

OPERATION

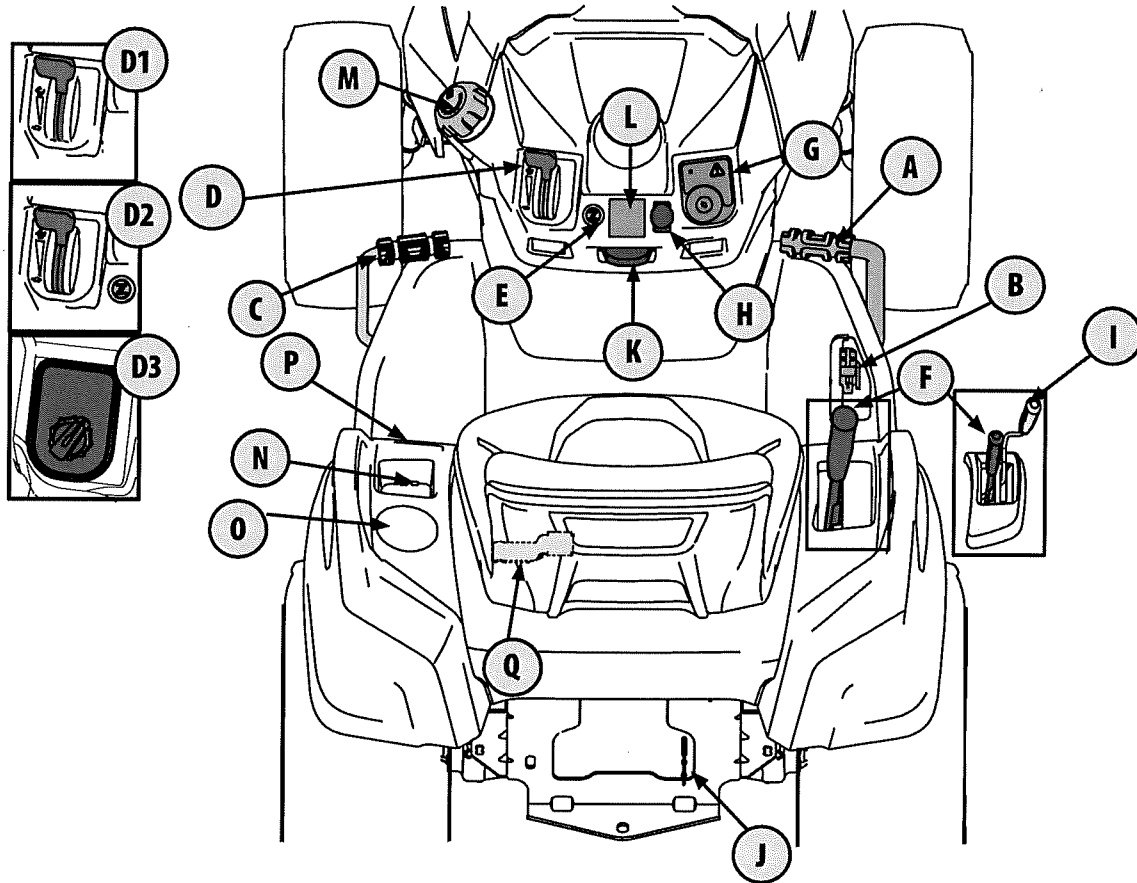


Figure 24

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.

A. FORWARD DRIVE PEDAL

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

B. REVERSE DRIVE PEDAL

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

C. BRAKE PEDAL

Depress the brake pedal while the tractor is in use to stop the tractor and for setting the park brake.

NOTE: The brake pedal must be fully depressed to start the tractor. Refer to Safety Interlock System for more information.

D. THROTTLE/CHOKE CONTROL LEVER, THROTTLE CONTROL, OR ELECTRONIC GOVERNOR CONTROL

- 1. 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.
- 2. 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.

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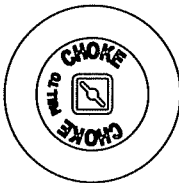
3. Electronic Governor Control (If equipped) - When set in a given position, a uniform engine speed will be maintained. The electronic governor control has various inputs for maintaining engine speed. Use CUT setting for optimal cutting performance in normal cutting conditions. Use POWER CUT setting for optimal cutting performance in heavy cutting conditions.

NOTE: If the tractor is equipped with an Electronic Governor Control, the tractor can be started at any speed setting along the dial and will automatically adjust to the desired engine speed setting.

NOTE: It may take a few seconds after starting for the engine to adjust to the proper engine speed. This is normal.

E. 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. If equipped, Choke Control will be paired with a Throttle Control (D2). When pulled outward the Choke Control closes the choke for cold starting. Once started always run the engine with the Choke Control pushed all the way inward.



F. DECK LIFT LEVER

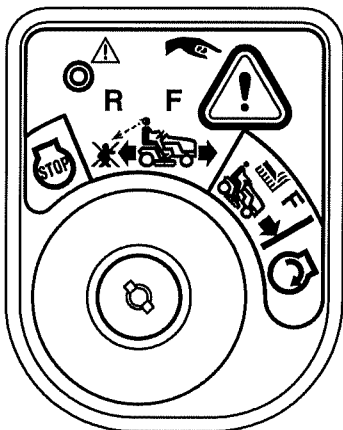
The deck lift lever is used to raise and lower the deck. Pull the lever to the left out of the index notch and push downward to lower the deck, or pull upward to raise the deck. When the desired height is attained, move the lift lever to the right until fully engaged in the index notch.

G. IGNITION SWITCH TURN-KEY START (IF EQUIPPED)

⚠ WARNING

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

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



⚠ WARNING

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

PBS (PUSH BUTTON START)/SERVICE MINDER & HOUR METER (IF EQUIPPED)

⚠ WARNING

Never leave a running tractor unattended. Always disengage PTO, set park brake, stop engine, and remove the key.

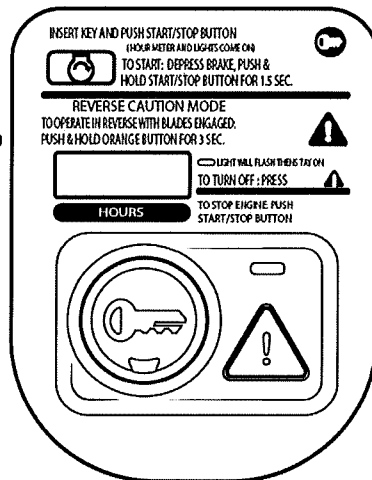
NOTE: If the REVERSE CAUTION MODE button is depressed during starting, the starting sequence is aborted and needs to be restarted.

To stop the engine, press or remove the ignition key.

When the ignition key is inserted and pressed for less than 0.5 seconds, the LCD Service Minder & Hour Meter will briefly display the battery voltage, followed by the tractor's accumulated hours.

NOTE: Hours of tractor operation are recorded only when the engine is running.

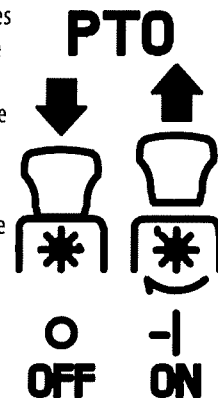
The LCD Service Minder will remind the operator of maintenance intervals for changing the engine oil, air filter service, low engine oil and low or high battery warnings.



H. POWER TAKE-OFF (PTO)(BLADE ENGAGE) SWITCH (ELECTRIC PTO) (IF EQUIPPED)

The PTO (Blade Engage) switch operates the electric PTO clutch mounted on the bottom of the engine crankshaft. Pull the switch knob outward to engage the PTO clutch, or push the knob inward to disengage the clutch.

The PTO (Blade Engage) switch must be in the OFF position when starting the engine. See Engaging the PTO (Blade Engage) (Electric PTO tractors) section for information and instructions on using the PTO.



OPERATION

I. PTO (BLADE ENGAGE) LEVER (MANUAL PTO)

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

J. TRANSMISSION BYPASS ROD

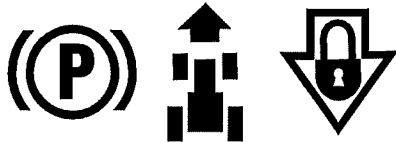
When engaged, the rod opens a bypass within the hydrostatic transmission, which allows the tractor to be pushed short distances by hand. Refer to the Assembly section for instructions on using the bypass feature.

⚠ CAUTION

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

K. PARK BRAKE/CRUISE CONTROL LEVER

The park brake/cruise control lever is used to engage the park brake and the cruise



control. Refer to the Driving the Tractor section of this manual for detailed instructions regarding the park brake.

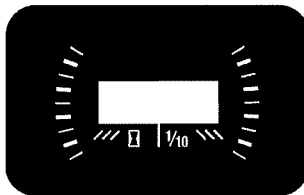
NOTE: The park brake must be set if the operator leaves the seat with the engine running or the engine will automatically shut off.

NOTE: Cruise control CANNOT be engaged at the tractor's fastest ground speed.

L. HOUR METER

LCD SERVICE MINDER & HOUR METER (IF EQUIPPED)

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.



When the key is rotated out of the STOP position but is not in the START position, the LCD Service Minder & Hour Meter 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, 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 Charging the Battery 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.

M. FUEL TANK CAP

Turn the fuel cap at least two clicks counter-clockwise and pull upward to remove. The fuel cap is tethered to the fuel tank to prevent its loss. Do not attempt to remove the cap from the fuel tank. 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. The fuel tank holds approximately 3 gallons (11.35 L) of gasoline.

Push the cap downward on the fuel tank filler 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.

N. STORAGE TRAY

The storage tray is located to the left of the operator's seat.

O. CUP HOLDER

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

OPERATION

P. DIFFERENTIAL LOCK PEDAL (IF EQUIPPED)

Activating the differential lock increases traction by maintaining equal wheel speed on the rear tires. See Using the Differential Lock section for more information on using the differential lock.

Q. SEAT ADJUSTMENT LEVER

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.

HEADLIGHTS (NOT SHOWN)

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

On PBS tractors the lights are ON whenever the PBS module is on. Headlights can be activated for 15 seconds without being on the seat by pressing the ignition key once. To keep the headlights active you can sit in the seat or start/run the engine.

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 safety interlock system should ever malfunction, do not operate the tractor. Contact an authorized service dealer.

- The safety interlock system prevents the engine from cranking or starting unless the park brake is engaged or the operator is in the seat and the brake pedal is fully depressed, with the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever in the disengaged (OFF) position.
- The engine will automatically shut off if the operator leaves the seat before engaging the park brake.

- The engine will automatically shut off if the operator leaves the tractor's seat with the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever in the ENGAGED (ON) position, regardless of whether the park brake is engaged.
- With the ignition key in the NORMAL MOWING position, the electric PTO (Blade Engage) Clutch will automatically shut off if the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever is moved into the engaged (ON) position with the drive pedal in position for reverse travel.

CHECKING THE SAFETY INTERLOCK CIRCUITS

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

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

STARTING THE ENGINE

CAUTION

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

Continue for turn-key ignitions, skip ahead to the PBS Ignition section for Push-Button Start ignitions.

Turn-Key Ignition with Separate Throttle and Choke Control

1. Insert the ignition key into the ignition switch.
2. Place the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever in the OFF position.
3. Engage the tractor's park brake.
4. Engage the choke control (if equipped).

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

5. Move the throttle control lever to midway between the FAST and SLOW positions.

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

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.

OPERATION

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, disengage the choke control. Do not use the choke control to enrich the fuel mixture, except as necessary to start the engine.
8. Allow the engine to run for a few minutes at mid-throttle before putting the engine under load.

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

9. Observe the hour meter/indicator panel. If the battery indicator light or oil pressure light comes on, immediately stop the engine. Have the tractor inspected by your authorized service dealer.

NOTE: There will be no oil pressure when the engine is not running and this may be indicated by oil pressure light.

Turn-Key Ignition with Throttle/Choke Control

1. Insert the ignition key into the ignition switch.
2. Place the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever in the OFF position.
3. Engage the tractor's park brake.
4. Push the throttle control lever upward, past the detent, to engage the choke.

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

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

CAUTION

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

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

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

8. Observe the hour meter/indicator panel. If the battery indicator light or oil pressure light comes on, immediately stop the engine. Have the tractor inspected by your authorized service dealer.

NOTE: There will be no oil pressure when the engine is not running and this may be indicated by oil pressure light.

Turn-Key Ignition with Electronic Governor Control

1. Insert the ignition key into the ignition switch.
2. Place the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever in the OFF position.
3. Engage the tractor park brake.
4. Set the Electronic Governor Control dial to the desired engine speed setting.

NOTE: If the tractor is equipped with an Electronic Governor Control, the tractor can be started at any speed setting along the dial and will automatically adjust to the desired engine speed setting.

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

NOTE: It may take a few seconds after starting for the engine to adjust to the proper engine speed. This is normal.

PBS Ignition

1. Place the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever in the OFF position and sit in the seat. You must be in the seat for the PBS ignition to work.
2. Insert the ignition key.
3. Engage tractor park brake.
4. Move the throttle into the FAST position.
5. Press and hold the ignition key. After the engine starts, release the key. It will return to an extended position.

NOTE: When operating the tractor be certain that the throttle control lever is always in the FAST position. Operating with the throttle at less than full throttle may lead to shortened battery life.

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.

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

STOPPING THE ENGINE

1. If the blades are engaged, place the PTO (Blade Engage) Switch or PTO (Blade Engage) Lever in the OFF position.
2. Engage the tractor park brake.
3. Place the throttle control to midway between the FAST and SLOW positions.
4. Turn the ignition key counter-clockwise to the STOP position, or on PBS units press or remove the ignition key.

Driving the Tractor

⚠ WARNING

Keep all movement of the Forward and Reverse drive pedals and brake pedal slow and smooth. Abrupt movement of the drive pedals or brake pedal can affect the stability of the tractor and could cause the tractor to flip over, which may result in serious injury or death to the operator.

1. Depress the brake pedal to release the park brake. Move the throttle into the FAST position.
2. To travel FORWARD, slowly depress the forward drive pedal (a) forward until the desired speed is achieved. See Figure 25.
3. To travel in REVERSE, check that the area behind is clear then slowly depress the reverse drive pedal (b) until the desired speed is achieved. See Figure 25.

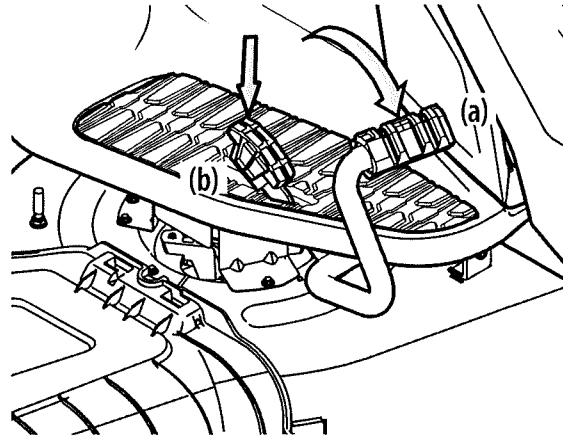


Figure 25

⚠ WARNING

- Sharp turns can affect control of the tractor. ALWAYS slow the tractor before making sharp turns.
- Do not leave the seat of the tractor without first placing the PTO (Blade Engage) Switch or Lever in the DISENGAGED (OFF) position and engaging the park brake. If leaving the tractor unattended, also turn the engine off and remove the ignition key.

Engaging the Park Brake

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

To set the park brake:

1. Depress the brake pedal completely down with your left foot and hold it in that position.
2. Depress the park brake/cruise control lever and hold it in that position.
3. Remove your foot from the brake pedal.
4. Release pressure from the park brake/cruise control lever.

After completing Step 3, the brake pedal should remain in the down position. If it doesn't, the park brake is not engaged. Repeat Steps 1-4 to engage the park brake.

To disengage the park brake, depress the brake pedal.

Setting the Cruise Control

⚠ WARNING

Do not attempt to engage the cruise control lever while traveling in reverse. The cruise control will not engage while traveling in reverse.

To set the cruise control:

1. Depress the forward drive pedal with your right foot until the desired speed is achieved.

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2. Press down on the park brake/cruise control lever and hold it in that position.
3. Remove your foot from the forward drive pedal.
4. Release pressure from the park brake/cruise control lever.

The forward drive pedal should remain in the down position and the tractor will maintain the same forward drive speed. If it doesn't, the cruise control is not engaged. Repeat Steps 1-4 again to engage the cruise control.

To disengage the cruise control, lightly depress the forward drive pedal or the brake pedal.

Reverse Caution Mode

REVERSE CAUTION MODE (TURN-KEY IGNITION)

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

NOTE: Mowing in reverse is not recommended.

⚠ WARNING

Use extreme caution while operating the tractor in the REVERSE CAUTION MODE. Always look down and behind before and while backing. Do NOT operate the tractor 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 previously instructed.
2. Turn the ignition key from the NORMAL MOWING (a) position to the REVERSE CAUTION MODE (b) position of the ignition switch. See Figure 26.

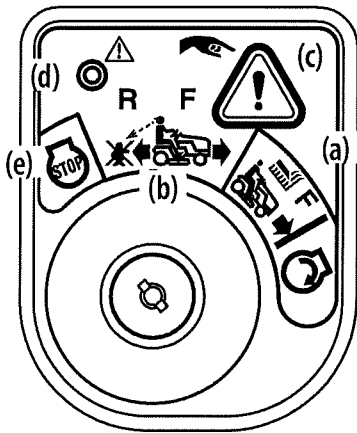


Figure 26

3. Press and hold the REVERSE CAUTION MODE BUTTON (c) at the top, right corner of the ignition module for 3 seconds. The red indicator light (d) at the top, left corner of the ignition module will be ON while activated. See Figure 26.

4. Once activated (indicator light ON), the tractor can be driven in reverse with the PTO (Blade Engage) Lever in the engaged (ON) position.
5. Always look down and behind before and while backing up slowly to make sure no children are around. After resuming forward motion, return key to the NORMAL MOWING (a) position to return to normal mowing operation. See Figure 26.

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

- The key is placed in either the NORMAL MOWING (a) position or STOP (e) position. See Figure 26.
- The operator leaves the seat (electric PTO)/the park brake is set (manual PTO).

REVERSE CAUTION MODE (PBS IGNITION)

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

NOTE: Mowing in reverse is not recommended.

⚠ WARNING

Use extreme caution while operating the tractor in the REVERSE CAUTION MODE. Always look down and behind before and while backing. Do NOT operate the tractor 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 above.
2. Press the REVERSE CAUTION MODE button and hold for 3 seconds. The indicator light will flash for 3 seconds and will stay on when the REVERSE CAUTION MODE is activated. See Figure 27.
3. The indicator light above the REVERSE CAUTION MODE button will be ON while activated. See Figure 27.

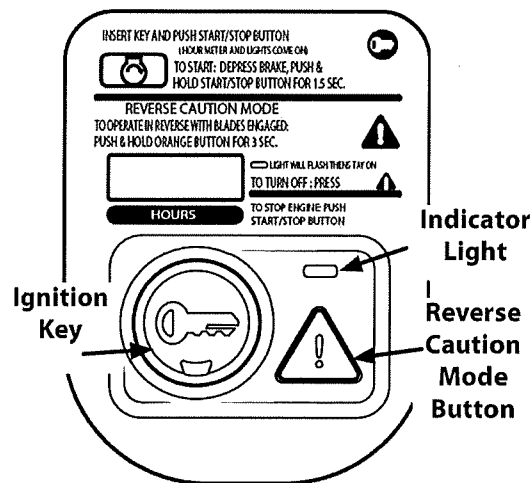


Figure 27

OPERATION

- Once activated (indicator light ON), the tractor can be driven in reverse with the cutting PTO (Blade Engage) Lever in the engaged (ON) position.
- Always look down and behind before and while backing to make sure no children are around. After resuming forward motion, press the REVERSE CAUTION MODE button to return to NORMAL MOWING.
- The REVERSE CAUTION MODE will remain activated until:
 - The REVERSE CAUTION MODE button is pressed again.
 - The ignition key is pressed or removed.
 - The operator leaves the seat.

Engaging the PTO (Blade Engage)(Electric PTO tractors)

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

- Move the throttle to the FAST position.
- Pull the PTO (Blade Engage) Switch outward into the engaged (ON) position. See H in Figure 24 on page 15.

NOTE: When operating the tractor be certain that the throttle is always in the FAST position. Operating with the throttle at less than full throttle may lead to premature battery wear and a poor quality cut.

- To disengage the PTO (Blade Engage), push the PTO (Blade Engage) Switch inward to the disengaged (OFF) position.

Engaging the PTO (Blade Engage)(Manual PTO tractors)

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

- Move the throttle to the FAST position.
- Push the PTO (Blade Engage) Lever forward into the engaged (ON) position. See Figure 28.

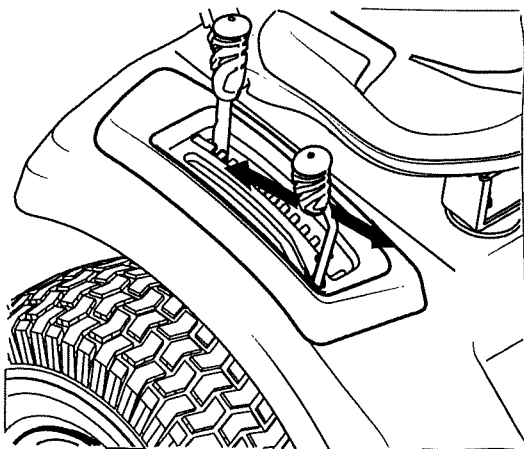


Figure 28

NOTE: When operating the tractor be certain that the throttle is always in the FAST position. Operating with the throttle at less than full throttle may lead to premature battery wear and a poor quality cut.

- To disengage the PTO (Blade Engage), push the PTO (Blade Engage) Lever forward and to the right, out of the locked position, then release the lever into the disengaged (OFF) position.

Mowing

⚠ WARNING

To help avoid blade contact or a thrown object injury, keep bystanders, helpers, children, and pets at least 75 feet (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.

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

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

NOTE: The speed of the tractor will affect the quality of the tractor cut. Mowing at full speed will adversely affect the cut quality.

- Your tractor is designed to cut normal residential grass of a height no more than 10" (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.

OPERATION

- Do NOT attempt to mow heavy brush and weeds or extremely tall grass. Your tractor is designed to mow lawns, NOT clear brush.
- Keep the blades sharp and replace the blades when worn.
- When approaching the other end of the strip, slow down or stop before turning. A three point turn is recommended.
- Align the tractor 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 park brake.
- Shut engine off and remove the ignition key.
- Doing so will minimize the possibility of having your lawn "browned" by hot exhaust from your tractor's running engine.

Using the Differential Lock (If equipped)

WARNING

- When the differential lock is on, be sure to allow for a larger turning radius and greater steering effort.
- Engage the differential lock only when the vehicle is stationary. Do not use the differential lock when traveling downhill.
- With or without the differential lock engaged, all Safe Operation Practices described in this manual must be followed.

NOTE: The system should only be used when poor traction is encountered. It should be disengaged when traveling on solid surfaces.

In some instances, the tractor may be driven in slippery or low-traction situations and it may be necessary to activate the differential lock. To use the differential lock proceed as follows:

1. Stop the motion of the tractor.
2. Depress the differential lock pedal to engage the differential lock.

NOTE: The differential lock only works while the pedal is depressed.

NOTE: Engagement may be delayed. The differential lock will engage when different wheel speeds are detected.

NOTE: Disengagement may be delayed. The differential lock will disengage when the rear wheel speeds allow it to release.

3. To disengage the differential lock, release the pedal.

SERVICE AND MAINTENANCE

⚠ WARNING

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

Follow the Maintenance Schedule given below. This chart describes service guidelines only.

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

| | 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 Operator's Manual |
|--|-----------------|---------------------|----------------|----------------|----------------|-----------------|-----------------|------------------|------------------------------|
| Check/Clean Engine Intake Screens & Cooling Fans # | ✓ | | | | | | | ✓ | |
| Check/Clean Exhaust Manifold, Muffler Pipe & Muffler Shields # | ✓ | | | | | | | ✓ | |
| Check/Clean Top & Underside of Deck, Under & Around Spindle Covers & Belt Area # | ✓ | | | | | | | ✓ | |
| Check/Clean Around Fuses, Wiring & Wiring Harnesses # | ✓ | | | | | | | ✓ | |
| Check/Clean Around Transmission, Axle & Fans # | ✓ | | | | | | | ✓ | |
| Check Air Filter for Dirty, Loose or Damaged Parts | ✓ | | | | | | | | |
| Check Engine Oil Level | ✓ | | | | | | | | |
| Clean Battery Terminals | | | ✓ | | | | | ✓ | |
| Grease All Lubrication Points | | | ✓ | | | | | ✓ | |
| Check Engine Intake Screen/Clean as Needed | | | ✓ | | | | | ✓ | |
| Check Blades/Sharpen or Replace as Needed | | | ✓ | | | | | ✓ | |
| Check Tire Pressure | | | ✓ | | | | | ✓ | |
| Check/Clean Underside of Deck | ✓ | | ✓ | | | | | | |
| Check Safety Interlock System | | | ✓ | | | | | ✓ | |
| Check Mower Blade Stop Time | | | ✓ | | | | | ✓ | |
| Inspect & Lube Deck Wheels | | | | ✓ | | | | ✓ | |
| Check Deck Level/Pitch | | | | ✓ | | | | ✓ | |
| Check Belts & Pulleys for Damage/Wear | | | | | ✓ | | | | |
| Check That All Hardware is in Place & Secure | | | | | | ✓ | | | |
| Check Engine Mounting Bolt Torque (Tighten to 325-450 in-lbs (36.7-50.8 N-m)) | | ✓ | | | ✓ | | | ✓ | ✓ |
| Check Blade Mount Nut Torque (Tighten to 70-90 ft-lbs (94.9-122 N-m)) | | ✓ | | | ✓ | | | ✓ | |
| Check Spark Plug Condition & Gap | | | | | | ✓ | | ✓ | ✓ |
| Engine Break-in Oil Change | | ✓ | | | | | | | ✓ |
| Change Engine Oil | | | | | ✓ | | | ✓ | ✓ |

SERVICE AND MAINTENANCE

| | 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 Operator's Manual |
|--|-----------------|---------------------|----------------|----------------|----------------|-----------------|-----------------|------------------|------------------------------|
| Check Fuel System (Lines, Tank, Cap, Fittings) | | ✓ | | | ✓ | | | ✓ | ✓ |
| Check Spark Arrestor | | ✓ | | | ✓ | | | ✓ | ✓ |
| Replace Oil Filter | | | | | ✓ | | | ✓ | ✓ |
| Clean or Change Air Filter | | | | | ✓ | | | | ✓ |
| Replace Fuel Filter | | | | | ✓ | | | | ✓ |
| Have Valve Lash Checked & Adjusted * | | | | | | | | | ✓ |

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

-- Perform more often in dry conditions and when mulching.

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

Post-Operation Tractor Care

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

⚠ WARNING

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

Cleaning the Underside of the Deck

DECK WASH SYSTEM (IF EQUIPPED)

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

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

1. Attach the nozzle adapter to a standard garden hose connected to a water supply.
2. Move the tractor to an area within reach of the hose where the dispersal of wet grass clippings is acceptable. Disengage the PTO, engage the 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 29.

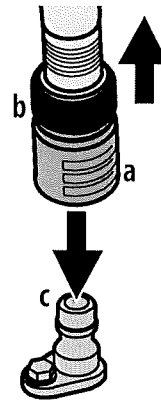


Figure 29

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 hot and can cause burns to the skin. Let the engine cool for at least five minutes. Exercise caution to avoid burns.

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

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

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

SERVICE AND MAINTENANCE

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

- Clean under the hood, including exhaust manifold, around fuses, all wiring and harnesses, muffler pipe, muffler shield, engine intake screens and cooling fins, etc. See Figure 30.

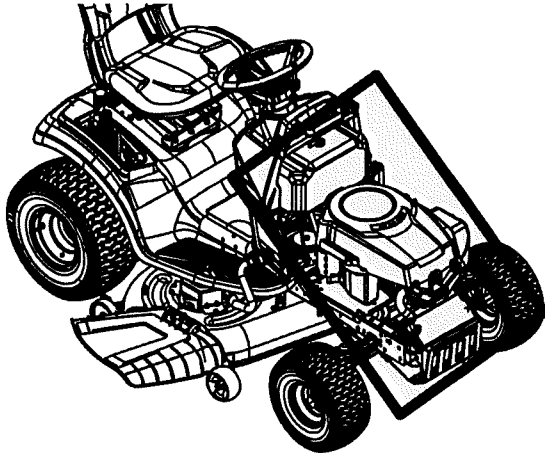


Figure 30

- Clean the top of the tractor deck, under the spindle covers and belt area. See Figure 31.

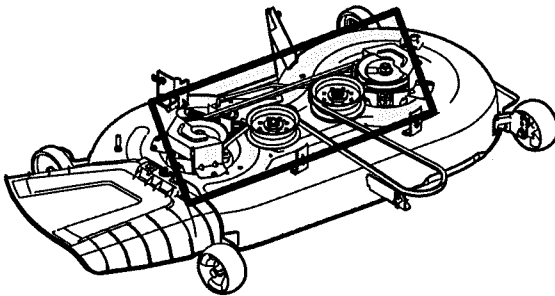
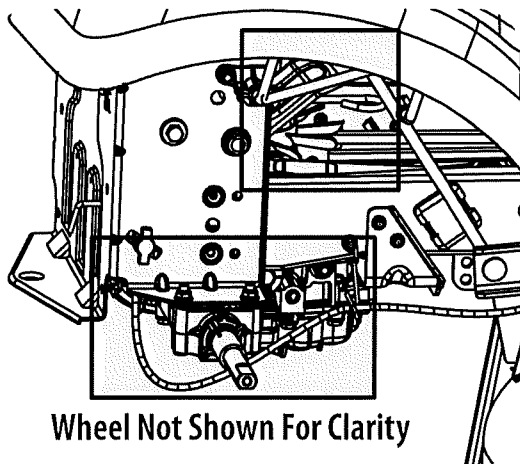


Figure 31

- Clean around and near the transmission, axle and the fan area. See Figure 32.



Wheel Not Shown For Clarity

Figure 32

- 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 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 tractor deck presenting a potential fire hazard.

Storing the Tractor

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

NOTE: If the tractor is temporarily left outside, tip the seat forward and cover it with a suitable plastic bag to prevent rain damage.

Maintenance

ENGINE

⚠ WARNING

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

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

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

CHANGING THE ENGINE OIL

⚠ WARNING

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

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

SERVICE AND MAINTENANCE

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. Open the tractor's hood and locate the oil drain port on the side of the engine.
3. Place an appropriate oil collection container with at least a 2.5 quart (2.36 L) capacity below the opening of the oil drain tube, to collect the used oil. Remove the oil fill cap/dipstick from the oil fill tube.
4. Open the protective cap on the end of the oil drain valve to expose the drain port. See Figure 33.

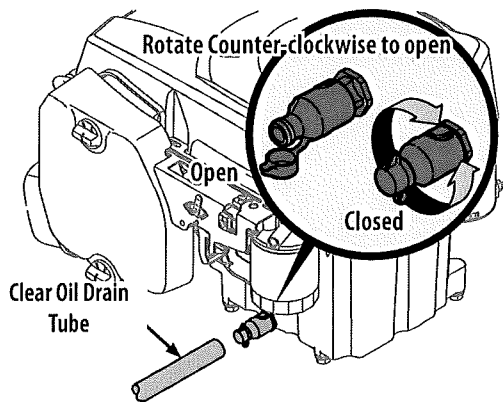


Figure 33

5. Push the oil drain tube (packed with this manual) onto the oil drain port. Route the opposite end of the tube into an appropriate oil collection container with at least a 2.5 quart (2.36 L) capacity to collect the used oil.
6. The engine is equipped with a twist-and-pull drain port. Turn the oil drain valve 1/4-turn counter-clockwise, then pull outward to begin draining oil. After the oil has finished draining, push the end of the oil drain valve back in and turn 1/4-turn clockwise to close the oil drain. Re-cap the end of the oil drain valve to keep debris from entering the drain port.
7. Replace the oil filter, and refill the engine with new oil as instructed in the Engine Operator's Manual.
8. Reinstall the oil fill cap/dipstick.

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

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

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

Lubrication

⚠ WARNING

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

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

LUBRICATING FRONT WHEELS

Each of the front wheel axles is equipped with a grease fitting. See Figure 34. Some models have rims equipped with grease fittings (excludes Turf Master and Multi-Trac wheels). See Figure 35. Lubricate with a No. 2 multi-purpose grease applied with a grease gun per the Maintenance Schedule.

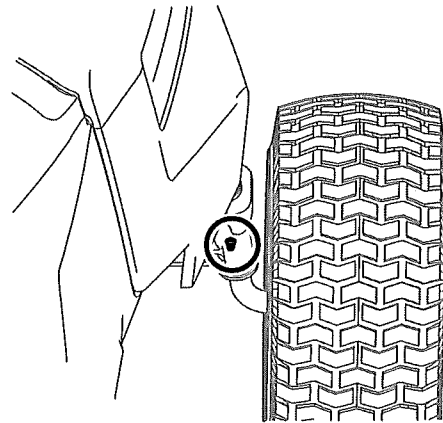


Figure 34

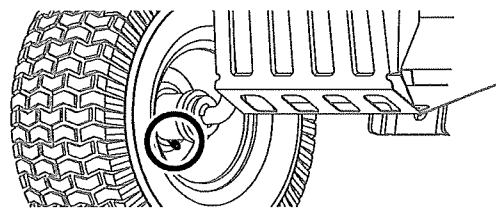


Figure 35

LUBRICATING PIVOT POINTS & LINKAGE

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

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

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.

SERVICE AND MAINTENANCE

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.

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 the Maintenance Schedule chart located in this manual for proper service intervals.

Observe the following guidelines:

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

Off-Season Storage

If your tractor is not going to be operated for an extended period of time (30 days to approximately six months), 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.
- 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

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.

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

SERVICE AND MAINTENANCE

LEVELING THE DECK (SIDE-TO-SIDE)

1. With the tractor parked on a firm, level surface, place the deck lift lever in the middle position and rotate both blades so that they are perpendicular with the tractor.
2. Measure the distance from the outside of the left blade tip to the ground and the distance from the outside of the right blade tip to the ground. Both measurements taken should be equal. If they are not, proceed to the next step.
3. Under the rear fenders inside the wheels there is a lift adjustment rod for each side of the deck. See Figure 36.

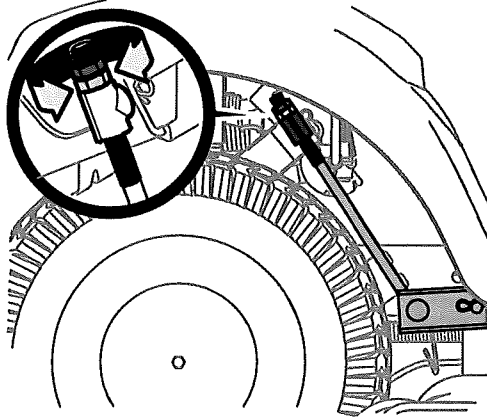


Figure 36

4. Minor side-to-side adjustments should be made using primarily the left adjustment rod.
5. To raise the left side of the deck, loosen the upper nut on the end of the lift rod, then turn the lower nut clockwise. When the proper adjustment is achieved, tighten the upper nut to secure in place. To lower the left side of the deck, loosen the upper nut on the end of the lift rod, then turn the lower nut counter-clockwise. When the proper adjustment is achieved, tighten the upper nut to 25-30 ft-lbs (33.9-40.7 N-m) to secure in place.
6. The deck is properly leveled when both blade tip measurements taken earlier are equal.

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

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

1. Park the tractor on a firm, level surface, place the deck lift lever in the middle position and rotate the blade nearest the discharge chute so that it is parallel with the tractor.
2. Measure the distance from the front of the blade tip to the ground and the rear of the blade tip to the ground. The front of the deck should be between 1/4"-3/8" (6.35 mm-9.5 mm) less than the rear of deck.
3. Determine the approximate distance necessary for proper adjustment and proceed, if necessary.

4. To **raise** the front of the deck, loosen the outer nut then tighten (thread inward) the inner nut against the front hanger bracket. See Figure 37. When proper adjustment is achieved, re-tighten the outer nut to 25-30 ft-lbs (34 mm-40.7 N-m).

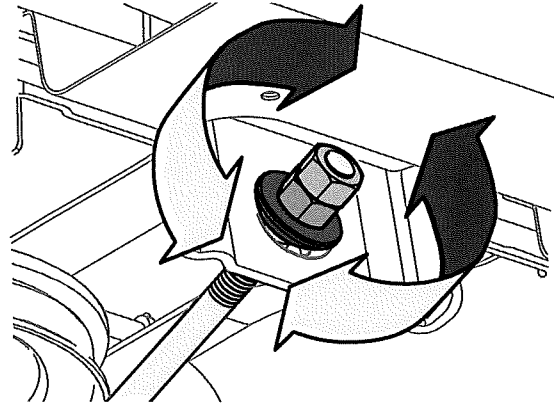


Figure 37

5. To **lower** the front of the deck, loosen the outer nut then loosen (thread outward) the inner nut, away from the front hanger bracket. See Figure 37. When proper adjustment is achieved, re-tighten the outer nut.

Adjusting the Deck Wheels

⚠ WARNING

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

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

The deck wheels should be approximately 1/4"-1/2" (6.35 mm-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.

SERVICE AND MAINTENANCE

PARK BRAKE ADJUSTMENT

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

HYDROSTATIC NEUTRAL ADJUSTMENT

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

WHEEL ALIGNMENT

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

Deck Removal

WARNING

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

To remove the deck, proceed as follows:

1. Move the tractor to a level surface, disengage the PTO, stop the engine, ENGAGE the park brake.
2. Lower the deck by moving the deck lift lever into the bottom notch on the right fender.
3. For tractors with a manual PTO continue with Step 4, for electric PTO models skip ahead to Step 8.
4. Loosen, but do not remove the flange lock nut on the right idler pulley and the hex screw on the left idler pulley.
5. Remove the hex screw securing the engine pulley keeper rod to the frame. See Figure 38.

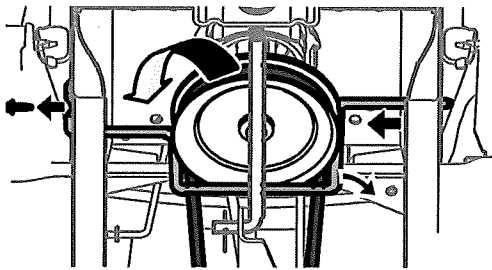


Figure 38

6. Slide the rod to the right to remove it.

NOTE: Be careful not to damage the wire harness when removing the rod.

7. Remove the bow tie clip that secures the PTO cable to the bracket on the deck, slide the PTO cable out of the bracket and unhook the spring from the idler bracket. See Figure 39.

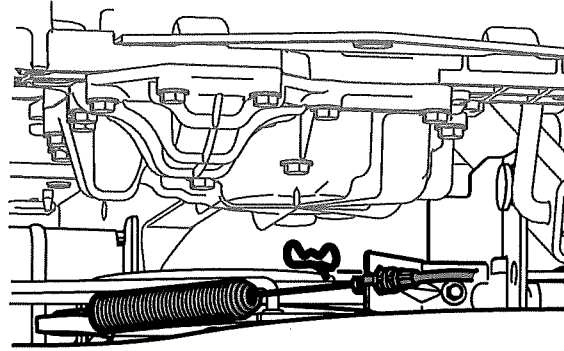


Figure 39

8. Working on the right side of the tractor, insert a 3/8" drive ratchet wrench, set to **tighten**, into square hole found on the idler bracket. See Figure 40.
9. Pivot the wrench forward to move the deck drive pulley forward. See Figure 40.

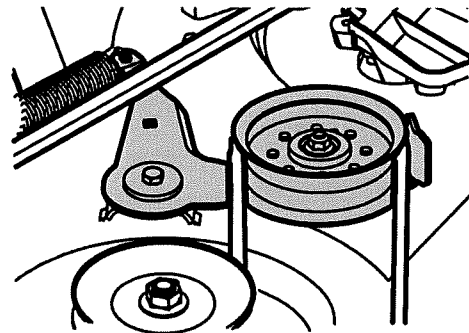


Figure 40

10. Carefully remove the belt from around the PTO pulley.
11. Looking at the deck from the left side of the tractor, locate the bow-tie pin on the rear left side of the deck. See Figure 41.
12. Remove the pin and slide the deck pin out of the deck lift arm. See Figure 41.

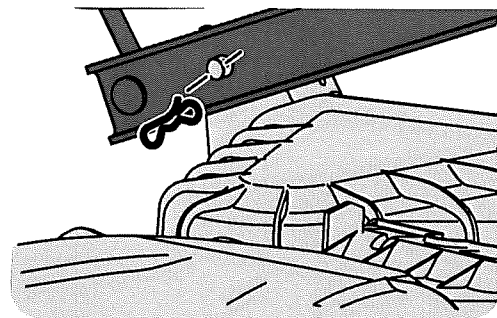


Figure 41

13. Repeat Steps 11-12 on the tractor's right side.
14. Pull the bow-tie pin out of the front deck lift rod securing it to the deck. See Figure 42. Slide the deck lift rod out of the front hanger bracket.

SERVICE AND MAINTENANCE

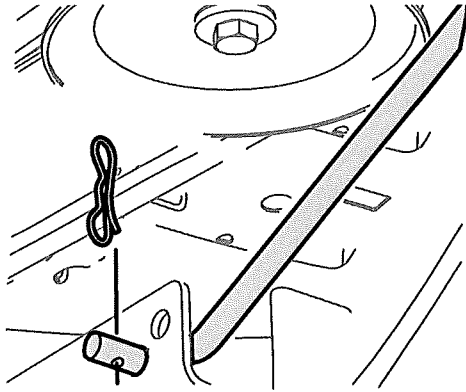


Figure 42

15. Move the deck lift lever into the top notch to raise the deck lift up and out of the way.
16. Gently slide the deck out from underneath the tractor.

Removing the Blades

⚠ WARNING

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

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

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

FASTATTACH™ BLADE SYSTEM (IF EQUIPPED)

1. Set the tractor deck height to its highest position.
2. Carefully feel for the finger grooves on the blade collar at the sides of the blade.
3. Push upward on the blade collar and hold it. See Figure 43.

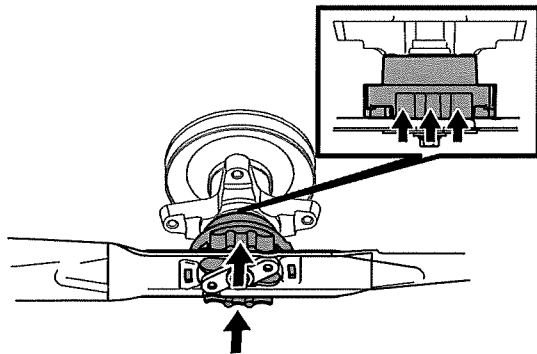


Figure 43

4. While holding the collar in the upward position, rotate the blade counter-clockwise to free it from the collar. See Figure 44.

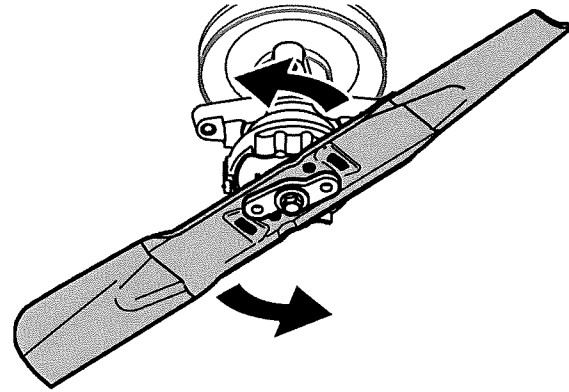


Figure 44

5. When the hole in the center of the blade aligns with the tractor blade retainer, carefully lower the blade. See Figure 45.

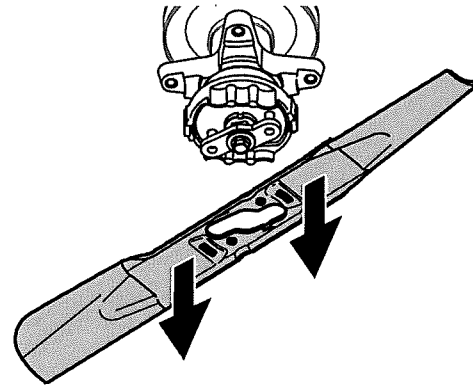


Figure 45

STANDARD BLADE SYSTEM (IF EQUIPPED)

1. Remove the deck from beneath the tractor, (refer to Deck Removal earlier in this section) then gently flip the deck over to expose its underside.
2. Place a block of wood between the deck housing baffle and the cutting blade to act as a stabilizer. See Figure 46.

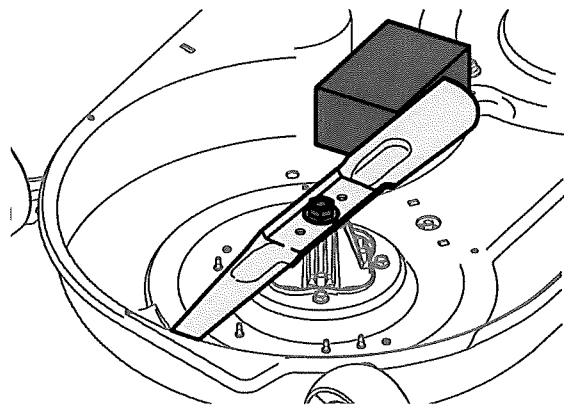


Figure 46

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

SERVICE AND MAINTENANCE

STANDARD BLADE SYSTEM WITH S-BLADES (IF EQUIPPED)

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)* securing the blade. See Figure 47.

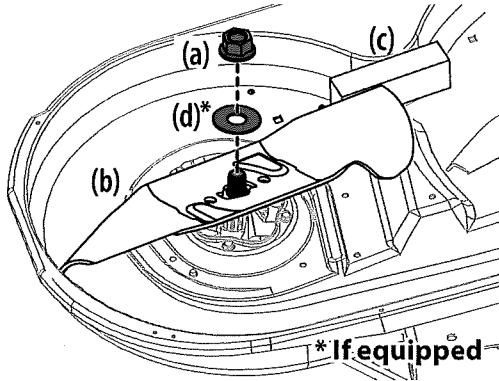


Figure 47

Installing the Blade

FASTATTACH™ BLADE SYSTEM (IF EQUIPPED)

1. Set the tractor deck height to its highest position.
2. Properly orient the blade. The bottom of the blade is labelled "Grass Side".
3. Position the blade under the spindle assembly and carefully align the large opening in the center of the blade over the tractor blade retainer. See Figure 48.

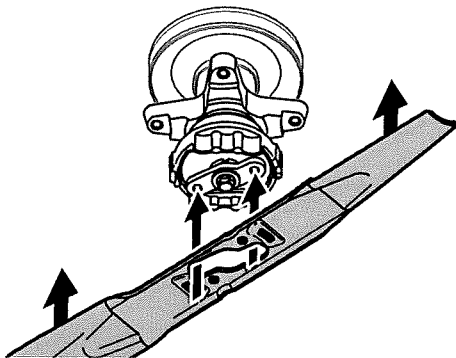


Figure 48

4. Push the blade upward against the blade adapter until the collar above rises. See Figure 43.
5. Rotate the blade clockwise to align with the blade adapter. See Figure 49.

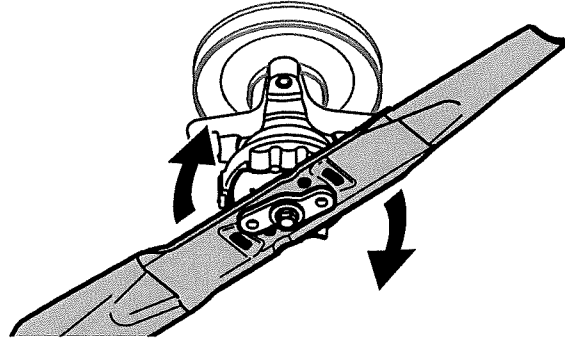


Figure 49

NOTE: If too much resistance is felt while turning the blade then the spindle is rotating, the blade is not properly aligned on the blade adapter, and installation will not be successful.

6. There will be an audible click when the blade is properly locked in place. See Figure 50.

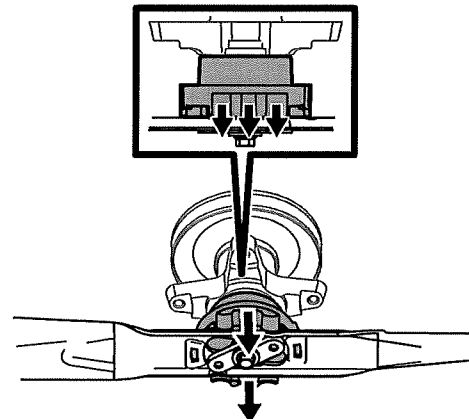


Figure 50

STANDARD BLADE SYSTEM (IF EQUIPPED)

1. With the deck removed gently flip the deck over to expose its underside.
2. Line up the hole in the center of the blade with the star-shaped retainer at the bottom of the spindle assembly and slide the blade into place.
3. Place a block of wood between the deck housing baffle and the cutting blade to act as a stabilizer. See Figure 46 on page 31.
4. Thread on the hex flange nut to secure the blade to the spindle assembly.
5. Use a torque wrench to tighten the blade spindle hex flange nut to 70-90 ft-lbs (94.9-122 N-m).
6. Re-install the deck (refer to Changing the Deck Belt & Reinstalling the Deck in this section).

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

STANDARD BLADE SYSTEM WITH S-BLADES (IF EQUIPPED)

1. With the deck removed gently flip the deck over to expose its underside.

SERVICE AND MAINTENANCE

- When re-installing blades, be sure of the following (see Figure 47 on page 32):
 - Blades (b) are installed so that wings are pointing upward toward the top of the deck.
 - 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.
- Tighten hex nuts (a) to 70-90 ft-lbs (95-122 N-m).
 - Re-install the deck (refer to Deck Installation in this section).

Sharpening the Blade

- To properly sharpen the cutting blades, remove equal amounts of metal from both ends of the blades along the cutting edges, parallel to the trailing edge, at a 25° to 30° angle. Always grind each cutting blade edge equally to maintain proper blade balance. See Figure 51.

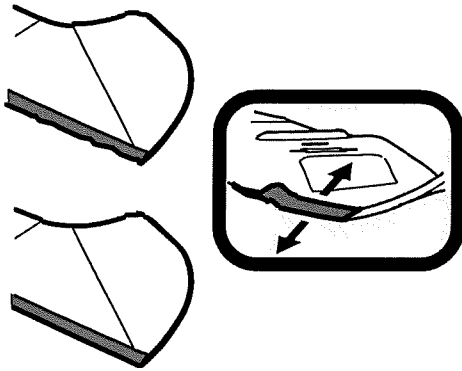


Figure 51

- Test the blade's balance using a blade balancer. Grind metal from the heavy side until it balances evenly.

⚠ WARNING

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

Changing the Deck Belt & Reinstalling the Deck

⚠ CAUTION

The V-belts found on your tractor are specially designed to engage and disengage safely. A substitute (non-OEM) V-belt can be dangerous by not disengaging completely. For a properly working tractor, use factory approved belts.

All belts on your tractor are subject to wear and should be replaced if any signs of wear are present. To change or replace the deck belt on your tractor, proceed as follows:

- Remove the deck as instructed earlier in this section under Deck Removal.

- Loosen, but do not remove the hardware on the right and left idler pulley.

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.

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

- Route the new belt as shown in the applicable figure below. See Figure 52 for 42" decks, Figure 53 for 46" decks and Figure 54 for 50" & 54" decks.

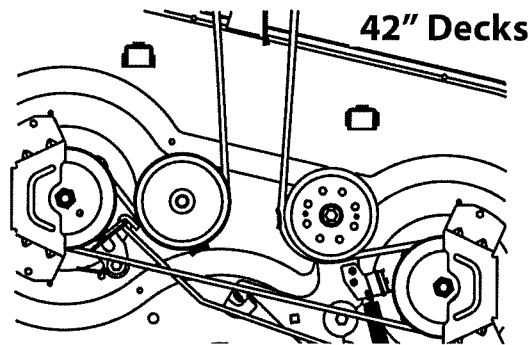


Figure 52

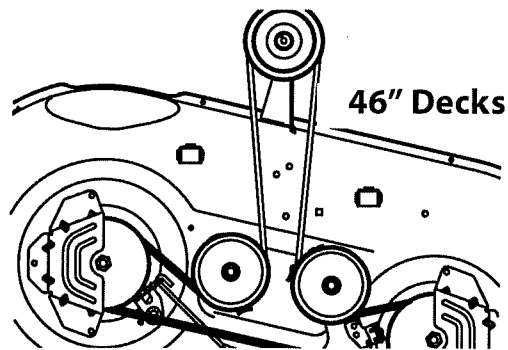


Figure 53

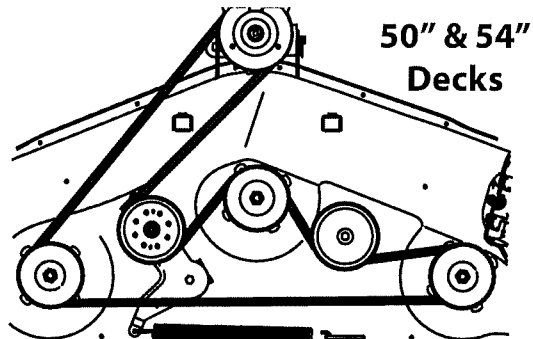


Figure 54

NOTE: Use a 3/8" drive ratchet wrench as instructed in earlier steps when routing the new belt to pivot the drive pulley.

- Ensure that the belt is routed properly along the idler pulleys and inside the belt keepers and retighten idler pulleys, if loosened earlier. Torque to 256-313 in-lbs (28.9-35.4 N-m).
- Remount the spindle covers if removed earlier.

SERVICE AND MAINTENANCE

7. Re-install the deck making sure the belt remains routed around the pulleys as instructed.
8. On manual PTO units, re-install the engine pulley keeper rod and the PTO cable.
9. Pull the right side of the belt and place the narrow "V" side of the belt into the PTO pulley. See Figure 55.

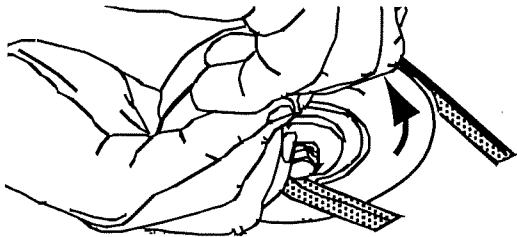


Figure 55

10. While holding the belt and pulley together, rotate the pulley to the left. Continue holding and rotating the pulley and belt until the belt is fully rolled into the PTO pulley.

Removing the Front Bumper (If equipped)

⚠ WARNING

Disengage the PTO, engage the brake lock, and stop the tractor engine before performing any maintenance procedures. Place the tractor on a firm and level surface before beginning installation or removal procedures. The exhaust system and surrounding areas are HOT. To avoid personal injury, allow the tractor to cool before beginning any brush guard installation or removal procedures.

1. Remove the four hex screws (a) securing the front bumper in place. See Figure 56.
2. The front bumper (b) may now be removed.

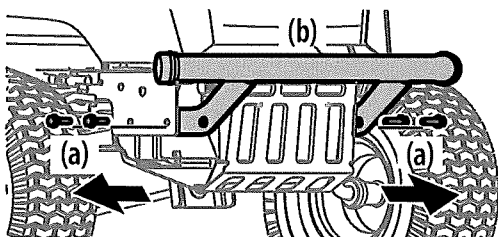


Figure 56

Removing the Brush Guard (If equipped)

⚠ WARNING

The exhaust system and surrounding areas are HOT. To avoid personal injury, allow the tractor to cool before beginning any brush guard installation or removal procedures.

1. Remove two cotter pins, and then pull the pins. See Figure 57.

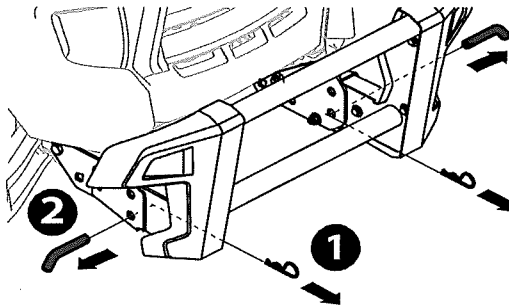


Figure 57

2. The brush guard assembly may now be removed. See Figure 58.

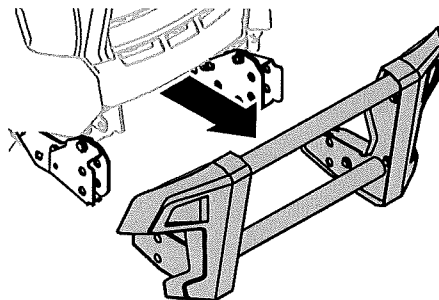


Figure 58

NOTE: The FastAttach™ brackets may be left in place for use with other FastAttach™ attachments. Contact your authorized service dealer for a complete list of products and availability.

Changing the Transmission Drive Belt

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