World-Class Lubrication Management for Gearboxes

PAUL DUMONT

As the saying goes, "an ounce of prevention is worth a pound of cure." When it comes to maintenance of your plant's gearboxes, this is definitely true.

By using an industry-leading Lubrigard gearbox adapter kit to perform regular maintenance, a company will save money and time, reduce operating costs and have longer-lasting, more reliable equipment. For an average $600 investment, a company can protect an $80,000 piece of equipment.

Until about 15 years ago, most companies did not pay much attention to gearbox maintenance. Gearboxes were usually ignored until they broke and needed to be rebuilt or replaced. Plant managers began to pay attention when they realized the critical job of a gearbox, as well as the cost to purchase oil and to repair or replace a gearbox.

In the past, maintenance managers did not perform any proactive maintenance on their gearboxes and settled for OEM equipment, which is limited to a basic breather, drain plug and a tiny oil level gauge or plug. Preventative maintenance on small gearboxes holding one quart to one gallon would consist of an oil change once a year, while the oil in medium to large gearboxes holding five gallons (20 litres) or more would be changed every one to five years. Maintenance managers did not perform routine oil analysis and took samples only when they suspected a problem.

The standard OEM breath and/or fill port are not adequate to prevent oil contamination.

But today, most plant managers realize the losses due to lubrication amount to 10-20 per cent of their maintenance budget. This is 10 times the cost of the actual lubricant, according to Mark Barnes, vice-president of reliability services at Des-Case, which specializes in contamination control products for industrial lubricants.

Today, the gearbox is part of many manager's proactive maintenance strategies and are considered critical to plant operations. In response, they are upgrading OEM equipment with best-in-class practices and hardware. Common practices for small gearboxes are to use the traditional preventative maintenance service schedules. The OEM breather would be replaced with a small desiccant breather and an oil level device, such as a bull's-eye style or a standard oil level gauge, would be installed. This updated equipment will protect the gearbox from contamination and help technicians easily determine that proper oil levels are being maintained.

LUBRIGARD

Heavy-Duty Filtration
TC-Series Portable Carts
TS-Series Dedicated Stands

The TC/TS Series of filtration systems represent the highest quality and most rugged systems available for purifying all types of industrial oils. These heavy-duty systems are capable of removing particles and/or free water from all types of oil, even high viscosity gear oils, and are designed for years of dependable service.

- Handles viscosities up to ISO 680
- High beta ratio full flow filters (beta 1000)
- 3, 6, 12 & 25µ and water removal elements
- 2 to 40 GPM (7.5 to 150 lpm) flow rates
- 110V, 220V, 480V, 575V voltages
- Heavy duty frame and large wheels

For more info visit
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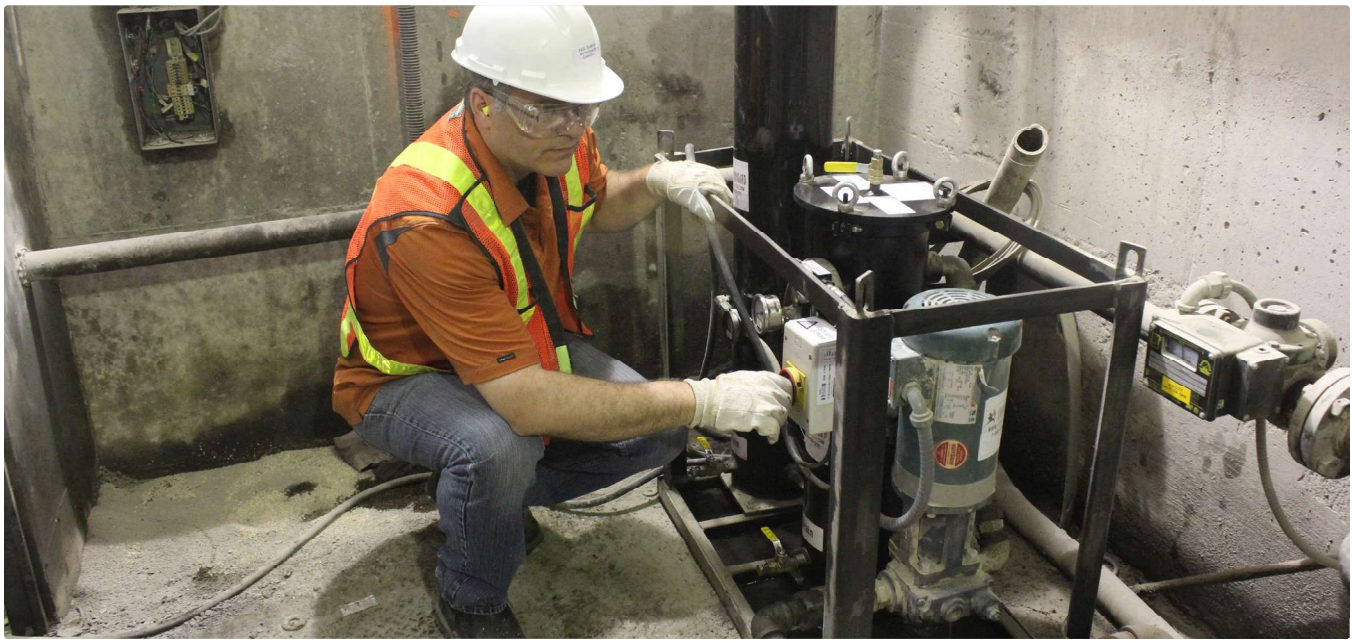


For medium and large gearboxes (>5 gallon to more than 200 gallon) a new strategy is required that includes the use of a gearbox adapter kit which is currently best class practice in the industry. Introducing the Top Mount Gearbox Adapter Kit.

Gearbox Adapter Kit:

Top mount gearbox adapter kits are an innovative solution designed to protect the gearbox against contamination and allows your equipment and lubricant to run longer and harder. The adapter kit incorporates a quick connect fitting, desiccant breather and vacuum gauge. Each of these parts allows the oil technician to service the equipment quicker and safer.

Desiccant Breather:

The desiccant breather has a rated three micron filter pad element and is filled with desiccant gel for moisture removal. Lubrigard breathers attack fluid contamination, which is the primary cause of component wear and lubricant failure in industrial equipment. As moist contaminated air is drawn through the unit, the filter removes particles and the desiccant gel soaks up moisture. This keeps the gearbox clean from external contamination. The same moisture removal process occurs during the exhale of the air from the gearbox. The desiccant gel starts off a rich blue color, but as moisture is absorbed, begins to turn pink. When the breather is completely pink the breather needs to be replaced.

Critical gearboxes can improve MTBF with the addition of a by-pass filtration system.

Vacuum Gauge:

The vacuum gauge is very helpful in plant locations with a very harsh environment, such as cement plants, steel mills and mining operations where higher levels of dirt, dust and process contamination are present. These high levels of contamination can clog the filter pad of the breather quickly. If left undetected it would cause the gearbox to become over pressurised and could result in seal failure or leaks. The vacuum gauge allows the operator to monitor the condition of the filter element of the breather.

Top mount gearbox adapter kits prevent contamination and provide access for top-up and filtration services.

Lube tasks taking too long?

Maybe it's time for new lube ports.

LUBRIGARD

Have a look at the full line of lubrication ports at
www.lubrigard.com/lubrication-ports

The vacuum gauge has a spring loaded red marker band that shows the operator if the filter pad is clogged and the breather needs to be replaced.

Quick Connect Coupler:

The gearbox adapter is equipped with a quick connect coupler designed to facilitate oil servicing tasks such oil top-ups, oil filtration and oil fill-ups. Combined the gearbox port quick connect system with the Lubrigard premium pump dispensing container with female quick connect creates a cost effective solution for servicing gearboxes.

Drain Port Adapter:

Many gearbox systems have only a limited amount of external oil plugs at the bottom of the unit. Typically one drain plug is available for the sole purpose of draining the oil from the unit. Lubrigard has developed a solution to maximize the usefulness of this single plug. A Lubrigard drain port adapter incorporates all the necessary hardware required to ensure that an oil change, oil filtration service, oil sample retrieval or oil level reading are quick, easy and safe.

The Lubrigard drain port hardware is available in a wide range of thread options designed to fit most gearbox reservoirs. Once in place the drain port replaces the drain plug. The drain port adapter employs a quick connect device to ensure that the gear lubricant can be serviced quickly and safely with the use of an offline filter cart or dedicated filter system. With a drain port adapter both oil changes and oil filtration services are quick and cost effective.

> "The addition of the oil level gauge gives the operator an excellent view when determining the proper oil level needed for each gearbox unit"

Drain port adapters can be outfitted with an oil level gauge. An oil level gauge allows a technician to visually monitor oil quality and quantity with just a glance to ensure the unit has the proper amount of oil in the system and that the oil is not grossly contaminated. Having the correct oil levels will ensure the gears are properly lubricated at all times and reduce gear wear in the component. Low oil levels or no oil on the gears will result in damage and possible premature failure of the gearbox.

The drain port adapter includes a pitot tube sampling device for taking representative oil samples. The pitot tube extends into the gearbox and rests in the oil sump. This means sampling can be done while the gearbox is running, allowing for a representative sample of the condition of the gearbox. The addition of oil sampling hardware to a gearbox represents a significant labour time savings for oil technicians tasked with taking oil samples. Medium and large gearbox units should be part of your oil sampling program, and should be sampled quarterly. With a proper oil sample your oil analysis program will allow you to safely extend oil drains intervals as well as help you determine when service to the gearbox is needed. When service is required the top mount and drain adapters will allow you to perform these tasks effectively and efficiently.

World-Class Gearbox Lubrication Management:

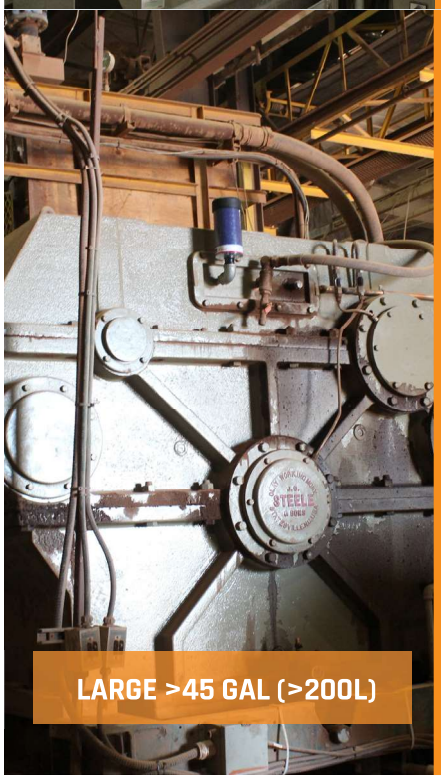
When lubricating oil is contaminated by particles or water, equipment wears out faster, which results in production downtime and repair costs. Careful handling of lubricants can keep dirt and moisture from entering a system. This can be difficult with traditional systems but Lubrigard port adapters keep systems sealed during lubrication tasks, preventing the consequences of oil contamination. Lubrigard port adapters incorporate smart technology to make fluid handling a simple task, requiring less equipment and labor.

These kits are a proactive step that companies can take to meet best-practice guidelines and prevent equipment failures and plant shutdowns. Once Lubrigard port adapters are installed, tasks such as connecting a portable filtration cart can be carried out easily and efficiently. This reduces the time to change the oil from hours to minutes. In fact, servicing time is close to 80 per cent faster.

Just like a classic car needs regular maintenance to keep running, gearboxes need attention. Proactive maintenance translates to dollars and cents through extended life of your equipment and avoiding huge costs to repair or replace your gearbox including the money lost during a potential plant shutdown.

DID YOU KNOW?

Installation of a lubrication port adapter typically requires just the removal of the existing port or cap and replacement with the new hardware.

GEARBOX CAPACITY	RECOMMENDATION	SERVICING
 SMALL 0-5 GAL (0-20L)	Install a rated desiccant air breather to prevent dirt and water contamination. Replace drain plug with a level gauge with a t-mount that includes a drain port.	Change air breather when the desiccant has changed to pink. Top-up when oil level is low. Change oil based on standard preventive maintenance schedule.
 MED 5-45 GAL (20-200L)	Install a gearbox top mount adapter that includes a quick connect connection (for oil top-up and filtration hook-up), a vacuum gauge (to indicate if the breather is plugged), and a rated desiccant air breather to prevent dirt and water contamination. Install a bottom mount adapter with a quick connect (for oil drain, and filtration hook-up), a level gauge, and sampling (pitot) tube. 	Include in oil sampling program and sample quarterly. Oil top-ups based on oil level reading, change oil or use off-line filtration on-condition (based on oil analysis report). 
 LARGE >45 GAL (>200L)		

HARDWARE REQUIRED

DC-VG-BB - Small desiccant air breather
LG-3 – 3" level gauge with drain plug

GAB202H82

Gearbox top adapter
- ½" NPT quick connect
- Desiccant air breather
- Vacuum gauge

GBBS3434LG9

Drain port adapter
- ¾" NPT quick connect
- Level gauge
- Sampling (pitot) tube

OFF-LINE FILTRATION

Small gearboxes typically do not show any significant return on investment (ROI) from off-line or dedicated filtration.

For less critical gearboxes use an off-line filtration system such as a Drum Topper or a FlowGuard portable filter unit. These portable filter carts are used to remove particulate and water contamination.

DRUM TOPPER

FC SERIES FILTER CART

For larger reservoir sumps use an off-line TC-Series Heavy Duty portable filtration cart. These carts are designed to filter out large amounts of dirt and water contamination.

TC SERIES FILTER CART

DEDICATED FILTRATION

For more critical gearboxes use a dedicated filtration unit like the Panel Unit. These systems allow for continuous dirt and water contamination removal for medium sized gearboxes and lube systems.

FLOWGUARD PANEL UNIT

For more critical gearboxes and lube systems use a TS Series heavy duty dedicated filter unit. Again these filtration units are designed for continuous filtration of high viscosity gear oil. These systems are ideal for removing large amounts of dirt and water contamination.

TS SERIES FILTER STAND