

## Oil or Grease: Orientation, Cleanliness & Efficiency (Part 4/4)

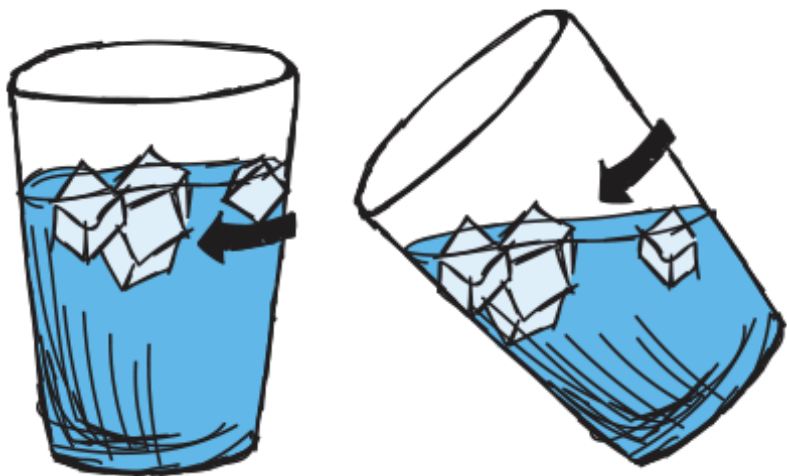
July 7, 2016

### Factors #5 & #6: Orientation of Application and Cleanliness of Environment



Although fairly self-explanatory, orientation of the application—the location, position, and accessibility of the motor—effects the practicality of using grease or oil. Some motors must operate in tight spaces or are required to function at angles at which thinner lubricants, like oil, will have a greater chance of leaking or being unable to maintain the necessary oil levels for proper lubrication. Think of when you tip a glass of water sideways. Parts of the glass that were touching water originally no longer do now that the orientation has changed.

Similarly, if the gearbox requires lubricant to be 2/3 filled, the parts that need the lubrication might run dry if the orientation is changed and additional leaking might occur.



Grease, if chosen correctly, will last for the lifespan of the motor. As a result, it won't require routine re-lubrication like some oil applications will nor will it shift as much as oil, since its thickness allows it to maintain its position even if the orientation of a gearbox changes. Additionally, the higher

viscosity, or thickness, of grease allows it to create somewhat of a self-sealant against contaminants. On the flipside, oil not only moves heat away from moving parts, but it also transfers away contaminants. Although this helps maintain internal cleanliness, it also means that oil (just like in a car) should be changed after about every 2,000 hours of operation. However, the size of the motor affects this need for re-lubrication. Smaller motors, especially those that can be made rather cost-effectively, tend to be replaced rather than re-lubricated because of practicality and cost. For this reason, Groschopp typically uses oil "for life," just like grease.

**Because of this, if operating in an abnormally dirty, dusty, or harsh environment or in hard-to-access area, grease is typically the preferred option—the thickness and self-sealing qualities of grease help combat filthier environments.**

# GROSCHOPP® BLOG

Oil or Grease: Orientation, Cleanliness & Efficiency (Part 4/4) | PAGE 2

However, it should be noted that once foreign matter is present in grease, rapid deterioration of the motor bearings will occur (and bearing failures caused from lubricant problems account for more than half of all motor issues).

Finally, this leads us to the big question: How do oil and grease affect the overall efficiency of the motor?

## Factor #7: Efficiency

This is the goal that engineers, manufacturers, and customers alike all share. It's the term that stands behind the cliché that we all want to get the “most bang for our buck,” and it's the E-word that greatly affects both the sale and purchase of a motor. However, efficiency lies in more than just the motor parts—the design largely contributes, but the use of oil and grease does as well.

The following bullet points highlight the two main Grease vs. Oil pros and cons for efficiency:

- Grease has better torque and start potential. Oil settles once operation ceases, so applications run the risk of a dry start (causing internal damage), whereas grease stays in place.
- Oil requires less effort to be exerted by the application because of its lower viscosity than grease. This can limit the speeds of a grease-lubricated application and increase internal temperatures.

PROS		CONS	
Has better torque and start potential	Stays in place when not in operation	Increased internal temps	Speeds can be limited
GREASE		GREASE	
Thinner and requires less effort to use	Decreased internal temps	Settles when not in operation	Internal damage can occur
OIL		OIL	

As you can see, the age-old question of “Which is better—oil or grease?” is a tough one to answer. Just as sometimes it's best to write in pencil instead of pen, there are some applications in which oil is ideal and others in which grease is the better option. Consequently, determining which to use starts with, but is not limited to, taking careful note of these seven factors: climate, operation hours, vibration levels, load, orientation, environmental cleanliness, and efficiency. For related information on efficiency and lubrication, feel free to check out the following link entitled, “Gearbox Efficiency Factors.”

