



DEALER
SERVICE SHOP
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John Deere

Operator's Manual

Electric 90

OM-M46367

Mower

Issue H1






Safety Precautions



M 9380

This OPEI Seal certifies that your model of mower has been tested by an independent laboratory and that it complies with American National Standard B71.1.1968, "Safety Specification for Power Lawn Mowers."

 Improper use or maintenance of the Electric 90 Mower and its equipment on the part of an operator can still result in injury. To reduce this possibility, follow these safety suggestions.

Preparation

Do not allow anyone to operate your Electric 90 Mower without proper instructions.

Never allow children to operate mower.

Keep children and pets a safe distance away while mowing.

Know your controls. Read this manual carefully. Learn how to stop the traction drive and mower motors quickly in an emergency.

Make sure the lawn is clear of sticks, stones, wire and debris that could be thrown by the blades.

Set mower at highest cutting height when mowing rough ground or tall weeds.

Use care when operating mower on slopes or in wet grass.

Do not operate mower with guards removed.

Wear tight fitting clothes. Loose clothing may catch on controls.

Remove charging cord from wall receptacle before starting traction motor.

Operation

Give complete and undivided attention to the job at hand.

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

Disengage clutch and shift into neutral before starting traction drive motor.

To stop ground travel, depress both the brake and clutch pedals. The Electric 90 Mower will coast if only the clutch pedal is depressed.

Always stop ground travel before shifting gears.

Mow only in daylight or in good artificial light.

Do not allow passengers to ride on your mower.

Do not operate mower too close to a ditch or terrace. Stay alert for holes or other hidden hazards.

Shift to a lower gear to reduce speed on slopes and sharp turns. Prevent tipping or loss of control.

This machine is not for street or highway use. Watch for traffic when mowing near roadways.

Stop your Electric 90 after striking a solid object. Check for damage and make necessary repairs prior to restarting and operating.

Stop all motors, set the brake and remove the key whenever you leave the mower, even for a moment.

Use caution when towing heavy loads.

Maintenance and Storage

Disconnect a battery cable when working on the electrical system.

Frequently check all fasteners, guards, and parts. Built-in safety features are effective only if maintained.

Follow maintenance instructions in this manual. Have a competent serviceman inspect the mower each year.

Charge batteries in a ventilated area.

Keep shroud raised while charging batteries until timer returns to "OFF."

Keep flames away and avoid smoking while working around batteries to avoid fires or explosion.

Do not tip mower on end unless batteries are first removed from the mower. Acid could cause injury or machine damage.

Do not remove battery cover except to disconnect battery cables.

Do not service battery while recharging.



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To the Purchaser

Read this operator's manual before you start the motors. You will be able to do a better, safer job of mowing.

! 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 read carefully the message that follows.

The Electric 90 Mower is designed and manufactured to the traditionally high standards of John Deere. It has many quality features to bring you new mowing efficiency and convenience, as well as greater ease of operation and maintenance. If given proper care, your mower will give you long, efficient service.

The Electric 90 Mower has an electric traction drive motor to power the 3-speed transaxle. The mower is driven by two individual electric motors, one on each blade. Cutting width is 34 inches.

When in need of parts or major service, see your John Deere Consumer Products Dealer. For prompt, efficient service, give the dealer the mower serial number.

The mower serial number is located on the rear of the battery box.

Record the mower serial number in the space provided on page 17.

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

In addition to the warranty shown on the back of the purchase order, the batteries used in the Electric 90 Mower are warranted for a five year period. The batteries are warranted against defects for the first two years with a prorated charge for the last three years. This warranty does not apply if the unit is leased, used for hire, or commercial mowing.



M10533



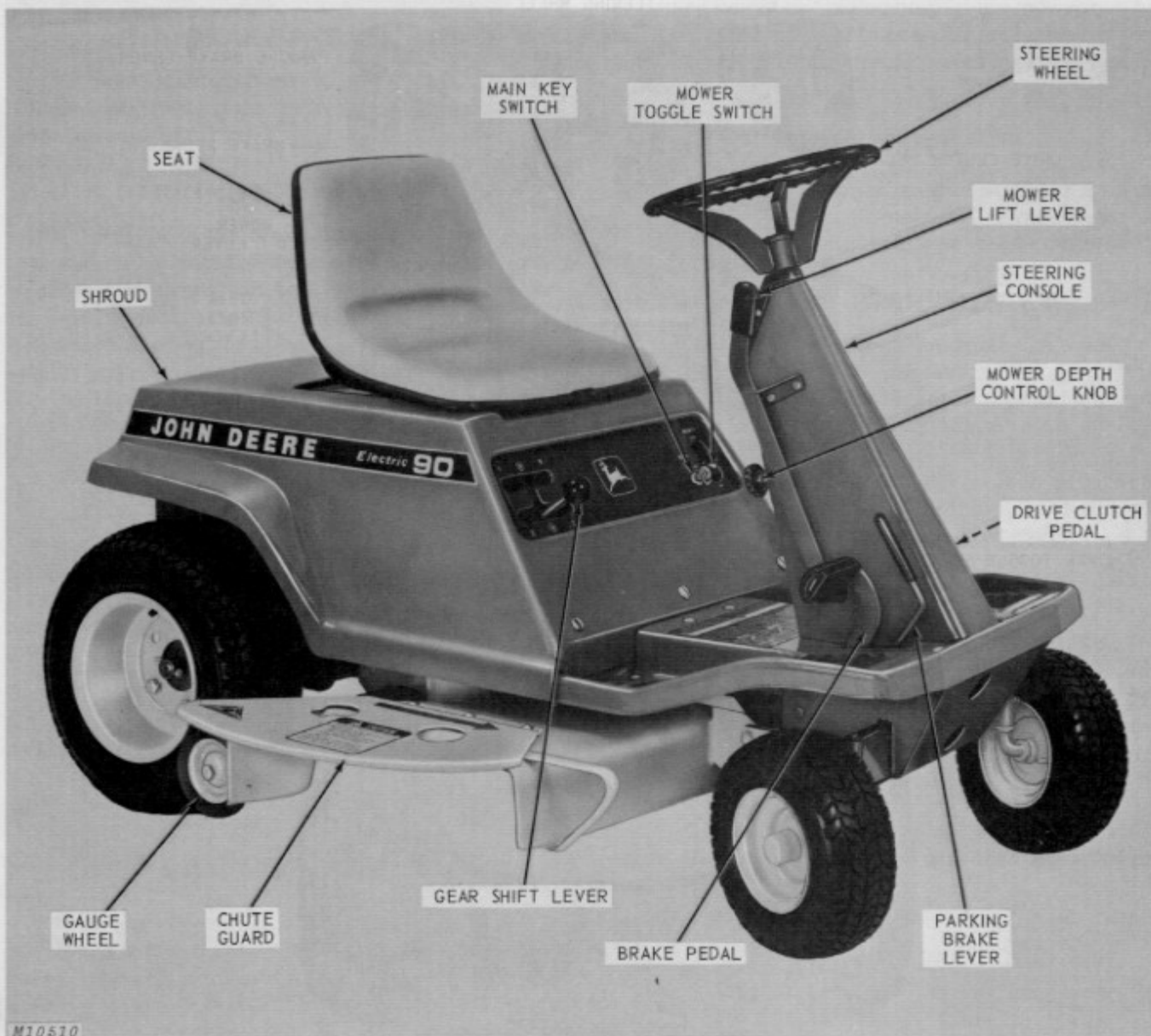
DRIVE CLUTCH PEDAL

This pedal, located at the left of the steering console, is used to engage or disengage the transaxle drive or manual travel. When depressed, the drive is disengaged. The drive clutch pedal must be depressed when starting the traction motor used to

With the mower completely lowered, the cutting height is approximately 1 inch. With the mower fully raised, the cutting height is approximately 4 inches. To lock mower in raised position, pull lever back and hold in position.

MOWER DEPTH CONTROL KNOB

Mower Identification

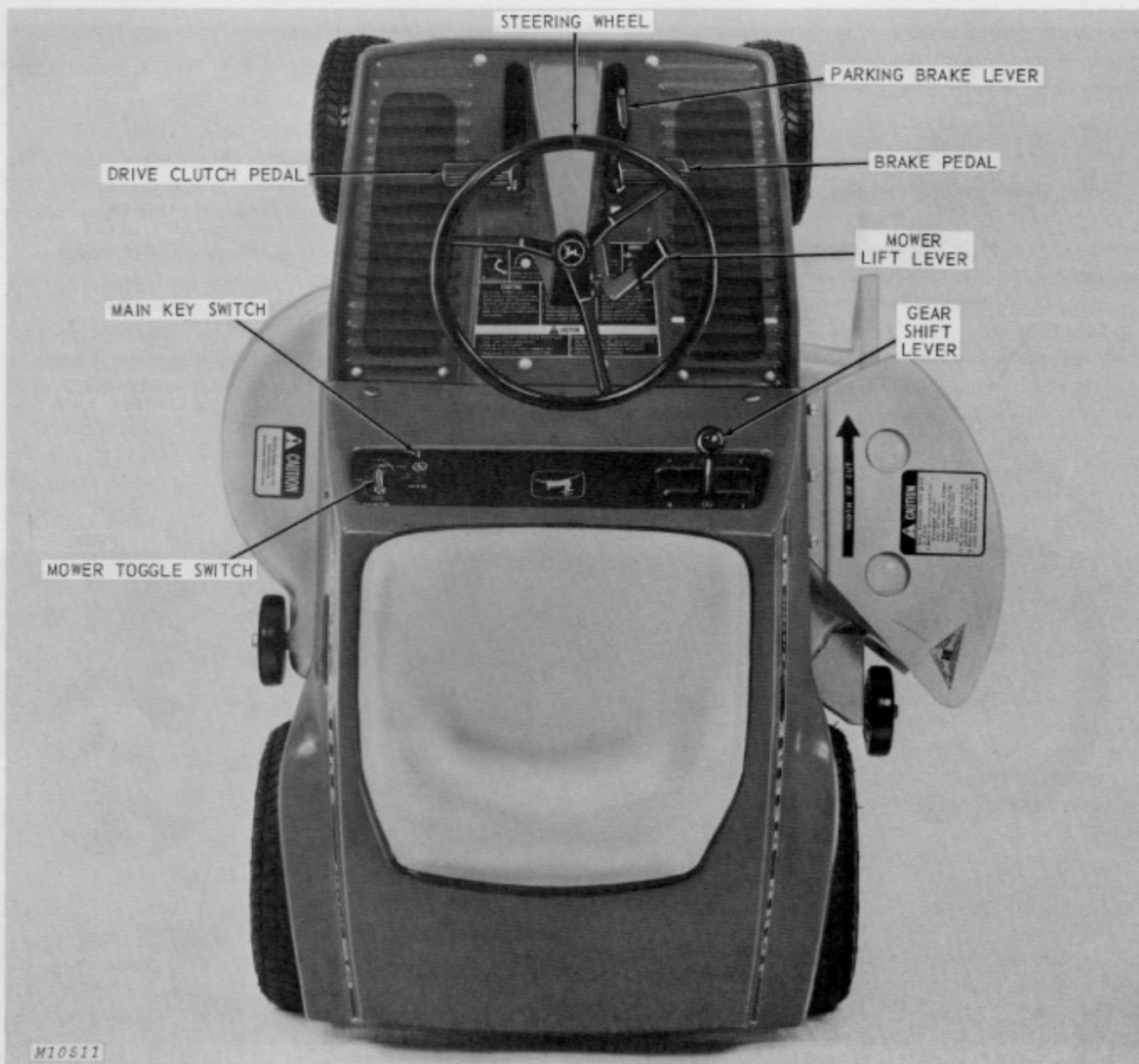


M10610

John Deere Electric 90 Mower

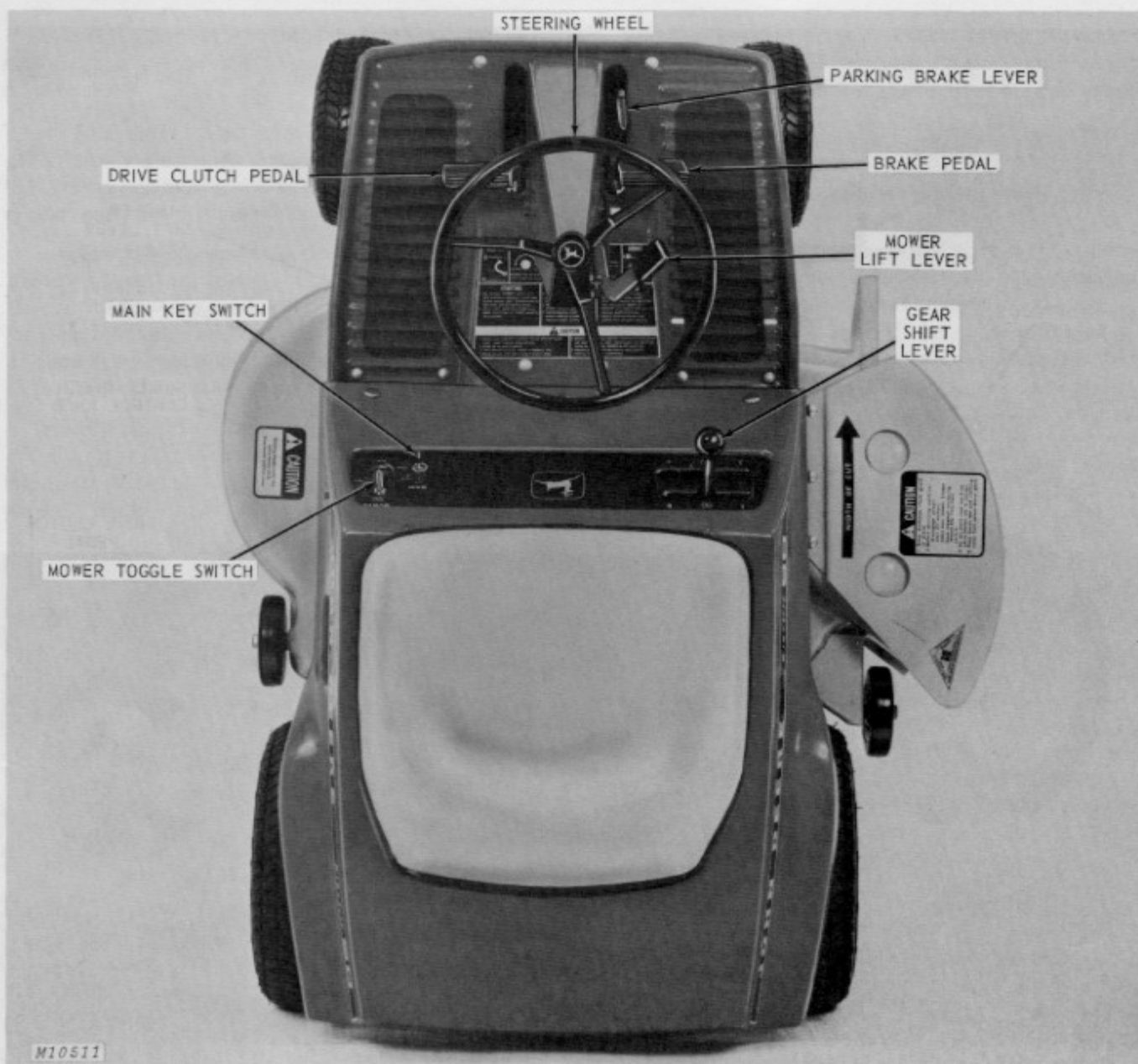


Controls





Controls



DRIVE CLUTCH PEDAL

This pedal, located at the left of the steering console, is used to engage or disengage the transaxle drive for ground travel. When depressed, the drive is disengaged. The drive clutch pedal must be depressed when starting the traction motor used to drive the transaxle. Depressing the drive clutch pedal does not stop machine. The brake pedal must be depressed to stop ground travel.

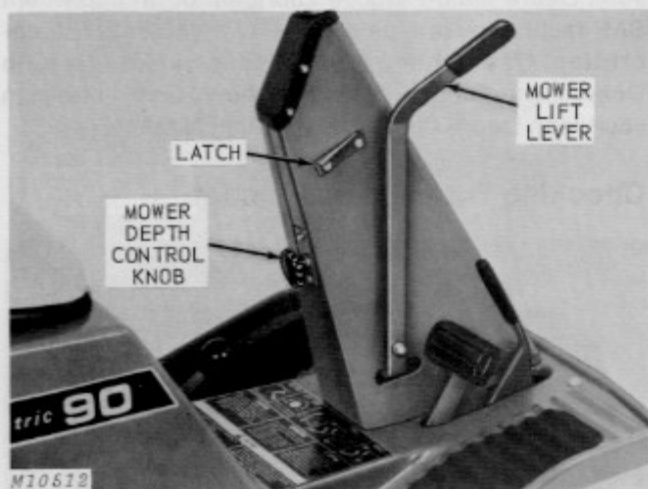
BRAKE PEDAL

This pedal, located at the right of the steering console is used to stop ground travel with the drive clutch pedal depressed.

PARKING BRAKE LEVER

This lever locks the brake for parking. To engage the lever, fully depress the brake pedal. While the pedal is fully depressed, move the lever forward to engage the pedal stop. The brake pedal is held in the depressed position. To release, depress brake pedal slightly and move lever to the rear.

MOWER LIFT LEVER



The mower lift lever, located on the right side of the steering console, is used to lower the mower to the same preset height and to lock the mower in the raised position. To lower mower, pull lever back and to the right to release lever from the latch.

With the mower completely lowered, the cutting height is approximately 1 inch. With the mower fully raised, the cutting height is approximately 4 inches. To lock mower in raised position, pull lever back and hook behind latch.

MOWER DEPTH CONTROL KNOB

The mower depth control knob is located on the rear of the steering console. It is used to preset mower cutting height by limiting how far the mower can be lowered. Turn the knob clockwise for higher mower cutting height and counterclockwise for lower mower cutting height.

SWITCHES

The main key switch is used to start the traction drive motor and stop all motors. The mower toggle switch is used to start and stop the mower motors.

NEUTRAL-START SYSTEM

Your Electric 90 Mower is equipped with a neutral-start switch on the clutch to prevent starting with the traction drive engaged. The clutch pedal must be depressed before the traction motor will start.

A safety interlock between the traction circuit and the mower circuit prevents the mower motors from running unless the traction motor is running.

GEAR SHIFT LEVER

The gear shift lever, located at the front right-hand side of the seat pedestal, is used to obtain the desired speed and direction of ground travel. ALWAYS DEPRESS the drive clutch pedal before moving the shift lever. There are 3 speeds for forward travel; one for reverse travel.

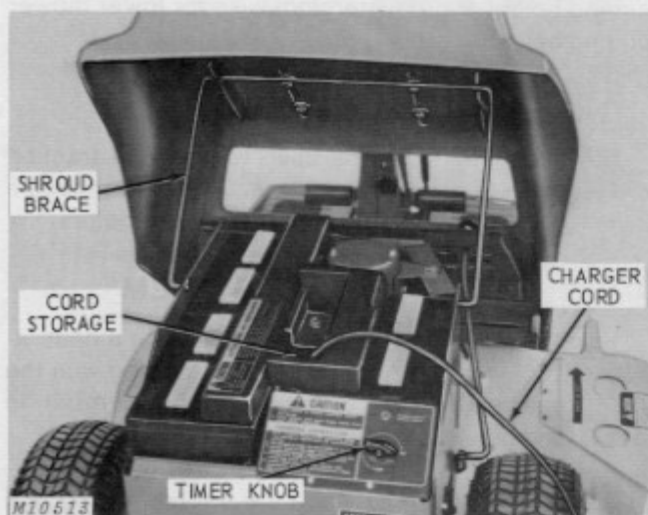


CAUTION: Do not attempt to shift gears on-the-go. Always stop ground travel before changing speeds.



Before Starting Mower

PREPARING THE MOWER



Move charger control timer knob to "OFF", if not in that position. Unplug the charger cord from the electrical outlet. Coil the cord and store it in the compartment between the batteries.

Raise the shroud slightly and pivot the shroud brace to the rear. Lower the shroud.

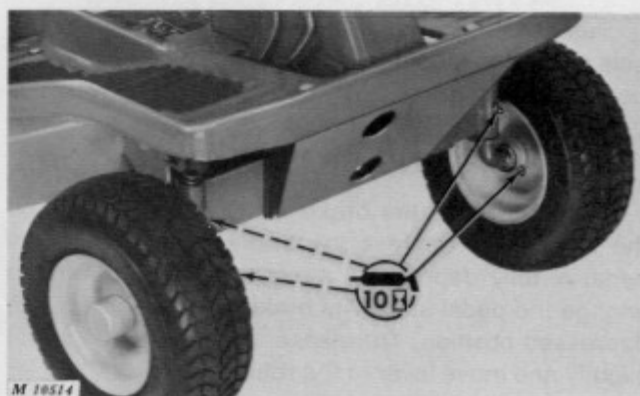
Checking Tire Pressure

Check tire pressures with a low-pressure tire gauge. Inflate front tires to 8 psi; rear tires to 6 psi.

Leveling Mower

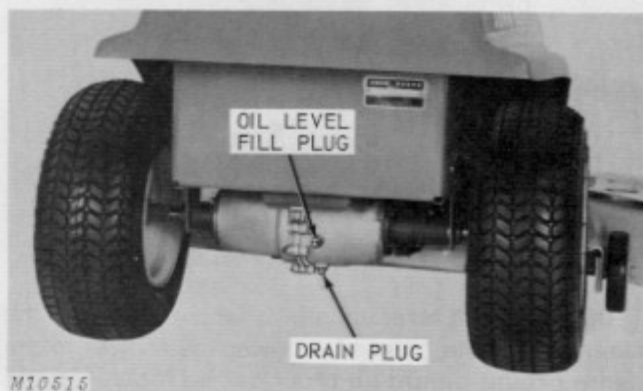
Level mower as instructed on page 12.

Lubricating Grease Fittings



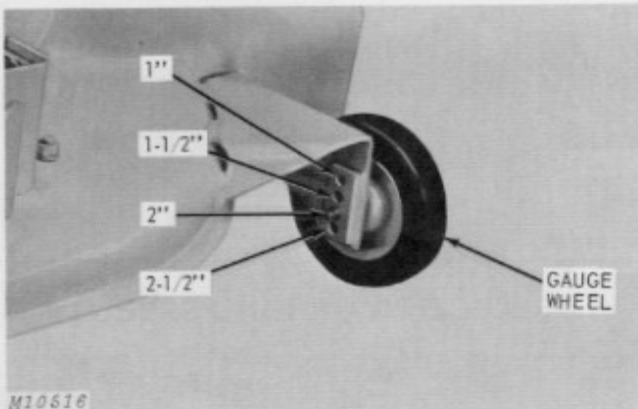
Lubricate the four grease fittings illustrated with John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease every 10 hours of operation. Use either a hand grease gun or the John Deere Pisto-Luber with flexible hose (available from your John Deere Consumer Products dealer).

Checking Transaxle Lubricant



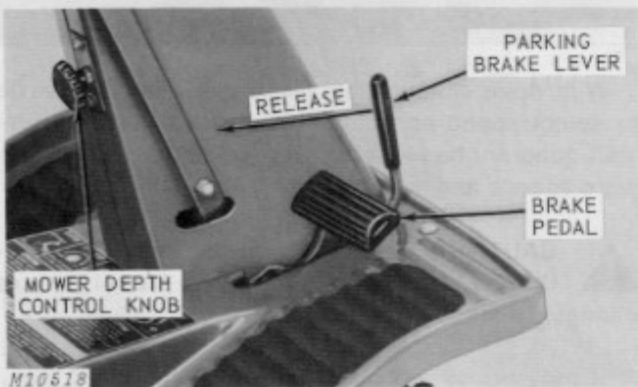
Check transaxle lubricant level periodically with mower parked on a level surface. Remove oil level-fill plug. Lubricant should be level with hole. If necessary add John Deere AM30200 Transmission Lubricant with a JD93 pressure oil can until lubricant runs out of hole. John Deere SAE 90 Gear Lubricant or an equivalent SCL multipurpose-type gear oil also can be used in the transaxle.

Adjusting Cutting Height



Cutting height is regulated by the mower depth control knob on the steering console. The gauge wheels are anti-scalp wheels only and should not carry the weight of the mower.

Adjust cutting height on a hard flat surface.



Set mower depth control knob to carry mower at the desired cutting height (See illustration).

Adjust gauge wheels by removing cap screw and positioning cap screw in hole that places gauge wheels as close to ground as possible without touching.

Both gauge wheels must be in the same position.

MOWING TIPS

Pick up and remove all rocks, wire, glass, sticks, toys and other such objects that may cause personal injury or damage to the mower.

Cutting grass at 2 or 2-1/2 inches is satisfactory for most turfgrasses. This will leave sufficient leaf area to give a neat appearing lawn.

Mow often enough so that only one-third of growth is removed at each cutting. This promotes dense growth which helps shade out weedy grasses.

Cutting less often produces dense clippings which should be removed.

When mowing dense, tall grass, it may be desirable to mow only a partial swath.

Mow with the left-hand side of the mower next to borders so clippings are discharged away from fences, flower beds, sidewalks, driveways, etc. Use first "1" gear range for slow ground speed.

RELEASING PARKING BRAKE

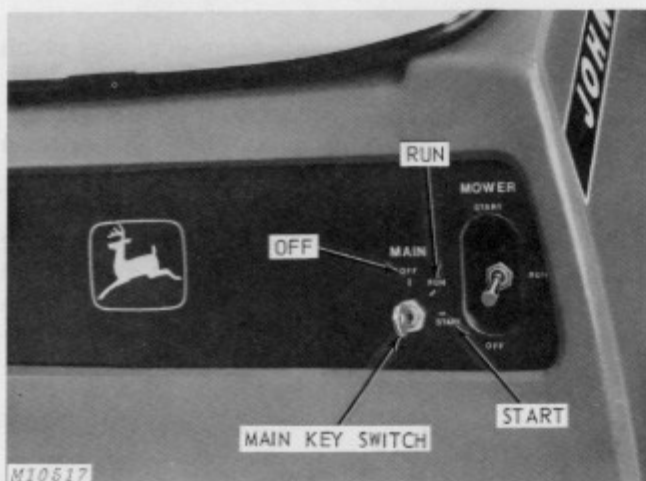


Depress the brake pedal at the right of the steering console and move the parking brake lever to the rear to release the parking brake.



Operation

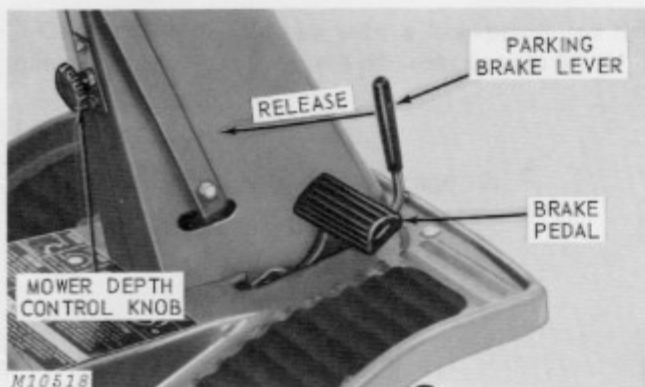
STARTING TRACTION MOTOR



Depress the drive clutch pedal at the left of the steering console.

Turn the main key switch to the "START" position to start the traction drive motor. Release the switch as soon as the motor starts. The switch will return to the "RUN" position.

RELEASING PARKING BRAKE



Depress the brake pedal at the right of the steering console and move the parking brake lever to the rear to release the parking brake.

SELECTING GROUND SPEED



With drive clutch pedal depressed, shift transaxle to select speed and direction of travel desired. The shift quadrant has a horizontal "H" pattern with 3 forward speeds and one reverse.

CAUTION: Do not attempt to shift gears on-the-go. Always stop ground travel before changing speeds.

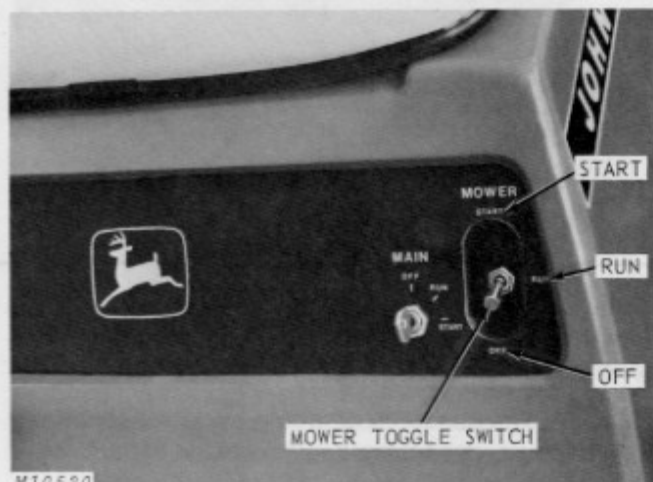
It may be necessary to let out drive clutch pedal momentarily to rotate gears for easy engagement. Release the drive clutch pedal slowly for a smooth start.

Use the first speed "1" for mowing thick or tall grass, when mowing in close quarters, or when ground is rough. Use second "2" or third "3" speed when mowing in open areas or thin grass.

CAUTION: Climb steep hills and terraces in first "1" speed to avoid need for gear changing on hillsides.

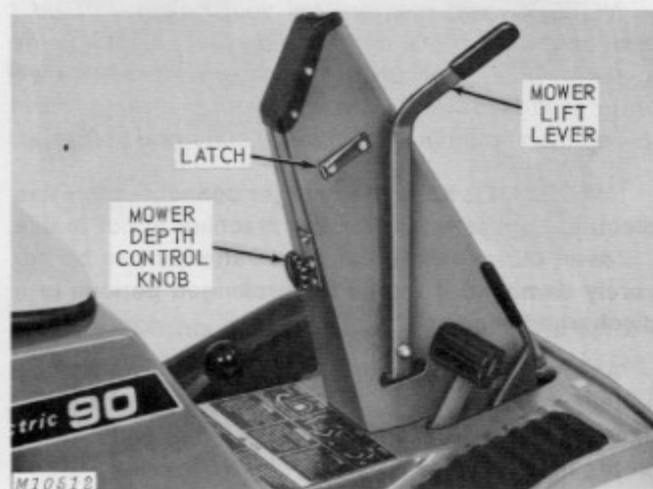
IMPORTANT: Always disengage and raise the mower when driving from one area to another.

OPERATING THE MOWER



M10520

After traction motor is running, raise mower toggle switch to the "START" position. Release switch after mower motors are running. The switch will return to the "RUN" position.



M10512

Pull slightly back and outward on the mower lift lever to release it from the latch. The lever will move forward lowering mower.

STOPPING THE MOWER

1. Fully depress drive clutch (left-hand pedal) and brake (right-hand pedal) to stop ground travel.



CAUTION: Depress **BOTH** the drive clutch pedal and the brake pedal at the same time. Depressing only the clutch or brake pedal will not stop the machine.

2. Move mower toggle switch down to "OFF" position. Pull back mower lift lever to raise mower.
3. Drive mower to storage area near electrical outlet. Stop ground travel. Shift to neutral and set parking brake lever.
4. Turn main key switch to vertical "OFF" position and remove key.
5. Raise shroud, and pivot brace upward to hold shroud in raised position.

Charge batteries according to instructions on page 10.

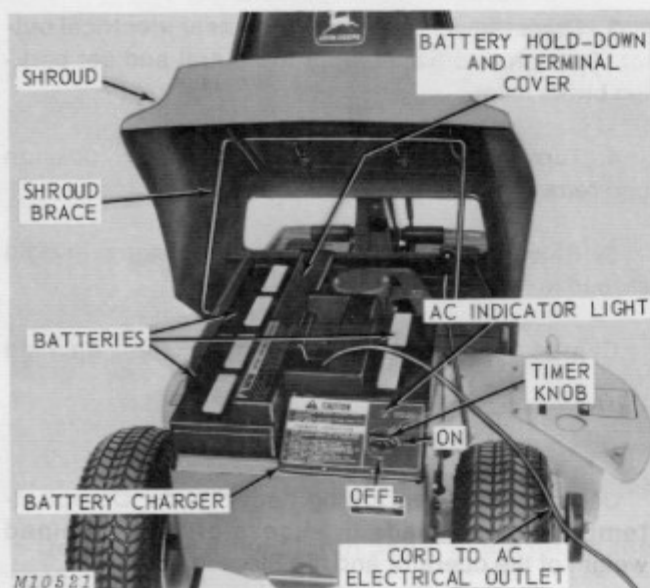
TOWING LOADS

Use caution when towing heavy loads. Do not attempt to move loads in excess of the combined weight of the operator and the Electric 90 Mower.



General Maintenance

CHARGING THE BATTERIES



As soon as you finish using your John Deere Electric 90 Mower, raise the shroud and pivot the brace forward to hold the shroud in the raised position.

CAUTION: Highly combustible hydrogen gas is vented from the batteries during the charging cycle. Keep the shroud raised while charging batteries until timer returns to "OFF." Charge batteries in ventilated area. Keep flames away from and do not smoke around batteries.

To charge batteries, remove the charge cord from the storage compartment between the batteries and plug it into a grounded alternating current (AC) outlet supplying at least 105 to 130 volts.

When the red indicator light glows, electrical current is being supplied to the charger. If the light does not glow, check supply circuit for blown fuses, a tripped circuit breaker, or to see that a controlling wall switch is not in the "OFF" position.

Turn the timer knob clockwise to the "ON" position to start the charging cycle. The timer will not be activated until batteries reach approximately 80 percent of full charge. The timer will then operate for an addi-

tional six hours to fully charge the batteries. When the batteries are fully charged, the timer will automatically return to the "OFF" position shutting itself off.

NOTE: The complete charging cycle will take from 6 to 12 hours, depending upon condition of batteries.

The charger also contains an automatic timer that turns the charger on once every 24 hours to permit a 12- to 15-minute boost charge. This keeps the batteries at full charge at all times. Only one full charge is required after each mowing.

NOTE: Should memory fail you, however, (Did I turn on the timer last night or did I just plug it into the outlet?) reset timer. Be sure to raise shroud. As it will not damage batteries, it is better to charge them twice, than let them remain in a discharged condition.

IMPORTANT: Keep the charger connected to a live electrical outlet whenever the machine is not in use . . . even during winter storage. Batteries can be severely damaged if stored for prolonged periods in a discharged condition.

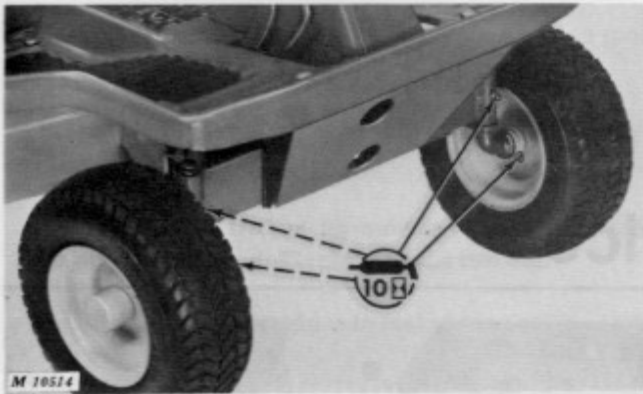
As long as the charger is plugged into the electrical outlet, the indicator light will glow. Movement of the timer knob is not noticeable due to the length of the charging cycle.

It is normal for the charger to become warm while in operation. A thermostat within the charger, prevents machine damage in the event the charger becomes too warm. The thermostat works much in the same manner as a circuit breaker. Keeping the shroud raised and the air passage in the battery cover open helps in cooling the charger.

The shroud does not have to be in the raised position after the timer has returned to the "OFF" position. The shroud can be lowered during the daily automatic charging cycles.

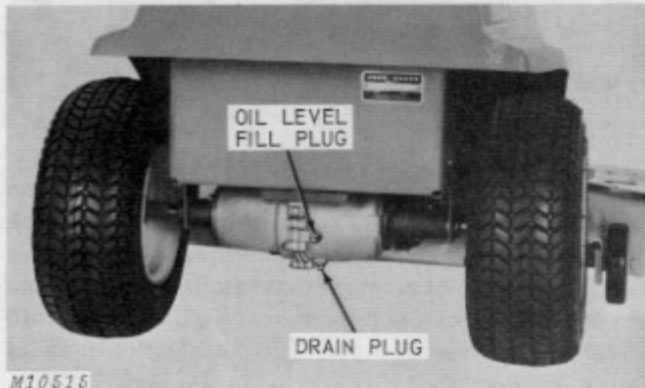
CAUTION: Do not charge batteries with any other charger. Do not use the mower batteries to start other vehicles. Battery damage will result.

LUBRICATING GREASE FITTINGS



Lubricate the grease fittings illustrated above every 10 hours of operation. See page 6.

CHANGING TRANSAXLE LUBRICANT



Every 200 hours or two years, whichever comes first, remove transaxle drain plug and drain all oil. Replace plug and add three 8-ounce cans of AM30200 Transmission Lubricant or its equivalent through oil-level fill hole.

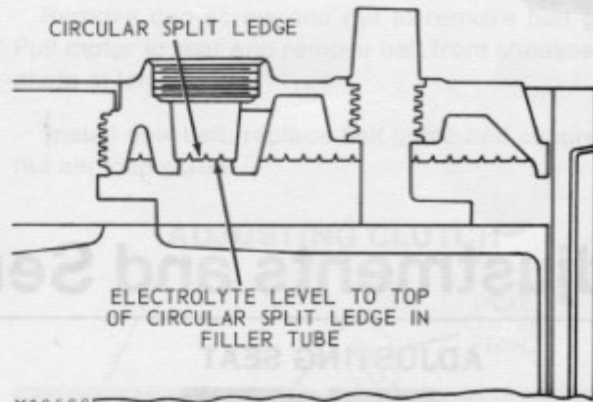
John Deere SAE 90 Gear Lubricant or an equivalent SCL multipurpose-type gear oil can be used in the transaxle.

LUBRICATING STEERING MECHANISM

At the beginning of each mowing season lubricate steering wheel shaft bushings and steering gear pivot with oil.

CHECKING BATTERIES

Check electrolyte level periodically (at least once each month). If necessary, add distilled water to bring level to top of circular split ledge in filler tube.



CAUTION: Battery electrolyte is poisonous and can be injurious to eyes, skin and clothing. Handle it carefully. If electrolyte is spilled, flush immediately with a solution of one part baking soda to four parts water.

Keep battery terminals clean and free of corrosion. Coat terminals with petroleum jelly. Keep connections tight to prevent arcing and pitting.

IMPORTANT: Connect charger cord to an electrical outlet and turn timer to "ON" after each use, no matter how short a time, to maintain full battery charge. Leave cord plugged in at all times except during use. See page 10.

SERVICING MOWER BLADES

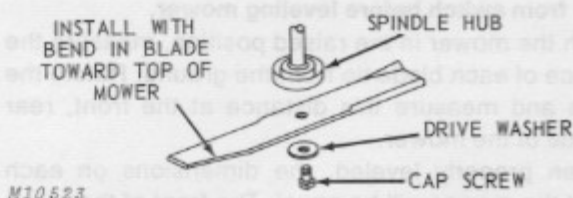
Keep blades sharp and in balance for uniform mowing with a minimum of power.

CAUTION: Turn key to "OFF" and remove key from switch before removing blades.

Remove blades by removing cap screws and washers.

Sharpen blades leaving a 1/64-inch dull tip on the cutting edge. A razor-sharp cutting edge will roll over and dull more quickly. Maintain original bevel. Remove an equal amount of material from each end of the blade to maintain proper balance. Replace blade if extensively damaged or out of balance.

Excessive mower vibration indicates blades are out of balance or improperly installed.

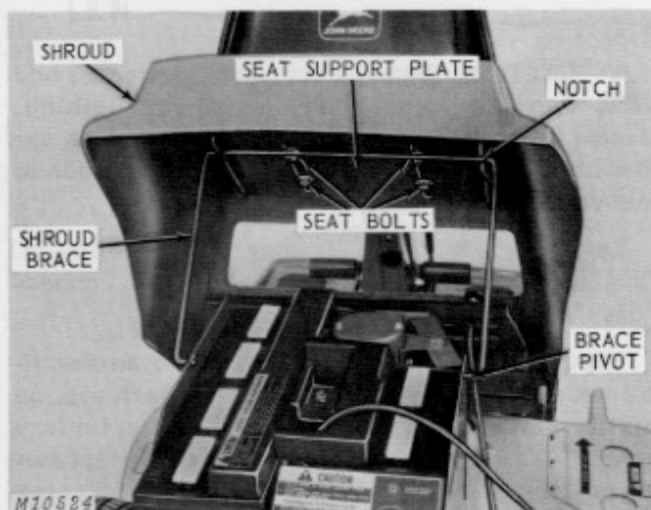


Install blades as illustrated. Tighten cap screws to 55 foot-pounds torque.



Adjustments and Service

ADJUSTING SEAT



The seat may be adjusted to suit operator comfort.

Raise the shroud and pivot shroud brace upward. Loosen the cap screws holding the seat. Lower shroud and slide seat forward or backward as desired. Then raise shroud again and tighten cap screws.

When the seat bolts are loosened, the seat support plate is loosened and is free to slide. Therefore, the shroud must be lowered so that the notches in the plate fit over the brace pivots, holding the plate in place while the seat is moved.

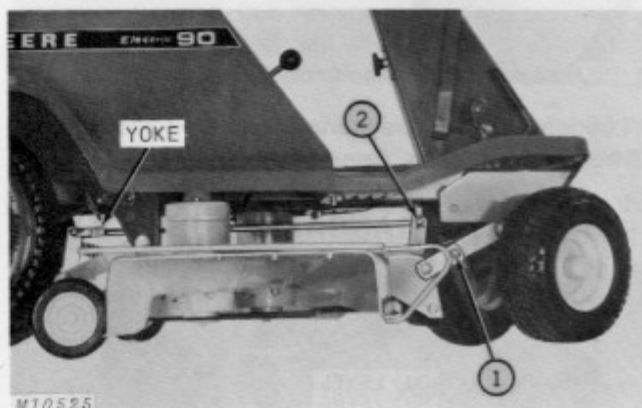
LEVELING MOWER

Park the mower on a flat surface such as a sidewalk or concrete driveway. Check to see that tires are inflated equally.

CAUTION: Turn key to "OFF" and remove key from switch before leveling mower.

With the mower in the raised position, measure the distance of each blade tip from the ground. Rotate the blades and measure this distance at the front, rear and side of the mower.

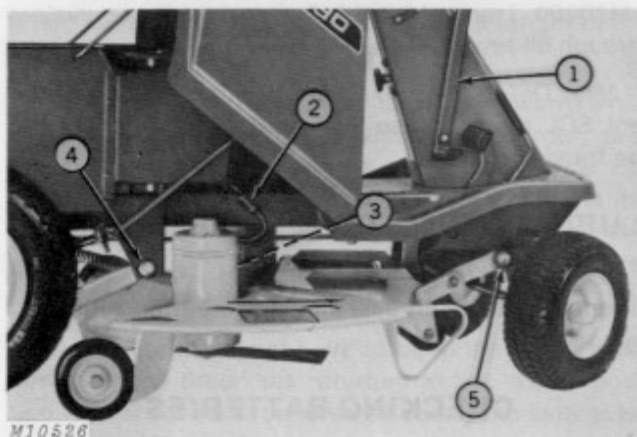
When properly leveled, the dimensions on each side of the mower will be equal. The front of the mower should be 1/8-inch to 1/4-inch lower than the back for most efficient cutting.



1. To adjust for side-to-side level, loosen bolt on right front draft arm and raise or lower mower deck until blades are level. Tighten nut firmly.

2. To adjust for rear-to-front pitch, pull cotter pin in rod and remove rod from bracket. Turn rod into yoke to raise rear of mower, or out of yoke to lower rear of mower.

REMOVING AND INSTALLING MOWER



To remove mower:

1. Lower mower with lift lever.
2. Raise shroud and disconnect both mower motors.
3. Pull spring-locking pin and remove drilled pin to disconnect lift cable yoke.

4. Pull spring-locking pin and remove drilled pin in rear draft link.

5. Pull spring-locking pins and remove drilled pins in front of machine.

6. Partially raise front of machine to remove mower.

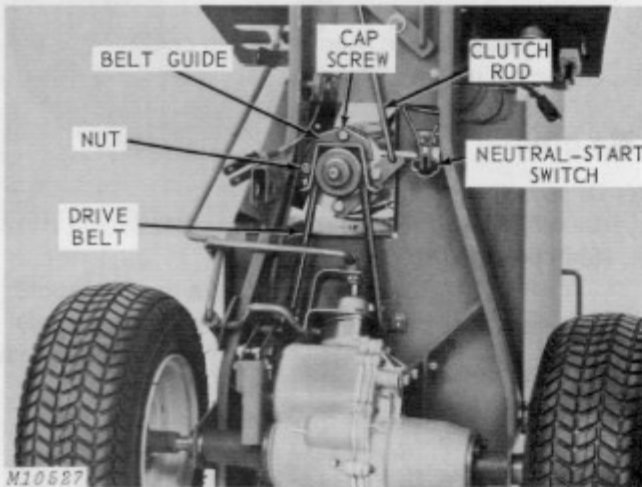
CAUTION: Do not tip mower on end with batteries installed. Electrolyte will run out.

Reverse above procedure to install mower.

SERVICING TRANSAXLE

If transaxle is inoperative or operates erratically, see your John Deere Consumer Products Dealer.

REPLACING NEUTRAL-START SWITCH



M10527
Mower Removed for Clarity

CAUTION: Do not tip mower on end with batteries installed. Electrolyte will run out.

1. Disconnect wires from switch terminals.
2. Remove cap screw holding bracket to frame. Remove switch.

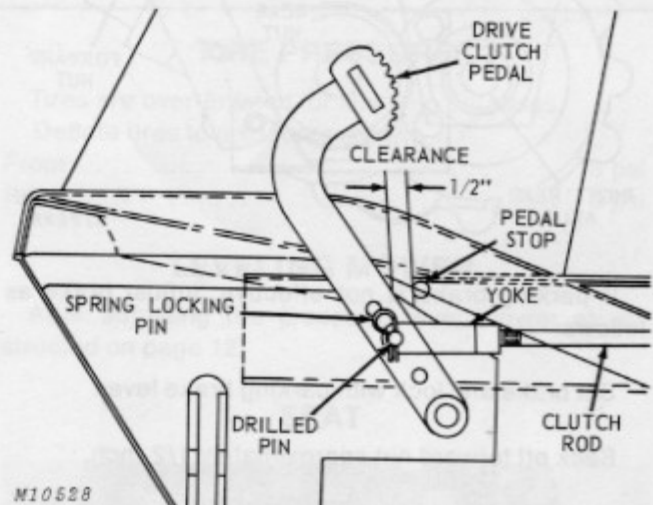
NOTE: Be sure to install switch arm behind clutch rod linkage when installing new switch.

REPLACING DRIVE BELT

Remove cap screw and nut to remove belt guide. Pull motor to rear and remove belt from sheaves. See photo at left.

Install new belt, replace belt guide and secure with nut and cap screw.

ADJUSTING CLUTCH



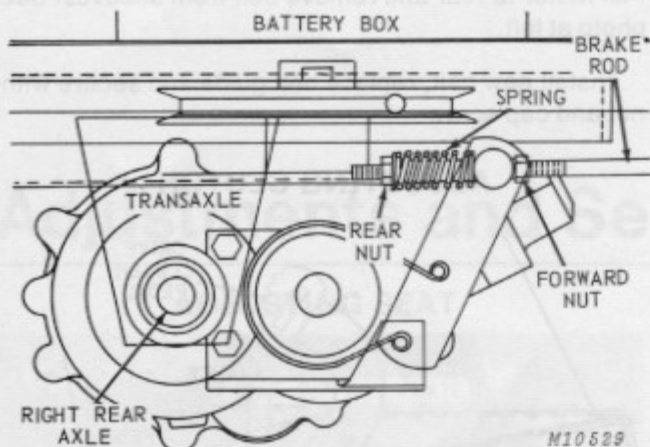
The drive clutch pedal should be adjusted to have approximately 1/2-inch of clearance between the back edge of pedal and the pedal stop when in the "Engaged" position.

To adjust, remove the spring-locking pin securing the drilled pin; remove the drilled pin.

Turn the yoke off the clutch rod to increase clearance, and onto the clutch rod to decrease clearance.

Install the drilled pin in the center hole of clutch pedal and secure the spring-locking pin.

ADJUSTING BRAKE



M10529

If parking brake is not effective, adjust brake as follows:

Set brake and lock with parking brake lever.

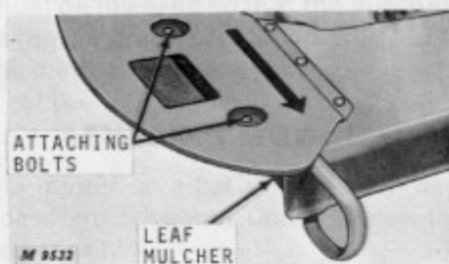
Back off forward nut approximately 1/2-inch.

Tighten rear nut until spring is completely compressed; then, back off four to five turns.

Tighten forward nut.

NOTE: If excessive pedal pressure is required to set parking brake lever, rear nut may be backed off additional turns.

ATTACHING LEAF MULCHER PLATE (Extra Equipment)



M 9532

Install the leaf mulcher plate with 1/4 x 1/2-inch carriage bolts and 1/4-inch wing nuts.

STORAGE

Clean all dirt and grease from your Electric 90 Mower. Repaint chipped or rusted spots.

IMPORTANT: Leave battery charger connected to electrical outlet to maintain batteries at full charge. See page 10.

TROUBLE SHOOTING

Traction drive motor won't start

- Batteries discharged.
- Drive clutch not depressed.
- Motor overheated. Allow it to cool.
- Defective main key switch or neutral-start switch.

Mower motors won't start

- Traction drive motor not running.
- Motors overheated. Allow them to cool.
- Defective mower solenoid.

No ground travel

- Drive belt broken.
- Clutch linkage broken.
- Shift linkage broken.

Batteries not recharged

- Charger not working.
- No power to charger.

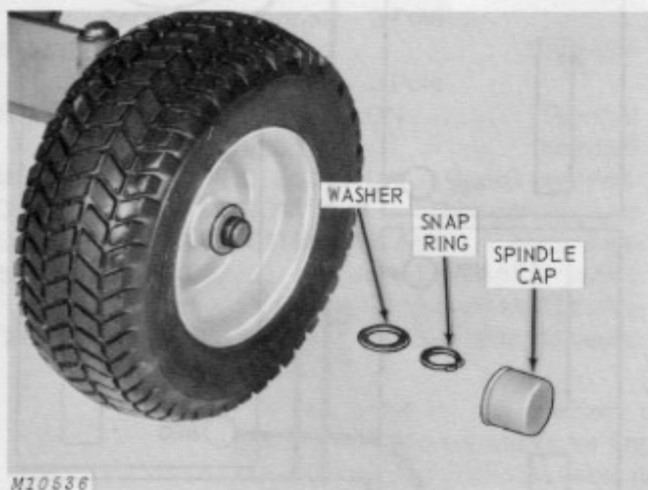
Uneven mowing

- Tires not inflated properly. See page 6.
- Mower not leveled properly. See page 12.
- Reduce ground speed on rough ground so mower does not bounce.



Assembly

FRONT WHEELS



Block up front axle.

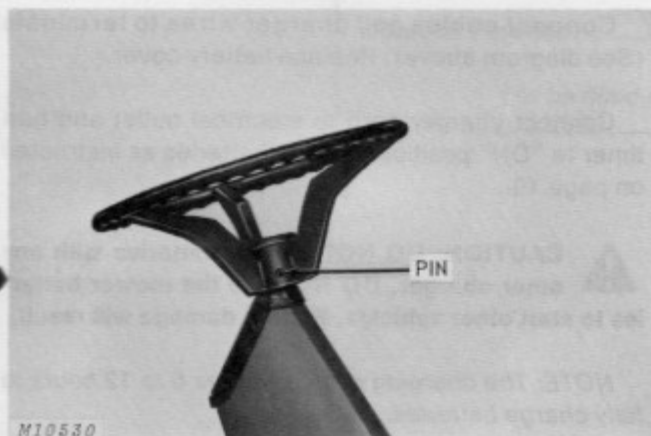
Grease axle and install wheel with valve stem toward mower.

Place washer on axle.

Install snap ring with sharp edge outward.

Press spindle cap over wheel hub.

STEERING WHEEL



Remove pin from steering shaft.

Install steering wheel on shaft and insert pin.

TIRE PRESSURE

Tires are over-inflated for shipping purposes.

Deflate tires to pressures shown:

Front	8 psi
Rear	6 psi

LEVELING MOWER

After adjusting tire pressure, level mower as instructed on page 12.

SEAT



To remove shroud from chassis, raise rear of shroud. Lift front of shroud slightly to unhook pivot arms. Move shroud to rear and lift to remove.

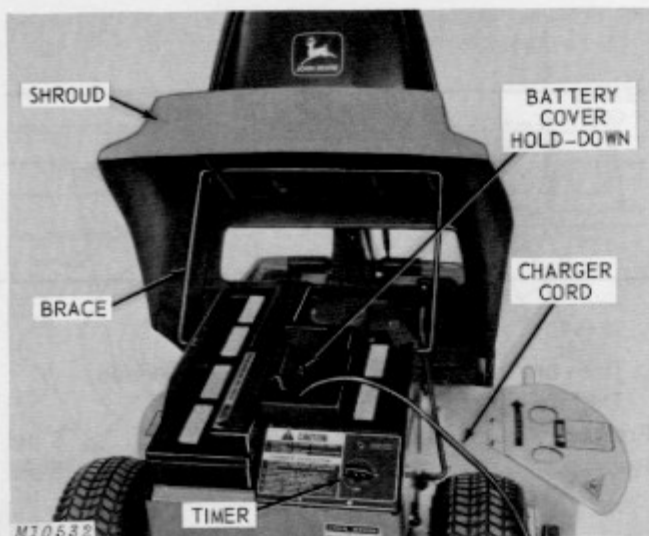
Lay seat upside down on edge of bench or table. Place flat washer over each hole.

Place shroud over seat. Place support plate inside shroud with notched flange to rear.

Use flat washers on cap screws and insert cap screws through slotted holes into seat.

Replace shroud. Adjust seat and tighten cap screws as instructed on page 12.

ACTIVATING BATTERIES



Raise shroud and pivot brace forward to hold shroud in raised position.

Remove charger cord from storage compartment.

Depress battery cover hold-down and turn 1/4-turn right or left to unhook hold-down from base. Lift cover off.

Disconnect cables and charger wires from battery terminals. Remove batteries from compartment.

IMPORTANT: Be sure to remove batteries before filling with electrolyte. This will prevent accidental damage in case of acid spill.

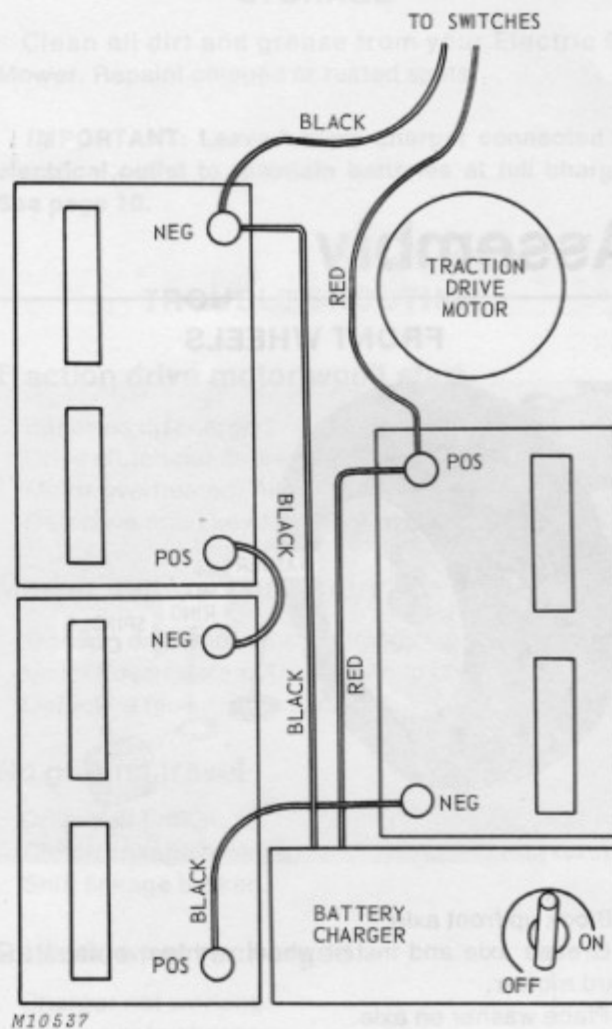
Add electrolyte to top of circular split ledge in filler tubes. See page 11.

CAUTION: Battery electrolyte is poisonous and can be injurious to eyes and clothing. Handle it carefully. If spilled, clean with a solution of one part baking soda to four parts water.

Electrolyte is not furnished with the Electric 90 Mower. It is available from your Parts Depot in the following quantities:

Part No.	Description
4098522	5 gallons
4098532	6 quarts
409240	Hose for 5 gallon package

Use only battery grade sulfuric acid electrolyte with 1.265 specific gravity plus or minus 0.005 corrected to 80 degrees Fahrenheit.



Battery Wiring Diagram

Clean and dry batteries and install in battery compartment.

Connect cables and charger wires to terminals (See diagram above). Replace battery cover.

Connect charger cord to electrical outlet and turn timer to "ON" position. Charge batteries as instructed on page 10.

CAUTION: DO NOT charge batteries with any other charger. DO NOT use the mower batteries to start other vehicles. Battery damage will result.

NOTE: The charging cycle requires 6 to 12 hours to fully charge batteries.



Specifications

TRACTION MOTOR 2400 rpm
Permanent Magnet - 2 Pole
MOWER MOTORS (2) 3200 rpm
Permanent Magnet - 2 Pole
TRACTION MOTOR PROTECTION Thermal
overload
MOWER MOTOR PROTECTION Circuit breakers
CHARGER PROTECTION Thermal overload
ELECTRICAL PROTECTION, 100 AMP .. Metal fuse
BATTERIES* (3) John Deere 55 amp-hr.,
12 volt (AM33995)
CHARGING TIME 100% - 6 to 12 Hours

TRANSAXLE LUBRICANT SAE 90
AM30200 Lubricant
TRANSAXLE CAPACITY 24 oz.
TRANSAXLE 3 forward speeds;
1 reverse
BRAKE Band type on transaxle,
pedal operated

TIRE PRESSURES

Front - 11x4.00-5 8 psi
Rear - 16x6.50-8 6 psi

* The batteries are specially designed and constructed for motive power and are not suitable for engine starting service. Likewise, starter service batteries are not suitable for motive power service.

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

John Deere Electric 90 Mower

Mower Serial No. _____

Date of Purchase _____

(To be filled in by purchaser)

JOHN DEERE



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