

John Deere

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MODEL:

5000 Series Tractors

**SERVICE
MANUAL**



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JD-S-SM2040

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SERVICE MANUAL

JOHN DEERE

5000 SERIES

TRACTORS

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DESCRIPTION, OPERATION, AND SPECIFICATIONS

Group 5 DESCRIPTION

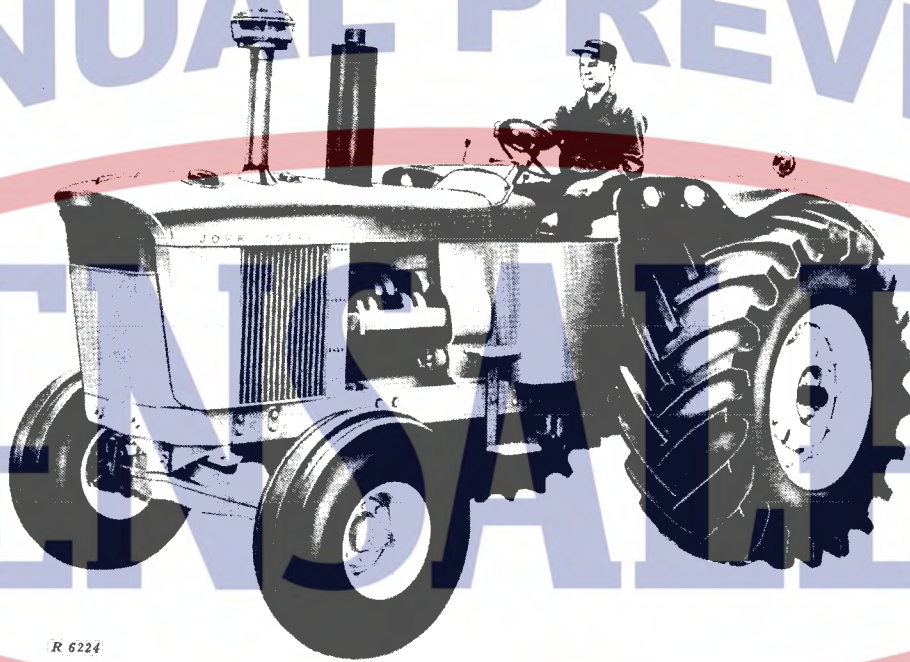


Fig. 10-5-1—Left-Hand View of John Deere 5020 Standard Tractor

INTRODUCTION

The John Deere 5000 Series tractors are large heavy-duty tractors designed for high capacity operation. The 5020 tractor is available as a row-crop or a standard tractor. The 5010 tractor was available as a standard tractor only.

The features of the tractor are briefly described in the paragraphs which follow. Full description of the components are given in the various sections throughout this manual.

SERIAL NUMBERS

Each engine is identified by a serial number located on the right-hand side of the cylinder block in front of the fuel filters. The engine serial numbers given in this manual are the numerical serial numbers indicated in the examples in the next column.

Engine Serial No.
Prior to 12000

33E 1000

Engine Serial No.
12000 and After

M33R0 012000 R

Numerical Serial No. Numerical Serial No.

The tractor serial number is located at the rear center of the transmission case. The tractor serial numbers given in this manual are the numerical serial numbers indicated in the following examples.

Tractor Serial No.
Prior to 8000

32T 1000

Tractor Serial No.
8000 and After

T323R 008000 R

Numerical Serial No. Numerical Serial No.

For brevity, when serial numbers are referred to in this manual, all zeros preceding the first significant digit are omitted.

NOTE: When ordering engine or tractor parts, record all the digits in the serial number.

Group 10

OPERATION



Fig. 10-10-1—Starting Controls

PRE-STARTING INSPECTION

- (1) Check engine crankcase oil level.
- (2) Check radiator coolant level.
- (3) Check amount of fuel in fuel tank. Turn key switch clockwise to first position and note reading on fuel gauge.
- (4) Make sure fuel shut-off valve at bottom of fuel tank is open.
- (5) Visually inspect the tractor and tires for any irregularities which might affect operation.
- (1) Place the gear shift lever in park or any neutral position.
- (2) Place the hand throttle in the 1200 rpm position, approximately one-third of the way downward.
- (3) Turn the key switch clockwise to the first position. The generator and oil pressure indicator lamps should light. If either lamp fails to light, turn the switch to the "OFF" position and determine the cause. See Section 150 of this manual.
- (4) On tractors prior to Serial No. 8000, turn the key switch clockwise as far as it will go to crank the engine.

STARTING THE ENGINE

Figure 10-10-1 illustrates the controls for starting the engine.

On tractors with Serial No. 8000 and after, press the starter button to crank the engine.

CAUTION: Do not hold the switch in the start position more than 30 seconds at a time. To do so may overheat the starter.

If the engine does not start the first time, wait a minute or two before trying again. If it does not start after four such attempts, refer to Section 270, "Trouble Shooting," of this manual.

- (5) As the engine starts and runs, make sure the generator or alternator and oil pressure lights go out. If either light does not go out, stop the engine and determine the cause. See Section 150 of this manual.

AFTER STARTING INSPECTION

- (1) Check generator or alternator and oil pressure indicator lights to be sure they go out.
- (2) Check for oil, water, and hydraulic leaks.

COLD WEATHER STARTING

COLD WEATHER STARTING FLUID ADAPTER



Fig. 10-10-2—Cold Weather Starting Fluid Adapter
(Prior to Serial No. 8000)

Cold weather starting fluid should be used when the air temperature is 40° F. or below.

The tractor is equipped with the starting fluid adapter (Fig. 10-10-2) which is used to inject atomized starting fluid into the engine air intake system to facilitate cold weather starting. The starting fluid is furnished in pressurized containers.

To use the can of starting fluid, remove the safety cap and plastic spray button from the can. Remove the cap from the adapter and position the can under the adapter.

To inject starting fluid, push up on the can.

CAUTION: To avoid damage, turn engine with starter one or two revolutions before injecting starting fluid. Inject starting fluid only while the engine is turning.

Relax pressure on the can between "shots" of starting fluid. Stop injecting fluid after the engine starts. If the engine begins to die during the first few minutes of operation, inject another "shot" of fluid. When the engine is operating satisfactorily, remove the can from the adapter and replace the safety cap on the can.

Be sure to install the cap on the adapter when it is not in use. This will prevent dust from being drawn into the engine.

Store starting fluid cans where they will not be subject to extreme cold or warm temperatures. For best results, store fluid at room temperature.

CAUTION: Ether starting fluid is highly flammable.

CRANKCASE OIL HEATER



Fig. 10-10-3—Location for Crankcase Oil Heater

The tractor is designed to permit the use of a 240-watt electrical crankcase heater. The heater warms the oil to facilitate engine starting.

To install the heater, drain the crankcase oil and remove the pipe plug from the right-hand side of the engine crankcase. Apply thread paste to the threads of the heater and install heater into the crankcase. Refill the crankcase. When the heater is to be put into use, remove the protective cap,

attach cord and plug into a 115-volt electrical source with a suitable ground. The connector on the cord has a release lever to lock the heater and terminal connection. Press the release lever when connecting or disconnecting heater cord.

PTO DISCONNECT

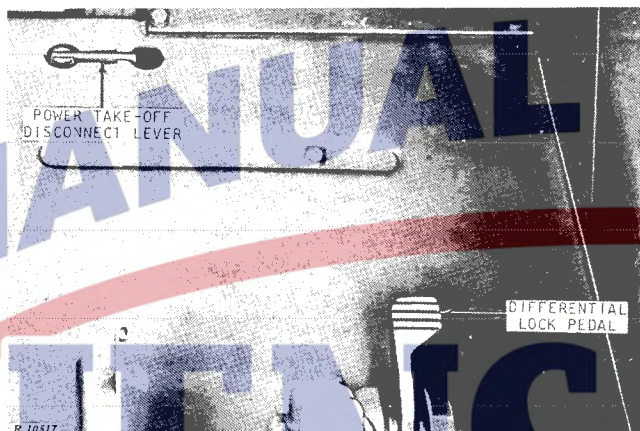


Fig. 10-10-4—PTO Disconnect Lever and Differential Lock Pedal

In cold weather, drag on the engine can be reduced by disconnecting the power take-off drive. This is accomplished by lifting the lever (Fig. 10-10-4) and rotating 180°. When the beveled edge of the lever is showing, the PTO drive is engaged.

If the tractor will be used for PTO work, engage the PTO disconnect by rotating the disconnect lever 180 degrees with the engine stopped. If the drive does not engage easily, momentarily engage the engine starter while maintaining pressure on the lever.

NOTE: Always disconnect the power take-off drive when the PTO is not being used.

HYDRAULIC PUMP SHUT-OFF

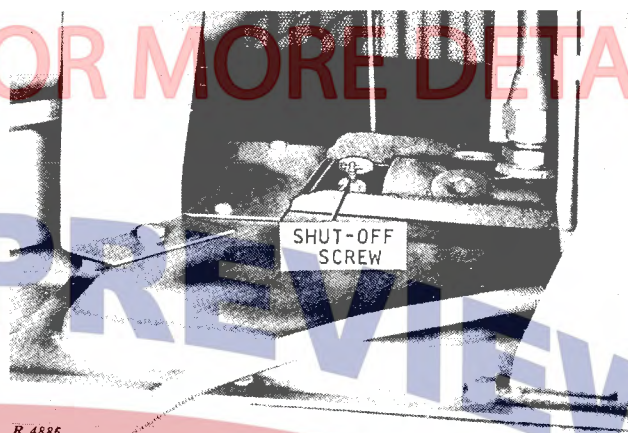


Fig. 10-10-5—Hydraulic Pump Shut-Off Screw

As an additional aid to cold weather starting on some tractors, the main hydraulic pump can be adjusted out of stroke. Figure 10-10-5 shows the shut-off screw for this purpose.

To adjust the pump out of stroke, turn the screw in (clockwise) a few turns with a screwdriver. Then turn the screw in by hand until resistance is felt. Turn the screw in one more turn. After the engine is started, use the screwdriver to back the shut-off screw all the way out. The pump will not build up pressure.

NOTE: The shut-off screw must be backed all the way out against the internal stop or oil will leak past the shut-off screw.

OPERATING THE TRACTOR

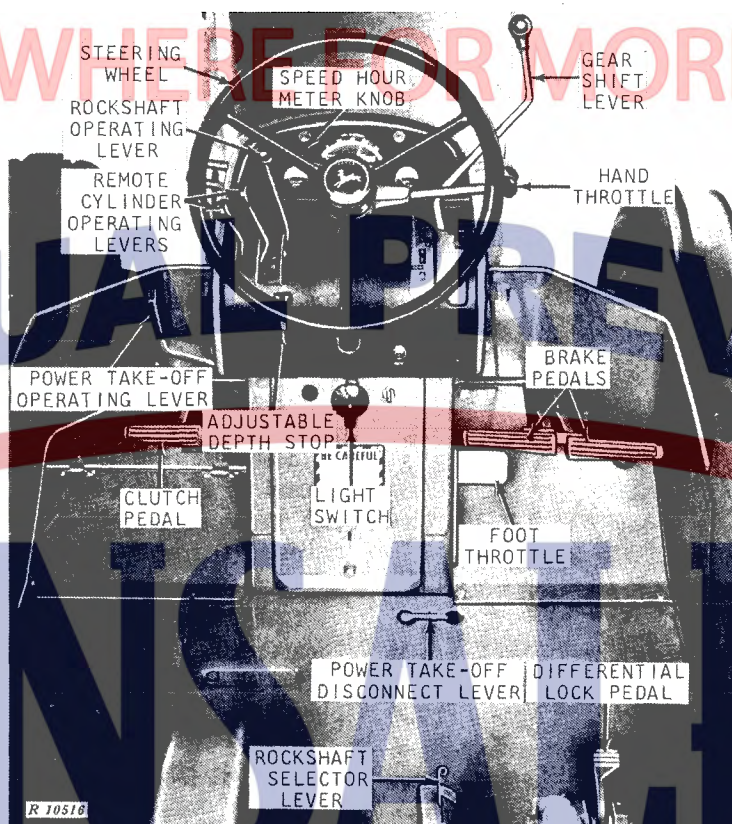


Fig. 10-10-6—Operating Controls

Operating controls are illustrated in Figure 10-10-6.

ENGINE WARM-UP

Always be sure that the engine is at operating temperature before subjecting it to a full load.

A good way to do this is to operate the engine at about 1500 rpm for a few minutes, then at a very light load (such as driving to the field) for the next five or ten minutes.

It is good practice, when the tractor is put to work, to operate for the first 30 minutes in a lower speed than is normally used for the load.

The above procedure permits the engine oil to reach operating temperature and prevents undue wear on engine and transmission parts.

ENGINE SPEEDS

The engine is designed to operate at working speeds ranging from 1500 to 2200 rpm. These are variable governed speeds. The engine can be operated efficiently at any speed between the two extremes to meet various working conditions.

When using the power take-off, operate the engine at 1900 rpm.

Slow idle speed on tractors prior to Serial No. 012000 is 600 rpm. On tractors Serial No. 012000 and after, slow idle speed is 800 rpm.

In addition, by using the foot throttle, engine speeds can be varied between 2200 and 2500 rpm to save time when traveling on highways or smooth surfaced roads.

Using the Hand Throttle

Use the hand throttle to select the "stop" or "slow idle" positions and any of the variable governed speeds from 1500 to 2200 rpm (Fig. 10-10-7).

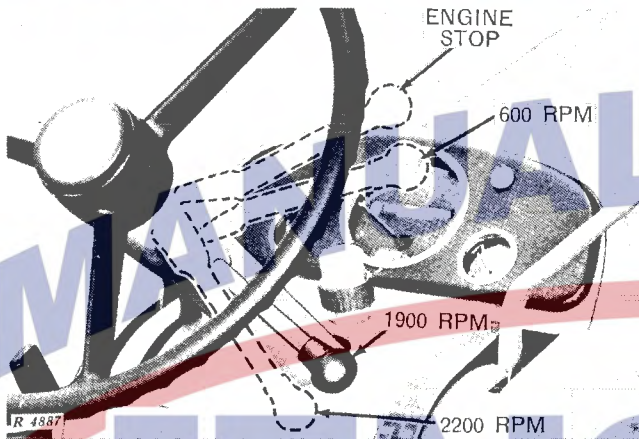


Fig. 10-10-7—Hand Throttle Positions

Move the lever counter-clockwise as far as it will go with the knob in to obtain the slow idle speed. To obtain rated engine load speed (1900 rpm), move the lever clockwise to the first stop. Placing the lever midway between the slow idle and 1900 rpm positions gives the 1500 rpm speeds. Engine speeds between 1500 and 1900 rpm can be selected by moving the lever between these two positions.

To obtain working speeds above 1900 rpm, pull out on the knob at the end of the hand throttle lever and move the lever clockwise as far as it will go. This is the 2200 rpm position. Engine speeds between 1900 and 2200 rpm can be selected by moving the lever between these two positions.

Using the Foot Throttle

The foot throttle (Fig. 10-10-6) is used to select transport speeds up to 2500 rpm or to increase engine speeds momentarily.

The foot throttle operates independently of the hand throttle. When it is not in use, engine speed is determined by the position of the hand throttle.

NOTE: The foot throttle is not intended as a means of increasing the normal working speed of the engine.

SHIFTING THE TRANSMISSION**SELECTING GROUND SPEED**

The tractor has eight forward gear selections which can be used in any throttle position. These combinations enable the operator to balance speed and power for maximum economy and allow him flexibility to meet varying working conditions. For example, for a given ground speed the operator can elect to work in a low gear at high engine speed for maximum reserve power or in a higher gear at a lower engine speed for maximum fuel economy.

Examples of ground speeds are shown in Group 15 of this Section. Engine working speeds can be varied between 1500 and 2200 rpm and transport speed can be varied up to 2500 rpm.

CAUTION: Avoid overloading the tractor. Overloading causes undue strain on parts, eventually resulting in poor operation and repair expense.

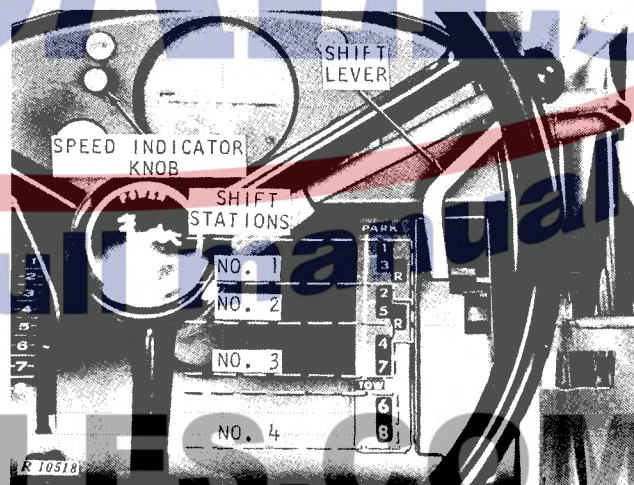
SHIFTING INTO GEAR

Fig. 10-10-8—Gear Shift Stations
(Serial No. 4500 and After)

Depress the clutch pedal to disengage the clutch, and move the shift lever to the gear desired.

SHIFTING FROM ONE SPEED TO ANOTHER

The shift quadrant has four "stations" (Fig. 10-10-8). On tractors prior to Serial No. 4500 stations 1, 2, and 3 have two forward and one reverse speeds. Station 4 has two forward speeds only.

On tractors Serial No. 4500 and after stations 1 and 2 have two forward speeds and one reverse speed. Stations 3 and 4 have two forward speeds only.

When the clutch pedal is depressed, the transmission can be shifted, within the same station, from one forward speed to the other forward speed, or to reverse while the tractor is in motion at slow speeds. Shifting can be accomplished between 1st, 3rd, and 3rd reverse speeds; 2nd, 5th, and 5th reverse speeds; 4th, 7th, and 7th reverse speeds and 6th and 8th speeds without stopping the tractor.

To shift from one station to another, depress the clutch pedal, stop the tractor, move the shift lever to neutral and then to the desired station. Gradually release the clutch pedal to engage the clutch.

PARKING THE TRACTOR

When the tractor is stopped for parking, holding it on an incline, or for holding it while doing PTO work, move the shift lever as far forward as it will go from neutral into the "PARK" position.

CAUTION: Be sure the tractor is stopped before placing the lever in the "PARK" position.

Shifting from "PARK" to neutral or any operating gear releases the parking mechanism.

TOWING THE TRACTOR

The shift lever **MUST** be placed in the "TOW" position when towing the tractor. This reduces transmission drag and assures proper lubrication. Have an operator steer the tractor.

CAUTION: Observe all safety precautions when towing the tractor. Do not tow at excessive speed. Always attach a tow bar or chain to the tractor frame. When possible, run the engine to maintain hydraulic pressure for power operation of steering and brakes.

POWER TAKE-OFF (PTO)



Fig. 10-10-9—PTO Disconnect Lever and Differential Lock Pedal

PTO DISCONNECT

The power take-off is disengaged when the straight edge of the lever is up as shown in Figure 10-10-9.

The drive can be disconnected, when the engine is stopped or running at slow speed, by lifting the lever and rotating it 180°.

To connect the PTO drive, rotate the lever 180° with the engine stopped. If the lever does not rotate easily, momentarily engage the engine starter while maintaining pressure on the disconnect lever.

NOTE: Always disconnect the power take-off drive when the PTO is not being used.