



# 5020 Tractor (Serial No. SN 25000-)



JOHN DEERE

## OPERATORS MANUAL

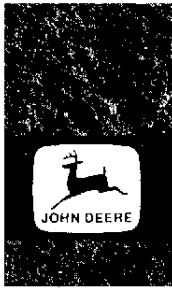
5020 Tractor  
(Serial No. SN 25000-)

OMR46936 L9 English

John Deere Waterloo Works  
OMR46936 L9

LITHO IN U.S.A. (REVISED)  
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 new tractor.

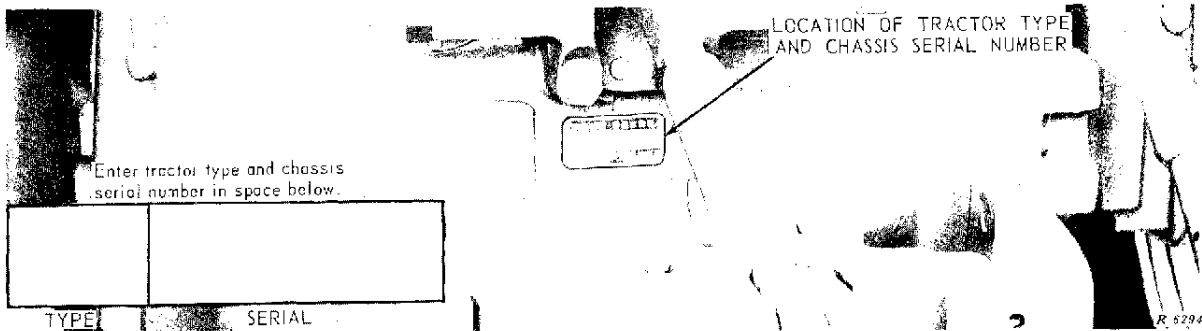
We are confident this modern tractor, combined with equally advanced John Deere tools and implements, will help you to farm better, easier, and more profitably.

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.

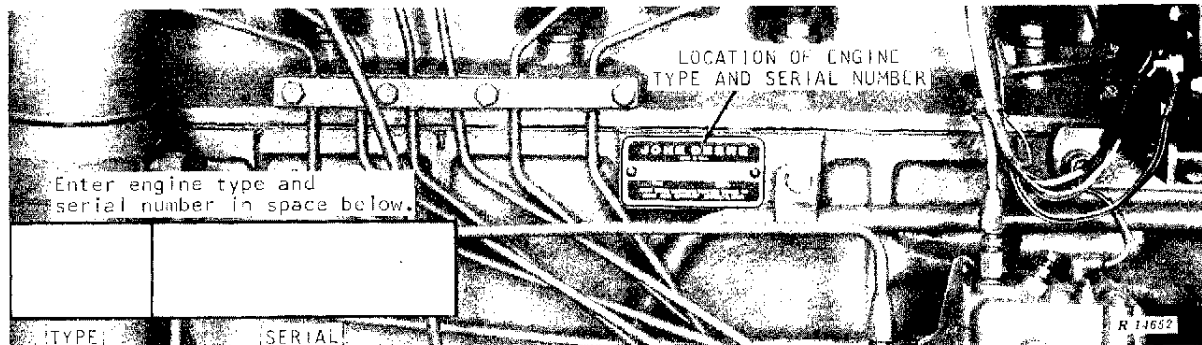
Information concerning warranty on this tractor appears on your copy of the Purchase Order which you should have received from your dealer when you purchased the tractor.

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; 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, the complete tractor chassis serial number, the engine type and complete engine serial number. For ready reference, locate and record this information in the spaces provided in the following illustrations.



*Tractor Chassis Serial Number*

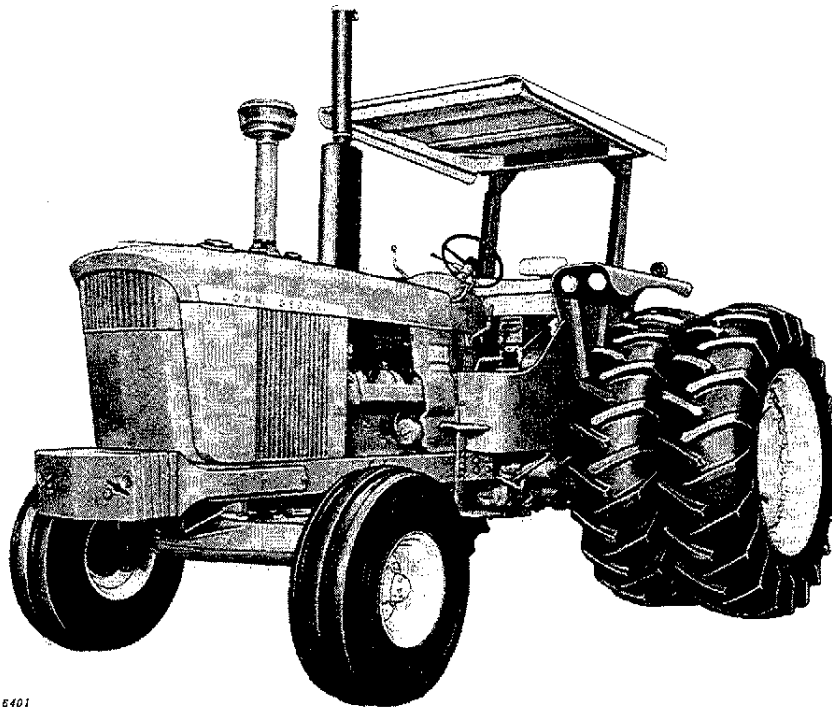


*Engine Serial Number*



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R 6401

*John Deere 5020 Row-Crop Diesel Tractor with Roll-Gard, Canopy, and Double Rear Wheels*

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# SPECIFICATIONS

**\*HORSEPOWER:**

Measured at the PTO . . . . . 141.34

**ENGINE:**

Type . . . 6-cylinder, in-line, valve-in-head

Engine Speeds:

Slow idle . . . . . 800 rpm

Working range . . . . . 1500 to 2200 rpm

Maximum transport speed . . . . . 2500 rpm

Bore and stroke . . . . . 4-3/4 in. x 5 in.

Displacement . . . . . 531 cu. in.

Compression ratio . . . . . 16.5 to 1

Firing order . . . . . 1-5-3-6-2-4

Valve clearance . . . . . intake 0.018 in.

exhaust 0.028 in.

Injection pump timing . . . . . TDC

**CAPACITIES:**

Fuel tank . . . . . 68 U.S. gals.

Crankcase (with filter change). 20 U.S. qts.

Transmission-hydraulic system 16 U.S. gals.

Cooling system (add

2 U.S. qts. for cab heater) . . . 33 U.S. qts.

*\*Above horsepower figure is official at 2200 engine rpm.*

**GROUND SPEEDS:\*\***

1st . . . . . 1.7 mph

2nd . . . . . 2.6 mph

3rd . . . . . 3.5 mph

4th . . . . . 4.5 mph

5th . . . . . 5.6 mph

6th . . . . . 7.3 mph

7th . . . . . 9.4 mph

8th . . . . . 15.4 mph

1st reverse . . . . . 3.4 mph

2nd reverse . . . . . 5.4 mph

CLUTCH: . . . . Heavy-duty, two 12-in. plates, foot operated

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

**FUEL SYSTEM:**

Type . . . . . Direct injection

Injection pump type . . . . . Inlet metering, distributing type

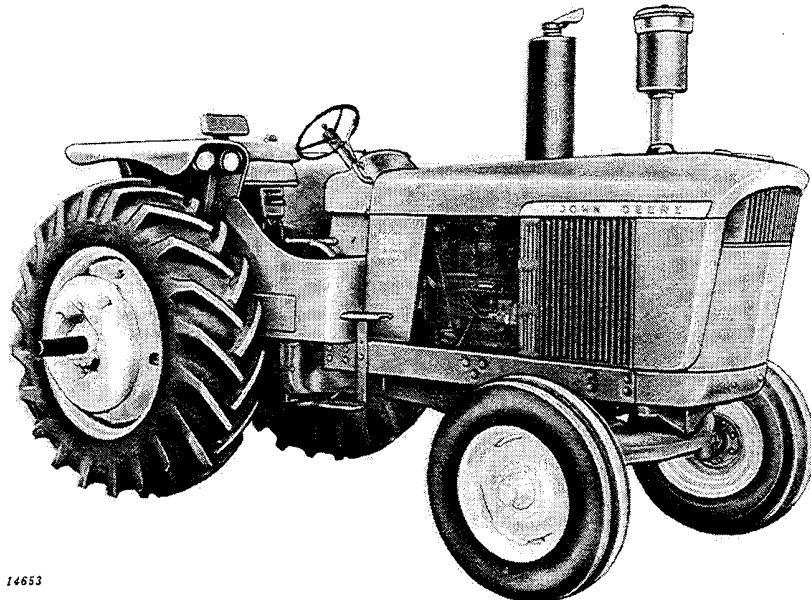
Air cleaner . . . . . Dry type

**COOLING SYSTEM:**

Type . . . Pressurized with centrifugal pump

Engine temperature control . . . Two heavy-duty thermostats

*\*\*Calculated at 1900 rpm engine speed with 24.5-32 tires.*



R 14653

John Deere 5020 Row-Crop Diesel Tractor

**ELECTRICAL SYSTEM:**

Type. . . . . 12-volt, negative grounded  
 Batteries. . . . . Two 6-volt, 87-plate, 204  
 ampere-hour, group 6T3A,  
 tractor-type, connected in series

**TRANSMISSION:**

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

**POWER TAKE-OFF:**

Type. . . . . Independent  
 Speed (1900 engine rpm). . . . . 1010 rpm  
 PTO ahead of drawbar hitch point. . . 16 in.  
 PTO shaft above ground. . . . . 25-1/2 in.

**PTO CLUTCH. . . . .** Hydraulically power ac-  
 tuated, hand-operated

**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

**FRONT TIRES:\*\*\***

Standard. . . . . 11.00-16, 8-ply  
 Row-Crop. . . . . 9.50-20, 8-ply

**REAR TIRES:\*\*\***

Standard. . . . . 24.5-32, 10-ply  
 Row-Crop. . . . . 18.4-38, 12-ply

**FRONT WHEEL TREAD. . . . .** See page 12

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

**DIMENSIONS:**

**Standard (Fixed tread front axle):**

Wheel base. . . . . 104 in.  
 Over-all length. . . . . 172.3 in.  
 Over-all height. . . . . 98.3 in.  
 Height to steering wheel. . . . . 82.4 in.  
 Width. . . . . Regular wheel, 95.8 in.  
 Drawbar clearance. . . . . 16 in.  
 Turning radius. . . . . 12 ft. 6 in.

**Row-Crop (81.5-inch tread front axle):**

Wheel base. . . . . 102 to 106 in.  
 Over-all length. . . . . 172.3 in.  
 Over-all height. . . . . 98.3 in.  
 Height to steering wheel. . . . . 82.4 in.  
 Over-all width. . . . . 108.4 in.  
 Turning radius. . . . . 13 ft.

**TRACTOR CAB:**

	Not Air Conditioned	Air Conditioned
Blower capacity. . . . .	290 cfm	560 cfm
Heater capacity . . . . .	20,000 btu/hr.	22,000 btu/hr.
Interior height to roof. . .	60.5 in.	60.5 in.
Interior width (window frame to window frame) 50 in.	50 in.	50 in.
Interior length (window frame to window frame) 62 in.	62 in.	62 in.
Exterior width at fender well . . . . .	36.4 in.	36.4 in.
Exterior cab height (tires at loaded radius) 116.7 in.	118.5 in.	118.5 in.

**SHIPPING WEIGHT (With equipment for  
 average field service):**

Standard. . . . . 15,600 lbs.  
 Row-Crop. . . . . 14,480 lbs.

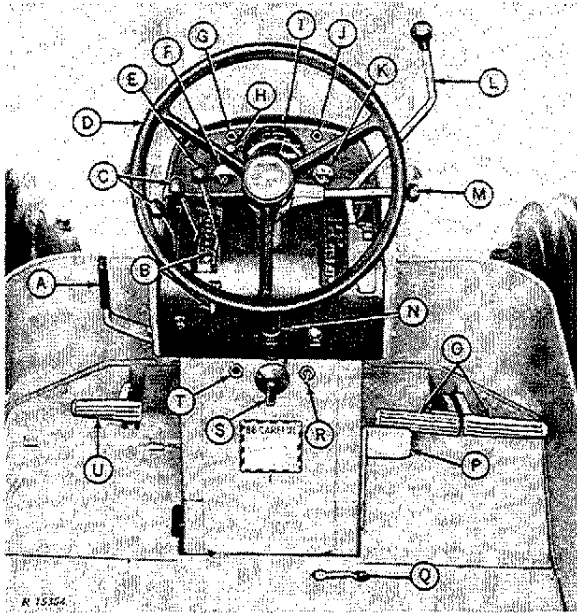
\*\*\*Additional tire sizes available.

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

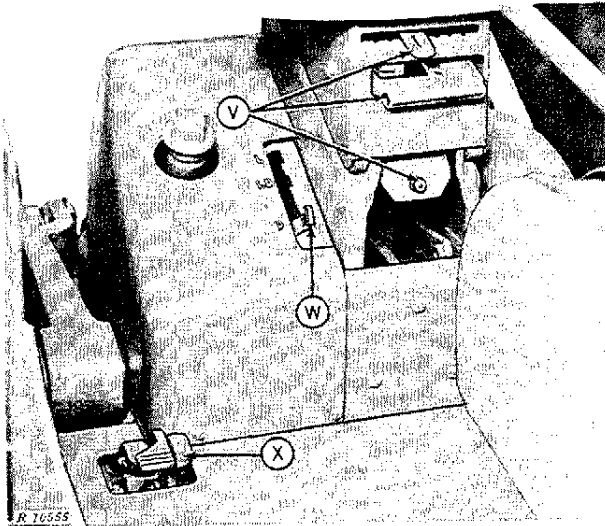


# CONTROLS AND INSTRUMENTS

Before attempting to operate your new tractor, become familiar with the location and purpose of its controls and instruments. Additional information will be found on the page number following the control or instrument. World-wide graphic symbols are used to assist identification and operation.

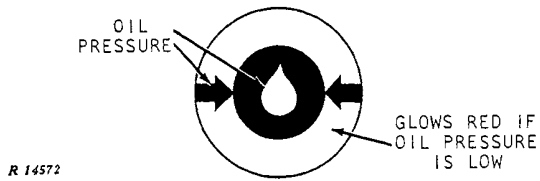


- A - PTO Clutch Operating Lever (Page 29)
- B - Rockshaft Control Lever Stop and Lock (Page 22)
- C - Remote Cylinder Operating Levers (Page 19)
- D - Steering Wheel
- E - Rackshaft Control Lever (Page 22)
- F - Coolant Temperature Gauge
- G - Alternator Indicator Lamp (Page 7)
- H - Speed Indicator Knob (Page 11)
- I - Speed-Hour Meter (Pages 11 and 35)
- J - Oil Pressure Indicator Lamp (Page 7)
- K - Fuel Gauge
- L - Gear Shift Lever (Page 11)
- M - Hand Throttle (Page 9)
- N - Ether Starting Fluid Adapter (Page 8)
- O - Brake Pedals (Page 12)
- P - Foot Throttle (Page 9)
- Q - Power Take-Off Drive Disconnect Lever (Page 29)
- R - Key Switch (Page 7)
- S - Light Switch (Page 17)
- T - Air Cleaner Indicator Light (Pages 7 and 37)
- U - Clutch Pedal (Page 11)

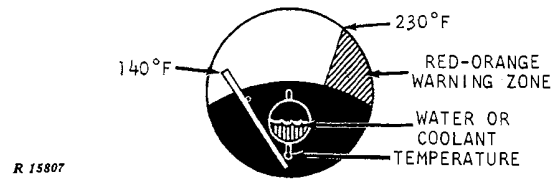


- V - Seat Controls (Page 6)
- W - Rockshaft Selector Lever (Page 22)
- X - Differential Lock Operating Pedal (Page 12)

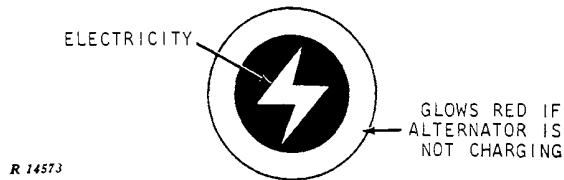
**ENGINE OIL PRESSURE INDICATOR LIGHT**



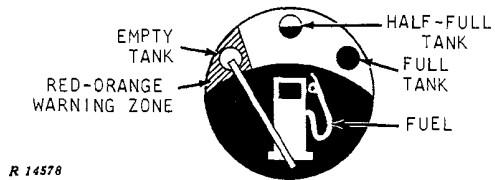
**COOLANT TEMPERATURE GAUGE**



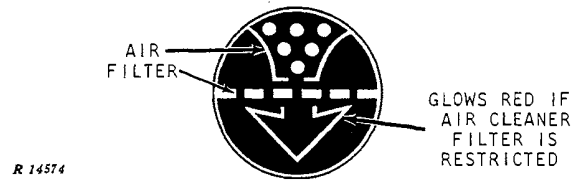
**ALTERNATOR INDICATOR LIGHT**



**FUEL GAUGE**

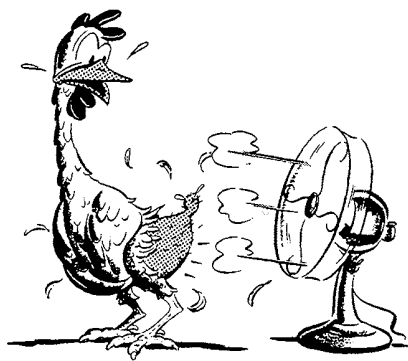


**AIR CLEANER INDICATOR LIGHT**



**SPEED-HOUR METER**

The speed-hour meter shows the following: (1) Engine speed, in hundreds of rpm; (2) Tractor speed in miles per hour according to the gear in which the tractor is operating; and (3) Hours of accumulated engine operation in hours and tenths of hours (based on an average engine operating speed of 1900 rpm).



**Be Extra Cautious  
around Moving Machinery!**

R 2330



R 2206

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

## SEATS

The deluxe tractor seat has a steel compression spring and shock absorber to provide "float ride" suspension. The seat is also equipped with a flexibly mounted padded backrest and semi-circular foam padding which surrounds the operator.

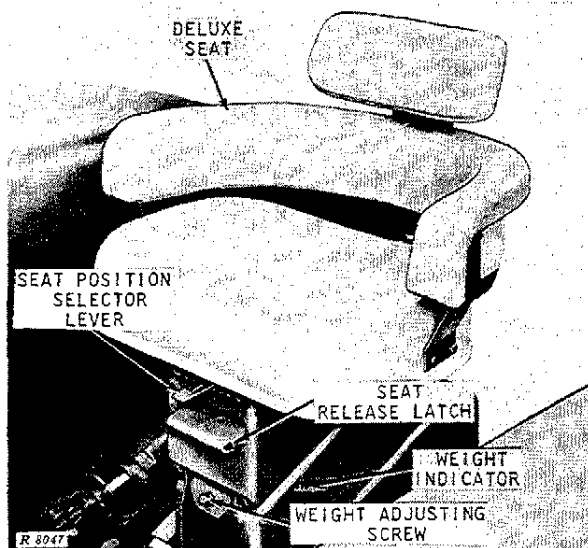
Use only warm water and mild soap to clean the seat cushions. NEVER USE SOLVENTS.

### MOVING SEAT TO UPPER, REAR POSITION

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

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.

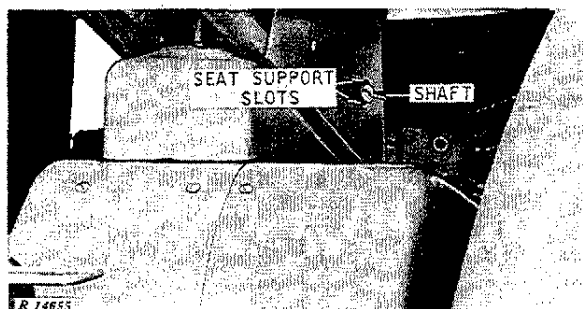


Seat Controls

### ADJUSTING FOR WEIGHT OF OPERATOR

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

### ADJUSTING COUNTERBALANCE SPRING



Counterbalance Shaft

If the seat does not move fully to the rear when unlatched, adjust the counterbalance spring as follows. Push the seat to the upper, rear position. Insert a screwdriver in the slot in the counterbalance shaft and push in on the screwdriver to unlatch the shaft. Turn the shaft counterclockwise until seat action is satisfactory. Line up the latch across the end of the shaft with one of the pairs of slots in the side of the seat support and release pressure on the screwdriver.

### ROLL-GARD AND SEAT BELT

A protective Roll-Gard is available as special equipment for your tractor. A canopy that fits on the top of the Roll-Gard, and seat belts are also available. See page 53 for additional information.

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

1. The use of a seat belt with the optional John Deere Roll-Gard is recommended.
2. Its use without roll-over protective equipment is not recommended.



# 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

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

(a) Check the engine crankcase oil level—see page 39.

(b) Check the radiator coolant level—see page 39.

(c) If the tractor has a precleaner, check the collector bowl—see page 39.

(d) Check the fuel pump sediment bowl—see page 39.

(e) Lubricate the wide-swing drawbar rollers, the front axle pivot pins, steering knuckle pins, steering bellcrank, and steering cylinder end fittings—see page 39.

### STARTING THE ENGINE

*NOTE: If the prevailing temperature is 40°F. or lower, it may be necessary to use a cold weather starting aid to start the engine—see next column.*

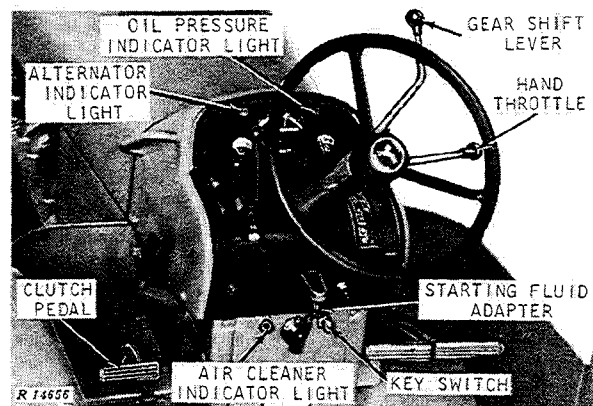
(2) Make sure that the fuel shut-off valve at the bottom of the fuel tank is open—see page 43.

(3) See that the shift lever is in the "PARK" position. Depress the clutch pedal to decrease drag on the engine.

(4) Set the hand throttle approximately 1/3 of its travel downward to the first stop.

(5) Turn the key switch clockwise to the first position. The alternator and oil pressure indicator lights should glow. Turning the key switch further to the start position should cause the air cleaner indicator light to glow and cause the alternator indicator light to go out. If any light fails to glow, turn off the key switch and determine the cause.

(6) Turn the key switch all the way to the right to start the engine. Do not operate the starter for more than 30 seconds at a time. To do so may overheat the starter. If the engine does



Starting Controls

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 59.

If the key 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) After the engine starts, the indicator lights should go out. If a light continues to glow when the engine is running, stop the engine and determine the cause.

### COLD WEATHER STARTING AIDS

For cold weather starting, the tractor is equipped with an ether starting fluid adapter. 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.

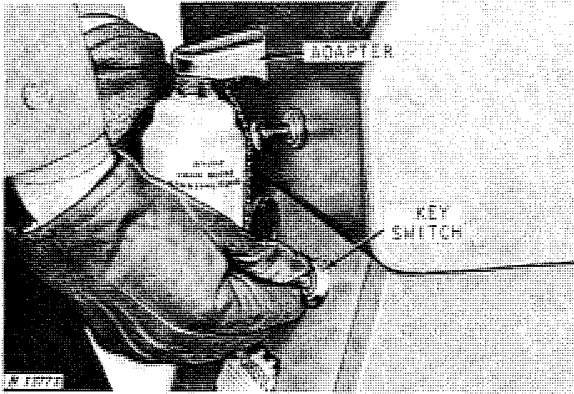
Always use No. 1 diesel fuel at temperatures below 40° F.

## 8 Operation

### STARTING FLUID ADAPTER

This adapter 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.



*Injecting Starting Fluid*

To inject a "shot" of starting fluid, momentarily push up on the can.

**IMPORTANT:** 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.

### SHUTTING OFF HYDRAULIC PUMP

If the hydraulic pump has a shut-off screw (available from your 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 located on top of the pump 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.

After the engine has started, use a screwdriver to back the shut-off screw out against the internal stop (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.*

### CRANKCASE OIL AND TANK-TYPE COOLANT HEATERS

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.

A thermostatically controlled tank-type coolant heater (available from your dealer) will improve cold weather starting. This attachment will keep the coolant warm, reducing oil drag and shortening the engine warm-up period.

**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.

### ADDITIONAL BATTERIES

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

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

Connect a jumper cable to the POSITIVE (+) post of a 12-volt booster battery and to the POSITIVE (+) post of the tractor battery that is connected to the starter. Connect one end of the other jumper cable to the negative post of the other tractor battery that is connected to the starter.

starter. Connect the other end of the other jumper cable to the negative post of the booster battery.

*NOTE: To prevent damage to the electrical system ground wire, never connect a booster battery to the tractor frame. To prevent damage to the alternator or the electrical system, be sure to connect the batteries in proper polarity.*

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 2200 rpm. The engine can be operated at any speed in the working range to meet various operating conditions. Operate the engine at 1900 rpm to obtain the SAE rated PTO speed.

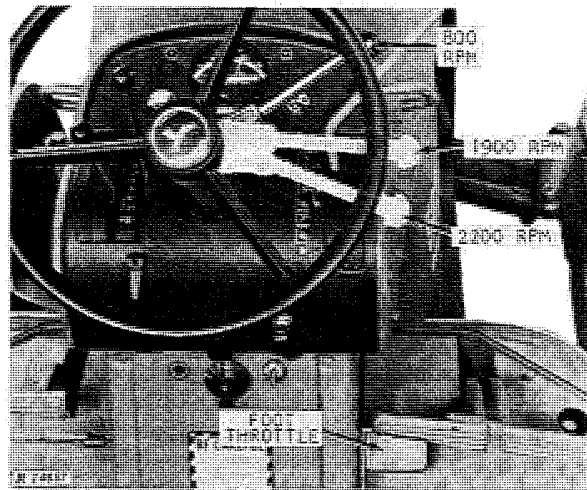
In addition, engine speeds can be varied up to 2500 rpm to save time when traveling on highways or smooth-surfaced roads.

Slow idle speed is approximately 800 rpm. To check engine speeds, see page 41.

### USING HAND THROTTLE

Use the hand throttle to select slow idle or any of the variable governed speeds from 1500 to 2200 rpm.

Move the hand throttle counterclockwise as far as it will go to obtain normal slow idle speed of 800 rpm.



Range of Hand Throttle Positions

To obtain 1900 rpm load speed, move the throttle clockwise to the first stop. Placing the throttle halfway between slow idle and 1900 rpm gives the 1500 rpm speed. Engine speeds between 1500 and 1900 rpm may 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. With the knob pulled out, move the throttle clockwise as far as it will go. This is the 2200 rpm load speed position. Engine speeds between 1900 and 2200 rpm may be selected by moving the lever between these two positions.

### USING FOOT THROTTLE

The foot throttle is used to obtain engine transport speeds or to raise engine speed momentarily. When the foot throttle is pushed all the way downward, the engine operates at 2500 rpm load speed.

*NOTE: The foot throttle should not be used to increase the normal engine working speed.*

**STOPPING THE ENGINE**

Place the shift lever 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.

Turn the key switch counterclockwise to the off position to stop the engine.

After stopping the engine, remove the key from the switch to prevent tampering and unauthorized operation. Removing the key also prevents the switch from being accidentally left in the on (clockwise) or the accessory (counterclockwise) position and causing battery discharge.

Before dismounting, be sure all equipment is lowered to the ground, the light switch and other accessory switches are off, and the transmission is in the "PARK" position.

**BREAKING IN THE ENGINE**

During the first 100 hours of tractor service avoid prolonged periods of engine idling.

If the coolant temperature rises to the warning range on the gauge, shift to a lower gear to reduce the load on the engine.

Be sure to follow the special break-in lubrication instructions on page 35.

**OPERATING THE TRACTOR**

**SELECTING GROUND SPEED**

The tractor has 8 forward speeds and 2 reverse speeds for each of the throttle positions that may be used. 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 may choose to work in a low gear at high engine speed for maxi-

mum 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 2200 rpm, and engine transport speeds may be varied up to 2500 rpm. Tractor ground speeds shown in the chart are only for engine speeds of 1500, 1900, 2200, and 2500 rpm.

*NOTE: The ground speeds shown in the chart below are for a tractor equipped with 18.4-38 or 24.5-32 rear tires with a loaded radius of 31.6 inches.*

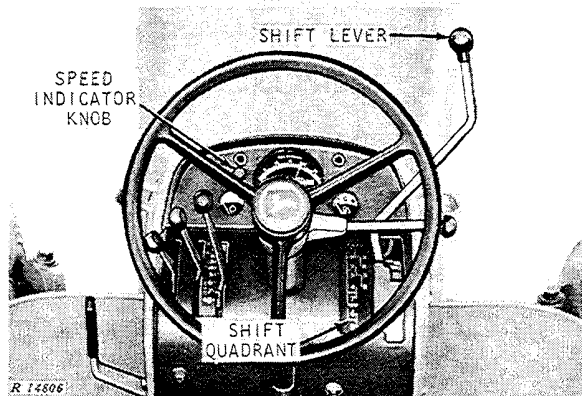
**TRACTOR GROUND SPEEDS**

Gear	Hand Throttle Operating Range			Maximum Foot Throttle Speed 2500 rpm
	1500 rpm	*1900 rpm	2200 rpm	
1st	1.3 mph	1.7 mph	1.9 mph	2.2 mph
2nd	2.1 mph	2.6 mph	3.0 mph	3.5 mph
3rd	2.7 mph	3.5 mph	4.0 mph	4.6 mph
4th	3.5 mph	4.5 mph	5.2 mph	5.9 mph
5th	4.4 mph	5.6 mph	6.5 mph	7.3 mph
6th	5.8 mph	7.3 mph	8.5 mph	9.6 mph
7th	7.5 mph	9.4 mph	10.9 mph	12.4 mph
8th	12.2 mph	15.4 mph	17.9 mph	20.3 mph
1st reverse	2.7 mph	3.4 mph	.....	.....
2nd reverse	4.3 mph	5.4 mph	.....	.....

*\*1900 rpm engine speed gives the ASAE standard PTO speed.*

Gates in the shift quadrant permit selection of the proper gear for the work to be done, as shown in the illustration. Turn the speed indicator knob on the instrument panel so that the speed-hour meter will show the correct tractor ground speed in miles per hour for the gear selected.

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.



Shift Lever, Shift Quadrant, and Speed Indicator Knob

#### SHIFTING BETWEEN STATIONS

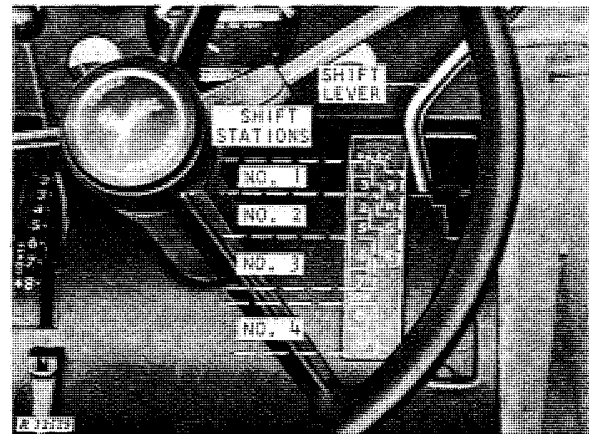
The shift quadrant has four shift stations. Stations No. 1 and 2 have two forward speeds and one reverse speed. Stations No. 3 and 4 have two forward speeds.

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.



Gear Shift Stations

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.

*NOTE: To prevent unnecessary wear, never "ride" the clutch or brake pedals by resting the feet on the pedals.*

#### PARKING THE TRACTOR

When the tractor is stopped for parking, for holding it on an incline, or for holding it during PTO work, move the shift lever as far as it will go forward from neutral to the "PARK" position. To shift from "PARK," move the shift lever rearward to the station desired.

**IMPORTANT: Be sure the tractor is stopped before placing the shift lever in the "PARK" position.**

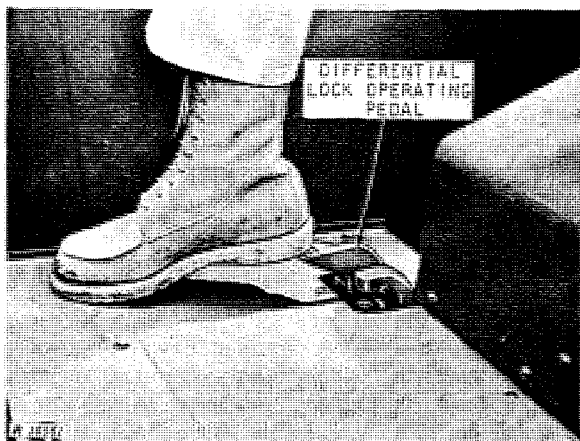
#### TOWING THE TRACTOR

When towing the tractor, place the shift lever in "TOW" and have an operator steer the tractor. Run the engine to maintain power operation of steering and brakes. The transmission oil level should be at the "FULL" mark. If the front end is raised, add one gallon of oil for each six inches the front end is raised. Disengage the differential lock.

**CAUTION: Never tow the tractor at high speeds. Always attach a tow bar or chain to the tractor frame.**

## 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 power when one wheel is slipping.

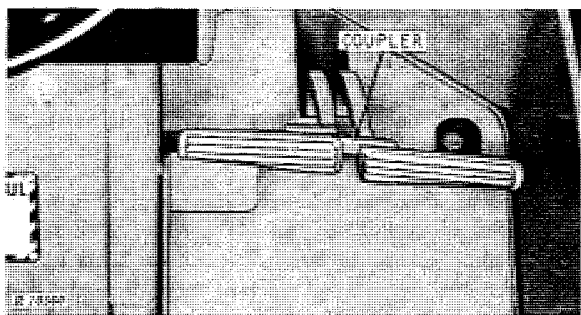


*Differential Lock Operating Pedal*

When one wheel starts to slip or whenever desired, 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 engaging or disengaging the differential lock.

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

## POWER STEERING AND BRAKES



*Brake Pedals Coupled Together*

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

The brake accumulator provides pressure oil to the brakes for several brake applications after the tractor engine is stopped.

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

## TOWED LOADS

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

## FRONT AXLES

### FRONT AXLE TREAD

The tractor front axle may be adjusted to the following front wheel treads:

Fixed tread - 69 or 71 in. (Standard only)

Adjustable tread (81-1/2 in. tread):

18.4-16A tire - 74, 78, 82, or 86 in.

14L-16A tire - 69-1/2, 73-1/2, 77-1/2, or 81-1/2 in.

11.00-16 tire - 68, 72, 76, or 80 in.

9.50-20 tire:

Wheel dish in - 64-1/2, 68-1/2, 72-1/2, or 76-1/2 in.

Wheel dish out - 69-1/2, 73-1/2, 77-1/2, or 81-1/2 in.

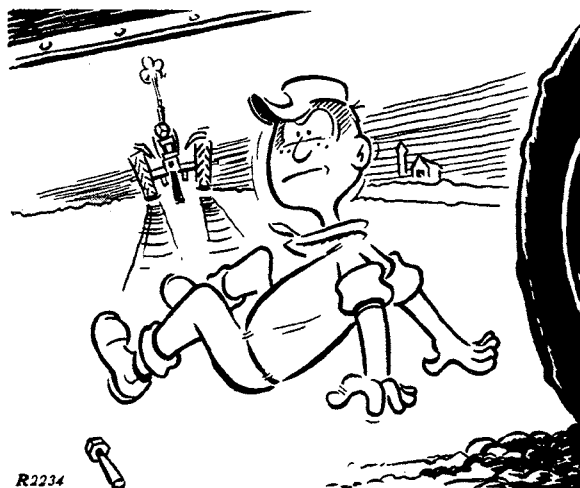
Adjustable tread (88 in. tread):

14L-16A tire - 76, 80, 84, or 88 in.

9.50-20 tire:

Wheel dish in - 71, 75, 79, or 83 in.

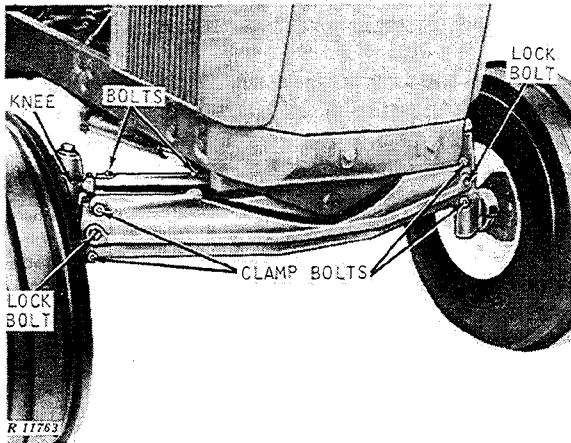
Wheel dish out - 76, 80, 84, or 88 in.



R2234

**CAUTION:** After attaching a heavy load to the drawbar, engage the clutch slowly. Do not start with a jerk.

TREAD ADJUSTMENT



Front Axle Tread Adjustment

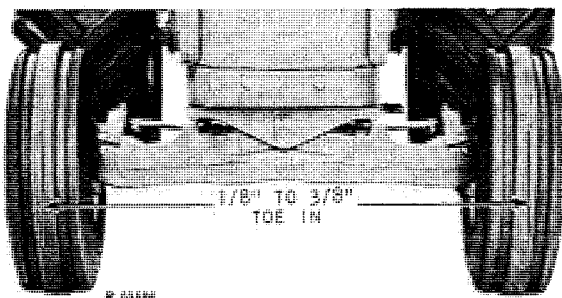
To adjust the tread width, jack up the front end of the tractor.

**IMPORTANT:** Do not place jack under engine oil pan.

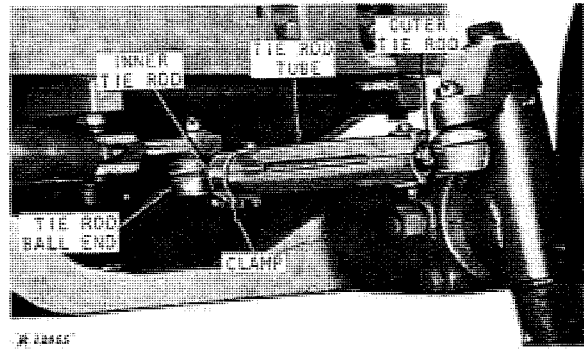
To change the adjustable front axle tread, remove the tie rod lock bolts and tie rod tube halves. Clean tie rod threads. Loosen the clamp bolts and drive the lock bolts from the front axle housing. Move the front axle knees in or out to the desired tread width. Install lock bolts and tighten clamp bolts to 300 ft-lbs torque. Install bolts in tie rods with the nuts down. Coat unpainted surfaces with rust preventative. Check toe-in.

To change the thread on fixed tread front axle or to reverse the dish of the front wheels, unbolt the wheels from the hubs, reverse the wheels, install them, and tighten to 100 ft-lbs torque.

TOE-IN ADJUSTMENT



Correct Toe-In



Toe-In Adjustment

With the front wheels in the straight ahead position and the steering bellcrank in the centered position, measure the toe-in. At axle height, the front measurement between the tires should be 1/8 to 3/8 inch less than the rear measurement.

To adjust toe-in on adjustable tread axles, loosen inner tie rod lock bolt and the tie rod clamp bolt. Remove outer tie rod lock bolt. Turn the tie rod tube to adjust the inner tie rod on the inner tie rod ball end. One turn should adjust toe-in approximately 3/8 inch. Separate the tie rod tube halves to realign the tie rod lock bolt holes. Install tie rod lock bolts with the nuts down. Recheck toe-in and if it is correct, tighten the lock bolts. Tighten the clamp in the downward position.

On fixed tread axles, loosen the tie rod clamps. Turn the tie rod tubes in or out until the toe-in is correct. Tighten the clamps in the downward position.

Tighten tie rod clamps to 35 ft-lbs torque. With properly adjusted tie rods, the tractor will turn as sharp to the left as it will to the right.

REAR WHEEL TREAD

**CAUTION:** Do not operate a row-crop tractor with operator's shield removed. Row-crop tractor operator's shield is designed to protect operator from tire when tire is in narrow tread position.

SINGLE REAR WHEEL ADJUSTMENT

The rear wheel tread may be adjusted by one or more of the following methods: by moving the wheel on the axle with the rack and pinion, by reversing the dish of an offset wheel on the axle,



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## 14 Operation

or by changing the position of the rim on the wheel.

AXLE TYPE	WHEEL DISK DISHED IN OR OUT	RIM RING	BOLT	CLAMP	DISH OUT	DISH IN
R 16210						
REGULAR AXLE	DISH IN	60"-82"	68"-90"	67"-89"	75"-97"	
	DISH OUT	88"-105"	96"-113"	95"-112"	103"-120"	
EXTRA LONG AXLE	DISH IN	60"-100"	68"-108"	67"-107"	75"-115"	
	DISH OUT	88"-123"	96"-131"	95"-130"	103"-138"	

Tread Range 18.4-38 or 20.8-38 Single Tires  
(63 in. Minimum Tread with 20.8-38 Tires)

AXLE TYPE	POSSIBLE TREAD WIDTHS	
	STANDARD TRACTOR	ROW-CROP TRACTOR
REGULAR AXLE	70"-100"	70"-112"
LONG AXLE	70"-124"	70"-124"
EXTRA LONG AXLE	70"-130"	70"-130"

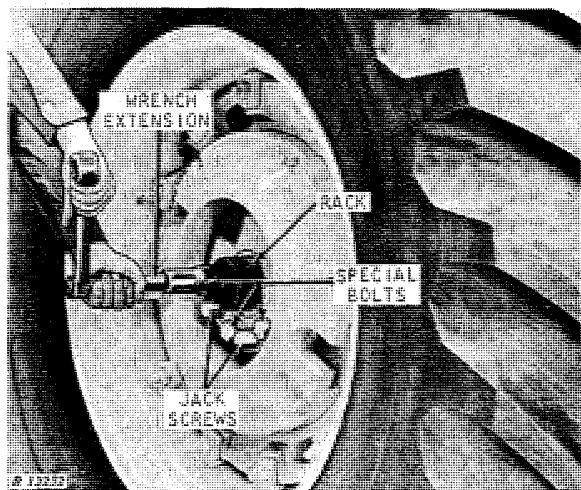
Tread Range for Tractors with 24.5-32 Single Tire

**IMPORTANT:** Limit rear wheel tread of a single tire to 110 inches or less when pulling heavy loads in 1st, 2nd, or 3rd gear.

Minimum tread on tractors with a Crenlo Cab is 64-1/2 inches with 18.4 tires, 67 inches with 20.8 tires or 70-1/2 inches with 24.5 tires.

### RACK AND PINION METHOD

The rack and pinion rear wheel tread adjustment is accomplished by turning the pinion gear in the rear wheel hub. The pinion engages a rack on the axle to move the wheel in or out on the axle.



Rack and Pinion Adjustment

This adjustment can be made with up to two outside wheel weights installed. Additional weights will interfere with the turning of the pinion.

Jack up the tractor and rotate the wheel until the rack on the axle is up. Loosen the three special bolts 1/4 to 3/8 inch. To loosen the tapered sleeve, turn the two jack screws clockwise until the notches in the hex. surface are even with the wheel hub.

Turn the pinion gear to move the wheel in or out on the axle. Measure the amount the axle protrudes from the hub to maintain the same distance from the wheels to the tractor centerline. BE SURE that the tire or wheel weight will not rub the tractor.

After the desired tread is obtained, back out the jack screws until the ENTIRE HEX. SURFACE is exposed. Remove the special bolts, oil the threads, and install the bolts. Tighten them securely (300 ft-lbs torque). After a few hours service, RETIGHTEN the bolts and keep them tight.

**CAUTION:** Avoid adjusting wheels too close to the rear axle housing. This can damage the pinion when the hub is tightened. To avoid this, adjust the wheel to the innermost position until the pinion contacts the end of the rack. Then back up until the wheel has moved outward at least 1/4 inch. The jack screws MUST BE FREE TO TURN after the hub is tightened. If necessary, back the jack screws out a little further and retighten special bolts.

### REVERSING OFFSET WHEEL ON AXLE

On tractors with offset wheels, the rear wheel tread may be changed by reversing the "dish" of the wheel. To do so, jack up the tractor and remove the wheel. Reverse the "dish" and install the wheel. Be sure to maintain the proper direction of tire rotation. Another way is to install wheel and tire on other axle. After a few hours service, retighten the special bolts and keep them tight.

### CHANGING RIM POSITION ON WHEEL

On tractors that have a double rim ring, the clamps may be bolted to either side of the wheel and can engage either one of the two raised rings on the rim. This gives four possible rim positions on the wheel as shown in the tread chart.

On offset deep well rims (18.4-34 and 24.5-32 tires), two possible rim positions are obtained by reversing the offset deep well. To maintain proper direction of tire rotation, install rim and tire on other wheel. On standard tractors with

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