



12-32

Wheel Horse® Rear Engine Rider

Model No. 70089—210000001 and Up

Operator's Manual



Warning



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Important The engine in this product is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate this engine on any forest-covered, brush-covered, or grass-covered land as defined in CPRC 4126. Other states or federal areas may have similar laws.

This spark ignition system complies with Canadian ICES-002.

Ce système d'allumage par étincelle de véhicule est conforme à la norme NMB-002 du Canada.

The enclosed Engine Owner's Manual is supplied for information regarding the U.S. Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance, and warranty.

Keep this engine Owner's Manual with your unit. Should this engine Owner's Manual become damaged or illegible, replace it immediately. Replacements may be ordered through the engine manufacturer.

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Introduction

Read this manual carefully to learn how to operate and maintain your product properly. The information in this manual can help you and others avoid injury and product damage. Although Toro designs and produces safe products, you are responsible for operating the product properly and safely.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. Figure 1 illustrates the location of the model and serial numbers on the product.

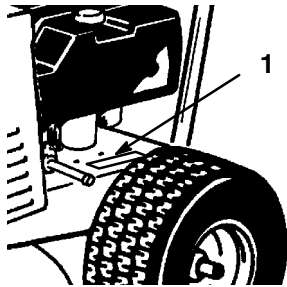


Figure 1

1. Location of the model and serial numbers

Write the product model and serial numbers in the space below:

Model No. _____

Serial No. _____

This manual identifies potential hazards and has special safety messages that help you and others avoid personal injury and even death. **Danger**, **Warning**, and **Caution** are signal words used to identify the level of hazard. However, regardless of the hazard, be extremely careful.

Danger signals an extreme hazard that *will* cause serious injury or death if you do not follow the recommended precautions.

Warning signals a hazard that *may* cause serious injury or death if you do not follow the recommended precautions.

Caution signals a hazard that may cause minor or moderate injury if you do not follow the recommended precautions.

This manual uses two other words to highlight information. **Important** calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

Safety

This machine meets or exceeds the B71.1-1998 specifications of the American National Standards Institute, in effect at the time of production. However, improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert symbol, which means CAUTION, WARNING, or DANGER—"personal safety instruction." Failure to comply with the instruction may result in personal injury or death.

Safe Operating Practices

The following instructions are from ANSI standard B71.1—1998.

This product is capable of amputating hands and feet and throwing objects. Always follow all safety instructions to avoid serious injury or death.

General Operation

- Read, understand, and follow all instructions in the operator's manual and on the machine before starting.
- Allow only responsible adults who are familiar with the instructions to operate the machine.
- Clear the area of objects such as rocks, toys, wire, etc., which could be picked up and thrown by the blade.
- Be sure the area is clear of other people before mowing. Stop the machine if anyone enters the area.
- Never carry passengers.
- Do not mow in reverse unless absolutely necessary. Always look down and behind before and while backing.
- Be aware of the mower discharge direction and do not point it at anyone. Do not operate the mower without either the entire grass catcher or the guard in place.
- Slow down before turning.
- Never leave a running machine unattended. Always turn off blades, set parking brake, stop engine, and remove keys before dismounting.
- Turn off blades when not mowing.
- Stop the engine before removing the grass catcher or unclogging the chute.
- Mow only in daylight or good artificial light.
- Do not operate the machine while under the influence of alcohol or drugs.

- Watch for traffic when operating near or crossing roadways.
- Use extra care when loading or unloading the machine into a trailer or truck.
- Always wear safety goggles or safety glasses with side shields when operating mower.
- Data indicates that operators, age 60 years and above, are involved in a large percentage of riding mower-related injuries. These operators should evaluate their ability to operate the riding mower safely enough to protect themselves and others from serious injury.

Slope Operation

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it.

- Mow up and down slopes, not across.
- Remove obstacles such as rocks, tree limbs, etc.
- Watch for holes, ruts or bumps. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Use slow speed. Choose a low gear so that you will not have to stop or shift while on the slope.
- Follow Toro's recommendations for wheel weight or counterweights to improve stability.
- Use extra care with grass catchers or other attachments. These can change the stability of the machine.
- Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
- Avoid starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly straight down the slope.
- Do not turn on slopes unless necessary, and then, turn slowly and gradually downhill, if possible.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly turn over if a wheel goes over the edge of a cliff or ditch, or if an edge caves in.
- Do not mow on wet grass. Reduced traction could cause sliding.
- Do not try to stabilize the machine by putting your foot on the ground.
- Do not use a grass catcher on steep slopes.

Children

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

- Keep children out of the mowing area and under the watchful care of another responsible adult.
- Be alert and turn the machine off if children enter the area.
- Before and while backing, look behind and down for small children.
- Never carry children, even with the blades off. They may fall off and be seriously injured or interfere with safe machine operation.
- Never allow children to operate the machine.
- Use extra care when approaching blind corners, shrubs, trees, the end of a fence or other objects that may obscure vision.



Service

- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
 - Use only an approved container.
 - Never remove the gas cap or add fuel when the engine is running. Allow the engine to cool before refueling. Do not smoke.
 - Never refuel the machine indoors.
 - Never store the machine or fuel container inside where there is an open flame, such as near a water heater or furnace.
- Never run a machine inside a closed area.
- Keep nuts and bolts tight, especially the blade attachment bolts. Keep equipment in good condition.
- Never tamper with safety devices. Check their proper operation regularly.
- Keep the machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow the machine to cool before storing.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Grass catcher components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. Frequently check components and replace with manufacturer's recommended parts, when necessary.
- Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.

- Use only genuine Toro replacement parts to ensure that original standards are maintained.
- Avoid turning on slopes. If you must turn, turn slowly and gradually downhill, if possible.
- Do not use a grass catcher on steep slopes. Heavy grass bags could cause loss of control or overturn the machine.

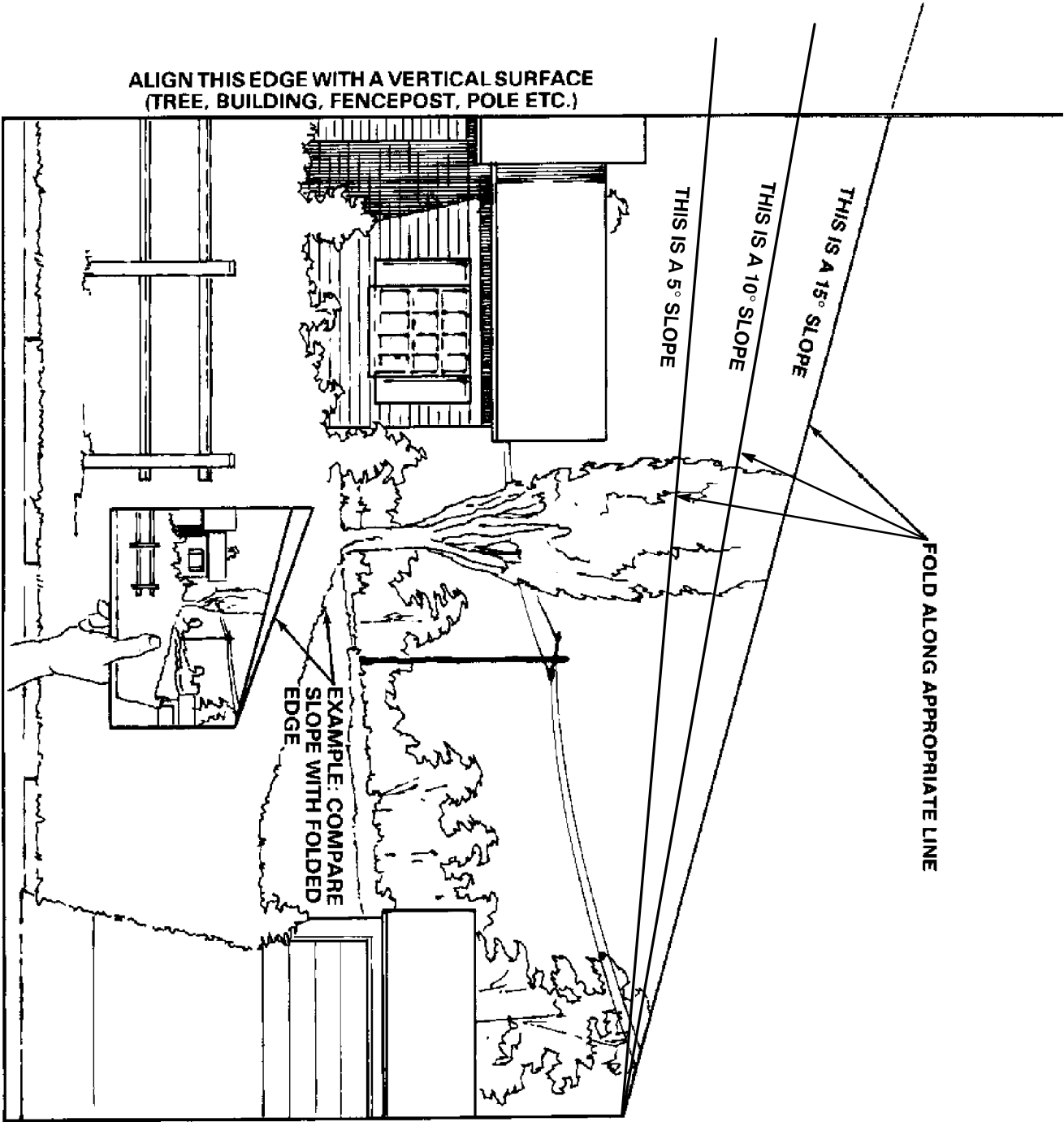
Toro Riding Mower Safety

The following list contains safety information specific to Toro products or other safety information that you must know that is not included in the ANSI standards.

	Warning	
<p>Engine exhaust contains carbon monoxide, which is an odorless, deadly poison that can kill you. It is also known to the State of California to cause birth defects.</p> <p>Do not run engine indoors or in an enclosed area.</p>		

- Stop the engine, disconnect spark plug wire(s) and remove key before performing any service, repairs, maintenance or adjustments.
- Slow down before turning. Sharp turns on any terrain may cause loss of control.
- Never leave a running machine unattended. Always turn off blades, set parking brake, stop engine, and remove the ignition and KeyChoice™ keys before dismounting.
- Keep hands, feet, hair and loose clothing away from attachment discharge area, underside of mower and any moving parts while engine is running.
- Do not touch equipment or attachment parts which may be hot from operation. Allow to cool before attempting to maintain, adjust or service.
- Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes and clothing. Protect your face, eyes and clothing when working with a battery.
- Battery gases can explode. Keep cigarettes, sparks and flames away from battery.
- Use only genuine replacement parts to ensure that original standards are maintained.
- Use only Toro approved attachments. Warranty may be voided if used with unapproved attachments.
- Do not mow across hillsides or slopes exceeding 5 degrees.
- Do not mow down hillsides or slopes exceeding 15 degrees.
- Do not mow up hillsides or slopes exceeding 10 degrees.
- If a steep slope must be ascended, back up the hill, and drive forward down the hill, keeping the machine in gear.

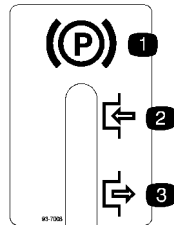
Slope Chart



Safety and Instruction Decals

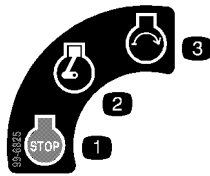


Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



Part No. 93-7008

1. Parking brake
2. Engage
3. Disengage

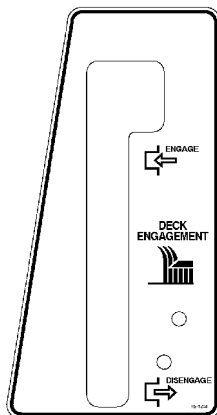


Part No. 99-6825

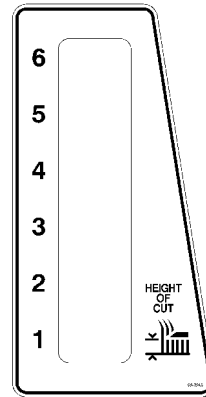
1. Engine stop
2. Engine run
3. Engine start



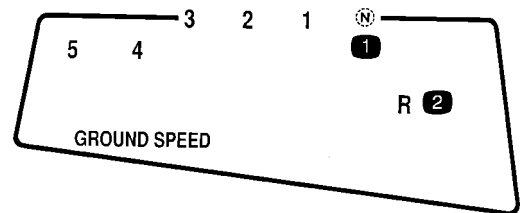
Part No. 99-2979



Part No. 92-7244



Part No. 92-7245



Part No. 92-1751

1. Neutral
2. Reverse



Part No. 99-2981



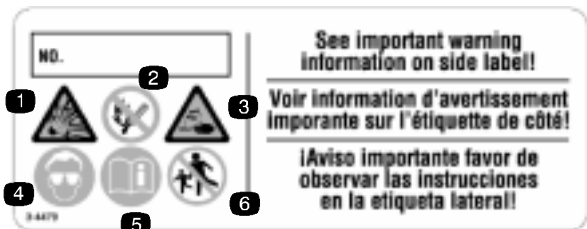
Part No. 66-1340



Part No. 68-3650



Part No. 93-1122



Part No. 104-4163

- | | |
|--|-------------------------------|
| 1. Explosion hazard | 4. Wear eye protection |
| 2. No sparks, flame, or smoking | 5. Read the operator's manual |
| 3. Caustic liquid hazard—burns to hand and damage to items | 6. Keep bystanders away |



Part No. 99-6093



Part No. 104-4164

Gasoline and Oil

Recommended Gasoline

Use UNLEADED Regular Gasoline suitable for automotive use (85 pump octane minimum). Lead regular gasoline may be used if unleaded regular is not available.

Important Never use methanol, gasoline containing methanol, or gasohol containing more than 10% ethanol because the fuel system could be damaged. Do not mix oil with gasoline.



Danger



In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any gasoline that spills.
- Do not fill the fuel tank completely full. Add gasoline to the fuel tank until the level is 1/4 to 1/2 in. (6 to 13 mm) below the bottom of the filler neck. This empty space in the tank allows gasoline to expand.
- Never smoke when handling gasoline, and stay away from an open flame or where gasoline fumes may be ignited by a spark.
- Store gasoline in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of gasoline.
- Always place gasoline containers on the ground away from your vehicle before filling.
- Do not fill gasoline containers inside a vehicle or on a truck or trailer bed because interior carpets or plastic truck bed liners may insulate the container and slow the loss of any static charge.
- When practical, remove gas-powered equipment from the truck or trailer and refuel the equipment with its wheels on the ground.
- If this is not possible, then refuel such equipment on a truck or trailer from a portable container, rather than from a gasoline dispenser nozzle.
- If a gasoline dispenser nozzle must be used, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.

Using Stabilizer/Conditioner

Use a fuel stabilizer/conditioner in the machine to provide the following benefits:

- Keeps gasoline fresh during storage of 90 days or less. For longer storage, drain the fuel tank.
- Cleans the engine while it runs
- Eliminates gum-like varnish buildup in the fuel system, which causes hard starting

Important Do not use fuel additives containing methanol or ethanol.

Add the correct amount of gas stabilizer/conditioner to the gas.

Note: A fuel stabilizer/conditioner is most effective when mixed with fresh gasoline. To minimize the chance of varnish deposits in the fuel system, use fuel stabilizer at all times.

Filling the Fuel Tank

1. Shut the engine off and set the parking brake.
2. Clean around the fuel tank cap and remove the cap. Add unleaded regular gasoline to the fuel tank until the level is 1/4 to 1/2 in. (6 to 13 mm) below the bottom of the filler neck. This space in the tank allows gasoline to expand. Do not fill the fuel tank completely full.
3. Install the fuel tank cap securely. Wipe up any gasoline that may have spilled.

Checking the Engine Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to Checking the Oil Level, page 23.

Assembly

Note: Determine the left and right sides of the machine from the normal operating position.

Description	Qty.	Use
Seat	1	Installing the seat
Wire tie	1	
Clamp	1	
Seat spacer (rubber)	2	
Seat spacer (metal)	2	
Washer, 5/16 in.	2	
Screw, 5/16 x 1-1/2 in.	2	
Locknut, 5/16 in.	2	
Front wheel assembly	2	Installing the front wheels
Flat washer	2	
Hub cap	2	
Cotter pin	2	
Steering wheel	1	Installing the steering wheel
Roll pin	1	
Steering shaft cover	1	
Capscrew	2	Securing the battery cables to the battery
Wing nut	2	
Key	2	Used in the ignition and KeyChoice™ switches
Hose coupling	1	Washing the underside of the mower
Operator's manual	1	Read before operating the tractor.
Engine operator's manual	1	
Registration card	1	Fill out and return to Toro.
Hang tag	1	Read for warranty information.

Installing the Seat

1. Thread 2 seat spacers (rubber) into the bottom of the seat (Fig. 2) in the rear holes.
2. Position the seat onto the seat base, inserting the seat switch cable through the slot and the spacer studs through the rear mounting holes (Fig. 2). Secure them loosely with 2 locknuts (5/16 in.).
3. Slide the clamp over the seat switch wire (Fig. 2).
4. Install 2 metal spacers in line with the front holes. Insert a screw (5/16 x 1-1/2 in.) screw through the clamp and a flat washer (5/16 in.). Insert this screw through the seat bracket and spacer into the left front seat hole (Fig. 2). Install another screw (5/16 x 1-1/2 in.) with a flat washer into the right front seat hole.
5. Adjust the seat to the desired position in the seat base slots and tighten the locknuts and screws.
6. Insert the seat switch connector into the wire harness connector.

- Secure the wire harness to the front of the seat base with the wire tie.

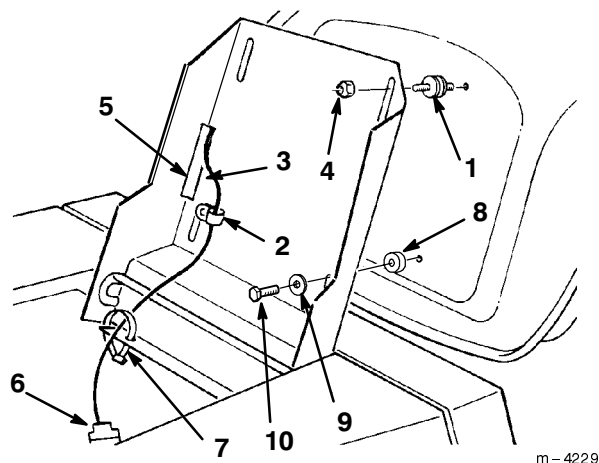


Figure 2

- | | |
|--------------------------|-----------------------------|
| 1. Seat spacers (rubber) | 6. Seat switch connector |
| 2. Clamp | 7. Wire tie |
| 3. Seat switch wire | 8. Spacers (metal) |
| 4. Locknut | 9. Washer, 5/16 in. |
| 5. Seat switch slot | 10. Screw, 5/16 x 1-1/2 in. |

Installing the Front Wheels

Note: Grease the axle shafts before installing the wheels.

- Install the wheel onto the axle.
- Mount the flat washer onto the axle. Insert a cotter pin and open the pin ends with a pliers (Fig. 1).
- Install the hub caps.

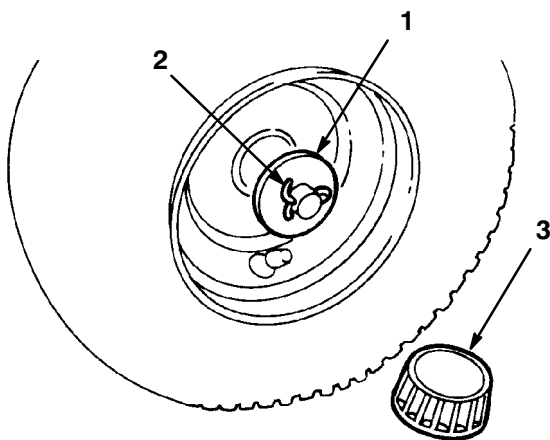


Figure 3

- | | |
|----------------|------------|
| 1. Flat washer | 3. Hub cap |
| 2. Cotter pin | |

- Repeat steps 1-3 on the opposite side of the machine.

- Check the front and rear tires for proper inflation; refer to Tire Pressure, page 27.
- Lubricate both of the front wheels with No. 2 general purpose grease. Pump the grease gun until grease comes through the bearings. Wipe up any excess grease.

Installing the Steering Wheel

- Position the wheels straight ahead and slide the steering shaft cover over the steering shaft.
- Slip the steering wheel over the shaft and align the steering wheel mounting hole with the shaft mounting hole (Fig. 4). The Toro logo on the steering wheel insert should be readable from the operator's position.

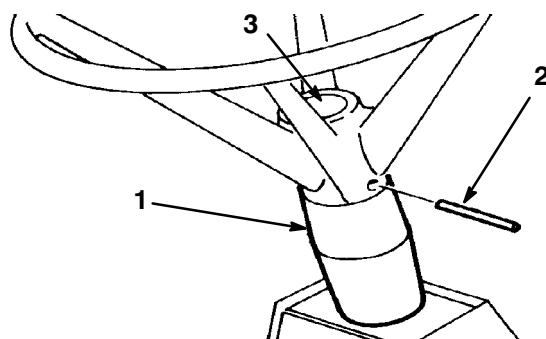


Figure 4

- | | |
|-------------------------|--------------------------|
| 1. Steering shaft cover | 3. Steering wheel insert |
| 2. Roll pin | |

- Insert a drift punch partially through the holes to maintain the alignment and insert the roll pin in from the opposite side.
- Drive the roll pin in until it is flush with the outside of the wheel (Fig. 4).

Activating the Battery



Warning



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

Bulk electrolyte with 1.260 specific gravity must be purchased from a local battery supply outlet.

Important Never fill the battery with electrolyte while the battery is installed in the tractor. Electrolyte could be spilled on other parts and cause corrosion.

1. Remove the battery from the tractor; refer to Removing the Battery, page 28.

Danger

Battery electrolyte contains sulfuric acid which is a deadly poison and causes severe burns.

- Do not drink electrolyte and avoid contact with skin, eyes or clothing. Wear safety glasses to shield your eyes and rubber gloves to protect your hands.
- Fill the battery where clean water is always available for flushing the skin.
- Follow all instructions and comply with all safety messages on the electrolyte container.

2. Remove the vent caps from the battery. Slowly pour electrolyte into each battery cell until the electrolyte level is up to the Upper line on the battery case (Fig. 5).

Important Do not overfill the battery because electrolyte (sulfuric acid) can cause severe corrosion and damage to the chassis.

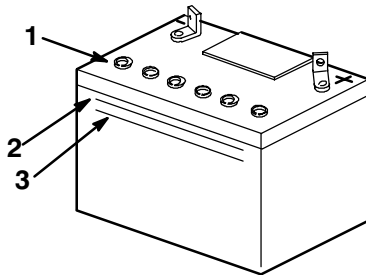


Figure 5

1. Vent caps
2. Upper line
3. Lower line

3. Wait five to ten minutes after filling the battery cells. Add electrolyte, if necessary, until the electrolyte level is up to the Upper line (Fig. 5) on the battery case.
4. Reinstall the battery vent caps.
5. Charge the battery for 10 to 15 minutes at 25 to 30 amps or 30 minutes at 4-6 amps (Fig. 6). Do not overcharge the battery.

Warning

Charging the battery produces gasses that can explode.

Never smoke near the battery and keep sparks and flames away from battery.

6. When the battery is fully charged, unplug the charger from the electrical outlet, then disconnect the charger leads from the battery posts (Fig. 6).

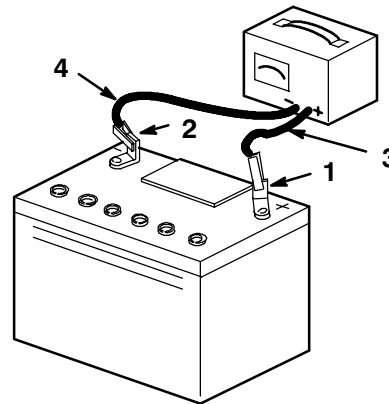


Figure 6

1. Positive post
2. Negative post
3. Charger red (+) wire
4. Charger black (-) wire

7. Install the battery and battery box in the tractor and connect the battery cables; refer to Installing the Battery, page 29.

Filling the Crankcase with Oil

The tractor is shipped from the factory without oil in the crankcase.

1. Place the tractor on a level surface.
2. Unscrew and remove the dipstick from the oil fill tube (Fig. 7).

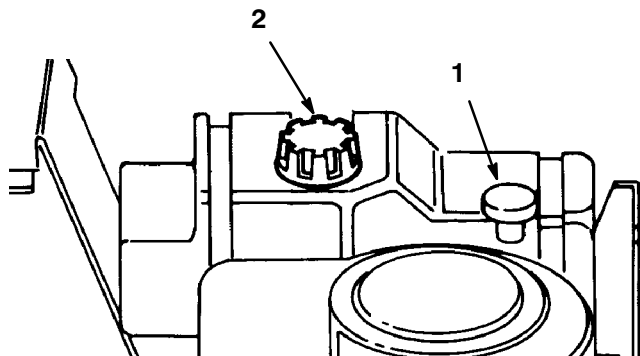


Figure 7

1. Dipstick
2. Fuel tank cap

3. Insert a funnel into the tube and slowly add engine oil into the crankcase until the oil level reaches the full mark on the dipstick; refer to Engine Oil, page 23, for crankcase capacity, oil type, and oil viscosity.

Important Do not overfill or engine damage may result.

4. Insert the dipstick and turn it clockwise to secure it in the fill tube.

Note: Drain the oil and replace it after the first 5 hours of operation to remove the contaminants produced by normal engine break-in. Thereafter, change the oil as specified in the maintenance section.

Operation

Note: Determine the left and right sides of the machine from the normal operating position.

Think Safety First

Please carefully read all of the safety instructions and decals in the safety section. Knowing this information could help you, your family, pets, or bystanders avoid injury.

Become familiar with all of the controls before you start the engine and operate the machine.

Gear Shift

The transaxle has five forward speeds, neutral, and reverse. The gear shift lever is located at the right side of the operator (Fig. 8). An interlock switch prevents the engine from being started when the transaxle is in any gear except neutral.

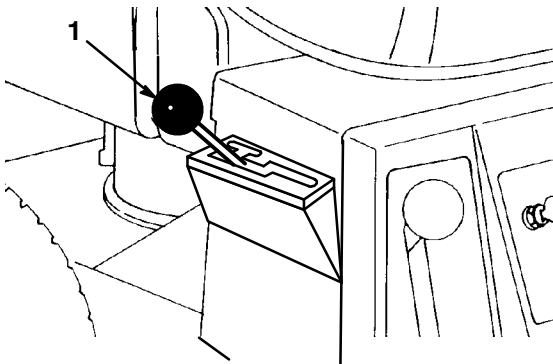


Figure 8

1. Gear shift

Clutch Pedal

The clutch pedal (Fig. 9) is used in conjunction with the gear shift. Depress the clutch pedal fully when shifting gears and whenever the brake is used.

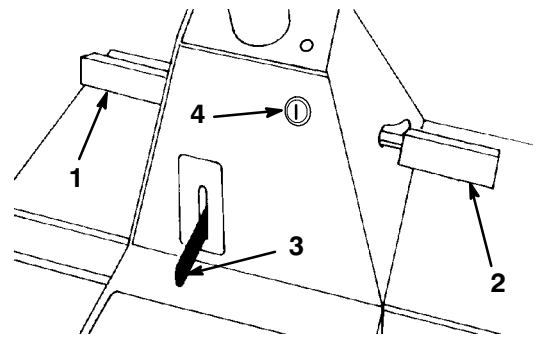


Figure 9

- | | |
|-----------------|-----------------------|
| 1. Clutch pedal | 3. Parking brake lock |
| 2. Brake pedal | 4. Ignition switch |

Brake Pedal

The brake pedal (Fig. 9) must be depressed to slow down or stop the tractor. When the pedal is depressed, a caliper engages the brake disc at the side of the transaxle. Remember to depress the clutch pedal when using the brake.

Note: Avoid depressing the brake pedal while the clutch is engaged, otherwise premature brake wear will occur. Do not rest your foot on the pedal while mowing.

Parking Brake

The parking brake (Fig. 9) must be used in conjunction with the brake pedal. When the pedal is depressed, the end of the parking brake lever holds the brake pedal in the depressed position and a caliper engages the brake disc at the side of the transaxle.

Always set the parking brake when you stop the machine or leave it unattended.

Setting the Parking Brake

1. Depress the brake pedal fully and shift the transaxle into neutral.
2. Move the parking brake control (Fig. 9) upward and release the brake pedal.

Releasing the Parking Brake

To release the parking brake, depress the brake pedal. The parking brake lever will return to its disengaged position. Release the brake pedal slowly.

Ignition Switch

The ignition switch (Fig. 9) has three positions: Off, Run, and Start. The key automatically returns to the Run position from the Start position when it is released after the engine starts.

Deck Engagement Lever (Power Take Off [PTO])

The deck engagement lever (PTO) (Fig. 10) engages and disengages the cutter blade. An interlock switch prevents the engine from starting when the control is in the Engage position. The engine will start when the control is in the Disengage position only.

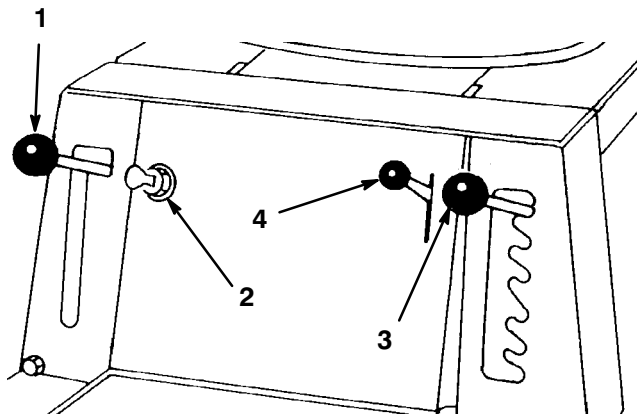


Figure 10

- | | |
|--------------------------|--------------------------|
| 1. Deck engagement lever | 3. Height-of-cut control |
| 2. KeyChoice™ switch | 4. Throttle control |

Height-of-Cut Control

The height-of-cut control (Fig. 10) varies the cutting height from approximately 1-1/2 to 4 inches (38 to 102 mm) in six increments.

KeyChoice Switch

The KeyChoice switch (Fig. 10) is a hold and release switch used for deactivating the operating-in-reverse interlock feature.

Throttle Control

The throttle control (Fig. 10) connects to and operates the carburetor mounted throttle and choke. The control has four positions: Idle, Hot Restart, Operate, and Choke. Push the control slightly to the left and upward to obtain the Choke position.

Starting and Stopping the Engine

Starting

1. Shift into neutral (N) and move the deck engagement lever (PTO) to Disengage. Lock the parking brake.
2. Move the throttle control to the Choke position and rotate the ignition key to Start. When the engine starts, release the key and immediately move the throttle control between the Operate and Idle positions if the choke was used for starting.
3. Select the desired height-of-cut and move the PTO lever to Engage. Release the parking brake, depress the clutch pedal, and shift into gear.
4. Release the clutch pedal slowly and smoothly.

Stopping

1. Depress the clutch and brake pedals, move the throttle control lever to Slow, move the PTO lever to Disengage.
2. Shift the transaxle to neutral and engage the parking brake. Rotate the ignition key to Off.
3. Remove the key from the ignition switch. Wait for all moving parts to stop before getting off of the seat.

Break-In

The engine requires no special break-in other than changing the oil after the first five hours of operation. Operate the transaxle in all gears to ensure that the drive system is functioning correctly. After the first five hours of operation, check the condition of the belts.

Adjusting the Height-of-Cut

The height-of-cut may be set in one of six positions from approximately 1-1/2 to 4 in. (38 to 102 mm).

1. Ensure the PTO lever is in the Disengage position.
2. Move the height-of-cut control lever into the desired setting.
3. To engage the blade for cutting, move the PTO lever to Engage.

Operating Procedure

1. Move the PTO lever to Disengage.
2. Start the engine; refer to Starting and Stopping the Engine, page 18.

Important When the tractor is used for the first time, operate the transaxle in all gears to ensure that the drive system is functioning correctly, and become familiar with the controls and operating characteristics. Never shift while the machine is moving or without first depressing the clutch pedal; transaxle damage could result.

3. Depress the clutch pedal and shift the transaxle into the selected gear. Release the pedal slowly until the traction drive engages.

Important To avoid a jerky start and putting a heavy load on the transaxle, release the clutch pedal slowly. If shifting into reverse gear is difficult, jog the clutch pedal in and out to get the gears to mesh. Do not force the gear shift because damage may result. Should you encounter a jerking or grabbing condition during operation, contact your local Authorized Service Dealer for assistance.

4. To engage the blade for cutting, move the height-of-cut control to the desired setting. Place the throttle in the Operate position. Then move the PTO lever to the Engage position.
5. To stop the engine, depress the clutch and brake pedals and move the throttle control to Slow. Move the PTO lever to Disengage, the gear shift into neutral, engage the parking brake, and rotate the ignition key to Off to stop the engine.

The Safety Interlock System



Caution



If safety interlock switches are disconnected or damaged the machine could operate unexpectedly causing personal injury.

- Do not tamper with the interlock switches.
- Check the operation of the interlock switches daily and replace any damaged switches before operating the machine.
- Replace switches every two years regardless of whether they are operating properly or not.

Understanding the Safety Interlock System

The safety interlock system is designed to prevent the engine from starting unless:

- The power-take-off (PTO) is Off.
- The gear shift lever is in neutral (N).

The safety system is designed to stop the engine if:

- You rise from the seat when the clutch/brake pedal is released.
- You rise from the seat when the PTO is Engaged.
- You shift into reverse with the PTO engaged and the operating-in-reverse interlock not deactivated.

Setting the KeyChoice™ Switch to Operate in Reverse

An interlock feature on the tractor prevents the power take off (PTO) from operating when backing up. If you shift into reverse with the PTO engaged (i.e., with mower blades or other attachment running), the engine will stop.

Do not mow in reverse unless absolutely necessary.

If you need to use the PTO while backing up, you can turn off this interlock feature using the KeyChoice switch located near the seat bracket (Fig. 11).



Danger



You could back over a child or bystander while the mower blade(s) or other attachment is engaged and cause serious injury or death.

- Do not mow in reverse unless absolutely necessary.
- Do not insert the KeyChoice key unless it is absolutely necessary.
- Always look backward and down before backing up.
- Use the KeyChoice switch only if you are certain no children or other bystanders will enter the mowing area.
- Be very observant after deactivating the interlock because the sound of the engine may prevent you from noticing that a child or bystander has entered the work area.
- Always remove both the ignition and KeyChoice keys and put them in a safe place out of the reach of children or unauthorized users when leaving the unit unattended.

1. Engage the PTO.
2. Insert the KeyChoice key into the switch (Fig. 11).

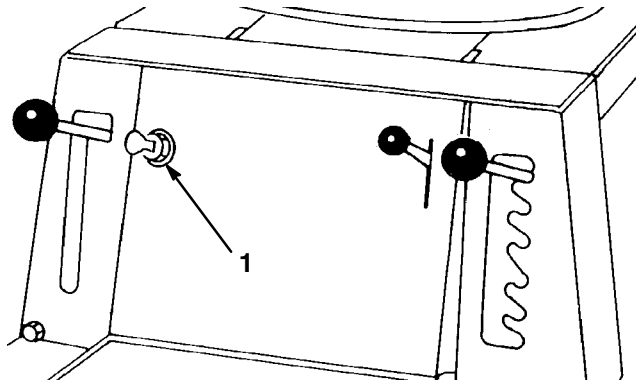


Figure 11

1. KeyChoice switch

3. Turn the KeyChoice key.

A red light on the front console (Fig. 12) turns on, indicating that the interlock is disabled.

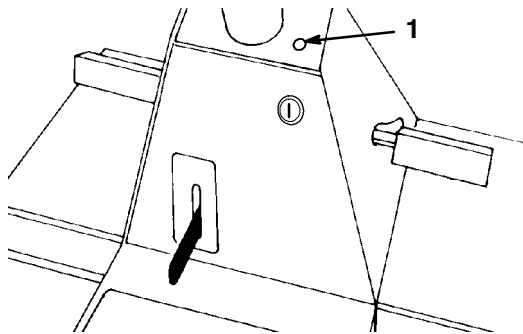


Figure 12

1. Operating-in-reverse light

4. Shift into reverse and complete your task.
5. Stop the PTO of the engine to activate the interlock.
6. Remove the KeyChoice key and put it in a safe place out of reach of children.

Testing the Safety Interlock System

Test the safety interlock system before you use the machine each time. If the safety system does not operate as described below, have an Authorized Service Dealer repair the safety system immediately.

1. Move the gear shift into neutral.
2. Move the PTO lever to Engage. Sit on the seat and rotate the ignition key to Start; the engine should not crank. If it does, the interlock system is malfunctioning, and it must be repaired by an Authorized Service Dealer. If the engine does not crank, proceed to step 3.
3. Move the PTO lever to Disengage. Sit on the seat, depress the brake and clutch pedals, engage the parking brake, and shift into gear. Rotate the ignition key to Start; the engine should not crank. If it does, the interlock system is malfunctioning and must be repaired by an Authorized Service Dealer. If the engine does not crank, proceed to step 4.
4. Sit on the seat, move the gear shift into neutral, and the PTO lever to Disengage. Ensure that the parking brake is engaged. Rotate the ignition key to Start; the engine should start and continue to run. Then engage the PTO lever and carefully rise from the seat; the engine should stop. If the engine does not stop running, shut the engine off and have the interlock system repaired by an Authorized Service Dealer. If the engine shuts off when you rise from the seat, the interlock system is functioning correctly and the tractor can be operated safely.
5. Put the PTO lever in the Disengage position and the gear shifter in neutral. Start the engine. While the engine is running, move the PTO lever to the Engage position, push in the clutch, and put the gear shifter in reverse. The engine should stop.
6. Put the PTO lever in the Disengage position and the gear shifter in neutral. Start the engine. Move the PTO lever to the Engage position and turn the KeyChoice key and release it. The KeyChoice warning light should illuminate. Move the PTO lever to the Disengage position and the KeyChoice warning light should turn off.

Side Discharging or Bagging

To side discharge or use the bagging attachment, stop the engine and wait for all moving parts to stop.

1. Shut the engine off and remove the ignition key.
2. Remove the wing nut securing the discharge cover (Fig. 13) to the mower housing. **Never remove the grass deflector from the mower housing (Fig. 13).**
3. Lift the grass deflector and metal tab together to enable the removal of the metal tab. Continue to lift the grass deflector enough to remove the plastic discharge cover off of the long bolt. Save the discharge cover and metal tab for possible future installation.
4. Install the wing nut and tighten it. Lower the grass deflector fully down. The tractor is ready for side discharge or bagging.

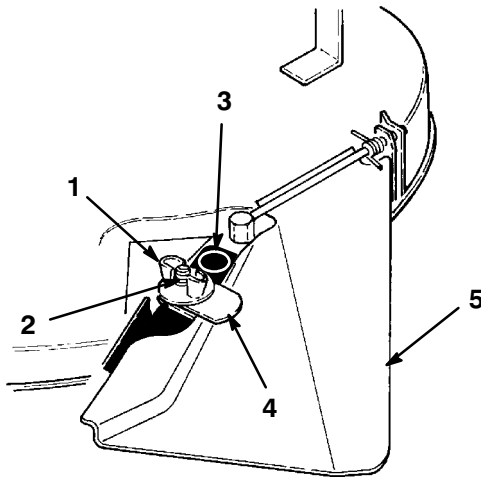


Figure 13

- | | |
|----------------------------|--------------------|
| 1. Wing nut | 4. Metal tab |
| 2. Long bolt | 5. Grass deflector |
| 3. Plastic discharge cover | |

Note: When the bagger is full, the mower will begin to inject clippings down into the grass.

For improved bagger performance, change to the high sail blade and remove the Recycler® kickers. If you no longer wish to side discharge or bag clippings, the discharge cover can be installed by securing it to the mower housing with the wing nut.

Important When the discharge cover is in place, it **must** be secured to the grass deflector with the metal tab and wing nut.



Danger



Without the grass deflector, discharge cover, or complete grass catcher assembly mounted in place, you and others are exposed to blade contact and thrown debris. Contact with the rotating mower blade(s) and thrown debris will cause injury or death.

- **Never remove the grass deflector from the mower because the grass deflector routes material down toward the turf. If the grass deflector is ever damaged, replace it immediately.**
- **Never put your hands or feet under the mower.**
- **Never try to clear the discharge area or mower blades unless you move the power take off (PTO) to Off and rotate the ignition key to Off. Also remove the key and pull the wire off of the spark plug(s).**

Driving Forward or Backward

The throttle control regulates the engine speed as measured in rpm (revolutions per minute). Place the throttle control in the Fast position for best performance while mowing.

To go forward, push the clutch in and place the gear shifter in a forward gear, release the parking brake, and slowly release the clutch. To go in reverse push the clutch in to stop, and after stopping completely, place the gear shifter in reverse. Slowly release the clutch.

Note: For reverse motion, with the PTO engaged, the operating-in-reverse interlock must be deactivated by the KeyChoice switch located in front of and below the seat.

Stopping the Machine

To stop the machine, push the clutch in and shift to neutral (N). Disengage the PTO, and turn the ignition key to Off to stop the engine. Also set the parking brake if you leave the machine unattended; refer to Setting the Parking Brake, page 15. Remember to remove the keys from the ignition and KeyChoice switches.



Caution



Children or bystanders may be injured if they move or attempt to operate the tractor while it is unattended.

Always remove the ignition and KeyChoice keys and set the parking brake when leaving the machine unattended, even if it is just for a few minutes.

Important To prevent brake wear, do not “Ride the Brakes.” Shift to a lower speed for slower ground speed. Choose a slow speed so that you will not have to stop or shift while on the slope.

Positioning the Seat

The seat can move forward and backward. Position the seat where you have the best control of the machine and are most comfortable.

1. Raise the seat and loosen the locknuts (Fig. 14).
2. Slide the seat to the desired position and tighten the locknuts.

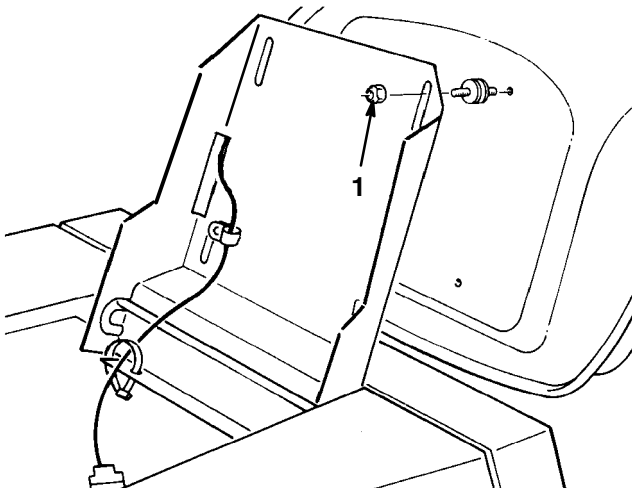


Figure 14

1. Locknuts

Recycler[®] Mowing Tips

Recycler Rider Features

Your Toro Recycler rider has a new and completely different cutting concept. It leaves your lawn with a bagged look without bagging clippings. The rider is equipped with special parts (Fig. 15) which increase your ability to cut and recut grass clippings, leaves, and other yard debris into tiny particles which are injected down into the grass. These parts are:

- Deck ring
- Special blade and blade stiffener
- Discharge cover
- Four special kickers strategically positioned on the underside of the mower deck. A fifth kicker is molded into the discharge cover.

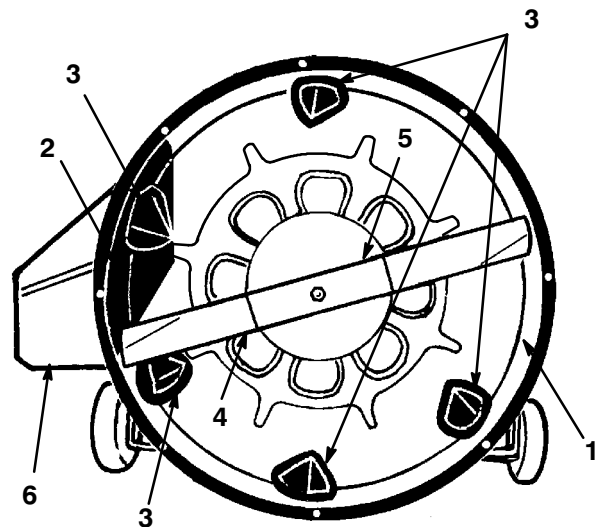


Figure 15

- | | |
|--------------------|--------------------|
| 1. Deck ring | 4. Blade |
| 2. Discharge cover | 5. Blade stiffener |
| 3. Kickers | 6. Grass deflector |

Tips for Cutting Grass

Fast Throttle Setting

For best mowing and maximum air circulation, operate the engine at Fast. Air is required to thoroughly cut grass clippings, so do not set the height-of-cut too low or totally surround the mower by uncut grass. Always try to have one side of the mower free from uncut grass, which allows air to be drawn into the mower. When making an initial cut thru center of uncut area, operate the tractor at a slower ground speed and back up if the mower starts to clog.

Using the Mower for the First Time

Cut the grass slightly longer than normal to ensure that the cutting height of the mower housing does not scalp any uneven ground. However, the cutting height used in the past is generally the best one to use. When cutting grass longer than six inches (15.2 cm) tall, you may want to cut the lawn twice to ensure an acceptable quality of cut.

Cut 1/3 of the Grass Blade

It is best to cut only about 1/3 of the grass blade. Cutting below the 3rd setting is not recommended unless grass is sparse or it is late fall when grass grows more slowly.

Mowing Direction

Alternate mowing direction to keep the grass standing straight. This also helps disperse clippings which enhances decomposition and fertilization.

Mow at Correct Intervals

Normally, mow every four days. But remember, grass grows at different rates at different times. So to maintain the same cutting height, which is a good practice, mow more often in early spring. As the grass growth rate slows in mid summer, mow less frequently. If you cannot mow for an extended period, first mow at a high cutting height; then mow again two days later with a lower height setting.

Avoid Cutting Too Low

If the cutting width of the mower is wider than the mower you previously used, raise the cutting height one notch to ensure that uneven turf is not cut too short.

Long Grass

If the grass is ever allowed to grow slightly longer than normal, or if it contains a high degree of moisture, raise the cutting height higher than usual and cut the grass at this setting. Then cut the grass again using the lower, normal setting.

When Stopping

If the machine must be stopped while mowing, a clump of grass clippings may drop onto your lawn. To avoid this:

1. With blade engaged, move onto a previously cut area.
2. To disperse the clippings evenly, raise the mower one or two height-of-cut settings while driving forward with the blade engaged.

Keep the Underside of the Mower Clean

Use the washout port to clean clippings and dirt from the underside of the mower after each use. If grass and dirt build up inside the mower, cutting quality will eventually become unsatisfactory.

Blade Maintenance

Maintain a sharp blade throughout the cutting season because a sharp blade cuts cleanly and without tearing or shredding the grass blades. Tearing and shredding turns grass brown at the edges, which slows growth and increases the chance of diseases. Every 30 days, check the cutter blade for sharpness and file down any nicks.

Tips for Cutting Leaves

In the fall, you can cut your leaves up into fine particles and inject the particles down into the grass. When spring arrives, the leaf particles will have decomposed and restored valuable nutrients to the soil.

- When cutting is complete, always be sure that 50% of the lawn shows through the finely cut leaf cover. This may require one or more passes over the leaves.
- If there are more than five inches of leaves on the lawn, raise the deck one or two notches higher. This makes it easier to feed leaves under the mower deck.
- If leaves are not cut up fine enough to be hidden down in the grass, make a second pass 90 degrees to the first pass.
- If you cut up a lot of oak leaves, you might want to add lime to your grass in the spring. Lime reduces the acidity of oak leaves.

Maintenance

Note: Determine the left and right sides of the machine from the normal operating position.

Recommended Maintenance Schedule

Maintenance Service Interval	Maintenance Procedure
After first use	<ul style="list-style-type: none"> • Change the oil.
Each use	<ul style="list-style-type: none"> • Check the oil. • Check the system interlock. • Check the cutting blades. • Check the brake. • Wash the underside of the mower. • Clean the outside of the engine.
Every 25 hours	<ul style="list-style-type: none"> • Grease the front axle spindles, wheel bearings, and rear axle.² • Lubricate pivot points.² • Service the air cleaner pre-cleaner.² • Check the spark plug. • Remove the rear wheels and grease the axle grease fittings. • Check the tire pressure.
Every 50 hours	<ul style="list-style-type: none"> • Change the oil.¹
Every 100 hours	<ul style="list-style-type: none"> • Service the paper air cleaner.² • Replace the spark plug. • Check the front wheel toe-in.
Before storage	<ul style="list-style-type: none"> • Perform all of the maintenance procedures listed above. • Check the blade drive belt. • Check the traction drive belt. • Drain the gasoline. • Paint chipped surfaces.
After storage	<ul style="list-style-type: none"> • Check the system interlock. • Check the brake. • Check the spark plug.

¹Change the oil every 25 hours when operating the engine under heavy load or in high temperatures.

²Clean more often under dusty, dirty conditions.

Important Refer to your engine operator's manual for additional maintenance procedures.



Caution



If you leave the key in the ignition switch, someone could accidentally start the engine and seriously injure you or other bystanders.

Remove the key from the ignition and disconnect the wire from the spark plug before you do any maintenance. Set the wire aside so that it does not accidentally contact the spark plug.

Engine Oil

Service Interval/Specification

Change the oil:

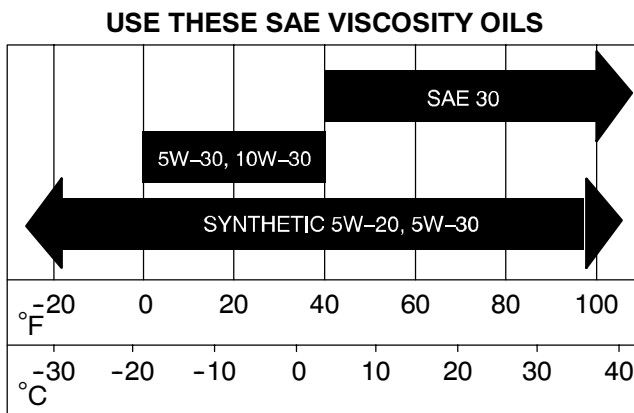
- After the first 5 operating hours
- After every 50 operating hours

Note: Change the oil more frequently when operating conditions are extremely dusty or sandy.

Oil Type: Detergent oil (API service SF, SG, SH, SJ, or higher)

Crankcase Capacity: 48 oz. (1.4 l)

Viscosity: See the table below



Checking the Oil Level

1. Park the machine on a level surface, disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
2. Clean around the oil dipstick (Fig. 16) so dirt cannot fall into the filler hole and damage the engine.

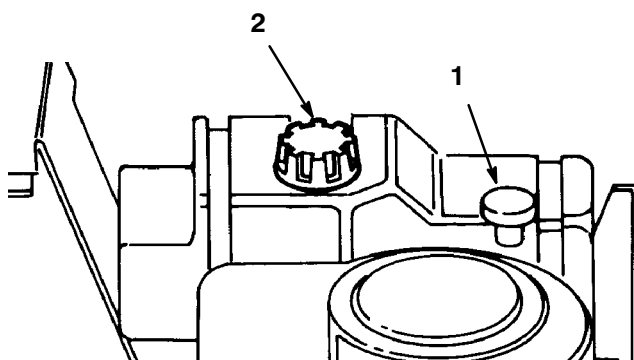


Figure 16

1. Oil dipstick 2. Fuel tank cap

3. Unscrew the oil dipstick and wipe the metal end clean (Fig. 16).

4. Screw the dipstick fully into the filler neck. Remove it and check the oil level on the dipstick. If the level is low, add only enough oil to raise the level to the Full mark.

Important Do not overfill the crankcase with oil because the engine may be damaged.

Changing and Draining the Oil

1. Start the engine and let it run for five minutes. This warms the oil so that it drains better.
2. Park the machine so that the drain side is slightly lower than the opposite side to ensure that the oil drains completely. Then disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
3. Place a pan below the drain plug (Fig. 17). Remove drain the plug. Allow all of the oil to flow into the drain pan. When the oil has drained completely, install the drain plug.

Note: Dispose of the used oil at a certified recycling center.

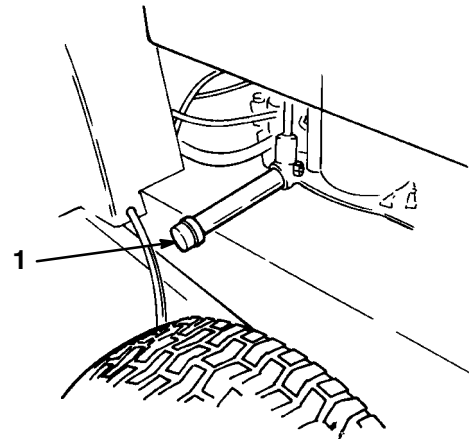


Figure 17

1. Drain cap

4. Unscrew the dipstick and slowly pour 80% of the specified amount of oil into the filler hole (Fig. 16). Check the oil level; refer to Checking the Oil Level, page 23, steps 3-4.

Brake

Always set the parking brake when you stop the machine or leave it unattended. If the parking brake does not hold securely, an adjustment is required.

Checking the Brake

1. Park the machine on a level surface, disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
2. If the rear wheels lock and skid when you try to push the tractor forward, no adjustment is required. An adjustment is required if the wheels turn and do not lock; refer to Adjusting the Brake, page 24.
3. Release the brake and push the tractor forward. The wheels should rotate freely.
4. If both conditions are met, no adjustment is required.

Adjusting the Brake

Adjust the brake pucks if the parking brake does not hold or braking power is not sufficient when the brake pedal is depressed. The brake is located on the left side of the transaxle (Fig. 18).

1. Shut the engine off and remove the ignition key. Pull the wire off of the spark plug.
2. Tighten the locknut approximately 1/4 turn clockwise (Fig. 18).

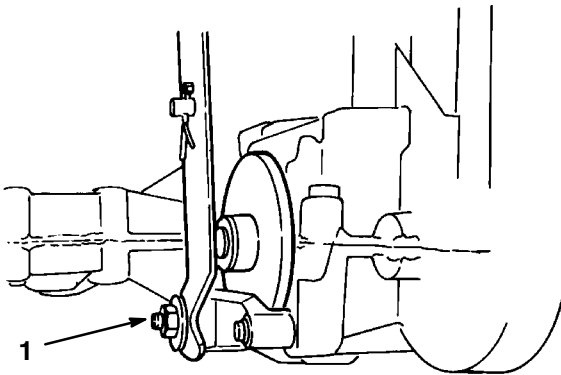


Figure 18

1. Locknut

3. Check the operation of the brake by pushing the tractor; no brake drag should be evident. If drag is evident, rotate the locknut an additional 1/8 turn counterclockwise or until there is no drag.

Important With the parking brake released, the rear wheels must rotate freely when you push the tractor. If brake action and free wheel rotation cannot be achieved, contact your service dealer immediately.

Greasing and Lubrication

Service Interval/Specification

Grease the machine after every 25 operating hours or yearly, whichever occurs first. Grease more frequently when operating conditions are extremely dusty or sandy.

Grease Type: General-purpose grease

How to Grease

1. Disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
2. Clean the grease fittings with a rag. Make sure to scrape any paint off of the front of the fitting(s).
3. Connect a grease gun to the fitting. Pump grease into the fittings.
4. Wipe up any excess grease.

Where to Add Grease

1. Lubricate the front wheels and steering spindles until grease begins to ooze out of the bearings (Fig. 19).

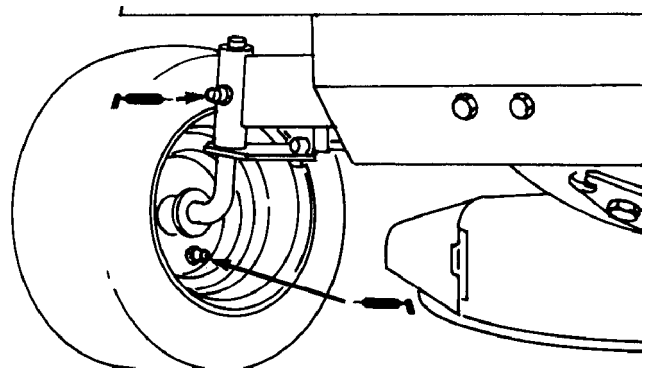


Figure 19

2. Grease the rear axles with one to two pumps of No. 2 general purpose grease. The fittings are located just inside of the rear tires on the bottom of the transaxle (Fig. 20).

Lubricate Pivot Points

The mechanical pivot points on the tractor must be oiled after every 25 hours of operation. Lubricate more frequently when conditions are dusty or sandy.

1. Oil the pivot points of the steering, drive, brake, clutch, and deck engagement linkage (Fig. 20). Wipe up any excess oil.

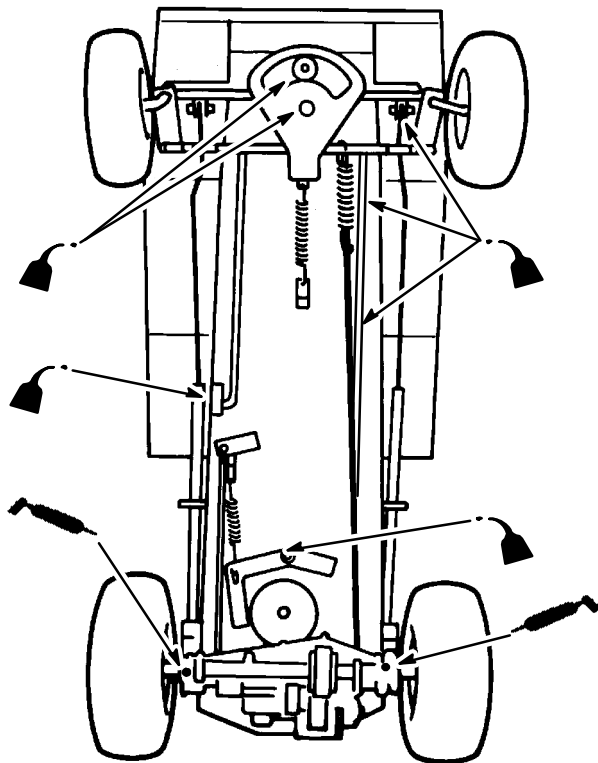


Figure 20

2. Remove the mower; refer to Removing and Installing the Cutting Unit, page 31.
3. Lubricate the mower mounts (Fig. 21). Wipe up any excess oil.

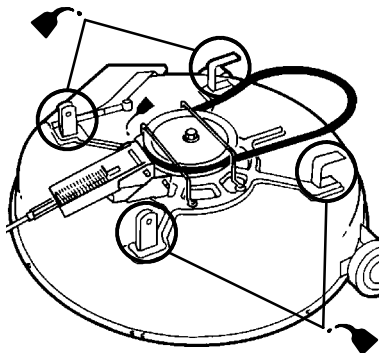


Figure 21

4. Install the mower; refer to Removing and Installing the Cutting Unit, page 31.

Air Cleaner

Service Interval/Specification

Foam Element: Clean and oil after every 25 operating hours, or yearly, whichever occurs first.

Paper Element: Replace every 100 operating hours or yearly, whichever occurs first.

Note: Service the air cleaner more frequently (every few hours) if operating conditions are extremely dusty or sandy.

Removing the Foam and Paper Elements

1. Remove the wire from the spark plug.
2. Unscrew the knob and remove the air cleaner cover (Fig. 22).

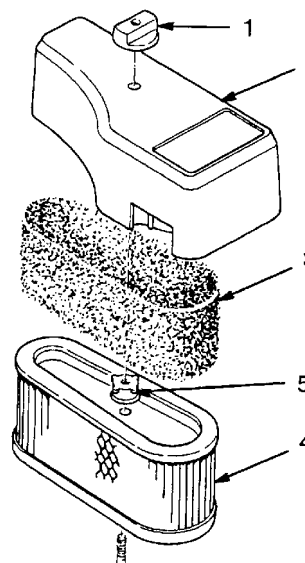


Figure 22

- | | |
|----------------------|------------------|
| 1. Knob | 4. Paper element |
| 2. Air cleaner cover | 5. Nut |
| 3. Foam element | |

3. Carefully slide the foam element off of the paper element (Fig. 22).
4. Unscrew the nut and remove the paper element (Fig. 22).

Cleaning the Foam and Paper Elements

1. Foam element:
 - A. Wash the foam element in liquid soap and warm water. When the element is clean, rinse thoroughly.
 - B. Dry the element by squeezing it in a clean cloth.
 - C. Saturate the element in engine oil. Squeeze it in a clean cloth to remove excess oil.

Important Replace the foam element if it is torn or worn.

2. Paper element:
 - A. Lightly tap the element on a flat surface to remove dust and dirt.
 - B. Inspect the element for tears, an oily film and damage to the rubber seal.

Important Never clean the paper element with pressurized air or liquids, such as solvent, gas, or kerosene. Replace the paper element if it is damaged or cannot be cleaned thoroughly.

Installing the Foam and Paper Elements

Important To prevent engine damage, always operate the engine with the complete foam and paper air cleaner assembly installed.

1. Clean the air cleaner base carefully to prevent dirt from entering the carburetor.
2. Carefully slide the foam element onto the paper air cleaner element (Fig. 22).
3. Slide the air cleaner assembly onto the long rod. Tighten the nut securely (Fig. 22).

Note: Make sure the rubber seal is flat against the air cleaner base.

4. Install the air cleaner cover and knob (Fig. 22). Tighten the knob securely.

Spark Plug

Service Interval/Specification

Install a new spark plug after every 100 operating hours. Check the spark plug after every 25 operating hours. Make sure the air gap between the center and side electrodes is correct before installing the spark plug. Use a spark plug wrench for removing and installing the spark plug and a gapping tool/feeler gauge to check and adjust the air gap.

Type: Champion RJ-19LM

Air gap: 0.030 in. (0.76 mm)

Removing the Spark Plug

1. Disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
2. Pull the wire off of the spark plug (Fig. 23). Clean around the spark plug to prevent dirt from falling into the engine and potentially causing damage.
3. Remove the spark plug(s).

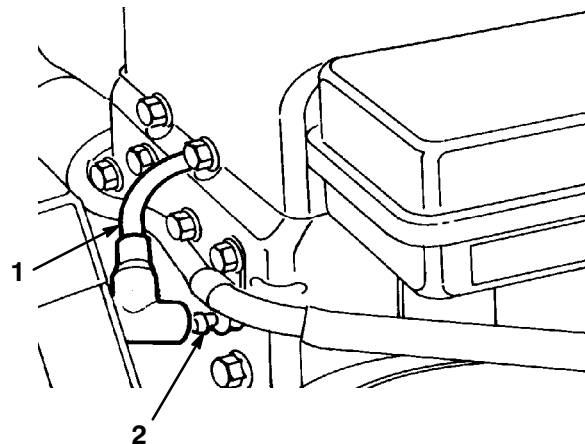


Figure 23

1. Spark plug wire 2. Spark plug

Checking the Spark Plug

1. Look at the center of the spark plug(s) (Fig. 24). If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means the air cleaner is dirty.

Important Never clean the spark plug. Always replace the spark plug when it has a black coating, worn electrodes, an oily film, or cracks.

2. Check the gap between the center and side electrodes (Fig. 24). Bend the side electrode (Fig. 24) if the gap is not correct.

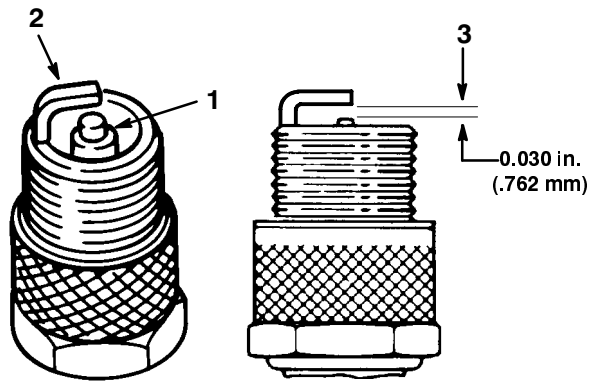


Figure 24

1. Center electrode insulator
2. Side electrode
3. Air gap (not to scale)

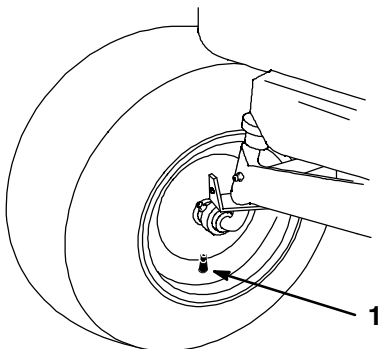
Installing the Spark Plug

1. Install the spark plug. Make sure the air gap is set correctly.
2. Tighten the spark plug(s) to 15 ft.-lb. (20 N·m).
3. Push the wire onto the spark plug (Fig. 23).

Tire Pressure

Service Interval/Specification

Maintain the air pressure in the front and rear tires at 20 psi (138 kPa). Check the pressure at the valve stem after every 25 operating hours or monthly, whichever occurs first (Fig. 25). Check the tires when they are cold to get the most accurate pressure reading.



2323

Figure 25

1. Valve stem

Front Wheel Toe-In

Service Interval/Specification

Maintain toe-in of the front wheels as specified. If there is uneven tire wear, lawn scuffing, or hard steering develops, an adjustment may be required. Check the toe-in after every 100 operating hours or yearly, whichever occurs first (Fig. 26).

Specification: .06-.25 in. (1.5-6.3 mm) toe-in on the front wheels.

Measuring Toe-in

1. Disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
2. Push the front tires out, at the front, to remove normal looseness in the linkage.
3. Measure between the wheels, at spindle level, at the front and rear of the wheels (Fig. 26).

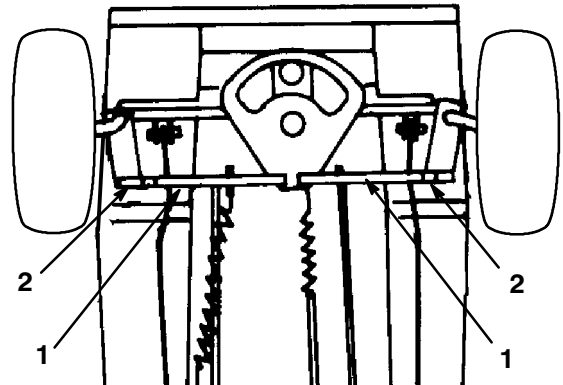


Figure 26

1. Tie rod (only one rod is adjustable)
2. Jam nut

The front measurement should be less than the rear, as specified under Adjusting the Toe-In, page 27.

Adjusting the Toe-In

1. To align the front wheels, loosen the jam nut and turn tie rod end (there is only one adjustable tie rod) until the center line distance across the front of the wheels (d1) is .06-.25 in. (1.5-6.3 mm) less than the center line distance across the rear of the front wheels (d2) (Fig. 26 & 27).

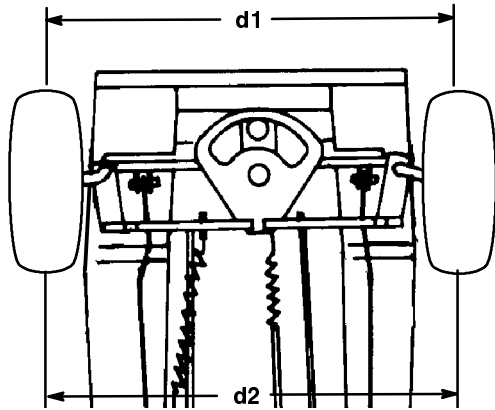


Figure 27

Draining the Fuel Tank



Danger



In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- Drain gasoline from the fuel tank when the engine is cold. Do this outdoors in an open area. Wipe up any gasoline that spills.
- Never smoke when draining gasoline, and stay away from an open flame or where a spark may ignite the gasoline fumes.

1. Clean the area around the fuel tank cap so foreign matter cannot enter the filler hole when the cap is removed. Remove the cap from the fuel tank.
2. Using a pump-type syphon, drain the gasoline into a clean gas can.

Note: There is no other recommended way to drain gasoline from the fuel tank, other than by using a pump-type syphon. An inexpensive syphon can be purchased at a hardware store.

Battery



Warning



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

Service Interval/Specification

Always keep the battery clean and fully charged. Use a paper towel to clean the battery case. If the battery terminals are corroded, clean them with a solution of four parts water and one part baking soda. Apply a light coating of grease to the battery terminals to prevent corrosion.

Voltage: 12 v, 160 Cold Cranking Amps

Removing the Battery



Warning



Battery terminals or metal tools could short against metal tractor components causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.

- When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the tractor.
- Do not allow metal tools to short between the battery terminals and metal parts of the tractor.

1. Disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
2. Tip the seat forward to see the battery.
3. Disconnect the negative (black) ground cable from the battery post (Fig. 28).



Warning



Incorrect battery cable routing could damage the tractor and cables causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.

- Always *disconnect* the negative (black) battery cable before disconnecting the positive (red) cable.
- Always *connect* the positive (red) battery cable before connecting the negative (black) cable.

4. Slide the rubber cover up the positive (red) cable. Disconnect the positive (red) cable from the battery post (Fig. 28).
5. Remove the wing nut securing the battery hold-downs to the tractor chassis (Fig. 28).
6. Lift up on the top battery hold-down and pivot it rearward
7. Remove the battery from the chassis.

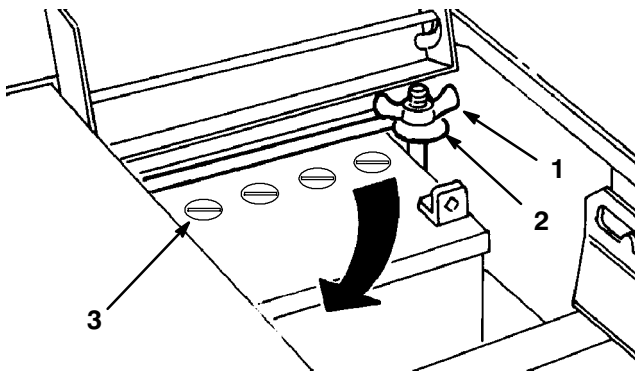


Figure 28

1. Wing nut
2. Battery hold down
3. Filler cap

Installing the Battery

1. Install the battery into the chassis (Fig. 29).
2. Secure the battery in the chassis with the hold-down rods.
3. Using the bolt and wing nut, connect the positive (red) cable to the positive (+) battery post (Fig. 29). Slide the rubber cover over the battery post.
4. Using the bolt and wing nut, connect the negative (black) cable to the negative (-) battery post (Fig. 29).

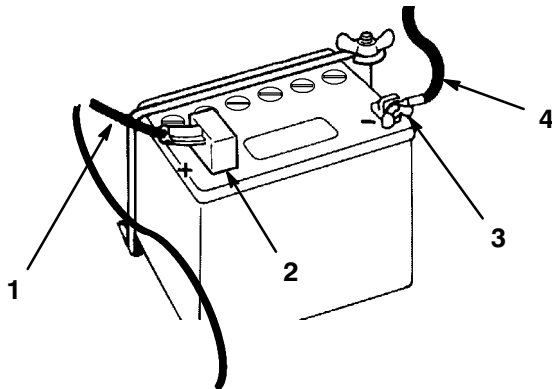


Figure 29

1. Positive (red) battery cable
2. Rubber boot
3. Wing nut and bolt
4. Negative (black) battery cable

Checking the Electrolyte Level



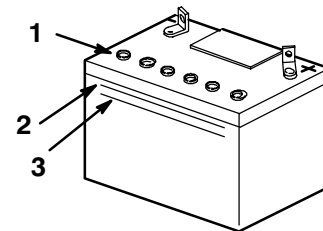
Danger



Battery electrolyte contains sulfuric acid which is a deadly poison and causes severe burns.

- Do not drink electrolyte and avoid contact with skin, eyes or clothing. Wear safety glasses to shield your eyes and rubber gloves to protect your hands.
- Fill the battery where clean water is always available for flushing the skin.

1. With the engine off, tip the seat forward to see the battery.
2. Look at the side of the battery. The electrolyte must be up to the Upper line (Fig. 30). Do not allow the electrolyte to fall below the Lower line (Fig. 30).



m-5004

Figure 30

1. Vent caps
2. Upper line
3. Lower line

3. If the electrolyte is low, add the required amount of distilled water; refer to Adding Water to the Battery, page 29.

Adding Water to the Battery

The best time to add distilled water to the battery is just before you operate the machine. This lets the water mix thoroughly with the electrolyte solution.

1. Remove the battery from the tractor; refer to Removing the Battery, page 28.
2. Clean the top of the battery with a paper towel.

Important Never fill the battery with distilled water while the battery installed in the tractor. Electrolyte could be spilled on other parts and cause corrosion.

3. Remove the vent caps from the battery (Fig. 30).

- Slowly pour distilled water into each battery cell until the electrolyte level is up to the Upper line (Fig. 30) on the battery case.

Important Do not overfill the battery because electrolyte (sulfuric acid) can cause severe corrosion and damage to the chassis.

- Wait five to ten minutes after filling the battery cells. Add distilled water, if necessary, until the electrolyte level is up to the Upper line (Fig. 30) on the battery case.
- Reinstall the battery vent caps.

Charging the Battery

! **Warning** !

Charging the battery produces gasses that can explode.

Never smoke near the battery and keep sparks and flames away from battery.

Important Always keep the battery fully charged (1.260 specific gravity). This is especially important to prevent battery damage when the temperature is below 32°F (0°C).

- Remove the battery from the chassis; refer to Removing the Battery, page 28.
- Check the electrolyte level; refer to Checking the Electrolyte Level, page 29.
- Make sure the vent caps are installed in the battery. Charge the battery for 1 hour at 25 to 30 amps or 6 hours at 4 to 6 amps. Do not overcharge the battery.
- When the battery is fully charged, unplug the charger from the electrical outlet, then disconnect the charger leads from the battery posts (Fig. 31).

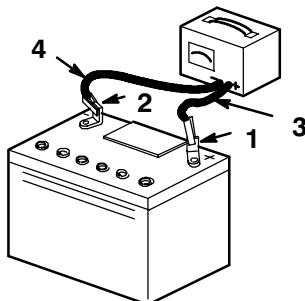


Figure 31

- | | |
|--------------------------|---------------------------|
| 1. Positive battery post | 3. Red (+) charger lead |
| 2. Negative battery post | 4. Black (-) charger lead |

m-4970

- Install the battery in the chassis; refer to Installing the Battery, page 29.

Note: Do not run the tractor with the battery disconnected because electrical damage may occur.

Servicing the Cutting Blade

To ensure a superior quality of cut, keep the blade(s) sharp. For convenient sharpening and replacement, you may want to have an extra blade(s).

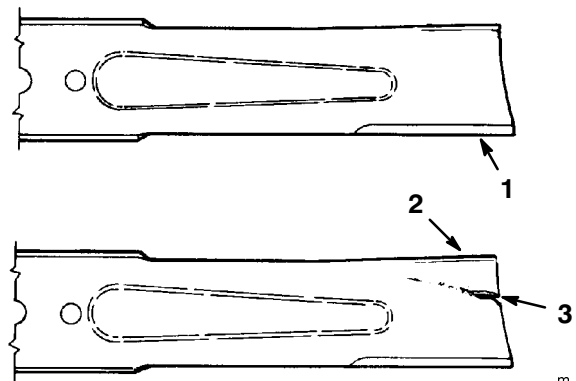
! **Danger** !

A worn or damaged blade can break, and a piece of the blade could be thrown into the operator's or bystander's area, resulting in serious personal injury or death.

- Inspect the blade periodically for wear or damage.
- Replace a worn or damaged blade.

Inspecting the Blade(s)

- Remove the mower; refer to Removing and Installing the Cutting Unit, page 31.
- Inspect the cutting edges (Fig. 32). If the edges are not sharp or have nicks, remove the blade(s) and sharpen them; refer to Sharpening the Blade(s), page 31.



m-151

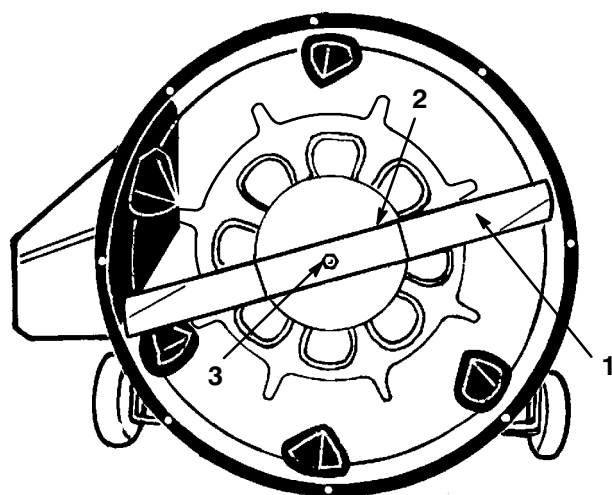
Figure 32

- | | |
|-----------------|----------------------|
| 1. Cutting edge | 3. Wear/slot forming |
| 2. Curved area | |

- Inspect the blade(s), especially the curved area (Fig. 32). If you notice any damage, wear, or a slot forming in this area (Fig. 32), immediately install a new blade.

Removing the Blade

1. Stop the engine and remove the ignition key. Pull the wire off of the spark plug.
2. Shift the transaxle into first gear and engage the parking brake.
3. Remove the cutting unit; refer to Removing and Installing the Cutting Unit, page 31.
4. Grasp the end of the blade using a rag or thickly padded glove. Then remove the blade bolt, curved washer, blade stiffener, and blade (Fig. 33). A block of wood may be wedged between the blade and the mower to lock the blade when you are removing the bolt.



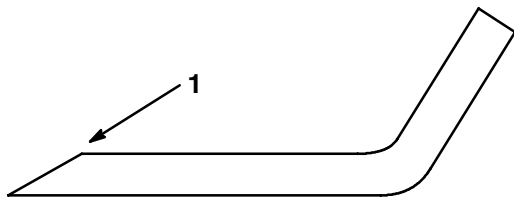
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Figure 33

- | | |
|--------------------|---------------------------------|
| 1. Blade | 3. Blade bolt and curved washer |
| 2. Blade stiffener | |

Sharpening the Blade

1. Use a file to sharpen the cutting edge at both ends of the blade (Fig. 34). Maintain the original angle. The blade retains its balance if the same amount of material is removed from both cutting edges.

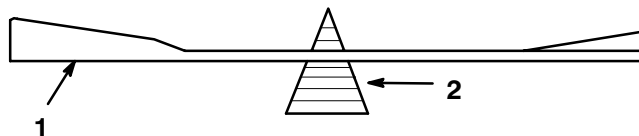


m-1854

Figure 34

1. Sharpen at original angle

2. Check the balance of the blade by putting it on a blade balancer (Fig. 35). If the blade stays in a horizontal position, the blade is balanced and can be used. If the blade is not balanced, file some metal off of the back side of the blade. Repeat this procedure until the blade is balanced.



m-1855

Figure 35

- | | |
|----------|-------------|
| 1. Blade | 2. Balancer |
|----------|-------------|

Installing the Blade(s)

1. Install the blade, blade stiffener, curved washer, and blade bolt (Fig. 33).

Important The curved part of the blade must be pointing toward the inside of the mower to ensure proper cutting.

2. Tighten the blade bolt to 45-60 ft.-lb. (61-81 N·m)

Important Make sure the cutting edge of the blade is away from the mower housing.

3. Install the cutting unit; refer to Removing and Installing the Cutting Unit, page 31.

Removing and Installing the Cutting Unit

1. Stop the engine and remove the ignition key. Pull the wire off of the spark plug.
2. Engage the parking brake and turn the front wheels completely to the right or left to allow more clearance for the cutting unit.
3. Set the height-of-cut control to the lowest setting.

- Loosen the belt guides near the engine pulley and rotate them out of the way. Remove the deck belt from the engine pulley (Fig. 36).

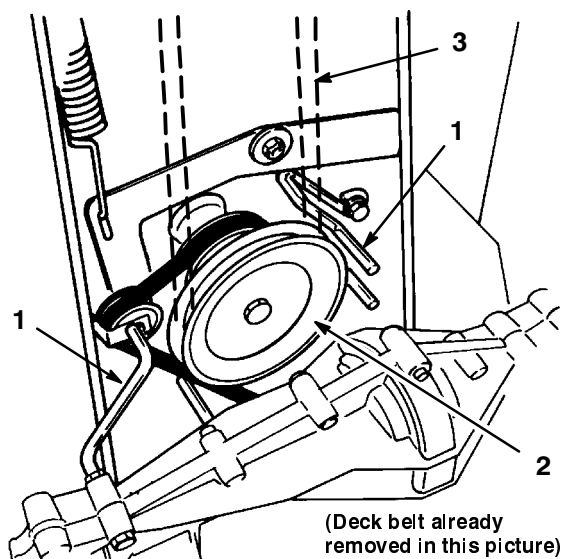


Figure 36

- | | |
|------------------|--------------|
| 1. Belt guides | 3. Deck belt |
| 2. Engine pulley | |

- Remove the cotter pin from the adjustment rod and pull it from the pivot tube arm (Fig. 37).

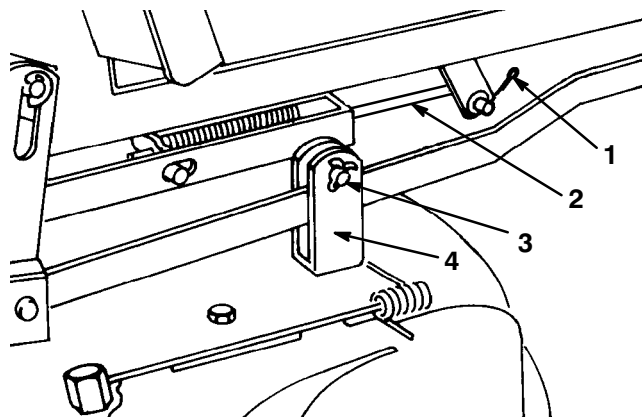


Figure 37

- | | |
|-------------------|------------------------------|
| 1. Cotter key | 3. Cotter pin and clevis pin |
| 2. Adjustment rod | 4. Front hanger bracket |

- Remove the cotter pins from the clevis pins on the front hanger brackets. Hold the front of the cutting unit in place with one hand and remove the clevis pins to lower the cutting unit to the ground. Pull the rear hanger brackets off the pins on the rear suspension arms. Set the height-of-cut control to the highest position and slide the cutting unit out from under the tractor.
- Install the cutting unit in the reverse order.

Replacing the Blade Drive Belt

- Engage the parking brake, stop the engine, and remove the ignition key. Pull the wire off the spark plug.
- Remove the cutting unit; refer to Removing and Installing the Cutting Unit, page 31.
- Loosen and remove the mounting screw securing each belt guide to the cutting unit. Pivot the belt guides away from the spindle pulley and remove the belt. Visually inspect the belt for wear or damage (Fig. 36).
- Install a new belt, if needed, then install the belt guides.
- Install the cutting unit; refer to Removing and Installing the Cutting Unit, page 31.

Adjusting the Blade Drive Belt

- Set the height-of-cut lever in the lowest setting and PTO lever to Engage.
- Remove the cotter pin from the adjustment rod (Fig. 37).
- Rotate the adjustment rod until there is 0.06 in. (1.5 mm) or less between the end of the slot in the engagement bracket and the outer diameter of the pin (Fig. 38).

Note: The adjustment rod is a left-hand thread.

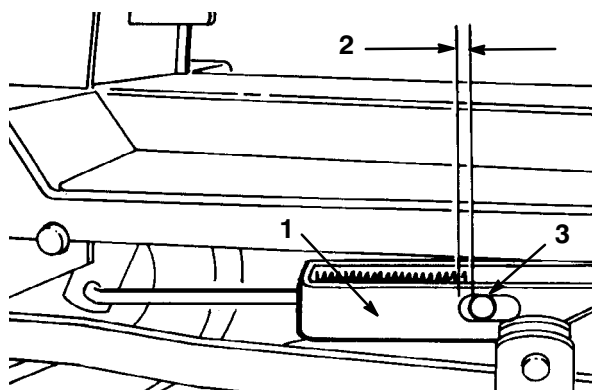


Figure 38

- | | |
|---------------------------|--------|
| 1. Engagement bracket | 3. Pin |
| 2. 0.06 in. max. (1.5 mm) | |

Replacing the Traction Drive Belt

1. Remove the cutting unit; refer to Removing and Installing the Cutting Unit, page 31.
 2. Remove the belt guides from the transaxle pulley (Fig. 39). Loosen the belt guides at the engine pulley and rotate them out of the way. Loosen the lock nut and remove the belt retainer from the idler pulley.
- Note:** To make belt removal easier, set and lock the clutch with the parking brake to remove tension from the belt.
3. Remove the deck belt from the engine pulley (Fig. 36).
 4. Remove the drive belt (Fig. 39). Inspect the belt for damage or wear.
 5. Install a new deck belt, if needed.
 6. Replace the belt guides for the transaxle pulley. Install the belt retainer on the idler pulley and tighten the lock nut.

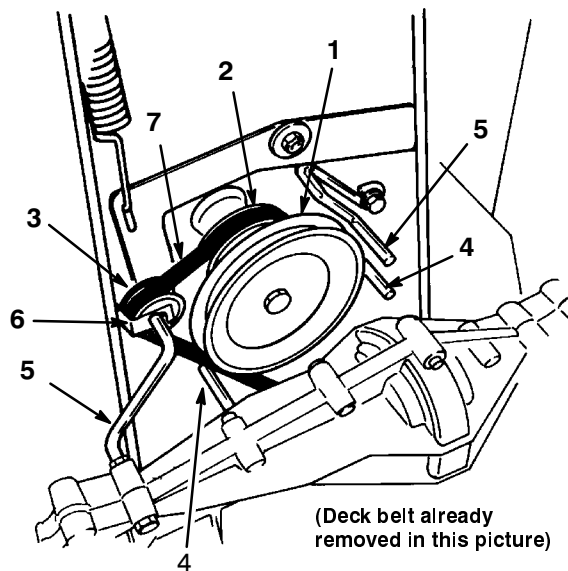


Figure 39

- | | |
|---------------------------------|-------------------------------|
| 1. Engine pulley | 5. Engine pulley belt guides |
| 2. Transaxle pulley | 6. Belt retainer and lock nut |
| 3. Idler pulley | 7. Drive belt |
| 4. Transaxle pulley belt guides | |

Important The idler retainer must be installed at an 80 to 90 degree angle to the idler mounting bracket (Fig. 40) or the tractor may creep with the clutch pushed down.

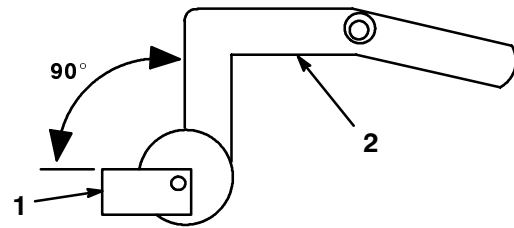


Figure 40

- | | |
|-----------------|---------------------------|
| 1. Idler pulley | 2. Idler mounting bracket |
|-----------------|---------------------------|

7. Install cutting unit: refer to Removing and Installing the Cutting Unit, page 31.

Leveling the Cutting Unit

If the mower does not cut level from side to side and the cutting blade is not bent, level the cutting unit as follows:

1. Place the tractor on level surface, engage the parking brake, stop the engine, and remove the ignition key.
2. Raise the seat or remove the left side panel from the tractor.
3. Place the height-of-cut lever in the Number 3 position and position the cutting blade at a right angle to the direction of rider travel.
4. Measure the blade tip height at one end of the blade. Rotate the blade 180 degrees and measure the same blade tip at the opposite side of the mower. The measurements should be within 1/8 in. (3 mm) of one another.
5. If the blade tip height is not within 1/8 inch (3 mm), level the cutting unit by loosening the height-of-cut support bracket capscrews and raising or lowering the bracket (Fig. 41).

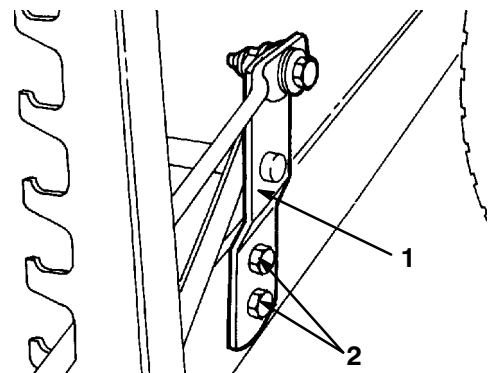


Figure 41

- | | |
|----------------------------------|--------------|
| 1. Height-of-cut support bracket | 2. Capscrews |
|----------------------------------|--------------|

6. Ensure the blade tip height is within 1/8 in. (3 mm) and tighten the capscrews.

Adjusting the Gear Shift Neutral Position

An adjustment to the gear shift rod may be required if the gear shift will not go into the neutral position.

1. Remove the cotter pin from the rod on the right side of the transaxle as viewed from the rear of the unit (Fig. 42).
2. Lift the rod out of the bracket hole (Fig. 42).
3. Rotate the rod one complete turn clockwise and insert rod into the hole in the bracket.
4. Move the gear shift selector into the Reverse position, then to Neutral, then to first gear, and then back to Neutral.
5. Try rolling the tractor backward and forward. If the wheels turn freely and the gear shift selector lines up with the Neutral mark on the gear shift guide, the adjustment is correct.

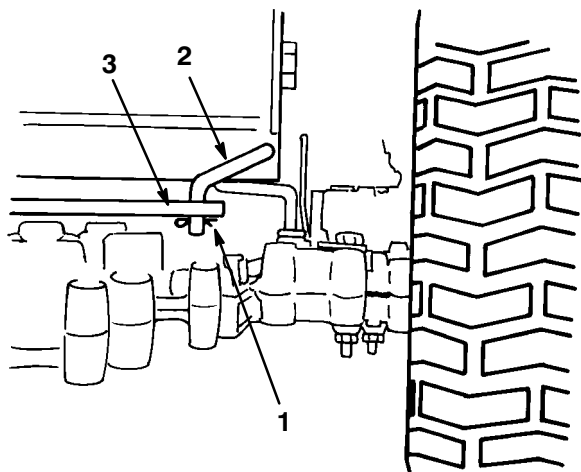
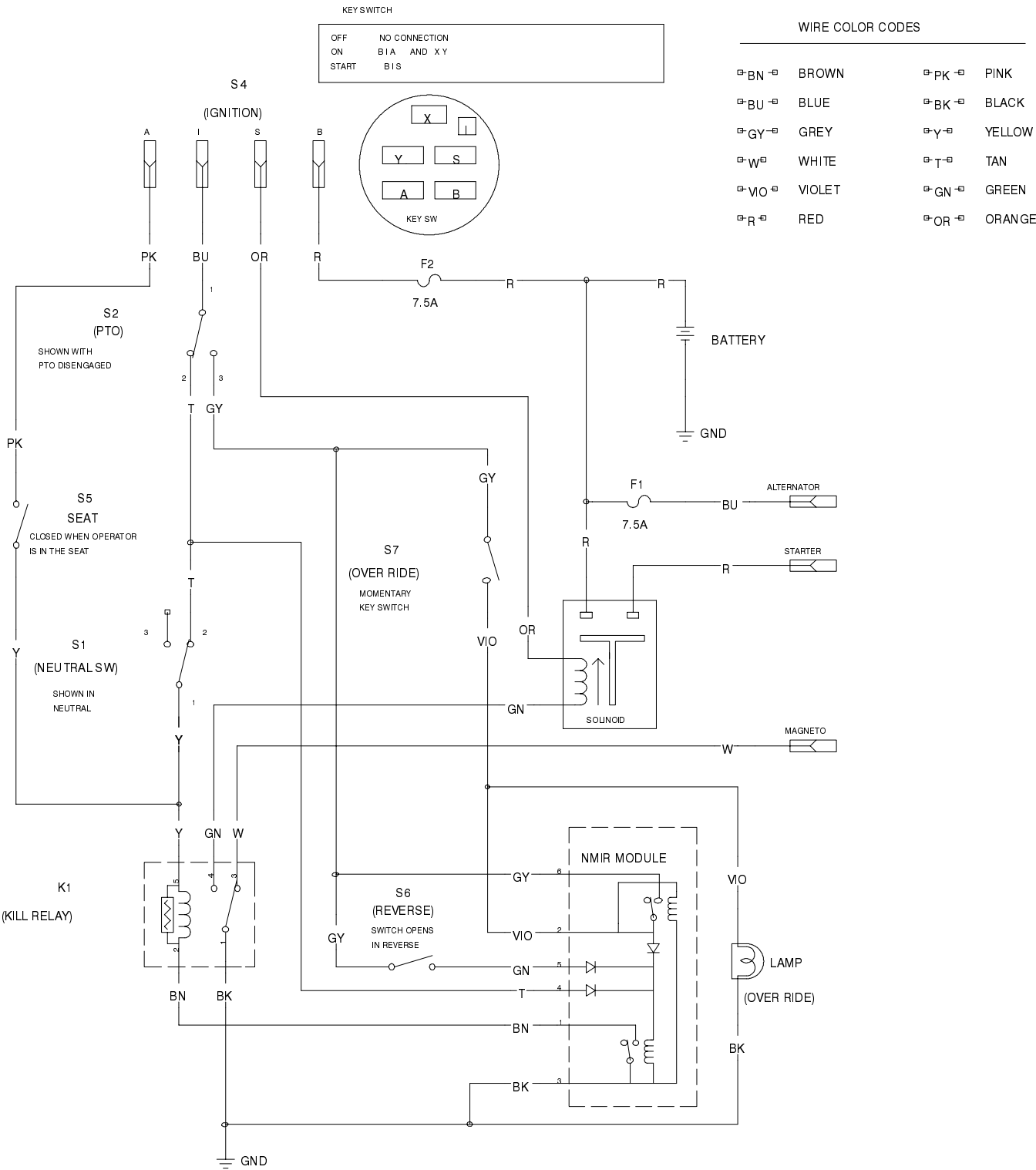


Figure 42

- | | |
|---------------|------------|
| 1. Cotter pin | 3. Bracket |
| 2. Rod | |

6. If the adjustment is not correct, remove the rod from the hole in the bracket again. Rotate the rod two turns counterclockwise and install the rod in the hole in the bracket.
7. Check the adjustment again by repeating step 5.
8. When the adjustment is correct, insert the cotter pin in the rod.

Wiring Diagram



Washing the Underside of the Mower

After each use, wash the underside of the mower to prevent grass buildup for improved mulch action and clipping dispersal.

1. Park the machine on a hard level surface, disengage the PTO, stop the engine, and remove the ignition key.
2. Attach the hose coupling to the end of the mower washout fitting, and turn the water on high (Fig. 43).

Note: Spread petroleum jelly on the washout fitting o-ring to make the coupling slide on easier and protect the o-ring.

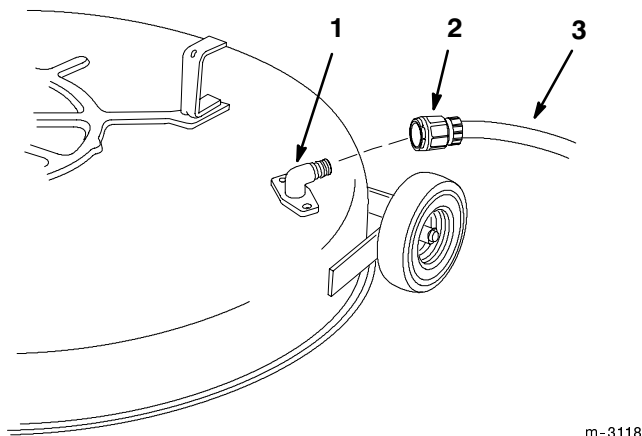


Figure 43

1. Washout port
2. Coupling

3. Hose

3. Lower the mower to the lowest height-of-cut.
4. Sit on the seat and start the engine. Engage the PTO and let the mower run for one to three minutes.
5. Disengage the PTO, stop the engine, and remove the ignition key. Wait for all moving parts to stop.
6. Turn the water off and remove the hose coupling from the washout fitting.

Note: If the mower is not clean after one washing, soak it and let it stand for 30 minutes. Then repeat the process.

7. Run the mower again for one to three minutes to remove excess water.



Warning



A broken or missing washout fitting could expose you and others to thrown objects or blade contact. Contact with blade or thrown debris contact will cause injury or death.

- **Replace broken or missing washout fitting immediately, before using mower again.**
- **Plug any hole(s) in mower with bolts and locknuts.**
- **Never put your hands or feet under the mower or through openings in the mower.**

Cleaning and Storage

1. Disengage the PTO, set the parking brake, stop the engine, and remove the ignition key.
2. Remove grass clippings, dirt, and grime from the external parts of the entire machine, especially the engine. Clean dirt and chaff from the outside of the engine cylinder head fins and blower housing.

Important You can wash the machine with mild detergent and water. **Do not use a pressure washer to wash the machine.** Pressure washing may damage the electrical system or wash away necessary grease at friction points. Avoid excessive use of water, especially near the control panel, lights, engine, and the battery.

3. Check the brake; refer to Brake, page 27.
4. Service the air cleaner; refer to Air Cleaner, page 25.
5. Grease the chassis; refer to Greasing and Lubrication, page 24.
6. Change the crankcase oil; refer to Engine Oil, page 23.
7. Check the tire pressure; refer to Tire Pressure, page 27.
8. For storage over 30 days, prepare the traction unit as follows:
 - A. Add a petroleum based stabilizer/conditioner to the fuel in the tank. Follow the mixing instructions from the stabilizer manufacturer (1 oz. per gallon). **Do not use an alcohol based stabilizer (ethanol or methanol).**

Note: A fuel stabilizer/conditioner is most effective when mixed with fresh gasoline and used at all times.

- B. Run the engine to distribute conditioned fuel through the fuel system (5 minutes).
- C. Stop the engine, allow it to cool, and drain the fuel tank; refer to Draining the Fuel Tank, page 28.
- D. Restart the engine and run until it stops.

- E. Choke or prime the engine.
- F. Start and run the engine until it will not start again. Use the primer, if equipped on the machine, several times to ensure that no fuel remains in the primer system.
- G. Dispose of fuel properly. Recycle as per local codes.

Important Do not store stabilizer/conditioned gasoline over 90 days.

- 9. Remove the spark plug(s) and check its condition; refer to Spark Plug, page 26. With the spark plug(s) removed from the engine, pour two tablespoons of engine oil into the spark plug hole. Use the electric starter to crank the engine and distribute the oil inside the cylinder. Install the spark plug(s); refer to Spark Plug, page 26. Do not install the wire on the spark plug(s).

- 10. Disconnect the negative battery cable. Clean the battery and battery terminals. Check the electrolyte level and charge it fully; refer to Battery, page 28. Leave the negative battery cable disconnected from the battery during storage.

Important The battery must be fully charged to prevent it from freezing and being damaged at temperatures below 32°F (0°C). A fully charged battery can be stored one winter season without recharging.

- 11. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is worn or damaged.
- 12. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
- 13. Store the machine in a clean, dry garage or storage area. Remove the ignition and KeyChoice keys from the mower and keep them in a memorable place. Cover the machine to protect it and keep it clean.

Troubleshooting

Problem	Possible Causes	Corrective Action
The starter does not crank.	<ul style="list-style-type: none"> 1. The PTO lever is engaged. 2. The battery is dead. 3. The electrical connections are corroded or loose. 4. The transaxle is in gear. 5. A relay or switch is damaged. 	<ul style="list-style-type: none"> 1. Move the PTO lever to Disengaged. 2. Charge the battery. 3. Check the electrical connections for good contact. 4. Position the shift lever in Neutral. 5. Contact an Authorized Service Dealer.
The engine does not idle or idles poorly.	<ul style="list-style-type: none"> 1. The air cleaner is dirty. 2. The idle speed is too low. 3. Dirt, water, or stale fuel is in the fuel system. 4. The spark plug is pitted, fouled, or the gap is incorrect. 	<ul style="list-style-type: none"> 1. Clean or replace the air cleaner element. 2. Adjust the carburetor. 3. Contact an Authorized Service Dealer. 4. Install a new, correctly-gapped spark plug.
The engine overheats.	<ul style="list-style-type: none"> 1. The engine load is excessive. 2. The oil level in the crankcase is low. 3. The cooling fins and air passages under the engine blower housing are plugged. 4. The carburetor is adjusted incorrectly. 	<ul style="list-style-type: none"> 1. Shift into a lower gear to reduce ground speed. 2. Add oil to the crankcase. 3. Remove the obstruction from the cooling fins and air passages. 4. Adjust the carburetor.

Problem	Possible Causes	Corrective Action
The engine will not start, starts hard, or fails to keep running.	<ol style="list-style-type: none"> 1. The fuel tank is empty. 2. The choke is not on. 3. The air cleaner is dirty. 4. The spark plug wire is loose or disconnected. 5. The spark plug is pitted, fouled, or the gap is incorrect. 6. Dirt, water, or stale fuel is in the fuel system. 7. The battery is dead. 8. The vent hole in the fuel tank cap is plugged. 9. The carburetor is adjusted incorrectly. 10. A module or switch is damaged. 	<ol style="list-style-type: none"> 1. Fill the fuel tank with gasoline. 2. Move the choke lever to On. 3. Clean or replace the air cleaner element. 4. Install the wire on the spark plug. 5. Install a new, correctly-gapped spark plug. 6. Contact an Authorized Service Dealer. 7. Charge the battery 8. Clean or replace the fuel cap. 9. Adjust the carburetor. 10. Contact an Authorized Service Dealer.
The engine loses power.	<ol style="list-style-type: none"> 1. The engine load is excessive. 2. The air cleaner is dirty. 3. The oil level in the crankcase is low. 4. The cooling fins and air passages under the engine blower housing are plugged. 5. The spark plug is pitted, fouled, or the gap is incorrect. 6. The vent hole in the fuel cap is plugged. 7. The carburetor is adjusted incorrectly. 8. Dirt, water, or stale fuel is in the fuel system. 	<ol style="list-style-type: none"> 1. Reduce your ground speed. 2. Clean the air cleaner element. 3. Add oil to the crankcase. 4. Remove the obstruction from the cooling fins and air passages. 5. Install a new, correctly-gapped spark plug. 6. Clean or replace the fuel cap. 7. Adjust the carburetor. 8. Contact an Authorized Service Dealer.
The blade does not rotate.	<ol style="list-style-type: none"> 1. The blade drive belt is worn, loose, or broken. 2. The blade drive belt is off of the pulley. 	<ol style="list-style-type: none"> 1. Install a new blade drive belt. 2. Install the blade drive belt and check the idler pulley and belt guides for the correct position.

Problem	Possible Causes	Corrective Action
There is an abnormal vibration.	<ol style="list-style-type: none"> 1. The engine mounting bolts are loose. 2. There is a loose engine pulley, idler pulley, or blade pulley 3. The engine pulley is damaged. 4. The cutting blade is bent or unbalanced. 5. The blade mounting bolt is loose. 6. The drive belt is damaged. 	<ol style="list-style-type: none"> 1. Tighten the engine mounting bolts. 2. Tighten the appropriate pulley. 3. Contact an Authorized Service Dealer. 4. Install new cutting blade(s). 5. Tighten the blade mounting bolt. 6. Install the blade drive belt and check the idler pulley and belt guides for the correct position.
The machine does not drive.	<ol style="list-style-type: none"> 1. The traction idler is adjusted incorrectly. 2. The traction belt is worn, loose, or broken. 3. The traction belt is off of the pulley. 4. The transmission does not shift. 	<ol style="list-style-type: none"> 1. Adjust the traction drive belt. 2. Contact an Authorized Service Dealer. 3. Contact an Authorized Service Dealer. 4. Contact an Authorized Service Dealer.



Consumer
Riding
Products

The Toro Total Coverage Guarantee

A Two-Year Full Warranty (Limited Warranty for Commercial Use)

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly promise to repair any Toro Product used for normal residential purposes* if defective in materials or workmanship. The following time periods apply from the date of purchase:

<u>Products</u>	<u>Warranty Period</u>
• All Products	2 year full warranty
• 300 and 5xi Series Tractors:	
Chassis	5 year full warranty
Front Axle	5 year full warranty
Drive Shaft (5xi Series Only)	5 year full warranty
• All Batteries	1 year full warranty

This warranty covers both the cost of parts and labor, and transportation within a fifteen mile radius of the servicing dealer.

This warranty applies to all consumer riding products and their attachments.

* Normal residential purposes means use of the product on the same lot as your home. Use at more than one location is considered commercial use, and the commercial use warranty would apply.

Limited Warranty for Commercial Use

Toro Consumer Products and attachments used for commercial, institutional, or rental use are warranted against defects in materials or workmanship for the following time periods from the date of purchase:

<u>Products</u>	<u>Warranty Period</u>
• All Products	90 day limited warranty
• 300 and 5xi Series Tractors	
Chassis	1 year limited warranty
Liquid Cooled Gas Engines	1 year limited warranty
Air Cooled Gas and Diesel Engines	2 year limited warranty

Instructions for Obtaining Warranty Service

Should you feel your Toro Product contains a defect in materials or workmanship, contact the retailer who sold you the product or any Authorized Service Dealer or Master Service Dealer. The Yellow Pages of your telephone directory is a good reference source. The dealer will either arrange service at his/her dealership or recommend another Authorized Service Dealer who may be more convenient. You may need proof of purchase (copy of registration card, sales receipt, etc.) for warranty validation.

Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

If for any reason you are dissatisfied with the Service Dealer's analysis of the defect in materials or workmanship or if you need a referral to a Toro Service Dealer, please feel free to contact us at:

Customer Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
952-888-8801 or 800-421-9684

Owner Responsibilities

You must maintain your Toro Product by following the maintenance procedures described in the operator's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

Items and Conditions Not Covered

There is no other express warranty except for special emission system coverage on some products. This express warranty does not cover:

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, tune-up parts, blade sharpening, brake and clutch adjustments.
- Any product or part which has been altered or misused or required replacement or repair due to normal wear, accidents, or lack of proper maintenance.
- Repairs necessary due to improper fuel, contaminants in the fuel system, or failure to properly prepare the fuel system prior to any period of non-use over three months.
- Pickup and delivery charges for distances beyond a fifteen mile radius from an Authorized Toro Service Dealer.

All repairs covered by this warranty must be performed by an Authorized Toro Service Dealer using Toro approved replacement parts.

General Conditions

Repair by an Authorized Toro Service Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.