MINING & MINERAL TECH NOTES

Application Guidelines to Keep You Better Informed

MOTORS & DRIVES

Bearing Grease Intervals

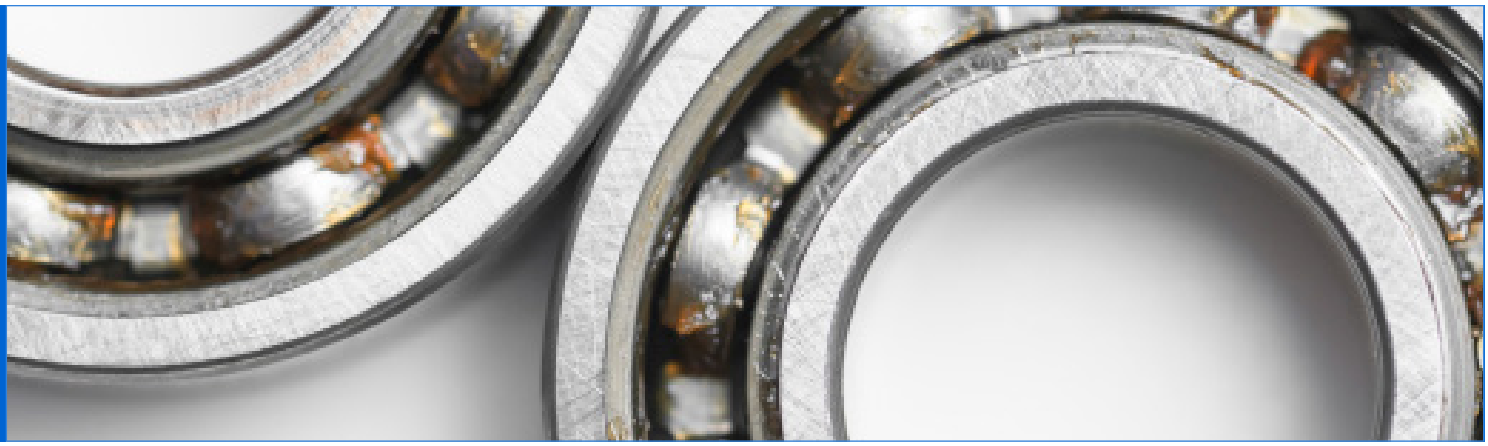
BEARING GREASING INTERVALS

Bearing regreasing interval time is an issue which tends to be as much of an art as it is a science.

From the scientific end of the spectrum, greasing intervals are dependent on bearing type, bearing size, grease type, and rotational speed. If ideal conditions were to exist in all motor/bearing applications, regreasing intervals would be easy to calculate.

The challenge comes into play when we apply the motor/bearing combination into the real world and then try to make a responsible regreasing interval recommendation that will give rated bearing life in 99% of the cases. Required regreasing intervals can be shortened by a multitude of external influences such as vibration, moisture, dust and other contaminants, the type of grease used, high ambient temperatures, and high radial load applied to the shaft of the motor. Every motor in an industrial application tends to be subjected to a unique combination of varying degrees of the previously listed factors. This makes it virtually impossible to recommend a general regreasing interval that satisfies the bearing's needs and satisfies the customer's wishes of having the longest greasing interval possible and still allow the bearings to attain rated life expectancy in 99% of all applications.

Toshiba is conservative in its recommendations for greasing intervals. We mimic the recommendations that are published by such bearing manufacturers as SFK, NTN, and NSK. We have also checked with grease manufacturers such as Shell and Chevron and found that the grease manufactures publish almost identical recommended greasing intervals as the bearing manufacturers do (most manufacturers follow the guidelines set forth by the National Lubricating and Greasing Institute). The one factor that the recommended greasing intervals have in common besides being very similar in time frames is that they are published on the conservative side. This is where the "art" aspect of recommending bearing greasing intervals comes into play. (Continued on Page 2)



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Bearing manufacturers point out that the greasing interval can be significantly stretched out if ideal conditions exist.

This increase in regreasing intervals can be as much as 2.5 times for roller bearings and as much as 3 times for ball bearings. Somewhere in between the “worst case” scenario and the “ideal” situation lies a regreasing interval which is appropriate for each specific motor/bearing application. We feel that it would be inappropriate to make a general statement that extends the recommended greasing interval beyond the time frame recommended by the bearing and grease manufacturers unless very specific external parameters are known.

The single most significant thing that increases greasing intervals, that is under the control of the manufacturer, is to supply ball bearings in lieu of roller bearings. The greasing intervals for a ball bearing is almost exactly double that of a roller bearing if both bearings are the same physical size. Ball bearings have the capacity of handling a limited amount of radial thrust as compared to roller bearings, but are still suitable for many applications and therefore should be seriously considered when making motor/bearing selections. Please note that higher HP motors, (i.e. 440 frames and larger) will require roller bearings for belt-driven applications.

SERVICE CONDITIONS

Standard Duty	Eight Hours per Day
	Light to Normal Loading
	Clean Conditions, Free from Dust
Severe Duty	24 Hours per Day
	Light to Normal Shock Loading & Vibration
	Exposure to Dirt or Dusty Conditions
Very Severe Duty	24 Hours per Day
	High Ambient Temperatures
	Normal to High Shock Loading & Vibration
	Dusty Conditions
	Confined Mounting Conditions

BEARING GREASING INTERVALS CHART

SYNC. RPM RANGE	FRAME SIZE
3600	143T to 256T
1800 to 900	143T to 256T

STANDARD DUTY	SEVERE DUTY	VERY SEVERE DUTY
8 Months	4 Months	1 Month
30 Months	12 Months	4 Months

BEARING SIZE	
6205/6206	
6207/6206/6305	
6306	
6306/6309	
3600	284T to 365T
1800 to 900	284T to 365T

PERIODIC GREASE AMOUNT		
3 Grams		
5 Grams		
10 Grams		
20 Grams		
8 Months	4 Months	1 Month
24 Months	12 Months	4 Months

BEARING SIZE	
6211	
6309	
6310/6312	
6314	
3600	404T to 447T
1800 to 600	404T to 447T

PERIODIC GREASE AMOUNT		
10 Grams		
20 Grams		
30 Grams		
50 Grams		
8 Months	4 Months	1 Month
18 Months	8 Months	3 Months

BEARING SIZE
6216
6313/NU317
NU318/NU320
6317/6318
6320/6322/6324
NU322/NU324
NU328/NU2228

PERIODIC GREASE AMOUNT
20 Grams
30 Grams
50 Grams
80 Grams
80 Grams
80 Grams
100 Grams

Notes:
1. When re-lubricating roller bearings, divide the monthly service time by two.
2. Gram quantity when using a typical low-pressure hand grease gun:
   4 pumps = 5 grams