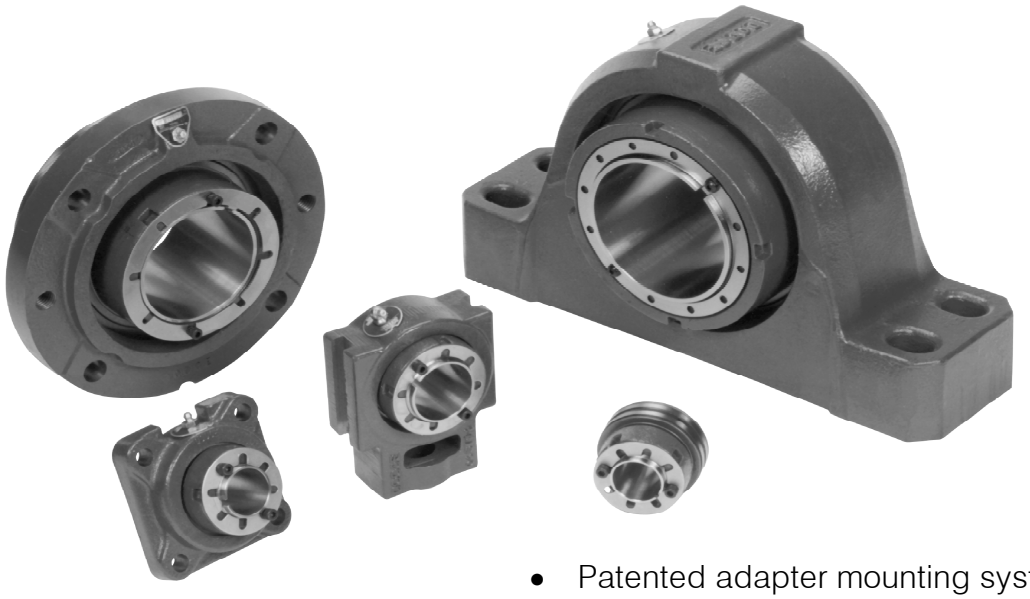
CONTENTS

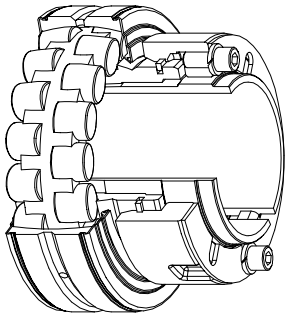
IMPERIAL™

FEATURES/BENEFITS

IMPERIAL–IP

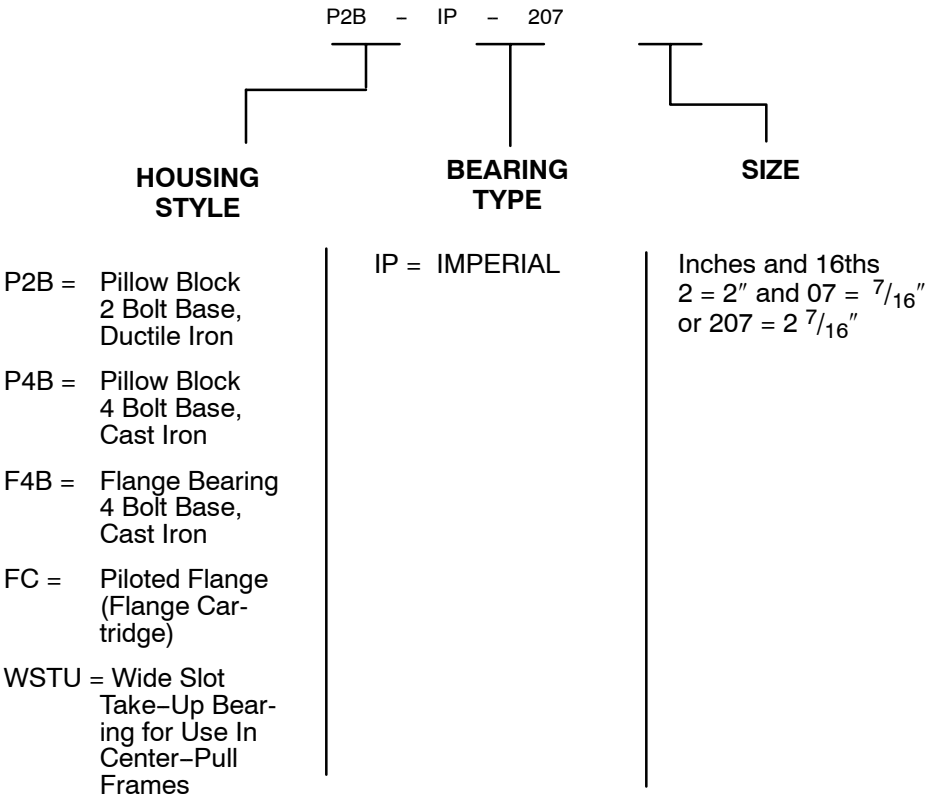


- Operating temperatures are 25% lower than setscrew mounted products
- Grease limiting speeds 30% higher than setscrew mounts
- Same rolling element as the S–2000 bearing
- Pillow blocks are interchangeable with S2000 dimensions on most sizes
- 2 bolt pillow blocks are ductile iron, all other styles are gray iron
- Ductile iron 2 bolt pillow block housing with 65,000 PSI tensile strength is 92% the strength of steel
- 2 bolt pillow blocks, 4 bolt flange bearings piloted flange and take–ups 1–7/16” to 3–15/16”
  4 bolt pillow blocks in sizes 2–7/16” to 4–15/16”
- Jackscrew holes standard on piloted flanges
- Can replace 300 series ball bearings in many applications
- Patented adapter mounting system
- Superior holding power reduces the fretting corrosion caused by vibration
- Shaft ready installation
- No special tools required for installation
- DODGE “R” seal provides superior sealing system
- Full 2° misalignment capability
- Sphered seal land on OD of inner ring maintains full contact pressure even when misaligned
- Less shaft damage vs. setscrew mounts
- Reduced vibration damage vs. setscrew mounts



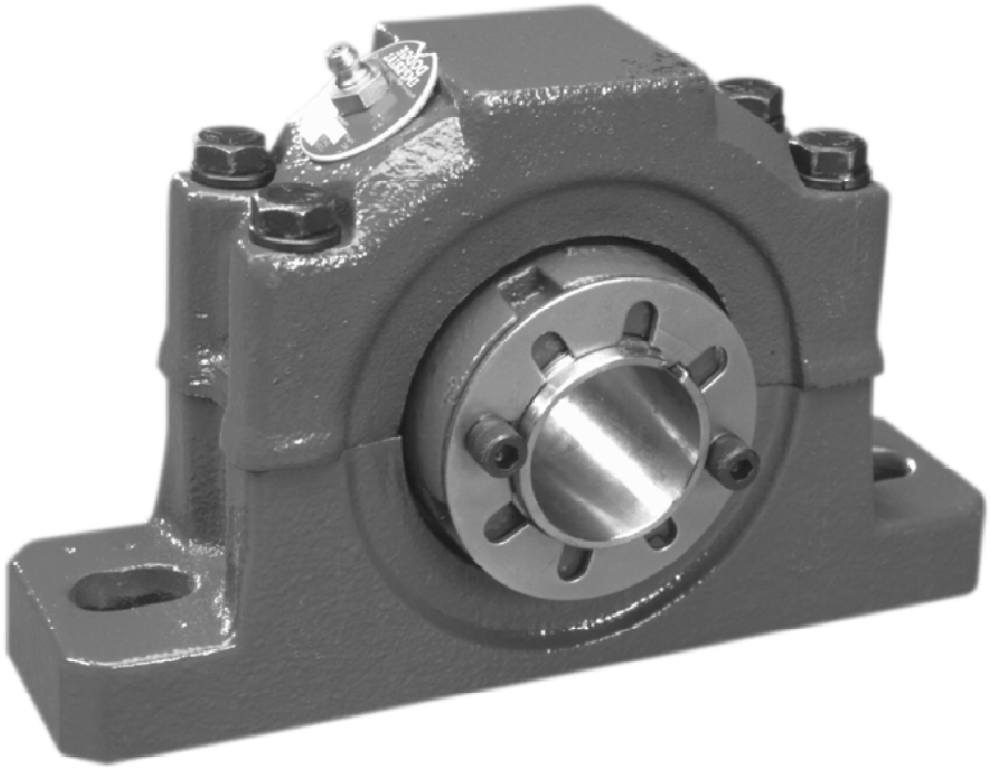
NOMENCLATURE

IMPERIAL–IP

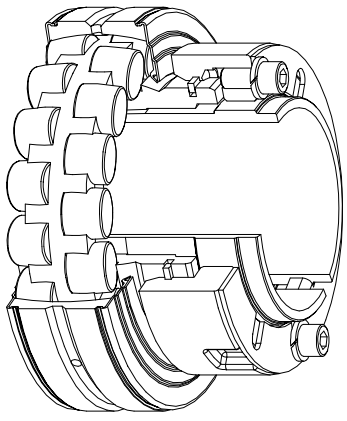


FEATURES/BENEFITS

ISAF

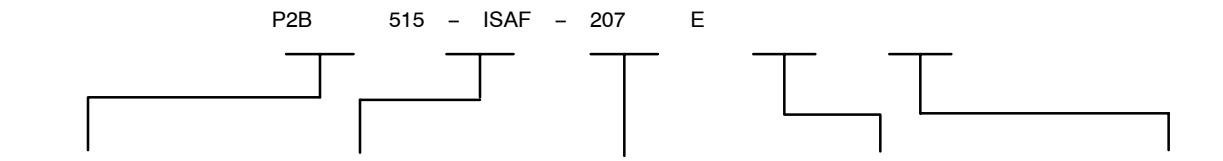


- Interchangeable with SAF style pillow blocks.
- Patented adapter mounting system.
- Easy installation – no feeler gauges needed.
- Easy removal – no torches, sledge hammers or special tools needed.
- DODGE “R” seal provides superior sealing system.
- Full 2° misalignment capability.
- Sphered seal land on OD of inner ring maintains full contact pressure even when misaligned.
- High capacity double row spherical bearing.
- 2 bolt pillow blocks in sizes 1–7/16” to 1–15/16”
- 4 bolt pillow blocks in sizes 2–7/16” to 4–15/16”



NOMENCLATURE

ISAF



HOUSING STYLE	HOUSING SIZE	BEARING TYPE	SIZE	OTHER DATA
P2B = Pillow Block 2 Bolt Base, Cast Iron P4B = Pillow Block 4 Bolt Base, Cast Iron	5xx for interchangeable SAF style housings	ISAF = IMPERIAL SAF	Inches and 16ths 2 = 2″ and 07 = $^{7}/_{16}$″ or 207 = 2 $^{7}/_{16}$″	E = EXPANSION If E does not appear, bearing is a non–expansion type

IMPERIAL–IP and ISAF Spherical Roller Bearings

DODGE Unitized Spherical Roller Bearings have the capacity to carry heavy radial loads and combined radial and thrust loads. The maximum recommended load which can be applied is limited by various components in the system such as bearing, housing, shaft, shaft attachment, speed and life requirements as listed in this catalog. DODGE spherical roller bearings have been applied successfully even when these limits have been exceeded under controlled operating conditions. Contact DODGE Application Engineering (864-297-4800) for applications which exceed the recommendations of this catalog.

L_{10} Hours Life — The life which may be expected from at least 90% of a given group of bearings operating under identical conditions.

$$L_{10}\text{ Life, Hours} = \left(\frac{C}{P}\right)^{10/3} \times \left(\frac{16667}{RPM}\right)$$

Where:

C = Dynamic Capacity (Table 1 for IMPERIAL), lbs.

P = Equivalent Radial Load, lbs.

GENERAL

Heavy Service — For heavy shock loads, frequent shock loads, or severe vibrations, add up to 50% (according to severity of conditions) to the Equivalent Radial Load to obtain a Modified Equivalent Radial Load. Consult DODGE Application Engineering for additional selection assistance.

Thrust load values shown in the table below are recommended as a guide for general applications that will give adequate L_{10} life. Spherical bearings require a radial load at least equal to the thrust load for proper operation. If the thrust load exceeds this limit, consult Application Engineering. Where substantial radial load is also present, it is advisable to calculate actual L_{10} life to assure that it meets the requirements. The effectiveness of the shaft attachment to carry thrust load depends on proper tightening of the bearing to the shaft. Therefore, it is advisable to use auxiliary thrust carrying devices such as shaft shoulder, snap ring or a thrust collar to locate the bearing under thrust loads heavier than shown below, or where extreme reliability is desired.

RPM RANGE	20-200	201-2000	over 2000
RECOMMENDED THRUST LOAD	C/20	C/40	C/60

The shaft tolerances recommended below are adequate for normal radial and radial/thrust load applications. Since the allowable load, especially at a low speed, is very large, the shaft should be checked to assure adequate shaft strength.

The magnitude and direction of both the thrust and radial load must be taken into account when selecting a housing. **When pillow blocks are utilized, heavy loads should be directed through the base. Where cap loads are involved, see Tables 3 – 5 on pages B8–11 – B8–13 for maximum values.** Where a load pulls the housing away from the mounting base, both the hold-down bolts and housing must be of adequate strength. Auxiliary load carrying devices such as shear bars are advisable for side or end loading of pillow blocks and radial loads for flange units.

SHAFT TOLERANCES

SHAFT SIZE	IMPERIAL TOLERANCE, IN.
UP TO 1–1/2″	+.0000 –.002″
1–9/16 TO 2-1/2″	+.0000 –.003″
2–5/8 TO 4″	+.0000 –.004″
4–3/16 to 5”	+.0000 – .005”

IMPERIAL–IP and ISAF Spherical Roller Bearings

BEARINGS SUPPORTING RADIAL LOADS ONLY

1. Define L_{10} Life Hours desired.
2. Establish bearing radial load, F_R (F_R = P for Pure Radial Load Conditions). The DODGE program BEST™★ can be used to find application loads.
3. Establish RPM.

Using the easy selection Table 2, page B8–10 for IMPERIAL, find, under the RPM column, the equivalent radial load that equals or is slightly higher than the application radial load for the desired life. The shaft size on the far left will be the minimum shaft size that you can use for your application.

If the desired life is different than the values shown on the chart, use alternate Method A shown below.

Example:
1. L_{10} Life = 30,000 Hours
2. Radial load = 4000 lbs.
3. RPM = 1,000

At the intersection of the 1,000 RPM column and the 30,000 hours L_{10} life row, the equivalent radial load of 4011 lbs. exceeds the 4000 lbs. radial load for shaft sizes $2^3/_8$ - $2^7/_{16}$″. A bearing with bore ranging from $2^3/_8$″ to $2^7/_{16}$″ may be used for this application.

ALTERNATE METHOD A — SELECTING A BEARING FOR AN L_{10} LIFE VALUE NOT SHOWN IN THE EASY SELECTION CHART.

The L_{10} life equation can be rearranged so that the bearing dynamic capacity **C** is identified in terms of L_{10}, RPM and P

$$\mathbf{C} = \left(\frac{L_{10} \times RPM}{16667}\right)^{0.3} \times P$$

($P = F_R$ for Pure Radial Load Conditions)

Since the L_{10}, RPM and P are known, solve for **C**. Select from the dynamic capacity column on Table 1, page B8–9 the **C** value equal to or greater than the **C** value just calculated. The bore size on the far left represents the proper bore size selection. Check that the application RPM does not exceed the MAX. RPM on Table 1★. When selecting an L_{10} life of less than 30,000 hours, particular attention must be paid to shaft deflection and proper lubricant selection.

SELECTING BEARINGS SUPPORTING COMBINATION RADIAL AND THRUST LOADS

When a bearing supports both a radial load and a thrust load, the loading on the two rows is shared unequally depending on the ratio of thrust to radial load. The use of the X (radial factor) and Y (thrust factor) from Table 1★ converts the applied thrust load and radial loads to an equivalent radial load having the same effect on the life of the bearing as a radial load of this magnitude.

The equivalent radial load $P = XF_R + YF_A$

Where:

P	=	Equivalent radial load, lbs.
F_R	=	Radial load, lbs. (see Table 1 for allowable slip fit maximum)
F_A	=	Thrust (axial) load, lbs.
e	=	Thrust load to radial load factor (Table 1)★
X	=	Radial load factor (Table 1)★
Y	=	Thrust load factor (Table 1)★

★ The DODGE Bearing Evaluation and Selection Technique (BEST) is a menu driven computer program that calculates bearing loads, fatigue life and operating temperature for a two bearing shaft system based on user supplied input parameters. To order, call (864) 297-4800.

IMPERIAL–IP and ISAF Spherical Roller Bearings

To find X and Y, calculate F_A/F_R and compare to **e** for the selected bore size. Determine X and Y from Table 1, for IMPERIAL bearing depending on whether F_A/F_R is equal to or less than **e**, or F_A/F_R is greater than **e**. Substitute all known values into the equivalent radial load equation. P (equivalent radial load) can be used in the life formula to determine L_{10}, or it can be compared to the allowable equivalent radial load ratings for the speed and hours life desired in the easy selection Table 2, page B8–10 for IMPERIAL bearing .

SELECTING BEARINGS SUPPORTING ONLY THRUST LOADS

Spherical Roller Bearings generally are not recommended for pure thrust load applications. However, they will perform satisfactorily under very light pure thrust loads. Consult DODGE Application Engineering (864-297-4800).

SELECTING LUBRICATION

DODGE IMPERIAL–IP and ISAF spherical roller bearings are lubricated at the factory with Shell Alvania #2 grease. Shell Alvania #2 grease is a superior industrial grease using a lithium hydroxystearate thickener and highly refined base oil. This grease will adequately handle low and medium speeds with low and medium loads at normal temperatures. For very low and high speeds, for heavy loads and for low and high temperatures, special greases must be used. Contact DODGE Application Engineering (864-297-4800), DODGE engineers will recommend bearings and lubricants for the above unusual conditions. DODGE also has the expertise to custom design and build special bearings for your needs. The only maintenance requirement for DODGE Unitized roller bearings is periodic relubrication at regular intervals as outlined in the appropriate instruction manuals.

MISALIGNMENT CONSIDERATIONS

In nearly all applications good design practice requires two bearings supporting the shaft. In cases where three or more bearings are installed, unless precautions are taken to line the bearings up, both vertically and horizontally, it is possible to induce heavy loads. In the case of two bearings, alignment is not as critical, especially with DODGE Unitized Spherical Roller Bearings. IMPERIAL–IP and ISAF bearings are designed to allow a maximum of ±2° of static and dynamic misalignment. However, for optimum seal performance, misalignment should be kept under ±0.5°. To ensure good alignment, mounting surfaces must be checked for flatness and must lie in the same plane. When tightening base bolts, each bolt should be alternately tightened in incremental torque values until full torque is achieved to prevent the angular shifting of the pillow block that occurs when one bolt is tightened to its full torque. Shimming may be required to minimize misalignment.

IMPERIAL–IP and ISAF Spherical Roller Bearings

TABLE 1 – RADIAL AND THRUST FACTORS FOR IMPERIAL–IP AND ISAF ADAPTER MOUNTED DOUBLE ROW SPHERICAL ROLLER BEARINGS

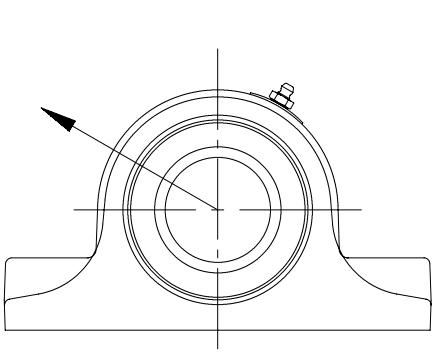
Shaft Size (in)	Bearing Series	e	Fa/Fr ≤ e		Fa/Fr > e		Adapter Maximum Thrust Load (lbs)	Dynamic Capacity, C (lbs)	Maximum RPM Grease	Maximum Expansion Capability IMPERIAL–IP P2B & F4B (in.)	Maximum Expansion Capability IMPERIAL–IP P4B, FC TU (in.)	Maximum Expansion Capability ISAF
			X	Y	X	Y						
1-7/16	22208K	0.28	1	2.4	0.67	3.6	620	20,800	3,900	5/32	1/4	7/32
1-11/16	22209K	0.26	1	2.6	0.67	3.9	700	20,800	3,650	5/32	1/4	–
1-15/16 2 SM	22210K	0.24	1	2.8	0.67	4.2	775	22,000	3,450	5/32	1/4	1/4
2 LG 2-3/16	22211K	0.23	1	2.9	0.67	4.4	930	27,000	2,950	5/32	1/4	–
2-3/8 2-7/16	22213K	0.24	1	2.8	0.67	4.2	1360	38,000	2,350	3/16	1/4	5/16
2-11/16 2-3/4 2-15/16	22215K	0.22	1	3.1	0.67	4.6	1570	41,500	2,200	3/16	1/4	7/32
3-7/16	22218K	0.23	1	2.9	0.67	4.3	2430	64,000	1,800	3/16	1/4	3/8
3-15/16	22220K	0.24	1	2.8	0.67	4.2	3100	80,000	1,500	7/32	5/16	3/8
4–7/16	22222K	0.25	1	2.7	0.67	4.0	3660	102,000	1,300	––	3/8	3/8
4–15/16	22226K	0.26	1	2.6	0.67	3.9	5250	143,000	1,150	––	3/8	3/8

IMPERIAL–IP and ISAF Spherical Roller Bearings

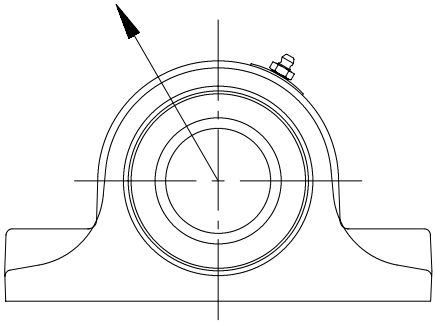
TABLE 2 – EASY SELECTION TABLE FOR IMPERIAL–IP AND ISAF ADAPTER MOUNTED DOUBLE ROW SPHERICAL ROLLER BEARINGS

Shaft	L10 Life	Allowable Equivalent Radial Load Rating (lbs.) at Various Revolutions per Minute												
Size (in.)	(hours)	50	100	250	500	750	1000	1500	1800	2000	2200	2500	3000	3600
1–7/16	10000	7498	6090	4626	3758	3327	3052	2703	2559	2479	2409	2319	2195	2078
	30000	5393	4380	3327	2703	2393	2195	1944	1840	1783	1733	1668	1579	1495
	50000	4626	3758	2855	2319	2053	1883	1668	1579	1530	1487	1431	1355	1282
	70000	4182	3397	2581	2096	1856	1703	1508	1427	1383	1344	1293	1224	1159
	100000	3758	3052	2319	1883	1668	1530	1355	1282	1243	1208	1162	1100	1042
1–11/16	10000	7498	6090	4626	3758	3327	3052	2703	2559	2479	2409	2319	2195	
	30000	5393	4380	3327	2703	2393	2195	1944	1840	1783	1733	1668	1579	
	50000	4626	3758	2855	2319	2053	1883	1668	1579	1530	1487	1431	1355	
	70000	4182	3397	2581	2096	1856	1703	1508	1427	1383	1344	1293	1224	
	100000	3758	3052	2319	1883	1668	1530	1355	1282	1243	1208	1162	1100	
1–15/16	10000	7930	6441	4893	3975	3519	3228	2859	2706	2622	2548	2452	2322	
2 SM	30000	5704	4633	3519	2859	2531	2322	2056	1947	1886	1833	1764	1670	
	50000	4893	3975	3019	2452	2172	1992	1764	1670	1618	1572	1513	1433	
	70000	4423	3593	2729	2217	1963	1801	1594	1510	1463	1421	1368	1295	
	100000	3975	3228	2452	1992	1764	1618	1433	1356	1314	1277	1229	1164	
2 LG	10000	9733	7905	6005	4878	4319	3962	3508	3322	3218	3127	3010		
2–3/16	30000	7000	5686	4319	3508	3106	2850	2523	2389	2315	2249	2165		
	50000	6005	4878	3706	3010	2665	2445	2165	2050	1986	1930	1857		
	70000	5429	4410	3350	2721	2409	2210	1957	1853	1795	1744	1679		
	100000	4878	3962	3010	2445	2165	1986	1758	1665	1613	1567	1508		
2–3/8	10000	13698	11126	8452	6865	6079	5576	4938	4675	4529	4402			
2–7/16	30000	9852	8002	6079	4938	4372	4011	3551	3362	3258	3166			
	50000	8452	6865	5215	4236	3751	3441	3047	2884	2795	2716			
	70000	7640	6206	4714	3829	3391	3110	2754	2608	2526	2455			
	100000	6865	5576	4236	3441	3047	2795	2475	2343	2270	2206			
2–11/16	10000	14959	12151	9230	7497	6639	6090	5392	5105	4946				
2–3/4	30000	10759	8739	6639	5392	4775	4380	3878	3672	3558				
2–15/16	50000	9230	7497	5696	4626	4096	3758	3327	3150	3052				
	70000	8344	6778	5149	4182	3703	3397	3008	2848	2759				
	100000	7497	6090	4626	3758	3327	3052	2703	2559	2479				
3–7/16	10000	23070	18739	14235	11562	10238	9392	8316	7873					
	30000	16592	13477	10238	8316	7363	6755	5981	5663					
	50000	14235	11562	8783	7134	6317	5795	5131	4858					
	70000	12868	10452	7940	6449	5711	5239	4639	4392					
	100000	11562	9392	7134	5795	5131	4707	4168	3946					
3–15/16	10000	28837	23423	17794	14453	12798	11739	10395						
	30000	20741	16847	12798	10395	9204	8443	7476						
	50000	17794	14453	10979	8918	7897	7244	6414						
	70000	16085	13065	9925	8062	7138	6548	5798						
	100000	14453	11739	8918	7244	6414	5884	5210						
4–7/16	10000	36765	29865	22685	18425	16315	14967							
	30000	26445	21480	16315	13255	11735	10765							
	50000	22686	18427	13998	11370	10068	9235							
	70000	20508	16658	12654	10278	9101	8348							
	100000	18427	14967	11370	9235	8177	7501							
4–15/16	10000	51545	41870	31805	25835	22875	20984							
	30000	37075	30115	22875	18580	16450	15092							
	50000	31806	25834	19625	15940	14115	12947							
	70000	28752	23354	17741	14410	12759	11704							
	100000	25834	20984	15940	12947	11465	10517							

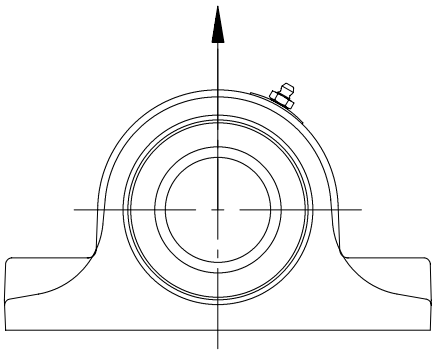
IMPERIAL–IP and ISAF Spherical Roller Bearings



P120°



P150°



P180°

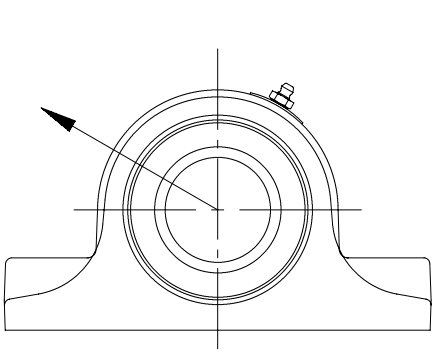
TABLE 3 – IMPERIAL–IP 2–BOLT PILLOW BLOCK HOUSING RATINGS*

Bore Size	Pillow Block Designation	Maximum Recommended Housing Cap Loads, lbf		
		P120°	P150°	P180°
1–1/8 to 1–1/2	P2B–IP–107	5500	6750	8000
1–5/8 to 1–3/4	P2B–IP–111	6800	8600	10000
1–7/8 to 2 SM	P2B–IP–115	8000	9900	11700
2 LG to 2–3/16	P2B–IP–203	10200	12500	14800
2–3/8 to 2–1/2	P2B–IP–207	10200	12400	14900
2–11/16 to 3	P2B–IP–215	12900	15900	18900
3–3/16 to 3–1/2	P2B–IP–307	11900	14600	17400
3–11/16 to 4	P2B–IP–315	16900	20800	24600

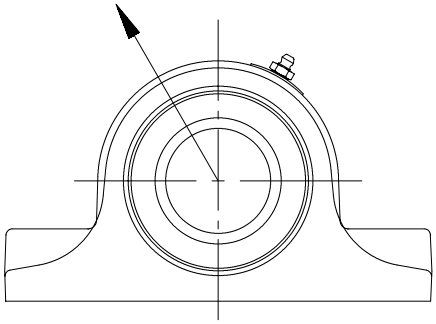
* When utilizing heavy cap loads on pillow block housings; the installation must adhere to the following procedures:

1. The pillow block base bolts must be of high strength (Grade 8) bolts and properly tightened to mounting structure.
2. Stop bars (shear strips) should be used against the plummer block where side loads are encountered.
3. In all cases where loads are heavy, the L_{10} life of the bearing should be checked for proper selection and life requirements.

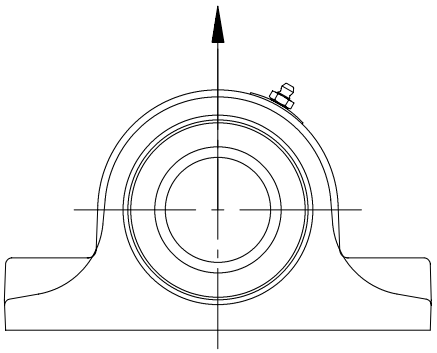
IMPERIAL–IP and ISAF Spherical Roller Bearings



P120°



P150°



P180°

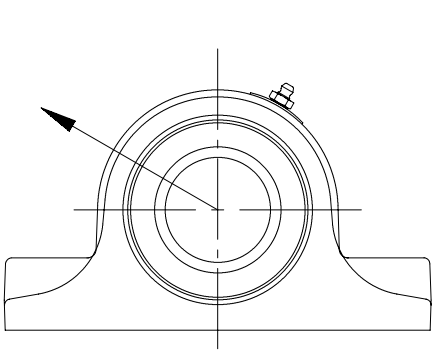
TABLE 4 – IMPERIAL–IP 4–BOLT PILLOW BLOCK HOUSING RATINGS*

Bore Size	Pillow Block Designation	Maximum Recommended Housing Cap Loads, lbf		
		P120°	P150°	P180°
2–3/8 to 2–1/2	P4B–IP–207	3810	4760	5600
2–11/16 to 3	P4B–IP–215	4620	5780	6800
3–3/16 to 3–1/2	P4B–IP–307	4700	5870	6900
3–11/16 to 4	P4B–IP–315	7500	9350	11000
4–7/16	P4B–IP–407	9900	12330	14500
4–15/16	P4B–IP–415	13400	16750	19700

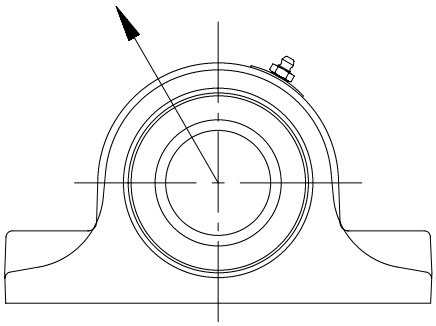
* When utilizing heavy cap loads on pillow block housings; the installation must adhere to the following procedures:

1. The pillow block base bolts must be of high strength (Grade 8) bolts and properly tightened to mounting structure.
2. Stop bars (shear strips) should be used against the plummer block where side loads are encountered.
3. In all cases where loads are heavy, the L_{10} life of the bearing should be checked for proper selection and life requirements.

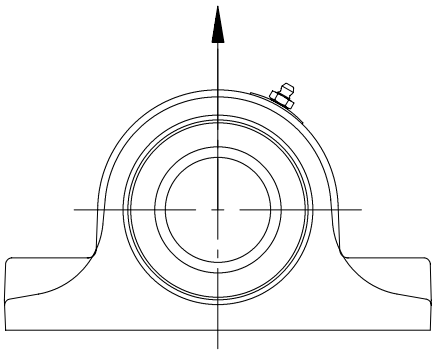
IMPERIAL–IP and ISAF Spherical Roller Bearings



P120°



P150°



P180°

TABLE 5 – ISAF HOUSING RATINGS*

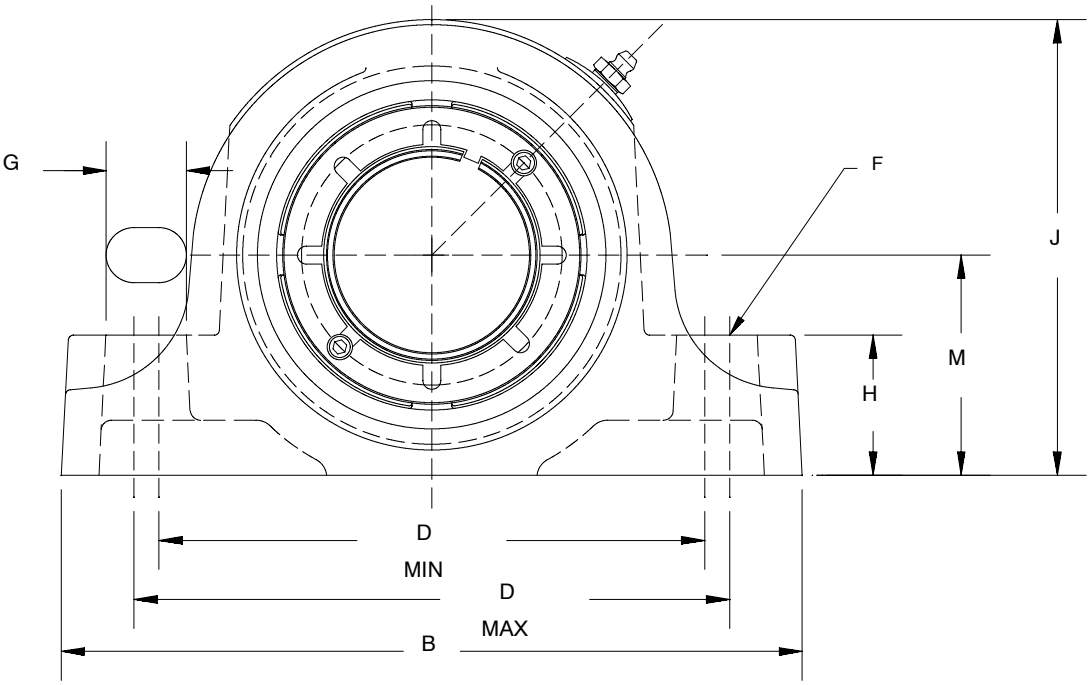
SHAFT SIZE (INCHES)	MAXIMUM RECOMMENDED HOUSING CAP LOADS, LBS
	180°
1–7/16	4,600
1–15/16	7,875
2–7/16	9,220
2–15/16	10,200
3–7/16	14,700
3–15/16	17,800
4–7/16	18,300
4–15/16	22,300

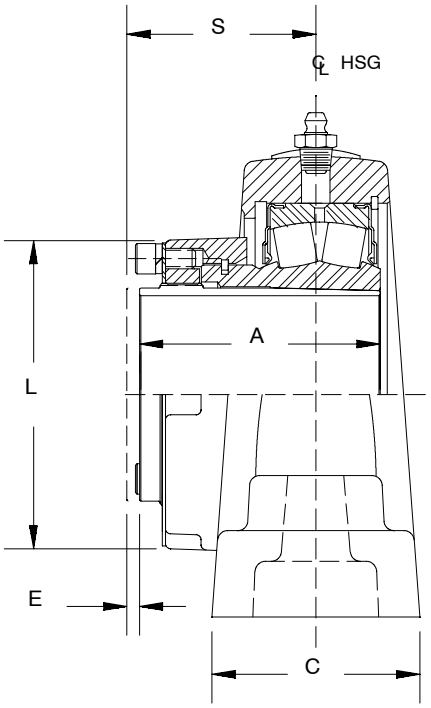
* When utilizing heavy cap loads on pillow block housings; the installation must adhere to the following procedures:

1. The pillow block base bolts must be of high strength (Grade 8) bolts and properly tightened to mounting structure.
2. Stop bars (shear strips) should be used against the plummer block where side loads are encountered.
3. In all cases where loads are heavy, the L_{10} life of the bearing should be checked for proper selection and life requirements.

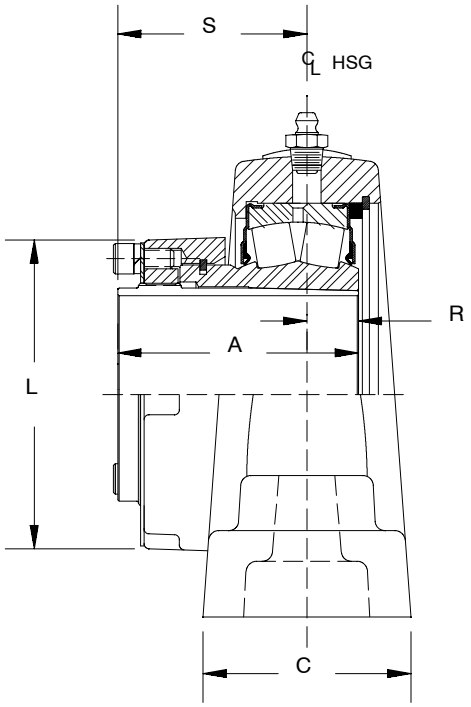
IMPERIAL–IP Pillow Block

2–BOLT





EXPANSION



NONEXPANSION

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IMPERIAL–IP Pillow Block

2–BOLT

Shaft Size Inch	NON–EXPANSION*		EXPANSION		Approx. Wt./Lbs.
	Part No.	Part Name	Part No.	Part Name	
1–7/16	**048230**	P2B–IP–107	**048242**	P2B–IP–107E	5.4
1–11/16	**048231**	P2B–IP–111	**048243**	P2B–IP–111E	6.9
1–15/16	**048232**	P2B–IP–115	**048244**	P2B–IP–115E	7.4
2 SM	**048281**	P2B–IP–200SM	**048282**	P2B–IP–200SME	7.4
2 LG	**048233**	P2B–IP–200LG	**048245**	P2B–IP–200LGE	8.0
2–3/16	**048234**	P2B–IP–203	**048246**	P2B–IP–203E	7.6
2–3/8	**048235**	P2B–IP–206	**048247**	P2B–IP–206E	13.8
2–7/16	**048236**	P2B–IP–207	**048248**	P2B–IP–207E	13.6
2–1/2	**048286**	P2B–IP–208	**048287**	P2B–IP–208E	13.6
2–11/16	**048237**	P2B–IP–211	**048249**	P2B–IP–211E	19.3
2–3/4	**048238**	P2B–IP–212	**048250**	P2B–IP–212E	19.0
2–15/16	**048239**	P2B–IP–215	**048251**	P2B–IP–215E	18.6
3–7/16	**048240**	P2B–IP–307	**048252**	P2B–IP–307E	28.4
3–15/16	**048241**	P2B–IP–315	**048253**	P2B–IP–315E	36.8

IMPERIAL–IP 2–BOLT PILLOW BLOCK DIMENSIONS — INCHES

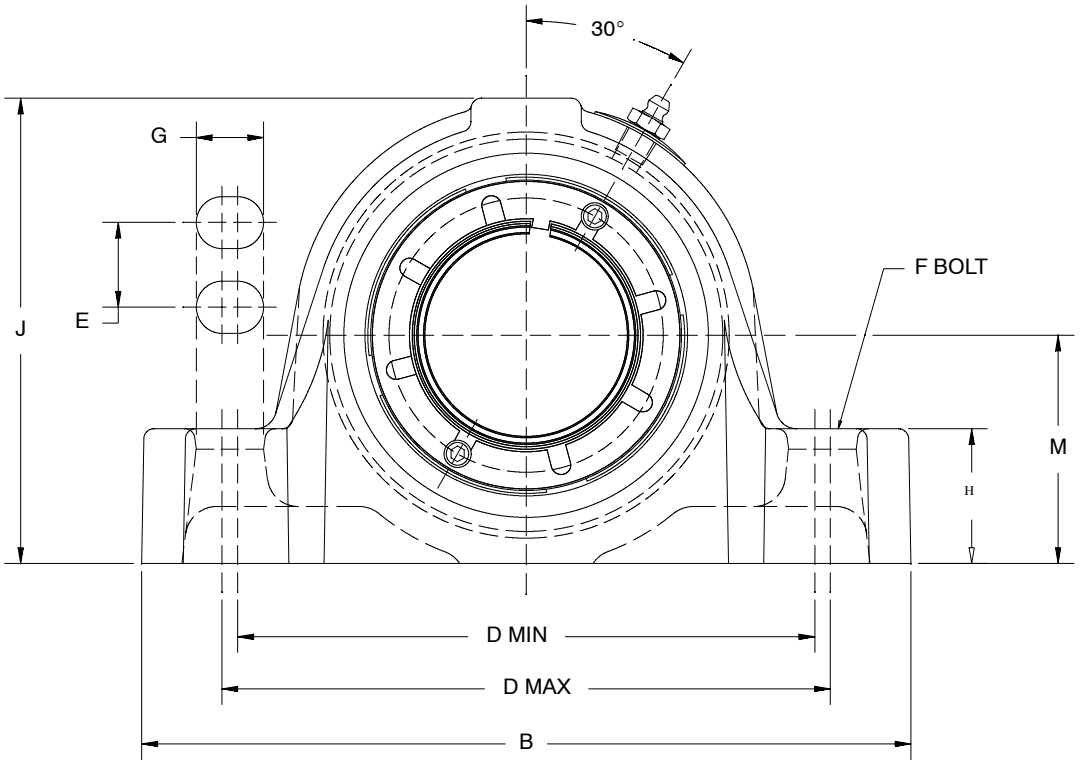
Shaft Size Inch	A	B	C	D		E Total Expansion	F Bolt Dia.	G	H	J	L	M	R	S
				Min.	Max.									
1-7/16	2-11/32	6-7/8	1-61/64	4-11/16	5-1/2	5/32	1/2	31/32	1-3/16	3-7/8	2-23/32	1-7/8	39/64	1-57/64
1-11/16	2-27/64	7-3/8	2-1/16	5-3/16	5-7/8	5/32	1/2	29/32	1-5/16	4-1/4	3	2-1/8	39/64	1-61/64
1-15/16 2 SM	2-7/16	8-3/8	2-1/16	5-15/16	6-11/16	5/32	5/8	1-1/16	1-3/8	4-9/16	3-9/32	2-1/4	5/8	1-31/32
2 LG 2-3/16	2-45/64	8-7/8	2-5/16	6-7/16	7-1/8	5/32	5/8	1-1/32	1-5/8	5	3-1/2	2-1/2	21/32	2-13/64
2-3/8 2-7/16 2-1/2	2-31/32	9-1/4	2-9/16	6-13/16	7-7/16	3/16	5/8	1	1-3/4	5-11/16	3-7/8	2-3/4	41/64	2-11/32
2-11/16 2-3/4 2-15/16	3-1/8	10-7/16	2-9/16	7-13/16	8-7/16	3/16	3/4	1-1/8	2-1/4	6-7/16	4-9/32	3-1/4	7/8	2-7/16
3-7/16	3-37/64	13	2-13/16	9-1/4	10-3/4	3/16	7/8	1-11/16	2-1/4	7-1/2	5	3-3/4	1-7/64	2-41/64
3-15/16	4	14-1/4	3-5/16	10	11-7/8	7/32	1	2	2-1/2	8-7/16	5-9/16	4-1/8	1-13/64	3-1/32

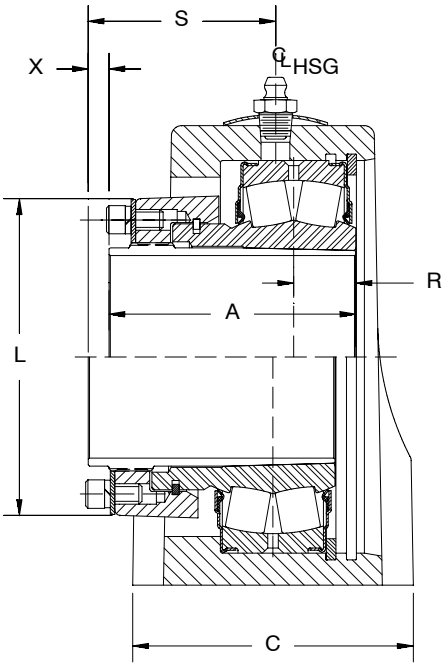
- Dimensions shown are for non-expansion units. The expansion bearing center and housing center are on the same centerline.

* Furnished unless otherwise specified

IMPERIAL–IP Pillow Block

4–BOLT





EXPANSION

NON–EXPANSION

IMPERIAL–IP Pillow Block

4–BOLT

SHAFT SIZE	NON-EXPANSION* PART NUMBER	NON-EXPANSION* DESCRIPTION	EXPANSION PART NUMBER	EXPANSION DESCRIPTION	APPROX WEIGHT LBS.
2-7/16	**048882**	P4B–IP–207	**048890**	P4B–IP–207E	16.7
2-11/16	**048883**	P4B–IP–211	**048891**	P4B–IP–211E	24.1
2-3/4	**048884**	P4B–IP–212	**048892**	P4B–IP–212E	23.9
2-15/16	**048885**	P4B–IP–215	**048893**	P4B–IP–215E	23.0
3-7/16	**048886**	P4B–IP–307	**048894**	P4B–IP–307E	33.8
3-15/16	**048887**	P4B–IP–315	**048895**	P4B–IP–315E	48.6
4–7/16	**048888**	P4B–IP–407	**048896**	P4B–IP–407E	69.3
4–15/16	**048889**	P4B–IP–415	**048897**	P4B–IP–415E	103.5

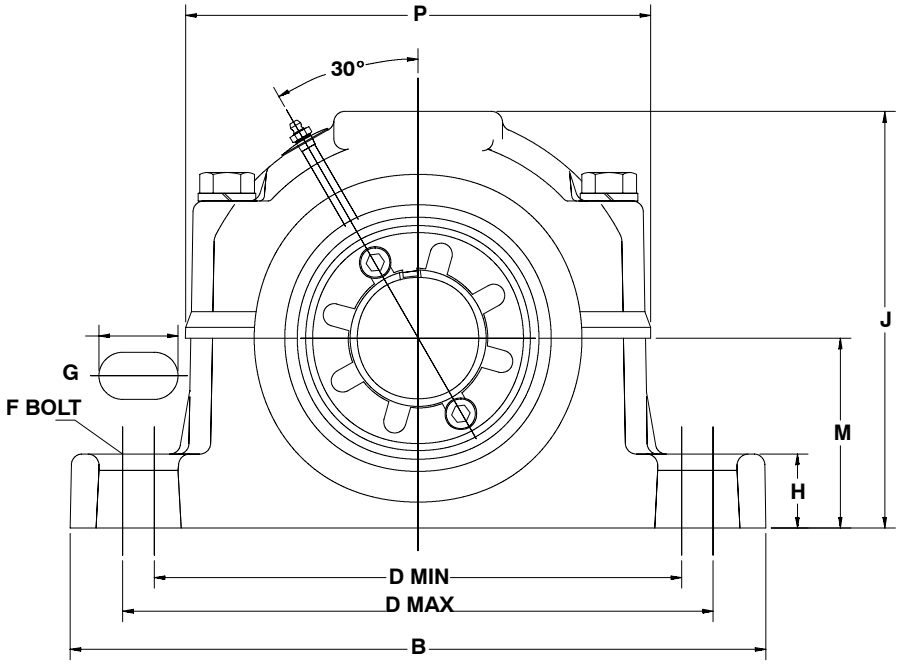
IMPERIAL–IP 4–BOLT PILLOW BLOCK DIMENSIONS — INCHES

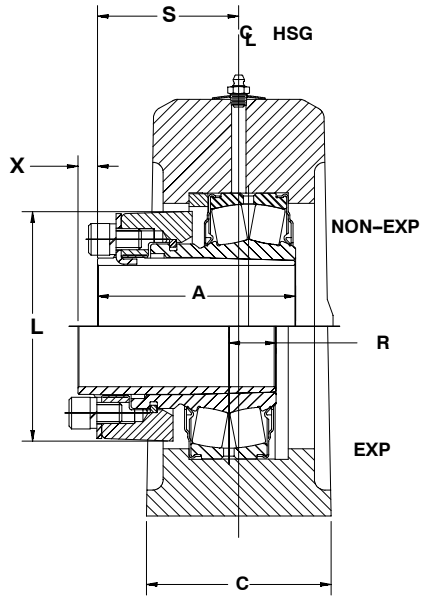
SHAFT SIZE	A	B	C	D MIN	D MAX	E	F BOLT DIA.	G	H	J	L	M	R	S	X
2-7/16	2-31/32	9-1/4	3-3/8	6-15/16	7-5/16	1-3/4	1/2	13/16	1-5/8	5-5/8	3-7/8	2-3/4	41/64	2-7/32	1/4
2-11/16 2-3/4 2-15/16	3-1/8	10-7/16	3-3/4	7-15/16	8-5/16	1-7/8	5/8	15/16	1-7/8	6-7/16	4-9/32	3-1/4	7/8	2-5/16	1/4
3-7/16	3-37/64	13	4-1/8	9-3/8	10-5/8	2	3/4	1-1/2	2-1/4	7-9/16	5	3-3/4	1-7/64	2-5/8	1/4
3-15/16	4	15-1/4	4-1/2	12-1/8	12-7/8	2-1/4	3/4	1-1/4	2-7/16	8-7/16	5-9/16	4-1/4	1-13/64	2-29/32	5/16
4–7/16	4–1/8	16–1/2	4–3/4	13	14	2–1/2	3/4	1–3/8	2–3/4	9–5/8	6–1/32	4–3/4	1–5/32	3–3/64	3/8
4–15/16	5–3/32	18–5/8	5–3/8	15	16	2–3/4	7/8	1–1/2	3	11–1/8	6–29/32	5–1/2	1–37/64	3–19/32	3/8

- Dimensions shown are for non-expansion units. The expansion bearing center and housing center are on the same centerline.

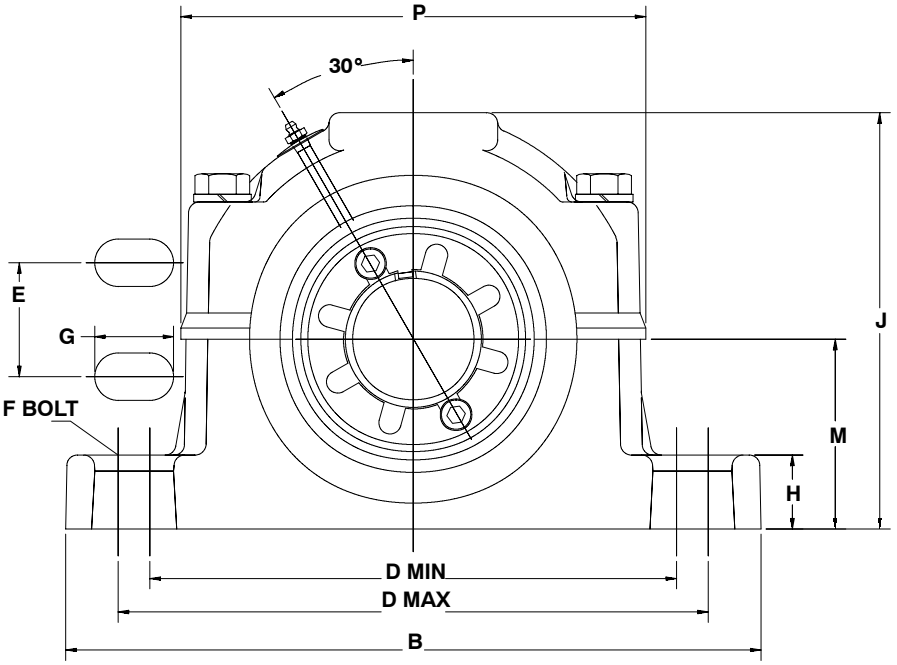
* Furnished unless otherwise specified.

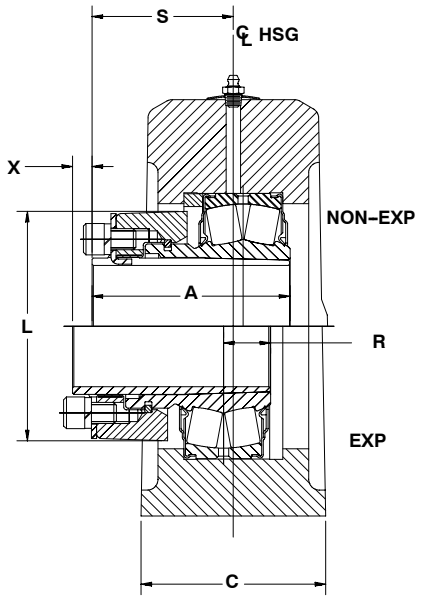
ISAF 2–Bolt Pillow Block





ISAF 4–Bolt Pillow Block





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ISAF Pillow Blocks 2–bolt And 4–bolt

ISAF 2–BOLT PILLOW BLOCK

Shaft Size Inch	Comparable SAF housing Series	NON–EXPANSION*		EXPANSION		Approx. Weight lbs.
		Part Number	Part Name	Part Number	Part Name	
1–7/16	509	**037810**	P2B509–ISAF–107	**037818**	P2B509–ISAF–107E	12
1–15/16	511	**037811**	P2B511–ISAF–115	**037819**	P2B511–ISAF–115E	17

Shaft Size	SAF Series	A	B	C	D		F BOLT DIA	G	H	J
					MIN.	MAX.				
1–7/16	509	2–11/32	8–1/4	2–3/16	6–1/4	7	1/2	15/16	7/8	5–7/64
1–15/16	511	2–7/16	9–5/8	2–3/4	7–3/8	8–1/4	5/8	1–13/64	1–1/32	6–9/64

Shaft Size	SAF Series	L	M	P	R	S	X
1–7/16	509	2–23/32	2–1/4	5–33/64	9/16	1–23/32	0.231
1–15/16	511	3–9/32	2–3/4	6–23/64	19/32	1–23/32	0.275

ISAF 4–BOLT PILLOW BLOCK

Shaft Size Inch	Comparable SAF housing Series	NON–EXPANSION*		EXPANSION		Approx. Weight lbs.
		Part Number	Part Name	Part Number	Part Name	
2–7/16	515	**037812**	P4B515–ISAF–207	**037820**	P4B515–ISAF–207E	30
2–15/16	517	**037813**	P4B517–ISAF–215	**037821**	P4B517–ISAF–215E	45
3–7/16	520	**037814**	P4B520–ISAF–307	**037822**	P4B520–ISAF–307E	71
3–15/16	522	**037815**	P4B522–ISAF–315	**037823**	P4B522–ISAF–315E	110
4–7/16	526	**037816**	P4B526–ISAF–407	**037824**	P4B526–ISAF–407E	140
4–15/16	528	**037817**	P4B528–ISAF–415	**037825**	P4B528–ISAF–415E	180

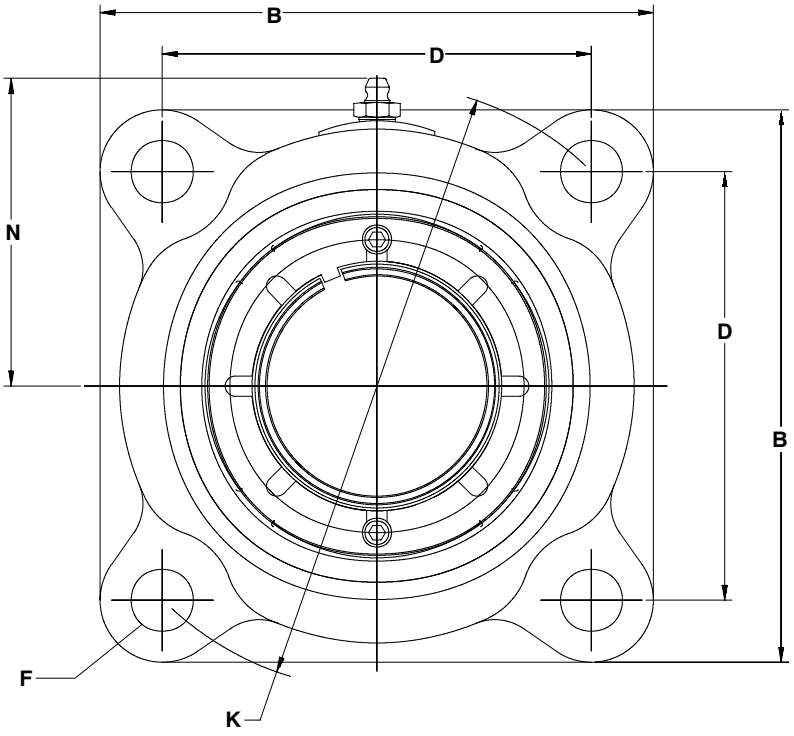
Shaft Size	SAF Series	A	B	C	D		F Bolt Dia	E	G	H	J
					MIN.	MAX.					
2–7/16	515	2–31/32	11–1/8	3–1/8	8–5/8	9–5/8	1/2	1–7/8	1–1/8	1–1/4	7–1/32
2–15/16	517	3–1/8	12–19/32	3–1/2	9–7/8	11	5/8	2–1/8	1–21/64	1–1/4	7–59/64
3–7/16	520	3–37/64	14–1/4	4–11/32	11–13/16	13–1/8	3/4	2–3/8	1–5/8	1–21/32	9–27/64
3–15/16	522	4	16–1/2	4–3/4	12–19/32	14–1/2	3/4	2–3/4	1–53/64	1–2532	10–23/64
4–7/16	526	4–3/8	18–3/8	5–1/8	14–1/2	16	7/8	3–1/4	1–1/4	2–1/16	11–53/64
4–15/16	528	5–13/32	19–45/64	5–7/8	15–5/8	17–3/8	1	3–3/8	2	2–1/16	12–37/64

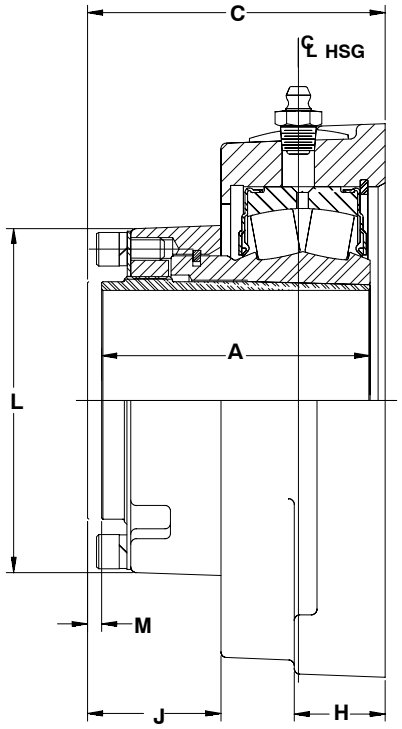
Shaft Size	SAF Series	L	M	P	R	S	X
2–7/16	515	3–7/8	3–1/4	7–3/8	3/4	2–3/32	0.325
2–15/16	517	4–9/32	3–3/4	8–5/16	25/32	2–15/64	0.245
3–7/16	520	5	4–1/2	10–3/32	15/16	2–1/2	0.394
3–15/16	522	5–9/16	4–15/16	10–45/64	1–3/32	2–25/32	0.388
4–7/16	526	6–7/16	6	12–19/64	1–5/32	3–9/64	0.394
4–15/16	528	7–5/8	6	13–23/64	1–37/64	3–49/64	0.394

* Furnished unless otherwise specified.

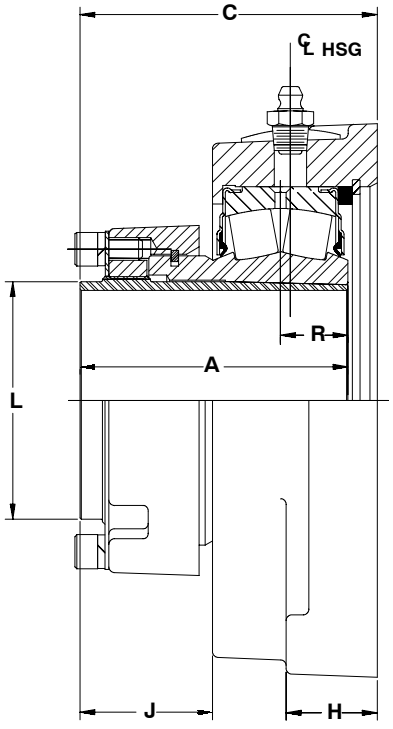
IMPERIAL Flange Bearing

4–BOLT





EXPANSION



NON–EXPANSION

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IMPERIAL Flange Bearing

4–BOLT

Shaft Size Inch Δ	NON-EXPANSION*		EXPANSION		Approx. Wt./Lbs.
	Part No.	Part Name	Part No.	Part Name	
1-7/16	**048254**	F4B–IP–107	**048266**	F4B–IP–107E	5.2
1-11/16	**048255**	F4B–IP–111	**048267**	F4B–IP–111E	6.7
1-15/16	**048256**	F4B–IP–115	**048268**	F4B–IP–115E	6.9
2 SM	**048283**	F4B–IP–200SM	**048284**	F4B–IP–200SME	6.7
2 LG	**048257**	F4B–IP–200LG	**048269**	F4B–IP–200LGE	8.4
2-3/16	**048258**	F4B–IP–203	**048270**	F4B–IP–203E	8.4
2-3/8	**048259**	F4B–IP–206	**048271**	F4B–IP–206E	11.0
2-7/16	**048260**	F4B–IP–207	**048272**	F4B–IP–207E	10.5
2-11/16	**048261**	F4B–IP–211	**048273**	F4B–IP–211E	17.0
2-3/4	**048262**	F4B–IP–212	**048274**	F4B–IP–212E	16.7
2-15/16	**048263**	F4B–IP–215	**048275**	F4B–IP–215E	16.3
3-7/16	**048264**	F4B–IP–307	**048276**	F4B–IP–307E	24.7
3-15/16	**048265**	F4B–IP–315	**048277**	F4B–IP–315E	32.0

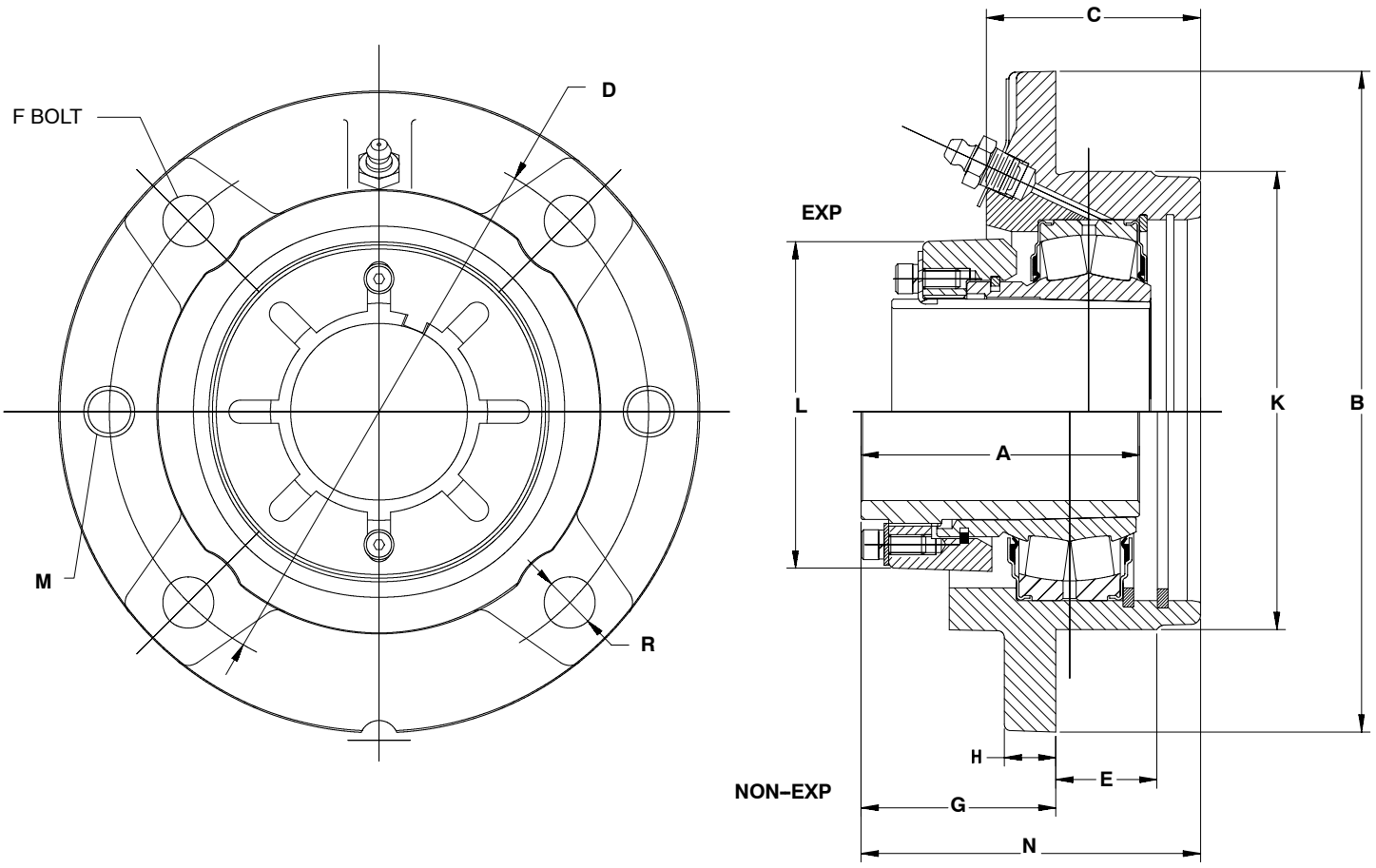
Δ Consult DODGE for sizes not listed.
* Furnished unless otherwise specified.

IMPERIAL 4–BOLT FLANGE DIMENSIONS — INCHES

Shaft Size Inch	A	B	C	D	F Bolt Dia.	H	J	K	L	M Total Expansion	N	R
1-7/16	2-11/32	4-3/4	2-37/64	3-17/32	1/2	3/4	1-15/64	5	2-23/32	5/32	2-7/16	39/64
1-11/16	2-27/64	5-1/8	2-43/64	3-29/32	1/2	3/4	1-15/64	5-1/2	3	5/32	2-3/4	39/64
1-15/16 2 SM	2-7/16	5-5/16	2-23/32	4-1/16	1/2	11/16	1-1/4	5-3/4	3-9/32	5/32	2-7/8	5/8
2 LG 2-3/16	2-45/64	5-7/8	3	4-1/2	5/8	3/4	1-13/32	6-3/8	3-1/2	5/32	3-1/16	21/32
2-3/8 2-7/16	2-31/32	6-1/8	3-5/16	4-25/32	5/8	1	1-1/2	6-3/4	3-7/8	3/16	3-3/8	41/64
2-11/16 2-3/4 2-15/16	3-1/8	7-3/16	3-21/64	5-9/16	3/4	15/16	1-33/64	7-7/8	4-9/32	3/16	3-13/16	7/8
3-7/16	3-37/64	8-11/32	3-49/64	6-23/32	3/4	1-1/16	1-37/64	9-1/2	5	3/16	4-5/16	1-7/64
3-15/16	4	9-15/32	4-23/64	7-5/8	7/8	1-1/16	1-55/64	10-3/4	5-9/16	7/32	4-11/16	1-13/64

- Dimensions shown are for non-expansion units. The expansion bearing center and housing center are on the same centerline.

IMPERIAL Piloted Flange Bearing



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* IMPERIAL Piloted Flange Bearing

SHAFT SIZE	NON–EXPANSION*		EXPANSION		APPROX. WEIGHT LBS
	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION	
1–7/16	**048420**	FC–IP–107	**048432**	FC–IP–107E	5.8
1–11/16	**048421**	FC–IP–111	**048433**	FC–IP–111E	7.5
1–15/16	**048422**	FC–IP–115	**048434**	FC–IP–115E	7.7
2	**048423**	FC–IP–200	**048435**	FC–IP–200E	7.6
2–3/16	**048424**	FC–IP–203	**048436**	FC–IP–203E	9.4
2–3/8	**048425**	FC–IP–206	**048437**	FC–IP–206E	12.3
2–7/16	**048426**	FC–IP–207	**048438**	FC–IP–207E	11.8
2–11/16	**048427**	FC–IP–211	**048439**	FC–IP–211E	19.0
2–3/4	**048428**	FC–IP–212	**048440**	FC–IP–212E	18.7
2–15/16	**048429**	FC–IP–215	**048441**	FC–IP–215E	18.3
3–7/16	**048430**	FC–IP–307	**048442**	FC–IP–307E	27.7
3–15/16	**048431**	FC–IP–315	**048443**	FC–IP–315E	35.8

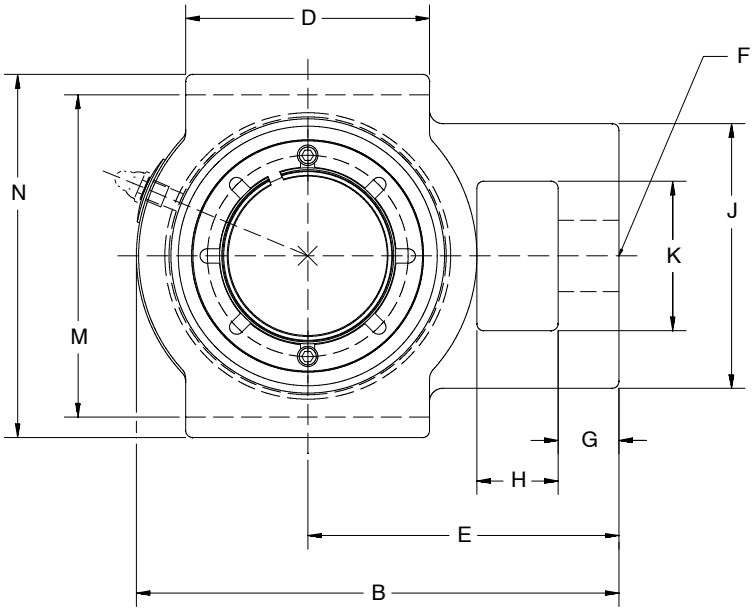
* Furnished unless otherwise specified.

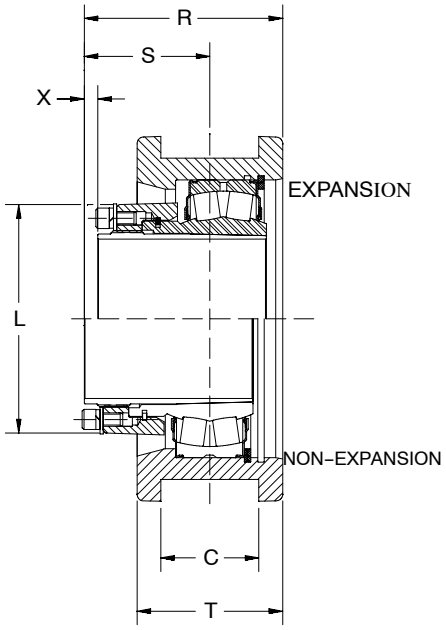
IMPERIAL PILOTED FLANGE DIMENSIONS — INCHES

SHAFT SIZE	A	B	C	D	E	F-BOLT DIA.	G		H	K +.000 –.002	L	M	N
							NE	EXP					
1–7/16	2–11/16	5–1/4	2	4–3/8	3/4	3/8	1–15/32	1–7/32	7/16	3–5/8	2–23/32	3/8 – 16	2.84
1–11/16	2–27/64	6–1/8	2	5–1/8	7/8	7/16	1–17/32	1–9/32	7/16	4–1/4	3	7/16 – 14	2.88
1–15/16 2	**2–7/16**	**6–3/8**	**2**	**5–3/8**	**7/8**	**7/16**	**1–17/32**	**1–9/32**	**1/2**	**4–1/2**	**3–9/32**	**7/16 – 14**	**2.87**
2–3/16	2–45/64	7–1/8	2.18	6	1	1/2	1–21/32	1–13/32	1/2	5	3–1/2	1/2 – 13	3.16
2–3/8 2–7/16	**2–31/32**	**7–5/8**	**2.5**	**6–1/2**	**1**	**1/2**	**1–13/16**	**1–9/16**	**9/16**	**5–1/2**	**3–7/8**	**1/2 – 13**	**3.45**
2–11/16 2–3/4 2–15/16	3–1/8	8–3/4	2.62	7–1/2	1–1/4	5/8	1–31/32	1–23/32	11/16	6–3/8	4–9/32	5/8 – 11	3.66
3–7/16	3–37/64	10–1/4	3	8–5/8	1–1/4	3/4	2–7/16	2–3/16	7/8	7–3/8	5	3/4 – 10	4.03
3–15/16	4	10–7/8	3.5	9–3/8	1–1/2	3/4	2–21/32	2–11/32	1–1/16	8–1/8	5–9/16	3/4 – 10	4.63

- Dimensions shown are for non-expansion units. The expansion bearing center and housing center are on the same centerline.

IMPERIAL Wide Slot Take-up Bearing





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IMPERIAL Wide Slot Take-up Bearing

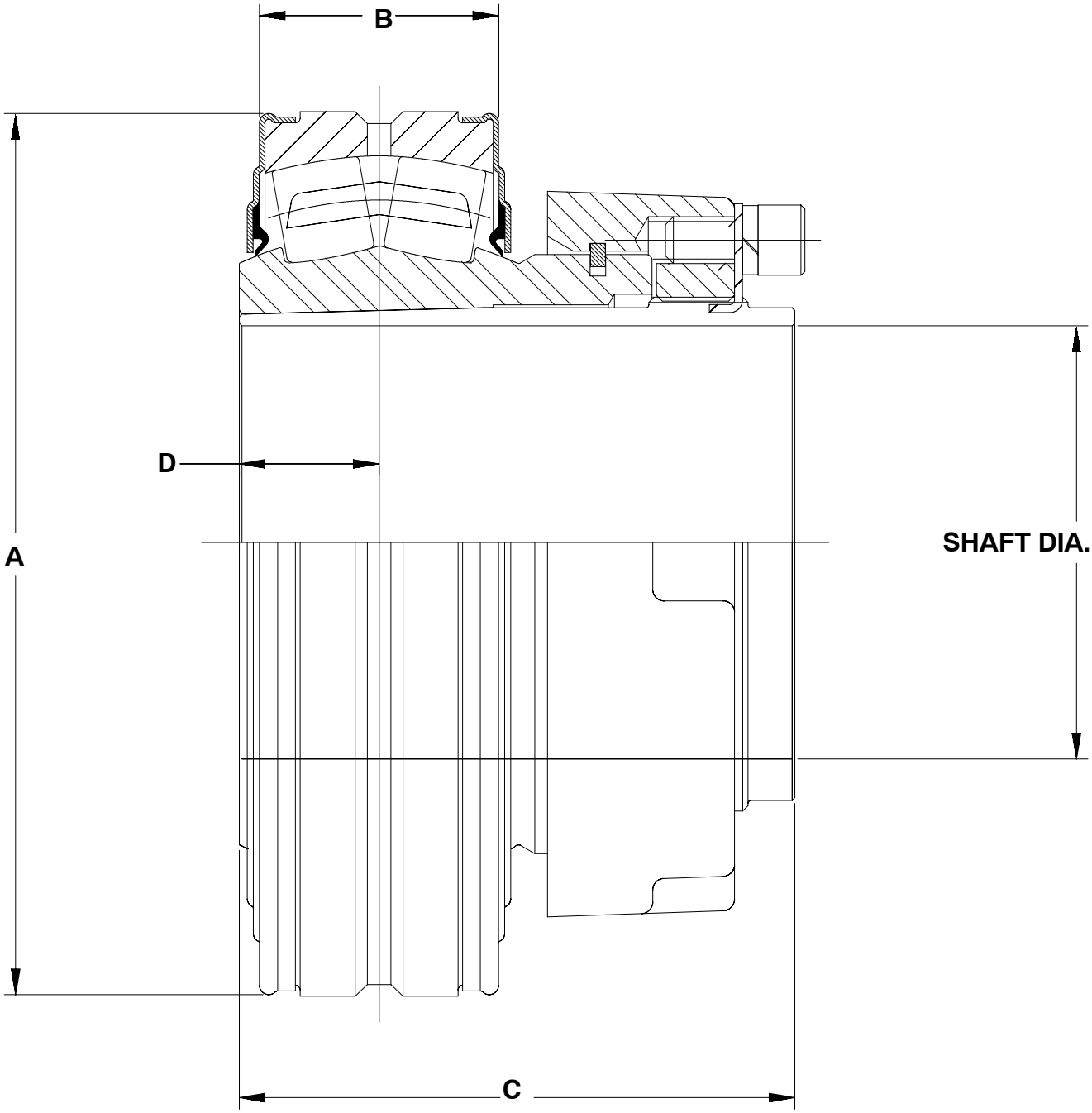
SHAFT SIZE	NON–EXPANSION* PART NUMBER	NON–EXPANSION* DESCRIPTION	EXPANSION PART NUMBER	EXPANSION DESCRIPTION	APPROX. WEIGHT LBS.
1–7/16	**048898**	WSTU–IP–107	**048910**	WSTU–IP–107E	6.3
1–11/16	**048899**	WSTU–IP–111	**048911**	WSTU–IP–111E	8.1
1–15/16	**048900**	WSTU–IP–115	**048912**	WSTU–IP–115E	9.0
2	**048901**	WSTU–IP–200	**048913**	WSTU–IP–200E	8.8
2–3/16	**048902**	WSTU–IP–203	**048914**	WSTU–IP–203E	12.6
2–3/8	**048903**	WSTU–IP–206	**048915**	WSTU–IP–206E	16.2
2–7/16	**048904**	WSTU–IP–207	**048916**	WSTU–IP–207E	15.8
2–11/16	**048905**	WSTU–IP–211	**048917**	WSTU–IP–211E	22.5
2–3/4	**048906**	WSTU–IP–212	**048918**	WSTU–IP–212E	22.1
2–15/16	**048907**	WSTU–IP–215	**048919**	WSTU–IP–215E	21.7
3–7/16	**048908**	WSTU–IP–307	**048920**	WSTU–IP–307E	34.2
3–15/16	**048909**	WSTU–IP–315	**048921**	WSTU–IP–315E	45.0

* Furnished unless otherwise specified.

IMPERIAL WIDE SLOT TAKE-UP DIMENSIONS — INCHES

SHAFT SIZE	B	C	D	E	F	G	H	J	K	L	M	N	R	S	T	X	FRAME SIZE
1-7/16	5–1/16	17/32	2–3/4	3–3/16	7/8	11/16	5/8	2–7/16	1–7/16	2–43/64	3–1/2	4–1/8	2–13/16	1–25/32	2–1/16	1/4	CP308
1-11/16	5–15/16	11/16	3–1/8	3–13/16	1–1/8	15/16	3/4	3–5/16	1–15/16	2–6164	4	4–3/4	2–27/32	1–27/32	2–1/32	1/4	CP400
1-15/16	6–3/16	11/16	3–5/8	3–15/16	1–1/8	15/16	3/4	3–5/16	1–15/16	3–13/64	4	4–3/4	2–27/32	1–27/32	2	1/4	CP400
2 2-3/16	7–1/16	13/16	3–5/8	4–5/8	1–3/8	15/16	1–1/4	3–7/8	2–1/4	3–7/16	4–1/2	5–1/4	3–11/64	2–1/16	2–7/32	1/4	CP408
2-3/8 2-7/16	7–11/16	1–1/16	4–3/8	5	1–3/8	1–1/16	1–1/4	4–1/4	2–1/2	3–13/16	5–1/8	5–7/8	3–7/16	2–7/32	2–7/16	1/4	CP502
2-11/16 2-3/4 2-15/16	8–7/8	1-13/16	4–1/2	5–3/4	1–5/8	1–1/8	1–1/2	4–7/8	2–3/4	4–13/64	5–15/16	6–11/16	3–21/32	2–21/64	2–11/16	1/4	CP515
3-7/16	10–1/16	1–13/16	5–1/2	6–3/8	1–7/8	1–1/16	1–5/8	5–1/8	2–7/8	4–59/64	6–13/16	7–13/16	4–5/32	2–5/8	3–1/16	1/4	CP613
3-15/16	12–9/16	2–1/16	7	8–3/8	2–1/8	2–1/16	2–1/8	6	3–3/8	5–15/32	8–5/8	9–7/16	4–5/8	2–29/32	3–7/16	5/16	CP810

IMPERIAL Bearing Insert – Inch



IMPERIAL Bearing Insert – Inch

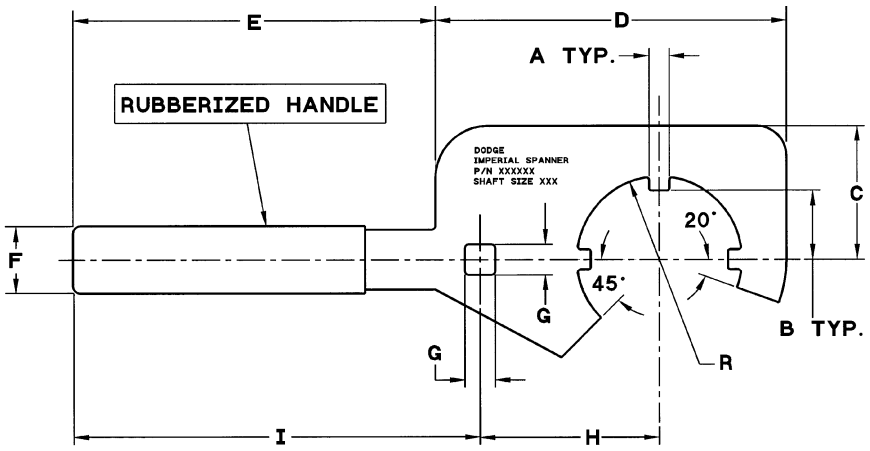
IMPERIAL BEARING INSERT W/SEALS

Shaft Size Inch	Part No.	Part Name	Approx. Wt./Lbs.
1-7/16	**048295**	INSIP107	2.0
1-11/16	**048296**	INSIP111	2.2
1-15/16	**048297**	INSIP115	2.5
2SM	**048293**	INSIP200SM	2.8
2LG	**048298**	INSIP200LG	2.8
2-3/16	**048299**	INSIP203	2.6
2-3/8	**048300**	INSIP206	4.7
2-7/16	**048301**	INSIP207	4.5
2-11/16	**048302**	INSIP211	6.3
2-3/4	**048303**	INSIP212	6.0
2-15/16	**048304**	INSIP215	5.8
3-7/16	**048305**	INSIP307	9.8
3-15/16	**048306**	INSIP315	12.9
4–7/16	**048291**	INSIP407	18.6
4–15/16	**048292**	INSIP415	28.2

IMPERIAL BEARING INSERT DIMENSIONS — INCHES

Shaft Size Inch	A	B	C	D
1-7/16	3.1496	.9455	2-11/32	39/64
1-11/16	3.3465	.9455	2-27/64	39/64
1-15/16 2SM	3.5433	.9455	2-7/16	5/8
2LG 2-3/16	3.9370	1.0343	2-45/64	21/32
2-3/8 2-7/16	4.7244	1.2705	2-31/32	41/64
2-11/16 2-3/4 2-15/16	5.1181	1.2705	3-1/8	7/8
3-7/16	6.2992	1.6243	3-37/64	1-7/64
3-15/16	7.0866	1.8610	4	1-13/64
4–7/16	7.8740	2.1586	4.368	1.16
4–15/16	9.0551	2.5916	5.403	1.573

IMPERIAL Impact Spanner Wrench

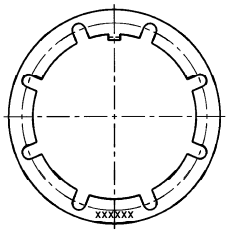


Shaft Size Inch	Part No.	Thick-ness	A	B	C	D	E	F	G	H	I	R
1–7/16	**066629**	0.5	0.335	1.147	2.219	5.875	6	1	0.51	3	6.750	1.380
1–11/16	**066630**	0.5	0.335	1.270	2.219	5.875	6	1	0.51	3	6.750	1.520
1–15/16 2 SM	**066631**	0.5	0.335	1.425	2.219	5.875	6	1	0.51	3	6.750	1.645
2 LG 2–3/16	**066632**	0.5	0.460	1.550	2.219	5.875	6	1	0.51	3	6.750	1.770
2–3/8 2–7/16	**066633**	0.5	0.460	1.748	2.750	6.875	6	1	0.51	3	7.250	1.958
2–11/16 2–3/4 2–15/16	**066634**	0.5	0.460	1.925	2.750	6.875	6	1	0.51	3.25	7	2.160
3–7/16	**066635**	0.5	0.460	2.240	3	7.875	6	1	0.51	4	7	2.520
3–15/16	**066636**	0.5	0.460	2.453	3.375	8.375	6	1	0.51	4	7.125	2.801
4–7/16	**066637**	0.5					6	1	0.76			
4–15/16	**066638**	0.5					6	1	0.76			

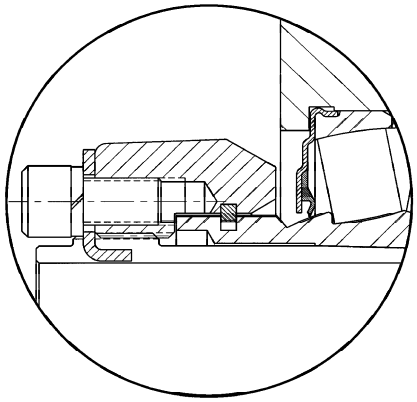
Material: Heat treated 4140 ST or 1045 ST or Equivalent

IMPERIAL LOCKPLATE KIT

Shaft Size Inch	Part Number
1-7/16	**048925**
1-11/16	**048926**
1-15/16 2 SM	**048927**
2 LG 2-3/16	**048928**
2-3/8 2-7/16	**048929**
2-11/16 2-3/4 2-15/16	**048930**
3-7/16	**048931**
3-15/16	**048932**



The Lockplate Kit consists of:
Lockplate
2 Socket Head Capscrews
2 Lockwashers



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