

OPERATION

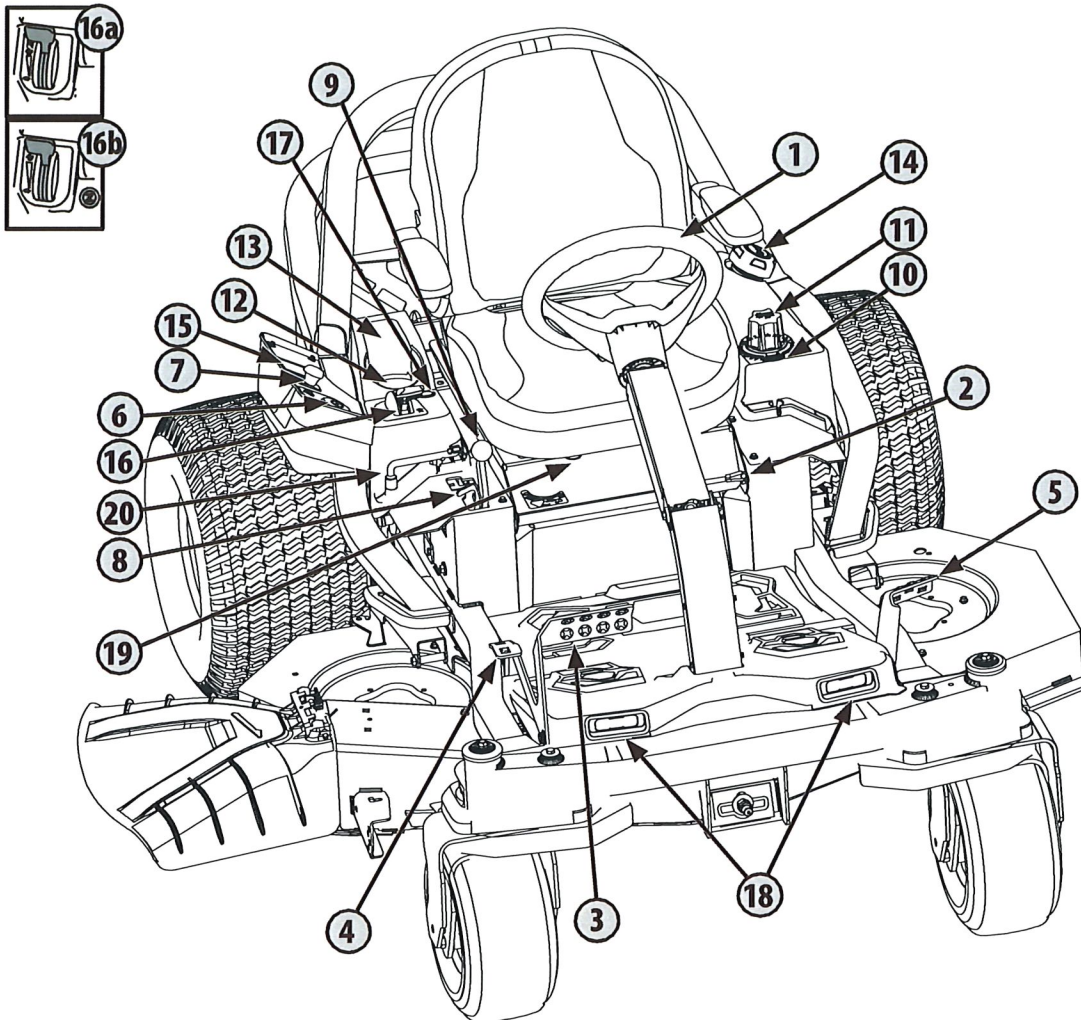


Figure 15

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.

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

1 Steering Wheel

The steering wheel is used to control the direction of the tractor.

2 Steering Column Adjustment Lever

The steering column adjustment lever is located on the left side of the steering column. To adjust the column pull up on the steering column adjustment lever and move the steering column up into the desired position. Release the steering column adjustment lever to secure the steering column in the desired position.



3 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 pressed, the faster the tractor will travel. The pedal will return to its original/neutral position when it is released.



4 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 pressed, the faster the tractor will travel. The pedal will return to its original/neutral position when it is released.



OPERATION



5 Deck Lift Pedal

The deck lift pedal is located on the front, left corner of the platform. The pedal is used in conjunction with the deck lift knob to raise and lower the mowing deck. Push forward on the deck lift pedal, rotate the deck lift knob to the desired height and release the deck lift pedal.

6 Ignition 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 counter-clockwise to the STOP  position.

⚠ CAUTION

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

NOTE: To prevent accidental starting and/or battery discharge, remove key from the ignition switch when tractor is not in use.

7 Power Take-Off (PTO)

The PTO switch is located on the RH console to the left of the hour meter/indicator panel.

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

The PTO switch must be in the "OFF" position when starting the engine.



8 Transmission Bypass Lever

The transmission bypass lever is located to the right of the operator's seat, next to the park brake lever. When engaged, the lever opens a bypass within the hydrostatic transmissions, which allows the tractor to be pushed short distances by hand. Refer to the Assembly section for additional instructions.



⚠ CAUTION

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

9 Park Brake Lever

The park brake lever is located to the right of the operator's seat, next to the transmission bypass lever. It is used to engage the parking brake when the tractor is at rest. Refer to the Driving the Tractor section of this manual for detailed instructions regarding the parking brake.



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

10 Deck Height Index

Each rotation represents a 1/4" (6.35 mm) change in deck height. Positions range from 1" (2.5 cm) to 4-1/2" (11.4 cm) at the highest point.

11 Deck Lift Knob

The deck lift knob is used in conjunction with the deck lift pedal to raise and lower the mowing deck. Push forward on the deck lift pedal, rotate the deck lift knob to the desired height and release the deck lift pedal.

12 Cup Holder

The cup holder is located on the top of the console.

13 Storage Tray

The storage tray is located to the rear of the console.

14 Fuel Tank Cap

Turn the fill cap counter-clockwise and pull upward to remove. The fuel cap is tethered to the tractor to prevent its loss. Do not attempt to remove the cap from the tractor. Fill tank to 1/2" (12.7 mm) below the bottom of the filler neck, allowing some space in the tank for fuel expansion. Do not overfill the tank.

Push the cap downward on the fuel tank fill neck and turn at least two clicks clockwise to tighten. Always re-install the fuel cap tightly onto the fuel tank after removing.

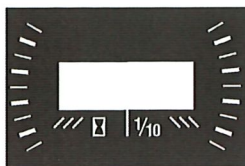
⚠ WARNING

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


OPERATION

15 Hour Meter & LCD Service Minder (If Equipped)

The hour meter & LCD service minder will remind the operator of maintenance intervals for changing the engine oil, air filter



service, low engine and low battery warnings. When the key is rotated out of the STOP position but is not in the START position, the hour meter & LCD service minder will briefly display the battery voltage, followed by the tractor's accumulated hours.

NOTE: When the ignition key is out of the STOP position the hourglass  symbol is illuminated/blinks to indicate it is recording the hours of tractor operation, regardless of whether the engine has been started.

CHANGE OIL

The LCD screen will alternate the letters "CHG", followed by "OIL", followed by "SOON", 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 Engine Operator's Manual.

LOW OIL

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

The LCD screen will alternate the letters "LO" followed by "OIL", followed by the meter's accumulated time, which indicates the engine has low oil pressure. This is common when starting an engine. The indicator will remain active until the engine sufficiently builds pressure after starting. If it remains on with the engine at full speed, and after a few minutes of operation, stop the tractor immediately and check the engine oil level and add as instructed in the Engine Operator's Manual. If the oil level is correct and the indicator persists, contact an authorized service dealer.

LOW BATTERY

At startup, the battery voltage will briefly display, then changes to accumulated hours. The letters "LO" followed by the letters "BATT" will display, 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 Assembly section of this manual or have the charging system checked by your local service dealer.

AIR FILTER SERVICE

The LCD screen will display the letters "CLN" followed by the letters "AIR", followed by "FILT", 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.

16 Throttle/Choke Control Lever or Throttle Control

NOTE: When set in a given position, a uniform engine speed will be maintained.

A. THROTTLE/CHOKE CONTROL LEVER (IF EQUIPPED)

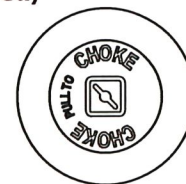
Push the throttle/choke control lever forward to increase the engine speed. The tractor is designed to operate with the throttle/choke control lever at full throttle (FAST) when the tractor is being driven and the mower deck is engaged. Pull the throttle/choke control lever rearward to decrease the engine speed. When starting the engine, push the control lever fully forward into the CHOKE position. After starting and warming the engine, move the control lever rearward until you feel it move past the choke detent. Throttle is not meant to control unit speed, throttle should remain in high speed while operating blades.

B. THROTTLE CONTROL (IF EQUIPPED)

Push the throttle control lever forward to increase the engine speed. The tractor is designed to operate with the throttle control lever at full throttle (FAST) when the tractor is being driven and the tractor deck is engaged. Pull the throttle control lever rearward to decrease the engine speed.

17 Choke Control (If Equipped)

The choke control determines the position of the engine choke. Pull the knob out to choke the engine; push the knob in to open the choke.



18 Headlights

The headlights are located on the front of the frame. The headlights are ON whenever the ignition key is rotated out of the STOP position and OFF when the ignition key is moved to the STOP position.

19 Seat Adjustment Lever

The seat adjustment lever is located under the seat. The seat adjustment lever allows for adjustment forward or backward of the operator's seat. Refer to the Assembly section for instructions on adjusting the seat position.

OPERATION

20 Multi-Tool

The multi-tool (a) is located on the front of the right console. The multi-tool (a) can be used as a deck lift lockout, to remove the footpan bolt, and can be used as a removal tool with the 1/2" socket end. See the Product Care section for more information on multi-tool (a) usage. See Figure 16.

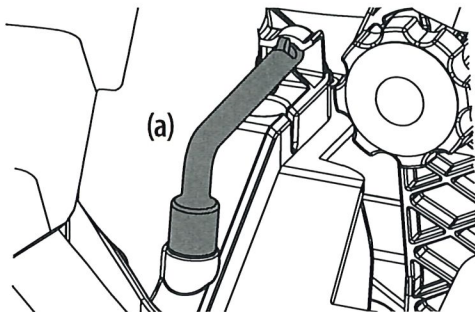


Figure 16

Operation

BEFORE OPERATING YOUR TRACTOR

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

SAFETY INTERLOCK SYSTEM

⚠ WARNING

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

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

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

- The engine will automatically shut OFF if the operator leaves the tractor's seat with the PTO switch in the ENGAGED (ON) position, regardless of whether the parking brake is engaged.

CHECKING THE SAFETY INTERLOCK CIRCUITS

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

1. Pull the PTO upward to the ENGAGED (ON) position. Momentarily turn the ignition switch to the START position; the engine should not crank.
2. With the tractor running move both drive pedals to the neutral position; then lift upward from the operator's seat. The engine should stop.
3. With both drive pedals in the neutral position and the parking brake engaged, engage the PTO. Lift upward from the operator's seat; the engine should stop.

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 interlock system is malfunctioning. Periodically check the functions of the interlock system for proper operation.

⚠ WARNING

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

NOTE: Refer to the Engine Operator's Manual for gasoline and oil fill-up instructions.

1. Operator must be sitting in the tractor seat.
2. Engage the parking brake by placing drive control pedals in neutral and pulling the parking brake lever back. See Figure 17.

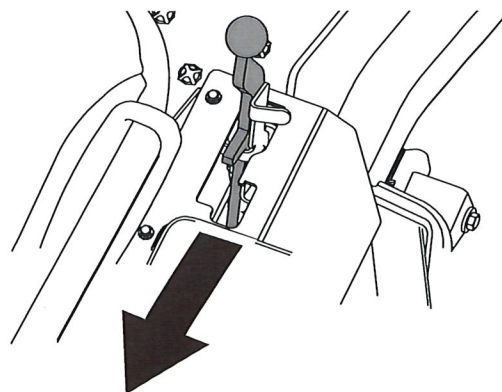


Figure 17

OPERATION

3. Make certain the PTO switch is in the disengaged (down) position.
4. Move the throttle control to midway between its SLOW and FAST positions.
5. Move the choke control into the CHOKE position (if equipped).

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

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

⚠ CAUTION

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

7. As the engine warms up, gradually push the choke control downward.

NOTE: Do not leave the 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.

8. Allow the engine to run for a few minutes at mid-throttle before putting the engine under load.
9. 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 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 gases. 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 one end of the red 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 black 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 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.

⚠ WARNING

Sharp turns can affect control of the tractor. ALWAYS slow the tractor before making sharp turns.

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 (a) forward until the desired speed is achieved. See Figure 18.

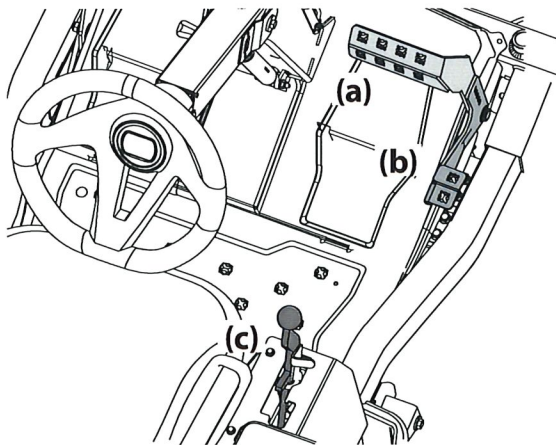


Figure 18

OPERATION

- To stop or slow down the tractor, take your foot off of the forward (a) or reverse drive (b) pedal. To lock the parking brake, place drive control pedals in neutral and pull the park brake lever (c) back. See Figure 18 on page 17.
- To travel in reverse, check that the area behind is clear then slowly push down on the reverse drive pedal (b) with the ball of your foot (NOT your heel) until the desired speed is achieved. See Figure 18 on page 17.

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 key.

REVERSE CAUTION MODE

The REVERSE CAUTION MODE (b) position of the ignition 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 (b). 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 (b):

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

- Start the engine as previously instructed.
- Turn the key from the NORMAL MOWING (a) position to the REVERSE CAUTION MODE (b) position of the ignition module. See Figure 19.

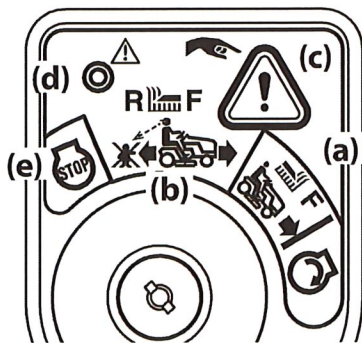


Figure 19

- Press the REVERSE PUSH BUTTON (c) at the top, right corner of the ignition module. The red indicator light (d) at the top, left corner of the ignition module will be ON while activated. See Figure 19.
- Once activated (indicator light ON), the tractor can be driven in reverse with the cutting blades (PTO) engaged.
- Always look down and behind before and while backing to make sure no children are around. After resuming forward motion, return key to the NORMAL MOWING (a) position. See Figure 19.
- The REVERSE CAUTION MODE (b) will remain activated until (see Figure 19):
 - The key is placed in either the NORMAL MOWING (a) position or STOP (e) position, or
 - The operator leaves the seat.

OPERATING THE PTO

Operate the PTO clutch as follows:

NOTE: During your tractor's initial break-in period, in order to engage the PTO and avoid engine stall, allow the engine to warm before engaging the PTO. Break-in period varies depending on your engine.

- Move the throttle control lever to the FAST position.
- Pull the PTO switch upward to the ENGAGED position.
- The operator must remain in the tractor seat at all times. If the operator should leave the seat without disengaging the PTO, the tractor's engine will shut off.
- The PTO clutch will not operate when the tractor is driving in the reverse direction without the use of the REVERSE CAUTION MODE. See REVERSE CAUTION MODE section.

Mowing

WARNING

To help avoid blade contact or a thrown object injury, keep bystanders, helpers, children, and pets at least 75' (23 meters) from the machine while it is in operation. Stop machine if anyone enters the area.

WARNING

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

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.

OPERATION

WARNING

Be careful when crossing gravel paths or driveways. Disengage the PTO and raise the deck to the highest position before crossing.

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

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

NOTE: The speed of the tractor will affect cut quality of the lawn. Mowing at full speed will adversely affect a high quality cut lawn. Control the ground speed with the drive pedals.

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

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

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

PRODUCT CARE

WARNING

Before cleaning, repairing, or inspecting, make certain the blade(s) and all moving parts have stopped. Turn off the engine, remove the key, disconnect the spark plug wire(s) and the negative battery cable to prevent unintended starting. Always wear safety glasses or safety goggles during operation and while performing an adjustment or repair to protect your eyes.

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

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

NOTE: Maintenance schedule continues onto the next page.

	Before Each Use	After First 5 Hours	Every 10 Hours	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Prior to Storing	See Engine Manual
Check/Clean Engine Intake Screens & Cooling Fans #	✓							✓	
Check/Clean Exhaust Manifold, Muffler Pipe, & Muffler Shields #	✓							✓	
Check/Clean Top and Underside of Deck, Under & Around Spindle Covers, Belt Area #	✓							✓	
Check/Clean Around Fuses, Wiring & Wiring Harnesses #	✓							✓	
Check/Clean Around Transmission, Axle & Fans #	✓							✓	
Check/Add/Change Transmission Fluid as needed							✓		
Check Air Filter for Dirty, Loose or Damaged Parts	✓								
Check Engine Oil Level	✓								
Clean Battery Terminals			✓					✓	
Grease All Lubrication Points			✓					✓	
Check Engine Intake Screen/Clean as Needed			✓					✓	
Check Blades/Sharpen or Replace as Needed			✓					✓	
Check Tire Pressure			✓					✓	
Check/Clean Underside of Deck	✓		✓						
Check Safety Interlock System			✓					✓	
Check Mower Blade Stop Time			✓					✓	
Inspect & Lube Deck Wheels				✓				✓	
Inspect & Lube Steering Joint				✓					
Check Deck Level/Pitch				✓				✓	

PRODUCT CARE

	Before Each Use	After First 5 Hours	Every 10 Hours	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Prior to Storing	See Engine Manual
Check Belts & Pulleys for Damage/Wear					✓				
Check That All Hardware is in Place & Secure						✓			
Check Engine Mounting Bolt Torque (Tighten to 325-450 in-lbs (37-50 N-m))		✓			✓			✓	✓
Check Blade Mount Nut Torque (Tighten to 70-90 ft-lbs (95-122 N-m))		✓			✓			✓	
Check Spark Plug Condition & Gap						✓		✓	✓
Engine Break-In Oil Change		✓							✓
Change Engine Oil					✓			✓	✓
Check Fuel System (Lines, Tank, Cap, Fittings)		✓			✓			✓	✓
Check Spark Arrestor		✓			✓			✓	✓
Replace Oil Filter					✓			✓	✓
Clean or Change Air Filter					✓				✓
Replace Fuel Filter					✓				✓
Have Valve Lash Checked & Adjusted*									✓

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

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

Post-Operation Tractor Care

After each operation of the tractor, to ensure safe operating conditions refer to Maintenance Schedule chart in this manual for proper tractor care.

⚠ WARNING

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

Cleaning the Underside of the Deck

DECK WASH SYSTEM (IF EQUIPPED)

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

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

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

1. Attach the nozzle adapter to a standard garden hose connected to a water supply.
2. Move the tractor to an area within reach of the hose where the dispersal of wet grass clippings is acceptable. Disengage the PTO, engage the park brake and stop the engine.
3. Pull back the lock collar (a) of the nozzle adapter (b) and push the nozzle adapter onto the deck wash nozzle (c). Release the lock collar to lock the nozzle adapter on the deck wash nozzle. See Figure 20.

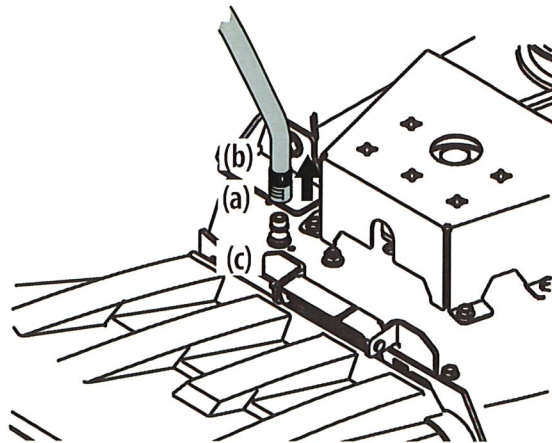


Figure 20

PRODUCT CARE

4. Turn on the water supply.
5. From the tractor operator's seat, start the engine and engage the PTO. Allow to run as needed. Disengage the PTO and stop the engine.
6. Turn off the water supply.
7. Pull back the lock collar of the nozzle adapter to disconnect the nozzle adapter from the deck wash nozzle.

Cleaning the Tractor

⚠ WARNING

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

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

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

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

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

- Keep both sides of transmission cooling slots, exhaust manifold, around fuses, all wiring and harnesses, muffler pipe, muffler shield, engine intake screens and cooling fins, etc., clear of grass clippings and leaves. See Figure 21.

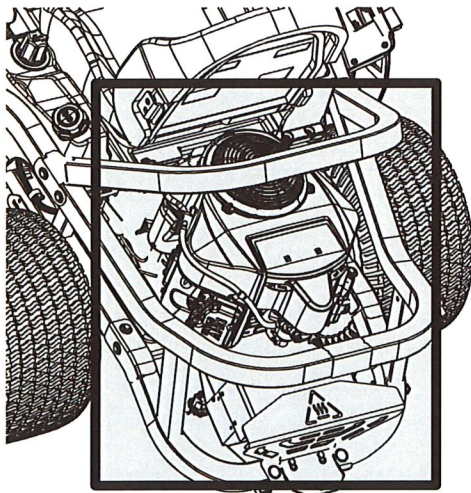


Figure 21

- Clean the top of the mower deck, under the spindle covers and belt area. See Figure 22.

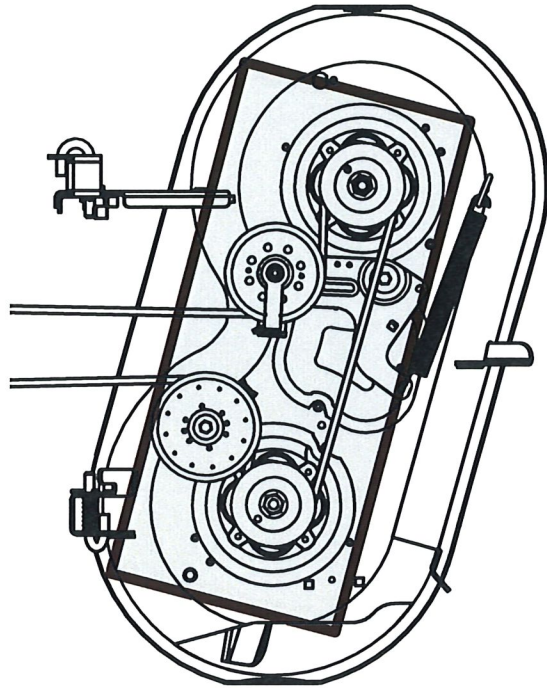
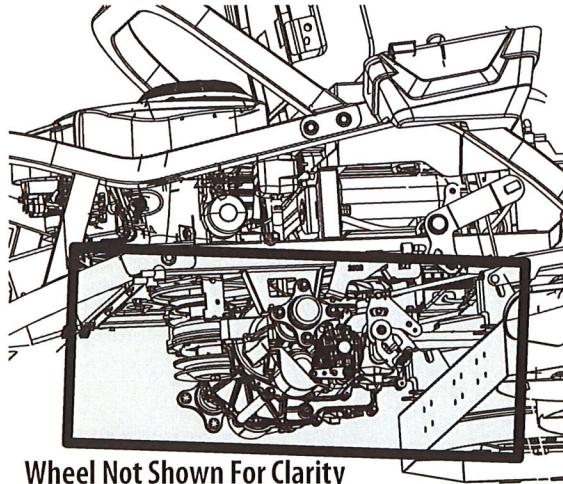


Figure 22

- Clean around and near the transmission, axle and the fan area. See Figure 23.



Wheel Not Shown For Clarity

Figure 23

- Debris can accumulate anywhere on the tractor, especially on horizontal surfaces. Additional cleaning may be necessary when mowing in dry conditions or when mulching.
- Fuel leaks/spills, oil leaks/spills and excess lubrication can also become collection sites for debris. Immediate repair and cleaning up oil or fuel spills can help reduce fire hazards.
- In addition to cleaning the tractor before operating and storing, do not attempt to mow unusually tall grass (10" (25.4 cm) or higher), dry grass (e.g., pasture) or piles of dry leaves. Dry grass or leaves may contact the engine exhaust and/or build up on the mower deck presenting a potential fire hazard.

PRODUCT CARE

Storing the Tractor

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

Maintenance

REMOVING THE FLOOR PANEL

⚠ WARNING

Do not operate tractor with floor panel removed.

The floor panel can be removed for maintenance, service and cleaning. To remove the floor panel:

1. Using the multi-tool or a 1/2" socket, remove the hex screw (a) that secures the floor panel in place. See 1 in Figure 24.

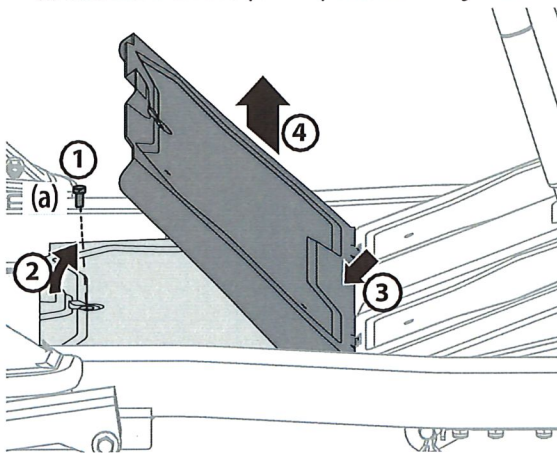


Figure 24

2. Carefully lift the rear of the floor panel. See 2 in Figure 24.
3. Slide the floor panel rearward to free the front of the floor panel. See 3 in Figure 24.
4. Lift it off the tractor. See 4 in Figure 24.
5. To place the floor panel back on the tractor, carefully put the floor panel back in place and re-install the hex screw removed in Step 1. Torque to 108-132 in-lbs (12-15 N-m).

ENGINE

⚠ WARNING

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

Refer to the Engine Operator's Manual for all engine 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 dealer.

CHANGING THE ENGINE OIL

⚠ WARNING

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

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

To complete an oil change, proceed as follows:

1. Locate the oil drain hose (a) on the side of the engine. See Figure 25.
2. Place an appropriate oil collection container with at least a 2.5 quart (2.37 liter) capacity below the opening of the oil drain hose, to collect the used oil. Remove the oil fill cap/dipstick (b) from the oil fill tube. See Figure 25.
3. While holding the free end of the oil drain hose over the oil collection container, unscrew the square head hose plug (c) from the end of the oil drain hose. See Figure 25. Drain the engine oil into the collection container.

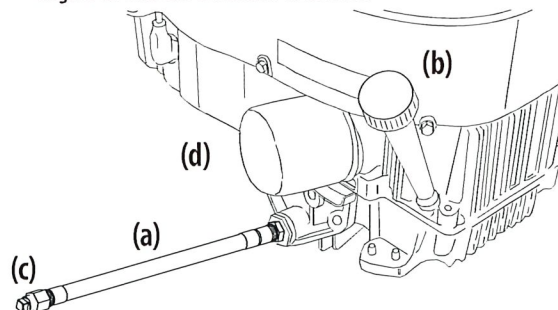


Figure 25

4. After draining the oil, wipe any residual oil from the oil drain hose. Thread the square head hose plug into the oil drain hose fitting and tighten the square head hose plug to 16 ft-lbs (22 N-m).
5. Remove the oil filter (d) and drain into the collection container. See Figure 25.
6. Replace the oil filter (d) and refill the engine with new oil as instructed in the Engine Operator's Manual. See Figure 25.

NOTE: Place an absorbent towel beneath the oil filter to keep oil off the clutch.

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

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

PRODUCT CARE

LUBRICATION

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

SPARK ARRESTOR MAINTENANCE (IF EQUIPPED)

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

GREASE POINTS

Front Wheels

Each of the front wheel axles is equipped with grease fittings. See Figure 26. Lubricate with a No. 2 multi-purpose grease applied with a grease gun after every 25 hours of tractor operation.

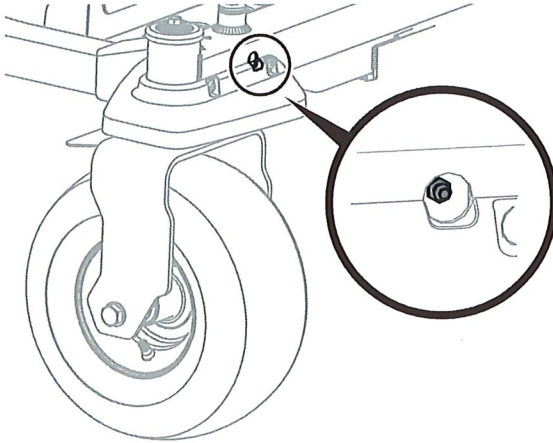


Figure 26

Steering Joint

The steering joint is equipped with two grease fittings. See Figure 27. Lubricate with a No. 2 multi-purpose grease applied with a grease gun after every 25 hours of tractor operation.

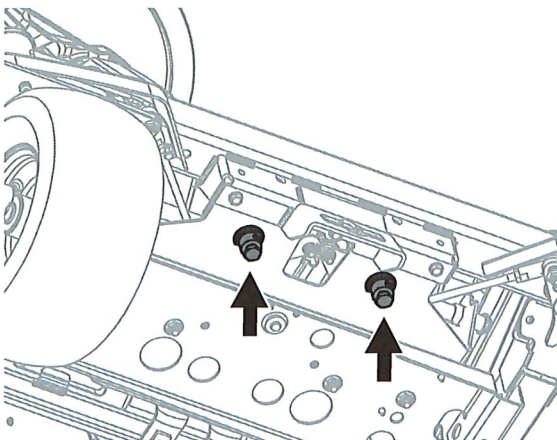


Figure 27

TIRES

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

Observe the following guidelines:

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

HYDROSTATIC TRANSMISSION

Your zero-turn tractor is equipped with two hydrostatic pumps/transaxles. Under normal operating conditions, the oil level does not need to be checked.

Changing the Transmission Oil

Please see your authorized service dealer for transmission oil changes.

Off-Season Storage

If your tractor is not going to be operated for an extended period of time (30 days or more), the tractor should be prepared for storage. Store the tractor in a dry and protected location. If stored outside, cover the tractor (including the tires) to protect it from the elements. The procedures outlined below should be performed whenever the tractor is placed in storage.

1. Change the engine oil and filter following the instructions provided in this manual as well as the Engine Operator's Manual provided with this tractor.

⚠ WARNING

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

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

PRODUCT CARE

- c. Emptying the fuel system for storage of more than 90 days:
 - Prior to putting the tractor in storage, monitor fuel consumption with the goal of running the fuel tank empty.
 - Run the engine until it begins to stall. Use the choke to keep the engine running until all fuel in the carburetor has been exhausted.
 - Referring to the Engine Operator's Manual, drain the fuel from the carburetor bowl.

3. Clean the engine and the entire tractor thoroughly.

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

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

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

5. Lubricate all lubrication points.

Removing the Tractor from Storage

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

Adjustments

ADJUSTING DECK LIFT PEDAL

1. Set the deck to the transport position.
2. Remove the hex bolt, washer and hex nut near the center of the pedal assembly. See Figure 28.

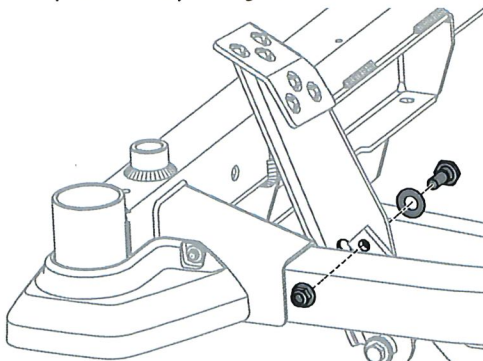


Figure 28

3. Position the pedal to the optimal position based on operator preference. See Figure 29.

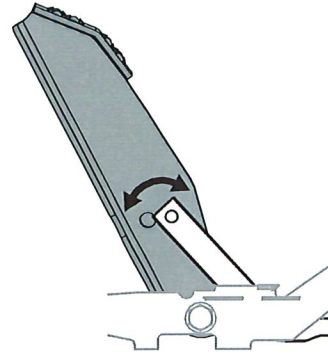


Figure 29

4. Re-install the hardware previously removed and torque the nut to 28-35 ft-lbs (38-47 N-m). See Figure 28.

DECK LEVELING

If the cutting deck appears to be mowing unevenly, leveling adjustments can be performed.

⚠ WARNING

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

⚠ WARNING

Tractor blades are sharp. Wrap the blade or wear gloves, and use extra caution when servicing them.

LEVELING THE DECK (SIDE-TO-SIDE)

1. Place the deck lift knob in a middle mowing position and rotate both outside blades so 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 are not, proceed to the next step.
3. Locate the adjustment bolts (a) on the left and right side of the deck. See Figure 30.
4. Loosen, but do not remove, the jam nuts (b) on the adjustment bolt. Adjust either the right or left adjustment bolt up or down as necessary until the side-to-side heights are equal. See Figure 30.

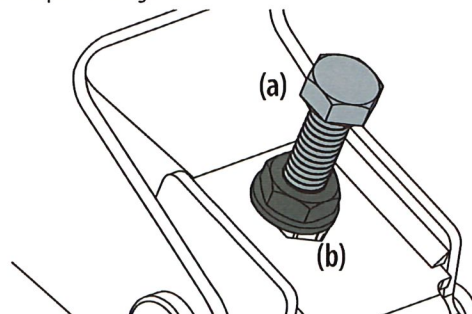


Figure 30

PRODUCT CARE

NOTE: Continue to check the front-to-back leveling as you make the side-to-side adjustment as the side-to-side adjustment can affect the front-to-back level. If necessary, adjust front-to-back.

5. When proper adjustment is achieved, re-tighten the jam nuts (b). Tighten to 57 ft-lbs (77 N-m). See Figure 30 on page 25.

LEVELING THE DECK (PITCH/FRONT-TO-REAR)

The front of the deck should be between 1/16-1/4" (2-6 mm) 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 knob 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 1/16-1/4" (2-6 mm) 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 jam nut (a) then tighten (thread inward) the inner nut (b) against the front hanger bracket. See Figure 31. When proper adjustment is achieved, re-tighten the outer jam nut (a) and replace the end cap.

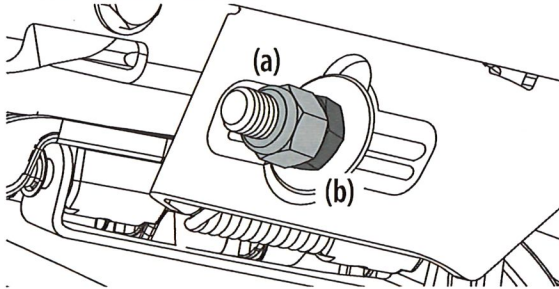


Figure 31

6. To **lower** the front of the deck, remove the end cap, loosen the outer jam nut (a) then loosen (thread outward) the inner nut (b), away from the front hanger bracket. See Figure 31. When proper adjustment is achieved, re-tighten the outer jam nut (a) to 57 ft-lbs (77 N-m) and replace the end cap.

ADJUSTING THE DECK WHEELS

⚠ WARNING

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

NOTE: The deck wheels are an anti-scalp feature of the deck and are not designed to support the weight of the cutting deck. The deck wheels should be approximately 1/4-1/2" (6.35-12.7 mm) above the ground when the deck is set in the desired height setting. To adjust the deck wheels, see the Assembly section for instructions.

Service

ELECTRICAL SYSTEM

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

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

RELAYS AND SWITCHES

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

PARK BRAKE ADJUSTMENT

If the tractor does not come to a complete stop when the control pedals are in the neutral position, engaging the park brake, or if the tractor's rear wheels can roll with the park brake engaged (and the hydrostatic relief valve open), the brake is in need of adjustment. See your authorized dealer to have the brake properly adjusted.

DECK REMOVAL

Remove the tractor deck from the tractor as follows:

1. Move the tractor to a level surface, disengage the PTO, stop the engine, place the drive pedals in the neutral position and engage the park brake.
2. There are two methods for removing the belt, to remove the belt by releasing belt tension go on to Step 3, to remove the belt by rolling the belt off the PTO pulley skip ahead to Step 4.

⚠ WARNING

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

3. Releasing belt tension with the idler pulley:
 - a. Using the deck lift pedal and knob, 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 32 on page 27.
 - b. Working from the middle of the tractor, pivot the idler bracket (a) and movable idler pulley (b) rearward just far enough to lift the belt up and over the spindle pulley. See Figure 32 on page 27.

PRODUCT CARE

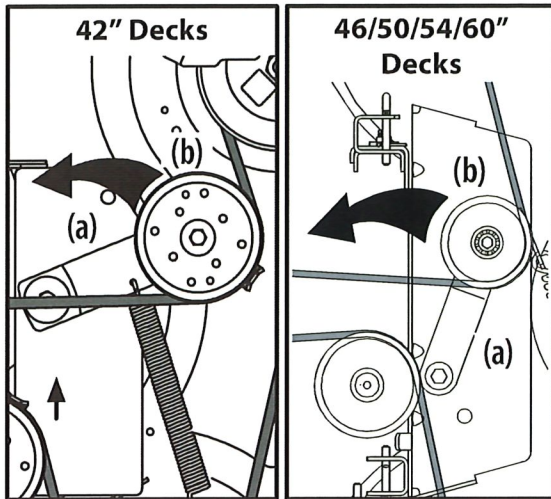


Figure 32

- c. From beneath the rear of the tractor, slide the belt off of the PTO pulley on the bottom of the engine.
- d. Lower the deck into the lowest mowing position.
- e. Skip ahead to Step 5.
4. Rolling the belt off the PTO pulley:
 - a. 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.
 - b. Sitting behind the tractor facing forward, reach beneath the tractor to grasp the belt at the front of the PTO pulley.
 - c. 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.

- d. While still holding the PTO belt (a) downward, continue turning the PTO pulley (b) until the PTO belt (a) is rolled off the PTO pulley (b). See Figure 33.

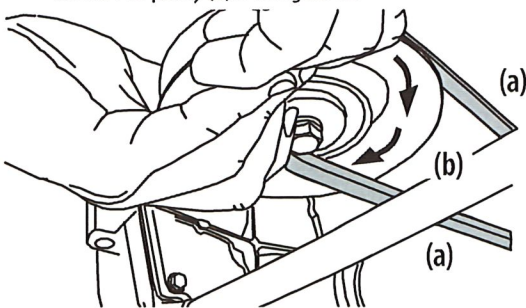


Figure 33

- e. Lower the deck into the lowest mowing position.
- f. Move on to Step 5.

⚠ WARNING

The deck lift on tractors with the deck lift knob is spring-assisted and under tension. Injury can occur if spring-assisted deck lift is released suddenly. Always use the multi-tool to secure the deck lift in place.

5. Use the deck lift pedal and deck lift knob to place the deck in the lowest position and use the multi-tool (a) to lock the deck lift components in place as shown in Figure 34.

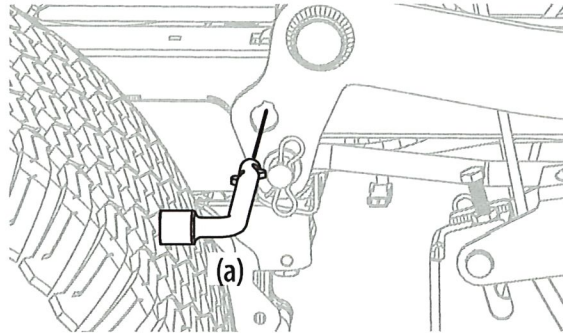


Figure 34

- a. Remove the two bow-tie pins (a) from the clevis pins (b) that secure the lift link brackets (c) to the rear deck lift brackets (d) on the deck. Remove the clevis pins (b). See Figure 35.

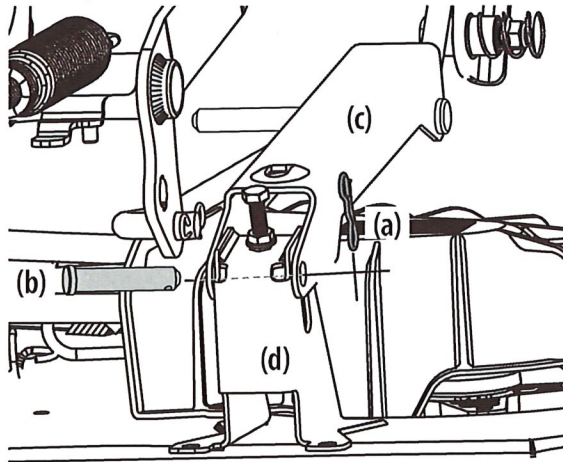


Figure 35

- b. Remove the third bow-tie pin (a) from the clevis pin (b) that secures the front deck control rod (c) to the front deck lift bracket (d). Remove the clevis pin (b). See Figure 36.

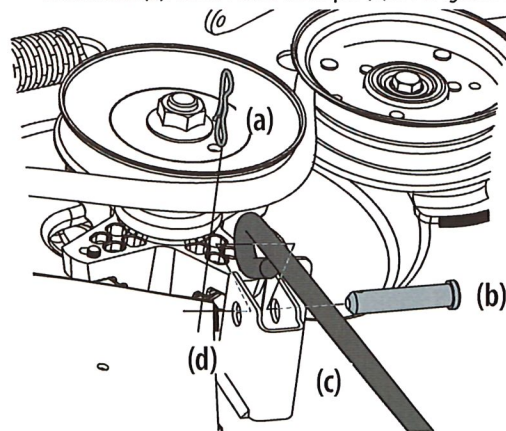


Figure 36

- c. Carefully maneuver the deck out from beneath the tractor.

PRODUCT CARE

DECK INSTALLATION

Install the deck on the tractor as follows:

1. Carefully maneuver the deck under the tractor from the right side, lining up the deck hanger brackets and the deck lift arms on deck lift rod/deck release pin tractors and align the lift link brackets and front deck control rod with the deck lift brackets on three-pin tractors.
2. Once the deck is under the tractor, move the deck lift 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.
3. Re-install the applicable hardware for your tractor.
4. 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.
5. 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.
6. 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.
7. 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.

8. Pull the right side of the PTO belt rearward and place the narrow V-side of the PTO belt into the PTO pulley. See Figure 33 on page 27.
9. While holding the PTO belt and PTO pulley together, rotate the PTO pulley to the left (see Figure 33 on page 27). Continue holding and rotating the PTO pulley and PTO belt until the PTO 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 (a) and left idler pulley (b). Refer to Figure 37 for 42" decks, Figure 38 for 46" decks, Figure 39 for 50" and 54" decks and Figure 40 on page 29 for 60" decks.

NOTE: Take note of the position of the belt guards (c) 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 (a & b) and the spindle pulleys (d).

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

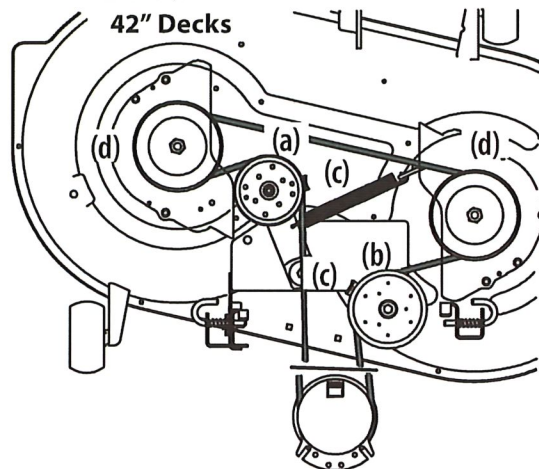


Figure 37

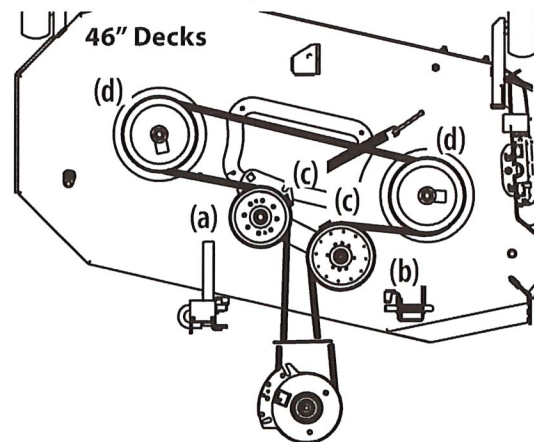


Figure 38

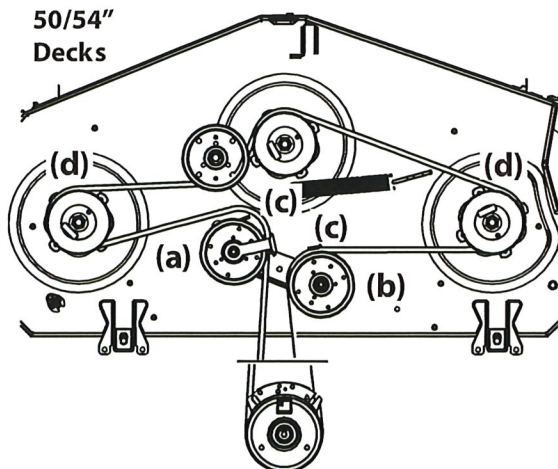


Figure 39

PRODUCT CARE

60" Decks

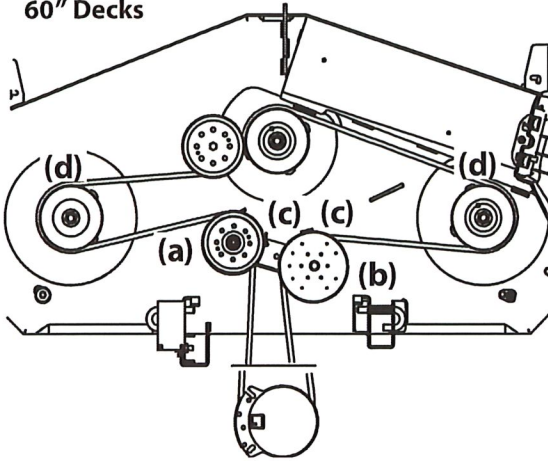


Figure 40

Tractor Blade Care

⚠ WARNING

Tractor blades are sharp. Wrap the blade or wear gloves and use extra caution when servicing them.

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 15/16" wrench to hold the hex nut on top of the spindle assembly when loosening the hex nut (a) and washer (d)* securing the blade (b). A block of wood (c) may be placed between the deck housing and the cutting edge of the blade (b) to help in breaking loose the hex nut (a) and washer (d)*. See Figure 41.

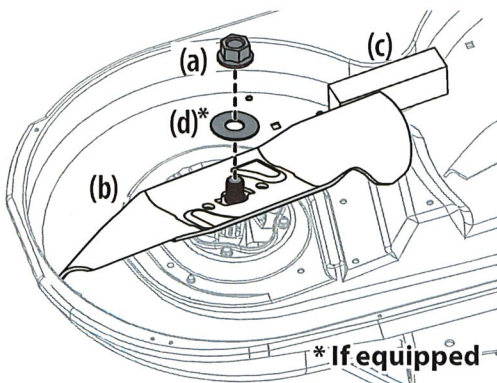


Figure 41

3. When re-installing the blades, be sure of the following (see Figure 41):

- a. Blades (b) are installed so wings are pointing upward toward the top of the deck.

NOTE: When replacing or installing the blades, be sure to install with the side marked "Bottom" or "Grass Side" (or with a part number stamped on it) facing the ground when mower is in operating position.

- b. Washer (d)* is placed between bottom of blade (b) and hex nut (a).

IMPORTANT! Align "S" shaped cutout with matching "S" shape on spindle for secure fit.

4. Tighten the hex nuts (a) to 70-90 ft-lbs (95-122 N-m).
5. Re-install 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 tractor when the throttle is on and the speed control pedals are in the neutral position. If your tractor creeps, see an authorized service dealer.