Timberjack 450 & 520 Powershift Skidder

Operator Manual
Timberjack 450 & 520
Powershift Skidder
P/N: 8045510

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

If this product contains a gasoline engine:

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.

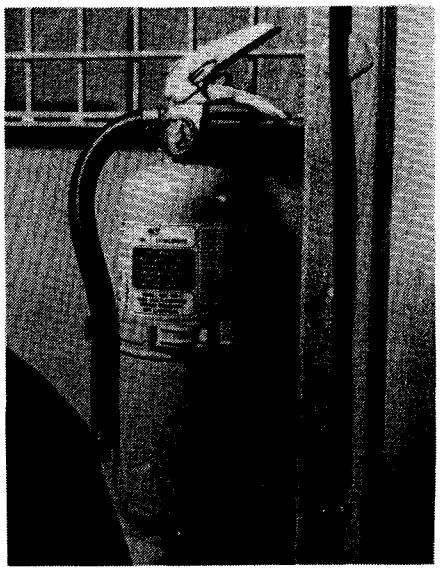
Worldwide Construction
And Forestry Division
LITHO IN U.S.A.

SECTION 2

SAFETY

THE FIRE EXTINGUISHER AND HOW TO USE IT

A pressurized dry chemical fire extinguisher (5 lb. capacity) is supplied as standard equipment on TIMBERJACK skidders. It is located in the canopy to the left of the operator.



TO REMOVE THE FIRE EXTINGUISHER:

Unclip the retaining strap and pull the extinguisher away from the mounting bracket.

The effective range of the extinguisher is 10-15 ft (3-4.5 m) and the total discharge time is 10-12 seconds.

If a fire starts, act immediately as follows:

1) PARK THE MACHINE IN THE SAFEST POSSIBLE WAY, so that it will not tend to roll away if not held by the brakes.

2) STOP THE ENGINE IMMEDIATELY by pulling the stop control. This is to cut the draft from the fan and drop the pressure in all oil and fuel lines.

3) TURN THE ELECTRICAL DISCONNECT SWITCH "OFF."

4) APPLY THE PARKING BRAKE.

5) REMOVE THE FIRE EXTINGUISHER from the mounting bracket.

6) PULL THE SAFETY PIN from the handle.

7) AIM THE EXTINGUISHER AT THE BASE OF THE FLAMES from as near as is possible.

8) SQUEEZE THE LEVER and SHOOT SHORT BURSTS WITH A SWEEPING MOTION until the fire is smothered.

Do not waste the charge of the extinguisher on a fire once it has been smothered, as the fire may flash up again.

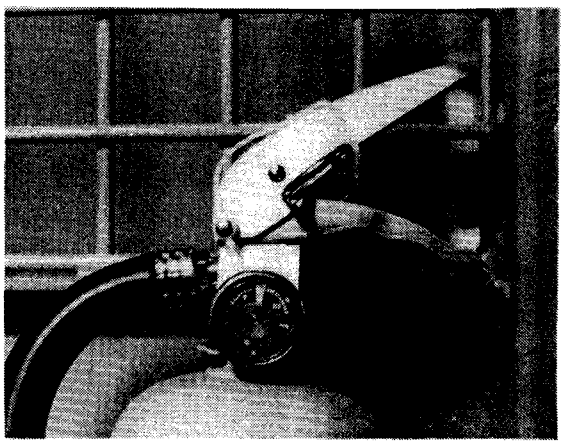
Once the fire is definitely out, disconnect the batteries and soak the area with water so as to cool all debris before cleaning the area completely. If the fire was in the battery area, remove these before dousing with water.

Ascertain what damages have been done by the fire, especially to hydraulic and fuel hoses as well as the electrical wiring insulation. Try to find out the cause of the fire to establish better preventation for the future.

⚠ CAUTION: WHENEVER THE FIRE EXTINGUISHER HAS BEEN USED, IT SHOULD BE RECHARGED IMMEDIATELY.

Inspection and Maintenance

Inspect the pressure gauge on the fire extinguisher at least once a week to make sure that the unit is still fully charged. Also, visually check the shell for signs of damage and ensure that the nozzle is unobstructed and the seal is intact.



If the pressure is below the operable range (shown as a white band on the face of the gauge), or if the weight of the fire extinguisher is less than 8 pounds 10 ounces (3.9 kg), the unit should be recharged.

TOWING

Towing a disabled skidder, or any other articulated vehicle, is not recommended. However, if it becomes necessary to tow or push the unit, certain precautions must be taken before moving the machine to avoid damaging the transmission.

If the machine is to be towed only a short distance (less than 1/2 mile), first shift the transmission into neutral, secure the dozer blade in a raised position and release the parking brake. The machine can then be moved at a SLOW speed.

If a towing distance further than 1/2 mile is involved, the lower drive shafts to the front and rear axles must also be removed or disconnected from the axle input yokes.

⚠ CAUTION: Hydraulic power is not available unless the engine is running. Therefore, if the machine is to be towed with all four wheels on the ground, the engine must be running to enable is to be steered. If the engine is inoperative and the machine is being towed with two wheels off the ground, the frame articulation should be blocked.

⚠ CAUTION: It is impossible to start the engine by pushing or towing the machine. Permanent damage to the transmission will result if this is attempted.

520 skidder - Loosen the filler cap SLOWLY one full turn and wait a few seconds before removing it completely.

Check the oil level with the machine parked on level ground the engine stopped, the parking brake applied, and the dozer blade lowered to the ground.

If the level is being checked before starting the engine at the beginning of the day's operations, the level should be approximately two to three inches (50 - 76 mm) below the bottom of the filler tube.

Before adding oil, bring the system up to its normal operating temperature, when a more accurate check can be made. At this time, oil should be added to bring the level to the bottom of the filler tube.

After replacing the hydraulic tank filler cap, close the drain cock on the side of the filler neck and reinstall the front grill.

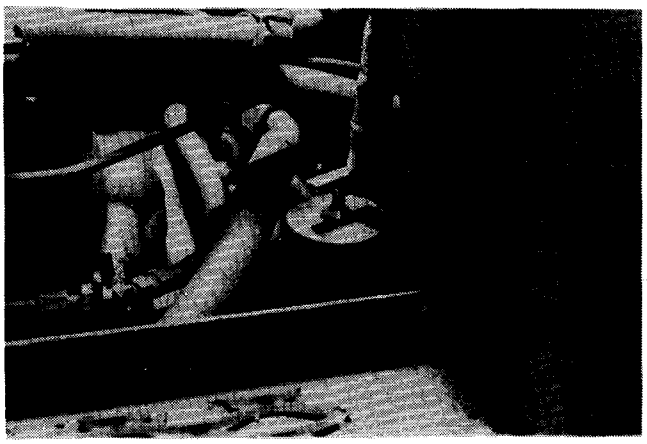
5) CHECK LEVEL OF TRANSMISSION FLUID

Since the transmission oil is used to transmit power and to cool and lubricate the transmission parts, it is important that the proper oil level be maintained at all times.

If the level is too low, the converter and clutches will not receive and adequate oil supply. This can result in poor performance or transmission failure.

If the level is too high, the oil will foam and aerate, causing transmission overheating and irregular shifting.

The dipstick is accessible after removing the centre floor panel in the operator's compartment.



Clean around the end of the fill pipe before removing the dipstick. Dirt must not be allowed to enter the oil system because it can cause valves to stick, cause undue wear of transmission parts or clog internal passages.

To check the oil level:

a Operate the machine until the temperature of the transmission oil has been brought up to 82-93°C. (180-200°F.)

NOTE: The oil must be within the above temperature range to ensure an accurate level check. The level rises as the temperature increases.

b Shift the transmission through all speed ranges to fill the clutch cavities and oil passages.

c Park the machine on level ground, shift the transmission to neutral, apply the parking brake and lower the dozer blade to the ground. Leave the engine running at idle speed.

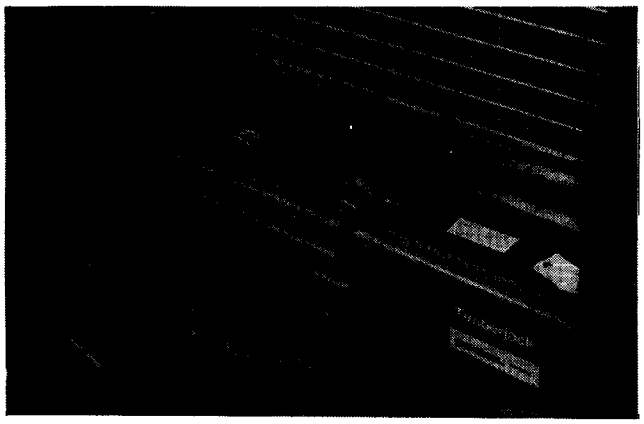
d Check the oil level after first wiping the dipstick clean. The safe operating level is between the "low" and "full" marks on the dipstick.

e If the level is not within the safe operating range, add or drain oil as necessary to bring the level to the "full" mark.

NOTE: It is essential that any oil added to the transmission is absolutely clean. Containers that have been used for antifreeze (ethylene glycol) must not be used for adding oil to the transmission.

6) DRAIN WATER AND SEDIMENT FROM FUEL STRAINER AND FILTER(S)

CAUTION: The fuel must not be allowed to drain into the frame or on to collected debris as this will create a fire hazard.



⚠ DANGER: Do not smoke or bring an open flame near the batteries when checking the electrolyte level - batteries give off flammable fumes that could cause an explosion.

⚠ - The battery electrolite is an acid solution - avoid contact with skin and eyes to prevent personal injury.
- NEVER ADD ACID TO A BATTERY, ONLY DISTILLED WATER.

Unscrew the plastic cell caps to check the electrolyte level - all the cells of each battery must be checked individually as they are not interconnected. When the level of the electrolyte is below the top of the lead plates and separators, add distilled water to each cell until the plates are covered.

NOTE: Only distilled water should be added to the batteries. If distilled water is not available, rain water or clean drinking water may be used. Unknown river water or muddy water must never be used in a battery.

Take care not to overfill the cells as this will cause a loss of acid concentration.

Never add water to a battery in freezing weather unless the engine is to be run long enough (2 or 3 hours) to assure adequate mixing of the water and electrolyte.

Normally, very little water will be required to maintain the electrolyte at its correct level. However, if the machine is operating in very high ambient temperatures, the water usage rate will be higher and it may become necessary to check the electrolyte level more often than every 50 hours.

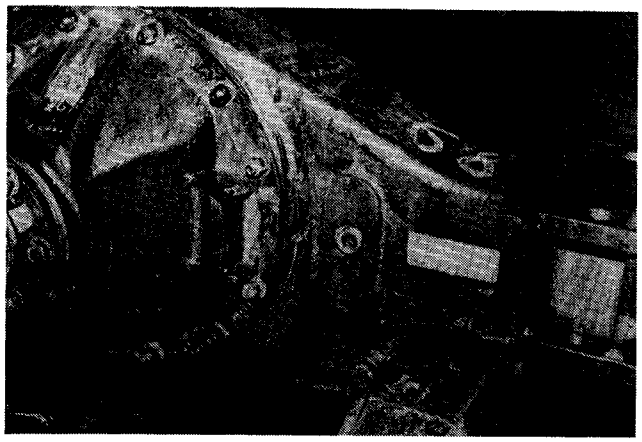
Whenever the electrolyte level is checked, clean off the top of the batteries and coat the battery terminals with petroleum jelly. Also, ensure that the vent holes in the cell caps are clear.

19) CHECK AXLE DIFFERENTIAL AND PLANETARY HUB OIL LEVELS

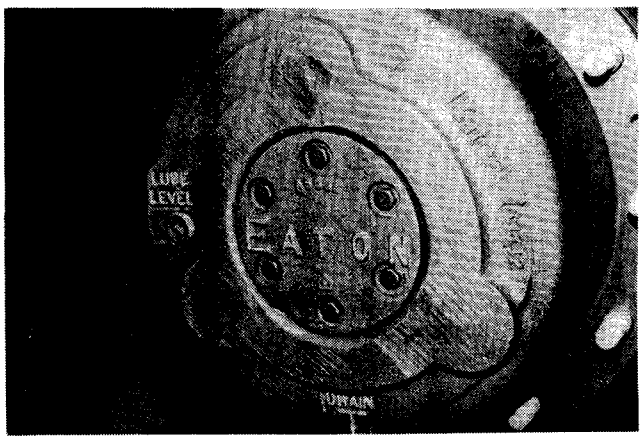
⚠ CAUTION: Before working under the skidder, park the machine on level ground, apply the parking brake, lower the dozer blade to the ground and stop the engine.

NOTE: If the machine has been moved, allow at least five minutes for the axle lubricant to settle before checking the levels. The skidder must be parked on level ground to obtain accurate readings.

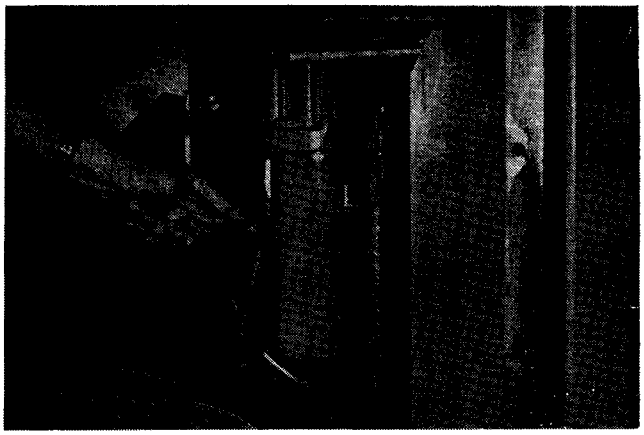
The oil fill/level plugs for the front and rear differentials are located on the axle housing, adjacent to the differential carriers. They are accessible from under the machine. After removing each fill plug, add the correct type of oil as necessary to bring the lubricant level up to the bottom of the fill plug opening. Reinstall the plugs and tighten securely.



The planetary hub oil fill/level plugs are located at the outer end of each wheel hub (four locations) and must be checked individually.



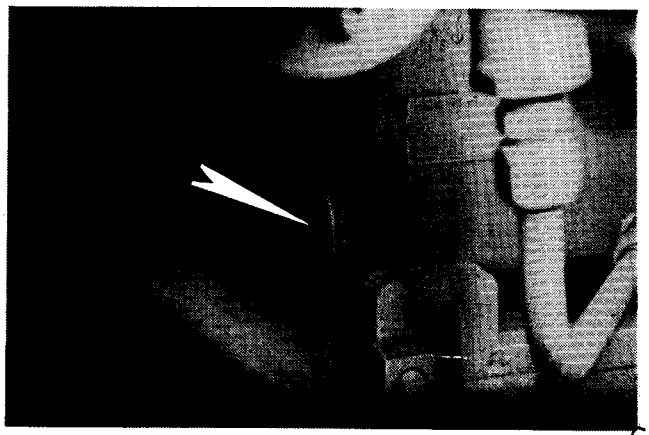
c While the transmission oil is draining, service the remote filter. This is located ahead of the control console and is accessible after removing the left hand console covers.



To change the element, unscrew the centre bolt retaining the housing to the filter head and remove the housing and element together. Discard the old element and thoroughly clean out the housing and filter head. Inspect the 'O' ring seal in the filter head for damage and replace it if necessary. Insert the new element in the housing and reinstall it on the filter head, making sure that the housing is properly centred inside the 'O' ring seal. Tighten the retaining bolt to 55-65 lb. ft. (74.6 - 88.0 Nm) torque.

d When the oil has completely drained from the transmission sump, reconnect the dipstick tube and tighten securely.

e Remove the strainer screen from the left rear corner of the transmission sump, clean thoroughly and reinstall, using a new gasket. Tighten the screen assembly to 10-15 lb. ft. (13.6 - 20.3 Nm) torque.



f Refill the transmission through the dipstick tube, using clean automatic transmission fluid (Type "A", Suffix "A" or Dexron), until the level reaches the "Full" mark on the dipstick.

520 skidder: For the transmission and winch refill procedure, refer to paragraph 38).

g Start the engine and run it at idle speed to prime the torque converter and remote filter circuits. Check around the filter, sump screen and dipstick tube connections for leaks.

h After a few minutes, recheck the oil level with the engine idling. Add oil, as necessary, to bring the level up to the "Low" mark on the dipstick.

i Close the belly pan door on the power frame, ensuring that the safety cable is properly attached.

j Make the final oil level check with the transmission at its normal operating temperature - see paragraph 5) for the check procedure.

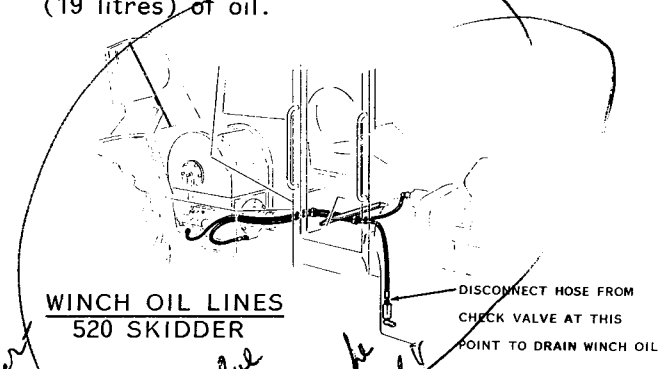
38) CHANGE WINCH OIL (520 SKIDDER WITH EATON T-50 WINCH)

Since the Eaton T-50 winch receives its oil supply from the transmission, the winch must also be drained whenever the transmission fluid is changed.

Drain and refill the winch as follows:

a Remove the air vent plug from the top of the cover plate on the left hand side of the winch.

b Disconnect the winch oil return hose from the top of the check valve located at the rear of the transmission sump. Place the end of the hose in a suitable container and allow sufficient time for the winch oil to drain. The winch holds approximately 5 U.S. gallons (19 litres) of oil.



WINCH OIL LINES
520 SKIDDER

BRAKE PEDAL "FREE TRAVEL" ADJUSTMENT

The brake pedal "free travel" is the distance the pedal moves before the push rod touches the piston in the master cylinder.

Sufficient clearance must be provided to ensure that the piston primary seal (inside the master cylinder) does not cover the back pressure relief hole when the pedal is released. In such a case, the master cylinder would be locked hydraulically and the brakes would remain partially engaged.

Check the adjustment as follows:

a) Using hand pressure only, move the brake pedal down until all free play has been eliminated - an increase in resistance against pedal movement will be felt at this point.

Measure the movement of the pedal (at the outer end of the pad) as it is again allowed to return to the released position.

NOTE: If the return spring is not strong enough to hold the pedal in the released position, then it must be replaced.

The correct amount of pedal movement or free travel is 5/8" ± 1/8" (15.9 mm ± 3.2 mm.).

b) If adjustment is necessary, loosen jam nut A and turn push rod B clockwise (looking towards master cylinder) to decrease the travel or counter-clockwise to increase the travel.

c) Tighten the jam nut securely and recheck the pedal free travel.