

# Bearing lubrication analysis

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**What are the methods of lubrication of bearings?** The lubrication methods available for bearings on a machine tool include grease lubrication, oil mist lubrication, air-oil lubrication, and jet lubrication. Each method has unique advantages. Therefore, a lubricating system should be selected that best suits the lubrication requirements.

**What is the formula for bearing lubrication?** The formula is as follows: Re-lubrication Amount of Grease (g) =  $0.005 \times \text{Bearing Outside Diameter (mm)} \times \text{Total Bearing Width (mm)}$ . If the speed and load are known for the bearing; only then can a frequency be determined, otherwise it is trial-and-error. Unfortunately an error in lubrication means a machine is down.

**What are the principles of bearing lubrication?** Precision Bearing Lubrication  
Reducing friction: Lubricants can specifically prevent metal-on-metal contact between the bearings and raceways or exterior casing. The right lubricant can maintain a thin hydrodynamic film that remains constant despite the machinery's speed or heat buildup.

**Which technique is used for lubrication analysis?** Techniques like Infrared (IR) Spectroscopy are used to assess the breakdown of certain elements and determine when lubricants need to be flushed and replaced. Samples are analysed in the infrared spectrum, which reveals the unique properties of circulating lubricants.

**What is the best lubrication for bearings?** Besides, grease is the better lubrication choice for linear guide and drive applications. That's because it sticks to the bearing surfaces longer and is better than oil lubricants. Besides, it is less likely to run off or get ejected from rotating parts.

**How do I choose bearing lubricant?** It's important to consider the specific requirements of your bearing application and choose a lubricant that aligns with those requirements. Factors such as temperature, speed, load, and environmental conditions should be taken into account when selecting the appropriate lubricant.

**What is the primary lubricant for bearings?** Mineral oil lubricants can be used in a wide range of temperatures and are compatible with most ball bearing materials. They also have excellent rust protection properties, which can help to prevent corrosion in ball bearings.

**How do you know how much grease to put in a bearing?** Rule of Thumb #1:  $G = DB/10$  This is done by pumping a known number of strokes on your grease gun and weighing the discharged grease on a scale. As an example of using this formula, let's consider a sealed bearing on a 2" diameter shaft that is 7/8 of an inch wide.  $(2 \times .875)/10 = 0.16$  oz of grease.

**What is the frequency you need to lubricate the bearing?** Using the chart and the formula, the bearing only needs 8 grams of grease every 10,000 hours. If your grease gun delivers around 1.35 grams per stroke, that means the bearing needs 6 strokes every 13 months; you could average it out to a stroke every 8 weeks or so.

**What is the problem with bearing lubrication?** If there isn't enough lubrication a direct metal-to-metal contact will occur and cause friction that produces destructive heat. You can usually identify this problem by looking at the bearing and seeing discoloration on the ball and raceway.

**How are main bearings lubricated?** Engine bearings are lubricated by motor oils constantly supplied in sufficient amounts to the bearings surfaces. Lubricated friction is characterized by the presence of a thin film of the pressurized lubricant (squeeze film) between the surfaces of the bearing and the journal.

**What is the type 3 lubrication method?** There are three gear lubrication methods in general use: (1) Grease lubrication. (2) Splash lubrication (oil bath method). (3) Forced oil circulation lubrication.

**Which lubrication method is used in bearing?** The air/oil method of lubrication, also known as the oil-spot method, uses a similar air and oil combination to provide

lubrication to bearings. This method uses compressed air to move a precise amount of lubricant directly into the bearing, but unlike the oil mist method, there is no atomization of the air or oil.

**How do you test lubricant quality?** These generally include tests to check oil viscosity, Quantitative Spectrophotometric Analysis (QSA), etc. To analyse the types, variety and composition of contaminants found in the oil sample. This involves a range of tests, including moisture and particulate analysis, fuel, glycol and soot analysis, etc.

**What is the viscosity test for lubricant?** A predetermined volume of lubricant is introduced into the viscometer tube. Gravity causes the sample to flow through the tube. The amount of time the sample takes to flow through the calibrated portion of the tube is recorded.

**What is a common mistake when greasing a bearing?** Mistake 1: Over- and under-lubrication Adding too much or too little grease is one of the most common mistakes made in our industry.

**Why is WD40 bad for bearings?** The conclusion is that WD-40 does not necessarily have an optimal viscosity value, simply because it was not designed on the basis of this criterion. Therefore, in general, it is better to opt for a lubricant whose viscosity has been specifically chosen for the application of interest to us.

**What type of bearing should not be lubricated?** A double sided shielded bearing 2Z or 2RS is not supposed to be greased. They are lubricated for life, and keep the dirt out (and also the grease in).

**What is the best lubricant for bearings?** In general, both mineral oils and synthetic oils can be used for ball bearing lubrication. Synthetic oils are mainly used for high temperature fluctuations in the working process.

**What happens if you over grease a bearing?** Over greasing Over lubrication can cause excess heat build-up, bearing seal damage, clean up issues and increased downtime. Surplus grease in a bearing cavity will cause the rollers or balls to slide rather than turn, pushing and churning the grease out of the way.

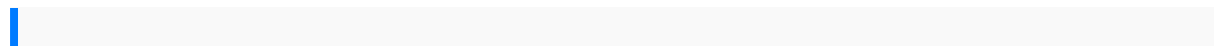
**Should bearings be greased or oiled?** Bearings in some applications use oil, but grease is the lubricant of choice for 80 to 90% of bearings. Grease consists of about 85% mineral or synthetic oil with thickeners rounding out the rest of the grease volume. The thickeners are usually lithium, calcium or sodium-based metallic soaps.

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**What are the methods of applying lubrication?**

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**What can I use to lube my bearings?** Mineral oil lubricants are the most common type of lubricant used for ball bearings. These lubricants are made from refined crude oil and are affordable, widely available, and effective in reducing friction.



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