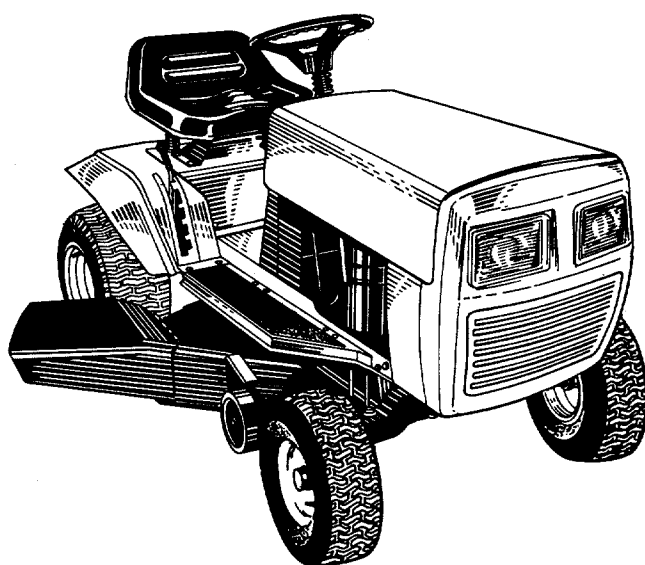


OWNER'S GUIDE

ASSEMBLY • OPERATION • MAINTENANCE



TRANSMATIC FRONT ENGINE LAWN TRACTORS

Model Series
300 and 400
Lawn Tractors

Important: Read Safety Rules and Instructions Carefully



WARNING: This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator.

In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. A spark arrester for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 360900, Cleveland, Ohio 44136.

IMPORTANT

RULES FOR SAFE OPERATION



THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH, IF NOT FOLLOWED, COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE YOUR UNIT. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY. WHEN YOU SEE THIS SYMBOL—



HEED ITS WARNING.



DANGER:

Your unit was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. If you violate any of these rules, you may cause serious injury to yourself or others.

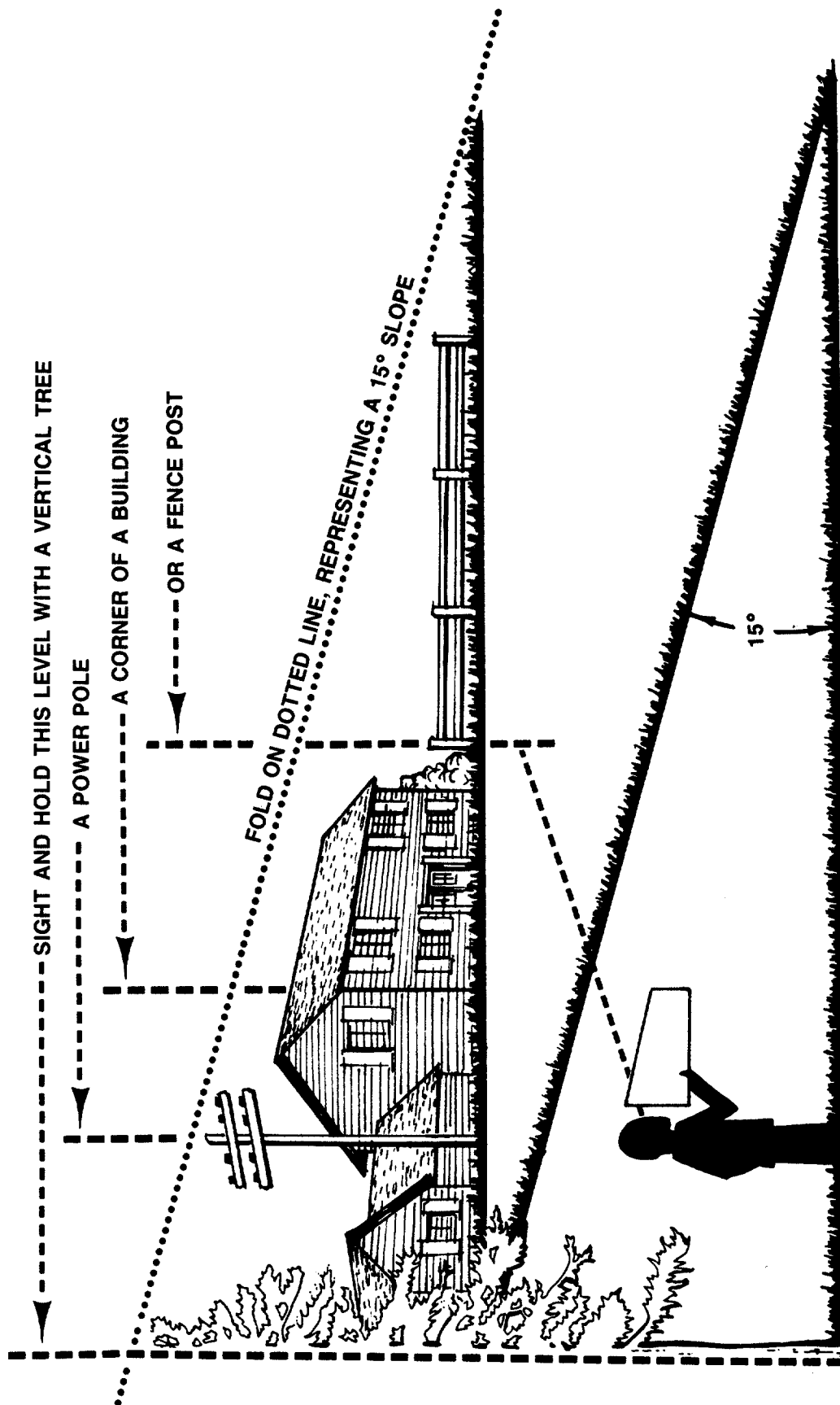
1. READ THIS OWNER'S MANUAL carefully in its entirety before attempting to assemble or operate this unit. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. This unit is a precision piece of power equipment, not a plaything. Therefore exercise extreme caution at all times.
3. Know the controls and how to stop the machine quickly.
4. Do not allow children under 14 years old to operate vehicle. Children 14 years and over should only operate unit under close parental supervision. Do not allow anyone to operate it without proper instruction. Only persons well acquainted with these rules of safe operation should be allowed to use your mower.
5. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Do not wear loose fitting clothes or jewelry. They can be caught in moving parts. Never operate a unit in bare feet, sandals, or sneakers.
6. To prevent injury, do not carry passengers or give rides. Keep children, pets and bystanders out of the area while mowing. Only the operator should ride on the unit and only ride in the seat.
7. Check overhead clearance carefully before driving under power lines, guy wires, bridges or low hanging tree branches, before entering or leaving buildings, or in any other situation where the operator may be struck or pulled from the unit, which could result in serious injury.
8. To maintain control of the unit and reduce the possibility of upset or collision, operate the tractor smoothly. Avoid erratic operation and excessive speed.
9. Thoroughly inspect the area to be mowed. Remove all stones, sticks, wire, bones and other foreign objects. Keep the area of operation clear of all persons, particularly small children and pets. Stop engine when they are in the vicinity of your mower. Although the area of operation should be completely cleared of foreign objects, a small object may have been overlooked and could be accidentally thrown by the mower in any direction and cause injury to you or a bystander. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders, pets and the like.
10. Always wear safety glasses or eye shields during operation or while performing an adjustment or repair, to protect eyes from foreign objects that may be thrown from the machine in any direction.
11. Stop the blade(s) when crossing gravel drives, walks or roads.
12. Disengage all attachment clutches, thoroughly depress the brake pedal, and shift into neutral before attempting to start engine.
13. Before leaving the operator's position, disengage blade(s), place shift lever in neutral, engage parking brake, shut engine off and remove key.
14. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times as the rotating blade(s) can cause injury.
15. Disengage power to attachment(s) and stop engine before making any repairs or adjustments. Disconnect the spark plug wire and keep the wire away from the plug to prevent accidental starting.
16. Before attempting to unclog the mower or discharge chute, stop the engine. The mower blade(s) may continue to rotate for a few seconds after the engine is shut off. Therefore, be sure the blade(s) have stopped completely. Disconnect the spark plug wire and keep the wire away from the plug to prevent accidental starting.
17. Disengage power to attachment(s) when transporting or not in use.
18. For your safety, use the slope gauge included as part of this manual to measure slopes before operating this unit on a sloped or hilly area. If the slope is greater than 15° as shown on the slope gauge, do not operate this unit on that area or serious injury could result.
19. Do not stop or start suddenly when going uphill or downhill. Mow up and down face of steep slopes; never across the face. Use extreme caution if it is necessary to drive the tractor up an incline or back the tractor down an incline because the front of the tractor could lift and rapidly flip over backward which could cause serious injury.
20. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Always keep the tractor in low gear when going down steep hills to take advantage of engine braking action. Choose a low enough gear so that you will not have to stop or shift while on the slope.
21. Stay alert for holes in terrain and other hidden hazards which may cause the unit to tip over.
22. Use care when pulling loads or using heavy equipment.
 - A. Use only approved drawbar hitch points.
 - B. Limit loads to those you can safely control.
 - C. Do not turn sharply. Use care when backing.
 - D. Use counterweight(s) or wheel weights when suggested in owner's manual.
23. Watch out for traffic when crossing or near roadways.
24. When using any attachments, never direct discharge of material toward bystanders nor allow anyone near vehicle while in operation.
25. Handle gasoline with care. It is highly flammable.
 - A. Extinguish cigarettes, cigars, pipes and all other sources of ignition.
 - B. Use approved gasoline container.
 - C. Never remove cap or add gasoline to a running or hot engine or fill fuel tank indoors. Allow to cool at least 2 minutes before refilling. Wipe up spilled gasoline. Always use original type vented cap.
 - D. Open doors if engine is run in garage. Exhaust fumes are dangerous. Do not run engine indoors.
26. Never store the machine with fuel in the fuel tank inside a building where fumes may reach an open flame or spark, such as hot water and space heaters, clothes dryers, and the like. Allow the engine to cool before storing in any enclosure.
27. To reduce fire hazard, keep engine and cutting deck free of grass, leaves or excessive grease or oil.
28. Keep the vehicle and attachments in good operating condition, and keep safety devices in place. Use guards as instructed in operator's manual. Do not operate this unit unless the chute deflector, guards, and safety interlock system are installed and functioning properly.
29. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
30. The vehicle and attachments should be stopped and inspected for damage after striking a foreign object. The damage should be repaired before restarting and operating the equipment.
31. Do not change the engine governor settings or overspeed the engine.

(continued on page 5)

SLOPE GAUGE

(Keep this sheet in a safe place for future reference.)

USE THIS SHEET AS A GUIDE TO DETERMINE SLOPES WHERE YOU MAY NOT OPERATE SAFELY.



Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2½ feet every 10 feet). A riding mower could overturn and cause serious injury. If operating a walk-behind mower on such a slope, it is extremely difficult to maintain your footing and you could slip, resulting in serious injury.

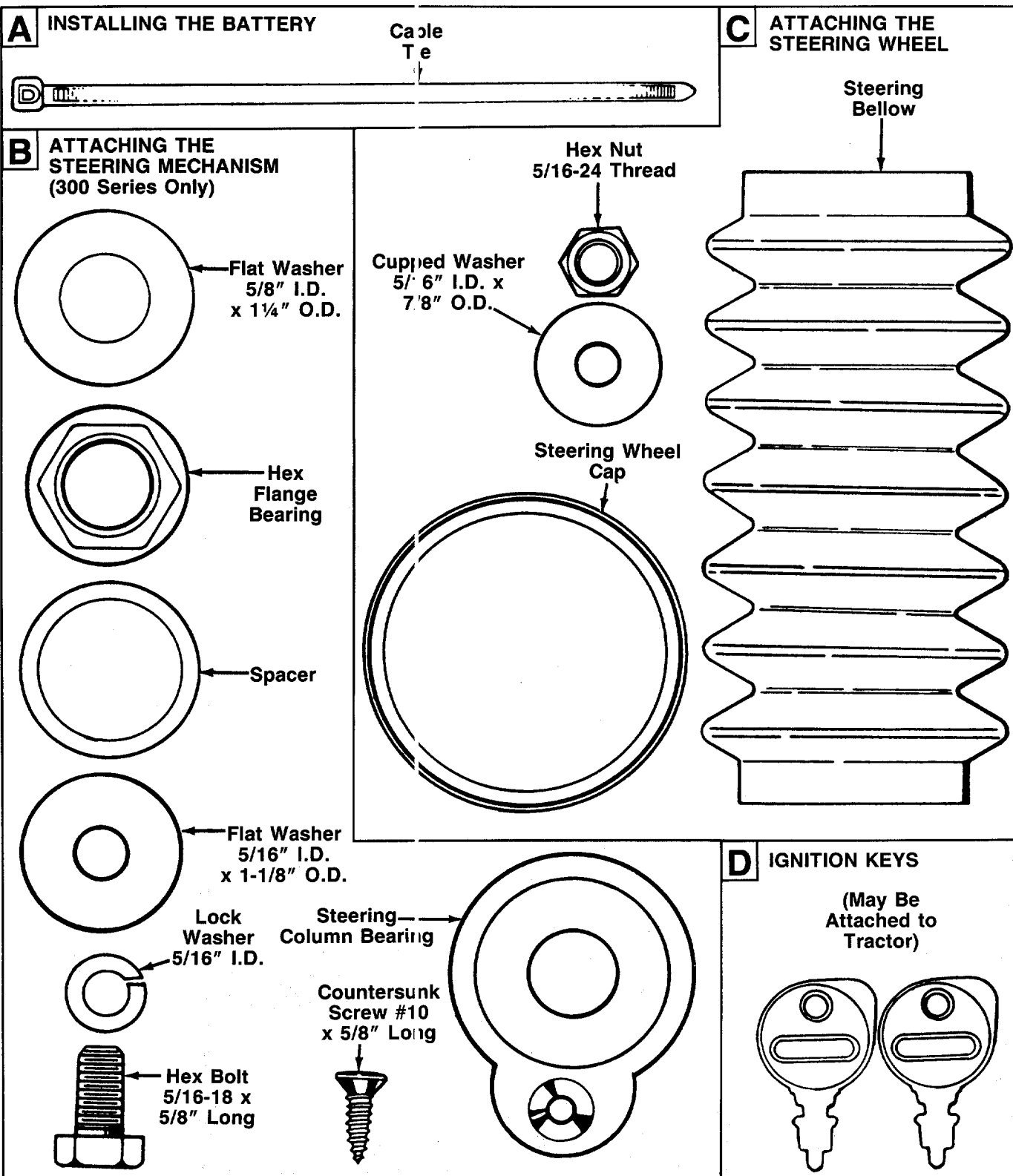
Operate RIDING mowers up and down slopes, never across the face of slopes.

Operate WALK-BEHIND mowers across the face of slopes, never up and down slopes.

CONTENTS OF HARDWARE PACK

Remove this sheet from your owner's manual and lay the hardware on the illustration for identification purposes. After assembly, keep the Slope Gauge which is on the reverse side of this sheet for future use.

(Hardware pack may contain extra items which are not used on your unit. Part numbers are shown in parentheses.)



Cut Along this Line

RULES FOR SAFE OPERATION (CONTINUED)

32. When using the vehicle with mower, proceed as follows:
 - A. Mow only in daylight or in good artificial light.
 - B. Never make a cutting height adjustment while engine is running if operator must dismount to do so.
 - C. Shut the engine off and wait until the blade comes to a complete stop before removing the grass catcher.
 - D. Check blade mounting bolts for proper tightness at frequent intervals. Also, check blades for wear or damage (e.g. bent, cracked). Replace with blade which meets original equipment specifications.
33. Check grass catcher bags frequently for wear or deterioration. For safety protection, replace only with new bag meeting original equipment specifications.
34. Look behind to make sure the area is clear before placing the transmission in reverse and continue looking behind while backing up. Disengage blades before shifting into reverse and backing up.
35. This unit should not be driven up a ramp onto a trailer or truck under power, because the unit could tip over, causing serious personal injury. The unit must be pushed manually to load properly.
36. Check brake operation frequently. Adjust and service according to brake adjustment instructions in this manual.
37. Muffler, engine, and belt guards become hot during operation and can cause a burn. Allow to cool down before touching.

ASSEMBLY

This owner's manual covers various models of lawn tractors. The units illustrated may vary slightly from your unit. Follow only those instructions which pertain to your model lawn tractor.

IMPORTANT: This unit is shipped **WITHOUT GASOLINE or OIL**; however, a small amount of oil may be present from the factory. Do not overfill. After assembly, service engine with gasoline and oil as instructed in the separate engine manual packed with your unit.

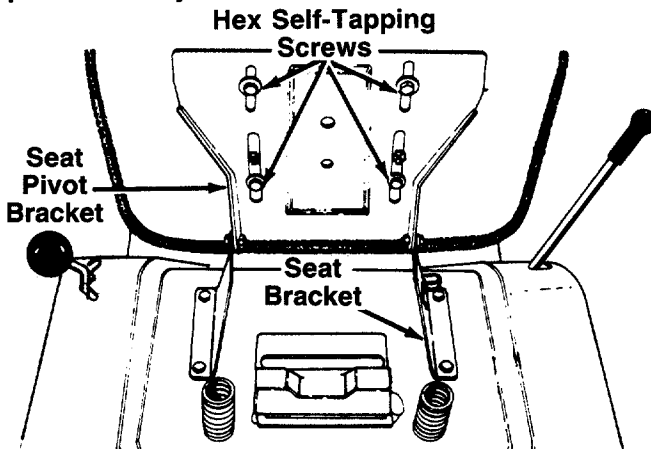


FIGURE 1.

NOTE: Reference to right or left hand side of the unit is observed from the driver's seat, facing forward.

UNPACKING

1. Remove the lawn tractor from the carton as follows. Open the top flaps. Remove all loose parts and carton inserts. Cut the front corners of the carton. Make certain brake is released, and push the unit out of the carton.
2. Remove page four from this manual and lay the contents of the hardware pack on the illustration for identification.

ATTACHING THE SEAT

1. The seat on your lawn tractor has been mounted backward for shipping purposes. Remove the four hex self-tapping screws which secure the seat to the seat pivot bracket.
2. Turn the seat around and place in position against the seat pivot bracket, lining up the slotted holes in the pivot bracket with the holes in the seat. Select desired position for the seat, and secure with hex self-tapping screws. See figure 1.

BATTERY INFORMATION



WARNING

- A. Battery acid must be handled with great care as contact with it can burn and blister the skin. It is also advisable to wear protective clothing (goggles, rubber gloves and apron) when working with it.*
- B. Should battery acid accidentally splatter into the eyes or onto the face, rinse the affected area immediately with clean cold water. If there is any further discomfort, seek prompt medical attention.
- C. If acid spills on clothing, first dilute it with clean water, then neutralize with a solution of ammonia/water or baking soda/water.

- D. Since battery acid is corrosive, do not pour it into any sink or drain. Before discarding empty electrolyte containers, rinse them with a neutralizing solution.
 - E. NEVER connect or disconnect charger clips to battery while charger is turned on as it can cause sparks.
 - F. Keep all lighted materials (cigarettes, matches, lighters) away from the battery as the hydrogen gas generated during charging can be combustible.
 - G. As a further precaution, only charge the battery in a well-ventilated area.
- *Always shield eyes, protect skin and clothing when working near batteries.

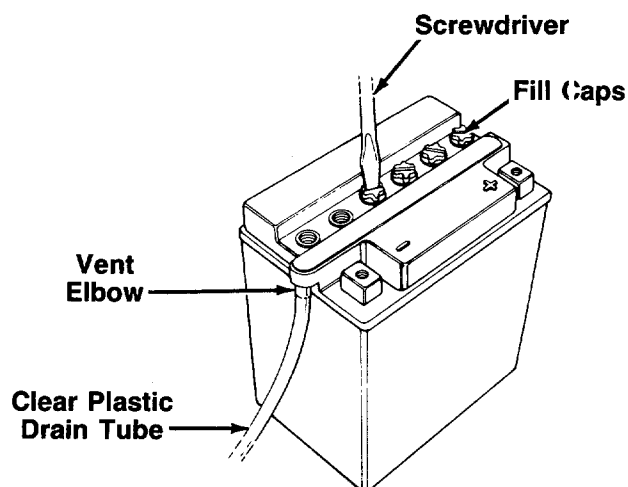


FIGURE 2.

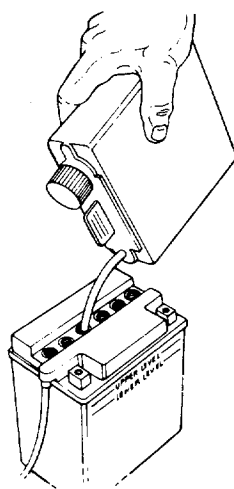


FIGURE 3.



DANGER

Battery contains sulfuric acid. Refer to warning on page 5. Antidote: EXTERNAL—Flush with water. INTERNAL—Drink large quantities of water or milk. Follow with milk of magnesia, beaten eggs or vegetable oil. Call physician immediately. EYES: Flush with cool water for at least 15 minutes then get prompt medical attention.

Since batteries produce explosive gases, keep all lighted materials (cigarettes, lighters, matches, etc.) away. Be sure to charge battery only in well-ventilated areas. Make certain venting path of battery (drain tube) is always open.

**KEEP BATTERIES
OUT OF THE REACH OF CHILDREN!**

ACTIVATING THE BATTERY

Do not activate battery (fill with battery acid) until battery is actually placed in service. Be certain to read previous warnings before activating the battery.

NOTE: On most units the battery will be found inside the battery box, located under the seat. Some units will have the battery packed in the same carton as the battery fluid.

1. Open the battery box (located under the seat) by pressing in on the end (right hand side) and lifting up. Remove the battery. The clear plastic drain tube should be attached to the battery.
2. Open the battery pack. Be careful not to puncture the box. It contains the battery fluid (acid) in a plastic container and one short plastic tube.
3. Place the battery on a table or workbench. Make certain the long plastic drain tube is in place on the vent elbow.
4. Remove the six fill caps from the top of the battery with a screwdriver. Be careful not to damage the fill caps. See figure 2.
5. Place the battery fluid container on the table or workbench. Carefully cut off tip of the spout and attach the short plastic tube provided. Do not squeeze the container when cutting tip.
6. Fill each battery cell slowly and carefully to the UPPER LEVEL line marked on battery. See figure 3. Use caution as the acid level will rise rapidly after the bottom of the cell is filled.
7. Allow battery to stand for 30 minutes with the fill caps removed, while the plates absorb acid.
8. If acid level has fallen after the 30 minute standing period, refill each cell with battery acid to the UPPER LEVEL line on battery. Replace the fill caps.
9. Before discarding the empty container, neutralize any residue with baking soda and rinse container with water. Puncture container several times before discarding.
10. Charge the battery after the 30 minute standing period. SLOW CHARGE THE BATTERY (DO NOT FAST CHARGE) at a maximum bench rate of 1.4 amperes until the specific gravity reading is 1.260-1.280. Charge for a minimum of 2 hours and a maximum of 8 hours.

NOTE: This engine is equipped with an alternator. The current for the battery charger alternator is unregulated. During normal operation, it is only necessary to charge the battery:

1. When it is activated for the first time.
2. Before winter storage.
3. Before using the lawn tractor after winter storage.

NOTE: Charging rate after battery has been put into operation—the battery is to be charged for a period of 14-16 hours. NO LONGER THAN 30 HOURS.

After battery has been charged, add only distilled water. Do not add acid.

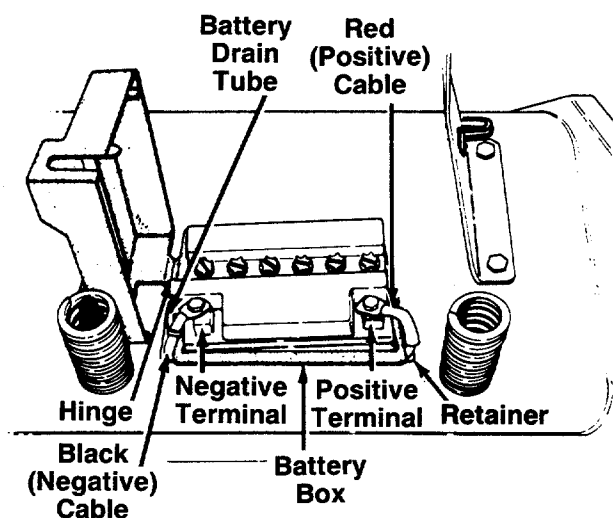


FIGURE 4.

INSTALLING THE BATTERY (Hardware A)

1. Lift the seat.
2. Make certain the positive cable (heavy red wire) extends through the retainer on the right side of the battery box. The negative cable (heavy black wire) should be routed up along the left side of the battery box.
3. Place the battery inside the battery box so that the positive terminal is toward the right side of the unit. See figure 4. Route the battery drain tube down beside the battery box.
4. Remove the bolt on the positive terminal of the battery. Place the positive (+) red cable on the terminal. Secure with the bolt. Be careful not to lose the nut which is inside the terminal.
5. Attach the negative (-) black cable in the same manner.

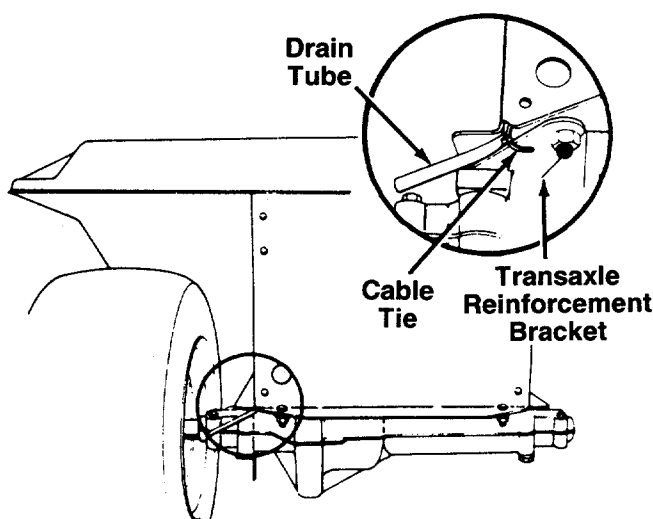


FIGURE 5.

6. Route the drain tube through the opening between the transaxle reinforcement bracket and the frame on the left rear of the unit. Insert the drain tube to the transaxle reinforcement bracket through the cable tie which is attached as shown in figure 5. Be certain drain tube is routed away from the wheel rim. Trim excess end of cable tie.
7. Close the top of the battery box.

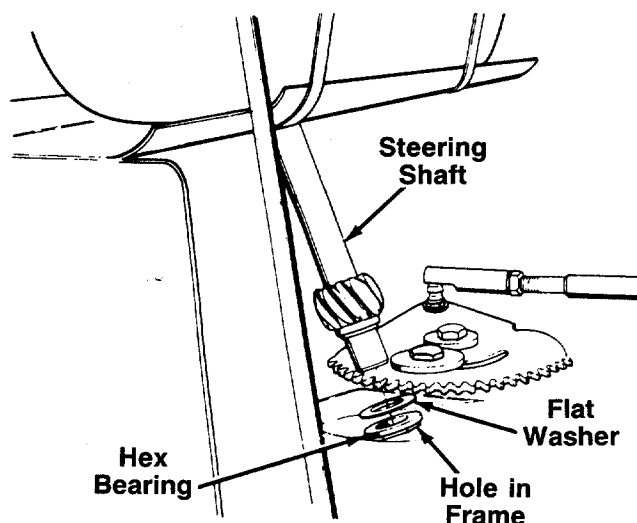


FIGURE 6.

INSTALLING THE STEERING MECHANISM (Hardware B)

Model 300 Series Lawn Tractor Only:

1. Open the hood of the lawn tractor by lifting up on both sides of the hood. Position the front wheels of the tractor so they are pointing straight forward.
2. Insert the hex bearing into the hole in the frame shown in figure 6.
3. Insert the end of the steering shaft which has the pinion gear attached through the hole in the dash panel. Place 5/8" I.D. flat washer on the end of the steering shaft, and insert shaft through hex bearing. Make certain the pinion gear is fully seated against the flat washer and hex bearing.

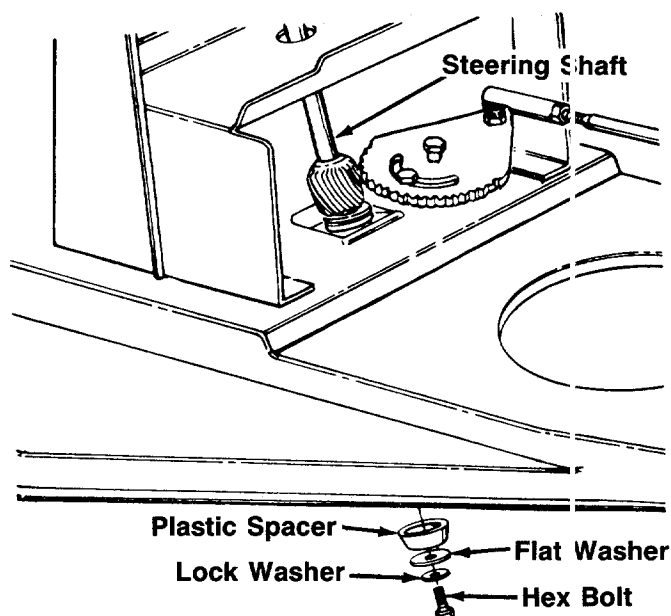


FIGURE 7.

4. Secure bottom of the steering shaft as follows. See figure 7.

- Lower the deck by moving the lift and disengagement lever (located on the right fender) all the way down.
- Place the plastic spacer over the end of the steering shaft. Secure with 5/16" I.D. flat washer, lock washer and hex bolt. A 1/2" wrench is required (socket wrench with an extension would be helpful).

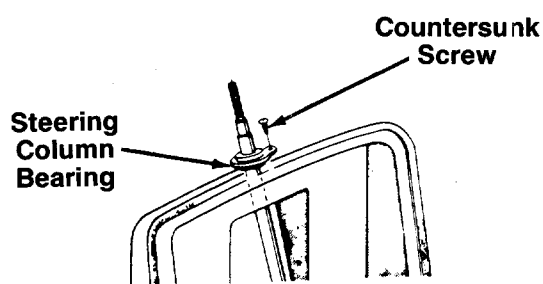


FIGURE 8.

5. Place the steering column bearing (solid side up) over the upper end of the steering shaft. Seat the steering column bearing into the hole in the dash panel. Secure with countersunk screw. See figure 8.

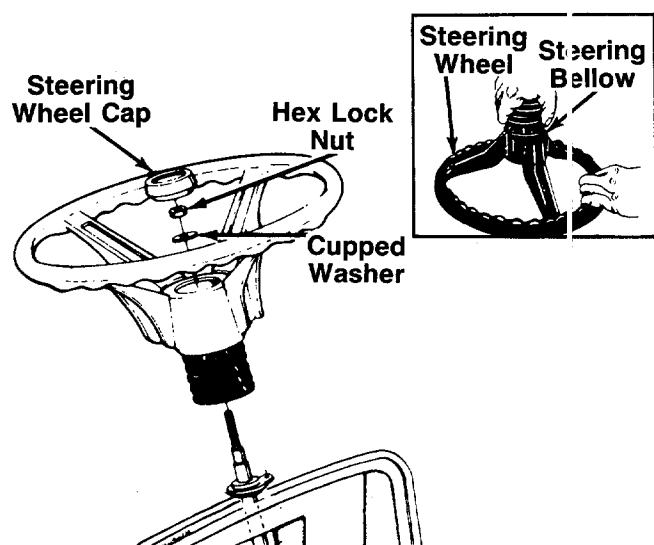


FIGURE 9.

ATTACHING THE STEERING WHEEL (Hardware C)

- Attach one end of steering bellow to the steering wheel as shown in figure 9, inset.
- With the wheels of the tractor pointing straight forward, place the steering wheel and steering bellow over the steering shaft, positioning steering wheel as desired.
- Place the washer with the cupped side down over the steering shaft. Secure with 5/16" hex lock nut. See figure 9.
- Place the steering wheel cap over the center of the steering wheel and seat it with your hand.

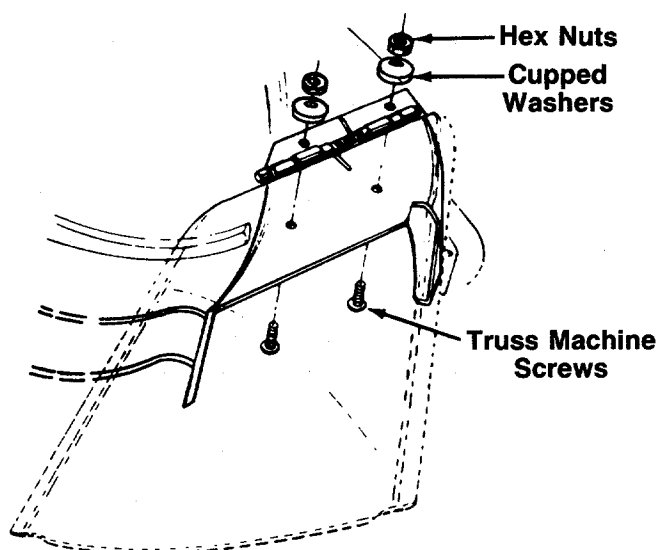


FIGURE 10.

ATTACHING THE CHUTE DEFLECTOR

1. Remove the truss machine screws, cupped washers and hex jam nuts which are attached to the deck next to the chute opening.
2. Place the chute deflector in position as shown in figure 10. Secure with hardware just removed.



WARNING: Do not operate your unit unless the chute deflector has been properly installed.

CONTROLS

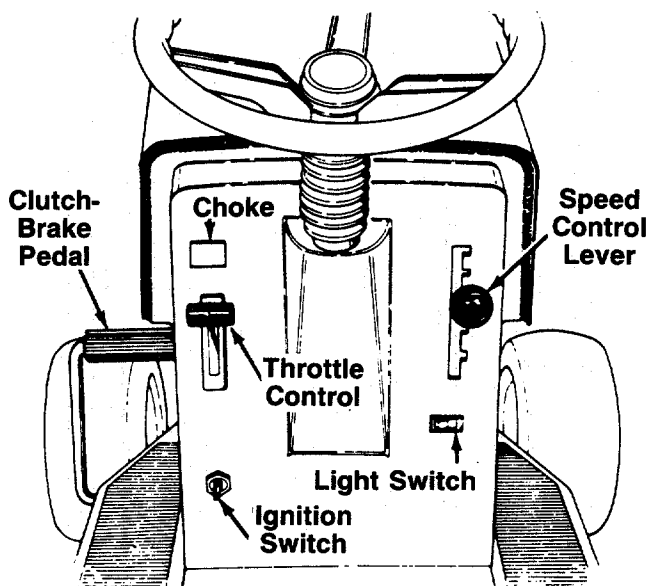


FIGURE 11.

THROTTLE CONTROL

The throttle control is used to regulate the engine speed. To get maximum efficiency from cutting, the throttle should be in the FAST position when operating the mower. See figure 11.

CHOKE CONTROL

The choke control is located on the dashboard and is operated manually. Details for the choke operation are covered in the separate engine manual packed with your unit. See figure 11.

SPEED CONTROL LEVER

The speed control lever allows you to regulate the ground speed of the lawn tractor. See figure 11. To select the ground speed, depress clutch pedal. Push speed control lever inward and move downward to slow lawn tractor, move upward to increase speed. When desired speed has been obtained, release lever in that position. Whenever clutch is engaged, unit will automatically go to the pre-set speed.

IGNITION SWITCH

Turn the key to the START position to start the engine. When the engine is running, let the key return to the ON position. To stop the engine, turn the key to the left to the OFF position and remove it to prevent accidental starting. See figure 11.

LIGHT SWITCH

Push the light switch to turn on the lights. The lights will only operate when the engine is running. See figure 11.

SHIFT LEVER

The shift lever is located on the left fender and has three positions, FORWARD, NEUTRAL and REVERSE. See figure 12. The clutch-brake pedal must be depressed and the lawn tractor must not be moving when shifting gears. Do not force the shift lever. Release the clutch-brake pedal slightly to line up the shifting collar in the transmission. Then try to shift gears.

CLUTCH-BRAKE PEDAL

The clutch-brake pedal is located on the left side of the lawn tractor. Depressing the clutch-brake pedal part way disengages the clutch. Pressing the pedal all the way down disengages the clutch and engages the disc brake. See figure 11.

NOTE: The clutch-brake pedal must be depressed to start the engine.

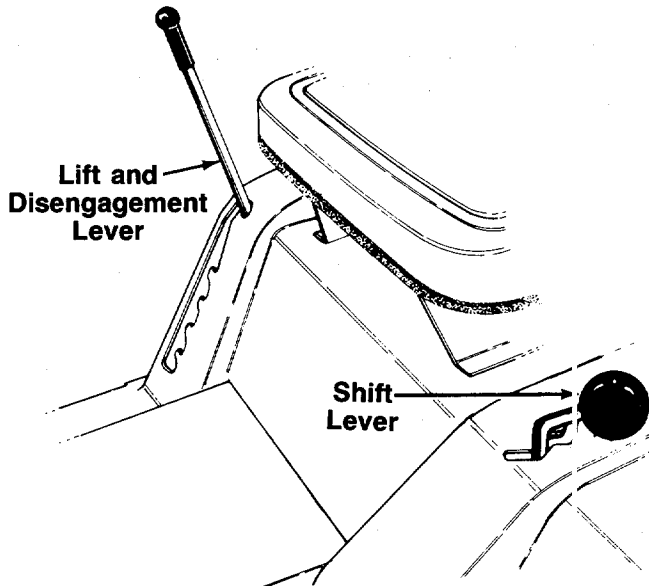


FIGURE 12.

PARKING BRAKE

The speed control lever is used to set the parking brake. To set the parking brake, depress the clutch-brake pedal. Press the speed control lever inward and all the way down. Release the speed control lever and the clutch-brake pedal.

To release the parking brake, depress the clutch-brake pedal, press the speed control lever inward and move to desired position. Release the speed control lever and the clutch-brake pedal.

NOTE: The parking brake must be set if the operator leaves the seat with the engine running.

AMMETER (Optional)

If your lawn tractor is equipped with an ammeter, it registers the rate of battery charge or discharge. The ammeter will register on the discharging side when starting the engine. It should register on the opposite side (charging) when the engine is running in the fast position until the battery is completely charged. With a fully charged battery or with the engine idling, the ammeter will not show a charge.

INTERLOCKS (Not Shown)

Interlock safety switches are located by the clutch-brake pedal, the lift and disengagement lever, the shift lever and under the seat.

Before the engine will start, the clutch-brake pedal must be depressed all the way and the lift and disengagement lever must be in the disengaged position.

Before the unit can be shifted into reverse or if the operator leaves the seat, the lift and disengagement lever must be in the disengaged position.

CUTTING CONTROLS

A. LIFT AND DISENGAGEMENT LEVER

The lift and disengagement lever is used to raise and lower the cutting deck which determines the cutting height. Pulling it all the way back and locking it disengages the blades. The lift and disengagement lever **must** be in the disengaged position when starting the engine, when shifting into reverse or if the operator leaves the seat. See figure 12.

B. DECK WHEEL HEIGHT ADJUSTMENT

Set the deck wheels (if so equipped) so that the wheels are $\frac{1}{4}$ to $\frac{1}{2}$ inch above the ground, by moving the deck wheels to the desired hole location in the deck.

OPERATION

CAUTION

- READ OPERATOR'S MANUAL(S)
- NEVER CARRY CHILDREN
- KNOW LOCATION AND FUNCTION OF ALL CONTROLS
- KEEP SAFETY DEVICES (GUARDS, SHIELDS AND SWITCHES) IN PLACE AND WORKING
- REMOVE OBJECTS THAT COULD BE THROWN BY BLADE(S)
- DO NOT OPERATE THE UNIT WHEN CHILDREN AND OTHERS ARE AROUND
- ALWAYS LOOK BEHIND THE UNIT BEFORE BACKING UP
- DO NOT OPERATE THE UNIT WHERE IT COULD SLIP OR TIP
- IF THE UNIT STOPS GOING UPHILL, STOP BLADE(S) AND BACK SLOWLY DOWNHILL
- BE SURE BLADE(S) AND ENGINE ARE STOPPED BEFORE PLACING HANDS OR FEET NEAR BLADE(S)
- BEFORE LEAVING OPERATOR'S POSITION, DISENGAGE THE BLADE(S), PLACE THE SHIFT LEVER IN NEUTRAL, ENGAGE THE PARKING BRAKE, SHUT ENGINE OFF AND REMOVE THE KEY.

TIRE PRESSURE

The tires on your unit may be over-inflated for shipping purposes. Reduce the tire pressure before operating the unit. Recommended operating tire pressure is approximately 12 p.s.i. (check sidewall of tire for tire manufacturer's recommended pressure).



WARNING: Maximum tire pressure under any circumstances is 30 p.s.i. Equal tire pressure should be maintained on all tires.

GAS AND OIL FILL-UP

NOTE: To open the hood, simply lift up on both sides of the hood.

Service the engine with gasoline and oil as instructed in the separate engine manual packed with your tractor. Read instructions carefully.

NOTE: Your tractor is shipped without oil; however, a small amount of oil may be present from the factory. Do not overfill.



WARNING: Never fill fuel tank indoors, with engine running or while engine is hot.

STARTING THE ENGINE

1. Depress the clutch-brake pedal and set the parking brake.
2. Place the lift and disengagement lever in the DISENGAGED position. See figure 12.

NOTE: This unit is equipped with a **safety interlock system** for your protection. The purpose of the safety interlock system is to prevent the engine from cranking or starting unless the clutch-brake pedal is depressed and the lift and disengagement lever is in the disengaged position. In addition, the lift and disengagement lever must be in the disengaged position when the unit is put into reverse or the engine will shut off. If the operator leaves the seat with the lift and disengagement lever engaged and/or without setting the parking brake, the engine will shut off.



WARNING: Do not operate the lawn tractor if the interlock system is malfunctioning because it is a safety device, designed for protection.

3. Set the throttle control in the FAST position. See figure 11.
4. Pull out choke knob to choke engine. A warm engine may not require choking.
5. Turn the ignition key to the START position. When the engine is running, let the key return to the ON position. See figure 11.
6. Push choke knob in gradually. Move the throttle control to desired engine speed.

STOPPING THE ENGINE

Turn the ignition key to the left to the OFF position. Remove the key to prevent accidental starting.

IMPORTANT: If you strike a foreign object, stop the engine. Remove wire from spark plug, thoroughly inspect the unit for any damage, and repair the damage before restarting and operating the mower.

NOTE: If any problems are encountered, refer to the Trouble Shooting Chart on page 19.

OPERATING THE LAWN TRACTOR

1. Start the engine as instructed in previous column.
2. Move throttle control to $\frac{3}{4}$ or full throttle to prevent strain on the engine and to operate the cutting blades.
3. Place the shift lever in either the FORWARD or REVERSE position.



WARNING: Look to the rear before backing up.

4. Release the parking brake by depressing the clutch-brake pedal, pressing outward on the speed control lever and moving to desired position. Use first speed position when operating the lawn tractor for the first time.
5. Release clutch-brake pedal slowly to put unit into motion.
6. The lawn tractor is brought to a stop by depressing the clutch-brake pedal.

NOTE: When operating the unit initially, there will be little difference between the highest two speeds until after the belts have seated themselves into the pulleys during the break-in period. Be certain to change oil in the crankcase after the first 5 hours of operation.

Be sure that the lawn is clear of stones, sticks, wire, or other objects which could damage lawn tractor, or the debris could be thrown by the blade in any direction and cause an injury. For best results and to insure more even grass distribution, do not mow when lawn is excessively wet.



WARNING: Before leaving the operator's position for any reason, disengage the blades, place the shift lever in neutral, engage the parking brake, shut engine off and remove the key.

When stopping the unit to empty a grass bag, etc., follow the instructions above. This procedure will also eliminate "browning" the grass, which is caused by hot exhaust gases from a running engine.

If unit stalls with speed control in high speed, or if unit will not operate with speed control lever in a low speed position, proceed as follows.

1. Place shift lever in NEUTRAL.
2. Restart engine.
3. Place speed control lever in high speed position.
4. Release clutch-brake pedal fully.
5. Depress clutch-brake pedal.
6. Place speed control lever in desired position.

7. Place shift lever in either FORWARD or REVERSE, and follow normal operating procedures.

OPERATING THE CUTTING BLADES

The cutting blades may be engaged while the lawn tractor is moving or standing still. DO NOT engage the cutting blades abruptly as the sudden belt tension on the pulley may cause the engine to stall.



WARNING: When the blade drive is engaged, keep feet and hands away from the discharge opening, the blades or any part of the deck. When the unit is used for other than mowing, the blade drive should be disengaged.

Move the lift and disengagement lever into the DISENGAGED position to raise the deck and disengage the blades.

ADJUSTMENTS

SEAT ADJUSTMENT

To adjust the position of the seat, loosen the four self-tapping screws on the bottom of the seat. See figure 9. Slide the seat forward or backward as desired. Retighten the self-tapping screws.

DECK LEVELING ADJUSTMENT

If an uneven cut is obtained, the deck may be leveled as follows.

1. Move the lift and disengagement lever forward (lower the cutting deck). Make certain the deck wheels (if so equipped) are not resting on the ground.
2. With unit on hard, level surface, measure the distance from the bottom edge of the center of the left side of deck to the ground. Measure the same distance just behind the chute area on the right side of the deck. Or, place the blades in a straight line, and measure the distance from the outside edge of the blade tips to the ground.
3. Disconnect the adjustable deck links from the deck lift pivot brackets on the left side of the unit by removing the hairpin clips and flat washers. See figure 13.
4. Thread the adjustable links in or out as necessary. Reassemble the links. Check the adjustment, and readjust as necessary.

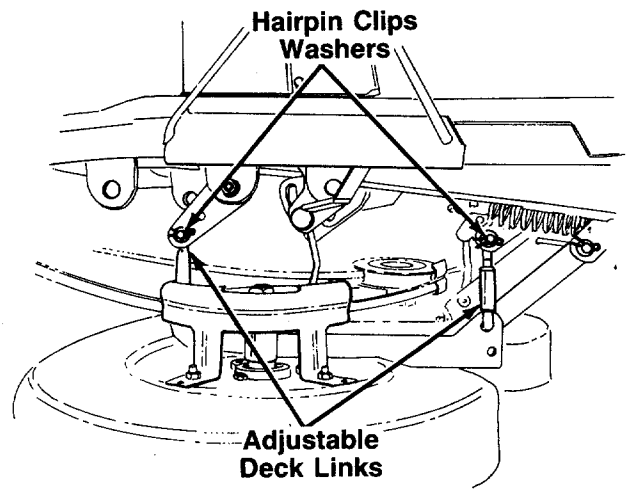


FIGURE 13.

SPEED CONTROL ADJUSTMENT (See Figure 14)

NOTE: When operating the unit initially or after replacing the belts, there will be little difference between the highest two speeds until after the belts have gone through a break-in period and have seated themselves into the pulleys.

First, adjust the speed control lever as follows:

1. Place the shift lever in Neutral position.
2. Start the engine.
3. Place the speed control lever in high speed position.
4. Release the clutch-brake pedal completely, then slowly depress the pedal all the way (to disengaged position). Hold the pedal in this position.
5. Turn the engine off.
6. After engine stops completely, release the clutch-brake pedal.
7. Disconnect the speed control link from the variable speed bracket by removing the hairpin clip and flat washer from the stud located on the bottom side of the variable speed bracket.
8. Depress the clutch-brake pedal forward until the stop on the clutch-brake pedal assembly hits solidly against the underside of the frame.
9. Remove the hairpin clip and flat washer from the rod attached to the back of the speed control lever.
10. Place the speed control lever in parking brake position.
11. Thread the ferrule on the rod until the ferrule slips into the bottom end of the slot in the speed control lever, then thread the ferrule down on the rod one full turn (to shorten).
12. Position speed control lever as follows:
 - a. **7-speed units:** Place speed control lever in second position.

b. **5-speed units:** Place speed control lever in first position.

13. Place ferrule into speed control lever slot, and secure with flat washer and hairpin clip. Release the clutch-brake pedal.

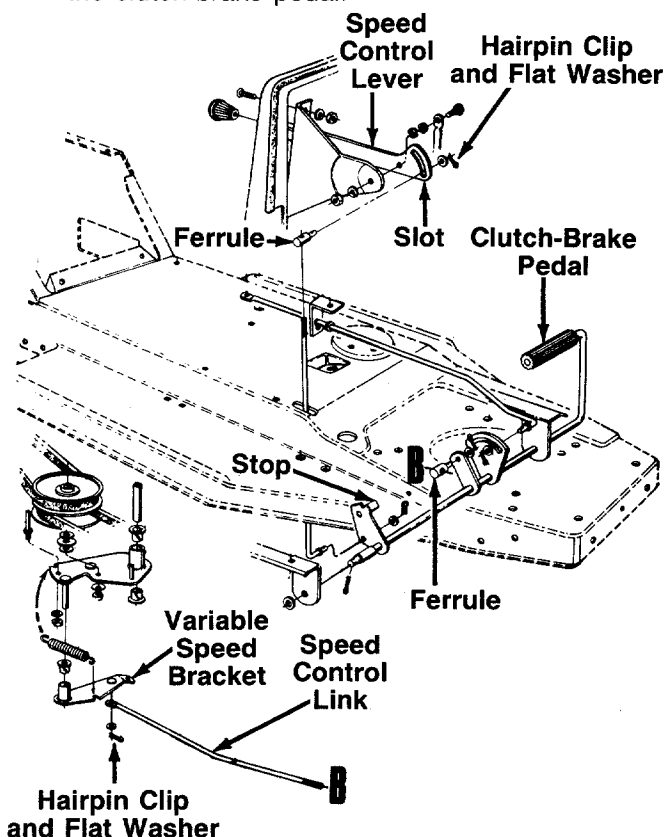


FIGURE 14.

Next, adjust the speed control link as follows to obtain the correct neutral adjustment.

1. Push the clutch-brake pedal backward by hand as far as it will go using light pressure. Hold it in this position as you make the following adjustment.
2. Thread the speed control link into or out of the ferrule until the eyelet on the opposite end of the link slips onto the stud on the bottom side of the variable speed bracket.
3. Secure the speed control link to the variable speed bracket with flat washer and hairpin clip.

NEUTRAL ADJUSTMENT (Wheel Drive)

1. Place the transmission in neutral. (The unit will move freely when pushed forward and backward with the parking brake released.)
2. Loosen the bolt which secures the shift lever assembly to the shift lever adjusting link. See figure 15.
3. Place the shift lever in the neutral slot. See figure 15.
4. Tighten the bolt to 13 foot pounds.

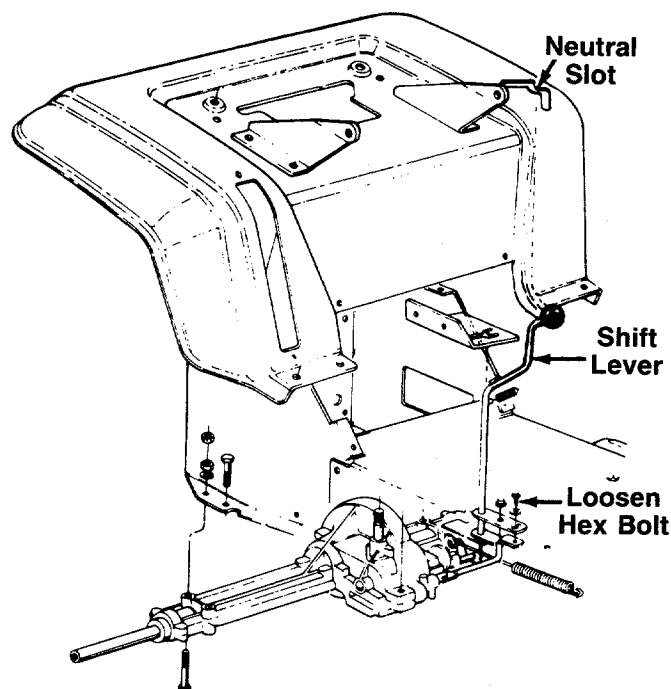


FIGURE 15.

CUTTING DECK ENGAGEMENT ADJUSTMENT

The cutting deck engagement may be adjusted to make certain deck is disengaged when lift and disengagement lever is in the disengaged position, or to obtain more drive in the cutting positions. Correct adjustment as follows.

Place the lift and disengagement lever in the highest cutting position (first notch down from disengaged position). The approximate adjustment is to have the lock nut on the threaded rod (above the rear of the deck) touching the end of the tubing. See figure 16.

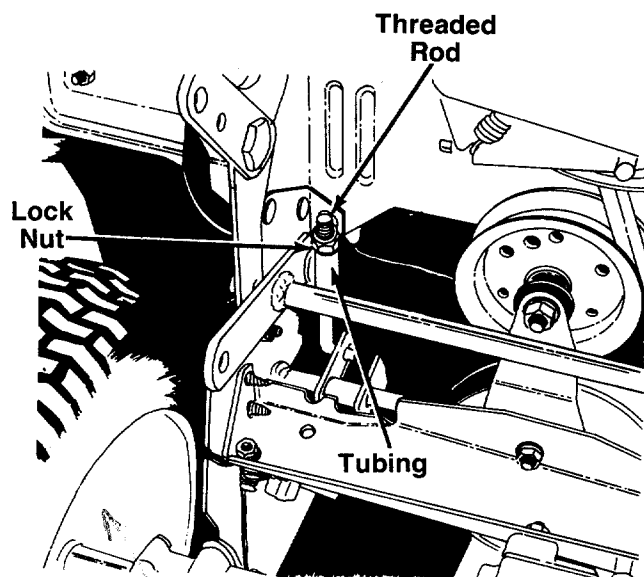


FIGURE 16.

Move the lock nut toward the tubing to start to disengage the deck earlier. Move the lock nut away from the tubing to obtain more drive in the cutting positions.



WARNING: Make certain the unit is adjusted so that the cutting blades are disengaged when the lift and disengagement lever is in the disengaged position.

WHEEL ADJUSTMENT

The caster (forward slant of the king pin) and the camber (tilt of the wheels out at the top) require no adjustment. Automotive steering principles have been used to determine the caster and camber on the tractor. The front wheels should toe-in 1/8 inch.

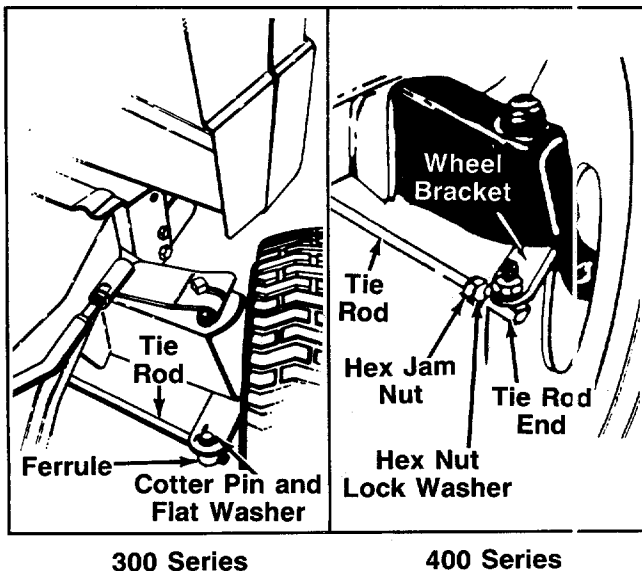
To adjust the toe-in, follow these steps.

300 Series Lawn Tractors:

1. Remove the cotter pin and flat washer from the ferrule on the tie rod end on the right side of the tractor. See figure 17.
2. Adjust the tie rod for correct toe-in by threading the ferrule in or out as necessary. (See figure 18.) Reassemble the tie rod.

400 Series Lawn Tractors:

1. Remove the hex nut and lock washer, and drop the tie rod end from the wheel bracket. See figure 13.
2. Loosen the hex jam nut on tie rod.
3. Adjust the tie rod assembly for correct toe-in. (See figure 18.) Retighten hex jam nut.



300 Series

400 Series

FIGURE 17.

Dimension "B" should be approximately 1/8" less than Dimension "A." See figure 18.

A.) To increase Dimension "B," thread the ferrule onto the tie rod (300 Series) or thread the rod into tie rod end (400 Series).

B.) To decrease Dimension "B," unscrew the ferrule from the tie rod (300 Series) or unscrew the tie rod from the tie rod end (400 Series).

C.) Reassemble tie rod. Check dimensions. Readjust if necessary.

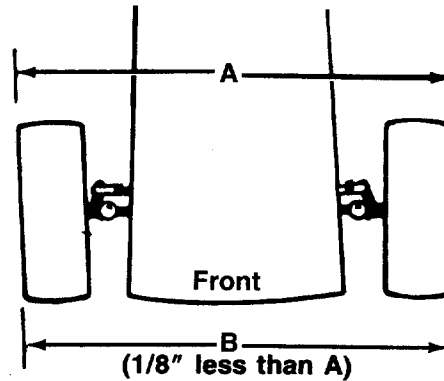


FIGURE 18.

CARBURETOR ADJUSTMENT



WARNING: If any adjustments are made to the engine while the engine is running (e.g. carburetor), disengage all clutches and blades. Keep clear of all moving parts. Be careful of heated surfaces and muffler.

Minor carburetor adjustment may be required to compensate for differences in fuel, temperature, altitude and load. To adjust the carburetor, refer to the separate engine manual packed with your unit.

NOTE: A dirty air cleaner will cause an engine to run rough. Be certain air cleaner is clean and attached to the carburetor before adjusting carburetor.

BRAKE ADJUSTMENT (See figure 19)

The brake is located by the left rear wheel inside the frame. During normal operation of this machine, the brake is subject to wear and will require periodic examination and adjustment.



WARNING: Do not have the engine running when you adjust the brake.

NOTE: Your brake may be equipped with a lock nut instead of the castle nut and cotter pin shown in figure 19.

To adjust the brake, remove the cotter pin from the castle nut (if so equipped). Adjust the nut so the brake starts to engage when the brake lever is 1/4" to 5/16" away from the axle housing.

NOTE: Figure 19 is shown with the unit tipped up on rear wheels for clarity only.

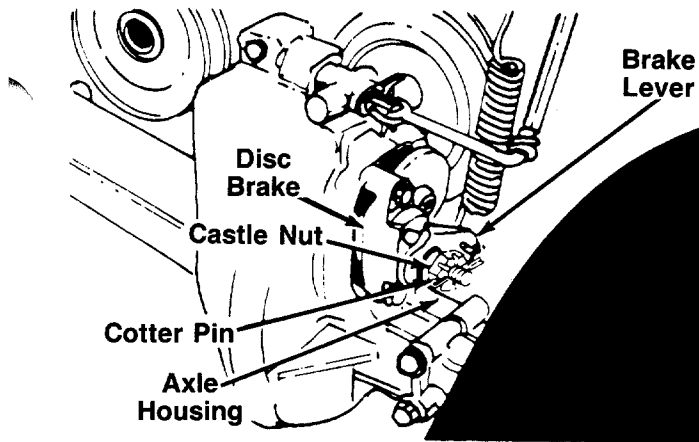


FIGURE 19.

LUBRICATION



WARNING: Always stop engine and disconnect spark plug wire before cleaning, lubricating or doing any kind of work on lawn tractor.

STEERING GEARS

Lubricate teeth of steering gears with automotive multi-purpose grease after every 25 hours of operation or once a season.

STEERING SHAFT

Lubricate steering shaft at least once a season with light oil.

TRANSAXLE

The transaxle is lubricated and sealed at the factory and does not require checking. If disassembled for any reason, lubricate with 10 oz. of grease, part number 737-0148.

WHEELS

The front wheels are provided with grease fittings. The rear wheels must be removed from the axle for lubrication. Lubricate both front and rear wheels at least once a season with automotive multi-purpose grease.

PIVOT POINTS

Lubricate all pivot points with light oil at least once a season.

MAINTENANCE



WARNING: Disconnect the spark plug wire and ground against the engine before performing any repairs or maintenance.

TROUBLE SHOOTING

Refer to page 19 of this manual for trouble shooting information.

ENGINE

Refer to the separate engine manual for engine maintenance instructions.

Maintain **engine oil** as instructed in the separate engine manual packed with your unit. Read and follow instructions carefully.

Service **air cleaner** every 10 hours under normal conditions. Clean every few hours under extremely dusty conditions. Poor engine performance and flooding usually indicates that the air cleaner should be serviced. To service the air cleaner, refer to the separate engine manual packed with your unit.

The **spark plug** should be cleaned and the gap reset once a season. Spark plug replacement is recommended at the start of each mowing season; check engine manual for correct plug type and gap specifications.

CUTTING BLADE

A. Removal for Sharpening or Replacement



WARNING: Be sure to disconnect and ground the spark plug wire and remove ignition key before working on the cutting blade to prevent accidental engine starting. Protect hands by using heavy gloves or a rag to grasp the cutting blades.

1. Remove the large bolt and lock washer which holds the blade and adapter to the blade spindle.
2. Remove the blade and adapter from the spindle.
3. If the blade or blade adapter needs replacing, remove the two small bolts, lock washers and nuts which hold the blade to the adapter.

B. Sharpening

Remove the cutting blade by following the directions of the preceding section.

When sharpening the blade, follow the original angle of grind as a guide. It is **extremely important** that each cutting edge receives an equal amount of grinding to prevent an unbalanced blade. An unbalanced blade will cause excessive vibration when rotating at high speeds, may cause damage to the mower and could break, causing personal injury.

The blade can be tested for balance by balancing it on a round shaft screwdriver. Remove metal from the heavy side until it balances evenly.

NOTE: It is recommended that the blade always be removed from the adapter for the best test of balance.

C. Reassembly

Before reassembling the blade and the blade adapter to the unit, lubricate the spindle and the inner surface

of the blade adapter with light oil. Lubricating the bolt holes, bolts and inner surface of the nuts with light oil is also recommended. A 4 oz. plastic bottle of light oil lubricant is available. Order part number 737-0170. Engine oil may also be used.

When replacing the blade, be certain the wide blade is assembled on the right side of the deck. Be sure to install the blades with the side of the blades marked "Bottom" (or with part number) facing the ground when the mower is in the operating position.

Blade Mounting Torque

3/8" Dia. Bolt 375 in. lb. min., 450 in. lb. max.

5/16" Dia. Bolt 150 in. lb. min., 250 in. lb. max.

To insure safe operation of your unit, ALL nuts and bolts must be checked periodically for correct tightness.

FUEL FILTER

Your unit is equipped with a replaceable in-line fuel filter. Replace filter whenever contamination or discoloration is noticed. Order replacement filter through your engine authorized service dealer.

DRIVE BELT REMOVAL AND REPLACEMENT



WARNING: Disconnect the spark plug wire and ground it against the engine. Block the wheels of the unit.

NOTE: When changing the belts, a spring puller or other suitable tool is required to remove some of the springs. A spring puller (part number 732-0571) is available to assist in removal of springs.

Removing the Deck Belt

NOTE: Figures 20, 23 and 24 are shown with the unit tipped up for clarity. It is not necessary to tip the unit to remove the belts.

1. Place the lift lever in the disengaged position.
2. Remove the two hex bolts (belt keepers) from the engine pulley belt guard. See figure 20.

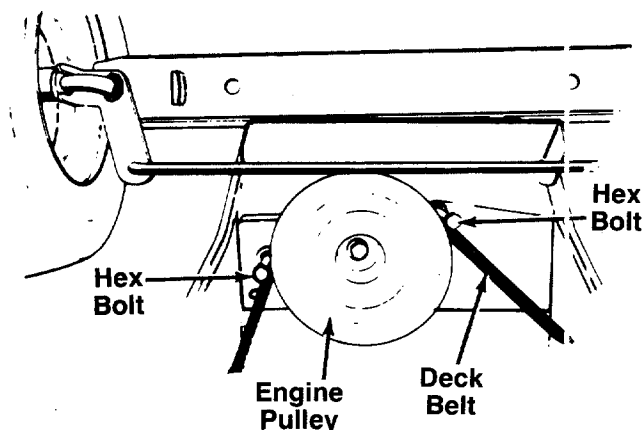


FIGURE 20.

NOTE: Make certain hex bolts are reassembled as shown in figure 20.

3. Unhook the deck belt from the engine pulley.
4. Place the lift lever in the engaged (all the way forward) position.
5. Disconnect the spring from the left rear transmission support bracket. See figure 21.
6. Disconnect the two front deck links by removing the hairpin clips and flat washers.

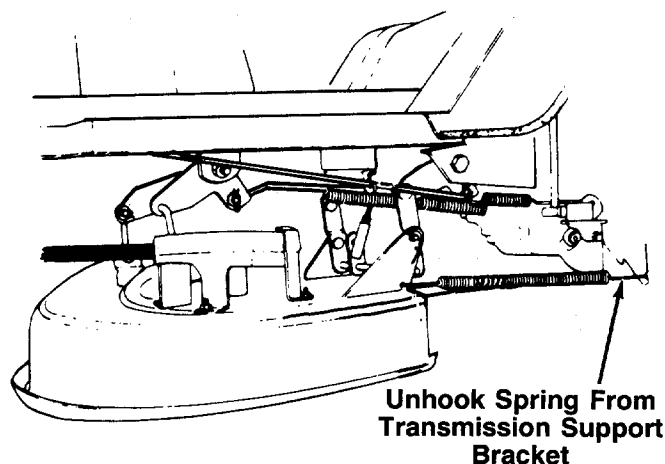


FIGURE 21.

7. Remove the belt guards at each deck pulley by removing the hex bolts, lock washers and hex nuts. See figure 22.
8. Remove and replace the belt, following the instructions in reverse order.

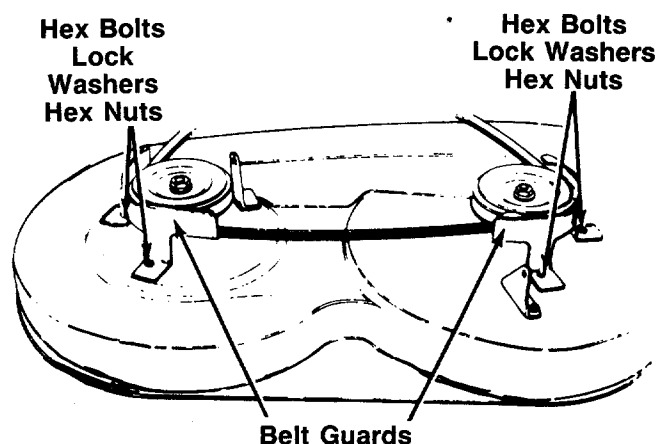


FIGURE 22.

Removing the Rear Drive Belt (Refer to figure 23)

1. Start the engine. Place shift lever in neutral. Place speed control lever in high speed position and turn engine off. Engage lift lever (move all the way forward). Do not set parking brake.

2. Disconnect the large spring from the transmission support bracket, using a spring puller or other suitable tool.

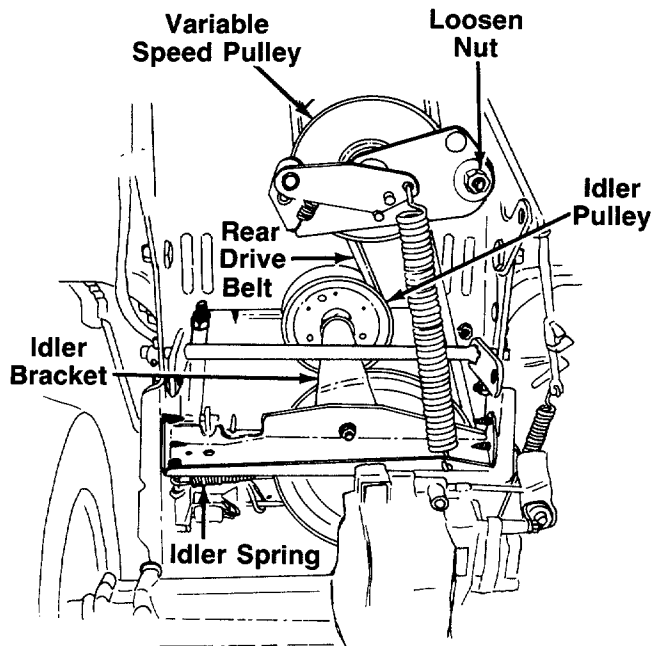


FIGURE 23.

3. Disconnect the idler spring from the bolt on the right side of the frame and transmission support bracket.
4. Loosen (**do not** remove) the hex nut which secures the variable speed pulley bracket to allow clearance in order to remove the belts. A 9/16" socket wrench is required.
5. Remove belt from transmission pulley and idler pulley. Remove the rear drive belt from around the top of the variable speed pulley.
6. Reassemble new belt, following instructions in reverse order.

Removing the Forward Drive Belt (See figure 24)

1. To remove the forward drive belt, first remove the rear drive belt (steps 1 through 5 of the preceding instructions).
2. Remove the deck belt from the engine pulley (steps 1 through 3 of "Removing The Deck Belt").
3. Remove the engine pulley belt guard by removing two self-tapping screws from each side of the frame. Remove the engine pulley belt guard by moving it back and to the left.
4. Remove the forward drive belt from the engine pulley and from the variable speed pulley.
5. Reassemble new belt, following instructions in reverse order.

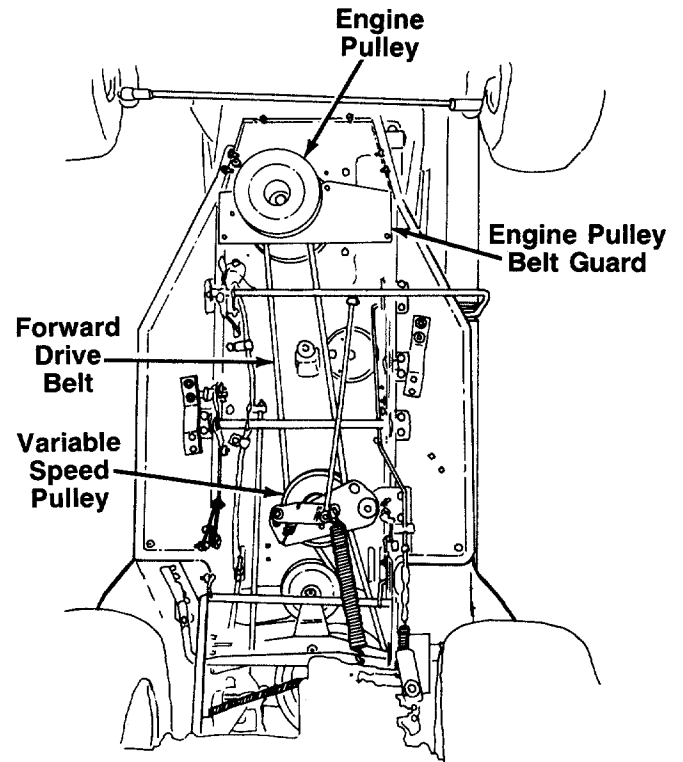


FIGURE 24.

BATTERY REMOVAL OR INSTALLATION



WARNING: When removing the battery, follow this order of disassembly to prevent the screwdriver from shorting against the frame.

1. Remove the Negative cable.
2. Remove the Positive cable.

To install a battery:

1. Attach the Positive cable.
2. Attach the Negative cable.

JUMP STARTING

1. Attach the first jumper cable from the Positive terminal of the good battery to the Positive terminal of the dead battery.
2. Attach the second jumper cable from the Negative terminal of the good battery to the FRAME OF THE UNIT WITH THE DEAD BATTERY.



WARNING: Failure to use this starting procedure could cause sparking, and the gas in either battery could explode.

BATTERY MAINTENANCE

1. Check periodically (every two weeks or before and after charging) to be sure electrolyte level is above the lowest line on battery. Add only distilled water or a good quality drinking water. NEVER add additional acid or other chemicals to battery after initial activation.
2. The battery should be checked with a hydrometer after every 25 hours of operation. If the specific gravity is less than 1.225, remove battery and recharge.
3. Coat the terminals and exposed wiring with a thin coat of grease or petroleum jelly for longer service and protection against electrolyte corrosion.
4. The battery should be kept clean. Any deposits of acid should be neutralized with soda and water. Be careful not to get this solution in the cells.

BATTERY STORAGE

1. Charge battery using normal methods. NEVER store discharged battery as it will not recover.
2. When storing battery for extended periods, disconnect battery cables. Removing battery from unit is recommended.
3. Store in cold, dry place.
4. Recharge battery whenever the specific gravity is less than 1.225, before returning to service, or every two months, whichever occurs first

COMMON CAUSES FOR BATTERY FAILURE ARE:

1. Overcharging
2. Undercharging
3. Lack of water
4. Loose hold downs and/or corroded connections
5. Excessive loads
6. Battery electrolyte substitutes
7. Freezing of electrolyte

NOTE: THESE FAILURES DO NOT CONSTITUTE WARRANTY.

TIRES

Recommended operating tire pressure is approximately 12 p.s.i. (check sidewall of tire for tire manufacturer's recommended pressure). Maximum tire pressure under any circumstances is 30 p.s.i. Equal tire pressure should be maintained on all tires.

When installing a tire to the rim, be certain rim is clean and free of rust. Lubricate both the tire and rim generously. Never inflate to over 30 p.s.i. to seat beads.



WARNING: Excessive pressure (over 30 p.s.i.) when seating beads may cause tire/rim assembly to burst with force sufficient to cause serious injury.

OFF-SEASON STORAGE

If the machine is to be inoperative for a period longer than 30 days, prepare for storage as follows.

1. Clean the engine and the entire unit thoroughly.
2. Lubricate all lubrication points. Wipe the entire machine with an oiled rag to protect the surfaces.
3. Refer to the engine manual for correct engine storage instructions. The engine must be completely drained of fuel to prevent gum deposits from forming on essential carburetor parts, fuel lines and fuel tanks.
4. Refer to battery storage instructions in previous column.
5. Store unit in a clean, dry area.

NOTE: When storing any type of power equipment in an unventilated or metal storage shed, care should be taken to rustproof the equipment. Using a light oil or silicone, coat the equipment, especially any chains, springs, bearings and cables.

GRASS COLLECTOR AVAILABLE

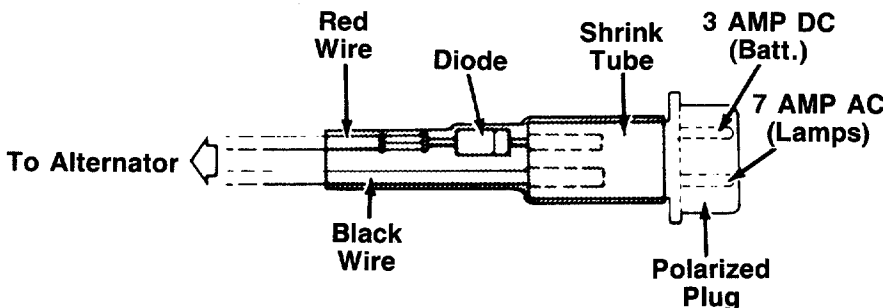
GRASS COLLECTOR Model 063 is available as optional equipment for the lawn tractors shown in this manual (requires mounting kit model 084).



WARNING: The mower should not be operated without the entire grass catcher or chute deflector in place.

NOTE: Under normal usage bag material is subject to wear, and should be checked periodically. Be sure any replacement bag complies with the mower manufacturer's recommendations. For replacement bags, use only factory authorized replacement bag.

TROUBLE SHOOTING GUIDE

| TROUBLE | LOOK FOR | REMEDY |
|----------------------------------|--|---|
| Engine will not crank | Battery installed incorrectly | The battery must be installed with the negative terminal, identified at the terminal post by (Neg, N or -), grounded. The positive terminal (Pos, P or +) attaches to the large cable from the solenoid. The small red wire from the fuse holder or circuit breaker is also attached to the positive terminal. |
| | Blown fuse or circuit breaker | Replace fuse with 7½ amp. fuse ¼ x 1¼" lg. Circuit breaker will reset itself when it cools off. Fuses or circuit breakers seldom open or fail without a reason. The problem must be corrected. Check for loose connections in the fuse holder. Replace fuse holder if necessary. A dead short may be in the cranking or charging circuit where the insulation may have rubbed through and exposed the bare wire. Replace the wire or repair with electrician's tape if the wire strands have not been damaged. Note: Look for a wire pinched between body panels, burned by the exhaust pipe or muffler or rubbed against a moving part. |
| | Battery is dead or weak | <p>Use a hydrometer to check the condition of the battery. The Specific Gravity (s.g.) should be 1.265 at 80°F. (1.215 s.g. minimum needed for cranking engine). The reason for the battery failing must be determined. (1) Defective battery. Battery will not accept or hold a full charge. (2) Short circuit. Check for grounded wire. (3) Charging system not working.</p> <p>The charging system is an alternator located under the flywheel. It is unregulated and rated 3 amp. at 3600 r.p.m. A diode (rectifier) is located in the output lead just before the wire harness plug on the engine side.</p>  <p>The diode changes A.C. to D.C. to charge the battery. A bad diode can either fail to charge the battery or discharge the battery if the alternator is shorted as well as the diode. To test: (1) Disconnect charger lead from the battery (small red wire). (2) Connect 12 V small test lamp between the 3 amp. D.C. charge lead and the positive terminal of the battery. (3) With the engine off, the lamp should not light. If it does, the diode and possibly the alternator should be replaced. (4) Start the engine. The lamp should light. If it does not, the alternator (stator) or lead wire is bad and should be replaced.</p> |
| | Mechanical failure (Wires and switches) | The interlock system includes two mechanical activated switches which are wired in series in the circuit used to energize the starter solenoid. While testing the interlock system, you will make the mower temporarily unsafe by permitting the engine to be started with the blade and clutch engaged. WARNING: While testing, disengage the clutch, shut off the blade control, set the parking brake and place the gear shift lever in neutral. Attach a wire (minimum 18 gauge) to the positive terminal of the battery and touch the other end to the small terminal on the solenoid. If the engine does not crank: (1) There is a loose connection or poor ground. (2) The solenoid may be bad. The solenoid can be checked by using a heavy wire (#8 gauge minimum) and jumping between the two large terminals. If the engine cranks, the solenoid is bad. (3) If the engine does not crank when you jump the solenoid, have the starter motor tested by an authorized engine dealer. If the engine does crank, the problem is with one of the safety switches, ignition switch or the wire between the fuse holder (or circuit breaker) and the small terminal on the solenoid. Note: Look for a poor connection at the switches or a defective switch. Replace if necessary. |
| Engine cranks but will not start | Throttle or choke not in starting position | Check owner's guide for correct position for throttle control and choke for starting. |
| | No spark to spark plug | <p>Spark plug lead disconnected. Connect lead. Hold spark plug lead away from engine block about 1/8". Crank engine. There should be a spark. If not, have engine repaired at authorized engine service dealer.</p> <p>Faulty spark plug. To test, remove spark plug. Attach spark plug lead to spark plug. Ground the spark plug body against the engine block. Crank the engine. The spark plug should fire at the electrode. Replace if it does not.</p> |

TROUBLE SHOOTING GUIDE (Continued)

| TROUBLE | LOOK FOR | REMEDY |
|---|--|---|
| | No fuel to the carburetor | Gasoline tank empty. Fill. Fuel line or in-line fuel filter plugged. Remove and clean fuel line. Replace filter if necessary. |
| | Air filter dirty | If the air cleaner is dirty, the engine may not start. Clean or replace as recommended by the engine manufacturer. |
| Engine smokes | Engine loses crankcase vacuum | Dipstick not seated or broken. Replace defective part. Engine breather defective. Replace. |
| Excessive vibration | Bent or damaged blade spindle | Stop engine immediately. Check all pulleys, blade adapters, keys and bolts for tightness and damage. Tighten or replace any damaged parts. |
| | Bent blade | Stop engine immediately. Replace damaged blade. Only use original equipment blades. |
| Mower will not discharge grass or leaves uncut strips | Engine speed low Transmission selection Blades short or dull | Throttle must be set between 3/4 and full throttle. Use lower transmission speed. The slower your ground speed, the better the quality of cut. Sharpen or replace blades (uncut strip problem only). Make certain deck engagement adjustment is correct. See adjustment section. |