210, 212, 214 and 216 Lawn and Garden Tractors



OPERATOR'S MANUAL



Horicon Works OM-M82325 Issue G8

LITHO IN U.S.A.



Safety Precautions

Improper use of the tractor and its equipment can result in injury. To reduce this possibility, give complete and undivided attention to the job at hand, and follow these safety precautions. This tractor is not for street or highway use.

Preparation

Know your controls. Read this operator's manual and the manuals provided with your equipment. Learn how to stop the tractor, engine, and equipment quickly in an emergency.

Do not allow children to operate machine; nor adults to operate it without proper instructions.

Keep children and pets a safe distance away.

Never permit any person other than the operator to ride or board the tractor at any time.

Clear work area of objects which might be picked up and thrown.

Do not use tractor for mowing unless the mower discharge chute guard is in place.

Operation

Disengage all attachment clutches and shift into neutral before attempting to start engine.

Start the engine carefully. Keep feet and hands well away from rotating parts.

Always wear relatively tight and belted clothing when operating tractor. Loose jackets, shirts, sleeves or other loose clothing should not be worn because of the danger of catching them in moving parts or controls

Read and observe all "DANGER", "CAUTION" and "WARNING" decals appearing on tractor and equipment.

Never direct discharge of any material toward bystanders nor allow anyone near machine while it is in operation.

Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.

Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes.

Stay alert for holes in terrain and other hidden hazards. Always drive slowly over rough ground.

Stop and inspect tractor and attachments for damage after striking a foreign object. Repair damage before restarting and operating the equipment.

Use care when pulling loads or using heavy equipment. Use only approved drawbar hitch points. Limit loads to those you can safely control. Do not turn sharply. Use care when backing. Use counterweight(s) or wheel weights when suggested in owner's manual.

Watch out for traffic when crossing or working near roadways.

Disengage power to attachments and stop engine (1) before leaving operator position, (2) before making any repairs or adjustments, or (3) when transporting or not in use.

Take all possible precautions when leaving tractor unattended; such as disengaging power-take-off, lowering attachments, shifting into neutral, setting parking brake, stopping engine and removing key.

Maintenance and Storage

Handle gasoline with care—it is highly flammable. Use approved gasoline container. Never remove cap or add gasoline to a running or hot engine or fill fuel tank indoors. Clean up spilled gasoline. Open doors if engine is run in garage—exhaust fumes are dangerous. Do not run engine indoors. Never smoke while refueling.

Never store equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark.

Allow engine to cool before storing in any enclosure. Do not change engine governor settings or overspeed engine.

Keep vehicle and attachments in good operating condition and keep safety devices in place.

Keep all nuts, bolts, and screws tight to be sure equipment is in safe working condition.

Keep engine free of grass, leaves or excessive grease to reduce fire hazard.

Prevent accidental operation of the starter or engine. Always turn off key switch and disconnect spark plug wire whenever working on the electrical system. Also do this when making adjustments to the engine or other moving parts.

After operating the tractor or engine, never touch exhaust muffler until it has had sufficient time to cool.

Always keep positive battery post covered with terminal cover.

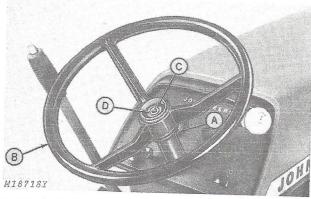
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JOHN DEERE 210, 212, 214 AND 216 LAWN AND GARDEN TRACTORS

PREDELIVERY CHECK LIST

IMPORTANT: Before starting tractor, perform and check each predelivery item listed below. Use delivery check list as a reminder of items to discuss with customer.

☐ Install Steering Wheel

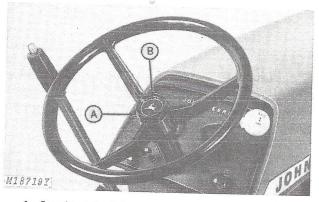


A—Foam Washer B—Steering Wheel

C—Steering Shaft D—Nut

Place plastic foam washer (A) on steering shaft.

Position steering wheel (B) on steering shaft (C) with single spoke on steering wheel down when front wheels are straight ahead. Install and tighten nut (D) to a maximum torque of 10 to 12 ft-lbs (13 to 16 Nm).



A-Steering Wheel Cap

B-Leaping Deer Decal

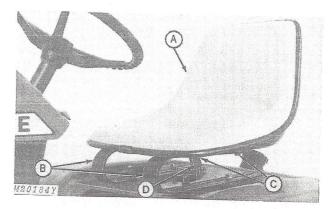
Lubricate inner flange on steering wheel cap (A) with multipurpose-type grease or oil. Press cap into steering wheel hub.

NOTE: If it is necessary to tap cap into place, use a wood block large enough to span entire diameter of cap and tap cap into place.

If steering wheel cap is loose, remove it and place rubber band from bag of parts under O-ring of steering wheel cap. Reinstall steering wheel cap and check to be sure it is secured in place.

Remove adhesive backing from leaping deer decal (B) and install decal on steering wheel cap (A).

☐ Install Seat



A—Seat B—Seat Springs

C—Cap Screws and Flat Washers D—Seat Safety Switch Wires

Attach seat (A) to seat springs (B) with four 3/8 \times 3/4-inch cap screws and flat washers (C).

Connect seat safety switch electrical wires (D).

NOTE: A flat washer should be under head of each cap screw.

☐ Check Tire Inflation

Tires are overinflated for shipping. Deflate tires to air pressure shown below. (Use a low pressure tire gauge.)

In the chart below, use the high psi or kPa readings for heavy front loads such as loaders. Use mid-range readings for blades and snow throwers.

TIRE INFLATION PRESSURES

Tire	Front	Rear
High-Flotation Tires	16x6.50-8	23x8.50-12
(GT-3 Tractor)	6 to 16 psi (41 to 110 kPa)	5 to 10 psi (34 to 69 kPa)
Traction Tires	4.80x4.00-8	23x8.50-12
(GT-4 Tractor)	12 to 40 psi (82 to 276 kPa)	5 to 10 psi (34 to 69 kPa)
High-Flotation Tires	16x6.50-8	23x10.50-12
(GT-5 Tractor)	6 to 16 psi	5 to 10 psi
	(41 to 110 kPa)	(34 to 69 kPa)
Traction Tires	16x6.50-8	23x10.50-12
(GT-8 Tractor)	6 to 16 psi (41 to 110 kPa)	5 to 10 psi (34 to 69 kPa)

Figures above are in pounds per square inch (psi) and kilopascals (kPa).

☐ Fill Gas Tank With Gasoline

Use clean regular grade non-leaded gasoline with an octane rating of 85 or higher.

Do not use ethyl, white, high-test gasoline, or any regular gasoline having an octane rating below 85. Wipe up spilled fuel.

☐ Start Engine and Check Tractor Performance

If any difficulty is encountered, see "Trouble Shooting" section of operator's manual.

□ Check Tractor Appearance

Clean and polish tractor. Touch up scratches.

□ Adjust Equipment

If tractor is to be used with equipment, adjust as detailed in equipment operator's manual.

☐ Attach Operator's Manual.

Attach operator's manual to tractor.

DELIVERY CHECK LIST

Advise customer to change engine crankcase oil after first two hours of operation.
Instruct customer in safe-operation of tractor and equipment.
Explain recommended daily and periodic inspections.
Instruct customer about making all operating adjustments.
Stress the importance of using only John Deere or engine manufacturer's parts.
Explain service and warranty procedures to customer.
Advise customer never to use ethyl, white, premium, or low-octane regular gasoline.
Advise customer of availability of service publications. See insert sheet at back of manual.

☐ Remove these check list pages from operator's

☐ Give customer his operator's manual.

manual.





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Safety precautions	Inside front cover
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Figure 1-John Deere 216 Tractor with Manual Lift



To the Purchaser



Figure 2-OPEI Seal

This OPEI Seal certifies that your model of tractor with mower has been tested by an independent laboratory and that it complies with the American National Standard for "Safety Specification for Power Lawn Mowers, Lawn and Garden Tractors and Lawn Tractors."

Read this operator's manual to become thoroughly familiar with the tractor and controls before starting the engine. Pay strict attention to the "Lubrication" and "Maintenance" sections of this manual.

Your Lawn and Garden Tractor has been manufactured to the traditionally high standards of John Deere. It has been carefully designed to provide the same time-saving performance, comfort, and convenience that owners have come to expect from larger John Deere Tractors.

In addition to John Deere Equipment, a wide variety of Allied Equipment is available to make your tractor a real year-round work saver. See your John Deere dealer for the complete list.

Right-hand (R.H.) and left-hand (L.H.) references are determined by standing at the rear of the tractor and facing the direction of forward travel.

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

Your operator's manual contains SI Metric equivalents which follow immediately after the U.S. customary units of measure.

When in need of parts or major service, see your John Deere dealer. Record the tractor and engine serial numbers in the space provided on page 30 of this manual.

This operator's manual is prepared for:

 210 Tractors (Serial Number C210H 095001M)

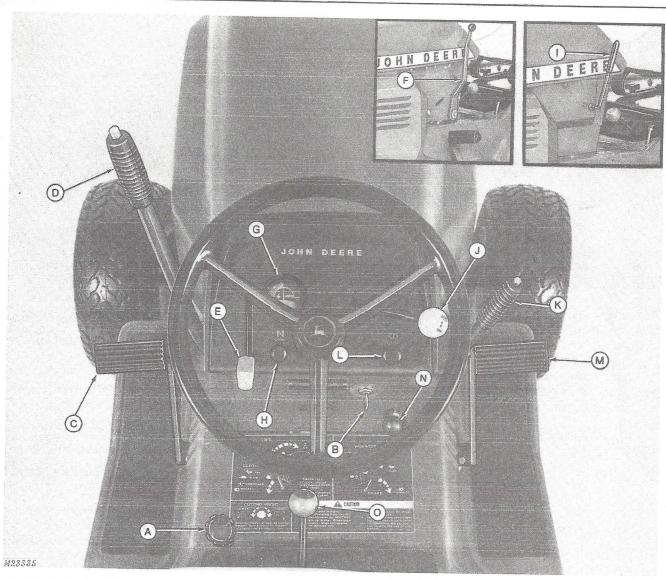
 212 Tractors (Serial Number C212H 095001M)

 214 Tractors (Serial Number C214H 095001M)

 216 Tractors (Serial Number C216H 095001M)



Controls



- A-Depth Control Knob
- B-Ignition Key Switch
- C-Clutch-Brake Pedal
- D-Manual Lift Lever
- E-Throttle Lever
- F-Electric Lift Lever (Extra Equipment)
- G-Ammeter
- H-Choke Knob
- I —Hydraulic Lift Lever (Extra Equipment)
- J -- Power Take-Off (PTO) Clutch Lever*
- K-Variable Speed Control Lever
- L-Light Switch Knob
- M-Brake Pedal
- N-Parking Brake Knob
- 0-Shift Lever

Figure 3

*NOTE: A pressure-sensitive safety switch (not illustrated) is located in the seat. This switch shuts off the engine whenever the operator leaves the seat with the engine running and the PTO engaged. The engine will remain running with the PTO disengaged and the operator off the seat.



Operation

BEFORE STARTING ENGINE Filling Gas Tank

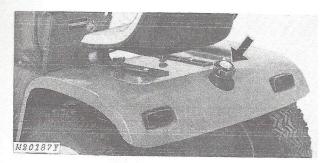


Figure 4

CAUTION: To prevent injury from explosion or fire, never smoke while filling gas tank.

Wipe dust and dirt from around gas tank cap (arrow) before removing it.

Open fuel shut-off valve (Figure 35, page 18). Fill gas tank with fresh, clean "regular" grade gasoline having an octane rating of 85 or higher. We recommend non-leaded gasoline. Low-lead or leaded "regular" grades are acceptable if the octane rating is 85 or higher.

DO NOT use premium, ethyl, or white gasoline, or regular gasoline having an octane rating below 85. Never use special additives such as carburetor cleaners, deicers or moisture-removing liquids in the gasoline.

IMPORTANT: Do not mix oil with gasoline. Be sure fuel containers are clean.

Checking Engine Crankcase Oil Level

Place tractor on a level surface. Stop engine and wipe dust and dirt from around the dipstick. Remove dipstick. Oil level should be between "L" and "F" mark. Add oil as necessary. Oil level should never be above the "F" mark. See Figure 19, page 11.

IMPORTANT: Change oil after the first 2 hours of operation. See page 11.

Checking Air Filter

Be sure the carburetor air filter is clean. See Figure 28, page 14.

Checking Engine Air Intake Side Panels

Always keep the engine air intake side panels clean to prevent engine overheating. See page 14.

STARTING THE ENGINE

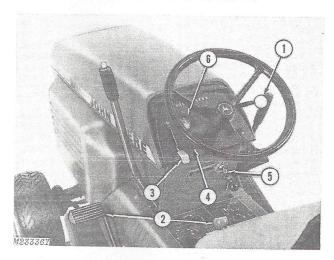


Figure 5

- 1. Disengage PTO clutch by pulling lever rearward.
- 2. Fully depress clutch-brake pedal and shift transmission into neutral.

NOTE: The engine will not start unless the PTO is disengaged and the transmission is in neutral.

- 3. Raise the throttle lever to the 1/4 open position.
- 4. If the engine is cold, pull the choke knob out.

NOTE: It usually isn't necessary to choke a warm engine.

5. Turn ignition key to "START" position. When engine starts, push choke knob in. In extremely cold weather, leave the choke knob out until engine begins to warm up.

NOTE: Let engine warm up before applying load.

6. With engine running, the ammeter needle should be in the black (+) area or in the vertical position between the black (+) area and the amber (-) area. If the needle is in the amber (-) area, check the electrical connections or contact your dealer.

TO STOP ENGINE, lower throttle lever all the way down and idle engine momentarily. Turn ignition key to the "OFF" (vertical) position. Remove the key.

OPERATING THE TRACTOR

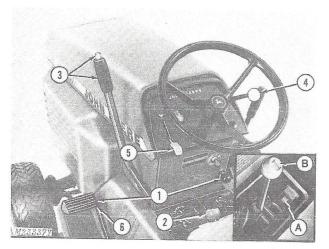


CAUTION:

1. Never operate your tractor without brakes.

2. Do not "ride" the brake pedal. Use brakes for stopping only.

3. If brakes begin to feel "spongy" or "weak", adjust the brakes as explained on page 17 or see your John Deere dealer.



A-Stop

B-Shift Lever Knob

Figure 6

1. Fully depress the clutch-brake pedal. Lift parking brake knob. Move knob to the right and release into short vertical slot.

CAUTION: To prevent possible injury, always look behind you to make sure area is clear of people, pets and debris before backing

2. Shift transaxle into desired gear. Always stop tractor movement completely before shifting gears.

NOTE: The transaxle shifting pattern is shown on the transaxle shift lever knob (B).

Raise stop (A) to shift into first gear for minimum ground travel speed. Use a strong, steady motion to engage gears firmly into mesh. If necessary, release clutch-brake pedal and then depress fully again to rotate gears enough for easy engagement. Never "grind" gears.

NOTE: The shift lever position between first and second gear is not a detented neutral position. NEVER leave lever in this position.

3. On manual lift tractors, press thumb release. Move lift lever forward to lower equipment; rearward to raise equipment. Release thumb pressure to lock lever in position.

NOTE: On tractors equipped with electric or hydraulic lift (extra equipment), push lever forward to lower equipment; pull lever rearward to raise equipment. See pages 6 and 7 for instructions on manual, electric and hydraulic lift.

4. Slowly move the power take-off (PTO) clutch lever upward to engage power-driven equipment.

CAUTION: If tractor is to be used to power an elevator or other machine operated by the PTO attachment (extra equipment), disconnect mower drive belt or remove mower from tractor to avoid injury from rotating mower blades.

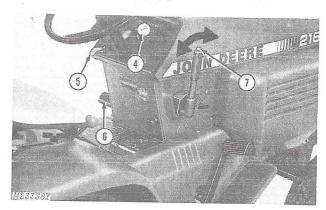


Figure 7

- 5. Move throttle lever up to full throttle position. Power-driven equipment should be operated at full throttle.
 - 6. Release the clutch-brake pedal slowly.

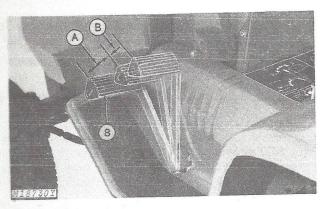
NOTE: If operating on inclines depress brake pedal on right-hand side to keep tractor from moving until clutch-brake pedal is released far enough to start tractor movement.

7. Press the thumb release and move the variable speed control lever forward to increase travel speed. It is not necessary to depress thumb release when moving the lever rearward to decrease travel speed. The lever may be moved through its full range without disengaging the clutch or stopping the tractor as long as the engine is running.

CAUTION: To avoid tipping tractor, move the variable speed control lever to the rear (slow speed position) for safest operation on hillsides or in rough terrain.

IMPORTANT: Always depress the clutch-brake pedal completely when bringing tractor to a stop or shifting gears. Never depress or ride the brake pedal to slow tractor travel speed without first depressing the clutch-brake pedal. Otherwise, the transaxle may be damaged. Brake pedal on righthand side of tractor should only be used to prevent tractor movement on uphill starts.

OPERATING THE TRACTOR—Continued



A-Neutral Range

B-Variable Speed Range

Figure 8

8. Tractor speed may be varied with the footoperated clutch-brake pedal. Place the variable speed control lever (page 5, Figure 7) in the desired forward position. Depressing the clutch-brake pedal reduces travel speed. Releasing the pedal provides the original travel speed selected with the variable speed control lever.

STOPPING THE TRACTOR

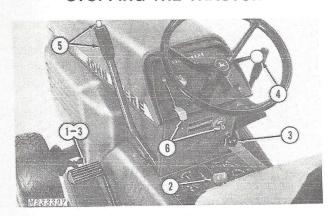


Figure 9

- 1. Fully depress the clutch-brake pedal. Keep pedal depressed.
 - 2. Shift transaxle into neutral.
- 3. Move parking brake knob left into long vertical slot and release. Remove foot from clutch-brake pedal. (Clutch-brake pedal will remain depressed).
- 4. Pull the PTO clutch lever back to disengage power-driven equipment.
- 5. Lower mounted equipment to the ground with the
- 6. Return throttle lever to idle position and allow engine to idle momentarily before turning ignition key to the "OFF" (vertical) position.

CAUTION: Remove the ignition key each time you leave the tractor. This prevents unauthorized use of the tractor and assures that lights and ignition are off.

MANUAL LIFT CONTROL SYSTEM



Figure 10

- 1. Press thumb release and move lift lever forward to lower mounted equipment; rearward to raise equipment. Release thumb pressure to lock lever in position.
- 2. To set depth control, first turn depth control knob counterclockwise until tight. Next, lower equipment to desired operating height. Then, turn depth control knob clockwise until tight.

Proper adjustment of the depth control allows the mower or center blade to return to the same pre-set height each time it is raised and lowered. This assures uniform cutting height or blading depth.

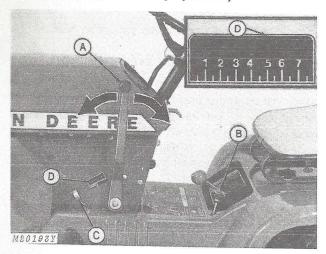
The depth control also enables the operator to lock the mower or center blade in the raised position while using the manual lift lever to operate front- or rearmounted equipment.

To lock mower or center blade in raised position, raise equipment all the way up with the lift lever and turn depth control knob clockwise until tight.

NOTE: Front- or rear-mounted equipment cannot be locked in the raised position with the depth control knob.

CAUTION: If tractor is to be used to power an elevator or other machine operated by the PTO attachment (extra equipment), disconnect mower drive belt or remove mower from tractor to avoid injury from rotating mower blades.

ELECTRIC LIFT CONTROL SYSTEM (Extra Equipment)



A-Lift Lever B-Deck Depth Control

C-Console Depth Control Knob D-Decal

Figure 11

Move the lift lever (A) forward to lower equipment; rearward to raise equipment.

NOTE: This electric lift system is position-responsive. The equipment moves up or down in direct proportion to the amount the lift lever is moved forward or rearward.

IMPORTANT: Turn the deck depth control knob (B) counterclockwise as far as possible. This allows the console depth control knob (C) to be used to set mower or center blade depth.

To set mower or center blade depth, turn both depth control knobs (B and C) counterclockwise until tight. Lower mower or blade to desired height and turn console depth control knob (C) clockwise until depth stop touches the lift stop mechanism.

NOTE: The decal (D) located adjacent to console depth control knob can be used as a guide in determining operating depth.

Proper adjustment of the console depth control allows the mower or center blade to return to the same pre-set height each time it is raised and lowered. This assures uniform cutting height or blading depth.

To lock mower or center blade in raised position, raise mower or blade all the way up and turn deck depth control knob (B) clockwise until tight. The electric lift can now be used to operate front- or rearmounted equipment.

NOTE: Front- and rear-mounted equipment can be operated position-responsive or at a pre-set depth, depending on how the console depth control is set. The electric lift is always position-responsive from the pre-set depth to the fully raised position. Front- or rear-mounted equipment cannot be locked in the raised position with either the deck or console depth control knobs.

HYDRAULIC LIFT CONTROL SYSTEM (Extra Equipment)

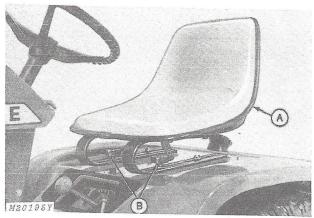


Figure 12

The hydraulic lift control system (arrow) operates primarily the same as the manual lift control system. The hydraulic cylinder raises and lowers equipment instead of doing it manually with a lift lever.

Refer to manual lift control system, page 6, for the method of setting depth control knob.

ADJUSTING POSITION OF SEAT



A-Seat

Figure 13

B-Knobs

Adjust seat (A) by loosening knobs (B) and sliding seat forward or backward to the most comfortable position. Tighten knobs (B).

ADJUSTING REAR WHEEL TREAD

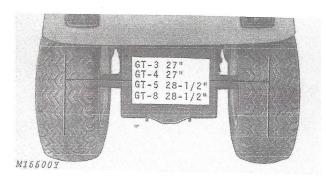


Figure 14-Narrow Tread

Rear wheels are factory assembled in the narrow tread position. For greater stability, especially on hill-sides, wheels can be turned around on the hubs for a wide wheel tread as explained at right above.

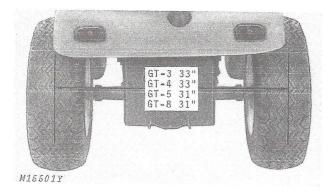


Figure 15-Wide Tread

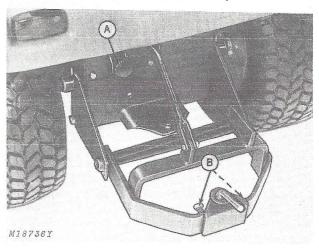
Tractors with GT-3 or GT-5 High-Flotation Tires

Remove wheel bolts; turn wheel around with valve stem inward, and reassemble wheel on hub.

Tractors with GT-4 or GT-8 Traction Tires

Remove wheel bolts, turn wheel around with valve stem inward and reassemble each wheel on the opposite side of the tractor. Interchanging right-hand and left-hand rear wheels is required to maintain the proper direction of rotation for traction tires. Tread (and arrow) on tire must point forward in direction of travel.

ADJUSTING INTEGRAL HITCH (Extra Equipment)



A-Handwheel

B-Cap Screws

Figure 16

Use the manual, electric or hydraulic lift lever (pages 6 and 7) to raise or lower the integral hitch.

Adjust the height of the hitch with the handwheel (A). Turn the handwheel clockwise to lower the hitch; turn it counterclockwise to raise the hitch. Turn the handwheel counterclockwise all the way to hold the hitch in the raised position for transport.

To avoid difficult steering when pulling an implement having a heavy draft, loosen cap screws (B) to allow the implement to "sway" on the hitch. For rigid "straight-line" mounting, tighten cap screws evenly.

Use front frame weights or front wheel weights when working with rear-mounted tools to aid steering and provide additional stability.

CAUTION: Be careful tractor does not upset when working with rear-mounted tools, especially when working on hillsides. Always back up a steep incline and work downhill.

MOWER SAFETY

When using your tractor with a mower:

- (1) Mow only in daylight or in good artificial light.
- (2) Never make a cutting height adjustment while engine is running, if you must dismount to do so.
- (3) Shut engine off when unclogging discharge chute.
- (4) Check blade mounting bolts for proper tightness at frequent intervals.
- (5) Do not use tractor for mowing unless mower discharge chute guard is in place.

1. Keep all shields and discharge chute

guard in place.

2. Before servicing machine: disengage power, shut off engine, make sure knife arms have stopped revolving, disconnect engine spark plug cable.

3. Do not stand near machine while knives are in motion.

4. Keep hands, feet and clothing away from power-driven parts.

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Figure 17



Service Interval Chart

Daily (5 Hours)	Weekly (25 Hours)	Monthly (100 Hours)	Spring and Fall	Service Item
Page 11	Page 11	Page 11	Page 11	Check crankcase oil level
Page 14	Page 14	Page 14	Page 14	Clean engine air intake side panels and grille
	Page 11	Page 11	Page 11	Change engine crankcase oil
÷	Page 14	Page 14	Page 14	Clean air filter
7	Page 15	Page 15	Page 15	Check battery electrolyte level
	Page 18	Page 18	Page 18	Check tire pressure
*	9	Page 15	Page 15	Clean engine shrouds and cooling fins
		Page 12	Page 12	Check transaxle lubricant level. (Change lubricant every 500 hours or 2 years)
		Page 16	Page 16	Check spark plug gap
	-	·	Page 18	Clean fuel strainer
	**		Page 13	Lubricate grease fittings
			Page 12	Repack PTO clutch bearing

Use the service interval chart as a reminder of periodic and seasonal services that must be performed to keep your tractor running smoothly. If necessary, refer to the appropriate page in the "Lubrication" or "Maintenance" sections of this manual for detailed instructions on how to perform the service.

HOUR METER (Extra Equipment)

A digital-type hour meter is available as an accessory for your tractor. The hour meter is useful for keeping a record of service interval hours. The hour meter can be purchased from your John Deere dealer. See Figure 18 at the right. Complete instructions for installing the hour meter are furnished with it. The hour meter is installed in the dash on the tractor.

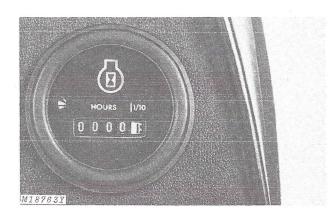


Figure 18



Lubrication

CAUTION: To prevent personal injury, stop engine, set parking brake, remove ignition key, and wait for all movement to stop before servicing machine.

CHECKING ENGINE CRANKCASE OIL LEVEL

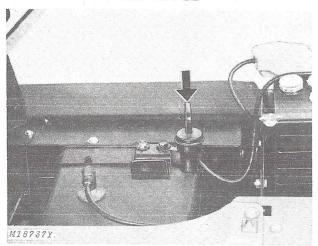


Figure 19

Daily or every 5 hours of operation, check the engine crankcase oil level. Park the tractor on a level surface, stop the engine, and raise the hood. Wipe dust and dirt from around the dipstick (arrow). Pull out the dipstick to check oil level.

If necessary, add John Deere Torq-Gard Supreme™ engine oil or its equivalent of the proper viscosity (see chart below) to bring oil level up to the full "F" mark on the dipstick when the dipstick is pushed in tight.

JOHN DEERE TORQ-GARD SUPREME ENGINE OIL

Air Temperature- Season	Oil Viscosity	1/2 Pint (0.2365 I) Pop-Top Can (6 per carton)	1-Quart (0.946 I) Can	
Summer Above 32°F SAE 30 or 0°C		AR63979	AR63218	
Winter Below 32°F or 0°C	SAE 5W-20*	AR63980	AR63228	

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

We recommend John Deere Torq-Gard Supreme engine oil for use in the engine crankcase. This oil provides superior lubrication under all conditions. NEVER PUT ADDITIVES IN THE CRANKCASE. Torq-Gard Supreme oil was formulated to provide all the protection your engine needs. Additives could reduce this protection rather than help it.

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

API Service CD/SE, CD/SD, CC/SD or SD

MIL-L-46152

MIL-L-2104C*

*As further assurance of quality, the oil should be identified as suitable for API Service Designation SD.

CHANGING ENGINE CRANKCASE OIL

Change oil after first two hours of operation and every 25 hours or each week of operation, thereafter. Drain crankcase when oil is hot and all dirt and foreign material is in suspension.

NOTE: Change oil every 8 hours when working in extremely dusty conditions.

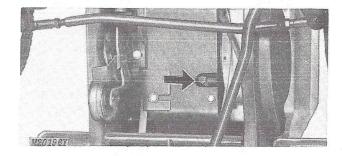


Figure 20

Turn oil drain valve (arrow) counterclockwise to open, and drain oil into a container. Close valve after oil has drained.

IMPORTANT: Use a hex. head wrench to loosen or open valve. When closing valve, do not use a wrench to tighten. Hand tighten only.

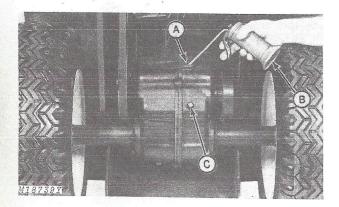
NOTE: For convenience, a suitable length of 5/8 inch (15.88 mm) garden hose or plastic tubing may be installed on the drain valve to allow oil to drain into a container away from the tractor.

Fill crankcase with oil of the proper viscosity (see chart at left) to full "F" mark on dipstick. The crankcase holds approximately 3 U.S. pints (1.419 I) of oil.

CHANGING ENGINE CRANKCASE OIL—Continued

IMPORTANT: Check dipstick reading before pouring in the last 1/2-pint (0.2365 I). Fill only to "F" mark. Overfilling can cause engine overheating, resulting in permanent damage to the engine.

CHECKING TRANSAXLE LUBRICANT LEVEL



A-Oil Level Filler Hole B-Pressure Oil Can

C-Drain Plug

Figure 21

Each month or every 100 hours of operation. check the transaxle lubricant level. Park the tractor on a level surface, shut off engine, and set the parking brake.

Remove the plug from the oil level filler hole (A) in the front of the transaxle. The lubricant should be even with the filler hole (A). If necessary, use a pressure oil can (B) to add lubricant through the filler hole until oil spills out.

Use AM30200 Transmission Lubricant in transaxle. This select, non-foaming lubricant is especially suited for the transaxle and can be purchased from your John Deere dealer in 1/2-pint (0.2365 I) cans. It may be used in any weather condition.

John Deere SAE 90 Gear Lubricant or an equivalent SCL multipurpose-type gear oil also can be used in the transaxle. The JD94 Pressure Oil Can (B) illustrated above is available from your John Deere dealer.

CHANGING TRANSAXLE LUBRICANT

Every 2 years or 500 hours of operation, remove the transaxle drain plug (C) and drain oil into a container. Wipe the drain plug clean and replace it in the transaxle. Remove oil level filler plug.

Using the pressure oil can (B) illustrated above. add AM30200 Transmission Lubricant or its equivalent through the filler plug hole (A) until oil spills out. Replace oil level filler plug.

REPACKING POWER TAKE-OFF CLUTCH BEARING

Each spring and fall repack the PTO clutch bearing. Remove the right-hand engine side panel for access to the PTO clutch. See Figure 27, page 14.

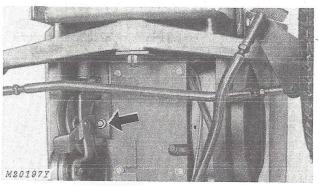
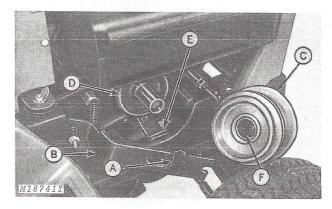


Figure 22

Using a 1/2-inch socket wrench with extension. loosen the cap screw (arrow) holding the PTO clutch brake in place. Loosen cap screw only enough to permit removal of the PTO clutch assembly.



- A-Clutch Arm Clip
- B-Clutch Arm
- C-PTO Sheave Assembly
- D-Clutch Lining E-Brake Lining
- F-Bearing

Figure 23

Pivot clutch arm clip (A) upward and slide clutch arm (B) to the rear to remove clutch arm from sheave hub.

Slide the PTO sheave assembly (C) off the shaft. Check condition of clutch lining (D) and brake lining (E). If brake or clutch lining appears to be worn thin, see your John Deere dealer for service.

Use a solvent to remove the old grease from the bearing (F). Dry the bearing thoroughly and repack it with John Deere High-Temperature Grease or its equivalent.

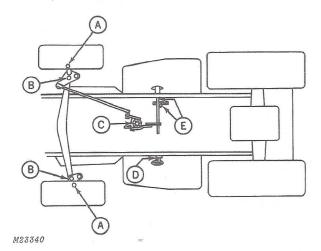
John Deere High-Temperature Grease is available in one-pound (0.45 kg) cans as Part No. AT30408.

Slide the PTO sheave assembly on the shaft and replace the clutch arm. Lock arm in place with clip.

Refer to page 19 and adjust the clutch brake so the distance between the brake and clutch cup sheave is 1/32-inch (0.79 mm) when the clutch is engaged. Tighten the cap screw. Replace engine side panel.

LUBRICATING **GREASE FITTINGS**

CAUTION: To prevent personal injury, shut off engine, set parking brake, remove ignition key and wait for all movement to stop before servicing machine.



- A-Front Wheel Hubs **B**—Front Axle Spindles
- C-Steering Gear (See "IMPORTANT" (below)
- D-Brake Pedal Shaft E-Primary Lift Shaft
- (2)

Figure 24-Tractor Grease Fitting Locations

Each spring and fall lubricate the grease fittings illustrated above with John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease.

IMPORTANT: Do not overlubricate steering column fitting. Only 3 to 4 strokes with a hand grease gun or John Deere Pisto-Luber are necessary. Do not use a high-pressure grease gun on this fitting. The Pisto-Luber is available from your John Deere dealer as Part No. TY2097. Replacement tubes of lubricant are available as Part No. TY2098.

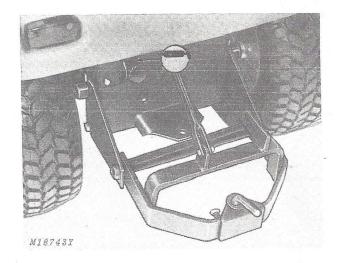


Figure 25-Integral Hitch (Extra Equipment)

If the tractor is equipped with an integral hitch (extra equipment) lubricate the rear lift pivot, Figure 25.

Use either a hand grease gun or the John Deere Pisto-Luber with flexible hose and throw-away tube available from your dealer. (Be sure to puncture grease tube before using Pisto-Luber.)

CHECKING HYDRAULIC LIFT LUBRICANT LEVEL (Extra Equipment)

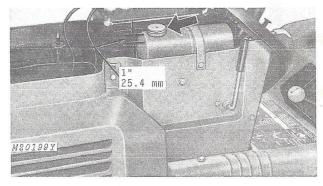


Figure 26

Once a week or every 50 hours of operation, check hydraulic fluid level. Park the tractor on a level surface, shut off engine, and set parking brake.

Remove reservoir cap (arrow). The hydraulic fluid level should be within 1 inch (25.4 mm) from top of reservoir. If hydraulic fluid is required, use John Deere All-Weather Hydrostatic Fluid or an equivalent Type "F" automatic transmission fluid.

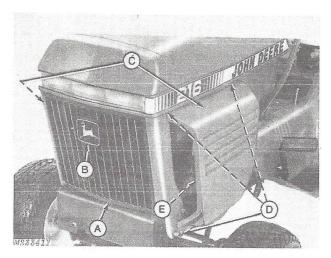


Maintenance

This section of your operator's manual describes simple adjustments and services that you can perform to keep your tractor running smoothly. Sometime your tractor may need service that requires special tools or "know-how". Then it is best to contact your John Deere dealer.

CAUTION: Prevent personal injury from accidental operation of the starter or engine. Remove ignition key. Disconnect spark plug cable when working on the electrical system or when making adjustments to the engine or other moving parts.

REMOVING GRILLE AND ENGINE SIDE PANELS



A—Grille B—Emblem C—Side Panels D—Cap Screws E—Rotating Screen

Figure 27

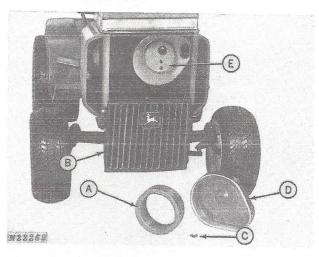
Remove grille (A) for access to ignition points, carburetor, and other engine parts. To remove grille, place hand under front of emblem (B) and pull outward. To remove side panels (C), raise hood and loosen three cap screws (D) attaching each side panel to tractor.

IMPORTANT: Never operate tractor with engine side panels or grille removed. Keep air intake openings in grille and side panels clean at all times. Brush foreign material off engine rotating screen (E) inside left-hand side panel.

CLEANING ENGINE AIR INTAKE SIDE PANELS AND GRILLE

Daily or every 5 hours of operation, make a visual check of the grille and side panel air intake openings. The engine is air-cooled and must have an ample supply of air to prevent it from overheating. Wipe off all dirt or debris from the air intake openings; check openings, often, especially when mowing or mulching leaves.

CLEANING AIR FILTER



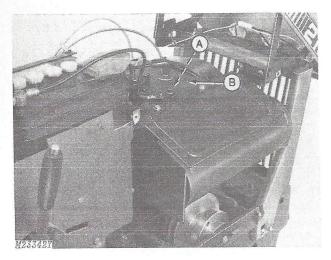
A—Air Filter B—Grille C—Wing Nut D—Cover E—Air Cleaner Base

Figure 28

Weekly or every 25 hours of operation (more often when operating in extremely dusty conditions), clean the air filter (A). Remove grille (B). Remove wing nut (C), cover (D), and lift out air filter (A). Clean the filter by tapping it lightly against a solid object to shake out the dust. You also can use a brush to remove dust particles. Never dip the filter (Part No. M47494) into a liquid cleaner of any type or use compressed air to clean it. Replace the filter if it is bent, crushed or damaged.

IMPORTANT: Never run engine with filter removed. Wipe dust from the filter cover. Reassemble the filter (A) and cover (D), first making sure the filter is properly seated around the air cleaner base (E). Tighten wing nut (C) on cover (D) finger-tight.

CLEANING ENGINE SHROUDS AND COOLING FINS



A-Cooling Fins

B-Shrouds

Figure 29

Be sure the engine cooling fins (A) and the shrouds (B) which enclose them are clean at all times. Dirt, oil and other debris which may have entered through the screens may lodge on cooling fins, restricting the normal air flow. Overheating causes serious damage to engine parts.

Raise tractor hood and remove engine side panels as shown on page 14 to gain access to engine shrouds.

Remove screws holding shrouds (B) in place and brush dirt from cooling fins (A). Clean inside of shrouds thoroughly. Soak off oil deposits with a safe solvent.

CHECKING BATTERY ELECTROLYTE LEVEL

CAUTION: Protect against fire and explosion. Keep positive battery terminal covered with plastic cover on end of cable.

Every 25 hours or each week of operation, check the electrolyte level of each cell by removing the cap. Water should completely cover the plates at all times. If necessary, fill each cell with distilled water to the top of the circular split ledge (A) in the filler tube (B), Figure 30.

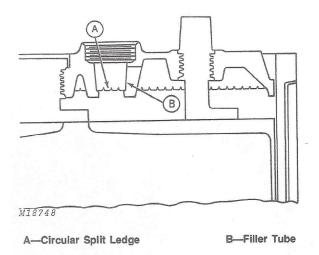


Figure 30

IMPORTANT: When adding water to battery during freezing weather, run engine at least an hour to make sure water and electrolyte have mixed thoroughly.

CHARGING BATTERY

Keep the battery fully charged during the winter to prevent freezing. A trickle-type battery charger can be obtained from your John Deere dealer to keep the battery charged when tractor is not in use.

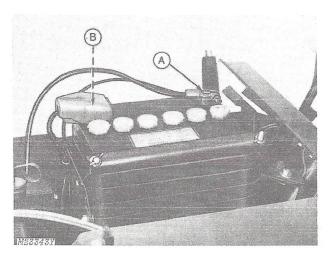
Keep battery connections tight at all times, especially when charging. Loose cables will cause arcing and pitting and eventual battery failure. If battery requires complete charging, remove battery from tractor and charge 30 to 40 amps for 10 minutes or 15 amps for 30 minutes.

CAUTION: To prevent explosion or fire, avoid sparks. Unplug battery charger from electrical outlet before connecting or disconnecting cables.

NOTE: Most battery damage occurs when electrolyte level is too low (below top of plates). Most machine damage (acid spill and corrosion) occurs when electrolyte level is too high.

CAUTION: Hydrogen and oxygen gases in the battery are very explosive. Keep open sparks or flames away from the battery at all times, especially when charging the battery. Do not smoke around a charged battery. Keep vent holes in cell caps open.

CLEANING BATTERY



A-Negative (-) Battery Cable B-Positive (+) Battery Cable

Figure 31

Remove negative (-) battery cable (A) first. Remove positive (+) battery cable (B) last. Use a wire brush to remove corrosion around battery terminals. Wash terminals with a solution consisting of one part baking soda to four parts water. Do not allow cleaning solution to run into battery cells.

Wash entire battery case, platform and hold-down parts with clear water and wipe dry.

Coat battery terminals with petroleum jelly. Connect positive (+) battery cable first. Be sure both cables are tight. Place plastic cover over positive cable.

Be sure top and bottom vent holes in each cell cap are open.

JUMP-STARTING TRACTOR

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: Use genuine John Deere or equivalent jumper cables to jump-start the tractor. Jumper cables can be obtained from your John Deere dealer.

- 1. Make sure tractor and starting vehicle are not touching. On both vehicles, set parking brake, shift transmission into park or neutral and turn off ignition, lights and accessories.
- 2. Be sure the starting vehicle has a 12-volt negative (-) ground battery.
- 3. Check electrolyte level in tractor battery. Add distilled water to tractor battery if necessary.

CAUTION: To prevent explosion or fire, DO NOT jump-start a frozen battery.

- 4. Connect one end of red jumper cable to positive (+) terminal of jumper battery and then connect the other end of red cable to positive (+) terminal of tractor battery. Wiggle jumper cable clamps so they bite into connections and won't spark.
- 5. Connect one end of black jumper cable to negative (-) terminal of jumper battery.

CAUTION: To avoid sparks and a possible explosion or fire, DO NOT connect other end of black jumper cable to negative (-) terminal of tractor battery.

- 6. Connect other end of black jumper cable directly to tractor frame.
- 7. Try to start tractor. If jumper battery voltage is too low to start tractor, start engine in starting vehicle and permit it to run a few minutes before trying to start tractor again.
- 8. After tractor starts, disconnect jumper cable from tractor frame FIRST; then, jumper battery.
- 9. Disconnect jumper cable from positive (+) terminal of tractor battery; then, jumper battery.

SETTING SPARK PLUG GAP



Figure 32

Use a round, wire-type feeler gauge to check the spark plug gap after every 100 hours of operation.

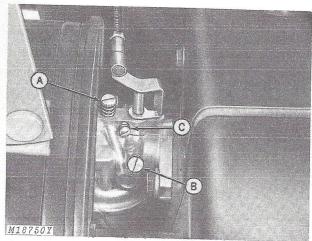
The distance between electrodes should be 0.025 inch (0.635 mm) for a resistor-type plug and 0.035 inch (0.8890 mm) for a regular plug.

Bend the outer electrode only to obtain proper gap. If the electrodes have burned short or have become pitted, install a new spark plug.

Use a spark plug wrench to remove plug. Always use a new spark plug gasket when replacing plug. Tighten plug to 15 to 20 ft-lbs (20 to 27 Nm) torque.

NOTE: In Canada, compliance with radio interference regulations certified. Replace spark plug with resistor-type spark plug only. See "Specifications", page 30, for spark plug type and part number.

ADJUSTING CARBURETOR



A-High-Speed Mixture Needle B-Idle Mixture Needle

C-Idle Speed Screw

Figure 33

CAUTION: To prevent injury from explosion or fire, never smoke when making adjustments to carburetor or fuel system. Never work on fuel system in a closed area or near sparks or flame. Be careful not to accidentally burn hands or fingers on hot engine parts when making adjustments.

If the engine misses, backfires, surges or starts hard, carburetor adjustment may be required.

Depress clutch-brake pedal and move shift lever into NEUTRAL. Disengage PTO clutch. Set parking brake before adjusting carburetor.

Idle adjustment and high-speed adjustment must be made at the same time as each affects the other. Adjust as follows:

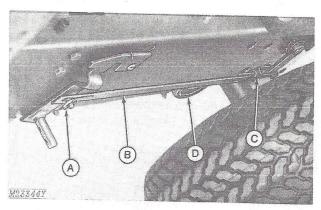
- 1. Turn high-speed mixture needle (A) clockwise until closed. Close finger-tight only. Then open 2 turns.
- 2. Turn idle mixture needle (B) clockwise until closed. Close finger-tight only. Then open 2-1/2 complete turns.
- 3. Start engine and raise throttle lever on dash panel to "FAST" position. Allow engine to warm up.

- 4. Turn high-speed mixture needle (A) 1/8 turn each time, clockwise or counterclockwise, until engine runs smoothly at full throttle. Keep needle position slightly on the rich side (open) when operating tractor with power-driven equipment such as the mower or snow thrower.
- 5. Move throttle lever to "SLOW" position and turn idle mixture needle (B) 1/8 turn each time, clockwise or counterclockwise, until engine idles smoothly.
- 6. Advance throttle lever quickly to check for uniform acceleration. If engine misses, gas-air mixture is too lean. Turn high-speed mixture needle (A) counterclockwise until positive acceleration can be obtained

If excess exhaust smoke is noticed, mixture is too rich. Readjust idle mixture needle, if necessary, until good balance is achieved and engine idles smoothly between 1700 and 1900 rpm.

The idle speed screw (C) adjusts the speed at which the engine idles. This is factory-adjusted and will not normally require adjustment. Leave all other adjustments of carburetor and governor to your John Deere service technician.

ADJUSTING REAR WHEEL BRAKE



A-Cotter Pin and Washer B-Strap

C-Yoke D-Brake

Figure 34-Fender-Deck Removed For Illustrative Purposes

To adjust brake, remove cotter pin and washer (A) and disconnect strap (B) from clutch-brake pedal stud. Turn strap (B) into yoke (C) two or three turns to tighten brake. Reconnect strap with washer and cotter pin and test brake by operating tractor on a level surface at a slow travel speed. The brake is properly adjusted when clutch-brake pedal is depressed and strong resistance is encountered when the pedal is approximately 1 inch (25.40 mm) from deck.

CHECKING TIRE PRESSURES

Check tire pressures after storage, when changing attachments, and weekly during use. Use a low-pressure tire gauge to check tire pressure. Inflate tires to pounds-per-square-inch (psi) or kilopascals (kPa) shown in chart below.

Use the high psi or kPa readings for heavy front loads such as loaders; mid-range readings for blades and snow throwers, and low readings for normal lawn use.

TIRE	INFLATION PRESSUR	ES	
Tire	Front	Rear	
High-Flotation	16 x 6.50-8	23 x 8.50-12	
Tires (GT-3 Tractor) 6 to	6 to 16 psi (41 to 110 kPa)	5 to 10 psi (34 to 69 kPa)	
Traction Tires (GT-4 Tractor)	4.80 x 4.00-8 12 to 40 psi (82 to 276 kPa) 16 x 6.50-8 6 to 16 psi (41 to 110 kPa)	23 x 8.50-12 5 to 10 psi (34 to 69 kPa)	
High-Flotation		16 x 6.50-8 23 x 1	23 x 10.50-12
(GT-5 Tractor)		5 to 10 psi (34 to 69 kPa) 23 x 10.50-12	
Traction Tires (GT-8 Tractor)	16 x 6.50-8 6 to 16 psi (41 to 110 kPa)	5 to 10 psi	

CLEANING FUEL STRAINER

CAUTION: Never smoke when working on fuel system. Never work on fuel system in a closed area or near sparks or flame.

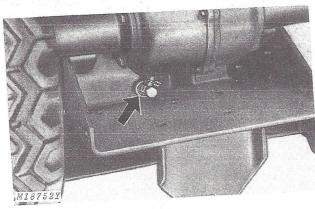
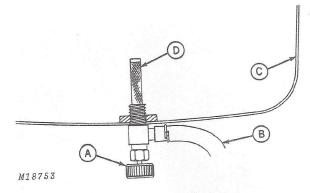


Figure 35

Once a year, clean the fuel strainer located on bottom of gas tank between rear hitch frame and axle as shown above.

Turn fuel shut-off valve knob (arrow) clockwise to close; counterclockwise to open valve.



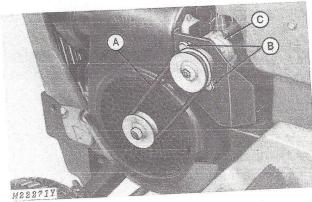
A—Fuel Shut-Off Valve B—Hose C—Gas Tank D—In-Line Strainer

Figure 36

Close the fuel shut-off valve (A) and disconnect the hose (B) from valve. Attach a 12-inch length of 1/4-inch rubber hose, open the shut-off valve and drain the gas tank (C) into a clean container. Remove hose from valve and unscrew the shut-off valve assembly from the gas tank. Thoroughly clean all particles from the in-line strainer (D).

Reinstall the valve assembly, close the valve, connect the hose, and fill the gas tank. Disconnect hose at fuel pump and open the fuel shut-off valve. When gas begins to run out, connect the hose. This procedure will prevent an air lock in the gas line.

ADJUSTING HYDRAULIC LIFT PUMP DRIVE BELT (Extra Equipment)



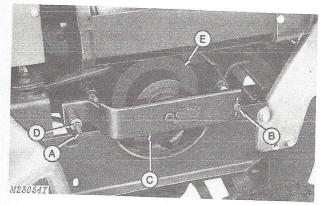
A-Drive Belt B-Bolts C-Pump

Figure 37

The hydraulic lift pump drive belt (A) is properly adjusted when you can depress the belt 1/2-inch (12.70 mm) midway between the sheaves.

Adjust drive belt tension by loosening the two bolts (B) and moving the lift pump (C) in slots on pump mounting bracket. Tighten bolts after proper adjustment is obtained.

ADJUSTING POWER TAKE-OFF (PTO) CLUTCH

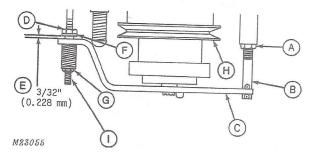


A-Adjusting Link **B**—Pivot Assembly

C-Clutch Arm D-Adjusting Nut E-Drive Sheave

Figure 38

- 1. Remove right-hand engine side panel as shown on page 14.
 - 2. Engage PTO clutch control lever.
- 3. Adjustment is necessary if clutch lining wear has reduced spring tension gap (E), Figure 39, to zero or, if clutch does not engage drive properly.



A-Jam Nut

B—Pivot Assembly

C-Clutch Arm

D-Jam Nut

E-Spring Tension Gap

F-Washer

G-Adjusting Nut

H-Drive Sheave

I -Adjusting Link

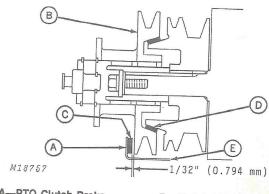
Figure 39

4. To adjust clutch arm (C) parallel with drive sheave (H), loosen jam nut (A) and turn pivot assembly (B) until clutch arm (C) is parallel with face of drive sheave (H). Tighten jam nut (A) after adjustment.

5. Spring tension gap (E) should be 3/32 inch (0.228 mm) between washer (F) and clutch arm (C) with PTO clutch control lever engaged. To adjust, loosen jam nut (D) and turn adjusting nut (G) on or off adjusting link (I) until spring tension gap (E) is correct. Tighten jam nut (D) after adjustment.

IMPORTANT: After adjusting PTO clutch, refer to Figure 40 and adjust PTO clutch brake so it stops the PTO clutch sheave in 4 seconds at an engine speed of 3600 rpm under no load when PTO clutch control lever on dash of tractor is disengaged.

ADJUSTING PTO CLUTCH BRAKE



A-PTO Clutch Brake B-PTO Clutch Sheave

D-Clutch Lining E-Brake Shoe

C-Brake Lining

Figure 40

Shut off tractor engine and engage PTO clutch control lever on tractor dash. Place a feeler gauge between brake lining (C) and PTO clutch sheave (B). When properly adjusted, distance between brake lining and sheave should be no more than 1/32-inch (0.79 mm). Refer to Figure 41 and instructions below if adjustment is required.

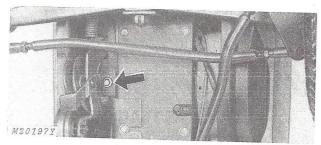
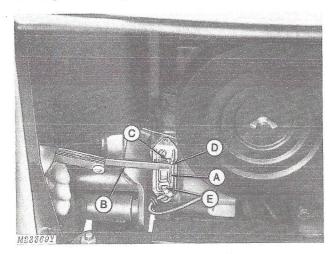


Figure 41

To adjust PTO clutch brake, use a 1/2-inch socket with extension to loosen cap screw (arrow). Move brake shoe in or out as required until proper adjustment is attained as explained under Figure 40 above. After adjustment, tighten cap screw firmly.

ADJUSTING AND REPLACING BREAKER POINTS

CAUTION: Remove ignition key. Disconnect spark plug cable to prevent accidental starting of the engine.



A—Breaker Points B—Feeler Gauge C—Locking Screw D-V-Slot E-Screw

Figure 42

Remove tractor grille and right-hand engine side panel, page 14.

Remove ignition point cover and rotate engine flywheel until breaker points (A) are fully open.

Check point gap with a 0.020-inch (0.5080 mm) feeler gauge (B). If adjustment is required, loosen locking screw (C) and move screwdriver in V-slot (D) until points (A) are properly set. After tightening locking screw, recheck point gap.

To replace points, remove locking screw (C) and screw (E). Be sure lock washers are in place when installing new points.

Replace ignition point cover, replace grille, and install engine side panel.

SERVICING TRANSAXLE

Because special tools are required, it is not recommended that you service or dismantle any part of the transaxle. See your John Deere dealer for all transaxle service.

REPLACING MASTER CIRCUIT BREAKER

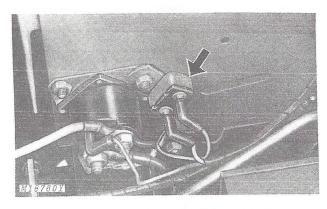
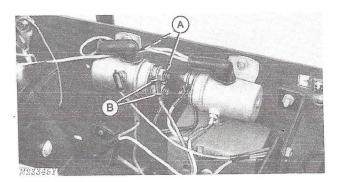


Figure 43-Battery and Battery Box Removed to Show 25-amp Master Circuit Breaker

The tractor is equipped with a 25-amp master circuit breaker (arrow) to protect the entire electrical system (except the electric lift which is extra equipment and neutral-start system), in case of a short circuit or electrical overload. The circuit breaker, attached to the starter solenoid, is located under the battery base.

The circuit breaker will automatically reset after the cause of the electrical short or overload is corrected. If a circuit breaker should require replacement, see your John Deere dealer.

REPLACING ELECTRIC LIFT FUSE (Extra Equipment)



A-100-Amp Fuse

B-Nuts

Figure 44

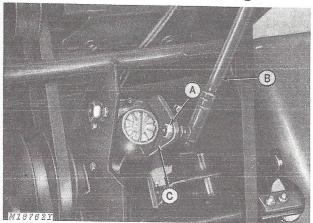
The electrical circuit is protected by a 100-amp fuse (A) located on the electric lift console panel. If the electrical circuit is overloaded, the fuse may "blow" and require replacing. Remove battery from tractor before replacing fuse.

To replace fuse, remove two nuts at (B). Remove blown fuse and install new fuse as shown above. Fuses are available from your John Deere dealer.

ADJUSTING STEERING

If the tractor is difficult to steer or hard to control, adjust the tractor steering components as follows:

Adjusting Steering Gear Bearings

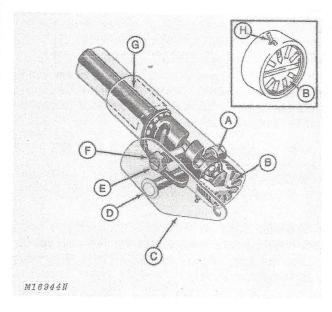


A-Nut

B-Drag Link C-Lever Arm

Figure 45

Adjust bearings to take play out of steering gear. To adjust, remove nut (A) and disconnect drag link (B) from lever arm (C) Figure 45.



A-Jam Nuts B-Adjusting Plug C-Lever Arm

D-Cross Bolt

E-Tapered Stud F-Jam Nut G-Housing H-Cotter Pin

Figure 46

Loosen jam nuts (A) on cross bolt (D), Figure 46.

Loosen jam nut (F) and tapered stud (E) several turns.

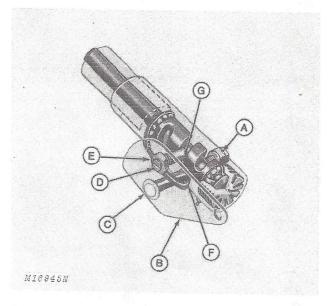
Remove cotter pin (H), Figure 46, from adjusting plug (B).

Tighten adjusting plug (B) into housing (G) to 10 to 14 ft-lbs (13.6 to 17.6 Nm) torque.

Install cotter pin (H).

Refer to Figure 45 and re-connect drag link (B) to lever arm (C).

Adjusting Steering Gear Backlash



A-Jam Nuts B-Lever Arm C-Cross Bolt D-Tapered Stud

E-Jam Nut F-Housing Face G-Mid-Point on Gear

Figure 47

Adjust steering gear so there is a slight drag at mid-point (G), Figure 47, as the steering wheel is turned through its full range of travel.

To find mid-point (G), count the number of turns from one extreme to the other.

Turn steering wheel one-half the total number of turns. Adjust at this point.

Loosen tapered stud (D) two or three turns.

To adjust backlash, place a 0.100-inch (2.54 mm) thick piece of shim stock between lever arm (B) and housing face (F).

Tighten inside jam nut (A) until shim stock is held tight.

ADJUSTING STEERING—Continued

Adjusting Steering Gear Backlash—Continued

Then loosen inside jam nut just enough to remove spacer.

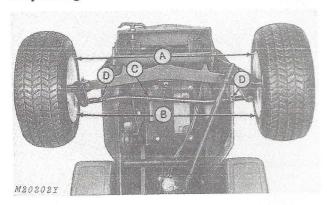
Tighten outside jam nut (A), Figure 47, to 40 ft-lbs (54.23 Nm) torque.

Tighten tapered stud (D) into housing until it is snug.

Tighten jam nut (E) to 40 ft-lbs (54.23 Nm) torque.

Turn steering wheel through its full range of travel for final test.

Adjusting Toe-In



A-Distance at Front of Wheel

B-Distance at Rear of Wheel

C-Tie Rod D-Jam Nuts

Figure 48-Adjustable Tie Rod Viewed From Underneath Tractor

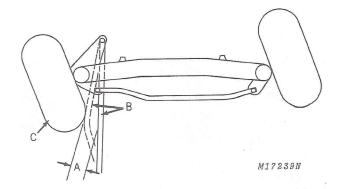
Measure distances (A) and (B), Figure 48. The tractor has proper toe-in or alignment when dimension (A) is 3/16-inch less than dimension (B).

When required, loosen jam nuts (D) and turn tie rod (C) until proper toe-in is obtained. Tighten jam nuts (D) firmly.

Adjusting Steering Linkage

Adjust the steering linkage to obtain the following.

- 1. Adequate clearance (A) between the drag link (B) and tire (C) as shown, Figure 49.
 - 2. Equal left and right turning radius.
- 3. Maximum clearance between mower deck and drag link when mower deck is raised.



A-Clearance Between Drag Link and Tire **B**—Drag Link Positions C-Tire

Figure 49-Steering Linkage Adjustment Viewed from Top of Tractor

The overall length of the drag link determines left and right turning radius.

To equalize turning radius, disconnect the drag link from lever arm. Position wheels straight ahead.

Turn steering wheel through its full range, counting the number of turns. Turn wheel half-way back. Loosen jam nuts at the drag link. Then lengthen or shorten drag link until it can be attached to lever

If drag link interferes with left front tire, loosen drag link ball joint jam nuts. Rotate drag link inward (toward center of the tractor). Lock ball joint jam nuts and re-test for equal turning.

REPLACING HEADLIGHT BULBS

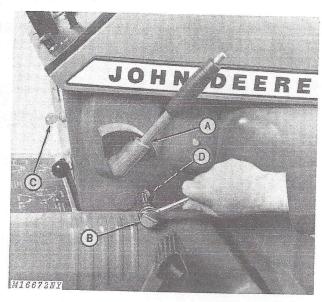
Periodically check to be sure headlight bulbs are functioning properly and that bulbs are not burned out.

To replace headlight bulbs, raise hood and twist bulb socket 1/4 turn out of hood retainer. Pull bulb out of socket. Replace defective headlight bulb with a new bulb, Part No. AM35170.

Replacement bulbs are available from your John Deere dealer.

VARIATOR ADJUSTMENTS

Linkage Adjustment



A—Variable Speed Control Lever

-Socket Wrench

C—Ignition Key D—Cap Screw

Figure 50-Adjusting Variator

- 1. To adjust the variator linkage, place the variable speed control lever (A) in notch 5 on the quadrant, which is the third notch from the front of the tractor.
- 2. Pry button plug from adjusting hole in right side of the tractor pedestal and loosen cap screw (D) one to two turns with a 3/4-inch (19.050 mm) socket wrench (B).
- 3. Disconnect spark plug cable and ground. Turn ignition key (C) to crank engine several revolutions with starter until the clutch pedal raises as high as it will go.
- 4. Take up slack in linkage by pushing down on cap screw (D). Tighten cap screw (D) and replace button plug in adjusting hole.

NOTE: If, after adjusting variator linkage, tractor will not move when the variable speed control lever is in first notch on the quadrant (slow speed position) and the clutch pedal is released, install a new primary belt. See page 24.

Spring Adjustment

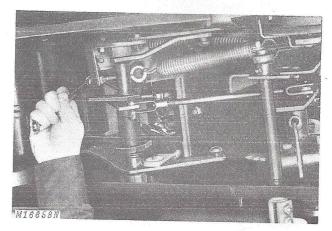


Figure 51-Adjusting Variator Spring

To obtain desired torque and load sensing characteristics, adjust the variator spring as follows:

For greater load sensitivity (variator increases torque earlier under load) loosen the spring tension by lengthening the eyebolt. For less load sensitivity, tighten the spring tension by shortening the eyebolt.

Belt Guide Adjustment

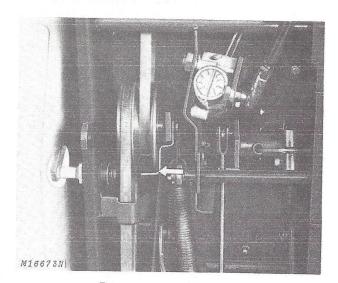


Figure 52-Adjusting Belt Guide

If the primary belt jumps the variator sheave when the clutch-brake pedal is depressed, the distance between the variator and primary belt guide should be checked. Distance between guide and sheave should not exceed 1/8 inch (3.175 mm).

INSPECTING AND REPLACING V-BELTS

Inspecting V-Belts

The V-belts transmit power by friction and a wedging action against the sheaves. All belts and sheaves wear with use. Normal wear can be recognized as even wear, both on the belt and sides of sheaves.

A slight raveling of the belt does not indicate premature belt failure. Cut off the raveling when the covering begins to peel.

When evidence of extreme or abnormal belt wear is noted, check first for faulty sheaves. A bent, nicked or chipped sheave will cause rapid belt wear. Replace sheaves found in this condition.

Belt wear, tractor vibration, and erratic operation will result when dirt becomes packed and lodged in V-grooves of the sheaves. Check especially the variator sheave. Loosen and clean dirt from all sheaves.

Cleaning V-Belts

Clean belts by wiping them with a clean cloth. Avoid use of solvents since this will soften the belt materials and cause the clutch to grab. Replace belts found to be oily or greasy.

Do not use belt dressings. Dressings often give only temporary gripping action while softening the belt and causing eventual deterioration, and shortening of the belt life.

Replacing Primary V-Belt



A-PTO Arm

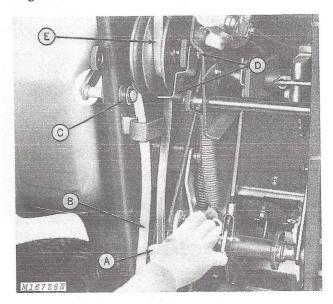
B-PTO Brake Shoe

C-Clutch Sheave

Figure 53-Removing PTO Clutch

Remove right-hand side panel. Unclip PTO arm (A) and push it to the rear away from the machine.

Loosen cap screw securing PTO brake shoe (B) enough so PTO clutch sheave (C) can be pulled off the engine crankshaft.



A—Secondary Beit Idler B—Secondary Beit

C—Brake Pedal Shaft

D—Primary Belt Guide E—Primary Belt

10

Figure 54-Removing Primary Belt

Move the variable speed control lever forward. Push up on secondary belt idler (A) and remove the secondary belt (B) from variator sheave.

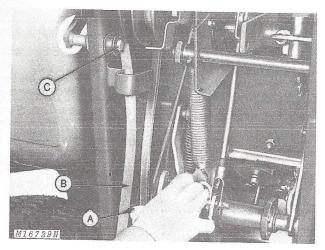
Depress clutch-brake pedal so secondary belt (B) may be pulled past brake pedal shaft (C).

Loosen the primary belt guide (D) at the variator and remove the primary belt (E).

Install new belt in opposite order.

IMPORTANT: After replacing primary belt, readjust variator. Refer to "Variator Adjustments" page 23.

Replacing Secondary V-Belt



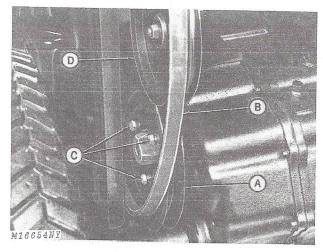
A-Secondary Belt Idler B-Secondary Belt

C-Brake Pedal Shaft

Figure 55-Replacing Secondary Belt

To replace a worn or broken secondary belt (B), move variable speed control lever forward. Raise the secondary belt idler (A) and slip secondary belt (B) off variator.

Depress clutch-brake pedal to allow secondary belt (B) to be pulled past the brake pedal shaft (C).



-Transmission Driven Sheave B-Secondary Belt

-Cap Screws D-Secondary Belt Idler

Figure 56-Installing Secondary Belt

Loosen three cap screws on the transmission driven sheave (A) and slide sheave off hub far enough to remove secondary belt (B).

Install new belt on variator sheave.

Raise secondary belt idler (D) and install belt on transmission driven sheave (A). Tighten cap screws (C) onto driven sheave (A).

After belt replacement, check variator and brake adjustments.



Storage

If your tractor will not be used for a period of time such as through the winter season, perform the following operations.

PREPARING TRACTOR FOR STORAGE

Engine

- 1. When engine is warm, drain oil and refill with proper viscosity oil. See page 11.
- 2. Drain gasoline tank. Start engine and run it out of fuel. Drain carburetor by loosening nut on bottom of carburetor bowl.
- 3. Remove, clean and reinstall fuel strainer. Also drain gasoline from fuel lines. See page 18.
- 4. Remove all oil, grease and dirt from around engine and related parts.
- 5. Use spray paint or brush and touch up all unpainted areas to prevent rust.
- 6. Remove spark plug and pour in one tablespoonful SAE 30 oil. Turn engine over at least two times and replace spark plug.

Tractor

- 1. Remove battery and store where it will not freeze. Check electrolyte level. Refill and charge fully. See page 15.
- 2. Clean tractor exterior thoroughly, removing all mud, dirt, grease and other material.
- 3. Touch up all unpainted and exposed surfaces with paint to prevent rust.
- 4. Check all visible moving parts for wear, breakage or damage. Order parts required and make necessary repairs to avoid delay when starting again next season.

- 5. Block up tractor to take weight off tires. Store tractor in cool, dark and dry place if possible to prevent excess tire deterioration.
 - 6. Wipe and clean belts with a dry cloth.
- Remove belt tension from all belts. Lock parking brake to remove tension from primary belt. Block up secondary idler. Disengage clutches on belt-driven equipment.

Your dealer is equipped to give your tractor a complete service check and make recommendations for replacing parts in need of attention.

PREPARING TRACTOR FOR USE AFTER STORAGE

Engine

- 1. Close fuel shut-off valve and refill gasoline tank. Be sure to remove fuel line from fuel pump to prevent airlock. Open fuel shut-off valve and connect hose when gas begins to run out. See page 18.
 - 2. Clean spark plug and set gap. See page 16.
 - 3. Check breaker point gap. See page 20.

Tractor

- 1. Reinstall battery. Check electrolyte level. See page 15.
 - 2. Check transaxle lubricant level. See page 12.
 - 3. Check tire inflation. See page 18.
 - 4. Check V-belts see page 24.
 - 5. Lubricate grease fittings. See page 13.
- Unlock parking brake and remove block from secondary idler if idler was blocked up in Step 7 above.



Trouble Shooting

STARTER INOPERATIVE OR WILL NOT TURN ENGINE

Move transaxle shift lever to neutral position.

Disengage PTO clutch.

If solenoid clicks but engine will not start, charge battery.

Check for faulty transaxle and PTO neutral-start switches.

Check and clean battery connections.

ENGINE HARD TO START

Disconnect fuel line at fuel pump to make sure gas is getting to carburetor. Clean fuel lines if they are gummed or plugged.

Clean in-line fuel strainer, page 18, and refill gas tank with clean, fresh gasoline.

If dirty fuel is the cause of hard starting, have your service technician clean the carburetor.

Adjust carburetor, page 17.

Check spark plug for proper gap, page 16.

Replace spark plug if electrodes are pitted or fouled.

If breaker points are worn, pitted, or incorrectly gapped, see your John Deere dealer.

ENGINE BACKFIRES

Check carburetor adjustment for lean fuel mixture. See page 17.

Have your service technician check for a sticking intake valve or improper ignition timing.

ENGINE MISSES UNDER LOAD

Check spark plug for proper gap, page 16.

Replace spark plug (use correct type) if electrodes are pitted or fouled, pages 16 and 30.

Check for lean fuel mixture. Adjust carburetor highspeed mixture needle. See page 17.

See your service technician if other ignition or carburetor adjustments are necessary.

ENGINE KNOCKS

Use only fresh regular grade or non-leaded gasoline having an octane rating of 85 or higher.

Check carburetor adjustment for lean fuel mixture. See page 17.

Keep engine air intake side panels, grille and shrouds clean to prevent overheating.

Check crankcase oil level. Fill to full "F" mark on dipstick.

NOTE: If engine knock has developed because of lack of crankcase oil, have your dealer check condition of connecting rod and cap.

Have your service technician check for possible loose connecting rod, improper timing, or excessive carbon in the combustion chamber.

ENGINE WILL NOT IDLE

Check carburetor adjustments, page 17.

Check spark plug for proper gap, page 16.

Have your service technician check carburetor for dirt particles in passages and air leaks in gasket. Have service technician check that valves are seating properly and that condenser is not faulty.

ENGINE LOSES POWER

Keep engine air intake side panel perforated openings, grille and shrouds clean to prevent overheating.

Use only fresh regular grade or non-leaded gasoline having an octane rating of 85 or higher.

Check carburetor adjustment for lean fuel mixture. See page 17.

Check dipstick for excessive oil in engine crankcase. Do not fill above full "F" mark on dipstick, page 11.

Clean air filter, page 14.

Check to be sure choke control cable is not jammed. Choke must be completely open after engine is warmed up except on extremely cold days.

Have your service technician check breaker points and make engine compression and vacuum tests.

ENGINE OPERATES ERRATICALLY

Check carburetor adjustment for lean fuel mixture. See page 17.

Clean fuel line if clogged. Clean in-line fuel strainer too, page 18.

Check fuel supply for water.

Check for faulty operation of choke.

Check for loose electrical connections.

Check for loose throttle cable.

Have your service technician check carburetor for dirt particles in passages and air leaks in gasket or connections.

TRANSAXLE WILL NOT STAY IN GEAR

Shift gears firmly without letting them "grind" before engaging.

See your John Deere dealer for transaxle service.

BRAKE NOT EFFECTIVE

Adjust the brake, page 17, or have your service technician replace the brake band if it is worn excessively.

IMPROPER STEERING OR **EXCESSIVE FRONT TIRE WEAR**

Check toe-in and steering gear adjustment as instructed on pages 21 and 22.

CLUTCH HARD TO OPERATE

Move variable speed control lever to rear (slow speed position) before applying clutch pressure.

Clean dirt from variable speed sheave hub. See page 24.

Depress clutch-brake pedal before stopping engine.

TRACTOR WILL NOT MOVE WITH ENGINE RUNNING

Be sure tractor is in gear and parking brake is released.

Move variable speed control lever to fast speed position.

Adjust the variable speed linkage. See page 23.

EXCESSIVE TRACTOR VIBRATION

Replace worn V-belts. See page 24 and 25.

Clean dirt from variable speed sheaves and hub.

Check all sheaves for excessive wear and wobble.



Specifications

TRACTOR SERIAL NUMBER RANGES:

210	Tractor	(C210H	095001M-)
212	Tractor	(C212H	095001M-)
214	Tractor	(C214H	095001M-)
216	Tractor	(C216H	095001M-	1

ENGINE HORSEPOWER AND MODEL NUMBERS:

10 hp	(7.45 kW) (210 Tractor)	(241	AQS
12 hp	(8.94 kW) (212 Tractor)	301	AQS
14 hp	(10.43 kW) (214 Tractor)	321	AQS
16 hp	(11.94 kW) (216 Tractor)	341	AOS

CAPACITIES:

Gas Tank	3-1/2 U.S. gallons (13.248 L)
Crankcase	3 U.S. pints (1.419 L)
Transmission	3-1/2 U.S. pints (1.6555 L)

FUEL Regular grade or non-leaded gasoline with an octane rating of 85 or higher.

LUBRICANTS:*

Crankcase:

Summer (above 32°F or 0°C)	John Deere Torq-Gard Supreme SAE 30 (1/2 pt. [0.2365 L]
	AR63979, 1 at. [0.946 L] AR63218)
Winter (below 32°F or 0°C)	John Deere Torq-Gard Supreme SAE 5W-20 (1/2 pt. [0.2365 L]
	AR63980, 1 qt. [0.946 L] AR63228)
Transmission	John Deere Transmission Oil (1/2 pt. [0.2365 L] AM30200)
Hydraulic lift reservoir	John Deere All-Weather Hydrostatic Fluid (1 qt. [0.946 L]
	PT570)
Power take-off clutch bearing J	John Deere High-Temperature Grease (1 lb. [.4536]
	AT30408)
Grease fittings	John Deere Multipurpose Lubricant

*Refer to "Lubrication", pages 11 through 13, for equivalent lubricants.

AIR FILTER..... Dry-type

30 Specifications

SI		Champion type H10 (AM514T) AC type 45-L (AM1535T) Resistor-Type Champion RH10 (AM37129) Prestolite 14-L7B (AT17208)	
S	PARK PLUG GAP	0.025 in. (0.635 mm) Resistor-Type Plug 0.035 in. (0.8890 mm) Regular Plug	
В	REAKER POINT GAP	0.020 in. (0.5080 mm)	
T	IRE PRESSURES	See page 18	
G	1st gear	(@ 3400 rpm engine speed) Variable, 0.3 to 0.9 mph (0.6 to 1.6 kms/hr) Variable, 1.0 to 2.7 mph (2.1 to 4.6 kms/hr) Variable, 1.8 to 4.7 mph (3.8 to 8.0 kms/hr) Variable, 2.6 to 7.0 mph (5.5 to 11.9 kms/hr) Variable, 1.4 to 3.7 mph (2.4 to 5.3 kms/hr)	· ()
	WheelbaseOver-all lengthOver-all width (maximum)	67-1/2 in. (1.715 m) 42 in. (1.067 m)	
Ş	SHIPPING WEIGHTS (Approximate) 210 Tractor with manual lift	. 750 lbs. (341 kg) . 759 lbs. (344 kg)	

*In Canada, compliance with radio interference regulations certified. Replace spark plug with resistor-type spark plug only.

(Specifications and design subject to change without notice.)

SERIAL NUMBERS

When in need of parts or service, be prepared to give your dealer both the tractor and engine serial numbers.

The tractor serial number is located on the pedestal below the steering wheel. The engine serial number is on the engine shroud.

Locate the serial numbers now and record them in the space provided for your convenience.

Joh	n Dee	re	210	, 212	, 214	and
216	Lawn	and	d G	arde	n Tra	ctors

Tractor Model 210	212	214	216 🗆	
Tractor Serial No				
Engine Serial No				
Engine Horsepower				
Date of Purchase				

(To be filled in by purchaser)

MEMORANDA

MEMORANDA

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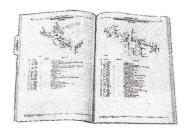
Title	Order No.	Oty.	Price Each
Parts Catalog 200, 210, 212, 214, and 216 Lawn and Garden Tractors	PC-1473		\$ 4.50
Operator's Manual 210, 212, 214, and 216 Lawn and Garden Tractors	OM-M82325		\$ 1.20
Service or Technical Manual - 200, 210, 212, 214, and 216 Lawn and Garden Tractors	SM-2105B		\$15.25

NOTE: If you want manuals or catalogs for equipment not shown on this list, list the model number, serial number and name of the equipment below.

Illinois State Residents add 5% for ROT	
Check or money order in U.S. dollars enclosed	

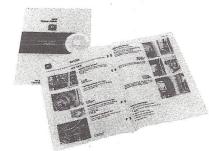
Prices subject to change without notice.

PARTS CATALOG



A parts catalog containing exploded view illustrations and lists of all parts is useful when purchasing service parts. Helps identify the correct parts. Useful in assembling and disassembling.

OPERATOR'S MANUAL



An extra copy of the operator's manual may be important if the copy furnished with your machine is misplaced.

SERVICE OR TECHNICAL MANUAL



The service or technical manual is a service guide for your machine. Included in the manual are specifications, diagnosis and adjustments, illustrations of special assembly and disassembly procedures, and wiring diagrams.

COL



John Deere is at your service when you need it

it is John Deere's objective to train all of their authorized dealer service personnel effectively so they can handle your service needs. Your dealer therefore has service technicians who are trained to give your machine the best of care. We would encourage you to use the service provided by your dealer whenever possible.

If for some reason you are unable to locate a dealer in your area, our sales branches are available to provide you with such information. The location and listing of such sales branches are listed below. Check the listing for the location nearest you.

Sales Branch

- JOHN DEERE COMPANY 2001 Deere Dr. Conyers, Georgia 30208
- JOHN DEERE COMPANY 701 Georgesville Road Columbus, Ohio 43228
- 3. JOHN DEERE COMPANY P.O. Box 20598 Dallas, Texas 75220
- 4. JOHN DEERE COMPANY 1400 - 13th Street East Moline, Illinois 61244

- JOHN DEERE LIMITED
 S. Service Road
 P.O. Box 1000
 Grimsby, Ontario, Canada L3M 4H5
- JOHN DEERE COMPANY
 3210 East 85th Street
 Southeast Station
 Kansas City, Missouri 64132
- 7. JOHN DEERE COMPANY P.O. Box 47 2105 Latham Street Memphis, Tennessee 38101

- JOHN DEERE COMPANY
 Box 855
 2001 West 94th Street
 Minneapolis, Minnesota 55440
- 9. JOHN DEERE COMPANY P.O. Box 20098 2100 N.E. 181st Avenue Portland, Oregon 97220
- JOHN DEERE COMPANY P.O. Box 4949 Court Street & Deere Road Syracuse, New York 13221

