3020 ROW-CROP UTILITY AND GROVE AND ORCHARD TRACTORS (SERIAL NO. 68000-UP)

JOHN DEERE

OPERATORS MANUAL

3020 ROW-CROP UTILITY AND GROVE AND ORCHARD TRACTORS (SERIAL NO. 68000-UP)

OMR39666 D8 English

JOHN DEERE TRACTOR WORKS
OMR39666 D8

LITHO IN THE U.S.A.
ENGLISH

TO THE PURCHASER

Your versatile new John Deere Tractor meets the exacting requirements of modern farming.

Operating ease and comfort, hydraulic power when and where you need it, the ability to match engine power and transmission speed to any job, outstanding economy and dependability, modern styling, and simplicity of lubrication and service are all special features of this great tractor.

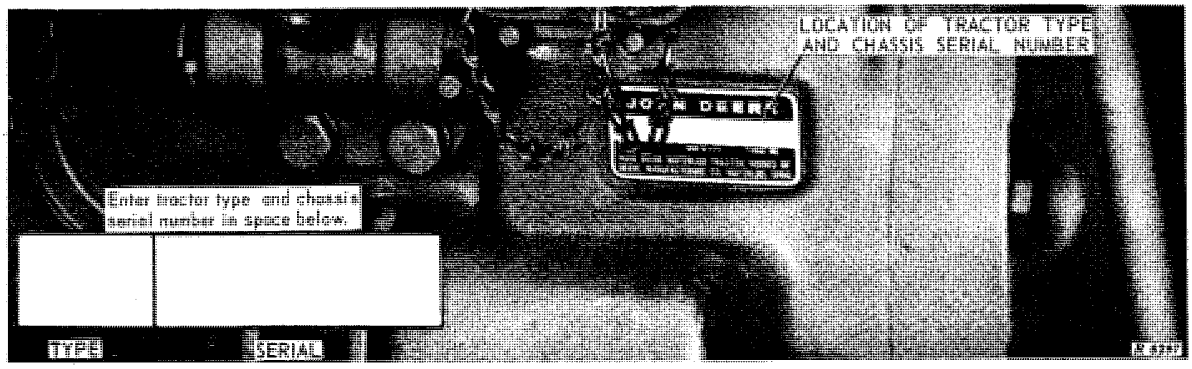
We are confident this modern tractor, combined with equally advanced John Deere tools and implements, will help you to farm better, easier, and more profitably.

At the time the tractor was delivered, the John Deere dealer discussed with you its safe operation and proper care. However, before putting the tractor to work, read this manual. It contains complete instructions for operating the tractor, caring for it, and taking full advantage of its many time- and labor-saving features. After reading the manual, keep it in a convenient place for quick and easy reference if questions arise concerning operation, lubrication, or service.

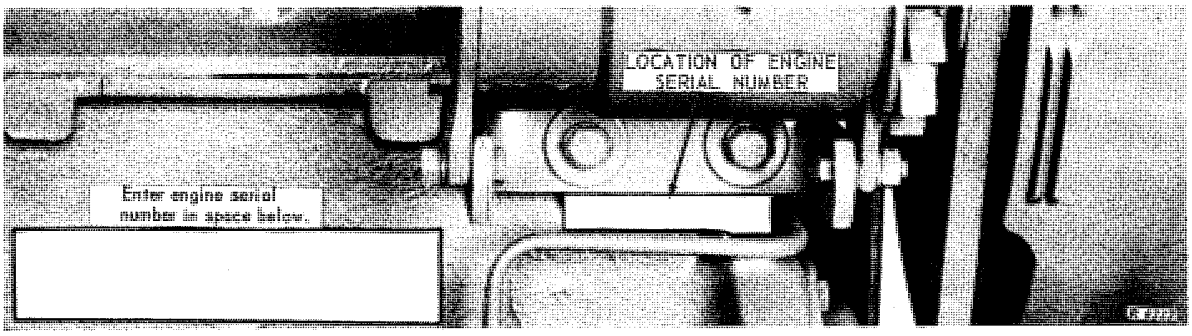
Information concerning the warranty on this tractor will be found on the inside back cover of this manual, and in your copy of the delivery receipt which you should have received from your dealer when the tractor was delivered to you.

Your John Deere dealer wants to help you get the most value from your tractor. His skilled servicemen can handle every job efficiently. These men are trained in modern service methods; they have all necessary tools and equipment. If new parts are needed, only genuine John Deere parts will be installed. These parts are exact duplicates of the originals, made from the same patterns and of the same high-quality materials.

When in need of new parts, be prepared to furnish your dealer with the tractor type, complete tractor chassis serial number, and complete engine serial number. For ready reference, locate and record the above information in the spaces provided in the illustrations below.

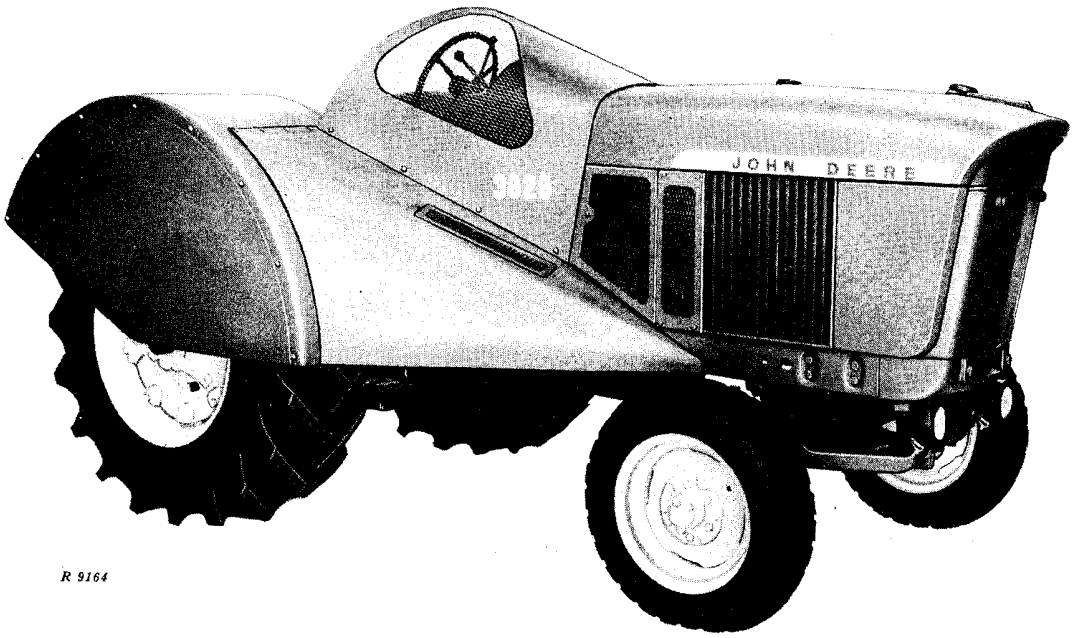


Tractor Chassis Serial Number



Engine Serial Number

CONTENTS



R 9164

John Deere 3020 Grove and Orchard Tractor with Gasoline Engine

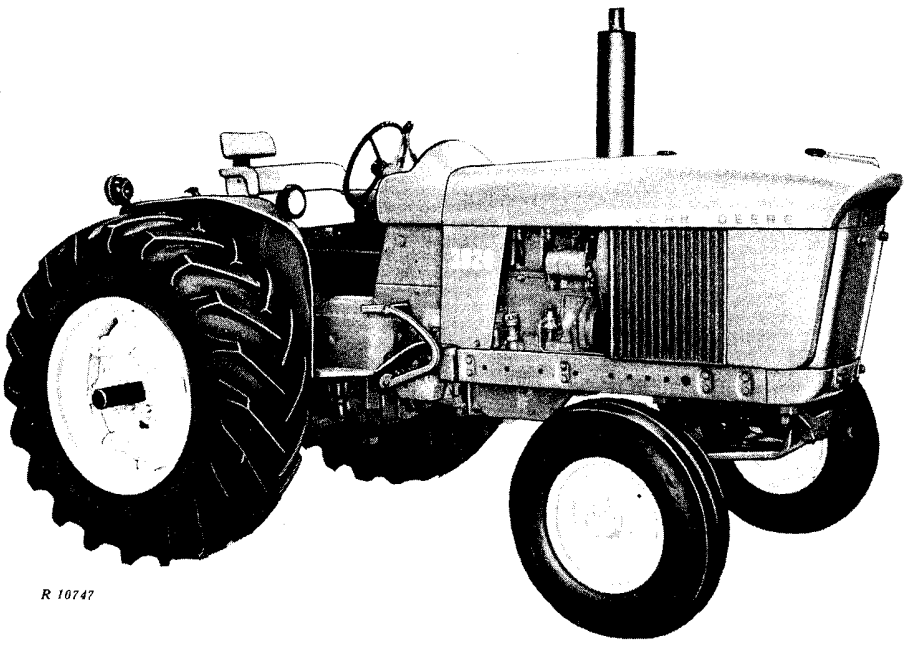
SPECIFICATIONS

	Diesel	Gasoline	LP-Gas***
HORSEPOWER (observed):			
PTO (Syncro-Range Transmission)*	70 h.p.	70 h.p.	70 h.p.
PTO (Power Shift Transmission)**	65 h.p.	64 h.p.	64 h.p.
Drawbar (Power Shift Transmission)**	57 h.p.	55 h.p.	56 h.p.
ENGINE:			
Type	4-cylinder, in-line, valve-in-head		
Engine speeds:			
Idle for engine shutoff	.....	420 rpm	500 rpm
Normal slow idle	600 rpm	650 rpm	650 rpm
Working range	1500 to 2500 rpm	1500 to 2500 rpm	1500 to 2500 rpm
Bore and stroke	4-1/4 in. x 4-3/4 in.	4-1/4 in. x 4 in.	4-1/4 in. x 4 in.
Displacement	270 cu. in.	227 cu. in.	227 cu. in.
Compression ratio	16.5 to 1	7.5 to 1	9.0 to 1
Firing order	1-3-4-2	1-3-4-2	1-3-4-2
Intake valve clearance	0.018 in.	0.015 in.	0.015 in.
Exhaust valve clearance	0.018 in.	0.028 in.	0.028 in.
Injection pump timing	TDC	.....	.....
Distributor timing (see page 60 for engine speed)	.....	20° BTDC	25° BTDC
Distributor point gap	.....	0.022 in.	0.022 in.
Spark plug gap	.....	0.025 in.	0.015 in.
ELECTRICAL SYSTEM:			
Starter and generator voltage	24 volts	12 volts	12 volts
Lights and accessory voltage	12 volts	12 volts	12 volts
12-volt battery, 78-plate, 75 amp-hour	Two (connected in series)	One	One

* *Maximum observed PTO horsepower at 2500 engine rpm (factory observed).*

** *Above observed horsepower figures are official at 2500 engine rpm.*

*** *Available for Row-Crop Utility Tractors only.*



R 10747

John Deere 3020 Row-Crop Utility Tractor with Gasoline Engine and Syncro-Range Transmission

COOLING SYSTEM:
- Type . . . . . Pressurized with centrifugal pump
- Engine temperature control . . Heavy-duty thermostat

LUBRICATION SYSTEM . . Force-feed pressurized type with full-flow oil filter

CAPACITIES:
- Fuel tank . . . . . Diesel and gasoline— 29 U.S. gals.
  LP-Gas (80% full)— 33.6 U.S. gals.
- Crankcase . . . . . Dry System— 9 U.S. qts.
  At service intervals— 8 U.S. qts.
- Transmission-hydraulic system:
  - Syncro-Range . . . . . Dry System— 11 U.S. gals.
    At service intervals— 8 U.S. gals.
  - Power Shift . . . . . Dry System— 14 U.S. gals.
    At service intervals— 11 U.S. gals.
- Oil-bath air cleaner . . . . . Diesel— 4 U.S. pints
  Gasoline and LP-Gas— 2-1/4 U.S. pints
- Cooling system . . . . . — 19 U.S. qts.
- Belt pulley . . . . . — 2-1/2 U.S. pints

SYNCRO-RANGE TRANSMISSION:
- Type . . . . . Syncro-Range, constant mesh
- Gear selections . . . . . 8 forward and 2 reverse
- Shifting . . . . . 4 stations, synchronized shifting within stations

POWER SHIFT TRANSMISSION:*
- Type . . . . . Planetary gears, hydraulically actuated wet disk clutches and brakes
- Gear selections . . . . . 8 forward and 4 reverse
- Shifting . . . . . Hydraulic, powershifting controlled by speed selector

POWER TAKE-OFF:
- Type . . . . . Independent PTO with front and rear power take-off. Stub shafts used for rear dual speed PTO speed conversion
- Speed (1900 engine rpm) . . . . . Front—1000 rpm
  Dual speed rear—540 or 1000 rpm
  Single speed rear—1000 rpm

**Available for Row-Crop Utility Tractors Only.*

HYDRAULIC SYSTEM:
- Type . . . . . Closed center, constant pressure. Includes power steering, power brakes, and implement control
- Maximum pressure . . . . . 2250 psi

BRAKES . . . . . Hydraulically power actuated, disk-type, operating in oil

GROUND SPEEDS . . . . . See page 12

FRONT TIRES** . . . . . 6.50 - 16, 6-ply

REAR TIRES**
- Row-Crop Utility . . . . . 14.9 - 28, 6-ply
- Orchard . . . . . 16.9 - 26, 6-ply

FRONT WHEEL TREAD . . . . . See page 16

REAR WHEEL TREAD . . . . . See page 17

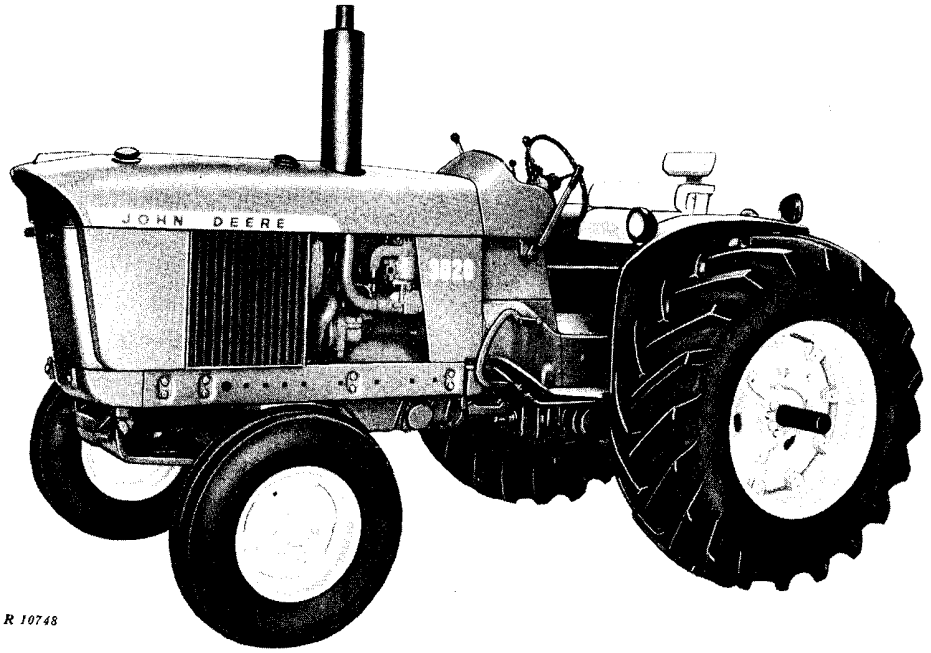
DIMENSIONS	Row-Crop Utility	Orchard
Wheel base	81-1/2 or 92-3/4 in.	81-1/2 in.
Over-all length	138-1/2 in.	139 in.
Over-all height	85-1/2 in.	68 in.
Height to steering wheel	66-1/2 in.	65-1/2 in.
Width (regular axle)	89-5/8 in.	81 in.
Turning radius	120 in.	120 in.

SHIPPING WEIGHT (With equipment for average field service, less fuel and ballast. Add 330 lbs. if tractor has Power Shift transmission:

	Row-Crop Utility	Orchard
Diesel	7399 lbs.	6481 lbs.
Gasoline	7204 lbs.	6360 lbs.
LP-Gas*	7374 lbs.	

***Additional tires available for special purposes.*

Specifications and design subject to change without notice.

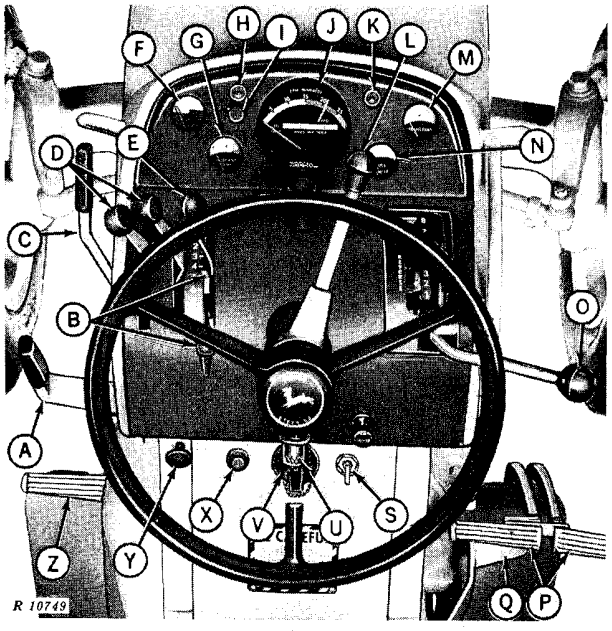


R 10748

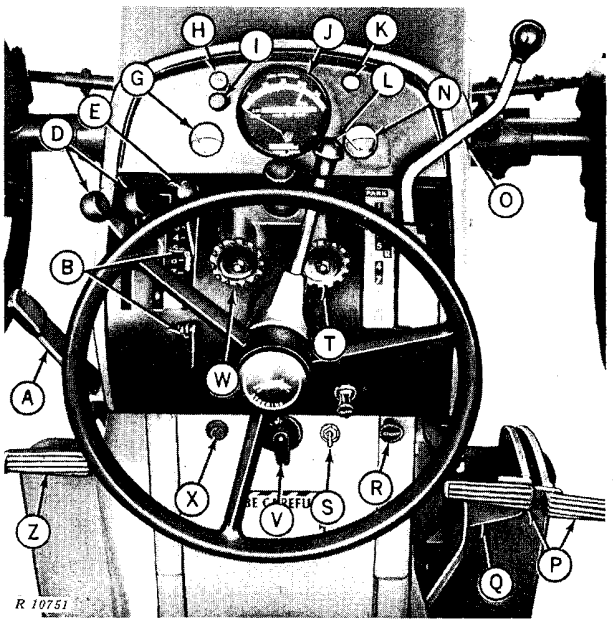
John Deere 3020 Row-Crop Utility Tractor with Gasoline Engine and Syncro-Range Transmission

CONTROLS AND INSTRUMENTS

Before attempting to operate your new tractor, become familiar with the location and purpose of its controls and instruments. Study the next few pages carefully, regardless of your previous tractor experience.

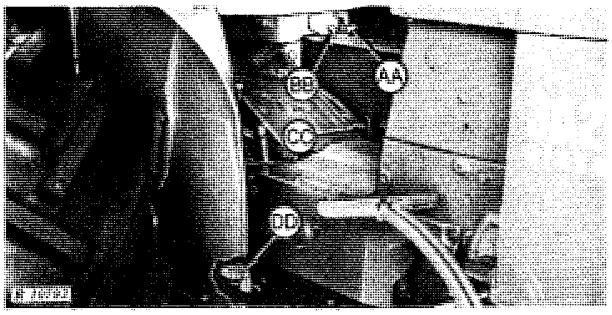


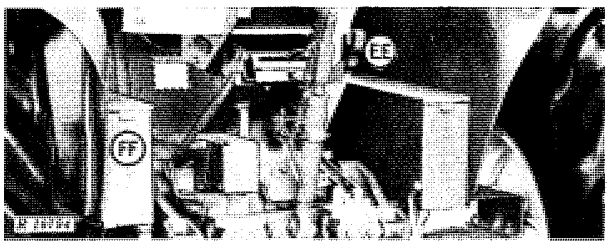
Row-Crop Utility Tractor with Diesel Engine and Power Shift Transmission



Row-Crop Utility Tractor with LP-Gas Engine and Syncro-Range Transmission

A – Power Take-Off Clutch Lever (Page 33)
B – Rockshaft Control Lever Stop and Lock (Page 22)
C – Engine Disconnect Lever (Power Shift Tractors, page 8)
D – Remote Cylinder Operating Levers (Page 28)
E – Rockshaft Control Lever (Page 22)
F – Transmission Oil Pressure Gauge (Power Shift Tractors, pages 8 and 13)
G – Coolant Temperature Gauge
H – Generator Indicator Light (Pages 5 and 6)
I – Speed Indicator Knob (Page 12)
J – Speed-Hour Meter (Pages 12 and 42)
K – Oil Pressure Indicator Light (Pages 5 and 6)
L – Hand Throttle (Page 9)
M – Transmission Oil Temperature Gauge (Power Shift Tractors, page 13)
N – Fuel Gauge
O – Shift Lever (Syncro-Range Tractors, page 14)
Speed Selector (Power Shift Tractors, page 12)
P – Brake Pedals (Page 16)
Q – Foot Throttle (Page 10)
R – Engine Choke Knob (Gasoline and LP-Gas Tractors, page 6)
S – Key Switch (Pages 5, 6, and 10)
T – Vapor Withdrawal Valve (LP-Gas Tractors, page 6)
U – Ether Starting Fluid Adapter (Diesel Tractors, page 7)
V – Light Switch (Page 20)
W – Liquid Withdrawal Valve (LP-Gas Tractors, page 6)
X – Starter Switch (Pages 5 and 6)
Y – Lever Latch Knob (Power Shift Tractors, page 8)
Z – Clutch Pedal (Syncro-Range Tractors, page 14)
Inching Pedal (Power Shift Tractors, page 12)





AA – Seat Latch Handle (Page 11)
BB – Seat Weight Adjusting Screw (Page 11)
CC – Tow Lever (Power Shift Tractors, page 15)
DD – Differential Lock Operating Pedal (Page 15)
EE – Seat Position Selector Lever (Page 11)
FF – Rockshaft Selector Lever (Page 23)

OPERATION

Complete instructions for operating your tractor safely and efficiently are given on the following pages. By following these directions carefully, you can be sure that you are taking full advantage of the many features built into your tractor.

OPERATING THE ENGINE

PRESTARTING CHECKS

Perform the following checks and services before starting the engine for the first time each day:

(1) Check the engine crankcase oil level—see page 46.

(2) Check the radiator coolant level—see page 46.

(3) If tractor has an oil-bath air cleaner, check the air cleaner oil cup—see page 50. If tractor has a precleaner, check the sediment bowl—see page 47.

(4) If tractor has a fuel pump, check the sediment bowl—see page 47.

(5) Grease the front axle pivot pins and steering spindles—see page 47.

(6) Grease the front wheel bearings if the tractor has been operated in extremely wet or muddy conditions—see page 47.

STARTING THE DIESEL ENGINE

NOTE: If the prevailing temperature is 40 degrees Fahrenheit or lower, it may be necessary to use a cold weather starting aid to start the engine (page 7).

Perform the Prestarting checks above.

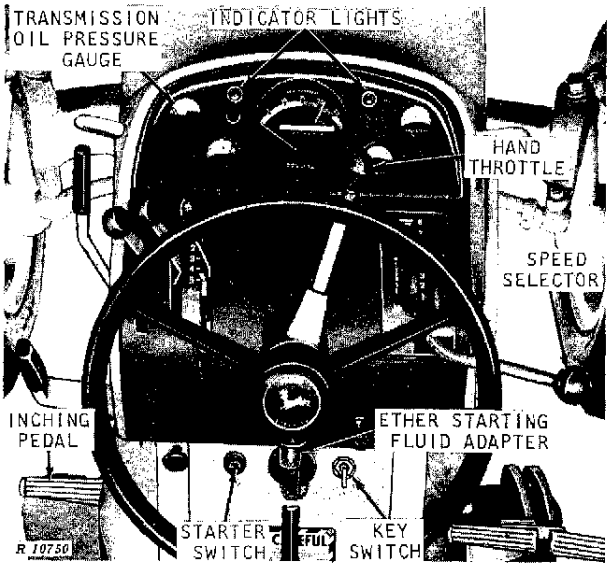
(1) Make sure the fuel shut-off valve on the bottom of the fuel tank is open—see page 54.

(2) See that the shift lever or the speed selector is in the "PARK" position. Depress the clutch pedal or the inching pedal.

(3) PLACE THE HAND THROTTLE IN THE 1200 RPM POSITION, approximately one-third of its travel to the right.

(4) Turn the key switch clockwise to the "ON" position. Both indicator lights should glow. If either light fails to glow, turn off the key switch and determine the cause.

(5) Press on the starter switch to start the engine. Do not press on the starter switch for more than 30 seconds at a time. To do so may overheat the starter. If the engine does not start the first time, wait for a minute or two before trying again. If it does not start after four attempts, see "Trouble Shooting" (page 72).



Starting Controls on Diesel Tractor with Power Shift Transmission

If the starter switch is released before the engine starts, wait until the starter and the engine stop before trying again. This will prevent possible damage to the starter.

Before the starter will operate, the shift lever or the speed selector lever must be in "PARK" or neutral and on Power Shift tractors, the inching pedal must also be depressed.

(6) After the engine starts, the generator and oil pressure indicator lights should go out. If either light continues to glow when the engine is running faster than 800 rpm, stop the engine and determine the cause. Leave key switch in the on position so the indicator lights will function.

On tractors with Power Shift transmission, check to see that the transmission oil pressure gauge indicates oil pressure. Operating the engine when gauge shows insufficient pressure may damage the tractor. See pages 8 and 13.

STARTING THE GASOLINE ENGINE

Perform the Prestarting checks listed on page 5.

(1) Make sure the fuel shut-off valve on the bottom of the fuel tank is open—see page 54.

(2) See that the shift lever or the speed selector is in "PARK" position. Depress the clutch pedal or the inching pedal.

(3) PLACE THE HAND THROTTLE IN THE 650 RPM POSITION, all the way to the left with the knob in.

(4) When the prevailing temperature is below 60 degrees Fahrenheit and the engine is cold, pull out on the engine choke knob.

NOTE: At extremely low temperatures it may be necessary to use a cold weather starting aid (page 8).

(5) Turn the key switch clockwise to the on position. The generator and oil pressure indicator lights should glow. If either light fails to glow, turn the key switch off and determine the cause.

(6) Press on the starter switch to start the engine. To prevent overheating the starter, do not operate the starter for more than 30 seconds at a time and then wait a minute or two before trying again. If the engine does not start, momentarily pull the choke knob out while starting the engine. If it does not start after four such attempts, see "Trouble Shooting" (page 72).

If the starter switch is released before the engine starts, wait until the starter and the engine stop before trying again. This will prevent possible damage to the starter.

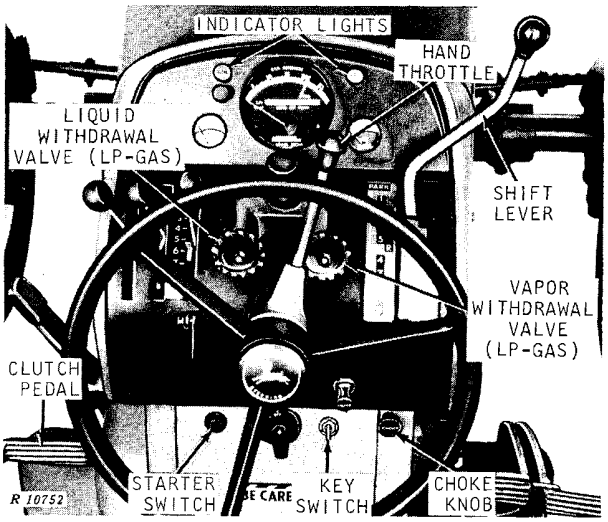
Before the starter will operate, the shift lever or the speed selector lever must be in "PARK" or neutral and on Power Shift tractors, the inching pedal must also be depressed.

(7) As soon as the engine starts, push the choke knob in. During cold weather, it may be necessary to leave the choke partially on for the first few minutes.

(8) As the engine begins to run, check to see that the oil pressure and generator indicator lights go out. If either light continues to glow when the engine is running faster than 700 rpm, stop the engine and determine the cause.

On tractors with Power Shift transmission, check to see that the transmission oil pressure gauge indicates oil pressure. Operating the engine when gauge shows insufficient pressure may damage the tractor. See pages 8 and 13.

STARTING THE LP-GAS ENGINE



Starting Controls on Gasoline and LP-Gas Tractors with Syncro-Range Transmission

Perform the Prestarting checks listed on page 5.

(1) See that the shift lever or speed selector lever is in "PARK" position. Depress the clutch pedal or inching pedal.

(2) PLACE THE HAND THROTTLE IN THE 650 RPM POSITION, all the way to the left with the knob in.

(3) Open the vapor withdrawal valve slowly. If the valve is opened too fast, it may cause the excess flow valve (inside the withdrawal valve) to close and prevent normal flow of vapor. If this happens, close the vapor withdrawal valve and open it more slowly.

(4) Turn the key switch clockwise to the on position. The generator and oil pressure indicator lights should glow. If either light fails to glow, turn off the key switch and determine the cause.

(5) Press on the starter switch to start the engine.

Before the starter will operate, the shift lever or the speed selector lever must be in "PARK" or neutral and on Power Shift tractors, the inching pedal must also be depressed.

(6) In cold weather, if the engine does not start immediately, place the hand throttle in the 500 rpm position (page 9). While the starter is cranking the engine, pull the choke knob out slowly until the engine fires regularly. Leave the choke in this position and slowly advance the hand throttle. Release starter switch when engine is no longer being turned by starter. Gradually push the the choke knob in. DO NOT OVER-CHOKE.

NOTE: At low temperatures, it may be necessary to use a cold weather starting aid (next column).

Do not press on the starter switch for more than 30 seconds at a time. To do so may overheat the starter. If the engine does not start the first time, wait for a minute or two before trying again. If it does not start after four attempts, see "Trouble Shooting" (page 72).

If the starter switch is released before the engine starts, wait until the starter and the engine stop before trying again. This will prevent possible damage to the starter.

(7) As the engine begins to run, check to see that the oil pressure indicator light and generator indicator light go out. If either light continues to glow when the engine is running faster than 700 rpm, stop the engine and determine the cause.

On tractors with Power Shift transmission, check to see that the transmission oil pressure gauge indicates oil pressure. Operating the engine when gauge shows insufficient pressure may damage the tractor. See pages 8 and 13.

(8) Operate the engine on vapor until the cooling system is warm. Then slowly open the liquid withdrawal valve and close the vapor valve. Opening the liquid withdrawal valve too fast may cause the excess flow valve to close and prevent normal flow of liquid. If this happens, close the withdrawal valve and open it more slowly.

R 2206

CAUTION: Before starting the tractor engine, be sure there is plenty of ventilation. Never operate the tractor in a shed or garage.

COLD WEATHER STARTING AIDS

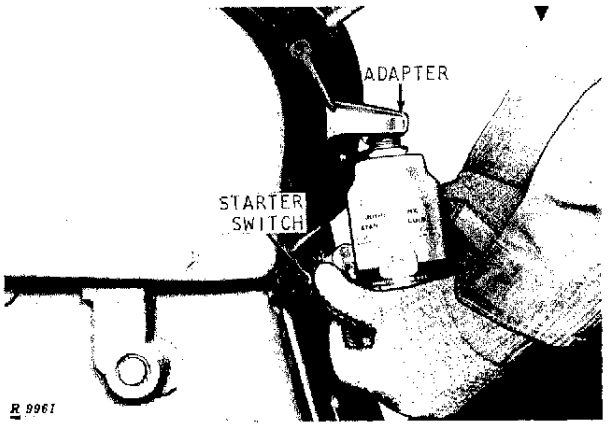
For cold weather starting, the diesel tractor is equipped with an ether starting fluid adapter. The Power Shift transmission tractor is equipped with an engine disconnect lever. Other starting aids are available from your John Deere dealer.

These aids are effective at low temperatures, only when the engine is otherwise operating satisfactorily. They will not correct such deficiencies as low battery charge, crankcase oil of heavy viscosity, and high electrical resistance which may prevent the engine from starting.

ETHER STARTING FLUID ADAPTER (Diesel Tractors)

The diesel tractor is equipped with this adapter which is used to inject atomized starting fluid into the engine air intake system. Pressurized cans of starting fluid are available from your John Deere dealer.

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.



R 9961

Injecting Starting Fluid

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.

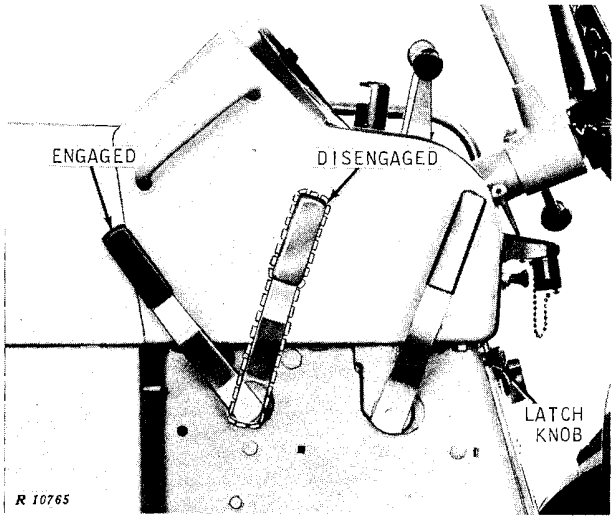
Relax pressure on the can between "shots" of starting fluid. Stop injecting fluid after the engine starts. If the engine begins to die during the first few minutes of operation, inject another "shot" of fluid. When the engine is operating satisfactorily, remove the can from the adapter and replace the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

ENGINE DISCONNECT LEVER (Power Shift Tractors)



Engine Disconnect Lever

During cold weather, the starter speed on Power Shift tractors may be increased by disengaging the engine disconnect lever so that the transmission will not turn. To do so, pull the lever rearward until it is latched in the disengaged position.

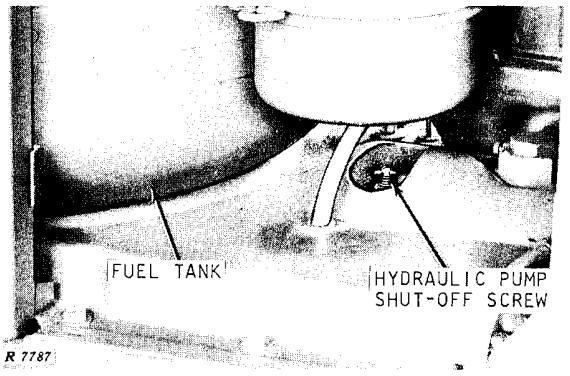
Immediately after starting the engine, engage the lever by pulling it slightly rearward while pulling out on the latch knob. Hold the knob out and allow the lever to move forward to the engaged position. Release the latch knob. The transmission oil pressure gauge should indicate oil pressure (pages 5 and 13).

CAUTION: Operating the engine with the engine disconnect lever disengaged will damage the tractor. Be sure to engage it as soon as the engine starts.

Never attempt to start a tractor with a Power Shift transmission by towing or pushing.

SHUTTING OFF HYDRAULIC PUMP

If the tractor has a hydraulic pump shut-off screw (available from your John Deere dealer), the starter speed may be increased during cold weather by shutting off the hydraulic pump so it will not build up pressure. To do so, turn the shut-off screw in (clockwise) one turn with a screwdriver. Then turn the screw in by hand until resistance is felt. Turn the screw in one more turn.



Hydraulic Pump Shut-Off Screw

After the engine has started, use a screwdriver to back the shut-off screw all the way out (turn the screw counter-clockwise). The pump will now build up pressure.

NOTE: Oil will leak past the shut-off screw if it is not backed all the way out against the internal stop.

CRANKCASE OIL HEATER

To facilitate cold weather starting, a 240-watt, 115-volt electrical crankcase oil heater may be installed in the engine oil pan at the lower front right-hand corner.

ADDITIONAL BATTERIES

Cold weather starting can be made easier by connecting an additional 12-volt battery in parallel with the 12-volt battery on the tractor.

CAUTION: Gas given off by batteries is explosive. To avoid injury or battery damage, avoid sparks near the batteries.

Make sure all electrical switches or accessories are turned off and make the last connection or the first disconnection at some point away from the battery.

On gasoline or LP-Gas tractors, connect a jumper cable to the negative post of a 12-volt booster battery and to the negative post of the tractor battery. Connect one end of the other jumper cable to the positive (+) post of the booster battery and the other end to a good ground on the tractor frame away from the battery. NEVER connect jumper cable to pipes or thin sheet metal.

NOTE: On diesel tractors, the only battery ground connection is a light gauge ground wire.

To prevent damage to the ground wire, NEVER connect a booster battery to the diesel tractor frame.

On Row-Crop Utility diesel tractors, use two 12-volt batteries and four jumper cables. Connect first jumper cable to the positive (+) post of the first booster battery and to the positive (+) post of the right-hand tractor battery. Connect the second jumper cable from the negative post of the second booster battery and to the negative post of the left-hand tractor battery. Connect one end of the third jumper cable to the negative post of the first booster battery. Connect one end of the fourth jumper cable to the positive (+) post of the second booster battery. To make the last connection away from the batteries, connect together the other ends of the third and fourth jumper cables.

On Grove and Orchard diesel tractors, make the same connections as instructed above except that the left-hand battery referred to above is on the right-hand side of the tractor. The right-hand battery in the above instructions is on the left-hand side of a Grove and Orchard tractor.

See your John Deere dealer for additional booster battery information.

TRACTOR WARM-UP PERIOD

Always be sure the tractor is warmed up properly before operating under a full load.

A good way to do this is first to idle the engine at about 1500 rpm for 5 minutes and then operate it at about 1900 rpm for another 5 minutes.

It is good practice to operate the tractor for the first 30 minutes in a lower gear than is normally required for the load. This gives the oil a chance to circulate freely and prevents undue wear on engine or transmission parts.

ENGINE IDLING

Avoid unnecessary engine idling. Prolonged engine idling may cause the engine coolant temperature to fall below its normal range. This in turn causes crankcase oil dilution, due to incomplete fuel combustion, and permits formation of gummy deposits on valves, pistons, and piston rings. It also promotes rapid accumulation of engine sludge and unburned fuel in the exhaust system.

When the tractor is to remain idle for a considerable length of time, stop the engine.

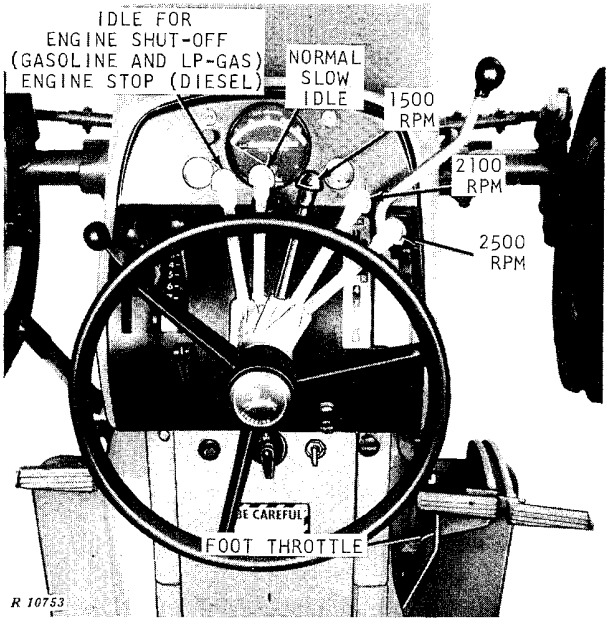
ENGINE SPEEDS

The tractor engine is designed to operate at working speeds ranging from 1500 to 2500 rpm. The engine can be operated at any speed in the working range to meet various operating conditions. Operate the engine at 2100 rpm to obtain the SAE rated PTO speeds.

Normal slow idle is approximately 600 rpm for diesel tractors and 650 rpm for gasoline and LP-Gas tractors. On a gasoline tractor, a 420 rpm idle speed is provided for engine shut-off. The engine shut-off idle speed is 500 rpm on an LP-Gas tractor.

To check engine speeds, see page 51.

USING HAND THROTTLE



Range of Hand Throttle Positions

Use the hand throttle to select slow idle or any of the variable governed speeds from 1500 to 2500 rpm.

Push the throttle to the left as far as it will go to obtain the normal slow idle speed (600 rpm for diesel tractors and 650 rpm for gasoline or LP-Gas tractors). To obtain the idle speed for engine shut-off on gasoline or LP-Gas tractors, pull out on the knob on the hand throttle and push the throttle to the left as far as it will go. To obtain the 2100 rpm load speed, pull the throttle to the right to the first stop. Placing the throttle halfway between slow idle and 2100 rpm gives the 1500 rpm speed. Engine speeds between 1500 rpm and 2100 rpm may be selected by moving the lever between these two positions.

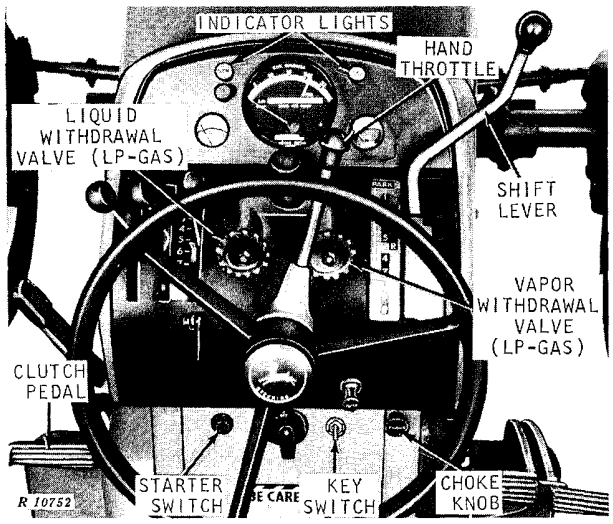
To obtain working speeds above 2100 rpm, pull out on the knob at the end of the hand throttle and pull the throttle to the right as far as it will go. This is the 2500 rpm load speed position. Engine speeds between 2100 and 2500 rpm may be selected by moving the lever between these two positions.

USING FOOT THROTTLE

The foot throttle (see illustration on page 9) is used to raise engine speed momentarily. When the foot throttle is pushed all the way downward, the engine operates at 2500 rpm load speed.

STOPPING THE ENGINE

Place the shift lever or speed selector in "PARK" and allow the engine to idle a few minutes. Sudden stopping of a hot engine may allow some parts to overheat momentarily and cause possible damage.



Stopping Controls

DIESEL ENGINES

Pull out on the hand throttle knob and push the throttle to the left into the engine stop position. Turn the key switch off.

GASOLINE ENGINES

Pull out on the hand throttle knob and push the throttle to the left into the idle position for engine shut-off. Stop the engine by turning the key switch off. If engine continues running after switch is off, be sure hand throttle is all the way into the idle position for engine shut-off.

LP-GAS ENGINES

Close the withdrawal valves and let the engine run until all fuel is exhausted from the lines and the engine stops. Turn the key switch off.

CAUTION: Never leave liquid fuel in the lines with the withdrawal valves closed. To do so can damage the fuel system. Never leave the tractor with the valves open.

ALL ENGINES

After stopping the engine, remove the key from the switch to prevent tampering and unauthorized operation. Removing the key also prevents battery discharge in the event that the switch was accidently left in the on position.

BREAKING IN THE ENGINE

NOTE: If the coolant temperature rises above the "N" range, operate in a lower gear to reduce the load on the engine. Be sure to follow the special break-in lubrication instructions given on page 42.

With the following exceptions, the engine is ready for normal operation:

DIESEL ENGINE

During the first 20 hours, it is not recommended to use the foot throttle or to place the hand throttle in speeds above the 2100 rpm load speed position (page 9). To facilitate break-in, avoid prolonged periods of engine idling, for the first 100 hours of service.

GASOLINE AND LP-GAS ENGINES

During the first 20 hours of service, operate the gasoline or LP-Gas engine at half load with the hand throttle in the 2100 rpm load speed position (page 9). At half load, the engine speed will be approximately 2250 rpm. During the break-in period, it is not recommended to use the foot throttle or to place the hand throttle in speeds above the 2100 rpm load speed position.

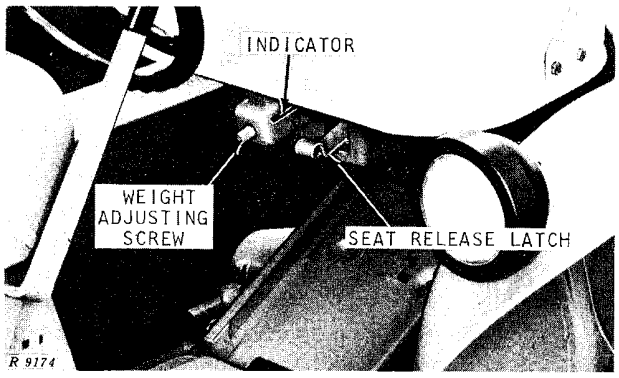
OPERATING THE TRACTOR

SEAT FOR ROW-CROP UTILITY TRACTORS

The deluxe, foam-padded suspension seat has a steel compression spring and shock absorber to provide "Float-Ride" comfort. The semi-circular lower backrest and flexibly mounted upper backrest add to the operator's comfort and safety.

Use only warm water and mild soap to clean the seat cushions. NEVER USE SOLVENTS.

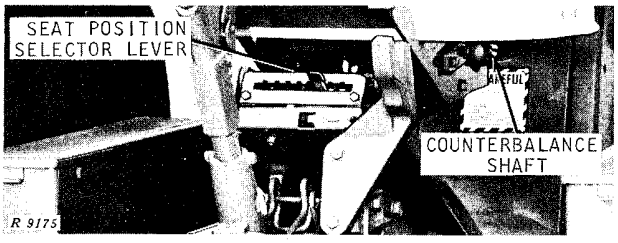
MOVING SEAT TO UPPER REAR POSITION



Seat Release Latch and Weight Adjusting Screw

To move the seat up and back, stand up and lift the seat release latch. The seat will move automatically to the upper rear position. Sit down to return the seat to the normal, preset operating position.

ADJUSTING FOR HEIGHT OF OPERATOR



Position Selector Lever and Counterbalance Shaft

The normal operating position of the seat can be suited to the height of the individual operator. To make this adjustment, first move the seat to the upper, rear position. Then shift the seat position selector lever between "short" and "tall" until the pedals and levers can be operated comfortably when you are seated. The seat will always return to this position when you sit down after having moved the seat up and to the rear for standing.

ADJUSTING FOR WEIGHT OF OPERATOR

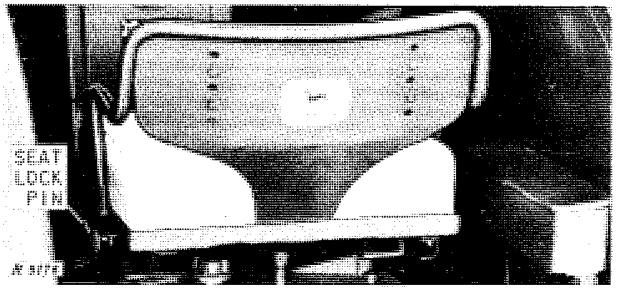
You can adjust the tension of the steel compression spring to conform to your weight. This enables the seat to "float" when traveling over rough ground. To make this adjustment, turn the weight-adjusting screw clockwise or counter-clockwise until the indicator conforms to your weight.

ADJUSTING COUNTERBALANCE SPRING

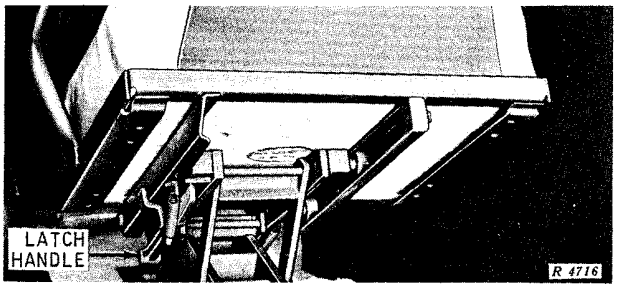
If the seat does not move fully to the rear when unlatched, adjust the counterbalance spring as follows. Move the seat to the upper rear position. Insert a screwdriver in the slot in the counterbalance shaft, push in to unlatch the shaft, and turn the shaft counter-clockwise. Align the latch in the end of the shaft with one of the pairs of slots in the side of the seat support and pull the screwdriver outward to latch the shaft.

SEAT FOR ORCHARD TRACTORS

The seat is mounted on rails and is adjustable forward and backward. To adjust the seat, pull out on the seat lock pin (tractors without rockshaft) or lift up on the latch handle (tractors with a rockshaft). Move the seat to the desired position and release the lock pin or the latch handle. On tractors with a rockshaft, the seat may be pivoted up and to the rear by lifting the seat and pushing it rearward.



Seat for Orchard Tractors Without Rockshaft



Seat Tipped Up (Orchard Tractors with Rockshaft)

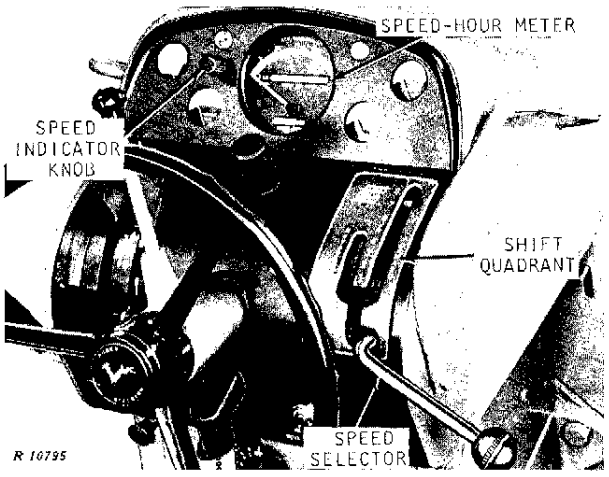
SELECTING GROUND SPEED

Both transmissions provide eight forward speeds for each of the throttle positions that may be used. The Syncro-Range transmission has two reverse speeds, and the Power Shift transmission has four. These combinations enable the operator to balance speed and power for maximum economy and allow him flexibility to meet varying working conditions. For example, at a given ground speed the operator may choose 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 the ground speeds at which the tractor will travel are shown below. Engine working speeds may be varied between 1500 rpm and 2500 rpm. Tractor ground speeds shown in the chart are only for engine speeds of 1500, 2100, and 2500 rpm.

Turn the speed indicator knob on the instrument panel until the gear selected shows on the speed indicator. The speed-hour meter needle will now indicate the tractor ground speed in miles per hour.

Avoid overloading the tractor. When this occurs, operate in a lower gear. Overloading causes undue strain on parts, eventually resulting in poor operation and unnecessary repair expense.



Speed Indicator Knob and Speed Selector

POWER SHIFT TRANSMISSION (Row-Crop Utility Tractors Only)

SHIFTING

The Power Shift transmission can be shifted "on the go" or when the tractor is stopped by moving the speed selector to the desired gear. It is not necessary to use the inching pedal when starting out or when shifting.

To move the tractor forward, move the speed selector from neutral to the desired gear in the right-hand or forward side of the quadrant. Progressive shifting (one gear at a time) will result in smoother speed change.

TRACTOR GROUND SPEEDS IN MILES PER HOUR

NOTE: The following ground speeds are for Row-Crop Utility tractors with 16.9-28 rear tires that have a loaded radius of 25.4 inches. Grove and Orchard tractors are equipped with Syncro-Range transmissions only and have ground speeds similar to Row-Crop Utility tractors.

Gear	1500 Rpm		*2100 Rpm		2500 Rpm	
	Syncro-Range	Power Shift	Syncro-Range	Power Shift	Syncro-Range	Power Shift
1st	1.1	1.0	1.5	1.4	1.8	1.7
2nd	1.7	1.4	2.3	2.0	2.8	2.3
3rd	2.2	2.2	3.0	3.1	3.6	3.6
4th	2.8	2.8	3.9	4.0	4.6	4.7
5th	3.4	3.6	4.8	5.1	5.7	6.1
6th	4.6	4.7	6.4	6.6	7.6	7.9
7th	5.7	6.2	8.0	8.7	9.5	10.4
8th	9.4	10.4	13.1	14.6	15.6	17.3
1st reverse	2.1	1.2	3.0	1.6	. . .	. . .
2nd reverse	3.3	1.7	4.6	2.3	. . .	. . .
3rd reverse	. . .	2.5	. . .	3.6	. . .	. . .
4th reverse	. . .	3.3	. . .	4.6	. . .	. . .

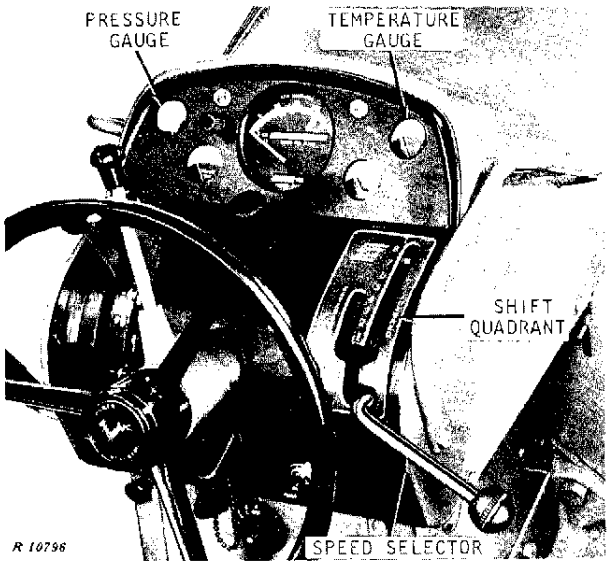
**2100 engine rpm gives the SAE rated 540 or 1000 rpm PTO speed. Some PTO-driven implements are operated at other speeds. See the implement operator's manual for detailed instructions.*

To reverse the tractor, move the speed selector rearward progressively (one gear at a time) to neutral. Then, move the lever to first gear in the left-hand or reverse side of the quadrant. A hand rail beside the speed selector may be used as an aid to shifting when traveling over rough ground.

Use the inching pedal when making emergency stops, when hitching to an implement, or whenever slower clutch engagement is required.

Reduce engine speed prior to making sudden extreme speed changes.

OPERATION



Transmission Instruments and Speed Selector

When operating a tractor with a Power Shift transmission, check the transmission oil pressure gauge and the transmission oil temperature gauge for satisfactory transmission operation.

If the indicator hand on the temperature gauge goes into the red zone, stop the tractor and clean all dirt and trash from the grille screens and the transmission-hydraulic oil cooler core. See page 62. Also check for proper transmission-hydraulic oil level. If necessary, fill the system to the proper level. See page 49. If this does not correct the difficulty, call your John Deere dealer. Do not operate the tractor when the temperature indicator hand is in the red zone.

When operating the engine at 2200 rpm, the indicator hand on the transmission oil pressure gauge should be to the right of the minimum transmission pressure line.

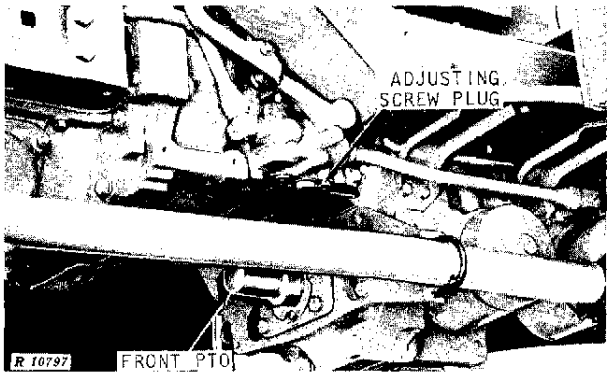
The minimum, safe transmission oil pressure will decrease in proportion to engine speed below 2200 rpm. If the pressure is questionable, check it by momentarily running the engine at 2200 rpm.

If the gauge indicates low oil pressure, stop the tractor and check the transmission oil level (see page 49). If the oil level is in the "SAFE" range, the transmission-hydraulic system filters may be clogged and need replacing. See page 51. If this does not correct the difficulty, call your John Deere dealer.

CAUTION: Do not operate the tractor when the transmission oil temperature is too high or the oil pressure is too low.

SHIFT ADJUSTMENT

The transmission speed-of-shift may be adjusted for rapid shift or for slow, smoother shift. When pulling a heavy load, such as a plow, adjust for a rapid shift to prevent the tractor from stopping while shifting. When pulling a light load, such as a mower, adjust for a slow, smooth shift.



Speed-of-Shift Adjusting Screw Plug

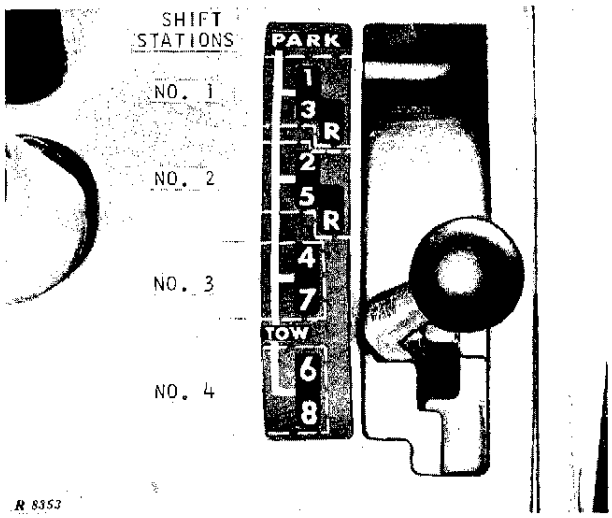
To adjust the speed-of-shift, stop the engine and remove the adjusting screw plug at the bottom of the valve housing on the left-hand side of the tractor. With a screwdriver, turn the adjusting screw in (clockwise) to slow down the shifting. To speed up the shifting for heavy loads, turn the adjusting screw out. Turn the adjusting screw one-half turn at a time until the desired speed-of-shift is obtained.

Install the adjusting screw plug to prevent oil leakage.

SYNCRO-RANGE TRANSMISSION (Row-Crop Utility and Grove and Orchard Tractors)

SHIFTING BETWEEN STATIONS

The shift quadrant has four shift stations. Stations No. 1 and 2 have two forward speeds and one reverse speed. Stations No. 3 and 4 have two forward speeds only.



Syncro-Range Transmission Shift Lever in TOW Position

With the tractor stopped and the clutch pedal depressed, move the shift lever to a neutral position at the left side of the quadrant. Then move the shift lever to the station that has the desired speed. Move the lever to the right and into the speed desired.

Gradually release the clutch pedal to take up the load smoothly.

SHIFTING WITHIN STATIONS

With the clutch pedal depressed, the transmission can be shifted from one forward speed to the other forward speed within the same station while the tractor is in motion. For instance, you can shift between 1st and 3rd gears, 2nd and 5th gears, 4th and 7th gears, and 6th and 8th gears without stopping the tractor.

You can also shift from a forward speed to the reverse speed within the same station without stopping the tractor. However, to avoid injury and damage to the tractor, do so only at slow ground speed.

Gradually release the clutch pedal to engage the clutch.

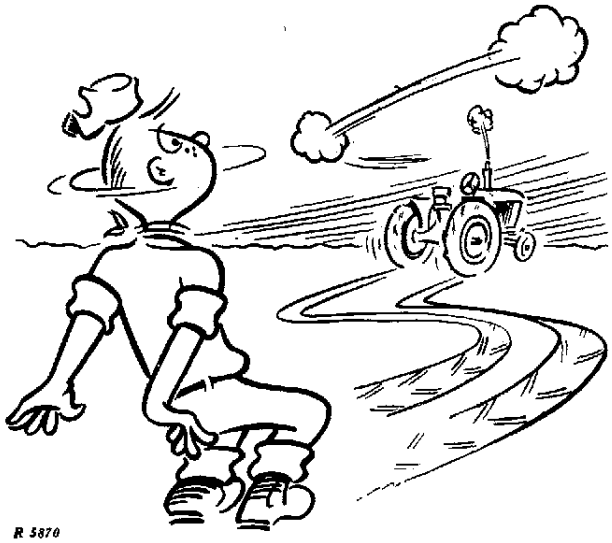
PARKING THE TRACTOR

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

SYNCRO-RANGE TRACTORS

On Syncro-Range tractors, move the shift lever to a neutral position at the left side of the quadrant. Then push the shift lever all the way forward into "PARK."

To shift from "PARK" when the tractor is not parked on a steep incline, simply move the shift lever rearward to the station desired. When the tractor is parked on a steep incline it may be necessary to do the following to relieve the load on the transmission park lock. Depress the clutch pedal and pull the shift lever rearward against spring pressure into the No. 1 shift station. Then shift into a forward or reverse gear that will move the tractor UP THE INCLINE. VERY SLOWLY engage the clutch and the transmission will shift out of "PARK."



CAUTION: Whenever the tractor is stopped, place the shift lever or speed selector in the "PARK" position BEFORE DISMOUNTING. Never dismount from the tractor when it is in motion.

POWER SHIFT TRACTORS

On Power Shift tractors, move the speed selector rearward and to the right into the "PARK" position shown in the illustration on page 13. Shifting from "PARK" to neutral releases the park locking action.

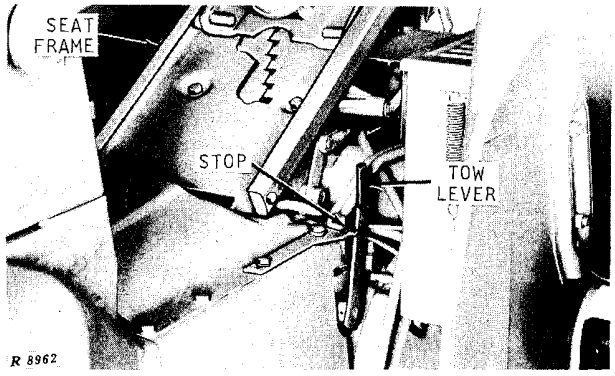
TOWING THE TRACTOR

CAUTION: Never tow the tractor at high speeds. 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.

SYNCRO-RANGE TRACTORS

The shift quadrant for the Syncro-Range transmission has a "TOW" position. Whenever a Syncro-Range tractor is to be towed, move the shift lever to this position.

POWER SHIFT TRACTORS



Tow Lever on Power Shift Tractor

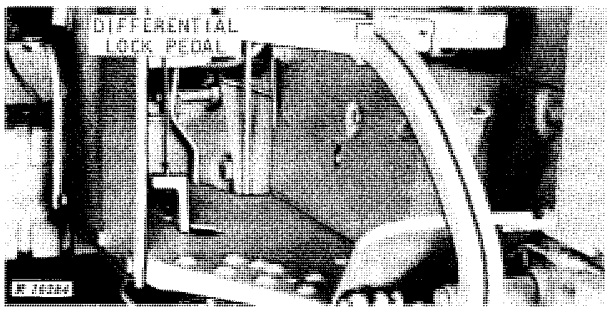
When towing a tractor with a Power Shift transmission, move the tow lever forward around the stop until it locks in the "TOW" position. Place the speed selector in the neutral "N" position.

CAUTION: To prevent transmission damage, always place the tow lever in "TOW" position when towing Power Shift tractors. Never tow the tractor in an attempt to start it.

When moving the lever out of the "TOW" position to operate the tractor, place the speed selector in "PARK" and move the tow lever rearward, around the stop until the lever locks in the rearward position. If tow lever will not move all the way rearward, start the engine while applying pressure rearward to the lever.

DIFFERENTIAL LOCK

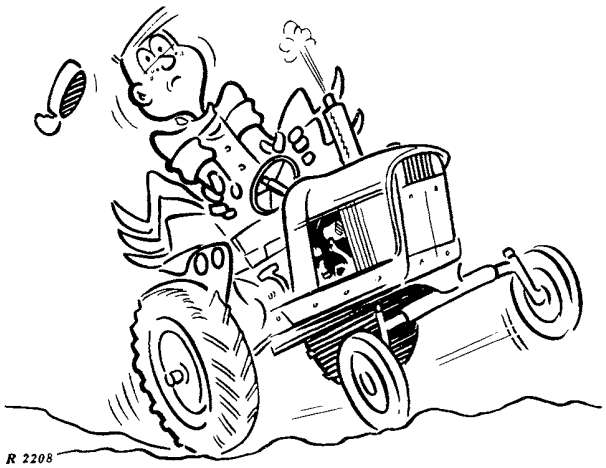
Your tractor may be equipped with a differential lock that will turn both rear wheels at the same speed. This prevents the usual loss of traction when one wheel is slipping.



Differential Lock Operating Pedal

When one wheel starts to slip or whenever required, engage the differential lock by depressing the operating pedal located at the right-rear side of the platform. When no longer required and before turning the tractor, disengage the differential lock by depressing one or both brake pedals. The front wheels should be in the straight ahead position when disengaging the differential lock.

CAUTION: Do not operate the tractor at high speeds or attempt to turn the tractor with the differential lock engaged.



CAUTION: Fast driving is the cause of many accidents. Drive at a safe speed at all times.

Suggest:

If the above button click is invalid.

Please download this document

first, and then click the above link

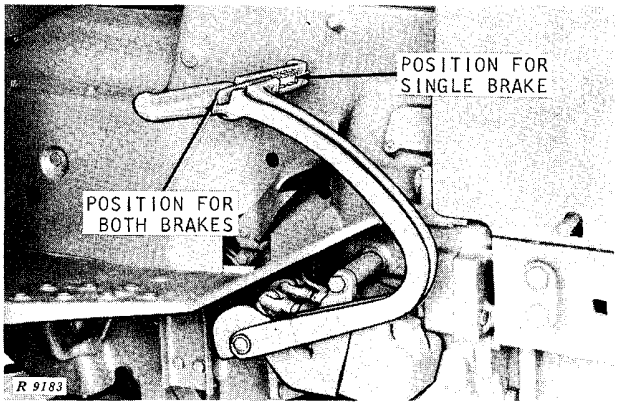
to download the complete manual.

Thank you so much for reading

POWER STEERING AND BRAKES

The tractor is equipped with full hydraulic power steering and power brakes so that a minimum of effort is required to operate the tractor.

To assist in making sharp turns, apply the brakes individually or, to stop the tractor, apply both brakes simultaneously. When traveling at high speeds, couple the pedals together as shown and use a light pressure on the pedals.

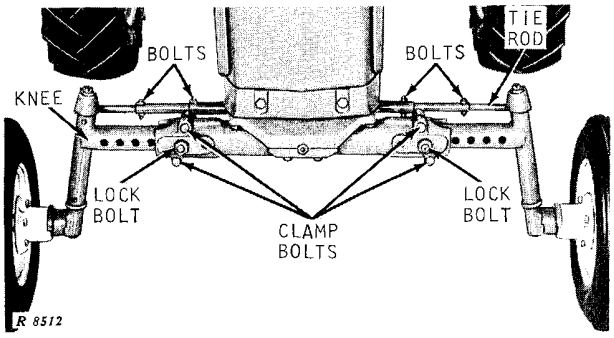


Brake Pedals Coupled Together

FRONT WHEEL TREAD

ADJUSTABLE-TREAD FRONT AXLE

On an adjustable-tread front axle, the tread can be adjusted in 4-inch steps from 49-1/4 to 73-1/4 inches when the wheels are "dished" in. With the wheels "dished" out, the tread range is 54-1/2 to 78-1/2 inches. To change the wheel "dish," unbolt the front wheels from the hubs, reverse the wheels, and install them.



Front Wheel Tread Adjustment (Wheels "Dished" Out)

To adjust the tread width, jack up the front end of the tractor.

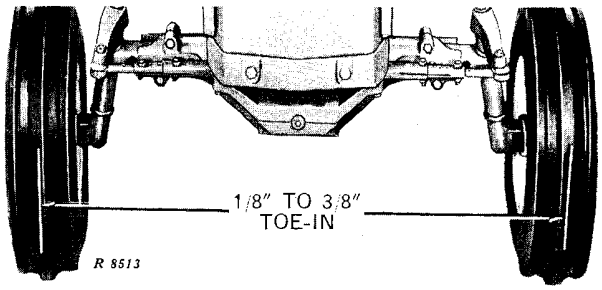
CAUTION: Do not place jack under engine oil pan.

Loosen the clamp bolts and drive the lock bolts from the front axle housing. Remove the bolts from the tie rods and move the front axle knees in or out to give the desired tread width. Install the bolts in the tie rods and axle housing. Tighten the clamp bolts securely. Coat unpainted surfaces with rust preventive or heavy grease. Check toe-in.

FIXED-TREAD FRONT AXLE

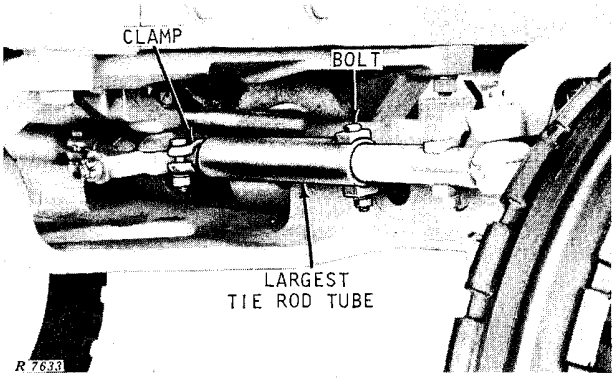
The front wheel tread on a fixed-tread front axle is 54-3/4 inches with the wheels "dished" inward and 60 inches when the wheels are "dished" outward. To change the tread, reverse the wheels.

TOE-IN ADJUSTMENT



Correct Toe-In (Wheels "Dished" In)

To check toe-in, turn the steering wheel until the front wheels point straight ahead, parallel to the center line of the tractor. Measure the distance from tire to tire, first at the front of the tires and then at the rear. Front measurement should be 1/8 to 3/8 inch less than rear measurement.



Toe-In Adjustment

To adjust toe-in on adjustable tread axles, remove the bolts from the largest tie rod tubes and loosen the clamps on the inner end of the tie rods. On fixed tread axles, loosen the tie rod clamps.

Turn the tie rod tubes in or out until toe-in is correct. Replace the bolts and tighten the clamps. Do not overtighten the clamps. Both wheels must have equal toe-in.