



Issue 10: Bud's Take on Grease Fill Amount

I just finished watching another video on the internet discussing bearing grease fill amount. It wasn't incorrect, but it was incomplete and a generalization. I do not believe the intent was to be misleading; it was an attempt to simplify.

It is my take that because more than 50% of bearing failures are attributed to lubrication issues that we should not attempt to generalize or simplify. We should educate and help lead to the questions and information necessary to assist on an application bases.

Bearing Grease Fill with Closures (Seals or Shields)

Bearings with closures on both sides are supplied by bearing manufacturers with approximately 20-50% grease fill. This amount varies by manufacturer and application. These type bearings are considered maintenance free as sealed or shielded for life. No grease replenishment is required. *It is important to note that sealed for life means calculated life of the grease, not design life of the bearing.*

Important Bearing Terms:

Bearing Free Space is the area remaining inside of the bearing cavity after subtracting the space consumed by the rolling elements and retainer.

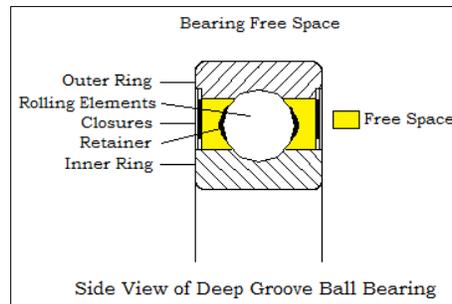


Figure 1: Representation of Bearing Free Space

The Generalization

If you contact an application engineer working for a manufacturer and ask for grease fill amount they will normally only calculate the amount of grease that goes into the bearing cavity or free space, see figure 1. They will use the density of the grease and the volume of free space to determine the required grease amount.

Metric Weight (Grams)	English Weight (Ounces)
$G = 0.005 * D * B$	$G = 0.114 * D * B$
Where	Where
G = AMOUNT OF GREASE grams	G = AMOUNT OF GREASE IN ounces
D = O.D. OF BEARING IN mm	D = O.D. OF BEARING IN inches
B = WIDTH OF BEARING IN mm	B = WIDTH OF BEARING IN inches

Figure 2: Estimate Initial Grease Amount

This process can be estimated by using a constant, outside diameter and width of the bearing, as seen in figure 2.



Figure 3: Pillow block bearing

Where this Estimate Works

This estimate is focused on the grease going into the bearing cavity or free space. For it to be effective the injection method must go directly into the bearing cavity, such as in a pillow block unit, see figure 3.

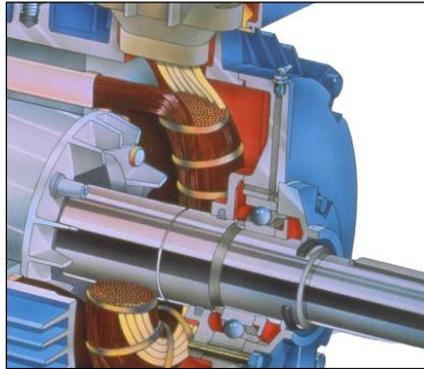


Figure 4: Bearing in Motor with Grease Inlet Line.

Where this Estimate Does Not Work

Any circumstance where the grease is not being directly injected the estimated formula does not work. The amount of grease in most cases will not even reach the bearing.

Conclusion

My objective was not to instill fear, but to better understand the bearing grease fill question. It is imperative to take into consideration the grease inlet, cavity around the bearing, and any other space the grease can migrate too. The most effective way to resolve this issue is to have a distributor who has open dialog with the bearing manufacturer to help assist with any questions.

