

Maintaining rental equipment is a full time job and yet some parts tend to get overlooked.

Though parts like the gearbox rarely present any major problems to the mechanic, it does not mean that it needs no inspection. Since gearboxes tend to run well with minimal maintenance, many have overlooked routine service on these items. Some mechanics have ignored them until they are no longer able to be repaired and must be replaced. This is a costly proposition.

Routine Gearbox Maintenance

Routine gearbox maintenance should include, but not be limited to the following simple procedures:

1. Oil changes should occur at intervals no longer than one year.
2. Oil level should be checked at every service.
3. Oil quality, color and consistency should be checked at every service.
4. Oil seals should be checked at every service.
5. Gearboxes should be inspected for apparent damage such as cracks in the housings at every service.
6. Internal gears should be inspected for damage and wear at every oil change interval.

Oil Changes

Oil changes are necessary because oil tends to break down over time. How fast the oil breaks down depends on use and environmental conditions.

If the hoist is being used at maximum capacity or above maximum capacity on a continual basis, the oil may tend to degrade faster. The reasons for this is that even under normal usage gearboxes develop a certain amount of heat. Heat is the first enemy to gearbox oil.

The oil that Power Climber specs out for all of our gearboxes is Mobil Oil SHC 626. This oil has a very good operating range which contributes to extended parts life and extended lubricant life. The pour point on this oil is -65°F and the flash point is 473° F. For more information about this product including detailed MSDS information, please visit the Mobil Oil Corporation website www.mobil.com or call them toll free, 1-800-662-4525.

The second most common enemy to gearbox oil is contamination from the operating environment. If you are operating the hoist in high humidity, high moisture or high airborne debris environments, you have an increased chance of oil contamination occurring in vented gearboxes. Since gearboxes develop a certain normal amount of heat during operation, condensation occurs.

Condensation occurs in a gearbox after it has been run for a period of time and is then allowed to cool down. As the gearbox cools down, the warm air inside expands and escapes as the cooler outside air rushes in. When the cooler outside air contains a lot of moisture or fine airborne debris, it too gets sucked inside the gearbox causing contamination. This process accounts for most oil changes.

Signs of Oil Contamination

The Mobil oil specified for all Power Climber gearboxes is normally a clear orange color. Oil mixed with water can appear brownish, milky and sometimes frothy in consistency. It may even have rust particles inside if left for a period of time.

Oil mixed with airborne debris will tend to take on the color and appearance of the debris. Therefore if your customer is using Black Beauty grit, the oil will tend to be black in color.

When inspecting the oil inside of a PC1 gearbox, it is normal to find some bronze particles that have worn off the bronze gear into the oil. The presence of bronze material in the gearbox after the factory break-in procedure appears as very fine slivers. This may be significant to a mechanic unaccustomed to inspecting a brand new gearbox.

The presence of bronze chunks as opposed to fine slivers could warrant a factory rebuild.

Gearbox Teardown

The correct procedure for disassembly of a PC1 gearbox is covered in the Power Climber service training course. Opening or servicing a gearbox without the proper training usually results in damage to the gearbox.

Properly trained mechanics may need to partially disassemble a PC1 gearbox, depending on use and/or the presence of, or diagnoses of a particular problem for some of the following reasons:

1. To completely remove foreign debris and/or contamination.
2. To completely inspect the bronze gear, worm gear and thrust bearing assemblies.
3. At times the mechanic may feel it is necessary for the removal of oil seals, although this is rare.
4. To replace either one or both of the gearbox internal O-rings.
5. To perform a thorough gearbox inspection in relation to a particular service bulletin.

Tips and Tricks

- When changing out oil seals on a gearbox, coat the inside of the seal with grease prior to installation. This will help to minimize any potential rust damage where the seal meets the shaft.
- When changing out oil in the gearbox, empty the oil into a clean container. This will help you inspect the oil for color, quality, consistency and debris.
- Keep a record of updates, upgrades, and retrofits mandated by service bulletins in each hoists' individual file with a sheet similar to the attached example.

For questions or comments, contact Customer Service at 1-800-560-CLIMB (2546) or customerservice@safeworks.com.