

JOHN DEERE

OPERATORS MANUAL

850 AND 950
TRACTORS

OMR68993 H8 English

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TRACTORS

OMR68993 H8 English

JOHN DEERE LAWN & GROUNDS CARE
DIVISION
OMR68993 H8

LITHO IN THE U.S.A.
ENGLISH



IMPORTANT WARRANTY INFORMATION

The warranty on this tractor appears on your copy of the purchase order which you should have received from your dealer when making your purchase. This warranty provides you the assurance that John Deere will back its products where defects appear within the warranty period. In some circumstances, John Deere also provides field improvements, often without charge to the customer, even if the product is out of warranty.

Warranty and field improvements are a part of John Deere's product support program for customers who operate and maintain their equipment as described in this manual. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied. Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

 This safety alert symbol indicates 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.



Worldwide symbols are used to assist identification and operation. In this manual, an identifying symbol is placed by the instructions like the example at left for the symbol on the engine oil pressure gauge. The cylinder block in the symbol represents the engine, the drop signifies oil, and the arrows indicate pressure. Regardless of the language used in a nation, this symbol means engine oil pressure without translation.

"Right-hand" and the "left-hand" sides of the tractor are determined by facing in the direction of tractor forward travel.



This tractor is of metric design. All hardware is therefore metric. Make sure you use the specified metric hardware when replacement becomes necessary.

For your convenience most specifications are given in customary U.S. measurement with the metric measurement following.

Some specifications cannot be converted. Those appear in metric only.

Record your tractor serial numbers on page 83. Provide this information to your dealer when ordering parts.



R40017

John Deere 950 Tractor



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**PAGES SKIPPED WERE ORIGINALLY LEFT BLANK IN THE MANUAL.
THIS COVERS THE YANMAR YM2500 FOR NEARLY 95% AND THE YM2610
EXCLUDING THE POWER-SHIFT.**



Safety



R 30818

Operate Tractor Safely

Never allow riders on the tractor.

Slow down for hillsides, rough ground, and sharp turns. Couple the brake pedals together before driving at transport speeds.

To avoid exhaust gas hazards, never run the engine in a closed building.



R 30819

Avoid Tip-Overs

If your tractor is equipped with a Roll-Gard, use the seat belt under almost all operating conditions.

Use of seat belt is not recommended for tractors without a rollover protective device.

Avoid holes, ditches, etc. which may cause the tractor to tip, especially on hillsides.

Never drive near the edge of a gully or steep embankment—it might cave in.

Driving forward out of a ditch or mired condition or up a steep slope could cause tractor to tip over rearward. Back out of these situations if possible.

Hitch towed loads only to the drawbar. When using a chain, take up the slack slowly.

Handle Chemicals Properly

When using agricultural chemicals, follow the instructions given in the implement operator's manual and those given by the chemical manufacturer.

Avoid Exhaust Fumes

Do not operate engine inside a closed building.

If a Roll-Gard canopy is installed, also install an exhaust extension.

A horizontal exhaust system is available for applications where a vertical exhaust would be in the way. See your John Deere dealer.

Transport Safely

Never tow the tractor faster than 20 mph (32 km/h).

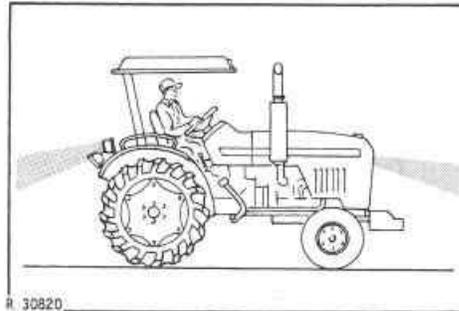
Before descending a steep hill, shift to a low gear to control the tractor with little or no braking. Never coast downhill.

A towed load of more than twice the weight of the tractor should have brakes. If it does not, drive slowly and avoid hills. Avoid hard applications of the brakes when pulling heavy loads. Keep brakes properly adjusted as instructed on page 73.

When operating the tractor on a road, turn the light switch to the "H" position. Be sure the SMV emblem is visible and clean.

Always dim the headlights before meeting another vehicle. Keep the lights adjusted so they will not blind another driver.

Be sure lighting conforms to local regulations.



R 30820

Stay Clear of PTO

Stop the engine and be sure the PTO has stopped before:

- Connecting or disconnecting a PTO shaft
- Making any adjustment to PTO drive train or hitch
- Cleaning out PTO driven equipment.

PTO master shield should be in place at all times except when connecting a PTO drive line or for special applications as directed in the operator's manual.

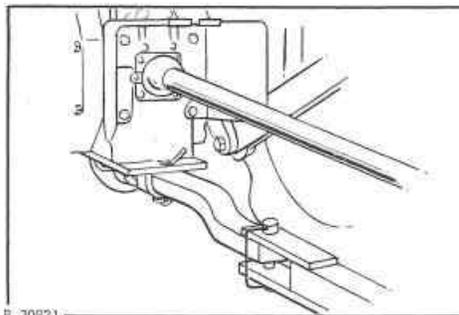
The PTO shaft guard should be in place when the PTO is not being used.

Stay Clear of Moving Tractor

Never try to get on or off a moving tractor.

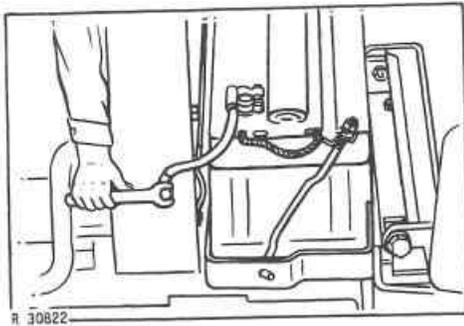
Before dismounting, lock the brakes and lower implements to the ground. If tractor is to be left unattended, stop the engine and remove the key.

Never attempt to start or operate the tractor except from the operator's station.



R 30821

4 Safety



Service Tractor Safely

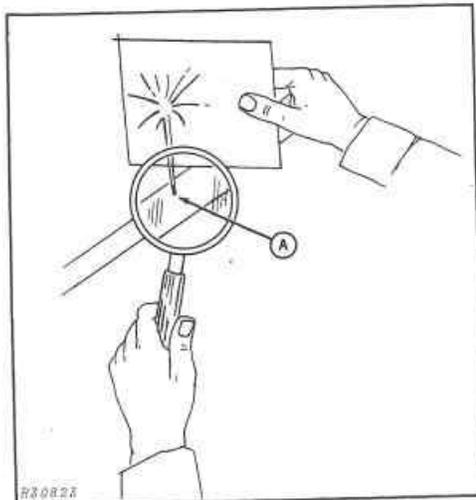
Do not service the tractor while it is in motion or while the engine is running.

Disconnect the battery ground cable before working on the electrical system or working in any area where you might accidentally contact electrical components.

Avoid Explosions or Fire

Before using booster batteries, read the instructions on page 14. Before connecting or disconnecting a battery charger, turn the charger off to avoid sparks.

Be careful with any type of fuel. Do not refuel the tractor when the engine is hot or running. Never smoke while handling fuel.



A—Pin Hole Leak

Avoid High-Pressure Fluids

Do not remove the radiator cap when the engine is hot. Shut the engine off and wait until it cools. Then turn the cap to the first stop to relieve pressure before removing it completely. (Normally, use coolant recovery tank for filling radiator.)

Hydraulic oil or diesel fuel escaping under pressure can penetrate the skin, causing serious injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure, be sure all connections are tight and all components are in good condition.

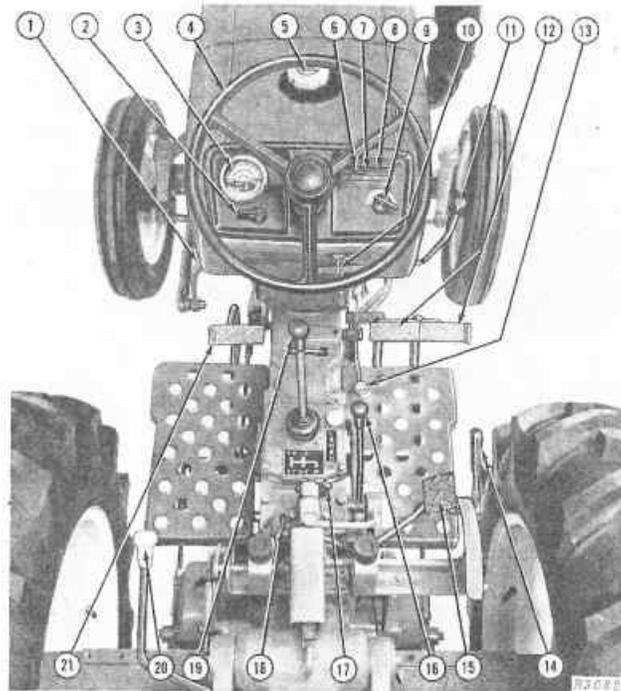
Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.



Controls and Instruments

	See Page
1—Compression Release	13
2—Turn Signal Controller	50
3—Speed-Hour Meter	19
4—Steering Wheel	51
5—Fuel Gauge	7
6—Temperature Indicator Lamp	11
7—Charging System Indicator Lamp	11
8—Oil Pressure Indicator Lamp	49
9—Light Switch	11
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16—Range Shift Lever	23
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18—Speed-of-Drop Valve	18
19—Gear Shift Lever	34
20—PTO Shift Lever	18
21—Clutch Pedal	18





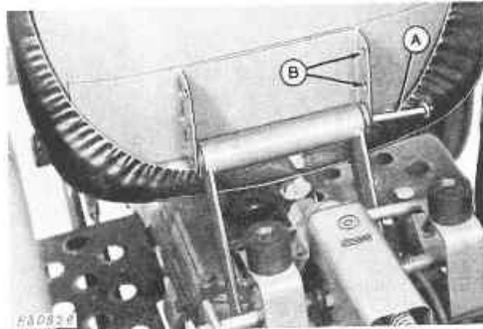
Operator's Station

SEAT

To protect seat when tractor is not in use, tilt it forward.



To move seat forward or back, remove pin (A), and reinstall through desired adjustment holes (B).



A—Pin
B—Adjustment Holes

SEAT BELT

⚠ CAUTION: If tractor is equipped with a Roll-Gard, use the seat belt under almost all operating conditions.

Use of a seat belt is not recommended for tractors without a rollover protective device.

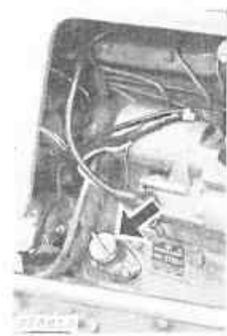




Engine Break-in

The engine is ready for normal operation. However, you should be extra cautious during the first 100 hours.

1. Avoid unnecessary engine idling. If tractor will be idle longer than five minutes, stop the engine.
2. Watch coolant temperature indicator closely. If lamp glows, shift to a lower gear or reduce load. Unless temperature quickly drops, stop the engine and determine the cause.
3. Check engine oil and coolant levels more frequently. Watch for any signs of leaks.
4. Follow break-in lubrication instructions on page 53.
5. Until you become thoroughly familiar with the sound and feel of your new tractor, stay extra attentive and alert.



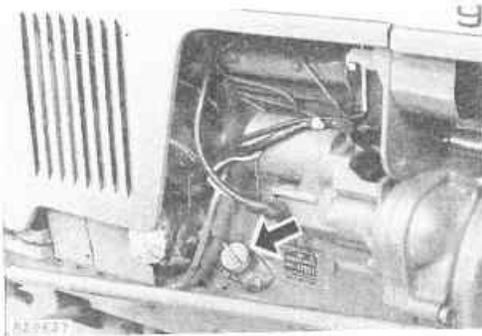
Engine Oil Dipstick



Coolant Level



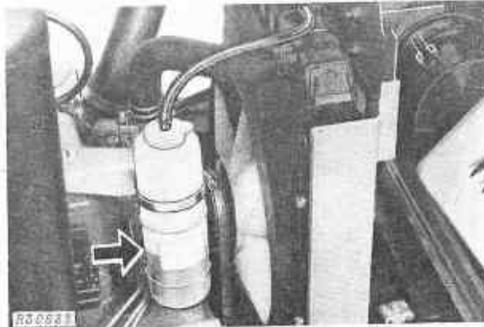
Prestarting Checks



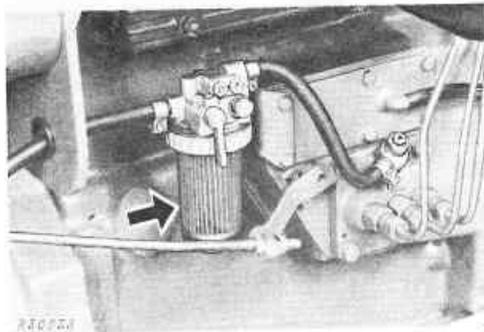
Do the following before starting the engine for the first time each day.

1. Check the engine oil level. Wipe dipstick off, and check with dipstick resting on threads but not screwed in.

Safe operating range is from full mark to end of dipstick. Do not operate engine when oil level is below end of dipstick. See page 52 for oil specifications.

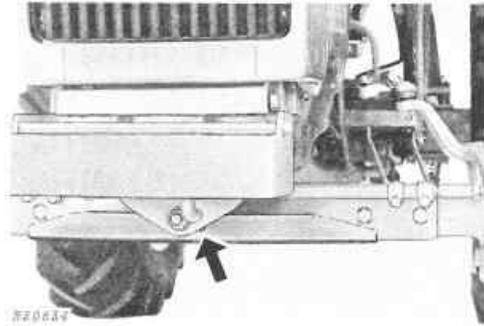


2. Check the coolant level. It must be above "LOW" mark on coolant recovery tank.



3. Check fuel filter sediment bowl. If water or sediment is present, remove it. See page 67.

4. Lubricate front axle pivot pin.





Operating the Engine

STARTING THE ENGINE

CAUTION: Before starting engine, be sure there is plenty of ventilation.

NOTE: If temperature is below 40°F (5°C), it may be necessary to use a cold weather starting aid. See Page 13.

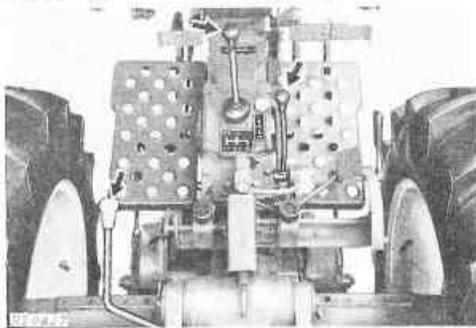
1. If fuel shut-off valve is closed, open it. Be sure tractor has plenty of fuel.



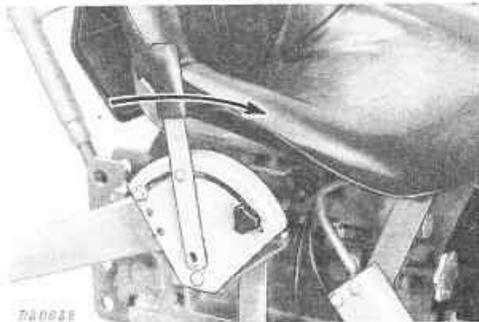
Shut-off Valve



Fuel Gauge



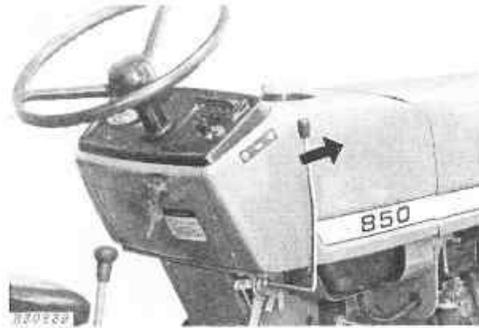
2. Place gear shift lever, range shift lever, and PTO lever in neutral positions.



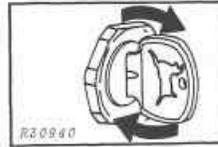
3. Place rockshaft control lever in lower position.

4. Push hand throttle fully forward. Engine will not start with throttle pulled completely back.

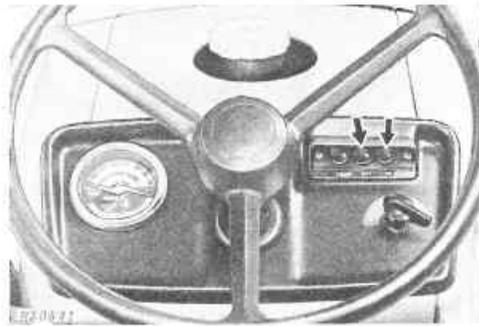
IMPORTANT: As soon as engine starts, pull throttle about halfway back. Do not run a cold engine at full throttle.



5. Turn key clockwise to first position.

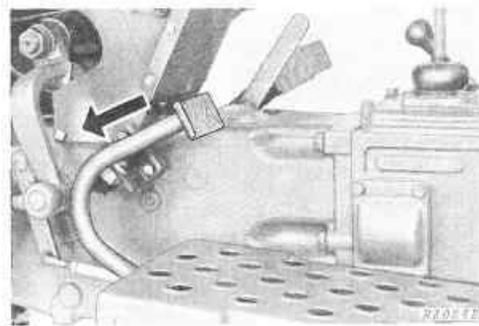


6. Check indicator lamps. Both oil pressure indicator and charging system indicator should glow. If they do not, consult your John Deere dealer.



7. Fully depress clutch pedal to close starter override switch.

⚠ CAUTION: Start engine only from operator's seat. NEVER start engine while standing on ground.



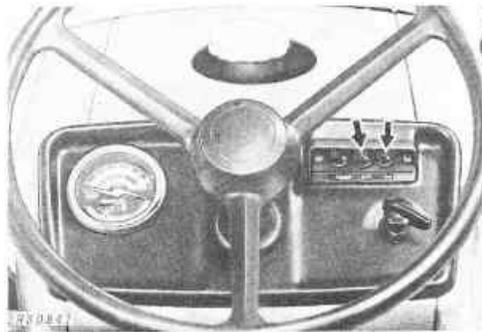
12 Operating the Engine



R30840

8. Turn key switch farther clockwise to engage starter. Release key when engine starts. If key is released before engine starts, wait until starter and engine stop turning before trying again.

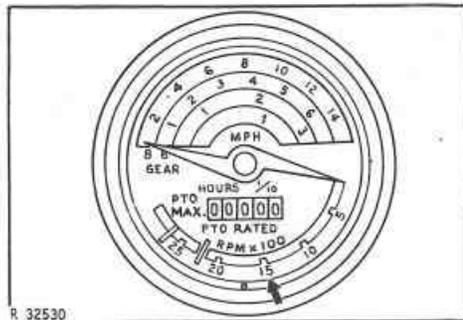
IMPORTANT: Do not operate starter more than 20 seconds at a time. If engine does not start, wait at least two minutes before trying again. If engine does not start in four attempts, refer to "Trouble Shooting", page 77.



R30841

9. Check indicator lamps as soon as engine starts. If lamps glow longer than five seconds, stop the engine and determine the cause.

Always leave key switch turned on while engine is running, so indicator lamps will function.



R 32530

10. Operate engine at approximately 1500 rpm for several minutes. Do not accelerate or apply a load until engine warms up.

COLD WEATHER STARTING AIDS

⚠ CAUTION: Do not use starting fluid in this engine.



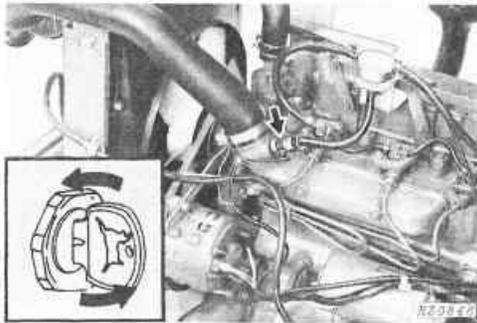
Decompression Knob

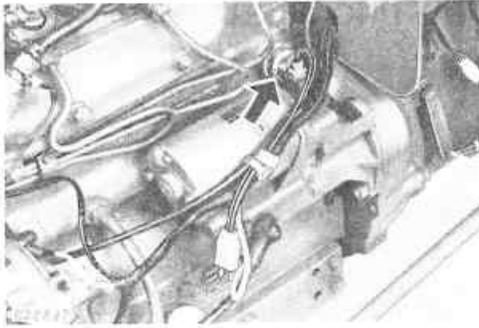
1. Pull hand throttle fully rearward.
2. Pull decompression knob for easier engine cranking.
3. Crank engine approximately five seconds. Oil pressure indicator lamp should stop glowing.
4. Push hand throttle forward and start engine. Push decompression knob in as engine is cranking. Use thermostart device if needed.



Thermostart Device

1. Turn key switch counterclockwise and hold it there 10 or 15 seconds. An electric glow plug ignites a small amount of fuel in the intake manifold.
2. Quickly turn key switch clockwise and start engine, using decompression knob if needed.





Electric Coolant Heater (Optional)

CAUTION: To avoid shock, always use a three-wire, heavy duty electrical cord, and be sure it is properly grounded.

Connect coolant heater to a 115-volt electrical outlet.

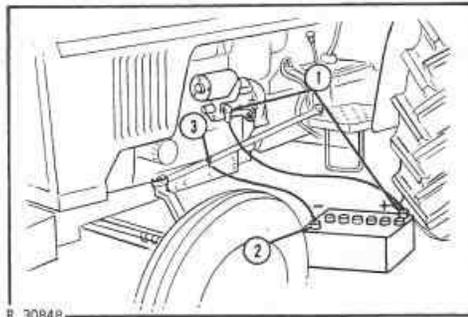
In extremely cold weather, it may take five to eight hours to heat engine. Coolant heater has a 400-watt heating element.

Using a Booster Battery

A 12-volt battery can be connected in parallel with the tractor battery. Use heavy duty jumper cables.

CAUTION: Gas given off by batteries is explosive. Keep sparks and flames away from batteries. Make last connection and first disconnection at a point away from batteries.

IMPORTANT: Be sure polarity is correct before making connections. Reversed polarity will damage electrical system.



R 30848

1. Attach one cable to positive terminal of booster battery and to starter terminal where positive battery cable is attached.
2. Attach one end of second cable to negative terminal of booster battery.
3. Attach other end of second cable to a good ground on tractor frame.

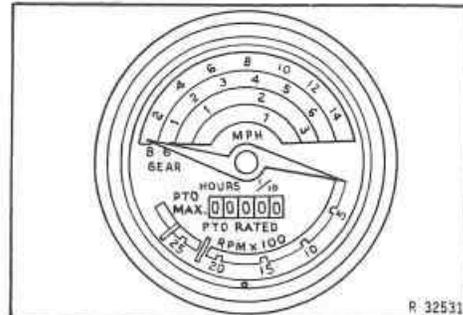
ENGINE SPEEDS

Slow idle speed should be 850 rpm.

Full throttle speed at full load should be 2600 rpm for 850 Tractor and 2400 rpm for 950 Tractor. At light or no load, full throttle speed will increase by about 150 rpm.

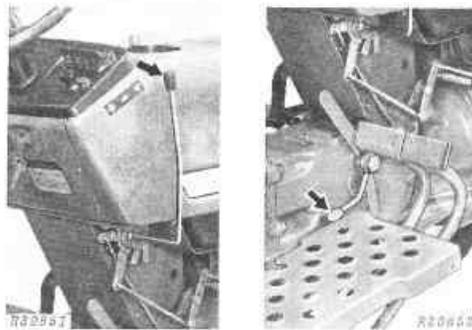
Normal working speed is 1900 to 2600 rpm for 850 Tractor and 1700 to 2600 rpm for 950 Tractor. Any engine speed in this range is suitable.

For standard PTO speed (540 rpm), run engine at 2260 rpm.



To increase speed, push throttle forward.

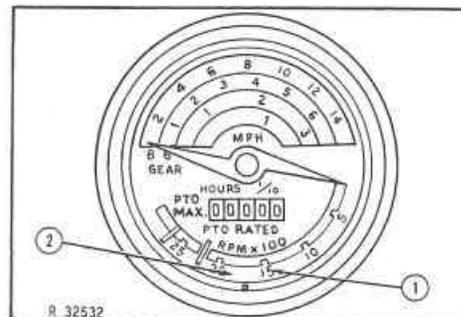
To temporarily increase engine speed above hand throttle setting, depress foot throttle.



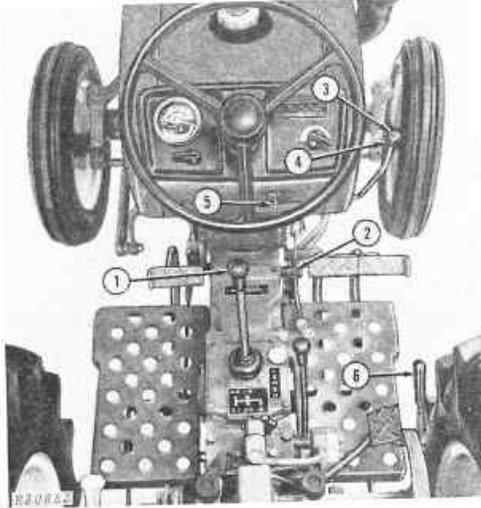
TRACTOR WARM-UP

Do not place tractor under full load until it is properly warmed up.

1. Idle engine at about 1500 rpm for five minutes.
2. Run engine at about 1900 rpm and under light load for five minutes.



STOPPING THE ENGINE



1. Stop tractor and shift transmission to neutral.
2. Set parking brake by pulling lever back, then firmly depressing brake pedals.
3. Pull hand throttle back to slow idle position. Allow engine to idle one to two minutes.

IMPORTANT: Cooling of certain engine parts is provided by engine oil. Stopping a hot engine suddenly could cause damage to these parts by overheating.

4. Pull hand throttle fully rearward to stop engine.
5. Turn switch off and remove key.
6. Lower mounted equipment to ground before dismounting.

IMPORTANT: Do not use decompression knob to stop engine.

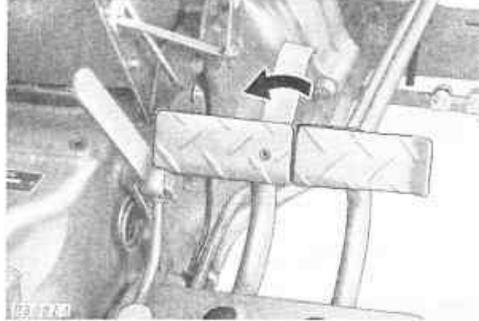


Operating the Tractor

BRAKES

Use individual brakes to assist in making sharp turns. Disengage coupler bar and depress only one brake pedal.

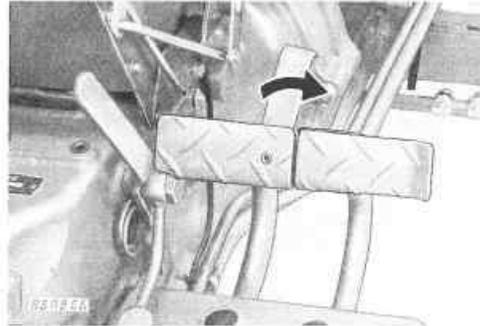
To stop tractor, depress both brake pedals.



CAUTION: Before operating tractor on a road, lock pedals together. Use brakes lightly and cautiously at transport speeds. Towed loads heavier than twice the weight of the tractor should have their own brakes.

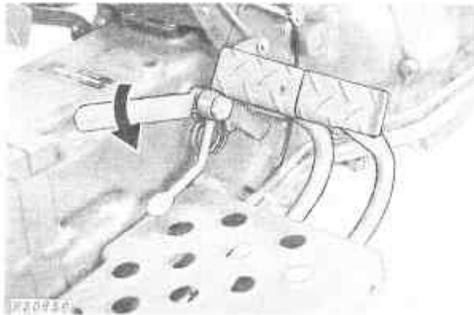
CAUTION: Keep brake pedals adjusted evenly, to prevent tractor from swerving to one side when both brakes are applied. See page 73.

IMPORTANT: To prevent unnecessary wear, never ride the brakes by resting a foot on the pedals.

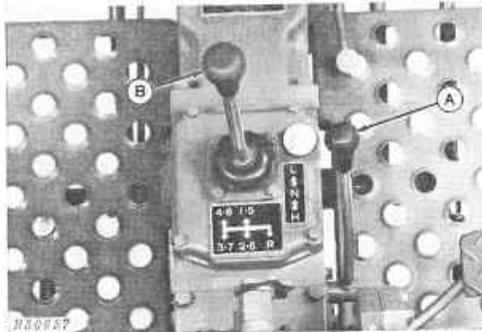


To set parking brake, pull lever back and firmly depress brake pedals.

To release parking brake, push lever forward while depressing brake pedals.



TRANSMISSION

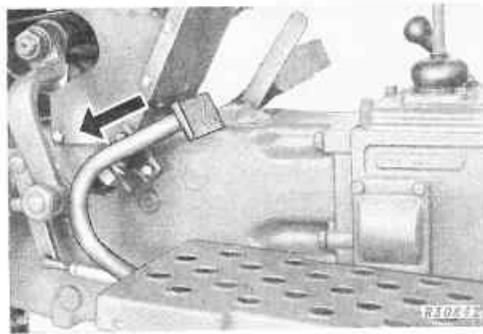


Operation

Range selector (A) provides two speed ranges. Low range speeds are below 3 mph (5 km/h), and high range speeds are above.

Speed selector (B) provides four forward speeds and reverse in each range.

A—Range Selector Lever
B—Speed Selector Lever



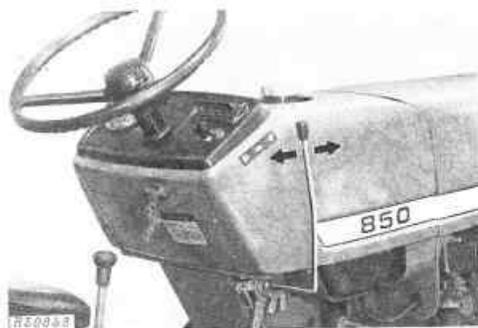
Shifting

IMPORTANT: To prevent transmission damage, do not shift on-the-go.

Depress clutch pedal and stop tractor before shifting either range selector lever or speed selector lever. Release clutch pedal gradually to take up load smoothly.

To prevent unnecessary wear, never "ride" the clutch by resting a foot on the pedal.

CHOOSING A GEAR



IMPORTANT: Avoid loads so heavy they require the lowest gears. To extend tire life and avoid excessive wear of drive train components, avoid continuous full-load operation at ground speeds below 4.4 mph (7.1 km/h).

Don't overload engine. Select a gear which will pull the load without undue strain.

If slight movement of throttle causes a change in engine speed, engine is not overloaded.

For light loads, use a higher gear and lower engine speed.

TRAVEL SPEEDS

Travel speeds for 850 Tractor are shown at right. Speeds are for a tractor with 11.2-24 rear tires. Speeds would be 3% slower with 9.5-24 tires and 17% slower with 13.6-16 turf tires.

Gear	850 TRACTOR SPEEDS			
	At Rated Engine Speed (2600 rpm)		At Standard PTO Speed (2260 rpm)	
	mph	km/h	mph	km/h
1	0.8	1.3	0.7	1.1
2	1.1	1.8	1.0	1.6
3	1.7	2.7	1.5	2.4
4	2.5	4.0	2.2	3.5
5	3.8	6.0	3.3	5.2
6	5.4	8.6	4.7	7.5
7	8.0	12.7	6.9	11.1
8	11.7	18.8	10.2	16.3
R1	1.1	1.8	1.0	1.6
R2	5.4	8.6	4.7	7.5

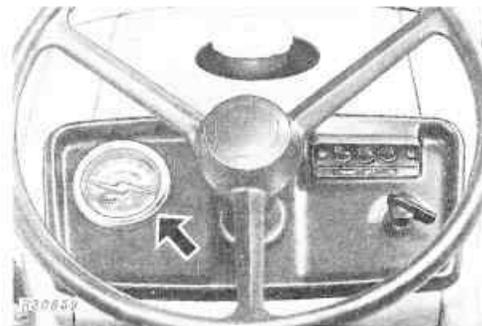
Travel speeds for 950 Tractor are shown at right. Speeds are for a tractor with 12.4-28 rear tires. Speeds would be 12% slower with 11.2-24 tires and 1% faster with 13.6-28 turf tires.

Gear	950 TRACTOR SPEEDS			
	At Rated Engine Speed (2400 rpm)		At Standard PTO Speed (2260 rpm)	
	mph	km/h	mph	km/h
1	0.8	1.3	0.8	1.2
2	1.2	1.9	1.1	1.8
3	1.7	2.8	1.6	2.6
4	2.6	4.1	2.4	3.9
5	3.9	6.2	3.7	5.9
6	5.5	8.9	5.2	8.4
7	8.2	13.1	7.7	12.3
8	12.1	19.3	11.4	18.2
R1	1.2	1.9	1.1	1.8
R2	5.5	8.9	5.2	8.4

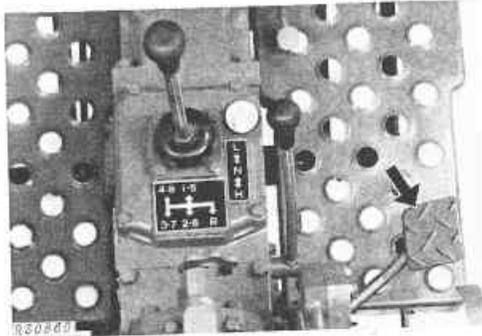
SPEED-HOUR METER

Speed-hour meter indicates engine speed, travel speed, and accumulated hours of operation.

Travel speeds are indicated in second, fourth, sixth, and eighth gears. Use these scales to estimate travel speeds in the other gears.



DIFFERENTIAL LOCK



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

IMPORTANT: To prevent damage to power train, do not engage differential lock when one wheel is spinning and the other is completely stopped.

When one wheel starts to spin, engage differential lock by depressing pedal.

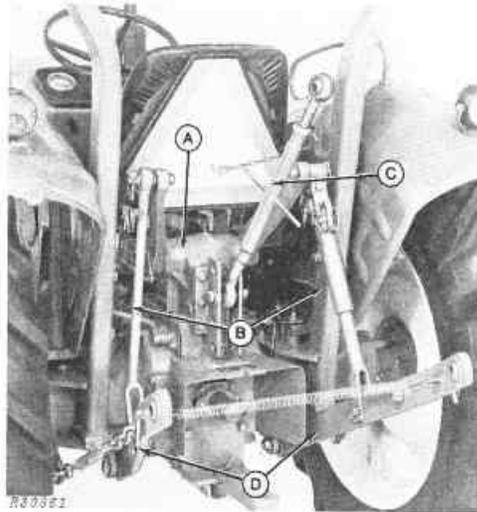
Unequal traction will keep the lock engaged. When traction equalizes, lock will disengage itself by spring action. If lock does not disengage, depress one brake pedal and then the other.

If tires repeatedly slip, then get traction, then slip again, hold pedal in the engaged position.



Rockshaft and 3-Point Hitch

IMPORTANT: Horsepower of the tractor should be matched to the size of certain implements. Excessive horsepower can damage an implement, and too large an implement can damage the tractor. Refer to your implement operator's manual for minimum and maximum horsepower requirements before attaching an implement.

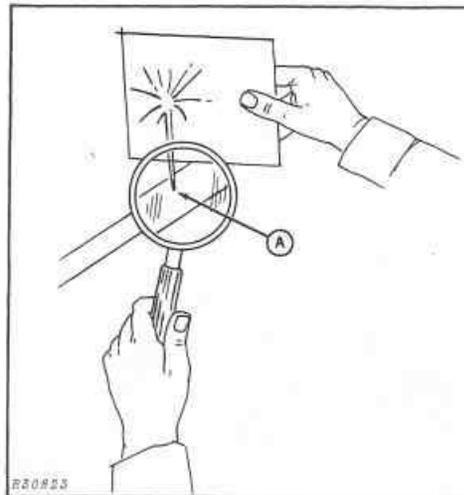


A—Rockshaft
B—Lift Links
C—Center Link
D—Draft Links

⚠ CAUTION: Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged.

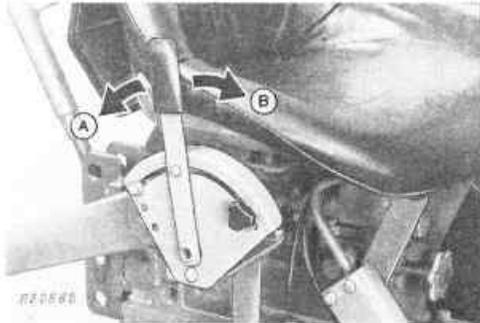
Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.



A—Pin Hole Leak

ROCKSHAFT CONTROL LEVER

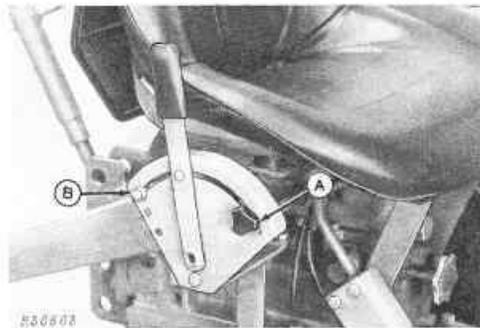


To raise rockshaft, pull lever rearward.



To lower rockshaft, push lever forward.

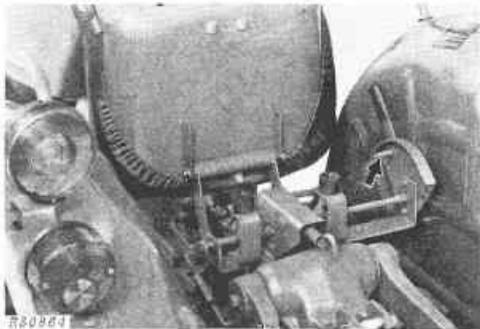
A—To Raise
B—To Lower



For convenience, set adjustable depth stop (A). Operate implement a few minutes to determine proper height, then move stop up against lever. Rockshaft will then lower to same position each time lever is pushed to stop.

If necessary to prevent an interference when rockshaft is fully raised, install a bolt ahead of height stop (B). Carefully raise rockshaft to maximum height you wish to allow, then install bolt against lever.

A—Depth Stop
B—Height Stop

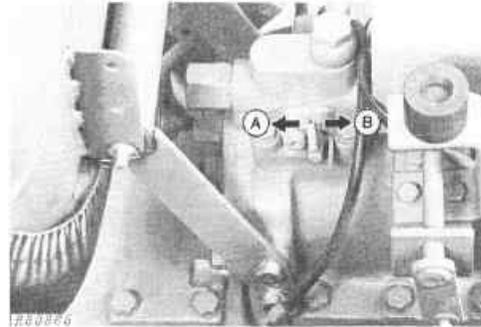


If control lever moves too easily, tighten adjusting nut behind spring.

SPEED OF DROP

⚠ CAUTION: Excessive speed of drop may cause damage or injury. Fully lowering implement should require at least two seconds.

Rockshaft drops faster when a heavy implement is attached. Adjust speed of drop so that is slow enough to be safe.



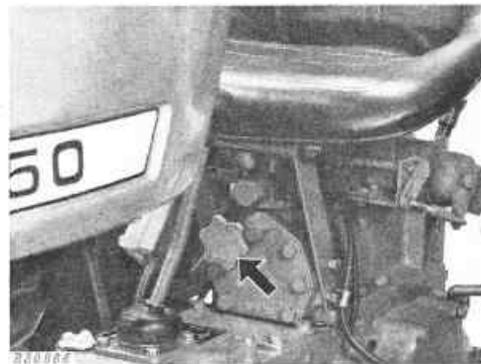
A—Faster
B—Slower

HYDRAULIC STOP VALVE

IMPORTANT:

1. Do not raise control lever when hydraulic stop valve is closed.
2. Do not lock rockshaft in its highest position.
3. Open valve completely when it is not in use.

You can lock rockshaft in position, so it can't be raised or lowered, by closing hydraulic stop valve. Turn knob clockwise to stop.

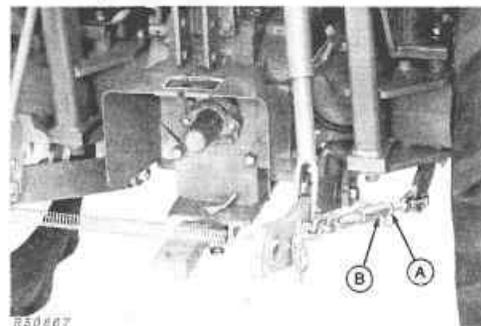


SWAY CONTROL

Side sway of implement is controlled by sway chains. Loosen lock nuts (A), rotate turnbuckles (B) to lengthen or shorten chain as desired, and tighten lock nuts.

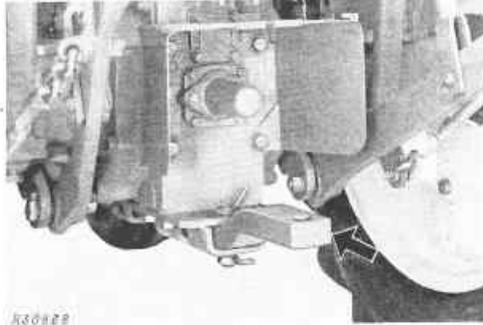
Check implement operator's manual for instructions on whether to allow side sway.

IMPORTANT: Be sure draft links are not permitted to strike tires.

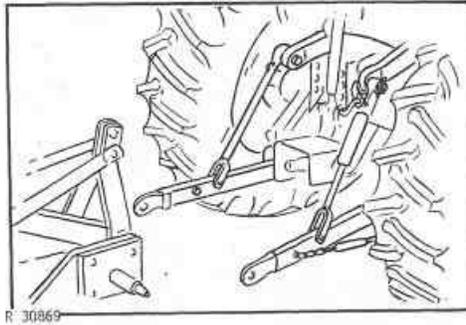


A—Lock Nut
B—Turnbuckle

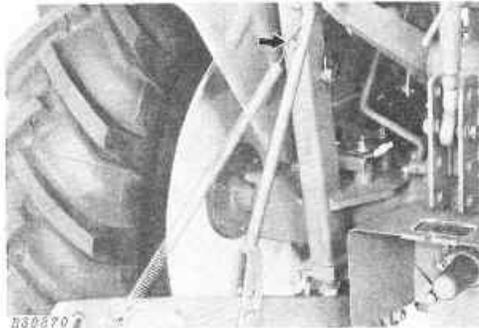
ATTACHING IMPLEMENT TO 3-POINT HITCH



1. Be sure drawbar will not interfere. If necessary, move drawbar ahead or remove it. See page 31 for drawbar adjustments. Check for any other potential interference.



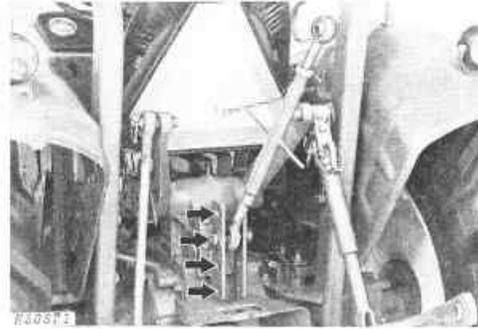
2. Back tractor up to implement so that hitch points are in line. Set parking brake, and stop the engine.
3. Slip draft links over implement hitch pins, and secure them with Quik-Lock pins.



4. If implement will interfere with spring between draft links, disconnect spring from right-hand side and hook as shown.

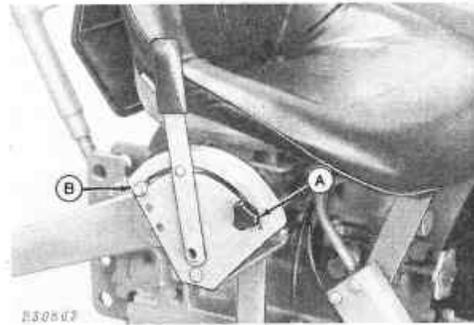
IMPORTANT: When no implement is attached to hitch, always use spring to keep draft links from striking tires.

5. Remove center link from transport hook, and attach it to implement top mast.
Center link may be attached in any of the four positions, but the top position should be used for most implements. For moldboard plows, use the third hole down from the top.
6. Make any necessary adjustments to lift links and center link as instructed on page 26.



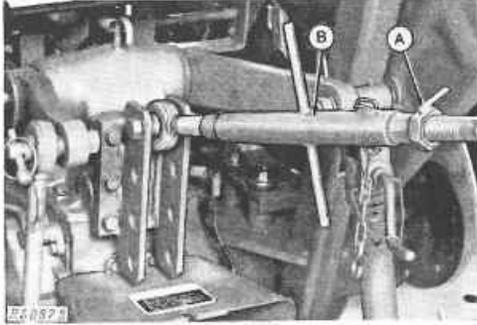
⚠ CAUTION: To avoid bodily injury or machine damage whenever 3-point-hitch or other implements are attached to tractor, check full range of operation for interference, PTO separation or binding.

7. Raise implement slowly and check for any point of interference. If necessary, set height stop on rockshaft control lever as instructed on page 22.



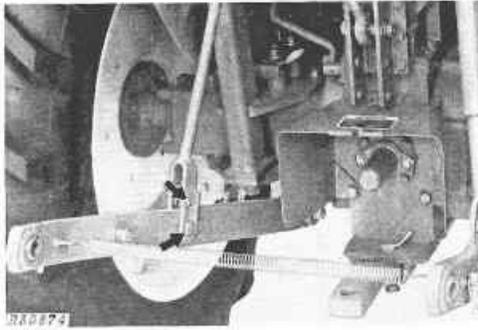
A—Depth Stop
B—Height Stop

ADJUSTING HITCH

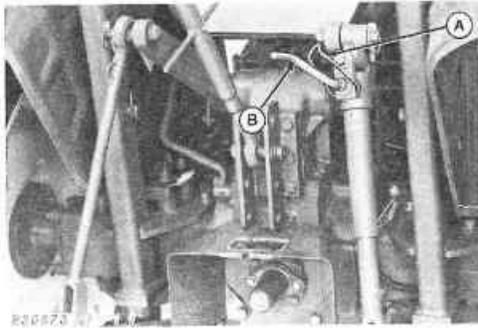


1. Adjust center link to level implement front-to-rear. Loosen lock nut (A) and rotate body (B). Tighten lock nut.

A—Lock Nut
B—Body



2. Left-hand lift link has two positions. If needed for clearance, raise draft link to upper position. Adjust right-hand link to same length.



3. Adjust right-hand lift link to level implement side-to-side. Raise latch (A) and turn handle (B). Push latch down.

A—Latch
B—Handle

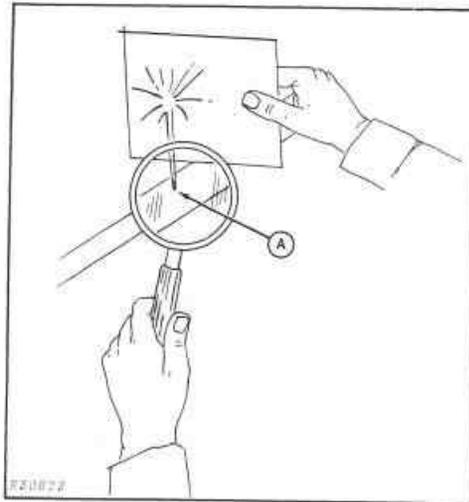


Remote Hydraulic Cylinders

CAUTION: Escaping hydraulic oil under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged.

Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.



A—Pin Hole Leak

CONNECTING CYLINDER HOSES

1. Stop engine.



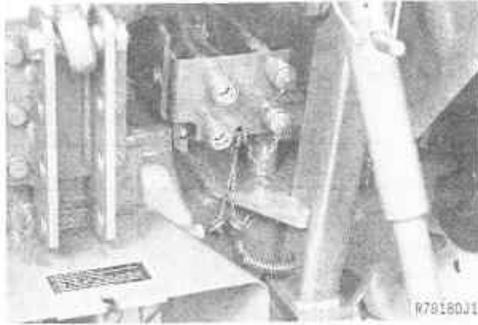
R 32534

2. Move both control levers in both directions to relieve pressure in all lines.



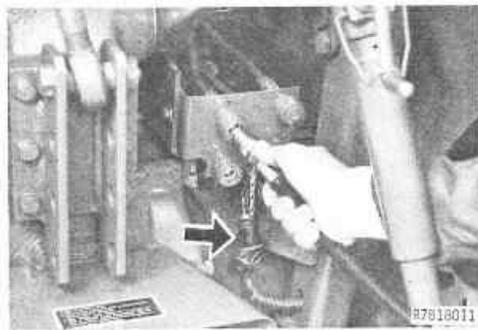
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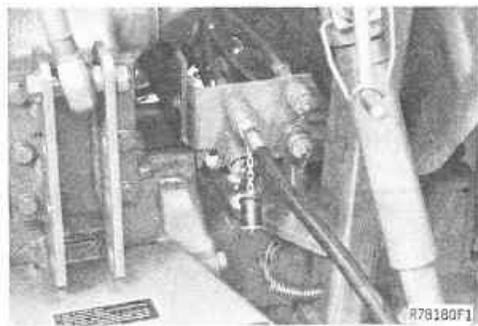


3. Remove coupler dust plugs. Be sure receptacles are clean.

NOTE: Left-hand lever controls left-hand half of coupler, and right-hand lever controls right-hand half.



4. Remove dust caps from hose ends and place them over dust plugs from coupler. Be sure hose ends are clean.



5. Check hoses to see which is used for extending cylinder. This hose must be connected to upper receptacle in order for control lever to work properly.

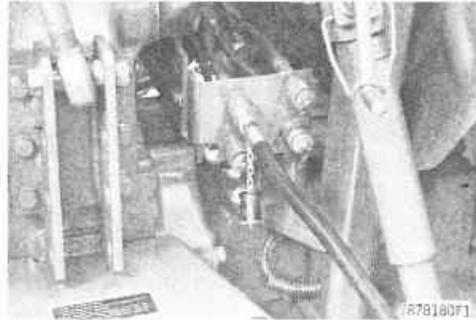


6. To connect each hose, push knurled ring forward with one hand and push hose into receptacle with other hand. Release knurled ring, making sure it returns fully to its original position.

Single-Acting Cylinders

In order for control levers to work properly, single-acting cylinders must be connected only to the upper receptacles.

IMPORTANT: Volume of oil required to extend cylinder must not lower transmission-hydraulic oil level below end of dipstick. Check oil with cylinder fully extended.



REMOTE CYLINDER OPERATING LEVERS

Lever Positions

⚠ CAUTION: If cylinder response is reversed, extending when it should retract, reverse cylinder hose connections at coupler.

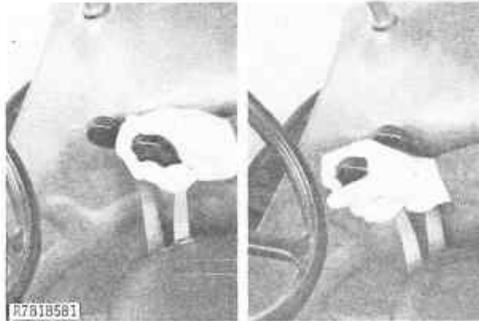


Neutral

Move lever to center. Remote cylinder is locked in position.

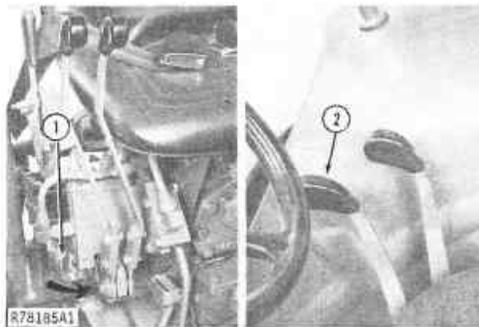


30 Remote Hydraulic Cylinders



Extend

Retract



R78185A1

Extend

Pull lever slightly to rear of neutral and hold it against spring pressure. This extends cylinder and in most cases raises implement. Lever returns to neutral when released.

Retract

Push lever slightly forward and hold it against spring pressure. This retracts cylinder and in most cases lowers implement. Lever returns to neutral when released.

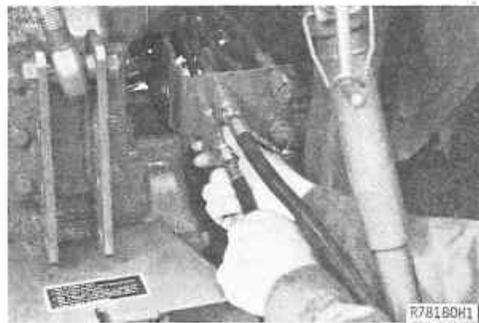
Float

Left-hand control lever also has a float position which allows the cylinder to extend or retract freely.

1. Push float lockout stop to the left.
2. Push control lever all the way forward and release it. Lever will stay in this position until you pull it back.

IMPORTANT: When float is not needed, move stop back to its lockout position to prevent accidental use of float.

DISCONNECTING CYLINDER HOSES



R78180H1

1. Stop engine.
2. Lower any attached equipment.
3. Move both control levers both directions to relieve pressure in all lines.
4. To disconnect each hose, push knurled ring forward with one hand and pull hose out of receptacle with other hand. Release knurled ring.
5. Make sure dust plugs for receptacles and dust caps for hoses are clean, and install them.



Drawbar and PTO

DRAWBAR

IMPORTANT: Certain heavy equipment such as a loaded single-axle trailer can place excessive strain on drawbar. Strain is greatly increased by speed and rough ground.

Maximum static vertical load on drawbar should not exceed 825 pounds (3.7 kN). Drive slowly with heavy loads.

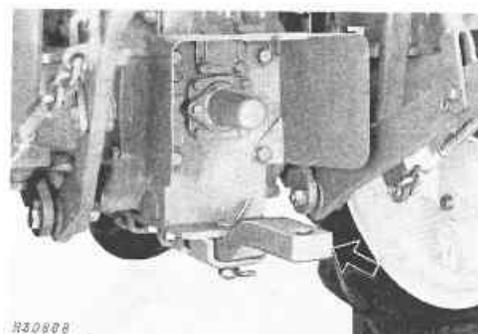
Drawbar Position

For maximum traction and efficiency, drawbar hitch point should usually be as near as possible to line of draft between tractor and implement. This is often the short, high position, but it might be something different. Check implement operator's manual for more information.

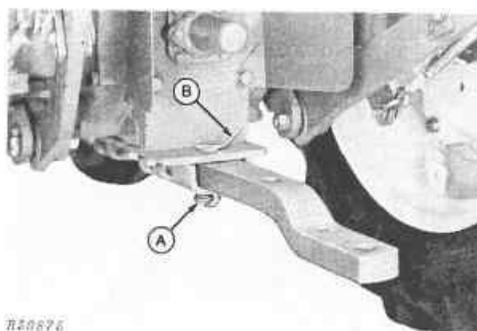
IMPORTANT: For drawn PTO-driven implements, drawbar must be in the long, low position.

Length Adjustment

Remove locking pin (A) and drawbar pin (B). Slide drawbar to desired position. Install pins.



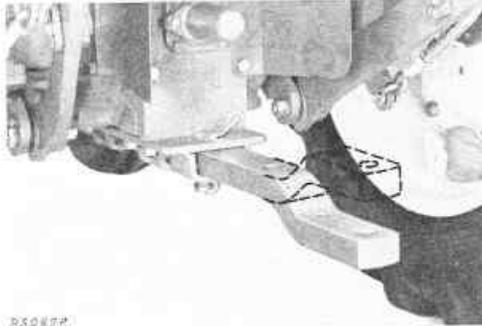
R20808



R20876

A—Locking Pin
B—Drawbar Pin

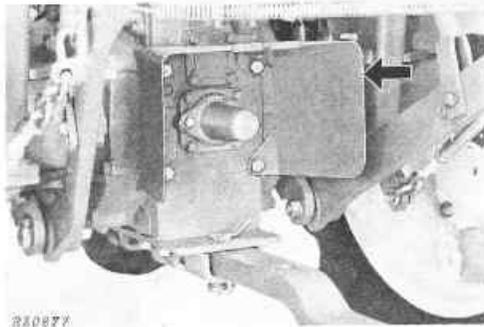
Continued on page 32



Height Adjustment

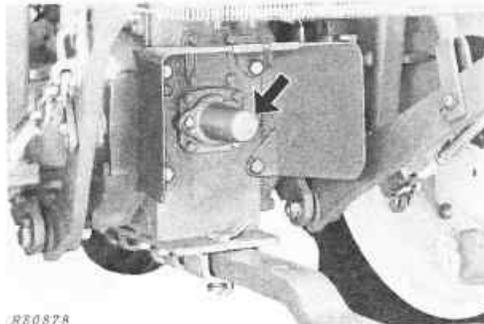
Height of drawbar is adjustable only by turning offset up or down. Proceed as in length adjustment but slide drawbar all the way out and turn it over.

POWER TAKE-OFF (PTO)



Master Shield

⚠ CAUTION: Tractor master shield should be in place at all times except when connecting a PTO drive line or for special applications as directed in the operator's manual. The PTO shaft guard should be in place when the PTO is not being used.



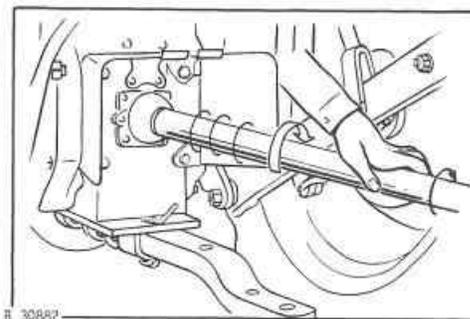
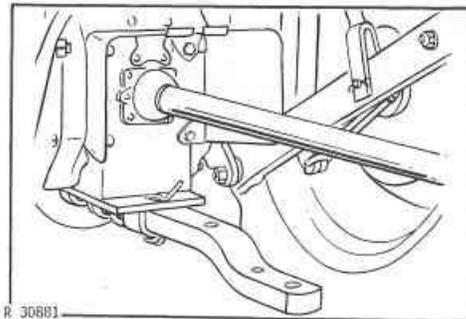
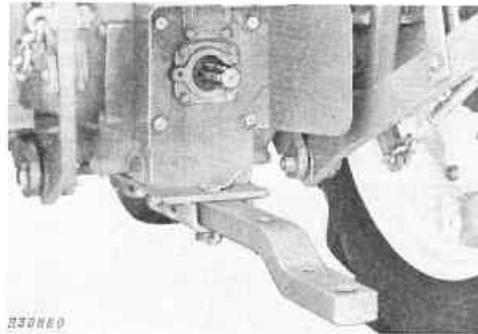
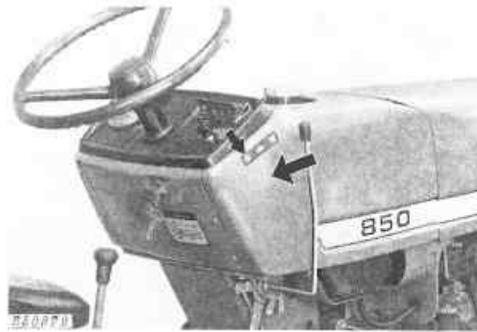
PTO Guard

⚠ CAUTION: Always keep PTO guard in place when PTO is not being used. Either PTO guard or master shield should be in place at all times.

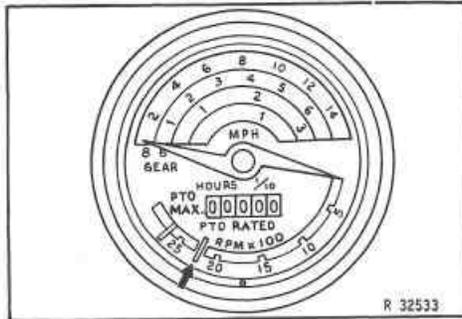
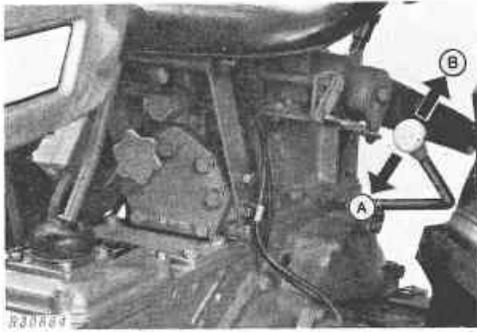
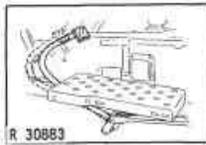
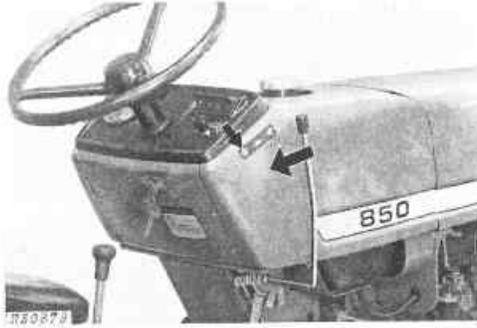
Attaching Implement

⚠ CAUTION: Stop engine before working in area of implement hitch.

1. If implement will be attached to drawbar, fully extend drawbar and turn offset downward. If implement will be connected to 3-point hitch, be sure drawbar will not interfere. Remove it if necessary.
2. Attach implement to tractor before connecting PTO drive line.
3. Connect drive line to PTO shaft. Turn shaft slightly by hand if necessary to line up splines. Be sure yoke is in proper position and firmly locked.
4. Be sure all shields are in place and in good condition. NEVER operate PTO unless mastershield is properly installed. With engine stopped, check integral shields on drive line by making sure they rotate freely on shaft. Check carefully for any interference.



Continued on page 34



Operation

CAUTION: Stop engine and make sure all mechanisms have stopped before cleaning out machine or making any adjustment.

IMPORTANT: Depress clutch pedal and stop tractor before engaging PTO. PTO is driven by transmission, and it uses the same clutch.

 Push control lever forward to engage PTO.

 Pull lever back to disengage PTO.

A—Engage
B—Disengage

IMPORTANT: Never exceed 2640 engine rpm when PTO is engaged.

For standard PTO speed (540 rpm) run engine at 2260 rpm. Correct speed is very important for some machinery.



Ballast

REAR BALLAST

Why And How Much?

Add weight to rear wheels if needed to improve traction. Amount of ballast should be matched to job, and ballast should be removed when it is not needed.

Ideally, tire slippage should be 10 to 15 per cent under heavy load. Check slippage as follows:

1. While tractor is working, count revolutions of rear wheel between two markers.
2. Go back with implement raised and count rear wheel revolutions between same two markers.
3. Compare the two counts. The first should be 10 to 15 per cent larger.
4. Check tire tracks often. With too much ballast, tread marks will be clear and distinct, showing no slippage. With too little ballast, tread marks will be wiped out by slippage.

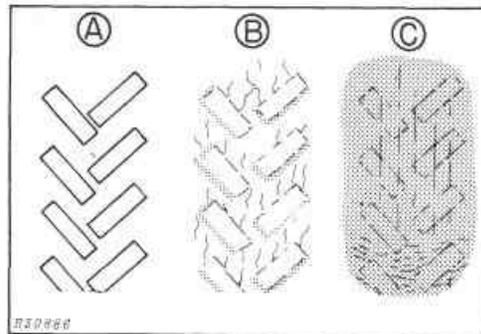
TOO LITTLE BALLAST

1. Excessive spinning
2. Power loss
3. Tire wear
4. Fuel waste

TOO MUCH BALLAST

1. Increased load
2. Power loss
3. Tire strain
4. Soil compaction

A—Too Much Ballast
B—Correct Ballast
C—Too Little Ballast



Continued on page 36

MAXIMUM ADDED BALLAST		
Tire Size	Ply Rating	Capacity
850 Tractors		
9.5-24	4	300 lbs. (140 kg)
11.2-24	4	900 lbs. (410 kg)
13.6-16	4	1000 lbs. (450 kg)
950 Tractors		
11.2-24	4	600 lbs. (270 kg)
12.4-28	4	1500 lbs. (680 kg)
13.6-28	6	3700 lbs. (1680 kg)

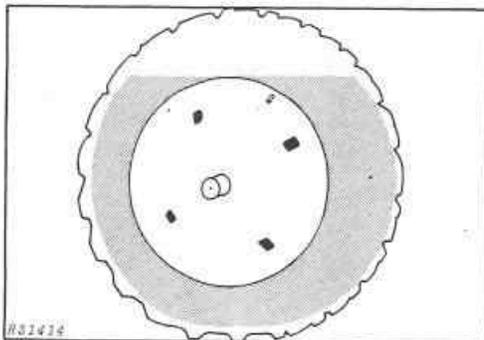
Maximum Rear Ballast

IMPORTANT: Do not overload tires. Add no more weight than indicated at left.

IMPORTANT: Do not ballast tractor to pull extremely heavy loads in the lowest gears. To extend tire life and avoid excessive wear of drive train components, avoid continuous full-load operation at ground speeds below 4.4 mph (7.1 km/h).

Rather than weighting tractor down to pull heavy loads, try to reduce load. Pulling a lighter load at a higher speed is cheaper and more efficient.

Use no more ballast than necessary, and remove ballast when it is no longer needed.



TIRE SIZE	LIQUID WEIGHT PER TIRE (75% FILL)
9.5-24	175 lbs. (79 kg)
11.2-24	235 lbs. (106 kg)
12.4-28	355 lbs. (147 kg)
13.6-16	275 lbs. (125 kg)
13.6-28	439 lbs. (199 kg)

Liquid Weight

A solution of water and calcium chloride provides safe, economical ballast. Used properly, it will not damage tires, tubes, or rims.

Use calcium chloride to prevent water from freezing. A mixture of 3.5 pounds of calcium chloride per gallon (0.4 kg per liter) will not freeze solid above -50°F (-45°C).

NOTE: Use of alcohol as liquid ballast is not recommended. Calcium chloride solution is heavier and cheaper.



CAUTION: Installing liquid ballast requires special equipment and training. Have the job done by your John Deere dealer or a tire service store.

Fill tires slightly above valve level (75% fill). Less solution would expose part of rim, causing corrosion. More solution would leave too little air space to absorb shocks.

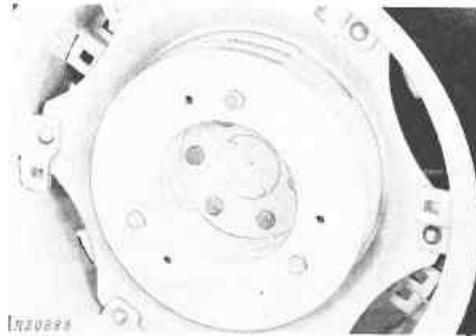
Chart at left shows how much each size will hold if properly filled.

Cast Iron Weights

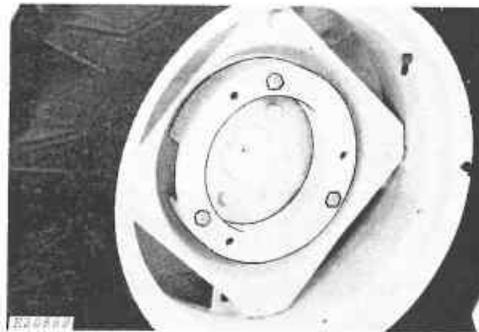
Cast iron wheel weights are available from your John Deere dealer. Each weighs 55 pounds (25 kg), and up to six can be installed (three on each rear wheel).

Bolt first weight to wheel, installing nuts on inner side of wheel. To install second and third weights, install bolts in threaded holes in previous weights.

Tighten attaching bolts securely. Retighten after a few hours, and keep them tight.



NOTE: On 24-inch wheels with offset turned outward, the first weight installed must be a special starter weight. Install additional weights as usual.



FRONT BALLAST

Why And How Much?

Add weight to front end if needed for stability. Heavy pulling and heavy rear-mounted implements tend to lift front wheels. Add enough ballast to maintain steering control and prevent tip-over.

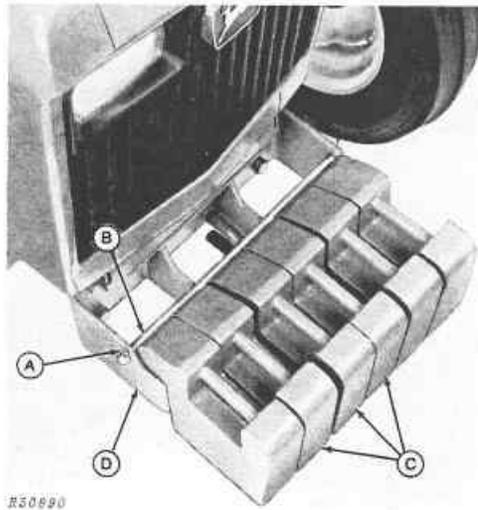
⚠ CAUTION: Additional ballast may be needed for transporting heavy integral implements. When implement is raised, drive slowly over rough ground, regardless of how much ballast is used.

QUIK-TATCH FRONT WEIGHTS			
850 Tractor		950 Tractor	
Implement Code	Weights Required	Implement Code	Weights Required
0-32	None	0-38	None
33-37	2	39-43	2
38-41	4	44-47	4
42-45	6	48-52	6

John Deere engineers have developed a code to determine how much front ballast is needed.

1. Find implement code in implement operator's manual.
2. Refer to charts at left to see how much front end weight is needed for that implement on this tractor.

If front tires contain liquid ballast, add 2 to each number in the implement code charts. (Slightly heavier implements may be used.)



R50880

Quik-Tatch Weights

Up to six Quik-Tatch weights can be installed. Each weighs approximately 45 pounds (20 kg). Install weights in pairs, one on each side.

1. Remove Quik-Lock pin (A).
2. Slide weight retainer (B) out of your way.
3. Slip weights (C) onto support (D).
4. Install retainer and Quik-Lock pin to hold weights in place.

A—Quik-Lock Pin
B—Weight Retainer
C—Quik-Tatch Weights
D—Weight Support

Liquid Weight

A solution of water and calcium chloride can be added to front tires. Depending on tire size, each tire will hold 25 to 60 pounds (10 to 25 kg).

Use calcium chloride to prevent water from freezing. A mixture of 3.5 pounds of calcium chloride per gallon (0.4 kg per liter) will not freeze solid above -50°F (-45°C).

NOTE: Use of alcohol as liquid ballast is not recommended. Calcium chloride solution is heavier and cheaper.



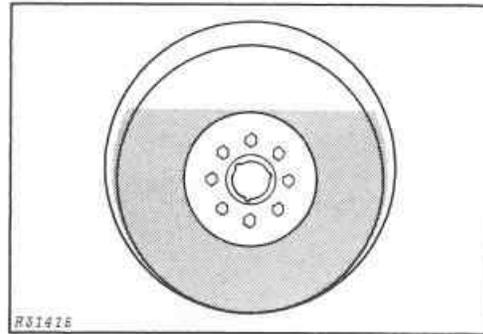
CAUTION: Installing liquid ballast requires special equipment and training. Have the job done by your John Deere dealer or a tire service store.

Fill tires to slightly above valve level (75% fill). Less solution would expose part of rim, causing corrosion. More solution would leave too little air space to absorb shocks.

Maximum Front Ballast

Use no more ballast than needed for safety. Remove ballast when it is no longer needed.

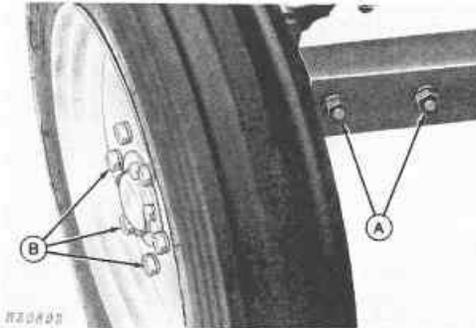
IMPORTANT: Do not overload tires. If maximum weight shown at right is not enough for safety, reduce load or install stronger tires.



TIRE SIZE	PLY RATING	MAXIMUM ADDED FRONT END WEIGHT	
		850	950
4.00-15	4	None	
5.00-15	4	200 lbs. (90 kg)	150 lbs. (70 kg)
5.50-16	4		400 lbs. (180 kg)
23/8.50-12	2	400 lbs. (180 kg)	
27/8.50-15	2		700 lbs. (320 kg)

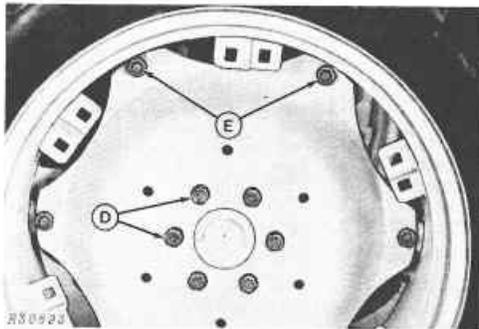


Wheels, Tires, and Tread



CAUTION: Never operate tractor with a loose rim, wheel, or axle.

1. Any time bolts are loosened, retighten to specified torque.
2. After driving tractor about 100 yards (100 m), and before placing it under load, retighten bolts to specified torque.
3. Check bolts after working three hours and again after 10 hours. Retighten if necessary.
4. Check all bolts frequently and keep them tight.



- A—137 ft-lbs (186 Nm) (19 kgm)
- B— 98 ft-lbs (133 Nm) (13 kgm)
- D—137 ft-lbs (186 Nm) (19 kgm)
- E—137 ft-lbs (186 Nm) (19 kgm)

FRONT TREAD

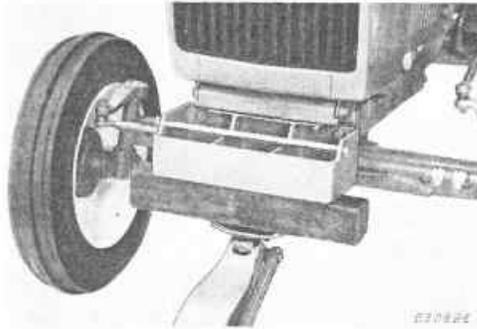
Adjusting Front Axle

Front tread is adjustable in four-inch (100 mm) steps. Three tread settings are available on 850 Tractors and four on 950 Tractors. Tread ranges are shown in chart at right.

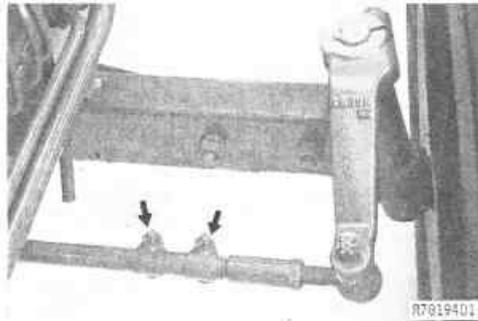
Reversing front wheels to extend wheel tread is not recommended.

FRONT TIRES	TREAD RANGE
850 Tractor	
Regular Tires	42 to 50 in. (1.07 to 1.27 m)
Turf Tires	44 to 52 in. (1.12 to 1.32 m)
950 Tractor	
Regular Tires	45 to 57 in. (1.14 to 1.44 m)
Turf Tires	47 to 59 in. (1.19 to 1.50 m)

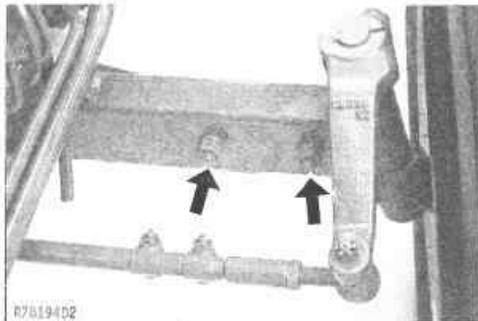
1. With jack under front weight support, jack up tractor just enough to take weight off tires.



2. Remove bolts from tie rod clamps.

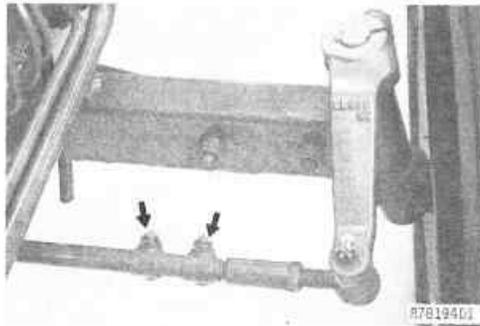
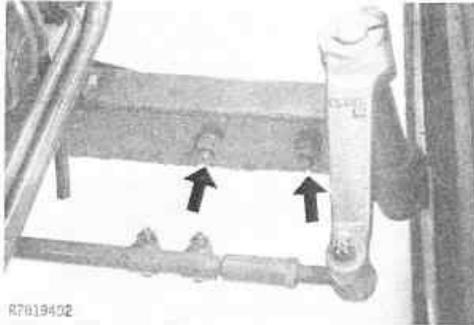


3. Remove bolts from front axle.



Continued on page 42

42 *Wheels, Tires, and Tread*



4. Slide axle knee to desired position.

5. Install axle bolts. Tighten to 137 ft-lbs (186 Nm) (19 kgm) torque. Check and retighten as instructed on page 40.

6. Install bolts in tie rod, making sure tie rod is changed same amount as axle.

FRONT TREAD WIDTH	DRAG LINK LENGTH
850 Tractor	
42 in. (1.07 m)	31 in. (790 mm)
46 in. (1.17 m)	31-1/4 in. (793 mm)
48 in. (1.27 m)	31-1/2 in. (800 mm)
950 Tractor	
45 in. (1.14 m)	33-1/2 in. (853 mm)
49 in. (1.24 m)	33-3/4 in. (859 mm)
53 in. (1.34 m)	34 in. (865 mm)
57 in. (1.44 m)	34-1/2 in. (875 mm)

7. Adjust other side in same manner. Both sides should normally be adjusted to same spacing.

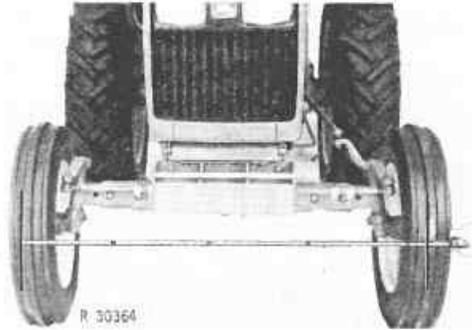
8. Adjust drag link so tractor will turn equally sharp in both directions. Chart at left shows correct length of drag link for each tread width. Measure between centers of ball joints.

9. Check toe-in each time tread is adjusted. See instructions on page 43.

TOE-IN

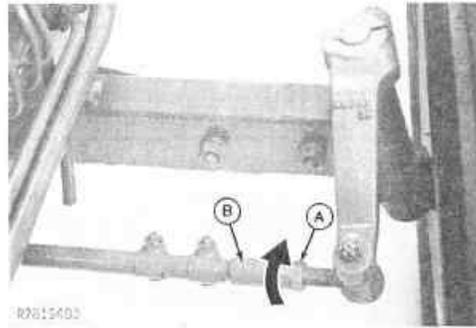
Checking Toe-In

1. Steer front wheels straight ahead.
2. Measure distance between tires at hub level, both in front and in back. Tires should be $1/8$ to $3/8$ inch (3 to 9 mm) closer together in front.



Adjusting Toe-In

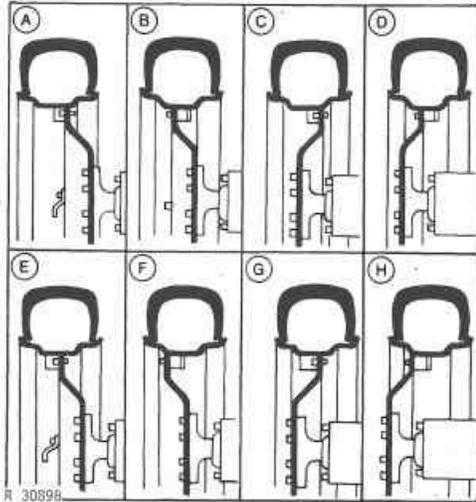
1. Loosen lock nut (A) on each end of tie rod (B).
2. Rotate tie rod to lengthen or shorten it. Adjust toe-in to $1/4$ inch (6 mm).
3. Tighten lock nuts.



A—Lock Nut
B—Tie Rod

REAR TREAD

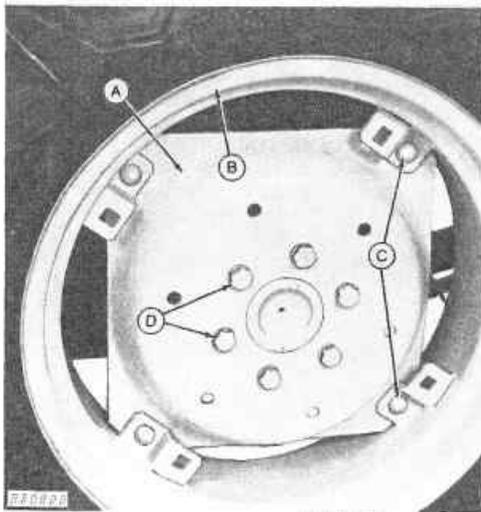
- IMPORTANT:** 1. Tires must have at least one inch (25 mm) clearance with fenders.
 2. Be sure tires are mounted to rotate in proper direction.



24-Inch Wheels

Wheel and rim can be installed in eight different positions, but one position cannot be used because tires would strike fenders. Certain other positions result in equal tread widths, leaving five different tread widths available. Tread is measured between centers of tires.

Wheel/Rim Position	TREAD WIDTH
A	58 in. (1.47 m)
B	54 in. (1.37 m)
C	46 in. (1.17 m)
D	42 in. (1.07 m)
E	54 in. (1.37 m)
F	50 in. (1.27 m)
G	42 in. (1.07 m)
H	Do not use—tires would strike fenders.



A—Wheel
 B—Rim
 C—Wheel-to-Rim Bolts
 D—Lug Bolts

CAUTION: Support tractor securely on stands before removing a rim or wheel.

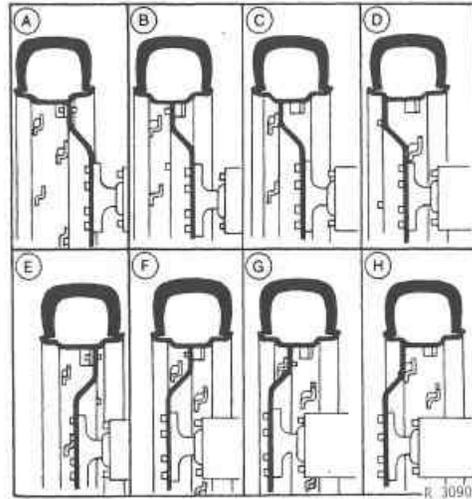
1. Wheel (A) can be attached to either set of mounting holes on rim (B). Simply remove four wheel-to-rim bolts (C), reposition rim, and install bolts in other holes. Tighten bolts to 137 ft-lbs (186 Nm) (19 kgm) torque. Check and retighten bolts as instructed on page 40.
2. Offset of wheel can be reversed, permitting two more positions. Remove rim from wheel, turn wheel around, and install rim. Tighten lug bolts (D) and wheel-to-rim bolts to 137 ft-lbs (186 Nm) (19 kgm) torque. Check and retighten bolts as instructed on page 40.
3. Mounting plates on rim are off-center, so four more positions can be obtained by turning offset the other way. To maintain proper direction of tire rotation, change offset by moving left tire to right side and right to left. Tighten, check, and retighten as above.

28-Inch Wheels (950 Tractor)

Wheel and rim can be installed in eight different positions, but two positions cannot be used because tires would strike fenders.

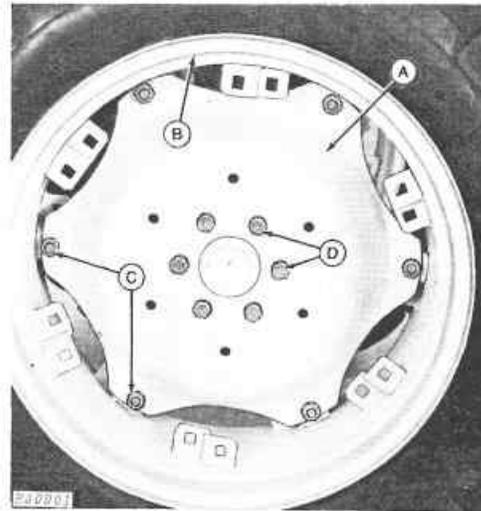
Tread width is measured between centers of tires.

Wheel/Rim Position	12.4-28 Tires	13.6-28 Turf Tires
A	59 in. (1.51 m)	59 in. (1.51 m)
B	55 in. (1.41 m)	55 in. (1.41 m)
C	51 in. (1.28 m)	51 in. (1.28 m)
D	47 in. (1.19 m)	47 in. (1.19 m)
E	49 in. (1.26 m)	49 in. (1.26 m)
F	45 in. (1.16 m)	Do not use.
G	Do not use—tires would strike fenders.	
H	Do not use—tires would strike fenders.	



⚠ CAUTION: Support tractor securely on stands before removing a rim or wheel.

1. Wheel (A) can be attached to any of four sets of mounting holes on rim (B). Simply remove six wheel-to-rim bolts (C), reposition rim, and install bolts in other holes. Tighten bolts to 137 ft-lbs (186 Nm) (19 kgm) torque. Check and tighten bolts as instructed on page 40.
2. Offset of wheel can be reversed permitting four more positions. Remove rim from wheel, turn wheel around, and install rim. Tighten lug bolts (D) and wheel-to-rim bolts to 137 ft-lbs (186 Nm) (19 kgm) torque. Check and retighten bolts as instructed on page 40.



A—Wheel
 B—Rim
 C—Wheel-to-Rim Bolts
 D—Lug Bolts



13.6-16 Turf Tires (850 Tractor)

Only one tread position is available for 13.6-16 turf tires. Tread width is 55 inches (1.40 m).

TIRE INFLATION

TIRE SIZE	PLY RATING	INFLATION PRESSURE	
		MINIMUM psi (bar)	MAXIMUM psi (bar)
Front Tires			
4.00-15 (850)	4	36 (2.5)	52 (3.6)
5.00-15	4	24 (1.7)	44 (3.0)
5.50-16 (950)	4	24 (1.7)	40 (2.8)
23/8.50-12 (850)	2	10 (0.7)	10 (0.7)
27/8.50-15 (950)	2	10 (0.7)	10 (0.7)
Rear Tires			
9.5-24 (850)	4	12 (0.8)	20 (1.4)
11.2-24	4	12 (0.8)	18 (1.2)
12.8-28 (950)	4	12 (0.8)	16 (1.1)
13.6-16 (850)	4	12 (0.8)	14 (1.0)
13.6-28 (950)	6	12 (0.8)	22 (1.5)

Check tires daily for damage or noticeably low pressure.

At least every 50 hours of operation, check inflation pressure with a gauge. Use an accurate gauge having 1 psi (0.1 bar) graduations.

If tires contain liquid ballast, use a special air-water gauge and measure with valve stem at bottom.

IMPORTANT: Minimum pressures may be used only for light loads and only if tractor has no added weight. If you install ballast or mounted implements, or if you pull heavy loads, increase pressure.

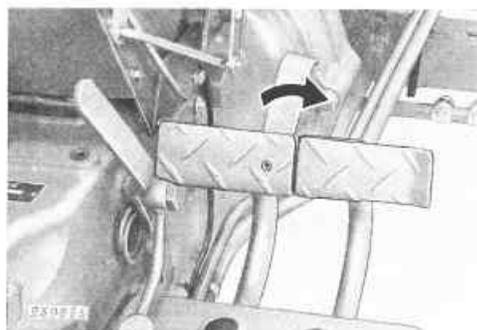


Transporting

DRIVING

⚠ CAUTION: Observe the following precautions when operating tractor on a road.

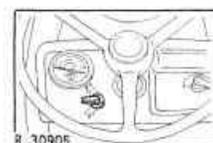
1. Be sure brakes are evenly adjusted, and couple pedals together before driving on a road. Avoid hard applications of brakes. A towed load of more than twice the weight of the tractor should have brakes. If not, drive slowly and avoid hills.



2. Be sure SMV emblem and warning lights are clean and visible. If towed or rear-mounted equipment obstructs these safety devices, install SMV emblem and warning lights on equipment. See your John Deere dealer.



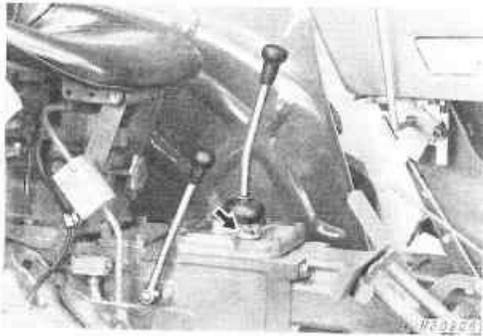
3. Turn light switch to "H" position. Never use flood lights or any lights which could blind or confuse other drivers. Always dim lights when meeting another vehicle.
4. If equipped use turn signals when turning. Be sure to return lever to center position after turning.
5. Drive slowly enough to maintain safe control at all times. Slow down for hillsides, rough ground, and sharp turns, especially when transporting heavy, rear-mounted equipment.
6. Before descending a hill, shift to a gear low enough to control speed without using brakes.



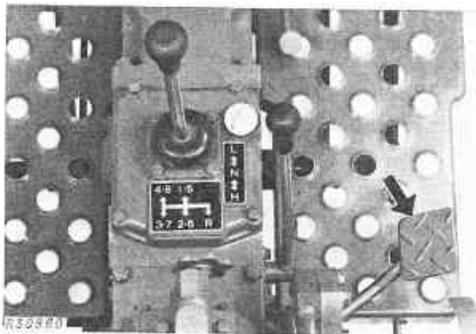
TOWING

⚠ CAUTION: Never tow tractor faster than 20 mph (32 km/h). If possible, have someone operate steering and brakes.

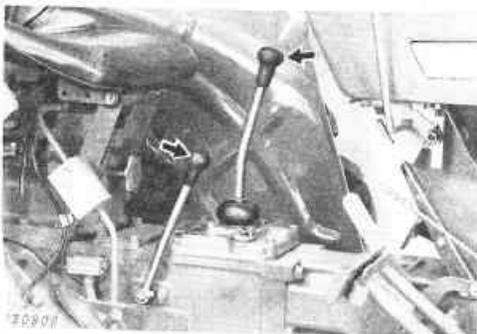
IMPORTANT: To avoid damaging transmission-hydraulic system, observe the following precautions:



1. Be sure transmission-hydraulic system oil level is to full mark on dipstick. If tractor is to be towed with front end raised, add one quart of oil for each three inches (1 L for each 80 mm) it is raised.



2. Make sure differential lock is not engaged.



3. Place both shift levers in neutral.



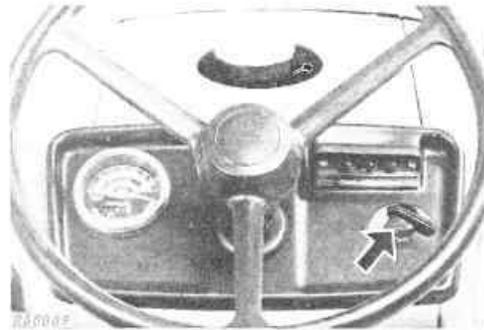
Lighting and Signals

LIGHTS

Light Switch

The tractor light switch has five positions:

- OFF**—To turn off all lights.
- W**—To turn on warning lamps. (For highway driving during daytime.)
- F**—To turn on bright headlights and rear flood light. (For field use ONLY. Do not use on roads, as lights might blind or confuse other drivers.)
- H1**—To turn on bright headlights, taillight, and warning lamps. (For highway driving during daytime or nighttime.)
- H2**—Same as H1, except headlights are dim.



Headlights

Dual-beam headlights (A) are switched on by "H1", "H2", and "F" positions.

Always dim headlights, by turning switch to "H2", before meeting another vehicle.

Be sure headlights are properly adjusted, as instructed on page 50.

Taillight

Red taillight (B) is switched on by "H1" and "H2" positions.

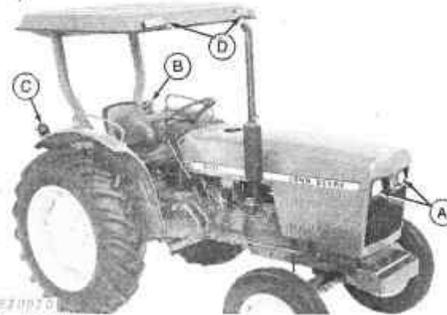
Be sure taillight lens is clean before driving on a road, so other drivers can see it easily.

Flood Light

⚠ CAUTION: When operating on a road, move switch to "H" position. Never use flood lights or any lights which would blind or confuse other drivers.

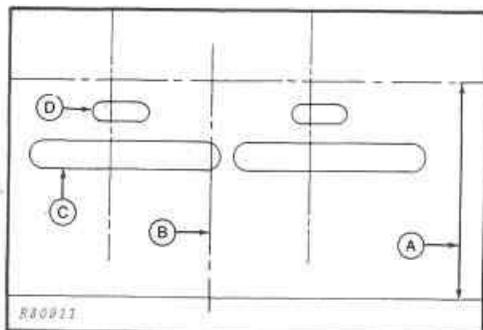
Rear flood light (C) is switched on by "F" position.

By loosening mounting bolts, you can turn flood light to shine wherever light is most needed. Tighten bolts securely.



A—Headlights
B—Taillight
C—Flood Light
D—Warning Lights

Continued on page 50

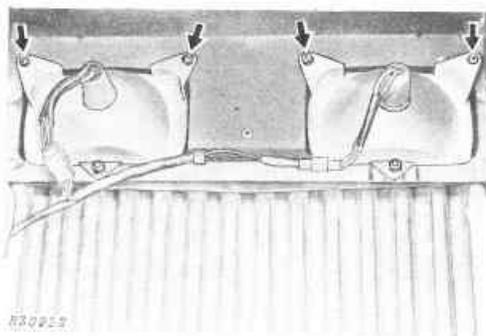


Adjusting Headlights

Adjust headlights so they shine slightly downward and to the right.

Check adjustment by parking tractor 25 feet (8 m) from a wall with lights on low beam. Sight across hood ornament and steering wheel to locate tractor centerline.

- A—Height of Lamp
- B—Centerline of Tractor
- C—Lower Light Zone
- D—Upper Light Zone



Adjusting screws are behind bulbs. Open hood for access.

TURN SIGNALS (OPTIONAL)



When operating tractor on a road, use turn signals as you would in a car or truck.

NOTE: Be sure to return lever to center position after turning.

WARNING LAMPS



⚠ CAUTION: Always use warning lamps when operating tractor on a road.

Turn warning lamps on by turning light switch to "W", or "H1", or "H2".

NOTE: If flashing lights are prohibited by local regulations, install a special controller for non-flashing operation. See your John Deere dealer.



Fuels and Lubricants

FUELS

IMPORTANT: Use diesel fuel only.

Diesel Fuel Specifications

Use either Grade No. 1-D or Grade No. 2-D fuel, as defined by ASTM Designation D975 for diesel fuels. Use the chart at right to determine correct grade of fuel.

As further insurance of satisfactory operation, use fuel having less than 1.0 percent sulfur—preferably less than 0.5 percent.

For maximum filter life, sediment and water should not exceed 0.10 percent.

To maintain proper fuel delivery during cold weather operation, use Grade No. 1-D diesel fuel with a pour point at least 10°F. (5.6°C) below lowest ambient air temperature.

The cetane number should be 40 minimum. Low atmospheric temperature, as well as high-altitude operation, may require use of a fuel with a higher cetane number.

NOTE: In some conditions, the interval between service on the fuel system may be increased by adding John Deere Diesel Fuel Conditioner to the fuel.

Storing Fuel

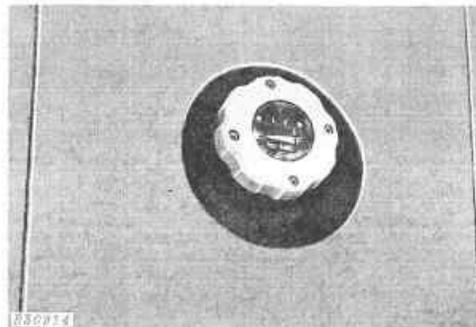
Proper fuel storage is critically important. Keep all dirt, water, and other contaminants out of fuel. Avoid storing fuel over long periods of time.

Store fuel in a convenient place away from buildings.

Filling Fuel Tank

Fill fuel tank at end of each day's operation. This prevents condensation in tank as moist air cools. Capacity of fuel tank is 8.5 U.S. gallons (32 l).

DIESEL FUELS		
Type of Engine Service	Air Temperature	Diesel Fuel Grade No.
Wide variation in load and speed, considerable idling.	Below 80°F (25°C)	1-D
	Above 80°F (25°C)	2-D
Heavy load and high speed, minimum idling	Below 40°F (5°C)	1-D
	Above 40°F (5°C)	2-D



LUBRICANTS



111778

ENGINE OILS			
Air Temperature	John Deere Torq-Gard Supreme Oil	Other Oils	
		Single Viscosity Oil	Multi-Viscosity Oil
Above 32°F (0°C)	SAE 30	SAE 30	Not recommended
-10 to 32°F** (-23 to 0°C)	SAE 10W-20	SAE 10W	10W-30
Below -10°F (-23°C)	SAE 5W-20	SAE 5W	SAE 5W-20

**If air temperature is below 10°F (-12°C), use an engine heater. SAE 5W-20 oils may also be used to insure optimum lubrication of engine.

Engine Oils

We recommend John Deere Torq-Gard Supreme engine oil for use in the engine crankcase. Torq-Gard Supreme Oil was formulated to provide all the protection your engine needs, so never put additives in the crankcase.

If oil other than Torq-Gard Supreme is used, it must conform to one of the following specifications:

SINGLE VISCOSITY OILS

API Service CD/SD
MIL-L-2104C*

MULTI-VISCOSITY OILS

API Service CC/SE, CC/SD or SD
MIL-L-46152

Depending upon the expected prevailing temperature for the fill period, use oil of viscosity as shown in the chart at left.

Some increase in oil consumption may be expected when SAE 5W-20 or SAE 5W oils are used. Check oil level more frequently.



R 29623

Transmission-Hydraulic Oils

Use only John Deere Hy-Gard Transmission and Hydraulic Oil or its equivalent in the transmission-hydraulic system.

Grease

Use John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease for all grease fittings. Wheel bearing grease is recommended for front wheel bearings.

Storing Lubricants

Your tractor can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination.

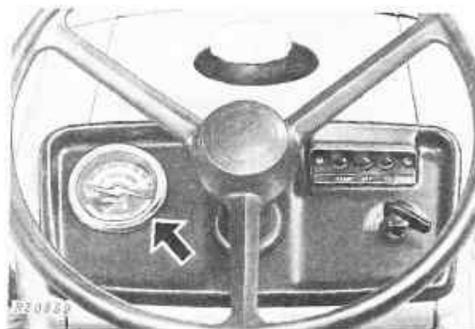


Lubrication and Maintenance

SERVICE INTERVALS

Using hour meter as a guide, perform all services at the hourly intervals indicated on following pages. Keep a service record beginning on page 90.

IMPORTANT: Recommended service intervals are for average conditions. Service **MORE OFTEN** if tractor is operated under adverse conditions.

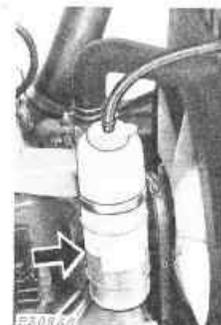


BREAK-IN PERIOD

1. Avoid unnecessary engine idling during first 100 hours.
2. Watch coolant temperature closely.
3. Check engine oil and coolant levels more frequently. Watch for leaks. If oil must be added during first 100 hours, use SAE 10W-20 John Deere Torq-Gard Supreme or its equivalent.



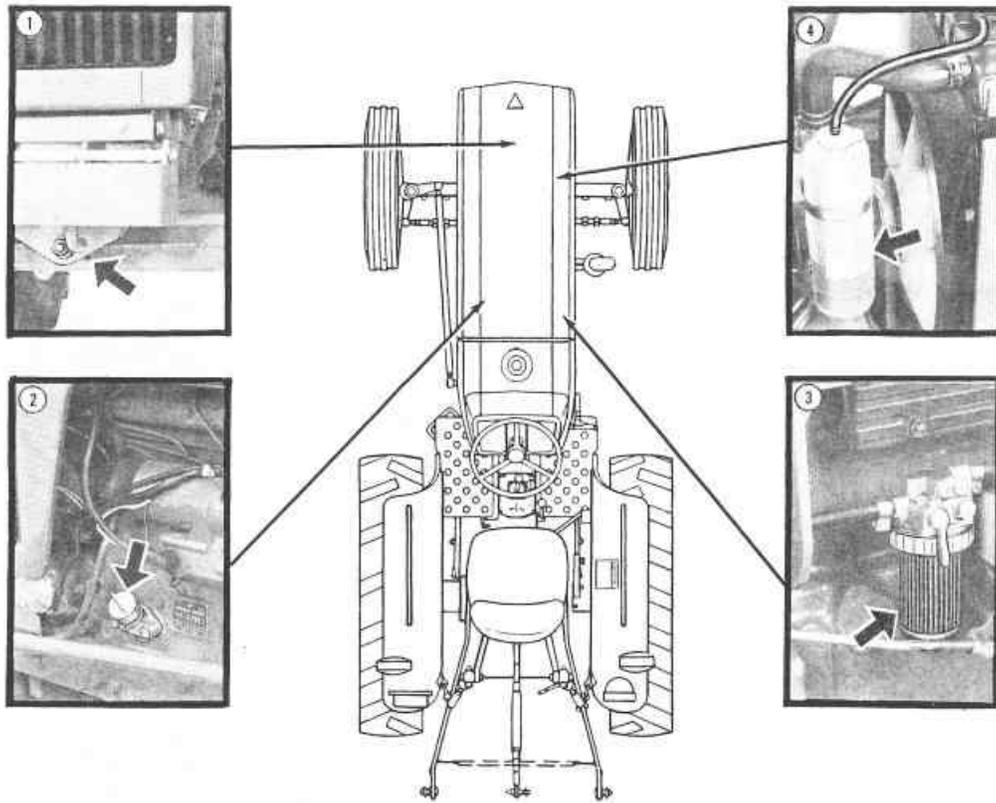
Engine Oil Dipstick



Coolant Level

4. Change engine oil and filter after first 50 hours and again after 100 hours. See pages 56 and 57.
5. Change transmission-hydraulic oil, and clean the filter, after first 50 hours. See page 58.

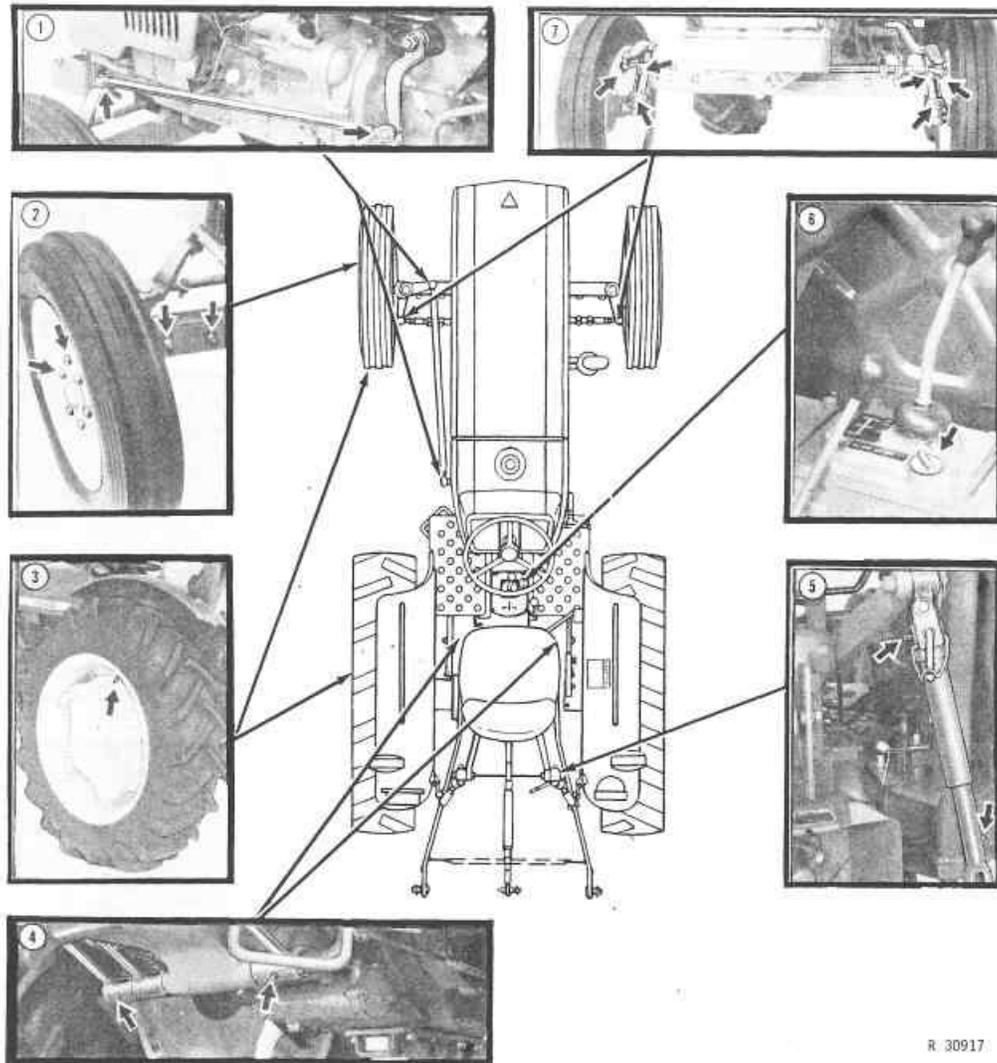
EVERY 10 HOURS OF OPERATION



R 30916

1. Apply several shots of grease to axle pivot pin.
2. Remove dipstick and wipe it clean. Insert dipstick to rest on threads, but do not screw it in. Oil level should be between full mark and end of dipstick. If low, add oil as specified on page 52.
3. Check fuel filter for sediment or water. If any is present, remove it and bleed air from lines. See page 67.
4. Check coolant level. Add clean water or antifreeze as needed.

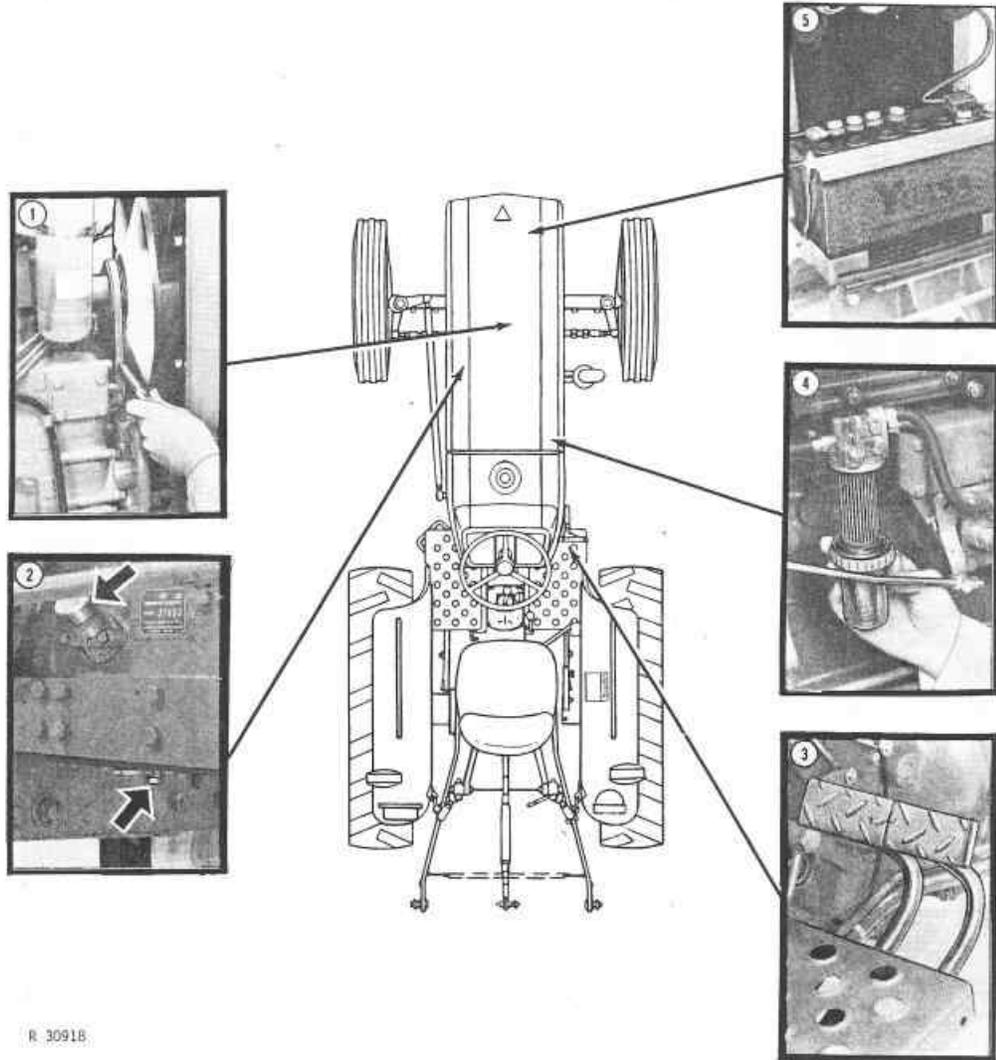
EVERY 50 HOURS OF OPERATION



R 30917

1. Apply several shots of grease to drag link ends.
2. Inspect tractor for loose bolts or nuts. Tighten as required. Page 40 lists important torques.
3. Inspect all tires and check inflation pressures. See page 66.
4. Apply several shots of grease to clutch and brake fittings.
5. Apply a few shots of grease to 3-point hitch levelling box.
6. Remove transmission-hydraulic oil dipstick and wipe it clean. Insert dipstick to rest on threads, but do not screw it in. Oil level should be between full mark and end of dipstick. If low, add John Deere Hy-Gard Transmission and Hydraulic Oil or its equivalent.
7. Apply several shots of grease to tie rod ends. REMOVE RELIEF PLUGS, and apply several shots of grease to steering spindles. Install plugs.

EVERY 100 HOURS OF OPERATION



R 3091B

1. Inspect fan belt. Replace belt if worn or damaged. Check tension by pressing belt midway between pulleys. Belt should deflect about 1/2 inch (13 mm). Adjust if necessary.

IMPORTANT: Adjust tension only when belt is cool.

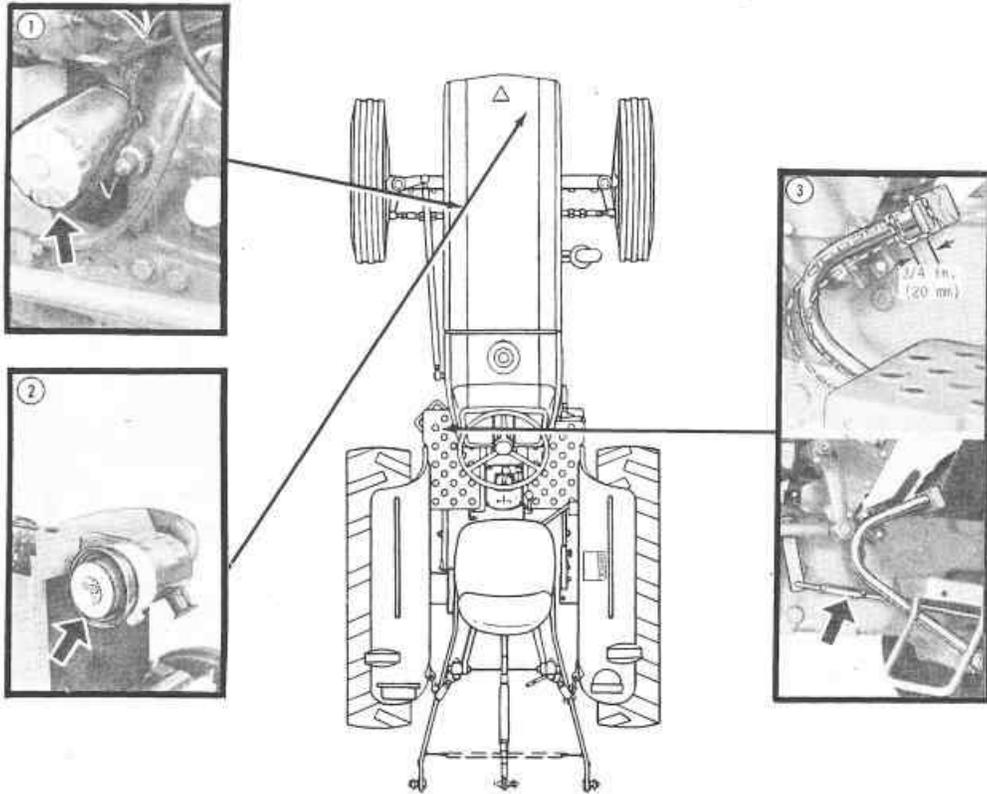
2. Remove engine oil drain plug, and drain out oil. Install drain plug, and add engine oil as specified on page 52. Capacity is five U.S. quarts (4.5 L) for 850 Tractor and seven U.S. quarts (6.4 L) for 950 Tractor.

3. Check brake pedal adjustment. Left and right-hand pedals must be evenly adjusted, and pedal free travel should not exceed 1-1/4 inches (32 mm). If adjustment is needed, see page 73.

4. Clean fuel filter. Shut fuel off, and remove filter. Clean filter and sediment bowl in fuel. Install filter, turn fuel on, and bleed air from system.

5. Wipe battery with a damp cloth. Clean and tighten connections if needed. Check liquid level in each cell. Fill to bottom of filler neck with clean, mineral-free water.

EVERY 200 HOURS OF OPERATION



R 30919

1. Replace engine oil filter while changing oil as instructed on page 56. Clean filter mounting pad. Make sure lock nut on filter mounting stud is tight. Oil gasket and install new element. Hand tighten only.
2. Clean and inspect air cleaner as instructed on page 63.

SERVICE AIR CLEANER MORE OFTEN IF REQUIRED. Loss of power and excessive smoke are indications of a dirty element.

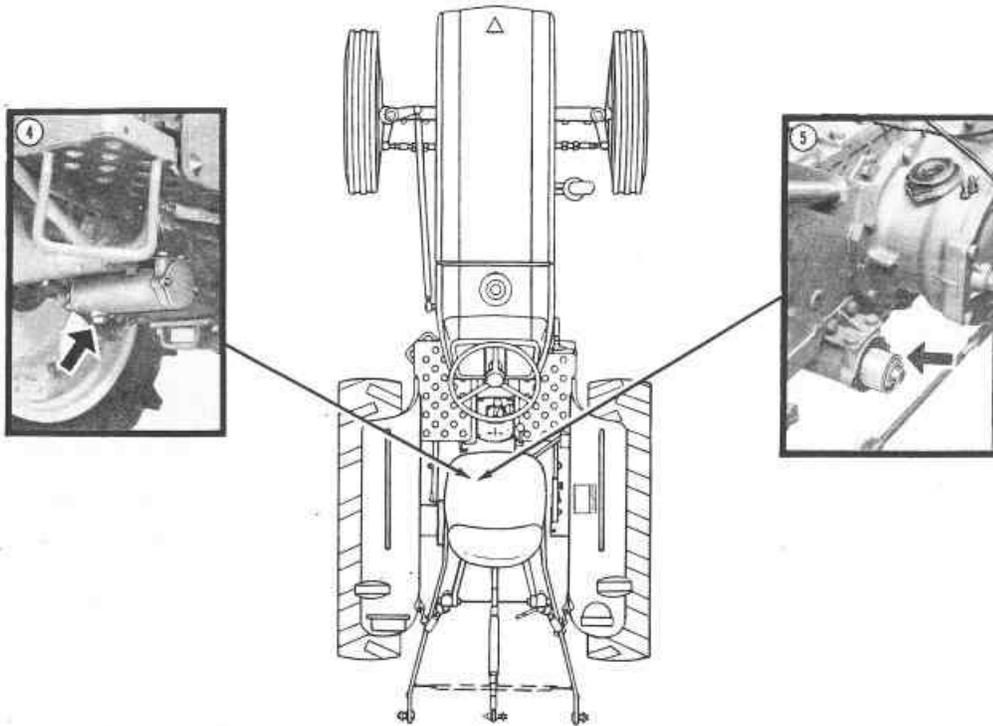
3. Check clutch pedal adjustment. If free travel at top of stroke is 5/8 inch (15 mm) or less, adjust linkage to obtain 3/4 inch (20 mm) free travel.

IMPORTANT: Do not operate tractor when clutch pedal free travel is less than 1/2 inch (13 mm).

To adjust free travel, loosen lock nuts and rotate turnbuckle. Adjust free travel to 3/4 inch (20 mm), and tighten lock nuts.

Continued on page 58

EVERY 200 HOURS OF OPERATION (Continued)



R 30920

4. Remove drain plug from transmission case and drain out oil. Lower rockshaft to remove trapped oil.

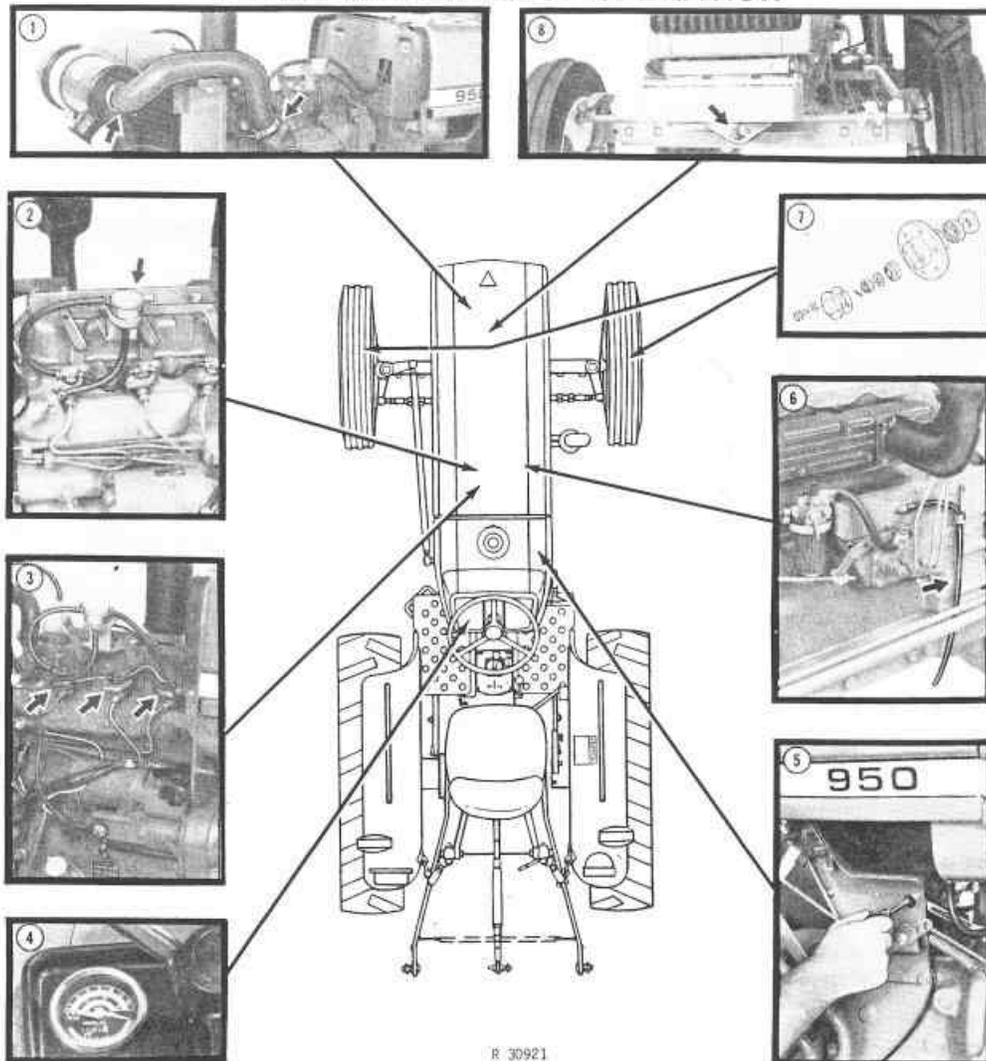
Clean or replace transmission oil filter as instructed in Step 5 before adding oil.

After replacing filter and drain plug, refill system with John Deere Hy-Gard Transmission and Hydraulic Oil or its equivalent. Capacity is 19 U.S. quarts (18 L).

5. After draining oil from transmission case, remove two bolts and pry off filter cover. Carefully clean filter in solvent and blow dry with compressed air. Install filter and cover, and fill system with oil.

NOTE: Filter could be easily damaged by handling. Replace filter every 600 hours. Replace filter immediately if it is damaged.

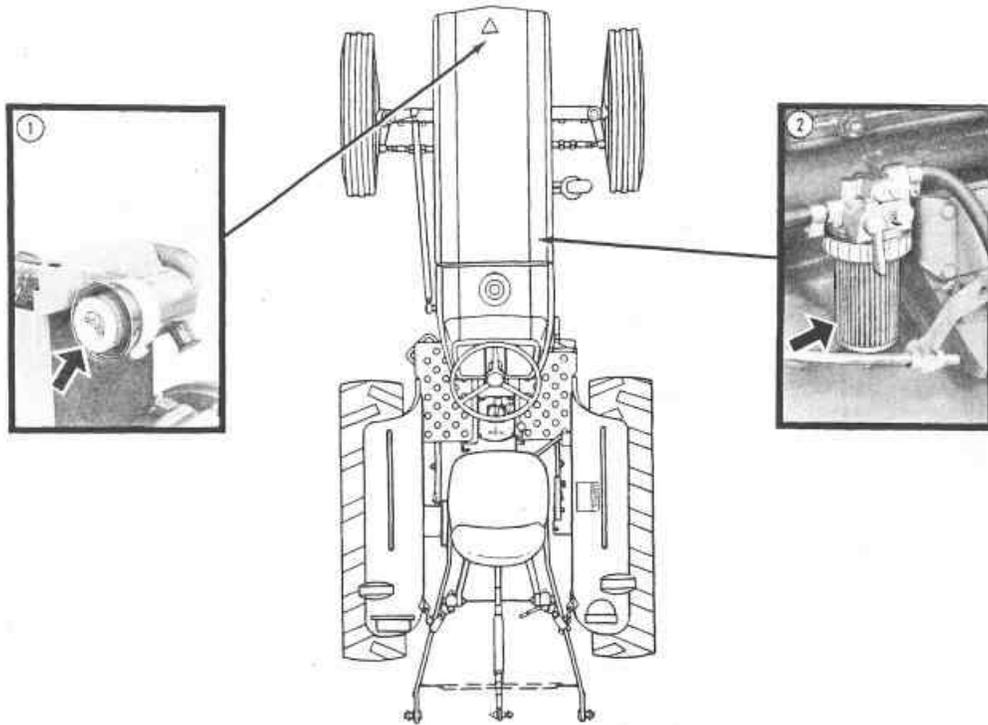
EVERY 600 HOURS OF OPERATION



R 30921

1. Check air intake system for leaks. Correct as necessary.
2. Have your John Deere dealer adjust engine valve clearance.
3. Have your John Deere dealer inspect fuel injectors.
4. Check engine idle speeds. With no load, fast idle speed should be 2750 rpm for 850 Tractor and 2550 rpm for 950 Tractor. Slow idle speed should be 850 rpm. If speeds are not correct, see your John Deere dealer.
5. Check steering wheel free travel. If free travel exceeds two inches (50 mm) at outer rim, reduce it by adjusting steering gear housing. Loosen lock nut and tighten adjusting screw. Reduce free travel to 3/4 inch (20 mm). Tighten lock nut.
6. Remove crankcase vent tube and clean in solvent. Reinstall tube, making sure it is not kinked or pinched.
7. Disassemble front wheel bearings, and clean parts in solvent. Pack bearings in wheel bearing grease. Reassemble and tighten nut until slight drag is felt when wheel is turned. Back nut off to insert cotter pin in first hole.
8. Have your John Deere dealer check front axle pivot pin and adjust if necessary.

AS REQUIRED



R 30923

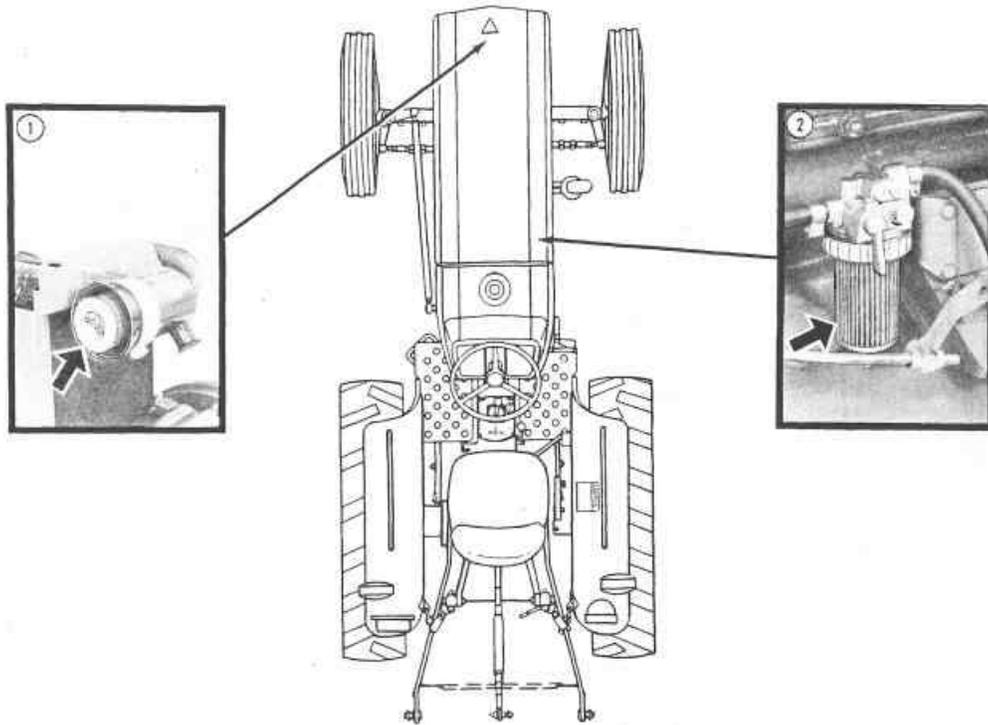
1. Under dusty conditions, it may be necessary to service air cleaner more often than every 200 hours. Whenever a dirty air cleaner element is indicated by loss of power and excessive smoke, clean element as instructed on page 63.

If frequent cleaning is required, it may be necessary to replace element more often than annually. Whenever element does not respond to cleaning, replace it.

2. Fuel filter element must be replaced occasionally, as it becomes plugged with contaminants. Replace element whenever engine cannot get enough fuel under heavy load. Replace element at least once each year.

Shut off fuel, remove filter element, clean sediment bowl, and install new element. Turn fuel on and bleed air from system. See page 67.

AS REQUIRED



R 30923

1. Under dusty conditions, it may be necessary to service air cleaner more often than every 200 hours. Whenever a dirty air cleaner element is indicated by loss of power and excessive smoke, clean element as instructed on page 63.

If frequent cleaning is required, it may be necessary to replace element more often than annually. Whenever element does not respond to cleaning, replace it.

2. Fuel filter element must be replaced occasionally, as it becomes plugged with contaminants. Replace element whenever engine cannot get enough fuel under heavy load. Replace element at least once each year.

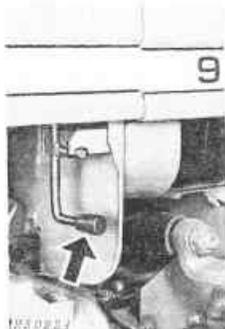
Shut off fuel, remove filter element, clean sediment bowl, and install new element. Turn fuel on and bleed air from system. See page 67.



Service

NOTE: This is not a service manual. It contains only information needed for safe operation and routine maintenance. If you want more detailed service information, use the form in the back of this manual to order a technical manual.

HOOD

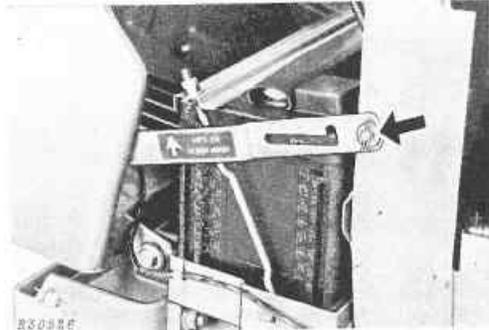


Hood Latch

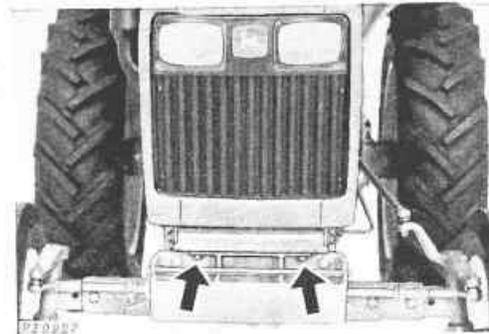


Retainer Strap

1. To open hood, release hood latch on each side. Tilt hood forward. To close hood, lift retainer strap and push hood back. Fasten latches.



2. To open hood wider for access to air cleaner and battery, hook retainer strap in end hole. Remove Quik-Lock pin and washer, and carefully tilt hood far enough to hook strap in end hole. Replace washer and Quik-Lock pin.



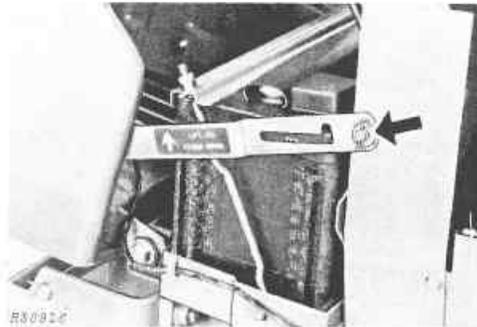
3. To remove hood completely, remove two retaining bolts. Release hood latches. Disconnect retainer strap and headlight wiring connector. Lift hood off tractor.

AIR CLEANER

Service air cleaner at least every 200 hours. Service more often if a dirty element is indicated by loss of power and excessive smoke.

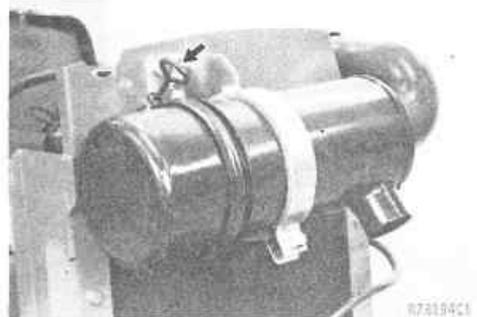
Replace element at least once a year. Replace more often if element has been cleaned several times and no longer responds to cleaning.

1. For access to air cleaner, tilt hood forward to end hole on retainer strap.

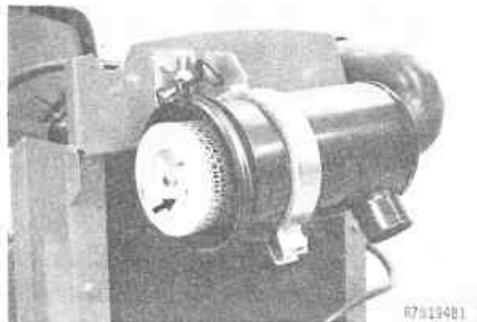


2. Remove cover by loosening retaining ring. Clean out any dirt collected in dust cup.

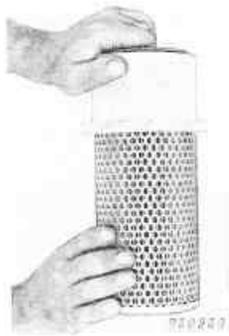
IMPORTANT: Remove cover and check dust cup frequently. Empty dust cup as often as needed to keep it from filling with dust. If dust cup is allowed to fill with dust, air cleaner element will quickly become plugged.



3. Remove element by removing wing bolt. Clean out any dirt collected in canister.



Continued on page 64



Cleaning Element

1. Pat sides of element gently to loosen dirt. Do not tap element against a hard surface.
2. Using a John Deere AR62377 Dry Element Cleaner Gun, clean element with compressed air. Hold nozzle next to inner surface, and move up and down pleats.

IMPORTANT: Do not direct air against outside of element, as it might force dirt through to inside.

3. Repeat Steps 1 and 2 to remove additional dirt. Inspect element before reinstalling.



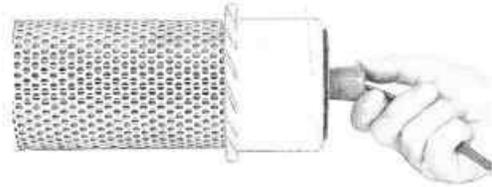
Washing Element

IMPORTANT: Never wash element in gasoline or any solvent. Never use compressed air on a wet element. Do not oil element.

1. If element is coated with oil or soot, wash in a solution of warm water and John Deere R36751 Filter Element Cleaner or its equivalent. Let element soak at least 15 minutes, then agitate gently to flush out dirt.
2. Rinse element thoroughly from inside with clean water. Use element cleaning gun or a free-running hose. Keep pressure low to avoid damaging element.
3. Allow element to dry completely before using. This usually takes from one to three days. Do not oven dry or use drying agents. Protect element from freezing until dry. Inspect element before reinstalling.

Inspecting Element

1. Hold a bright light inside element and check carefully for holes. Discard any element which shows the slightest hole.
2. Be sure outer screen is not dented. Vibration would quickly wear a hole in filter.
3. Be sure filter gasket is in good condition. If gasket is damaged or missing, replace element.
4. If element is to be stored, seal it in a plastic bag and store in shipping container to protect against dust and damage.



R30022

R30022
Outer Screen

R30022

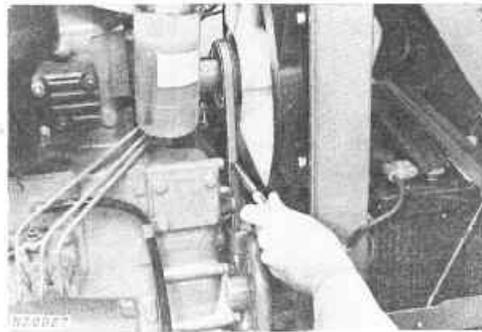
Gasket

FAN BELT

IMPORTANT: Belt must be cool when tension is adjusted.

Adjusting Fan Belt

1. With engine stopped, press belt midway between pulleys and measure deflection. Belt should deflect 1/2 inch (13 mm) with a 20-pound (90 N) force.
2. If belts need adjustment, loosen adjusting cap screw and mounting bolt. Pry only against FRONT alternator frame. Holding alternator in position, tighten cap screw and mounting bolt.



TIRES



CAUTION: Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death. Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Have it done by your John Deere dealer or a qualified tire repair service.

Never exceed 35 psi or maximum inflation pressures specified by tire manufacturers for mounting tires. Inflation beyond this maximum pressure may break the bead, or even the rim, with dangerous explosive force. If both beads are not seated when the maximum recommended pressure is reached, deflate, reposition tire, relubricate bead, and reinflate.

Detailed agricultural tire mounting instructions, including necessary safety precautions, are contained in John Deere Fundamentals of Service (FOS) Manual 55, Tires and Tracks, available through your John Deere dealer. Such information is also available from the Rubber Manufacturers Association and from tire manufacturers.

TIRE SIZE	PLY RATING	INFLATION PRESSURE	
		MINIMUM* psi (bar)	MAXIMUM psi (bar)
Front Tires			
4.00-15 (850)	4	36 (2.5)	52 (3.6)
5.00-15	4	24 (1.7)	44 (3.0)
5.50-16 (950)	4	24 (1.7)	40 (2.8)
23/8.50-12 (850)	2	10 (0.7)	10 (0.7)
27/8.50-15 (950)	2	10 (0.7)	10 (0.7)
Rear Tires			
9.5-24 (850)	4	12 (0.8)	20 (1.4)
11.2-24	4	12 (0.8)	18 (1.2)
12.8-28 (950)	4	12 (0.8)	16 (1.1)
13.6-16 (850)	4	12 (0.8)	14 (1.0)
13.6-28 (950)	6	12 (0.8)	22 (1.5)

* Minimum pressures may be used only for light loads and only if tractor has no added weight. If you install ballast or mounted implements, or if you pull heavy loads, increase pressure.

1. Check tires daily for damage or noticeably low pressure.
2. At least every 50 hours of operation, check tires with an accurate gauge having one psi (0.1 bar) (0.1 kg/cm²) graduations. If tires contain liquid ballast, use a special air-water gauge and measure with valve stem at bottom.
3. Have any cuts or breaks repaired as soon as possible.
4. Protect tires from exposure to sunlight, petroleum products, and chemicals.
5. Drive carefully. Try to avoid rocks and sharp objects.

Tubeless Tires

Certain sizes of tires are tubeless. A small puncture in a tubeless tire can be temporarily repaired without dismounting the tire, thus avoiding down time during a busy season. See your John Deere dealer or tire service store for repair kits and instructions.

IMPORTANT: A permanent, inside-out repair should be made as soon as possible to prevent tire damage.

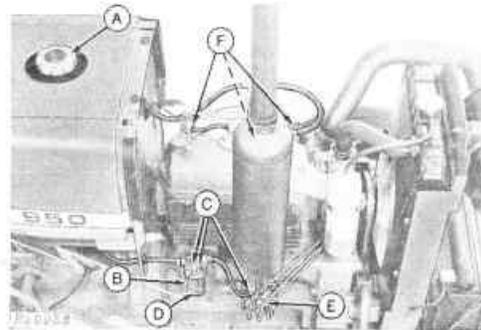
FUEL SYSTEM

CAUTION: Escaping diesel fuel under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

IMPORTANT: Modification or alteration of the injection pump, the injection pump timing, or the fuel injectors in ways not recommended by the manufacturer will terminate the warranty obligation to the purchaser. See warranty information inside front cover.

Do not attempt to service injection pump or fuel injectors yourself. Special training and special tools are required. See your John Deere dealer.



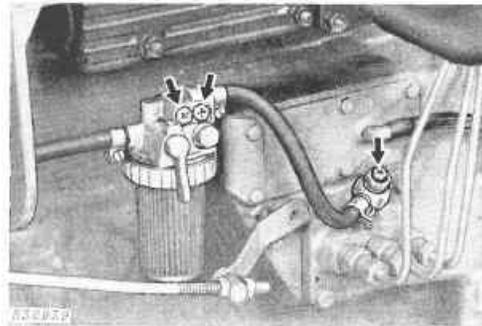
A—Fuel Tank
 B—Fuel Shut-Off Valve
 C—Fuel Line Bleed Screws
 D—Fuel Filter
 E—Injection Pump
 F—Fuel Injectors

Bleeding Fuel Lines

Whenever air gets into fuel system, bleed it out. This could be from removing fuel filter sediment bowl or running out of fuel.

1. With fuel turned on, loosen both bleed screws above fuel filter. When air bubble is gone and fuel flows out bleed holes, tighten screws.
2. If fuel line from filter to injection pump is also empty, also loosen bleed screw on injection pump. When fuel flows out bleed hole, tighten screw.

NOTE: If lines from injection pump to fuel injectors are also empty, loosen lines where they connect to injectors. Push throttle fully forward and operate starter until fuel runs from fittings. (Never operate starter longer than 20 seconds at a time.) Tighten lines and start engine.



COOLING SYSTEM

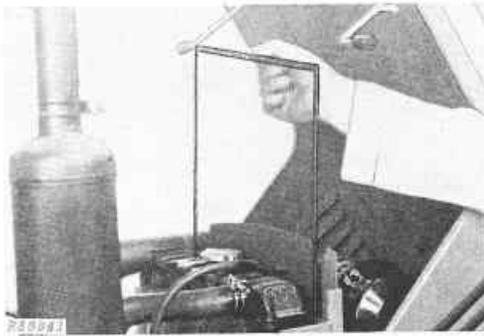
IMPORTANT: Never pour cold water into a hot engine, as it might crack cylinder block or head. Do not operate engine without coolant for even a few minutes.

Cleaning Grille Screen and Radiator

1. Whenever trash builds up on grille screen, stop engine and brush screen clean.

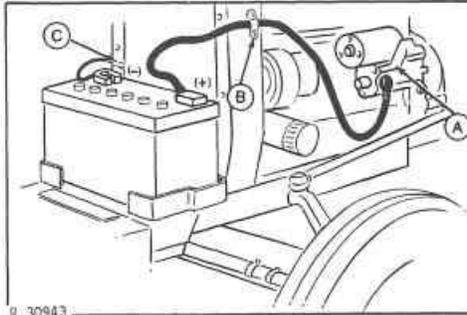


2. Raise hood and lift out screen in front of radiator. Brush off any trash.



3. If necessary, clean radiator itself by forcing water or compressed air through cooling fins from back side.

ELECTRICAL SYSTEM



R 30943

Battery

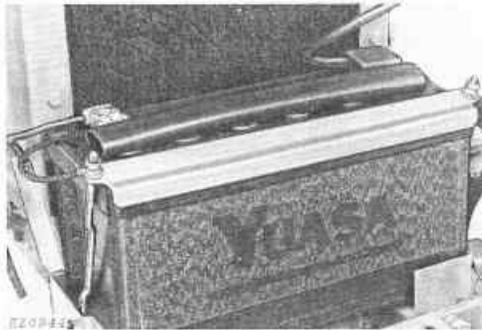
Electrical system uses a single 12-volt battery. Battery connections are shown at left. System has negative ground.

A—Starter
B—Clamp
C—Ground

REPLACEMENT BATTERY SPECIFICATIONS

John Deere Part Number	AT29159
Voltage	12 volts
BCI Group	30H
Cold Cranking Amps at 0°F (-18°C)	475
Reserve Capacity (Minutes at 25 Amps)	160

When replacing battery, use John Deere AT29159 or equivalent.



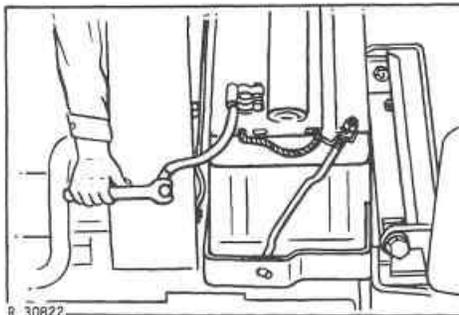
R 30943

Battery Service

Proper battery maintenance is vital to dependable service.

For access to battery, tilt hood forward to end hole on retainer strap.

⚠ CAUTION: Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive. To avoid sparks, connect ground cable last and disconnect it first. When using a booster battery, follow instructions on page 14.

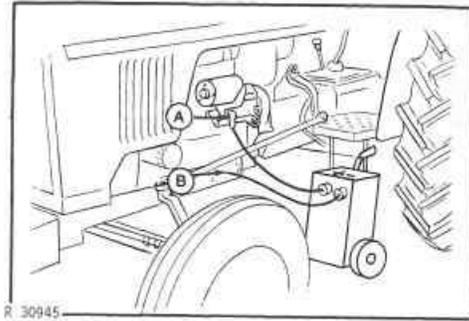


R 30822

To avoid shocks and burns, disconnect battery ground cable before servicing any part of electrical system.

1. Keep battery clean by wiping it with a damp cloth. Keep all connections clean and tight. Remove any corrosion, and wash terminals with a solution of baking soda and water.
2. Keep batteries fully charged, especially during cold weather. If a battery charger is needed, connect it as shown at right.

A—Positive Lead to Battery Cable Connector on Starter
B—Negative Lead to a Good Ground on Tractor Frame



3. Check level of electrolyte in each cell at least every 200 hours. If low, fill to bottom of filler necks with CLEAN, SOFT water.

IMPORTANT: Do not add water in freezing weather unless tractor will be run at least 30 minutes to assure thorough mixing.



4. To check battery condition, use a battery hydrometer. Check specific gravity of electrolyte in each cell. Charge battery if reading is below 1.215. Replace battery if difference between cells is more than 0.050.



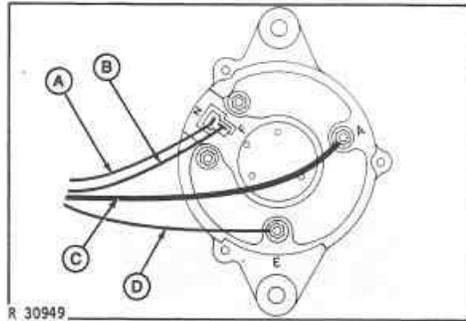
Continued on page 72



Fuses

All lighting circuits are protected by fuses. Size and usage of each fuse are marked on fuse panel cover.

IMPORTANT: Do not install larger fuses. If these sizes will not carry the loads, have your John Deere dealer check the electrical system.



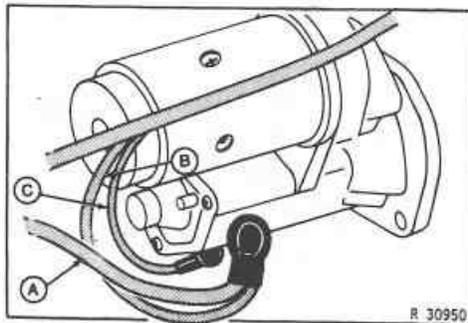
R 30949

Wiring Connections

IMPORTANT: Disconnect battery ground cable before servicing any part of electrical system. Make all other connections before connecting ground cable.

If alternator is disconnected for any reason, connect wires as shown at left.

- A—(N Terminal) White With Red Stripe
- B—(F Terminal) White With Black Stripe
- C—(A Terminal) White
- D—(E Terminal) Black



R 30950

If starter is disconnected for any reason, connect wires as shown at left.

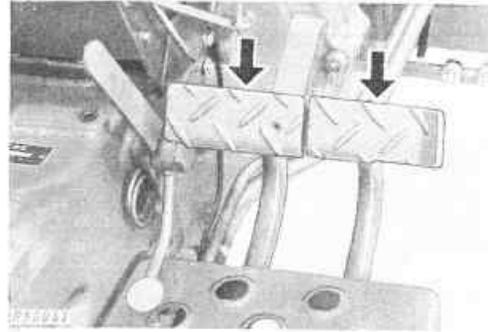
- A—Positive Battery Cable
- B—White
- C—Black With White Stripe

ADJUSTING BRAKES

Keeping Pedals Even

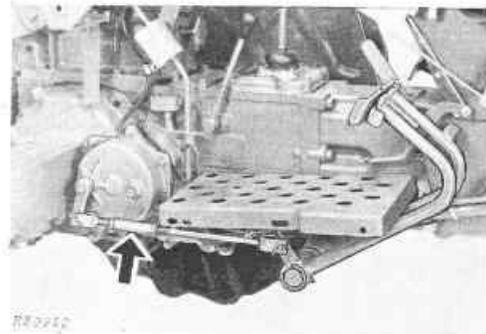
⚠ CAUTION: To insure that brakes will not pull to one side when pedals are locked together, pedals must be adjusted evenly.

1. With pedals not latched together, depress both pedals to where they firmly engage brakes. The two pedals should be at the same height when brakes are engaged.
2. If pedals do not engage brakes evenly, adjust free travel of lower pedal as instructed below, so the two are even.



Adjusting Free Travel

1. Measure distance pedals travel at top of stroke before engaging brakes. Free travel should not exceed 1-3/8 inches (35 mm).
2. If free travel is excessive, adjust linkage rod. Loosen lock nut and rotate turnbuckle to shorten rod. Adjust free travel to one inch (25 mm). Tighten lock nut. Keep both pedals adjusted evenly.
3. When linkage rod has no adjustment left, two other adjustments can be made before replacing brake shoes. Shoes can be reversed (front to rear and rear to front), and anchor pin can later be turned 90°. These are jobs for a qualified mechanic. See your John Deere dealer.





Storage

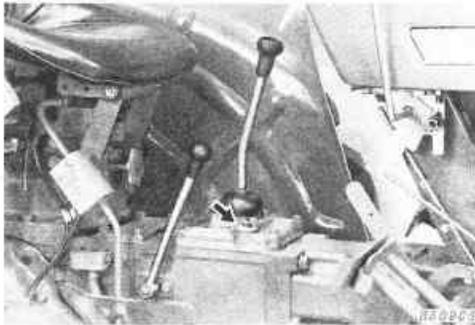
STORING TRACTOR

Whenever tractor will not be used for several months, use following procedure to properly store it. This minimizes corrosion and deterioration. Use an AR41785 Engine Storage Kit and an extra quart (0.95 L) of AR41870 Corrosion Inhibitor.

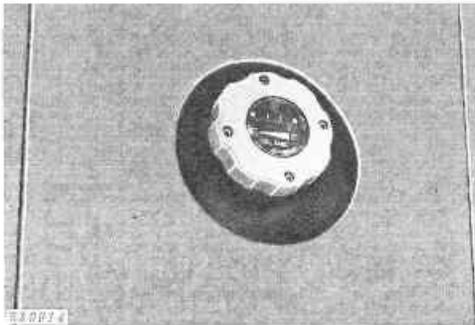
1. Change engine oil as instructed on page 48. Used oil would not give adequate protection.
2. Service air cleaner as instructed on page 63.
3. Flush cooling system as instructed on page 69. Be sure system is full of coolant and coolant contains a rust inhibitor (in antifreeze or summer coolant conditioner).

IMPORTANT: If you drain cooling system to prevent freezing, first add a suitable rust preventive. Run engine to circulate preventive and leave a protective coating throughout the system.

4. Add nine ounces (0.25 L) of corrosion inhibitor to transmission-hydraulic system.

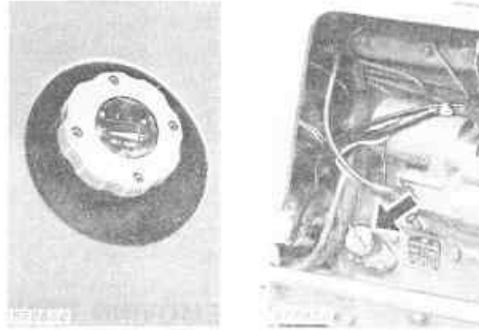


5. Drain fuel tank and add back one gallon (4 L) of fuel. Add 12 ounces (0.4 L) of corrosion inhibitor.

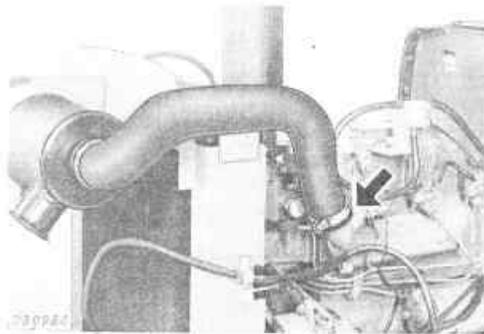


6. Run engine until it reaches normal temperature.
Raise and lower rockshaft several times.

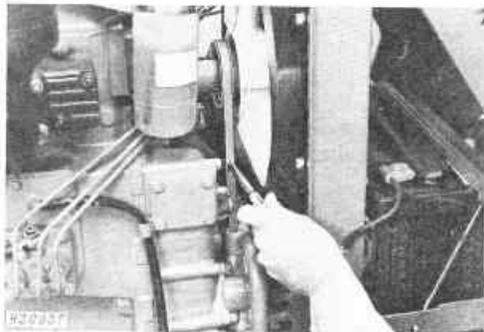
7. Add 16 ounces (0.5 L) more of inhibitor to fuel tank.
8. Add 16 ounces (0.5 L) of inhibitor to engine crankcase.

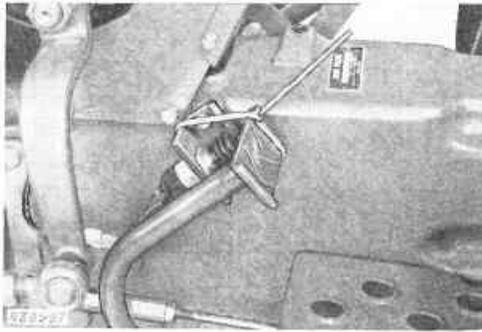


9. Remove air intake hose from manifold. Pour three ounces (0.1 L) into intake manifold, and replace hose. Pull hand throttle all the way back to engine stop position, and crank engine ONLY a few revolutions.



10. Loosen alternator belt after it has cooled.





11. Tie or block clutch pedal down in the disengaged position.
12. Remove and clean battery. Store it in a cool, dry place, and keep it charged.
13. Use plastic bags and tape to seal air inlets, exhaust pipe, crankcase vent tube, fuel tank cap, radiator expansion tank, and transmission-hydraulic system filler cap.
14. Coat exposed metal surfaces, such as axles, with grease or a corrosion inhibitor.
15. Raise tires off ground. Protect them from heat and sunlight.
16. Thoroughly clean tractor. Touch up any painted surfaces that are scratched or chipped.
17. If tractor must be stored outside, cover it with a waterproof material.

REMOVING TRACTOR FROM STORAGE

1. Check tire inflation pressure (see page 66) and lower tires to ground.
2. Unseal all openings sealed in Step 12.
3. Install battery. See page 70 for proper connections.
4. Adjust tension of alternator belt as instructed on page 65.
5. Check levels of engine oil, transmission-hydraulic oil, and engine coolant. Add if necessary.
6. Fill fuel tank.
7. Perform all appropriate 10-hour, 100-hour, 200-hour, and 600-hour services as instructed on pages 54 through 59.
8. Pull hand throttle all the way back to engine stop position, and crank engine until oil pressure rises. Then push throttle forward and start engine. Do not operate starter more than 20 seconds at a time, and wait at least two minutes for starter to cool before trying again.
9. Operate engine at slow idle for several minutes. Warm up carefully and check all systems before placing tractor under load.



Trouble Shooting

ENGINE

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY	PAGE REFERENCE	
Engine hard to start or will not start	Hand throttle not pushed forward.	Push throttle forward.		
	Decompression knob pulled out.	Push knob in.	13	
	No fuel.	Check fuel tank.		
	Fuel shut-off valve closed.	Open shut-off valve.	10	
	Cold weather.	Use cold weather starting aids.	13	
	Slow starter speed.	See "Starter Cranks Slowly."		
	Crankcase oil too heavy.	Use oil of proper viscosity.	52	
	Improper type of fuel.	Consult fuel supplier; use proper type fuel for operating conditions.	51	
	Water, dirt, or air in fuel system.	Drain, flush, fill, and bleed system.	67	
	Clogged fuel filter.	Replace filter element.	61	
	Dirty or faulty injectors.	Have John Deere dealer check injectors.		
	Engine knocks	Insufficient oil.	Add oil.	54
		Injection pump out of time.	See your John Deere dealer.	
Low coolant temperature.		Remove and check thermostat.		
Engine overheating.		See "Engine Overheats."		
Engine runs irregularly or stalls frequently	Idle speed too slow.	Check idle speed.	59	
	Vent in fuel tank cap obstructed.	Clean cap in solvent. Blow dry.		
	Low coolant temperature.	Remove and check thermostat.		
	Clogged fuel filter.	Replace filter element.	61	
	Water, dirt, or air in fuel system.	Drain, flush, fill, and bleed system.	67	
	Dirty or faulty injectors.	Have John Deere dealer check injectors.		

Continued on page 78

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY	PAGE REFERENCE	
Lack of engine power	Engine overloaded.	Reduce load or shift to lower gear.		
	Intake air restriction.	Service air cleaner.	63	
	Clogged fuel filter.	Replace filter elements.	61	
	Improper type of fuel.	Use proper fuel.	51	
	Overheated engine.	See "Engine Overheats."		
	Below normal engine temperature.	Remove and check thermostat.		
	Improper valve clearance.	See your John Deere dealer.		
	Dirty or faulty injectors.	Have John Deere dealer check injectors.		
	Injection pump out of time.	See your John Deere dealer.		
	Implement improperly adjusted.	See implement operator's manual.		
	Improper ballast.	Adjust ballast to load.	35	
	Engine Overheats	Engine overloaded.	Shift to lower gear or reduce load.	
		Low coolant level.	Fill radiator to proper level, check radiator and hoses for loose connections or leaks.	54
Faulty radiator cap.		Have serviceman check.		
Loose or defective fan belt.		Adjust belt tension.	56	
Dirty radiator core or grille screens.		Remove all trash.		
Cooling system needs flushing.		Flush cooling system.	69	
Defective thermostat.		Remove and check thermostat.		
Defective temperature lamp or sender.	Check water temperature with thermometer and replace if necessary.			

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY	PAGE REFERENCE
Low oil pressure	Low oil level.	Add oil.	54
	Improper type of oil.	Drain, fill crankcase with oil of proper viscosity and quality.	56
High oil consumption	Crankcase oil too light.	Use proper viscosity oil.	52
	Oil leaks.	Check for leaks in lines, around gaskets and drain plug.	
Engine emits white smoke	Improper type of fuel.	Use proper fuel.	51
	Low engine temperature.	Warm up engine to normal operating temperature.	
	Defective thermostat.	Remove and check thermostat.	
Engine emits black or gray exhaust smoke	Engine out of time.	See your John Deere dealer.	
	Improper type of fuel.	Use proper fuel.	51
	Clogged or dirty air cleaner.	Service air cleaner.	63
	Engine overloaded.	Reduce load or shift to a lower gear.	
	Injection nozzles dirty.	See your John Deere dealer.	
	Engine out of time.	See your John Deere dealer.	
High fuel consumption	Improper type of fuel.	Use proper fuel.	51
	Clogged or dirty air cleaner.	Service air cleaner.	63
	Engine overloaded.	Reduce load or shift to lower gear.	
	Improper valve clearance.	See your John Deere dealer.	
	Injection nozzles dirty.	See your John Deere dealer.	
	Engine out of time.	See your John Deere dealer.	
	Implement improperly adjusted.	See implement operator's manual.	
	Low engine temperature.	Check thermostat.	

ELECTRICAL SYSTEM

PROBLEM	POSSIBLE CAUSE	POSSIBLE REMEDY	PAGE REFERENCE
Battery will not charge	Loose or corroded connections.	Clean and tighten connections.	70
	Sulfated or worn-out battery.	Check electrolyte level and specific gravity.	71
	Loose or defective alternator belt.	Adjust belt tension or replace belt.	56
"CHG" indicator glows with engine running	Low engine speed.	Increase speed.	
	Defective battery.	Check electrolyte level and specific gravity.	71
	Defective alternator.	Have your John Deere dealer check alternator.	
Starter inoperative	Slipping belt.	Tighten belt.	56
	Loose or corroded connections.	Clean and tighten loose connections.	70
	Low battery output.	Check electrolyte level and specific gravity.	71
	Clutch pedal not depressed.	Fully depress pedal.	11
Starter cranks slowly	Low battery output.	Check electrolyte level and specific gravity.	71
	Crankcase oil too heavy.	Use proper viscosity oil.	52
	Loose or corroded connections.	Clean and tighten loose connections.	70
One lighting circuit does not function	Fuse blown.	Replace fuse.	72

HYDRAULIC SYSTEM

Hitch fails to lift	Low oil level.	Fill system with proper oil.	55
	Hydraulic stop valve closed.	Open valve.	23
	Excessive load on hitch.	Reduce load.	
Hitch drops slowly or does not drop	Hydraulic oil filter clogged.	Clean or replace filter.	58
	Hydraulic stop valve closed.	Open valve.	23
	Rate-of-drop set too slow.	Adjust rate-of-drop.	23
Hitch drops too fast	Rate-of-drop set too fast.	Adjust rate-of-drop.	23
Direction of remote cylinder travel is reversed	Improper hose connections.	Reverse hose connections.	27



Specifications

	850 TRACTOR	950 TRACTOR
HORSEPOWER (Official PTO horsepower)	22.27 hp (16.61 kW) at 2600 rpm	27.36 hp (20.40 kW) at 2400 rpm
ENGINE:		
Type	3-cylinder, in-line, valve-in-head, diesel	3-cylinder, in-line, valve-in-head, diesel
Slow idle speed	850 rpm	850 rpm
Working speed range	1900 to 2600 rpm	1700 to 2400 rpm
Bore and stroke	3.15 x 3.35 in. (80 x 85 mm)	3.54 x 3.54 in. (90 x 90 mm)
Displacement	78 cu. in. (1281 cm ³)	105 cu. in. (1717 cm ³)
Compression ratio	21 to 1	20 to 1
Firing order (No. 1 in rear)	1-3-2	1-3-2
Valve clearance		
Intake	0.008 in. (0.20 mm)	0.006 in. (0.15 mm)
Exhaust	0.008 in. (0.20 mm)	0.006 in. (0.15 mm)
Injection pump timing	26° BTDC	25° BTDC
Lubrication system	force-feed, pressurized with full-flow filter	force-feed, pressurized with full-flow filter
FUEL SYSTEM:		
Type	precombustion chamber	precombustion chamber
Injection pump type	plunger	plunger
Air cleaner	dry type	dry type
COOLING SYSTEM:		
Type	pressurized with centrifugal pump	pressurized with centrifugal pump
Temperature control	heavy duty thermostat	heavy duty thermostat
CAPACITIES		
Fuel tank	8.5 U.S. gallons (32 L)	8.5 U.S. gallons (32 L)
Cooling system	6 U.S. quarts (5.5 L)	6.5 U.S. quarts (6 L)
Crankcase (with filter change)	5 U.S. quarts (4.5 L)	7 U.S. quarts (6.4 L)
Transmission-hydraulic system	19 U.S. quarts (18 L)	19 U.S. quarts (18 L)
TRANSMISSION:		
Type	2-speed range selector and 4-speed gear selector	2-speed range selector and 4-speed gear selector
Gear selections	8 forward and 2 reverse	8 forward and 2 reverse
Clutch	single-disk, dry	single-disk, dry
POWER TAKE-OFF:		
Type	transmission driven, with overrunning clutch	transmission driven, with overrunning clutch
Speed (2260 engine rpm)	540 rpm	540 rpm
Size	1-3/8 inch (35 mm)	1-3/8 inch (35 mm)
Clutch	uses transmission clutch	uses transmission clutch
HYDRAULIC SYSTEM:		
Type	open center, constant flow	open center, constant flow
Working pressure	2000 psi (138 bar) (138 kg/cm ²)	2000 psi (138 bar) (138 kg/cm ²)
Pump	gear pump, driven by engine	gear pump, driven by engine

Continued on page 82

	850 TRACTOR	950 TRACTOR
BRAKES		
Type	mechanical dry, internal expanding shoe	mechanical, dry, internal expanding shoe
ELECTRICAL SYSTEM:		
Type	12-volt, negative ground	12-volt, negative ground
Battery	one, 12-volt, BCI group 30H, 475 amps cold cranking, 160 minutes reserve capacity	one, 12-volt, BCI group 30H, 475 amps cold cranking, 160 minutes reserve capacity
Alternator	25-amp	25-amp
TIRES AND TREADS:	See page 40	See page 40
DIMENSIONS:		
Wheelbase	64 in. (1630 mm)	69 in. (1750 mm)
Overall length	118 in. (2290 mm)	122 in. (3100 mm)
Height to muffler cover*	73.6 in. (1870 mm)	7.70 in. (1955 mm)
Height to top of Roll-Gard Canopy*	81.1 in. (2060 mm)	84.0 in. (2130 mm)
Overall width (minimum tread)	53 in. (1330 mm)	59 in. (1500 mm)
Turning radius	110 in. (2800 mm)	118 in. (3000 mm)
SHIPPING WEIGHT**	2350 lbs. (1065 kg)	2650 lbs. (1200 kg)

*850 Tractor equipped with 11.2-24 rear tires and 5.00-15 front tires. 950 Tractor equipped with 12.4-28 rear tires and 5.50-16 front tires.

**Equipped for average field service, without fuel and ballast.

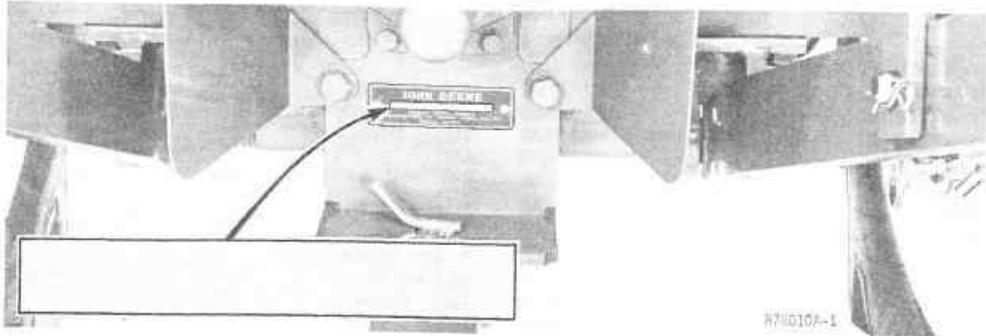
Gear	850 Tractor		950 Tractor	
	Rated Engine Speed (2600 rpm)	Standard PTO Speed (2260 rpm)	Rated Engine Speed (2400 rpm)	Standard PTO Speed (2260 rpm)
1	0.8 mph 1.3 km/h	0.7 mph 1.1 km/h	0.8 mph 1.3 km/h	0.8 mph 1.2 km/h
2	1.1 mph 1.8 km/h	1.0 mph 1.6 km/h	1.2 mph 1.9 km/h	1.1 mph 1.8 km/h
3	1.7 mph 2.7 km/h	1.5 mph 2.4 km/h	1.7 mph 2.8 km/h	1.6 mph 2.6 km/h
4	2.5 mph 4.0 km/h	2.2 mph 3.5 km/h	2.6 mph 4.1 km/h	2.4 mph 3.9 km/h
5	3.8 mph 6.0 km/h	3.3 mph 5.2 km/h	3.9 mph 6.2 km/h	3.7 mph 5.9 km/h
6	5.4 mph 8.6 km/h	4.7 mph 7.5 km/h	5.5 mph 8.9 km/h	5.2 mph 8.4 km/h
7	8.0 mph 12.7 km/h	6.9 mph 11.1 km/h	8.2 mph 13.1 km/h	7.7 mph 12.3 km/h
8	11.7 mph 18.7 km/h	10.2 mph 16.3 km/h	12.1 mph 19.3 km/h	11.4 mph 18.2 km/h
1R	1.1 mph 1.8 km/h	1.0 mph 1.6 km/h	1.2 mph 1.9 km/h	1.1 mph 1.8 km/h
2R	5.4 mph 8.6 km/h	4.7 mph 7.5 km/h	5.5 mph 8.9 km/h	5.2 mph 8.4 km/h

*850 Tractor equipped with 11.2-24 rear tires. 950 Tractor equipped with 12.4-28 rear tires.

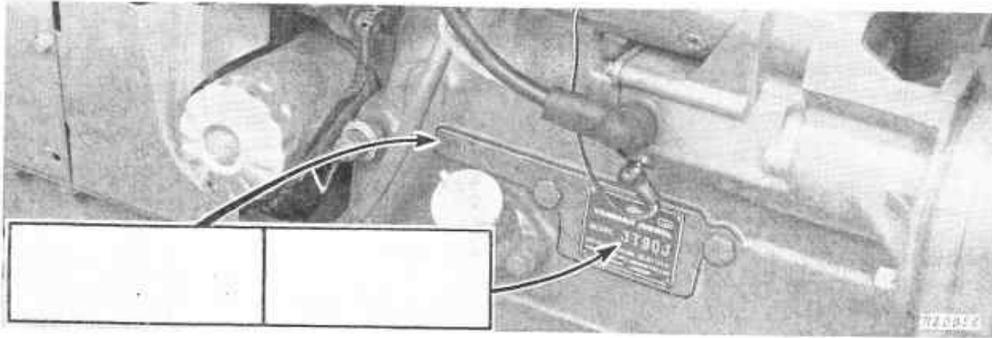
(Specifications and design subject to change without notice.)

SERIAL NUMBERS

Enter your tractor's serial numbers in the space provided below. Provide these numbers to your dealer when ordering parts.



Tractor Type and Chassis Serial Number



Engine Type and Engine Serial Number



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