# 1020 AND 2020 TRACTORS

JOHN DEERE

## OPERATORS MANUAL

1020 AND 2020
TRACTORS

OMR48388 H0 English

**JOHN DEERE TRACTOR WORKS**
**OMR48388 H0**

LITHO IN THE U.S.A.
**ENGLISH**

# TO THE OPERATOR

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.

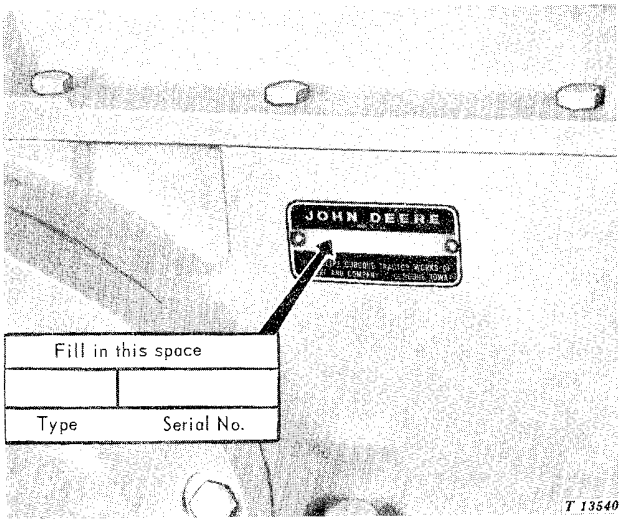
⚠ This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

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.

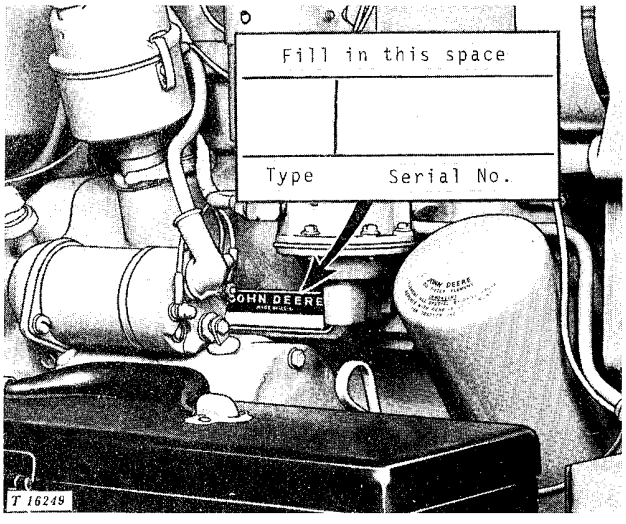
The warranty on this tractor appears on your copy of the purchase order which you should have received from your dealer when you purchased the tractor.

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 and 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, engine type, and complete engine serial number. For ready reference, locate and record the above information in the spaces provided in the illustrations below.



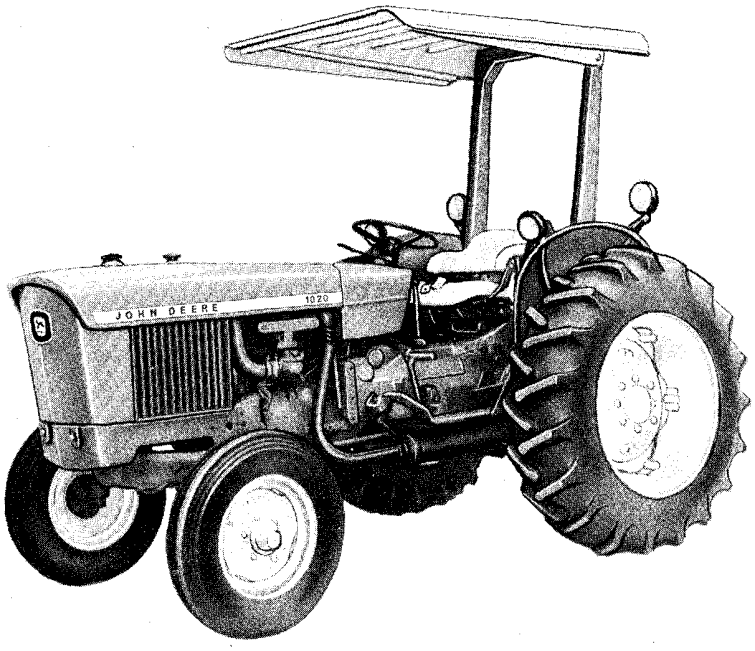

Tractor Serial No.




Engine Serial No.

# CONTENTS






R 17306

*John Deere 1020 RU Tractor Equipped with Underneath Exhaust and Roll-Gard with Canopy*

# SPECIFICATIONS

| | 1020 Series | | 2020 Series | |
|---|---|---|---|---|
| | Gasoline | Diesel | Gasoline | Diesel |
| **HORSEPOWER (Official Tests)** | | | | |
| Maximum drawbar horsepower | 32.74 | 32.67 | 45.45 | 47.39 |
| Maximum PTO horsepower | 38.82 | 38.92 | 53.91 | 54.09 |
| **ENGINE** | | | | |
| Number of cylinders | 3 | 3 | 4 | 4 |
| Bore and stroke, inches | 3.86 x 3.86 | 3.86 x 4.33 | 3.86 x 3.86 | 3.86 x 4.33 |
| Displacement in cubic inches | 135.0 | 152.0 | 180.0 | 202.0 |
| Compression ratio | 7.5 to 1 | 16.3 to 1 | 7.5 to 1 | 16.3 to 1 |
| Firing order | 1-2-3 | 1-2-3 | 1-3-4-2 | 1-3-4-2 |
| N.A.C.C. or A.M.A. horsepower rating for tax purposes | 17.88 | 17.88 | 23.84 | 23.84 |
| Intake valve clearance | 0.014-inch | 0.014-inch | 0.014-inch | 0.014-inch |
| Exhaust valve clearance | 0.022-inch | 0.018-inch | 0.022-inch | 0.018-inch |
| Slow idle | 600 rpm | 800 rpm | 600 rpm | 800 rpm |
| Fast idle | 2680 rpm | 2650 rpm | 2680 rpm | 2650 rpm |
| Working speed range | 1500 to 2500 rpm | 1500 to 2500 rpm | 1500 to 2500 rpm | 1500 to 2500 rpm |

**CAPACITIES (U.S. Standard Measures)**

| | | |
|---|---|---|
| Fuel tank | 16-1/2 gals. | 19-1/2 gals. |
| Cooling system | 11 qts. | 12 qts. |
| Crankcase (including filter) | 6 qts. | 6 qts. |
| Transmission-hydraulic system | 10 gals. | 10 gals. |
| Air cleaner (oil-bath type) | 1 qt. | 1 qt. |
| Belt pulley | 2-1/2 pts. | 2-1/2 pts. |

**DIFFERENTIAL AND FINAL DRIVES**

Type . . . . . Planetary reduction final drives with spiral bevel gear drive differential.

Differential lock . . . . Hand or foot operated mechanical lock spring-loaded out of engagement.

**POWER TAKE-OFF**

Type . . . . . Continuous-running, transmission-driven or independent PTO types available in 540 and/or 1000 rpm options. See page 35 for details.

**HYDRAULIC SYSTEM**

Type . . . . . Closed center, constant pressure.

Standby oil pressure . . . . . 2250 psi

BRAKES . . . . . Hydraulically actuated, wet-disk type.

**ELECTRICAL SYSTEM**

Battery (dry) voltage . . . . . 12 volts

Battery specific gravity at full charge (corrected to 80° F.) . . . . . 1.260

Battery terminal grounded . . . . . negative

CLUTCH . . . . . Single or dual stage, spring-loaded, dry disk, foot-operated.

TRANSMISSION

Type . . . . . Collar Shift
Gear selections. . . 8 forward and 4 reverse
Shifting . . . . . 4 speeds each in high, low, and reverse ranges. Park lock included.

OPTIONAL REVERSER

Hydraulic wet clutches, no clutching required.

OPTIONAL HI-LO SHIFT UNIT

Hydraulic wet clutches, no clutching required.

FRONT TIRES:* . . . . . 9.00-10
6.00-16
7.50-16

REAR TIRES:* . . . . . 18.4-16.1
12.4-24
14.9-28
12.4-36
13.6-38

REAR WHEEL TREAD . . . . . See page 14.

FRONT WHEEL TREAD . . . . . See page 13.

**Additional tire sizes available.*

## TRAVEL SPEEDS, MPH (With Zero Slip)

*NOTE: The travel speeds shown are for RU tractors with 13.6 - 28 rear tires, HU tractors with 13.9 - 36 rear tires, and LU tractors with 12.4 - 24 rear tires. On tractors with the Hi-Lo Shift option, high range speeds are the same as listed in the chart below. Low range speeds are 25.8 percent less than those listed. If tractor is equipped with a reverser, multiply forward speeds by 1.16 to obtain true reverse speeds.*

| | 1500 rpm | | | 2100 rpm* | | | 2500 rpm | | |
|---|---|---|---|---|---|---|---|---|---|
| Gear | RU | HU | LU | RU | HU | LU | RU | HU | LU |
| 1st | .8 | .9 | .8 | 1.2 | 1.2 | 1.1 | 1.4 | 1.5 | 1.3 |
| 2nd | 1.2 | 1.3 | 1.1 | 1.7 | 1.8 | 1.5 | 2.0 | 2.1 | 1.8 |
| 3rd | 1.8 | 1.9 | 1.6 | 2.5 | 2.6 | 2.2 | 3.0 | 3.1 | 2.7 |
| 4th | 2.5 | 2.6 | 2.2 | 3.5 | 3.7 | 3.1 | 4.2 | 4.4 | 3.7 |
| 5th | 3.4 | 3.5 | 3.0 | 4.5 | 4.9 | 4.2 | 5.6 | 5.9 | 5.0 |
| 6th | 4.8 | 5.0 | 4.2 | 6.7 | 7.0 | 5.9 | 8.0 | 8.4 | 7.1 |
| 7th | 7.2 | 7.4 | 6.2 | 10.1 | 10.4 | 8.4 | 11.9 | 12.4 | 10.5 |
| 8th | 10.0 | 10.4 | 8.8 | 14.0 | 14.6 | 12.6 | 16.6 | 17.3 | 14.7 |
| R1 | 1.0 | 1.0 | .9 | 1.4 | 1.5 | 1.2 | 1.7 | 1.7 | 1.5 |
| R2 | 1.4 | 1.5 | 1.3 | 2.0 | 2.1 | 1.8 | 2.4 | 2.5 | 2.1 |
| R3 | 2.1 | 2.2 | 1.9 | 2.8 | 3.1 | 2.6 | 3.5 | 3.7 | 3.1 |
| R4 | 2.9 | 3.1 | 2.7 | 4.1 | 4.3 | 3.7 | 4.9 | 5.1 | 4.4 |

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

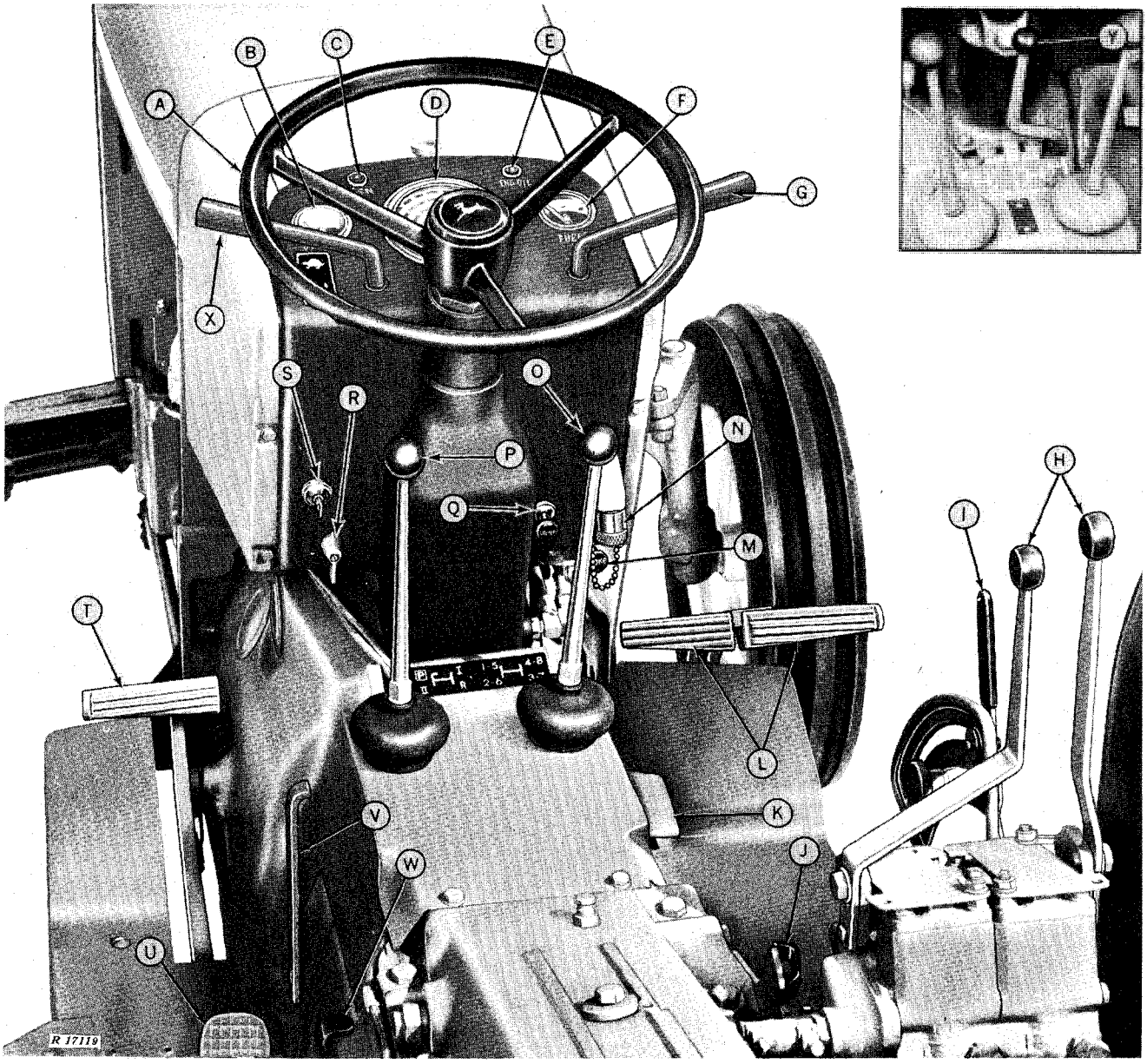
## DIMENSIONS

| | 1020 RU Tractors | 1020 HU Tractors | 1020 LU Tractors | 2020 RU Tractors | 2020 HU Tractors | 2020 LU Tractors |
|---|---|---|---|---|---|---|
| Height to top of hood. . . . . | 51-3/16 in. | 55-13/16 in. | 49 in. | 56-3/4 in. | 59 in. | 54 in. |
| Clearance (front axle). . . . . | 20-1/4 in. | 23-15/16 in. | 16-15/16 in. | 20-3/8 in. | 24-1/8 in. | 17-15/16 in. |
| Over-all height . . . . . | 76-7/16 in. | 80-15/16 in. | 74-3/16 in. | 82 in. | 84-1/4 in. | 78-3/16 in. |
| (LU Low Profile Orchard option). . . . | . . . . . | . . . . . | 49-1/4 in. | . . . . . | . . . . . | 52-1/4 in. |
| Over-all width, min. . . . . | 63-1/16 in. | 67-1/4 in. | 51-3/16 in. | 65-5/8 in. | 67-7/8 in. | 56-1/8 in. |
| Over-all length (with 3-point hitch) . . . . . | 126 in. | 126 in. | 126 in. | 131-1/2 in. | 131-1/2 in. | 131-1/2 in. |
| Wheelbase (maximum) (straight axle) . . . . . | 80-11/16 in. | 80-11/16 in. | . . . . . | 85-3/4 in. | 85-3/4 in. | . . . . . |
| (sweptback axle). . . . . | 74-3/8 in. | . . . . . | 75 in. | 79-3/8 in. | . . . . . | 80 in. |
| Turning radius (with brakes applied) (straight axle) . . . . . | 128 in. | 128 in. | . . . . . | 133 in. | 132-1/8 in. | . . . . . |
| (sweptback axle). . . . . | 122 in. | . . . . . | 120 in. | 127 in. | . . . . . | 121 in. |
| Shipping weight (approx.) (gasoline) . . . . . | 4100 lbs. | 4700 lbs. | 3790 lbs. | 4565 lbs. | 4850 lbs. | 4060 lbs. |
| (diesel). . . . . | 4150 lbs. | 4750 lbs. | 3840 lbs. | 4645 lbs. | 4930 lbs. | 4140 lbs. |

*(Specifications and design subject to change without notice.)*

# 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 experience.




A – Steering Wheel
B – Water Temperature Gauge
C – Alternator Indicator Light
D – Speed-Hour Meter (page 42)
E – Engine Oil Pressure Indicator Light
F – Fuel Gauge
G – Hand Throttle (page 5)
H – Selective Control Levers (page 31)
I – Rockshaft Control Lever (page 24)
J – Load and Depth Control Lever (page 24)
K – Foot Throttle
L – Brake Pedals (page 12)
M – Choke (gasoline) (page 5)
N – Diesel Starting Fluid Adapter (page 6)
O – Gear Shift Lever (page 10)
P – Range Shift Lever (page 10)
Q – Cigar Lighter
R – Light Switch (page 23)
S – Key Switch (page 5)
T – Clutch Pedal
U – Differential Lock Pedal or Lever (page 12)
V – Mid PTO Selector Lever (page 35)
W – Rear PTO Selector Lever (page 35)
X – Hi-Lo Shift Lever (page 11) or Reverser Lever (page 11)
Y – Independent PTO Control Lever (page 35)

# OPERATION

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

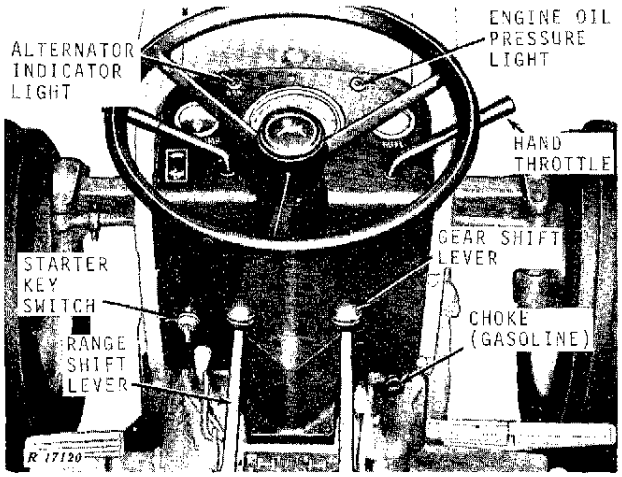
## OPERATING THE ENGINE

### 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.
2. Check the radiator coolant level.
3. Inspect air cleaner.
4. Drain any sediment from the fuel filter sediment bowl.
5. Check pre-cleaner.
6. Make sure the fuel shut-off valve at fuel tank is open.

### STARTING THE ENGINE




*Engine Starting Controls*

1. The tractor is equipped with a starter safety switch, so range shift lever must be in neutral or in park (P) position when starting engine. Apply foot brake and depress clutch pedal to decrease drag on engine.

2. Place the hand throttle in slow idle position (gasoline) or halfway open position (diesel).

3. On gasoline tractors, pull out choke knob full distance. (If tractor engine is warm, start engine without choking.)

4. At temperatures below 32° F., use cold weather starting aids, if so equipped (see "Starting Aids").

5. Turn key switch clockwise to start engine. (Do not crank engine for more than 30 seconds at a time. To do so may overheat the starter. Wait a minute or two before trying again.)

6. On gasoline tractors, push choke all the way in after engine has turned a few revolutions. During cold weather it may be necessary to leave choke out part way for the first few minutes.

7. As soon as engine starts, release key switch and adjust engine speed to approximately half throttle. The engine oil pressure indicator light and the alternator indicator light should go out. If the lights do not go out after the engine has been running for 10 seconds, the engine should be shut off at once and the cause of difficulty determined.

8. Release clutch pedal. In cold weather, warm engine and transmission for 5 minutes by operating engine at half throttle. Do not allow engine to operate at slow idle speed during engine warm-up. Observe gauges.

*NOTE: If engine fails to start, refer to trouble shooting charts on page 72.*

**IMPORTANT: Never attempt to start a tractor with Hi-Lo Shift or reverser by towing or pushing, as the clutches may be damaged. On tractors with standard transmissions, never tow at a speed greater than normal for the gear in which the tractor is being towed. Tow the tractor for starting only in 6th, 7th, or 8th gear. On diesel models, be sure key switch is "ON" before engine is turned over.**

## COLD WEATHER STARTING AIDS

To assist in cold weather starting, several aids are available. These optional aids are explained below. Auxiliary batteries can be used. For diesel tractors, a starting fluid adapter can be used. See your John Deere dealer for auxiliary batteries and other starting aids.

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 too heavy viscosity, or high electrical resistance, any of which may prevent the engine from starting.

### DIESEL STARTING FLUID ADAPTER

Your diesel tractor may be equipped with a John Deere Starting Fluid Adapter. This attachment is used to inject atomized starting fluid into the engine air intake system when starting the engine at temperatures below 32° F.

*Injecting Starting Fluid*

**CAUTION: Starting fluid is highly flammable.**

To use 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 as shown with the tube in the adapter hole. To inject fluid, push up on can; then release it, while cranking engine.

**IMPORTANT: To avoid damage, turn engine with starter one or two revolutions before injecting starting fluid. Inject starting fluid only while engine is turning. Inject starting fluid intermittently, not continuously.**

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

Be sure to put the cap back on the adapter when not in use. This prevents dust from being drawn into the engine.

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

**CAUTION: Do not puncture or incinerate starting fluid containers.**

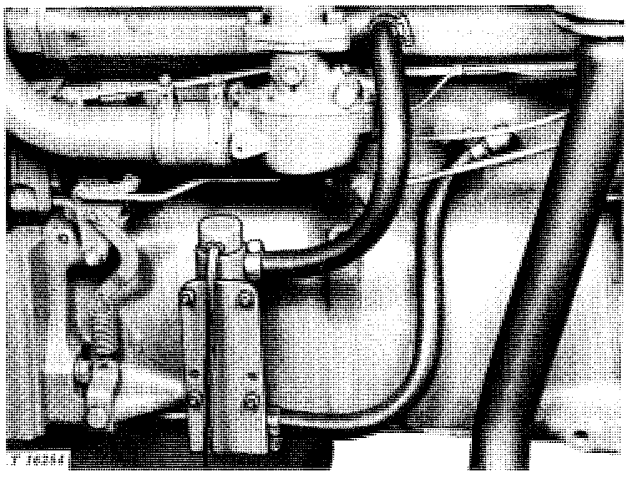
### ADDITIONAL BATTERIES

Starting the engine in cold weather can be made easier by connecting an additional 12-volt battery in parallel with the 12-volt battery or batteries on the tractor.

Use jumper cables to connect the positive (+) terminal of the booster battery to the positive (+) terminal of the tractor battery and the negative (-) terminal of the booster battery to negative (-) terminal of the tractor battery. See your John Deere dealer for booster batteries.

**IMPORTANT: The batteries on your tractor are NEGATIVE grounded only. Reversed polarity in battery or alternator connections will result in damage to electrical system.**

### ENGINE COOLANT HEATER

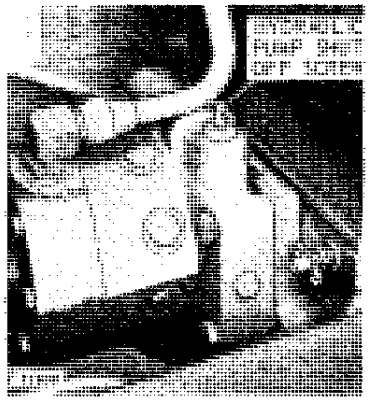


*Engine Coolant Heater*

A 1000-watt, 115-volt electrical coolant heater can be installed on the engine.

**⚠ CAUTION: To avoid shock or hazardous operation, always use a three wire heavy-duty electrical cord equipped with 3-wire connectors. If a 2- to 3-contact adapter is used at the wall receptacle, always connect the green wire to a good ground.**

HYDRAULIC PUMP SHUT-OFF SCREW



*Hydraulic Pump Shut-Off Screw*

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

After the engine has started, back the shut-off screw all the way out (turn the screw counterclockwise). 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.*

## 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.

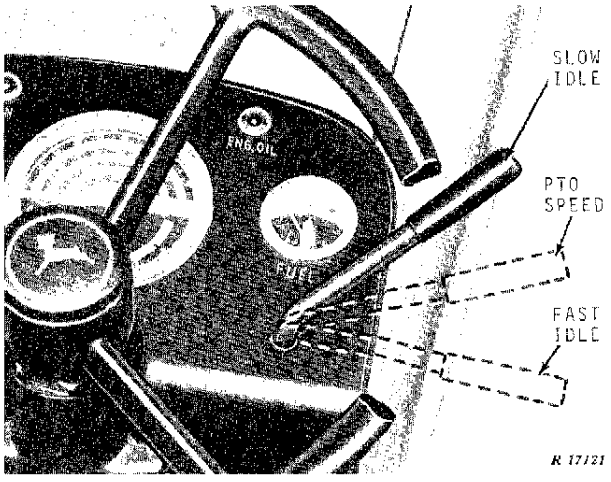
## ENGINE SPEEDS

The engine is designed to operate under load at speeds ranging from 1500 to 2500 rpm. These are variable governed speeds, and the engine can be operated at any speed between the two extremes to meet various working conditions. Maximum continuous power at full load is obtained at 2500 rpm.

Operate the engine at 2100 rpm to obtain SAE standard PTO speeds. Use this speed when operating the power take-off.

## USING HAND THROTTLE

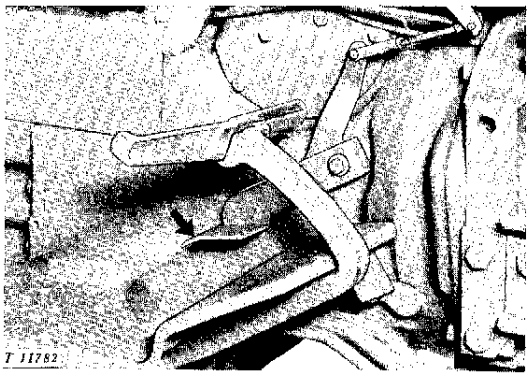
Use hand throttle to select any of the variable engine speeds between slow idle and fast idle. Move lever counterclockwise to slow down engine; move lever clockwise to speed up engine.




*Range of Hand Throttle Positions*

## USING FOOT THROTTLE

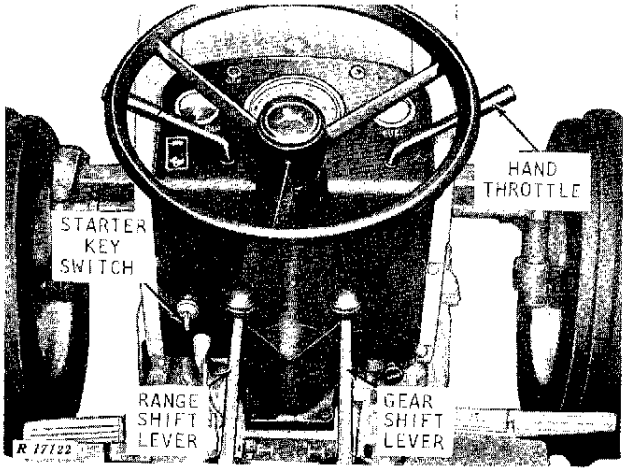
Use the foot throttle to speed up the engine quickly, as during transport. The foot throttle is also a handy control during loader operation




*Foot Throttle*

when the hands are busy with levers. When the pedal is released, the engine speed returns to the hand throttle setting.

## STOPPING THE ENGINE




*Engine Stopping Controls*

Stop the engine by performing the following steps:

1. Move the gear shift lever into any gear position. Then place the range shift lever in park (P) position. This will lock the gears and hold the tractor in place.

2. Run the engine at 1500 rpm for a short time before stopping it. Sudden stopping of a hot engine may allow some parts to overheat momentarily and possibly cause damage.

3. Turn the key switch to the vertical "OFF" position to stop the engine.

**IMPORTANT: Never attempt to stop the diesel engine by turning off the fuel supply. This will cause the fuel injection pump to run dry and damage internal parts.**

After stopping the engine, remove the key from the switch to prevent tampering and unauthorized operation. Removing the key also prevents battery discharge if the switch is accidentally left in the "on" position.

**IMPORTANT: Key switch should be kept in vertical (OFF) position at all times when engine is stopped. Failure to do so will run down batteries and may cause overheating of ignition resistor (gasoline).**

## BREAK-IN PERIOD

To be sure that all bearing surfaces will be properly lubricated, operate the tractor at moderate loads for the first 100 hours of operation. Avoid light loads or excessive engine idling. Check periodically to be sure that an adequate supply of oil is maintained in the crankcase. If it becomes necessary to add oil during the first 100 hours, use new oil of the normal types recommended on page 41.

At the end of this 100-hour period, drain oil, replace filter element, and fill the crankcase with new oil as recommended on page 41. Thereafter, drain and refill crankcase every 100 hours of operation.

At the end of the first 4 hours and 8 hours of operation, retighten all wheel retainers. Check tightness of the retainers frequently for the first 100 hours of operation (see pages 13 and 14).

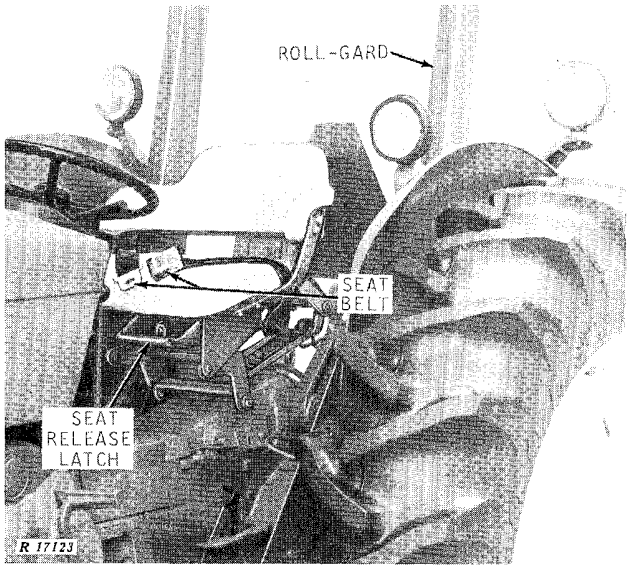
At the end of the first 50 hours of operation, change the transmission-hydraulic system oil filter (see page 48).

After the first 100 hours, retighten the front axle tie rods and steering drag link end nuts to 55 ft-lbs torque. Advance nut to line up slot and hole in rod end and install cotter pin.

# OPERATING THE TRACTOR

## SEAT

Your tractor may be equipped with a pan seat, a regular seat, or a deluxe cushioned seat. Both the regular and the deluxe cushioned seats are adjustable for the operator's height, and fold back for standing. The deluxe seat also is adjustable for the operator's weight.




*Deluxe Seat with Seat Belt and Roll-Gard*

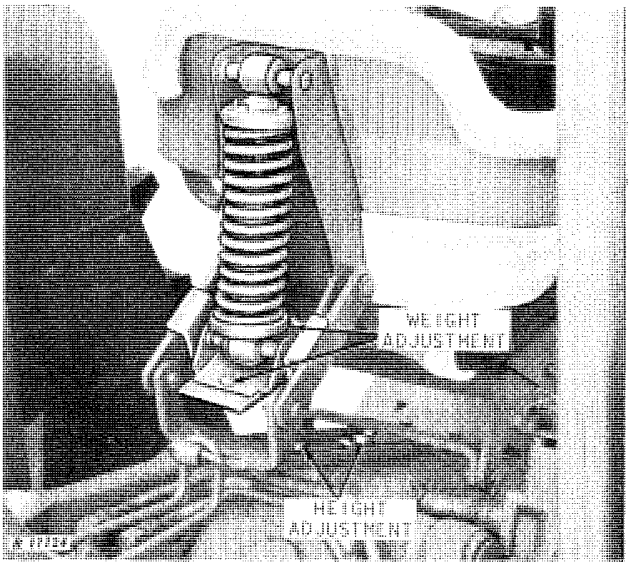
MOVING SEAT TO UPPER REAR POSITION FOR STANDING

*Deluxe Seat.* Lift the release latch (shown). Stand up and lift the seat to the upper rear. This will give you room to drive while standing. To return the seat to the normal position, pull the seat forward. Sit down on the seat to lock it in place.

*Regular Seat.* To move the seat to the upper rear, lift back of seat and push seat to rear. This will give you room to drive while standing. To return the seat to the normal position, lift the front of the seat and move it forward.

ADJUSTING FOR HEIGHT OF OPERATOR

To adjust the seat for operator's height, loosen the cap screws securing the seat to the rockshaft housing or seat support base and slide seat to desired position. Then securely tighten cap screws.




*Adjusting Seat for Operator's Weight and Height (Deluxe Seat Shown)*

ADJUSTING FOR WEIGHT OF OPERATOR (Deluxe Seat)

Move the seat to the upper rear position to take tension off the spring. Loosen the wing nuts under the weight adjustment link and move slide to desired weight position. Tighten wing nuts and return seat to the normal position.

The seat is adjustable for operator's weight from 100 to 300 pounds.

### ROLL-GARD, SEAT BELT AND CANOPY

A protective Roll-Gard with seat belt may be ordered as special equipment for your tractor. A canopy that fits on top of the Roll-Gard is also available.

**⚠ CAUTION: Under almost all operating conditions:**

**1. The use of a seat belt with the optional John Deere Roll-Gard is recommended.**

**2. Use of a seat belt without roll-over protective equipment is not recommended.**

## SELECTING GROUND SPEED

The tractor has eight forward speeds and four reverse speeds. The wide range of speeds, together with the variable speed engine, allow the operator to balance load and speed for maximum economy, and give him flexibility to meet varying work conditions. For example, for a given travel speed the operator may choose to work in a low gear at a high engine speed or in a higher gear at a lower engine speed. Engine working speeds may be varied anywhere between 1500 and 2500 rpm. See page 3 for travel speeds.

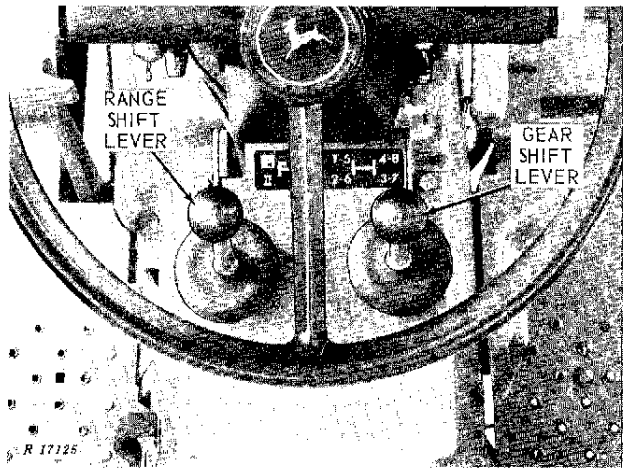
Decals near the range shift lever and gear shift lever show range positions and gear positions for selection of the desired speed.

## OVERLOADING

This tractor will handle economically and efficiently all jobs within its range of power. Using tractor on loads beyond its power range places excessive strain on all parts and will eventually result in unnecessary repair expense and impaired operating efficiency.

An overloaded tractor can usually be detected by gradual slowing down in travel speed and slowing down and laboring of engine. Using more than the recommended amounts of ballast will also result in overloading the tractor and cause transmission damage.

## SHIFTING GEARS

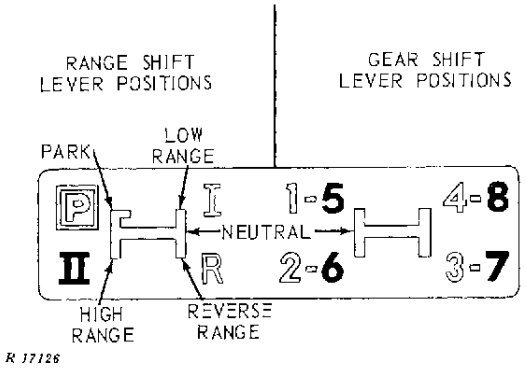



*Range and Gear Shift Levers*

Gear shifting is controlled by a range shift lever and a gear shift lever.

The range shift lever shifts between low, high, and reverse ranges. A park (P) position is also provided.

The gear shift lever can be used to select 1st, 2nd, 3rd, and 4th gears when the range shift lever is in low range position; it can be used to select 5th, 6th, 7th, and 8th gears when the range shift lever is in high range position. When the range shift lever is in reverse range, reverse gears comparable to 1st, 2nd, 3rd, and 4th can be obtained.




*Transmission Shifting Pattern*

The shift patterns are marked by a decal on the transmission case shield.

### SHIFTING FROM NEUTRAL

1. Fully depress clutch pedal.
2. Move gear shift lever from neutral into gear desired. Then move range shift lever into high, low, or reverse range as desired. Slide levers fully into position when gears stop rotating.
3. Gradually release clutch pedal to take up load smoothly.

### SHIFTING TO ANOTHER GEAR

By double clutching, you can shift gears within a range "on the go" by means of the gear shift lever. To double clutch, depress clutch pedal, shift to neutral, and release clutch pedal. Again depress clutch pedal, shift to desired gear and release pedal.

### SHIFTING TO ANOTHER RANGE

To shift to another range, fully stop the tractor and disengage the clutch before attempting to change the range.

## HIGH SPEED DRIVING

Use high speed (8th) gear to save time in transport over highways and other smooth roads. But - BE CAREFUL! Fast driving is the cause of many accidents. On rough ground, shift to a lower gear for safety.

## PARKING THE TRACTOR

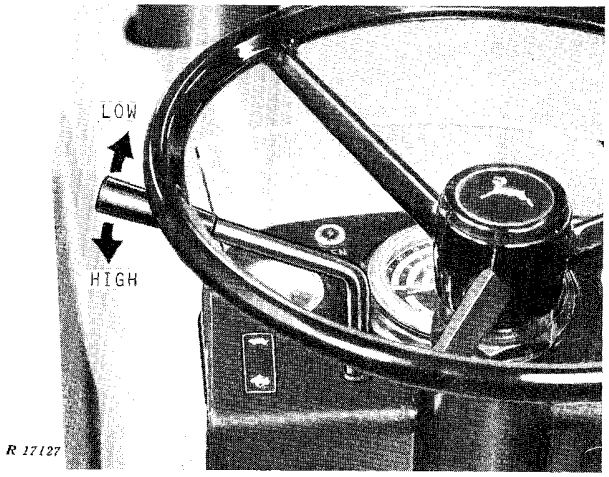
Completely stop the tractor. Move the gear shift lever into any gear position. Then move the range shift lever to park (P) position.

## TOWING THE TRACTOR

When towing the tractor, move both the range and gear shift levers to the neutral position. This will prevent undue wear on transmission parts during towing.

**⚠ CAUTION: Never tow the tractor at a speed greater than 15 miles per hour.**

## HI-LOW SHIFT




*Hi-Lo Shift Lever*

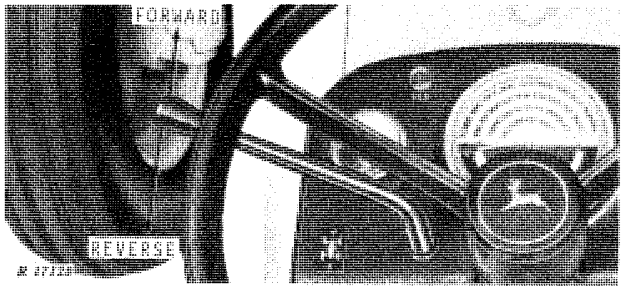
The optional Hi-Lo Shift allows the operator to increase or decrease his ground speed and pull power "on the go" without declutching.

See above illustration for location and positioning of Hi-Lo shift lever.

Shifting from Hi to Lo decreases the ground travel speed 25.8 percent and provides up to 35 percent increase in pull power in any of the transmission speeds. Shifting from Hi to Lo provides approximately the same speed and pull power change as manually down-shifting one gear on the transmission.

## REVERSER

The reverser allows the operator to change the direction of travel "on the go" without clutching or shifting gears.



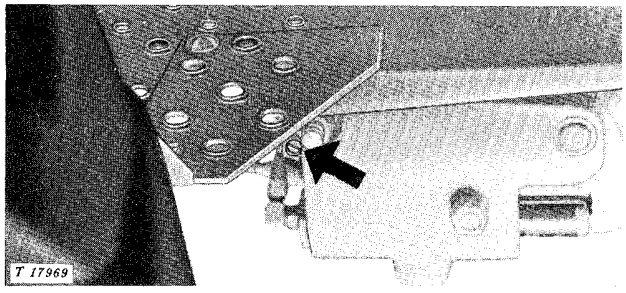

*Reverser Control Lever*

A reverser control lever is located at the left side of the instrument panel. The control lever has two positions: Forward and reverse. When the lever is in the forward position, the tractor is in direct drive. When the lever is pulled rearward, the tractor is in reverse drive. It is not necessary to disengage clutch or to shift gears when using the reverser lever.

**⚠ CAUTION: The reverser gear ratio is such that reverse speeds are 16 percent higher than their respective forward speeds. Therefore, use care when reversing direction, especially at higher travel speeds.**

### REVERSER SPEED-OF-SHIFT ADJUSTMENT

The reverser may be adjusted for a firm rapid shift or for a slower shift.



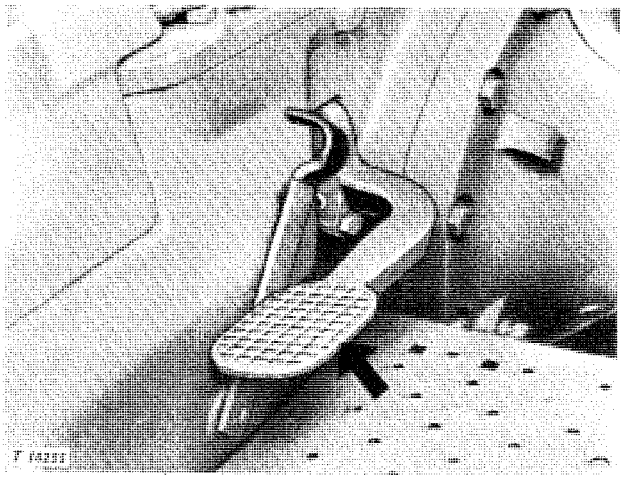

*Reverser Speed-Of-Shift Adjusting Screw*

The reverser speed-of shift adjusting screw is located on the rear of the reverser control housing under the right footrest. Turn the adjusting screw clockwise to slow down the shift. Turn the screw counterclockwise to speed up the shift.

*NOTE: When the speed-of-shift screw is adjusted properly, the time to complete the shift should be 3/4 to 1-1/4 seconds.*

## DIFFERENTIAL LOCK

Your tractor may be equipped with a differential lock, used to direct power equally to both rear wheels. This prevents the usual loss of traction when one wheel is slipping.



*Differential Lock Pedal*

A differential lock pedal is provided and is located on the left side of the tractor.

When slippery conditions are anticipated or encountered, engage the differential lock. To engage the differential lock "on the go," push down on the pedal. Unequal traction will keep the lock engaged. When traction is equalized, the pedal will disengage itself by spring action.

If rear wheels slip, then get traction, then slip again, hold the pedal in the engaged position.

**IMPORTANT: Do not attempt to turn the tractor with the differential lock engaged.**

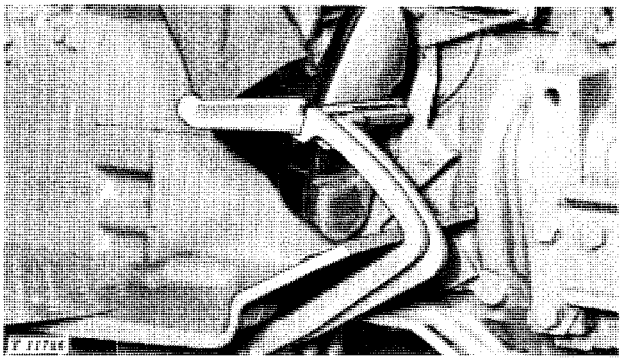
## HYDRAULIC BRAKES

When turning the tractor, press down on a single brake pedal; use the left pedal to turn left, and the right pedal to turn right.

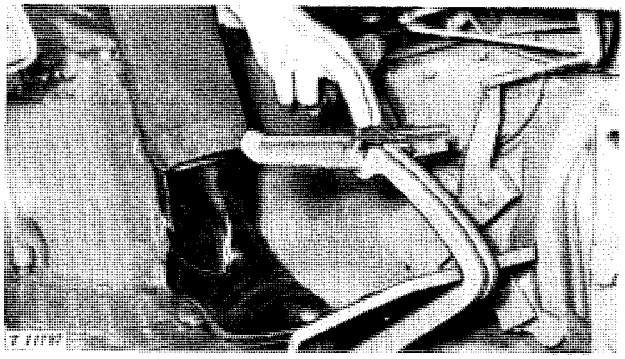
When stopping the tractor, press down on both brake pedals. When traveling at high speeds on the road, couple the pedals together as shown and use a light pressure on the pedals.

**⚠ CAUTION: Fast driving causes many accidents. Couple the brake pedals together for road travel, and always drive at a safe speed.**

**Towed loads that weigh more than twice the weight of the tractor should have brakes. If not, reduce speed and avoid inclines.**



*Using Brakes to Make a Sharp Left-Hand Turn*



*Coupling Brake Pedals Together*

## POWER STEERING

The tractor may be equipped with power steering to make steering and control of the tractor easier for the operator. In case of oil pressure failure, the tractor can be steered manually.

## HYDRAULIC OIL SUPPLY

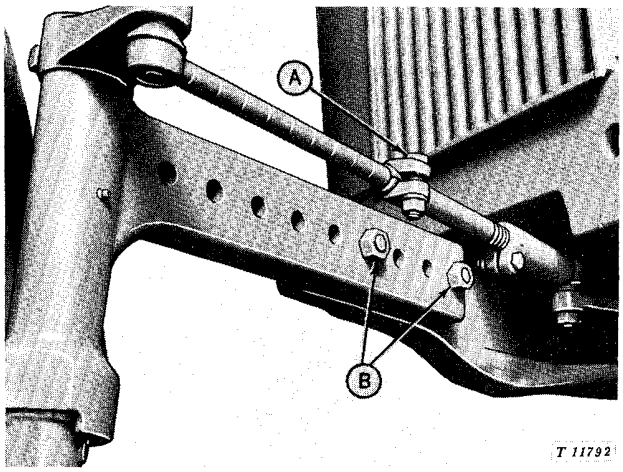
The transmission oil pump supplies oil for the main hydraulic pump. Therefore, **avoid prolonged disengagement of the engine or PTO clutch,** which controls oil pump operation. Disengaging the clutch for longer periods reduces supply of pressure oil for hydraulic functions on tractors without independent PTO.

## COASTING

**Do not allow tractor to coast with clutch disengaged with transmission in gear, especially in low range. This may result in overspeeding and damage the clutch disk.**

# FRONT WHEEL TREAD

## ADJUSTABLE FRONT AXLE




*Front Wheel Tread Adjustment*

Your tractor may be equipped with an adjustable front axle (heavy duty, straight, or swept-back), or with a fixed-tread heavy duty front axle.

| *Axle Type* | *Tire Size* | *Wheel Treads (inches)** |
|---|---|---|
| Swept-back (RU) | 5.50 - 16<br>6.00 - 16 | 48 to 72-9/16 - 77-11/16 max. with wheels reversed. |
| | 7.5L - 15<br>7.50 - 16 | 49-5/8 to 74-3/16 - 77-5/16 max. with wheels reversed. |
| | 9.00 - 10 | 52 to 69 inches with wheels dished in. |
| Straight (RU and HU) | 5.50 - 16<br>6.00 - 16 | 48 to 74 - 79-1/8 max. with wheels reversed. |
| | 7.5L - 15<br>7.50 - 16 | 49-5/8 to 75-5/8 - 80-11/16 max. with wheels reversed. |
| Swept-back (Short Knee) | All (LU and RU) | 44 to 61-66 max. with wheels reversed. |
| Extra wide straight (HU) | 5.50 - 16<br>6.00 - 16 | 58-3/8 to 86-3/8 - 91-1/2 max. with wheels reversed. |
| | 7.5L - 15 | 60 to 88 - 93 max. with wheels reversed. |
| Extra wide straight (RU) | 5.50 - 16<br>6.00 - 16 | 58 to 86 - 91 max. with wheels reversed. |
| | 6.50 - 16<br>7.5L - 15<br>7.50 - 16 | 59 to 87 - 92-1/2 max. with wheels reversed. |
| Heavy Duty Fixed | 7.5L - 15<br>7.50 - 16 | 56 |
| | 9.5L - 15<br>11L - 15 | 59 |
| Heavy Duty Adjustable | 7.5L - 15<br>9.5L - 15<br>11L - 15<br>7.50 - 16 | 53 to 73 - 76 max. with wheels reversed. |

**Wheel treads are changed in two-inch steps.*

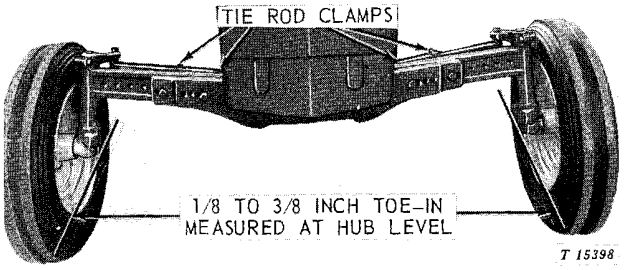
**IMPORTANT: Do not separate axle halves beyond above limits. Use 4-inch bolt spacing in maximum tread width, and 6-inch spacing in all other widths.**

## ADJUSTING FRONT WHEEL TREAD

Raise front end of tractor, and loosen tie rod clamp (A), and axle bolts (B). Reposition axle and tighten nuts to 300 ft-lb torque. Adjust tie rods so that the front wheels turn equally to right and left. Check toe-in, and adjust if necessary.

*NOTE: To obtain the widest front wheel tread available, screw out the threaded end of each tie rod to the hole in the threaded portion of the tie rod tube. Never screw out tie rod ends, too far (beyond second small hole in the rod end).*

## ADJUSTING FRONT WHEEL TOE-IN




*Checking Front Wheel Toe-In*

Check and adjust front wheel toe-in periodically.

1. Drive tractor straight ahead for a short distance and stop it.
2. Measure front wheel tread at front and rear of wheels at hub height. Proper toe-in is 1/8 to 3/8 inch less in front than in rear.
3. To adjust, loosen both clamps on each tie rod tube. Turn each tie rod tube an equal amount until toe-in is correct. *Both front wheels must have equal toe-in.* When finished, be sure slot in tube faces to rear. Then position outer clamp so that screw is vertical and tighten screw to 65-75 ft-lbs torque. Also tighten inner clamp securely.

## CHECKING FRONT WHEEL RETAINERS

Periodically check the tightness of the front wheel retainer cap screws. If necessary, retighten wheel-to-hub screws evenly to 85 ft-lbs (tires 6.00 - 16 or smaller) or 100 ft-lbs (tires larger than 6.00 - 16).

**IMPORTANT: During break-in, retighten all front wheel retainers evenly after the first 4 hours and again after 8 hours of operation. Check tightness of retainers frequently during the first 100 hours of operation.**


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

# REAR WHEEL TREAD

The tread ranges in the chart below are obtained by moving the wheel on the axle by the rack and pinion method, by reversing the wheel on the axle, or by changing the rim position on the wheel. Details of tread adjustment are covered on the pages which follow.

| Tractor | Axle Type | Wheel Type | Possible Tread Range* |
|---|---|---|---|
| RU Models | Flanged | Demountable Rim | 48 inches to 76 inches |
| | Flanged | Steel Disk | 60 inches or 64 inches |
| | Flanged | Cast | 50 inches to 78 inches |
| | Rack and Pinion | Cast | 48 inches to 96 inches |
| | Flanged | Power Adjusted | 48 inches to 80 inches |
| HU Models | Flanged | Cast | 50 inches to 78 inches<br>54 inches to 78 inches (13.6-38 and 15.5-38) |
| | Rack and Pinion | Cast | 50 inches to 96 inches<br>54 inches to 96 inches (13.6-38 and 15.5-38) |
| | Flanged | Power Adjusted | 56 inches to 80 inches |
| LU Models | Flanged | Demountable Rim | 40 inches to 64 inches |
| | Flanged | Steel Disk | 47 inches or 52 inches |

**Due to fender interference, minimum tread width on RU tractors is 50 inches for 13.6 - 28 tires and 52 inches for 16.9 - 24 tires. On HU tractors (with rack and pinion axle) minimum tread is 50 inches for 12.4 - 36 tires and 52 inches for 13.9 - 36 tires. On LU tractors, minimum tread widths are 40 inches for 11.2 - 24 tires and 12.4 - 24 tires, and 48 inches for 14.9 - 24 tires.*

## MEASURING REAR WHEEL TREAD

Measure the distance from the center of the tractor to the center of the rear tire (see illustration). This distance should be the same for each side of the tractor. This is especially important on tractors equipped with rack and pinion rear axles or power adjusted rear wheels as this is the only way rear tread width can be determined. On tractors with flanged rear axles, refer to the charts on the following pages.

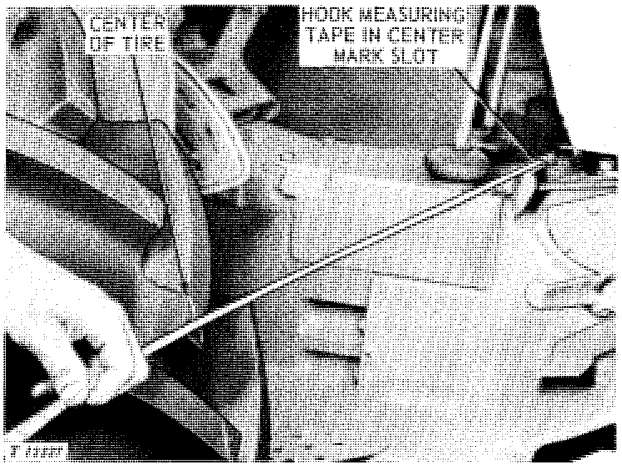
## CHECKING DIRECTION OF TIRE ROTATION

When installing new tires or changing tires, always be sure that the arrow on the side wall of the tire points in the direction of forward rotation of the tire.

## CHECKING REAR WHEEL RETAINERS

Periodically check the tightness of the rear wheel retainers. If necessary, retighten to the torques specified in the chart at right.

**IMPORTANT: Retighten all rear wheel retainers evenly after the first 4 hours and 8 hours of operation. Check tightness of the retainers frequently for the first 100 hours of operation.**




*Measuring Distance from Center of Tractor to Center of Tire*

TIGHTNESS OF REAR WHEEL RETAINERS

| Wheel Type | Hardware Location | Tightness Recommended |
|---|---|---|
| Cast Disk | Wheel-to-axle | 300 ft-lbs (rack and pinion)<br>130 ft-lbs (flanged axle) |
| | Rim-to-wheel | 170 ft-lbs (all) |
| Demountable | Wheel-to-axle | 100 ft-lbs |
| | Rim-to-wheel | 170 ft-lbs |
| Steel Disk | Wheel-to-axle | 100 ft-lbs |