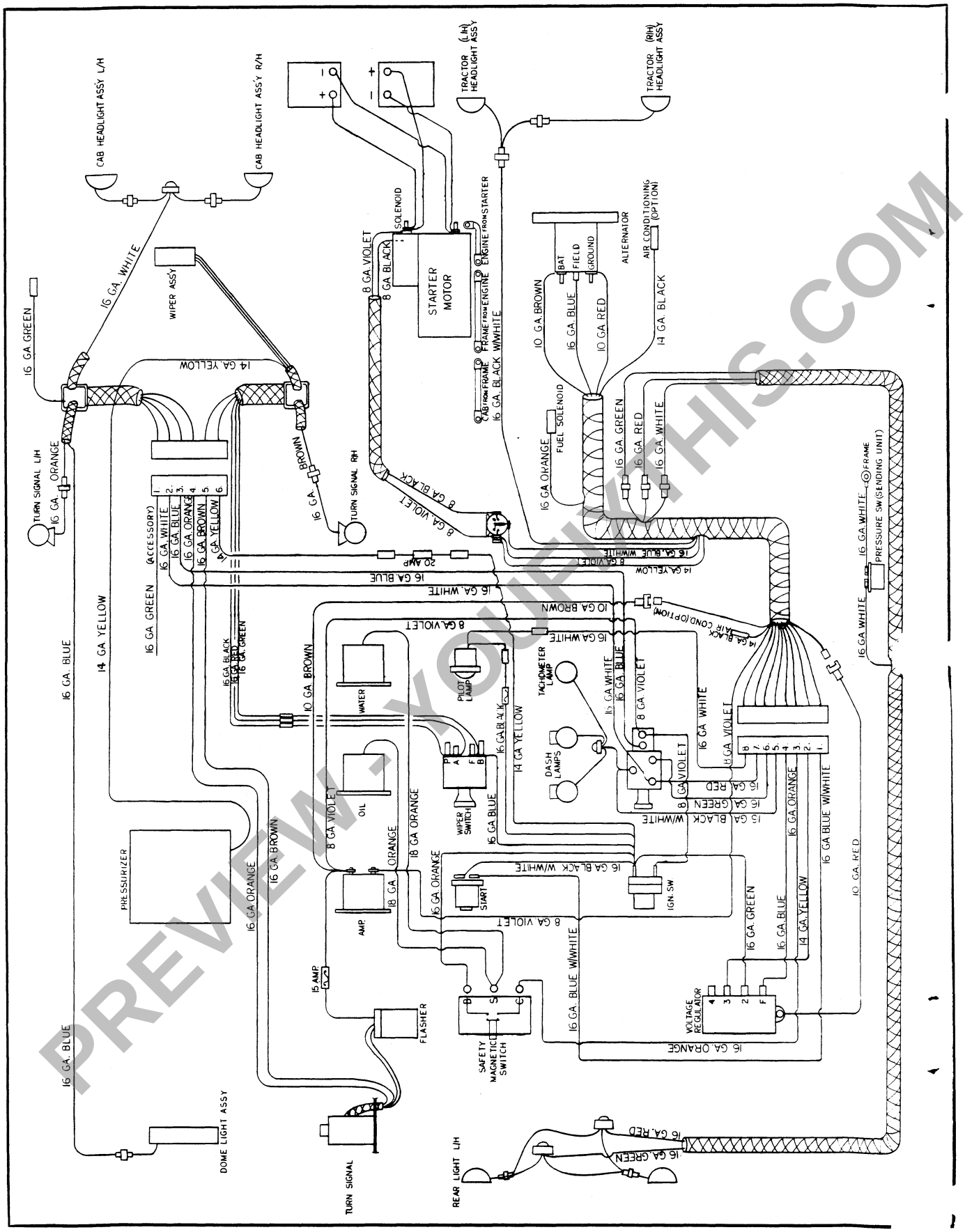
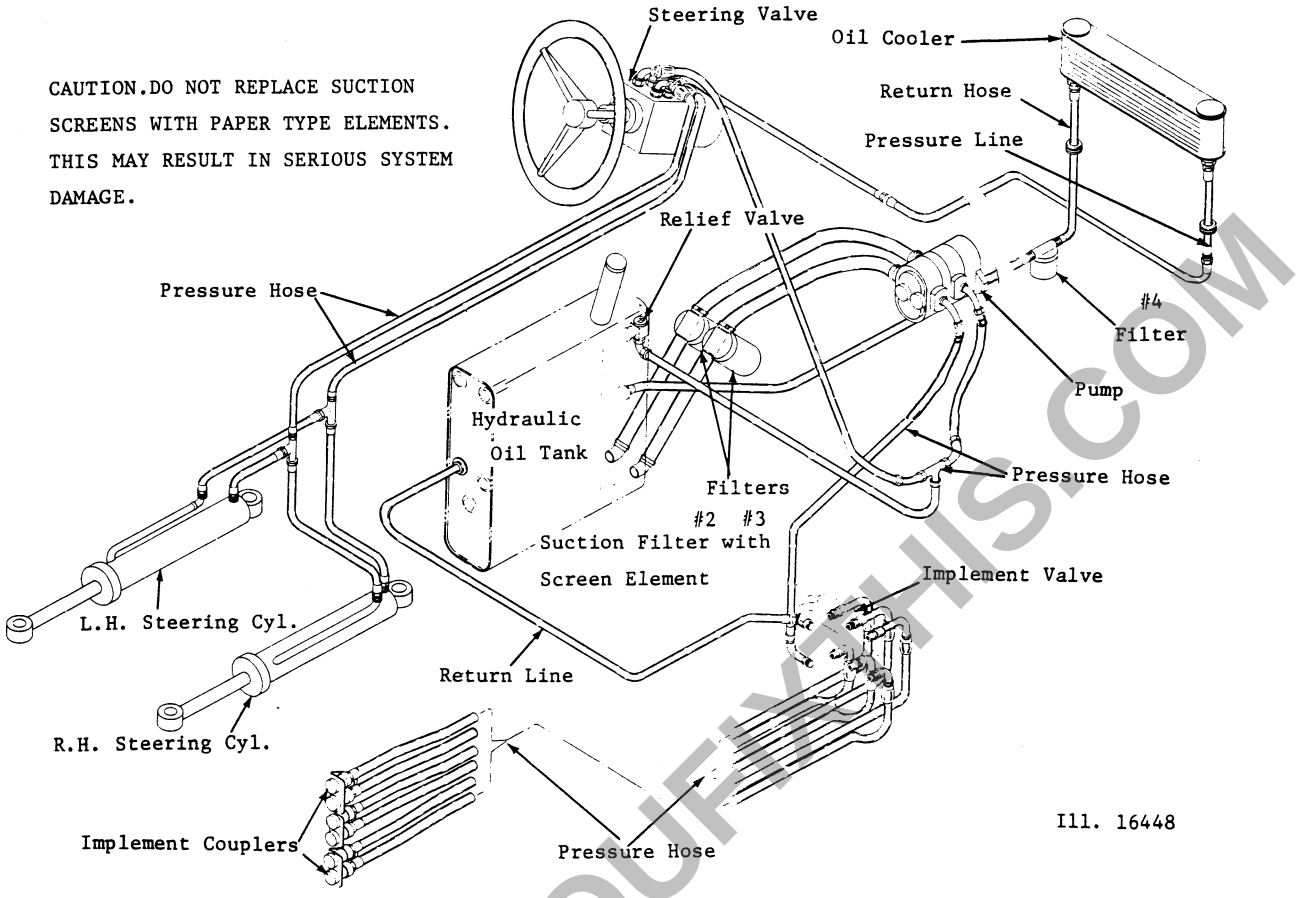


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CAUTION.DO NOT REPLACE SUCTION SCREENS WITH PAPER TYPE ELEMENTS. THIS MAY RESULT IN SERIOUS SYSTEM DAMAGE.



Ill. 16448

STEERING & AUXILIARY CIRCUIT

OIL SPECIFICATION	
Temperatures	Torque Fluid 56
Above 40°F	or Equivalent
Temperatures	5W - 20 MS.
Below 40°F	Motor Oil or Dexron

When adding oil to the system it is recommended that different brands or grades of oil not be mixed (Factory filled with ESSO TORQUE FLUID 56).

A complete oil change is recommended every 400 hours or yearly.

The drain plug is on the bottom of the oil tank and the inlet spout is under the floorboard. Roll back the floorboard carpet and remove cover closest to the door. A complete oil change will require 95 US qts.

FILTERS: The two inline filters on the suction lines between pump and reservoir have wire cloth reusable filter cartridge. At recommended intervals (see page 28) wash in warm water with detergent then dip in clear water and blow out with compressed air. Cartridge may be reused indefinitly or until any noticeable damage occurs.

The inline filter between oil cooler and tank is the throw away type. See page 28 for recommended change intervals.

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TRACTOR SPECIFICATIONS

ENGINE

Make	Cummins Diesel
Model	V903-C
Displacement	903 cu. in.
Bore/Stroke	5 1/2 x 4 3/4
Rated H.P.	300 @ 2400 RPM
Comp. Ratio	17.0
Low Idle	1000 to 1050 RPM
High Idle (No Load)	2550 to 2640 RPM
Full Load Governed Speed	2400 RPM

CLUTCH

Make	Dana Spicer
Size	14"
Type	Dry, Double Disc. Foot Operated Mechanically actuated, greaseable release and shaft bearings. Clutch brake as part of clutch assy. Ceramic Linings.

TRANSMISSION

Make	Versatile w oil cooling circuit
Type	Constant Mesh - Helical Gears. 12 Forward Speeds - 4 Reverse.

TIRE SIZES

18.4 - 38 Duals
24.5 - 32
30.5 - 32

SPEEDS Using 24.5 x 32 Tires) At 2400 RPM - 6.21 Differential.

Transmission Lever	Range 1	Range 2	Range 3	Range 4
1	2.6	3.1	3.4	4.1
2	4.7	5.5	6.1	7.4
3	8.9	10.7	11.9	14.3
Reverse	3.3	3.9	4.4	5.2

DRIVELINES

MAKE	Spicer
	Motor to Transmission - 1550
	Transmission to Axle - 1600

AXLES

Make:	Versatile
Type:	Planetary - Final Drive Reduction 4.36 to 1

DIFFERENTIAL

Make:	Eaton Series
Ratio:	6.21 to 1
Type:	Double Reduction with Spiral Bevel & Planetary Reduction

FRAME

Type:	Articulating frame, with full rear frame drag Link oscilation of 12 to 15 degrees.

STEERING

Articulated frame 42° in each direction hydraulically actuated by 2 double acting 3 inch dia. cylinder mounted on torrington self aligning ball bushings.

TURNING RADIUS 17 Feet Approx.

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TROUBLESHOOTING

ENGINE: Check Cummin's Operator's & Maintenance Manual

For engine trouble shooting.

PROBLEM	CAUSE	REMEDY
Steering:		
A. Noisy, erratic steering.	a. Low reservoir oil level b. Clogged filter c. System air leaks. d. Flattened suction hose.	a. Fill b. Clean c. Check suction hose connections and filter gasket. d. Replace.
B. Hard steering.	a. Low engine rpm. C. Clogged filter D. System air leaks	a. Increase to 1000 RPM C. (See page 28) d. Check suction hoses conecctions and filter gasket
C. No Steering.	a. Low Reservoir oil level. c. Faulty relief valve d. Faulty Steering cylinder. e. Ruptured hose. f. Faulty hydraulic pump. g. Faulty steering unit. H. Clogged Filter I. System air leaks	a. Fill c. Replace d. Repair cylinder e. Replace hose. f. See your VERSATILE dealer. g. See your VERSATILE dealer. i. Check suction hoses connections and filter gasket.
Implement Hydraulic System:		
A. Slow and erratic implement action	a. Low hydraulic oil level. c. Low engine rpm. d. Clogged filter e. Ruptured hose. f. Faulty hydraulic	a. Fill tank. c. Increase to 1000 RPM (suggested idling speed). d. Replace filter. e. Replace hose. f. See your VERSATILE dealer.
Hydraulic Pumps:		
A. Noisy pump caused by cavitation.	a. Oil supply low. b. Oil too heavy c. Oil filter plugged. d. Suction line plugged. E. System air leaks	a. Fill reservoir. b. Change to proper viscosity. C. (See page 28) d. Clean line. e. Check suction hoses and filter gasket.

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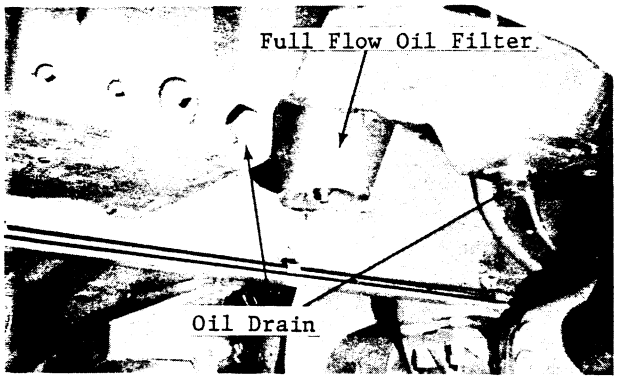
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FILTER REPLACEMENT SCHEDULE

FILTER DESCRIPTION	RECOMMENDED TIME CHANGE	PART NUMBER ELEMENT
TRANSMISSION CIRCUIT (Page 29) #1	First 60 hrs./200 hrs. thereafter throw away type.	SW 2854
INLINE SCREEN IN THE SUCTION HOSE	Wash, clean & re use. Maintain Yearly	SW 6731
STEERING CIRCUIT (Page 28) Filter #2 SUCTION	First 60 hrs/400 thereafter wash, clean & re use.	15799
(Page 28) Filter #4	First 60 hrs/200 hrs. thereafter Throw away type.	15801
AUXILIARY CIRCUIT (Page 28) Filter #3 SUCTION	First 60 hrs/400 thereafter. Wash, clean & re use.	15799
ENGINE Full Flow Engine Oil Filter	First 60 hrs/200 hours thereafter	15798
By-Pass Engine Oil Filter	Every 200 hours	711-T-106
Fuel Filter	Every 200 hrs. under Normal Conditions	608-T-118
COOLING SYSTEM Corrorion Resistor Filter	Every 400 hours/yearly	15802
AIR CLEANER Inner Element	Replace yearly (Page 18)	17444
Outer Element	After 10 Washings/yearly	22930
CAB PRESSURIZER ELEMENT	After 10 Washings/yearly	15942

CRANKCASE LUBRICATION

The engine will be delivered with the crankcase filled with Imperial Essolub HDX-10-30 oil. After 60 hours of operation the crankcase should be drained and the full flow oil filter cartridge replaced. It is not necessary to change the by-pass oil filter at this time unless the oil brand is changed. The crankcase should be filled with oil meeting the specifications listed in the CUMMINS Operation and Maintenance Manual. Oil level should be checked daily and maintained well within the safe operating range. It is not advisable to mix various brands or grades of oil or to change brands or grades at random. If it is necessary to change to a new brand, it is wise to completely drain the engine and replace the filters before filling. Oil consumption will vary between one to three quarts per day, depending on conditions. For operation in areas where ambient temperature is consistantly below 10^{o}F and there is no provision for keeping engines warm during shutdowns, the lubricating oil should meet the requirements as outlined under "Artic Oil Recommendations" in the lubrication section of the engine maintenance manual.



OIL VISCOSITY RECOMMENDATIONS	
OPERATING TEMP.	OIL VISCOSITY & GRADE
10^{o} to 30^{o} F	SAE 10 W
20^{o} to 90^{o} F	SAE 20 W
90^{o} upwards	SAE 30 W

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OPERATION

NEW ENGINE BREAK-IN PERIOD

The Cummins Engine used on the Versatile tractors has been run-in at the factory on dynomometers but it is recommended that care be taken in the first 100 hours of service by:

1) Operating as much as possible in half to three-quarter load .

2) Avoiding operation for long periods at engine idle speeds, or at maximum horsepower levels in excess of five minutes.

3) Check oil level every 10 hours during the break-in period

NORMAL STARTING PROCEDURE

1.- Set throttle at idle speed.

2.- Place gear shift in NEUTRAL position.

3.- TURN fuel solonoid switch in ON position.

4.- Push starter button <u>together with</u> Override Button (See Instrument Panel)

Override Button must be kept depressed until oil pressure reads over 20 P.S.I., the automatic shut-off pressure. Otherwise the engine will stop.

<u>IMPORTANT</u> - This is a safety device installed on all units to ensure the engine does not operate at dangerously low oil pressures.

DO NOT ALTER GAUGE SETTINGS.

<u>CAUTION</u>: To prevent permanent cranking motor damage do not crank engine for more than 30 seconds continuously. If engine does not fire within first 30 seconds, wait one to two minutes before recranking.

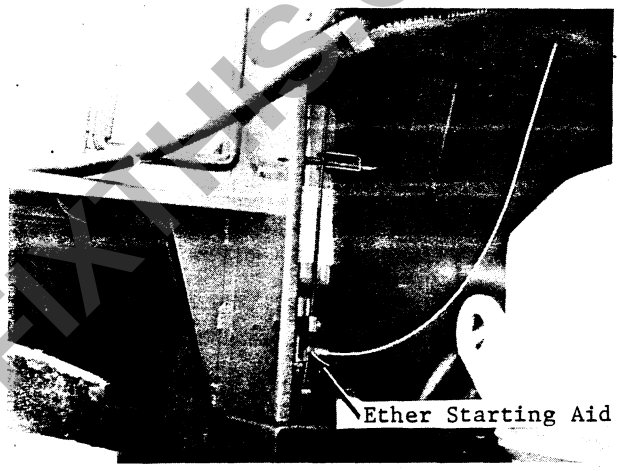
Allow engine to warm up to about 140° F before placing unit into operation. DO NOT RUN ENGINE AT HIGH RPM'S WHEN COLD. Lubricating oil hasn't had a chance to circulate properly.

COLD STARTING PROCEDURE

All tractors are equipped with an ether starting aid for cold weather use. 50°F(10°C) or below. Ether spray is discharged into the engine intake manifold from a pressurized container under the hood.

To operate:

1) Pull out control button for 3 to 5 seconds.



Ether Starting Aid

2) Push in and wait 5 seconds before following steps 1 to 4 of "Normal Starting Procedure" CYLINDER CONTAINS ETHER, extremely flamable under pressure. Keep container away from heat (over 200° F) sparks or open flame. Avoid contact with skin and breathing of vapors.

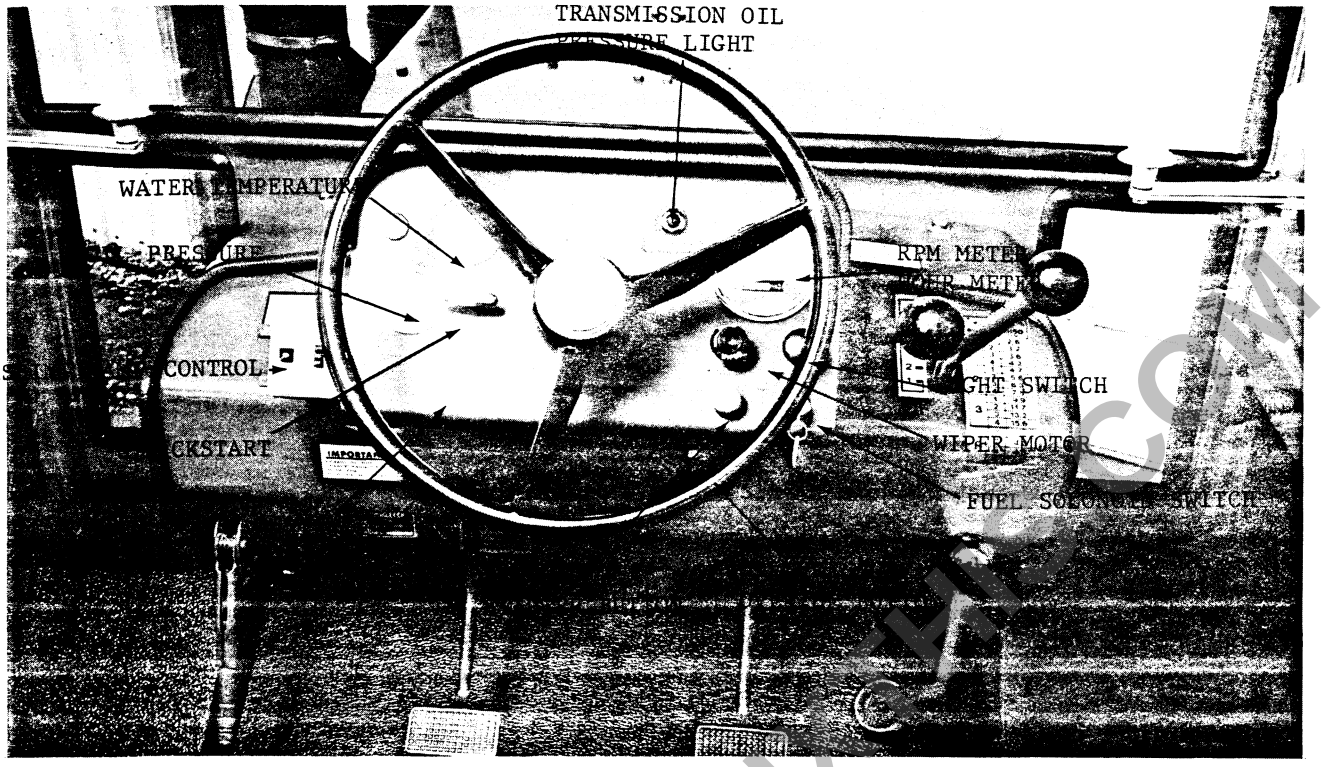
STEERING

The Model 900 has the articulated steering controlled by a pressure pump, power steering pump and two (2) double acting cylinders between the front and rear sections.

EXTREME CAUTION SHOULD BE USED IN ROUGH TERRAIN, IN DITCHES (ETC.) AVOID RAPID TURNS AT HIGH SPEEDS. UPHILL TURNS ON SLOPES SHOULD BE AVOIDED.

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INSTRUMENTS AND CONTROLS

TACHOMETER

The tachometer indicates the engine speeds. Engine idling speed should be 1000 RPM and Gover working speed 2850 RPM.

ENGINE OIL PRESSURE

All units are fitted with a special oil pressure guage, which automatically shuts engine down if pressure comes below 20 P.S.I. (minimum oil pressure requirement.)

ENGINE TEMPERATURE GAUGE

The coolant temperature guage is the same type as the oil pressure. When coolant temperature exceeds max. 205 ^{o} the engine shuts down. Normal operating temperature range is 170 to 190^{o}F.

FUEL SOLONOID SWITCH

The switch key controls the opening and closing of the electric shut down valve. Turning the switch off during operation stops the engine immediately. Before attempting to turn over cranking motor turn key in the on position.

AMMETER

Indicates charging rate of the alternator. Immediately after starting engine it is normal for the ammeter to show a charge for several minutes, then return to about two to five ampere charge.

STARTER BUTTON

With Fuel Solonoid switch turned to the "ON" position, hold oil pressure OVERIDE BUTTON then press starter button which engages the cranking motor. Continue to hold OVERIDE BUTTON until oil pressure exceeds 20 PSI.

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HYDRAULIC SYSTEMS	(Steering & Implement)
PUMP	Cessna Tandem Gear Pump with 26 GPM Capacity
CONTROL VALVE	Gresen 3 Spool w non adjustable relief valve 2000 P.S.I. 2 spools - self cancelling 1 Spool - Float
STEERING PUMP	Ross Power Steering unit with remote relief valve set at 1850 P.S.I.
CYLINDERS	Two double acting 3 inch cylinders w 16 1/2" stroke.
RESERVOIR	Common to both steering & implement situated under floorboards.
OIL COOLER	Fastened to the front of the radiator.
AIR CLEANER	
MAKE:	United Air Cleaner 112D-5 - 12" Dia. Filter Cartridge. Dry Type Service Indicator, Safety Element are Standard Equipment.
BRAKES	
Location	Situated on front driveline stops both axles.
Type	15" Disc. Type with Caliper hydraulically actuated by one foot pedal at the operator's platform.
PARKING BRAKE	Mechanical Disc. type hand operated from the operator's platform. Adjustment is done by rotating the handle on the lever.
ELECTRICAL	12 Volt negative ground system
Alternator	58 Amp output - Delco
Battery	Two (2) 204 Amp hour capacity.
COLD START	
Make	Turner Quick Start
Type	Ether
EXHAUST SYSTEM	Dual Vertical Muffler
CAPACITIES (Approx.) (U.S. Measure)	
Cooling System	53 quarts
Engine Oil	34 quarts
Transmission	23 quarts
Implement & Steering Hydraulics	95 quarts
AXLES	
Planetary	8 Qts.
Differential	19 Qts.
FUEL TANKS. (Two)	170 U.S. Gallons. (Both Tanks)
TRACTOR DIMENSION	
Wheel Base	10'-10"
Length to end of drawbar	21'-1"
Wheel tread width (Max.)	6'
Height (Overall)	11'-10"
Minimum bottom clearance	1' - 4"

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