ASK ALBERT!

Albert Roberts, Pine Stump Farms, Omak

Grease is the Word

Dear Albert,

I am doing some maintenance this winter/early spring and want to know which lubricant to use for different parts of my tractor. For example, there are u-joints, wheel bearing, rear ends, etc. Can I just use the same grease for them all?

Trying to do some TLC to my machinery.

Dear Trying,

Selecting a grease to lubricate your farm machinery is almost as complicated as sifting through the myriad of motor oils on the market. Generally speaking, greases don't have the same issues with compatibility that you may experience with mixing motor oil brands, due mainly to the additives present in different oils. There are some considerations that will help you decide which grease is best for your application and also save you some money along the way. Many times, grease is not only the lubricant, but it is the barrier to contamination.

Make sure you review the requirements of your equipment. Proper grease selection begins with OEM (original equipment manufacturer) specifications and recommendations regarding product type and lubrication interval.

Grease in machinery has to be able to deal with friction, but it also has to overcome other contributing factors along the way. Load, speed, and temperature all can cause lubricants to fail to protect the machinery properly, so you may not have a single good answer as to which product is best.

Lubricating products are generally either soap-based or petroleum-based

Grease viscosity is highest in the "moly" greases on the market. Moly stands for molybdenum sulfide, which is one of the best-known solid lubricants. Originally available only to the aerospace and military, moly-based greases are widely available now for commercial and homeowner applications. Moly greases work by filling surfaces that may have been roughened, contributing to an overall smoother surface finish and lower friction. This ability to fill in makes moly-based greases ideal for applications such as loader and back hoe pins, kingpins, ball joints, pivot pins and spherical frame pivot bearings. Its thicker formulation may also keep the grease from flowing as freely as needed on some applications.

On the other end of the spectrum are lithium-based greases. Lithium greases are soap-based, and, as such, they are not as water-resistant as other forms of thicker, pasty grease. The benefit to lithium grease is that it washes off more easily, and therefore, may be more desirable for visible applications—applications to high-speed parts (like roller chains), door hinges or around-the-house uses such as garage doors. Its thinner nature also allows it to be delivered in the form of a spray-on product, which can be very handy.

Based on the properties of grease, the following list describes situations where grease is the lubricant of choice. This comes with the caveats that one must also be thinking of the type of machine and where you're trying to get the grease (Is it somewhere that does not have a containment system for oil?):

- Where leakage and drippage is present;
- In hard-to-reach places where lubricant circulation is impractical;
- Where sealing is required in a high-contaminant environment (i.e. water and particles);
- To protect metal surfaces from rust and corrosion;
- To lubricate machines that are operated intermittently;
- To suspend solid additives such as moly during slow-speed, high-load sliding conditions;
- For use in sealed-for-life applications such as electric motors;
- To lubricate under extreme or special operating conditions ;
- To lubricate badly-worn machines;
- Where noise reduction is important.

Of the bearing failures caused by poor lubrication, 50% can be attributed to incorrect grease type. Therefore, it is of critical importance to the bearing performance that the correct type of grease is selected to provide the necessary base oil viscosity at the prevailing operating temperature. All-purpose greases are inadequate for specialized bearing needs and can cause problems rather than be beneficial. Bearing applications have wide variations of load, speed, temperature and environment, and correct lubrication calls for matching the grease precisely to the bearing application.

When selecting bearing lubrication grease, other operational conditions must be considered besides temperature, speed and load. An example of this is the requirement for bearings in assemblies subjected to heavy vibrations. If grease with a low mechanical stability is used, the grease may be destroyed by the vibrations causing the bearing to prematurely fail.

BASIC BEARING GREASE SELECTION		
Generally use	LGMT 2	All-purpose
Unless		
Expecting bearing temperature Continuously >100 °C/212 °F	LGHP 2	High temperature
Low ambient -50 °C/-58 °F, expected bearing temperature <50 °C/122 °F	LGLT 2	Low temperature
Shock loads, heavy loads, vibrations	LGEP 2	High load
Food processing industry	LGFP 2	Food processing
Green biodegradable, demands for low toxicity	LGGB 2	Green biodegradable

NOTES: For areas with relatively high ambient temperatures, use LGMT 3 instead of LGMT 2. For special operating conditions, refer to the range of special SKF bearing greases. For bearing temperatures > 200 ˚C / 392 ˚F (up to 260 ˚C / 500 ˚F) refer to LGET 2.

Grease Selection Chart: SKSbearings.com

The most important factors to consider when selecting grease for bearing lubrication, along with how heavy the load is on the part and the area you are in (whether the element you will be battling is water, sand, or mud, etc.) are:

- Machine type
- Bearing type and size
- Operating temperature
- Operational load conditions
- Speed range
- Operating conditions such as vibration and the orientation of the shaft in horizontal or vertical plane
- Cooling conditions
- Sealing efficiency
- External environment

Grease gun. *jeffersonsdaughters.com*

Grease Viscosity

Grease is produced in a range of viscosities, or thicknesses, and each grease type is given a numerical rating to indicate its thickness. The most common categories are 0 to 6, with 0 being the softest, nearly a liquid—and 6 being the hardest, like the consistency of a firm cheese. Most grease is rated at 2, a consistency that is similar to peanut butter.

Bio-based Grease

The part of grease that provides lubrication can be made from petroleum or from plants (bio-based). Oil derived from plants is friendlier to the environment than oil made from petroleum because plant-based oils are renewable and non-toxic. Both types mix freely with each other so you can easily switch between the two.

Note: To determine if one kind of grease is compatible with another type, you must consider what kind of base it uses as well as the type of oil.

Multi-Purpose Grease

This is general-purpose grease for the home, farm and shop. Use it for car chassis and U-joints, farm equipment, industrial machinery, and anywhere metal contacts metal. If you're using standard multi-purpose grease, be sure to follow the recommended change intervals.

White Lithium Grease

Zinc is added to this general-purpose grease, giving it a white color so you can easily see it. You can tell when all the old grease has been replaced in a fitting because it will come out dark, whereas the new grease will look clean and white. Use it wherever you would use general-purpose grease and want to be absolutely certain that you have applied it thoroughly.

Moly EP Grease

This grease contains molybdenum disulfide (hence, "moly") for better performance than general-purpose grease when metal parts are under high loads or extreme pressure (hence the name "EP"). It's intended to be used on parts where sliding motions are encountered, in sleeve-journal rotating shafts, for example. Use it to lubricate car chassis parts such as ball joints and U-joints, as well as farm equipment and industrial machinery.

Disc/Drum Wheel Bearing Grease

This grease is formulated specifically to lubricate automotive wheel bearings, which turn at high speed. In addition, grease for wheel bearings will tolerate the heat created by your brakes, which work by friction. That heat can be transmitted to your wheel bearings. This grease can also be used for general-purpose lubrication.

RED Grease

RED grease is heavy-duty, premium grease for the toughest lubricating jobs on the biggest, heaviest equipment. It performs better under higher pressures and temperatures than standard multi-purpose grease, and it resists water better. Because it resists water and sticks in place well, this grease will work on external parts that are exposed to the weather. It provides premium protection for car, truck and trailer wheel bearings (especially trailers that are heavily loaded), U-joints, farm equipment, and industrial machinery.

Grease Compatibility

Not all types of thickeners are compatible with each other. When replenishing old grease, you should try to use a type with either the same kind of thickener or one that is compatible. If you don't know what kind of grease you're replacing, try to clean out the old grease, if possible. If you can't get the old grease out of a fitting, then put in enough new grease to push out as much of the old stuff as you can. You will find the information you need about the kind of base used in your grease somewhere on the label or packaging. The manufacturer may refer to the base as "base", "thickener" or "soap."

Just as in motor oils, there are now synthetic greases on the market that offer longer lubrication intervals as a means to offset the initial high price tag. In short, there is no clear-cut answer to which grease is best under all conditions. To the contrary, research seems to suggest that basing decisions on condition (such as seasons, friction, fast-moving) is how one should go about selecting the proper lubricant for the job.

Hope this helps you identify some of the different needs of your various machine parts. Remember, grease is cheaper than parts. May your bearing not fail, may you not break down in the field (pack food & water).

May the grease be with you,

Albert

Albert Roberts was raised on a fourth-generation grain and cattle operation in North Dakota. He has ranched in the Okanogan for twenty eight years with his partner Carey Hunter. His fingers are still cold this time of year, though he'd like to say otherwise. www.pinestumpfarms.com

GOT QUESTIONS?

Ask Albert your farm machinery questions
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