

# CRAFTSMAN®

INSTRUCTION MANUAL | MANUAL DE INSTRUCCIONES

## R100 Series

### LAWN TRACTOR/TRACTOR CORTACÉSPED

Model Nos. CMXGRAM1130035

CMXGRAM1130040

CMXGRAM1222292

CMXGRAM7368327



IF YOU HAVE QUESTIONS OR COMMENTS, CONTACT US.  
SI TIENE DUDAS O COMENTARIOS, CONTÁCTENOS.

**1-888-331-4569**

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## PRODUCT SPECIFICATIONS

Engine Series: See Separate Engine Manual  
Engine Oil Type: See Separate Engine Manual  
Engine Oil Capacity: See Separate Engine Manual  
Fuel: Unleaded Gasoline

## MODEL NUMBER

Model Number \_\_\_\_\_  
Serial Number \_\_\_\_\_  
Date of Purchase \_\_\_\_\_

Record the model number, serial number,  
and date of purchase above.

### WARNING

**Before using this equipment, read the manual and follow all safety rules and operating instructions. SAVE THESE INSTRUCTIONS!**

**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.

# SAFETY INSTRUCTIONS

## 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!

## 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.

## 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.

## 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!**

## GENERAL OPERATION

- Read, understand, and follow all instructions on the machine 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.
- Be familiar with all controls and their proper operation. Know how to stop the machine and disengage them quickly.
- Never allow children under 14 years old to operate this machine. Children 14 years old and over should read and understand the operation instructions and safety rules in this manual and should be trained and supervised by a parent.
- Never allow adults to operate this machine without proper instruction.
- 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.
- Thoroughly inspect the area where the equipment 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.
- Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders and the like. Also, avoid discharging material against a wall or obstruction which may cause discharged material to ricochet back toward the operator.
- 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.
- Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Loose fitting clothes and jewelry can be caught in movable parts. Never operate this machine in bare feet or sandals.
- Be aware of the mower and attachment discharge direction and do not point it at anyone. Do not operate the mower without the discharge cover or entire grass catcher in its proper place.
- Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.
- A missing or damaged discharge cover can cause blade contact or thrown object injuries.
- Stop the blade(s) when crossing gravel drives, walks, or roads and while not cutting grass.
- Watch for traffic when operating near or crossing roadways. This machine is not intended for use on any public roadway.
- Do not operate the machine while under the influence of alcohol or drugs.
- Mow only in daylight or good artificial light.
- Never carry passengers.
- Disengage blade(s) before shifting into reverse. Back up slowly. Always look down and behind before and while backing to avoid a back-over accident.
- Slow down before turning. Operate the machine smoothly. Avoid erratic operation and excessive speed.
- Disengage blade(s), set 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.
- Never leave a running machine unattended. Always turn off blade(s), set parking brake, stop engine and remove key before dismounting.
- Use extra care when loading or unloading the machine into a trailer or truck. This machine should not be driven up or down ramp(s), because the machine could tip over, causing serious personal injury. The machine must be pushed manually on ramp(s) to load or unload properly.
- Muffler and engine become hot and can cause a burn. Do not touch.

# SAFETY INSTRUCTIONS

- 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 machine, which could result in serious injury.
- Disengage all attachment clutches and depress the brake pedal completely before attempting to start engine.
- Your machine is designed to cut normal residential grass of a height no more than 12". 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 mower deck presenting a potential fire hazard.
- Use only accessories and attachments approved for this machine by the machine manufacturer. Read, understand and follow all instructions provided with the approved accessory or attachment. For a list of approved accessories and attachments, call 1-888-331-4569.
- Data indicates that operators, age 60 years and above, are involved in a large percentage of riding mower-related injuries. These operators should evaluate their ability to operate the riding mower safely enough to protect themselves and others from serious injury.
- If situations occur which are not covered in this manual, use care and good judgment.

## SLOPE OPERATION

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.

For your safety, use the Slope Guide included as part of this manual to measure slopes before operating this machine on a sloped or hilly area. If the slope is greater than 12 degrees as shown on the Slope Guide, do not operate this machine on that area or serious injury could result.

### Do:

- Mow up and down slopes, not across. Exercise extreme caution when changing direction on slopes.
- Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Use slow speed. Choose a low enough speed setting so that you will not have to stop or shift while on the slope. Tires may lose traction on slopes even though the brakes are functioning properly. Always keep machine in gear when going down slopes to take advantage of engine braking action.
- Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
- Use extra care with grass catchers or other attachments. These can change the stability of the machine.
- Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction. Rapid engagement or braking could cause the front of the machine to lift and rapidly flip over backwards which could cause serious injury.
- Avoid starting or stopping on a slope. If tires lose traction, disengage the blade(s) and proceed slowly straight down the slope.

### Do Not:

- Do not turn on slopes unless necessary; then, turn slowly and gradually downhill, if possible.
- Do not mow near drop-offs, ditches or embankments. The mower could suddenly turn over if a wheel is over the edge of a cliff, ditch, or if an edge caves in.
- Do not try to stabilize the machine by putting your foot on the ground.
- Do not use a grass catcher on steep slopes.
- Do not mow on wet grass. Reduced traction could cause sliding.
- Do not attempt to coast downhill. Over-speeding may cause the operator to lose control of the machine resulting in serious injury or death.
- Do not tow heavy pull behind attachments (e.g. loaded dump cart, lawn roller, etc.) on slopes greater than 5 degrees. When going down hill, the extra weight tends to push the tractor and may cause you to lose control (e.g. tractor may speed up, braking and steering ability are reduced, attachment may jack-knife and cause tractor to overturn).

## CHILDREN

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. They do not understand the dangers. Never assume that children will remain where you last saw them.

- Keep children out of the mowing area and in watchful care of a responsible adult other than the operator.
- Be alert and turn machine off if a child enters the area.
- Before and while backing, look behind and down for small children.
- Never carry children, even with the blade(s) shut off. They may fall off and be seriously injured or interfere with safe machine operation.
- 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 machine.
- To avoid back-over accidents, always disengage the cutting blade(s) before shifting into Reverse. If equipped, the "Reverse Caution Mode" (blades operate while machine rides in reverse) should not be used when children or others are around.
- Keep children away from hot or running engines. They can suffer burns from a hot muffler.
- Remove key when machine is unattended to prevent unauthorized operation.

Never allow children under 14 years of age to operate this machine. Children 14 and over should read and understand the instructions and safe operation practices in this manual and on the machine and should be trained and supervised by an adult.

## TOWING

- Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
- Follow the manufacturer's recommendation for weight limits for towed equipment and towing on slopes.
- Never allow children or others in or on towed equipment.
- On slopes, the weight of the towed equipment may cause loss of traction and loss of control.

# SAFETY INSTRUCTIONS

- Always use extra caution when towing with a machine capable of making tight turns (e.g. “zero-turn” ride-on mower). Make wide turns to avoid jack-knifing.
- Travel slowly and allow extra distance to stop.
- Do not coast downhill.

## SERVICE

### Safe Handling of Gasoline:

**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.**

- Use only an approved gasoline container.
- 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.
- 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.
- 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.
- Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- Never fuel machine indoors.
- Never remove gas cap or add fuel while the engine is hot or running. Allow engine to cool at least two minutes before refueling.
- Never over fill fuel tank. Fill tank to no more than ½ inch below bottom of filler neck to allow space for fuel expansion.
- Replace gasoline cap and tighten securely.
- If gasoline is spilled, wipe it off the engine and equipment. Move machine to another area. Wait 5 minutes before starting the engine.
- To reduce fire hazards, keep machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage and remove any fuel soaked debris.
- Never store the machine 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.
- Allow a machine to cool at least five minutes before storing.

### General Service

- Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless, and deadly gas.
- Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Disconnect the spark plug wire and ground against the engine to prevent unintended starting.
- Periodically check to make sure the blades come to complete stop within approximately (5) five seconds after operating the blade disengagement control. If the blades do not stop within the this time frame, your machine should be serviced professionally by a qualified service dealer.

- Check brake operation frequently as it is subjected to wear during normal operation. Adjust and service as required.
- Check the blade(s) and engine mounting bolts at frequent intervals for proper tightness. 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, listed in this manual. Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!
- Mower blades are sharp. Wrap the blade or wear gloves, and use extra caution when servicing them.
- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
- Never tamper with the safety interlock system or other safety devices. Check their proper operation regularly.
- After striking a foreign object, stop the engine, disconnect the spark plug wire(s) and ground against the engine. Thoroughly inspect the machine for any damage. Repair the damage before starting and operating.
- Never attempt to make adjustments or repairs to the machine while the engine is running.
- Grass catcher components and the discharge cover are subject to wear and damage which could expose moving parts or allow objects to be thrown. For safety protection, frequently check components and replace immediately with original equipment manufacturer’s (O.E.M.) parts only, listed in this manual. Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!
- Do not change the engine governor settings or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
- Maintain or replace safety and instruction labels, as necessary.
- Observe proper disposal laws and regulations for gas, oil, etc. to protect the environment.
- According to the Consumer Products Safety Commission (CPSC) and the U.S. Environmental Protection Agency (EPA), this product has an Average Useful Life of seven (7) years, or 270 hours of operation. At the end of the Average Useful Life, buy a new machine or have the machine inspected annually by a qualified service dealer to ensure that all mechanical and safety systems are working properly and not worn excessively. Failure to do so can result in accidents, injuries or death.

## DO NOT MODIFY ENGINE

**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.**

# SAFETY INSTRUCTIONS

## 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), Oxidizing Catalyst (OC), Secondary Air Injection (SAI) and Three Way Catalyst (TWC) if so equipped.

## SPARK ARRESTOR

### WARNING

This machine 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).

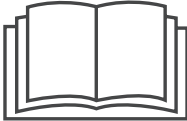





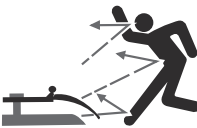
If a spark arrestor is used, it should be maintained in effective working order by the operator. In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands.

A spark arrestor for the muffler is available through your nearest qualified service dealer.







For location and purchase information, call 1-888-331-4569.

## SAFETY SYMBOLS

This page depicts and describes safety symbols that may appear on this product. Read, understand, and follow all instructions on the machine before attempting to assemble and operate.

Symbol	Description
	<b>READ THE OPERATOR'S MANUAL(S)</b> Read, understand, and follow all instructions in the manual(s) before attempting to assemble and operate
	<b>DANGER— ROTATING BLADES</b> Never carry passengers. Never carry children, even with the blades off.
	<b>DANGER— ROTATING BLADES</b> To avoid a back-over accident, keep children away from the machine while it is in operation.
	<b>WARNING— ROTATING BLADES</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.
	<b>DANGER— ROTATING BLADES</b> Always look down and behind before and while backing to avoid a back-over accident.
	<b>WARNING—THROWN OBJECTS</b> This machine may pick up and throw and objects which can cause serious personal injury.
	<b>WARNING—THROWN OBJECTS</b> This machine may pick up and throw and objects which can cause serious personal injury.

# SAFETY INSTRUCTIONS

Symbol	Description
	<b>BYSTANDERS</b> Keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation.
	<b>WARNING— SLOPE OPERATION</b> Do not operate this machine on a slope greater than 12 degrees.
	<b>WARNING— HOT SURFACE</b> Engine parts, especially the muffler, become extremely hot during operation. Allow engine and muffler to cool before touching.
	<b>DANGER — ROTATING BLADES</b> To reduce the risk of injury, keep hands and feet away. Do not operate unless discharge cover or grass catcher is in its proper place. If damaged, replace immediately.
	<b>WARNING— CARBON MONOXIDE</b> Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless and deadly gas.
	<b>DANGER— ROTATING BLADES</b> Do not step on the cutting deck.



**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

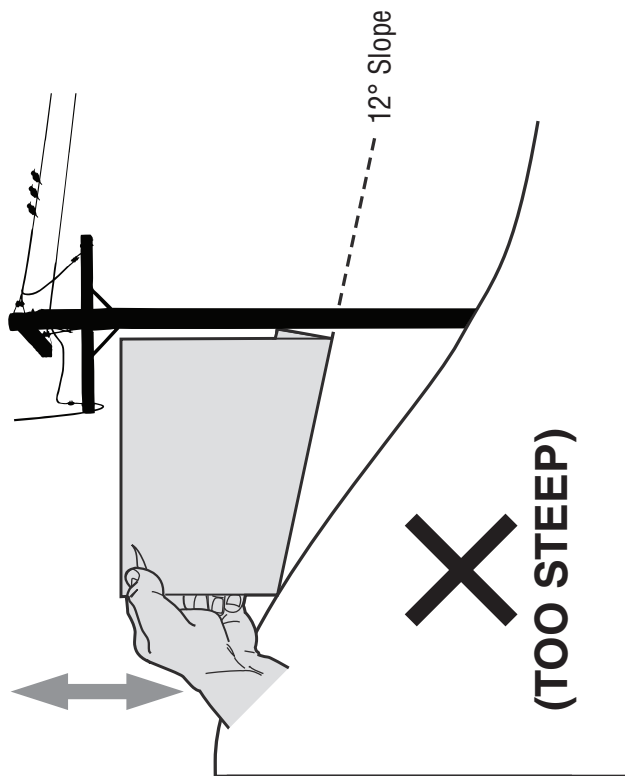


Figure 2

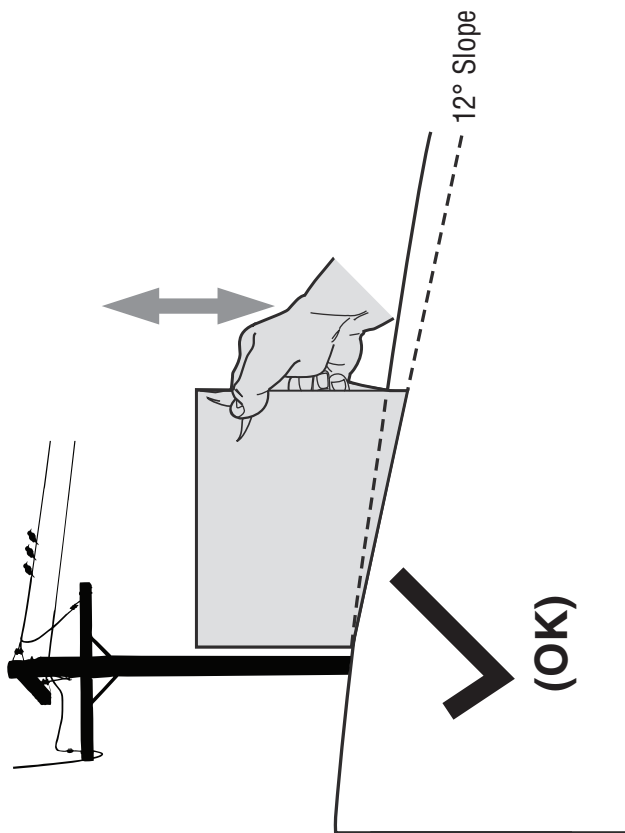


Figure 1

8

*12° 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 12 degrees. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it. Always mow up and down the face of slopes, never mow across the face of slopes.



# ASSEMBLY

## Contents of Crate

- One Riding Mower
- One Steering Wheel/Shaft Assembly
- One Rear Hitch Plate
- One Riding Mower Operator's Manual
- One Seat Assembly
- One Rear Engine Cover
- One Oil Drain Sleeve
- One Steering Pedestal Cap
- One Discharge Chute Assembly
- One Hardware Pack

## Contents of Hardware Pack

Before beginning installation, remove all the contents from the crate and all the hardware from the pack to make sure everything is present. Hardware is listed below. Part numbers are shown in parentheses.

- Hitch Plate
- Seat Mounting Bracket (with two shoulder bolts & lock nuts installed)

## Recommended Tools for Assembly

- 3/8" Wrench (or socket)
- 1/2" Wrench (or socket)
- 5/8" Wrench (or socket)
- 1/4" Drive Ratchet
- 9/16" Socket
- 7/16" wrench
- Phillips Screw Driver

## Manually Moving the Tractor

### Hydrostatic Tractors

On Hydrostatic tractors, use the transmission bypass rod located inside the right tire on the lower right section of the frame. When engaged, the rod opens a bypass within the hydrostatic transmissions, which allows the tractor to be pushed short distances by hand.

1. Engage the transmission bypass rod by pulling out and down to move the tractor manually without starting it.
2. Disengage the transmission bypass rod by lifting up and allowing it to return to its disengaged position after manually moving the tractor. See Figure 1.

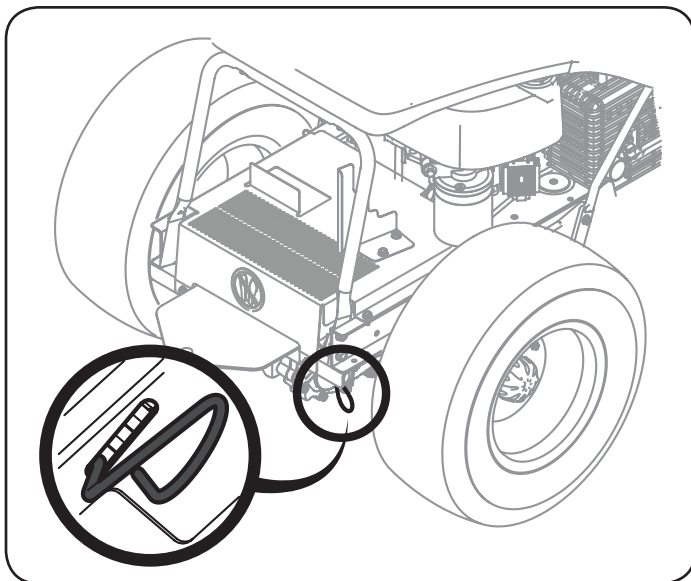


Figure 1

**Note:** If the tractor will not move or does not move freely when pushing check if the bypass lever 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 normal position prior to operating the tractor. If the tractor will not move when pushing on the forward/reverse pedals, or moves slowly, check to see if the bypass valve is on.

## 6-Speed Tractors

Engage the brake pedal and put the shift lever into NEUTRAL.

### ⚠ CAUTION

Never tow your tractor. Towing the tractor with the rear wheels on the ground may cause severe damage to the transmission.

## Installing The Steering Wheel Assembly

If the steering wheel assembly for your tractor did not come already installed, follow the steps below:

1. Slide the pedestal cap onto the steering shaft so that when the steering shaft is installed on the tractor, the pedestal cap will be upright as shown in Figure 2.

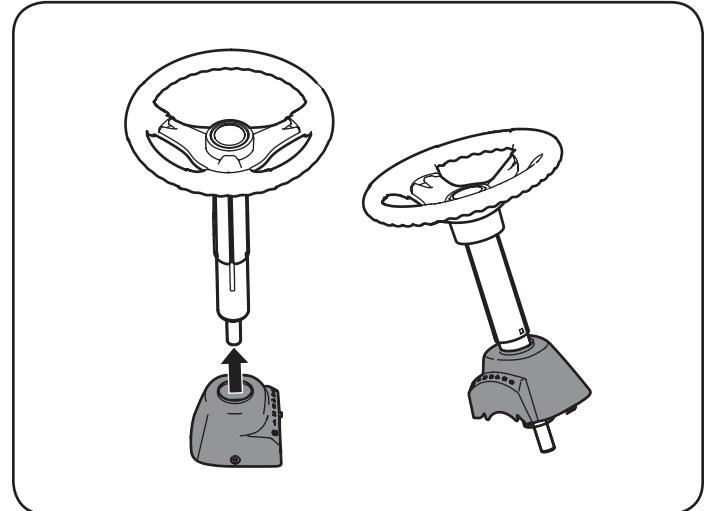


Figure 2

2. Remove the shoulder bolt and lock nut from the steering shaft on the tractor and retain for later steps.
3. With the steering wheel assembly upright and positioned over the lower steering shaft on the tractor, align the steering wheel so that with the tractor wheels straight, the large opening on the steering wheel is facing forward.

# ASSEMBLY

4. Lower the steering wheel assembly onto the lower steering shaft (1) and secure with bolt and lock nut (2) previously removed. See Figure 2.

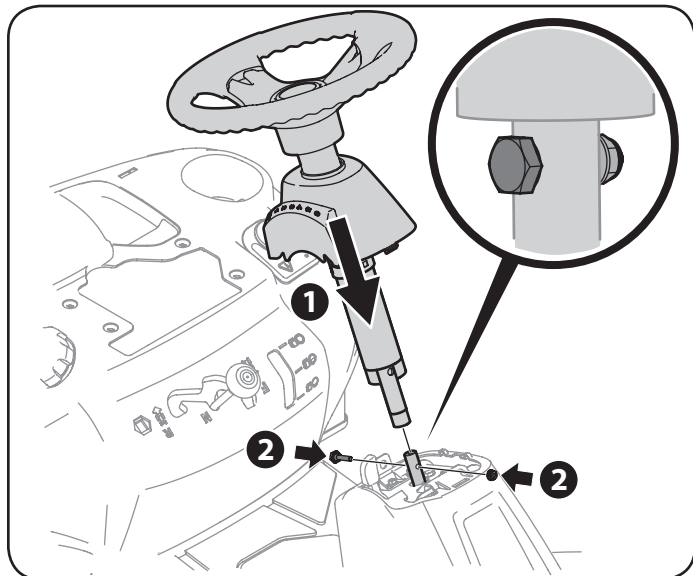


Figure 3

5. Tighten the shoulder bolt and lock nut using a 9/16" wrench and 7/16" wrench or socket.
6. Remove the pedestal cap mount screw factory installed and located on the tractor's steering console. Retain the screw for later instructions.
7. Slide the Pedestal cap down onto the tractor (1) and slightly rotate to the right to clip into place. Secure the pedestal with the screw (2) previously removed. See Figure 4.

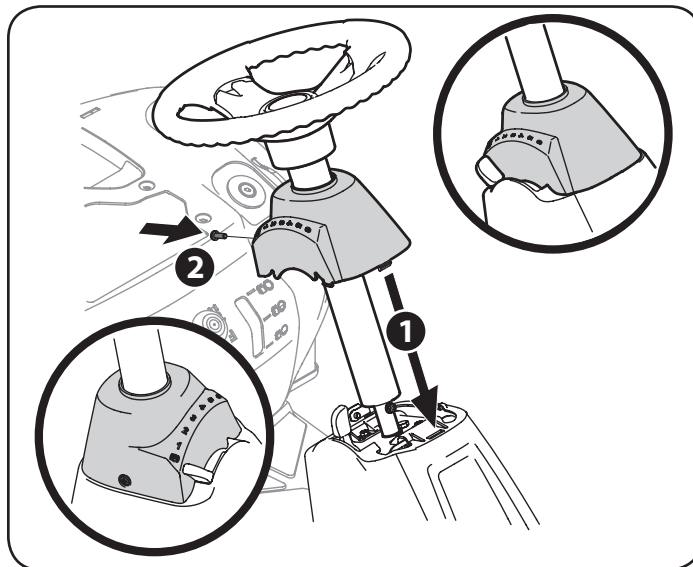


Figure 4

## Attaching The Seat

If the seat for your tractor was not attached at the factory, follow the applicable instructions below to attach it.

1. Remove the shoulder bolts and lock nuts from the seat mounting bracket included in your hardware pack. See Figure 5.

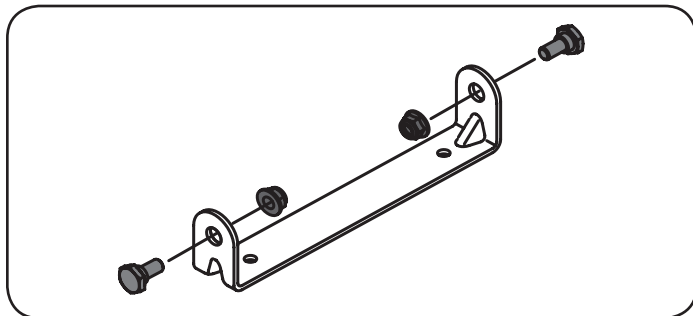


Figure 5

2. Remove the two self-tapping screws factory installed on the tractor. See Figure 6.

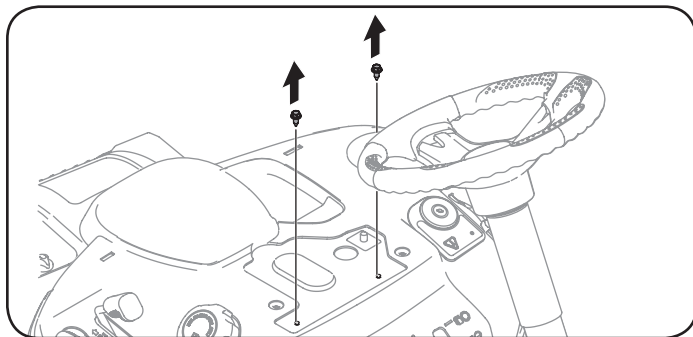


Figure 6

3. Align the seat bracket in place over the holes from where the self-tapping screws were removed, as shown in Figure 7.
4. Using a 1/4-inch drive ratchet with a 3/8" socket, secure the seat bracket with the self-tapping screws removed in Step 2. See Figure 7.

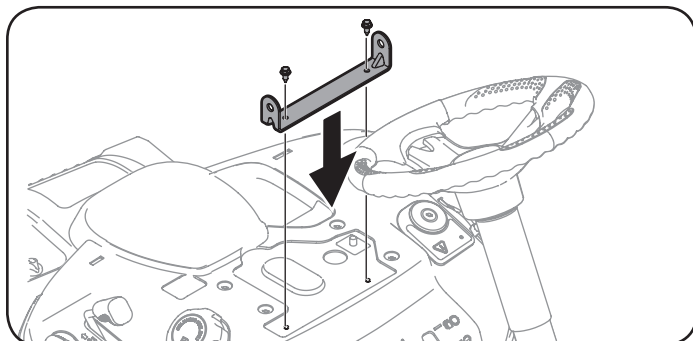


Figure 7

### ⚠ CAUTION

Do not use any type of power tool (e.g. impact gun or electric drill with nut driver attached) when tightening the self-tapping bolts to attach the seat bracket.

5. Position the seat assembly over the seat mounting bracket, aligning the holes provided.

# ASSEMBLY

6. Install the two shoulder bolts and lock nuts removed from the seat mounting bracket in Step 1. See Figure 8.

## ⚠ CAUTION

Do not use any type of power tool (e.g. impact gun or electric drill with nut driver attached) when tightening the self-tapping bolts to attach the seat bracket.

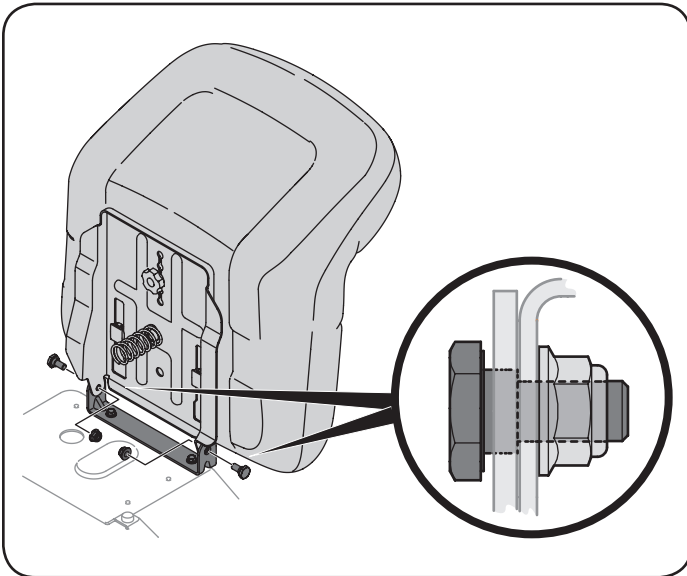


Figure 8

## Seat Adjustment

1. To adjust the position of the seat, remove the adjustment knob on the bottom of the seat. Slide the seat forward or backward as desired. Reinstall the adjustment knob. Refer to Figure 9.

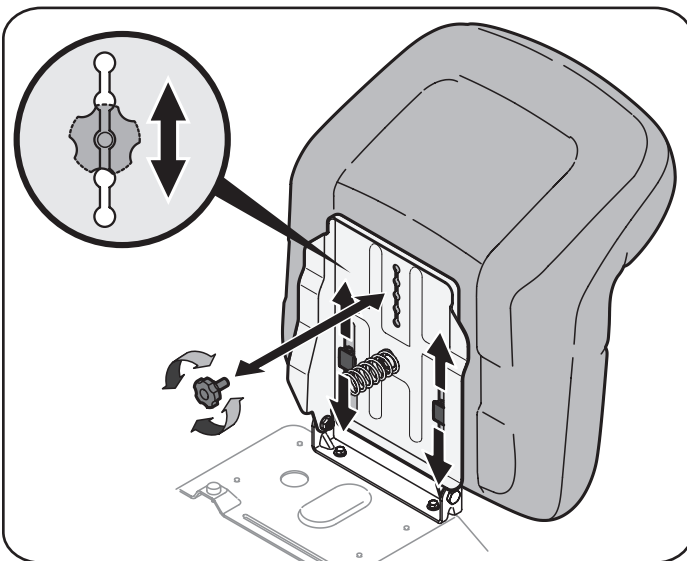


Figure 9

## Steering wheel height adjustment

To adjust the height of the steering wheel, this unit is equipped with a telescoping steering column. To adjust the height of the steering wheel:

1. Sit in the operator's seat and place your hands on the steering wheel.
2. Push the button (a) on the steering column and raise or lower the steering wheel (b) to the desired position. See Figure 10.

**Note:** Once the desired position is achieved, lift up and down on the steering wheel to make sure it locks into place and the button (a) on the steering column releases into a locked position. Do not operate this unit unless the steering column is in a locked position.

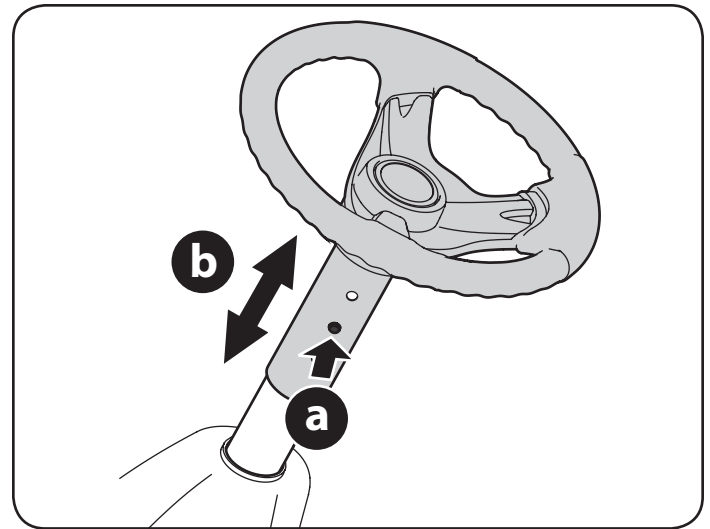


Figure 10

## Installing The Deck Chute

### ⚠ WARNING

NEVER operate this tractor without either the mulch plug or deck chute installed.

1. Remove the wing knobs installed on the mowing deck and retain for later installation.
2. Install the deck chute into the deck discharge opening on the deck. The rear of the chute should be under the tab on the rear deck bracket. See inset in Figure 11. The studs on the deck surface will fit through the holes on the upper portion of the deck chute. The small tab on the deck lip area will fit through the square cutout on the lower portion of the deck chute. See inset of Figure 11.

**Note:** Make certain that the upper-rear portion of deck chute is depressing the safety switch located on the deck surface and under the tab on the rear deck bracket. The engine will not start without the deck chute properly in place.

# ASSEMBLY

3. Secure the deck chute by tightening the wing knobs removed earlier. See Figure 11.

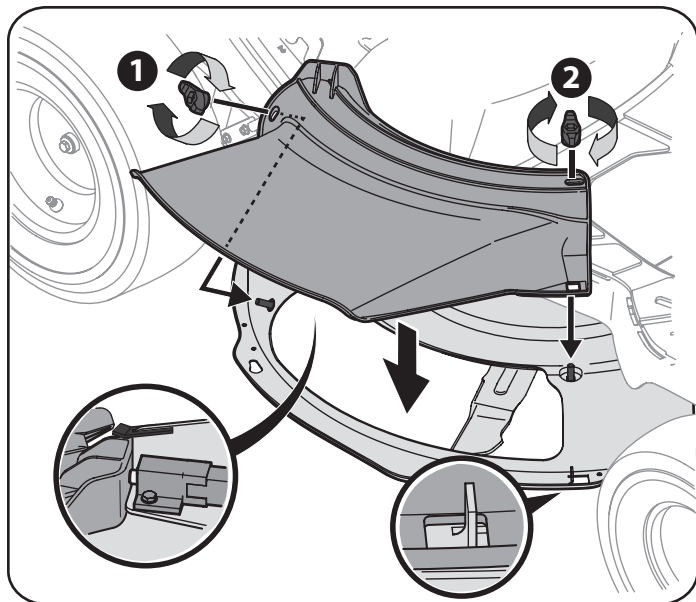


Figure 11

## Installing the Mulch Plug

### WARNING

NEVER operate this tractor without either the mulch plug or deck chute installed.

1. Remove the wing knobs installed on the mowing deck and retain for later installation. See Figure 12.

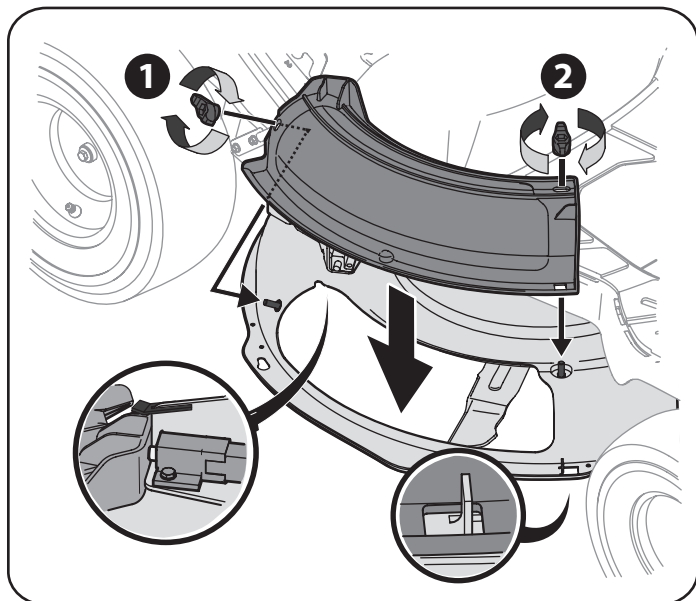


Figure 12

2. Install the mulch plug into the deck discharge opening on the deck. The rear of the mulch plug should be under the tab on the rear deck bracket. The studs on the deck surface will fit through the holes on the upper portion of the mulch plug. The small tab on the deck lip area will fit through the square cutout on the lower portion of the mulch plug. See Figure 12.

**Note:** Make certain that the upper-rear portion of mulch plug is depressing the safety switch located on the deck surface and under the tab on the rear deck bracket. The engine will not start without the mulch plug properly in place.

3. Secure the mulch plug by tightening the wing knobs removed in step 1.

## Install The Rear Engine Cover

1. Remove the two factory installed hex screws located on the rear engine cover mounting bracket. Retain the screws for later instructions. See Figure 13.
2. Install the rear engine cover by positioning it in place as shown in Figure 13. Tip the engine cover forward to fit it into the slots provided, then rotate it backwards to align the mounting holes.

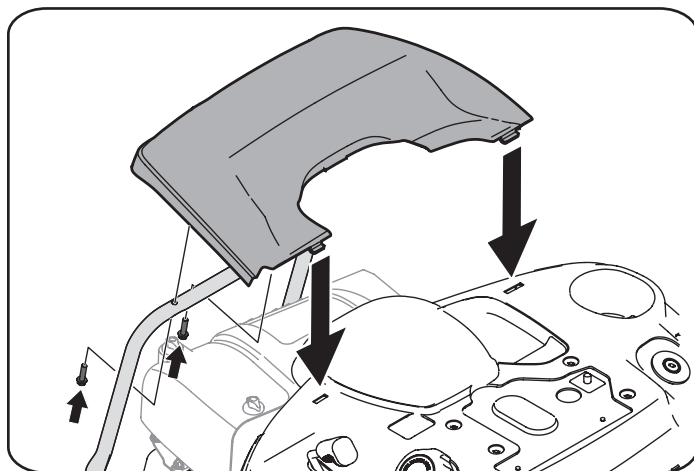


Figure 13

3. Secure the cover with the two hex screws previously removed. Do *not* over-tighten.

## Installing the Bumper

1. Remove the two screws as shown in Figure 14.
2. Position the bumper over the mounting holes and secure using the hardware removed in Step 1, as shown in Figure 14.

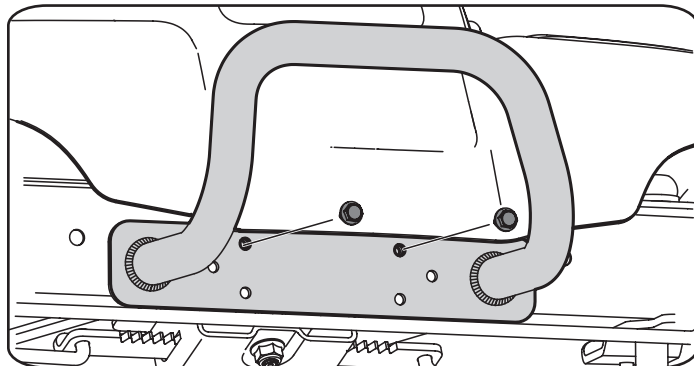


Figure 14

# ASSEMBLY

## Installing the Hitch Plate

1. Slide the hitch plate in between the frame and the rear cover on your rider. See Figure 15.

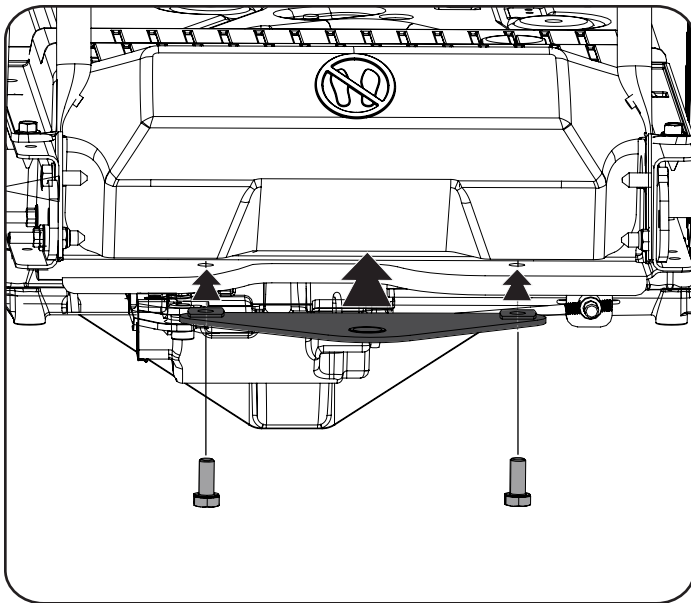


Figure 15

2. When the holes in the hitch plate and the frame are aligned, install the two hex screws from the manual bag up through the frame and into the hitch plate. See Figure 15.
3. Securely tighten the hitch plate.

## Connecting the Battery Cables

### WARNING

#### CALIFORNIA PROPOSITION 65

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.

### CAUTION

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

For shipping reasons, both battery cables on your equipment may have been left disconnected from the terminals at the factory. To connect the battery cables, proceed as follows:

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

1. Remove the factory installed hex bolts and hex nuts located on the end of the wiring harness. Retain the hardware for later instructions.
2. Remove the plastic cover, if present, from the positive battery terminal and attach the red cable to the positive battery terminal (+) with one of the hex bolt and hex nuts, using a 7/16 inch wrench and socket wrench. See Figure 16.

3. Remove the plastic cover, if present, from the negative battery terminal and attach the black cable to the negative battery terminal (-) with the remaining hex bolt and hex nut, using a 7/16 inch wrench and socket wrench. See Figure 16.
4. Position the red rubber boot over the positive battery terminal to help protect it from corrosion.

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

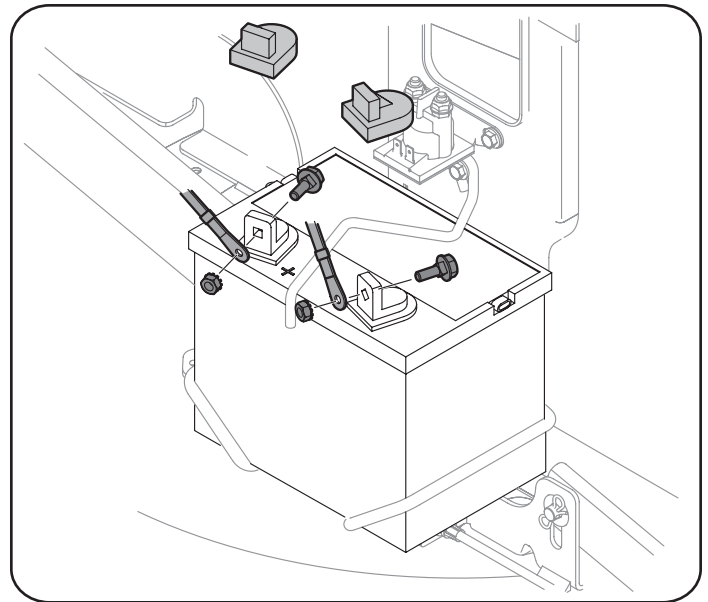


Figure 16

## Gas & Oil

**NOTE:** The engine is shipped without gasoline and with motor oil in the engine. However, you MUST check the oil level before operating. Be careful not to overfill. Running the engine with insufficient oil can cause serious engine damage and void the engine warranty.

### WARNING

Always keep hands and feet clear of equipment moving parts. Do not use a pressurized starting fluid. Vapors are flammable.

## Oil Recommendations

Before starting engine, check oil level, capacity is 1700 ml/57.5 fl. oz. Refer to viscosity chart in Figure 3-1 for oil recommendations. Do not over-fill. Use a 4-stroke, or an equivalent high detergent, premium quality motor oil certified to meet or exceed U.S. automobile manufacturer's requirements for service classification of a minimum level SJ (higher letter ratings are acceptable such as SL and SM grades). Motor oil will display this designation on the container.

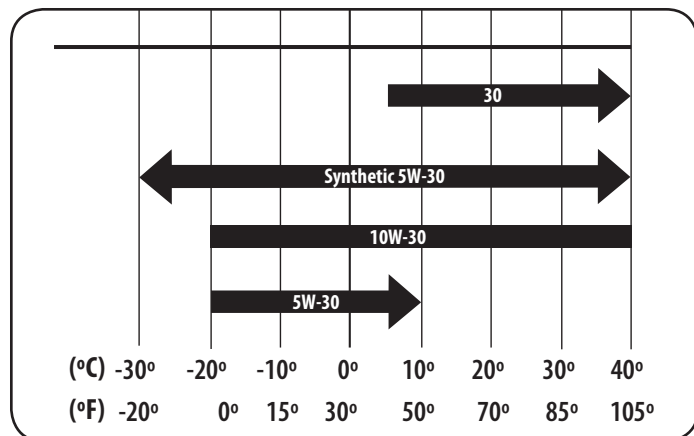
SAE 10W-30 is recommended for general, all temperature use. If single viscosity oil is used, select the appropriate viscosity for the average temperature in your area from the chart below.

### CAUTION

Do not use non-detergent oil or 2-stroke engine oil. It could shorten the engine's service life.

# ASSEMBLY

**NOTE:** A 5w30 synthetic oil may be used to improve start ability for cold weather (temperatures below 40 F).



## Checking The Oil Level

**NOTE:** Be sure to check the oil while on a level surface with the engine stopped.

1. Remove the oil filler cap/dipstick and wipe the dipstick clean.
2. Insert the dipstick into the oil filler neck. Turn the dipstick 1/4 turn into the locked position to fully seat. See Figure 17.
3. Remove dipstick to check the oil level.
4. If the level is low, slowly add oil until the reading is at the upper level on the dipstick. See Figure 17 inset.
5. Reinsert the dipstick and turn to locked position before starting the engine.

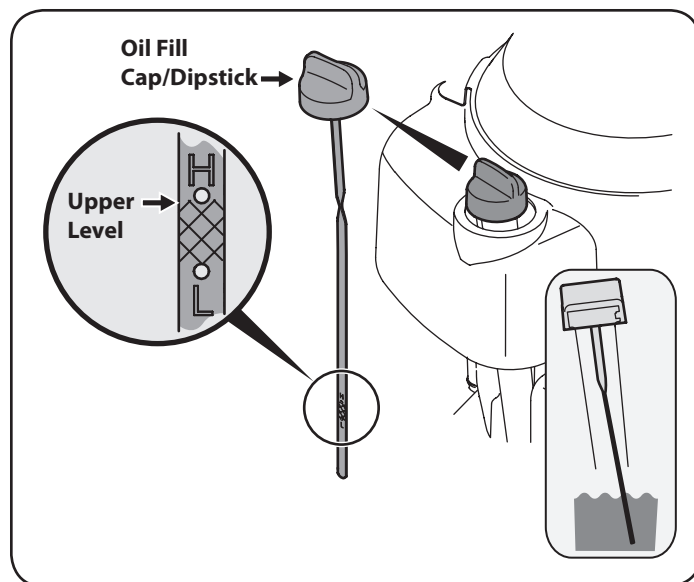


Figure 17

**NOTE:** Do not overfill. Overfilling with oil may cause smoking, hard starting, spark plug fouling, or oil saturation of air cleaner.

## Fuel Requirements

### ⚠ CAUTION

Operating the engine with E85 fuel, an oil/gasoline mixture, dirty gasoline, or gasoline over 30 days old without fuel stabilizing additive may result in damage to your engine's carburetor. Subsequent damage would **not** be covered under the Craftsman warranty.

Use automotive gasoline (unleaded or low leaded to minimize combustion chamber deposits) with a minimum of 87 octane. Gasoline with up to 10% ethanol or 15% MTBE (Methyl Tertiary Butyl Ether) can be used. Never use an oil/gasoline mixture or dirty gasoline. Avoid getting dirt, dust, or water in the fuel tank. DO NOT use E85 gasoline.

### ⚠ WARNING

Use extreme care when handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Never fuel machine indoors or while the engine is hot or running. Extinguish cigarettes, cigars, pipes, and other sources of ignition.

**NOTE:** Purchase gasoline in small quantities. Do not use gasoline left over from the previous season, to minimize gum deposits in the fuel system.

- This engine is certified to operate on unleaded gasoline. For best results, fill the fuel tank with only clean, fresh, unleaded gasoline with a pump sticker octane rating of 87 or higher.
- Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is an approved fuel. Other gasoline/alcohol blends, such as E85, 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.
- Fill fuel tank outdoors or in well-ventilated area.
- Do not overfill fuel tank. Fill tank to no more than 1/2 inch below bottom of filler neck to allow space for fuel expansion.
- Never remove gas cap or add fuel while the engine is hot or running. Allow engine to cool at least two minutes before refueling.
- If gasoline is spilled, wipe it off the engine and equipment. Move machine to another area. Wait 5 minutes before starting the engine.

## To Add Gasoline

**NOTE:** The tractor is fitted with a tethered, ratcheting fuel cap. STOP filling the tank once the fuel is seen inside the filler neck. This ensures that a proper expansion volume is created, otherwise the fuel can overflow creating a hazardous situation. Do NOT top off the fuel tank.

- Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where gasoline is stored.
- Do not overfill the fuel tank. After refueling, make sure the tank cap is closed properly and securely.
- Be careful not to spill fuel when refueling. Spilled fuel or fuel vapor may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.

# ASSEMBLY

- Avoid repeated or prolonged contact with skin or breathing of vapor.

## Adding Fuel

### WARNING

An adult should fuel this engine. NEVER allow children to refuel its engine. Gasoline (fuel) vapors are highly flammable and can explode. Fuel vapors can spread and be ignited by a spark or flame many feet away from engine. To prevent injury or death from fuel fires, follow these instructions:

- DO NOT use leaded fuel.
  - Fuel must be fresh and clean. NEVER use fuel left over from last season or stored for long periods.
  - NEVER mix oil with fuel.
  - DO NOT use fuel containing Methanol (Wood Alcohol)
- NOTE:** Before refueling, allow engine to cool two minutes.
1. Turn the engine off and let engine cool at least 2 minutes before removing the fuel cap. The gasoline tank is located under the seat. The fuel cap is tethered to the tractor to prevent its loss. Do not attempt to remove the cap from the tractor.
  2. Clean around fuel fill before removing cap to fuel.
  3. Fill tank until fuel reaches 1/2 inch below the bottom of the filler neck to allow space for fuel expansion. Be careful not to overfill. See Figure 18.

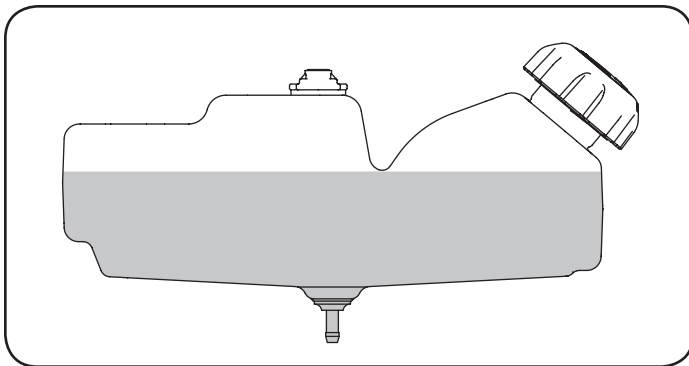


Figure 18

4. Replace the gasoline cap and tighten securely. Wipe up spilled fuel before starting engine. If fuel is spilled DO NOT start engine. Move machine away from area of spillage. Avoid creating any source of ignition until fuel vapors are gone.

## Tire Pressure

### WARNING

Equal tire pressure should be maintained at all times. Never exceed the maximum inflation pressure shown on the sidewall of the tire.

The recommended operating tire pressure is:

- Approximately 10 psi for the rear tires
- Approximately 14 psi for the front tires

**IMPORTANT:** Refer to the tire sidewall for exact tire manufacturer's recommended or maximum psi. Do not overinflate. Uneven tire pressure could cause the cutting deck to mow unevenly.

# OPERATION

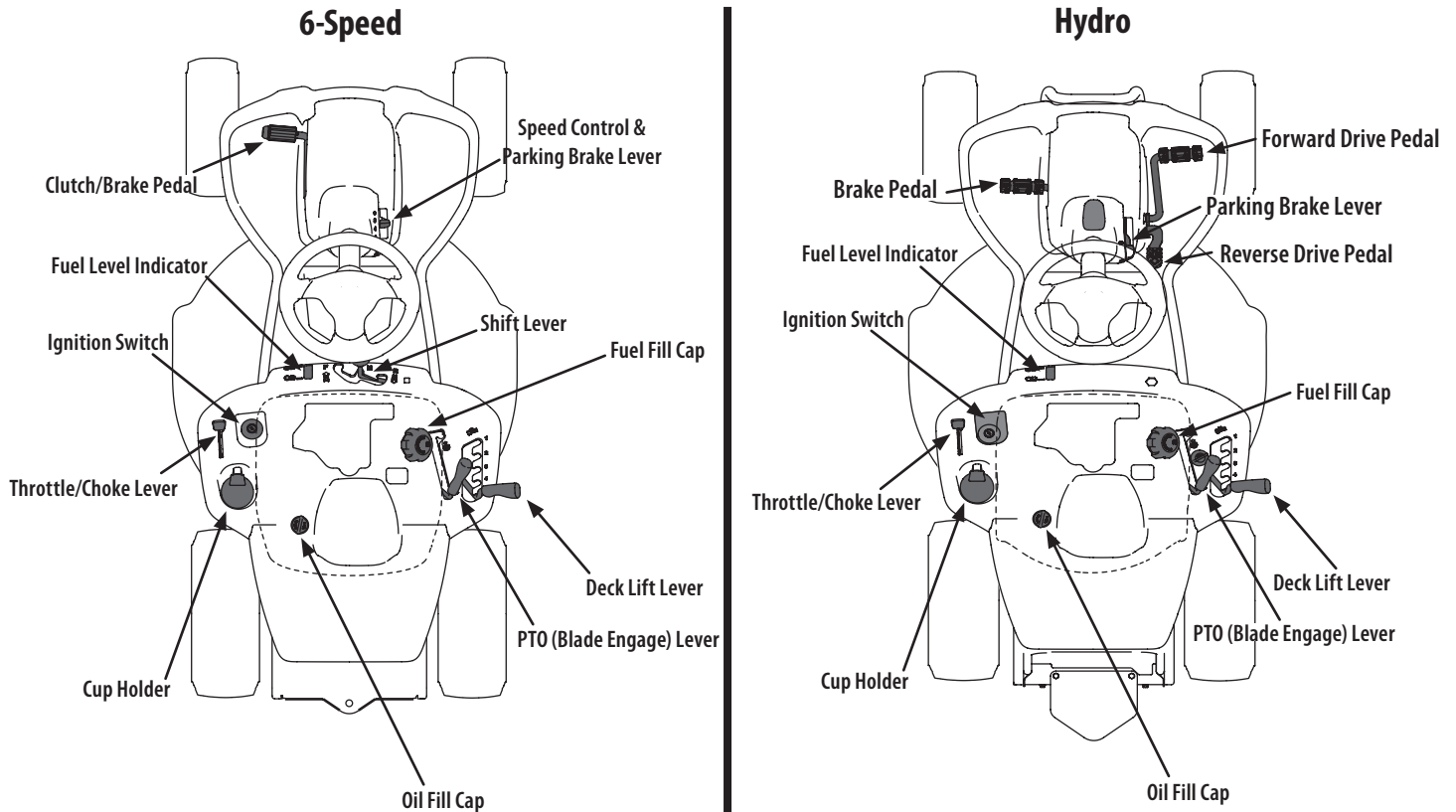


Figure 19

**NOTE:** Any reference in this manual to the RIGHT or LEFT side of the tractor is observed from operator's seat position facing forward towards the front of tractor.

## Meets ANSI Safety Standards

Craftsman Tractors conform to the safety standard of the American National Standards Institute (ANSI).

### Throttle / Choke Control

The throttle control lever is located on the left fender of the tractor as seen from the operator's position, see Figure 19. This lever controls the speed of the engine, as well as the choke when it is pushed all the way forward. When set in a given position, the throttle will maintain a uniform engine speed.

**IMPORTANT:** When operating the tractor with the cutting deck engaged, be certain that the throttle lever is always in the FAST (rabbit) position.

Moving the throttle lever all the way forward activates the engine's choke control. Activating the choke control closes the choke plate on the carburetor and aids in starting the engine.

Refer to Starting The Engine in the Operation section of this manual for detailed starting instructions.

### Ignition Switch

The ignition switch is located on the left fender of the tractor as seen from the operator's position, adjacent to the Throttle/Choke Control. Activate the Ignition Switch to start the engine by inserting the key into the ignition switch and turn clockwise to the START position. Release the key into the ON position once engine has fired. See Figure 20.

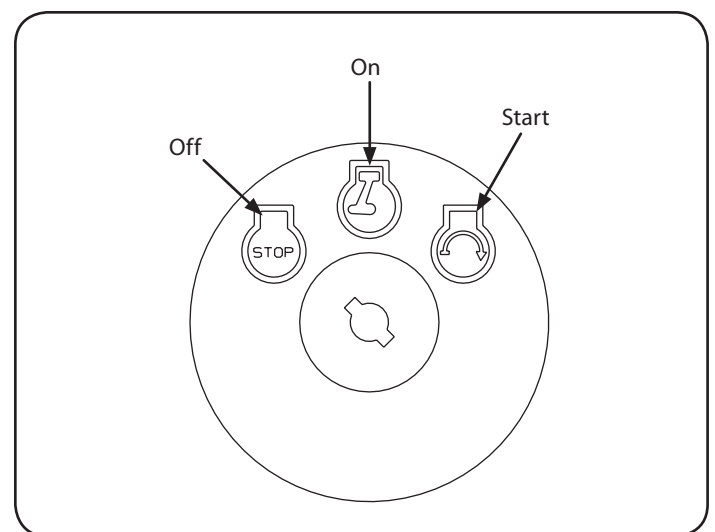


Figure 20



# OPERATION

## Clutch-Brake Pedal

The clutch-brake pedal is located on the left side of the lawn tractor, along the running board. Depress the clutch-brake pedal part way down when slowing the tractor by changing speeds (Refer to Speed Control Lever). Depress the pedal all the way down to engage the disc brake and bring the tractor to a complete stop.

**NOTE:** The clutch-brake pedal must be completely depressed to start the engine. Refer to Safety Interlock Switches in the Operation section of this manual.

## Shift Lever (6-Speed Tractors Only)

The shift lever is located on the control panel just below the seat, in the center of the tractor. It has three positions, FORWARD, NEUTRAL and REVERSE. The **brake pedal must be completely depressed** and the tractor must not be in motion when moving the shift lever. See Figure 21.

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

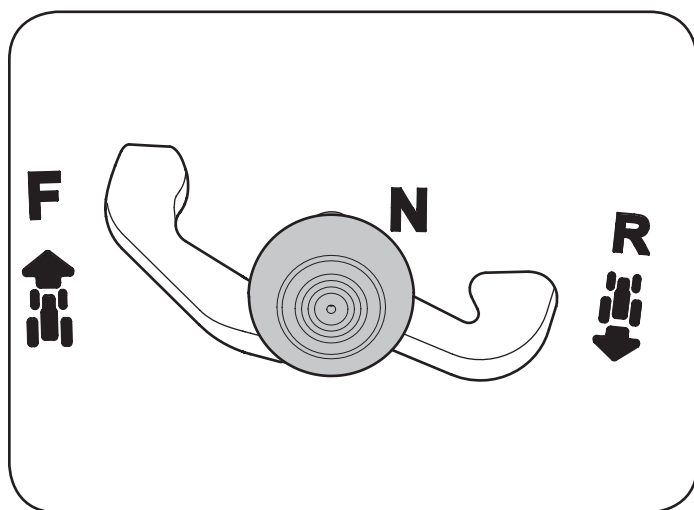


Figure 21

## Speed Control Lever (6-Speed Tractors Only)

The speed control lever, located on the right side of the tractor's steering console, allows you to regulate the ground speed of the lawn tractor.

To use, depress the clutch-brake pedal and move the lever out of the parking brake notch and forward to increase the tractor's ground speed. When a desired speed has been reached, release the lever into an appropriate notch to maintain that speed.

To slow the tractor's ground speed, depress the clutch-brake pedal and move the speed control lever rearward and release it into a notch.

## Forward Drive Pedal (Hydro Tractors Only)

The forward drive pedal is located on the right side of the machine, along the running board. Press the forward drive pedal forward to cause the riding mower to travel forward. Ground speed is also controlled with the forward drive pedal. The further forward the pedal is pivoted, the faster the riding mower will travel. The pedal will return to its original/neutral position when it's not pressed.

## Reverse Drive Pedal (Hydro Tractors Only)

The reverse drive pedal is located on the right side of the riding mower along the running board. Ground speed is also controlled with the reverse drive pedal. The further downward the pedal is pivoted, the faster the riding mower will travel. The pedal will return to its original/neutral position when it's not pressed.

## Brake Pedal (Hydro Tractors) &

## Clutch-Brake Pedal (6-Speed Tractors)

The brake pedal or clutch-brake pedal is located on the left side of the tractor, along the running board. Depress the pedal all the way down to engage the brake and bring the riding mower to a complete stop.

**NOTE:** The brake pedal must be completely depressed to start the engine. Refer to Safety Interlock Switches for more information.

## Parking Brake

To set the parking brake, fully depress the brake (Hydro tractors) or clutch-brake pedal (6-Speed tractors). On 6-Speed tractors, move the speed control lever all the way down and into the parking brake position. On Hydro tractors, move the parking brake lever all the way down into the parking brake engage position. Release the brake pedal or clutch-brake pedal to allow the parking brake to engage.

To release the parking brake, depress the brake pedal and move the parking brake lever or speed control lever out of the parking brake position into the desired position. Release the clutch-brake pedal.

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

## Fuel Level Indicator

The Fuel Level Indicator is located below the seat on the left hand side from the operator's position in the control panel. Use this window to identify the tractor's fuel needs. See Figure 22.

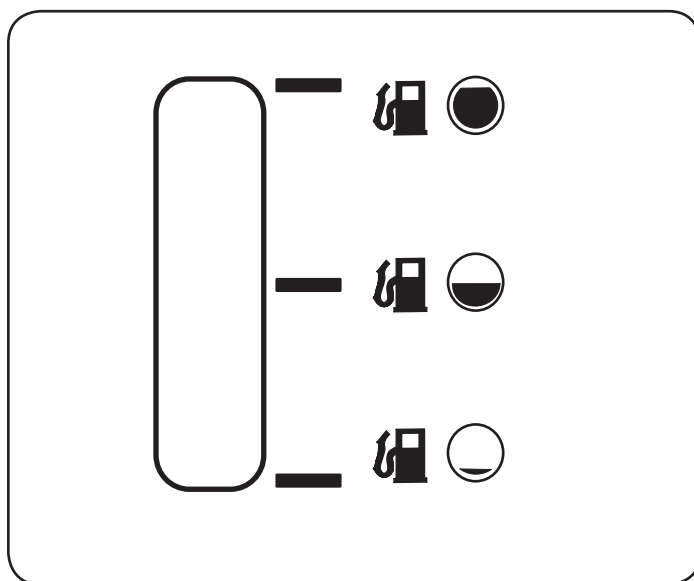


Figure 22

# OPERATION

## Deck Lift Lever

Found on your tractor's right fender, the deck lift lever is used to change the height of the cutting deck. To use, move the lever to the left, then place in the notch best suited for your application.

## PTO (Blade Engage) Lever

Found on the tractor's right fender, the PTO (blade engage) lever is used to engage power to the cutting deck. To operate, move the lever all the way forward. Moving the lever all the way rearward into the PTO OFF position disengages power to the cutting deck.

**NOTE:** The PTO (blade engage) lever must be in the disengaged (PTO OFF) position when starting the engine.

## Fuel Fill Cap

The Fuel Fill Cap is located below the seat. Refer to the Assembly section in this manual for instructions on fueling this tractor.

## Oil Fill Cap

The Oil Fill Cap is located below the seat. Refer to the Assembly section in this manual for instructions on checking and adding oil to this tractor.

## Fuel Fill Cap

The gasoline tank is located under the seat. Do not overfill.



### WARNING

Use extreme care when handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Never fuel machine indoors or while the engine is hot or running. Extinguish cigarettes, cigars, pipes, and other sources of ignition.

For detailed information on adding fuel, refer to Fuel Requirements in the Assembly section of this manual.

## Safety Interlock Switches

The safety interlock system is designed for safe operation of the tractor. If this system should ever malfunction, do not operate the tractor.

Immediately contact 1-888-331-4569 to have the system serviced.

- The safety interlock system prevents the engine from starting unless the parking brake is engaged and the PTO (Blade Engage) lever is in the disengaged (OFF) position.
- The safety interlock system will automatically shut off the engine if the operator leaves the seat before engaging the parking brake.
- The safety interlock system will automatically shut off the engine if the operator leaves the tractor's seat with the PTO (Blade Engage) lever engaged, regardless of whether the parking brake is engaged.
- The engine will automatically shut off if the PTO (Blade Engage) lever is moved into the engaged (ON) position with the shift lever in Reverse.



### WARNING

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

## Ignition Switch

The ignition switch is activated to start the engine. Insert key into the ignition switch and turn clockwise to the START position. Release the key into the ON position once engine has fired. See Figure 23.

To stop the engine, turn the ignition key counterclockwise to the OFF position. See Figure 23.



### WARNING

Never leave a running machine unattended. Always disengage PTO, move shift lever into neutral position, set parking brake, stop engine and remove key to prevent unintended starting.

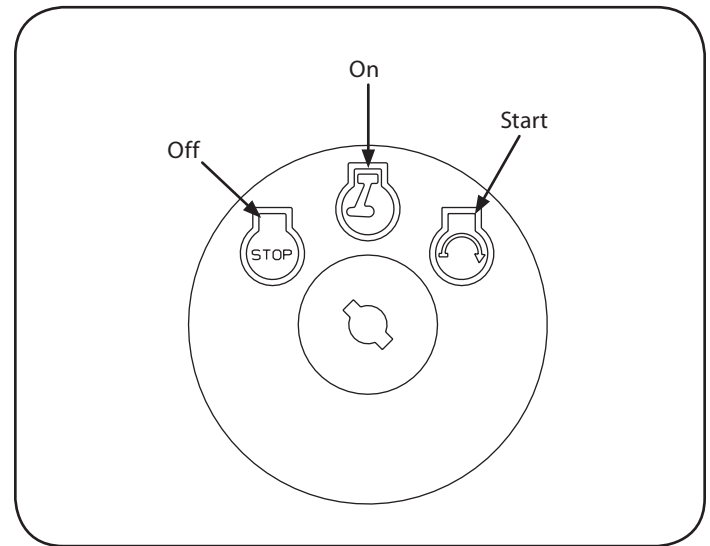


Figure 23



### WARNING

## Avoid Serious Injury or Death

- Know location and function of all controls.
- Remove objects which could be thrown by the blades.
- Go up and down slopes, not across.
- Use extra caution on slopes. Do not mow slopes greater than 12 degrees. Avoid sudden turns. Use low speed.
- Do not operate machine where it could tip or slip.
- If machine stops going uphill, stop blades and back down slowly.
- Before leaving operator's position, disengage blades, engage parking brake, shut off and remove key.
- Be sure blades and engine are stopped before placing hands or feet near blades.
- Keep safety devices (guards, shields, switches, etc.) in place and working.
- Keep bystanders away.
- Allow machine to cool before fueling or storing.
- Keep machine free of debris.

Read Operator's Manual

# OPERATION

## Engaging the Parking Brake

### To engage the parking brake:

1. Fully depress the brake pedal and hold it down with your foot.
2. Move the parking brake lever down into the parking brake position.
3. Release the brake pedal to allow the parking brake to engage.

### To release the parking brake:

1. Depress the brake pedal and move the speed control lever out of the parking brake position.

## Setting the Cutting Height

Select the height position of the cutting deck by placing the deck lift lever in any of the different cutting height notches on the right side of the fender.

### WARNING

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

## Starting the Engine

### WARNING

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

**NOTE:** Refer to the Assembly section of this manual for gasoline and oil fill-up instructions.

1. Insert the tractor key into the ignition switch.
2. Place the PTO (Blade Engage) lever in the disengaged (OFF) position.
3. Engage the tractor's parking brake.
4. Activate the choke control.
5. Turn the ignition key clockwise to the START position. After the engine starts, release the key. It will return to the ON position.

### WARNING

**IMPORTANT:** 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. After the engine starts, deactivate the choke control by placing the throttle control into the FAST position.

**NOTE:** Do NOT leave the choke control on while operating the tractor. Doing so will result in a "rich" fuel mixture and cause the engine to run poorly.

## Stopping the Engine

### WARNING

If you strike a foreign object, stop the engine, disconnect the spark plug wire(s) and ground against the engine. Thoroughly inspect the machine for any damage. Repair the damage before restarting and operating.

1. If the blades are engaged, place the PTO (Blade Engage) lever in the disengaged (OFF) position.
2. Turn the ignition key counterclockwise to the STOP position.

3. Remove the key from the ignition switch to prevent unintended starting.

## Driving The Tractor

### WARNING

Avoid sudden starts, excessive speed and sudden stops.

### WARNING

Do not leave the seat of the tractor without first placing the PTO (Blade Engage) lever in the disengaged (OFF) position, depressing the brake pedal and engaging the parking brake. If leaving the tractor unattended, also turn the ignition key off and remove the key.

### WARNING

Always look down and behind before and while backing up to avoid a back-over accident.

1. Depress the brake pedal and move the speed control lever out of the parking brake position, then let the pedal release.
2. Move the throttle lever into the FAST (rabbit) position.
3. Place the shift lever in either the FORWARD or REVERSE position.

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

4. Release the parking brake by depressing the clutch-brake pedal and positioning the speed control lever in desired position.

**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.

5. Release clutch-brake pedal slowly to put unit into motion.
6. The lawn tractor is brought to a stop by depressing the clutch-brake pedal.

**NOTE:** When operating the unit initially, there will be little difference between the highest two speeds until after the belts have seated themselves into the pulleys during the break-in period.

### WARNING

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

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

1. Place the shift lever in neutral,
2. Engage the parking brake,
3. Shut engine off and remove the key. Doing so will minimize the possibility of having your lawn "browned" by hot exhaust from your tractor's running engine.

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

1. Place shift lever in NEUTRAL.
2. Restart engine.

# OPERATION

- Place speed control lever in highest speed position.
- Release clutch-brake pedal fully.
- Depress clutch-brake pedal.
- Place speed control lever in desired position.
- Place shift lever in either FORWARD or REVERSE, and follow normal operating procedures.

## Driving On Slopes

Refer to the SLOPE GAUGE in the Safety Instructions section of the manual to help determine slopes where you may operate this tractor safely.



### WARNING

Do not mow on inclines with a slope in excess of 12 degrees (a rise of approximately 2 feet every 10 feet). The tractor could overturn and cause serious injury.

- Mow up and down slopes, NEVER across.
- Exercise extreme caution when changing direction on slopes.
- Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Avoid turns when driving on a slope. If a turn must be made, turn down the slope. Turning up a slope greatly increases the chance of a roll over.
- Avoid stopping when driving up a slope. If it is necessary to stop while driving up a slope, start up smoothly and carefully to reduce the possibility of flipping the tractor over backward.

## Engaging the Blades

Engaging the PTO (Blade Engage) transfers power to the cutting deck. To engage the blades, proceed as follows:

- Move the throttle/choke control lever to the FAST (rabbit) position.
- Grasp the PTO (Blade Engage) lever and pivot it all the way forward into the engaged (ON) position.
- Keep the throttle lever in the FAST (rabbit) position for the most efficient use of the cutting deck.

**NOTE:** The engine will automatically shut off if the PTO (Blade Engage) lever is moved into the engaged (ON) position with the shift lever in Reverse.

## Mulching

A mulch kit is available as an attachment. Mulching is a process of recirculating grass clippings repeatedly beneath the cutting deck. The ultra-fine clippings are then forced back into the lawn where they act as a natural fertilizer. Contact the nearest Parts & Repair Service Center to purchase a mulch kit for this unit.

To locate the nearest Parts & Repair Service Center, contact 1-888-331-4569.

## Using the Deck Lift Lever

To raise the cutting deck, move the deck lift lever to the left, then place it in the notch best suited for your application. Refer to Setting The Cutting Height earlier in this section.

## 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.

The following information will be helpful when using the cutting deck with your tractor:



### WARNING

Plan your mowing pattern to avoid discharge of materials toward roads, sidewalks, bystanders and the like. Also, avoid discharging material against a wall or obstruction which may cause discharged material to ricochet back toward the operator.

- Do not mow at high ground speed, especially if a mulch kit or grass collector is installed.
- 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.
- Do not cut the grass too short. Short grass invites weed growth and yellows quickly in dry weather.
- Mowing should always be done with the engine at full throttle.
- Under heavier conditions it may be necessary to go back over the cut area a second time to get a clean cut.
- Do NOT attempt to mow heavy brush and weeds and extremely tall grass. Your tractor is designed to mow lawns, NOT clear brush.
- Keep the blade sharp and replace the blade when worn. Refer to Cutting Blade in the Maintenance section of this manual for proper blade sharpening instructions.
- The lamps turn OFF when the ignition key is moved to the STOP position.

# 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. Use the Service Log column to keep track of completed maintenance tasks.

To locate the nearest Parts & Repair Service Center or to schedule service, simply call 1-888-331-4569.

Interval	Item	Service	Service Log
Each Use	<ol style="list-style-type: none"> <li>1. Engine Intake Screens &amp; Cooling Fans *</li> <li>2. Exhaust Manifold, Muffler Pipe &amp; Muffler Shields *</li> <li>3. Hood/Dash Panel Louvers *</li> <li>4. Top &amp; Underside of Deck, Under and Around Spindle Covers &amp; Belt Area *</li> <li>5. Around Fuses, Wiring and Wiring Harnesses *</li> <li>6. Around Transmission, Axle and Fans *</li> <li>7. Engine Oil</li> <li>8. Air Filter</li> </ol>	<ol style="list-style-type: none"> <li>1. Check/Clean</li> <li>2. Check/Clean</li> <li>3. Check/Clean</li> <li>4. Check/Clean</li> <li>5. Check/Clean</li> <li>6. Check/Clean</li> <li>7. Check</li> <li>8. Check</li> </ol>	
In the First Five Hours	<ol style="list-style-type: none"> <li>1. Engine Oil</li> </ol>	<ol style="list-style-type: none"> <li>1. Change</li> </ol>	
Every 10 Hours	<ol style="list-style-type: none"> <li>1. Hood/ Dash air vents</li> <li>2. Battery terminals</li> <li>3. Deck spindle and idler bracket</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean</li> <li>2. Clean</li> <li>3. Lubricate</li> </ol>	
Every 25 hours	<ol style="list-style-type: none"> <li>1. Air filter's precleaner*</li> <li>2. Air filter*</li> <li>3. Mid-steering arms, pivot shafts, rack and axles</li> <li>4. Front wheel bearings</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean</li> <li>2. Clean</li> <li>3. Lubricate</li> <li>4. Lubricate</li> </ol>	
Every 50 hours	<ol style="list-style-type: none"> <li>1. Engine oil/ Oil filter</li> <li>2. Muffler</li> </ol>	<ol style="list-style-type: none"> <li>1. Change/Replace</li> <li>2. Check</li> </ol>	
Annually	<ol style="list-style-type: none"> <li>1. Air filter</li> <li>2. Air filter's pre-cleaner</li> <li>3. Spark plug</li> <li>4. Air cooling system*</li> <li>5. Fuel filter</li> <li>6. Steering Gears</li> <li>7. Rear Wheels</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Replace</li> <li>3. Replace</li> <li>4. Clean</li> <li>5. Replace</li> <li>6. Clean</li> <li>7. Remove and grease axles</li> </ol>	
Before Storage	<ol style="list-style-type: none"> <li>1. Hood/ Dash air vents</li> <li>2. Battery terminals</li> <li>3. Mid steering arms, pivot shafts, and axles</li> <li>4. Front wheel bearings</li> <li>5. Deck spindle and idler bracket</li> <li>6. Pedal pivot points</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean</li> <li>2. Clean</li> <li>3. Lubricate</li> <li>4. Lubricate</li> <li>5. Lubricate</li> <li>6. Lubricate</li> </ol>	

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



### WARNING

Before performing any maintenance or repairs, disengage the PTO (Blade Engage Lever), engage the parking brake, stop the engine and remove the key to prevent unintended starting.



### 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. Exercise caution to avoid burns.

# SERVICE AND MAINTENANCE

## Post-Operation Rider Care

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



### DANGER

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

## Cleaning the Underside of the Deck

### Deck Wash System (if equipped)

Your rider's deck is 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. Drive the rider to a level, clear spot on your lawn, near enough for your garden hose to reach.



### WARNING

Make certain the rider's discharge chute is directed AWAY from people, your house, garage, parked cars, etc.

2. Disengage the PTO, set the parking brake and stop the engine.
3. Thread the hose coupler (packaged with your rider's Operator's Manual) onto the end of your garden hose.
4. Attach the hose coupler to the water port on your decks surface. See Figure 24.

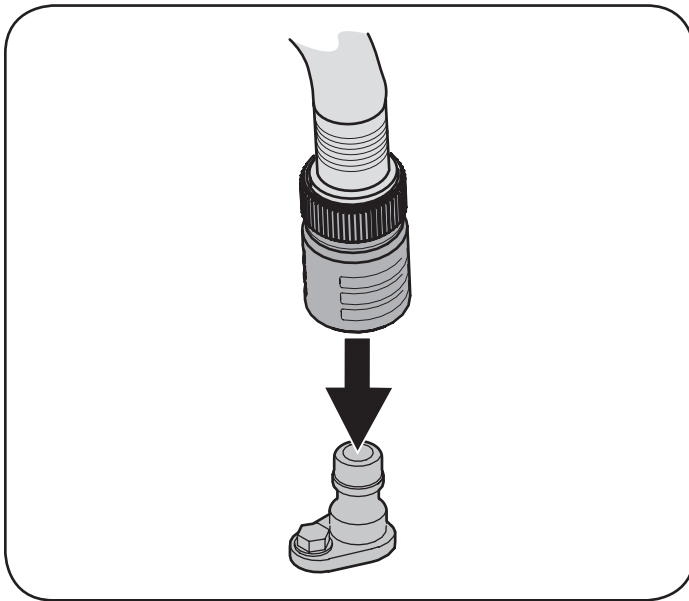




Figure 24

**Note:** Make sure that the hose is not routed under the deck and is clear of all moving parts.

5. Turn the water on.
6. While sitting in the operator's position on the rider, start the engine and place the throttle lever in the FAST  position.

7. Move the rider's PTO into the engaged (ON) position.
8. Remain in the operator's position with the deck engaged for a minimum of two minutes, allowing the underside of the deck to thoroughly rinse.
9. Move the rider's PTO into the disengaged (OFF) position.
10. Turn the ignition key to the STOP  position to turn the rider's engine off.
11. Turn the water off and detach the hose coupler from the water port on your deck's surface.
12. After cleaning your deck with the Smart Jet system, return to the operator's position and engage the PTO. Keep the deck running for a minimum of two minutes, allowing the underside of the deck to thoroughly dry.

## Cleaning the Rider



### WARNING

If the rider 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 rider 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 rider running efficiently and to reduce fire risk is to regularly remove debris buildup from the rider. Follow the recommendations below and contact your authorized dealer with any questions.

- Allow the machine to cool in an open area before cleaning.
- Do not use water on any part of the rider except the underside of the cutting deck. Doing so can cause damage to the rider's spindle bearings, electrical system and engine, leading to premature failures. The use of compressed air and/or leaf blower will help keep the rider clean.
- Clean under the hood. Exhaust manifold, around fuses, all wiring and harnesses, muffler pipe, muffler shield, engine intake screens and cooling fins, etc. See Figure 25.

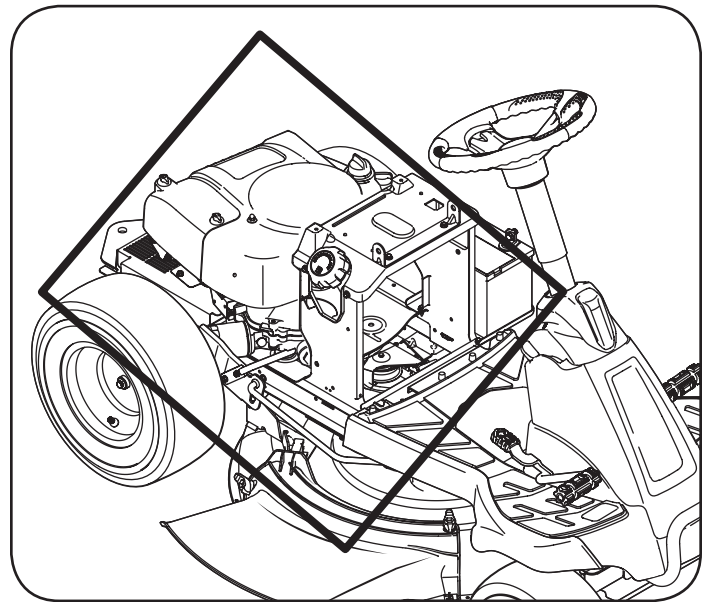


Figure 25

# SERVICE AND MAINTENANCE

- Clean the top of the mower deck, under the spindle covers and belt area. See Figure 26.

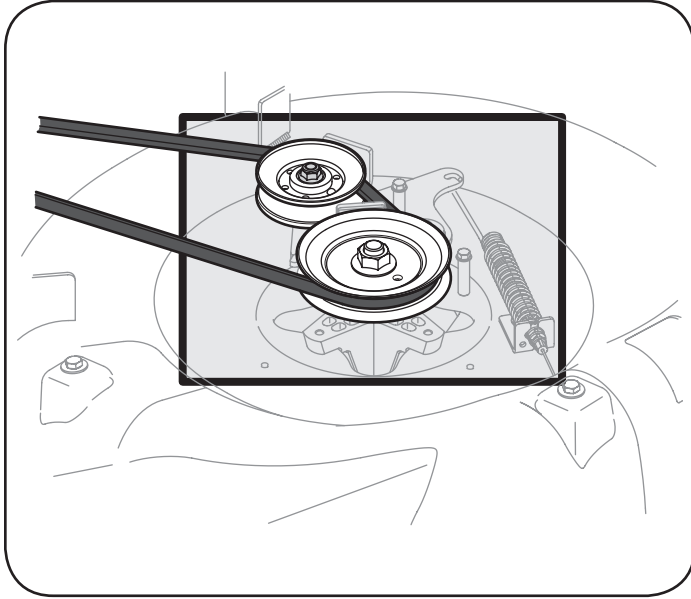


Figure 26

- Clean around and near the transmission, axle and the fan area. See Figure 26.
- Debris can accumulate anywhere on the rider, 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 collections sites for debris. Immediate repair and cleaning up oil or fuel spills can help reduce fire hazards.
- In addition to cleaning the rider before operating and storing, do not attempt to mow unusually tall grass (10" 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 mower deck presenting a potential fire hazard.

## Battery

Clean the battery by removing it from the riding mower and washing with a baking soda and water solution. If necessary, scrape the battery terminals with a wire brush to remove deposits. Coat terminals and exposed wiring with grease or petroleum jelly to prevent corrosion.

The battery is sealed and is maintenance-free. Acid levels cannot be checked.

- Always keep the battery cables and terminals clean and free of corrosive build-up.
- After cleaning the battery and terminals, apply a light coat of petroleum jelly or grease to both terminals.
- Always keep the rubber boot positioned over the positive terminal to prevent shorting.

**Important:** If removing the battery for any reason, disconnect the NEGATIVE (Black) wire from its terminal first, followed by the POSITIVE (Red) wire. When re-installing the battery, always connect the POSITIVE (Red) wire its terminal first, followed by the NEGATIVE (Black) wire. Be certain that the wires are connected to the correct terminals; reversing them could change the polarity and result in damage to your engine's alternating system.

## Storing the Rider

- Allow the machine to cool in an open area before storing.
- Do not park the rider 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 rider before storing. Empty cargo boxes, grass catchers or containers.
- Always shut off fuel flow when storing or transporting if rider 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.

## Engine Maintenance



### WARNING

Shut off the engine before performing any maintenance. To prevent accidental start-up, disconnect the spark plug boot.

**IMPORTANT:** If engine must be tipped to transport equipment or to inspect or remove grass, keep spark plug side of engine up. Transporting or tipping engine spark plug down may cause smoking, hard starting, spark plug fouling, or oil saturation of air cleaner.

Periodic inspection and adjustment of the engine is essential if high level performance is to be maintained. Regular maintenance will also ensure a long service life. The required service intervals and the kind of maintenance to be performed are described in the table on the previous page. Follow the hourly or calendar intervals, whichever occur first. More frequent service is required when operating in adverse conditions.



### WARNING

If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.

## Servicing the Engine Oil

- Check the oil level regularly.
- Be sure correct oil level is maintained. Check the oil every five to ten hours of operation, before starting the engine. See Checking Oil Level in the Assembly section.

Only use high quality detergent oil rated with API service classification SF, SG, SH, or SJ. Select the oil's SAE viscosity grade according to the expected operating temperature. Refer to Gas & Oil in the Assembly section of this manual.

## Oil Drain

**IMPORTANT:** Be sure to check engine on a level surface with the engine stopped. Drain the oil while the engine is still warm to assure rapid and complete draining.

For draining oil from the engine's crankcase of select model tractors, a plastic oil drain sleeve is packed with this Operator's Manual. To drain the oil, proceed as follows:

1. Unscrew the oil fill cap and remove the dipstick from the oil fill tube.
2. Snap the small end of oil drain sleeve onto the oil sump. See Figure 27.
3. Remove drain plug and drain oil into a suitable container with a capacity of no less than 64 oz.
4. Tip the tractor slightly in the direction of the suitable container to aid in fully draining all of the oil from the engine.



### WARNING

Before tipping engine or equipment to drain oil, drain fuel from tank by running engine until fuel tank is empty.

# SERVICE AND MAINTENANCE

5. Service the Oil Filter if desired, as per the instructions later in this section.
6. Reinstall the drain plug and tighten it securely, 12-14 Nm (106.2-123.9 in-lb).
7. Remove the oil drain sleeve from the oil sump. Return the dipstick to the oil fill tube and screw the oil fill cap back into place.
8. Pour oil into the dipstick tube. Do not over fill. With an oil filter change the high level amount of oil for this engine is 1700 ml (57.48 fl-oz.).
9. Install dipstick and turn to locked position before starting engine.
10. Start the engine. Allow it to run for a few seconds and then shut down the engine.
11. Check the oil level.

**IMPORTANT:** Used motor oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

**NOTE:** Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take it in a sealed container to your local service station for reclamation. Do not throw it in the trash, pour it down a drain or on the ground.

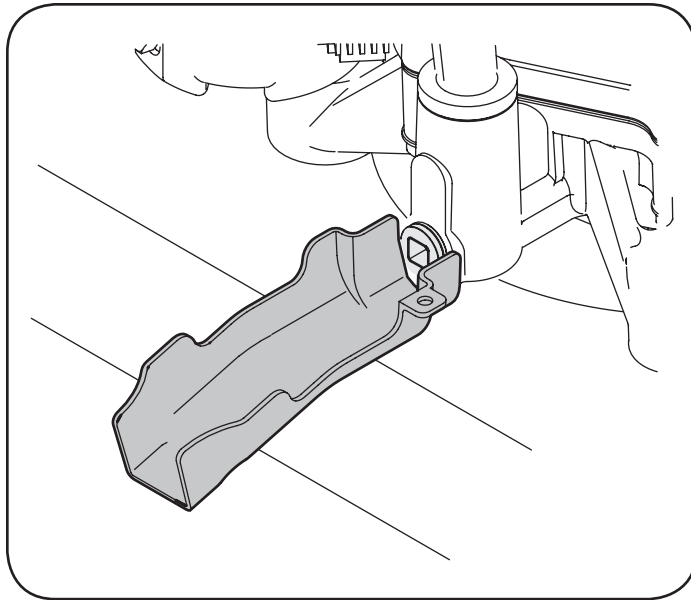


Figure 27

## Replacing The Oil Filter

This engine is equipped with a spin-on oil filter that should be replaced each time an oil change is performed, every season or 50 hours. Refer to Figure 28.

### To replace the Oil Filter:

1. Drain the oil as instruction previously in this section.
2. Remove the oil filter. Dispose of the old oil filter properly. See Figure 28.
3. Lube gasket of new oil filter with clean oil.
4. Install and turn oil filter by hand until the gasket comes in contact with the sealing surface of the crankcase cover, then tighten the oil filter, 10-12 Nm (88.5-106.2 in-lb), 1/2-3/4 turn.
5. Add oil as previously instructed.

6. Make sure dipstick is installed.
7. Start and run engine. Check for leaks.
8. Stop engine. Wait a few minutes and check the oil level. See Checking The Oil Level in the Assembly section of this manual.

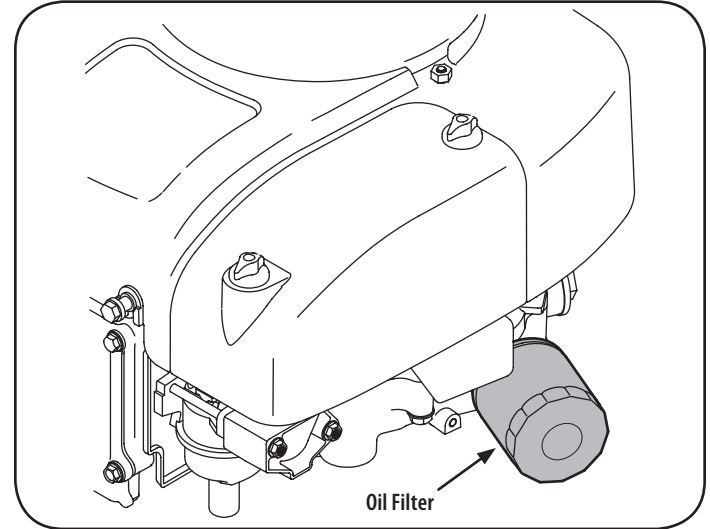


Figure 28

## Adding Oil

**IMPORTANT:** Be sure to check engine on a level surface with the engine stopped.

1. Wipe around dipstick cap and tube with a clean cloth to remove any debris. See Figure 29.

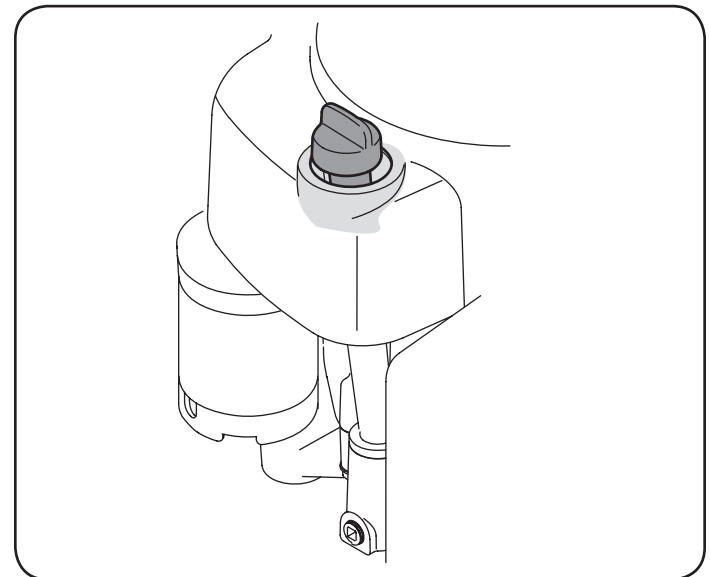


Figure 29

2. Remove dipstick and wipe clean with a cloth.
3. Pour oil into the dipstick tube. Do not over fill. With an oil filter change the high level amount of oil for this engine is 1700 ml (57.48 fl-oz.).
4. Install dipstick and turn to locked position before starting engine.
5. Start engine. Allow to run for a few seconds and then shut down the engine.
6. Check the oil level. See Checking Oil Level in the Assembly section of this manual.



# SERVICE AND MAINTENANCE

## Air Filter Service

Paper filters cannot be cleaned and should be replaced every 100 operating hours; more often if used in extremely dusty conditions.

**WARNING**

Never use gasoline or low flash point solvents for cleaning the air filter element. A fire or explosion could result.

**CAUTION**

Do not use pressurized air or solvents to clean the air cleaner cartridge.

**WARNING**

If filters, or covers are not installed correctly serious injury or death could result from backfire. Do not attempt to start the engine with them removed.

**IMPORTANT:** Never run the engine without the air filter. Rapid engine wear will result.

1. Unscrew the thumb screws and remove the air filter cover. See Figure 30.

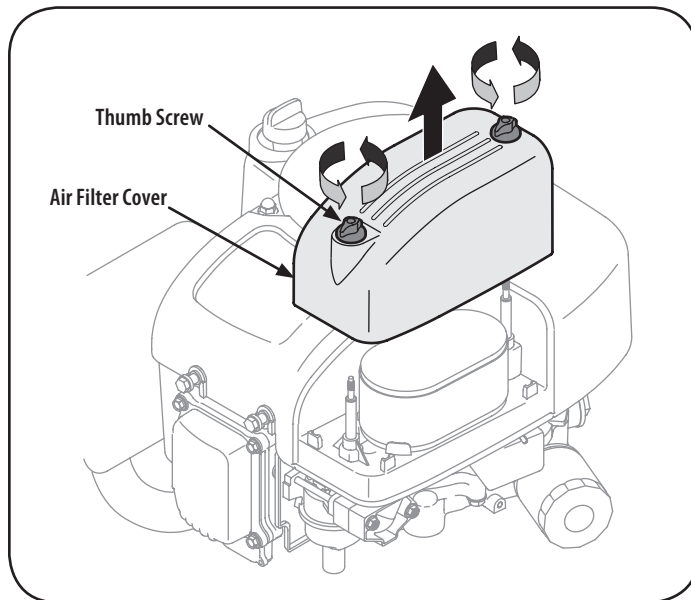


Figure 30

2. Remove thumb screw (A). See Figure 31.

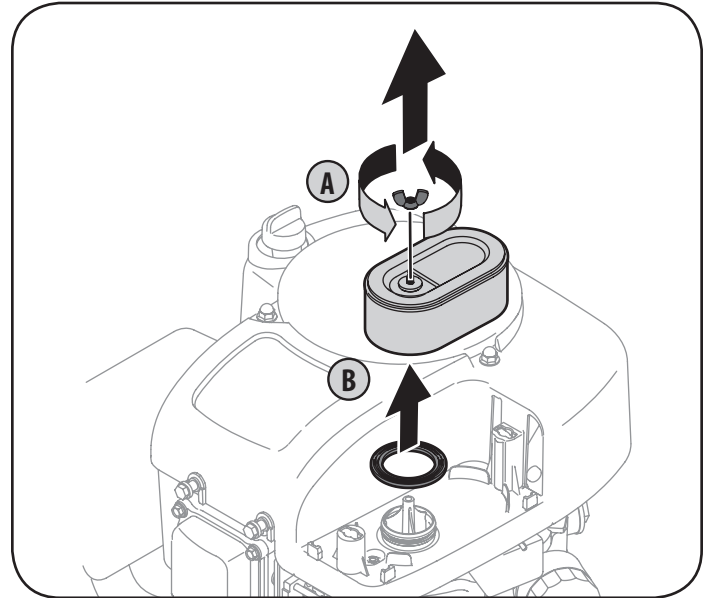


Figure 31

3. Pull up and remove air filter and base seal (B). See Figure 31.
4. Remove the foam pre-filter from around the paper air filter. See Figure 32. Replace paper element when dirty or damaged. Clean foam element or replace when damaged.

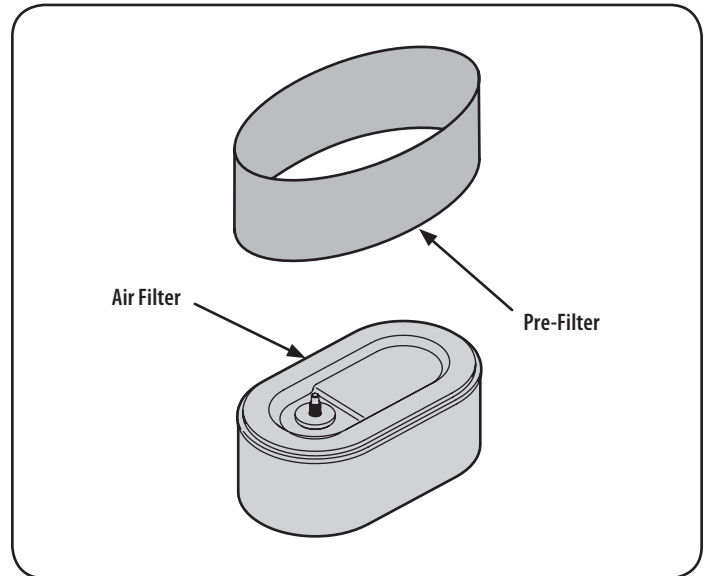


Figure 32

5. To clean foam element, wash in a mild liquid detergent and water. Squeeze or press the foam element to rinse out dirt and water. Do not twist; this could damage or tear the foam element. Allow to dry thoroughly before using. DO NOT oil the foam element.

# SERVICE AND MAINTENANCE

6. Attach the new air filter with foam element, aligning the hole in the air filter with the intake manifold. See Figure 33. Secure with thumb screw.

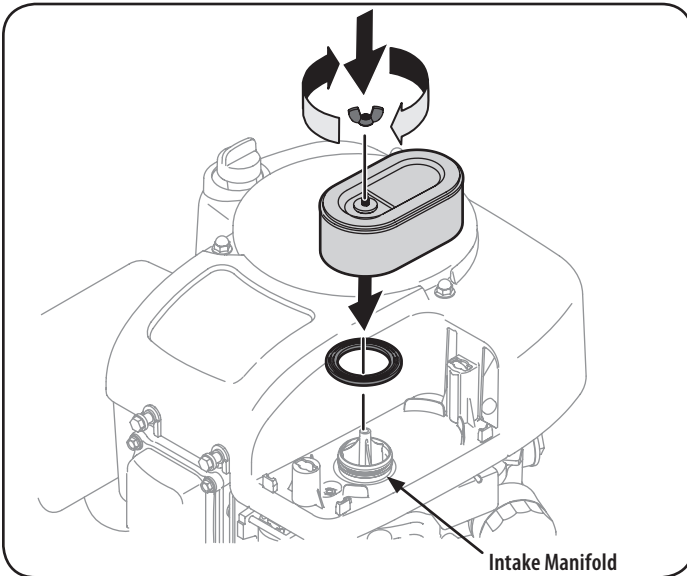


Figure 33

7. Attach the air filter cover, making sure to align plastic rib features on the shroud to the plastic features on the air filter cover. See Figure 34. Turn thumb screws clockwise until snug. Check for any misalignment.

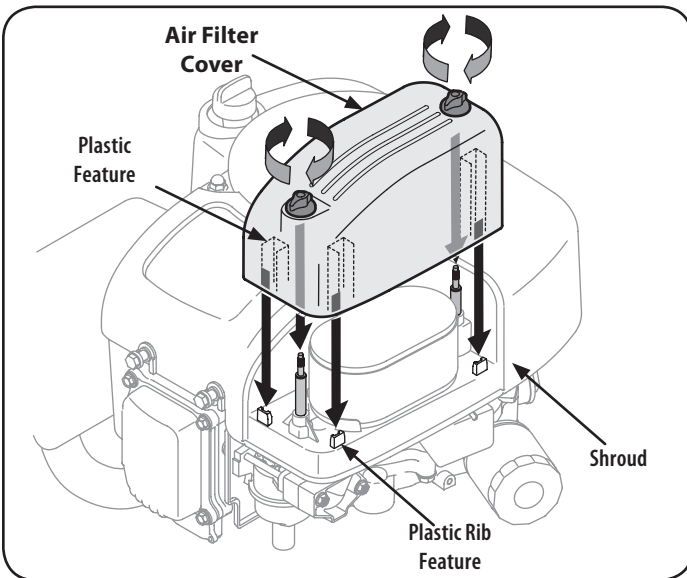


Figure 34

## Spark Plug Service



### WARNING

DO NOT check for spark with spark plug removed. DO NOT crank engine with spark plug removed.

To ensure proper engine operation, the spark plug must be properly gapped and free of deposits.

1. Remove the spark plug boot and use a spark plug wrench to remove the plug. See Figure 35.



### WARNING

If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.

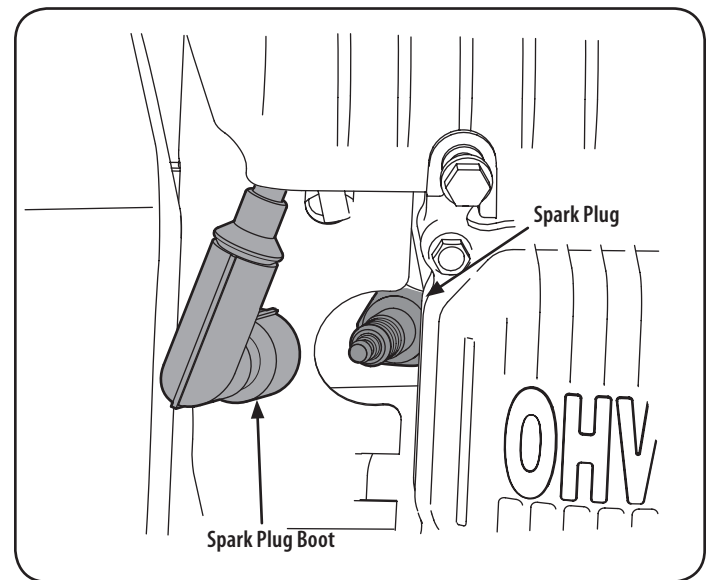


Figure 35

2. Visually inspect the spark plug. Discard the spark plug if there is apparent wear, or if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.
3. Measure the plug gap with a feeler gauge. Correct as necessary by bending side electrode. See Figure 36. The gap should be set to between 0.024-0.031 in.

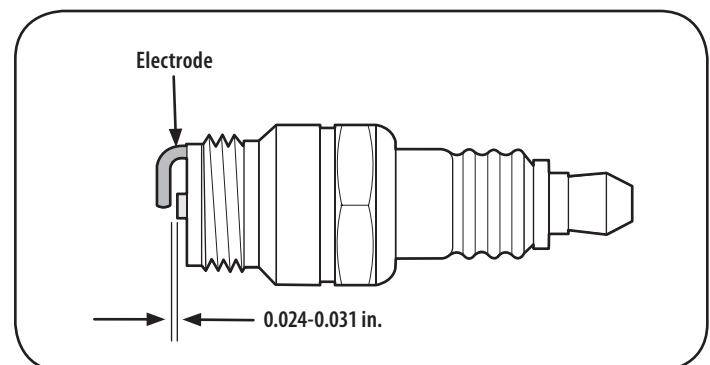


Figure 36

# SERVICE AND MAINTENANCE

4. Check that the spark plug washer is in good condition and thread the spark plug in by hand to prevent cross-threading.
5. After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

**NOTE:** When installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer. When reinstalling a used spark plug, tighten 1/8-1/4 turn after the spark plug seats to compress the washer.

**IMPORTANT:** The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may damage the engine.

## Fuel Filter Service



### WARNING

Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

- Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.
- Before replacing the fuel filter, drain the fuel tank as in To Drain the Fuel.
- Do not drain fuel when the engine is hot. Allow the engine adequate time to cool. Drain fuel into an approved container outdoors, away from open flame.
- Drain any large volume of fuel from the tank by disconnecting the fuel line from the in-line fuel filter near the engine.
- Remove the fuel line from the In-line side (side towards the fuel tank) of the fuel filter.
- Replacement parts must be the same and installed in the same position as the original parts.
- If fuel spills, wait until it evaporates before starting engine.
- Before replacing the fuel filter, drain the fuel tank. Otherwise, fuel can leak out and cause a fire or explosion.

### To Drain The Fuel:

1. Locate the fuel filter, which is routed on the left side of the engine between the fuel tank and the carburetor, and may be attached to the engine with a tie strap. Cut the tie strap, if present, then pinch the in-line clamp on the fuel filter with a pair of pliers, slide the clamp up the fuel line. Pull the fuel line free from the filter and place the open end of the line into an approved container to drain the fuel.

### To Change The Fuel Filter:

1. Use pliers to squeeze the tabs on the other clamp (the out-line side of the fuel filter), and slide the clamp away from the fuel filter. Twist and pull the fuel line off of the fuel filter. See Figure 37.
2. Check the fuel lines for cracks or leaks. Replace if necessary.
3. Replace the fuel filter with an original equipment replacement filter. **Call 1-888-331-4569 to purchase the original equipment replacement filter.**
4. Secure the fuel lines with the clamps.

The fuel filter cannot be cleaned and should be replaced every 100 operating hours; more often if run with old gasoline.

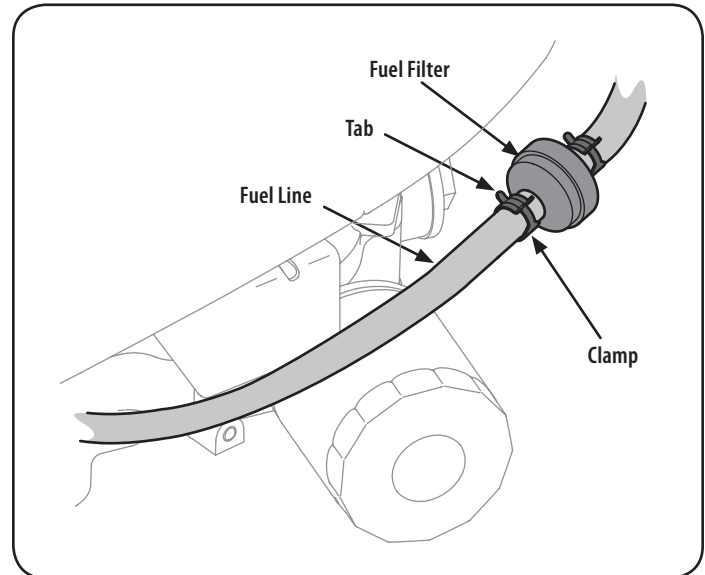


Figure 37

## Clean Engine

If the engine has been running, allow it to cool for at least half an hour before cleaning. Periodically remove dirt build-up from engine. Clean the engine cooling fins every 25 hours. Clean with a brush or compressed air.

**IMPORTANT:** Do not spray engine with water to clean because water could contaminate fuel. Using a garden hose or pressure washing equipment can also force water into the air cleaner or muffler opening. Water in the air cleaner will soak the paper element, and water that passes through the element or muffler can enter the cylinder, causing damage.



### WARNING

Accumulation of debris around muffler could cause a fire. Inspect and clean before every use.

## Cutting Deck Removal

To remove the cutting deck, proceed as follows:

1. Place the PTO (Blade Engage) lever in the disengaged (OFF) position and engage the parking brake.
2. Lower the deck by moving the deck lift lever into the bottom notch on the right fender.

# SERVICE AND MAINTENANCE

3. Remove the belt from around the tractor's PTO pulley. See Figure 38.



## WARNING

Avoid pinching injuries. Never place your fingers on the idler spring or between the belt and a pulley while removing the belt.

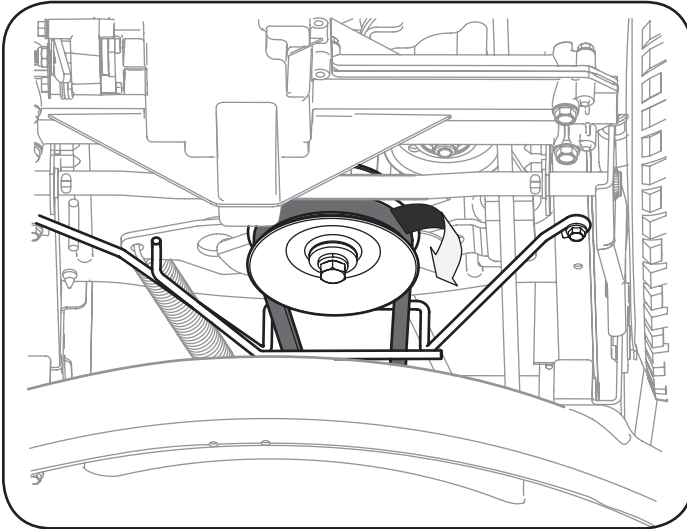


Figure 38

4. Remove the bow-tie cotter pin and flat washer from the deck lift assembly, and retain for reinstallation later. See Figure 39.

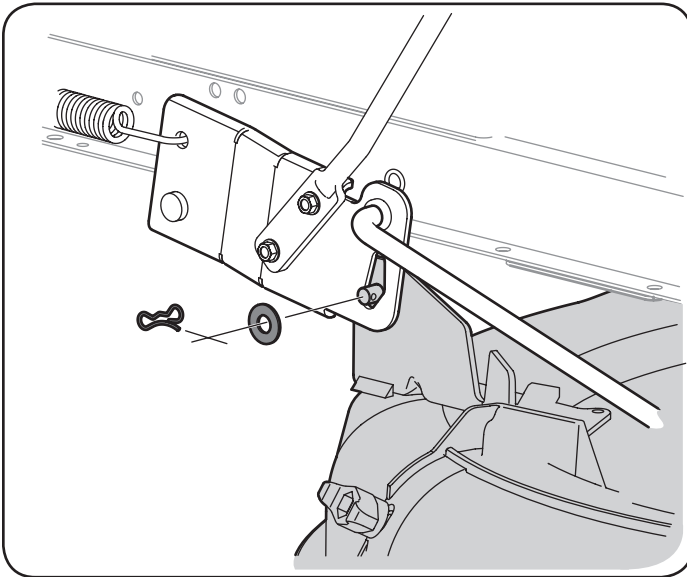


Figure 39

5. Remove the remaining bow-tie cotter pins securing the deck to the unit, as shown in Figure 40.

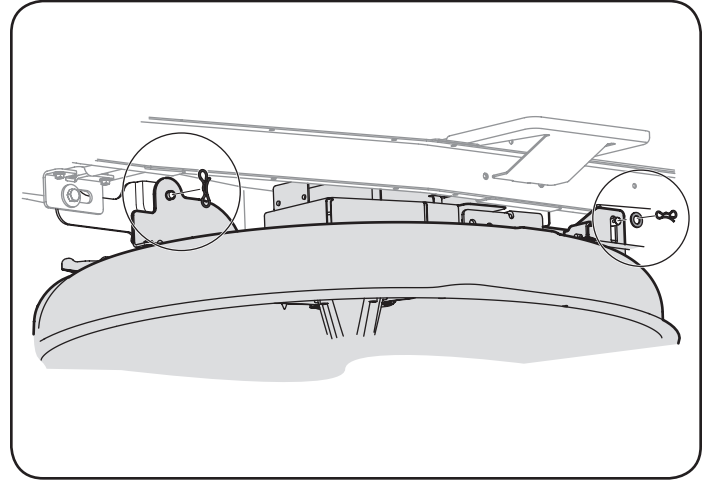


Figure 40

**NOTE:** The bow-tie clips should be re-installed from the top down.

6. 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.
7. Unplug the wiring pigtail from the deck safety switch.
8. Carefully remove the PTO cable from the rear of the cutting deck by removing the bow-tie cotter pin which secures it. Remove the spring from the deck idler bracket. See Figure 41.

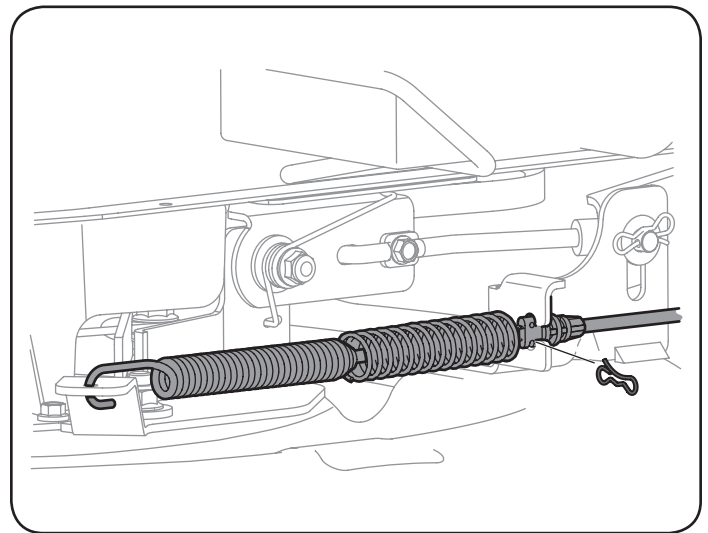


Figure 41

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

## Changing the Deck Belt

**NOTE:** It is possible to change the deck belt with the cutting deck still installed on the tractor, however it is much easier to remove the deck first, change the deck belt, then reinstall the cutting deck.

To change the cutting deck belt, proceed as follows:

# SERVICE AND MAINTENANCE

1. It is easiest to change the deck belt by first removing the cutting deck as instructed earlier in this section. Skip this step if deciding to change the deck belt with the mowing deck still installed on the unit. Otherwise, remove the cutting deck now.
2. If changing the deck belt with the cutting deck still installed on the unit, lower the cutting deck to the lowest cutting position.
3. Remove the deck belt from around the unit's PTO drive pulley as shown in Figure 38. Simply roll one side of the belt off of the pulley and then work it off the pulley by continuing around the pulley until the belt is off of the pulley.
4. Pull the belt towards the front of the unit, pulling it through and out of the belt keeper bracket, shown in Figure 38.
5. Remove the deck belt cover by removing the three hex bolts that secure it. See Figure 42.

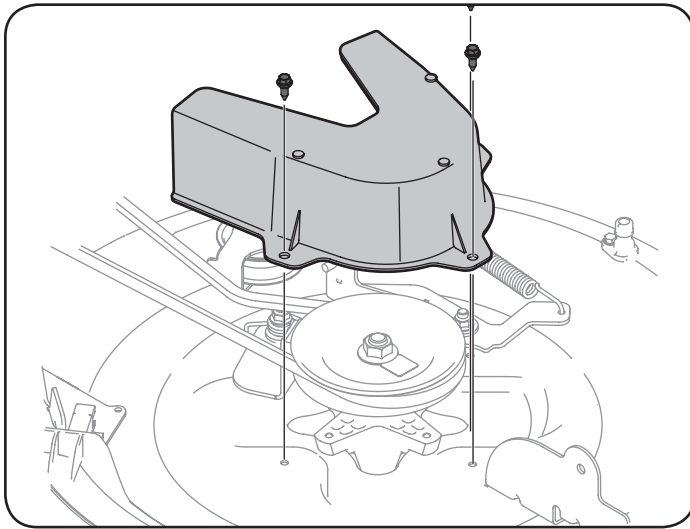


Figure 42

6. Remove the belt keeping spacer by removing the hex bolt that secures it. See Figure 43.

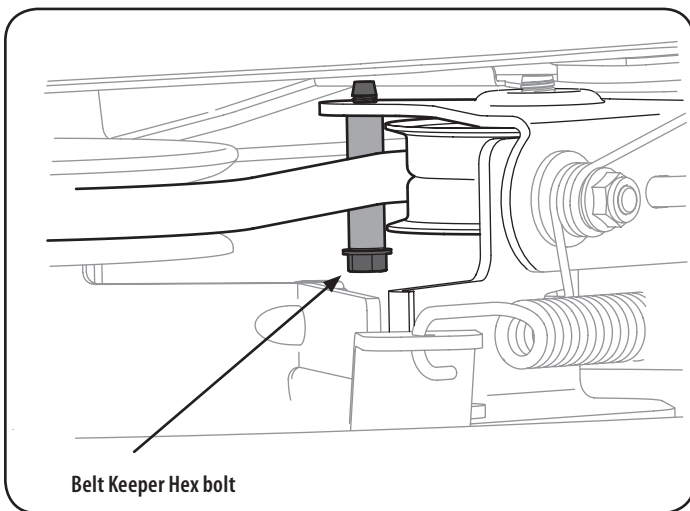


Figure 43

7. Change the belt, then reinstall all the components removed in the reverse order beginning with the idler pulley, and lastly the belt cover.

8. Feed the deck belt through the belt keeper bracket and work it around and onto the PTO drive pulley as shown in Figure 38.

## Tires

### WARNING

Never exceed the maximum inflation pressure shown on the sidewall of tire.

### The recommended operating tire pressure is:

- Approximately 10 psi for the rear tires
- Approximately 14 psi for the front tires

**IMPORTANT:** Refer to the tire sidewall for exact tire manufacturer's recommended or maximum psi. Do not overinflate. Uneven tire pressure could cause the cutting deck to mow unevenly.

## Cutting Blade

### WARNING

Shut the engine off and remove ignition key before removing the cutting blade for sharpening or replacement. Protect your hands by using heavy gloves when grasping the blade.

### WARNING

Periodically inspect the blade and/or spindle for cracks or damage, especially after you've struck a foreign object. Do not operate the machine until damaged components are replaced.

To remove the blade, proceed as follows.

**NOTE:** It may be easier to change the blade by first removing the deck from beneath the tractor, (refer to Cutting Deck Removal earlier in this section) then gently flip the deck over to expose its underside. It is possible to change the blade, however, with the deck still attached to the tractor. If attempting to change the blade with the deck still installed on the tractor, first move the deck lift lever to its highest cutting position.

1. Remove the mulch plug, deck chute or bagging chute, if equipped, exposing the deck chute opening.
2. Using a block of wood or 2 x 4, insert it into the deck opening and rotate the blade around until it wedges the wood between the deck opening and the cutting blade, as shown in Figure 44.
3. Remove the hex flange nut that secures the blade to the spindle assembly, and remove the blade. See the Inset of Figure 44.

**NOTE:** The deck spindle has a normal thread. To loosen, rotate the flange lock nut counterclockwise.

# SERVICE AND MAINTENANCE

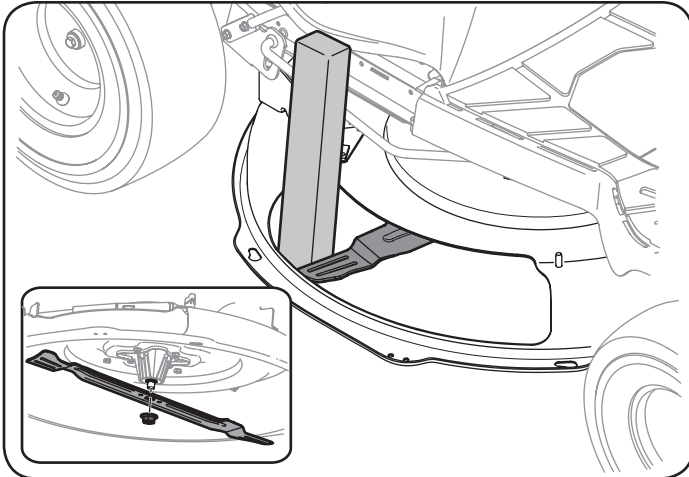


Figure 44

4. 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 45.

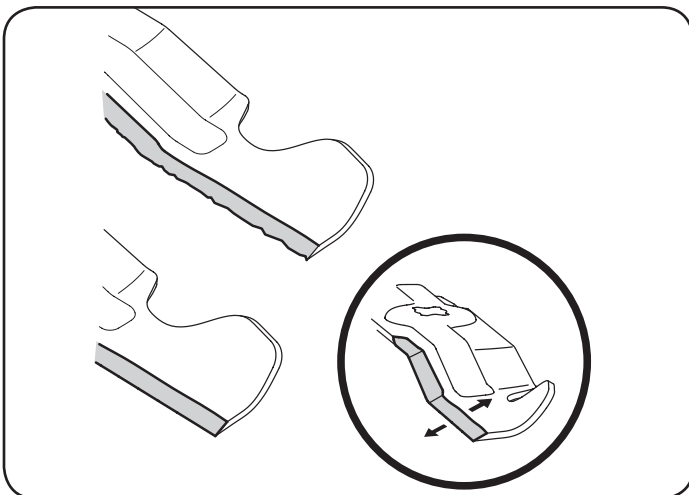


Figure 45



## CAUTION

If the cutting edge of the blade has previously been sharpened, or if any metal separation is present, replace the blades with new ones.



## WARNING

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

5. Test the blade's balance using a blade balancer. Grind metal from the heavy side until it balances evenly.  
**NOTE:** When replacing 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 when the mower is in the operating position.



## CAUTION

Use a torque wrench to tighten the blade spindle hex flange nut to between 70 lbs-ft and 90 lbs-ft.

## Adjustments



## WARNING

Never attempt to make any adjustments while the engine is running, except where specified in the operator's manual.

## Leveling the Deck

**NOTE:** Check the tractor's tire pressure before performing any deck leveling adjustments. Refer to Tires, in this Service And Maintenance section for more information regarding tire pressure.

## Front To Rear

It is possible to adjust the pitch of the cutting deck. The front of the deck should be between 0" (level) and 1/4" lower than the rear of the deck. Adjust if necessary as follows:

1. With the tractor parked on a firm, level surface, place the lever for lifting the cutting deck into the middle position (3) and rotate the blade so that it is aligned with the front and rear of 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 first measurement taken should be between 0" (level) and 1/4" less than the second measurement. Determine the approximate distance necessary for proper adjustment and proceed, if necessary, to the next step.
3. Locate the flange lock nut on the front end of the PTO Lift Rod. See Figure 46.
  - Tighten the flange lock nut to raise the front of the deck;
  - Loosen the flange lock nut to lower the front of the deck.

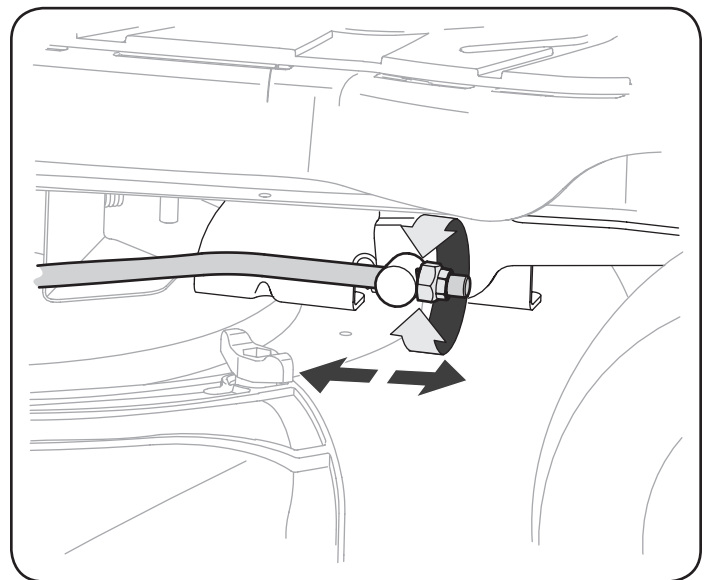


Figure 46

## Seat Adjustment

Refer to the Assembly section of this manual for seat adjustment instructions.

# SERVICE AND MAINTENANCE

## Parking Brake Adjustment

### WARNING

Never attempt to adjust the brakes while the engine is running. Always disengage PTO (Blade Engage Lever), move shift lever into neutral position, stop engine and remove key to prevent unintended starting.

If the tractor does not come to a complete stop when the clutch-brake pedal is completely depressed, or if the tractor's rear wheels can roll with the parking brake applied, the brake is in need of adjustment. Contact the nearest Parts & Repair Service Center to have your brakes serviced.

To locate the nearest Parts & Repair Service Center or to schedule service, contact 1-888-331-4569.

## Changing the Transmission Drive Belt

**NOTE:** Several components must be removed and special tools (i.e. air/impact wrench) in order to change the tractor's drive belt. Contact the nearest Parts & Repair Service Center to have your transmission drive belt serviced.

To locate the nearest Parts & Repair Service Center or to schedule service, call 1-888-331-4569.

## Muffler

### WARNING

Temperature of muffler and nearby engine areas may exceed 150° F (65° C). Avoid contact with these areas.

- Inspect muffler periodically, and replace if necessary. Replacement parts for the muffler must be the same and installed in the same position as the original parts.

## Carburetor Adjustment

- The carburetor on this engine is not adjustable.

## Battery

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.

### CAUTION

If removing the battery, disconnect the NEGATIVE (Black) wire from its terminal first, followed by the POSITIVE (Red) wire. When re-installing the battery, always connect the POSITIVE (Red) wire to its terminal first, followed by the NEGATIVE (Black) wire.

The battery is sealed and is maintenance-free. Acid levels cannot be checked.

- Always keep the battery cables and terminals clean and free of corrosive build-up.
- After cleaning the battery and terminals, apply a light coat of petroleum jelly or grease to both terminals.
- Always keep the rubber boot positioned over the positive terminal to prevent shorting.

## Removing the Battery

- Locate the battery on the left side of the riding mower.

- Remove the hex washer screw securing the battery hold-down rod to the frame. See Figure 47.

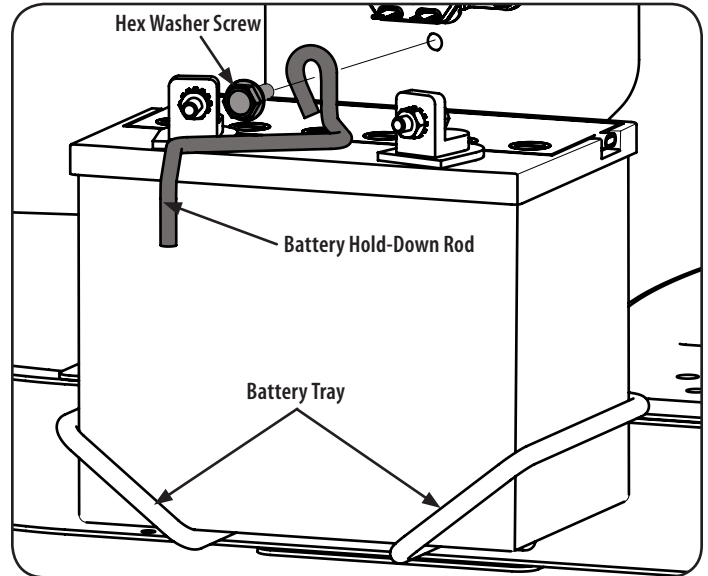


Figure 47

- With the battery hold-down rod removed, lift the battery out of the battery tray.
- To re-install the battery, place it back in the battery tray and secure in place with the battery hold-down rod and hex washer screw. See Figure 47.

**IMPORTANT:** If removing the battery for any reason, disconnect the NEGATIVE (Black) wire from its terminal first, followed by the POSITIVE (Red) wire. When re-installing the battery, always connect the POSITIVE (Red) wire to its terminal first, followed by the NEGATIVE (Black) wire. Be certain that the wires are connected to the correct terminals; reversing them could change the polarity and result in damage to your engine's alternating system.

## Cleaning Battery

Clean the battery by removing it from the tractor and washing with a baking soda and water solution. If necessary, scrape the battery terminals with a wire brush to remove deposits. Coat terminals and exposed wiring with grease or petroleum jelly to prevent corrosion.

## Battery Failures

Some common causes for battery failure are:

- Incorrect initial activation
- Overcharging
- Freezing
- Undercharging
- Corroded connections

These failures are NOT covered by your tractor's warranty.

# SERVICE AND MAINTENANCE

## Jump Starting

### WARNING

Never jump start a damaged or frozen battery. Be certain the vehicles do not touch, and ignitions are off. Do not allow cable clamps to touch.

1. Connect positive (+) cable to positive post (+) of your tractor's discharged battery.
2. Connect the other end of the cable to the positive (+) post of the jumper battery.
3. Connect the second cable negative (-) to the negative post (-) of the jumper battery.
4. Connect the other end of the negative cable to the engine block of the tractor, away from the battery. Attach to an unpainted part to assure a good connection.

### WARNING

If the jumper battery is installed on a vehicle (i.e. car, truck), do NOT start the vehicle's engine when jump starting your tractor.

5. Start the tractor (as instructed in the Operation section of this manual).
6. Set the tractor's parking brake before removing the jumper cables, in reverse order of connection.

## Charging

### WARNING

Batteries give off an explosive gas while charging. Charge the battery in a well ventilated area and keep away from an open flame or pilot light as on a water heater, space heater, furnace, clothes dryer or other gas appliances.

### CAUTION

When charging your tractor's battery, use only a charger designed for 12V lead-acid batteries. Read your battery charger's Owner's Manual prior to charging your tractor's battery. Always follow its instructions and heed its warnings.

If your tractor has not been put into use for an extended period of time, charge the battery as follows:

1. Set your battery charger to deliver a max of 10 amperes.

If your battery charger is automatic, charge the battery until the charger indicates that charging is complete. If the charger is not automatic, charge for no fewer than eight hours.

## Fuse

One 15 AMP fuse is installed in your tractor's wiring harness to protect the tractor's electrical system from damage caused by excessive amperage.

If the electrical system does not function, or your tractor's engine will not crank; first check to be certain that the fuse has not blown. It can be found under the fender on the left side of the unit, on the wiring harness just above the battery.

### WARNING

Always use a fuse with the same amperage capacity for replacement.

## Lubrication

### WARNING

Before lubricating, repairing, or inspecting, always disengage PTO (Blade Engage Lever), move shift lever into neutral position, set parking brake, stop engine and remove key to prevent unintended starting.

## Pivot Points & Linkage

Lubricate all the pivot points on the drive system, parking brake and lift linkage at least once a season with light oil.

## Rear Wheels

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

## Front Axles

Each end of the tractor's front pivot bar may be equipped with a grease fitting. Lubricate with a grease gun after every 25 hours of tractor operation.

## Steering Rack & Pinion

Once per season, or every 25 hours of operation, it will be necessary to lubricate the steering rack and pinion gear located under the front of the unit. Using standard automotive grease, apply grease to the front side and rear side of the steering rack, as indicated in Figure 48.

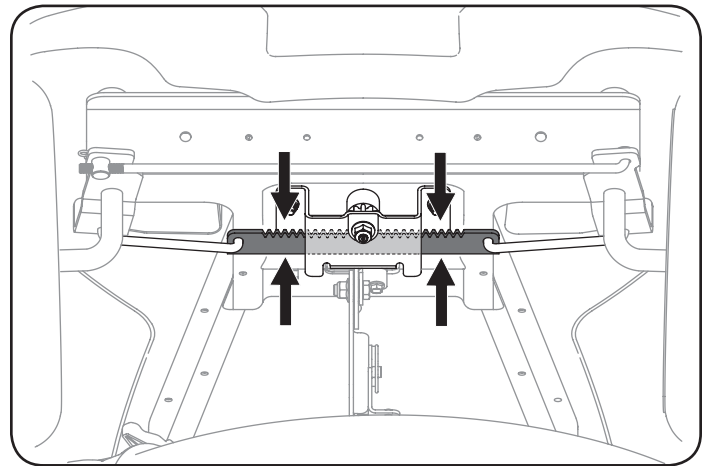


Figure 48



# OFF-SEASON STORAGE

## ⚠ WARNING

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

## PREPARING THE ENGINE

**IMPORTANT:** Fuel left in the fuel tank during warm weather deteriorates and will cause serious starting problems.

## ⚠ CAUTION

Failure to use a fuel stabilizing additive or completely run the engine until it's out of fuel before off-season storage may result in damage to your engine's carburetor. Subsequent damage would **not** be covered under the manufacturer's warranty.

Engines stored between 30 and 90 days need to be treated with a gasoline stabilizer and engines stored over 90 days need to be drained of fuel to prevent deterioration and gum from forming in fuel system or on essential carburetor parts. If the gasoline in your engine deteriorates during storage, you may need to have the carburetor, and other fuel system components, serviced or replaced.

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.

1. If using a fuel stabilizer:
  - a. Read the product manufacturer's instructions and recommendations.
  - b. Add to clean, fresh gasoline the correct amount of stabilizer for the capacity of the fuel system.
  - c. Fill the fuel tank with treated fuel and run the engine for 2-3 minutes to get stabilized fuel into the carburetor.
2. If emptying the fuel system:
  - a. Do not drain fuel when the engine is hot. Allow the engine adequate time to cool. Drain fuel into an approved container outdoors, away from open flame.
  - b. Drain any large volume of fuel from the tank by disconnecting the fuel line from the in-line fuel filter near the engine. See the complete instructions for Draining The Fuel later in this section.

## ⚠ WARNING

Gasoline is extremely flammable and can be explosive under certain conditions. Drain gasoline before storing the equipment for extended periods. Drain fuel only into an approved container outdoors, away from an open flame. Allow engine to cool. Extinguish cigarettes, cigars, pipes, and other sources of ignition prior to draining fuel. Store gasoline in an approved container in safe location.

- c. Reconnect the fuel line and run the engine until it starts to falter, then use the choke to keep the engine running until all fuel in the carburetor has been exhausted.
- d. Disconnect the fuel line and drain any remaining gasoline from the system.

## ⚠ WARNING

Gasoline is a toxic substance. Dispose of gasoline properly. Contact your local authorities for approved disposal methods.

3. Remove the spark plug and pour one (1) ounce of engine oil through the spark plug hole into the cylinder. Crank the engine several times to distribute the oil. Replace the spark plug.
4. Clean debris from around engine, under finger guard, and under, around and behind muffler. Touch up any damaged paint, and coat other areas that may rust with a light film of oil.
5. Store in a clean, dry and well ventilated area away from any appliance that operates with a flame or pilot light, such as a furnace, water heater, or clothes dryer. Also avoid any area with a spark producing electric motor, or where power tools are operated.
6. If possible, also avoid storage areas with high humidity, because that promotes rust and corrosion.
7. Keep the engine level in storage. Tilting can cause fuel or oil leakage.

## DRAINING THE FUEL

1. Locate the fuel filter, which is located on the left side of the engine, and may be attached to the engine with a tie strap.
2. Cut the tie strap, if present, then pinch the in-line clamp on the fuel filter with a pair of pliers, slide the clamp up the fuel line.
3. Pull the fuel line free from the filter and place the open end of the line into an approved container to drain the fuel.

## PREPARING THE LAWN TRACTOR

1. Clean and lubricate the unit thoroughly as described in the Lubrication instructions in the Service and Maintenance section.
2. Do not use a pressure washer or garden hose to clean your unit.
3. Store mower in a dry, clean area. Do not store next to corrosive materials, such as fertilizer.

## Removing From Storage

1. Check the oil level as described in the Assembly section of this manual.
2. If the fuel was drained during storage preparation, fill the tank with fresh gasoline. If you keep a container of gasoline for refueling, make certain it contains only fresh fuel. Gasoline oxidizes and deteriorates over time, causing hard starting.
3. If the cylinder was coated with oil during storage preparation, the engine will smoke briefly at startup. This is normal.

# TROUBLESHOOTING

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(s) disconnected.</li> <li>4. Throttle/Choke control lever not in correct starting position.</li> <li>5. Choke not activated</li> <li>6. Fuel tank empty, or stale fuel.</li> <li>7. Blocked fuel line.</li> <li>8. Faulty spark plug(s).</li> <li>9. Engine flooded.</li> <li>10. Blown Fuse(s).</li> <li>11. Safety switch(s) not properly engaged.</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(s) to spark plug(s).</li> <li>4. Place Throttle/Choke lever into the FAST position.</li> <li>5. Move the Throttle/Choke lever into the Choke position.</li> <li>6. Fill tank with clean, fresh (less than 30 days old) gas.</li> <li>7. Replace the fuel line and replace fuel filter.</li> <li>8. Clean, adjust gap or replace plug(s).</li> <li>9. Crank engine with throttle in FAST position.</li> <li>10. Replace Fuse(s)</li> <li>11. Ensure seat is in the proper operating position, and/or deck chute, tube or mulch plug properly installed.</li> </ol>
Engine runs erratically	<ol style="list-style-type: none"> <li>1. Unit running with CHOKE activated.</li> <li>2. Spark plug wire(s) 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 spark plug wire(s).</li> <li>3. Replace the fuel line; fill tank with clean, fresh gasoline and replace fuel filter.</li> <li>4. Clear vent or replace cap if damaged.</li> <li>5. Drain fuel tank. Refill with clean, fresh gasoline.</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 crankcase with proper amount and weight 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 reset the gap.</li> </ol>
Engine idles rough	<ol style="list-style-type: none"> <li>1. Spark plug fouled, faulty or gap too wide.</li> <li>2. Dirty air cleaner.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace spark plug. Set plug gap.</li> <li>2. Replace air cleaner element and/or clean pre-cleaner.</li> </ol>
Excessive vibration	<ol style="list-style-type: none"> <li>1. Cutting blade loose or unbalanced.</li> <li>2. Damaged or bent cutting blade.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten blade and spindle.</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 (rabbit) 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>

## Notes Page

This page intentionally left blank. Use this page to make any notes regarding your tractor.