



Caterpillar

Operator's Manual

12 Motor Grader

S/n 9K1 to 9K9999

& 7T1 to 7T3099

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CT-O-GRDR#129K

Operator's Manual

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the oils with higher numbers. The S.A.E. number refers only to the viscosity of the oil, and has reference to no other characteristic or property.

The following topic recommends the types, viscosities and grades of lubricants best suited for use in your motor grader for various operating temperatures.

LUBRICANTS

Crankcase Lubricating Oil: (Abbreviated CO)

At temperatures above freezing, S.A.E. No. 30 oil should be used in all compartments.

At temperatures below freezing S.A.E. No. 10W oil should be used to provide better lubrication at low temperature and also to make cranking easier. For a number of years S.A.E. No. 10 grade crankcase lubricating oil as classified by the Society of Automotive Engineers was recommended. A change in S.A.E. specifications for crankcase lubricating oil eliminates the S.A.E. No. 10 grade which is replaced by S.A.E. No. 10W grade.

S.A.E. No. 10W oil should be fluid enough for easy cranking at temperatures down to at least -10°F . In lower temperatures it may be necessary to dilute S.A.E. No. 10W oil with kerosene (except in air cleaners) so it will be fluid enough to insure free circulation. Evaporation in the engine crankcase under steady operation may make it necessary to again add kerosene to maintain proper fluidity. This should be done before stopping, then operate the engine for a few minutes to mix the kerosene and oil.

For an approximate check to determine if the oil will flow, remove the oil level gauge and if the oil on it will flow off, the oil is fluid enough to properly circulate in the engine.

Two types of crankcase lubricating oils, U. S. Army Specification MIL-O-2104 or Superior Lubricants (Series 2), can be used in the Diesel engine. These are both detergent type oils and the type to be used is governed by the sulphur content of the fuel being burned as well as the oil change periods. For example, MIL-O-2104 oils may be used with fuels having a sulphur content not to exceed 0.4% while following regular oil drain periods. When fuels are above 0.4% in sulphur content, only Superior Lubricants (Series 2) are recommended. It is permissible, however, to use Superior Lubricants (Series 2) at all times. Oil change periods may then be extended (See Diesel Engine Crankcase Lubricating Oil Change Period Chart) while operating on fuels not to exceed 1.0% in sulphur content.

NOTE

Detergent type oils that are recommended for use in "Caterpillar" Diesel Engines will, within a short period of operation, become much darker in color. This should not be any cause for concern. The darkening of the oil is due to minute particles of carbon, resulting from the combustion process, being held in suspension in the oil. This ability to hold carbon particles in suspension is one of the primary functions of a detergent

type lubricant. Otherwise, these particles would settle out, eventually leading to objectionable deposits in the engine. When the oil darkens therefore, it is an indication that it is keeping the engine clean and insuring satisfactory lubrication performance.

(CO) U. S. Army Specification MIL-O-2104 Oils: The crankcase lubricating oils which will provide satisfactory service in "Caterpillar" Diesel Engines, when operating on fuels of sulphur content not in excess of 0.4%, are those which conform to U. S. Army Specification MIL-O-2104. These oils have been developed specifically for use in Diesel engines and other heavy-duty service. All of these oils are marketed domestically and some are marketed in export territories. Consult your "Caterpillar" dealer for brand names of products qualified by the Ordnance Department as conforming to this specification.

For recommended oil change periods, see the following chart.

DIESEL ENGINE CRANKCASE LUBRICATING OIL CHANGE PERIOD CHART

FUEL SULPHUR CONTENT	* ENGINES WITH FULL-FLOW FILTERS	** ENGINES WITH BY-PASS FILTERS
0.4% OR LESS MIL-O-2104 LUBRICANTS	240	240
DOES NOT EXCEED 1.0% †† SUPERIOR LUBRICANTS (SERIES 2)	480	480

* Change full-flow filters every 240 hours regardless of dust conditions.

** Change by-pass filters every 240 hours except under severe dusty operating conditions when changes should be made at 120-hour intervals.

†† When the sulphur content of the fuel is greater than 1.0%, it may be necessary to reduce oil change periods. When the sulphur content of the fuel is 1.5% or higher, reduce oil change periods one half.

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(CO) Superior Lubricants (Series 2): Lubricating oils known as Superior Lubricants (Series 2) for "Caterpillar" Diesel Engines should be used in the crankcase for most satisfactory service when operating on fuels of sulphur content higher than 0.4 per cent. See the topic, FUELS and consult your "Caterpillar" dealer for brand names of Superior Lubricants (Series 2) lubricating oils.

If Superior Lubricants (Series 2) are used, the oil change period can be extended from the period recommended for the MIL-O-2104 oils. When the sulphur content of the fuel is greater than 1.0%, it may be necessary to reduce oil change periods. When the sulphur content of the fuel is 1.5% or higher, reduce oil change periods one half.

For recommended oil change period information, see the DIESEL ENGINE CRANKCASE LUBRICATING OIL CHANGE PERIOD CHART.

(CO) Straight Mineral, U. S. Army Specification MIL-O-2104 Oils Or Superior Lubricants (Series 2): In compartments other than the Die-

CO CRANKCASE LUBRICATING OIL

CLICK ANYWHERE FOR MORE DETAILS



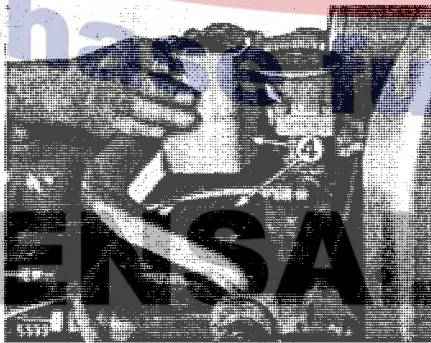
STARTING ENGINE CRANKCASE

- 29** Check oil level at full mark (1) on gauge every 10 hours. Every 120 to 240 hours, drain (2) and wash the crankcase. See topic, "Crankcase Lubricating Oil System".



STARTING ENGINE CRANKCASE

- 29** Refill the crankcase at (3) every 120 to 240 hours after it is drained and washed. ®



STARTING ENGINE CRANKCASE BREATHER

- 29** On machines before 9K2123, remove breather (4) and wash it. Pour ¼ pint (0.12 liter) oil through breather and replace it.



FLYWHEEL CLUTCH RELEASE BEARING

- 30** Fill oil cup every 10 hours to lubricate bearing.

CLICK ANYWHERE FOR MORE DETAILS