

# OPERATOR'S MANUAL

## Front Engine Lawn Tractor

### Record Product Information

Before setting up and operating your new equipment, please locate the model plate on the equipment and record the information in the provided area to the right. You can locate the model plate by lifting up the seat and looking under the seat pan. This information will be necessary, should you seek technical support via our web site or with your local authorized service dealer.

### MODEL NUMBER

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### SERIAL NUMBER

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#### ⚠ WARNING

Read and follow all safety rules and instructions in this manual before attempting to operate this machine. Failure to comply with these instructions may result in personal injury.

#### ⚠ WARNING

##### California Proposition 65

Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to State of California to cause cancer and birth defects or other reproductive harm.


Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

**NOTE:** This Operator's Manual covers several models. Features may vary by model. Not all features in this manual are applicable to all models and the model depicted may differ from yours.



# SAFE OPERATIONS PRACTICES

## WARNING

 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 this machine. Failure to comply with these instructions may result in personal injury. When you see this symbol, **HEED ITS WARNING!**

## DANGER

This machine was built to be operated according to the safe operation practices in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. This machine is capable of amputating fingers, hands, toes and feet and throwing debris. Failure to observe the following safety instructions could result in serious injury or death.

### General Information

1. Read, understand, and follow all instructions on the tractor and in the manual(s) before attempting to assemble and operate. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. Be familiar with all controls and their proper operation. Know how to stop the tractor and disengage them quickly.
3. Never allow children under 14 years of age to operate this tractor. Children 14 and over should read and understand the instructions and safe operation practices in this manual and on the tractor and should be trained and supervised by an adult.
4. Never allow adults to operate this tractor without proper instruction.
5. If situations occur which are not covered in this manual, use care and good judgment. Contact your customer service representative for assistance.
6. According to the U.S. Consumer Products Safety Commission (CPSC) and the U.S. Environmental Protection Agency (EPA), this product has an estimated useful life of seven (7) years, under ordinary use conditions. At the end of its useful life, have the product inspected annually to ensure all mechanical and safety systems are operating properly, safely, and are not worn excessively. Failure to do so may result in accident, injury, or death.

### Preparation Before Operating

1. Thoroughly inspect the area where the tractor is to be used. Remove all stones, sticks, wire, bones, toys, and other foreign objects which could be picked up and thrown by the blade(s). Thrown objects can cause serious personal injury.
2. To help avoid blade contact or a thrown object injury, keep helpers at least 75 feet (23 meters) from the tractor while it is in operation. Keep bystanders, children and pets inside during operation. Stop tractor if anyone enters the area.
3. Be aware of the tractor discharge direction and do not point it at anyone.
4. Always wear safety glasses or safety goggles during operation and while performing an adjustment or repair to protect your eyes. Thrown objects which ricochet can cause serious injury to the eyes.
5. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Loose fitting clothes, jewelry and long hair can be caught in moving parts. Never operate this tractor in bare feet or sandals.
6. Never over fill fuel tank. Fill tank to no more than 1/2" (13mm) below bottom of filler neck to allow space for fuel expansion.
7. Replace gasoline cap and tighten securely.
8. Use only accessories and attachments approved for this tractor by the tractor manufacturer. Read, understand and follow all instructions provided with the approved accessory or attachment.

### Operating

1. Data indicates that operators, age 65 years and above, are involved in a large percentage of riding tractor-related injuries. These operators should evaluate their ability to operate the riding tractor safely enough to protect themselves and others from serious injury.
2. Disengage the blades and set the parking brake before attempting to start the tractor.
3. Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.
4. Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the tractor. Tall grass can hide obstacles.
5. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, helpers and the like. Avoid discharging material against a wall or obstruction which may cause discharged material to ricochet back toward the operator.
6. Check overhead clearances carefully before driving under low hanging tree branches, wires, door openings etc., where the operator may be struck or pulled from the tractor, which could result in serious injury.
7. Never leave a running tractor unattended. Always turn off blade(s), set the parking brake, stop the engine and remove the key before dismounting.
8. Disengage blade(s), set the parking brake, stop engine and wait until the blade(s) come to a complete stop before removing grass catcher, emptying grass, unclogging chute, removing any grass or debris, or making any adjustments.
9. Your tractor is designed to cut normal residential grass of a height no more than 10" (25cm). Do not attempt to mow through unusually tall, dry grass (e.g. pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the tractor deck presenting a potential fire hazard.
10. Back up slowly. Always look down and behind before and while backing to avoid a back-over accident.
11. Never carry passengers.
12. Stay at least 10 feet (3 meters) from drop-offs, ditches, embankments or the edge of water. The tractor could suddenly turn over if a wheel is over the edge of a cliff, ditch, or if an edge caves in.
13. A missing or damaged chute deflector can cause blade contact or thrown object injuries.
14. Do not operate the tractor without the chute deflector or entire grass catcher in its proper place.
15. Use extra care with grass catchers or other attachments. These can change the stability of the tractor. Always follow the attachment manufacturer's instructions.
16. Stop the blades when crossing gravel drives, walks, or roads and while not cutting grass.

# SAFE OPERATIONS PRACTICES

17. Watch for traffic when operating near or crossing roadways. This tractor is not intended for use on any public roadway.
18. Mow only in daylight or good artificial light.
19. Do not operate the tractor while under the influence of alcohol or drugs.
20. Slow down before turning. Operate the tractor smoothly. Avoid erratic operation and excessive speed.
21. The muffler and engine become very hot and can cause serious burn injuries. Do not touch. Allow the tractor to cool for five minutes before attempting any service.
22. Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless, and deadly gas.
5. Do not mow on wet grass. Reduced traction could cause sliding or a loss of control.
6. Do not operate tractor under any conditions where traction, steering or stability is in question. Tires could slide even if the wheels are stopped.
7. Avoid starting and stopping on slopes. Avoid making sudden changes in speed or direction. Make turns slowly and gradually.
8. Use extra care while operating tractor with grass catcher or other attachment(s). They can affect the stability of the tractor. Do not use grass catcher on slopes greater than 10 degrees (17%).
9. Do not try to stabilize the tractor by putting your foot on the ground.
10. Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction. Rapid acceleration could cause the front of the tractor to lift and rapidly roll over backwards, which could cause serious injury or death.

## Children

1. Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the tractor and the mowing activity. They do not understand the dangers. Never assume that children will remain where you last saw them.
2. Keep bystanders, children and pets inside during operation under the watchful care of a responsible adult other than the operator. Stop tractor if anyone enters the area.
3. Never carry children, even with the blades shut off. They may fall off and be seriously injured or interfere with safe tractor operation. Children who have been given rides in the past could suddenly appear in the mowing area for another ride and be run over or backed over by the tractor.
4. Be alert and turn tractor off if a child or bystander enters the area.
5. To avoid back-over accidents, always look behind and down for small children.
6. Use extreme care when approaching blind corners, doorways, shrubs, trees or other objects that may block your vision of a child who may run into the path of the tractor.
7. Never allow children under 14 years of age to operate this tractor. Children 14 and over should read and understand the instructions and safe operation practices in this manual and on the tractor and should be trained and supervised by an adult.
8. Do not allow any child to joy ride on the tractor. The tractor is not a toy or a go-cart. Warn your children that the tractor can be dangerous and they must stay away from it at all times.
9. Keep children away from hot or running engines. They can suffer burns from a hot muffler.
10. Remove key when tractor is unattended to prevent unauthorized operation. Make certain the key is inaccessible to small children.

## Slope Operation

1. Slopes are a major factor related to loss of control and tip-over accidents which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it.
2. For your safety, measure any slope before using the tractor on the sloped area. Use a slope measuring device in addition to the slope gauge included as part of this manual to measure slopes before operating this tractor on a sloped or hilly area. Smart phone applications can be also utilized to measure slopes. If the slope is greater than 15 degrees (25%) as shown on the slope gauge or a slope measuring device, do not operate this tractor on that area or serious injury could result.
3. Do not mow on slopes greater than 15 degrees (25%).
4. Do not mow across slopes, only mow up and down slopes that are less than 15 degrees (25%). Use low speeds and avoid sudden turns.

## Fire & Fuel

1. To avoid personal injury or property damage use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Serious personal injury can occur when gasoline is spilled on yourself or your clothes which can ignite. Wash your skin and change clothes immediately.
2. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
3. Use only an approved gasoline container.
4. Never remove gas cap or add fuel while the engine is hot or running. Allow engine to cool at least five minutes before refueling.
5. Never fuel tractor indoors.
6. Never store the tractor or fuel container inside where there is an open flame, spark or pilot light as on a water heater, space heater, furnace, clothes dryer or other gas appliances.
7. If gasoline is spilled, wipe it off the engine and equipment. Clean up oil or fuel spillage and remove any fuel soaked debris. Move tractor to another area. Wait 5 minutes before starting the engine.
8. To reduce fire hazards, keep tractor free of grass, leaves, or other debris build-up. Follow the cleaning instructions in the Service & Maintenance section.
9. Your tractor is designed to cut normal residential grass of a height no more than 10" (25cm). Do not attempt to mow through unusually tall, dry grass (e.g., pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the tractor deck presenting a potential fire hazard.
10. Never over fill fuel tank. Fill tank to no more than ½" below bottom of filler neck to allow space for fuel expansion.
11. Replace gasoline cap and tighten securely. Do not operate without fuel cap in place.
12. Allow a tractor to cool at least five minutes before fueling or storing.
13. Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.
14. When practical, remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.
15. Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.

# SAFE OPERATIONS PRACTICES

## Hauling

1. Use properly secured full width ramps for loading and unloading a tractor for transport.
2. Use extra care when loading or unloading the tractor into a trailer or truck. This tractor should not be driven up or down ramp(s), because the tractor could tip over, causing serious personal injury. The tractor must be pushed manually on ramp(s) to load or unload properly.
3. Raise the deck to the highest position for loading clearance.

## Towing with your Tractor

1. Do not tow a load that exceeds 250 lbs (113 kg) rolling weight and never exceed 50 lbs (22 kg) tongue weight.
2. Do not attach towed equipment except at the hitch point of the tractor.
3. Never allow children or others in or on towed equipment.
4. Do not tow on slopes greater than 5 degrees (9%). On slopes, the weight of the towed equipment may cause loss of traction and loss of control and/or the ability to stop.
5. Always use extra caution when towing with a tractor capable of making tight turns (e.g. tight-turn tractor). Make wide turns to avoid jack-knifing.
6. Travel slowly and allow extra distance to stop.

## Service

1. Keep machine in good working order. Do not use the tractor until worn or damaged parts are replaced.
2. To avoid serious injury or death, do not modify engine in any way. Tampering with the governor setting can lead to a runaway engine and cause it to operate at unsafe speeds. Never tamper with factory setting of engine governor. Do not change the engine governor settings or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
3. Tractor blades are sharp. Wrap the blade or wear gloves, and use extra caution when servicing them.
4. Tractors with hydraulic pumps, hoses or motors; and/or diesel injections systems have fluid systems under pressure. Fluid escaping under pressure may have sufficient force to penetrate skin and cause serious injury. If fluid is injected into the skin, seek immediate medical attention. Keep body and hands away from pin holes or nozzles that eject fluid under high pressure. If a leak occurs, have the tractor immediately serviced by an authorized dealer.
5. Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Turn off the engine, remove the key, and disconnect the spark plug wire(s) and ground against the engine to prevent unintended starting.
6. Check to make sure the blades come to complete stop in not more than (5) five seconds after disengaging the blade disengagement control per the shedule shown on the Maintenance Schedule chart in the Service and Maintenance section of this manual. Measure the stopping time with a stop watch. If the blades do not stop completely in less than five seconds, your tractor should be serviced professionally by an authorized dealer.
7. Check the safety interlock system for proper function per the schedule shown on the Maintenance Schedule chart in the Service and Maintenance section of this manual. If the safety interlock system does not function properly, have your tractor serviced professionally by an authorized dealer.
8. Never tamper with the safety interlock system or other safety devices. Check their proper operation regularly.

9. Check the blade(s) and engine mounting bolt torque in accordance to Maintenance Schedule chart in this manual. Also, visually inspect blade(s) for damage (e.g., excessive wear, bent, cracked). Replace the blade(s) with the original equipment manufacturer's (O.E.M.) blade(s) only.
10. Use of service parts which do not meet the original equipment specifications may lead to improper performance and compromise safety.
11. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition. Review the Maintenance Schedule chart in this manual for service interval information.
12. After striking a foreign object, stop the engine, disconnect the spark plug wire(s) and ground against the engine. Thoroughly inspect the tractor for any damage. Repair the damage before starting and operating.
13. Never attempt to make adjustments or repairs to the tractor while the engine is running.
14. Grass catcher components and the chute deflector are subject to wear and damage which could expose moving parts or allow objects to be thrown. Frequently check components and replace immediately with original equipment manufacturer's (O.E.M.) parts only.
15. Maintain or replace safety and instruction labels, as necessary.
16. Observe proper disposal laws and regulations for gas, oil, etc. to protect the environment.

## Notice Regarding Emissions

Engines which are certified to comply with California and federal EPA emission regulations for SORE (Small Off Road Equipment) are certified to operate on regular unleaded gasoline, and may include the following emission control systems: Engine Modification (EM) and Three Way Catalyst (TWC) if so equipped.

When required, models are equipped with low permeation fuel lines and fuel tanks for evaporative emission control. California models may also include a carbon canister. Please contact Customer Support for information regarding the evaporative emission control configuration for your model.

## Spark Arrestor

### WARNING

This tractor 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 arrestor meeting applicable local or state laws (if any).




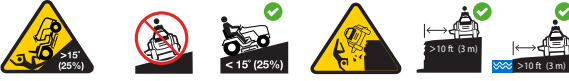


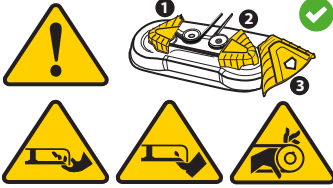
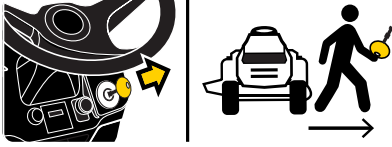

If a spark arrestor is used, it should be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.

A spark arrestor for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 361131 Cleveland, Ohio 44136-0019.

# SAFE OPERATIONS PRACTICES

## Safety Symbols

This page depicts and describes safety symbols that MAY APPEAR on this product.

Symbol	Description
 <p>OPESymbol.com</p>	<p><b>WARNING – READ OPERATOR’S MANUAL:</b> Read, understand and follow all the safety rules and instructions in the manual(s) and on the tractor before attempting to operate this tractor. Failure to comply with this information may result in personal injury or death. Keep this manual in a safe location for future and regular reference. Using a Smart Phone, scan the QR code symbol to learn more information concerning the warnings contained on this tractor. You can also go to <a href="http://www.OPESymbol.com">www.OPESymbol.com</a> for more information.</p>
	<p><b>WARNING – AVOID THROWN OBJECTS INJURY:</b> Keep helpers at least 75’ (23 meters) from machine during operation. Remove all stones, sticks, wire, bones, toys, and other foreign objects which could be picked up and thrown by the blade(s). Do not operate the tractor without the discharge cover or entire grass catcher in its proper place.</p>
	<p><b>WARNING – AVOID CHILD BACKOVER/RUNOVER/BLADE INJURY:</b> To avoid back-over accidents, always look behind and down for small children. Never carry children, even with the blade(s) shut off. Keep bystanders, children and pets inside during operation under the watchful care of a responsible adult other than the operator. Stop tractor if anyone enters the area.</p>
	<p><b>WARNING – AVOID TIP-OVER/ROLL-OVER INJURY:</b> Do not operate machine on a slope greater than 15° (25%). Do not mow across slopes, only mow up and down slopes that are less than 15 degrees (25%). Use low speeds and avoid sudden turns on slopes. Stay at least 10 feet (3 meters) from drop-offs, ditches, embankments or the edge of water.</p>
	<p><b>WARNING – AVOID FIRES:</b> Your tractor is designed to cut normal residential grass of a height no more than 10” (25cm). Do not attempt to mow through unusually tall, dry grass (e.g., pasture) or piles of dry leaves. Allow a tractor to cool at least five minutes before fueling or storing inside an enclosed garage or storage shed.</p>
	<p><b>WARNING – AVOID AMPUTATION INJURY:</b> Do not put hands or feet near or under the cutting deck. Contact with the blade(s) can amputate hands and feet.</p>
	<p><b>WARNING – AVOID AMPUTATION INJURY:</b> Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet. Ensure that all safety devices (guards, shields, switches, etc.) are in place and working. Belt and/or blade spindle contact can crush or injure body parts.</p>
	<p><b>WARNING – REMOVE KEY:</b> Always turn off blade(s), move the drive control levers outward into park position, stop engine and remove key before dismounting. If you are leaving the tractor unattended, always remove the key to prevent unauthorized use by children or others.</p>
	<p><b>WARNING – AVOID TOWING RELATED INJURY:</b> Do not tow a load that exceeds 250 lbs (113 kg) rolling weight and never exceed 50 lbs (22 kg) tongue weight. Never allow children or others in or on towed equipment. Do not tow on slopes greater than 5 degrees (9%). On slopes, the weight of the towed equipment may cause loss of traction, loss of control and/or loss of the ability to stop. Travel slowly and allow extra distance to stop.</p>

### ▲ WARNING

Your Responsibility — Restrict the use of this power machine to persons who read, understand and follow the warnings and instructions in this manual and on the machine. **SAVE THESE INSTRUCTIONS!**

# Slope Gauge

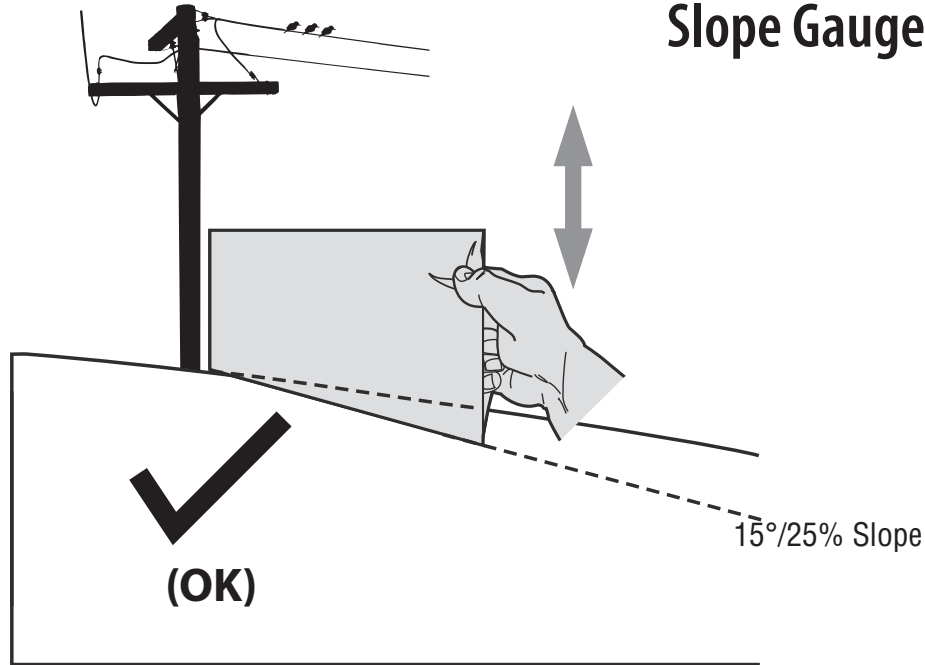


Figure 1

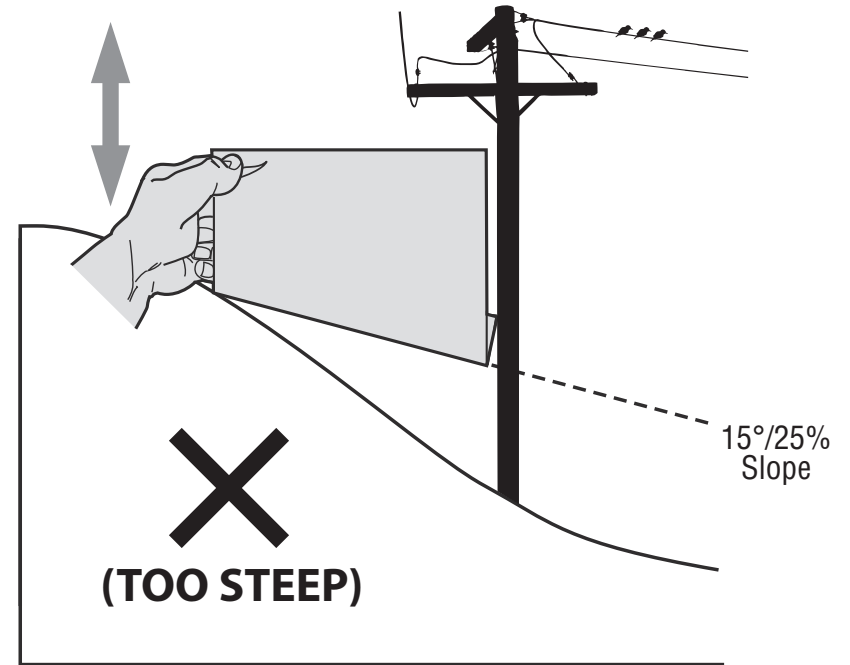


Figure 2

15°/25% dashed line

## USE THIS SLOPE GAUGE TO DETERMINE IF A SLOPE IS TOO STEEP FOR SAFE OPERATION!

To check the slope, proceed as follows:

1. Remove this page and fold along the dashed line.
2. Locate a vertical object on or behind the slope (e.g. a pole, building, fence, tree, etc.)
3. Align either side of the slope gauge with the object (See Figure 1 and Figure 2).
4. Adjust gauge up or down until the left corner touches the slope (See Figure 1 and Figure 2).
5. If there is a gap below the gauge, the slope is too steep for safe operation (See Figure 2 above).



**WARNING!** Slopes are a major factor related to tip-over and roll-over accidents which can result in severe injury or death. Do not operate machine on slopes in excess of 15 degrees. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it.

# ASSEMBLY

**NOTE:** This Operator's Manual covers several models. Features may vary by model. Not all features in this manual are applicable to all models and the model depicted may differ from yours.

**NOTE:** All references in this manual to the left or right side and front or back of the tractor are from the operating position only. Exceptions, if any, will be specified.

Refer to Figure 1 to match your transmission style; Foot Control CVT (Continuously Variable Transmission) or CVT, or Hydrostatic.

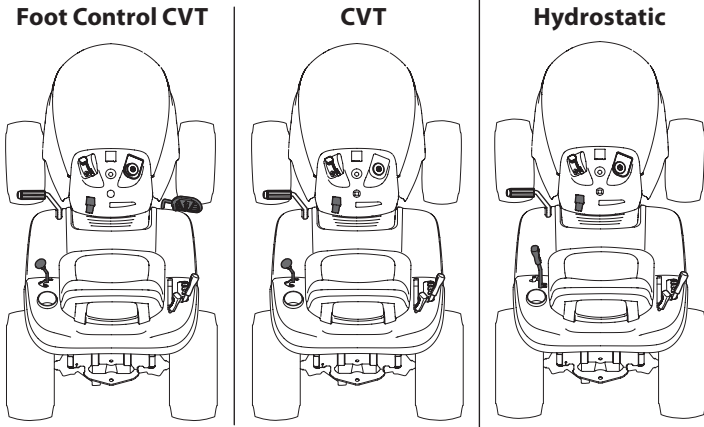


Figure 1

## Manually Moving the Tractor

### Hydrostatic Models (If Equipped)

1. Remove parking brake if activated.
2. Engage the transmission bypass rod to move the tractor manually without starting it. The transmission bypass rod is located on the rear of the tractor, on the frame. Engage the bypass rod by pulling out and down. See Figure 2.

**NOTE:** If the tractor will not move or does not move freely when pushing check if the hydrostatic bypass rod is fully open or the brake is engaged.

**NOTE:** The transmission will NOT engage when the hydrostatic bypass rod is pulled out. Return the rod to its disengaged position prior to operating the tractor.

3. Disengage the transmission bypass rod by pushing the rod back in after moving the tractor.

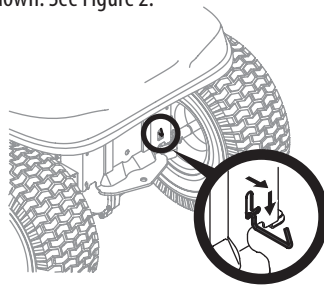


Figure 2

### CVT or Foot Control CVT Models (If Equipped)

1. Remove Parking Brake, if activated
2. Place the shift lever in the NEUTRAL (N) position.

## Install Operator's Seat (If necessary)

### Knob Adjust or Bolt Adjust

**NOTE:** The seat is shipped fastened to the tractor seat's pivot bracket with a cable tie OR mounted backward to the pivot bracket. To install the seat proceed as follows:

1. Remove the seat from its shipping position.
2. Remove the seat adjustment knob or 9/16" bolt (a) from the bottom of the seat (b). See Figure 3.
3. Align the seat (b) over the seat pivot bracket (c) as shown in Figure 3 and fit the seat (b) onto the seat pivot bracket (c) inserting the two tabs on the seat (b) bottom into the wide opening of the slots on the seat pivot bracket (c).

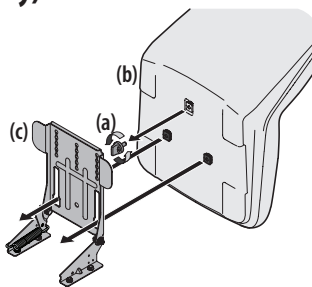


Figure 3

4. Slide the seat (b) rearward in the seat pivot bracket (c), lining up one of the slots in the seat pivot bracket (c) with the hole in the center rear of the seat (b) base. See Figure 4.

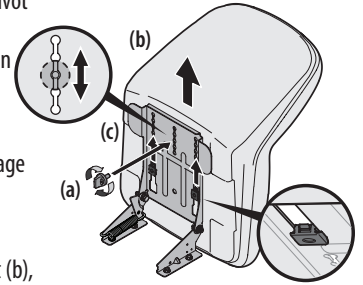


Figure 4

**NOTE:** Be certain the two seat tabs engage the seat pivot bracket as shown in the bottom right inset of Figure 4.

5. Select the desired position for the seat (b), and secure with the adjustment knob or 9/16" bolt (a) removed in Step 2.

### Lever Adjust

**NOTE:** The seat is shipped with the seat switch and seat pan attached.

1. Cut any straps securing the seat assembly to the tractor. Remove any packing material.

**NOTE:** Be careful not to cut the wiring harness connecting the seat and the seat switch.

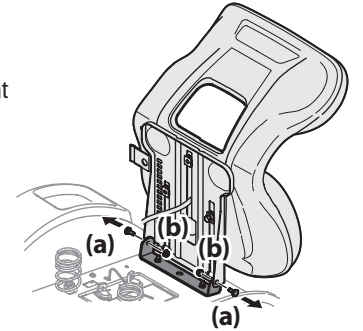


Figure 5

2. Remove the two shoulder bolts (a) and flange lock nuts (b) in the seat pan as shown in Figure 5.

3. Rotate the seat into position and slide a Phillips screwdriver through one of the seat-securing holes and seat bracket for alignment.

4. With the previously removed shoulder bolts (a) and flange lock nuts (b) secure one side of the seat and seat bracket. While supporting the seat, remove the Phillips screwdriver and secure the other side of the seat. Be careful not to crimp or damage the wire harness while installing the seat. See Figure 6. Torque to 84-103 in-lbs (9.5-11.6 N-m).

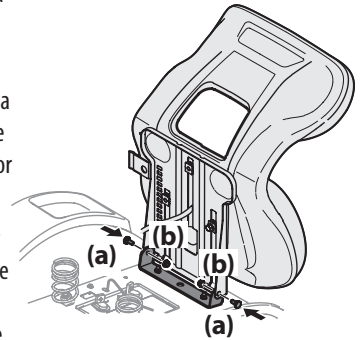


Figure 6

5. Using the harness clip attached to the harness, secure the excess wire to the fender by snapping the harness clip in place as shown in Figure 7.

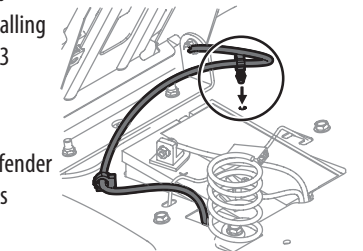


Figure 7

### Dash Shroud (If Equipped)

1. If the dash shroud (a) was shipped loose, the hardware for attaching the dash shroud (a) is shipped attached to the dash shroud (a). Remove the two bolts (b) from the dash shroud (a). See Figure 8.

2. Mount the dash shroud (a) and align the mounting holes between the top of the dash and the dash shroud. See Figure 8.

3. Secure the dash shroud (a) to the dash (c) with the bolts (b) removed in Step 1. See Figure 8.

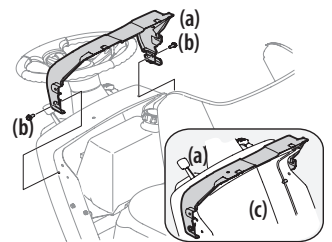


Figure 8

# ASSEMBLY

## Attaching the Hood Topper (If Necessary/If Equipped)

**Note:** Be careful not to damage the headlight harness when installing the hood topper.

1. Cut the cable ties securing the hood topper to the tractor.
2. Remove the four screws pre-installed in the hood topper and retain for Step 4.
3. Snap the hood topper into place using the hood as your guide. See Figure 9.
4. Install the hood topper onto the hood of the tractor and secure from the underside using the four screws removed in Step 2.

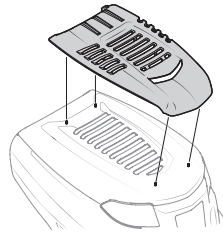


Figure 9

## Installing the Steering Wheel (If necessary)

The hardware for attaching the steering wheel has been packed within the steering wheel, beneath the steering wheel cap. Carefully pry off the steering wheel cap and remove the hardware.

**IMPORTANT!** Do not use impact tools to install or remove the steering wheel. Doing so can overtorque and damage the fastener.

1. Remove the key, attached with a cable tie to the steering wheel.
2. With the front wheels of the tractor pointing straight forward, align the steering wheel (a) and place it onto the steering shaft (b). See Figure 10.
3. Secure the steering wheel (a) with the hex bolt (c) and washer (f) from under the steering wheel cap (e) and torque to 18-22 ft.-lbs (24.4-29.8 N-m).
4. Place the steering wheel cap (e) over the center of the steering wheel (a) and push downward until it "clicks" into place.

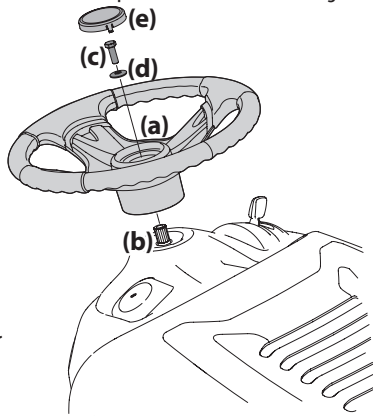


Figure 10

**NOTE:** The hex bolt (c) securing the steering wheel (a) has thread locker applied to it, so if it is removed, it is recommended that the hex bolt (c) be replaced or thread lock re-applied.

## Lower Deck Discharge Chute Deflector (If Equipped)

### ⚠ WARNING

Never operate the mower deck without the chute deflector installed and in the down position.

### 46" Deck Models

1. Remove the key attached with a zip tie to the chute bracket.
2. Remove the flange lock nut and hex screw from the deck.
3. Place the chute deflector on the deck, be sure to insert the tabs on the chute deflector into the holes on the deck. See Figure 11.
4. Slide the chute deflector toward the rear of the tractor until the bolt hole in the chute deflector aligns with the hole in the deck. See Figure 11.

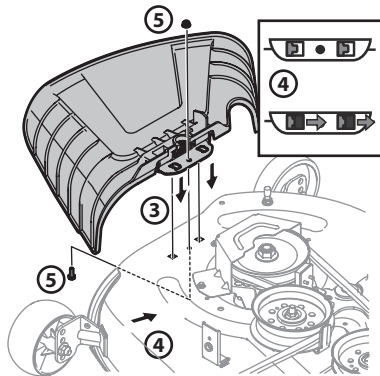


Figure 11

5. Secure the chute deflector in place with the flange lock nut and hex screw removed in step two. Tighten to 102-124 in.-lbs (11.5-14 N-m). See Figure 11. Skip ahead to "Setting the Deck Wheels"

### 42"/50"/54" Deck Models

1. Check the tractor deck for a shipping brace that may be holding the chute deflector upward for shipment. If the shipping brace is present, it must be removed before operating the tractor. Holding the chute deflector fully upward, remove the shipping brace.
2. Lower the chute deflector and discard the shipping brace. See Figure 12.

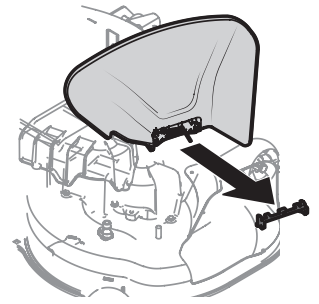


Figure 12

**Note:** 36" deck models come equipped with mulch plugs rather than chute deflectors and no shipping brace is included.

## Setting the Deck Wheels (If Equipped)

**NOTE:** The deck wheels are an anti-scalp feature of the deck and are not designed to support the weight of the cutting deck.

1. Move the tractor to a level surface, preferably pavement.
2. Check the tire pressure, adjust, if necessary. See tire sidewall for proper tire pressure.
3. Make sure the deck is level side-to-side and properly pitched. See the Maintenance and Adjustments section for deck leveling information and instructions.
4. Place deck lift lever in the desired mowing height position.
5. Check the wheels for contact or excessive clearance with the surface below.

**NOTE:** The deck wheels should have between 1/4"-1/2" (6.35-12.7mm) clearance above the ground. Proceed as follows to adjust the wheels:

- a. Raise the deck lift lever to its highest setting.
- b. Remove the front (a) and rear (b) deck wheels by removing the flange lock nuts (c) and shoulder bolts (d) that secure them to the deck. See Figure 13.
- c. Place the deck lift lever in the desired mowing height setting.
- d. Reinsert the shoulder bolt (with each deck wheel) into the index hole that leaves approximately 1/2" (13mm) between the bottom of the wheel and the pavement. Tighten the flange lock nut and shoulder bolt to between 25-30 ft.-lbs (34-40 N-m) using a torque wrench.

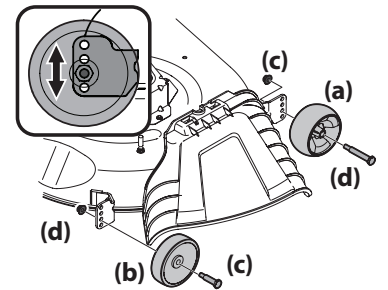


Figure 13

**NOTE:** Refer to Adjusting the Deck in the Service and Maintenance section of this manual for more detailed instructions regarding various deck adjustments.

## Battery Information

### ⚠ WARNING

California **PROPOSITION 65 WARNING:** Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.



# ASSEMBLY

## ⚠ WARNING

Should battery acid accidentally splatter into the eyes or onto the skin, rinse the affected area immediately with clean cold water. Seek prompt medical attention. If acid spills on clothing, first dilute it with clean water, then neutralize with a solution of ammonia/water or baking soda/water. NEVER connect (or disconnect) battery charger clips to the battery while the charger is turned on, as it can cause sparks. Keep all sources of ignition (cigarettes, matches, lighters) away from the battery. The gas generated during charging can be combustible. As a further precaution, only charge the battery in a well ventilated area. Always shield eyes and protect skin and clothing when working near batteries. Batteries contain sulfuric acid and may emit explosive gases. Use extreme caution when handling batteries. Keep batteries out of the reach of children.

## ⚠ CAUTION

When attaching battery cables, always connect the POSITIVE (Red) wire to terminal first, followed by the NEGATIVE (Black) wire.

**Note:** The positive battery terminal is marked Pos. (+). The negative battery terminal is marked Neg. (-).

## Connecting the Battery Cables

### ⚠ WARNING

When attaching battery cables, always connect the POSITIVE (Red) wire to its terminal first, followed by the NEGATIVE (Black) wire.

For shipping reasons the factory may leave both battery cables disconnected from the terminals. To connect the battery cables, proceed as follows:

1. If present, remove the plastic cover from the positive battery cable. Attach the red connector to the positive battery terminal (+) using the bolt (a) and hex nut (b). See Figure 14.
2. If present, remove the plastic cover from the negative battery terminal and attach the black cable to the negative battery terminal (-) with the bolt (a) and hex nut (b). See Figure 14.
3. Position the red rubber boot (c) over the positive battery terminal to help protect it from corrosion.

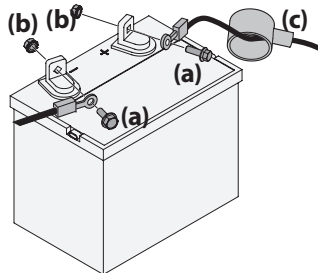


Figure 14

**NOTE:** If the battery is put into service after the date shown on top/side of battery, charge the battery as instructed in the Service and Maintenance section prior to operating the tractor.

## Battery Maintenance

- The battery is filled with battery acid and then sealed at the factory. However, even a "maintenance free" battery requires some maintenance to ensure its proper life cycle.
- Spray the terminals and exposed wire with a battery terminal sealer, or coat the terminals with a thin coat of grease or petroleum jelly, to protect against corrosion.
- Always keep the battery cables and terminals clean and free of corrosion.
- Avoid tipping. Even a sealed battery will leak electrolyte when tipped.

## Battery Storage

- When storing the tractor for extended periods, disconnect the negative battery cable. It is not necessary to remove the battery.
- All batteries discharge during storage. Keep the exterior of the battery clean, especially the top. A dirty battery will discharge more rapidly.
- The battery must be stored with a full charge. A discharged battery can freeze sooner than a charged battery. A fully charged battery will store longer in cold temperatures than hot.

- Recharge the battery before returning to service. Although the tractor may start, the engine charging system may not fully recharge the battery.

## Battery Removal

### ⚠ WARNING

Battery posts, terminals and related accessories contain lead and lead compounds. Wash hands after handling.

The battery is located beneath the seat frame. To remove the battery:

1. Remove the battery hold down bracket by pushing the hooked end out of the tab on the fender to the right side of the battery. Then flip the battery hold-down bracket up to free the battery. See Figure 15.
2. Remove the hex cap screw and sems nut securing the black negative battery lead to the negative battery post (marked NEG). Move the cable away from the negative battery post.
3. Remove the hex cap screw and sems nut securing the red positive battery lead to the positive battery post (marked POS).
4. Carefully lift the battery out of the tractor.
5. Install the battery by repeating the above steps in the reverse order.

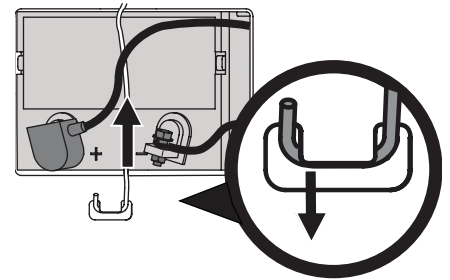


Figure 15

## Charging the Battery

Test and, if necessary, recharge the battery after the tractor has been stored for a period of time.

- A voltmeter or load tester should read 12.6 volts (DC) or higher across the battery terminals. See Figure 16.
- Charge the battery with a 12-volt battery charger at a MAXIMUM rate of 10 amps.

Voltmeter Reading	State of Charge	Charging Time
12.7	100%	Full Charge
12.4	75%	90 Min.
12.2	50%	180 Min.
12.0	25%	280 Min.

Figure 16

## Adjusting the Seat

### Knob Adjust or Bolt Adjust

To adjust the position of the seat, remove the adjustment knob or 9/16" bolt (a) on the bottom of the seat (b). Slide the seat (b) forward or backward as desired. Reinstall the adjustment knob or 9/16" bolt (a). See Figure 4.

### Lever Adjust

To adjust the position of the seat, lift the seat adjustment lever up. Slide the seat forward or rearward to the desired position; then release the adjustment lever. Make sure seat is locked into position before operating the tractor. See Figure 17.

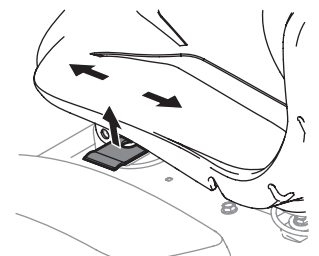


Figure 17

## Oil

**NOTE:** Your tractor is shipped with oil in the engine. However, you MUST check the oil level before operating. See the engine manual for instructions on checking, adding and changing oil.

### ⚠ CAUTION

Always check the engine oil level before each use as instructed in the engine operator's manual. Add oil as necessary. Failure to do so may result in serious damage to your engine.

# OPERATION

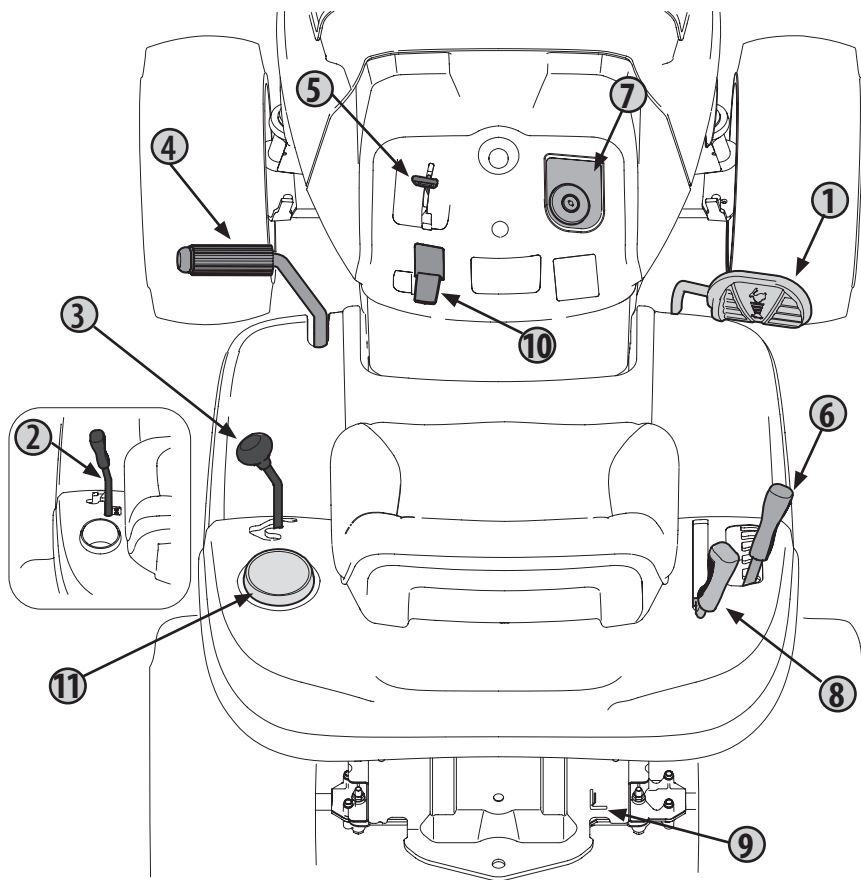


Figure 18

**Note:** This Operator's Manual covers several models. Tractor features may vary by model. Not all features in this manual are applicable to all tractor models and the tractor model depicted may differ from yours.

**NOTE:** References to LEFT, RIGHT, FRONT, and REAR indicate that position on the riding mower when facing forward while seated in the operator's seat.

## ① Drive Pedal (Foot Control CVT Models)(If Equipped)

Depress the drive pedal forward to allow the tractor to travel. The further forward the pedal is depressed, the faster the tractor will travel. The pedal will return to its original/neutral position when it's not depressed.

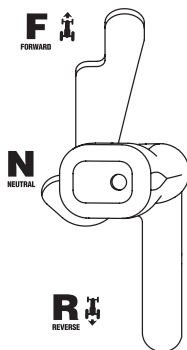
## ② Speed Control Lever (Hydrostatic Models)

To drive forward or in reverse, slowly move the speed control lever to the desired "F" forward or "R" reverse speed.

To stop, move the speed control lever to the "N" neutral position.

When mowing, place the speed control lever in the "Cutting Speed" position, or a slower forward speed for the best results.

**NOTE:** Do NOT use the parking brake pedal to control the ground speed of the tractor while driving. Always use the speed control lever to slow the ground speed of the tractor. Depressing the parking brake pedal with the speed control lever engaged as part of regular operation will result in premature wear of the drive belt.

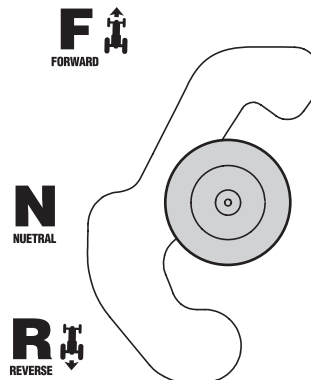


**IMPORTANT:** Do NOT attempt to change the direction of travel when the tractor is in motion. Serious damage to the tractor's transmission could result. Always bring the tractor to a complete stop before moving the speed control lever from forward to reverse or vice versa.

## ③ Shift Lever (CVT & Foot Control CVT Models)

The shift lever is located on the left side of the fender and has three positions; FORWARD (F), NEUTRAL (N) and REVERSE (R). The brake pedal must be depressed and the tractor must not be in motion when moving the shift lever.

**IMPORTANT:** Never force the shift lever. Doing so may result in serious damage to the tractor's transmission.



## ④ Brake Pedal/ Clutch-Brake Pedal

Depress the brake pedal/ clutch-brake pedal while the tractor is in use to stop the tractor, to shift (CVT and Foot Control CVT models) and for setting the parking brake.

**Note:** The brake pedal/ clutch-brake pedal must be fully depressed to start the tractor. Refer to Safety Interlock System for more information.

## ⑤ Throttle or Throttle/Choke Control Lever

Some models have an auto-choke feature. These models do not come with a manual choke function. Push the throttle or throttle/choke control lever forward to increase the engine speed. The tractor is designed to operate with the throttle/choke control lever at full throttle (FAST) when the tractor is being driven and the mower deck is engaged. Pull the throttle/choke control lever rearward to decrease the engine speed. When starting the engine, if equipped with a throttle/choke control lever, push the control lever fully forward into the "CHOKE" position. After starting and warming the engine, move the control lever rearward until you feel it move past the choke detent. Throttle is not meant to control unit speed, throttle should remain in high speed while operating blades.

## ⑥ Deck Lift Lever

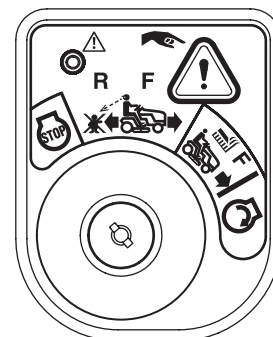
The deck lift lever is used to raise and lower the deck. Pull the lever to the left out of the index notch and push downward to lower the deck, or pull upward to raise the deck. When the desired height is attained, move the lift lever to the right until fully engaged in the index notch.

## ⑦ Ignition Switch

### ⚠ WARNING

Never leave a running tractor unattended. Always disengage PTO, set parking brake, stop engine and remove key to prevent unintended starting.

Refer to Starting the Engine for information on how to start the engine. Refer to Stopping the Engine for instructions on how to stop the engine.



# OPERATION

## WARNING

Prior to operating the tractor, refer to both **Safety Interlock System** and **Starting The Engine** in the Operation section of this manual for detailed instructions regarding the Ignition Switch Module and operating the tractor in REVERSE CAUTION MODE.

## 8 PTO (Blade Engage) Lever

The PTO (Blade Engage) lever engages power to the cutting deck or other (separately available) attachments. See Engaging the PTO (Blade Engage) section for information and instructions on using the PTO.

## 9 Transmission Bypass Rod (Hydrostatic Models)

When engaged, the rod opens a bypass within the hydrostatic transmission, which allows the tractor to be pushed short distances by hand. Refer to the Assembly section for instructions on using the bypass feature.

## 10 Park Brake or Park Brake/CVT Drive Control Lever

The Park Brake or Park Brake/ CVT Drive Control Lever is used to engage the parking brake and set the drive speed of CVT models. Refer to the Driving the Tractor section of this manual for detailed instructions regarding the parking brake.

**Note:** The parking brake must be set if the operator leaves the seat with the engine running or the engine will automatically shut off.

## 11 Cup Holder

The cup holder is located to the left of the operator's seat.

## Headlights (Not Shown)

On some tractors the lights are ON whenever the ignition key is rotated out of the STOP position. The lights turn OFF when the ignition key is moved to the STOP position.

On some tractors the lights are ON only while the engine is running. Turning the tractor OFF will turn the lights OFF.

The headlights may flicker briefly as the tractor is turned OFF.

## Operation

### Before Operating Your Tractor

- Before operation, refer to Maintenance Schedule chart located in this manual for regularly scheduled service items.
- This engine is certified to operate only on clean, fresh, unleaded gasoline. Fill only with clean, fresh, unleaded gasoline with a pump sticker octane rating of 87 or higher.
- Do not use gasoline left over from the previous season, to minimize gum deposits in the fuel system.
- Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is an approved fuel. Other gasoline/alcohol blends are not approved.
- Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blends (up to a maximum of 15% MTBE by volume) are approved fuels. Other gasoline/ether blends are not approved.

## Safety Interlock System

## WARNING

Do not operate the tractor if the safety interlock system is malfunctioning. This system was designed for your safety and protection.

This tractor is equipped with a safety interlock system for the protection of the operator. If the safety interlock system should ever malfunction, do not operate the tractor. Contact an authorized service dealer.

- The safety interlock system prevents the engine from cranking or starting unless the parking brake is engaged or the operator is in the seat and the brake pedal is fully depressed, with the PTO (Blade Engage) lever in the disengaged (OFF) position.
- The engine will automatically shut OFF if the operator leaves the seat before engaging the parking brake.
- The engine will automatically shut OFF if the operator leaves the tractor's seat with the PTO (Blade Engage) lever in the ENGAGED (ON) position, regardless of whether the parking brake is engaged.
- With the ignition key in the NORMAL DRIVING MODE position, the engine will automatically shut OFF if the PTO (Blade Engage) lever is moved into the engaged (ON) position with the speed control in REVERSE (R) position.

## Checking the Safety Interlock Circuits

Periodically check the safety interlock circuits to ensure they are working properly. If a safety circuit is not working as designed, contact your authorized service dealer to have the tractor inspected. DO NOT operate the tractor if any safety circuit is not functioning properly. To check the safety circuits, proceed as follows:

1. With the engine off and sitting in the seat, place the PTO lever in the ENGAGED (ON) position. Momentarily turn the ignition switch to the START position; the engine should not crank.
2. With the tractor running, and the parking brake not engaged; lift upward from the operator's seat. The engine should stop.
3. With the parking brake engaged, engage the PTO. Lift upward from the operator's seat; the engine should stop.

## Starting the Engine

## CAUTION

The operator should be sitting in the tractor seat when starting the engine.

1. Insert the ignition key into the ignition switch.
2. Place the PTO (Blade Engage) lever in the OFF position.
3. Engage the tractor's parking brake.
4. Push the throttle control upward. If equipped with a throttle/choke control lever, push the throttle/choke control lever past the detent, to engage the choke.

**Note:** If the engine is warmed up, it may not be necessary to choke the engine.

5. Turn the ignition key clockwise to the START position. After the engine starts, release the key. It will return to the NORMAL MOWING position.

## CAUTION

Do NOT hold the key in the START position for longer than ten seconds at a time. Doing so may cause damage to your engine's electric starter.

6. For models equipped with a throttle/choke control lever: as the engine warms up, gradually pull the throttle/choke control lever rearward past the choke detent position. Do not use the choke position to enrich the fuel mixture, except as necessary to start the engine.
7. Allow the engine to run for a few minutes at mid-throttle before putting the engine under load.

**Note:** When operating the tractor be certain that the throttle lever is always in the FAST position.

# OPERATION

## Using Jumper Cables To Start Engine

### WARNING

Batteries contain sulfuric acid and produce explosive gasses. Make certain the area is well ventilated, wear gloves and eye protection, and avoid sparks or flames near the battery.

If the battery charge is not sufficient to crank the engine, recharge the battery. If a battery charger is unavailable and the tractor must be started, the aid of a booster battery will be necessary. Connect the booster battery as follows:

1. Connect the end of one cable to the disabled tractor battery's positive terminal; then connect the other end of that cable to the booster battery's positive terminal.
2. Connect one end of the other cable to the booster battery's negative terminal; then connect the other end of that cable to the frame of the disabled tractor, as far from the battery as possible.
3. Start the disabled tractor following the normal starting instructions previously provided; then disconnect the jumper cables in the exact reverse order of their connection.
4. Have the tractor's electrical system checked and repaired as soon as possible to eliminate the need for jump starting.

## Stopping the Engine

1. If the blades are engaged, place the PTO (Blade Engage) lever in the OFF position.
2. Engage the tractor parking brake.
3. Place the throttle control to midway between the FAST and SLOW positions.
4. Turn the ignition key counterclockwise to the STOP position.

## Driving the Tractor

### WARNING

- Keep all movement of the drive pedal (If Equipped), Speed Control Lever (If Equipped) and brake pedal slow and smooth. Abrupt movement of the drive control or brake pedal can affect the stability of the tractor and could cause the tractor to flip over, which may result in serious injury or death to the operator.
- Sharp turns can affect control of the tractor. ALWAYS slow the tractor before making sharp turns.
- Do not leave the seat of the tractor without first placing the PTO (Blade Engage) in the DISENGAGED (OFF) position and engaging the parking brake. If leaving the tractor unattended, also turn the engine off and remove the ignition key.

## Hydrostatic

1. Move the throttle into the FAST position.
2. Depress the brake pedal and move the park brake lever to release the parking brake.
3. To travel FORWARD, slowly move the speed control lever forward until the desired speed is achieved.
4. To travel in REVERSE, check that the area behind is clear then slowly move the speed control lever rearward until the desired speed is achieved.
5. The further forward or rearward that the lever is moved, the faster the tractor will travel.
6. **To stop**, move the speed control lever to the NEUTRAL (N) position.

## CVT

1. Move the throttle into the FAST position.

2. Depress the clutch-brake pedal and move the Park Brake/ CVT Drive Control lever to the desired speed setting to take the tractor out of Park and set the drive speed.

**IMPORTANT:** First-time operators should use speed positions 1 or 2. Become completely familiar with the tractor's operation and controls before operating the tractor in higher speed positions.

3. Place the shift lever in either the FORWARD (F) or REVERSE (R) position.

### WARNING

Do NOT use the shift lever to change the direction of travel when the tractor is in motion. Always use the clutch-brake pedal to bring the tractor to a complete stop before shifting.

4. Release clutch-brake pedal slowly to put the tractor into motion.
5. To stop, depress the clutch-brake pedal.

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

1. Depress the clutch-brake pedal
2. Place shift lever in NEUTRAL (N).
3. Restart engine.
4. Place CVT Drive Control Lever in highest speed position.
5. Release clutch-brake pedal fully.
6. Depress clutch-brake pedal.
7. Place CVT Drive Control Lever in desired position.
8. Place shift lever in either FORWARD (F) or REVERSE (R), and follow normal operating procedures.

## Foot Control CVT

1. Move the throttle into the FAST position.
2. Depress the brake pedal and move the Park Brake/CVT Drive Control Lever out of the Park position.
3. Place the shift lever in either the FORWARD (F) or REVERSE (R) position.
4. Release clutch-brake pedal fully.
5. Gradually begin to apply pressure to the drive pedal. The further down the pedal is pushed, the faster the tractor will travel in the desired direction based on the position of the shift lever.
6. Stop the tractor by releasing the drive pedal and then depressing the brake pedal.

## Engaging the Parking Brake

**Note:** The parking brake must be set if the operator leaves the seat with the engine running or the engine will automatically shut off.

To set the parking brake:

1. Depress the brake pedal (Hydrostatic models) or clutch-brake pedal (CVT and Foot Control CVT models) completely down with your left foot and hold it in that position.
2. Move the Park Brake lever (Hydrostatic models and Foot Control CVT drive models) or Park Brake/ CVT Drive Control lever (CVT models) all the way down and into the Park Brake Engaged position.
3. Remove your foot from the brake pedal/clutch-brake pedal.

After completing step 3, the brake pedal should remain in the down position. If it doesn't, the parking brake is *not* engaged. Repeat steps 1-3 to engage the parking brake.

# OPERATION

## Releasing the Parking Brake

Depress the brake pedal/clutch-brake pedal and move the Park brake or Park Brake/CVT Drive Control lever out of the ENGAGED position and into the DISENGAGED position for Hydrostatic and Foot Control CVT models. For CVT models, depress the brake pedal/clutch-brake pedal and move the parking brake lever out of the ENGAGED position and into the desired speed setting.

## Reverse Caution Mode (If Equipped)

The REVERSE CAUTION MODE position of the ignition switch allows the tractor to be operated in reverse with the PTO (Blade Engage) into the engaged (ON) position.

**Note:** Mowing in reverse is not recommended.

### ⚠ WARNING

Use extreme caution while operating the tractor in the REVERSE CAUTION MODE. Always look down and behind before and while backing. Do not operate the tractor with children or others around. Stop the tractor immediately if someone enters the area.

To use the REVERSE CAUTION MODE:

**Note:** The operator MUST be seated in the tractor seat.

1. Start the engine as previously instructed.
2. Turn the ignition key from the NORMAL MOWING (a) position to the REVERSE CAUTION MODE (b) position of the ignition switch. See Figure 18.
3. Press and hold the REVERSE CAUTION MODE BUTTON (c) at the top, right corner of the ignition module for 3 seconds. The red indicator light (d) at the top, left corner of the ignition module will be ON while activated. See Figure 19.

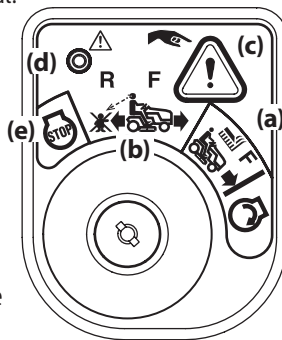


Figure 19

4. Once activated (indicator light ON), the tractor can be driven in reverse with the PTO (Blade Engage) in the engaged (ON) position.
5. Always look down and behind before and while backing up slowly to make sure no children are around. After resuming forward motion, return key to the NORMAL MOWING (a) position to return to normal mowing operation.

The REVERSE CAUTION MODE (b) will remain activated until:

- a. The key is placed in either the NORMAL MOWING (a) position or STOP (e) position.
- b. The operator leaves the seat (electric PTO)/the parking brake is set (manual PTO).

## Engaging the PTO (Blade Engage)

Engaging the PTO (Blade Engage) transfers power to the cutting deck. To engage the PTO:

1. Move the throttle to the FAST position.
2. Push the PTO (Blade Engage) lever forward into the engaged (ON) position. See Figure 20.
3. To disengage the PTO (Blade Engage), pull the lever backward, into the disengaged PTO (Blade Engage) OFF position.

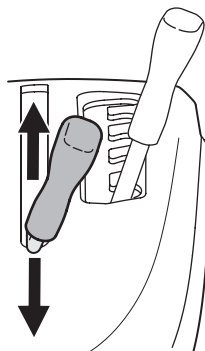


Figure 20

## Mowing

### ⚠ WARNING

To help avoid blade contact or a thrown object injury, keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation. Stop machine if anyone enters the area.

### ⚠ WARNING

Make certain the area to be mowed is free of debris, sticks, stones, wire or other objects that can be thrown by the rotating blades.

**Note:** Do not engage the mower deck when lowered in grass. Premature wear and possible failure of the "V" belt and PTO clutch will result. Fully raise the deck or move to a non grassy area before engaging the mower deck.

- Mow up and down slopes, not across. If mowing a slope, start at bottom and work upward to ensure turns are made uphill.
- Do not mow at high ground speed, especially if a mulch kit or grass collector is installed.
- Do not cut the grass too short. Short grass is prone to weed growth and yellows quickly in dry weather.
- Always operate the tractor with the throttle in the FAST position while mowing.
- On the first pass, pick a point on the opposite side of the area to be mowed. Follow the point to maintain a straight line.
- Engage the PTO and move the throttle control or throttle/choke control to the FAST position.
- Lower the mower deck to the desired height setting.
- For best results it is recommended that the first two laps be cut with the discharge thrown towards the center. After the first two laps, reverse the direction to throw the discharge to the outside for the balance of cutting. This will give a better appearance to the lawn.

**Note:** The speed of the tractor will affect the quality of the mower cut. Mowing at full speed will adversely affect the cut quality.

- Your tractor is designed to cut normal residential grass of a height no more than 10" (25cm). Do not attempt to mow through unusually tall, dry grass (e.g., pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the tractor.
- Do NOT attempt to mow heavy brush and weeds or extremely tall grass. Your tractor is designed to mow lawns, NOT clear brush.
- Keep the blades sharp and replace the blades when worn.
- When approaching the other end of the strip, slow down or stop before turning. A three point turn is recommended.
- Align the mower with an edge of the mowed strip and overlap approximately 3" (7.6 cm).
- Direct the tractor on each subsequent strip to align with a previously cut strip.
- To prevent rutting or grooving of the turf, if possible, change the direction that the strips are mowed by approximately 45° for the next and each subsequent mowing.

When stopping the tractor for any reason while on a grass surface, always:

- Engage the parking brake.
- Shut engine off and remove the ignition key.
- Doing so will minimize the possibility of having your lawn "browned" by hot exhaust from your tractor's running engine.

# SERVICE AND MAINTENANCE

## MAINTENANCE SCHEDULE

### WARNING

Before performing any type of maintenance/service, disengage all controls and stop the engine. Wait until all moving parts have come to a complete stop. Disconnect spark plug wire and ground it against the engine to prevent unintended starting. Always wear safety glasses during operation or while performing any adjustments or repairs.

Follow the maintenance schedule given below. This chart describes service guidelines only.

Refer to the Engine Operator's Manual for engine maintenance items listed in the table below.

\*-- Perform more often in dry conditions and/or when mulching

	Before Each use	After First 5 Hours	Every 10 Hours	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Prior to Storing	See Engine Manual
Check/Clean Engine Intake Screens & Cooling Fans #	✓							✓	
Check/Clean Exhaust Manifold, Muffler Pipe & Muffler Shields #	✓							✓	
Check/Clean Top & Underside of Deck, Under and Around Spindle Covers & Belt Area #	✓							✓	
Check/Clean Around Fuses, Wiring and Wiring Harnesses #	✓							✓	
Check/Clean Around Transmission, Axle and Fans #	✓							✓	
Check Air Filter for Dirty, Loose or Damaged Parts	✓								
Check Engine Oil Level	✓								
Clean Battery Terminals			✓					✓	
Grease All Lubrication Points			✓					✓	
Check Engine Intake Screen/Clean as Needed			✓					✓	
Check Blades/Sharpen or Replace as Needed			✓					✓	
Check Tire Pressure			✓					✓	
Check/Clean Underside of Deck			✓						
Check Safety Interlock System			✓					✓	
Check Mower Blade Stop Time			✓					✓	
Inspect & Lube Deck Wheels				✓				✓	
Check Deck Level/Pitch				✓				✓	
Check Belts & Pulleys for Damage/Wear					✓				
Check That All Hardware is in Place & Secure						✓			
Check Engine Mounting Bolt Torque (Tighten to 325-450 in.-lbs. (37-50 N-m))		✓			✓			✓	✓
Check Blade Mount Nut Torque (Tighten to 70-90 ft. lbs. (95-122 N-m))		✓			✓			✓	
Check Spark Plug Condition & Gap						✓		✓	✓
Engine Break-In Oil Change		✓							✓
Change Engine Oil					✓			✓	✓
Check Fuel System (Lines, Tank, Cap, Fittings)		✓			✓			✓	✓
Check Spark Arrestor		✓			✓			✓	✓
Replace Oil Filter					✓			✓	✓
Clean or Change Air Filter					✓				✓
Replace Fuel Filter					✓				✓
Have Valve Lash Checked & Adjusted *									✓

\* -- Have this item performed by an authorized service dealer

# -- Perform more often in dry conditions and/or when mulching

# SERVICE AND MAINTENANCE

**Note:** This operator's manual covers several models. Tractor features may vary by model. Not all features in this manual are applicable to all tractor models and the tractor depicted may differ from yours.

## Post-Operation Tractor Care

After each operation of the tractor, the following procedures should be implemented to extend the life of your tractor and ensure safe operating conditions.

### ⚠ WARNING

Failure to follow these recommendations may result in serious injury to yourself or others and may cause damage to the tractor.

## Cleaning the Underside of the Deck

### Deck Wash System (if Equipped)

Your tractor's deck may be equipped with a water port on its surface as part of its deck wash system.

Use the deck wash system to rinse grass clippings from the deck's underside and prevent the buildup of corrosive chemicals. Complete the following steps AFTER EACH MOWING:

1. Attach the nozzle adapter to a standard garden hose connected to a water supply.
2. Move the tractor to an area within reach of the hose where the dispersal of wet grass clippings is acceptable. Disengage the PTO, engage the parking brake and stop the engine.
3. Pull back the lock collar (a) of the nozzle adapter (b) and push the nozzle adapter onto the deck wash nozzle (c). Release the lock collar to lock the nozzle adapter on the deck wash nozzle. See Figure 21.
4. Turn on the water supply.
5. From the tractor operator's seat, start the engine and engage the PTO. Allow to run as needed. Disengage the PTO and stop the engine.
6. Turn off the water supply.
7. Pull back the lock collar of the nozzle adapter to disconnect the nozzle adapter from the deck wash nozzle.

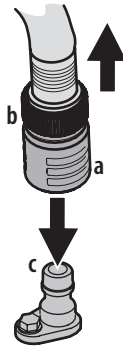


Figure 21

## Cleaning the Tractor

### ⚠ WARNING

If the tractor has been recently run, the engine, muffler and surrounding metal surfaces will be hot and can cause burns to the skin. Let the engine cool for at least five minutes. Exercise caution to avoid burns.

Your tractor should be cleaned after each use and under certain conditions, i.e. dry conditions and/or mulching situations, additional cleaning may be necessary.

One of the best ways to keep your tractor running efficiently and to reduce fire risk is to regularly remove debris buildup from the tractor. Follow the recommendations below and contact your authorized dealer with any questions.

- Allow the tractor to cool at least five minutes in an open area before cleaning.

**Note:** Using a pressure washer or garden hose is not recommended for cleaning your tractor other than to clean the underside of the deck. It may cause damage to electrical components, spindles, pulleys, bearings or the engine. The use of water will result in shortened life and reduce serviceability.

- Clean under the hood, including exhaust manifold, around fuses, all wiring and harnesses, muffler pipe, muffler shield, engine intake screens and cooling fins, etc. See Figure 22.

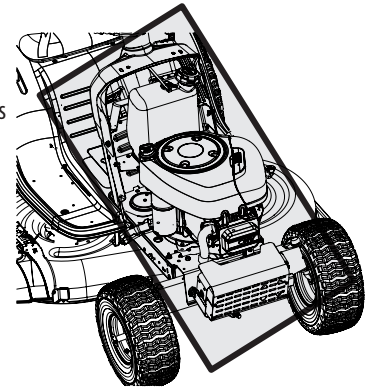


Figure 22

- Clean the top of the tractor deck, under the spindle covers and belt area. See Figure 23.

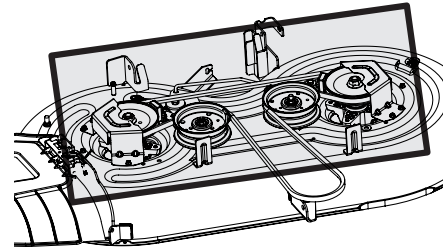


Figure 23

- Clean around and near the transmission, axle and the fan area. See Figure 24.
- Debris can accumulate anywhere on the tractor, especially on horizontal surfaces. Additional cleaning may be necessary when mowing in dry conditions or when mulching.
- Fuel leaks/spills, oil leaks/spills and excess lubrication can also become collection sites for debris. Immediate repair and cleaning up oil or fuel spills can help reduce fire hazards.
- In addition to cleaning the tractor before operating and storing, do not attempt to mow unusually tall grass, 10" (25cm) or higher, dry grass (e.g., pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the tractor deck presenting a potential fire hazard.

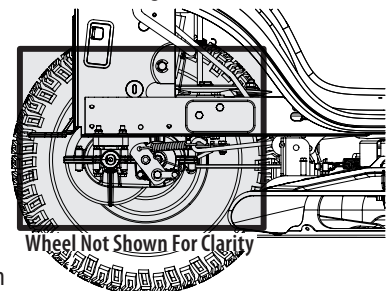


Figure 24

## Storing the Tractor

- Allow the tractor to cool at least five minutes in an open area before storing.
- Do not park the tractor near any flammable materials (wood, cloth or chemicals) or any open flames or other potential source of ignition (furnace, water heater or any other type of heater).
- Remove all combustible materials from the tractor before storing. Empty cargo boxes, grass catchers or containers.
- Always shut off fuel flow when storing or transporting if tractor is equipped with a fuel shutoff.
- Check the fuel system (lines, tank, cap and fittings) frequently for cracks or leaks. Repair and clean as necessary.

# SERVICE AND MAINTENANCE

## Maintenance

### Engine

#### ⚠ WARNING

Allow machine to cool in an open area for at least five minutes before storing or refueling.

Refer to the Engine Operator's Manual for all engine issues and questions.

**Note:** Maintenance, repair, or replacement of the emission control devices and systems which are being done at owner's expense may be performed by any engine repair establishment or individual. Warranty repairs must be performed by an authorized dealer.

### Changing Engine Oil

#### ⚠ WARNING

If the engine has been recently run, the engine, muffler and surrounding metal surfaces will be hot and can cause burns to the skin. Let the engine cool for at least five minutes. Exercise caution to avoid burns.

#### Oil Drain Tube Models

**NOTE:** The oil filter should be changed at every oil change interval.

To complete the oil change, proceed as follows:

1. Run the engine for a short time to warm the engine oil. The oil will flow more freely and carry away more impurities. Use care to avoid burns from hot oil.
2. Open the tractor's hood and locate the oil drain port on the side of the engine.
3. Place an appropriate oil collection container with at least a 2.5 quart (2.36L) capacity below the opening of the oil drain tube, to collect the used oil. Remove the oil fill cap/dipstick from the oil fill tube.
4. Open the protective cap on the end of the oil drain valve to expose the drain port. See Figure 25.
5. Push the oil drain tube (packed with this manual) onto the oil drain port. Route the opposite end of the tube into an appropriate oil collection container with at least a 2.5 quart (2.36L) capacity to collect the used oil.
6. The engine is equipped with a twist-and-pull drain port. Turn the oil drain valve 1/4-turn counter-clockwise, then pull outward to begin draining oil. After the oil has finished draining, push the end of the oil drain valve back in and turn 1/4-turn clockwise to close the oil drain. Re-cap the end of the oil drain valve to keep debris from entering the drain port.
7. Replace the oil filter, and refill the engine with new oil as instructed in the engine operator's manual.
8. Reinstall the oil fill cap/dipstick.

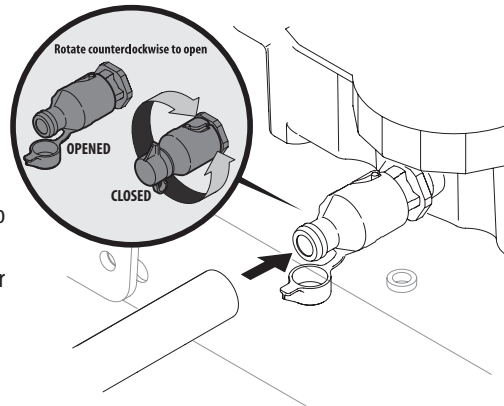


Figure 25

**NOTE:** Observe proper disposal laws and regulations for gas, oil, etc. to protect the environment.

**NOTE:** Maintenance, repair, or replacement of the emission control devices and systems which are being done at the owner's expense may be performed by any engine repair establishment or individual. Warranty repairs must be performed by an authorized dealer.

#### Oil Drain Sleeve Models

To complete the oil change, proceed as follows:

1. Run the engine for a short time to warm the engine oil. The oil will flow more freely and carry away more impurities. Use care to avoid burns from hot oil.
2. Open the tractor's hood and locate the oil drain port on the side of the engine.
3. Place an appropriate oil collection container with at least a 2.5 quart (2.36L) capacity below the opening of the oil drain tube, to collect the used oil. Remove the oil fill cap/dipstick from the oil fill tube.
4. Snap the small end of oil drain sleeve onto the oil sump. See Figure 26.
5. Remove drain plug and drain oil into collection container.
6. Replace the oil filter as instructed in the separate Engine Operator's Manual.
7. Reinstall oil drain plug and refill the engine with new oil as instructed in the engine operator's manual.
8. Reinstall the oil fill cap/dipstick.

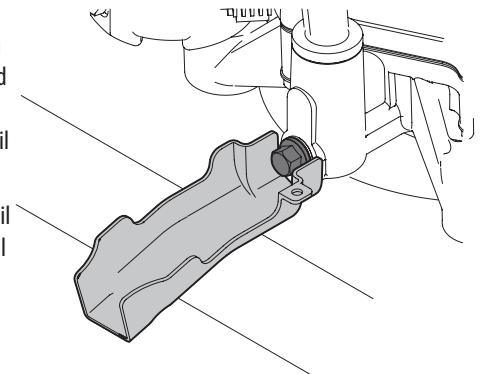


Figure 26

## Lubrication

#### ⚠ WARNING

Before lubricating, repairing, or inspecting, always disengage PTO, set parking brake, stop engine and remove key to prevent unintended starting.

Using a quality lubricating oil, lubricate all lubrication points. Refer to maintenance schedule chart located in this manual for proper service intervals.

#### Lubricating Pivot Points & Linkage

Lubricate all the pivot points on the drive system, parking brake and lift linkage per the Maintenance Chart.

**NOTE:** It is not necessary to grease the steering pinion/sector gear interface. Doing so will allow dirt to accumulate and can affect steering performance.

#### Rear Wheels

The rear wheels should be removed from the axles once a season. Lubricate the axles and the rims with an all-purpose grease before re-installing them.



# SERVICE AND MAINTENANCE

## Front Axles (If Equipped)

Each end of the tractor's front pivot bar may be equipped with a grease fitting. Lubricate with a No. 2 multi-purpose grease applied with a grease gun per the Maintenance Schedule. See Figure 27.

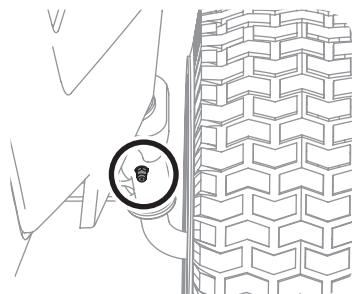


Figure 27

## Spark Arrestor Maintenance (If Equipped)

Spark arrestor assemblies must be inspected and cleaned periodically (see the service interval chart in this manual). Visually inspect the screen for tears, broken wires or loose welds. Replace the spark arrestor assembly if any of these conditions exist. If the screen is in good condition, clean the screen by brushing away loose dirt or carbon particles.

## Tires

Keep the tires inflated to the recommended pressures. Improper inflation will shorten the tire service life. See the tire side wall for proper inflation pressures. Refer to maintenance schedule chart located in this manual for proper service intervals.

Observe the following guidelines:

- Do not inflate a tire above the maximum pressure shown on the sidewall of the tire.
- Do not reinflate a tire that has been run flat or seriously under inflated. Have it inspected and serviced by a qualified tire mechanic.

## Off-Season Storage

If your lawn tractor is not going to be operated for an extended period of time (thirty days to approximately six months), the lawn tractor should be prepared for storage. Store the lawn tractor in a dry and protected location. If stored outside, cover the lawn tractor (including the tires) to protect it from the elements. The procedures outlined below should be performed whenever the lawn tractor is placed in storage.

1. Change the engine oil and filter following the instructions provided in this manual as well as the engine manual provided with this tractor.

### WARNING

Never store the tractor with fuel in the tank indoors or in poorly ventilated enclosures, where fuel fumes may reach an open flame, spark or pilot light as on a furnace, water heater, clothes dryer, etc.

2. If storing the tractor for 30 days or more:
  - a. To prevent gum deposits from forming inside the engine's carburetor and causing possible malfunction of the engine, the fuel system must be either completely emptied, or the gasoline must be treated with a stabilizer to prevent deterioration.
  - b. Using a fuel stabilizer for storage between 30 and 90 days:
    - Read the product manufacturer's instructions and recommendations.
    - Add to clean, fresh gasoline the correct amount of stabilizer for the capacity of the fuel system.
    - Fill the fuel tank with treated fuel and run the engine for 2-3 minutes to get stabilized fuel into the carburetor.
    - Fuel left in the fuel tank deteriorates and will cause serious starting problems.
  - c. Emptying the fuel system for storage of more than 90 days:
    - Prior to putting the tractor in storage, monitor fuel consumption with the goal of running the fuel tank empty.

- Run the engine until it begins to stall. Use the choke to keep the engine running until all fuel in the carburetor has been exhausted.
- Referring to the engine manual, drain the fuel from the carburetor bowl.

3. Clean the engine and the entire tractor thoroughly.

**Note:** Using a pressure washer or garden hose is not recommended for cleaning your tractor other than to clean the underside of the deck. It may cause damage to electrical components, spindles, pulleys, bearings or the engine. The use of water will result in shortened life and reduce serviceability.

4. Fully charge the battery, then disconnect the negative cable at the battery to prevent possible discharge. Recharge the battery periodically when in storage.

**Note:** Remove the battery if exposed to prolonged periods of sub-freezing temperatures. Store in a cool, dry location where temperatures are above freezing.

5. Lubricate all lubrication points.

## Removing the Lawn Tractor from Storage

1. Check the engine oil.
2. Fully charge the battery and inflate the tires to the recommended pressure. See tire side wall for proper tire inflation pressure.
3. Fill the fuel tank with clean, fresh gasoline.
4. Start the engine and allow to idle for a few minutes to ensure engine is operating properly.
5. Drive the tractor without a load to make certain all the tractor systems are functioning properly.

## Leveling the Deck (Side-to-Side)

1. With the tractor parked on a firm, level surface, place the deck lift lever in the second notch from the top (second highest position) and rotate both blades so that they are perpendicular with the tractor.
2. Measure the distance from the outside of the left blade tip to the ground and the distance from the outside of the right blade tip to the ground. Both measurements taken should be equal. If they're not, proceed to the next step.
3. Under the rear fenders inside the wheels there is a lift adjustment hex cap screw and gear for each side of the deck. See Figure 28.
4. Loosen, but do NOT remove, the hex cap screw (a) on the left deck hanger bracket.
5. Minor adjustments should be made to the adjustment gear immediately behind the hex cap screw loosened in the previous step (clockwise/up or counter-clockwise/down).
6. When the proper adjustment is achieved, tighten the hex cap screw (a) on the left deck hanger bracket.
7. The deck is properly balanced when both blade tip measurements taken earlier are equal.

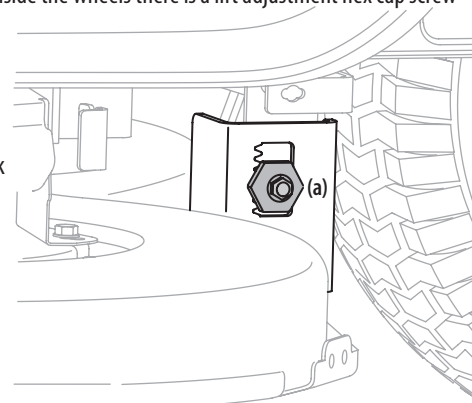


Figure 28

# SERVICE AND MAINTENANCE

## Leveling the Deck (Pitch/Front-to-Rear)

The front of the deck is supported by a stabilizer bar that can be adjusted to level the deck from front to rear. The front of the deck should be 1/4"-3/8" (6.35-9.5mm) lower than the rear of the deck. Adjust if necessary as follows:

1. Park the tractor on a firm, level surface and place the lever for lifting the platform on the second to the top notch (second highest position) and rotate the end of the blade nearest the discharge chute so that it is parallel with the tractor.
2. Measure the distance from the front of the blade tip to the ground and the rear of the blade tip to the ground. The front of the deck should be between 1/4"-3/8"(6.35-9.5mm) less than the rear of deck.
3. Determine the approximate distance necessary for proper adjustment and proceed, if necessary.
4. To *raise* the front of the deck, loosen the outer nut then tighten (thread inward) the inner nut against the front hanger bracket. See Figure 29. When proper adjustment is achieved, re-tighten the outer nut to 25-30 ft.-lbs (34-40.7 N-m).
5. To *lower* the front of the deck, loosen the outer nut then loosen (thread outward) the inner nut, away from the front hanger bracket. See Figure 29. When proper adjustment is achieved, re-tighten the outer nut.

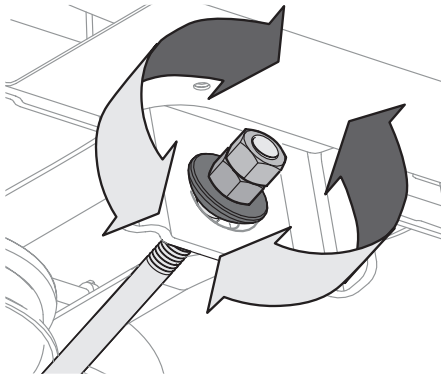


Figure 29

## Adjusting the Deck Wheels

### ⚠ WARNING

Keep hands and feet away from the discharge opening of the cutting deck.

**NOTE:** The deck wheels are an anti-scalp feature of the deck and are not designed to support the weight of the deck.

The deck wheels should be approximately 1/4-1/2" (6.35-12.7mm) above the ground when the deck is set in the desired height setting. To adjust the deck wheels see the Assembly section for instructions.

## Service

### Electrical System

A fuse is installed to protect the tractor's electrical system from damage caused by excessive amperage. Always use the same capacity fuse for replacement. If the electrical system does not function, check for a blown fuse.

If you have a recurring problem with blown fuses, have the tractor's electrical system checked by your authorized service dealer.

### Relays and Switches

There are several safety switches in the electrical system. If a function of the safety interlock system described earlier is not functioning properly, have the electrical system checked by your authorized service dealer.

## Parking Brake Adjustment

If the tractor does not come to a complete stop when the brake pedal is completely depressed, or if the tractor's rear wheels can roll with the parking brake applied (and the hydrostatic relief valve open if equipped), the brake is in need of adjustment. See your authorized service dealer to have the brake adjusted.

## Hydrostatic Neutral Adjustment

If the tractor creeps forward or rearward when neither the forward nor reverse pedal is depressed, contact your local authorized dealer to have the neutral setting properly adjusted.

## Wheel Alignment

If your tractor pulls to one side or is out of alignment, a wheel alignment might be necessary. Contact an authorized service dealer to have the wheels properly aligned.

## Deck Removal

### ⚠ WARNING

Use caution to avoid pinching your fingers when rolling the belt off the PTO pulley.

To remove the cutting deck, proceed as follows:

1. Move the tractor to a level surface, disengage the PTO, stop the engine, ENGAGE the parking brake.

2. Lower the deck by moving the deck lift lever into the bottom notch on the right fender.

3. Remove the belt-keeper rod (a), from around the tractor's engine pulley, by removing the self-tapping screw (b) that secures it. See Figure 30.

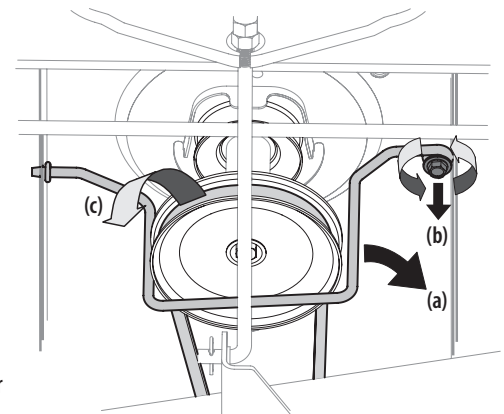


Figure 30

**NOTE:** Make a note what hole the other end of the belt-keeper rod is inserted in for reinstallation purposes.

4. Remove the belt (c) from around the tractor's engine pulley and idler pulley(s). See Figure 30.

5. Looking at the cutting deck from the left side of the tractor, locate the bow-tie pin (a) that secures the deck support rod (b) on the rear left side of the deck. See Figure 31. Remove the bow-tie pin (a) that secures the deck support rod (b), and carefully remove the deck support from the deck lift arm.

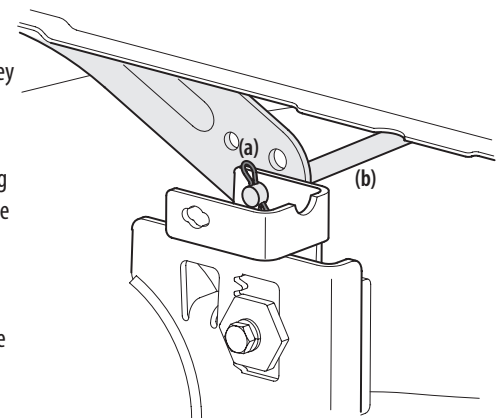


Figure 31

# SERVICE AND MAINTENANCE

6. Repeat step 5 on the tractor's right side.

7. Move the deck lift lever into the top notch on the right fender to raise the deck lift arms up and out of the way.

8. On 38" decks, gently slide the cutting deck toward the front of the tractor carefully guiding the hooks on the deck on the deck off of the deck stabilizer rod. See Figure 32.

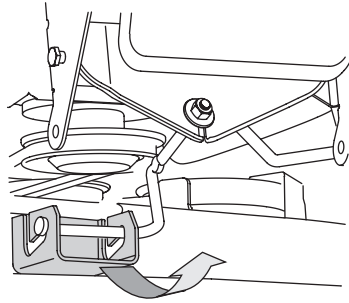


Figure 32

9. On 36", 42" and 46" decks, Remove the bow-tie pin (a) securing the deck stabilizer rod (b) to the deck. Slide the deck lift rod from the mounting weldment on the deck as seen in Figure 33.

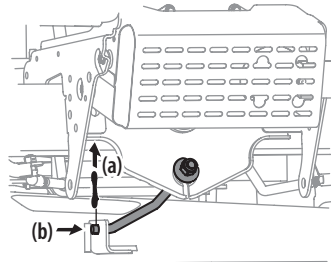


Figure 33

10. Carefully remove the PTO cable (a) from the rear of the cutting deck by removing the bow-tie clip (b) which secures it. Remove the spring (c) from the deck idler bracket. See Figure 34.

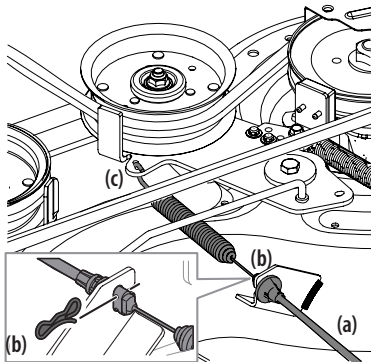


Figure 34

11. Gently slide the cutting deck (from the left side) out from underneath the tractor.

**NOTE:** To reinstall the deck after service, reverse the order of deck removal steps 1-11 in this section.

## Removing the Blade

### ⚠ WARNING

- Shut the engine off and remove ignition key before removing the cutting blade(s) for sharpening or replacement. Protect your hands by using heavy gloves when grasping the blade.
- Periodically inspect the blade and/or spindle for cracks or damage, especially after you've struck a foreign object. Do not operate the tractor until damaged components are replaced.
- If the cutting edge of the blade has previously been sharpened, or if any metal separation is present, replace the blades with new ones.

1. Remove the deck from beneath the tractor, (refer to Deck Removal on page 18) then gently flip the deck over to expose its underside.

2. Place a block of wood between the center deck housing baffle and the cutting blade to act as a stabilizer. See Figure 35.

3. Remove the hex flange nut that secures the blade to the spindle assembly. See Figure 35.

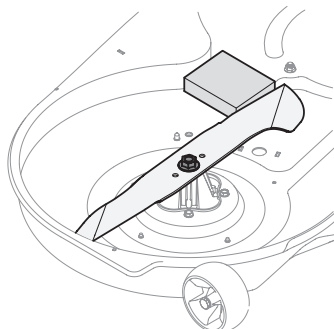


Figure 35

## Installing the Blade

1. With the deck removed gently flip the deck over to expose its underside.
2. Line up the hole in the center of the blade with the retainer at the bottom of the spindle assembly, and the side stamped with "grass-side" or with a part number, so that it will be facing the ground when with the deck reinstalled and in the proper operating position.
3. Place a block of wood between the deck housing baffle and the cutting blade to act as a stabilizer. See Figure 35.
4. Thread on the hex flange nut to secure the blade to the spindle assembly. Use a torque wrench to tighten the blade spindle hex flange nut to 80-90 ft-lbs (95-122 N-m).

**NOTE:** When replacing or reinstalling the blade, be sure to install the blade with the side of the blade marked "Bottom" (or with a part number stamped in it) facing the ground.

## Sharpening the Blade

1. To properly sharpen the cutting blades, remove equal amounts of metal from both ends of the blades along the cutting edges, parallel to the trailing edge, at a 25° to 30° angle. Always grind each cutting blade edge equally to maintain proper blade balance. See Figure 36.
2. Test the blade's balance using a blade balancer. Grind metal from the heavy side until it balances evenly.

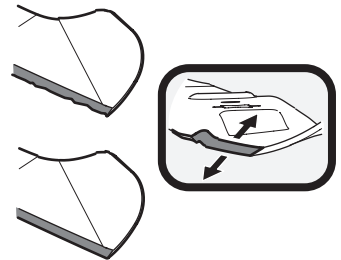


Figure 36

### ⚠ WARNING

A poorly balanced blade will cause excessive vibration, may damage the tractor and/or result in personal injury.

# TROUBLESHOOTING

## ⚠ WARNING

Before performing any type of maintenance/service, disengage all controls and stop the engine. Wait until all moving parts have come to a complete stop. Disconnect spark plug wire and ground it against the engine to prevent unintended starting. Always wear safety glasses during operation or while performing any adjustments or repairs.

This section addresses minor service issues. To locate the nearest authorized service center consult the separate supplement sheet for contact information.

Problem	Cause	Remedy
Engine fails to start	<ol style="list-style-type: none"> <li>1. PTO/Blade Engage lever engaged.</li> <li>2. Parking brake not engaged.</li> <li>3. Spark plug wire disconnected.</li> <li>4. Throttle control lever not in correct starting position.</li> <li>5. Fuel tank empty, or stale fuel.</li> <li>6. Blocked fuel line.</li>   <li>7. Faulty spark plug.</li> <li>8. Engine flooded.</li> <li>9. fuse(s) blown</li> </ol>	<ol style="list-style-type: none"> <li>1. Place lever in disengaged (OFF) position.</li> <li>2. Engage parking brake.</li> <li>3. Connect wire to spark plug.</li> <li>4. Place Throttle lever into the FAST position.</li>   <li>5. Fill tank with clean, fresh (less than 30 days old) gas.</li> <li>6. Replace fuel line. See a qualified service dealer. Replace fuel filter. See the Service and Maintenance section.</li> <li>7. Clean, adjust gap or replace plug.</li> <li>8. Crank engine with throttle in FAST position.</li> <li>9. Replace Fuse.</li> </ol>
Engine runs erratically	<ol style="list-style-type: none"> <li>1. Tractor running with CHOKE activated.</li> <li>2. Spark plug wires loose.</li> <li>3. Blocked fuel line or stale fuel.</li>   <li>4. Vent in gas cap plugged.</li> <li>5. Water or dirt in fuel system.</li>   <li>6. Dirty air cleaner.</li> </ol>	<ol style="list-style-type: none"> <li>1. Deactivate the CHOKE.</li> <li>2. Connect and tighten spark plug wires.</li> <li>3. Replace fuel line. See a qualified service dealer. Fill tank with clean, fresh gasoline and replace fuel filter. See the Service and Maintenance section.</li> <li>4. Clear vent or replace cap if damaged.</li> <li>5. Drain fuel tank. Refill with clean, fresh gasoline. See the Service and Maintenance section.</li> <li>6. Replace air cleaner paper element or clean foam pre-cleaner, if equipped.</li> </ol>
Engine overheats	<ol style="list-style-type: none"> <li>1. Engine oil level low.</li> <li>2. Air flow restricted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill engine with proper amount and type of oil.</li> <li>2. Clean grass clippings and debris from around the engine's cooling fins and housing.</li> </ol>
Engine hesitates at high RPM	<ol style="list-style-type: none"> <li>1. Spark plug gap too close.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove spark plug and adjust gap.</li> </ol>
Engine idles rough	<ol style="list-style-type: none"> <li>1. Fouled spark plug</li> <li>2. Dirty air cleaner.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace spark plug and adjust gap.</li> <li>2. Clean or replace air cleaner element and/or clean pre-cleaner.</li> </ol>
Excessive vibration	<ol style="list-style-type: none"> <li>1. Cutting blades loose or unbalanced.</li> <li>2. Damaged, dull, or bent cutting blade.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten blade and spindle. Balance blade.</li> <li>2. Replace blade.</li> </ol>
Mower will not mulch grass	<ol style="list-style-type: none"> <li>1. Engine speed too low.</li> <li>2. Wet grass.</li> <li>3. Excessively high grass.</li>   <li>4. Dull blade.</li> </ol>	<ol style="list-style-type: none"> <li>1. Place throttle in FAST position.</li> <li>2. Do not mulch when grass is wet.</li> <li>3. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath.</li> <li>4. Sharpen or replace blade.</li> </ol>
Uneven cut	<ol style="list-style-type: none"> <li>1. Deck not leveled properly.</li> <li>2. Dull blade.</li> <li>3. Uneven tire pressure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Perform side-to-side deck adjustment.</li> <li>2. Sharpen or replace blade.</li> <li>3. Check tire pressure in all four tires.</li> </ol>