Mounted Bearing Units - Lubrication

The housing on Mounted Bearing Unit is tapped to accept a grease fitting which is also supplied. Bearings are pre-lubricated at the factory and do not require additional grease upon installation. When operating in excessively moist, dusty, or hot environments it is recommended that grease be supplied at regular intervals. If properly maintained, the rated life of the bearing can be expected. The grease fittings that are supplied include 1/4-28 for smaller units and 1/8 NPT for larger units. Additional styles are available upon request.

Grease Life

The grease life for ball bearing units is influenced by: the level of the load, rotating speed of the bearing, and the operating temperature. The grease life for ball bearing units being used under appropriate operating conditions can be found by the formula shown below.

$$\log L = 6.10 - 4.40 \times 10^{-6}\, d_m n - 2.50 \left(\frac{P_r}{C_r} - 0.05\right) - (0.021 - 1.80 \times 10^{-8}\, d_m n)\, T \quad \cdots\cdots\cdots\cdots (4.7)$$

Whereas,

L: Grease life, hr

d_m: Pitch dia. of ball set, mm

$$d_m = \frac{(D + d)}{2}$$

(D: Nominal bearing outer dia., d: Nominal bearing bore dia.)

n: Rotating speed of bearing, min^{-1}

P_r: Dynamic equivalent radial load, N (see "**5 Bearing load**")

C_r: Basic dynamic radial load rating of bearing, N

T: Operating temperature of bearing, °C

Applicable conditions for the **Formula (4.7)** are shown below.

1) Operating temperature of bearing: T °C

To be applied if the following condition is satisfied: $T \leq 100$

If T is smaller than 50 ($T < 50$), following condition should be applied: $T = 50$.

If T is larger than 100 ($T > 100$), contact engineering.

2) Rotating speed of bearing: $d_m n$

To be applied if the following condition is satisfied: $d_m n \leq 30 \times 10^4$

If $d_m n$ is smaller than 12.5×10^4 ($d_m n < 12.5 \times 10^4$), following condition should be applied: $d_m n = 12.5 \times 10^4$

If $d_m n$ is larger than 30×10^4 ($d_m n > 30 \times 10^4$), contact engineering.

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3) Load condition of bearing: P_r/C_r

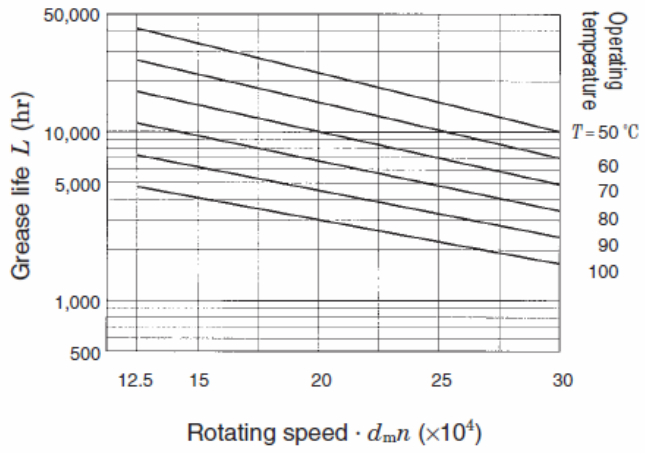
To be applied if the following condition is satisfied: $P_r/C_r \leq 0.2$

If P_r/C_r is smaller than 0.05 ($P_r/C_r < 0.05$), the following should be applied: $P_r/C_r = 0.05$

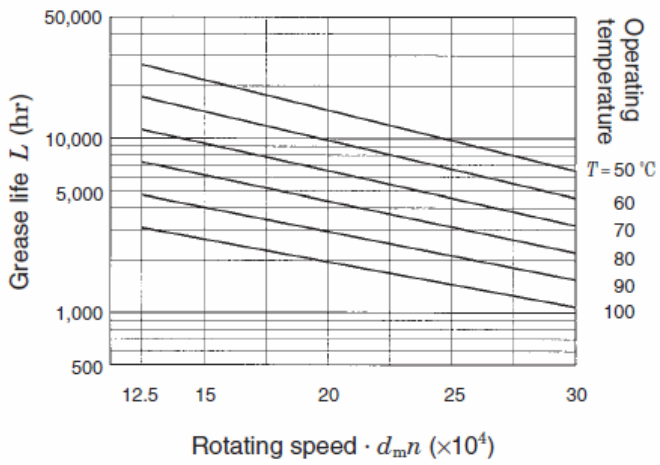
If P_r/C_r is larger than 0.2 ($P_r/C_r > 0.2$), contact engineering.

Reference graphs of grease life obtained by the **Formula (4.7)**

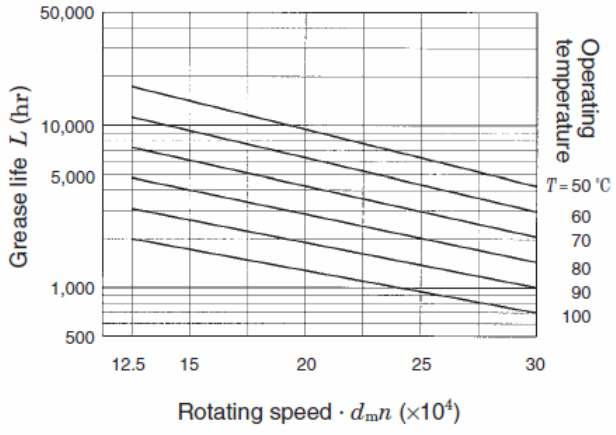
(1) Bearing load · $\frac{P_r}{C_r} = 0.05$



(2) Bearing load · $\frac{P_r}{C_r} = 0.125$



(3) Bearing load · $\frac{P_r}{C_r} = 0.2$



Amount of Grease

The amount of grease initially supplied in a new Mounted Bearing Unit is approximately 30 to 35% of the internal space capacity of the bearing. If the bearing is over greased, the agitation of the grease causes internal friction and heating of the bearing. The first sign of failure will be excessive grease finding its way to the outside of the bearing. DO NOT exceed the initial greasing amount.

Table 14.4 shows the recommended interval to be used for re-greasing the bearings. In a severely dusty or wet environments, the amount of grease may be as much as doubled if operating speeds are low.

Note:

1. **Table 14.4** applies to all units.
2. For greasing triple-lip (L3) type bearings, use 1 ½ times the amount of grease recommended in the table.

Table 14.4 Grease schedule of ball bearing units

Operating temperature, ℃		Grease Intervals			Bearing used
Over	Incl.	Substantially clean	Excessive dust	Excessive dust and moisture	
	50	(3 months)	(2 months)	(1 month)	Low temperature
		not necessary	1 year	4 months	
50	70	1 year	4 months	1 month	Standard bearing
70	100	6 months	2 months	2 weeks	
100	120	2 months	2 weeks	5 days	High temperature
120	150	2 weeks	5 days	2 days	
150	180	1 week	2 days	1 day	

Note Greasing intervals in parentheses are applicable to low temperature grease

Remark Greasing intervals shown in this table are applicable to a unit operated for 8 to 10 hours per day. If the time of operation is greater than this range, then a more frequent greasing interval must be specified. For example, if the unit is operated 16 to 20 hours per day, then the greasing interval must be twice as frequent.

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