



Michigan
Operator's Manual
175A

Wheel Loader

Operator's Manual

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MIC-O-175ALATE

MICHIGAN

OPERATORS MANUAL

No. 1371

MODEL 175A TRACTOR SHOVEL

Information Contained Herein Pertains Only to Machine
Serial Numbers Listed Below:

175A Waukesha Diesel — 19128 and thereafter
175A G.M. — 25541 and thereafter
175A Cummins — 26366 and thereafter

Record Your Machine Serial Number and Engine
Model Specification and Serial Number Here

Machine Serial.....

Engine Model.....

Engine Serial.....

CLARK
EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
BENTON HARBOR, MICHIGAN, U.S.A.

MICHIGAN

In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

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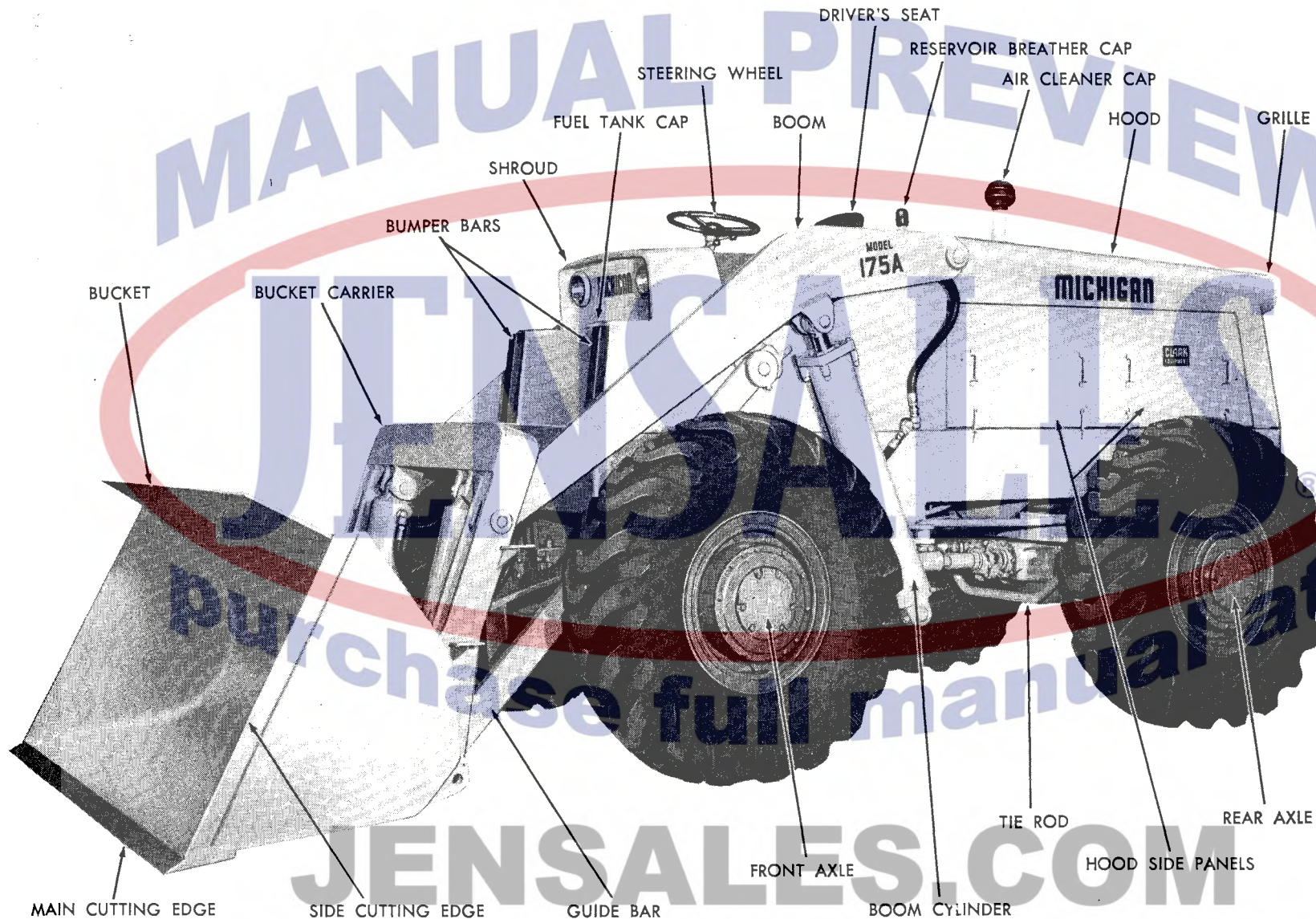
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OPERATING INSTRUCTIONS

After the machine has been properly checked, and the operator has familiarized himself with location and function of the various controls, the machine should be operated according to instructions in the following paragraphs.

STARTING PROCEDURE

PRE-STARTING CHECKS

Before starting engine at beginning of the work shift, or at anytime machine has been shut down for adjustment or time-off period, perform the following checks.

1. Engine oil level
2. Engine air cleaner
3. Hydraulic system oil level
4. Cooling system
5. Fuel supply
6. Transmission fluid level
7. Tire pressures

Service units at this time if inspection indicates the necessity.

NORMAL STARTING

CAUTION: *Walk around machine to make certain that no one is in "danger area" before entering operator's compartment.*

In warm weather, or with a warm or hot engine, start engine as follows:

1. Set all control levers in neutral. Prime fuel lines on Waukesha Diesel.
2. Turn ignition switch ON. Press glow plug switch 30 to 60 seconds on Waukesha Diesel.
3. Press starter switch. At same time press fuel switch on Cummins Diesel. If Waukesha Diesel, continue to hold glow plug switch.
4. Watch oil gauge on instrument panel when engine starts to be sure of oil pressure.
5. Allow engine a few minutes to warm up before driving or operating machine.

COLD WEATHER STARTING

MICHIGAN machines do not require extensive preparation for cold weather operation beyond addition of a permanent type anti-freeze to the cooling system, and a change of engine oil to a viscosity suitable for anticipated temperatures in which the machine is to operate. At temperatures below 32°F a change of oil in hydraulic system to Type "A" Automatic Transmission Fluid will aid starting by reduction of resistance in the main hydraulic pump. Probably the most important item to insure prompt starting is proper maintenance of the electrical system, especially the batteries.

Batteries must be kept fully charged at all times, since in cold weather the capacity of a battery to deliver full power is greatly reduced. A fully charged battery at 15°F is capable of delivering only 70% of its rated amperage, and at lower temperatures becomes even more inefficient. Service batteries weekly as follows:

1. Add distilled water to cover plates and separators, but do not overfill. Overfilling causes dilution of the electrolyte, and sputtering during the charging cycle. This may result in battery freezing and corroded terminals.
2. Keep terminals clean and tight. Dirty or loose connections offer high resistance.
3. Keep vent plugs in place, and tight, to prevent entrance of foreign material into cells.
4. Check specific gravity regularly with a hydrometer, and recharge or replace batteries that continually show low reading.

Glow plug circuits used on Waukesha and Cummins Diesels also should be checked to be sure they are in proper working order.

1. Check wiring that insulation is not cracked, and that terminals are clean and tight.
2. Remove glow plugs and check that they are clean. Test glow plug heating by connecting to electrical source as follows:

Waukesha	24 Volts
Cummins	6 Volts

3. On Cummins Diesels only, remove and clean fuel nozzle in intake manifold, and check that fuel connections are tight.

To avoid unnecessary cranking because of air locks in cold fuel oil, change fuel filters only when engine is hot; then start and run engine after filter change, and check that there is no fuel restriction nor leakage.

When not in use, machine should be parked or stored in a closed garage or building during cold weather to reduce cranking effort when starting a cold engine. It is particularly important in starting the engine, that it is not accelerated to governed speed, or a load applied until the oil has become warm enough to circulate to all bearing surfaces.

Cold starting procedure for the various makes of Diesel engines is as follows, after first placing all control levers in their neutral position.

Cummins Diesel (When Colder Than 50° F)

Cummins Diesels are equipped with an air preheater arrangement consisting of a single glow plug mounted in the intake manifold, and a hand priming pump to force atomized fuel into the manifold. Depressing glow plug switch heats glow plug, igniting the fuel in the manifold and heating the intake air entering the combustion chamber. *Since primary ignition takes place within the manifold, serious damage may result if starting fluid (pressurized can type) is used with glow plugs hot. Do not use starting fluid in any form.*

1. Set throttle in idle position. *Do not accelerate during the starting procedure.*
2. Turn ignition switch ON, and press glow plug switch. When indicator light has been on 20 seconds, press starter, and fuel switches.
3. As engine rotates, operate preheater priming pump to maintain 40 to 60 psi fuel pressure as shown in Figure 5. Use of primer before 20 second interval will wet glow plug and prevent heating. *Do not use starting fluid in any form.*
4. If engine does not start within 20 seconds, stop cranking and repeat steps 2 and 3. This will aid in battery conservation, and provide maximum cranking time. If no start is obtained after two trials, check intake manifold for heat.



Fig. 5. Preheater Priming Pump (Cummins Diesel)

5. After engine starts, release starter switch, but hold glow plug and fuel switches. When engine oil pressure is 7 to 10 psi, release fuel switch. Pump primer slowly to keep engine idling smoothly. In cold weather this may require 4 to 5 minutes or longer. Do not accelerate engine.
6. When engine does not falter between primer strokes, stop pumping, close primer and lock; then release glow plug switch.
7. Allow engine a few minutes to warm up before driving or operating machine.

G. M. Diesel

On G. M. Diesels no starting aid is provided for cold weather. Starting fluid (pressurized can type) sprayed into air cleaner intake is recommended as engine is being cranked.

Two types of starting aids: (1) air heater, and (2) fluid starting (capsule form) can be installed by any authorized G. M. Diesel Distributor.

1. Turn ignition switch ON.
2. Depress accelerator to full throttle position.
3. Press starter switch and use starting fluid (pressurized can type) directed into air cleaner intake.
4. Check engine oil pressure, and allow engine a few minutes to warm up before driving or operating machine.