Timberjack 450 A Skidder (Cummins Powered)

Operator Manual
Timberjack 450 A
Skidder (Cummins Powered)
S/N: 355000-357999

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 1 - Safety Rules

⚠ General Safety Precautions

TIMBERJACK'S basic policy is to produce products that are safe and reliable. However, even when using well engineered equipment, there will always be an element of risk in heavy-duty equipment operation.

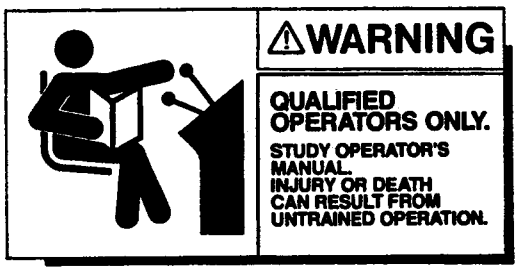
To minimize the risks and promote safety at all times, this section of the operator's manual details a number of safety rules which should always be followed and obeyed.

The safety rules detailed highlight both the general and the specific measures the operator should be familiar with and adhere to. The more specific measures are illustrated with pictograms. These pictograms may also be attached to the machine in locations most pertinent to their respective messages.

Study all the safety messages carefully, remember them and apply them on the job.

WHEN IT COMES TO SAFETY, NOTHING WILL EVER REPLACE A CAREFUL OPERATOR.

1. YOU MUST BE FULLY TRAINED to operate this piece of equipment.



2. Get to know the capabilities and limitations of the equipment and learn the most efficient operating techniques.

3. Use recommended protective clothing and safety devices such as gloves, safety boots, safety hat, goggles and ear protection when necessary.

4. Operate the machine only when physically fit and not under the influence of alcohol or drugs.

5. When mounting and dismounting the machine, use the handrails and steps provided. Do not climb onto the machine in any other fashion.

6. Keep floors, steps and running boards clean and free of oil, ice, mud and loose objects.

7. Carry no passengers. The vehicle is provided and approved with seating for the operator only.

8. Never remove any elements of the engine's exhaust system or any safety covers or devices from the operational machine.

9. Keep a comprehensive and complete First Aid Kit in an easily accessible place on the vehicle at all times.

10. Inspect the skidder daily for signs of damage, unusual wear, fluid leaks or faulty operation.

11. Comply with the instructions in this manual and your company's regulations for the operation of this vehicle.

2. Wait until the starter motor has cooled down. Push the stop handle in, depress the accelerator one third down, and press the starter button.

If the engine fails to start within 30 seconds, release the starter button and allow the starter motor to cool two to three minutes. Repeat steps 1 and 2.

NOTE:

No pre-heating is required when starting a warm engine; just press the starter button and depress the accelerator as described above.

3. When the engine is running, observe that the oil pressure indicated on the gauge (24) rises to the normal operating range. If the pressure remains below 10 psi (70 kPa) at idle or 30 psi (210 kPa) at rated speed, stop the engine and have the cause investigated and rectified.

4. When a cold engine is first started, leave the engine idling for a short period of time to allow the oil to warm up. A warm lubricating oil has a lower viscosity than cold oil and, therefore, flows easier through the engine filter with less chance of filter bypass. If unfiltered oil is circulated, potentially harmful particles dispersed in the oil may cause premature wear of bearing surfaces, etc.

IMPORTANT:

If the engine stalls, re-energize the starter motor ONLY AFTER the engine has completely stopped.

5. When the engine runs smoothly, the vehicle may be set in motion. After a few minutes of operation, the engine will reach normal operating temperature.

Cold-Weather Starting

Prior to starting and operating the machine in cold weather, ensure that the engine oil is of a suitable viscosity and that the diesel fuel used is of the proper grade. Refer to Lubrication Chart in Section 3 of this manual.

In very cold weather, an immersible type electrical coolant heater or other appropriate engine heater should be used to pre-heat the engine prior to start-up. Disconnect or switch off the heater when ready to start.

The procedure for starting the engine in cold weather is essentially the same as the normal starting procedure; however, below 0 deg.C (32 deg.F) the initial cranking time of the starter motor should be increased in order to pre-heat the cylinders sufficiently for combustion.

NOTE:

Starting the engine in an extremely cold environment requires that the batteries are fully charged. To ensure this, remove and store the batteries in a warm place when the machine is parked for prolonged periods of time.

Always ensure that the terminals and cable clamps are clean and have proper contact when the batteries are reinstalled.

Battery heater blankets or heater plates may also be used to maintain the charge of the batteries at a satisfactory level.

Engine Idling

Avoid unnecessary engine idling. During long idling periods, the engine coolant temperature will fall below the normal operating range. This can cause incomplete combustion and result in sticking piston rings and carbonized valves as well as oil dilution from unburned fuel "washed" into the crank case thus resulting in rapid wear of the engine components.

When prolonged engine idling is unavoidable, maintain the engine speed above 1000 rpm.

Stopping the Engine

IMPORTANT:

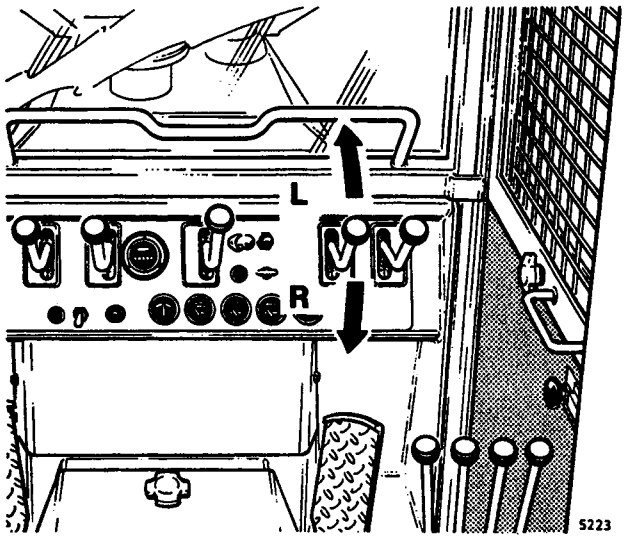
Before shutting the engine down, stop the vehicle and let the engine idle two to three minutes to allow the temperature of the different engine components to equalize. The short idling period is

Operating the Dozer Blade

Use the dozer blade for stacking of logs, clearing of debris and other light duty jobs, but do not undertake bulldozing jobs such as removal of large rocks and tree stumps.

1. To operate the dozer blade move the control lever as illustrated. Move the lever toward "R" to raise the dozer blade, and toward "L" to lower the blade.

2. During travel, when its use is not required, raise the dozer blade to its highest position to keep it clear of tree stumps and other obstacles.



OPERATING THE DOZER BLADE
FIGURE 2-20

Maintenance Schedule

EVERY 100 HOURS

31. Check battery electrolyte level.
32. Change engine oil and filter.
33. Check (clean) cab air intake filter.

EVERY 250 HOURS

34. Change fuel filter and strainer.
35. Drain water and sediments from fuel tank.
36. Lubricate throttle and stop control.
37. Lubricate brake linkages.
38. Check (clean) transmission breather.
39. Change hydraulic fluid filter. *

EVERY 500 HOURS

40. Change hydraulic fluid and clean tank.
41. Check engine fan belts.
42. Check fan belt tensioner and fan hub.
43. Change air filter elements.
44. Check condition of radiator hoses.
45. Lubricate hydraulic control valve linkages.
46. Lubricate transmission shift linkages.
47. Change transmission fluid filter.

EVERY 1000 HOURS

48. Change transmission fluid and clean sump screen.
49. Change planetary hub oil. ** ***
50. Change axle differential oil. ** ***
51. Change reduction box oil. ***
52. Change winch oil.
53. Clean engine cooling system.
54. Check valve lash clearance. ****
55. Inspect turbo charger. ****

* The initial hydraulic filter change should be performed after 50 hours of operation.

** The initital oil change should be performed after 50 hours of operation.

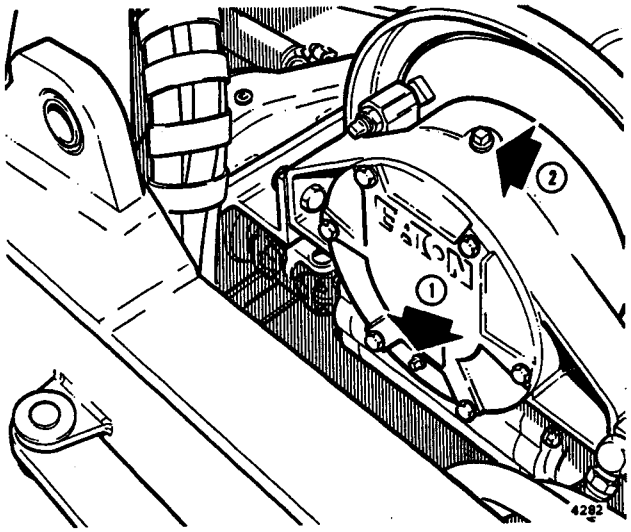
*** Lubrication oil should be changed every 1000 hours or once a year, whichever occurs first.

****These service procedures should only be performed by personnel qualified to work on CUMMINS engines.

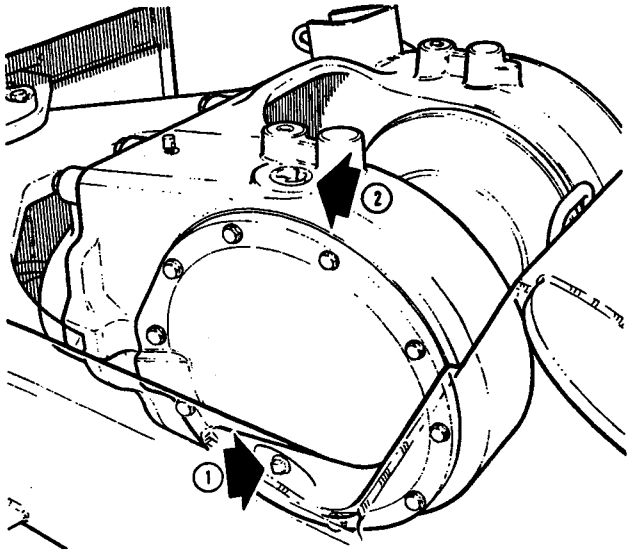
The skidder must be parked on level ground when the winch oil level is checked.

With the check plug removed, the oil level should be even with the bottom of the check plug hole. If required, replenish the oil

through the filler opening, item 2, at the top of the winch. Use oil as specified in table 3-1. Ensure that the check and fill plugs are securely installed when the check and replenishment procedures are completed.



T20 WINCH OIL LEVEL CHECK
FIGURE 3-24



T30 WINCH OIL LEVEL CHECK
FIGURE 3-25

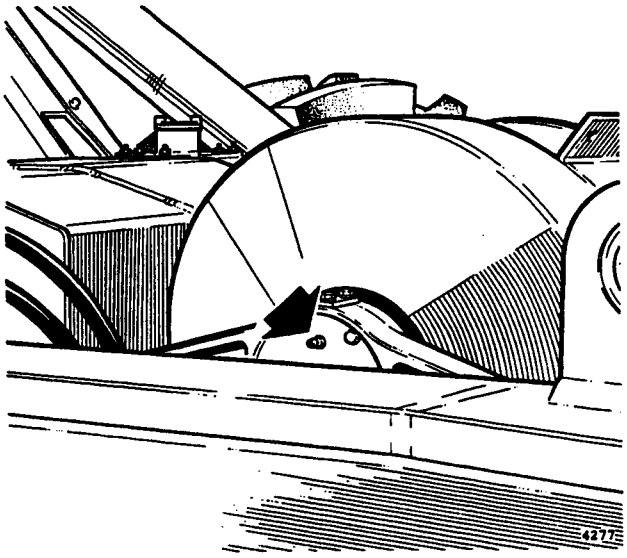
4367

ITEM 26.

Lubricate the T20 winch shaft bearing. Lubricate the grease nipple shown in figure 3-26 using a grease gun and grease as specified in table 3-1.

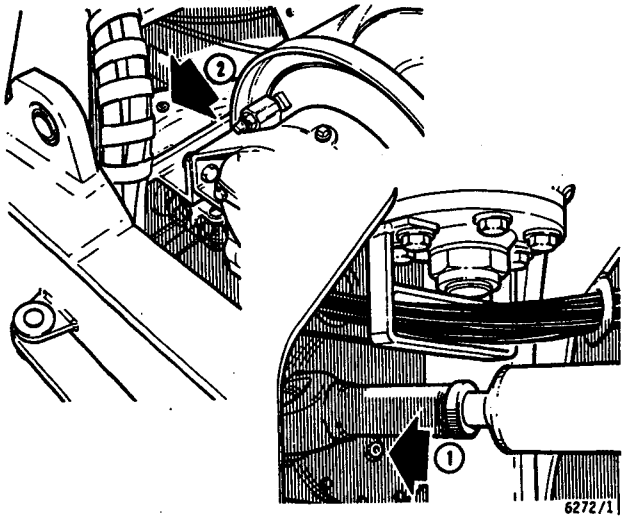
NOTE:

Prevent overgreasing. One or two pump strokes is adequate.



ITEM 27.

On machines with T20 winch, check the reduction box oil, ref. figure 3-27.



REDUCTION BOX OIL CHECK
FIGURE 3-27

LOCATION	RECOMMENDED LUBRICANT	CAPACITY
Engine Crankcase	Lubrication oil meeting specifications outlined in table 3-2.	12.5 Imp. Qts. 15 US Qts. 14.2 litres (Incl. Filter)
Transmission	Transmission fluid meeting specifications outlined in table 3-3.	Transmission less external circuits: 8 Imp. Gal. 9.6 US Gal. 36.4 litres
Winch	Use EP gear oil meeting MIL-L-2105C specifications (API GL-5 service designation) Ref. table 3-5 for viscosity.	T20 3.2 Imp. Qts. 3.9 US Qts. 3.6 litres T30 12 Imp. Qts. 14.4 US Qts. 13.6 litres
Reduction Box	Use EP gear oil meeting MIL-L-2105C specifications (API GL-5 service designation) Ref. table 3-5 for viscosity.	1 Imp. Qts. 1.2 US Qts. 1.1 liter
Axle Differentials	Use only EP gear oils meeting MIL-L-2105C specifications (API GL-5 service designation) Ref. table 3-4 for viscosity.	17.5 Imp. Qts. 21 US Qts. 20 litres
Planetary Hubs	EP gear oil meeting MIL-L-2105C specifications (API GL-5 service designation) Ref. table 3-4 for viscosity.	4.7 Imp. Qts. 5.7 US Qts. 5.3 litres
Engine Cooling	A permanent antifreeze solution System (ethylene glycol base) is recommended as a year round fill. Where freeze protection is unnecessary, plain water with a good quality corrosion inhibitor may be used.	11.4 Imp. Gal. 13.7 US Gal. 52 litres

FLUID AND LUBRICANT SPECIFICATIONS
TABLE 3-1

Machine Specifications - Model 450A Grapple Skidder

ENGINE:	
Make and model:	Cummins 6BTA5-9
Flywheel Hp:	155 Hp (115 kW) at 2100 rpm.
POWER TRAIN:	
Torque Converter:	Single Stage
Transmission:	Powershift. Full reversing
No. of Speeds:	3 forward & 3 reverse
HYDRAULIC SYSTEM:	
Pump Capacity at Governed rpm and 2500 psi:	27 US.gpm.(102 l/min.).
System Pressure:	2500 psi. (17225 kPa)
Capacity:	19.8 US Gal. (75 litres)
ELECTRICAL SYSTEM:	
Negative Ground:	
Alternator:	12 volt 62 amp.
Batteries:	2 reqd. 12 Volt, 90 amp./hour each
WINCH:	
Make:	T20
Rated line pull:	20,000 lbs. (89 kN)
Line Speed:	0 - 376 fpm (0 - 115 m/min)
Drum Capacity:	1/2" - 378 ft. (12 mm - 115 m) 5/8" - 253 ft. (16 mm - 77 m)
Alternative Make:	T30
Rated line pull:	30,000 lbs. (133 kN)
Line Speed:	0 - 406 fpm (0 - 120 m/min)
Drum Capacity:	1/2" - 396 ft. (12 mm - 121 m) 5/8" - 213 ft. (16 mm - 65 m)
BRAKES:	
Service Brake:	Hydraulically actuated transmision mounted brake.
Secondary Brake:	Hydraulically actuated two caliper driveline disc brake.
Parking Brake:	Mechanically applied service brake.
TIRES:	
Standard Tires:	23.1 x 26
Optional Tires:	24.5 x 32; 28.1 x 26; 30.5 x 32
GRAPPLE:	
Single Arch:	210 deg. rotation
Dual Arch:	360 deg. continous rotation
WEIGHT:	
Total weight	
Single Arch Skidder:	24,490 lb. (11,109 kg)
Dual Arch Skidder:	24,450 lb. (11,091 kg)

WEIGHTS OF COMMERCIALLY IMPORTANT WOODS

Species	lb/cu.ft (Green)	(kg/cu.m) (Green)
Red Alder	46	(737)
White Ash	48	(769)
Aspen	43	(689)
Baldcypress	51	(817)
Basswood	42	(673)
Beech	54	(865)
Paper Birch	50	(801)
Yellow Birch	58	(929)
Alaska Cedar	36	(577)
Incense Cedar	45	(721)
White Northern Cedar	28	(449)
Port-Orford Cedar	56	(897)
Western Red Cedar	27	(433)
Black Cherry	45	(721)
Eastern Cottonwood	49	(785)
Douglas Fir (Coast)	38	(609)
Douglas Fir (Inland) (Empire)	36	(577)
American Elm	54	(865)
Alpine Fir	28	(449)
Balsam Fir	45	(721)
Nobel Fir	30	(481)
Red Fir	48	(769)
Silver Fir	36	(577)
White Fir	47	(753)
Black Gum	45	(721)
Blue Gum	70	(1121)
Red Gum	50	(801)
Tupelo Gum	56	(897)
Eastern Hemlock	50	(801)
Western Hemlock	41	(657)
Pecan Hickory	62	(993)
True Hickory	63	(1009)
Western Larch	48	(769)
Black Locust	58	(929)
Cucumber Magnolia	49	(785)

Species	lb/cu.ft (Green)	(kg/cu.m) (Green)
Big Leaf Maple	47	(753)
Black Maple	54	(865)
Red Maple	50	(801)
Silver Maple	45	(721)
Sugar Maple	56	(897)
Black Oak	63	(1009)
Chestnut Oak	61	(977)
Red Oak	63	(1009)
Red Swamp Oak	67	(1073)
Swamp Chestnut Oak	65	(1041)
White Oak	62	(993)
White Swamp Oak	69	(1105)
Jack Pine	50	(801)
Loblolly Pine	62	(993)
Lodgepole Pine	39	(625)
Long Leaf Pine	62	(993)
Norway Red Pine	42	(673)
Short Leaf Pine	62	(993)
Slash Pine	62	(993)
Sugar Pine	51	(817)
Ponderosa Pine (Western Yellow)	45	(721)
White Western Pine	35	(561)
White Eastern Pine	36	(577)
Yellow Poplar	38	(609)
Redwood	50	(801)
Black Spruce	32	(513)
Engleman Spruce	39	(625)
Red Spruce	34	(545)
Sitka Spruce	33	(529)
White Spruce	34	(545)
Sweetgum	50	(801)
Sycamore	52	(833)
Tamarack	47	(753)
Black Walnut	58	(929)
Black Willow	50	(801)