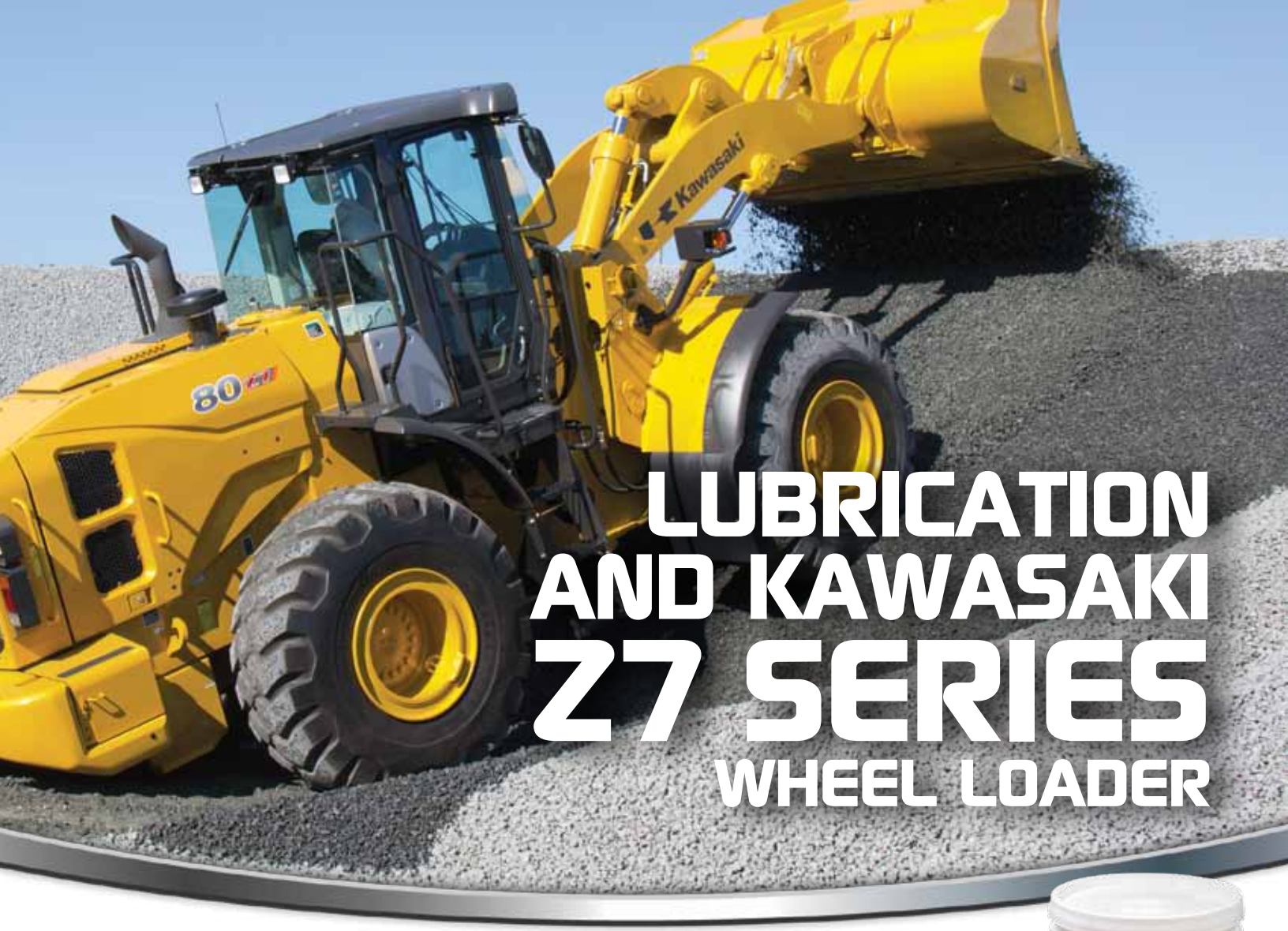


LUBRICATION AND KAWASAKI Z7 SERIES WHEEL LOADER

In our previous articles on Tier 4 Interim machines, we've focused on the engine area — ultra-low-sulfur fuel, the diesel particulate filter, and CJ-4 engine oil.

Now let's turn to some other maintenance areas you'll routinely service.

EASE OF SERVICE

As the oldest ongoing manufacturer of rubber-tire, articulated, wheel loaders in the world, we know a thing or two about maintenance needs. As a result, serviceability is an area where Kawasaki has always been strong. Our new Z7s continue that tradition. Not only are they designed to reduce operating costs and increase production, their serviceability reduces maintenance time and costs.

Our Z7s have easy access to areas requiring routine maintenance, and most of those are at ground level. They have wide access engine doors and swing-out cooler cores. There are sight glasses for the transmission and hydraulic levels. Coolant level is visible in a tank, fueling is ground level. Grease fittings are grouped together. And there is easy access to filters and fuses.

Many Z7 key maintenance intervals have been doubled. The oil-change interval for the engine has increased from 250 hours on the ZV-2s to 500 hours when using CJ-4 low-ash oil. The hydraulic oil change has been increased from 4,000 hours from 2,000 hours when using non-zinc hydraulic oil. And bucket linkage pins are equipped with patented HN™ bushings to extend pin lubrication up to 500 hours, depending on operating conditions. Only a few grease fittings require more frequent lubrication.

NON-ZINC EX46HN HYDRAULIC FLUID

There are three common types of hydraulic system failures: degradation (gradual wear and tear from usage or sometimes induced by contamination), transient (symptoms come and go — sometimes from particles that momentarily interfere with component function), and catastrophic (the most expensive and costly of all, usually occurs without warning but there may have been symptoms not recognized until after the fact). The goal of any preventive maintenance program is to mitigate failure as much as possible.

Let's focus on the role of hydraulic fluid — the lifeblood of your equipment's hydraulic circuit.

With ordinary hydraulic fluids, high temperatures, high pressure, air, and the hydrocarbons in hydraulic oil can lead to a reactive mixture. Oxidation raises an oil's viscosity, which causes an increase in friction. Zinc is widely used in many hydraulic oils as part of a compound that reduces metal wear. During operation, zinc can separate from this compound and combine

with other elements in the oil. The result is a sludge-like product that is difficult to remove. The accumulation of viscous deposits can plug valves and filters, reduce actuator response, increase pump abrasion, and shorten the oil's useful service life — not to mention shorten component life. To combat the sludge build-up, manufacturers require more frequent oil changes.

But using non-zinc hydraulic oil like KCM SuperEX46HN fluid provides a host of benefits:

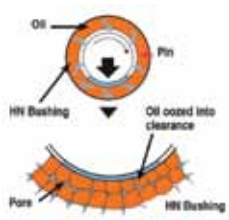
- Pure hydro-cracked base oil resists oxidation
- Reduces operating temperatures
- Molecularly binds exposed metal surfaces, preventing metal-to-metal contact and metal wear
- Extended lubricant service life and reduces varnish and carbon deposits
- Since it has no zinc, EX46HN greatly reduces sludge generation
- Prevents the generation of acids that can corrode equipment
- Improves fuel efficiency by reducing friction as well as improving filter and component life
- Lowers operating costs
- You can double the time between hydraulic oil changes — from 2,000 to 4,000 hours

WARNING: The use or addition of hydraulic oil with zinc additive shortens the oil-change interval to 2,000 hours.

No matter what kind hydraulic fluid is used, preventing water and dirt ingress while it is being stored is imperative. Before using, check the fluid for sediment and clarity. Hazy fluid can indicate excessive water, excessive fines contamination, or the mixing of incompatible fluids. As with used engine oil, used hydraulic oil should be analyzed by a qualified lab. And be sure to select a hydraulic filter that exactly matches OEM specs.

HN BUSHINGS

Use of HN bushings extends lube intervals on bucket linkage up to 500 hours or more, reducing maintenance time and costs. How? The bushings are impregnated with high viscosity oil to provide added lubrication and every time the pin is greased, the lubricant



within the HN bushings is replenished. The HN bushings do need to be broken in gradually. First, grease the pins every 10 hours for the first five days. Then once at 250 hours. Finally, every 500 hours. Use lithium-based, EP/Moly grease for most chassis lubrication applications. NLGI No. 2 grease is suitable for most temperatures and many auto-lube systems. Use NLG1 No. 1 or 0 for extremely low-temperature applications.

AXLE OIL

Z7 Series Wheel Loaders require an HD 50-type gear oil. Check your operator's manual to see when to first change the axle oil to remove any break-in debris. Thereafter, change every 2,000 hours. Top treatment with an Anti-Chatter additive may be necessary to prevent or eliminate service brake application noise.

TRANSMISSION FLUID

The transmission fill port is conveniently located in the center pin area, and also has a sight gauge there to check the transmission level while the machine is operating.

Change the transmission oil initially at 100 or 250 hours, depending on the model size, to remove break-in debris. 2,000 hours then becomes the normal service interval. Transmission oil filters are changed at break-in and then every 1,000 hours. Use engine oil classification API "CF" 10W or Multi-purpose Automatic Transmission Fluid.

FUEL

The fuel fill port is at ground level, for ease of use. To reiterate what was discussed in previous articles about fuel, be sure to use ultra-low-sulfur fuel, and always use very good filtration from the supply tank. Change the fuel filters every 500 hours.

READ THE MANUAL

Z7s, like all other wheel loaders, should have a simple daily maintenance routine. Check the fluid levels, and then do a walk-around inspection. And when it comes to servicing, always consult the operator's manual. New machines may well have new features and different service schedules than what you are used to. For example, Z7s have as standard a hydraulic reversible fan to blow out rear coolers. This helps minimize engine overheating conditions. Be sure to follow the recommended fluid service intervals— they may be much further apart than your older equipment. And never try to extend a fluid's or filter's life beyond the recommended hours. It won't offer the same protective qualities, and can lead to unwanted repair costs and unscheduled down time.