TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)

LOADER, SCOOP TYPE, DED, 4 x 4,

ARTICULATED FRAME STEER, 4 1/2 to 5 CU. YD., (CCE) (IHC MODEL H10OC):

TYPE I WITH 4 1/2 CU. YD. BUCKET

NSN 3805-01-052-9042

TYPE II WITH 5 CU. YD.

GENERAL PURPOSE BUCKET

NSN 3805-01-052-9043

This copy is a reprint which includes current paces from Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

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TECHNICAL MANUAL

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HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 15 July 1980

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS)

LOADER, SCOOP TYPE, DED, 4 X 4
ARTICULATED FRAME STEER, 4 1/2 to 5 CU. YD.,(CCE) (IHC MODEL H100C):
TYPE I WITH 4 1/2 CU. YD. BUCKET
(NSN 380501-052-9042)
TYPE II WITH 5 CU. YD. GENERAL PURPOSE BUCKET
(NSN 3805-01-052-9043)

This technical manual is an authentication of the manufacturers' commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

SECTION INDEX

This manual covers the instructions for operation, lubrication, adjustments and maintenance for normal daily care. These instructions are divided into nine sections to simplify your reference to the information most important to you. Refer to Table of Contents on next page for a complete list of the subjects covered within each section.

This manual has been prepared to help you operate and maintain your machine with utmost efficiency and safety. Read this manual thoroughly and learn your machine before you attempt to operate it.

SECTION 1 - INTRODUCTION

This section discusses generally the use of this manual, serial numbers and how to ship or store this machine.

SECTION 2 - BEFORE STARTING THE NEW MACHINE

This section outlines the special procedures necessary to insure proper "break-in" and care of a new machine.

SECTION 3 - INSTRUMENTS AND CONTROLS

The text and illustrations on instruments and controls in this section are designed to tell you "where it is," "what it does," and "how to use it." Read this section carefully.

SECTION 4 - PREPARING FOR EACH DAY'S WORK

This illustrates the few simple preparations before each day's work to assure a work day free of "down time. "

SECTION 5 - OPERATING THE MACHINE

This section outlines and illustrates the step-by-step procedures for starting, operating, and stopping the machine.

SECTION 6 - OPERATING TECHNIQUES

A few operating suggestions and techniques are discussed with simple ideas to help ease the work and lengthen the useful life of your machine.

SECTION 7 - SCHEDULED MAINTENANCE

A complete scheduled maintenance procedure is outlined here - one that assures less down-time and expense, and more profit and work from your machine. Read and use this section.

SECTION 8 - MAINTENANCE

Many of the maintenance and adjustment procedures outlined in Section 7 need clear explanation. This section is devoted to explaining the "how to do" in an easy style to help you "do it yourself" and get it right.

SECTION 9 - SPECIFICATIONS AND CAPACITIES

This section covers the capacities, general dimensions and weights, speeds and torques.

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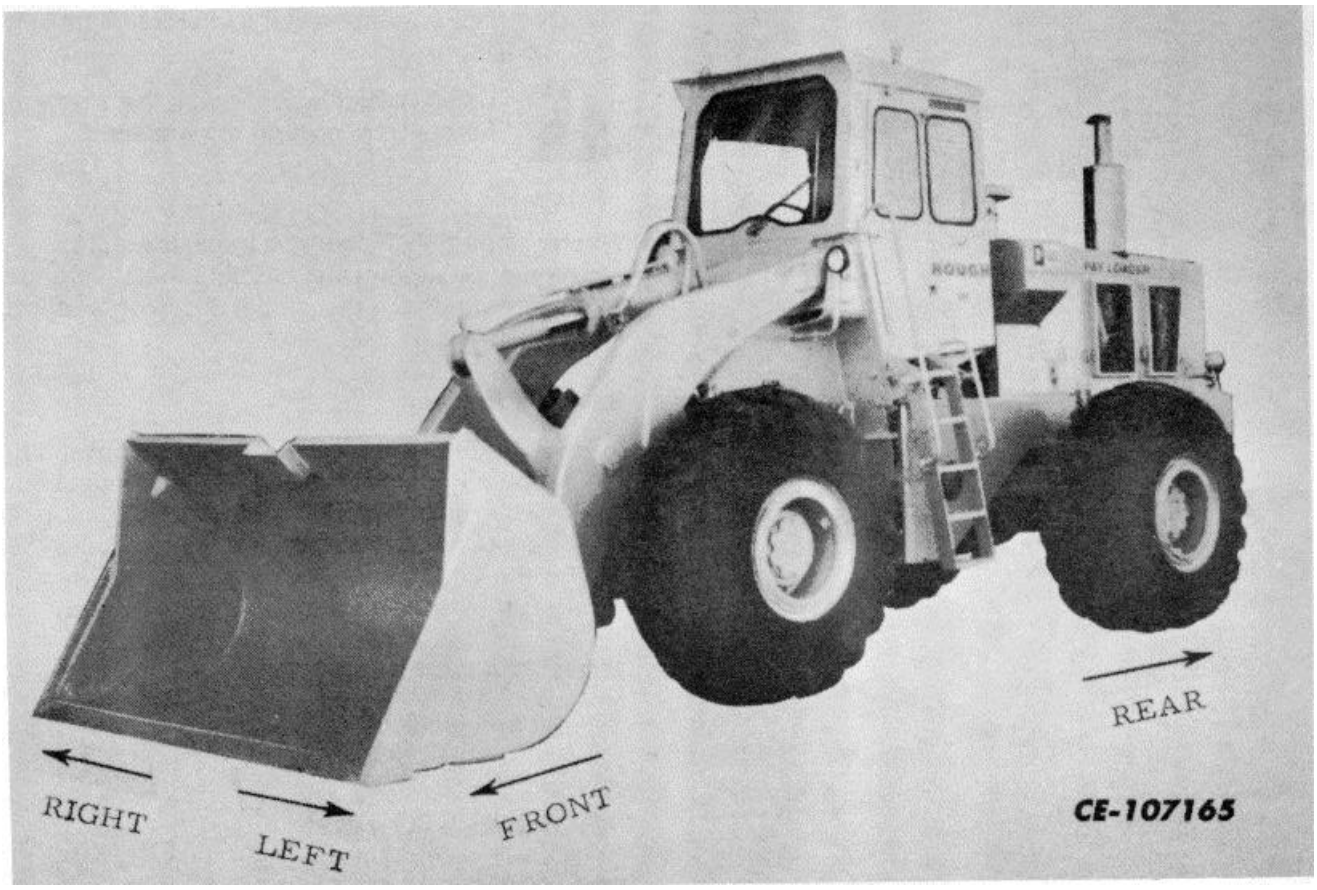

Fig. 1. Model H-100C Pay loader

GENERAL

Any cross references in this manual are to a specific section of the manual.

Some illustrations are of general application of this model and may not show your equipment accurately in all details.

Throughout this manual the use of the terms "left," "right," "front," and "rear" must be understood to avoid confusion when following instructions. "Left" and "right" indicate the left and right sides of the tractor when facing forward in the operator's seat (see Fig. 1).

SERIAL NUMBERS

The machine serial number plate (Fig. 2) is located on the lower left hand side of the operator's compartment. This serial number is also stamped on the left rear side of the rear frame (Fig. 3).

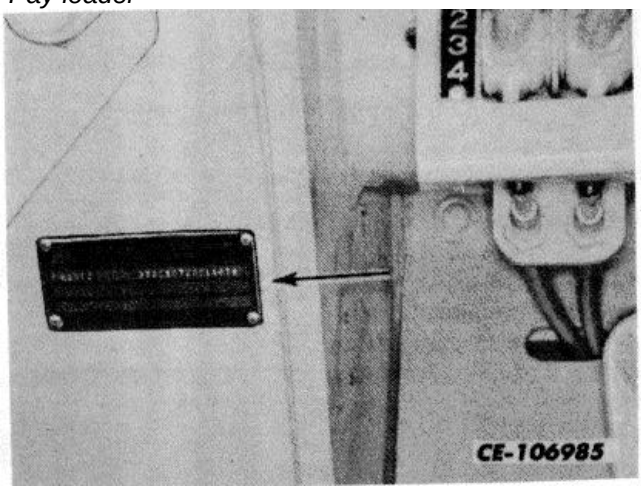

Fig. 2. Machine Serial Number Plate

The engine serial number is located on the left side of the engine block near the flywheel housing (Fig. 4). It is stamped into the engine block.

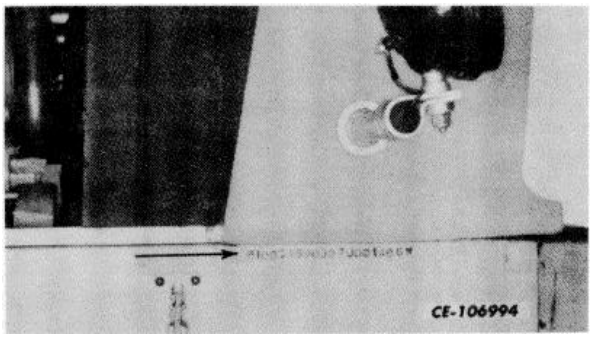

Fig. 3. Machine Serial Number Location on Rear Frame

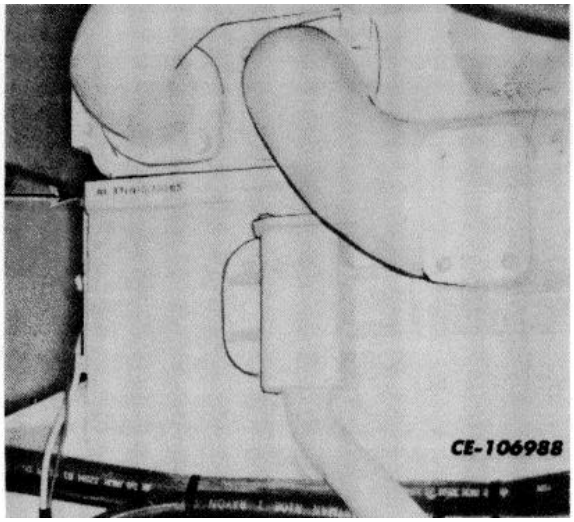

Fig. 4. Engine Serial Number

Use serial numbers when requesting information or ordering parts. For ready reference, write these serial numbers in the spaces provided below.

Machine Serial Number _____

Engine Serial Number _____

MACHINE TRANSPORT

SHIPPING INSTRUCTIONS

NOTE: ***When transporting this machine on a high speed carrier, seal the intake and exhaust pipe openings to prevent turbocharger damage.***

The electrical system master switch must be in the "OFF" position.

CAUTION! Always install the safety bar before transporting the machine.

Truck

When shipping this loader by truck, the state and local regulations may vary. Contact the state and/or local authorities for the proper shipping and loading regulations.

Railroad Flatcar

The loading rules and specifications published by the Association of American Railroads must be followed when shipping this machine on open top rail-road cars. Check the manual entitled "Rules Governing the Loading of Commodities on Open Top Cars" at the nearest Railroad Freight Agency.

MOVING A DISABLED MACHINE

Towing this machine is not recommended.

MACHINE STORAGE

PREPARING FOR STORAGE

When the machine is not to be used for a period of time, store it in a dry and protected place. Leaving equipment outdoors exposed to the elements will materially shorten its life.

Follow the procedure below when the loader is placed in storage for 30 days or more. Lubricate the machine every six months.

1. Wash or clean the machine thoroughly.

2. Lubricate all points of the machine as outlined in the "SERVICE GUIDE" in Section 7.

3. Move the machine to storage location.

4. If the cooling system will be exposed to freezing temperature and water only was used during operation, drain and refill the cooling system with an anti-freeze solution. Refer to "COOLING SYSTEM" in Section 8.

5. Remove the injection nozzles. Spray 28 grams (one liquid ounce) of Grade 30 lubricating oil into each cylinder. Crank the engine two or three revolutions. Clean the nozzle seats and install the injection nozzles with new gaskets.

6. Service the air cleaner. Refer to "AIR CLEANING SYSTEM" in Section 8.

7. Drain the water from the fuel tank and fill with approved diesel fuel. Refer to "FUEL SYSTEM" in Section 8.
8. Seal the engine air intake, exhaust outlet, electrical components, fuel tank vent line and breathers on the crankcase and hydraulic reservoir to prevent dirt and moisture from entering.
9. Remove the batteries and store them in a cool dry place (0 to 10°C/32 to 50°F) to minimize self-discharge. Be sure the batteries are fully charged. Check batteries once a month for water level and specific gravity. Never allow batteries to run down below 3/4 full charge.
10. Coat all machined, unpainted surfaces with chassis grease to prevent rust.
11. Oil all connections, joints, nuts, pins shaft and bushings of the control linkage which are not provided with a lubrication fitting.
12. If the bucket is detached for storage, secure the cylinder to the machine to avoid damage.
13. If it is desirable to leave the tires on the ma-chine, jack the machine up and place it on blocks leaving the tires in suspension. Deflate and cover the tires.

SERVICING ENGINE DURING STORAGE

One-Month Repetitive Service Period

1. Remove the coverings from the engine crank-case breather tube, exhaust outlet, electrical components, fuel tank vent line and engine air intake. Install the air intake cap.
2. Check the cooling system for leaks, loose connections and proper coolant level. Refer to "COOLING SYSTEM" in Section 8.
3. Check the engine oil level and add appropriate oil as required. Refer to "LUBRICANT SPECIFICATIONS AND CAPACITIES" in Section 7.
4. Drain the water from the fuel tank. Refer to "FUEL SYSTEM" in Section 8.
5. Install fully charged batteries. Refer to "ELEC-TRICAL SYSTEM" in Section 8.
6. With the engine shutdown handle pulled out and the electrical system master switch in the "ON" position, crank the engine until an oil pressure reading is indicated on the engine oil pressure gauge.

> **NOTE:** ***Cranking the engine should be limited to 30 second intervals as outlined under "STARTING THE ENGINE" in Section 5.***

7. Start the engine and run at low to medium speeds for 20 minutes and then shut down.
8. Remove the air intake cap. Seal the engine crank-case breather tube, exhaust outlet, electrical components, fuel tank vent line and engine air intake.
9. If the machine has been stored for a period of one year:
   a. The fuel system must be completely drained and refilled with approved diesel fuel. Fuel filters must also be changed.
   b. The engine oil must be drained and replaced with recommended lubricating oil. Oil filters must also be replaced.

Six-Month Repetitive Service Period

1. Perform Steps 1 through 5 of the "One-Month Repetitive Service Period".
2. Spray the inside of the crankcase through the oil filler pipe with 15 ml (0.5 oz) of volatile corrosion inhibitor oil for each litre or quart of engine lube oil capacity.

> **NOTE:** ***Volatile corrosion inhibitor oil such as MOTORSTOR (order from Delbert Chemical, 709 Enterprise Drive, Oak Brook, Illinois 60521), or equivalent, is available. Due to a relatively small amount of volatile substance in MOTORSTOR, irritation of eyes may occur and prolonged exposure to the vapors should be avoided.***

3. Through a tapped hole in the intake manifold, spray 60 to 120 ml (2 to 4 oz) of "VCI" into the air induction system.
4. With the engine shut-down handle pulled out and the electrical system master switch in the "ON" position, crank the engine for 5 to 10 seconds.
5. Remove the air intake cap. Immediately seal the engine crankcase breather tube, exhaust outlet, electrical components, fuel tank vent line and engine air intake.
6. Add 74 ml (2.5 oz) of "VCI" for each gallon of fuel in the tanks. An option to this is to completely drain the fuel tanks and spray the inside of the tanks with 40 ml (1-1/3 oz) of "VCI" for each 38 litres (10 gallons) of tank capacity.
7. If the machine has been stored for a period of one year, the following additional service must be performed prior to repeating the "Six-Month Repetitive Service Period" procedure above:

a. If fuel is left in the tank, the fuel system must be completely drained and refilled with approved diesel fuel; or if left empty, the inside of the tanks must be sprayed with "VCI" as previously de-scribed.

b. The engine oil must be drained and replaced with recommended lubricating oil.

PREPARING FOR OPERATION

1. Remove grease from all machined unpainted surfaces.

2. Install fully charged batteries. Refer to "ELECTRICAL SYSTEM" in Section 8.

3. Remove coverings from engine air intake, exhaust outlet, electrical components, fuel tank vent line, and breathers on the crankcase and hydraulic reservoir.

4. Drain the old fuel from the fuel tank and fill with an approved diesel fuel. Refer to "FUEL SYSTEM" in Section 8.

5. Check the cooling system for leaks, loose connections and coolant level. Refer to "COOLING SYSTEM" in Section 8.

6. Service the engine as follows:

a. Drain the crankcase oil, change lubricating oil filters and fill with the specified lubricating oil. Refer to "ENGINE LUBRICATING OIL FILTERS" in Section 8.

b. Prime the turbocharger. Refer to "TURBO-CHARGER" in Section 8.

CAUTION! Before starting the engine, be sure the area is adequately ventilated to avoid danger from exhaust gas. Do not accelerate the engine rapidly or operate it at high speed

c. Start the engine and run at low idle a few minutes to allow thorough distribution of lubricating oil. Do not place the machine under load until normal air pressure and temperature are reached.

d. If the engine is misfiring or loss of power is evident the fuel system is possibly clogged. Refer to "FUEL SYSTEM" in Section 8.

BEFORE STARTING THE NEW MACHINE

INITIAL SERVICE PROCEDURE

1. Check the belt tension. Refer to "BELTS" in Section 8.
2. Check coolant level. Refer to "COOLING SYSTEM" in Section 8.
3. Check the battery liquid level. Refer to the "ELECTRICAL SYSTEM" in Section 8.
4. Be sure the battery terminals are clean and the battery cables are fastened securely to the correct terminals. Refer to "ELECTRICAL SYSTEM" in Section 8.
5. Be sure the terminals on the alternator (Fig. 1) are clean and the cables are fastened securely to the proper terminals as follows:
   a. Output terminal (1) on alternator to cranking motor solenoid terminal "B."
   b. Ground screw (2) on alternator to cranking motor frame bolt.
   c. No cables are connected to the "R" (relay) terminal (3).

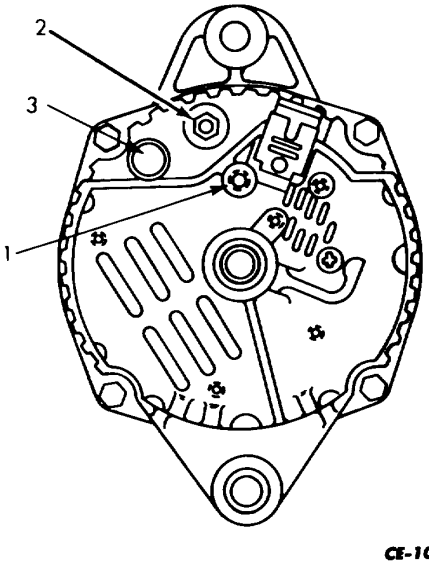

Fig. 1. Alternator Connections

LUBRICATION WHEN SHIPPED

This machine has been lubricated at the factory for operation in an air temperature range of +49°C to -7° C (+20° F to +120° F) (see NOTE). If the machine is to be operated above or below this range, change to the correct lubricants. Unless an exception is shown below, all lubricants can be used (within above temperature range) until regular scheduled (normal) change interval occurs. Refer to "SERVICE GUIDE" in Section 7 for the scheduled (normal) change intervals and to "LUBRICANT SPECI-FICATIONS AND CAPACITIES CHART" for the proper oil grades for various air temperatures.

COMPARTMENT	LUBRICANT
Crankcase	EO ⊙
Hydraulic Reservoir.....	EO ⊕
Transmission	Dexron® △
Transfer Drive Reservoir.....	MPL
Axles	MPL

⊙ After the initial 100 hours of operation, replace the crankcase oil filters and change the oil. Thereafter, replace the filters and change the oil at the interval specified in Section 7.

⊕ After the initial 100 hours of operation, replace the hydraulic reservoir filters. Thereafter, replace the filters at the interval specified in Section 7.

△ After the initial 100 hours of operation, replace the transmission filter element and clean the transmission sump strainer. Thereafter, replace the filter element and clean the sump strainer at the interval specified in Section 7.

INSTRUMENTS AND CONTROLS

This section covers the location and function of the various instruments and controls of this machine. In the case of controls, more detailed information regarding operation can be found in Sections 5 and 6.

Regardless of previous experience as an operator, you must be thoroughly familiar with the location and use of all instruments and controls before operating this machine. Check all instruments, immediately after starting, again upon reaching operating temperatures and at frequent intervals during operation to assure proper care through prompt detection of irregularities. If any of the instruments do lot register properly, stop the engine; locate and correct thy cause immediately.

1. TORQUE CONVERTER OIL TEMPERATURE GAUGE

This gauge registers the temperature of the fluid in the torque converter. After the engine has operated sufficiently to reach a stabilized torque converter temperature, tap the gauge lightly and check the reading. The gauge must register in the "RUN" (green area). If the gauge registers out of the "RUN" range, shift the transmission to a lower gear range and reduce engine speed. If this fails to bring the temperature into the "RUN" range, 'proceed as follows:

a. Stop the engine. Check the oil level in the transmission. Refer to "TRANSMISSION OIL" in Section 7.

b. Service the transmission filter. For filter servicing procedures, refer to "TRANSMISSION" in Section 8.

NOTE: ***Continual high fluid temperatures should be corrected before resuming to operate the machine*.**

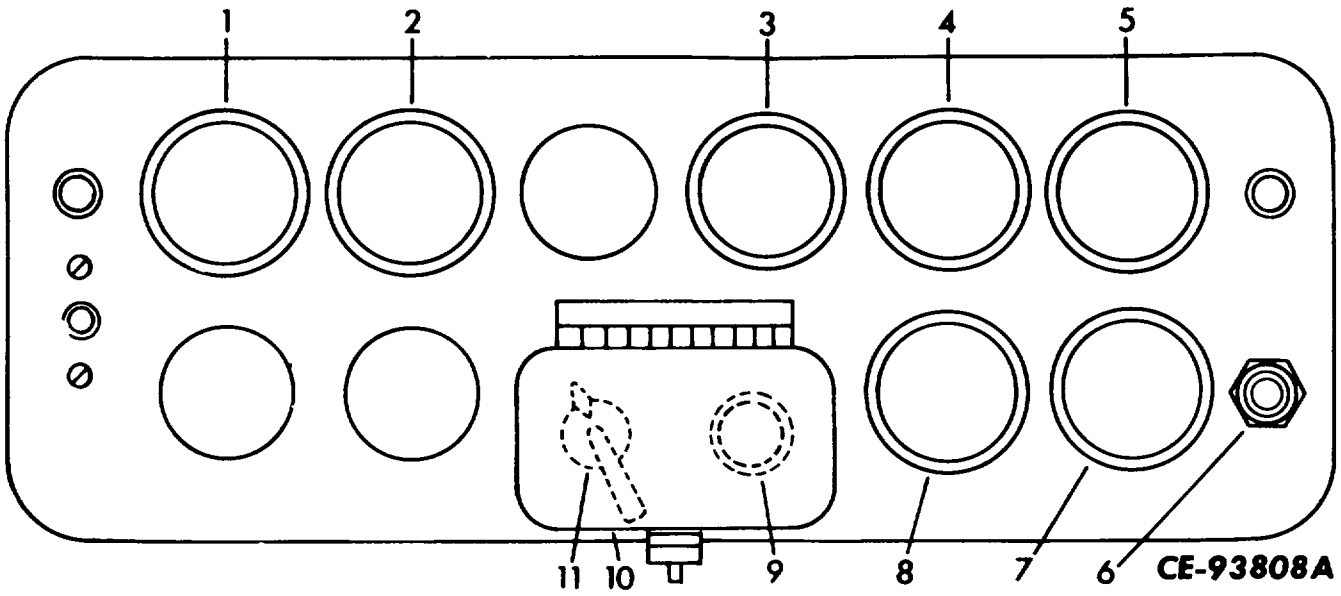

Fig. 1. Instrument Panel

1. Torque Converter Oil Temperature Gauge
2. Fuel Pressure Gauge
3. Air Pressure Gauge
4. Fuel Level Gauge
5. Engine Oil Pressure Gauge
6. Starter Switch
7. Engine Coolant Temperature Gauge
8. Voltmeter
9. Light Switch
10. Lock Box
11. Ignition Switch

2. FUEL PRESSURE GAUGE

This gauge registers the pressure of the fuel from the fuel tanks through the fuel filters to the engine fuel injection nozzles.

The pointer of the gauge must register in the "RUN" (green) range when the engine is operating at high idle speed. When the pointer is in the "CHANGE FILTER" range (black area) while the engine is operating at this speed, it means that the primary fuel filter needs replacement; the primary and final fuel filters need replacement; or that the fuel system is clogged at some point. It may also be accomplished by a loss of power or misfiring of the engine.

3. AIR PRESSURE GAUGE

This gauge registers the amount of air pressure in the air tank. Tap the gauge lightly when checking the gauge reading. The unit should not be moved until the gauge is registering in the "RUN" (green) segment of the gauge.

4. FUEL LEVEL GAUGE

This gauge is electrically operated and indicates the available fuel supply in the fuel tank. Tap the gauge lightly when taking a reading.

5. ENGINE OIL PRESSURE GAUGE

This gauge shows the pressure at which the lubricating oil is circulating through the engine. This gauge must register in the "IDLE" range immediately upon starting. When the engine is operated at full load speed, the pointer must be in the (green) "RUN" range. Stop the engine immediately and investigate cause if little or no pressure is indicated.

The oil pressure gauge gives some indication of the oil condition once it is at operating temperature. Pressure drops between oil changes may be caused by oil dilution, a clogged crankcase suction strainer or an internal engine oil leak. Always determine the cause of decreased from normal engine oil pressure.

6. STARTER SWITCH

Turn the combination switch to the ignition position and press the starter switch to crank the engine. After the engine starts to run release the starter switch.

NOTE: ***Never press the starter switch while the engine is running. This will damage the cranking motor and the engine flywheel.***

7. ENGINE COOLANT TEMPERATURE GAUGE

This gauge shows the temperature of the coolant circulating through the engine. After the engine has operated a sufficient length of time the pointer of the gauge must be in the (green) "RUN" range.

During normal operation, the gauge readings should vary between the minimum and maximum indicated by the "RUN" (green) segment of the gauge.

Continuous engine operation below the minimum temperature is harmful to the engine oil. Low cool-ant temperatures will also cause exhaust smoke and increase the rate of fuel consumption.

Overheating indicates the need for mechanical correction. A clogged cooling system or a low coolant level will also cause high operating temperatures. The engine temperature, under full load conditions, should remain below the maximum reading listed.

8. VOLTMETER

The voltmeter indicates the condition of the batteries. When the engine is not running or is running at low idle speed, the gauge pointer should be within the left green area, which indicates a good battery charge. If the voltage drops below the left green area at low idle speed, the batteries should be checked. With the engine operating above low idle speed, the gauge pointer should be within the right green area, which is the normal operating range. If the voltage drops below the right green area, the batteries and/or alternator should be checked.

9. LIGHT SWITCH

The ignition switch must be turned "ON" before the lights will operate. The light switch has two positions. When pulled out to the first position the front driving lights, tail and stop lights and instrument panel lights will come on. If pulled out to the second position the rear driving lights will also come on. Push the switch all the way in to turn the lights off. If the machine is equipped with low-level lights, they will go on and off the same time as the driving lights.

10. IGNITION SWITCH

The ignition switch has two positions: "ON" and "OFF". In the "OFF" position there is no electric cur-rent flow to any circuit. In the "ON" position electric current is allowed to flow to all circuits. The ignition switch must be in the "ON" position before the engine can be started or cranked.