High Load Ultran® Bearing Capacity and Travel Life

Bearing orientation and/or the direction of the applied load significantly effects bearing capacity. The maximum applied load and the expected bearing life are based on the most heavily loaded bearing, so both the actual capacity and expected life of the bearing is determined by using the Load Correction Factor (K).

The direction the load is applied to the bearing determines what the Load Correction Factor (K) constant is. The two purposes of (K) are to:

1. Correlate maximum rated load and maximum allowable load applied to the bearing.
2. Correlate actual loads to corresponding rated loads.

The dark "wavy" curve that surrounds the bearing in the polar graph in Figure 1 represents (K). Once the direction of the applied load is known, obtain (K) from the polar graph.

Bearing Capacity
Use the following formula to calculate the maximum allowable capacity.

Maximum Allowable Bearing Capacity = Rated Bearing Capacity * K

For example, the maximum allowable load that can be applied to the bearing at 180° is approximately:

620 pounds * 0.8 = 496 pounds

(0.8 is the value of (K) at 180° as shown in the Polar Graph in Figure 1.)

So when a load is applied to the side of the bearing (180°), it should not exceed 496 pounds. Similarly, if a load is applied at 90°, (K) equals 1 and the maximum allowable load is 620 pounds.

Bearing Life
The constant (K) also determines the life of the bearing. For the purpose of the "Ball Bearing Life" graph, as shown in Figure 2., the rated load correlates to the applied load by using the following formula:

$$\text{"\textbf{Load}"} = \frac{\text{Applied}}{(K)}$$

The information presented is in Bimba's best engineering opinion and should be used for reference only. Recommendations derived should be verified under actual operating conditions. Bimba reserves the right to change specifications without prior notice.

Leaders in Actuation.

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Once again, (K) should be taken from the Polar Graph based on the direction of the applied load. For example, if the bearing is subjected to a pull-off load is 80 pounds,

"Load" = 80 / 0.4 = 200 pounds

200 pounds is the equivalent load to be used in the Life Graph. At 200 pounds, expected life is approximately 60,000,000 inches or 946 miles.

Figure 1. (Polar Graph)

Figure 2. (Ball Bearing Life)