



Allis Chalmers

Operator's Manual

HD 6

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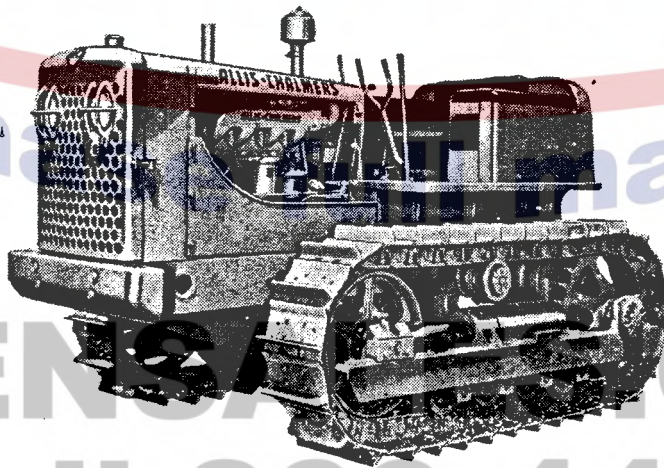
Operator's Manual

AC-O-HD6

FORM TM-123

**OPERATING
INSTRUCTIONS**

MODEL HD-6



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ALLIS-CHALMERS MFG. CO.

TRACTOR DIVISION

MILWAUKEE, WISCONSIN, U.S.A.

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GENERAL DESCRIPTION

The Model "HD 6B" Tractor is a 12,400 pound track-type tractor powered with a 4 cylinder, 4 cycle "DIESEL" engine.

Power from the engine is transmitted through a single plate, over-center type engine clutch to the transmission through a universal joint drive shaft assembly. From the transmission the power is transmitted to the bevel gear and from the bevel gear through the steering clutches to the final drives and the track drive sprockets.

The transmission provides 5 forward speeds ranging from 1.5 M.P.H. in low gear to 5.5 M.P.H. in high gear and a reverse speed of 2.0 M.P.H., under full governed engine speed of 1800 R.P.M.

Mechanical self-energizing brakes, wide operator's seat, and unobstructed view of the front of both tracks assure easy, positive control of the tractor at all times.

The standard model tractor is equipped with 24-volt electric starting and light equipment, suction type cooling fan, muffler, full width crankcase guard, bumper, hinged radiator guard, and 13" grouser track shoes. The truck wheels, track idlers, and track support rollers have positive type seals.

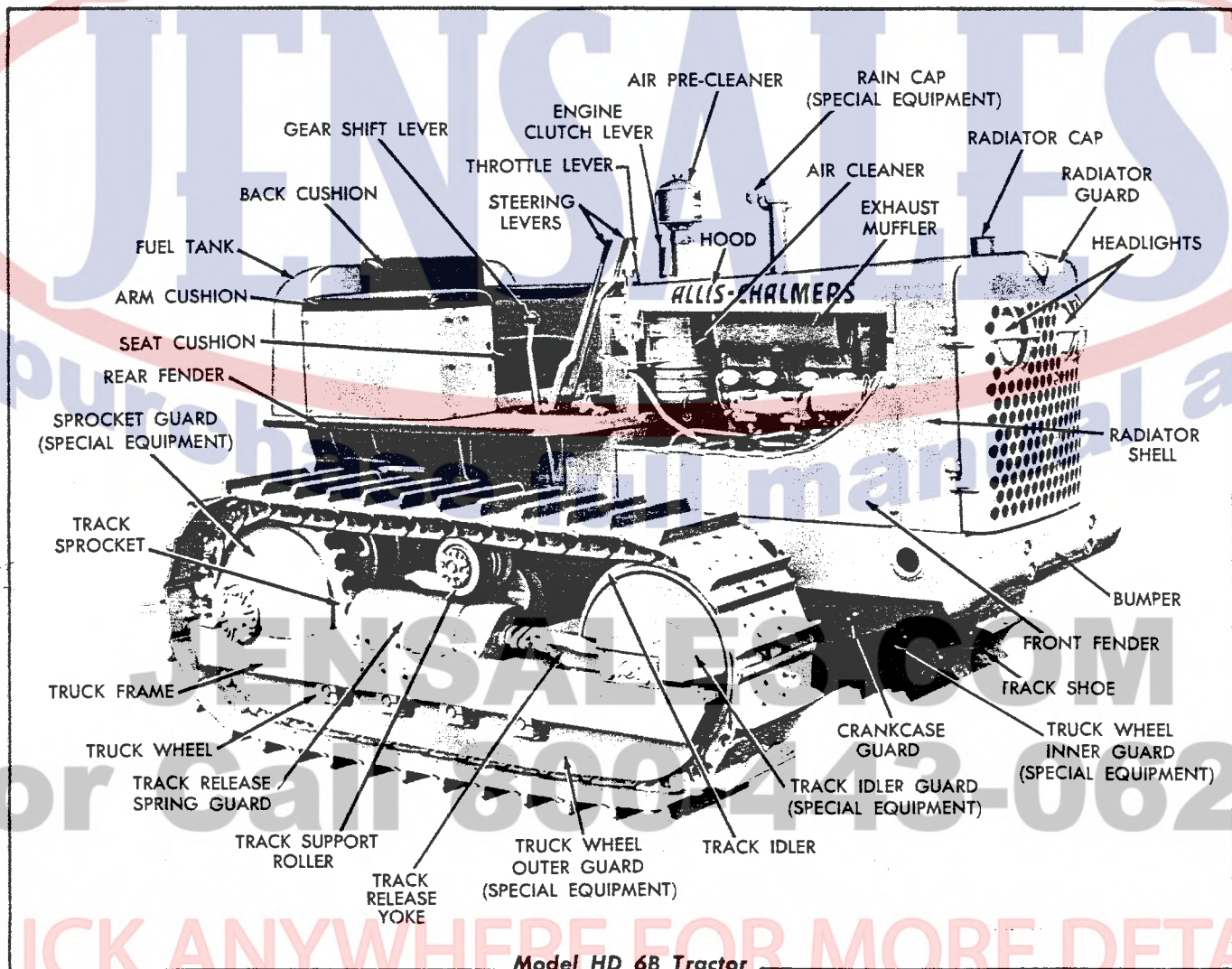
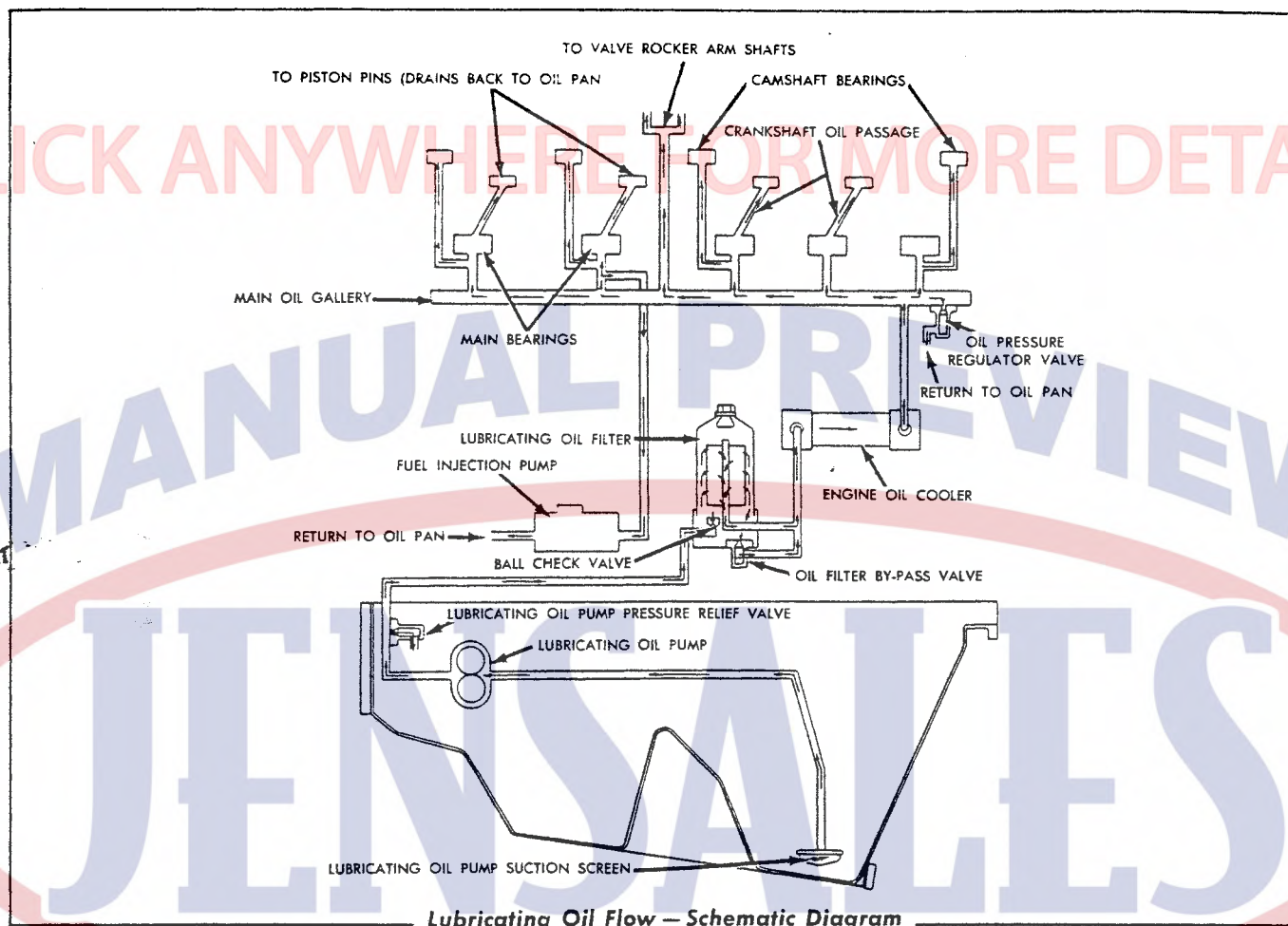


FIG. 1

ENGINE LUBRICATION SYSTEM



Lubricating Oil Flow — Schematic Diagram

FIG. 28

A. Description of System

The engine is pressure lubricated throughout by a gear type lubricating oil pump, driven by the oil pump driving gear in mesh with the crankshaft gear.

The lubricating oil pump draws the oil from the crankcase through the oil pump suction screen which is submerged in the lubricating oil. The pump then circulates the oil under pressure through the oil filter, engine oil cooler, and then to the main oil gallery of the engine which extends lengthwise through the cylinder block and parallel to the camshaft. Oil passages direct the oil from the main oil gallery to the camshaft and main bearings and through the rifle drilled connecting rods to the piston pins.

Stabilized oil pressure is maintained within the engine by an oil pressure regulator valve, located in the main oil gallery at the right rear corner of

the cylinder block. Excess oil by-passed through this valve returns to the crankcase oil pan.

A horizontal oil passage through the center of the cylinder block extends from the main oil gallery to a cavity in the left side of the cylinder block. From this cavity there are two openings which extend to the rocker arm assemblies.

An external oil line, extending from the main oil gallery of the cylinder block to the fuel injection pump housing, is provided for lubrication of the fuel injection pump and governor. The lubricating oil delivered to the fuel injection pump is returned to the engine crankcase through an oil return hole in the pump mounting flange.

The oil filter base contains two valves, an oil filter by-pass valve and a ball check valve. Oil delivered under pressure by the lubricating oil pump holds the ball check valve in the open position, allowing the oil to circulate; whenever the engine is

stopped, the ball check valve closes, preventing the oil in the filter from draining back to the crankcase. The oil filter by-pass valve, is provided to by-pass oil directly from the oil pump to the lubrication system in the engine if the oil filter becomes clogged, or if in cold weather the oil is too thick to circulate freely through the oil filter.

B. Lubricating Oil Filter

The lubricating oil filter, located on the right side of the engine, is of the full-flow type and contains a replaceable type element. A new element must be installed each time the oil in the crankcase is changed, or more often if conditions warrant.



FIG. 29

C. To Replace Filter Element

1. Thoroughly clean the filter shell and the surrounding area.
2. Loosen the shell center-tube and remove the center-tube, filter shell, and the filter element as a unit from the oil filter base.
3. Remove the filter element from the filter shell and discard the element.
4. Thoroughly wash and dry the interior of the filter shell.
5. Install a new shell gasket in position in the oil filter base. Install a new element in position in the filter shell.

6. Install the filter shell assembly in position on the oil filter base, making certain the shell gasket is properly installed in the base, then tighten the shell center-tube to a torque of 80 to 100 lbs. ft.
7. Start the engine and observe for oil leakage between the filter shell and the oil filter base. Stop the engine, check the oil level of the engine crankcase, and add oil as necessary to raise the oil level to the "FULL" mark on the oil level gage rod.

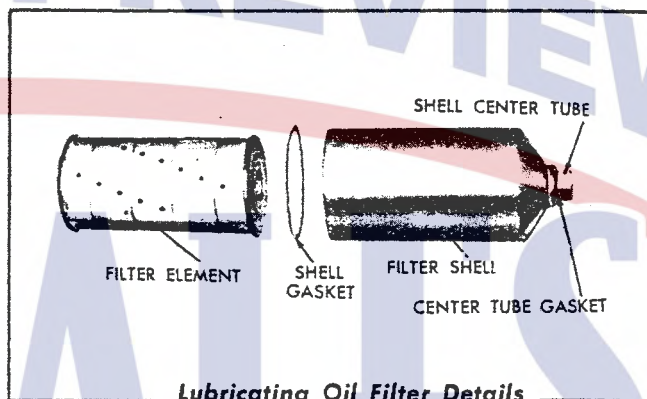


FIG. 30

D. Heavy-Duty Lubricating Oil Filter (Special Equipment)

On tractors equipped with a Heavy-Duty oil filter, the filter element must be changed at each engine oil change.

E. To Replace Heavy-Duty Lubricating Oil Filter Element

1. Thoroughly clean the filter cover and the surrounding area. Remove the drain plug from the bottom of the filter housing and allow the oil to drain. Remove the cover clamp ring and lift the cover from the filter housing.
2. Unscrew the T-handle hold-down assembly from the center-tube and remove the T-handle hold-down assembly. Remove the filter element from the housing by lifting with the pull-out bail. Discard the filter element and the cover gasket.
3. Clean the interior of the filter housing thoroughly and install the drain plug.
4. To assure leak-proof sealing, examine the

COLD WEATHER ENGINE PRIMER

A. PURPOSE

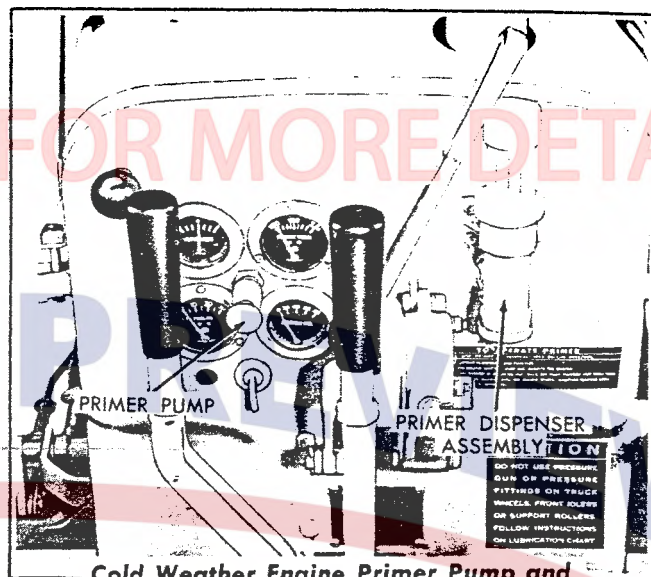
In warm weather, sufficient heat is generated by compression of the air within the cylinders to ignite the fuel and start the engine within a very short cranking period. However, in cold weather the "drag" caused by cold oil between the pistons and cylinder walls and in the bearings, reduces the cranking speed of the engine. A large part of the heat generated by compression of the air is absorbed by the pistons and cylinder walls. This heat loss and the reduced cranking speed may reduce the temperature of the air in the cylinders to a point too low to ignite the fuel. A starting aid must then be used in starting the engine.

B. DESCRIPTION

The cold weather engine primer consists of a cold weather starting fluid dispenser assembly, which holds and punctures a capsule containing ethyl ether fluid, a primer pump to force the starting fluid through a small nozzle and into the engine air inlet elbow, a primer elbow assembly, and the necessary lines to complete the system. The dispenser is located on the cowl (to the right of the instruments) and the primer pump is mounted in the cowl with the instruments. The starting fluid is forced through the primer elbow assembly and into the engine air inlet elbow, where it mixes with the intake air and is drawn into the cylinders. Since the starting fluid is highly combustible, it is easily ignited by the heat of the compressed air in the cylinders. The engine will start quickly at low ambient temperatures with the aid of the primer, even at a very slow cranking speed. The starting fluid capsules, available in 7 c.c. and 17 c.c. sizes, can be obtained from "Allis-Chalmers" Dealers. Refer to "STARTING AND STOPPING OF ENGINE" for full instructions on the use of the Cold Weather Engine Primer.

C. COLD WEATHER ENGINE PRIMER TROUBLE SHOOTING

If the engine is cranked, with the throttle operating lever pulled all the way back and with the engine shut-off knob all the way forward, and does not start after several strokes of the primer, it is advisable to stop cranking and inspect the primer



Cold Weather Engine Primer Pump and Dispenser Location

FIG. 36

system for the following possible causes of failure:

1. Primer Elbow Assembly Clogged

This condition will usually be indicated by excessive resistance on the primer pump. A partially clogged primer elbow assembly will prevent the delivery of sufficient starting fluid to the engine air intake system. To clean the primer elbow assembly, remove the elbow assembly from the engine air inlet elbow and remove the small nozzle from the primer elbow assembly. Remove and clean the nozzle swirl pin and open the hole in the end of the nozzle, if clogged. **CAUTION:** Do not enlarge the hole in the end of the nozzle.

After cleaning, reassemble the primer elbow assembly and install the assembly in the engine air inlet elbow.

2. Inoperative Primer Pump

Failure of the starting fluid primer pump to function properly may be due to worn or damaged pump piston rings, a clogged dispenser filter screen, clogged fluid lines, or "frozen" or worn pump check valve balls. The piston rings on the pump piston are made of a special rubber composition and must be replaced by duplicate parts if worn or damaged.

To replace the primer pump piston rings, unscrew