

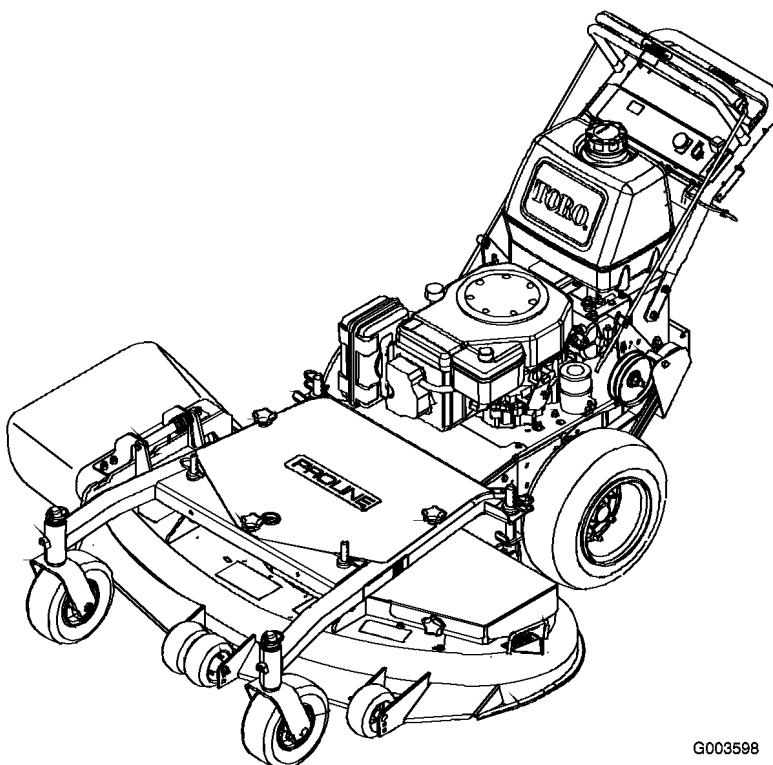
**TORO**<sup>®</sup>

**Count on it.**

# **Operator's Manual**

## **Mid-Size, T-bar, Gear, 15hp with 44in Side Discharge Mower**

**Model No. 30318—Serial No. 260000001 and Up**



## Warning

### CALIFORNIA Proposition 65 Warning

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

This spark ignition system complies with Canadian ICES-002

**Important:** This engine is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land. Other states or federal areas may have similar laws.

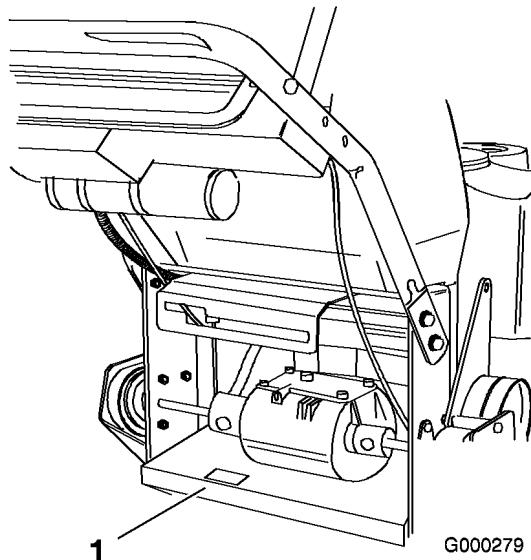
The enclosed Engine Owner's Manual is supplied for information regarding the US Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance, and warranty. Replacements may be ordered through the engine manufacturer.

## Introduction

Read this information carefully to learn how to operate and maintain your product properly and to avoid injury and product damage. You are responsible for operating the product properly and safely.

You may contact Toro directly at [www.Toro.com](http://www.Toro.com) for product and accessory information, help finding a dealer, or to register your product.

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 identifies the location of the model and serial numbers on the product. Write the numbers in the space provided.



**Figure 1**

1. Model and serial number location

**Model No.** \_\_\_\_\_

**Serial No.** \_\_\_\_\_

This manual identifies potential hazards and has safety messages identified by the safety alert symbol (Figure 2), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.



**Figure 2**

1. Safety alert symbol

This manual uses 2 other words to highlight information. **Important** calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

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# Safety

**Note:** The addition of attachments made by other manufacturers that do not meet American National Standards Institute certification will cause noncompliance of this machine.

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 B71.4-2004.

### Training

- Read the Operator's Manual and other training material. If the operator(s) or mechanic(s) can not read English it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner is responsible for training the users.
- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people or property.

### Preparation

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including hard hat, safety glasses and hearing protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys and wire which can be thrown by the machine.

- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
  - Use only an approved container
  - Never remove gas cap or add fuel with engine running. Allow engine to cool before refueling. Do not smoke.
  - Never refuel or drain the machine indoors.
- Check that operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.

### Operation

- Never run an engine in an enclosed area.
- Only operate in good light, keeping away from holes and hidden hazards.
- Be sure all drives are in neutral and parking brake is engaged before starting engine. Only start engine from the operator's position.
- Be sure of your footing while using this machine, especially when backing up. Walk, don't run. Never operate on wet grass. Reduced footing could cause slipping.
- Slow down and use extra care on hillsides. Be sure to travel side to side on hillsides. Turf conditions can affect the machine's stability. Use caution while operating near drop-offs.
- Slow down and use caution when making turns and when changing directions on slopes.
- Never raise deck with the blades running.
- Never operate with the PTO shield, or other guards not securely in place. Be sure all interlocks are attached, adjusted properly, and functioning properly.
- Never operate with the discharge deflector raised, removed or altered, unless using a grass catcher.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground, disengage drives, engage parking brake (if provided), shut off engine before leaving the operator's position for any reason including emptying the catchers or unclogging the chute.

- Stop equipment and inspect blades after striking objects or if an abnormal vibration occurs. Make necessary repairs before resuming operations.
- Keep hands and feet away from the cutting unit.
- Look behind and down before backing up to be sure of a clear path.
- Keep pets and bystanders away.
- Slow down and use caution when making turns and crossing roads and sidewalks. Stop blades if not mowing.
- Be aware of the mower discharge direction and do not point it at anyone.
- Do not operate the mower under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into or from a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

## Maintenance and storage

- Disengage drives, set parking brake, stop engine and remove key or disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning or repairing.
- Clean grass and debris from cutting unit, drives, mufflers, and engine to help prevent fires. Clean up oil or fuel spillage.
- Let engine cool before storing and do not store near flame.
- Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
- Park machine on level ground. Set parking brake. Never allow untrained personnel to service machine.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect the battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect the positive first and negative last.
- Use care when checking blades. Wrap the blade(s) or wear gloves, and use caution when

servicing them. Only replace blades. Never straighten or weld them.

- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.

## Toro Mower Safety

The following list contains safety information specific to Toro products and other safety information you must know.

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

This product is designed for cutting and recycling grass or, when equipped with a grass bagger, for catching cut grass. Any use for purposes other than these could prove dangerous to user and bystanders.

## General Operation

- Be sure the area is clear of other people before mowing. Stop the machine if anyone enters the area.
- Do not touch equipment or attachment parts which may be hot from operation. Allow to cool before attempting to maintain, adjust or service.
- Use only Toro approved attachments. Warranty may be voided if used with unapproved attachments.
- Check carefully for overhead clearances (i.e. branches, doorways, electrical wires) before operating under any objects and do not contact them.

## Slope Operation

All slopes and ramps require extra caution. If you feel uneasy on a slope, do not mow it.

- Remove obstacles such as rocks, tree limbs, etc. from the mowing area.
- Watch for holes, ruts or bumps. Tall grass can hide obstacles.
- Use caution near drop-offs, ditches, or embankments. The machine could suddenly

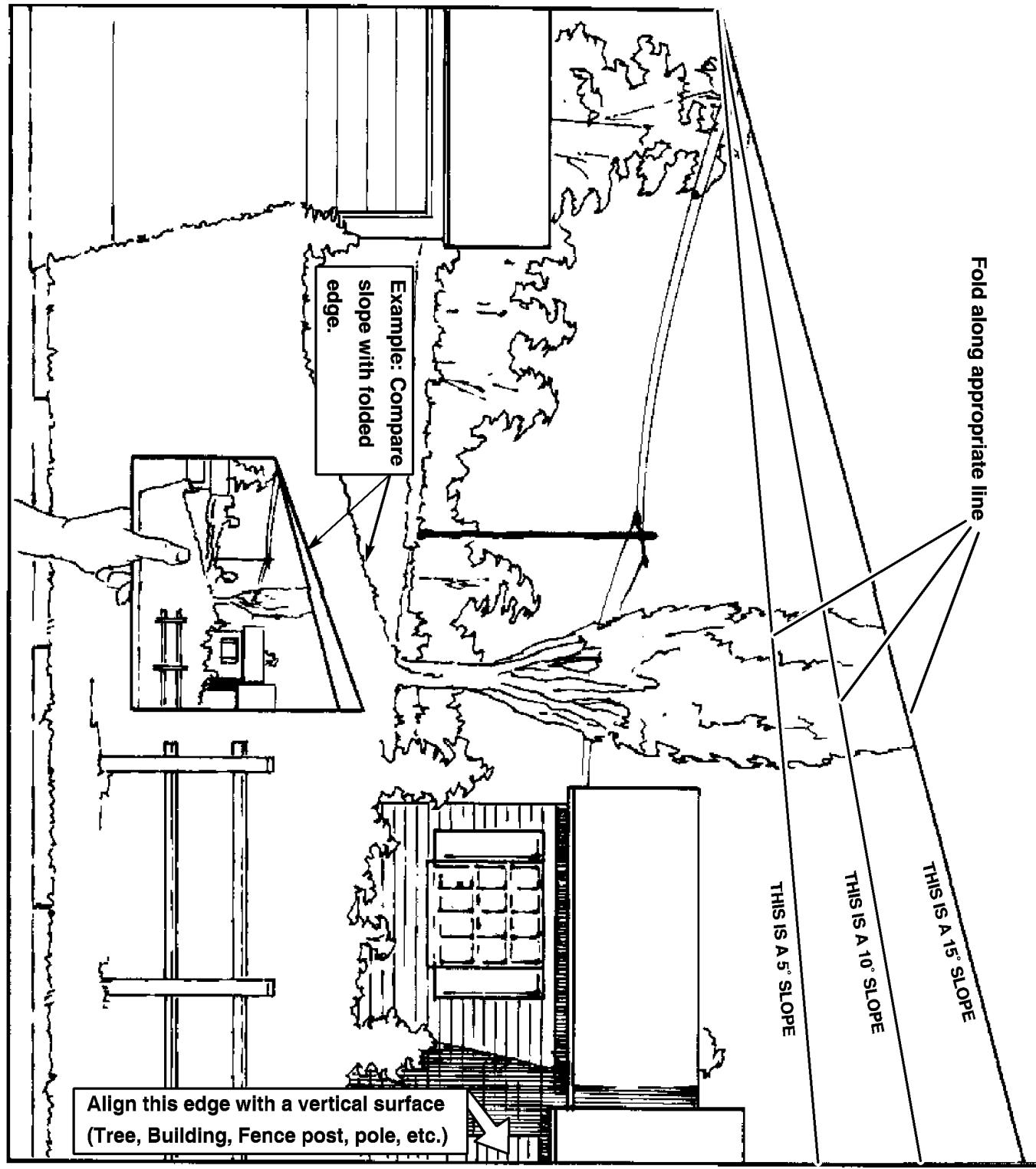
turn over if a wheel goes over the edge of a cliff or ditch, or if an edge caves in.

- 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.
- Mow slopes side to side.
- Do not mow slopes greater than 15 degrees.

## **Service**

- Never store the machine or fuel container inside where there is an open flame, such as near a water heater or furnace.
- Keep nuts and bolts tight, especially the blade attachment bolts. Keep equipment in good condition.
- Never tamper with safety devices. Check safety systems for proper operation before each use.
- Use only genuine replacement parts to ensure that original standards are maintained.
- Check brake operation frequently. Adjust and service as required.

## Slope Chart



## Safety and Instructional 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.





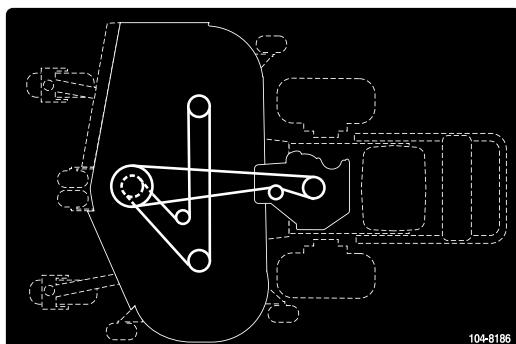
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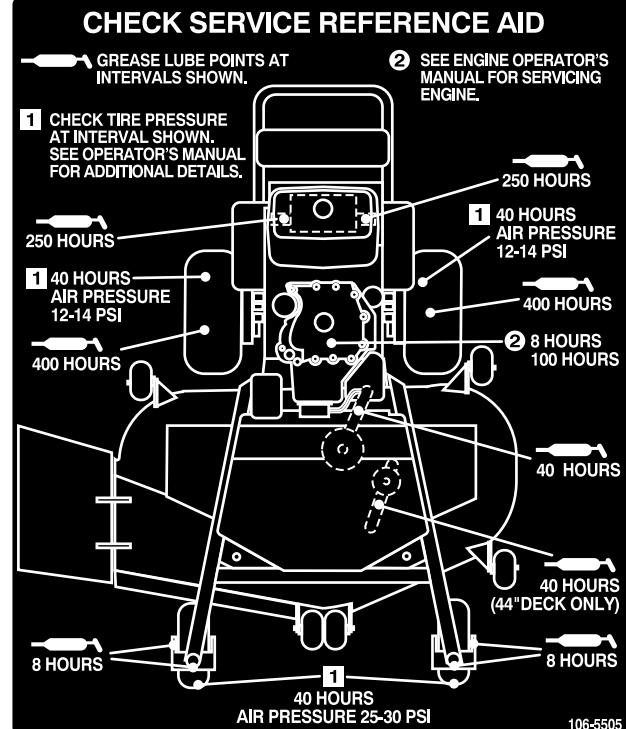
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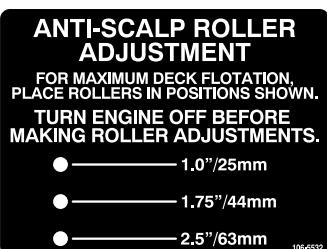
1. Warning—wear hearing protection.



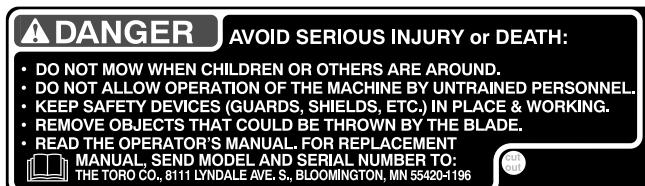
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**106-5499**

# Setup

## Loose Parts

Use the chart below to verify that all parts have been shipped.

Step	Description	Qty.	Use
<b>1</b>	No parts required	—	Remove the shipping bracket and shipping washers.
<b>2</b>	Handle assembly Flanged bolt, (3/8 x 1 inch) Flange nut, (3/8 inch)	1 4 4	Install the handle assembly.
<b>3</b>	Fuel tank with studs installed Bolt, (5/16 x 7/8 inch) Lock nut, (5/16 inch) Washer, (5/16 inch) Hose clamp Lock washer, (5/16 inch) Spring	1 2 2 4 1 2 2	Install the fuel tank.
<b>4</b>	No parts required	—	Check and adjust the shift lever plate.
<b>5</b>	Control rods Cotter pin Clevis Pin Washer Hairpin cotter pin	2 2 2 2 2	Install the control rods.
<b>6</b>	Hairpin cotter pin Spacers	2 6	Install the hairpin cotter pins and spacers.
<b>7</b>	Operator's Manual Engine Operator's Manual Parts Catalog Safety Video Registration Card Oil drain hose	1 1 1 1 1 1	Read the Operator's Manual and watch the video before operating the machine.

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

## Step

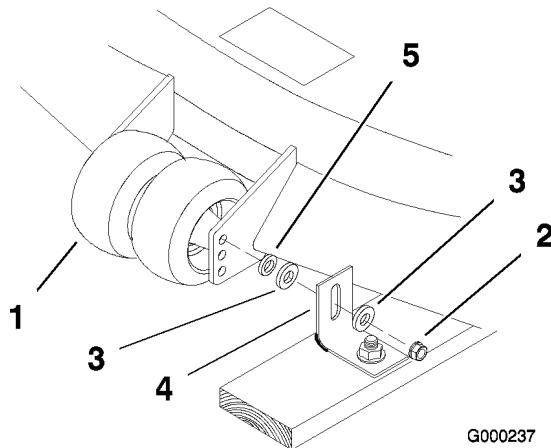
# 1

## Removing the Shipping Bracket and Shipping Washers

### No Parts Required

### Procedure

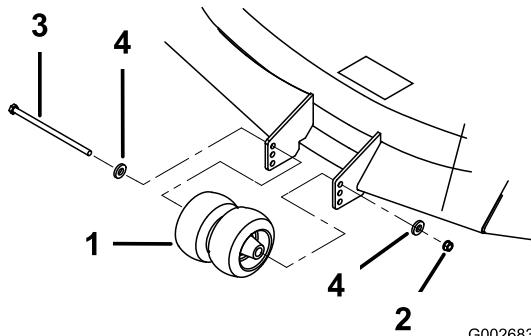
1. Remove the center gage wheel nut, 2 large washers, angle bracket and 1 small washer (Figure 3). Discard the 2 large washers and the angle bracket.



**Figure 3**

1. Center Gage Wheels and Spacer	4. Angle bracket-discard
2. Nut	5. Small washer
3. Large washer-discard	

2. Install the center gage wheels with the previously removed bolt, spacer, small washer, and nut (Figure 4).



**Figure 4**

1. Center Gage Wheels and Spacer	4. Washer
2. Nut	5. Spacer
3. Bolt	

## Step

# 2

## Installing the Handle Assembly

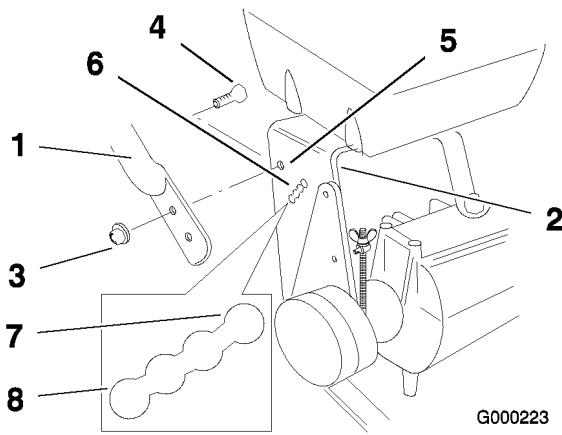
### Parts needed for this step:

1	Handle assembly
4	Flanged bolt, (3/8 x 1 inch)
4	Flange nut, (3/8 inch)

### Procedure

1. Align handle with upper mounting holes in rear frame (Figure 5).
2. Secure the handle at each upper mounting hole with a flange bolt (3/8 x 1 inch) and flange nut (Figure 5).
3. Select the low position for the lower mounting hole (Figure 5).
4. Secure the handle at each lower mounting hole with a flange bolt (3/8 x 1 inch) and flange nut (Figure 5).

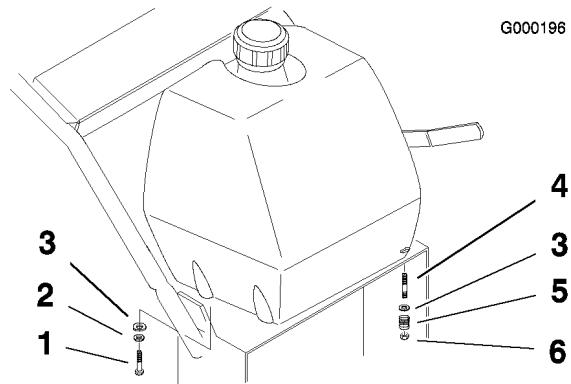
**Note:** The handle position can be adjusted to match the operator's height preference.



**Figure 5**

1. Upper handle	5. Upper mounting hole
2. Rear frame	6. Lower mounting holes
3. Flange nut, (3/8 inch)	7. Low position
4. Flange bolt, (3/8 x 1 inch)	8. High position

**Note:** Tighten left side of the fuel tank until it is completely tight and then unscrew locknut one full turn. This will allow the spring to work.



**Figure 6**

1. Bolt, 5/16 x 7/8 inch	4. Stud
2. Lock washer, (5/16 inch)	5. Spring
3. Washer, (5/16 inch)	6. Locknut

**Note:** Handle assembly must be installed before fuel tank is installed.

## Step

# 3

## Installing the Fuel Tank

### Parts needed for this step:

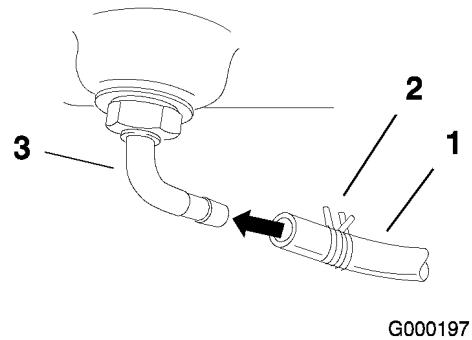
1	Fuel tank with studs installed
2	Bolt, (5/16 x 7/8 inch)
2	Lock nut, (5/16 inch)
4	Washer, (5/16 inch)
1	Hose clamp
2	Lock washer, (5/16 inch)
2	Spring

### Procedure

1. Align the fuel tank with the top of the rear frame (Figure 6).
2. Secure the right side of the fuel tank to the rear frame with 2 bolts (5/16 x 7/8 inch), lock washers (5/16 inch) and washers (5/16 inch) (Figure 6).
3. Secure the left side of the fuel tank to the rear frame with 2 studs, washers (5/16 inch), springs, and locknuts (5/16 inch) (Figure 6).

**Note:** Remove the plastic cap from the fuel fitting before installing the fuel line.

4. Slide the hose clamp onto the fuel line (Figure 7).
5. Push the fuel line onto the fuel tank connection and secure it with a hose clamp (Figure 7).

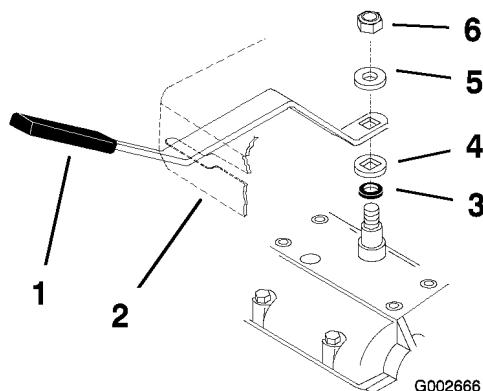


**Figure 7**

1. Fuel line	3. Fuel fitting
2. Hose clamp	

**Step****4****Checking and Adjusting the Shift Lever Plate****No Parts Required****Procedure**

- Shift lever to second gear and check alignment of lever in slot of shift lever plate. The clearance between top and bottom of the shift lever should be equal (Figure 8).

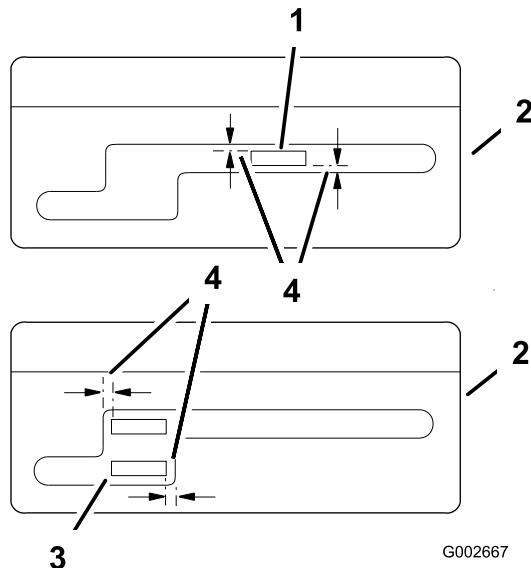
**Figure 8**

1. Shift lever	4. Square hole washer
2. Shift lever plate	5. Spring washer
3. Rubber seal washer	6. Locknut, 3/8 inch

- If clearance is not correct, remove lever and bend it slightly to adjust (Figure 8).

**Note:** Do not bend lever while it is attached to the transmission shaft or damage may occur.

- Shift lever to neutral and check alignment of lever in slot of shift lever plate. The clearance on the sides of shift lever should be equal (Figure 8).
- If clearance is not correct, loosen shift lever plate and adjust it side-to-side. Tighten the shift lever plate.

**Figure 9**

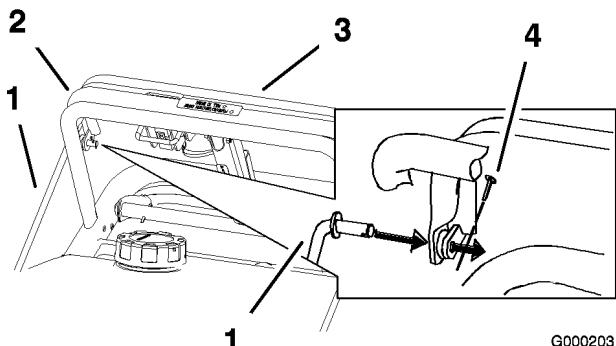
1. Shift lever in 2nd gear	3. Shift lever in neutral position
2. Shift lever plate	4. Equal distance

**Step****5****Installing the Control Rods****Parts needed for this step:**

2	Control rods
2	Cotter pin
2	Clevis Pin
2	Washer
2	Hairpin cotter pin

**Procedure**

- Install the control rods into the upper control bar and the blade control bail. Secure the control rods with 2 cotter pins (Figure 10).

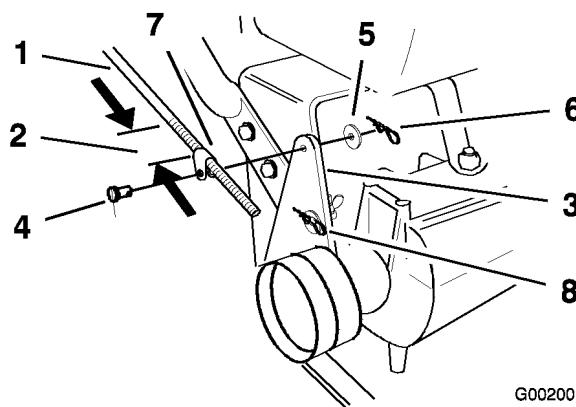


**Figure 10**

1. Control rod	3. Blade control bail
2. Upper control bar	4. Cotter pin

2. Make sure the rod fittings are equal distance onto each control rod. The rod fittings should be approximately 3-1/2 inch (89 mm) from the start of the threads for the handles lowest position (Figure 11).
3. Slide clevis pins through rod fittings and mounting holes in idler brackets (from outside) (Figure 11). Secure with washers and hairpin coppers (Figure 11).

**Note:** Make sure brake rod is installed in front (F) mounting hole in idler bracket.



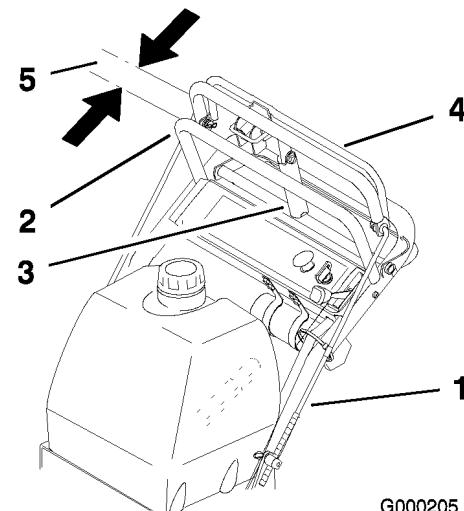
**Figure 11**

1. Control rod and fitting	5. Washer
2. 3-1/2 inch (89 mm)	6. Hairpin cotter pin
3. Idler bracket	7. Rod fitting
4. Clevis pin	8. Hole F

4. Check the gap between upper control bar and fixed bar with wheel drive fully engaged. Gap should be approximately 1 to 1-1/4 inch (25-32 mm) (Figure 12).

**Note:** The upper control bar and fixed bar must be parallel when the upper control bar is in the engaged, drive, neutral, or brake positions.

5. Check the operation. If adjustment is required, remove hairpin cotter, washer, and clevis pin securing control rod fitting to idler bracket.
6. Thread fitting up or down on rod until proper position is attained and install the fitting into the idler bracket with clevis pin, washer, and hairpin cotter.



**Figure 12**

1. Control rod	4. Upper control bar
2. Fixed control bar	5. 1 to 1-1/4 inch (25-32 mm) gap
3. Parking brake lever	6. Fitting

7. Check the parking brake adjustment. Refer to Checking the Brakes in the Brake Maintenance, page 36.

# Step 6

## Installing the Hairpin Cotter Pins and Spacers

### Parts needed for this step:

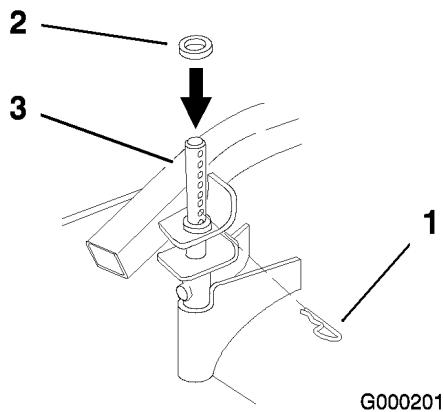
2	Hairpin cotter pin
6	Spacers

### Procedure

Unused height-of-cut spacers may be stored on posts and retained by a hairpin cotter.

**Note:** Make sure there is at least one spacer used on each height-of-cut post.

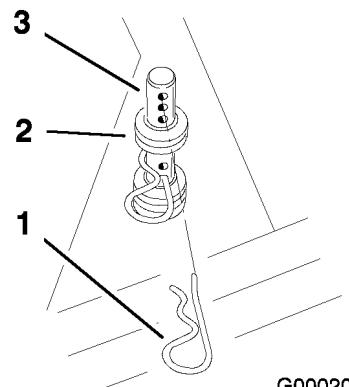
1. Remove the existing rear hairpin cotter pins from the rear height-of-cut posts (Figure 13).
2. Install a spacer onto both rear height-of-cut posts and install the hairpin cotter pins (Figure 13).



**Figure 13**

1. Hairpin cotter  
2. Spacer  
3. Height-of-cut post (rear shown)

3. Install a spacer onto both front height-of-cut posts and install the hairpin cotter pins.
4. On the opposite side of the muffler, install unused spacers onto front and rear height-of-cut pins and insert the hairpin cotter pins (Figure 14).



G000202

**Figure 14**

1. Hairpin cotter
2. Unused spacers
3. Height-of-cut post (front shown)

# Step 7

## Reading the Manual and Viewing the Safety Video

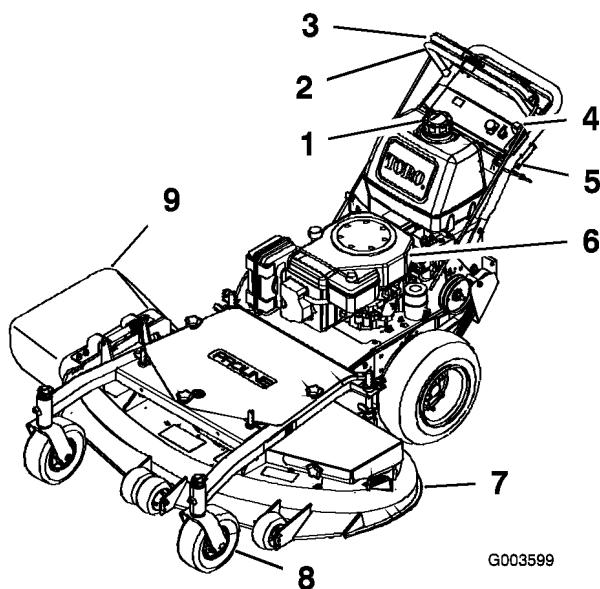
### Parts needed for this step:

1	Operator's Manual
1	Engine Operator's Manual
1	Parts Catalog
1	Safety Video
1	Registration Card
1	Oil drain hose

### Procedure

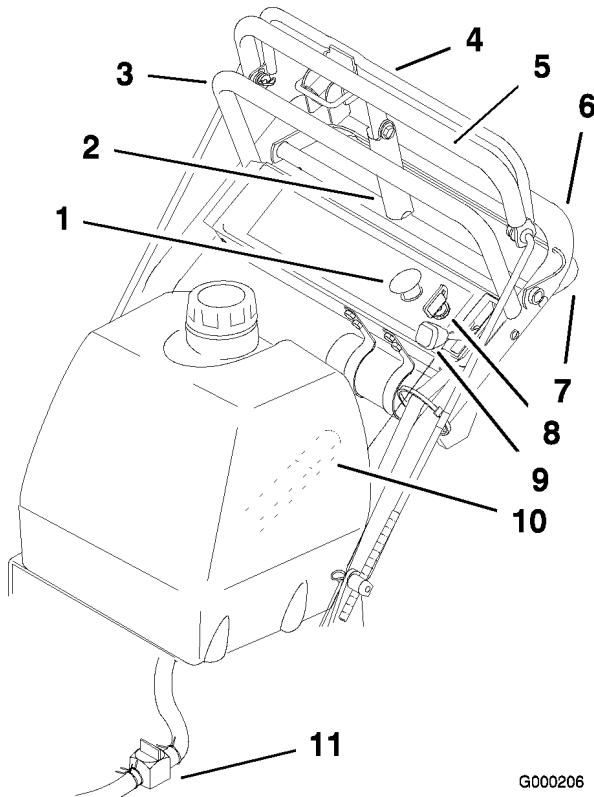
- Read the Operator's Manual.
- View the safety video.
- Fill out the registration card and mail it in or register online at [www.Toro.com](http://www.Toro.com).
- Use the oil drain hose when changing the engine oil.

# Product Overview



**Figure 15**

- 1. Gas tank
- 2. Upper handle
- 3. Blade control bail
- 4. Throttle control
- 5. Handle
- 6. Engine
- 7. Mower deck
- 8. Front caster
- 9. Side discharge chute



**Figure 16**

- 1. Power take off switch (PTO)
- 2. Parking brake lever-released position
- 3. Upper handle
- 4. Blade control bail
- 5. Upper control bar
- 6. Lower handle
- 7. Lower control bar
- 8. Ignition switch
- 9. Throttle control
- 10. Gear shift lever
- 11. Fuel shut-off valve

## Controls

Become familiar with all the controls (Figure 16) before you start the engine and operate the machine.

### Throttle Control

The throttle control has three positions: **Choke**, **Fast**, and **Slow**.

### Blade Control Bail

The bail is used in conjunction with the power take off switch (PTO) to engage the clutch to drive the mower blades. Release the mower control bail to disengage the mower blades.

### Power Take Off Switch (PTO)

This pull switch is used in conjunction with the blade control bail to engage the clutch to drive the mower blades.

### Gear Shift Lever

The transmission has five forward speeds, neutral, and reverse, and has an in-line shift pattern.

**Important:** Do not shift while unit is moving, as transmission damage may occur.

### **Upper Control Bar**

Shift to the desired gear and push forward on the upper control bar to engage forward traction operation and pull back to brake forward movement. Pull back on right side of upper control bar to turn right and left side to turn left.

### **Lower Control Bar**

Shift transmission to reverse and squeeze the lower control bar and handle together to engage rearward traction assist operation.

### **Parking Brake Lever**

Pull back on upper control bar and swing brake lever up against the upper handle (Figure 16).

### **Ignition Switch**

This switch is used in conjunction with recoil starter and has two positions: **Run** and **Off**.

### **Recoil Starter**

Pull recoil starter handle to start engine (not shown in Figure 16).

### **Fuel Shut-off Valve**

Close the fuel shut-off valve when transporting or storing mower.

# Operation

## Recommended Gasoline

Use **unleaded**, regular gasoline suitable for automotive use (85 pump octane minimum). Leaded 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.



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.
- Never fill the fuel tank inside an enclosed trailer.
- Do not fill the fuel tank completely full. Add gasoline to the fuel tank until the level is 1/4 to 1/2 inch (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.



**Gasoline is harmful or fatal if swallowed. Long-term exposure to vapors can cause serious injury and illness.**

- Avoid prolonged breathing of vapors.
- Keep face away from nozzle and gas tank or conditioner opening.
- Keep gas away from eyes and skin.

## 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 it is recommended that the fuel tank be drained.
- 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 fuel tank cap and remove the cap. Add unleaded regular gasoline to fuel tank, until the level is 1/4 to 1/2 inch (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 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 Oil Level in Engine Maintenance, page 28

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

## Think Safety First

Carefully read all the safety instructions and decals in the safety section. Knowing this information could help you or any bystanders avoid injury.

The use of protective equipment for eyes, hearing, feet and head is recommended.



**This machine produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss through extended periods of exposure.**

**Wear hearing protection when operating this machine.**



**Figure 17**

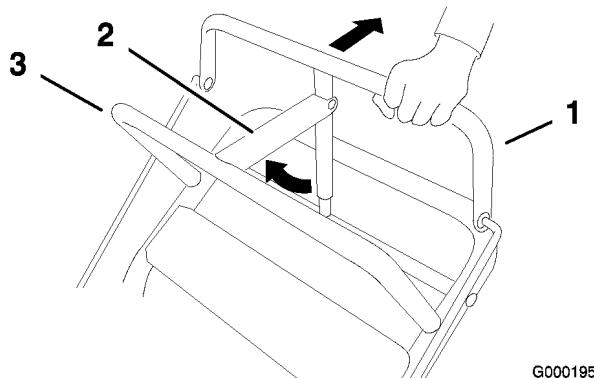
1. Warning—wear hearing protection.

## Using the Parking Brake

Stop on level ground, disengage drives, engage parking brake, shut off engine and remove key. Always set the parking brake when you stop the machine or leave it unattended.

## Setting the Parking Brake

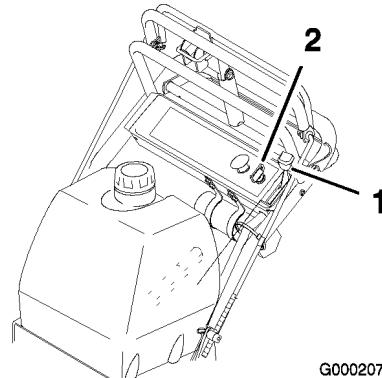
1. Pull the upper control bar (Figure 18) rearward and hold it in this position.
2. Lift the parking brake lock (Figure 18) up and gradually release the upper control bar. The brake lock should stay in the set (locked) position.



**Figure 18**

- 1. Upper control bar
- 2. Parking brake lever-set position
- 3. Fixed bar

2. Let engine idle for 30 to 60 seconds before turning the ignition key to **off**.
3. Turn the ignition key to **off** (Figure 19).



**Figure 19**

- 1. Throttle lever
- 2. Ignition key

4. Set the parking brake and remove key.
5. Pull wire off spark plug(s) to prevent possibility of accidental starting before storing machine.
6. Close the fuel shut off valve before storing machine.

**Important:** Make sure fuel shut off valve is closed before transporting or storing machine, as fuel leakage may occur.

## Starting and Stopping the Engine

### Starting the Engine

1. Make sure that the spark plug wire(s) are installed on the spark plug(s) and the fuel valve is open.
2. Move the shift lever to neutral, set the parking brake, and turn ignition key to run.
3. Move the throttle control to the choke position before starting a cold engine.

**Note:** A warm or hot engine usually does not require any choking. To start a warm engine, move throttle control to the fast position.

4. Grasp the recoil starter handle firmly and pull out until positive engagement results; then pull it vigorously to start engine and allow rope to recoil slowly.

**Important:** Do not pull recoil rope to its limit or let go of the starter handle when rope is pulled out because rope may break or recoil assembly may be damaged.

### Stopping the Engine

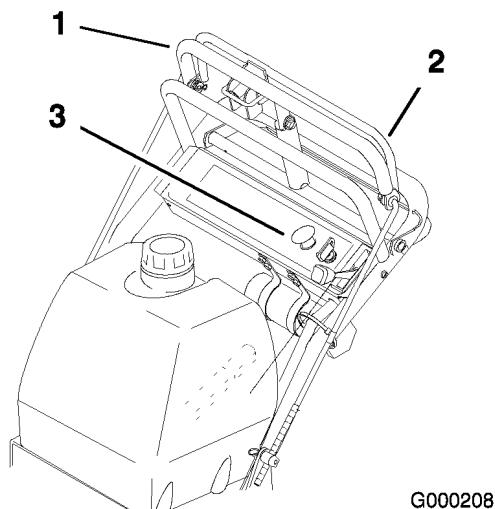
1. Move the throttle lever to the **slow** position (Figure 19).

## Operating the Mower Power Take Off (PTO)

The power take off switch (PTO) in conjunction with the blade control bail engages and disengages power to the electric clutch and mower blades.

### Engaging the Mower Blades (PTO)

1. Release the upper control bar to stop the machine (Figure 20).
2. To engage blade, squeeze blade control bail against the upper control bar (Figure 20).
3. Pull the power take off switch (PTO) up and release. Hold the blade control bail against the upper control bar while operating.
4. Repeat the procedure to engage the mower blades if the blade control bail is released.



G000208

**Figure 20**

1. Upper control bar  
 2. Blade control bail  
 3. Power take off switch (PTO)

## Disengaging the Mower Blades (PTO)

Release the blade control bail to disengage the blades (Figure 20).

## The Safety Interlock System



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.

## Understanding the Safety Interlock System

The safety interlock system is designed to prevent the mower blades from rotating unless:

- The control bail is depressed.
- The power take off switch (PTO) is pulled on.

The safety interlock system is designed to stop the mower blades if you release the blade control bail.

## Testing the Safety Interlock System

Test the safety interlock system before you use the machine each time.

**Note:** If the safety system does not operate as described below, have an Authorized Service Dealer repair the safety system immediately.

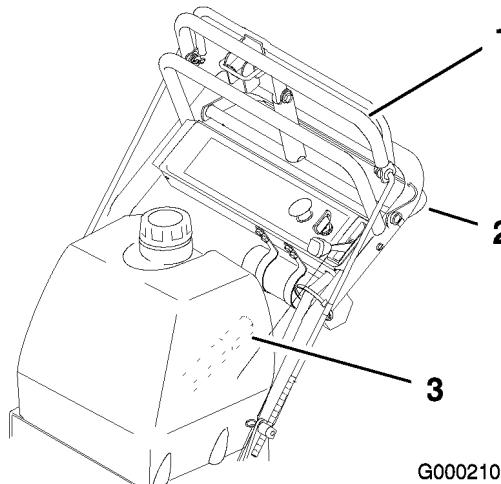
1. Set the parking brake and start the engine; refer to Starting and Stopping the Engine in Operation, page 19.
2. Squeeze the blade control bail against upper control bar. **The blades should not rotate.**
3. Then continue holding the blade control bail and pull up on the blade control switch and release. The clutch should engage and the mower blades begin rotating.
4. Release the blade control bail. **The blades should stop rotating.**
5. With the engine running, pull up the power take off switch (PTO) and release without holding the blade control bail. **The blades should not rotate.**

## 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 mowing performance.

### Driving Forward

1. To go forward, move the shift lever to a forward gear (Figure 21).
2. Release the parking brake; refer to Releasing the Parking Brake in Brake Maintenance, page 36.
3. Slowly press on the upper control bar to move forward (Figure 21).  
 To go straight, apply equal pressure to both ends of the upper control bar (Figure 21).  
 To turn, release pressure on the upper control bar side in the direction you want to turn (Figure 21).



**Figure 21**

- 1. Upper control bar
- 2. Lower control bar
- 3. Shift lever

## Driving Backward

1. To go backward, move the shift lever to reverse gear.
2. Release the parking brake; refer to Releasing the Parking Brake in Operation, page 19.
3. Slowly squeeze the lower control bar and lower handle together to move rearward (Figure 21).

## Using the Lower Control Bar

This procedure is for driving up a curb. This can be performed while driving forward or backward.

**Note:** Some curbs do not allow the rear drive tires to contact the curb. If this happens, drive the machine up the curb at an angle.



**A blade can be bent or damaged when driving up a curb. Pieces of blade that may be thrown could seriously injure or kill you or bystanders.**

**Do not run blades while driving up a curb forward or backward.**

## Driving Forward Up a Curb

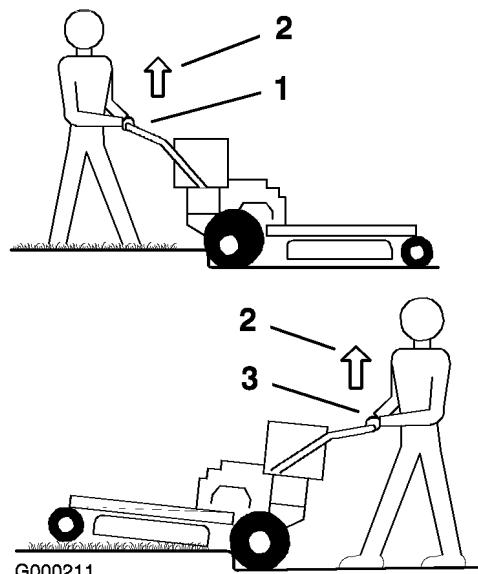
1. Disengage the mower blades.
2. Select first gear to drive the machine.
3. Drive machine until the castor wheels contact curb (Figure 22).

4. Lift the front of the machine by pushing down on the lower handle (Figure 22).
5. Drive the machine until drive wheels contact the curb (Figure 22).
6. Lower the front of the machine (Figure 22).

**Note:** Both drive wheels should contact the curb and castor wheels straight.

7. At the same time engage the lower control bar and lift up on the lower handle to drive over the curb (Figure 21 and Figure 22).

**Note:** Lifting up on the lower handle will assist driving the machine up a curb and not spin the drive wheels.



**Figure 22**

- 1. Lower Control Bar engaged and mower in reverse.
- 2. Pull up to assist machine
- 3. Lower Control Bar engaged and mower going forward.

## Driving Backward Up a Curb

1. Disengage the mower blades.
2. Select reverse to drive machine.
3. Drive the machine until drive wheels contact curb (Figure 22).

**Note:** Both drive wheels should contact the curb and castor wheels straight.

4. At the same time engage lower control bar and lift up on the lower handle (Figure 21 and Figure 22).

**Note:** Lifting up on the lower handle will assist driving the machine up a curb and not spin the drive wheels.

## Stopping the Machine

To stop the machine, pull back on the upper control bar, release the blade control bail, and turn the ignition key to off. Also set the parking brake if you leave the machine unattended; refer to Setting the Parking Brake in Operation, page 19. Remember to remove the key from the ignition switch.



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

**Always remove the ignition key and set the parking brake when leaving the machine unattended, even if just for a few minutes.**



**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 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 discharge area or mower blades unless you release the bail and the power take off (PTO) is off. Rotate the ignition key to Off. Also remove the key and pull the wire off the spark plug(s).

## Transporting Machines

Use a heavy-duty trailer or truck to transport the machine. Ensure that the trailer or truck has all necessary lighting and marking as required by law. Please carefully read all the safety instructions. Knowing this information could help you, your family, pets or bystanders avoid injury.

To transport the machine:

1. If using a trailer, connect it to the towing vehicle and connect the safety chains.
2. Load the machine onto the trailer or truck.
3. Stop the engine, remove the key, set the brake, and close the fuel valve.
4. Securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes.

## Side Discharging or Mulching the Grass

This mower has a hinged grass deflector that disperses clippings to the side and down toward the turf.

## Adjusting the Height-of-Cut

The height-of-cut can be adjusted from 1 to 4-1/2 inch (25 to 114 mm) in 1/4 inch (6 mm) increments. Adjustment is done by relocating four hairpin cotter pins in different hole location and by adding or removing spacers.

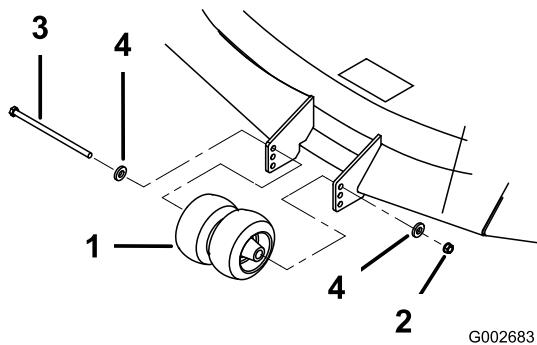
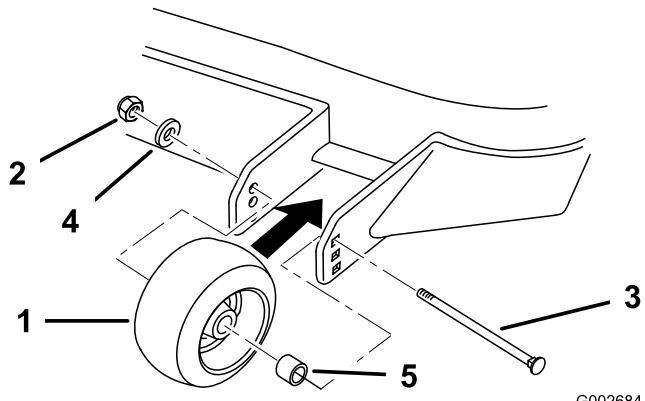
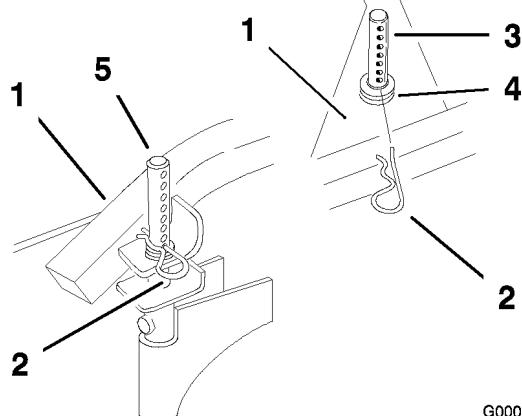
**Note:** All height-of-cut pins need at least one spacer or damage can occur to bushing if none are used.

**Note:** All height-of-cut pins can use only two spacers maximum.

1. Select hole in height-of-cut post and number of spacers corresponding to the height-of-cut desired (Figure 23).
2. Using the lift handle, raise side of deck and remove hairpin cotter (Figure 23).
3. Add or remove spacers if needed and then align holes and insert hairpin cotter (Figure 23).

**Note:** Spare height-of-cut spacers may be stored on posts and retained by a hairpin cotter.

**Important:** All four hairpin cotter pins must be in the same hole location and with the correct number of spacers for a level cut.



## Adjusting the Gage Wheels

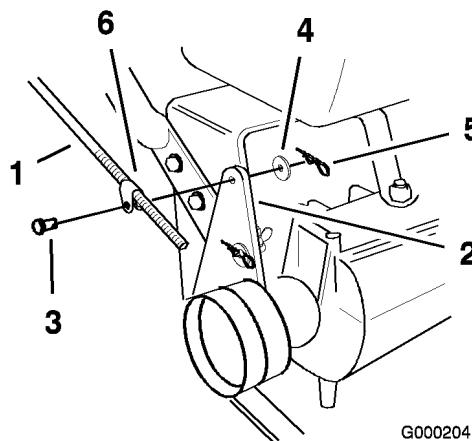
The gage wheels need to be adjusted in the proper hole location for each height-of-cut position. There needs to be 3/8 inch (10 mm) minimum clearance above the ground.

1. After adjusting height-of-cut, check the gage wheels so that there is a minimum of 3/8 inch (10 mm) clearance above the ground (Figure 24 and Figure 25).
2. If adjustment is needed, remove the bolt, washers and nut (Figure 24 and Figure 25).
3. Select a hole position so the gage wheels are a minimum of 3/8 inch (10 mm) off the ground (Figure 24 and Figure 25).
4. Install the bolt, washers and nut (Figure 24 and Figure 25).

## Adjusting the Handle Height

The handle position can be adjusted to match the operator's height preference.

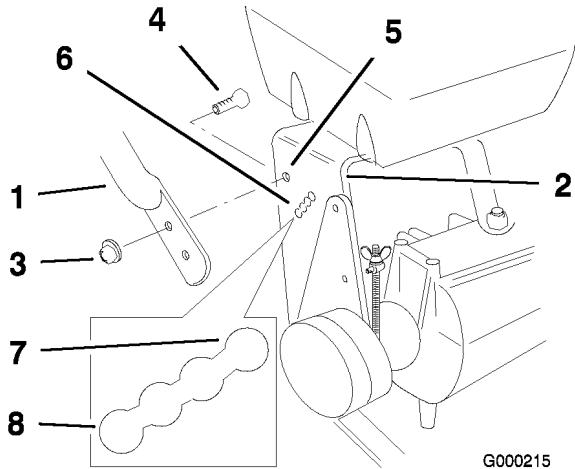
1. Remove hairpin cotter, washer and clevis pin securing control rod fitting to idler bracket (Figure 26).



**Figure 26**

1. Control rod and fitting	4. Washer
2. Idler bracket	5. Hairpin cotter pin
3. Clevis pin	6. Rod fitting

2. Loosen the upper flange bolts (3/8 x 1 inch) and flange nut securing handle to rear frame (Figure 27).



**Figure 27**

1. Upper handle	5. Upper mounting hole
2. Rear frame	6. Lower mounting holes
3. Flange nut, (3/8 inch)	7. Low position
4. Flange bolt, (3/8 x 1 inch)	8. High position

3. Remove the lower flange bolts (3/8 x 1 inch) and flange nuts securing handle to rear frame (Figure 25).
4. Pivot handle to desired operating position and install lower flange bolts (3/8 x 1 inch) and flange nuts into mounting holes. Tighten all flange bolts.
5. Thread rod fitting up or down on rod until proper position is attained and install into fitting to idler bracket with clevis pin, washer and hairpin cotter. Refer to Installing the Control Rods in Setup, page 11.

6. Check the parking brake adjustment. Refer to Checking the Brakes in Brake Maintenance, page 36.

# Maintenance

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

## Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
Before each use or daily	<ul style="list-style-type: none"><li>Check the safety interlock system.</li><li>Grease the caster wheels and caster pivot.</li><li>Check the engine oil level.</li><li>Clean the air intake screen.</li><li>Check the brakes.</li><li>Inspect the blades.</li></ul>
Every 25 hours	<ul style="list-style-type: none"><li>Clean and re-oil the foam element (more often in dusty dirty conditions).</li></ul>
Every 50 hours	<ul style="list-style-type: none"><li>Grease the PTO belt idler.</li><li>Grease the mower deck belt idler.</li><li>Check the tire pressure.</li><li>Check the traction drive belt.</li><li>Check the transmission belt.</li><li>Check the mower belt.</li></ul>
Every 100 hours	<ul style="list-style-type: none"><li>Replace the paper element (more often in dusty dirty conditions).</li><li>Change the engine oil.</li><li>Adjust the electric clutch.</li></ul>
Every 200 hours	<ul style="list-style-type: none"><li>Replace the oil filter.</li><li>Check the spark plug.</li><li>Replace the fuel filter.</li></ul>
Every 250 hours	<ul style="list-style-type: none"><li>Grease the transmission couplers (more often in dirty or dusty conditions).</li></ul>
Every 400 hours	<ul style="list-style-type: none"><li>Grease the wheel bearings (more often in dirty or dusty conditions).</li></ul>
Before storage	<ul style="list-style-type: none"><li>Paint chipped surfaces.</li><li>Perform all maintenance procedures listed above before storage.</li></ul>

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



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 spark plug wire from the spark plug(s) before you do any maintenance. Set the wire aside so that it does not accidentally contact the spark plug.

## Lubrication

Grease with No. 2 general purpose lithium base or molybdenum base grease.

## How to Grease

1. Disengage the PTO and set the parking brake.

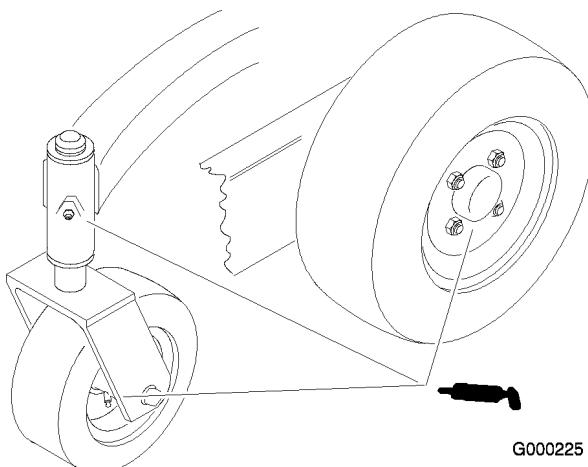
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the grease fittings with a rag. Make sure to scrape any paint off the front of the fitting(s).

4. Connect a grease gun to the fitting. Pump grease into the fittings until grease begins to ooze out of the bearings.
5. Wipe up any excess grease.

## Lubricating the Caster and Wheel Bearings

1. Lubricate the front wheel bearings and front spindles (Figure 28).
2. Raise the rear of the machine and use jack stands to support the machine.
3. Remove the rear wheel and tire assembly.
4. Remove rear wheel grease cap. Lubricate the rear wheel bearing (Figure 28).
5. Install the grease cap.
6. Install the rear wheel and tire assembly.

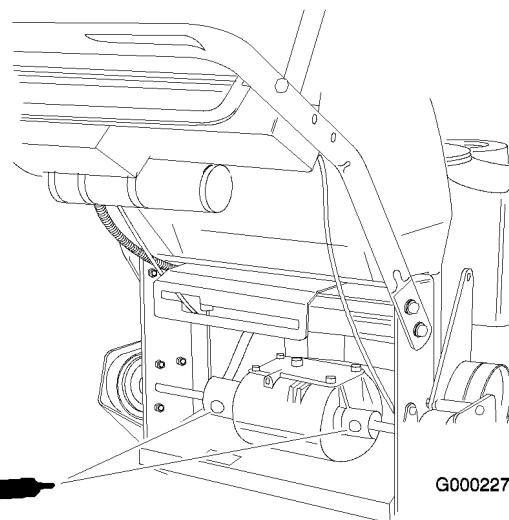
**Note:** Make sure the rear wheel grease caps are removed before lubricating rear wheels.



**Figure 28**

## Greasing the Transmission Couplers

Lubricate the transmission couplers located in the back of the machine (Figure 29).

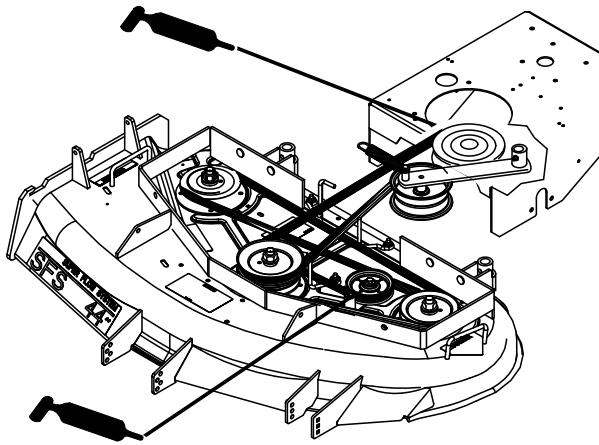


**Figure 29**

## Greasing the PTO Drive Belt Idler and Deck Belt Idler

Grease the fitting on the PTO belt idler arm pivot (Figure 30).

**Note:** You will have to remove the carrier covers to access the grease fitting for the deck.



**Figure 30**

## Engine Maintenance

### Servicing the Air Cleaner

Foam element: Clean and re-oil after every 25 operating hours.

Paper element: Replace it after every 100 operating hours or yearly, which ever comes first.

Inspect the foam and paper elements, and replace them if they are damaged or excessively dirty.

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

## Removing the Foam and Paper Elements

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Clean around the air cleaner to prevent dirt from getting into the engine and causing damage. Unscrew the cover nut and remove the air cleaner cover (Figure 31).
3. Remove the air cleaner assembly (Figure 31).
4. Carefully slide the foam element off the paper element (Figure 31).

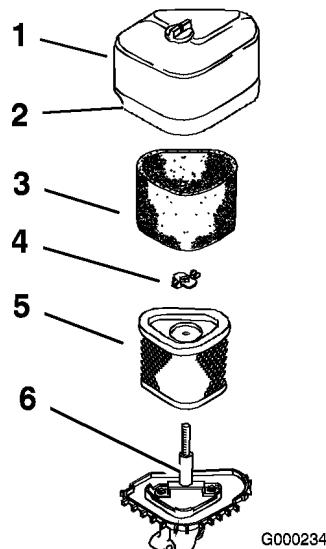


Figure 31

1. Cover and nut	4. Washer and grommet
2. Wing nut	5. Paper element
3. Foam element	6. Air cleaner base

## Cleaning the Foam Element

1. Wash the foam element in liquid soap and warm water. When the element is clean, rinse it thoroughly.

2. Dry the element by squeezing it in a clean cloth.
3. Put one or two ounces of oil on the element (Figure 33). Squeeze the element to distribute the oil.

**Note:** Excess oil in the foam element restricts the air flow through the element and may reach the paper filter and clog it.

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

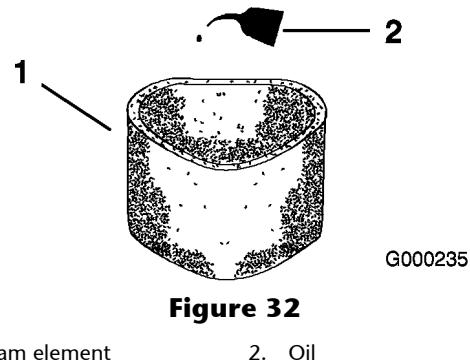


Figure 32

1. Foam element      2. Oil

## Cleaning the Paper Element

**Note:** Never try to brush dirt off the paper element; brushing forces the dirt into the fibers.

1. Lightly tap the element on a flat surface to remove dust and dirt (Figure 32).
2. 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, defective, or cannot be cleaned thoroughly.

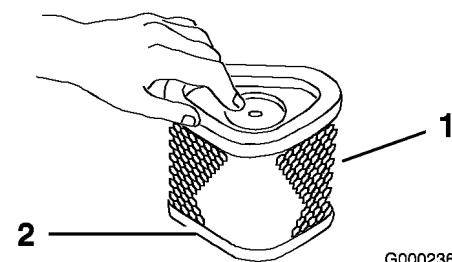


Figure 33

1. Paper element      2. Rubber seal

## 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. Carefully slide the foam element onto the paper air cleaner element (Figure 31).
2. Place the air cleaner assembly onto the air cleaner base (Figure 31).
3. Install the air cleaner cover and secure with cover nuts (Figure 31).

## Servicing the Engine Oil

Change the engine oil after every 100 operating hours.

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

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

Crankcase Capacity: w/filter, 64 oz. (1.9 l)

Viscosity: See table below

### USE THESE SAE VISCOSITY OILS

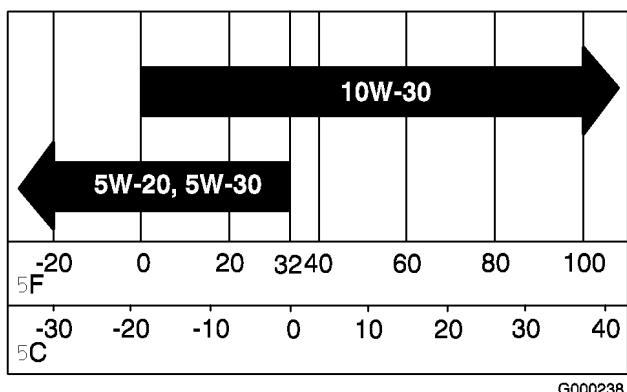


Figure 34

## Checking the Engine Oil Level

1. Park the machine on a level surface.
2. Disengage the PTO and set the parking brake.
3. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Clean around the oil dipstick (Figure 35) so that dirt cannot fall into the filler hole and damage the engine.

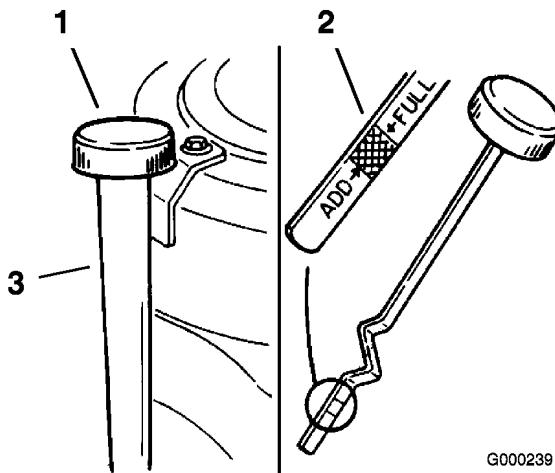


Figure 35

1. Oil dipstick
2. Metal end
3. Filler tube

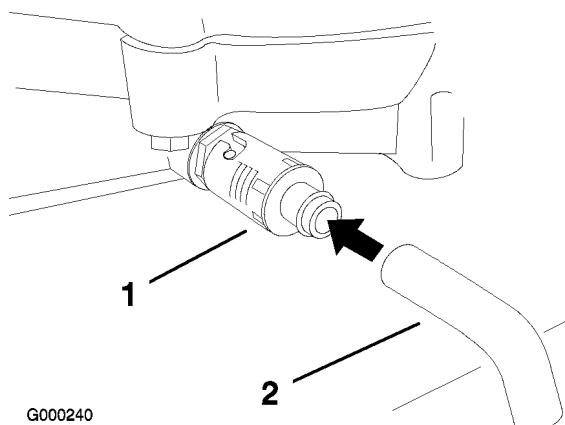
5. Unscrew the oil dipstick and wipe the end clean (Figure 35).
6. Slide the oil dipstick fully into the filler tube, but do not thread onto tube (Figure 35).
7. Pull the dipstick out and look at the end. If the oil level is low, slowly pour only enough oil into the filler tube to raise the level to the full mark.

**Important:** Do not overfill the crankcase with oil and run the engine; engine damage can result.

## Changing the Oil

1. Start the engine and let it run five minutes. This warms the oil so it drains better.
2. Park the machine so that the drain side is slightly lower than the opposite side to assure the oil drains completely.
3. Disengage the power take off (PTO) and set the parking brake.
4. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
5. Slide the drain hose over the oil drain valve.
6. Place a pan below the drain hose. Rotate oil drain valve to allow oil to drain (Figure 36).
7. When oil has drained completely, close the drain valve.
8. Remove the drain hose (Figure 36).

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



**Figure 36**

1. Oil drain valve      2. Oil drain hose

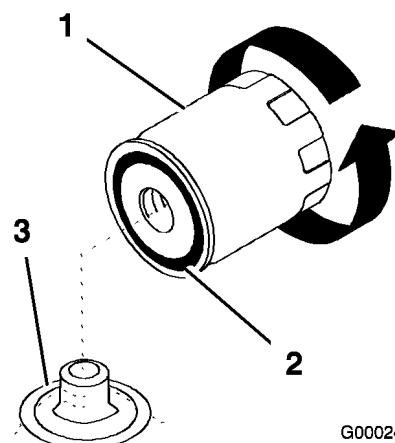
9. Slowly pour approximately 80% of the specified oil into the filler cap (Figure 35).
10. Check the oil level; refer to Checking the Engine Oil Level in the Engine Maintenance, page 28.
11. Slowly add the additional oil to bring it to the Full mark.

## Changing the Oil Filter

Replace the oil filter every 200 hours or every other oil change.

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

1. Drain the oil from the engine; refer to Changing the Oil.
2. Remove the old filter and wipe the filter adapter (Figure 37) gasket surface.
3. Apply a thin coat of new oil to the rubber gasket on the replacement filter (Figure 37).



**Figure 37**

1. Oil filter  
2. Gasket  
3. Adapter

4. Install the replacement oil filter to the filter adapter. Turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn (Figure 37).
5. Fill the crankcase with the proper type of new oil; refer to Changing the Oil.

## Servicing the Spark Plug

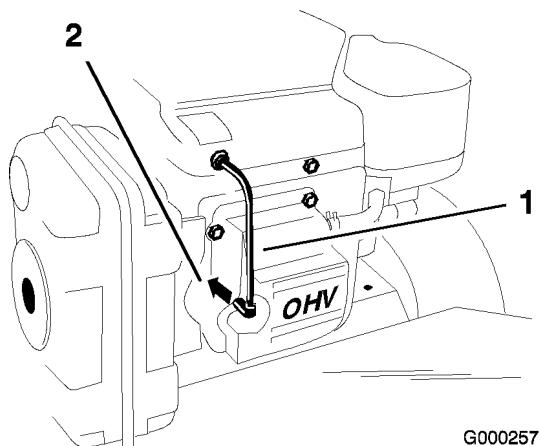
Check the spark plug(s) after every 200 operating hours. Make sure the air gap between the center and side electrodes is correct before installing the spark plug. Use a spark plug wrench for removing and installing the spark plug(s) and a gapping tool/feeler gauge to check and adjust the air gap. Install a new spark plug(s) if necessary.

Type: Champion® RC12YC or Champion® Premium Gold 2071 (or equivalent)

Air Gap: 0.040 inch (1.02 mm)

## Removing the Spark Plug(s)

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the key.
2. Pull the wire(s) off the spark plug(s) (Figure 38). Now clean around the spark plug(s) to prevent dirt from falling into the engine and potentially causing damage.
3. Remove the spark plug(s) and metal washer.



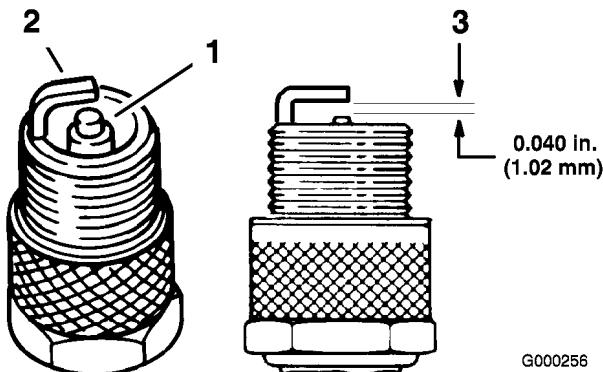
**Figure 38**

1. Spark plug wire      2. Spark plug

### Checking the Spark Plug

1. Look at the center of the spark plug(s) (Figure 39). 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(s). Always replace the spark plug(s) when it has: a black coating, worn electrodes, an oily film, or cracks.



**Figure 39**

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

2. Check the gap between the center and side electrodes (Figure 39). Bend the side electrode if the gap is not correct.

### Installing the Spark Plug(s)

1. Install the spark plug(s) and metal washer. Make sure the air gap is set correctly.

2. Tighten the spark plug(s) to 30 ft-lb (41 N·m).
3. Push the wire(s) onto the spark plug(s) (Figure 38).

## Fuel System Maintenance

### Draining the Fuel Tank



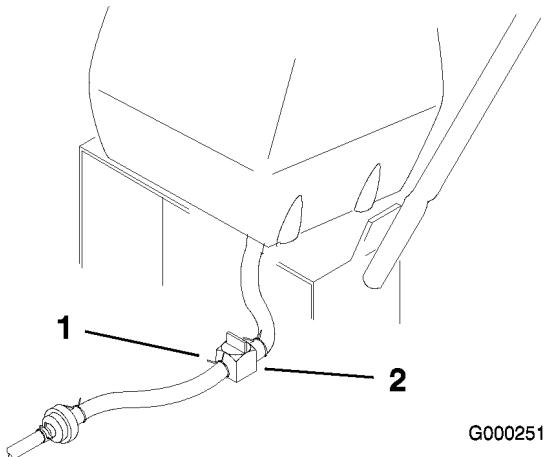
In certain conditions, gasoline is extremely flammable and highly explosive. A fire or explosion from gasoline can burn you and others and can damage property.

- 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. Park the machine on a level surface, to assure fuel tank drains completely. Then disengage the power take off (PTO), set the parking brake, and turn the ignition key to **off**. Remove the key.
2. Close the fuel shut-off valve at the fuel tank (Figure 40).
3. Squeeze the ends of the hose clamp together and slide it up the fuel line away from fuel filter (Figure 40).
4. Pull the fuel line off the fuel filter (Figure 40). Open the fuel shut-off valve and allow the gasoline to drain into a gas can or drain pan.

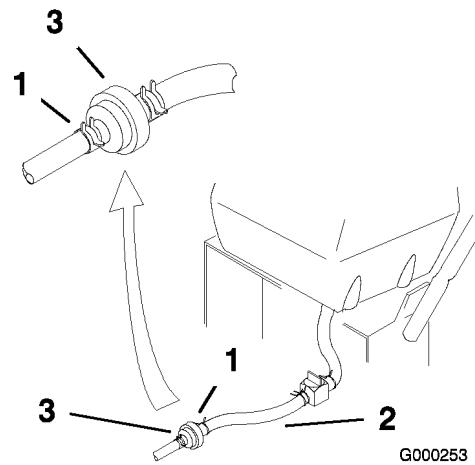
**Note:** Now is the best time to install a new fuel filter because the fuel tank is empty. Refer to Replacing the Fuel Filter.

5. Install the fuel line onto the fuel filter. Slide the hose clamp close to the valve to secure the fuel line.



**Figure 40**

1. Fuel shut-off valve      2. Clamp



**Figure 41**

1. Hose clamp      2. Fuel line      3. Filter

## Replacing the Fuel Filter

Replace the fuel filter after every 200 operating hours or yearly, whichever occurs first.

Never install a dirty filter if it is removed from the fuel line.

**Note:** Note how the fuel filter is installed.

**Note:** Wipe up any spilled fuel.

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Close fuel shut-off valve at fuel tank (Figure 40).

**Note:** Remove the fuel line from the fuel valve that is closest to the engine.

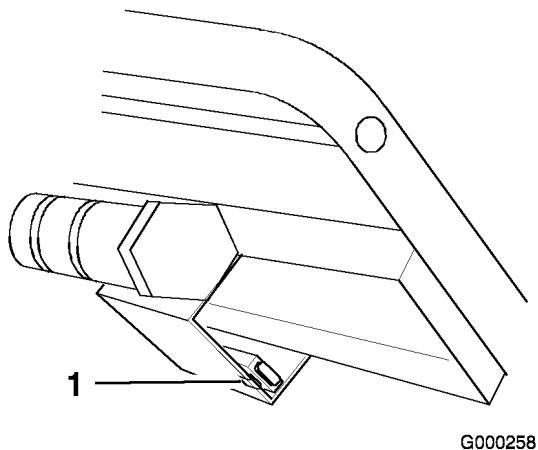
4. Squeeze the ends of the hose clamps together and slide them away from the filter (Figure 41).

5. Remove the filter from the fuel lines.
6. Install a new filter and move the hose clamps close to the filter.
7. Open fuel shut-off valve at fuel tank (Figure 40).
8. Check for fuel leaks and repair if needed.

## Electrical System Maintenance

### Servicing the Fuse

The electrical system is protected by a fuse. It requires no maintenance. If the fuse blows check component or circuit for malfunction or short. To replace fuse pull out on the fuse (Figure 42) to remove or replace it.



**Figure 42**

1. Fuse, 7.5 amp, blade type

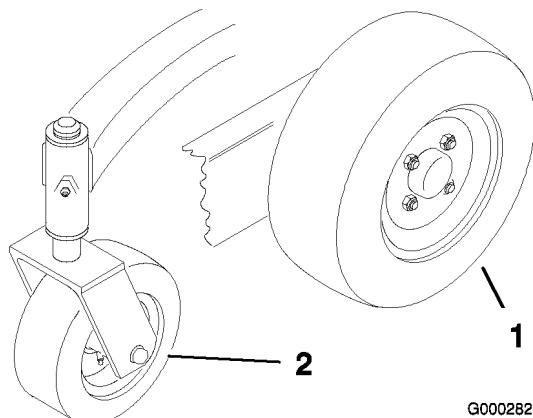
## Drive System Maintenance

### Checking the Tire Pressure

Maintain the air pressure in the front and rear tires as specified. Check the pressure at the valve stem after every 50 operating hours or monthly, whichever occurs first (Figure 43). Check the tires when they are cold to get the most accurate pressure reading.

Rear Tire Pressure: 12–14 psi (83–97 kPa)

Caster Tire Pressure: 25–30 psi (172–207 kPa)



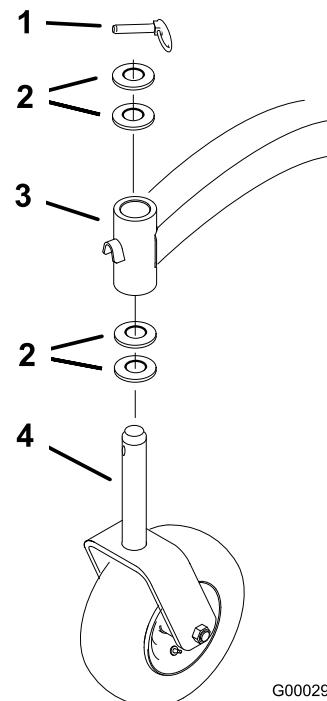
**Figure 43**

1. Rear Tire
2. Caster tire

## Replacing the Caster Wheel Fork Bushings

The caster wheel forks are mounted in bushings pressed into the top and bottom of the carrier frame mounting tubes. To check the bushings, move the caster forks back and forth and side-to-side. If a caster fork is loose, the bushings are worn and must be replaced.

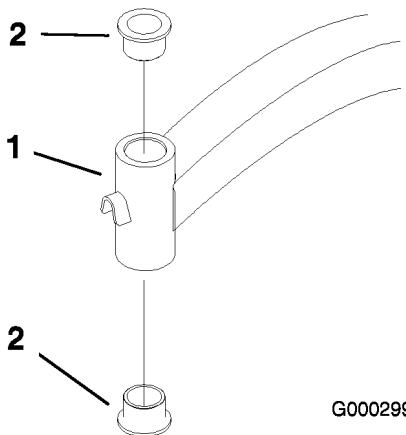
1. Raise the cutting unit so the caster wheels are off the floor, then block up the front of the mower with jack stands.
2. Remove the locking pin and spacer(s) from the top of the caster wheel fork (Figure 44).



**Figure 44**

1. Locking Pin
2. Spacers (locate as required)
3. Carrier frame mounting tube
4. Caster wheel fork

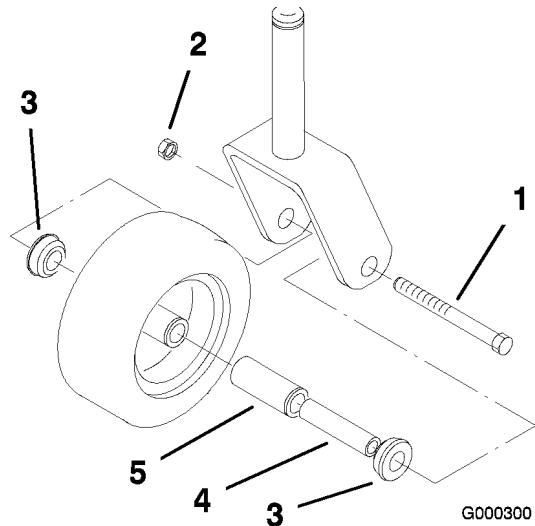
3. Pull the caster wheel fork out of the mounting tube, leaving the spacer(s) on the bottom of the fork. Remember the location of the spacers on each fork to ensure correct installation, and to maintain a level deck.
4. Insert a pin punch into the mounting tube and carefully drive out the bushings (Figure 45). Clean the inside of the mounting tube.



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**Figure 45**

1. Mounting Tube      2. Bushing



**Figure 46**

1. Locknut  
2. Wheel Bolt  
3. Bushing  
4. Spanner Bushing  
5. Roller Bearing

5. Grease the inside and outside of the new bushings. Use a hammer and flat plate to carefully drive the bushings into the mounting tube.
6. Inspect the caster wheel fork for wear and replace if necessary (Figure 44).
7. Slide the caster wheel fork through the bushings in the mounting tube. Replace the spacer(s) onto the fork and secure with the retaining ring (Figure 44).

**Important:** The inside diameter of the bushings may collapse slightly when installed. If the caster wheel fork does not slide into the new bushings, ream both bushings to an inside diameter of 1.126 inch (29 mm).

8. Grease the fitting on the carrier frame mounting tube using No. 2 general purpose lithium base or molybdenum base grease.

## Servicing the Caster Wheel and Bearings

The caster wheels rotate on a roller bearing supported by a spanner bushing. If the bearing is kept well lubricated, wear will be minimal. Failure to keep the bearing well lubricated will cause rapid wear. A wobbly caster wheel usually indicates a worn bearing.

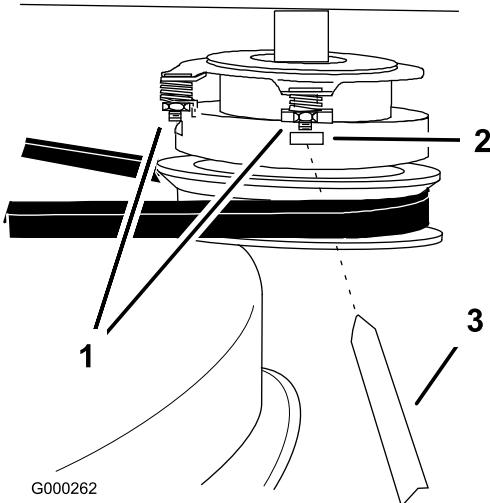
1. Remove the locknut and wheel bolt holding the caster wheel to the caster fork (Figure 46).

2. Remove one bushing, then pull the spanner bushing and roller bearing out of the wheel hub (Figure 46).
3. Remove the other bushing from the wheel hub and clean any grease and dirt from the wheel hub (Figure 46).
4. Inspect the roller bearing, bushings, spanner bushing and inside of the wheel hub for wear. Replace any defective or worn parts (Figure 46).
5. To assemble, place one bushing into the wheel hub. Grease the roller bearing and spanner bushing and slide them into the wheel hub. Place the second bushing into the wheel hub (Figure 46).
6. Install the caster wheel into the caster fork and secure with the wheel bolt and locknut. Tighten the locknut until the spanner bushing bottoms against the inside of the caster forks (Figure 46).
7. Grease the fitting on the caster wheel.

## Adjusting the Electric Clutch

The clutch is adjustable to ensure proper engagement and proper braking. Check adjustment after every 100 hours of operation.

1. To adjust the clutch, tighten or loosen the lock nuts on the flange studs (Figure 47).



**Figure 47**

1. Adjusting nut  
2. Slot  
3. Feeler gauge

2. Check adjustment by inserting a feeler gauge through the slots next to the studs (Figure 47).
3. The proper disengaged clearance between the clutch plates is 0.012-0.024 inch (0.30-0.60 mm). It will be necessary to check this clearance at each of the three slots to ensure the plates are parallel to each other.

## Cooling System Maintenance

### Cleaning the Air Intake Screen

Before each use remove any build-up of grass, dirt or other debris from the cylinder and cylinder head cooling fins, air intake screen on flywheel end, and carburetor-governor levers and linkage. This will help insure adequate cooling and correct engine speed and will reduce the possibility of overheating and mechanical damage to the engine.

## Brake Maintenance

### Servicing the Brakes

Before each use, check brakes on both a level surface and slope.

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 Brakes

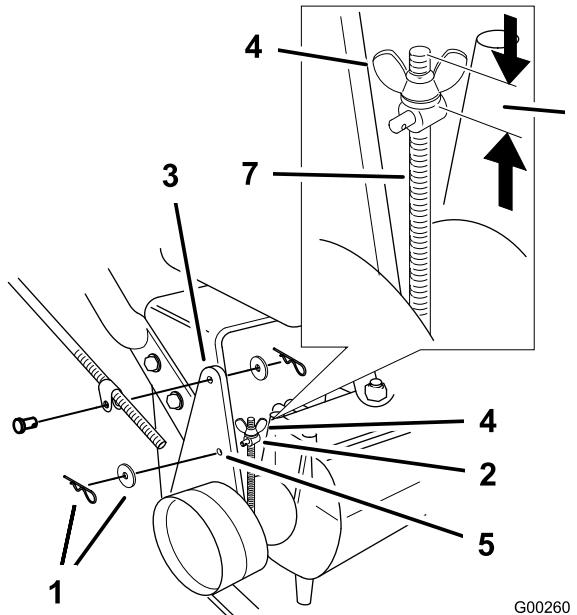
1. Park the machine on a level surface, disengage the PTO.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Apply the parking brake. The wheels must lock when you try to push the machine forward.
4. If the wheels do not lock, adjust the brakes. Refer to Adjusting the Brakes.
5. Release the brake and press upper control bar very lightly, approximately 1/2 inch (13 mm). The wheels should rotate freely, if not; refer to Adjusting the Brakes.

### Adjusting the Brakes

The brake lever is on the upper control bar. If the parking brake does not hold securely, an adjustment is required.

**Note:** For the initial adjustment, adjust the wing nut until it is 1-1/4 inches from the top of the rod (Figure 48).

1. Park the machine on a level surface, disengage the PTO, and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Check the brake before you adjust it; refer to Checking the Brakes.
4. Release the parking brake; refer to Releasing the Parking Brake in Operation, page 19.
5. To adjust the brake remove the hair pin cotter and washer from the brake lever and trunnion (Figure 48).



**Figure 48**

- 1. Hairpin cotter and washer
- 2. Trunnion
- 3. Brake lever
- 4. Wing nut
- 5. Hole F
- 6. Initial adjustment- 1-1/4 inch (32 mm)
- 7. Rod

6. Rotate the wing nut clockwise to increase the braking pressure.
7. Rotate the wing nut counterclockwise to decrease the braking pressure.
8. Install the trunnion into hole F (Figure 48). Tighten the wing nut.
9. Secure trunnion to brake lever with washer and hair pin cotter (Figure 48).
10. Check the brake operation again; refer to Checking the Brakes.

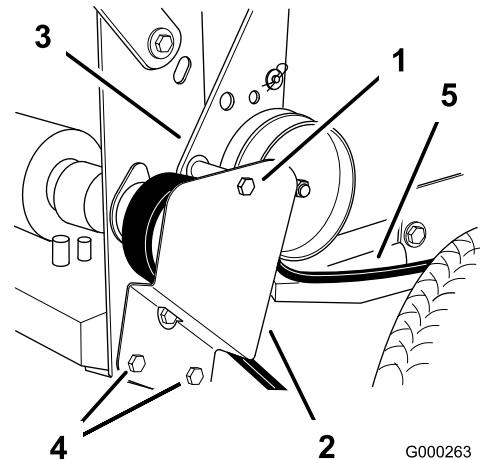
**Important:** With the parking brake released, the rear wheels must rotate freely when you push the mower. If brake action and free wheel rotation cannot be achieved contact your service dealer immediately.

## Belt Maintenance

### Replacing the Traction Drive Belt

Check all belts after every 50 operating hours or monthly, whichever occurs first. Look for cracks, wear, and signs of overheating.

1. Remove the top capscrew securing idler support and idler bracket to rear frame (Figure 49).



**Figure 49**

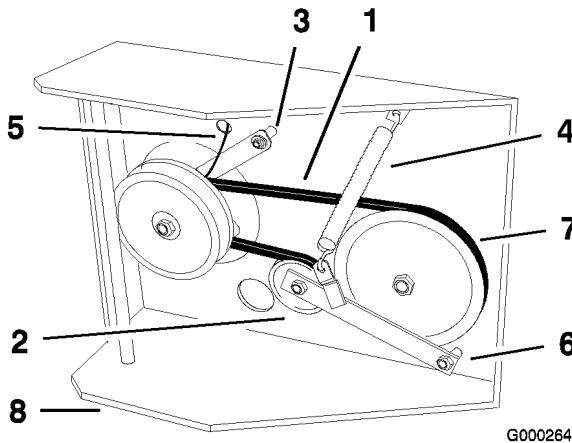
- 1. Top capscrew
- 2. Idler bracket
- 3. Idler support
- 4. Bottom capscrew
- 5. Traction drive belt

2. Loosen bottom two mounting screws enough to allow belt to pass between drive pulley and idler support (Figure 49).
3. Raise the wheel off the ground, to allow the belt to be removed, and remove the belt.
4. Install a new belt.
5. Install the top capscrew securing the idler support and idler bracket to the rear frame (Figure 49).
6. Tighten the bottom two mounting screws enough to allow the belt to pass between the drive pulley and idler support (Figure 49).

## Replacing the Transmission Belt

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove PTO drive belt. Refer to Replacing the PTO Drive Belt in the Belt Maintenance, page 37.
4. Raise the front of the machine and hold with jack stands.

- Disconnect clutch wire connector from wire harness.
- Disconnect clutch retainer from the engine deck (Figure 50).



**Figure 50**

1. Transmission belt	5. Clutch wire connector
2. Idler pulley	6. Pivot bolt
3. Clutch retainer	7. Drive pulley
4. Tension spring	8. Engine deck

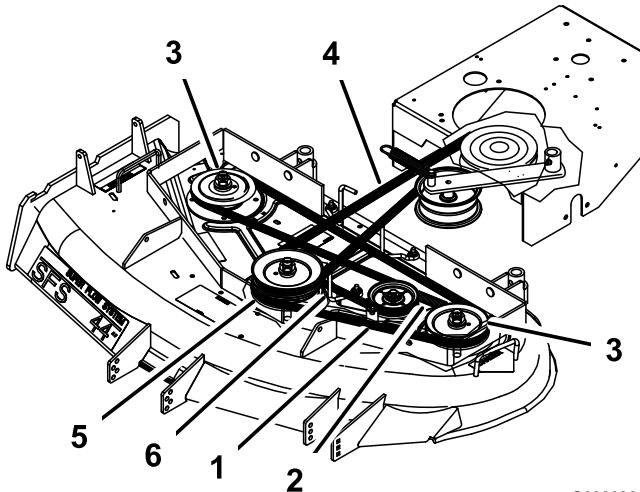
- Unhook tension spring from side of frame (Figure 50).
- Loosen pivot bolt enough to remove traction belt from the drive pulley and clutch.
- Install new belt around clutch and drive pulley.
- Torque pivot bolt to 35-40 ft-lb (47-54 N·m). Install tension spring between idler arm and frame bracket (Figure 50).
- Install clutch retainer to the engine deck (Figure 50).
- Connect clutch wire connector to wire harness.
- Install PTO drive belt.

## Replacing the Mower Belt

Squealing when the belt is rotating, blades slipping when cutting grass, frayed belt edges, burn marks and cracks are signs of a worn deck belt. Replace the deck belt if any of these conditions are evident.

- Disengage the PTO and set the parking brake.
- Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
- Remove the knobs/rubber washers holding the carrier frame cover and remove the carrier frame cover.

- Remove the knobs/rubber washers holding the belt cover to the cutting unit and remove the belt cover.
- Remove the PTO drive belt. Refer to Replacing the PTO Drive Belt in Belt Maintenance, page 37.
- Disconnect the idler arm spring to relieve tension on the idler arm and idler pulley, then remove the worn mower deck belt (Figure 51).
- Install the new mower deck belt around the two outside spindle pulleys, the idler pulley, and in the lower groove of the double spindle pulley (Figure 51).
- Connect the idler arm spring (Figure 51).
- Install the PTO drive belt. Refer to Replacing the PTO Drive Belt in the Belt Maintenance, page 37.
- Adjust the belt guide an 1/8 inch (3 mm) from the belt (Figure 51).
- Install the belt cover onto the cutting unit, then install and tighten the knobs/rubber washers.
- Install the carrier frame cover onto the cutting unit, then install and tighten the knobs/rubber washers.



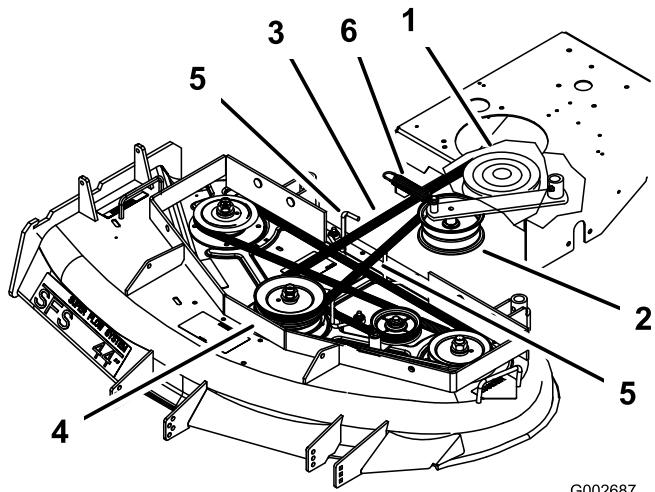
**Figure 51**

1. Mower deck belt	4. PTO Drive Belt
2. Idler arm spring	5. Center spindle pulley
3. Outside pulley	6. Belt guide

## Replacing the PTO Drive Belt

Squealing when the belt is rotating, blades slipping when cutting grass, frayed belt edges, burn marks and cracks are signs of a worn drive belt. Replace the drive belt if any of these conditions are evident.

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the knobs/rubber washers holding the carrier frame cover and remove the carrier frame cover.
4. Remove the knobs/rubber washers holding the belt covers to the top of the cutting unit and remove the belt covers.
5. Remove the heat shield from the engine deck and carrier frame.
6. Remove the idler spring from idler arm. Remove the drive belt from the PTO clutch pulley, idler pulleys and the left spindle pulley (Figure 52).
7. Install the new drive belt onto the PTO engagement pulley and the top groove of the center spindle pulley (Figure 52).
8. Install the belt onto idler pulleys and then install idler spring (Figure 52).
9. Install the heat shield to the engine deck and carrier frame.
10. Adjust the belt guide an 1/8 inch (3 mm) from the belt (Figure 52).
11. Install the belt covers onto the cutting unit, then reinstall and tighten the knobs/rubber washers.
12. Install the carrier frame cover onto the cutting unit, then reinstall and tighten the knobs/rubber washers.



**Figure 52**

1. PTO engagement pulley    4. Center spindle pulley  
 2. PTO drive belt idler pulley    5. PTO drive belt guide  
 3. PTO drive Belt    6. Idler spring

## **Mower Deck Maintenance**

### **Servicing the Cutting Blades**

To ensure a superior quality of cut, keep the blades sharp. For convenient sharpening and replacement, you may want to keep extra blades on hand.



**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.

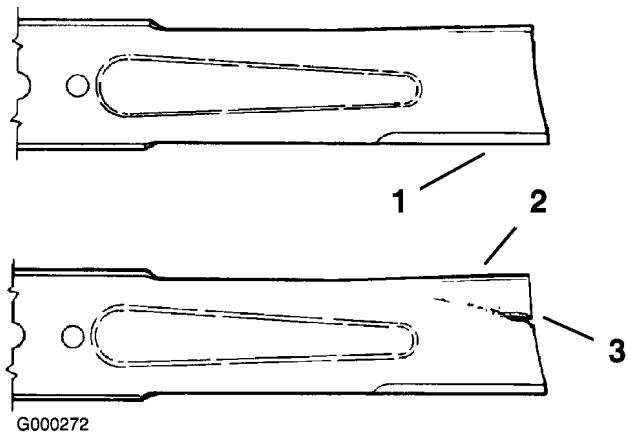
### **Before Inspecting or Servicing the Blades**

Park the machine on a level surface, disengage the blade control bail and set the parking brake. Turn the ignition key to off. Remove the key and disconnect the spark plug wire(s) from the spark plug(s).

## Inspecting the Blades

Inspect the blades every 8 hours.

1. Inspect the cutting edges (Figure 53). If the edges are not sharp or have nicks, remove and sharpen the blades. Refer to Sharpening the Blades.



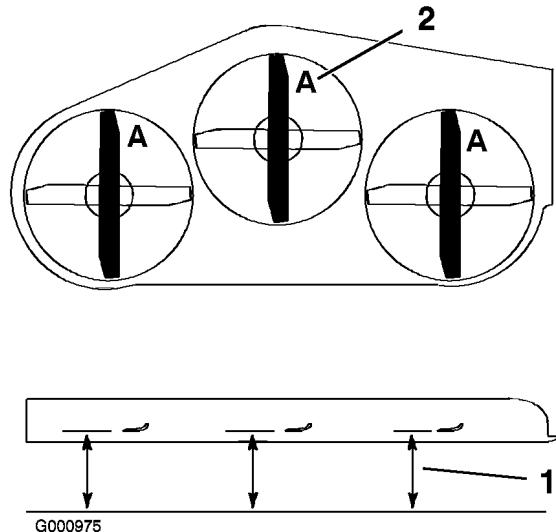
**Figure 53**

1. Cutting Edge      3. Wear/slot Forming  
2. Curved Area

2. Inspect the blades, especially the curved area (Figure 53). If you notice any damage, wear, or a slot forming in this area (item 3 in Figure 53), immediately install a new blade.

## Checking for Bent Blades

1. Disengage the PTO, move the motion control levers to the neutral locked position and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Rotate the blades until the ends face forward and backward (Figure 54). Measure from a level surface to the cutting edge, position A, of the blades (Figure 54). Note this dimension.



**Figure 54**

1. Measure here from blade      2. Position A to hard surface

4. Rotate the opposite ends of the blades forward.
5. Measure from a level surface to the cutting edge of the blades at the same position as in step 3 above. The difference between the dimensions obtained in steps 3 and 4 must not exceed 1/8 inch (3 mm). If this dimension exceeds 1/8 inch (3 mm), the blade is bent and must be replaced; refer to Removing the Blades and Installing the Blades.

!

**A blade that is bent or damaged could break apart and could seriously injure or kill you or bystanders.**

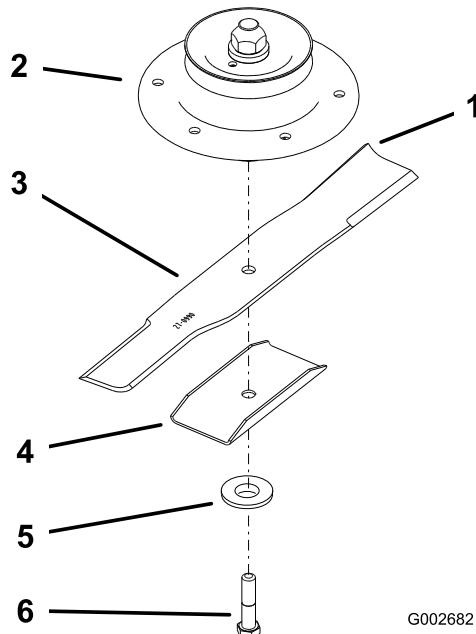
- Always replace bent or damaged blade with a new blade.
- Never file or create sharp notches in the edges or surfaces of blade.

## Removing the Blades

Blades must be replaced if a solid object is hit, if the blade is out of balance or is bent. To ensure optimum performance and continued safety conformance of the machine, use genuine Toro replacement blades. Replacement blades made by other manufacturers may result in non-conformance with safety standards. 1. Hold the blade end using a rag or thickly-padded glove. (Fig. 48).

Blades must be replaced if a solid object is hit, if the blade is out of balance or is bent. To ensure optimum performance and continued safety conformance of the machine, use genuine Toro replacement blades. Replacement blades made by other manufacturers may result in non-conformance with safety standards.

1. Hold the blade end using a rag or thickly-padded glove.
2. Remove the blade bolt, blade stiffener, washer, and blade from the spindle shaft (Figure 55).

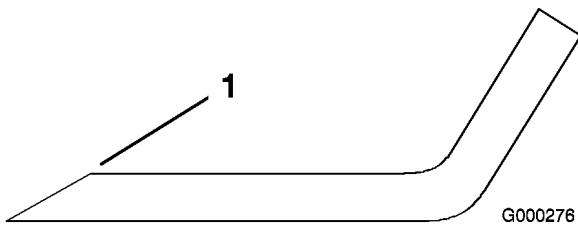


**Figure 55**

1. Sail Area of Blade	4. Blade stiffener
2. Blade spindle	5. Flat washer
3. Blade	6. Blade Bolt

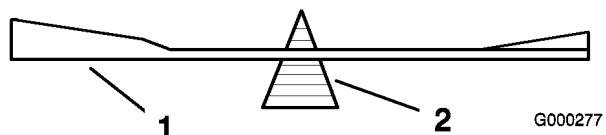
## Sharpening the Blades

1. Use a file to sharpen the cutting edge at both ends of the blade (Figure 56). Maintain the original angle. The blade retains its balance if the same amount of material is removed from both cutting edges.



**Figure 56**

1. Sharpen at original angle
2. Check the balance of the blade by putting it on a blade balancer (Figure 57). 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 the end of the sail area only (Figure 55). Repeat this procedure until the blade is balanced.



**Figure 57**

1. Blade	2. Balancer
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## Installing the Blades

1. Install the blade onto the spindle shaft (Figure 55).

**Important:** The sail part of the blade must be pointing upward, toward the inside of the mower to ensure proper cutting (Figure 55).

2. Install the blade stiffener, flat washer and blade bolt (Figure 55).
3. Torque the blade bolt to 85-110 ft-lb (115-140 N•m).

## Correcting the Mower Quality of Cut

If one deck blade cuts lower than the other, correct as follows.

**Note:** Tire air pressure is critical in these procedures. Make sure all tires have correct pressure.

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the

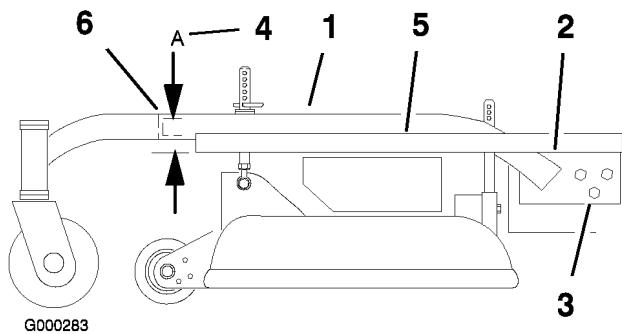
operating position. Disconnect the spark plug wire(s) from the spark plug(s).

3. Adjust the tire pressure in all tires to specifications on page .
4. Check that the blades and spindle shafts are not bent. Refer to Checking for Bent Blades.
5. Set the height-of-cut to the 4 inch (101.6 mm) position. Refer to Adjusting the Height-Of-Cut in Operation, page 19.
6. Perform the steps in the following sections Frame Set Up, Checking Front-to-Rear Pitch, and Checking Side-to-Side Leveling.

## Adjusting the Frame

### Checking the Carrier Frame and Deck Alignment

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Place a long straight edge on top of the engine deck as shown in Figure 58.



**Figure 58**

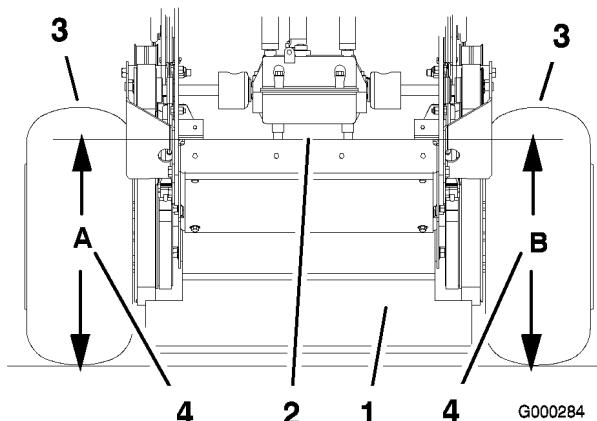
1. Carrier Frame	4. Location A, 1-5/16 inch (33 mm) $\pm 1/4$ inch (6 mm)
2. Top of engine deck	5. Straight edge
3. Carrier frame mounting bolts	6. Carrier frame cross tube

4. At the carrier frame cross tube, measure the height at location A (Figure 58). This measurement must be 1-5/16 inch (33 mm), plus or minus a 1/4 inch (6 mm).
5. If the height at location A is not correct, adjustment is needed.
6. Loosen the carrier frame mounting bolts on both sides of the machine (Figure 58).

7. Align the carrier frame and engine deck to match 1-5/16 inch (33 mm), plus or minus a 1/4 inch (6 mm) at location A (Figure 58).
8. Tighten the carrier frame mounting bolts on both sides of the machine.

### Checking the Engine Deck Height

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Adjust the tire pressure in all tires to specifications on page .
4. Measure engine deck height at location A (Figure 59).



**Figure 59**

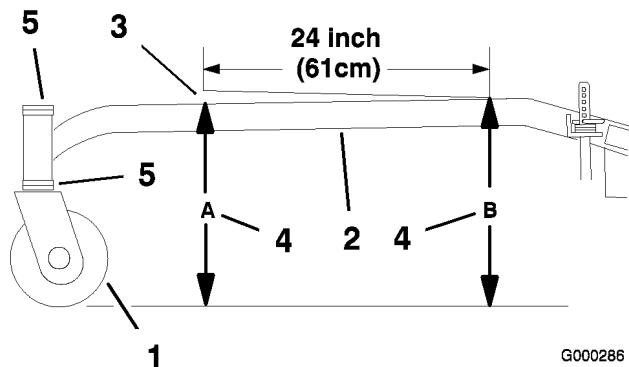
1. Back view of machine	3. Tires
2. Top of engine deck	4. Same height at locations A and B

5. Measure engine deck height at location B (Figure 59).
6. If the height at location A and B are not the same, change tire pressure slightly to make them the same.

### Checking Carrier Frame Front-to-Rear Pitch

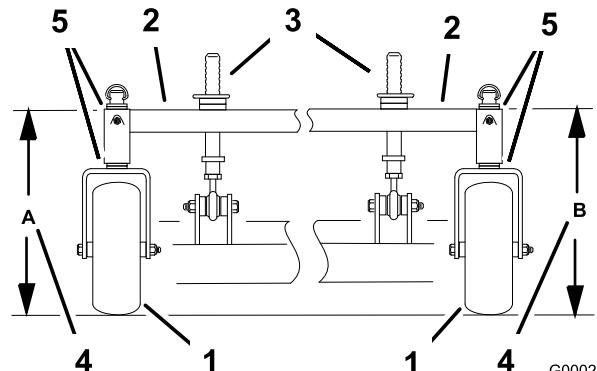
The carrier frame must have a pitch of a 1/4 inch (6 mm) over the length of 24 inches (61 cm) on the carrier frame (Figure 60).

1. Measure out 24 inches (61cm) on the carrier frame (Figure 60).



**Figure 60**

1. Caster Wheel
2. Carrier Frame
3. 1/4-3/8 inch (6-10 mm) pitch over 24 inch (61 cm) length
4. Height at locations A and B
5. Caster spacers



**Figure 61**

1. Caster Wheel
2. Carrier Frame
3. Front height-of-cut pins
4. Same height at locations **A** and **B**
5. Caster spacers

2. Measure carrier frame height at location **A** (Figure 60).
3. Measure carrier frame height at location **B** (Figure 60).
4. The height at location **A** must be a 1/4-3/8 inch (6 mm -10 mm) lower than location **B** (Figure 60).
5. If the carrier frame is not correct, move caster spacers to make it a 1/4-3/8 inch (6 -10 mm) pitch (Figure 60). Move spacers from top or bottom to make the correct pitch.
6. The tire pressure may also be adjusted slightly to make a 1/4 inch (6 mm) pitch.

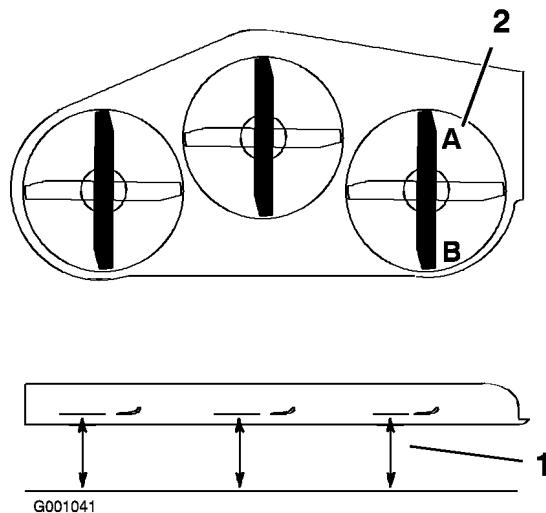
### Checking Carrier Frame Side-to-Side

1. Disengage the PTO and set the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Adjust the tire pressure in all tires to specifications; refer to Drive System Maintenance, page 34.
4. Measure carrier frame height at location **A** (Figure 61).

5. Measure carrier frame height at location **B** (Figure 61).
6. If the carrier frame height is not the same move spacers from top or bottom of caster wheel, to make it level. The tire pressure may also be adjusted slightly to make it level.

### Checking the Mower Deck Front-to-Rear Pitch

1. Check the tire pressure on both deck and traction unit.
2. Position one blade front-to-rear (Figure 62). Measure at **A** and **B** locations (Figure 62) from a level surface to the cutting edge of the blade tips (Figure 62).
3. The mower blade should be 1/4 inch (6 mm) lower in front at **A** than in the rear at **B**. Rotate blades and repeat for other blades. If it is not correct, proceed to Changing the Deck Front-to-Rear Pitch.



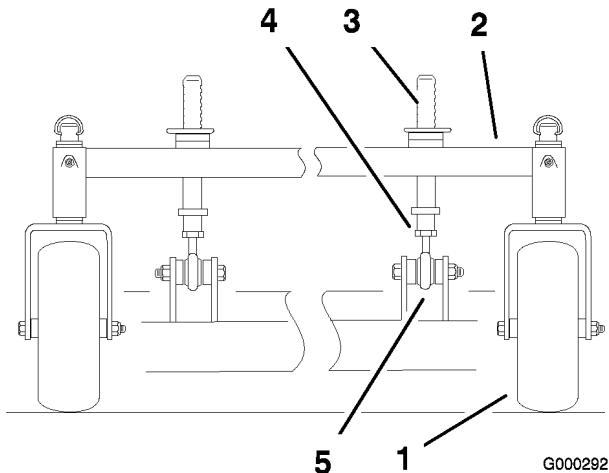
**Figure 62**

1. Measure blade at points **A**
2. Measure from a level surface

## Changing the Deck Front-to-Rear Pitch

Changing the front-to-rear pitch is done by adjusting the front height-of-cut posts.

1. To change the front-to-rear pitch, the front height-of-cut posts can be adjusted (Figure 63).



**Figure 63**

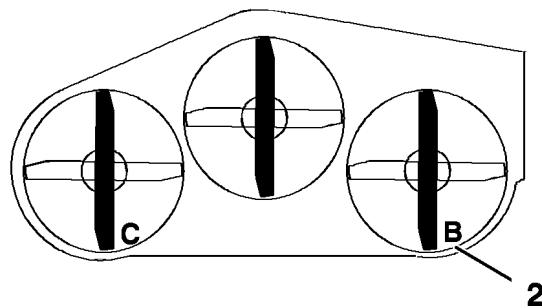
1. Caster Wheel	4. Jam nut
2. Carrier Frame	5. Ball joint
3. Front height-of-cut pins	

2. To raise the front of the deck, loosen jam nut and rotate the front pin clockwise (Figure 63).

3. To lower the front of the deck, loosen jam nut and rotate the front pin counter clockwise (Figure 63).
4. Position the blades front-to-rear. Measure at **C** and **D** locations (Figure 62) from a level surface to the cutting edge of the blades.
5. Check the side-to-side leveling of the cutting unit.
6. Tighten the jam nuts (Figure 63).

## Checking the Deck Side-to-Side Leveling

1. Check the tire pressure on both deck and traction unit.
2. Position the blades side-to-side (Figure 64). Measure at **B** and **C** locations (Figure 64) from a level surface to the cutting edge of blade tips (Figure 64).



**Figure 64**

1. Measure from a level surface
2. Measure blade at points **B** and **C**
3. The difference between measurements **B** and **C** should be no more than 1/4 inch (6 mm).

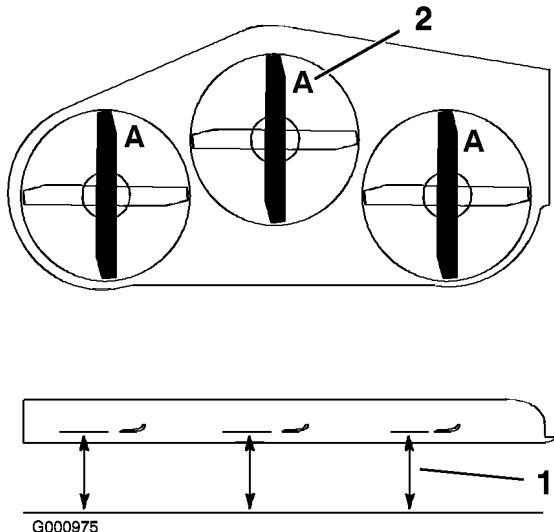
## Changing the Side-to-Side Leveling

Changing the side-to-side leveling is done by adjusting tire pressure.

1. Change the tire pressure on both deck and traction unit. Do this to the corresponding side that needs adjustment.
2. Recheck the front-to-rear pitch and side to side leveling of the cutting unit.

## Matching Height of Cut

1. Check the tire pressure on both deck and traction unit.
2. Set the height-of-cut to the 4 inch (101.6 mm) position following the height-of-cut decal.
3. With the machine on level surface, position one blade front-to-rear (Figure 65). Measure at **A** and from level surface to the cutting edge of the blade tips (Figure 65).



**Figure 65**

1. Measure from a level surface
2. Measure blade at point **A**
4. The measurement should be 4 inch (101.6 mm).
5. If it does not measure correctly, add air pressure in the rear tires to raise the height-of-cut.
6. If it does not measure correctly, decrease air pressure in rear tires to lower the height-of-cut.
7. Check the carrier frame front-to-rear pitch.

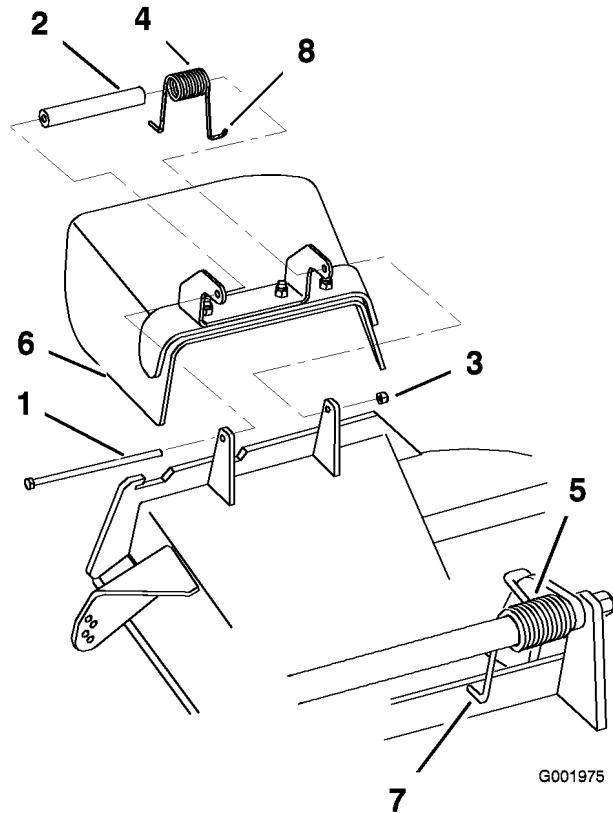
## Replacing the Grass Deflector



An uncovered discharge opening could allow the lawn mower to throw objects in the operator's or bystander's direction and result in serious injury. Also, contact with the blade could occur.

Never operate the lawn mower unless you install a cover plate, a mulch plate, or a grass chute and catcher.

1. Remove the locknut, bolt, spring and spacer holding the deflector to the pivot brackets (Figure 66). Remove damaged or worn grass deflector.



**Figure 66**

1. Bolt
2. Spacer
3. Locknut
4. Spring
5. Spring installed
6. Grass Deflector
7. L end of spring, place behind deck edge before installing bolt
8. J hook end of spring

2. Place spacer and spring onto grass deflector. Place the L end of spring behind deck edge.

**Note:** Make sure the L end of spring is installed behind deck edge before installing the bolt as shown in Figure 66.

3. Install bolt and nut. Place the J hook end of spring around grass deflector (Figure 66).

**Important:** The grass deflector must be able to rotate. Lift the deflector up to the full open position and ensure that it rotates into the full down position.

# Storage

## Cleaning and Storage

1. Disengage the power take off (PTO), set the parking brake, and turn the ignition key to off. Remove the 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's cylinder head fins and blower housing.

**Important:** You can wash the machine with mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water, especially near the shift lever plate, and engine.

3. Check the brake; refer to Servicing the Brake in Brake Maintenance, page 36.
4. Service the air cleaner; refer to Servicing the Air Cleaner in Engine Maintenance, page 28.
5. Grease the machine; refer to Greasing and Lubrication in Lubrication, page 27.
6. Change the crankcase oil; refer to Servicing the Engine in Engine Maintenance, page 28.
7. Check the tire pressure; refer to Checking the Tire Pressure in Drive System Maintenance, page 34.
8. For long-term storage:
  - A. Add stabilizer/conditioner additive to fuel in the tank.
  - B. Run engine to distribute conditioned fuel through the fuel system (5 minutes).
  - C. Stop engine, allow to cool and drain the fuel tank; refer to Servicing the Fuel Tank in Fuel System Maintenance, page 32, or operate engine until it stops.
  - D. Restart engine and run until it stops. Repeat, on Choke until engine will not restart.
  - E. Dispose of fuel properly. Recycle as per local codes.
9. Remove the spark plug(s) and check its condition; refer to Servicing the Spark Plug in

Engine Maintenance, page 28. With the spark plug(s) removed from the engine, pour two tablespoons of engine oil into the spark plug hole. Now use the starter to crank the engine and distribute the oil inside the cylinder. Install the spark plug(s). Do not install the wire on the spark plug(s).

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

**Note:** Do not store stabilizer/conditioned gasoline over 90 days.

9. Remove the spark plug(s) and check its condition; refer to Servicing the Spark Plug in

# Troubleshooting

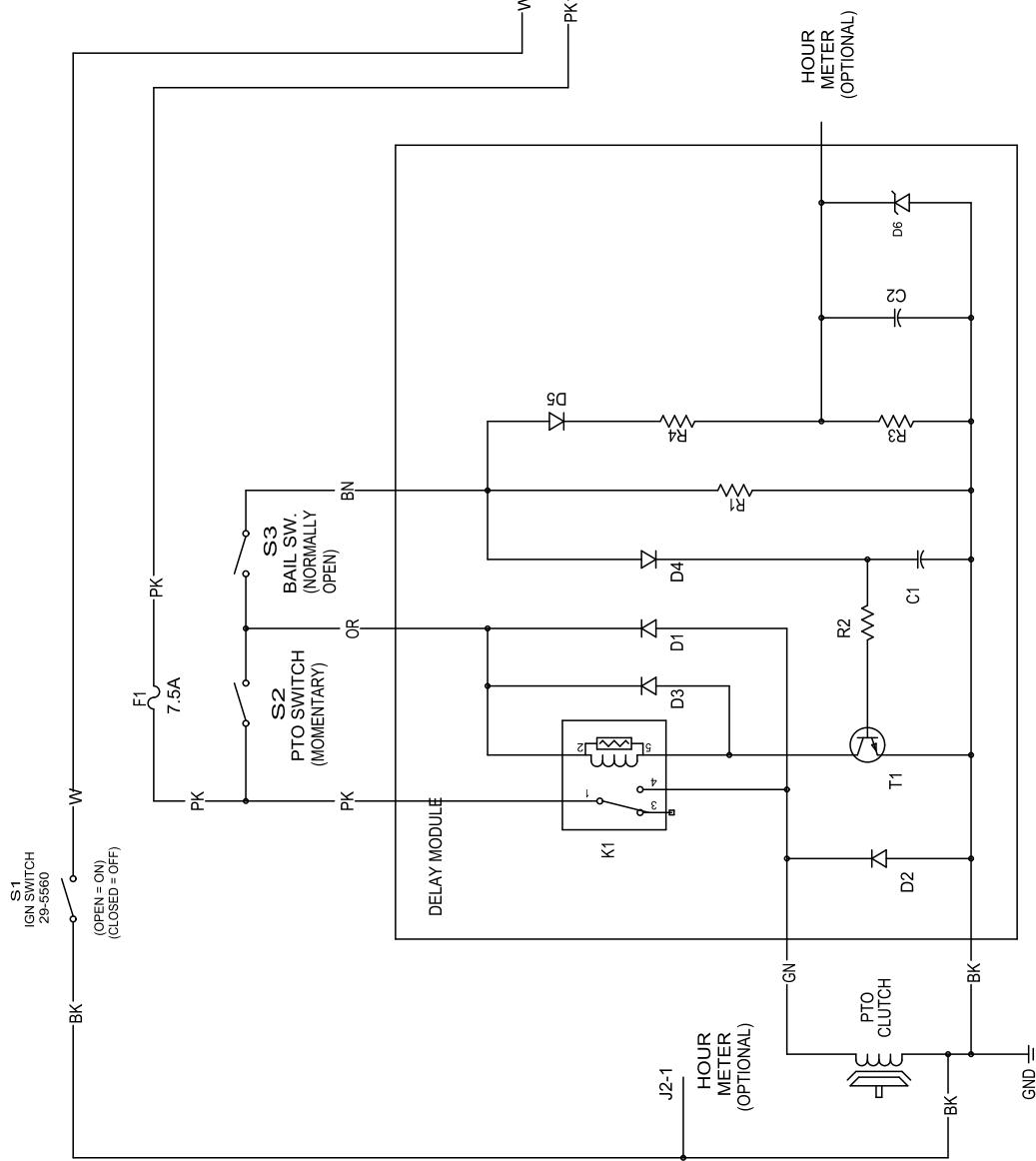
Problem	Possible Cause	Corrective Action
Engine will not start, starts hard, or fails to keep running.	<ol style="list-style-type: none"> <li>1. Fuel tank is empty.</li> <li>2. Choke is not on.</li> <li>3. Air cleaner is dirty.</li> <li>4. Spark plug wire is loose or disconnected.</li> <li>5. Spark plug is pitted, fouled, or the gap is incorrect.</li> <li>6. Dirt in the fuel filter.</li> <li>7. Dirt, water, or stale fuel is in the fuel system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill fuel tank with gasoline.</li> <li>2. Move the throttle lever to choke position.</li> <li>3. Clean or replace the air cleaner element.</li> <li>4. Install wire on spark plug.</li> <li>5. Install a new, correctly gapped spark plug.</li> <li>6. Replace the fuel filter.</li> <li>7. Contact an Authorized Service Dealer.</li> </ol>
Engine loses power.	<ol style="list-style-type: none"> <li>1. Engine load is excessive.</li> <li>2. Air cleaner is dirty.</li> <li>3. Oil level in the crankcase is low.</li> <li>4. Cooling fins and air passages under the engine blower housing are plugged.</li> <li>5. Spark plug is pitted, fouled, or the gap is incorrect.</li> <li>6. Vent hole in the fuel cap is plugged.</li> <li>7. Dirt in the fuel filter.</li> <li>8. Dirt, water, or stale fuel is in the fuel system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the ground speed.</li> <li>2. Clean the air cleaner element.</li> <li>3. Add oil to the crankcase.</li> <li>4. Remove the obstruction from the cooling fins and air passages.</li> <li>5. Install a new, correctly gapped spark plug.</li> <li>6. Clean or replace the fuel cap.</li> <li>7. Replace the fuel filter.</li> <li>8. Contact an Authorized Service Dealer.</li> </ol>
Engine overheats.	<ol style="list-style-type: none"> <li>1. Engine load is excessive.</li> <li>2. Oil level in the crankcase is low.</li> <li>3. Cooling fins and air passages under the engine blower housing are plugged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the ground speed.</li> <li>2. Add oil to the crankcase.</li> <li>3. Remove the obstruction from the cooling fins and air passages.</li> </ol>

<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
Machine does not drive.	<ol style="list-style-type: none"> <li>1. Shift lever is in neutral.</li> <li>2. Traction belt is worn, loose or broken.</li> <li>3. Traction belt is off a pulley.</li> <li>4. Broken or missing idler spring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Move shift lever to a drive gear position.</li> <li>2. Change the belt.</li> <li>3. Change the belt.</li> <li>4. Replace the spring.</li> </ol>
Abnormal vibration.	<ol style="list-style-type: none"> <li>1. Cutting blade(s) is/are bent or unbalanced.</li> <li>2. Blade mounting bolt is loose.</li> <li>3. Engine mounting bolts are loose.</li> <li>4. Loose engine pulley, idler pulley, or blade pulley.</li> <li>5. Engine pulley is damaged.</li> <li>6. Blade spindle is bent.</li> </ol>	<ol style="list-style-type: none"> <li>1. Install new cutting blade(s).</li> <li>2. Tighten the blade mounting bolt.</li> <li>3. Tighten the engine mounting bolts.</li> <li>4. Tighten the appropriate pulley.</li> <li>5. Contact an Authorized Service Dealer.</li> <li>6. Contact an Authorized Service Dealer.</li> </ol>
Uneven cutting height.	<ol style="list-style-type: none"> <li>1. Blade(s) not sharp.</li> <li>2. Cutting blade(s) is/are bent.</li> <li>3. Mower is not level.</li> <li>4. Underside of mower is dirty.</li> <li>5. Tire pressure is not correct.</li> <li>6. Blade spindle bent.</li> </ol>	<ol style="list-style-type: none"> <li>1. Sharpen the blade(s).</li> <li>2. Install new cutting blade(s).</li> <li>3. Level mower from side-to-side and front-to-rear.</li> <li>4. Clean the underside of the mower.</li> <li>5. Adjust the tire pressure.</li> <li>6. Contact an Authorized Service Dealer.</li> </ol>

<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
Blades do not rotate.	<ol style="list-style-type: none"> <li>1. Drive belt is worn, loose or broken.</li> <li>2. Drive belt is off pulley.</li> <li>3. Deck belt is worn, loose or broken.</li> <li>4. Deck belt is off pulley.</li> <li>5. Broken or missing idler spring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the belt tension.</li> <li>2. Install drive belt and check adjusting shafts and belt guides for correct position.</li> <li>3. Install new deck belt.</li> <li>4. Inspect the belt and replace if damaged. Check the pulleys and idler pulleys.</li> <li>5. Replace the spring.</li> </ol>

# Schematics

KAWASAKI GEAR M.S.



G002752









## Evaporative Emission Control Warranty Statement

California Evaporative Emission Control Warranty Statement  
Your Warranty Rights and Obligations

### Introduction

The California Air Resources Board and The Toro® Company are pleased to explain the evaporative emission control system's warranty on your 2006 model year equipment. In California, new equipment that use small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. The Toro® Company must warrant the evaporative emission control system on your equipment for two years provided there has been no abuse, neglect or improper maintenance of your equipment. Your evaporative emission control system may include parts such as: fuel lines, fuel line fittings, and clamps.

### Manufacturer's Warranty Coverage:

This evaporative emission control system is warranted for two years. If any evaporative emission-related part on your equipment is defective, the part will be repaired or replaced by The Toro® Company.

### Owner's Warranty Responsibilities:

- As the equipment owner, you are responsible for performance of the required maintenance listed in your Operator's Manual. The Toro® Company recommends that you retain all receipts covering maintenance on your equipment, but The Toro® Company cannot deny warranty solely for the lack of receipts.
- As the equipment owner, you should however be aware that The Toro® Company may deny you warranty coverage if your emission warranty parts have failed due to abuse, neglect, or improper maintenance or unapproved modifications.
- You are responsible for presenting your equipment to an Authorized Service Dealer as soon as the problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days. If you have a question regarding your warranty coverage, you should contact The Toro® Company at 1-952-948-4027 or call us toll free at the number listed in your Toro Warranty statement.

### Defects Warranty Requirements:

- The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser.
- General Evaporative Emissions Warranty Coverage. The emission warranty parts must be warranted to the ultimate purchaser and any subsequent owner that the evaporative emission control system when installed was:
  - Designed, built, and equipped so as to conform with all applicable regulations; and
  - Free from defects in materials and workmanship that causes the failure of a warranted part for a period of two years.
- The warranty on evaporative emissions-related parts will be interpreted as follows:
  - Any warranted part that is not scheduled for replacement as required maintenance in the written instructions must be warranted for the warranty period of two years. If any such part fails during the period of warranty coverage, it must be repaired or replaced by The Toro® Company. Any such part repaired or replaced under the warranty must be warranted for a time not less than the remaining warranty period.
  - Any warranted part that is scheduled only for regular inspection in the written instructions must be warranted for the warranty period of two years. A statement in such written instructions to the effect of "repair or replace as necessary" will not reduce the period of warranty coverage. Any such part repaired or replaced under warranty must be warranted for a time not less than the remaining warranty period.
  - Any warranted part that is scheduled for replacement as required maintenance in the written instructions must be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part must be repaired or replaced by The Toro® Company. Any such part repaired or replaced under warranty must be warranted for a time not less than the remainder of the period prior to the first scheduled replacement point for the part.
  - Repair or replacement of any warranted part under the warranty provisions of this article must be performed at no charge to the owner at an Authorized Service Dealer.
  - Notwithstanding the provisions of subsection (D) above, warranty services or repairs must be provided at an Authorized Service Dealer.
  - The owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective, provided that such diagnostic work is performed at an Authorized Service Dealer.
  - Throughout the evaporative emission control system's two year warranty period, The Toro® Company must maintain a supply of warranted parts sufficient to meet the expected demand for such parts.
  - Manufacturer approved replacement parts must be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner. Such use will not reduce the warranty obligations of The Toro® Company.
  - The use of any add-on or modified parts will be grounds for disallowing a warranty claim made in accordance with this article. The Toro® Company will not be liable under this Article to warrant failures of warranted parts caused by the use of an add-on or modified part.
  - The Toro® Company shall provide any documents that describe the warranty procedures or policies within five working days of request by the Air Resources Board.

### Emission Warranty Parts List:

The following lists includes the parts covered under this warranty:

- Fuel Lines
- Fuel Line Fittings
- Clamps

## The Toro Total Coverage Guarantee

### A Limited Warranty

#### Conditions and Products Covered

The Toro® Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly promise to repair the listed Toro Products if defective in materials or workmanship. The following time periods apply from the date of purchase:

Products	Warranty Period
All Products	1 year
All Spindles	2 years (parts and labor; third year, parts only)
Engines/Hydraulic Systems* on the following: Outfront and Mid-Mount Z's ProLine Mid-Size Mowers Groundsmaster[Symbol_registersans] Riding Mowers Backpack Blowers	2 years
Deck Shells (32 <sup>2</sup> -72 <sup>2</sup> ) on the following: ProLine Mid-Size Mowers Mid-Mount Z's	2 years
Electric Clutch on 500 Series Mid-Mount Z's	2 years

This warranty includes the cost of parts and labor, but you must pay transportation costs.

This warranty applies to:

- Outfront and Mid-Mount Z's
- ProLine Mid-Size Mowers
- Groundsmaster Riding Mowers
- Turf Maintenance Equipment
- Debris Management Equipment

Some engines used on Toro LCE Products are warranted by the engine manufacturer.

#### Instructions for Obtaining Warranty Service

If you think that your Toro Product contains a defect in materials or workmanship, follow this procedure:

1. Contact any Toro Authorized or Master Service Dealer to arrange service at their dealership. To locate a dealer convenient to you, access our website at [www.Toro.com](http://www.Toro.com). You may also call our Toro Customer Care Department toll free at 888-577-7466 (U.S. Customers) or 877-484-9255 (Canada customers).
2. Bring the product and your proof of purchase (sales receipt) to the Service Dealer.

If for any reason you are dissatisfied with the Service Dealer's analysis or with the assistance provided, contact us at:

#### 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.

#### 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 the following:

- 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.

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.**

**All implied warranties of merchantability (that the product is fit for ordinary use) and fitness for use (that the product is fit for a particular purpose) are limited to the duration of the express warranty.**

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

LCB Customer Service Department  
Toro Warranty Company  
8111 Lyndale Avenue South  
Bloomington, MN 55420-1196