TECHNI/TIPS

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PREPARATION OF GEARBOX RESERVOIRS FOR LE GEAR LUBRICANTS

In order to obtain the optimum performance from LE's DUOLEC™, ALMASOL®, MONOLEC®, QUINPLEX® and SYNOLEC® gear lubricants, it is necessary to properly prepare the enclosed gear reservoir.

The following procedure is recommended for gearbox preparation before filling with LE gear lubricant. These steps should be taken in every case before changing to LE gear lubricants and are especially important where foaming has been a problem or in applications involving use of LE gear oils far beyond the manufacturers' recommended drain intervals.

1. Drain oil presently in the box as completely as a possible while the unit is still warm. This helps remove contaminants and oxidized oil which can impair performance of LE gear lubricants. If contaminated oil remains in the gearbox, foaming can occur.

2. Do not use a volatile, chlorinated solvent or solvent-type flushing compound to wash out the gearbox. Any solvent trapped in the voids of the reservoir will cause corrosion. Also, the presence of even a very small amount of solvent-type flushing compound will reduce the viscosity of a gear oil. Further, without a coating of oil for even a short time, rusting of internal parts of the gearbox can take place.

3. To properly flush the gearbox, use one of the LE gear lubricants, or a light viscosity of LE's MONOLEC® R&O Compressor / Turbine Oil, filling to **one-third** the recommended operating oil level. Circulate under no-load conditions for 15 minutes and drain.

4. If the used gear oil has oxidized badly with a dark color, burned smell, and is thick and slow to drain, use a light viscosity of LE's MONOLEC® R&O Compressor / Turbine Oil. Fill to **one-third** the recommended operating volume and circulate under a no load condition for 10 minutes, then drain completely and refill to **one-third** volume, operate 15 minutes under a no load condition and drain. Some units are so badly oxidized that physical removal from the inner surfaces may be required.

5. Gear sets, motors, pumps and other internal parts of the oil reservoirs themselves are usually treated with rust preventatives by the manufacturer before shipment. Remove such rust preventative materials before charging with operating gear oil. Use the flush procedure explained in **Step 3** to remove rust preventatives, manufacturing debris, metal chips and core sand.

6. Remove and clean gear oil filters if present in the system.

7. Clean the vent plug and reinstall correctly.

8. When working with enclosed gearboxes or oiling systems which do not have a drain or circulating system, the used oil and flushing oil should be removed by suction. Use of pressure to force out or blow out this oil may damage seals. Some gearboxes have reinforcing ribs on the bottom. Be sure to allow for that when suctioning to remove the old lubricant.

9. Recharge the gearbox reservoir with the proper LE gear lubricant. Be careful not to overfill because this can cause foaming.

Any statement regarding the service life of gear oils should include information regarding operating, environmental and mechanical conditions of the equipment. Even in the best of situations, gear and circulating oils will not last indefinitely. Therefore, from the standpoint of both service and economy, gear oil should be removed and replaced with fresh lubricant when the oil has deteriorated or when the oil has become contaminated. When severe operating conditions are present, change intervals may need to be shortened.

Examples of severe gearbox operating conditions are:

- Rapid fluctuations in operating temperatures, high speeds and heavy loads.

- Any operating environment which causes condensation inside the gear case or oil reservoir, resulting in formation of sludge and causing the gear oil to foam.

- Operation in moist or dusty environments or where chemical fumes are present. In such instances, set change intervals accordingly.

Gear oil changes as needed are critical during the first few weeks or months of operation of gear cases. Rather than setting arbitrary change intervals, the operator should regularly monitor the condition of the oil to determine stability of the gear oil. After checking for dirt, metals, water, acid number and viscosity, the operator can determine when the interior of the oil reservoir needs cleaning.

When convoluted gears or meshing gears of different metals are encountered, oil changes and an inspection of the mechanism are essential. As these gears set themselves, bronze particles may adhere in the steel worm gear resulting in abrasive wear. Removing used lubricants and cleaning worm threads will often prevent further wear.

The careful inspection and proper cleaning of all other types of gear sets are also most valuable in obtaining maximum service life with LE's DUOLEC™, ALMASOL®, MONOLEC®, QUINPLEX® and SYNOLEC® gear lubricants.

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