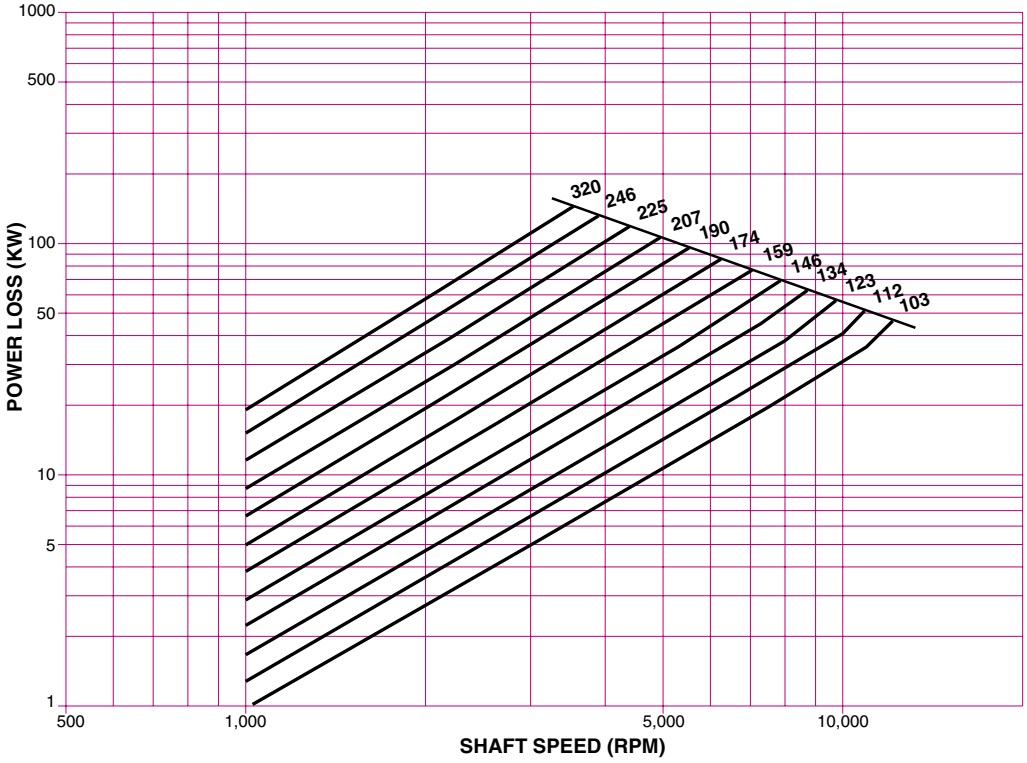
To calculate lubricant supply for double element bearings, add 20% to the values in these graphs.

All curves are based on an oil viscosity of ISO VG32, with an inlet oil temperature of 50° C. We recommend ISO VG32 oil viscosity for moderate through high speed applications. For other oil viscosities, consult our Engineering Department for assistance in bearing selection, frictional losses and oil flow requirements.

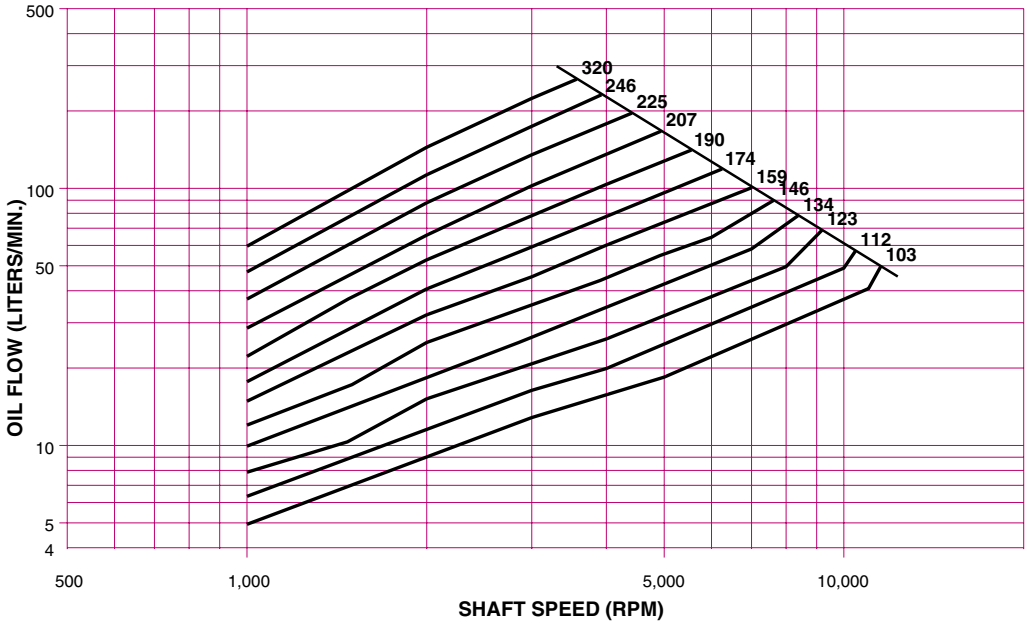
RATED LOAD FOR 18-PAD LEG BEARINGS



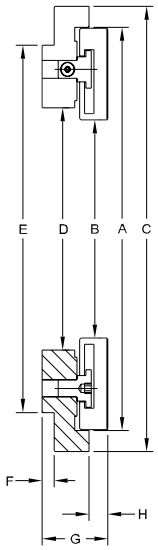
FRICTIONAL LOSS FOR SINGLE ELEMENT 18-PAD LEG BEARINGS



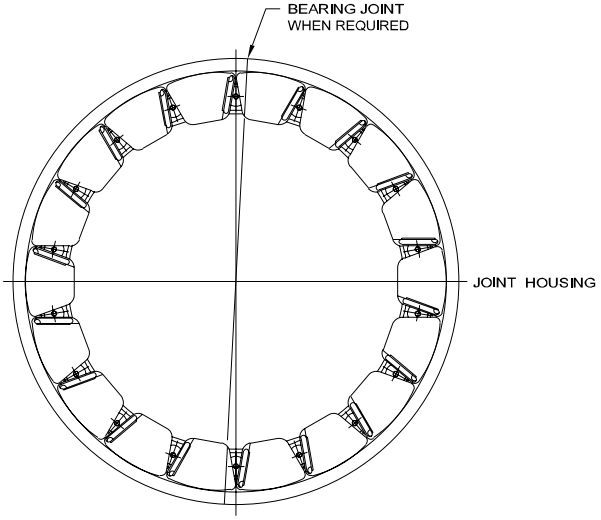
RECOMMENDED LUBRICANT SUPPLY FOR SINGLE ELEMENT 18-PAD LEG BEARINGS



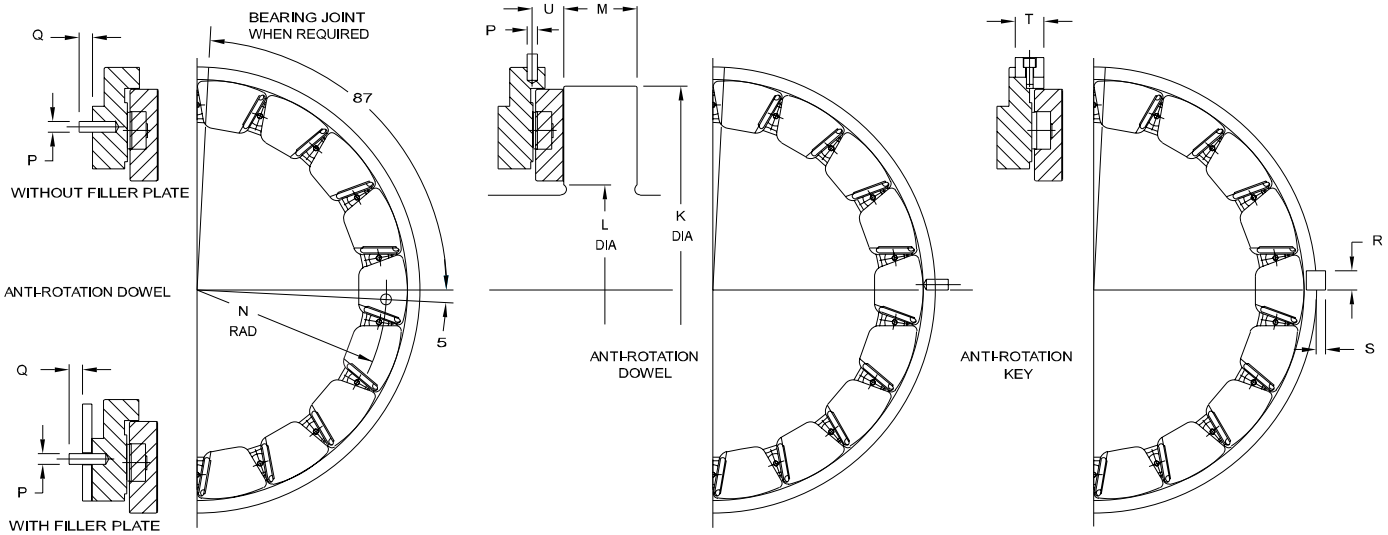
WITH FILLER PLATE



WITHOUT FILLER PLATE



BEARING SERIES "18" PAD			ALL DIMENSIONS ARE IN MM							
Pad Series	Thrust Pad		Bearing Area Sq. MM	Base Ring					Thickness	
	Dia "A"	Dia "B"		Dia "C" Bearing	Dia "C" Housing	Dia "D"	Dia "E"	Dim "F"	Dim "G"	Dim "H"
103	224	171.4	11575	244.43/244.48	244.53/244.48	178	206.2	7.9	23.823/23.767	4.7
112	244	187.4	13846	266.64/266.59	266.75/266.70	195	227.0	8.7	25.413/25.357	4.6
123	267	204.7	16349	288.87/288.82	288.98/288.93	213	249.1	8.4	28.593/28.537	6.5
134	292	224.0	19904	317.44/317.38	317.56/317.50	232	274.5	9.7	30.173/30.117	6.1
146	318	243.3	23505	346.02/345.96	346.14/346.08	254	299.9	10.7	31.763/31.707	6.7
159	346	265.4	28924	374.59/374.53	374.71/374.65	277	327.1	12.2	34.943/34.887	7.9
174	378	289.5	34170	406.33/406.27	406.46/406.40	302	355.6	13.3	38.113/38.057	8.1
190	413	316.2	42370	444.43/444.37	444.56/444.50	330	387.3	14.5	41.295/41.224	9.3
207	451	345.7	50693	482.53/482.47	482.66/482.60	359	425.4	15.0	44.465/44.394	11.4
225	492	377.9	61713	526.97/526.90	527.12/527.05	392	465.0	14.0	47.645/47.574	12.6
246	536	411.6	71256	571.42/571.35	571.57/571.50	429	508.8	16.4	50.815/50.744	12.8
269	584	447.8	83644	622.22/622.15	622.37/622.30	467	553.9	17.4	53.995/53.924	14.0



BEARING SERIES "18" PAD **ALL DIMENSIONS ARE IN MM**

Pad Series	Filler Plate		Collar			Anti Rotation Dowel/Key							Total End Play	Approx. Weight Less Filler Plate kg
	Dia "JJ"	Dim "J" Min	Dia "K" O.D.	Dia "L" Undercut	Dim "M" Width	Rad "N" Dowel P.C.	Dia "P" Dowel	Dim "Q" Dowel Out	Dim "R" Key-Width	Dim "S" Key-Out	Dim "T" Key-Length	Dim "U"		
103	238	4.8	227	168	17	100.1	7.9	8	-	-	-	10.7	0.30	2.99
112	260	6.4	248	184	19	109.5	9.5	8	-	-	-	12.6	0.30	3.85
123	282	6.4	270	202	21	119.1	9.5	8	-	-	-	13.6	0.30	4.97
134	311	6.4	295	221	22	130.2	11.1	8	-	-	-	15.1	0.35	6.46
146	339	6.4	321	240	24	141.3	11.1	8	-	-	-	15.7	0.35	8.21
159	368	6.4	349	262	27	154.0	12.7	10	15.9	5.6	22.2	-	0.35	10.36
174	400	6.4	381	286	30	168.3	12.7	10	15.9	5.6	25.4	-	0.40	13.13
190	438	9.5	419	311	32	184.2	15.9	13	15.9	5.6	25.4	-	0.40	16.93
207	476	9.5	457	340	35	201.6	15.9	13	19.1	6.4	28.6	-	0.40	21.86
225	523	9.5	498	371	38	219.1	19.1	13	19.1	6.4	28.6	-	0.50	27.56
246	565	9.5	543	406	43	238.1	19.1	13	22.2	8	31.8	-	0.50	34.50

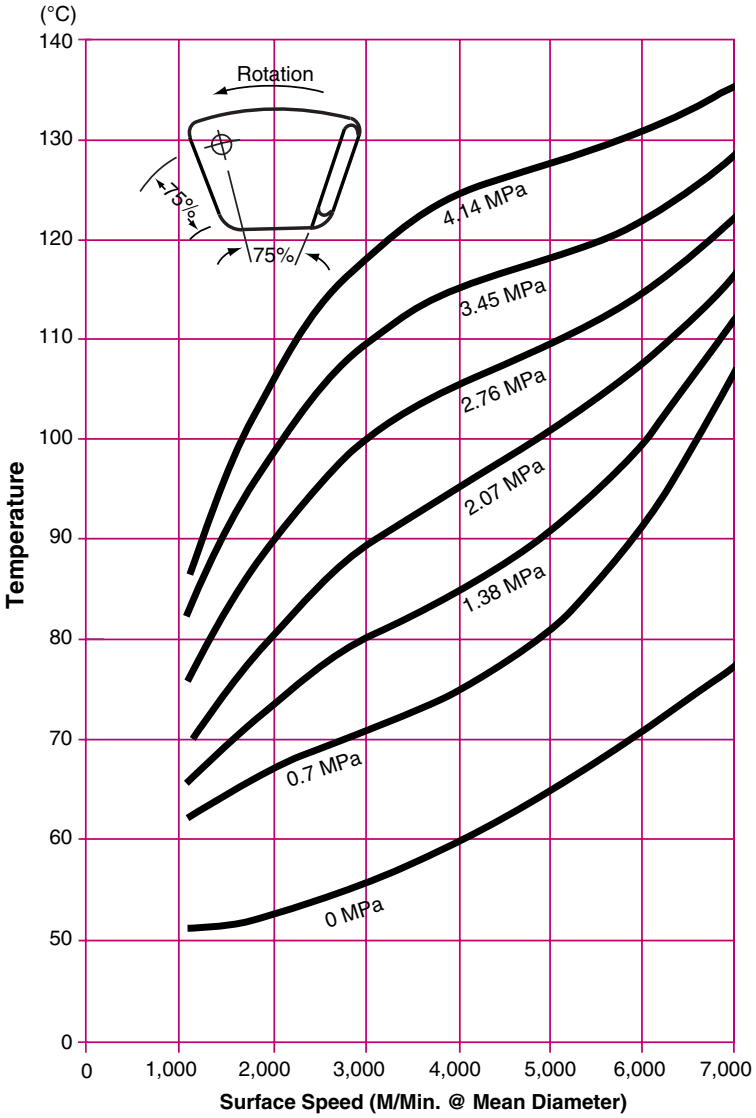
WHITE METAL TEMPERATURE

With the correct LEG thrust bearing selected, you may wish to estimate the white metal temperature at operating conditions, particularly if:

- Bearing load exceeds 2.8MPa.
- Collar surface speed exceeds 76.2m/s.
- Inlet oil temperature exceeds 50° C.
- User specifications limit maximum allowable temperature.

Please refer to the graph on this page to estimate the white metal temperature at the recommended 75/75 position. If white metal temperature exceeds bearing limitations of 130° C or user specifications (whichever is lower), please contact our Engineering Department for additional suggestions.

LEG WHITE METAL TEMPERATURES AT 75/75 POSITION (6 AND 8- PAD SERIES, STEEL PADS)



INSTRUMENTATION

KingCole bearings can be instrumented in the same manner as European standard thrust bearings.

Temperature measurement

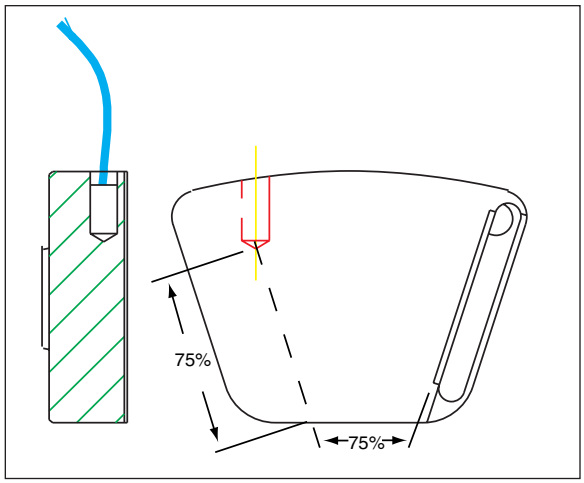
Changes in load, shaft speed, oil flow, oil inlet temperature, or bearing surface finish can affect bearing surface temperatures. At excessively high temperatures, the pad white metal is subject to wiping which causes bearing failure. While our computer predictions of operating temperature are solidly based on extensive empirical data, the algorithms used do include assumptions about the nature of the oil film shape, amount of hot oil carryover, and average viscosity. Consequently, for critical applications, we recommend using pads with built-in temperature sensors so you can see actual metal temperatures under all operating conditions. Either thermocouples or resistance temperature detectors (RTDs) can be installed in contact with the white metal or in the pad body near the pad body/white metal interface. See drawing for recommended sensor location.

Thrust measurement

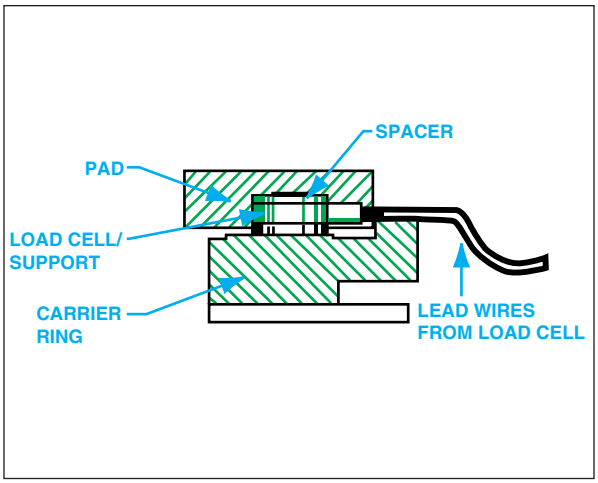
For bearings subject to critically high loads, continual thrust measurement can provide a vital indication of machine and bearing condition. To let you measure thrust, we can install a strain gauge load cell in one or more places in the bearing.

Load cells can be installed in LEG bearings in place of the pad support. We can also provide complete measuring instrumentation and recorders. Please contact us for more information.

LEG JOURNAL



Recommended Sensor Locations



Load Cell Installed in Pad

BEARINGS

We have also applied our Leading Edge Groove technology to our pivoted pad journal bearings. LEG Journal bearings use less oil than standard journal bearings, reducing friction power loss and oil system requirements. They also operate with significantly lower white metal temperatures. For sizing details and technical information, please consult our Engineering Department.

Kingsbury LEG Journal Bearing

Combination LEG Thrust and LEG Journal Bearing

KINGCOLE SLIMLINE

Our KingCole LEG bearing is now available in an equalizing version, which allows each shoe to carry an equal amount of thrust. Leveling plates on the back of the bearing reduce the chance of one shoe being more highly loaded than another. The leveling plates, combined with a spherical shoe support, also ensure that the thrust bearing face becomes perfectly aligned with the rotating thrust collar.

The advantage of this type of bearing is that it offers maximum load capacity for the life of the machine in which it is installed, while maintaining the low profile of the standard King Cole.