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Lubrication of Electric Motors

In servicing electric motor bearings, it is important that the right grease be applied in the right quantity. Both underlubrication and overlubrication are harmful. Underlubrication will result in bearing failure through inability of the insufficient amount of lubricant to perform successfully any one of its functions. Excess grease in the path of rotating parts offers high resistance to motion, and overheating and high internal pressure will result. Excessive leakage at bearing seals may occur.

The frequency of regreasing antifriction bearings of electric motors is affected by the following factors:

- Quality of grease used, especially as to its service life
- Severity of service, including operating temperatures
- Cleanliness of surroundings
- Presence of water
- Continuity of service (may range from infrequent operation to 24-hour-a-day operation)
- Bearing size
- Speed and housing design

In many applications, motor bearings are greased once a year during routine inspection and maintenance work. In general, large electric motors (greater than 40 hp) should be greased more frequently, such as every six months. Small motors operating under non-severe conditions and using high-quality grease may not require regreasing for periods of up to several years.

Relubrication Volume Formula

The amount of grease needed depends on bearing size. Bearing manufacturers use a variety of formulas, but experience has shown that the following works well:

Metric: $Gq = 0.005 \times D \times W$
Gq = Grease replenishment amount (gm)
D = Bearing outside diameter (mm)
W = Bearing width (mm)

English: $G = 0.1 \times D \times W$
G = Grease replenishment amount (oz)
D = Bearing outside diameter (in.)
W = Bearing width (in.)

To use this formula, you must know the size of the bearing as well as how much each pump of the gun delivers. Grease guns come in a variety of pump sizes, typically dispensing 1 to 3 gm (0.03 to 0.1 oz) per stroke. We suggest you pump grease into a small container of known volume and count the number of strokes to fill it. From this, you can figure the volume per stroke of the gun.

In the Lubrication Engineers manufacturing facility, we use a Xport Star Vario Single-Point Lubricator filled with Monolec® Extend EM Grease (1282) on the 125-hp electric motor shown above. Using this polyurea grease – featuring low-bleed characteristics – has enabled us to optimize the lubrication of this important piece of equipment and reduce the possibility of unplanned downtime. The automatic application method has eliminated the need for manual greasing and the possibility of under- or over-greasing.

Product Solutions

From grease selection to application method, LE offers solutions to help electric motors run longer and more efficiently, without incurring costly downtime.

Lubricant Recommendations

LE offers long-lasting protection of electric motors with its superior grease options, including Monolec® Extend EM Grease (1282) and Monolec® Multiplex Lubricant (4622).

Monolec Extend EM Grease

Polyurea NLGI 2 grease with low-bleed characteristics, excellent pumpability and great oxidation resistance.

Monolec Multiplex Lubricant

Lithium Complex NLGI 2 grease designed for extreme pressure performance in broad operating temperature range.

Application Methods

Clear Grease Guns

LE's Clear Grease Guns are a simple, cost-effective solution for eliminating cross-contamination by allowing 100% visual identification. These rugged, durable reliability tools are suitable for heavy industrial use and are approved for use by all branches of the U.S. Military. They are built to withstand heavy use and high temperatures.

Lever Style

Comes standard with whip hose and steel extension. Color options on collars allow secondary method of identification

Pistol Grip

Comes standard with whip hose and steel extension. Color options on collars allow secondary method of identification.

Xport Single-Point Lubricators

LE offers a variety of single-point lubricators, all filled with your choice of high-performance LE grease. The Flex and Star Vario are recommended for use with electric motors.

Flex

Available in 30-, 60- and 125-cm³ sizes. Performs reliably in extremely moist and dirty areas, as well as in cold and hot environments. Simply turn the rotary switch to desired discharge period (from 1 to 12 months), and screw unit into lubrication point.

Star Vario

Available in 60-, 120- and 250-cm³ sizes. Fully automatic and temperature-independent, it is preferred unit for motors requiring precise lubrication amounts. Features easy-to-read LCD display.

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