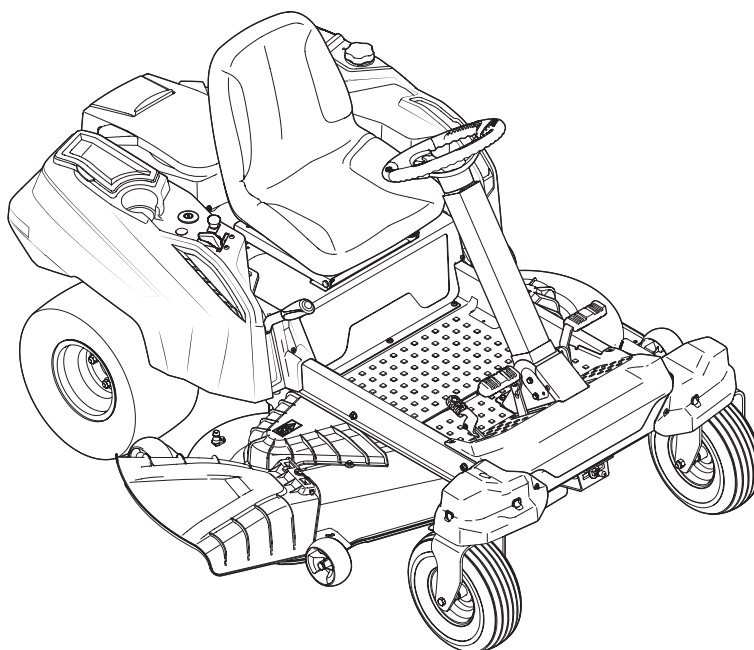




OPERATOR'S MANUAL



RZT-S

⚠ WARNING

**READ AND FOLLOW ALL SAFETY RULES AND INSTRUCTIONS IN THIS MANUAL
BEFORE ATTEMPTING TO OPERATE THIS MACHINE.
FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.**

MTD LLC, P.O. BOX 361131 CLEVELAND, OHIO 44136-0019

Thank You

Thank you for purchasing an MTD Zero-Turn Tractor. It was carefully engineered to provide excellent performance when properly operated and maintained.

Please read this entire manual prior to operating the equipment. It instructs you how to safely and easily set up, operate and maintain your machine. Please be sure that you, and any other persons who will operate the machine, carefully follow the recommended safety practices at all times. Failure to do so could result in personal injury or property damage.

All information in this manual is relative to the most recent product information available at the time of printing. Review this manual frequently to familiarize yourself with the machine, its features and operation. Please be aware that this Operator's Manual may cover a range of product specifications for various models. Characteristics and features discussed and/or illustrated in this manual may not be applicable to all models. We reserve the right to change product specifications, designs and equipment without notice and without incurring obligation.

If applicable, the power testing information used to establish the power rating of the engine equipped on this machine can be found at www.opei.org or the engine manufacturer's web site.

If you have any problems or questions concerning the machine, phone your local authorized MTD service dealer or contact us directly. MTD's Customer Support telephone numbers, website address and mailing address can be found on this page. We want to ensure your complete satisfaction at all times.

Throughout this manual, all references to *right* and *left* side of the machine are observed from the operating position

The engine manufacturer is responsible for all engine-related issues with regards to performance, power-rating, specifications, warranty and service. Please refer to the engine manufacturer's Owner's/Operator's Manual, packed separately with your machine, for more information.

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Record Product Information

Before setting up and operating your new equipment, please locate the model plate on the equipment and record the information in the provided area to the right. Pivot the seat assembly forward to locate the model plate on the underside of the seat pivot bracket. This information will be necessary, should you seek technical support via our web site, Customer Support Department, or with a local authorized service dealer.

MODEL NUMBER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

SERIAL NUMBER

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Customer Support

Please do NOT return the machine to the retailer or dealer without first contacting the Customer Support Department.

If you have difficulty assembling this product or have any questions regarding the controls, operation, or maintenance of this machine, you can seek help from the experts. Choose from the options below:

- ◇ Visit us on the web at www.mtdproducts.com



See How-to Maintenance and Parts Installation Videos at www.mtdparts.com/KnowledgeCenter

- ◇ Call a Customer Support Representative at 1300 951 594
- ◇ Write to MTD Products Australia Pty Ltd. • P.O. Box 376 • Dandenong. Vic. • 3175



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!**

CALIFORNIA PROPOSITION 65



WARNING! 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.



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*



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 hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

General Operation

1. 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.
2. Be familiar with all controls and their proper operation. Know how to stop the machine and disengage them quickly.
3. 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.
4. Never allow adults to operate this machine without proper instruction.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.

12. A missing or damaged discharge cover can cause blade contact or thrown object injuries.
13. Stop the blade(s) when crossing gravel drives, walks, or roads and while not cutting grass.
14. Watch for traffic when operating near or crossing roadways. This machine is not intended for use on any public roadway.
15. Do not operate the machine while under the influence of alcohol or drugs.
16. Mow only in daylight or good artificial light.
17. Never carry passengers.
18. Back up slowly. Always look down and behind before and while backing to avoid a back-over accident. Be aware and pay attention to the safety system function that stops power to the blades when driving in reverse. If not functioning properly, contact an authorized dealer for safety system inspection and repair.
19. Slow down before turning. Operate the machine smoothly. Avoid erratic operation and excessive speed.
20. 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.
21. Never leave a running machine unattended. Always turn off blade(s), place drive control levers in neutral, set parking brake, stop engine and remove key before dismounting.
22. 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.
23. Muffler and engine become hot and can cause a burn. Do not touch.
24. 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.
25. Disengage all attachment clutches, set the parking brake to the 'ON' position.
26. Your machine is designed to cut normal residential grass of a height no more than 10". 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.
27. 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.
28. 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.
29. If situations occur which are not covered in this manual, use care and good judgment. Contact your customer service representative for assistance.

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 gauge 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 15 degrees as shown on the slope gauge, do not operate this machine on that area or serious injury could result.

Do:

1. Mow across slopes, not up and down. Exercise extreme caution when changing direction on slopes.
2. Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
3. Use slow speed. Choose a low enough speed so that you will not have to stop while on the slope. Avoid starting or stopping on a slope. If the tires are unable to maintain traction, disengage the blades and proceed slowly and carefully straight down the slope.
4. Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
5. Use extra care with grass catchers or other attachments. These can change the stability of the machine.
6. Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction. Rapid acceleration or deceleration could cause the front of the machine to lift and rapidly flip over backwards, which could cause serious injury.

Do Not:

1. Do not turn on slopes unless necessary; then turn slowly uphill and use extra care while turning.
2. 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.
3. Do not try to stabilize the machine by putting your foot on the ground.
4. Do not use a grass catcher on steep slopes.
5. Do not mow on wet grass. Reduced traction could cause sliding.
6. 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

1. 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.
 - a. Keep children out of the mowing area and in watchful care of a responsible adult other than the operator.
 - b. Be alert and turn machine off if a child enters the area.
 - c. To avoid back-over accidents, always look behind and down for small children.
 - d. Never carry children, even with the blade(s) shut off. They may fall off and be seriously injured or interfere with safe machine operation.
 - e. Use extreme care when approaching blind corners, doorways, shrubs, trees or other objects that may block your vision of a child who may run into the path of the machine.
 - f. Keep children away from hot or running engines. They can suffer burns from a hot muffler.
 - g. Remove key when machine is unattended to prevent unauthorized operation.
2. 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

1. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
2. Follow the manufacturer's recommendation for weight limits for towed equipment and towing on slopes.
3. Never allow children or others in or on towed equipment.
4. On slopes, the weight of the towed equipment may cause loss of traction and loss of control.
5. The maximum weight on the hitch is 50 lbs. and the maximum towed load is 250 lbs.
6. Never allow passengers on the towed equipment.
7. Loss of traction can occur on slopes, 5° (9%) maximum grade.
8. Travel slowly and allow extra distance to stop.
9. Use caution during turns to avoid jack-knifing.
10. Use extra caution when operating in reverse.
11. Do not modify or repair the hitch, replace the hitch if damaged.
12. Travel slowly and allow extra distance to stop.
13. Do not shift to neutral and coast downhill.

Service

Safe Handling of Gasoline:

1. To avoid personal injury or property damage use extreme care in handling gasoline. **Gasoline is extremely flammable and the vapors are explosive.** Serious personal injury can occur when gasoline is spilled on yourself or your clothes which can ignite. Wash your skin and change clothes immediately.
 - a. Use only an approved gasoline container.
 - b. 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.
 - c. 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.
 - d. 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.
 - e. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
 - f. Never fuel machine indoors.
 - g. Never remove gas cap or add fuel while the engine is hot or running. Allow engine to cool at least two minutes before refueling.
 - h. Never over fill fuel tank. Fill tank to no more than ½" below bottom of filler neck to allow space for fuel expansion.
 - i. Replace gasoline cap and tighten securely.
 - j. If gasoline is spilled, wipe it off the engine and equipment. Move machine to another area. Wait 5 minutes before starting the engine.
 - k. 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.
 - l. 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.
 - m. Allow a machine to cool at least five minutes before storing.

General Service

1. Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless, and deadly gas.
2. Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Disconnect the spark plug wire(s) and ground against the engine to prevent unintended starting.

3. 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 an authorized dealer.
4. Regularly check the safety interlock system for proper function, as described later in this manual. If the safety interlock system does not function properly, have your machine serviced professionally by an authorized dealer.
5. 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!"
6. Mower blades are sharp. Wrap the blade or wear gloves, and use extra caution when servicing them.
7. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
8. Never tamper with the safety interlock system or other safety devices. Check their proper operation regularly.
9. 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.
10. Never attempt to make adjustments or repairs to the machine while the engine is running.
11. 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!"
12. Do not change the engine governor settings or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
13. Maintain or replace safety and instruction labels, as necessary.
14. Observe proper disposal laws and regulations for gas, oil, etc. to protect the environment.
15. 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* have the machine inspected annually by an authorized 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.

Notice Regarding Emissions

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

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

Spark Arrestor



WARNING! This 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 engine authorized service dealer or contact the service department, P.O. Box 361131 Cleveland, Ohio 44136-0019.

















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!

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
	READ THE OPERATOR'S MANUAL(S) Read, understand, and follow all instructions in the manual(s) before attempting to assemble and operate.
	DANGER — ROTATING BLADES Never carry passengers. Never carry children, even with the blades off.
	DANGER — ROTATING BLADES Mowing in reverse is not recommended.
	WARNING — ROTATING BLADES Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade(s) can amputate hands and feet.
	DANGER — ROTATING BLADES Look down and behind before and while backing to avoid a back-over accident.
	WARNING — THROWN OBJECTS This machine may pick up and throw and objects which can cause serious personal injury.
	DANGER — SAFETY DEVICES Keep safety devices (guards, shields, switches, etc.) in place and working.
	WARNING — BYSTANDERS Keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation.
	WARNING — SLOPE OPERATION Do not operate this machine on a slope greater than 15 degrees. Do not mow up and down slopes. Mow across slopes no greater than 15 degrees. Avoid sudden turns. Use low speed. If machine stops going uphill, stop blades and back down slowly.
	WARNING — HOT SURFACE Engine parts, especially the muffler, become extremely hot during operation. Allow engine and muffler to cool before touching.
	DANGER — ROTATING BLADES 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.
	WARNING — FIRE HAZARD Allow machine to cool before fueling or storing.
	WARNING — FIRE HAZARD Do not drive through piles of dry leaves or tall grass.
	WARNING — FIRE HAZARD Do not allow debris to accumulate. The build up of debris can lead to a fire.

Slope Gauge

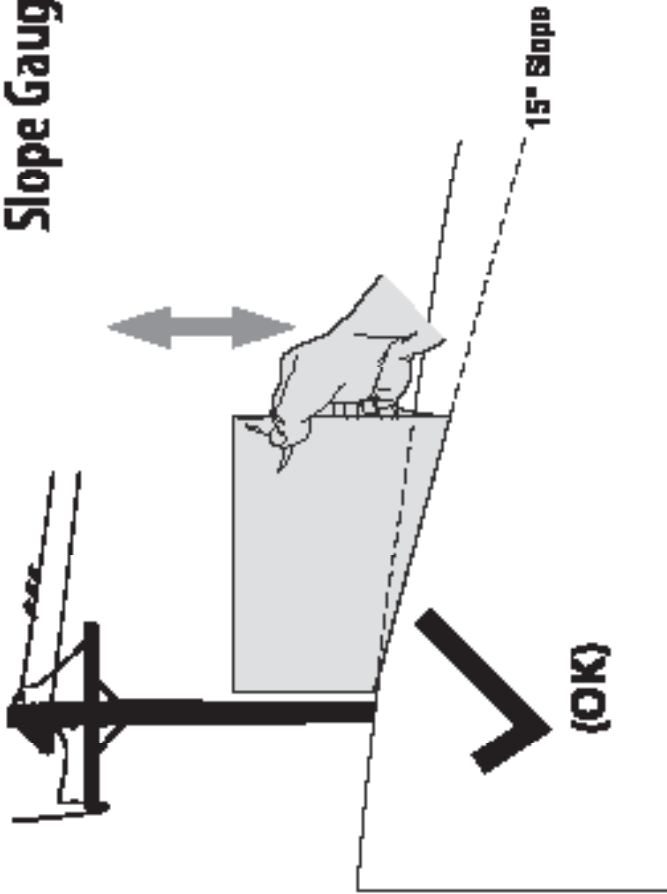


Figure 1

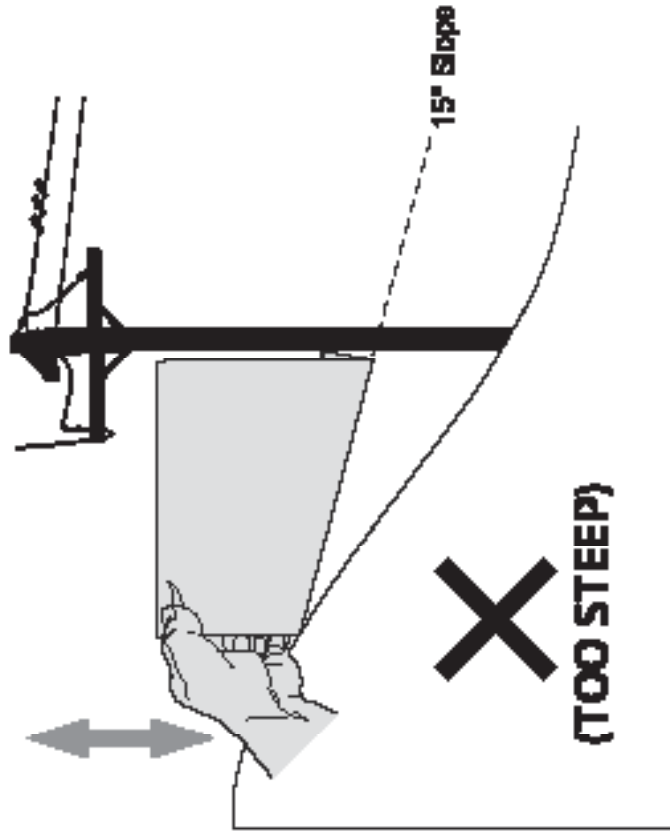


Figure 2

15° dashed line

USE THE SLOPE GAUGE TO DETERMINE

IF A SLOPE IS TOO STEEP FOR SAFE OPERATION:

To check the slope, proceed as follows:

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



WARNING! Slopes are a major factor related to tip-over and roll-over accidents which can result in severe injury or death. Do not operate machine on slopes in excess of 15 degrees. All slopes require extra caution.

Always mow across the face of slopes, never up and down slopes.

Contents of Crate

- One Lawn Tractor
- One Deck Wash Hose Coupler
- One Operator's Manual
- One Engine Operator's Manual
- Two Hex Screws and Flat Washers

Tractor Preparation

1. Remove the upper crating material from the shipping pallet, and cut any bands or tie straps securing the tractor to the pallet.
2. If the deck is not in the highest mowing position (pulled all the way back), use the deck lift handle to raise the deck to its highest position. Refer to the Controls & Features section for instructions on raising and lowering the deck.
3. Disengage the parking brake.
4. Engage the transmission bypass rods on each side of the tractor; then carefully roll the tractor off the shipping pallet. The transmission bypass rods (one for each the RH and LH transmission) are located on the rear of the tractor, just inside each rear wheel. Engage the bypass rods by pulling each one out and to the right then letting it return to lock it into place. See Figure 3-1.

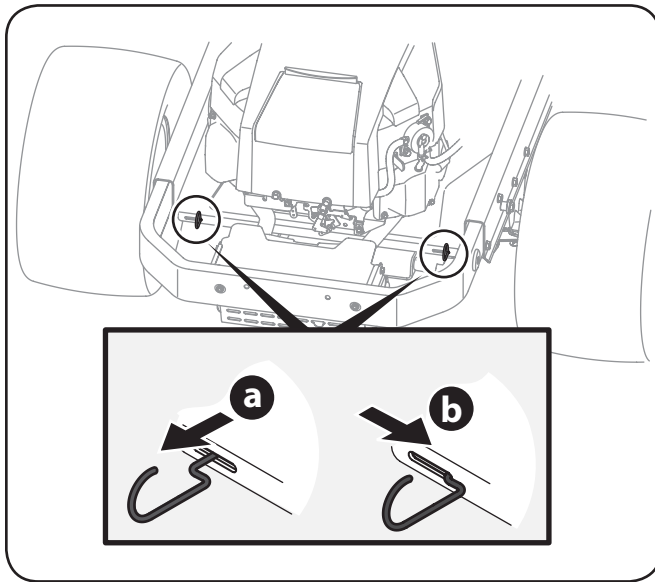


Figure 3-1

5. Disengage the bypass rods after rolling the tractor off the pallet. See Figure 3-1.
6. Remove the deck wash system nozzle adapter from the manual bag and store for future use.

Steering Wheel Column

The steering wheel column is tilted all the way back for shipping.

1. Place the steering column in one of the two positions and secure in place with the hex screws and flat washers packed separately. See Figure 3-2.

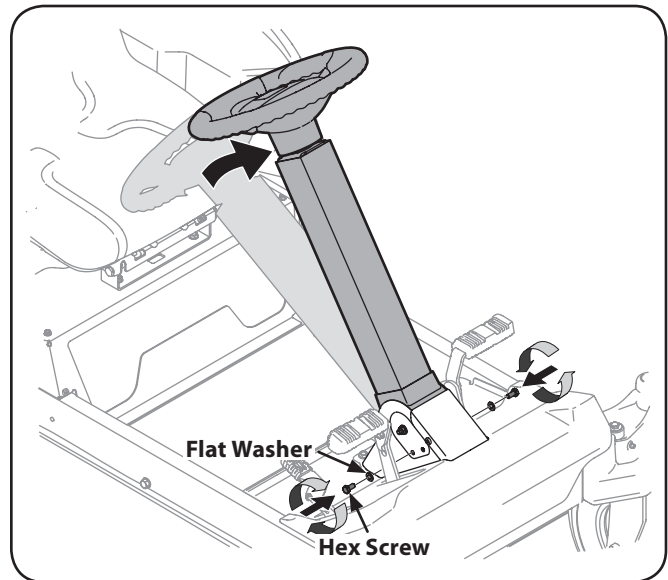


Figure 3-2

Steering Wheel

1. Remove the hardware for attaching the steering wheel from beneath the steering wheel cap. Carefully pry off the steering wheel cover to remove the hardware.
2. With the wheels of the tractor pointing straight forward, place the steering wheel over the steering shaft.

- Place the flat washer and belleville washer over the steering wheel and secure with the hex screw. See Figure 3-3.

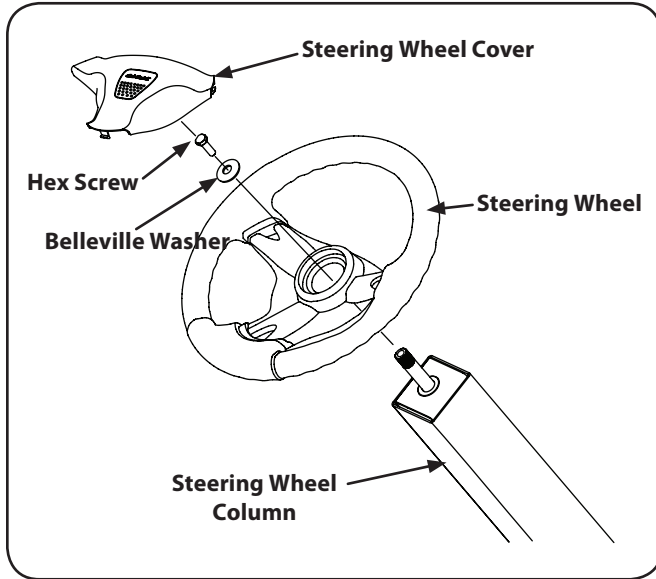


Figure 3-3

- Place the steering wheel cover over the center of the steering wheel and push downward until it “clicks” into place.

Install Operator’s Seat

To install the seat proceed as follows:

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

- Cut any straps securing the seat assembly and the drive control levers to the tractor. Remove any packing material.

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

- Remove the two shoulder screws and flange lock nuts in the seat pan as shown in Figure 3-4.

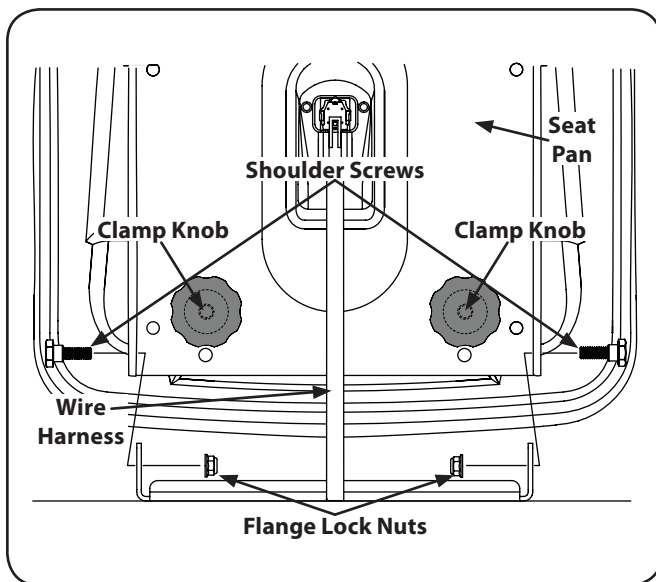


Figure 3-4

- Rotate the seat into position and secure the seat into place with the previously removed shoulder screws and flange lock nuts. Be careful not to crimp or damage the wire harness while installing the seat. See Figure 3-4.

NOTE: Be sure to push the excess wire from the wire harness into the seat box hole before continuing.

Lower Deck Discharge Chute Deflector



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

NOTE: For models with a 46”, 50” and 54” Deck skip ahead to step 6.

- Remove the keys that are attached with a zip tie to the chute bracket.
- Remove the flange lock nut and hex screw from the deck.
- Place the chute deflector on the deck, be sure to insert the tabs on the chute deflector into the holes on the deck. See Figure 3-5.

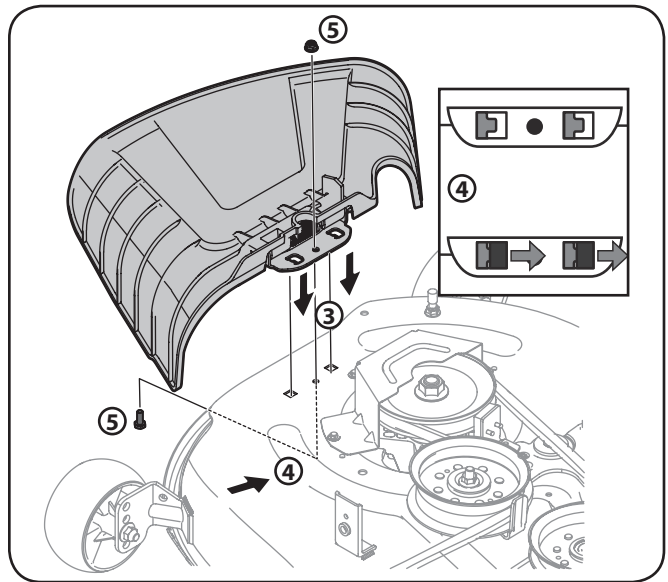


Figure 3-5

- When the tabs are installed in the deck, slide the chute deflector toward the rear of the tractor until the bolt hole in the chute deflector aligns with the hole in the deck. See Figure 3-5.
- Secure the chute deflector in place with the flange lock nut and hex screw removed in step 2. Tighten to 102-124 in-lbs. See Figure 3-5.

6. On models with a 46", 50" and 54" decks the chute is shipped attached and with a stop bracket holding the chute upright. The stop brackets must be removed prior to operating the tractor.
7. Holding the chute deflector fully upward, remove the shipping brace. Lower the chute deflector and discard the shipping brace. See Figure 3-6.

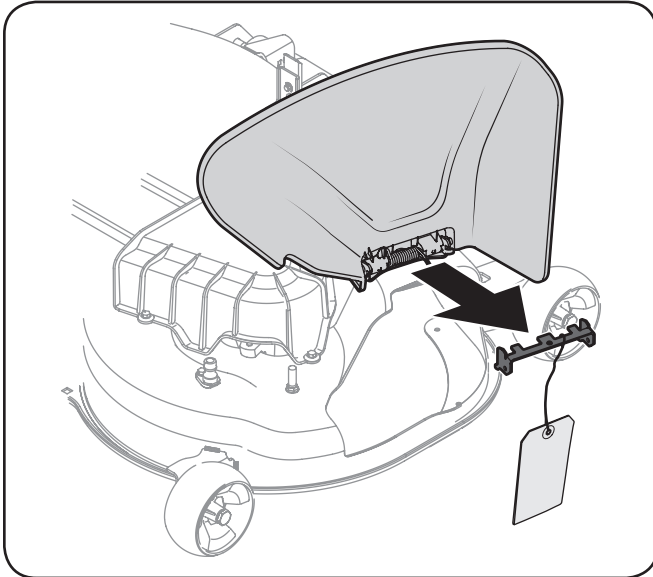


Figure 3-6

Setting the Front Gauge Wheels



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

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

Move the tractor on a firm and level surface, preferably pavement, and proceed as follows:

1. Check the tire pressure, make sure the pressure is correct and equal on all tires.
2. Make sure the deck is level, both front-to-back and side-to-side. See the Maintenance & Adjustments section for deck leveling information and instructions.
3. Select the height position of the cutting deck by placing the deck lift lever in the normally desired mowing height setting.
4. Check the wheels for contact or excessive clearance with the surface below. The deck wheels should have between $\frac{1}{4}$ " and $\frac{1}{2}$ " clearance above the ground. Proceed as follows to adjust the wheels:
 - a. Remove the lock nut securing one of the front gauge wheel shoulder screws to the deck. Remove the gauge wheel and shoulder screw. See Figure 3-7.

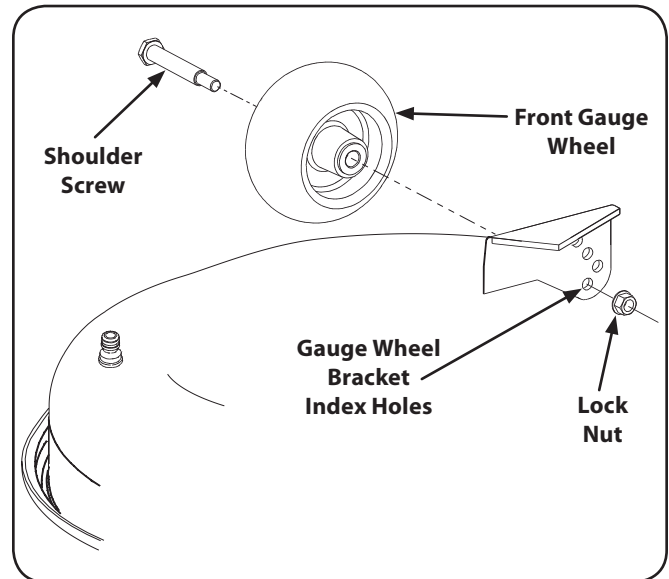


Figure 3-7

- b. Insert the shoulder screw into the one of four index holes in the front gauge wheel bracket that will give the gauge wheel a $\frac{1}{4}$ - $\frac{1}{2}$ " clearance with the ground.
- c. Note the index hole of the just adjusted wheel, and adjust the other front gauge wheel into the respective index hole of the other front gauge wheel bracket.

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

Connecting the Battery Cables



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: 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. (-).

NOTE: If the positive battery cable is already attached, skip ahead to step 2.

1. Remove the plastic cover, if present, from the positive battery terminal and attach the red cable to the positive battery terminal (+) with the bolt and hex nut. See Figure 3-8.

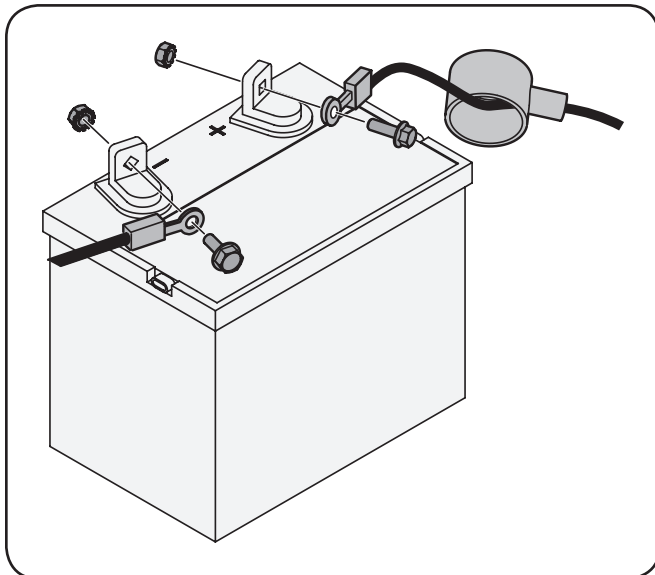


Figure 3-8

2. Remove the plastic cover, if present, from the negative battery terminal and attach the black cable to the negative battery terminal (-) with the bolt and hex nut. See Figure 3-8.
3. 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 your Operator's Manual prior to operating the tractor.

Adjusting the Seat

To adjust the position of the seat, rotate the seat forward and locate the clamp knobs on the front of the seat pan. Refer to Figure 3-4.

Rotate the clamp knobs to the left and remove them, slide the seat forward or backward and re-insert the clamp knobs into one of the four available positions on the seat pan and into the seat, then tighten both securely. Make sure the seat is locked into position before operating the tractor. See Figure 3-9.

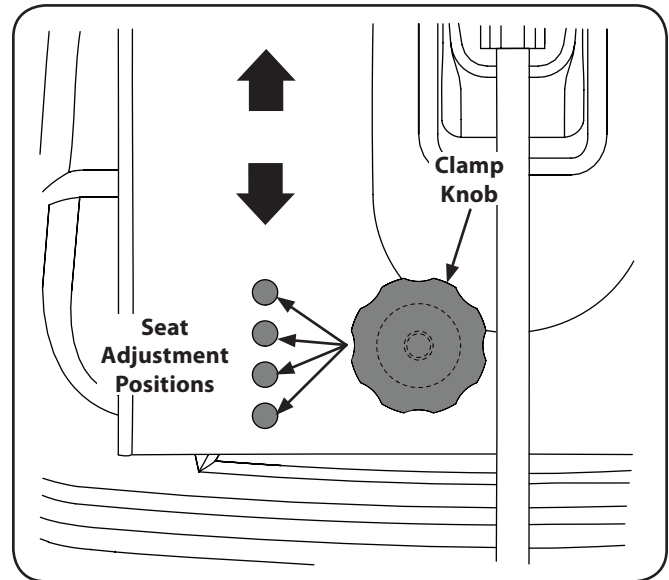
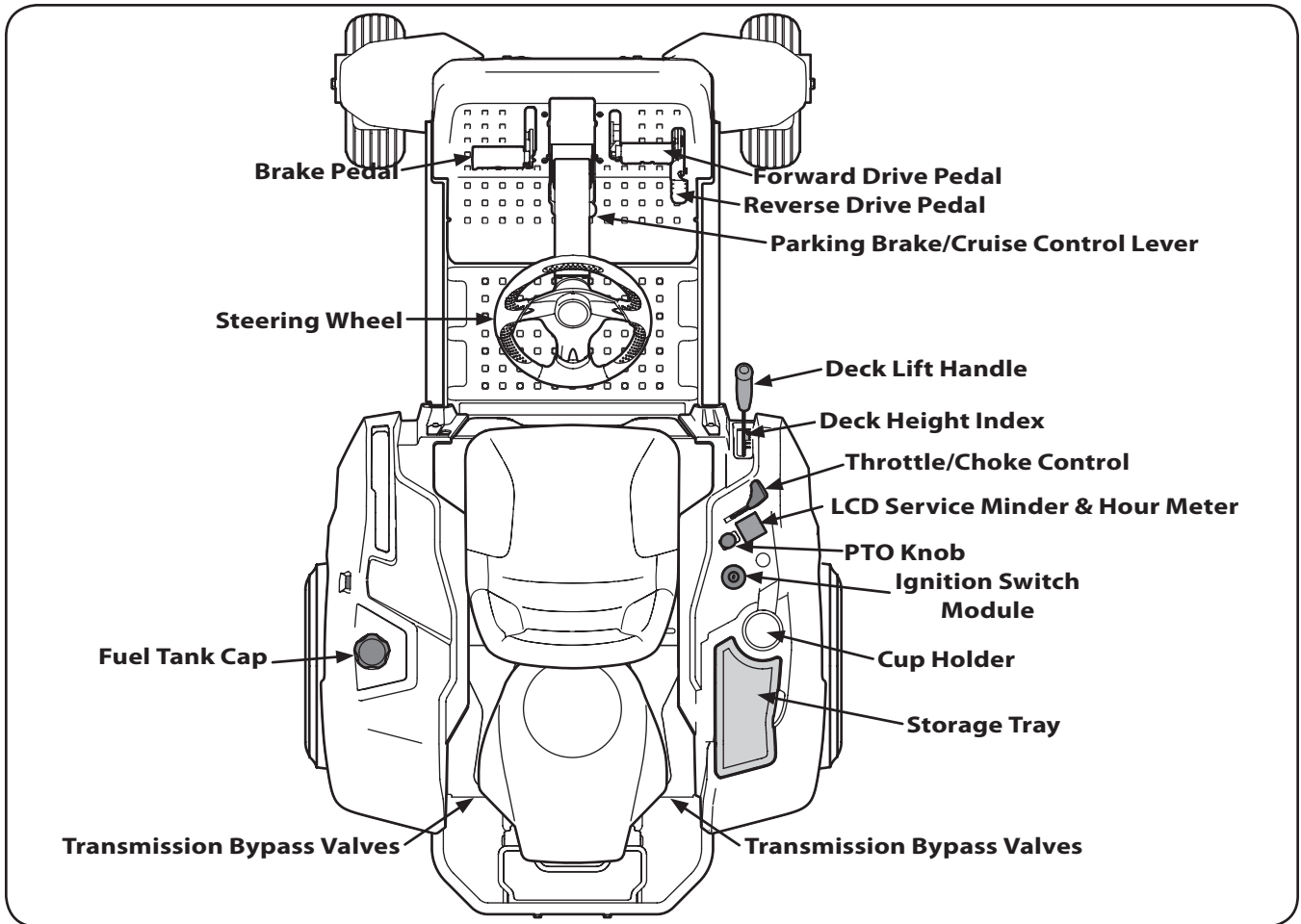


Figure 3-9

Fuel Fill-Up

Using a good grade of unleaded regular gasoline, fill the tank (beside the engine on the left side of the mower). When the fuel tank reaches one inch from the top of the tank, stop, DO NOT OVERFILL. Space must be left for expansion.



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

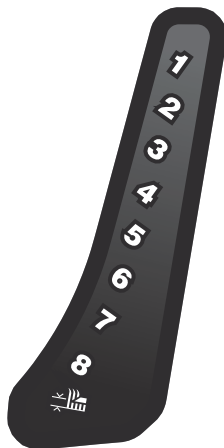
Deck Height Index

The deck height index consists of eight index notches located on the front/right of the console. Each notch corresponds to a 1/2" change in the deck height position ranging from 1-1/2" at the lowest notch to 4" at the highest notch.

Deck Lift Handle

The deck lift handle is located on the front/right of the console, and is used to raise and lower the mower deck.

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



Cup Holder

The cup holder is located on the RH console to the right of the operator's seat.

Storage Tray

The storage tray is located at the rear of the RH console.


Seat Clamp Knob (Not Seen)


The seat clamp knob is located below the front/left of the seat. The knob allows for adjustment forward or backward of the operator's seat. Refer to the Assembly & Set-Up section for instructions on adjusting the seat position.


Ignition Switch Module




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

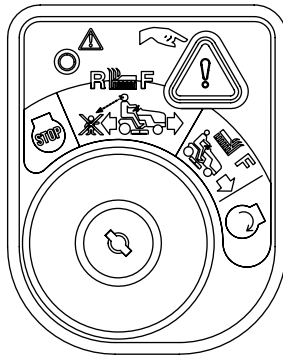
To start the engine, insert the key into the ignition switch and turn clockwise to the START  position.

Release the key into the NORMAL MOWING MODE  position once the engine has fired.

To stop the engine, turn the ignition key counterclockwise to the STOP  position.



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

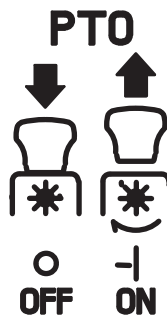


PTO Knob

The PTO (Power Take-Off) knob is located on the RH console to the right of the operator's seat.

The PTO knob operates the electric PTO clutch mounted on the bottom of the engine crankshaft. Pull the knob upward to engage the PTO clutch, or push the knob downward to disengage the clutch.

The PTO knob must be in the "disengaged" position when starting the engine.



Fuel Tank Cap

The fuel tank cap is located on the left console. Turn the fill cap to remove. Always re-install the fuel cap tightly onto the fuel tank after removing.



WARNING! Never fill the fuel tank when the engine is running. If the engine is hot from recently running, allow to cool for several minutes before refueling. Highly flammable gasoline could splash onto the engine and cause a fire.

Throttle/Choke Control

The throttle/choke control is located on the RH console to the left of the hour meter/indicator panel. When set in a given position, a uniform engine speed will be maintained.

- Push the throttle/choke control handle forward to increase the engine speed. The tractor is designed to operate with the throttle/choke control in the fast position (full throttle) when the tractor is being driven and the mower deck is engaged.
- Pull the throttle/choke control handle rearward to decrease the engine speed.
- When starting the engine, push the control handle fully forward into the "CHOKE" position.
- After starting and warming the engine, move the control handle rearward until you feel it move past the choke detent.



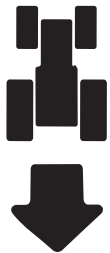
Forward Drive Pedal

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



Reverse Pedal

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



Transmission Bypass Valves

The transmission bypass valves (one for each the RH and LH transmission) are located under the tractor on the back of each transmission inside the rear wheels.

When engaged, the two valves open a bypass within the hydrostatic transmissions, which allows the tractor to be pushed short distances by hand. Refer to the Assembly & Set-Up section for instructions on using the bypass feature.

Park Brake/ Cruise Control Lock Pedal

The park brake/cruise control lock pedal is located at the base of the steering column. It is used to engage the park brake when the tractor is at rest. Engaging the lever while the tractor is in motion allows the tractor to remain at a constant ground speed without applying pressure to the forward drive pedal. Refer to the Operation section of this manual for detailed instructions regarding the parking brake as well as the cruise control feature.

NOTE: Cruise control can NOT be engaged at the tractor's fastest ground speed. If the operator should attempt to do so, the tractor will automatically decelerate to the fastest optimal mowing ground speed

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



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

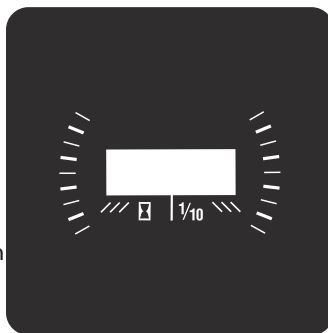
Hour Meter

LCD Service Minder & Hour Meter

When the ignition key is rotated out of the STOP position but not into the START position, the LCD Service Minder and Hour Meter will briefly display the battery voltage, followed by the tractor's accumulated hours.

NOTE: Hours of tractor operation are recorded any time the ignition key is rotated out of the STOP position, regardless of whether the engine is started.

The LCD Service Minder will remind the operator of maintenance intervals for changing the engine oil, air filter service, low engine and low battery warnings.



CRUISE
CONTROL



PARK
BRAKE



Change Oil

The LCD will display the letters "CHG", followed by the letters "OIL", followed by the letters "SOON", then finally followed by the meter's accumulated time. "CHG/OIL/SOON/TIME" will alternate on the display for 7 minutes after the meter reaches 50 hours. This oil service minder interval will occur every 50 hours. Before the interval expires, change the engine oil as instructed in the Maintenance section of the Engine Operator's Manual

Low Oil

The letters "LO" followed by the letters "OIL", then followed by the meter's accumulated time will indicate the tractor is low on oil. When an engine is not running and immediately after the engine is started the oil pressure may be low. This can trigger the "LO" "OIL" text. This is normal. If the low oil indication persists stop the tractor immediately and check the engine oil level as instructed in the Engine Operator's Manual.

NOTE: The "LOW OIL" function only works if the engine is equipped with an oil pressure switch.

Low Battery

At startup, the battery voltage is briefly displayed then changes to accumulated hours. The letters "LO" will display followed by the letters "BATT" and then followed by the meter's accumulated time. "LO/BATT/TIME" is displayed on the LCD when the voltage drops below 11.5 volts. When this occurs, the battery is in need of a charge or the engine's charging system is not generating sufficient amperage. Charge the battery as instructed in the Service section of this manual or have the charging system checked by your local service dealer.

Air Filter Service

The letters "CLN" will display, followed by the letters "AIR", followed by "FILT", then followed by the meter's accumulated time. "CLN/AIR/FILT/TIME" will alternate on the display for 7 minutes after the meter reaches 25 hours. This air filter service minder time interval will be every 25 hours. On intervals that are common with oil service, the oil message will be displayed first followed by the air filter message.

General Safety

- **RECEIVE INSTRUCTION** — Entirely read this operator's manual. Learn to operate this machine SAFELY. Do not risk INJURY or DEATH. Allow only those who have become competent in its usage to operate this tractor.
- Before starting the engine or beginning operation, be familiar with the controls. The operator should be in the operator's seat. The PTO switch must be in the disengaged position and the parking brake engaged.
- Keep all shields in place. Keep away from moving parts.
- **NO RIDERS!** Keep all people and pets a safe distance away. Look behind and down to both sides of the tractor before and while backing up.
- **DO NOT** direct the mower discharge at people.
- Avoid slopes where possible. Never operate on slopes greater than 15°. Slopes with a greater incline present dangerous operating conditions. Tractors can be rolled over.
- Before leaving the operator's seat shut off the PTO and engage the parking brake, shut off the engine and remove the ignition key. Wait for all movement to stop before servicing or cleaning.
- Avoid any sudden movements of the steering wheel when starting and stopping. Keep a firm grip on the steering wheel.
- Be careful when operating near roadways. Stop the tractor motion and wait for vehicles to pass before operating along the road.
- Do not operate the tractor with the mower deck removed. Removal of the deck will change the balance of the tractor, and could contribute to a tractor rollover.
- Avoid operation on traction surfaces that are unstable; use extreme caution if the surface is slippery.
- Slow down before turning and come to a complete stop before any zero turn maneuver.
- Do not stop the tractor or park the tractor over combustible materials such as dry grass, leaves, debris, etc.
- Do not fill the fuel tank when the engine is running or while the engine is hot. Allow the engine several minutes to cool before refueling. Tighten the fuel cap securely.

Before Operating Your Tractor

- Before you operate the tractor, study this manual carefully to familiarize yourself with the operation of all the instruments and controls. It has been prepared to help you operate and maintain your tractor efficiently.
- This engine is certified to operate only on clean, fresh, unleaded regular gasoline. For best results, fill the fuel tank with only clean, fresh, unleaded gasoline with a pump sticker octane rating of 87 or higher.
- Unleaded gasoline is recommended because it leaves less combustion chamber deposits and reduces harmful exhaust emissions. Leaded gasoline is not recommended and must not be used where exhaust emissions are regulated.
NOTE: Purchase gasoline in small quantities. Do not use gasoline left over from the previous season, to minimize gum deposits in the fuel system.
- Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is an approved fuel. Other gasoline/alcohol blends are not approved.
- Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blends (up to a maximum of 15% MTBE by volume) are approved fuels. Other gasoline/ether blends are not approved.
- Check the engine oil level.
- Clean the air cleaner element if necessary.
- Check the tire inflation pressures.
- Adjust the seat for operator's maximum comfort, visibility and for maintaining complete control of the tractor.

Safety Interlock Switches

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

- The safety interlock system prevents the engine from cranking or starting unless the parking brake is engaged, and the PTO knob is in the disengaged (OFF) position.
- The engine will automatically shut off if the operator leaves the seat before engaging the parking brake.



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

Starting the Engine



WARNING! This tractor is equipped with a safety interlock system designed for the protection of the operator. Do not operate the tractor if any part of the system is malfunctioning. Periodically check the function of the interlock system for proper operation.



WARNING! For personal safety, the operator must be sitting in the tractor seat when starting the engine.

NOTE: Refer to the Engine Operator's Manual for oil fill-up instructions and refer to the Assembly & Set-Up section for gasoline fill-up instructions.

1. Operator must be sitting in the tractor seat.
2. Engage the parking brake by pressing forward on the brake pedal (○), then press down on the parking break/cruise control lever and then release the brake pedal (○). Refer to Figure 5-1.

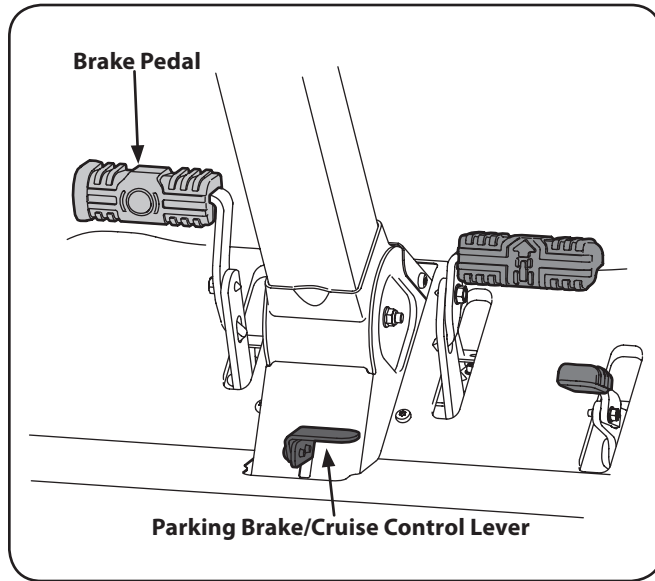


Figure 5-1

3. Make certain the PTO switch is in the disengaged (down) position. Refer to Figure 5-1.
4. Move the throttle/choke control (if equipped) into the CHOKE |🔥| position.
NOTE: If the engine is warmed up, it may not be necessary to CHOKE |🔥| the engine.
5. Turn the ignition key clockwise to the START 🗝️ position. After the engine starts, release the key. It will return to the run position.



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

6. As the engine warms up, gradually pull the throttle/choke control lever (if equipped) rearward past the choke detent position or push the choke knob (if equipped) down into the OFF position.

NOTE: Do NOT leave the throttle/choke control in the CHOKE |🔥| position while operating the tractor. Doing so will result in a "rich" fuel mixture and cause the engine to run poorly.

7. Allow the engine to run for a few minutes at mid throttle before putting the engine under load.
8. Observe the hour meter/indicator panel. If the battery indicator light or oil pressure light come on, immediately stop the engine. Have the tractor inspected by your authorized service dealer.

Cold Weather Starting

When starting the engine at temperatures near or below freezing, ensure the correct viscosity motor oil is used in the engine and the battery is fully charged. Start the engine as follows:

1. Be sure the battery is in good condition. A warm battery has much more starting capacity than a cold battery.
2. Use fresh winter grade fuel. Winter grade gasoline has higher volatility to improve starting. Do not use gasoline left over from summer.
3. Follow the previous instruction for Starting the Engine.

Using Jumper Cables To Start Engine



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

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

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

Stopping the Engine

1. Place the PTO switch in the disengaged position.
2. Engage the parking brake.
3. Move the throttle/choke control to the SLOW 🐢 position and allow the engine to idle for about one minute.
4. Turn the ignition key to the STOP 🗝️ position and remove the key from the ignition switch.

NOTE: Always remove the key from the ignition switch to prevent accidental starting or battery discharge if the equipment is left unattended.

Driving The Tractor



WARNING! Avoid sudden starts, excessive speed and sudden stops.

1. Release the parking brake. Move the throttle/choke control lever into the FAST position.
2. To travel FORWARD, slowly press the forward drive pedal forward until the desired speed is achieved. See Figure 5-2.

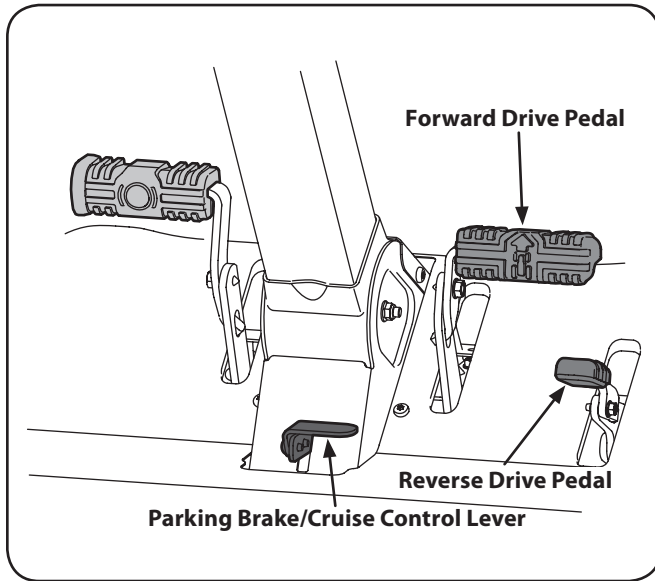


Figure 5-2

3. To stop or slow down the tractor, take your foot off of the forward or reverse drive pedal . To lock the parking brake, press forward on the brake pedal, then press down on the parking break/cruise control lever and then release the brake pedal .
4. To use the cruise control:
 - a. Press down on the forward drive pedal .
 - b. While maintaining the desired speed press down on the parking break/cruise control lever then release the forward drive pedal to activate the cruise control.
5. To release the cruise control, press the brake or the forward drive pedal .

NOTE: The forward and reverse drive pedals must not be used when the brake is partially engaged. When the brake is locked the drive belt is disengaged but if the brake is only part way back then the brakes are engaged but so is the drive belt so transmission damage will occur if you push forward or reverse.

6. To travel in reverse, check that the area behind is clear then slowly push forward on the reverse drive pedal with the ball of your foot (NOT your heel) until the desired speed is achieved. See Figure 5-2.



CAUTION: Do NOT attempt to change the direction of travel when the tractor is in motion. Always bring the tractor to a complete stop before moving the tractor from forward to reverse or vice versa.



WARNING! Do not leave the seat of the tractor without first placing the PTO knob in the disengaged (OFF) position and engaging the parking brake. If leaving the tractor unattended, also turn the engine off and remove the ignition key.

Reverse Caution Mode

The REVERSE CAUTION MODE position of the ignition switch module allows the tractor to be operated in reverse with the blades (PTO) engaged.

NOTE: Mowing in reverse is not recommended.



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

To use the REVERSE CAUTION MODE :

NOTE: The operator MUST be seated in the tractor seat.

1. Start the engine as instructed on the previous page.
2. Turn the key from the NORMAL MOWING (Green) position to the REVERSE CAUTION MODE (Yellow) position of the key switch module. See Figure 5-3.

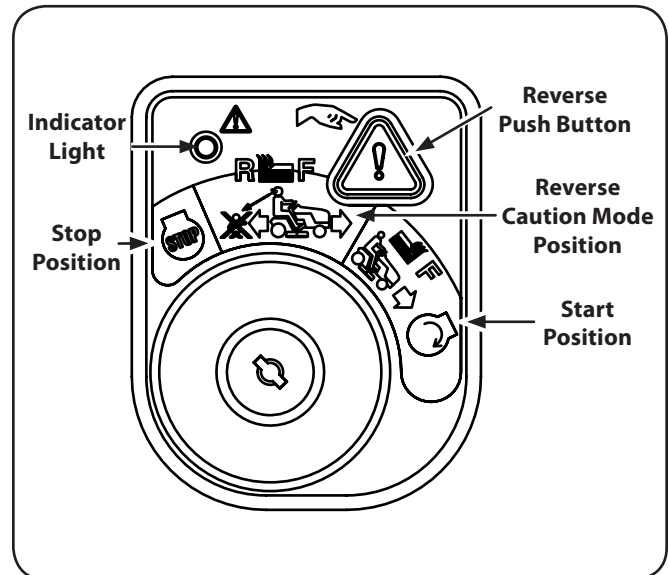






Figure 5-3

3. Press the REVERSE PUSH BUTTON  (Orange, Triangular Button) at the top, right corner of the key switch module. The red indicator light at the top, left corner of the key switch module will be ON while activated. See Figure 5-3.
4. Once activated (indicator light ON), the tractor can be driven in reverse with the cutting blades (PTO) engaged.
5. Always look down and behind before and while backing to make sure no children are around. After resuming forward motion, return the key to the NORMAL MOWING  position.

The REVERSE CAUTION MODE  will remain activated until:

- a. The key is placed in either the NORMAL MOWING  position or STOP  position or
- b. The operator leaves the seat.

Driving On Slopes

Refer to the SLOPE GAUGE on page 8 to help determine slopes where you may operate the tractor safely.



WARNING! Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). The tractor could overturn and cause serious injury.

- Mow across slopes, not up and down.
- 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.
- Do not turn on slopes unless necessary; then turn slowly uphill and use extra care while turning. Turning up a slope greatly increases the chance of a rollover.
- 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.

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.
- Do not cut the grass too short. Short grass is prone to weed growth and yellows quickly in dry weather.


- Always operate the tractor with the throttle in the FAST  position while mowing.
- 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 attempt to mow heavy brush and weeds or extremely tall grass. Your tractor is designed to mow lawns, NOT clear brush.
- Keep the blades sharp and replace the blades when worn.

Manual Lift Lever

To raise or lower the cutting deck, move the lift lever to the left, then place it in the notch best suited for your application.

Engaging the PTO

Engaging the PTO transfers power to the cutting deck or other (separately available) attachments. To engage the PTO:

1. Move the throttle to the FAST  position.
2. Pull the PTO/Blade Engage knob outward into the engaged (ON) position. See Figure 5-4.

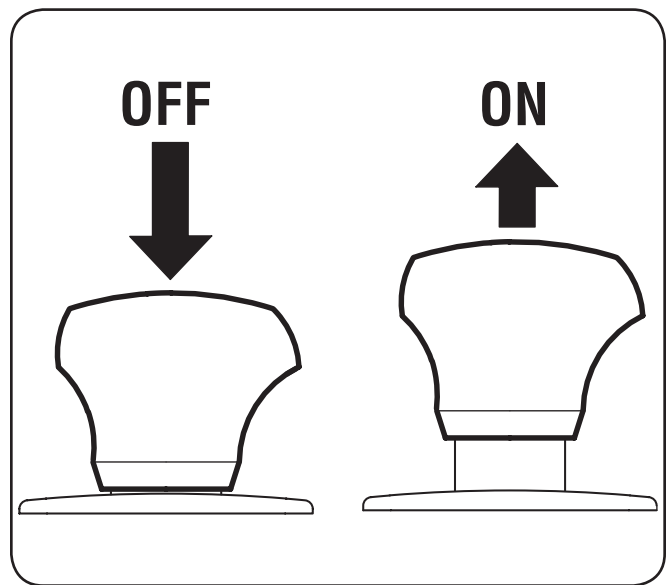



Figure 5-4

NOTE: Always operate the tractor with the throttle lever in the FAST  position for the most efficient use of the cutting deck or other (separately available) attachments.

Maintenance & Adjustments

6

Maintenance Schedule

	Before Each use	After First 5 Hours	Every 10 Hours	Every 25 Hours	Every 50 Hours	Every 100 Hours	Prior to Storing	See Engine Manual
Check & Clean Engine Cooling Fans for Debris	✓						✓	
Check Engine Oil Level	✓							
Check Air Filter for Dirty, Loose or Damaged Parts	✓							
Clean Battery Terminals			✓				✓	
Grease All Lubrication Points			✓				✓	
Check Intake Screen/Clean as Needed			✓				✓	
Check Blades/Sharpen or Replace as Needed			✓				✓	
Check Tire Pressure			✓				✓	
Check/Clean Underside of Deck			✓					
Grease Front Castings				✓				
Lube Front Caster Wheels and Wheel Spindles				✓			✓	
Inspect & Lube Deck Wheels				✓			✓	
Check Deck Level/Pitch				✓			✓	
Check Belts & Pulleys for Damage/Wear					✓			
Check That All Hardware is in Place & Secure						✓		
Check & Clean Under Floorboard							✓	
Check Spark Plug Condition & Gap						✓	✓	✓
Engine Break-In Oil Change		✓						✓
Change Engine Oil					✓		✓	✓
Replace Oil Filter					✓		✓	✓
Clean or Change Air Filter					✓			✓
Replace Fuel Filter					✓			✓
Have Valve Lash Checked & Adjusted *								✓

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



WARNING! Before performing any maintenance or repairs, disengage PTO, set parking brake, stop engine and remove key to prevent unintended starting.

Engine

Refer to the engine operator's manual for all engine maintenance procedures and instructions.

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

Changing the Engine Oil



WARNING! If the engine has been recently run, the engine, muffler and surrounding metal surfaces will be hot and can cause burns to the skin. Exercise caution to avoid burns.

To complete an oil change, proceed as follows:

1. Run the engine for a short time to warm the engine oil. The oil will flow more freely and carry away more impurities. Use care to avoid burns from hot oil.
2. Locate the oil drain valve on the right side of the engine. See Figure 6-1.

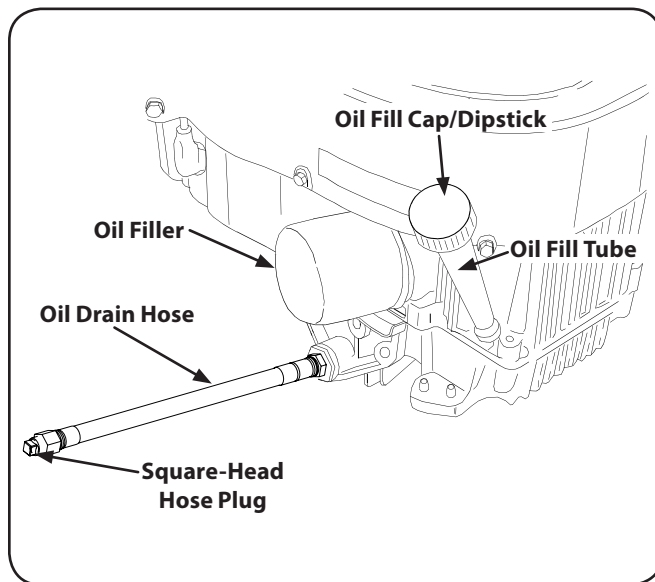


Figure 6-1

3. Remove the hose from the retaining loop-clamp. Route the free end of the oil drain hose toward an appropriate oil collection container with at least a 2.5 quart capacity, to collect the used oil. Remove the oil fill cap/dipstick from the oil fill tube.
4. While holding the free end of the oil drain hose over the oil collection container, unscrew the square head hose plug from the end of the hose. See Figure 6-1. Drain the engine oil into the collection container.

5. After draining the oil, wipe any residual oil from the oil drain hose. Thread the square head plug into the drain hose fitting and fully tighten the plug.
6. Replace the oil filter, and refill the engine with new oil as instructed in the engine operator's manual.
7. Re-insert hose through the retaining loop-clamp.

Hydrostatic Transmission

The hydrostatic transmission is sealed at the factory and is maintenance-free. The fluid level cannot be checked and the fluid cannot be changed.

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.

The battery is sealed and is maintenance-free. Acid levels cannot be checked and fluid can not be added.

- 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.



CAUTION: If removing the battery for cleaning, 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 result in serious damage to your engine's alternating system.

Cleaning the Tractor

Any fuel or oil spilled on the machine should be wiped off promptly. Do NOT allow debris to accumulate around the cooling fins of the engine, the transmission's cooling fan or on any other part of the machine, especially the belts and pulleys.

Smart Jet™

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

Use the Smart Jet™ 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 tractor to a level, clear spot on your lawn, near enough for your garden hose to reach.



CAUTION: Make certain the tractor's discharge chute is directed AWAY from your house, garage, parked cars, etc.

2. Disengage the PTO (Blade Engage), set the parking brake and stop the engine.
3. Thread the hose coupler (packaged with your tractor's Operator's Manual) onto the end of your garden hose.

- Attach the hose coupler to the water port on the left of your deck surface. See Figure 6-2.

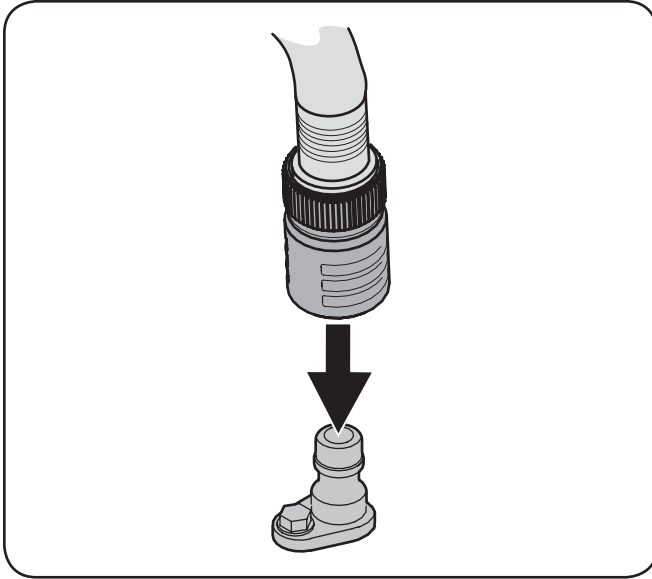




Figure 6-2

- Turn the water on.
- While sitting in the operator's position on the tractor, start the engine and place the throttle in the FAST  position.
- Engage the PTO.
- Remain in the operator's position with the cutting deck engaged for a minimum of two minutes, allowing the underside of the cutting deck to thoroughly rinse.
- Disengage the PTO.
- Turn the ignition key to the STOP  position to turn the tractor's engine off.
- Turn the water off and detach the hose coupler from the water port on your deck's surface.
- After cleaning your deck with the Smart Jet™ system, return to the operator's position and engage the PTO. Keep the cutting deck running for a minimum of two minutes, allowing the underside of the cutting deck to thoroughly dry.

Tires



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

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.

Lubrication



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

Front Wheels

Each of the front wheel axles and rims is equipped with grease fittings. See Figure 6-3. Lubricate with a No. 2 multi-purpose grease applied with a grease gun after every 25 hours of tractor operation.

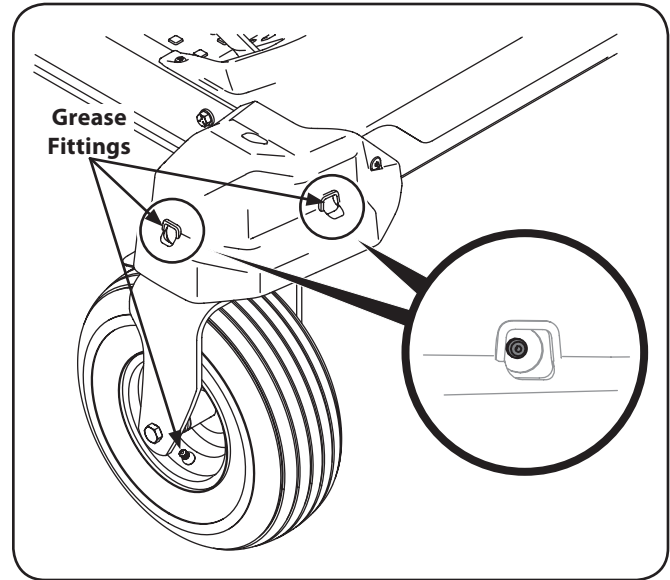


Figure 6-3

Steering Supports

Under the frame of the tractor there are two grease fittings for the steering supports. Lubricate with a No. 2 multi-purpose grease applied with a grease gun after every 25 hours of tractor operation. See Figure 6-4.

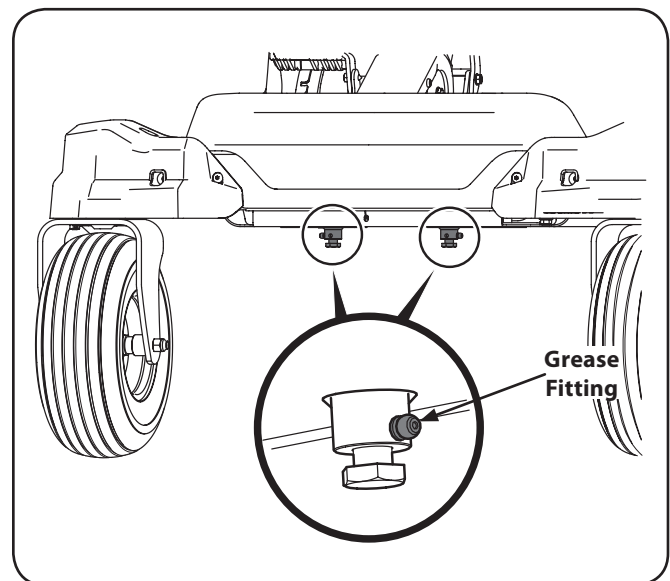


Figure 6-4

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.

Adjustments

Deck

NOTE: Check the tractor's tire pressure before performing any deck leveling adjustments. Refer to Tires above for information regarding tire pressure.



WARNING! Shut the engine off, remove the ignition key and engage the parking brake before making adjustments. Protect your hands by using heavy gloves when handling the blades.

Leveling the Deck (Side-to-Side)

NOTE: Check the tractor's tire pressure before performing any deck leveling adjustments. Refer to Tires for information regarding tire pressure. Always level the deck side to side before front to rear.

If the cutting deck appears to be mowing unevenly, a side to side adjustment can be performed. Adjust if necessary as follows:

1. With the tractor parked on a firm, level surface, place the deck lift handle in a middle mowing position and rotate both outside blades so that they are perpendicular with the tractor.
2. Measure the distance from the outside of the left blade tip to the ground and the distance from the outside of the right blade tip to the ground. Both measurements taken should be equal. If they're not, proceed to the next step.
3. Loosen, but do NOT remove, the hex bolt on the rear left deck hanger link. See Figure 6-5.

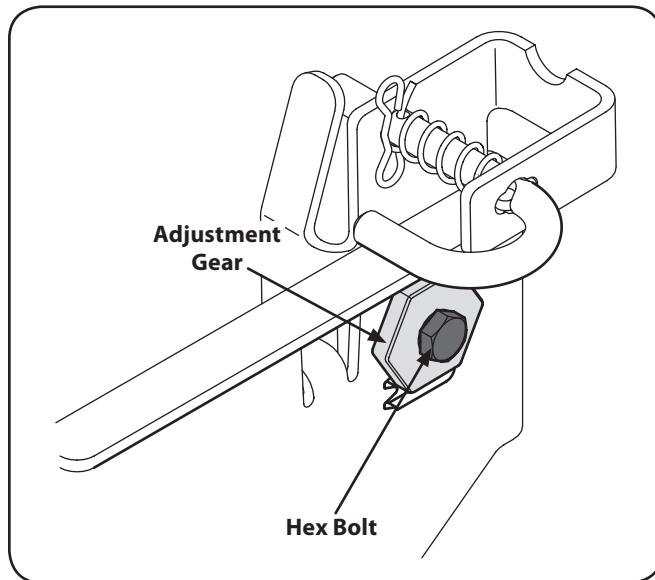


Figure 6-5

NOTE: The rear right deck hanger link is not adjustable and is used to help adjust the other hanger links.

4. Using a wrench, raise or lower the left side of the deck by turning the adjustment gear. See Figure 6-5.
5. The deck is properly leveled when both blade tip measurements are equal. Retighten the hex bolt on the front left deck hanger bracket when proper adjustment is achieved.

Leveling the Deck (Front-to-Rear)

NOTE: Check the tractor's tire pressure before performing any deck leveling adjustments. Refer to Tires on page 24 for information regarding tire pressure. Always level the deck side to side before front to rear.

The front of the deck should be between $\frac{1}{4}$ " and $\frac{3}{8}$ " lower than the rear of the deck. Adjust if necessary as follows:

1. Park the tractor on a firm, level surface and place the deck lift handle in a middle position.
2. Rotate the blade nearest the discharge chute so that it is parallel with the tractor.
3. 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 $\frac{1}{4}$ " and $\frac{3}{8}$ " less than the second measurement.
4. Determine the approximate distance necessary for proper adjustment and proceed, if necessary.
5. To raise the front of the deck, remove the end cap, loosen the outer nut then tighten (thread inward) the nut against the front hanger bracket. See Figure 6-6. When proper adjustment is achieved, re-tighten the outer nut and replace the end cap.

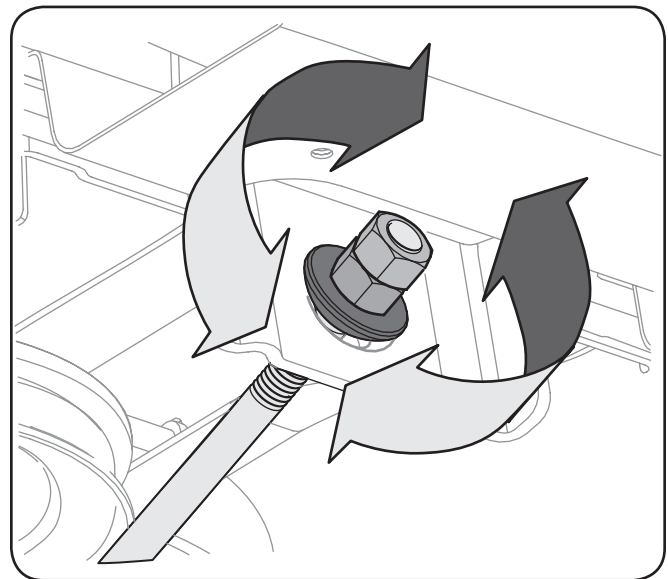


Figure 6-6

6. To lower the front of the deck, remove the end cap, loosen the outer nut then loosen (thread outward) the nut, away from the front hanger bracket. See Figure 6-6. When proper adjustment is achieved, re-tighten the outer nut and replace the end cap.

Deck Wheels



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

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

The deck wheels should be approximately $\frac{1}{4}$ – $\frac{1}{2}$ " above the ground when the deck is set in the desired height setting. To adjust the deck wheels see the Assembly & Set-Up section for instructions.

Parking Brake Adjustment

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

Off-Season Storage

Riding Mower Storage

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

1. Change the engine oil and filter following the instructions provided in the Engine Manual.



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

2. Service the engine as instructed in the separate engine manual.
3. 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.



WARNING! Drain fuel only into unapproved container outdoors, away from an open flame. Allow engine to cool. Extinguish cigarettes, cigars, pipes, and other sources of ignition prior to draining fuel.

3. Remove the spark plugs and pour approximately one ounce of oil into each cylinder. Crank the engine one or two turns to spread the oil evenly on the cylinder walls. Replace the spark plugs.

4. Clean the engine and the entire riding mower thoroughly.
NOTE: Use of a pressure washer or garden hose is not recommended to clean your riding mower. They may cause damage to electrical components, spindles, pulleys, bearings or the engine. The use of water will result in shortened life and reduce serviceability.
5. Sharpen the blades so that the mower will be ready to use when needed.
6. Protect the metal surfaces. Repair scratches with the appropriate touch-up spray paint. Brush a rust preventive oil on any unpainted surfaces including the pulleys and blades. (Be careful not to get any oil on the drive belts.)
7. Clean and fully charge the battery, then disconnect the negative cable at the battery to prevent possible discharge. Recharge the battery periodically when in storage.
NOTE: Remove the battery if exposed to prolonged periods of sub-freezing temperatures. Store in a cool, dry location where temperatures are above freezing.
8. Lubricate all lubrication points.
9. Jack the mower up and store it on blocks to take the weight off of the tires.

Removing the Riding Mower From Storage

1. Check the engine oil.
2. Fully charge the battery, lower riding mower off blocks, and inflate the tires to the recommended pressure.
3. Remove the spark plugs and wipe them off. Using the starter, crank the engine to pump the excess oil out of the spark plug holes. Replace the spark plugs and the ignition leads.
4. If drained before storing, fill the fuel tank with clean, fresh gasoline.
5. Check the level of the engine oil in the crankcase and the hydraulic reservoir tank.
6. Start the engine and allow to idle for a few minutes to ensure engine is operating properly.
7. Drive the riding mower without a load to make certain all the riding mower systems are functioning properly.

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



WARNING! Before performing any service, place the PTO switch in the "OFF" position, engage the parking brake lever, turn the ignition key to the "OFF" position and remove the key from the switch.

Battery Removal



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

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

1. Remove the hex washer screw securing the battery hold-down bracket to the frame. Then flip the battery hold-down bracket up to free the battery. See Figure 7-1.

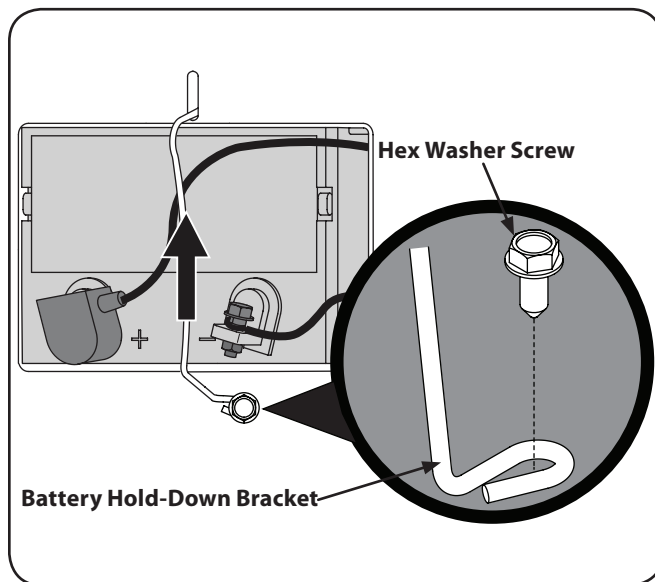


Figure 7-1

2. Remove the hex cap screw and sems nut securing the black negative battery lead to the negative battery post (marked NEG). Move the cable away from the negative battery post.
3. Remove the hex cap screw and sems nut securing the red positive battery lead to the positive battery post (marked POS).
4. Carefully lift the battery out of the tractor.
5. Install the battery by repeating the above steps in the reverse order.



WARNING! Always connect the positive lead to the battery before connecting the negative lead. This will prevent sparking or possible injury from an electrical short caused by contacting the tractor body with tools being used to connect the cables.

Charging the Battery

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

- A voltmeter or load tester should read 12.6 volts (DC) or higher across the battery terminals. See Figure 7-2.

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

Figure 7-2

- Charge the battery with a 12-volt battery charger at a MAXIMUM rate of 10 amps.

Servicing Electrical System

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

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

Relays and Switches

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

Deck Removal

Remove the mower deck from the tractor as follows:

1. Move the tractor to a level surface, disengage the PTO, stop the engine, and set the parking brake.
2. Move the deck gauge wheels or rollers to their highest setting (lowest deck setting).
3. Remove the 'V' belt from the PTO pulley, located on the bottom of the engine, using one of the following two methods.



WARNING! The muffler at the rear of the tractor may be extremely hot, and could cause serious burns. Use extreme caution when near the muffler. Allow the muffler to fully cool before removing the belt from the PTO pulley.

Releasing Belt Tension with the Idler Pulley

- Using the deck lift handle, raise the deck to the position that provides the most horizontal run of the belt between the deck idler pulleys and the PTO pulley on the bottom of the engine. See Figure 7-3.

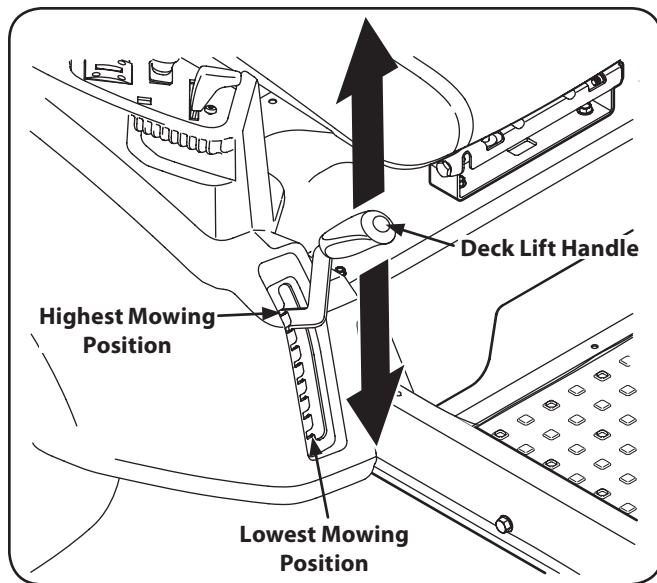


Figure 7-3

- Working from the middle of the tractor, pivot the idler bracket and movable idler pulley rearward away from the backside of the "V" belt just far enough to lift the belt up and over the idler pulley. See Figure 7-4.

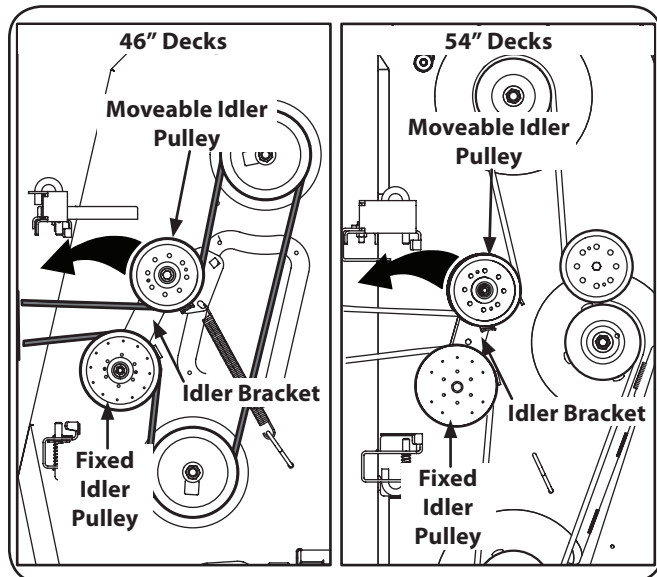


Figure 7-4

- From beneath the rear of the tractor, slide the belt off of the PTO pulley on the bottom of the engine.

Rolling the Belt off the PTO Pulley

- Using the deck lift handle, raise the deck to the position that provides the most horizontal run of the belt between the deck idler pulleys and the PTO pulley on the bottom of the engine.
- Sitting behind the tractor facing forward, reach beneath the tractor to grasp the belt at the front of the PTO pulley.



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

- Pull the left side of the belt rearward and downward while manually turning the PTO pulley to the right until the belt rides out onto the edge of the lower sheave of the pulley.
NOTE: If pulling the right side of the belt, turn the pulley left.
- While still holding the belt downward, continue turning the PTO pulley until the belt is rolled off the pulley. Refer to Figure 7-5.

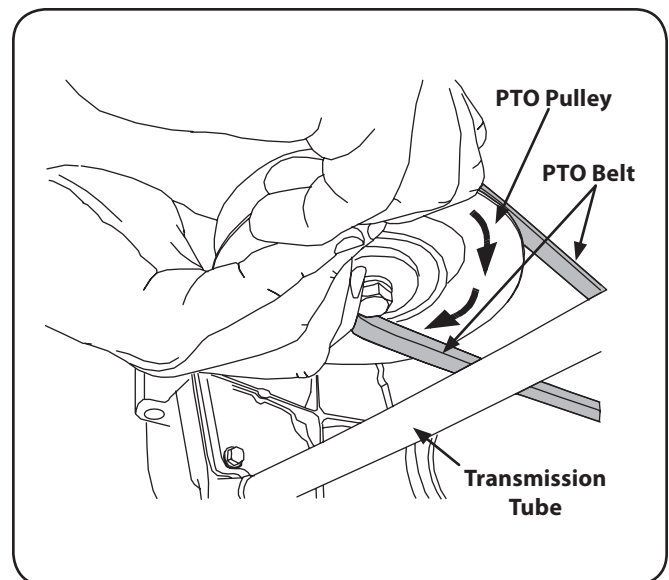


Figure 7-5

- Lower the deck into the lowest position using the deck lift handle. See Figure 7-3.

- Pull the cotter pin out of the front deck lift rod securing it to the deck. See Figure 7-6. Slide the deck lift rod out of the front hanger bracket.

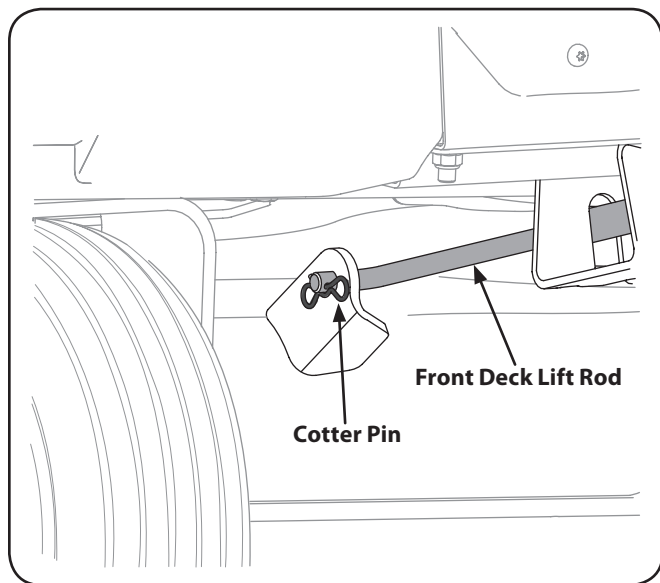


Figure 7-6

- Locate the LH and RH deck release pins on each side of the deck. Pull the release pins outward and release the deck from the LH and RH deck lift arms. See Figure 7-7.

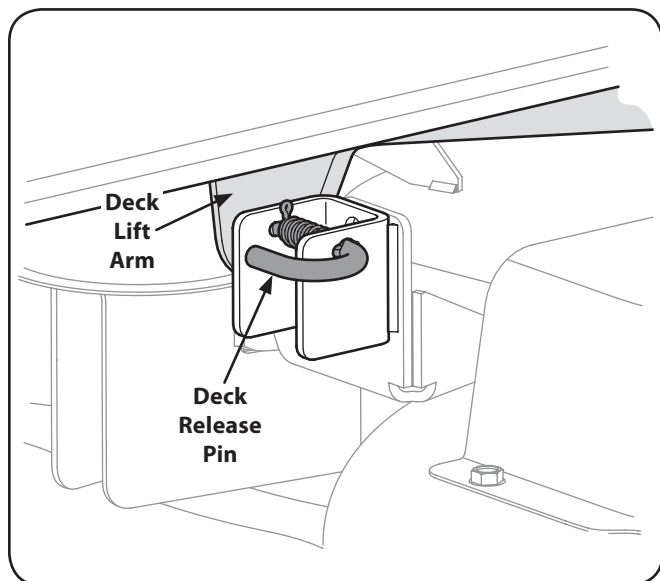


Figure 7-7

- Place the deck lift handle into the highest mowing position and slide the deck out from beneath the tractor.

Deck Installation

Install the deck on the tractor as follows:

- Place the deck lift handle in the highest mowing position See Figure 7-3.
- Slide the deck under the tractor on the right side of the tractor lining up the deck hanger brackets and the deck lift arms..
- Once the deck is under the tractor, move the deck lift handle to the lowest mowing position.

NOTE: To line the brackets up properly, it may be necessary to place a small block of wood under each side of the deck.
- Pull the deck release pins outward and maneuver the deck as necessary to align the holes in the deck lift arms with the pins. Refer to Figure 7-7.
- When aligned, push each pin fully inward through the lift arms to secure the arms in the rear hanger bracket slots.
- Reinstall the front deck lift rod and secure in place with the cotter pin. Refer to Figure 7-6.
- Make certain the 'V' belt is in the spindle pulleys on the deck; then route the belt rearward beneath the tractor frame, above the transmission tube(s), to the PTO pulley on the bottom of the engine.
- Using the deck lift handle, raise the deck to the position that provides the most horizontal run of the belt between the deck idler pulleys and the PTO pulley on the bottom of the engine.
- Make certain the belt is in the spindle pulleys of the deck, and that the backside of the belt is against both the fixed and movable idler pulleys.
- Sitting behind the tractor, facing forward, make certain the belt is not twisted; then reach beneath the tractor to grasp the belt and pull it toward the PTO pulley.



WARNING! Use caution to avoid pinching your fingers when rolling the belt onto the PTO pulley.

- Pull the right side of the belt rearward and place the narrow V side of the belt into the PTO pulley. See Figure 7-5.
- While holding the belt and pulley together, rotate the pulley to the left (See Figure 7-5). Continue holding and rotating the pulley and belt until the belt is fully rolled into the PTO pulley.

NOTE: Before using the tractor double-check the belt routing to make sure that the belt has been routed properly.

Replacing the Belt

1. Remove the deck from beneath the tractor, (refer to Deck Removal).
2. Loosen, but do not remove the hardware on the right and left idler pulley. Refer to Figure 7-8 for 46" decks and Figure 7-9 for 54" decks.

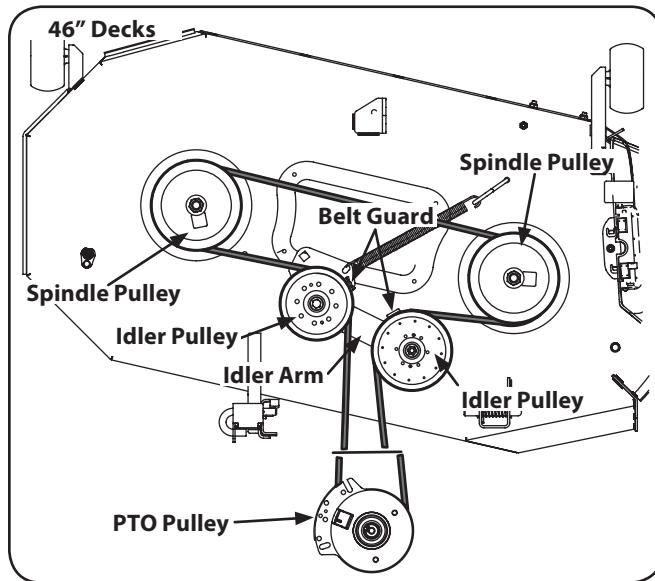


Figure 7-8

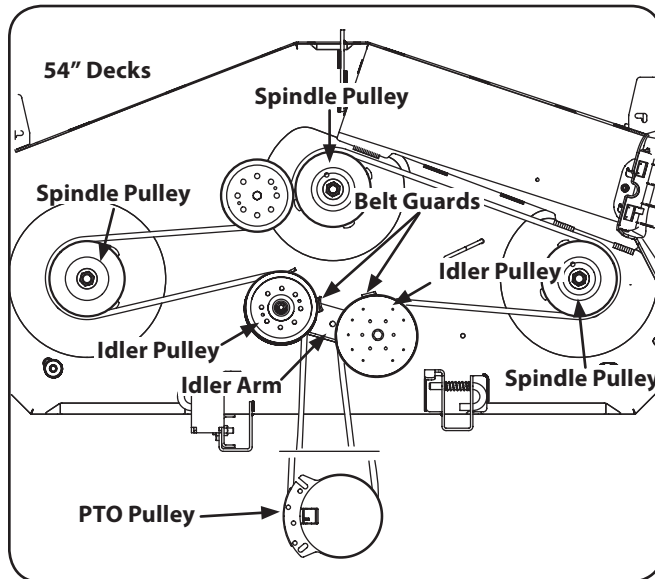


Figure 7-9

NOTE: Take note of the position of the belt guards to ensure they are properly re-installed.

NOTE: On Some decks it may be necessary to remove the spindle covers to remove and/or install the new belt. To remove the spindle covers, remove the screws securing them to the deck.

3. Carefully remove the belt from around the idler pulleys and the spindle pulleys.

4. Install the new belt around the pulleys as shown and reinstall the belt covers.
5. Place the belt around the idler pulleys removed in step 3 with the "V" side facing in. Once in place, reinstall all the hardware and tighten the flange lock nut to secure the assembly.
6. Route the belt as shown and then reinstall the deck (refer to Deck Installation).

Mower Blade Care



WARNING! Before performing any maintenance, place the PTO switch in the "OFF" position, engage the parking brake lever, turn the ignition key to the "OFF" position and remove the key from the switch. Protect your hands by using heavy gloves when handling the blades. When servicing the mower deck, be careful not to cut yourself on the sharpened blades.

The cutting blades must be kept sharp at all times. Sharpen the cutting edges of the blades evenly so that the blades remain balanced and the same angle of sharpness is maintained.

If the cutting edge of a blade has already been sharpened many times, or if any metal separation is present, it is recommended that new blades be installed. New blades are available at your authorized dealer.

The blades may be removed as follows.

1. Remove the deck from beneath the tractor, (refer to Deck Removal) then gently flip the deck over to expose its underside.
2. Use a $1\frac{5}{16}$ " wrench to hold the hex nut on top of the spindle assembly when loosening the hex nut securing the blade. A block of wood may be placed between the deck housing and the cutting edge of the blade to help in breaking loose the hex nut securing the blade. See Figure 7-10.

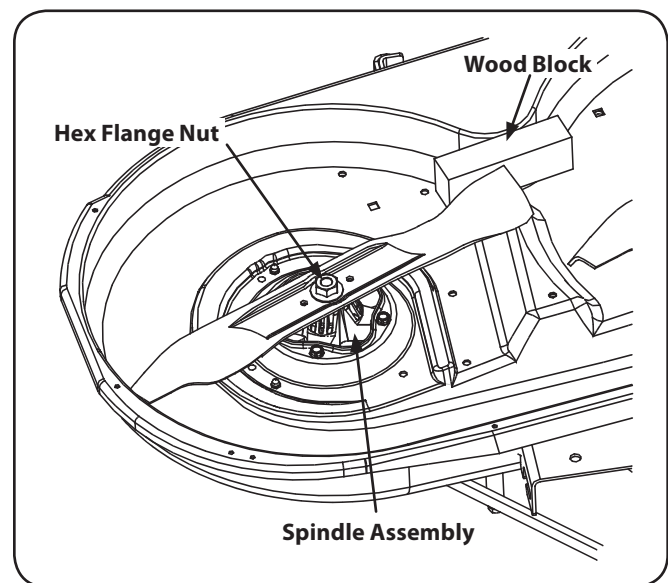


Figure 7-10

3. When reinstalling the blades, be sure they are installed so that the wings are pointing upward toward the top of the deck.

4. Tighten the blade nuts to 70-90 ft. lbs.
5. Reinstall the deck (refer to Deck Installation).

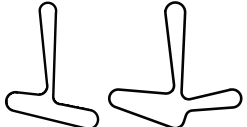
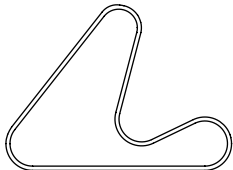
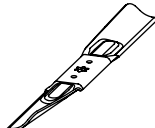


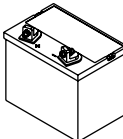



Changing the Transmission Drive Belt

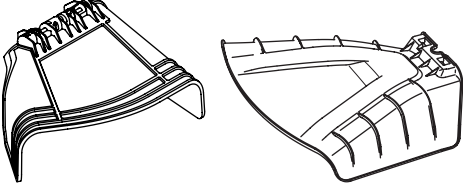
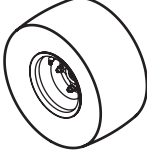

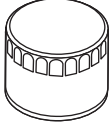

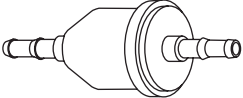
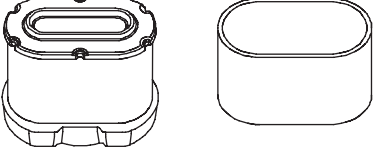
Several components must be removed and special tools used in order to change the tractor's transmission drive belt. See your authorized service dealer to have the transmission drive belt replaced.

Tractor Creeping

Creeping is the slight forward or backward movement of the mower when the throttle is on and the speed control levers are in the neutral position. If your mower creeps, see an authorized service dealer.

Problem	Cause	Remedy
Excessive vibration	<ol style="list-style-type: none"> 1. Cutting blade loose or unbalanced. 2. Damaged or bent cutting blade. 	<ol style="list-style-type: none"> 1. Tighten blade and spindle. 2. Replace blade.
Uneven cut	<ol style="list-style-type: none"> 1. Deck not leveled properly. 2. Dull blade. 3. Uneven tire pressure. 	<ol style="list-style-type: none"> 1. Perform side-to-side deck adjustment. 2. Sharpen or replace blade. 3. Check tire pressure in all four tires.
Mower will not mulch grass (If Equipped w/Mulching Kit)	<ol style="list-style-type: none"> 1. Engine speed too low. 2. Wet grass. 3. Excessively high grass. 4. Dull blade. 	<ol style="list-style-type: none"> 1. Place throttle in FAST (rabbit) position. 2. Do not mulch when grass is wet. 3. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath. 4. Sharpen or replace blade.

Component	Part Number and Description
	954-04325 Deck Belt, Pivot S46 954-04329A Deck Belt, Pivot S54
	954-04317A Drive Belt
	942-04244A 2-in-1 Blade, Pivot S46 942-04290-X Xtreme™ Blade, Pivot S46 942-05056A 2-in-1 Blade, Pivot S54
	918-05078A Spindle Assembly, Pivot S46 918-06978 Spindle Assembly, Pivot S54
	734-04155 Deck Wheel
	925-1707D Battery
	951-12179B Gas Cap
	946-05145 Throttle/Choke Control Cable
	625-05002 Ignition Key

Component	Part Number and Description
	<p>631-04354B Chute Deflector, Pivot S46 631-05116B Chute Deflector, Pivot S54</p>
	<p>634-04293 Wheel Assembly, Pivot S46 634-04128 Wheel Assembly, Pivot S54</p>
	<p>634-04711 Caster Wheel Assembly</p>
	<p>KH-12-050-01-S Oil Filter</p>
	<p>759-3336 Spark Plug</p>
	<p>KH-25-050-22-S1 Fuel Filter</p>
	<p>KH-32-883-09-S1 Air Filter & Pre-Cleaner</p>

Part No.	Part
19C70020OEM	46" Bagger Kit
19A70043OEM	54" Bagger Kit
19B30005OEM	46" Mulch Kit
19A70042OEM	54" Mulch Kit
490-850-0005	Blade Removal Tool
490-850-0008	Oil Siphon
19A70025OEM	Hitch Kit
19A40026OEM	EZ Stow Hauler
490-241-0021	Tire Chains, 46"
490-241-0022	Tire Chains, 54"
490-900-0045	Oil Filter Wrench
490-290-0013	Tractor Cover
490-850-0018	Extended Spark Plug Wrench

Warranty Conditions — Australia (Not applicable to other Regions)

The benefits given to you under this warranty are in addition to other rights and remedies that you have under Australian law in relation to the goods.

MTD Products Australia Pty Ltd warrants that this machine is free from defects in material and workmanship. This warranty is limited to repairing or replacing any part which appears upon inspection by MTD Products Australia Pty Ltd or its agent to be defective in material or workmanship.

A separate warranty is provided in respect of the engine for this machine. Refer to the engine warranty statement in the Engine Owner's Manual which has been included with this machine.

For domestic use, this warranty will apply for a period of 2 years from date of purchase. Warranty for commercial or industrial use is 90 days from the date of purchase. In the event of dispute, MTD Products Australia Pty Ltd will determine whether the machine was used for domestic, or commercial or industrial use.

All costs associated with claiming under this warranty must be borne by you, including transport costs incurred in the repair or replacement of any defective part.

This warranty excludes fair wear and tear and any damage caused by misuse or abuse. Parts such as Blades, Bump Knobs, Outer Spools, Cutting Line, Inner Reels, Starter Pulley, Starter Ropes, Drive Belts, Saw Blades, Guide Bars, Cultivator Tines, Spark Plugs, Carburettor Adjustments and Filters which can be subjected to use beyond their normal intended working capacity are also excluded.

This warranty is void if alterations are made to the machine without MTD Products Australia Pty Ltd prior written authority.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

IN ORDER TO MAKE A CLAIM UNDER THIS WARRANTY YOU WILL NEED TO TAKE YOUR PRODUCT AND YOUR PROOF OF PURCHASE TO AN AUTHORISED MTD DEALER. YOUR NEAREST MTD DEALER CAN BE FOUND at www.mtd.com.au. All SERVICING AND REPAIRS MUST USE GENUINE SPARE PARTS OR YOUR WARRANTY WILL BE VOID.

For your Record:

Retailers Name: Address:
Phone No: Model No:
Serial No: Date of Purchase:

MTD Products Australia Pty Ltd.

Postal Address: PO. Box 376 Dandenong. Vic. 3175

Business Address: 6 Zenith Road, Dandenong. Vic. 3175 and 97 Trade Street. Lytton.

Qld. 4178

Email Address: mtdservice@mtd.com.au Customer Service Phone: 1300 951 594

