

## **Dozer Undercarriage Health and Maintenance Drives Total Machine Performance; PLUS: The Dozer Health Checklist**

*Daily walk-arounds and preventive maintenance help eliminate downtime*

By John Bauer, brand marketing manager, CASE Construction Equipment; Brad Stemper, solutions marketing manager, CASE Construction Equipment

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Fact: approximately 20 percent of the purchase price and 50 percent of the maintenance cost of a dozer sits in its undercarriage. That's a lot of money tied to one component. Of all tracked machines, a [dozer](#) undercarriage experiences more force, abrasion and resistance than any other piece of equipment. Keeping that undercarriage in good working order will go a long way towards reducing maintenance costs and optimizing your working hours. In this article we will cover tips on how to prevent and minimize undercarriage wear, maximize undercarriage life and lower owning and operating costs.

We'll follow that up with **The Dozer Health Checklist**. As with all equipment, it's often the small stuff that can trip you up. Daily maintenance and upkeep is critical to overall machine health. Follow these important steps to ensure overall machine health – and see how new technologies can help you keep track of your service demands.

### **The Undercarriage and the Operator Effect**

The undercarriage of a dozer is built on a system of moving components: rollers, idlers, tracks and other parts. What many don't know is that how the machine is operated plays a critical role in the health of the undercarriage. Important operating tips include:

- **Make wider turns:** Counter-rotation, or pivot turns, causes accelerated wear. Make wider more gradual turns, such as Y-turns, when possible.
- **Work up and down on slopes:** Constant operation on a slope or hill in one direction can accelerate wear to idlers, rollers and guide lugs by placing greater forces on one side. Travel straight up or down the slope. Turns are best performed on level ground. Some jobs require hillside work - for these situations, keep in mind that minimizing time on the slope will always payoff in reduced wear and load to the undercarriage.
- **Alternate turning direction:** Continuous turning on the same side can cause asymmetrical wear and accelerated wear. Make every effort to balance the direction of turns throughout the day. If it's not possible, check for wear more often.
- **Control track spinning:** Unnecessary spinning can increase wear and decrease productivity. Decrease the blade or bucket load to avoid it.

- Limit high-speed and reverse travel: Higher speeds can cause more wear, as can unnecessary travel in reverse. Minimize unproductive high speeds and avoid excessive travel in reverse.
- Use caution when edges are encountered: avoid loading just the side of the track pad, instead of the entire pad supporting the weight.

## **Proper Maintenance Pays Dividends**

Proper care of the undercarriage can significantly minimize maintenance costs, increase uptime and impact the longevity of the dozer. Owners and operators should:

- Ensure proper track tension: Monitor track tension when the machine is in actual working conditions and adjust it accordingly. When steel tracks are too tight, it accelerates bushing wear. When they're too loose it can create instability, and in the worse case scenario, it can cause the tracks to derail. Proper tension also ensures the machine puts available power to best use. Check the operator's manual for specific track inspection and tensioning procedures.
- Keep the undercarriage clean: At the end of the day, clean out mud and debris from the undercarriage since it can build up and accelerate component wear. Doing so at the end of the day ensures that material that might freeze or dry up and harden overnight is removed. Optional covers and guards are available to help keep the undercarriage clean.
- Conduct daily inspections: Operators should inspect the undercarriage for excessive or uneven wear, as well as damaged or missing components. Any issues should be immediately addressed to minimize further wear or damage.
- Follow the schedule: Conduct a complete undercarriage inspection in keeping with the manufacturer's recommendations. More frequent inspections should be performed if the machine is used in conditions that are more demanding than normal.

## **The Dozer Health Checklist**

As it relates the rest of a dozer's operating systems, remaining consistent and adhering to recommended service schedules is important. One of the most important activities that a dozer operator can engage in on a daily basis is the "pre-flight check". Before starting the machine, the operator should look for the following:

- Check all lines and components for water or oil leaks
- Check that all visible nuts and screws are tightened
- Check for structural damage that may have happened overnight or since the last operation

- Check the oil level, as well as the coolant level at the overflow tank
- Check for clogging or damage to the radiator
- Check the engine accessory drive belt condition
- Check that the air filter restriction warning light is not illuminated
- Check the fuel tank, DEF tank<sup>1</sup> and hydraulic reservoir levels
- Check that the hydraulic oil is clean
- Check that all battery connections are properly tightened
- Check the condition of the blades, cutting edges and the ripper points
- Lubricate all grease points. Severe conditions, such as water immersion, may require more frequent greasing

Once you start the engine, it is also important to observe how the machine is running before beginning full operation. Factors to monitor include:

- Did the engine start correctly? Are the exhaust fumes normal? Are there any unusual sounds?
- Check for abnormal noise on the hydraulic components
- Check for water, fuel or oil leaks
- Check that the audible alarm devices, working lights and wipers are in working order
- Check that all hydraulic circuits are functioning correctly.

It may seem like a lot of work, but these checks take a relatively short amount of time and may help prevent a more significant problem that causes downtime. Other important intervals to monitor<sup>2</sup>:

**50 Hours:** Drain water and sediment from the fuel filter every 50 hours; more often if conditions require or if fuel quality is poor.

**First 100 Hours** (note: these are specific to the first 100 hours of operation and are not regularly scheduled intervals).

- Change the engine oil and filter
- Change the hydraulic oil filters
- Change the fuel filter
- Clean in-line DEF supply filter

**500 Hours:**

- Engine oil and filter replacement
- Fuel filter replacement
- Check battery fluid level

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<sup>1</sup> References CASE M Series dozers with Selective Catalytic Reduction (SCR) technology; dozers with different systems will not feature a DEF tank.

<sup>2</sup> These intervals are relative to CASE M Series dozers; each dozer make, model and series is different – please refer to your owner’s manual for intervals specific to your machine.

**1000 Hours**

- Change the oil in the final drive and the planetary drive
- Drain condensation from the fuel tank
- Clean the fuel tank cap
- Replace the hydraulic reservoir breather

**1500 Hours:**

- Clean in-line DEF supply filter
- Replace the drive belt

**2000 Hours:**

- Replace hydraulic oil filter
- Drain, flush and replace engine coolant
- Change the hydraulic/hydrostatic drive system oil and filters
- Clean the reservoir suction screen
- Replace the engine primary and secondary air filter

In many cases, your dealer may assist you with this work through a planned maintenance contract or other agreement, but keeping track of these items is critical. A telematics system – common now to many manufacturers – automatically keeps track of these intervals and can alert the owner to impending service needs. Dealer service departments can also be granted access to the telematics system to help monitor and plan for maintenance. Bottom line: the bookkeeping on maintenance intervals has gotten much easier with the advent of these technologies, and empowers the equipment managers to be proactive in ensuring optimal uptime and the profitability of your dozer. Ultimately driving down your owning and operating costs.

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