



Caterpillar

Operator's Manual

641B, 651B

S/n 65K1132, 42M250,

43M352, 45M608,

67K761 & Up

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Operator's Manual

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 Every 500 Service Hours or 3 Months 34

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 Every 2000 Service Hours or 1 Year 45

 When Required 54

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Maintenance Recommendations

COOLING

CAUTION

Never add coolant to an overheated engine; allow engine to cool first.

Measure specific gravity of antifreeze solution frequently in cold weather to ensure adequate protection.

When permanent antifreeze and water solutions are used in the cooling system, the solution should be drained and replaced EVERY 2000 SERVICE HOURS OR 1 YEAR.

When additions of inhibitor are made EVERY 500 SERVICE HOURS OR 3 MONTHS, cooling system drain and refill period can be extended to 4000 service hours or 2 years.

The cooling system should contain a 3% concentration of inhibitor at all times, regardless of concentration of antifreeze.

If machine is to be shipped to, or stored in, an area with below freezing temperatures, the cooling system must either be protected to the lowest expected ambient temperature or drained completely.

Do not use Caterpillar Cooling System Inhibitor with Dowtherm 209 coolant.

NOTE

The engine cooling system is protected to -20°F (-29°C), with permanent-type antifreeze, when shipped from the factory.

Pure undiluted antifreeze will freeze at -10°F (-23°C).

Use clean water that is low in scale forming minerals — not softened water.

When draining and refilling the cooling system, always measure the coolant level when the engine reaches normal operating temperature.

Filling cooling system at over 5 gpm (19 liters/min) rate can cause air pockets in the cooling system.

When measuring the coolant level, inspect the filler cap gasket. Replace gasket if it is damaged.

Premix antifreeze solution to provide protection to the lowest expected ambient temperature.

Operate with a thermostat in the cooling system all year-round. Cooling system problems can arise without a thermostat.

FUEL

CAUTION

Fill tank at the end of each day of operation to drive out moisture laden air and to prevent condensation.

Measure fuel level with dipstick in filler opening.

Water and sediment should be drained from the tank at the start of each shift, or after the fuel tank has been filled and allowed to stand for 5 to 10 minutes.

Drain moisture and sediment from fuel tank as often as required by prevailing conditions.

Drain water and sediment from the main fuel storage tank weekly, and before the tank is refilled, to help prevent water and sediment from being pumped from the storage tank into the machine fuel tank.

After changing fuel filters, always bleed the fuel system.

ENGINE AIR CLEANER

Inspect air cleaner precleaner daily for accumulation of dirt and debris.

Service air cleaner when the red band is visible in the air cleaner indicator.

ELECTRICAL

CAUTION

When using external electrical source to start machines with direct electrical starting, turn disconnect switch off and remove key before attaching cable to emergency starting receptacle.

When using jumper cables, be sure to connect in parallel: POSITIVE (+) to POSITIVE (+) and NEGATIVE (−) to NEGATIVE (−).

HYDRAULIC

CAUTION

Make-up hydraulic fluid must mix with fluid in the tank. Use only petroleum products unless machine is equipped for use with special products.

Water or air in the hydraulic system will cause pump failure.

If hydraulic oil is cloudy, water or air is entering the system. Purge and refill the system and tighten hydraulic suction line clamps and flanges.

Contact your Caterpillar dealer for correct purging instructions.

SCHEDULED OIL SAMPLING

Use scheduled oil sampling to monitor machine condition and maintenance requirements.

Each oil sample should be taken when the oil is hot and well mixed to ensure that the sample is representative of the oil in that compartment.

Consult your Caterpillar Dealer for complete information and assistance in establishing a scheduled oil sampling program for your equipment.

GENERAL

Accumulated grease and oil on a machine is a fire hazard. Remove this debris at least every 1000 hours or each time a significant amount of oil is spilled on a machine.

Wipe all fittings, caps and plugs before servicing.

Drain moisture and sediment from air reservoirs at the beginning of each day of operation.

Refill Capacities (Approximate)

These capacities are approximate and should not be used for exacting purposes such as billing. Always check the compartment level as described in this guide.

COMPARTMENT OR SYSTEM	U.S. MEASURE	METRIC MEASURE	IMPERIAL MEASURE
Engine Crankcase	16 gal.	60 liters	13 gal.
Hydraulic Tank	42 gal.	159 liters	34 gal.
Transmission System	36 gal.	136 liters	30 gal.
Differential and Final Drives	44 gal.	166 liters	37 gal.
Cooling System	41 gal.	155 liters	34 gal.
Fuel Tank	265 gal.	1003 liters	221 gal.
Steering Gear Sector Housing	3.5 qt.	3.3 liters	3.1 qt.
Wheel Coolant (each wheel)	27 gal.	102 liters	22 gal.

Walk-Around Inspection

For maintenance and operator personnel safety, and maximum service life of the tractor-scraper, make a thorough walk-around inspection when doing lubrication and maintenance work. Check under and around for such items as loose bolts, trash build-up, oil or coolant leaks, condition and inflation of tires and condition of cutting edge and cutting edge teeth.

ENGINE COMPARTMENT
Check for oil and fuel leaks.

OPERATOR'S COMPARTMENT
Check for cleanliness, loose items and broken gauges.

TRANSMISSION
Check on ground for leaks.

CUTTING EDGES AND ROUTER BITS
Check for wear or damage.

EJECTOR
Check for damage or distortion.

COOLING SYSTEM
Check for leaks, worn hoses and trash build-up.

DIFFERENTIAL AND FINAL DRIVES
Check on ground for leaks.

HYDRAULIC SYSTEM
Check for leaks, worn or damaged lines.

BOWL
Check for damage or distortion.

TIRES
Check for proper inflation, cuts or gouges.

Fuel and Lubricant Specifications

NOTE

The abbreviations listed below follow S.A.E. J754 nomenclature. The classifications follow S.A.E. J183 classifications. The MIL specifications are U.S.A. Military Specifications. These definitions will be of assistance in purchasing. The specific classifications for this machine are found on the "RECOMMENDED LUBRICANTS" chart.

Diesel Fuel

Distillate fuels that conform to ASTM No. 1 or No. 2 Fuel Oil or No. 1D or No. 2D Diesel Fuel Oil. Specifications with a minimum cetane of 35 are preferred fuels and provide proven maximum engine service life.

Some crude oils and blended fuels are regarded as permissible and can be used with extra fuel filters and adjusted oil change periods. However, this will result in less than maximum engine service life.

Contact your Caterpillar dealer regarding the Caterpillar SPECIAL INSTRUCTION titled "FUELS FOR CATERPILLAR DIESEL ENGINES", FORM SEHS7067, which specifies requirements for other preferred and permissible fuels.

Transmission Oil (CD/TO-2)

Use Service Classification **CD** oils that have satisfactory friction retention performance in the Caterpillar Oil Test No. TO-2: Referred to as Service Class (CD/TO-2) Oil.

Engine Oils (CD)

Use oils that meet Engine Service Classification **CD** (MIL-L-2104C) or **CD/TO-2**.

Hydraulic Oil (HYDO)

Use Engine Service Classification **CC** (MIL-L-2104B), (MIL-L-46152), **CD**, or industrial-type hydraulic oils which are certified by the supplier as having antiwear, antifoam, antirust and anti-oxidation additive properties for heavy duty use.

Multipurpose-type Gear Lubricant (MPL)

Use Gear Lubricant Classification **GL-5** (MIL-L-2105B).

Lubricating Grease (MPG)

Use Multipurpose-type Grease (**MPG**). Multipurpose-type grease which contains 3% to 5% molybdenum disulfide is also acceptable, and preferred. NGLI No. 2 Grade is suitable for most temperatures. Use NLGI No. 1 or No. 0 Grade for extremely low temperatures.

Wheel Coolant (WC)

Use a solution of 20% antifreeze (Ethylene Glycol) and 80% water.

RECOMMENDED LUBRICANTS AT STARTING TEMPERATURES FROM -10°F TO $+120^{\circ}\text{F}$ (-23°C TO $+48^{\circ}\text{C}$) ⁽¹⁾			
COMPARTMENT OR SYSTEM	LUBRICANT	STARTING TEMPERATURE	
		ABOVE 32°F (0°C)	BELOW 32°F (0°C)
Transmission System	CD/TO-2	SAE 30	SAE 10W
Engine Crankcase	CD	SAE 30 ⁽²⁾	SAE 10W ⁽³⁾
Steering Gear Sector Housing		SAE 30	SAE 10W
Hydraulic System	HYDO	SAE 10W	SAE 10W
Differential and Final Drives	MPL	SAE 90	SAE 80
Scraper Wheel Bearings		SAE 90	SAE 80

⁽¹⁾Below -10°F (-23°C) consult your Caterpillar dealer for Cold Weather Recommendations.

⁽²⁾SAE 40 is preferred for temperatures above 90°F (32°C). SAE 20W-40 is permissible for starting temperatures over $+15^{\circ}\text{F}$ (-10°C).

⁽³⁾SAE 10W oil may be used in the diesel engine even if daytime ambient temperature rises to 70°F (21°C). Below -10°F (-23°C) it may be necessary to warm the engine oil so the engine can be cranked and the oil will circulate freely.