



## **Q&A Session for Lubrication 101: Selecting Lubricants for Linear Motion**

**Q: What's the best way to remove the grease?**

A: The best way to remove the grease is to disassemble the system and clean each component separately. An ultrasonic cleaner with an industrial degreaser is recommended. As this is probably unrealistic in most applications, the use of an industrial degreaser and rag is sufficient in most cases.

**Q: I'm curious...What IS the number one lubrication mistake?**

A: Lack thereof! This is by far the largest lubrication mistake.

**Q: Is this class available in video or printed format?**

A: A recording of the presentation, as well as the Q&A, will be available on the [thomsonlinear.com](http://thomsonlinear.com) in a few days.

**Q: How about Tungsten Disulfide (Dicronite) dry lube?**

A: Dry lubricants are very good in limited applications in linear motion. The low friction / high slip features of these products make them excellent lubricants. In high speed applications with rolling elements, dry lubricants will cause the elements to skid which will increase wear and therefore, reduce life.

**Q: What lubrication would you recommend for a linear bearing and rail installation vertically mounted. The rail is 25 feet long. It is a challenge to get the correct amount of lubrication along the entire length. Currently using lithium based EP2.**

A: Grease with NLGI 3 rating and good adhesion properties would be recommended.

**Q: On your precision linear bearing for die sets are they shipped with grease or only the rust preventive as was just shown in this last slide?**

A: Only the rust preventative for shipping and storage purposes. Linear bearings must be lubricated upon assembly and prior to operation.

**Q: Would grease be preferred over dry film lube for ceramic bearing surfaces?**

A: We would recommend grease for most linear motion applications. Dry lubricants should only be selected if grease and oil lubricants are not possible.

**Q: What viscosity synthetic oil do recommend for speeds up to 450ft per min with 2" re-circulating bearing.**

A: 32 - 68 cSt depending on temperature.

**Q: What is the difference between weight and viscosity?**

A: Weight is the viscosity term used by SAE whereas viscosity is generally dimensioned in centistokes (cSt). Conversion charts exist to convert and compare ratings.

**Q: Can I remove the super smart pillow block from the rail to lubricate the bearings inside or do I use the fill port on the side?**

A: If possible, removing the bearing from the rail to lubricate the ball tracks directly is ideal. Be sure to replace the shipping arbor on the bearing before re-installing on the rail. If the bearing cannot be removed from the rail, lubricating through the lube port will be sufficient.

**Q: Is there a large difference between the lives of a lubed for life and standard lubricated bearings?**

A: No, the life rating is the same for the components. The lubrication interval reduction from standard to "lube for life" is the key advantage.

**Q: Does Lube for Life leave residue which attracts dirt and dust?**

A: The solid lubricant deposits a thin film of oil on the components during operation. The oil will attract contamination but the bearings are protected by seals. It will be necessary to clean the rails periodically.

**Q: Did you say that on precision linear bearings that the grease can be applied to the shaft?**

A: Lubrication should be applied to the shaft to prevent corrosion. Lubrication of the shaft will not provide adequate lubrication to the bearings as the seals may remove most of the shaft lubrication.

**Q: Is Aerosol Lubrication of rails or rods effective?**

A: Most aerosol lubricants are not intended for industrial use. Although the lubricants may be effective, the re-lubrication intervals would be very frequent and therefore their use is not recommended.

**Q: Are spray lubricants with drying waxes which resist dust such as Boeshield T-9 or Bostic Bearing Lubricant effective for linear rails?**

A: Yes, the referenced lubricants would be effective but are not recommended for industrial use. Wax is not a lubricant but acts as protection against contamination. Frequent cleaning and re-lubrication would be required with the use of a spray lubricant.

**Q: We are applying grease to bearings. The rail seems pretty dry.**

A: Lubrication is required at the point of use which is the contact surfaces of the bearing and raceways. Verify that lubrication exists within the bearing and that the lubrication ports are not blocked. Apply lubrication to the rail to provide corrosion resistance.

**Q: How high do the levels of radiation have to be before you need to be concerned?**

A: Any level of radiation will affect the grease performance. Contact your lubrication supplier to determine the compatibility of your current lubrication with the application.

**Q: How do you estimate the lubrication life of grease and oil?**

A: Grease will have a F10 service life but this is rated in a laboratory. Actual life will depend on application and environment and therefore frequent inspections should be performed and a maintenance interval determined based on actual conditions.

**Q: Do you need to remove the rust inhibitor prior to adding lube? If so, what do you recommend?**

A: We would recommend that the rust inhibitor is removed and the components cleaned prior to lubrication. The rust inhibitor is intended to protect the components during shipment and storage only. An industrial degreaser is the recommended means to remove the rust inhibitor.

**Q: Any recommended lubricant for lead screw (Teflon coated) and plastic nut? What is the recommended re-lubrication interval?**

A: Recommend

- TriGel-300S for plastic nuts
- TriGel-1200SC for plastic nuts in clean room
- TriGel-600SM for bronze nuts
- TriGel-1800RC for bronze nuts in clean room

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**Q: What does it mean if a grease changes color?**

A: Changes in the grease consistency and / or color are signs of lubrication failure or contamination. Grease will typically change color due to contamination. Changes in temperature due to the application or lubrication failure will also change the color of the grease.

**Q: Is contaminated grease / oil in a lead screw application the source of stiction?**

A: Contamination will increase the friction of the components. Stiction is the static friction between sliding components and is a threshold force that must be overcome to initiate movement. It is based on the materials, lubrication, and loads.

**Q: Is it true that if you harden paired bearing surfaces enough, the surfaces won't gall?**

A: Galling is a severe form of adhesive wear that shows up as torn areas of the metal surface. Galling can be minimized by decreasing contact stresses or by the use of protective surface layers such as lubricants. Hardening of surfaces improves wear resistance but will not eliminate galling.

**Q: Are there hydraulic fluids that can aid in temperature control?**

A: Yes, hydraulic fluids are oils that can aid in cooling.

**Q: How chemically resistant is the lube for life polymer?**

A: The lube for life polymer is stable and will not react with water, however contact with strong oxidants such as liquid chlorine, nitrates and peroxides should be avoided

**Q: Should EP oils with Sulfur-Phosphorus additives be used with bronze bearings.**

A: No, sulfur / phosphorus may react with the metal at high pressure and temperature and cause corrosion problems.

**Q: What is the difference between way oil and motor oil?**

A: Way oil is specially formulated for a specific application and contains additives that are beneficial to that application.