Form No. 3461-440 Rev A

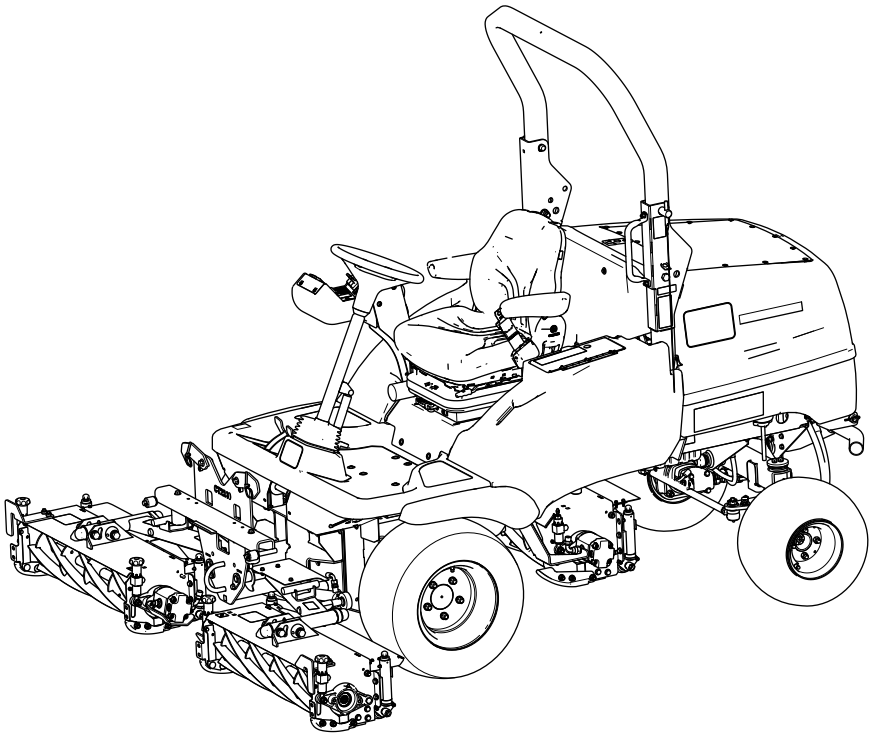
TORO®

Count on it.

Operator's Manual

# LT2240 Compact Triple 4-Wheel Drive Turf Mower

**Model No. 31654—Serial No. 413000000 and Up**



Register at www.Toro.com.
Original Instructions (EN)

CE UK CA

*3461-440*

This product complies with all relevant European directives; for details, please see the separate product specific Declaration of Conformity (DOC) sheet.

# Introduction

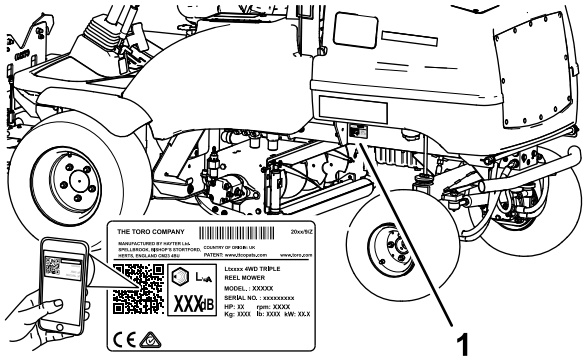
This machine is a ride-on, reel-blade lawn mower intended to be used by professional, hired operators in commercial applications. It is primarily designed for cutting grass on well-maintained turf. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

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.

Visit www.toro.com/en-gb for more information, including safety tips, training materials, 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.

***Important:*** **With your mobile device, you can scan the QR code on the serial number plate (if equipped) to access warranty, parts, and other product information.**




g347997

**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.



g000502

**Figure 2**

Safety-alert symbol

This manual uses 2 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

This machine has been designed in accordance with EN ISO 5395.

# General Safety

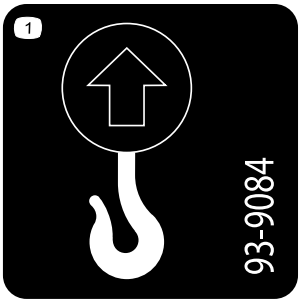
This product is capable of amputating hands and feet and of throwing objects.

- Read and understand the contents of this *Operator's Manual* before starting the engine.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.
- Keep bystanders and children out of the operating area. Never allow children to operate the machine.
- Shut off the engine, remove the key, and wait for all movement to stop before you leave the operator's position. Allow the machine to cool before adjusting, servicing, cleaning, or storing it.

Improperly using or maintaining this machine 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 these instructions may result in personal injury or death.

# Safety and Instructional Decals

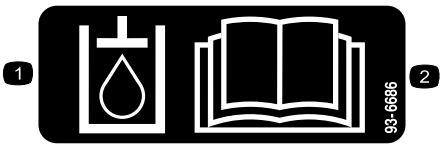
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.




decal93-9084

**93-9084**

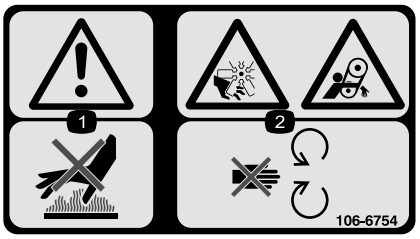
1. Lift point/Tie-down point




decal93-6686

**93-6686**

1. Hydraulic fluid
2. Read the *Operator's Manual*.




decal106-6754

**106-6754**

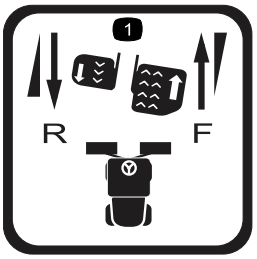
1. Warning—do not touch the hot surface.
2. Cutting/dismemberment hazard, fan; entanglement hazard, belt—stay away from moving parts.




decal111-3562

**111-3562**

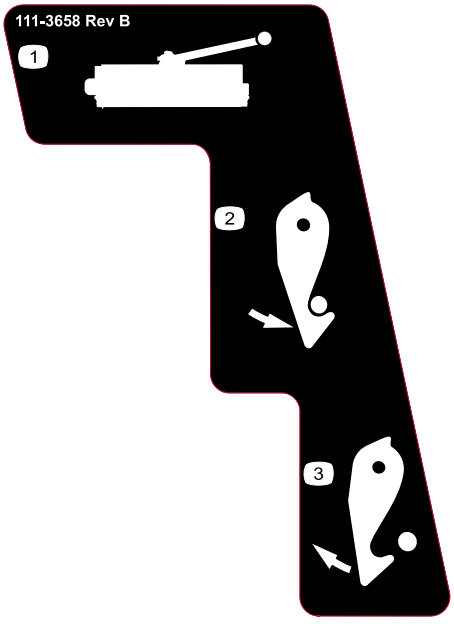
1. Press the pedal to adjust the steering wheel angle.




decal111-3567

**111-3567**

1. Pedal operation to control machine direction




decal111-3658

**111-3658**

1. Cutterhead
2. Latch
3. Unlatch

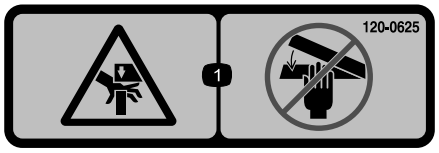



decal117-3276

**117-3276**

1. Engine coolant under pressure
2. Explosion hazard—read the *Operator's Manual*.
3. Warning—do not touch the hot surface.
4. Warning—read the *Operator's Manual*.

---

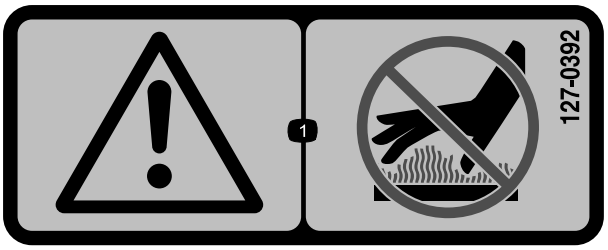



decal120-0625

**120-0625**

1. Pinch point, hand—keep hands away.

---

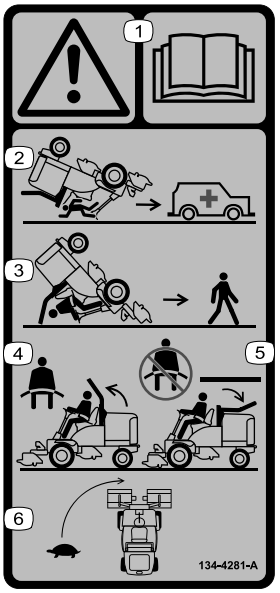



decal127-0392

**127-0392**

1. Warning—stay away from hot surfaces.

---

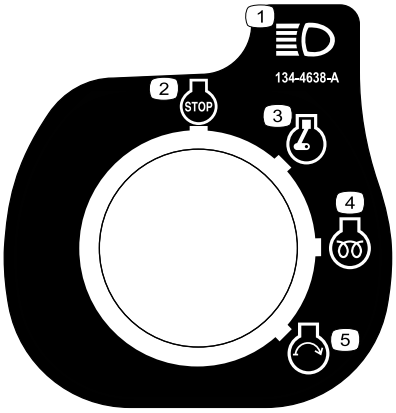



decal134-4281

**134-4281**

1. Warning—read the *Operator's Manual*.
2. There is no rollover protection when the roll bar is down.
3. There is rollover protection when the roll bar is up.
4. If the roll bar is raised, wear the seat belt.
5. If the roll bar is not raised, do not wear the seat belt.
6. Drive slowly when turning.

---




decal134-4638

**134-4638**

1. Lights
2. Engine—shut off
3. Engine—run
4. Engine—preheat
5. Engine—start

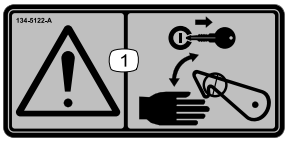
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decal134-4539

**134-4539**

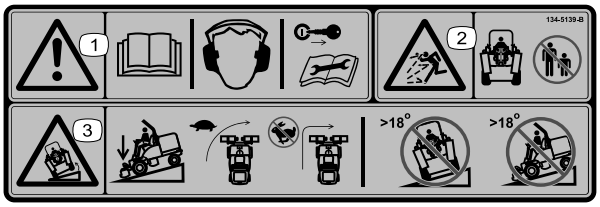
1. Falling, crushing hazard—ensure that the operator-platform latch is engaged before operating.




decal134-5122

**134-5122**

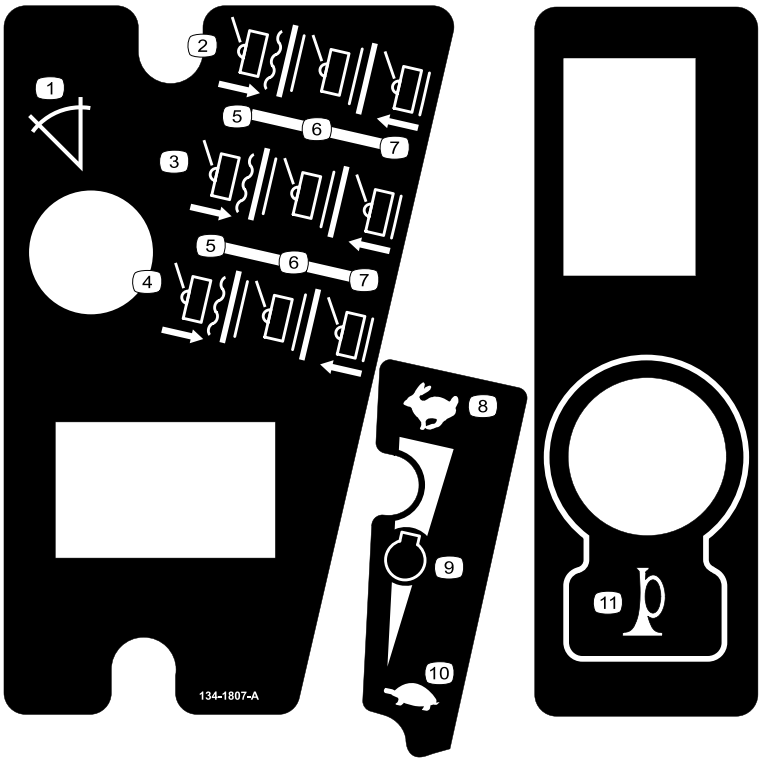
1. Warning—shut off the engine and remove the key before releasing or operating the safety latches.




decal134-5139

**134-5139**

1. Warning—read the *Operator's Manual*; wear hearing protection; remove the key before performing maintenance.
2. Thrown object hazard—keep bystanders away.
3. Tipping hazard—lower attachments when operating on hills/slopes; do not turn sharply while traveling fast; drive slowly when turning.

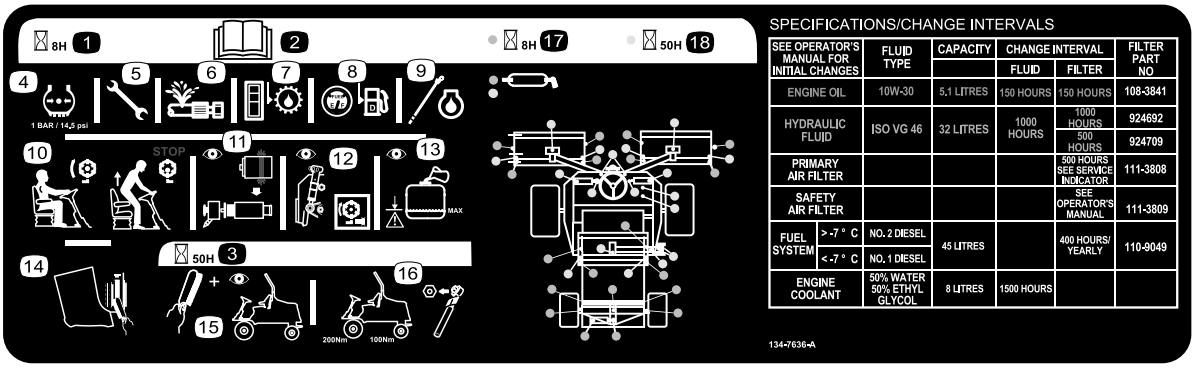



decal134-1807

**134-1807**

1. Slope indicator
2. Right cutting unit controls
3. Center cutting unit controls
4. Left cutting unit controls
5. Lower/float
6. Transport
7. Raise
8. Fast
9. Engine speed
10. Slow
11. Horn

---




SPECIFICATIONS/CHANGE INTERVALS

| SEE OPERATOR'S MANUAL FOR INITIAL CHANGES | | FLUID TYPE | CAPACITY | CHANGE INTERVAL | | FILTER PART NO |
|---|---|---|---|---|---|---|
| | | | | FLUID | FILTER | |
| ENGINE OIL | | 10W-30 | 5,1 LITRES | 150 HOURS | 150 HOURS | 108-3841 |
| HYDRAULIC FLUID | | ISO VG 46 | 32 LITRES | 1000 HOURS | 1000 HOURS | 924692 |
| | | | | | 500 HOURS | 924709 |
| PRIMARY AIR FILTER | | | | | 500 HOURS SEE SERVICE INDICATOR | 111-3808 |
| SAFETY AIR FILTER | | | | | SEE OPERATOR'S MANUAL | 111-3809 |
| FUEL SYSTEM | > -7 ° C | NO. 2 DIESEL | 45 LITRES | | 400 HOURS/ YEARLY | 110-9049 |
| | < -7 ° C | NO. 1 DIESEL | | | | |
| ENGINE COOLANT | | 50% WATER 50% ETHYL GLYCOL | 8 LITRES | 1500 HOURS | | |

decal134-7636

**134-7636**

1. 8 hour service interval
2. Read the *Operator's Manual*.
3. 50 hour service interval
4. Check the tire pressure.
5. Check all bolts and nuts for proper tightness.
6. Check all hoses for leaks.
7. Check the hydraulic-oil level.
8. Check the fuel level.
9. Check the engine-oil level.
10. Check the operation of the seat switch.
11. Check the air filter element.
12. Check the cutting unit settings.
13. Check the engine-coolant level.
14. Check the cleanliness of the radiator.
15. Clean and inspect the machine.
16. Check the wheel nut tightness using a torque wrench, front wheels 200 N•m, rear wheels 100 N•m.
17. 8 hour service interval
18. 50 hour service interval

---

# Setup

## Media and Additional Parts

| Description | Qty. | Use |
|---|---|---|
| Operator's Manual<br>Engine owner’s manual | 1<br>1 | Read the manuals before operating the machine. |

Store all documentation in a safe place for future use.

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

# Product Overview

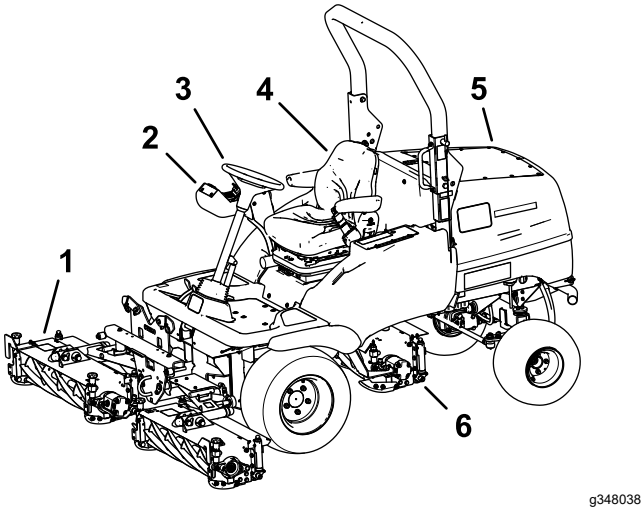



**Figure 3**

1. Front cutting unit
2. Control arm
3. Steering wheel
4. Operator's seat
5. Engine hood
6. Rear cutting unit

# Controls

## Control Console Controls

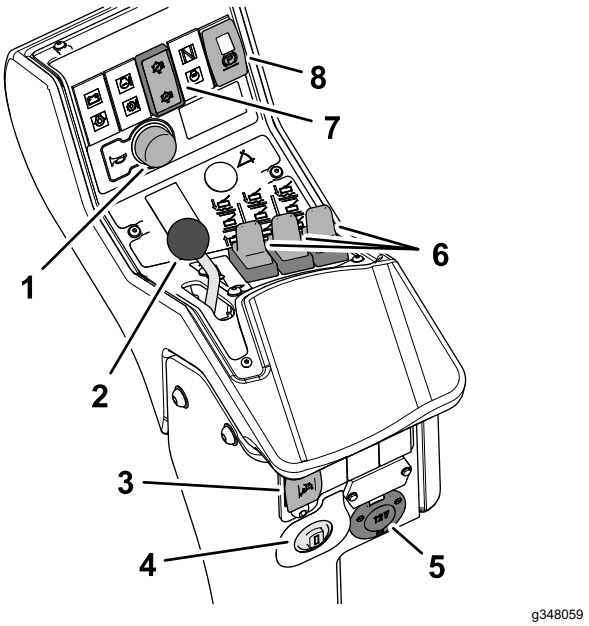


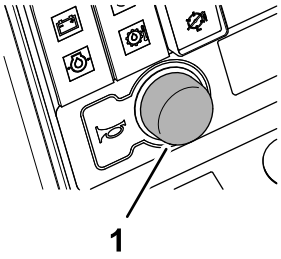

**Figure 4**

1. Horn button
2. Throttle control lever
3. Limited lift in reverse switch
4. Ignition switch
5. Auxiliary 12-volt socket
6. Lift-control switches
7. Cutting-unit drive switch
8. Parking brake switch

### Audible Warning Horn

***Important:*** **The horn sounds when an engine coolant overheat condition occurs. Shut off the engine immediately, and repair the machine before starting the engine again.**

Press the horn button to provide an audible warning (Figure 5).




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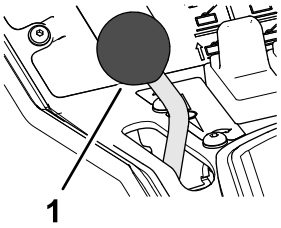
**Figure 5**

1. Horn button

### Throttle Control

- To increase the engine speed, move the throttle-control lever (Figure 6) forward.
- To decrease engine speed, move the throttle-control lever rearward.

**Note:** Engine speed influences the speed of the other functions, i.e. ground speed, reel speed and cutting unit lift rate.




g348130

**Figure 6**

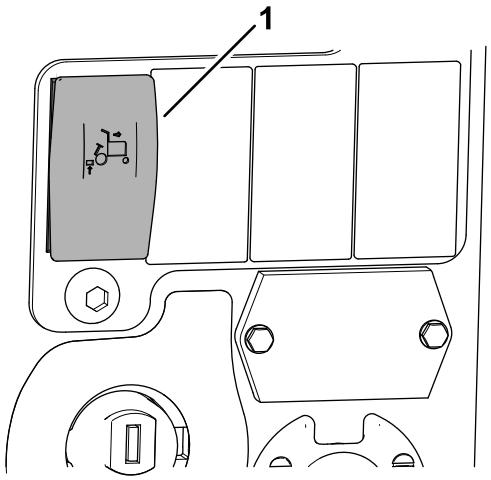
1. Throttle control lever

### Auto Reverse Limited-Lift Switch

The auto reverse limited-lift switch controls whether cutting units can rise automatically to the limited lift position when driving the machine backward.

- To enable auto reverse-limited lift, press the top of the auto reverse limited-lift switch (Figure 7).

  The LED light in the switch illuminates when limited lift in reverse is enabled.
- To shut off auto reverse-limited lift, press the bottom of the auto reverse limited-lift switch.




g348147

**Figure 7**

1. Auto reverse limited-lift switch

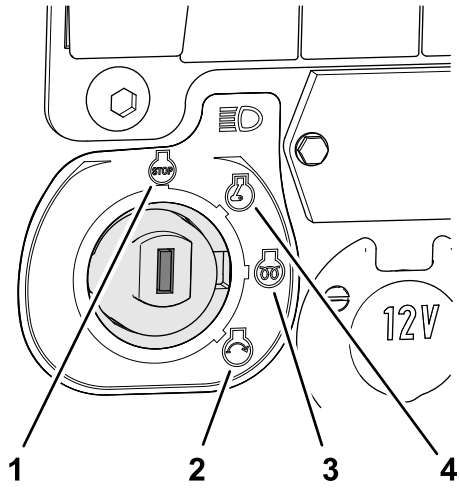
### Ignition Key

**⚠ CAUTION**

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

**Remove the key from the ignition.**

The ignition switch has 4 positions to control the engine and machine electrical power.



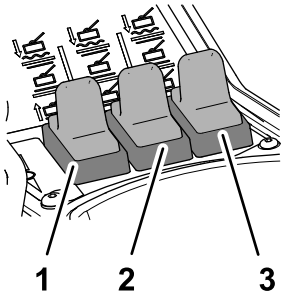

g348086

**Figure 8**

1. STOP
2. START
3. PREHEAT
4. RUN /AUXILIARY ON

### Lift-Control Switches

Use the lift-control switches to raise and lower the cutting units (Figure 9).




g348146

**Figure 9**

1. Left (front) cutting-unit lift switch
2. Rear cutting-unit lift switch
3. Right (front) cutting-unit lift switch

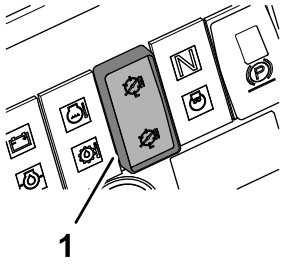
### Cutting-Unit Drive Switch

- To run the cutting units, press the top of the cutting-unit drive switch (Figure 10).

  The LED light in the switch illuminates when the cutting units are running.

- To shut off the cutting units, press the bottom of the cutting-unit drive switch.

  ***Important:*** **Always shut off cutting units when you are not cutting.**




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**Figure 10**

1. Cutting-unit drive switch

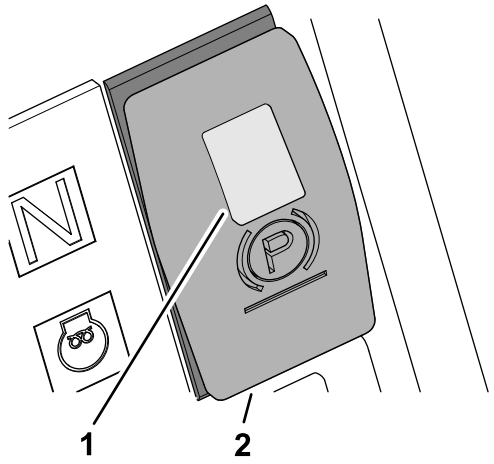
### Parking Brake Switch

***Important:*** **Do not operate the mower with the parking brake engaged, and do not engage the parking brake while the mower is moving.**

***Important:*** **The parking brake operates on the front wheels only. Do not park the mower on a slope.**

To engage the parking brake, pressing the smaller (orange) locking button, and moving the brake switch forward (Figure 11).

**Note:** The LED light in the switch illuminates when the parking brake is engaged and the ignition key is turned to the RUN position.




g348063

**Figure 11**

1. Locking button (orange)
2. Parking-brake switch

### Service Brake

The hydraulic transmission provides the machine with service-brake effect. When you release the forward or reverse travel pedals, or reduce engine speed the transmission produces service-brake effect and ground speed slows or stops the machine. To increase the transmission-braking effect, push the transmission pedal into the NEUTRAL position. Only the front wheels provide service brake effect.

**⚠ DANGER**

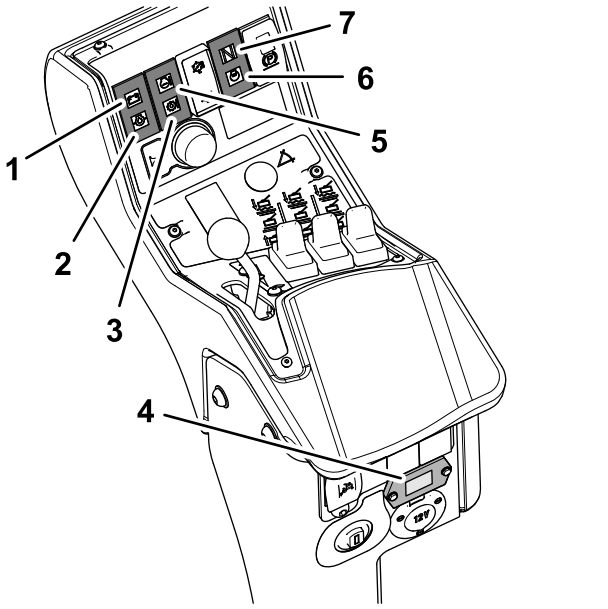
**The service braking system does not keep the machine from rolling when parked. The machine could move unintentionally.**

**Engage the parking brake when you park the machine.**

### Emergency Brake

If the service brake is damaged or ineffective, shut off the engine, engage the parking brake remove the key, and have the machine repaired.

# Control Console Indicators



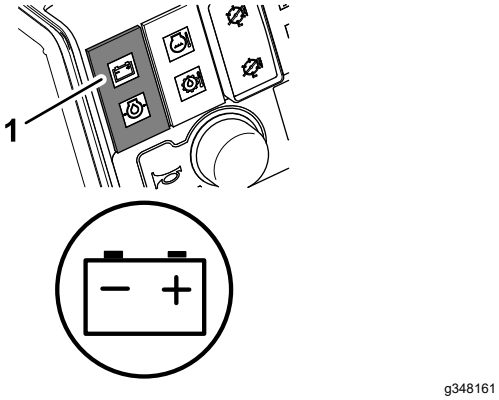

g348058

**Figure 12**

1. Battery warning indicator
2. Engine-oil pressure warning indicator
3. Hydraulic fluid temperature warning indicator (not applicable for Model 31654)
4. Hour meter
5. Engine coolant temperature warning indicator
6. Glow plug indicator
7. Transmission neutral indicator

### Low Battery Charge Warning Light

The battery charge warning light illuminates when low battery charge occurs (Figure 13).



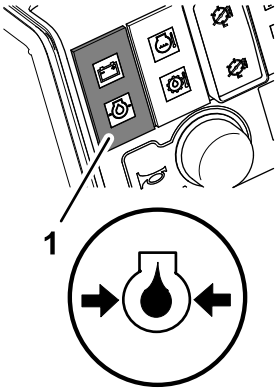

g348161

**Figure 13**

1. Low battery charge warning light

### Low Engine-Oil Pressure Warning Light

The engine-oil pressure warning light illuminates when the oil pressure is too low (Figure 14).



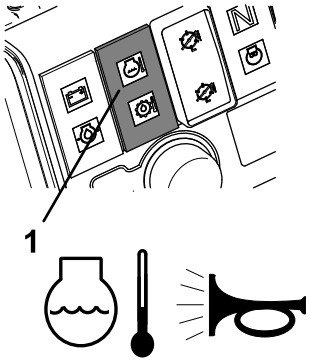

g348164

**Figure 14**

1. Low engine-oil pressure warning light

### Engine Coolant Overheating Warning Light

The engine coolant warning light illuminates, the horn is actuated, and the cutting units stop (Figure 15).



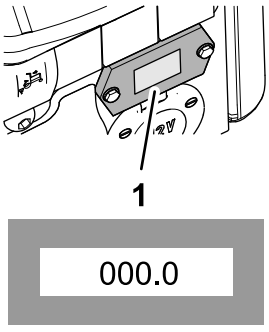

g348162

**Figure 15**

1. Engine coolant overheating warning light

### Hour Meter

The hour meter shows the total hours that the machine has been operated (Figure 16).




g348165

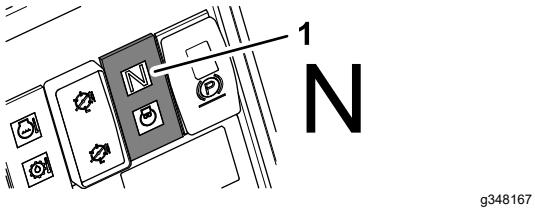
**Figure 16**

1. Hour meter

### Transmission Neutral Indicator Light

The transmission neutral indicator light illuminates when the traction pedals are in the NEUTRAL position and the ignition key is turned to the RUN position (Figure 17).

**Note:** You must engage the parking brake for the transmission neutral indicator light to illuminate.




g348167

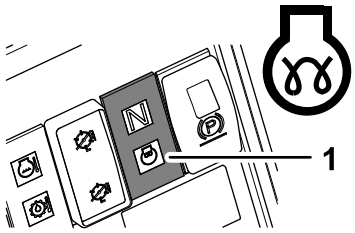
**Figure 17**

1. Transmission neutral indicator light

### Engine Preheat Indicator Light

Turn the ignition key to position PREHEAT. The engine preheat indicator light illuminates and the glow plugs energize to help start a cold engine. (Figure 18).

***Important:*** **Attempting to start a cold engine before using the preheat may cause unnecessary battery wear.**




g348166

**Figure 18**

1. Engine pre-heat indicator light

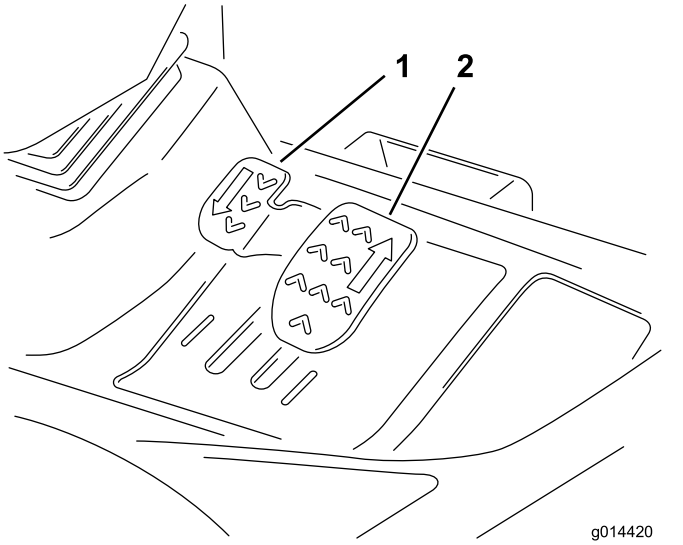
## Traction Pedals

**Forward travel:** Press the forward traction pedal to drive the machine forward and increase ground speed. Release the pedal to reduce ground speed (Figure 19).

**Reverse travel:** Press the reverse traction pedal to drive the machine backward and increase ground speed. Release the pedal to reduce ground speed (Figure 19).

**Stop (Neutral):** To stop the machine, use 1 of the following procedures:

- Reduce your foot pressure on the traction pedal and allow it to return to the neutral position. The machine dynamically brakes to a smooth stop.
- Tap or hold the opposite pedal briefly—this stops the machine faster than dynamic braking.




g014420

g014420

**Figure 19**

1. Reverse traction pedal
2. Forward traction pedal

## Adjustable Steering Column

Adjust the steering wheel and column only when the machine is parked on level ground.

1. To tilt the steering wheel, press the foot pedal down.
2. Position the steering tower to the most comfortable position and release the pedal (Figure 20).



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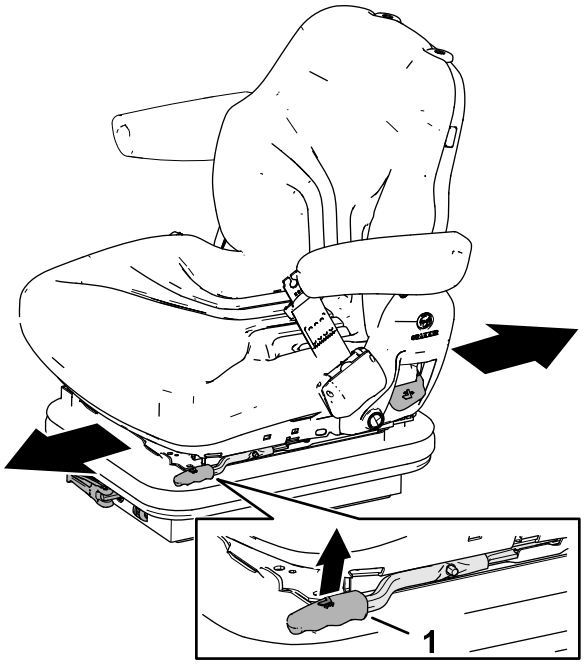
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**Figure 20**

# Operator’s Seat Controls

### Forward/Backward Adjustment

Move the lever upward to adjust the forward/backward position of the seat. Release the lever to lock the seat in position (Figure 21).




g348121

**Figure 21**

1. Lever

### Operator Weight Adjustment

Rotate the handle clockwise to increase suspension stiffness and counterclockwise to decrease the stiffness. The dial indicates when the seat suspension is adjusted for the operator’s weight (kg); refer to Figure 22.



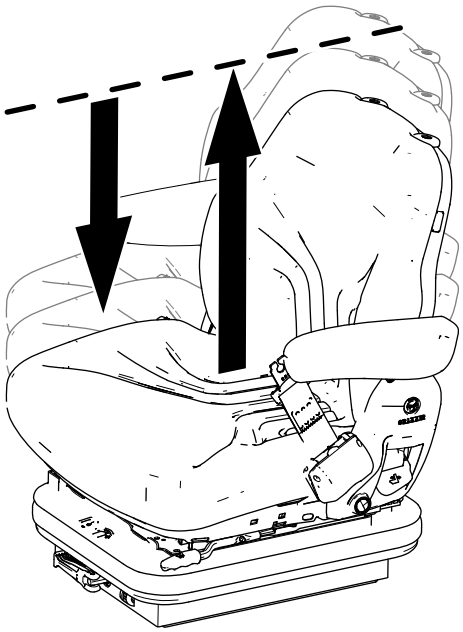

g348123

**Figure 22**

1. Lever
2. Dial

### Height Adjustment

To adjust seat height incremental, manually lift the seat. To lower the seat, lift it beyond the highest setting, allow it to drop to the lowest setting, and if needed manually lift the seat to the desired height (Figure 23).



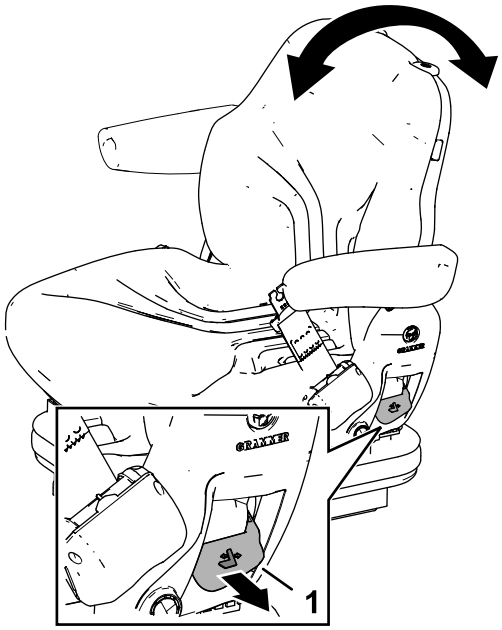
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**Figure 23**

1. Handle

### Backrest Adjustment

Pull the handle outward to adjust the seat backrest angle. Release the handle to lock the seat backrest in position (Figure 24).



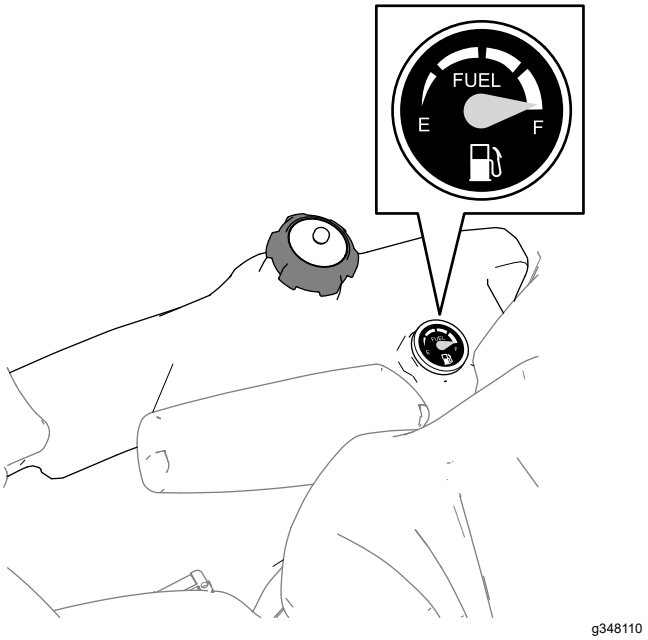

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**Figure 24**

1. Handle

## Fuel Gauge

The fuel gauge shows the amount of fuel in the tank (Figure 25).



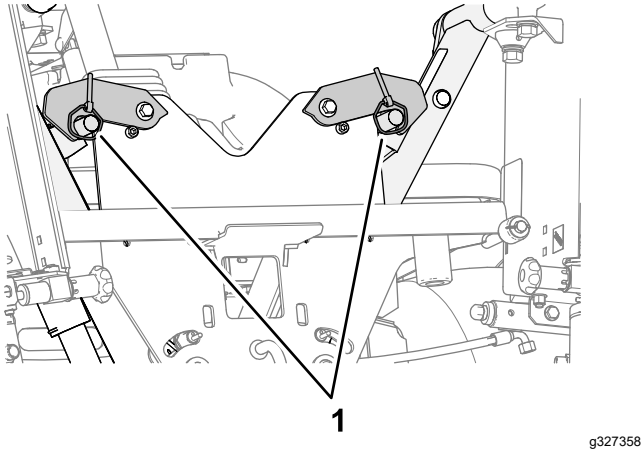

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**Figure 25**

# Transport Latches

### Front Cutting Unit Arm Latches

Raise the cutting units to the TRANSPORT position and secure the arm-latch pins to the latches with the bails (Figure 26).




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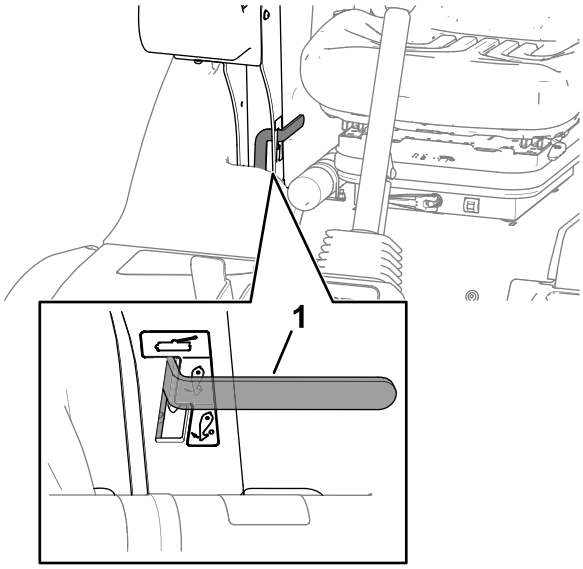
**Figure 26**

1. Bails (front cutting-unit arm latches)

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### Rear Cutting Unit Arm Latch

Raise the cutting units to the TRANSPORT position, push down the latch handle for the rear cutting-unit arm, and move the handle forward and up (Figure 27).




g348109

**Figure 27**

1. Latch handle (rear cutting-unit arm latch)

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# Specifications

**Note:** Specifications and design are subject to change without notice.

| | |
|---|---|
| **Transport Width** | 138 cm (54-5/16 inches) |
| **Width of Cut** | 212 cm (83-1/2 inches) |
| **Overall Width (heads down)** | 231 cm (91 inches) |
| **Length** | 286 cm (112-5/8 inches) |
| **Height** | 160.5 cm (63-3/16 inches) with ROPS folded<br>211.5 cm (83-5/16 inches) with ROPS in the vertical operating position |
| **Weight** | 1270 kg (2800 lb)<br>(with full fluids and 200 mm 6-blade cutting units) |
| **Engine** | Kubota 18.5 kw (25 hp) at 3000 rpm DIN 70020 |
| **Fuel-Tank Capacity** | 45 L (11.9 US gallons) |
| **Transport Speed** | 22 km/h (13.7 mph) |
| **Mowing Speed** | 11 km/h (6.8 mph) |
| **Hydraulic-System Capacity** | 32 L (8.5 US gallons) |

## Attachments/Accessories

A selection of Toro approved attachments and accessories is available for use with the machine to enhance and expand its capabilities. Contact your Authorized Service Dealer or authorized Toro distributor or go to www.toro.com/en-gb for a list of all approved attachments and accessories.

To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

# Operation

## *Before Operation*

## Before Operation Safety

### General Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Know how to stop the machine and shut off the engine quickly.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.
- Before mowing, always inspect the machine to ensure that the cutting units are in good working condition.
- Inspect the area where you will use the machine and remove all objects that the machine could throw.
- This product generates an electromagnetic field. If you wear an implantable electronic medical device, consult your health care professional before using this product.

### Fuel Safety

- Use extreme care in handling fuel. It is flammable and its vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or fill the fuel tank while the engine is running or hot.
- Do not add or drain fuel in an enclosed space.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.
- If you spill fuel, do not attempt to start the engine; avoid creating any source of ignition until the fuel vapors have dissipated.

# Performing Daily Maintenance

Before starting the machine each day, perform the Each Use/Daily procedures listed in Maintenance (page 32).

# Filling the Fuel Tank

**Service Interval:** Before each use or daily

## Fuel Tank Capacity

45 L (11.9 US gallons)

## Fuel Specification

**Note:** We recommend that you use only ultra-low sulphur diesel fuel.

- Never use kerosene or gasoline instead of diesel fuel.
- Never mix kerosene or used engine oil with the diesel fuel.
- Never keep fuel in containers with zinc plating on the inside.
- Do not use fuel additives.

### Petroleum Diesel

**Cetane rating:** 45 or higher

**Sulfur content:** Ultra-low sulfur (<15 ppm)

### Fuel Table

| Diesel fuel specification | Location |
|---|---|
| ASTM D975<br>No. 1-D S15<br>No. 2-D S15 | USA |
| EN 590 | European Union |
| ISO 8217 DMX | International |
| JIS K2204 Grade No. 2 | Japan |
| KSM-2610 | Korea |

- Use only clean, fresh diesel fuel or biodiesel fuels.
- Purchase fuel in quantities that you can use within 180 days to ensure fuel freshness.

Use summer-grade diesel fuel (No. 2-D) at temperatures above -7°C (20°F) and winter-grade fuel (No. 1-D or No. 1-D/2-D blend) below that temperature.

**Note:** Use of winter-grade fuel at lower temperatures provides lower flash point and cold flow characteristics which eases starting and reduces fuel filter plugging.

Using summer-grade fuel above -7°C (20°F) contributes toward longer fuel pump life and increased power compared to winter-grade fuel.

### Biodiesel

This machine can also use a biodiesel blended fuel of up to B20 (20% biodiesel, 80% petroleum diesel).

**Sulfur content:** Ultra-low sulfur (<15 ppm)

**Biodiesel fuel specification:** ASTM D6751 or EN14214

**Blended fuel specification:** ASTM D975, EN590, or JIS K2204

***Important:*** **The petroleum diesel portion must be ultra-low sulfur.**

Observe the following precautions:

- Biodiesel blends may damage painted surfaces.
- Use B5 (biodiesel content of 5%) or lesser blends in cold weather.
- Monitor seals, hoses, gaskets in contact with fuel as they may degrade over time.
- You may expect a plugged fuel filter plugging for a period after converting to biodiesel blends.
- Contact your authorized Toro distributor for more information on biodiesel.

## Adding Fuel

1. Park the machine on a level surface, lower the cutting units, shut off the engine, engage the parking brake, and remove the key.

2. Using a clean rag, clean area around fuel-tank cap.
3. Remove the cap from the fuel tank (Figure 28).

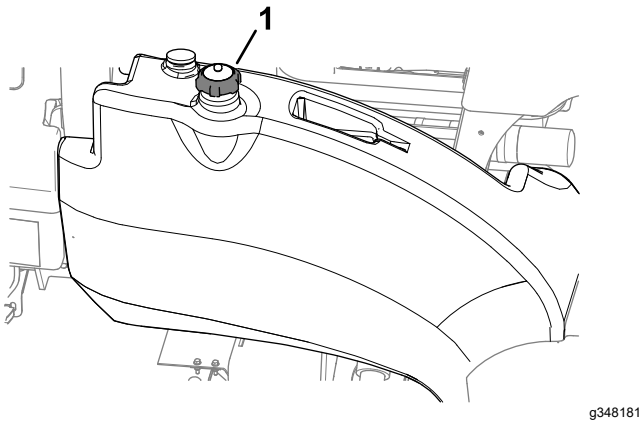



**Figure 28**

1. Fuel-tank cap

4. Fill the tank until the level is 25 mm (1 inch) below the bottom of the filler neck.
5. Install the fuel-tank cap tightly after filling the tank.

   **Note:** If possible, fill the fuel tank after each use. This minimizes possible buildup of condensation inside the fuel tank.

# Understanding the Operator-Presence Controls

**Service Interval:** Before each use or daily

**⚠ WARNING**

**Operating the machine when the operator presence controls are malfunctioning could result in personal injury.**

**Do not operate the turf mower if the operator presence controls are malfunctioning in any way. *Always* replace damaged or worn parts and check that they function correctly before operating the machine.**

**⚠ CAUTION**

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

- **Do not tamper with the interlock switches.**
- **Check the operation of the interlock switches daily and replace any damaged switches before operating the machine.**

## Engine Start Interlock

To start the engine, you must preform the following actions:

- Engage the parking brake.
- Ensure that the traction pedals are in the NEUTRAL position.
- Ensure that the cutting unit drive switch is in the OFF position.

## Engine Run Interlock

**Note:** The engine shuts off if you leave the seat without engaging the parking brake.

While the engine is running, you must stay seated whenever the parking brake is disengaged, otherwise the engine shuts off.

## Cutting Unit Drive Interlock

You must remain seated to run the cutting units. If you rise from the seat for 1 second or longer, the cutting units disengage. To run the cutting units again, you must sit in the seat, then cycle the cutting unit drive switch to the OFF position and to the ON position.

**Note:** If you momentarily rise off the seat during normal work, the cutting units continue running.

# *During Operation*

# During Operation Safety

## General Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; long trousers; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear loose clothing or loose jewelry.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.

- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Before you start the engine, ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position.
- Do not carry passengers on the machine and keep bystanders and children out of the operating area.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- Avoid mowing on wet grass. Reduced traction could cause the machine to slide.
- Keep your hands and feet away from the cutting units.
- Look behind and down before backing up to be sure of a clear path.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.
- Stop the cutting units whenever you are not mowing.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is lethal if inhaled.
- Do not leave a running machine unattended.
- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.
- Use the cruise control (if equipped) only when you can operate the machine in an open, flat area that is free from obstacles and where the machine can move at a constant speed without interruption.

## Rollover Protection System (ROPS) Safety

- Do not remove any of the ROPS components from the machine.
- Ensure that the seat belt is attached and that you can release it quickly in an emergency.
- Always wear your seat belt.
- Check carefully for overhead obstructions and do not contact them.
- Keep the ROPS in safe operating condition by thoroughly inspecting it periodically for damage and keeping all the mounting fasteners tight.
- Replace all damaged ROPS components. Do not repair or alter them.

## Machines with a Foldable Roll Bar

- Always use the seat belt with the roll bar in the raised position.
- The ROPS is an integral safety device. Keep a folding roll bar in the raised and locked position, and use the seat belt when operating the machine with the roll bar in the raised position.
- Lower a folding roll bar temporarily only when necessary. Do not wear the seat belt when the roll bar is folded down.
- Be aware that there is no rollover protection when a folded roll bar is in the down position.
- Check the area that you will be mowing and never fold down a folding roll bar in areas where there are slopes, drop-offs, or water.

## Slope Safety

- Slopes are a major factor related to loss of control and rollover accidents, which can result in severe injury or death. You are responsible for safe slope operation. Operating the machine on any slope requires extra caution.
- Evaluate the site conditions to determine if the slope is safe for machine operation, including surveying the site. Always use common sense and good judgment when performing this survey.
- Review the slope instructions, listed below, for operating the machine on slopes. Before you operate the machine, review the site conditions to determine whether you can operate the machine in the conditions on that day and at that site. Changes in the terrain can result in a change in slope operation for the machine.
  - Avoid starting, stopping, or turning the machine on slopes. Avoid making sudden changes in speed or direction. Make turns slowly and gradually.
  - Do not operate a machine under any conditions where traction, steering, or stability is in question.
  - Remove or mark obstructions such as ditches, holes, ruts, bumps, rocks, or other hidden hazards. Tall grass can hide obstructions. Uneven terrain could overturn the machine.

– Be aware that operating the machine on wet grass, across slopes, or downhill may cause the machine to lose traction.
– Use extreme caution when operating the machine near drop-offs, ditches, embankments, water hazards, or other hazards. The machine could suddenly roll over if a wheel goes over the edge or the edge caves in. Establish a safety area between the machine and any hazard.
– Identify hazards at the base of the slope. If there are hazards, mow the slope with a pedestrian-controlled machine.
– If possible, keep the cutting units lowered to the ground while operating on slopes. Raising the cutting units while operating on slopes can cause the machine to become unstable.

# Adjusting the Roll Bar

**⚠ WARNING**

**To avoid injury or death from rollover, keep the roll bar in the raised locked position and use the seat belt.**

**Ensure that the seat is secured with the seat latch.**

**⚠ WARNING**

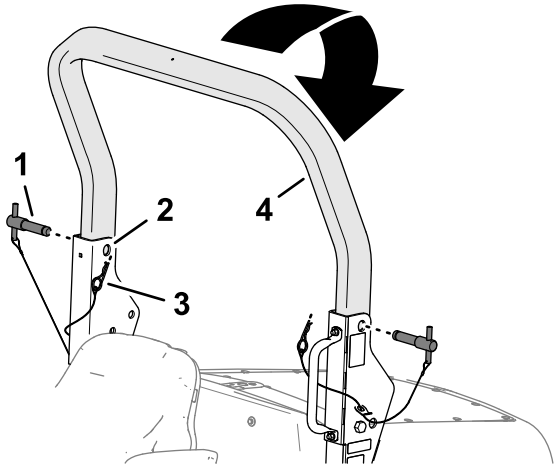
**There is no rollover protection when the roll bar is in the down position.**

- **Do not operate the machine on uneven ground or on a hill side with the roll bar in the down position.**
- **Lower the roll bar only when absolutely necessary.**
- **Do not wear the seat belt when the roll bar is in the down position.**
- **Drive slowly and carefully.**
- **Raise the roll bar as soon as clearance permits.**
- **Check carefully for overhead clearances (i.e., branches, doorways, electrical wires) before driving under any objects and do not contact them.**

***Important:*** **Always use the seat belt when the roll bar is in the raised and locked position. Do not use the seat belt when the roll bar is in the lowered position.**

## Lowering the Roll Bar

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key.
2. Remove the hairpins from the roll-bar pins in the pivot brackets of the lower roll-bar frame (Figure 29).

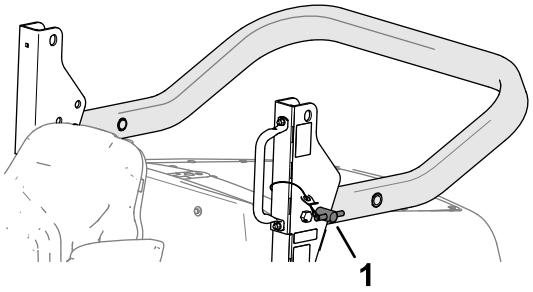


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**Figure 29**

1. Roll-bar pin
2. Pivot bracket upper (lower roll-bar frame)
3. Hairpin
4. Upper roll bar

3. While supporting the weight of the upper roll bar, remove the roll-bar pins from the pivot brackets (Figure 29).
4. Carefully lower the upper roll bar until it rests on the stops of the lower roll-bar frame.
5. Insert the roll-bar pins in the lower holes of the pivot brackets (Figure 30).



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**Figure 30**

1. Roll-bar pin (lower position)

6. Secure roll-bar pins to the pivot brackets with the hairpins.

## Raising the Roll Bar

1. Remove the hairpins that secure the roll-bar pins to the pivot brackets of the lower roll-bar frame.

2. Remove the roll-bar pins to the pivot brackets (Figure 31).

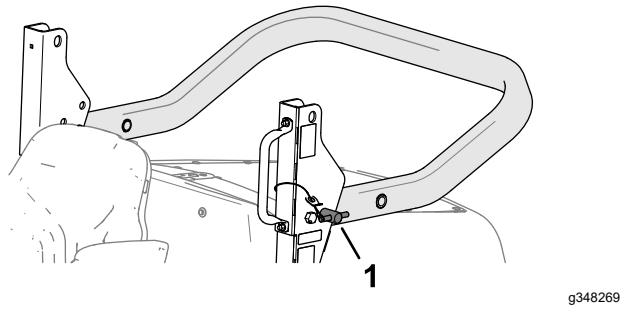



**Figure 31**

1. Roll-bar pin

3. Raise the upper roll bar until the holes in the roll bar align with the pivot brackets (Figure 32).

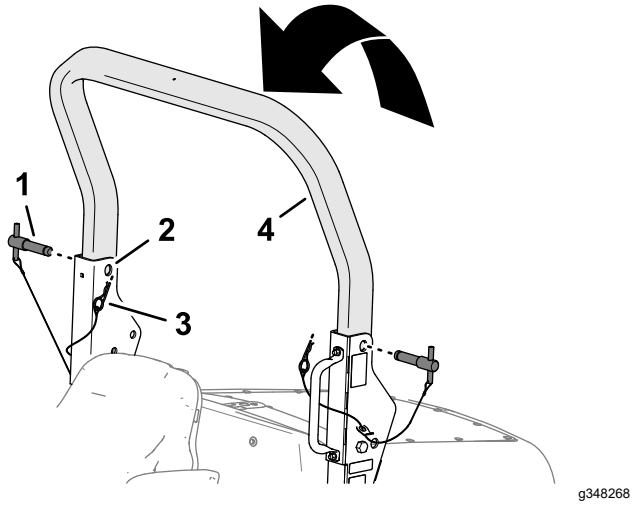



**Figure 32**

1. Roll-bar pin
2. Pivot bracket upper hole (lower roll-bar frame)
3. Hairpin
4. Upper roll bar

4. Insert the roll-bar pins through the upper holes of the pivot brackets and the upper roll bar (Figure 32).
5. Secure roll-bar pins to the pivot brackets with the hairpins (Figure 32).

# Starting and Shutting Off the Engine

***Important:*** **If you are starting the engine for the first time, the engine has shut off due to lack of fuel, or you have performed maintenance on the fuel system—you must bleed the fuel system before starting the engine; refer to Bleeding the Fuel System (page 43).**

**⚠ WARNING**

**Operating the machine in an unsafe manner could result in personal injury.**

**Before starting the engine, ensure that the following conditions are met:**

- **The area is clear of bystanders.**
- **The cutting unit drive is disengaged.**
- **The parking brake is engaged.**
- **The traction pedals are in the neutral position.**

***Important:*** **This machine is fitted with an engine start lockout; refer to Understanding the Operator-Presence Controls (page 20).**

## Starting the Engine

1. Sit on the seat, keep your foot off the traction pedals so that they return to the NEUTRAL position, engage the parking brake, and set the throttle to the 70% throttle position.
2. Turn the ignition key to the RUN position (Figure 33).

   **Note:** The engine-oil pressure and battery charge warning lights illuminate.

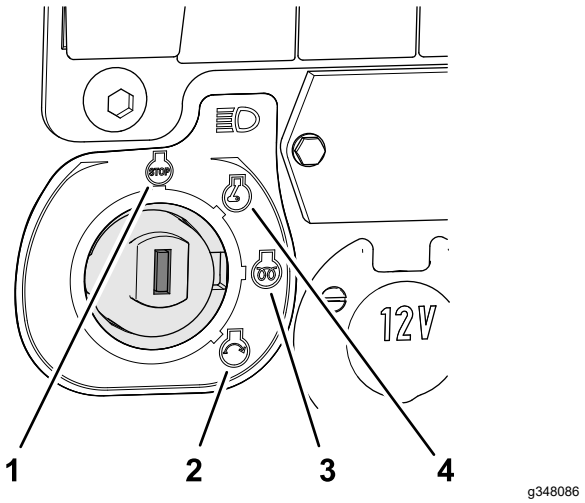



**Figure 33**

1. STOP
2. START
3. PREHEAT
4. RUN /AUXILIARY ON

3. If the engine is cold, turn the ignition key to the PREHEAT position, and hold the key for 5 seconds.

   **Note:** The glow plug energizes and the pre-heat indicator light illuminates.

4. Turn the key to the start position, crank the engine to start it, and release the key.

   ***Important:*** **Do not crank the engine longer than 15 seconds.**

5. If the engine is cold, run it at idle speed until it warms.

**⚠ WARNING**

**An illuminated warning light could indicate a serious problem that could lead to personal injury.**

**When the engine is operating normally, all warning lights should shut off. If a warning light illuminates, shut off the engine immediately and repair the machine before starting the engine.**

## Shutting off the Engine

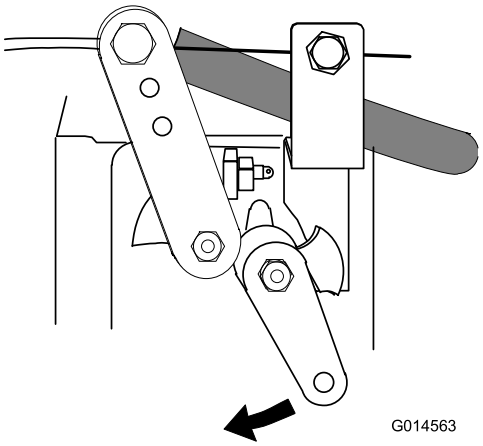
1. Keep your foot off the traction pedals so that they return to the NEUTRAL position, engage the parking brake, and lower the cutting units.
2. Move the throttle to the idle position, and allow the engine to idle for 5 minutes.
3. Turn the ignition key to the STOP position.

   If the engine fails to shut off when the ignition key is turned to the STOP position, operate the engine shutoff lever in the forward direction (Figure 34).

**⚠ WARNING**

**Contact with hot or moving parts can result in personal injury.**

**Keep all body parts away from any hot or moving parts of the engine.**




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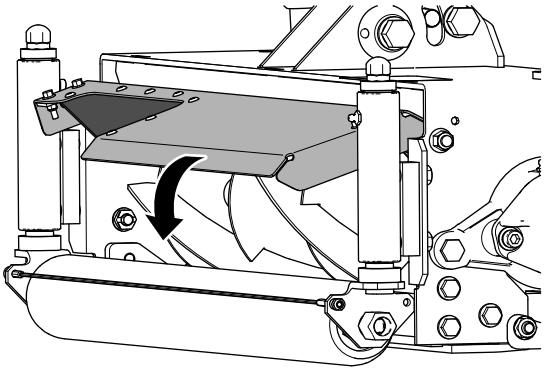
**Figure 34**

# Using the Cutting Units

## Adjusting the Grass Deflectors

Adjust the rear grass deflectors as low as possible so that grass clippings discharge to the ground without restricting clippings exiting cutting unit (Figure 35).

**Note:** Always position the rear grass deflectors correctly.



g327581

**Figure 35**

## Adjusting the Center Cutting Unit Height-of-Cut Correction

With all cutting units set at the same HOC as shown by the indicator rings, the center cutting unit may produce a higher cut finish compared to that of the left and right cutting units. The machine pulls the center cutting unit but pushes the left and right cutting units; this affects the cutting unit angle relative to the ground. The amount of HOC variation that results from this effect is also influenced by the terrain, but you can achieve satisfactory results by setting the center cutting unit HOC indicator ring lower than the left and right cutting unit settings.

# Controlling the Position of the Individual Cutting Units

Use the 3 lift-control switches to raise or lower the cutting units independently.

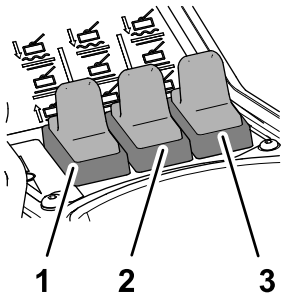
## Lowering the Cutting Unit

1. Press the cutting-unit-drive switch to the FORWARD ROTATION position.
2. Press the lift-control switch forward and release.

   **Note:** The cutting unit engages when it is approximately 150 mm (6 inches) above ground

level. The cutting unit is in ‘float’ mode, and follows the ground contours.

**Note:** The lift-control switch automatically returns to the (NEUTRAL) position when you release it.




g348146

**Figure 36**

1. Left (front) cutting-unit lift switch
2. Rear cutting unit lift switch
3. Right (front) cutting-unit lift switch

## Raising the Cutting Unit

1. Pull and hold the lift-control switch.
2. Release the lift-control switches when the cutting units are at the needed height.

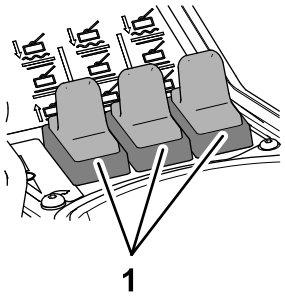
**Note:** The lift-control switches automatically return to the (NEUTRAL) position when you release it and the cutting unit arms hydraulically lock into position.

# Raising the Cutting Units

## Auto-Limited Lift

When the cutting unit drive switch is in the ON position and the cutting units lowered, momentarily move the 3 lift-control switches (Figure 37) rearward.

**Note:** The cutting units shut off immediately and raise to approximately 150 mm (6 inches) above ground level.




g348318

**Figure 37**

1. Lift-control switches

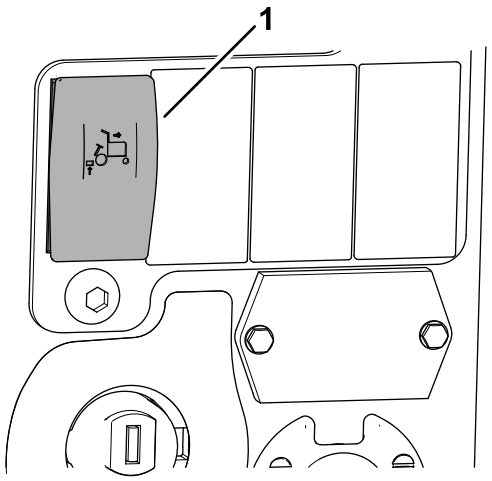
# Auto-Limited Lift in Reverse

With auto-limited lift in reverse engaged, driving the machine in reverse causes the cutting units to automatically raise to the limited-lift position.

***Important:*** **The cutting units continue to run while driving in reverse with the auto-limited lift in reverse engaged.**

## Operating the Machine with the Auto-Limited Lift in Reverse Engaged

1. Press the auto-limited lift in reverse switch to the ON position (Figure 38).




g348147

**Figure 38**

1. Auto-limited lift in reverse switch

2. With cutting units lowered and running, drive the machine in the reverse direction.

   **Note:** The cutting units automatically raise to approximately 150 mm (6 inches) above ground level.

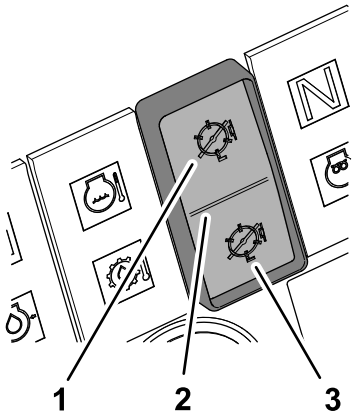
3. Drive the machine in the forward direction.

   **Note:** The cutting units lower and return to the floating position.

4. To shut off auto-limited lift in reverse, press the auto-limited lift in reverse switch to the OFF position (Figure 38).

# Cutting Unit Drive

The cutting unit drive engages only when you sit in the operator’s seat; refer to Understanding the Operator-Presence Controls (page 20).




g348287

**Figure 39**

1. Forward
2. Off
3. Reverse

## Engaging the Cutting Unit Drive for Forward Rotation

Press the top of the cutting unit drive switch to the forward rotation position (Figure 39).

## Engaging the Cutting Unit Drive for Reverse Rotation

Press the bottom of the cutting unit drive switch to the reverse rotation position (Figure 39).

## Disengaging All Cutting Unit Drives

Press the cutting unit drive switch to the middle position (Figure 39).

## Lowering the Cutting Units

Press the cutting unit drive switch to the forward rotation position. Press the lift-control switch(s) to the LOWER position. The cutting units run when they are approximately 150 mm (6 inches) above ground level.

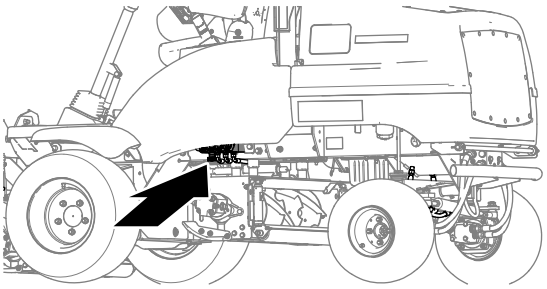
# Adjusting the Weight Transfer/Traction Assistance

A variable hydraulic weight transfer system provides improved tire grip with the grass surface—traction assistance.

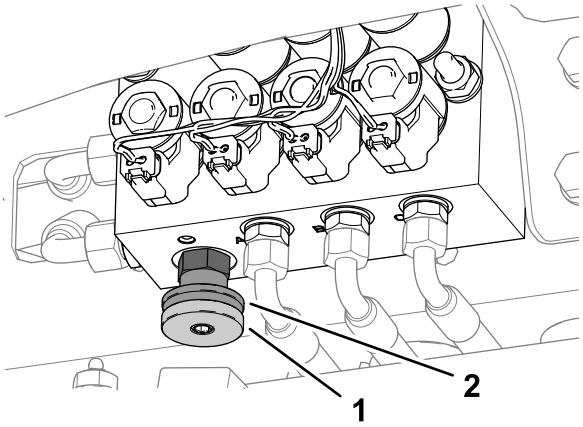
Hydraulic pressure from the cutting-unit lift system provides a lifting force that reduces the weight of the cutting units on the ground and transfers the weight downward to the tires. This action is known as weight transfer.

**Note:** Adjust the amount of weight transfer to suit operating conditions.

1. Park the machine on a level surface, engage the parking brake, lower the cutting units to the ground, and wait for all moving parts to stop.



g348285




g348284

**Figure 40**

1. Weight transfer hand wheel
2. Lock wheel

2. At the left side of the machine below the storage compartment, loosen the lock wheel of the weight transfer manifold 1/2 turn counterclockwise while holding the hand wheel steady (Figure 40).
3. Rotate the weight transfer hand wheel (Figure 40) as follows:
   - counterclockwise to reduce weight transfer
   - clockwise to increase weight transfer

   **Note:** The recommended setting for the weight transfer/traction assistance is to increase the weight transfer until the cutting units start to lift, then rotate the hand wheel 1/2 turn counterclockwise.
4. Tighten the lock wheel (Figure 40).

# Clearing the Cutting Units

**⚠ WARNING**

**Never attempt to rotate the cutting units by hand. Residual pressure in the hydraulic system could cause the cutting unit(s) to rotate suddenly when you release the blockage, which may cause serious injury.**

- **Always wear protective gloves and use a suitable strong wooden instrument.**
- **Ensure that the wooden instrument fits between the blades and through the reel and is long enough to provide leverage to release the blockage.**

1. Park the machine on a level surface.
2. Move the traction pedal to the NEUTRAL position, engage the parking brake, and shut off the cutting units.
3. Lower the cutting units to the ground or securely lock them in the transport positions.
4. Shut off the engine, remove the key, and wait for all moving parts to stop.
5. Release all stored energy devices.
6. Check that all moving parts are stationary.
7. Using a suitable strong wooden instrument, remove the blockage. Ensure that the wooden instrument is properly supported in the cutting unit and avoid using excessive force to prevent damage.
8. Remove the wooden instrument from the cutting unit before starting the engine.
9. Repair or adjust the cutting unit if required.

# Operating Tips

## Becoming Familiar with the Machine

Before mowing grass, practice operating the machine in an open area. Start and shut off the engine. Operate in forward and reverse. Lower and raise the cutting unit, and engage and disengage them. When you feel familiar with the machine, practice operating it up and down slopes.

## Understanding the Warning System

If a warning light comes on during operation, stop the machine immediately and correct the problem before continuing operation. Serious damage could occur if you operate the machine with a malfunction.

## Mowing Grass

To maintain the high quality of cut, keep the rotational speed of the cutting units as high as possible. This requires high engine speed.

Cutting performance is best when cutting against the lie of the grass. To take advantage of this effect, alternate the mowing direction between cuts.

Take care to not leave uncut strips of grass at the overlap at points between adjacent cutting units by avoiding tight turns.

## Maximizing the Quality of Cut

The quality of cut deteriorates when the forward speed is too fast. Always balance the quality of cut with the required cutting rate, and set the forward speed accordingly.

## Maximizing Engine Efficiency

Do not let the engine labor. If you notice that the engine starts to labor, reduce the forward speed or increase the height of cut. Ensure that the cutting unit blades are sharp.

## Driving the Machine in Transport Mode

***Important:*** **Take care when driving the machine over obstacles such as roadside curbs.**

**Always travel at slow speed over obstacles to prevent damage to the tires, wheels, and steering system. Ensure that the tires are inflated to the recommended pressures.**

Always disengage the cutting unit drive when driving the machine across areas with no grass. Grass lubricates the cutting edges while mowing. Excessive heat builds if the cutting units are run when not mowing, resulting in rapid wear. For this reason, reduce cutting speed when mowing lightly grassed areas or when the grass is dry. Be careful when driving between objects so that you do not accidentally damage the machine or the cutting units.

## Using the Rear Roller Scrapers

For optimum grass discharge, remove the rear roller scrapers where conditions allow.

If mud and grass start to build up on the rollers, install the scrapers. When installing the scraper wires, tension them correctly.

# *After Operation*

## After Operation Safety

### General Safety

- Park the machine on a level surface.
- Disengage and lower the cutting units.
- Engage the parking brake.
- Shut off the engine and remove the key.
- Wait for all movement to stop.
- Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- To help prevent fires, ensure that the cutting units, drives, mufflers, cooling screens, and engine compartment are free from grass and debris buildup. Clean up oil or fuel spills.
- Disengage the drive to the attachment whenever you are hauling or not using the machine.
- Maintain and clean the seat belt(s) as necessary.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.

## Identifying the Tie-Down Points

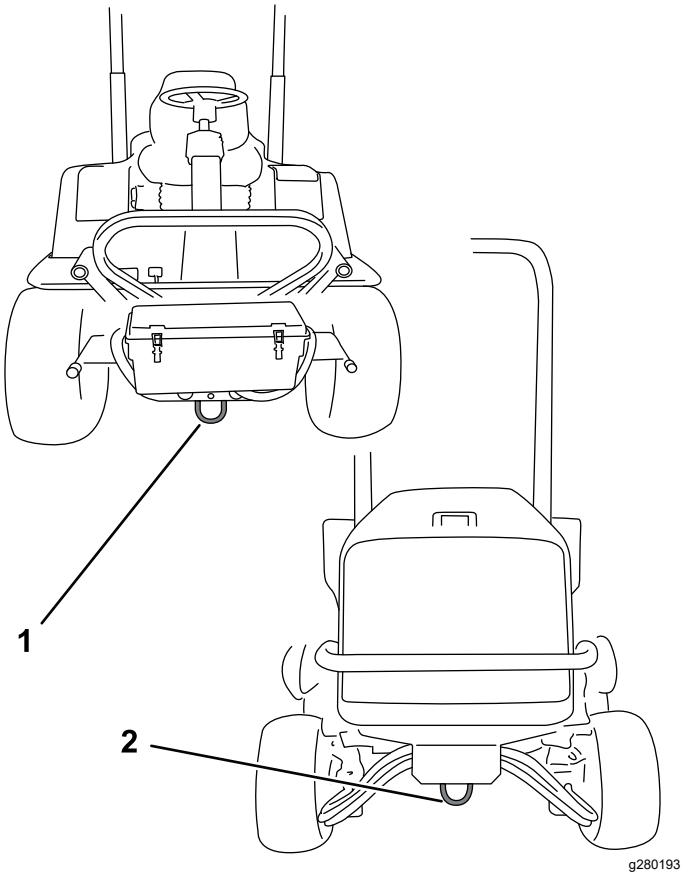



**Figure 41**

1. Front tie-down point
2. Rear tie-down point

## Hauling the Machine

- Use full-width ramps for loading the machine onto a trailer or truck.
- Tie the machine down securely.

## Towing the Machine

Ensure that the towing vehicle can control the combined weight of both vehicles; refer to Specifications (page 17).

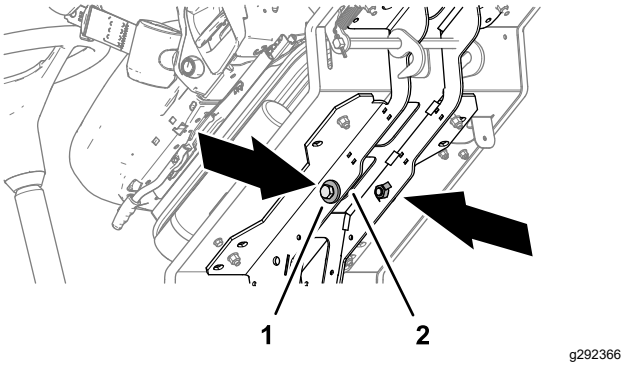
### Raising the Cutting Units

Whenever possible, raise and latch the cutting units before towing the machine.

### Releasing the Wheel-Motor Brakes

1. Engage the parking brake and chock the wheels of the towing vehicle.
2. Chock the front wheels of the machine.

3. Raise the platform forward; refer to Raising the Platform (page 35).
4. Remove the 2 bolts (12 x 40 mm) and 2 washers (12 mm) stored in the platform support rails (Figure 42).

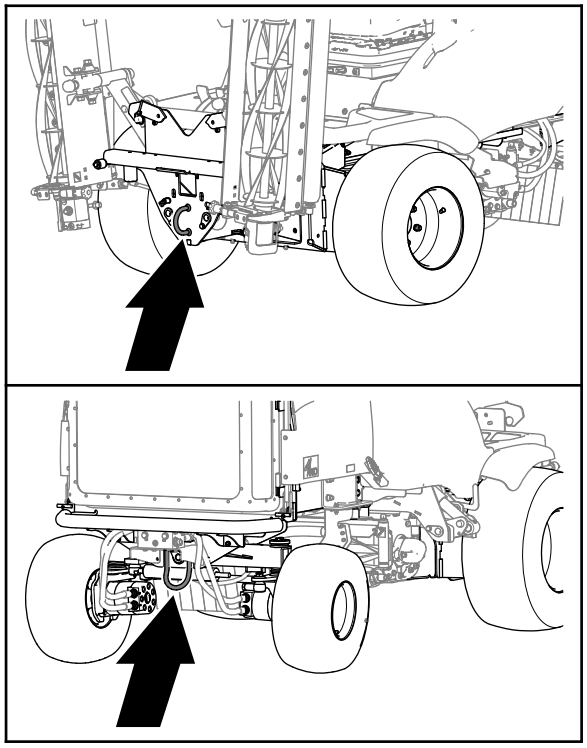



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**Figure 42**

1. Bolt (12 x 40 mm) and washers (12 mm)
2. Platform support rail

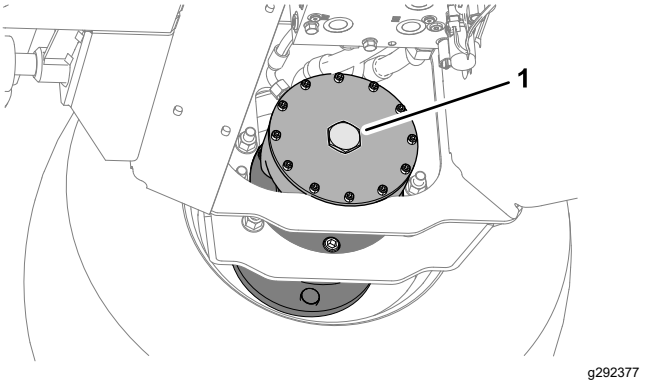
5. Connect a **rigid** tow bar between the front tow ring of the machine and the tow vehicle (Figure 43).



g328268

**Figure 43**

6. At the right, front wheel motor brake assembly remove the hex plug (Figure 44).

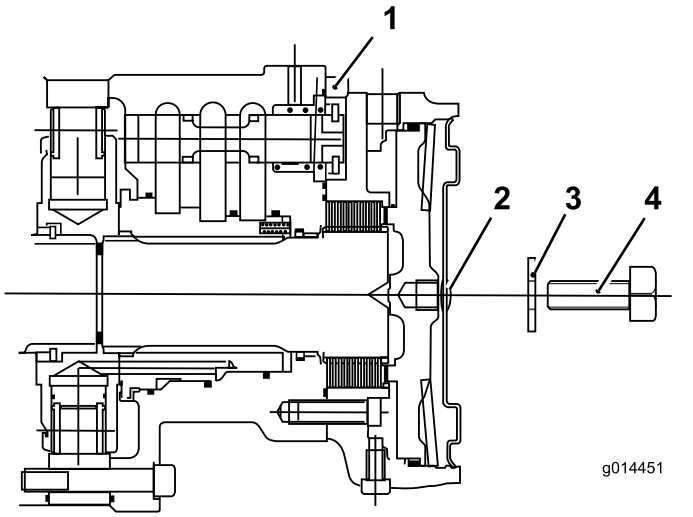



g292377

**Figure 44**

1. Hex plug

7. Assemble a bolt (12 x 40 mm) and washer (12 mm) into the hole at the center of the motor end plate (Figure 45).




g014451

**Figure 45**

1. Front wheel motor
2. Hex plug
3. Washer (12 mm)
4. Bolt (12 x 40 mm)

8. Tighten the bolt in the threaded hole in the brake piston until the brake releases (Figure 45).
9. Repeat steps 6 through 8 for the brake at the left side of the machine.

# Bypassing the Transmission Pump

1. Decommission the hydraulic service braking system by turning the bypass valve (located under the transmission pump) counterclockwise (Figure 46), a maximum of 3 turns.

   The mower is now in a freewheel condition and can be towed for a short distance at slow speed.

***Important:*** **You must manually steer the machine while it is towed. When the engine is shut off, there is no hydraulic steering assist—steering the machine feels heavy.**

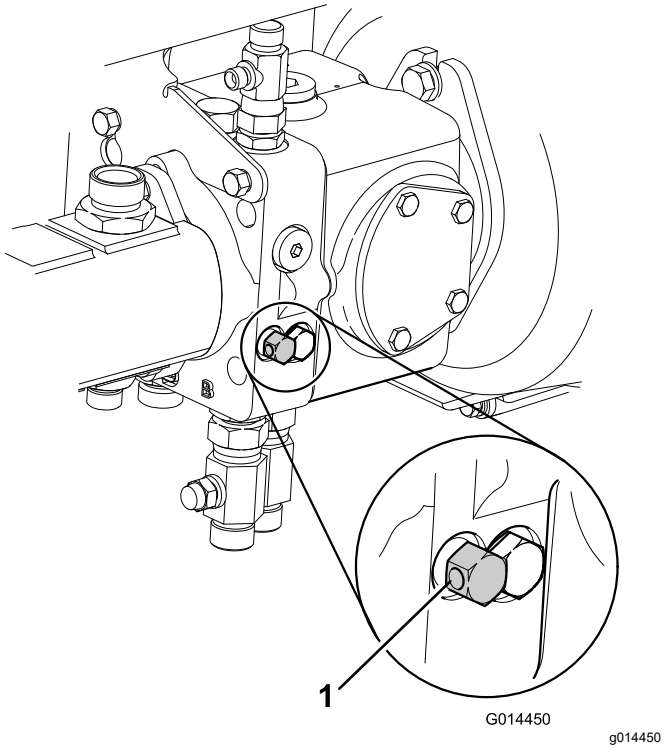



**Figure 46**

1. Transmission bypass valves

2. Lower and latch the platform; refer to Lowering the Platform (page 35).
3. Remove the wheel chocks.

## Towing the Machine

***Important:*** **Do not tow the machine faster than 3 to 5 km/h (2 to 3 mph) and for no longer than 3 minutes; otherwise, internal damage to the transmission may occur.**

- Use the front tow ring to tow the machine.
- Tow the machine a short distance, at slow speed, for no longer than 3 minutes.

## Restoring the Transmission Pump

1. Chock the front wheels.
2. Raise the platform forward; refer to Raising the Platform (page 35).
3. Close the bypass valve on the transmission pump (Figure 47) by turning it clockwise.

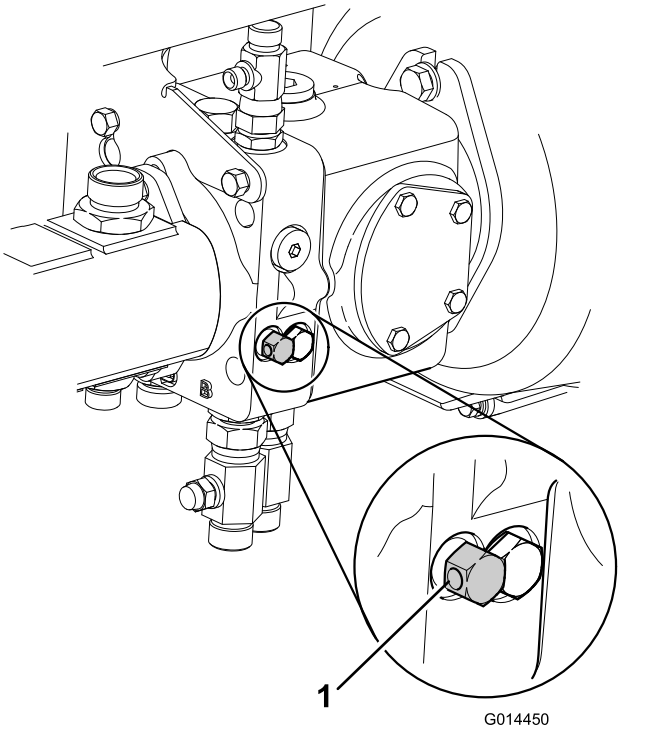



**Figure 47**

1. Transmission bypass valves

# Restoring the Brakes

1. Remove the bolt (12 x 40 mm) and washer (12 mm) from the hole at the center of the motor end plate (Figure 48).

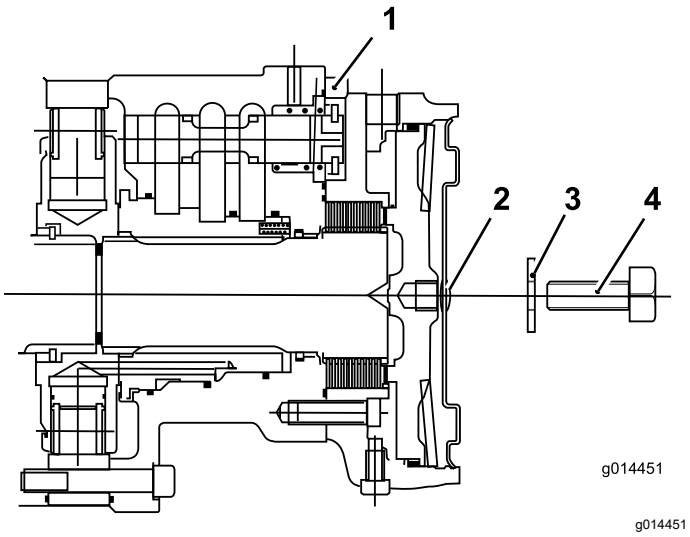



**Figure 48**

1. Front wheel motor
2. Hex plug
3. Washer (12 mm)
4. Bolt (12 x 40 mm)

2. Install the hex plug into the motor end plate (Figure 49).

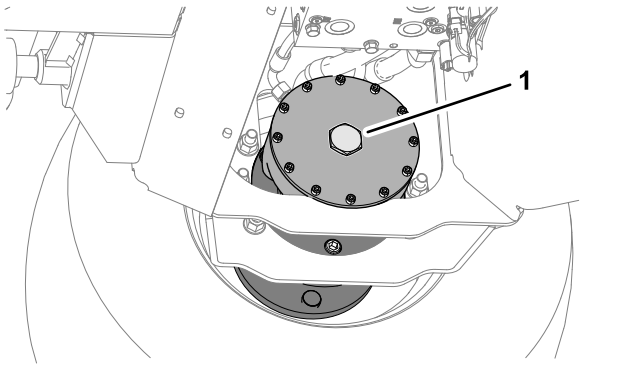



**Figure 49**

1. Hex plug

3. Repeat steps 1 through 2 for the brake at the other side of the machine.
4. Remove the wheel chocks.
5. Disconnect the tow bar.

   **Note:** The transmission and brakes are ready for operation.
6. Stow the 2 bolts (12 x 40 mm) and 2 washers (12 mm) stored in the platform support rails (Figure 49).

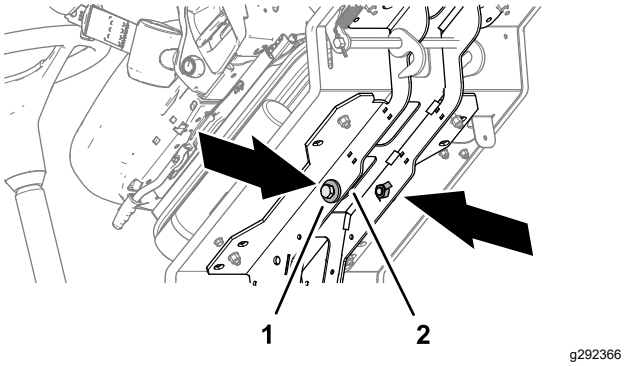



**Figure 50**

1. Bolt (12 x 40 mm) and washers (12 mm)
2. Platform support rail

7. Lower the platform; refer to Lowering the Platform (page 35).
8. Disconnect the tow vehicle.
9. Check the brake operation of the machine.

**⚠ WARNING**

**Operating the machine without the braking system working properly may cause you to lose control of the machine, resulting in serious injury to you and bystanders.**

**Before using the machine, ensure that the braking system operates correctly. Carry out initial checks driving the machine at slow speed. Do not operate the machine with a damaged or disconnected braking system.**

# Maintenance

Download a free copy of the electrical or hydraulic schematic by visiting www.toro.com/en-gb and searching for your machine from the Manuals link on the home page.

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

## Maintenance Safety

- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Wear appropriate clothing, including eye-protection; long trousers and substantial, slip-resistant footwear. Keep hands, feet, clothing, jewelry, and long hair away from moving parts.
- Allow machine components to cool before performing maintenance.
- If possible, do not perform maintenance while the engine is running. Keep away from moving parts.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is lethal if inhaled.
- Support the machine with jack stands whenever you work under the machine.
- Carefully release pressure from components with stored energy.
- Keep all parts of the machine in good working condition and all hardware tightened.
- Replace all worn or damaged decals.
- To ensure safe, optimal performance of the machine, use only genuine Toro replacement parts. Replacement parts made by other manufacturers could be dangerous, and such use could void the product warranty.

## Recommended Maintenance Schedule(s)

| Maintenance Service Interval | Maintenance Procedure |
|---|---|
| After the first hour | • Torque the wheel lug nuts. |
| After the first 10 hours | • Torque the wheel lug nuts. |
| After the first 50 hours | • Change the engine oil and filter.<br>• Check the engine speed (idle and full throttle).<br>• Check condition and tension of the alternator belt.<br>• Change the transmission fluid filter. |
| Before each use or daily | • Check the fuel level.<br>• Check the operator-presence controls.<br>• Check the tire pressure.<br>• Lubricate the grease fittings. Grease bearings, bushings, and pivot points immediately after every washing, regardless of the service interval.<br>• Check the air filter-blockage indicator.<br>• Check the engine-oil level.<br>• Check the coolant level.<br>• Remove debris from the screen, oil coolers, and radiator (more frequently in dirty operating conditions).<br>• Check the hydraulic lines and hoses.<br>• Check the hydraulic-fluid level.<br>• Inspect the seat belt(s) for wear, cuts, and other damage. Replace the seat belt(s) if any component does not operate properly.<br>• Check the fasteners of the machine. |
| Every 50 hours | • Lubricate the grease fittings. Grease bearings, bushings, and pivot points immediately after every washing, regardless of the service interval.<br>• Service the battery.<br>• Torque the wheel lug nuts. |

| Maintenance Service Interval | Maintenance Procedure |
|---|---|
| Every 100 hours | • Check the engine overheat warning system.<br>• Inspect the cooling system hoses.<br>• Check condition and tension of the alternator belt. |
| Every 150 hours | • Change the engine oil and filter. |
| Every 250 hours | • Check the transmission-control cable.<br>• Inspect the cooling-system hoses. |
| Every 400 hours | • Check the engine speed (idle and full throttle).<br>• Replace the fuel filter.<br>• Check the fuel lines and connections for deterioration, damage, or loose connections. |
| Every 500 hours | • Replace the primary air filter.<br>• Check the electrical system.<br>• Check the rear wheel alignment.<br>• If you are not using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid, replace the hydraulic return filter.<br>• Change the transmission fluid filter.<br>• If you are not using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid, change the hydraulic fluid. |
| Every 1,000 hours | • If you are using the recommended hydraulic fluid, replace the hydraulic return filter.<br>• If you are using the recommended hydraulic fluid, change the hydraulic fluid. |
| Every 1,500 hours | • Flush and replace the coolant. |
| Every 2 years | • Replace the transmission dampener.<br>• Replace all moving hoses.<br>• Replace the transmission cable. |

# Daily Maintenance Checklist

Duplicate this page for routine use.

| Maintenance Check Item | For the week of: Mon. | Tues. | Wed. | Thurs. | Fri. | Sat. | Sun. |
|---|---|---|---|---|---|---|---|
| Check the safety interlock operation. | | | | | | | |
| Check the brake operation. | | | | | | | |
| Check the engine-oil and fuel levels. | | | | | | | |
| Check the air-filter restriction indicator. | | | | | | | |
| Check the radiator and screen for debris. | | | | | | | |
| Check unusual engine noises.[1] | | | | | | | |
| Check unusual operating noises. | | | | | | | |
| Check the hydraulic system fluid level. | | | | | | | |
| Check hydraulic hoses for damage. | | | | | | | |
| Check for fluid leaks. | | | | | | | |
| Check the tire pressure. | | | | | | | |
| Check the instrument operation. | | | | | | | |
| Check the cylinder-to-bedknife adjustment. | | | | | | | |
| Check the height-of-cut adjustment. | | | | | | | |
| Check all grease fittings for lubrication.[2] | | | | | | | |
| Touch up damaged paint. | | | | | | | |

1. Check the glow plug and injector nozzles if hard starting, excess smoke, or rough running is noted.

2. Immediately after every washing, regardless of the interval listed

## Notation for Areas of Concern

| Inspection performed by: | | |
|---|---|---|
| **Item** | **Date** | **Information** |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |

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

# *Pre-Maintenance Procedures*

## Preparing the Machine for Maintenance

1. Park the machine on a level surface.
2. Engage the parking brake.
3. Lower the cutting units.
4. Shut off the engine and remove the key.
5. Wait for all movement to stop.
6. Allow the machine to cool before adjusting, servicing, or cleaning it.

## Raising the Platform

1. Move the platform-latch handle (Figure 51) toward the front of the machine until the latch hooks clear the locking bar.

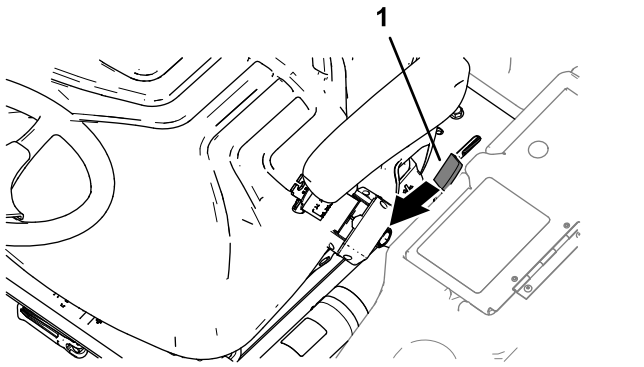



**Figure 51**

1. Platform-latch handle

2. Raise the platform (Figure 52).

   **Note:** The gas lift cylinder assists lifting the platform.

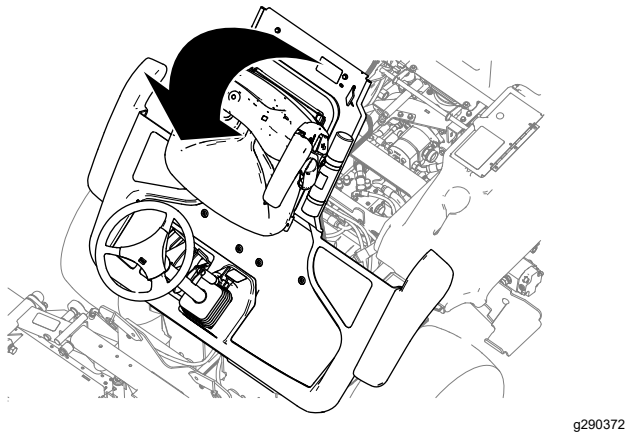



**Figure 52**

## Lowering the Platform

**⚠ WARNING**

**Operating the machine with the platform unlatched may cause you to lose control of the machine, resulting in serious injury to you and bystanders.**

**Never operate the machine without first checking that the operator platform latching mechanism is fully engaged and in good working order.**

1. Lower the platform carefully (Figure 53).

   **Note:** The gas lift cylinder helps support the platform.

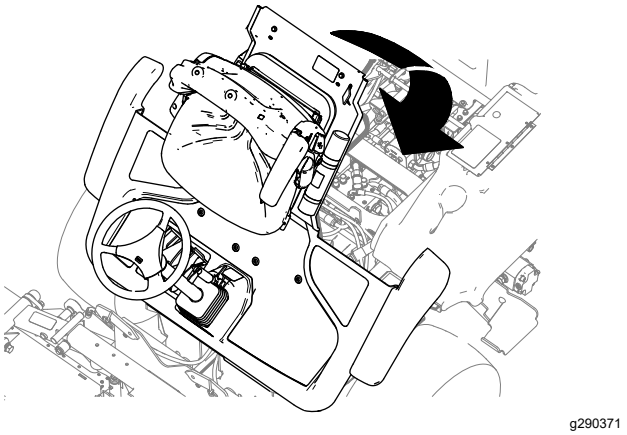



**Figure 53**

2. As the platform nears the fully lowered position, move the platform-latch handle (Figure 54) toward the front of the machine.

   **Note:** This ensures that the latch hooks clear the locking bar.

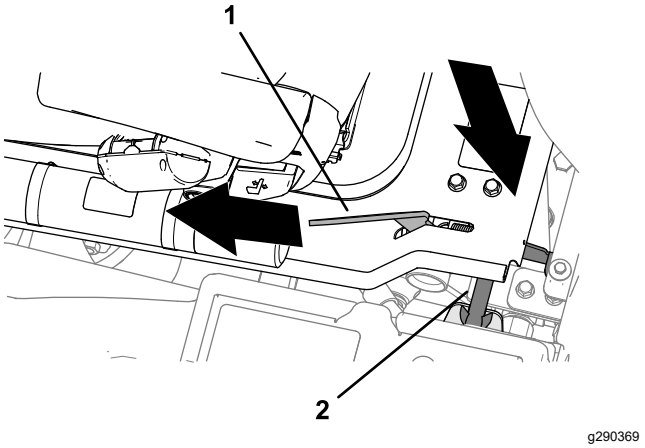



**Figure 54**

1. Platform-latch handle
2. Locking bar

3. Fully lower the platform and move the platform-latch handle toward the rear of the machine until the latch hooks fully engage the locking bar (Figure 55).

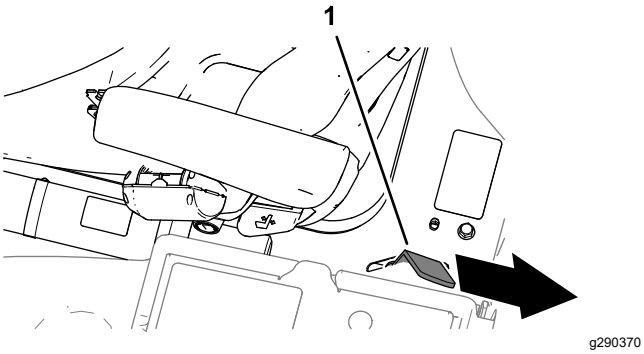



**Figure 55**

1. Platform-latch handle

# Removing the Storage Compartment

1. At the left side of the operator's platform, open the door of the storage compartment (Figure 56).

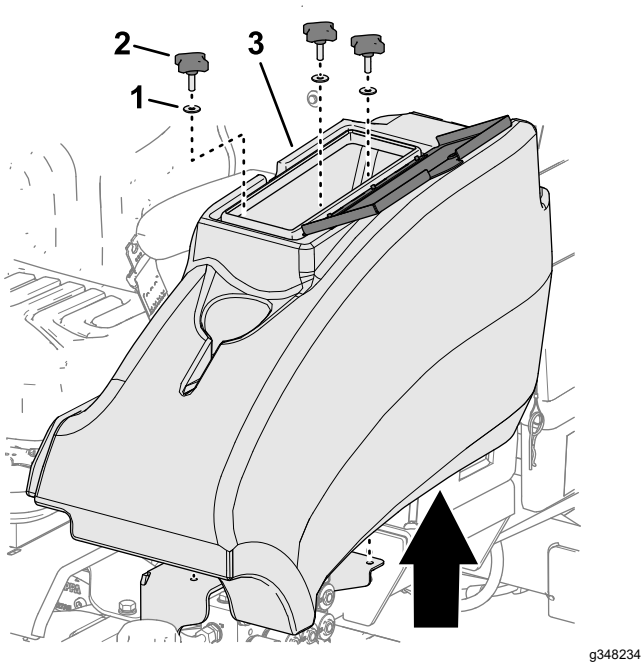



**Figure 56**

1. Washer
2. Knob
3. Storage compartment

2. Remove the 3 knobs and 3 washers that secure the storage compartment to the machine, and remove the compartment (Figure 56).

# Installing the Storage Compartment

1. Align the holes on the bottom of the storage compartment with the holes in the chassis brackets.
2. Assemble the storage compartment to the machine with the 3 knobs and 3 washers (Figure 57)

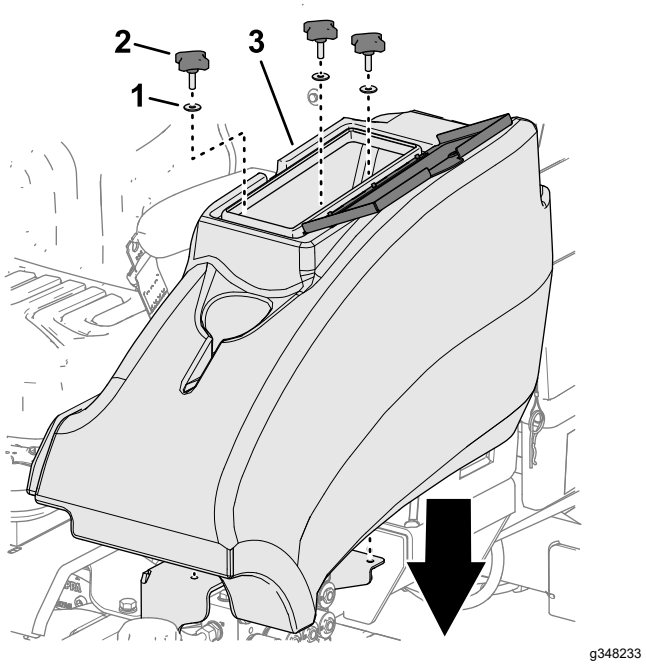



**Figure 57**

1. Washer
2. Knob
3. Storage compartment

3. Close the storage-compartment door.

# Locating the Lift Points

**Note:** Use jack stands to support the machine when you lift it.

**⚠ WARNING**

**Mechanical or hydraulic jacks may fail to support the machine and cause serious injury.**

**Use jack stands when supporting the machine.**

- Front—under the front arm mount
- Rear—axle tube on the rear axle

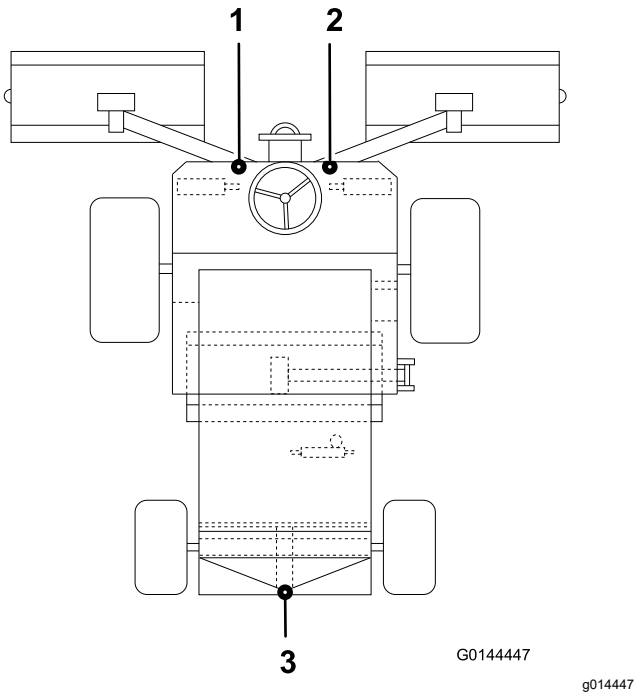



**Figure 58**

1. Front left lift point
2. Front right lift point
3. Rear lift point

# Raising the Mower off the Ground

**⚠ WARNING**

**If you go under the machine while the engine is running, you could be seriously injured or killed.**

- **Never crawl under the machine while the engine is running.**
- **Never start the engine while someone is under the machine.**

***Important:*** **Before raising the mower ensure that the lifting equipment is in good condition, and capable of supporting the weight of the machine securely.**

**Minimum lift capacity: 2,000 kg (4,409 lb)**

1. Park the machine on a level surface.
2. Engage the parking brake.
3. Shut off the engine and remove the ignition key.
4. Ensure that the ground under the lifting device is level and firm.
5. Align and ensure the lifting equipment is secure against one of the lifting points on the machine; refer to Locating the Lift Points (page 36).
6. If raising the front of the machine, chock the rear wheels to prevent the machine from rolling away.

   **Note:** The parking brake operates only on the front wheels.
7. Support the machine with jack stands.

# Greasing the Bearings, Bushings, and Pivots

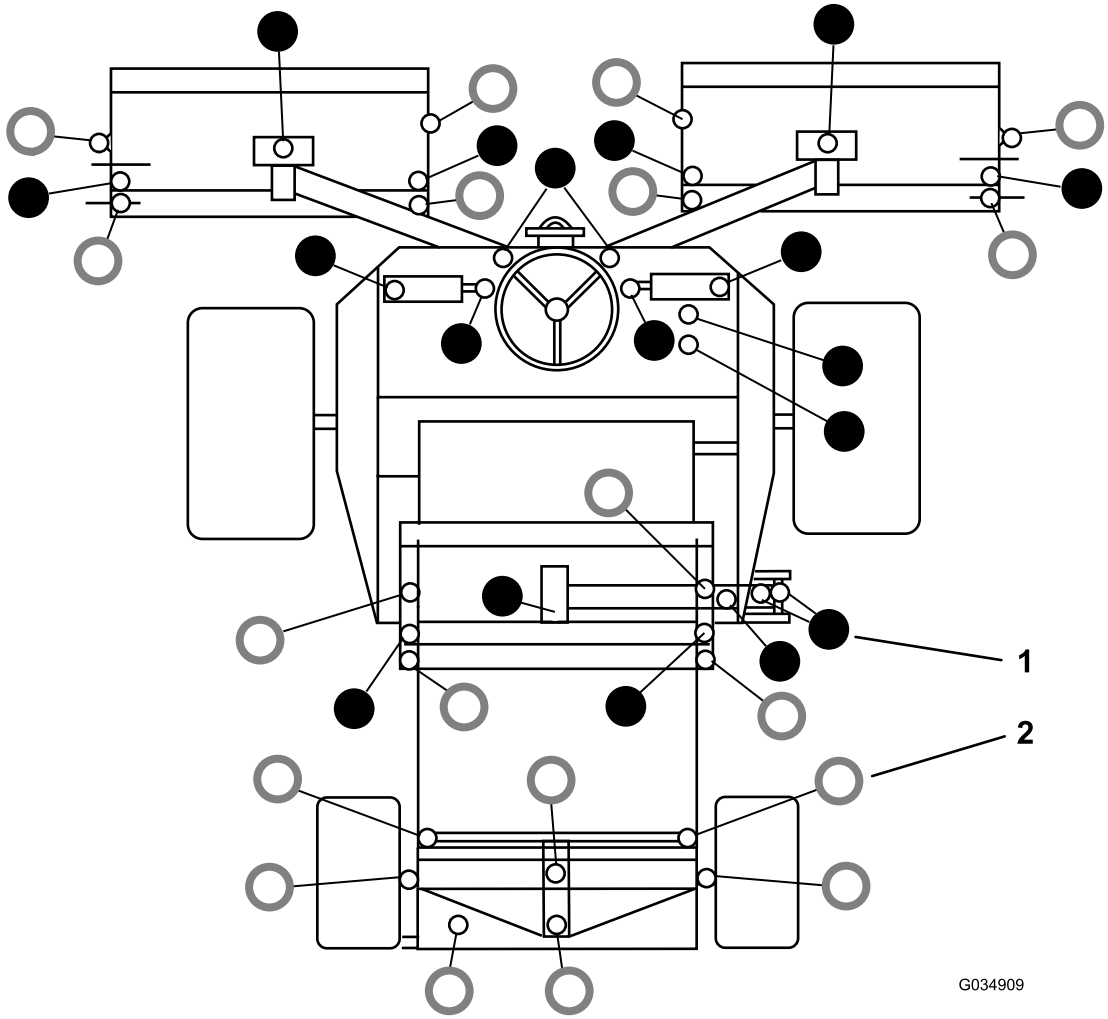
**Service Interval:** Before each use or daily—Lubricate the grease fittings. Grease bearings, bushings, and pivot points immediately after every washing, regardless of the service interval.

Every 50 hours—Lubricate the grease fittings. Grease bearings, bushings, and pivot points immediately after every washing, regardless of the service interval.

***Important:*** **Lubricate the bearings, bushings, and pivot points immediately after every washing, regardless of the service interval listed.**

**Grease specification:** No. 2 lithium grease.

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Use 1 pump of grease on the height-of-cut adjusters and 3 pumps of grease on all other grease fittings.
   - Refer to Figure 59 for the grease fitting locations.
   - Replace any damaged grease fittings.




g034909

**Figure 59**

1. ● Grease every 50 hours
2. ○ Grease daily

# Engine Maintenance

## Engine Safety

- Shut off the engine before checking the oil or adding oil to the crankcase.
- Do not change the governor speed or overspeed the engine.

## Checking the Engine Overheat Warning System

**Service Interval:** Every 100 hours

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. Turn the ignition key to the ignition RUN position.

   **Note:** Do not start the engine.
4. At the left side of the engine, disconnect the red/blue wire terminal from the engine temperature switch (Figure 60).

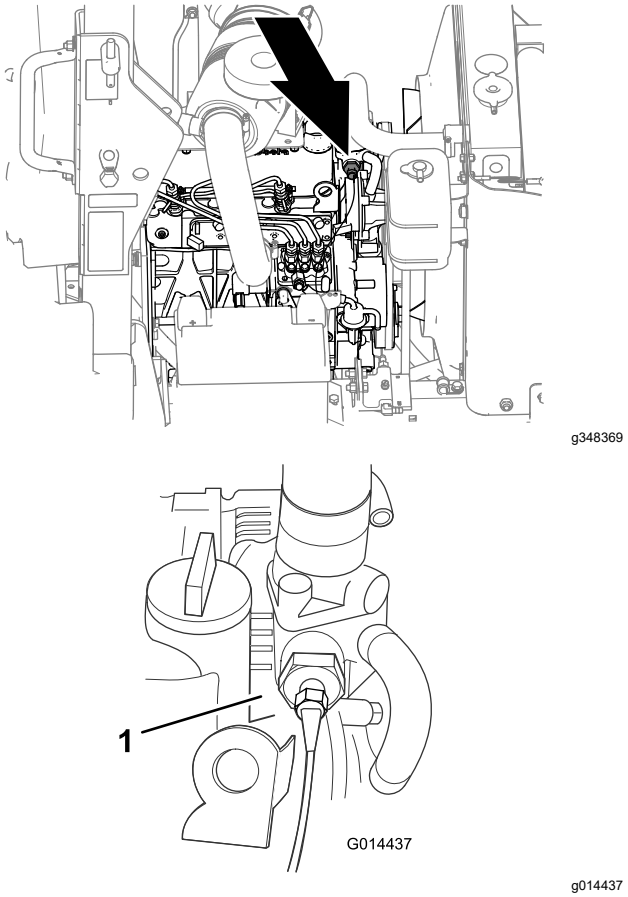



**Figure 60**

1. Temperature switch

5. Touch the metal terminal of this wire onto a suitable earth point, ensuring that the metal surfaces make good contact.

   **Note:** The horn sounds and the engine coolant temperature warning light illuminates to confirm operation.

   ***Important:*** **If the system is malfunctioning, make repairs before operating the mower.**
6. Turn the ignition key to the ignition STOP position, and remove the key.
7. Close and latch the hood.

## Checking the Air Filter-Blockage Indicator

**Service Interval:** Before each use or daily

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. Check the air filter-blockage indicator (Figure 61).

   ***Important:*** **If the indicator is red, inspect the primary air filter and replace it if it is dirty or damaged; refer to Replacing the Primary Air Filter (page 40).**

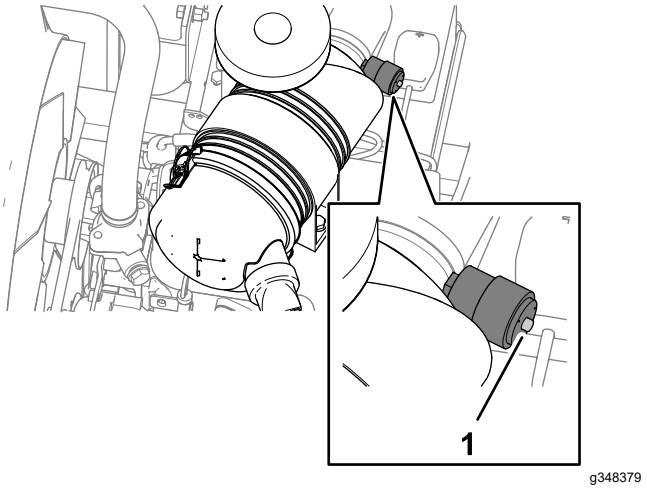



**Figure 61**

1. Filter-blockage indicator

4. If the filter-blockage indicator is not red, close the hood.
5. Close and latch the hood.

# Replacing the Primary Air Filter

**Service Interval:** Every 500 hours

Check the air-cleaner body for damage that could cause an air leak. Replace the air-cleaner body if damaged. Check the whole intake system for leaks, damage, or loose hose clamps.

**Note:** Service the primary air filter when the filter-blockage indicator (Figure 61) is red. Changing the air filter frequently increases the chance of dirt entering the engine when the filter is removed.

***Important:*** **Ensure that the cover is seated correctly and seals with the air-cleaner body.**

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. Before removing the air-filter cover, use low pressure air (40 psi, clean and dry) to help remove large accumulations of debris packed outside of the filter canister.

   **Note:** This cleaning process prevents debris from migrating into the intake when the filter is removed.

   ***Important:*** **Avoid using high-pressure air which could force dirt through the filter into the intake tract.**

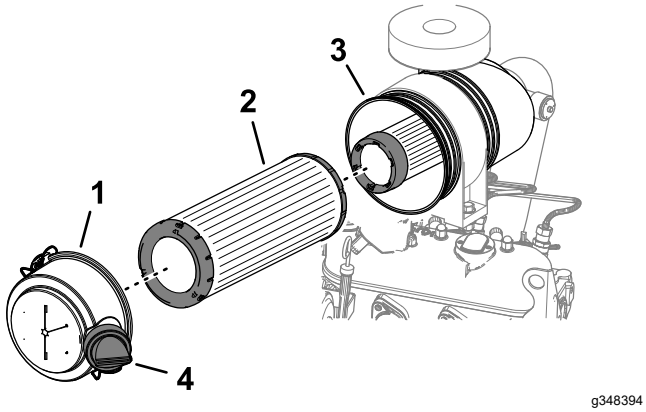



**Figure 62**

1. Air-filter cover
2. Primary air filter
3. Canister
4. Dirt ejection port

4. Remove the cover from the air-cleaner body.
5. Remove the primary air filter (Figure 62).

   ***Important:*** **Do not clean and reuse a used element because of possible damage to the filter element.**

6. Inspect the new filter for shipping damage, checking the sealing end of the filter and the body.

   ***Important:*** **Do not use a damaged element.**

7. Insert the new filter by applying pressure to the outer rim of the element to seat it in the canister.

   ***Important:*** **Do not apply pressure to the flexible center of the filter.**

8. Clean the dirt ejection port located in the air-filter cover. Remove the rubber outlet valve from the cover, clean the cavity in the valve, and install the outlet valve into the air-filter cover.
9. Align the dirt ejection port air-filter cover between 3 o'clock to 5 o'clock when viewed from the end, assemble the cover to the canister, and secure the cover.
10. Close and latch the hood.

# Replacing the Safety Filter

The air filter has a secondary, safety filter element inside the primary air filter to prevent dislodged dust and other items from entering the engine while changing the main element.

Replace the safety filter; never clean it.

***Important:*** **Never attempt to clean the safety filter. If the safety filter is dirty, then the primary filter is damaged. Replace both filters.**

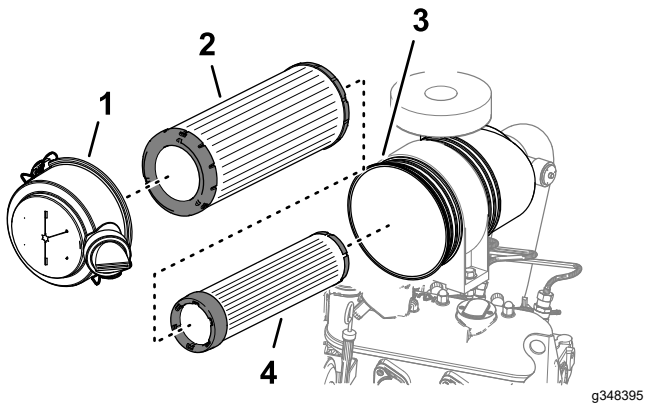



**Figure 63**

1. Air-filter cover
2. Primary air filter
3. Canister
4. Safety filter

# Servicing the Engine Oil

## Oil Specification

Use high-quality engine oil that meets the following specifications:

- API Classification Level Required: CH-4 or higher
- Preferred oil: SAE 15W-40 (above 0°F)
- Alternate oil: SAE 10W-30 or 5W-30 (all temperatures)

Toro Premium Engine Oil is available from your authorized Toro distributor in either 15W-40 or 10W-30 viscosity grades. See the parts catalog for part numbers.

## Checking the Engine-Oil Level

**Service Interval:** Before each use or daily

***Important:*** **Check the engine oil daily. If the engine-oil level is above the full mark on the dipstick, the engine oil may be diluted with fuel.**

**If the engine oil level is above the full mark, change the engine oil.**

The best time to check the engine oil is when the engine is cool before it has been started for the day. If it has already been run, allow the oil to drain back down to the sump for at least 10 minutes before checking. If the oil level is at or below the Add mark on the dipstick, add oil to bring the oil level to the Full mark. **Do not overfill the engine with oil**.

***Important:*** **Keep the engine oil level between the upper and lower limits on the oil gauge; the engine may fail if you run it with too much or too little oil.**

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. Remove the dipstick, wipe it clean, install the dipstick into the tube, and pull it out again. The oil level is correct when it is between the FULL and ADD marks (Figure 64).

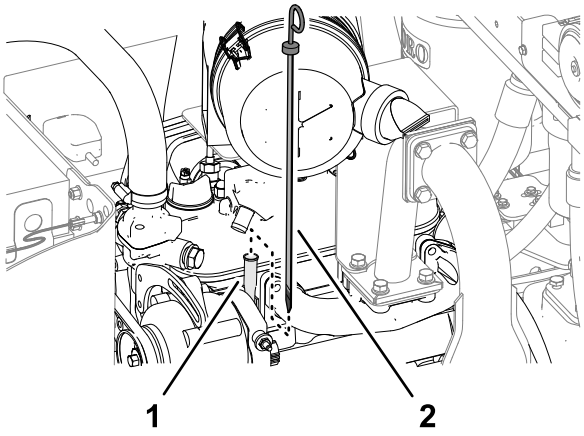



**Figure 64**

1. Dipstick tube
2. Dipstick

4. If the oil level is low, remove the fill cap and add oil until it is between the FULL and ADD marks (Figure 64).

   ***Important:*** **Do not overfill the engine with oil.**

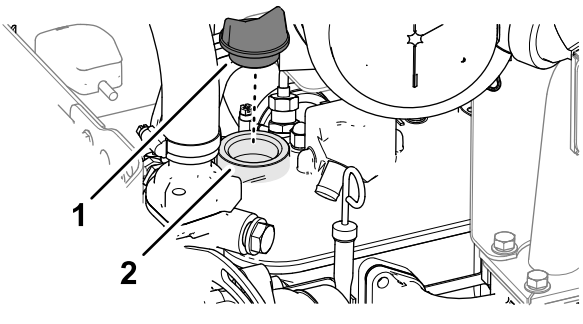



**Figure 65**

1. Fill cap
2. Valve cover

5. Install the oil-fill cap and dipstick.
6. Close and latch the hood.

## Crankcase Oil Capacity

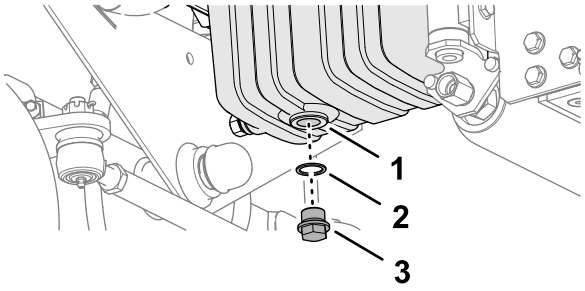
5.1 L (5.4 US qt) with the filter

## Changing the Engine Oil and Filter

**Service Interval:** After the first 50 hours—Change the engine oil and filter.

Every 150 hours—Change the engine oil and filter.

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. Remove the drain plug and let the oil flow into a drain pan (Figure 66).

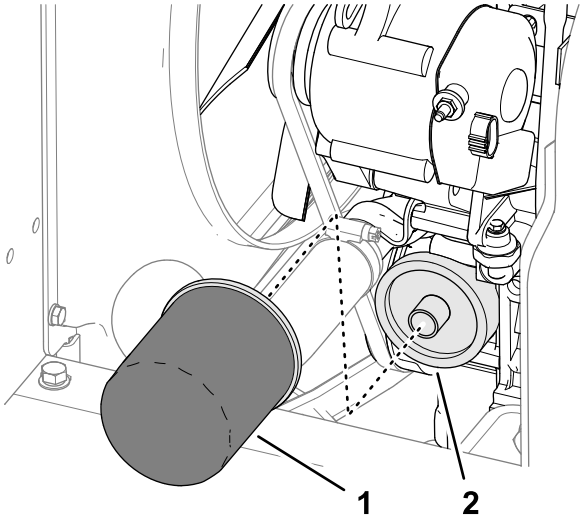



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**Figure 66**

1. Oil pan (engine)
2. Gasket
3. Drain plug (engine oil)

4. When all the oil is drained, install the drain plug.
5. Remove the oil filter (Figure 67).




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**Figure 67**

1. Oil filter (engine)
2. Adapter (oil filter)

6. Apply a light coat of clean oil to the oil filter gasket.
7. Thread the oil filter onto the oil filter-adapter until it contacts the mounting surface, and tighten the filter an additional turn.

   ***Important:*** **Do not overtighten the filter.**
8. Add oil to the crankcase; refer to Oil Specification (page 41) and Checking the Engine-Oil Level (page 41).
9. Close and latch the hood.

# Extended Engine Maintenance

**Service Interval:** After the first 50 hours—Check the engine speed (idle and full throttle).

Every 400 hours—Check the engine speed (idle and full throttle).

# *Fuel System Maintenance*

**⚠ DANGER**

**Under certain conditions, diesel fuel and fuel vapors are highly flammable and explosive. A fire or explosion from fuel can burn you and others and can cause property damage.**

- **Use a funnel and fill the fuel tank outdoors, in an open area, when the engine is off and is cold. Wipe up any fuel that spills.**
- **Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 25 mm (1 inch) below the bottom of the filler neck. This empty space in the tank allows the fuel to expand.**
- **Never smoke when handling fuel, and stay away from an open flame or where a spark may ignite fuel fumes.**
- **Store fuel in a clean, safety-approved container and keep the cap in place.**

## Fuel Maintenance

This *Operator's Manual* contains more detailed fuel and fuel system maintenance information than the engine *Owner's Manual*, which is a general-purpose reference relating to fuel and fuel maintenance.

Ensure that you understand that the fuel system maintenance, fuel storage, and fuel quality require your attention to avoid downtime and extensive engine repairs.

The fuel system has extremely tight tolerances due to the emissions and control requirements. Diesel fuel quality and cleanliness is more important for the longevity of today's high-pressure common rail (HPCR) fuel-injection system used on diesel engines.

***Important:*** **Water or air in the fuel system will damage your engine! Do not assume that new fuel is clean. Ensure that your fuel is from a quality supplier, store your fuel correctly, and use your fuel supply within 180 days.**

***Important:*** **If you do not follow the procedures for fuel filter replacement, fuel system maintenance, and fuel storage, the engine fuel system could fail prematurely. Perform all fuel system maintenance at the specified intervals or whenever the fuel is contaminated or its quality is poor.**

## Storing Fuel

Appropriate fuel storage is critical for your engine. Proper maintenance of fuel storage tanks is often overlooked and leads to the contamination of fuel delivered to the machine.

- Acquire only enough fuel that you will consume within 180 days. Do not use fuel that has been stored for more than 180 days. This helps eliminate water and other contaminates in the fuel.
- If you do not remove the water from the storage tank or machine fuel tank, it can lead to rust or contamination in the storage tank and fuel system components. Tank sludge developed by mold, bacteria, or fungus restricts flow and clogs the filter and fuel injectors.
- Inspect your fuel storage tank and machine fuel tank regularly to monitor the fuel quality in the tank.
- Ensure that your fuel comes from a quality supplier.
- If you find water or contaminants in your storage tank or machine fuel tank, work with your fuel provider to correct the problem and perform all fuel system maintenance.
- Do not store diesel fuel in tanks or canisters made with zinc-plated components.

## Bleeding the Fuel System

You must bleed the fuel system before starting the engine if any of the following situations have occurred:

- Initial start-up of a new machine.
- Engine has ceased running due to lack of fuel.
- Maintenance has been performed upon fuel system components; i.e., filter replaced, separator serviced, etc.

1. Park the machine on a level surface and ensure that the fuel tank is at least half full.
2. Open the hood.
3. Turn the key in the ignition switch to the ON position and crank the engine.

   **Note:** The mechanical pump sucks fuel out of the tank, fill the fuel filter and fuel hose and force the air into the engine. This could take some time to fully purge all the air out of the system and the engine might fire erratically until all air is purged out. When all air is purged and the engine is running smoothly, it should be run for a few minutes to ensure that it is fully purged.

   If required, a mechanical priming pump is provided at the mechanical fuel pump.

# Replacing the Fuel Filter

**Service Interval:** Every 400 hours

***Important:*** **Replace the fuel filter canister periodically to prevent wear of the fuel injection pump plunger or the injection nozzle, due to dirt in the fuel.**

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. Place a clean container under the fuel filter canister (Figure 69).
4. Use a hose pinch tool to pinch the inlet and outlet filter hoses to prevent fuel flow in and out of the filter.
5. Loosen the drain valve at the bottom of the filter canister and open the vent screw at the top of the canister mount and drain the fuel from the filter.

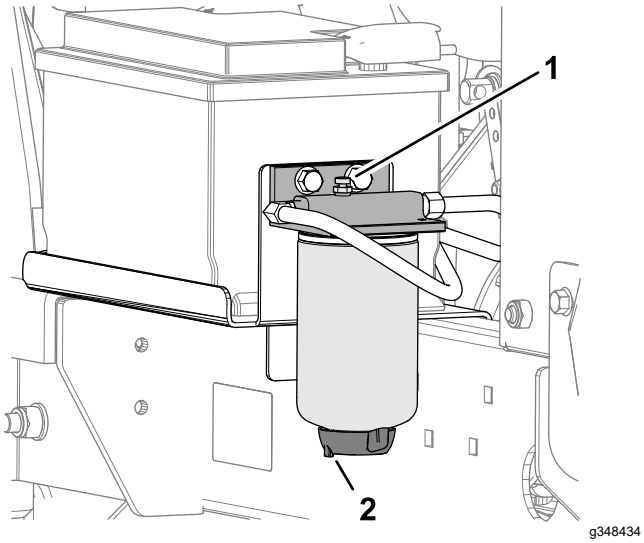



**Figure 68**

1. Vent screw
2. Drain valve

6. Tighten the drain valve at the bottom of the filter canister and close the vent screw at the top of the canister mount.
7. Clean the area around the fuel filter and filter head (Figure 69).

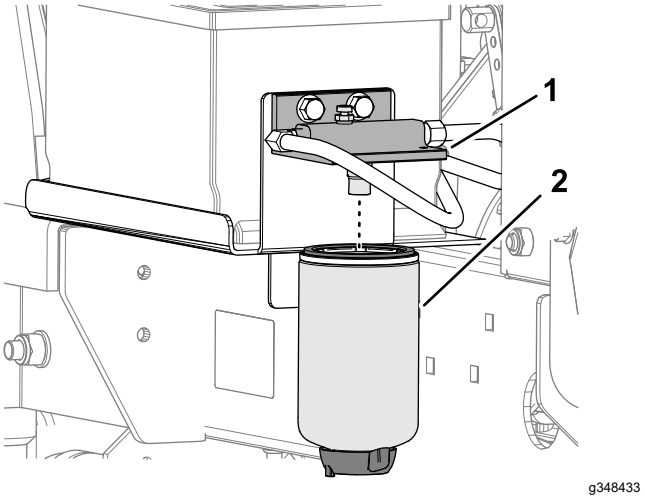



**Figure 69**

1. Filter head
2. Fuel filter

8. Remove the filter canister and clean the filter head (Figure 69).
9. Lubricate the gasket on the new filter canister with clean diesel fuel.
10. Install the new filter canister by hand until the gasket contacts the mounting surface.
11. Remove the inlet hose pinch tool and open the vent screw on the top of the filter head.

    The fuel filter is gravity-fed and will gradually fill. Once clean fuel purges from the vent screw, close the vent screw and remove the hose pinch tool from the filter outlet hose.
12. Close and latch the hood.
13. Prime the fuel system; refer to Bleeding the Fuel System (page 43).

# Checking the Fuel Lines and Connections

**Service Interval:** Every 400 hours/Yearly (whichever comes first)

Check the fuel lines and connections for deterioration, damage, or loose connections.

# *Electrical System Maintenance*

## Electrical System Safety

- Disconnect the battery before repairing the machine. Disconnect the negative terminal first and the positive last. Connect the positive terminal first and the negative last.
- Charge the battery in an open, well-ventilated area, away from sparks and flames. Unplug the charger before connecting or disconnecting the battery. Wear protective clothing and use insulated tools.

## Battery Maintenance

**⚠ DANGER**

**Battery electrolyte contains sulfuric acid, which is fatal if consumed and causes severe burns.**

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

**⚠ WARNING**

**Charging the battery produces gasses that can explode.**

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

Keep the terminals and the entire battery case clean because a dirty battery slowly discharges. To clean the battery, wash the entire case with a solution of baking soda and water. Rinse it with clear water.

### Servicing the Battery

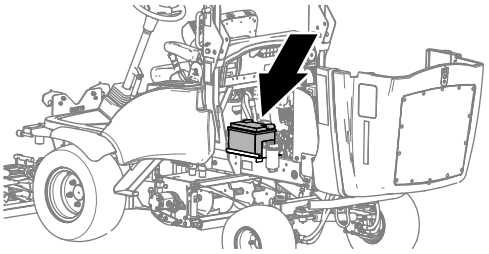
**Service Interval:** Every 50 hours (or weekly, whichever comes first)

***Important:*** **When removing the battery, always disconnect the negative (-) cable first.**

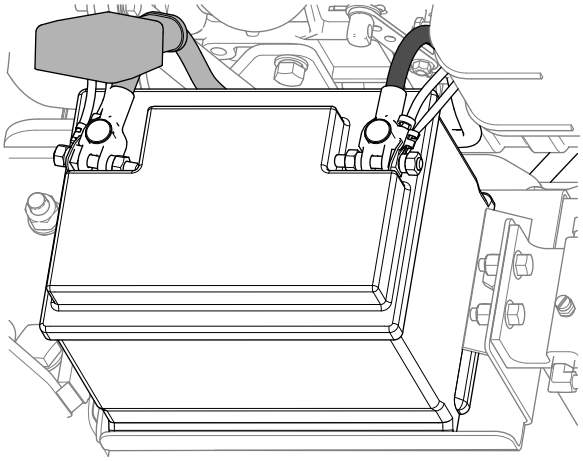
***Important:*** **When installing the battery, always connect the negative (-) cable last.**

Under normal operating conditions the battery does not require any further attention. If the machine has been subject to continuous use under high ambient temperature conditions, the battery electrolyte may require adding water.

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. At the left side of the machine, slip back the battery terminal insulators (Figure 70).



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**Figure 70**

4. Remove any corrosion from the battery terminals using a wire brush and to prevent further corrosion.

   **Note:** Check the condition of the battery cables. Install new cables when current ones are showing signs of wear or damage, and tighten any loose connections.
5. Apply Grafo 112X skin-over grease (Toro Part No. 505-47) or petroleum jelly to the terminals.
6. Clean the battery compartment.
7. Close and latch the hood.

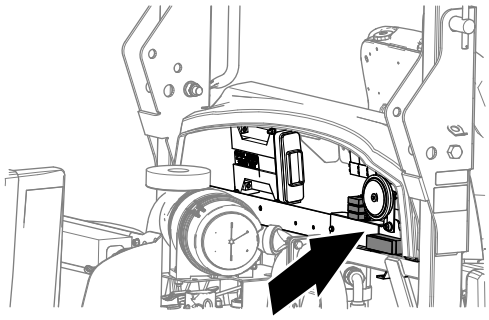
# Checking the Electrical System

**Service Interval:** Every 500 hours

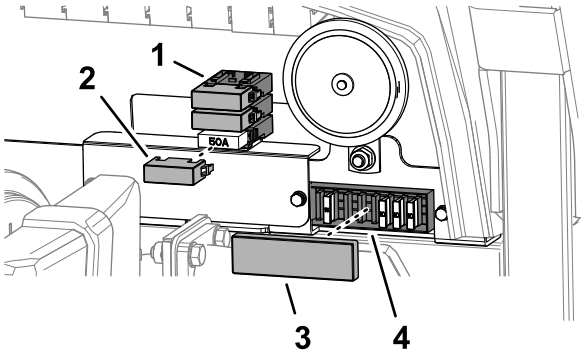
Inspect all electrical connections and cables and replace any which are damaged or corroded. Spray a good-quality water inhibitor onto exposed connections to prevent moisture ingress.

# Checking the Fuses

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. At the back of the bulkhead, remove the fuse-block cover (Figure 71)



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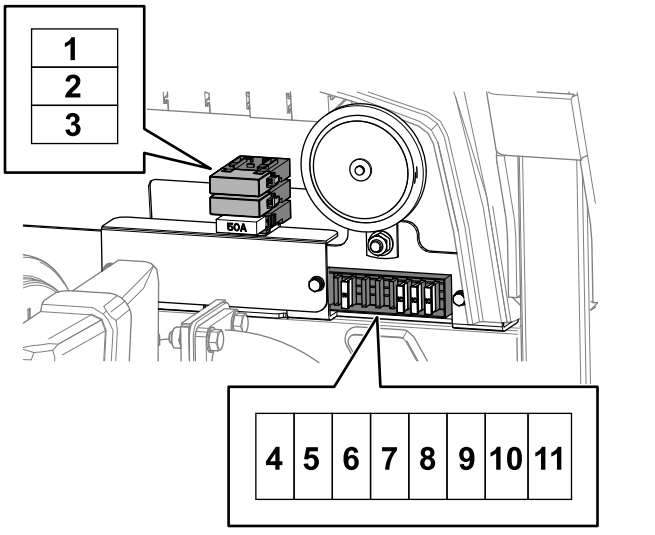



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**Figure 71**

1. Fuse holder (maxi fuse)
2. Maxi fuse-holder cover
3. Fuse-block cover
4. Fuse block (ACT/ATO blade)

4. Check for open fuses.
5. Replace any open fuse with a fuse of equal amperage capacity (Figure 72).




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**Figure 72**

1. 50A (Main power)
2. 40A (ECU)
3. 50A (Glow plugs)
4. Empty
5. 15A (12V aux power)
6. 10A (Hazard lights—optional)
7. 10A (Headlights—optional)
8. 10A (Air-ride seat—optional)
9. 10A (Beacon—optional)
10. 10A (System power—optional)
11. 10A (Horn)

6. Install the fuse-block cover (Figure 71).
7. Close and latch the hood.

# *Drive System Maintenance*

## Checking the Tire Pressure

Check the air pressure in the front and rear tires. Refer to the following chart for the correct pressure.

***Important:*** **Maintain correct tire pressure in all tires to ensure correct contact with the turf.**

| Tires | Tire Type | Recommended Tire Pressures | | | |
|---|---|---|---|---|---|
| | | General Usage | Turf Conditions | Road Conditions | Maximum Pressure |
| Front Axle | 23 x 10.5 - 12 BKT turf pattern | 1 bar (14.5 psi) | 0.7 bar (10 psi) | 1.4 bar (20 psi) | 1.7 bar (25 psi) |
| Rear Axle | 18 x 9.5 - 8 BKT turf pattern | 1 bar (14.5 psi) | 0.7 bar (10 psi) | 1.4 bar (20 psi) | 1.7 bar (25 psi) |

## Checking the Torque of the Wheel Nuts

**Service Interval:** After the first hour

After the first 10 hours

Every 50 hours

Torque the wheel nuts in a crossing pattern to the following values:

**Front wheels:** 200 N·m (148 ft-lb)

**Rear wheels:** 100 N·m (74 ft-lb)

**⚠ WARNING**

**Failure to maintain proper torque of the wheel nuts could result in personal injury.**

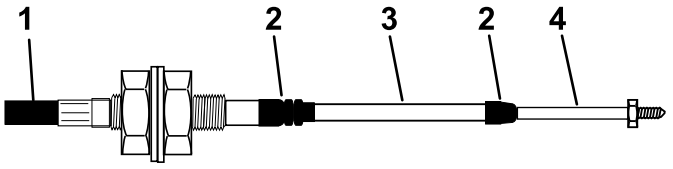
**Ensure that the wheel nuts are torqued properly.**

## Inspecting the Transmission Control Cable and Operating Mechanism

**Service Interval:** Every 250 hours

Check the condition and security of the cable and operating mechanism at the speed-control pedals and transmission pump ends.

- Remove buildup of dirt, grit, and other debris.
- Ensure that the ball joints are securely anchored and check that the mounting brackets and cable anchors are tight and free from cracks.
- Inspect end fittings for wear, corrosion, broken springs, and replace if necessary.
- Ensure that the rubber seals are correctly located and are in good condition.
- Ensure that the articulating sleeves supporting the inner cable are in good condition and firmly attached to the outer cable assembly at the crimped connections. If there are any signs of cracking or detachment install a new cable immediately.
- Check that sleeves, rods, and inner cable are free from bends, kinks, or other damage. If they are not, install a new cable immediately.
- With the engine shut off, operate the pedal controls through the entire range and ensure that the mechanism moves smoothly and freely to the neutral position without sticking or hanging up.




g014571
g014571

**Figure 73**

1. Outer cover
2. Rubber seal
3. Sleeve
4. Rod end

## Checking the Rear Wheel Alignment

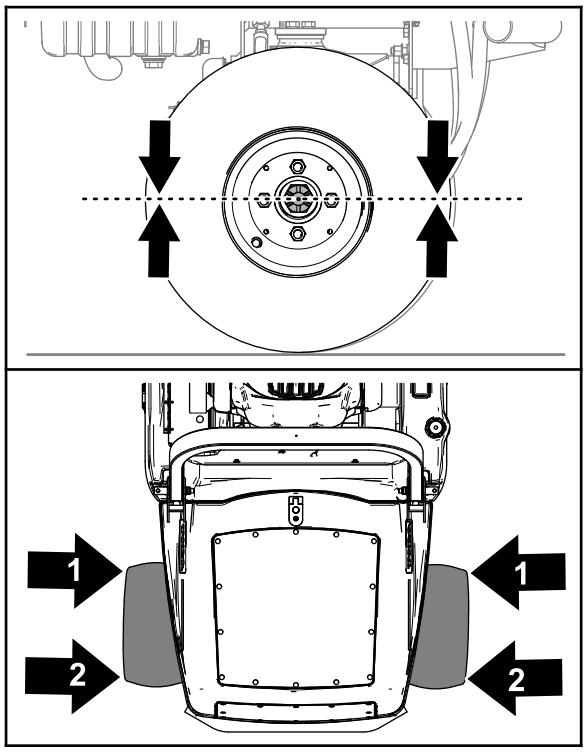
**Service Interval:** Every 500 hours

To prevent excessive tire wear and ensure safe machine operation, the front and back of the rear wheels must align within 5 mm (0.20 inch) or less.

1. Turn the steering wheel to align the rear wheels in the straight ahead.

2. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
3. At axle height, measure the distance between the front of the rear wheels and between the rear of the rear wheels.

   **Note:** The wheels are aligned if the difference between the front and rear measurements are 5 mm (0.20 inch) or less.




g348713

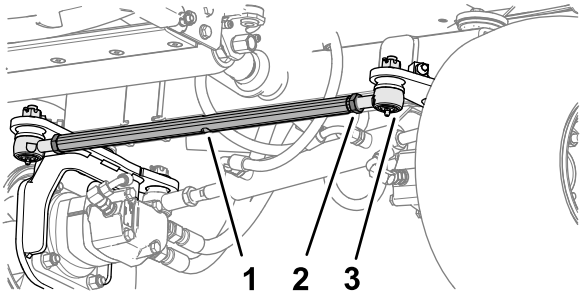
**Figure 74**

1. Front measurement
2. Rear measurement

4. If the difference between the front and rear measurements is greater that 5 mm (0.20 inch), align the rear wheels; refer to Adjusting Rear Wheel Toe-In (page 48)

# Adjusting Rear Wheel Toe-In

1. At the front of the rear wheel, loosen the 2 jam nuts securing the track rod assembly to the rod ends (Figure 75).




g348714

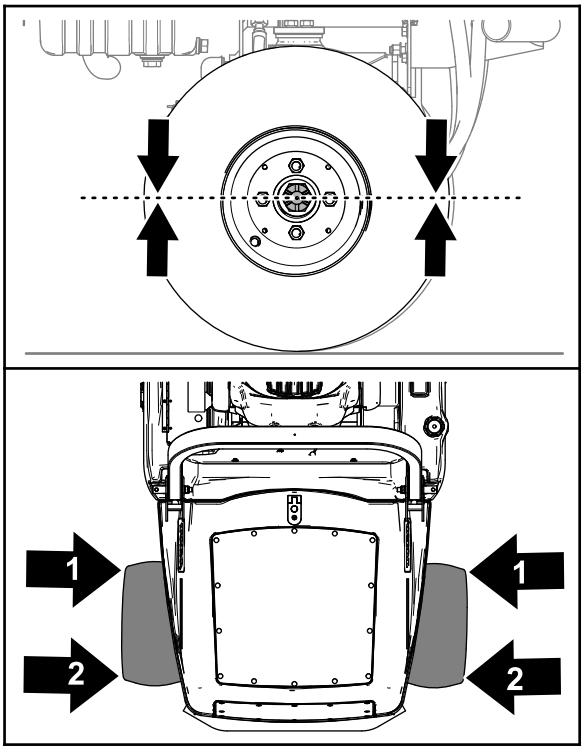
**Figure 75**

1. Track rod assembly
2. Jam nut
3. Rod end

2. Align the wheels by rotating the track rod (Figure 75).

   **Note:** Use the wrench flats of the track rod to turn it.
3. At axle height, measure the distance between the front of the rear wheels and between the rear of the rear wheels.

   **Note:** The wheels are aligned if the difference between the front and rear measurements are 5 mm (0.20 inch) or less.




g348713

**Figure 76**

1. Front measurement
2. Rear measurement

4. Repeat steps 2 and 3 until the wheels are aligned.
5. Tighten the 2 jam nuts to secure the track rod assembly and the rod ends (Figure 75).

# Cooling System Maintenance

## Cooling System Safety

- Swallowing engine coolant can cause poisoning; keep out of reach from children and pets.
- Discharge of hot, pressurized coolant or touching a hot radiator and surrounding parts can cause severe burns.
  - Always allow the engine to cool at least 15 minutes before removing the radiator cap.
  - Use a rag when opening the radiator cap, and open the cap slowly to allow steam to escape.

## Coolant Specification

The coolant reservoir is filled at the factory with a 50/50 solution of water and ethylene glycol base extended-life coolant.

***Important:*** **Use only commercially available coolants that meet the specifications listed in the Extended Life Coolant Standards Table.**

**Do not use conventional (green) inorganic-acid technology (IAT) coolant in your machine. Do not mix conventional coolant with extended-life coolant.**

### Coolant Type Table

| Ethylene-Glycol Coolant Type | Corrosion Inhibitor Type |
|---|---|
| Extended-life antifreeze | Organic-acid technology (OAT) |
| ***Important:*** **Do not rely on the color of the coolant to identify the difference between conventional (green) inorganic-acid technology (IAT) coolant and extended-life coolant.**<br>**Coolant manufacturers may dye extended-life coolant in one of the following colors: red, pink, orange, yellow, blue, teal, violet, and green. Use coolant that meets the specifications in the Extended Life Coolant Standards Table.** | |

### Extended Life Coolant Standards

| ATSM International | SAE International |
|---|---|
| D3306 and D4985 | J1034, J814, and 1941 |

***Important:*** **Coolant concentration should be a 50/50 mixture of coolant to water.**

- **Preferred:** When mixing coolant from a concentrate, mix it with distilled water.
- **Preferred option:** If distilled water is not available, use a pre-mix coolant instead of a concentrate.
- **Minimum requirement:** If distilled water and pre-mix coolant are not available, mix concentrated coolant with clean drinkable water.

## Checking the Coolant Level

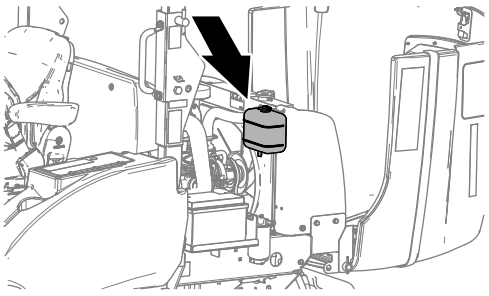
**Service Interval:** Before each use or daily

**⚠ CAUTION**

**If the engine has been running, the pressurized, hot coolant can escape and cause burns.**

- **Do not open the radiator cap when the engine is running.**
- **Use a rag when opening the radiator cap, and open the cap slowly to allow steam to escape.**

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.



g348711

**Figure 77**

3. Check the level of the coolant in the expansion tank (Figure 78).

   **Note:** The coolant level is normal when it is between the marks on the side of the tank.

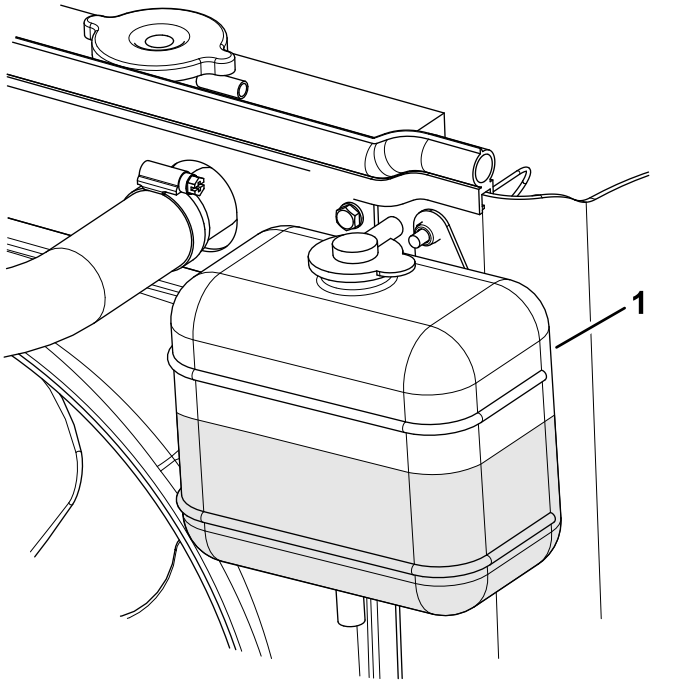



**Figure 78**

1. Expansion tank

4. If the coolant level is low, remove the expansion-tank cap and replenish the system.

   **Note:** Do not overfill.

5. Install the expansion-tank cap.
6. Close and latch the hood.

# Removing Debris from the Cooling System

**Service Interval:** Before each use or daily

Every 100 hours

**Note:** To prevent the engine from overheating, keep the radiator and oil cooler clean. Normally, check them daily and, if necessary, clean any debris off these parts. Check and clean more frequently in dusty and dirty conditions.

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Clean the outside of the screens in the hood (Figure 79).

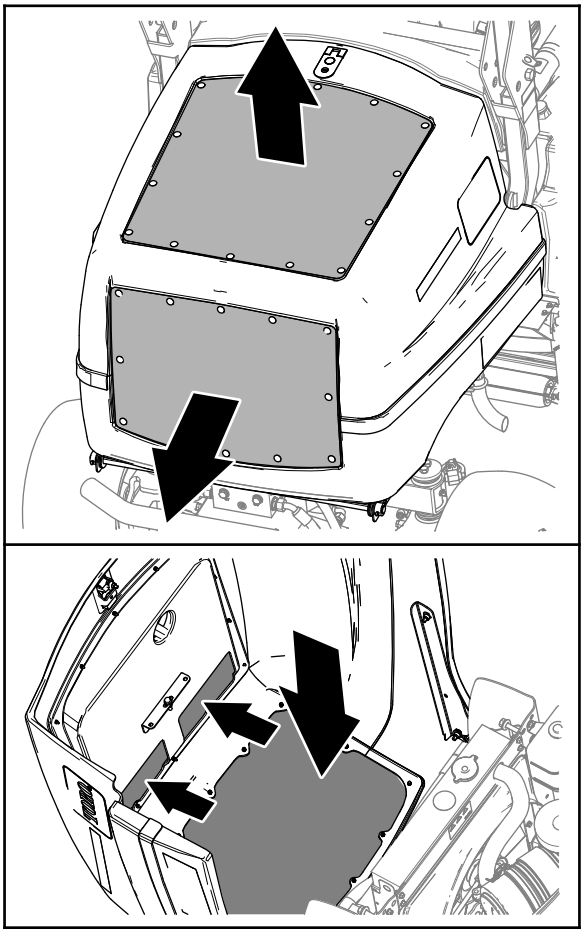
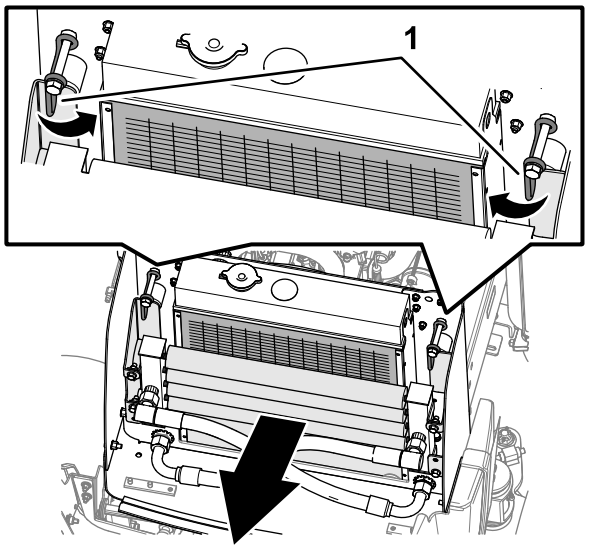



**Figure 79**

3. Unlatch and open the hood (Figure 79).
4. Clean the inside of the hood screens with compressed air (Figure 79).
5. Thoroughly clean all debris out of the engine area.
6. Clean the oil cooler with low-pressure (50 psi) compressed air (Figure 80).

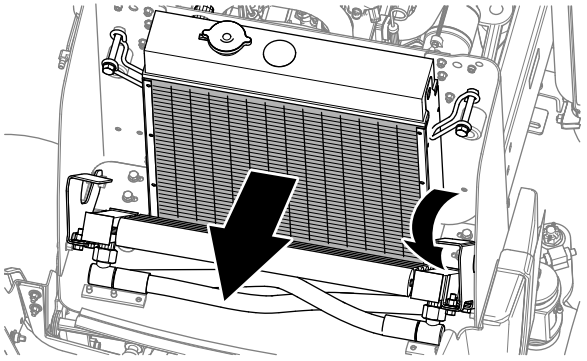



g348599

**Figure 80**

1. Oil-cooler latches

7. Rotate the oil cooler latches inward, and pivot the oil cooler (Figure 80 and Figure 81).



g348600

**Figure 81**

1. Radiator

8. Working from the fan side of the radiator , blow out debris with low-pressure (50 psi) compressed air (Figure 81). Repeat this step at the front of the radiator, and again from the fan side. Thoroughly clean both sides of the oil cooler.

   ***Important:*** **Do not use water to clean the radiator and oil cooler.**

9. Clean out any debris that may have collected on other parts of the machine with compressed air.
10. Pivot the oil cooler up and secure it with the latches.
11. Close and latch the hood.

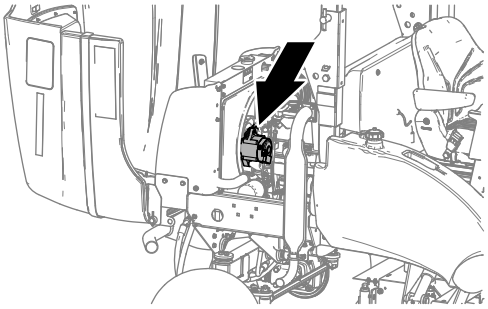
# *Belt Maintenance*

## Tensioning the Alternator Belt

**Service Interval:** After the first 50 hours

Every 100 hours

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.



g348710

**Figure 82**

3. Check the condition of the belt.

   **Note:** Replace the belt if it is worn or damaged.

4. Apply 10 kg (22 lb) of force against the alternator belt (Figure 83), midway between the pulleys.

   **Note:** The belt should deflect 10 mm (3/8 inch).

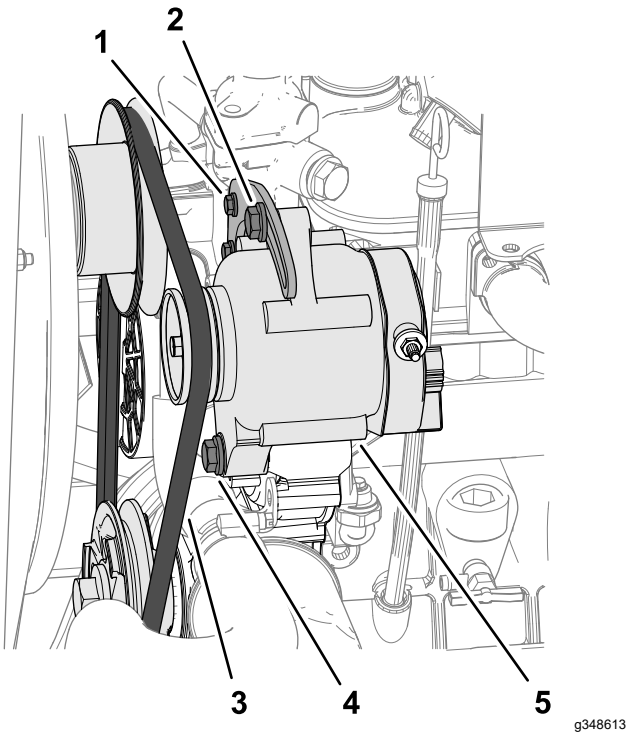



**Figure 83**

1. Tension bracket bolt
2. Alternator tension bolt
3. Belt
4. Alternator pivot bolt
5. Alternator

5. If the belt tension is incorrect, perform the following:
   - If belt deflection is less than 10 mm (3/8 inch), loosen the alternator pivot bolt and tension bolt (Figure 83), and reduce the belt tension.
   - If belt deflection is greater than 10 mm (3/8 inch), loosen the alternator pivot bolt and tension bolt (Figure 83), and increase the belt tension.

     **Note:** If needed, loosen the tension bracket bolt (Figure 83).
6. Tighten the bolts (Figure 83).
7. Check the deflection of the belt again to ensure correct belt tension.
8. Close and latch the hood.

# *Controls System Maintenance*

## Checking the Forward/Reverse Travel Pedal Action

With the engine shut off, operate the forward and reverse travel pedals through the full range of articulation and ensure that the mechanism returns freely to the NEUTRAL position.

# *Hydraulic System Maintenance*

## Hydraulic System Safety

- Seek immediate medical attention if fluid is injected into skin. Injected fluid must be surgically removed within a few hours by a doctor.
- Ensure that all hydraulic-fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.
- Keep your body and hands away from pinhole leaks or nozzles that eject high-pressure hydraulic fluid.
- Use cardboard or paper to find hydraulic leaks.
- Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.

## Checking the Hydraulic Lines and Hoses

**Service Interval:** Before each use or daily

Check the hydraulic lines and hoses for leaks, kinked lines, loose mounting supports, wear, loose fittings, weather deterioration, and chemical deterioration. Make all necessary repairs before operating.

## Hydraulic Fluid Specifications

The reservoir is filled at the factory with high-quality hydraulic fluid. Check the level of the hydraulic fluid before you first start the engine and daily thereafter; refer to Checking the Hydraulic Fluid Level (page 54).

**Recommended hydraulic fluid:** Toro PX Extended Life Hydraulic Fluid; available in 19 L (5 US gallon) pails or 208 L (55 US gallon) drums.

**Note:** A machine using the recommended replacement fluid requires less frequent fluid and filter changes.

**Alternative hydraulic fluids:** If Toro PX Extended Life Hydraulic Fluid is not available, you may use another conventional, petroleum-based hydraulic fluid having specifications that fall within the listed range for all the following material properties and that it meets industry standards. Do not use synthetic fluid. Consult with your lubricant distributor to identify a satisfactory product.

**Note:** Toro does not assume responsibility for damage caused by improper substitutions, so use products only from reputable manufacturers who stand behind their recommendation.

### High Viscosity Index/Low Pour Point Anti-wear Hydraulic Fluid, ISO VG 46

Material Properties:

| | |
|---|---|
| Viscosity, ASTM D445 | cSt @ 40°C (104°F) 44 to 48 |
| Viscosity Index ASTM D2270 | 140 or higher |
| Pour Point, ASTM D97 | -37°C to -45°C (-34°F to -49°F) |
| Industry Specifications: | Eaton Vickers 694 (I-286-S, M-2950-S/35VQ25 or M-2952-S) |

**Note:** Many hydraulic fluids are almost colorless, making it difficult to spot leaks. A red dye additive for the hydraulic fluid is available in 20 ml (0.67 fl oz) bottles. A bottle is sufficient for 15 to 22 L (4 to 6 US gallons) of hydraulic fluid. Order Part No. 44-2500 from your authorized Toro distributor.

***Important:*** **Toro Premium Synthetic Biodegradable Hydraulic Fluid is the only synthetic biodegradable fluid approved by Toro. This fluid is compatible with the elastomers used in Toro hydraulic systems and is suitable for a wide-range of temperature conditions. This fluid is compatible with conventional mineral oils, but for maximum biodegradability and performance, thoroughly flush of conventional fluid from the hydraulic system. The hydraulic fluid is available**

**in 19 L (5 US gallon) pails or 208 L (55 US gallon) drums from your authorized Toro distributor.**

# Checking the Hydraulic Fluid Level

**Service Interval:** Before each use or daily

The reservoir is filled at the factory with high-quality hydraulic fluid. The best time to check the hydraulic fluid is when it is cold.

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Check the sight-level gauge on the side of the tank.

   **Note:** The hydraulic-fluid level needs to align with the upper mark.
3. If additional hydraulic fluid is needed, remove the storage compartment; refer to Removing the Storage Compartment (page 36).
4. Clean the area around the filler neck and the cap of the hydraulic tank (Figure 84).

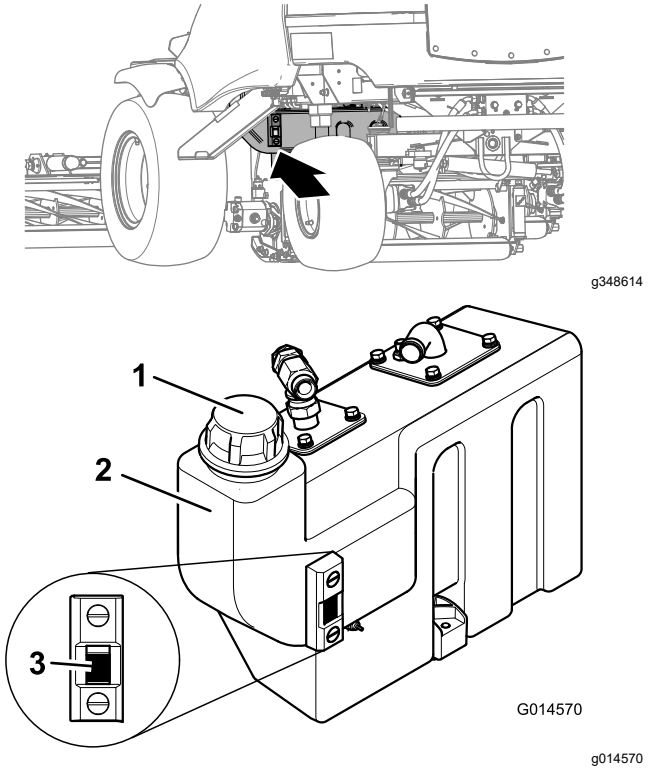



**Figure 84**

1. Hydraulic-tank cap
2. Fluid tank
3. Sight-level gauge

5. Remove the cap and fill the tank with the specified hydraulic fluid to the upper mark on the sight-level gauge.

   ***Important:*** **Do not overfill the tank with hydraulic fluid.**
6. Install the cap onto the tank.
7. Install the storage compartment; refer to Installing the Storage Compartment (page 36).

# Changing the Hydraulic Return Filter

**Service Interval:** Every 1,000 hours—**If you are using the recommended hydraulic fluid,** replace the hydraulic return filter.

Every 500 hours—**If you are not using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid,** replace the hydraulic return filter.

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. At the left side of the machine, clean the area around the filter head and place a drain pan under the filter (Figure 85).

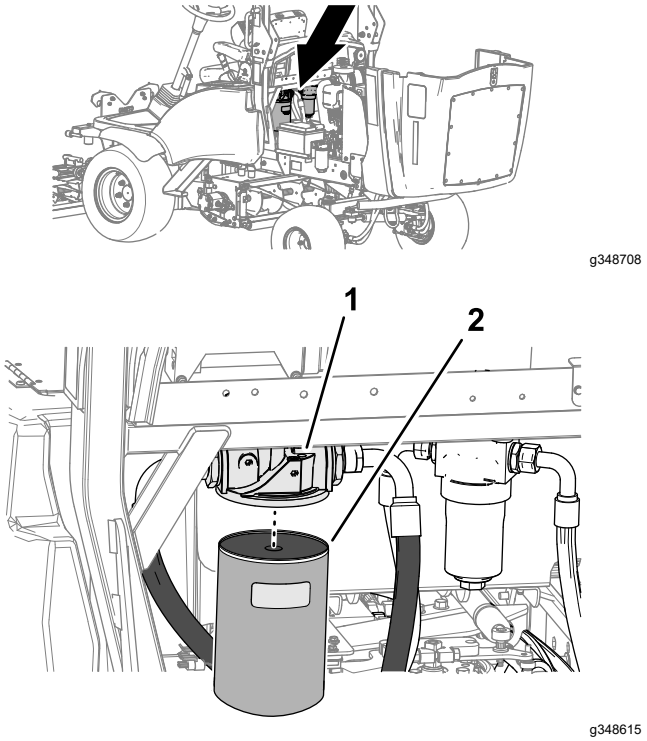



**Figure 85**

1. Filter head
2. Hydraulic fluid return filter

4. Remove the return filter (Figure 85).
5. Lubricate the gasket of the new return filter with clean hydraulic fluid.

6. Assemble the filter to the filter head, and tighten the filter by hand until the gasket contacts the mounting surface, then rotate it an additional 1/2 turn (Figure 85).
7. Start the engine and let it run for 2 minutes to purge air from the system.
8. Shut off the engine, remove the key, and check for leaks.
9. Close and latch the hood.

# Changing the Transmission Fluid Filter

**Service Interval:** After the first 50 hours

Every 500 hours

1. Prepare the machine for maintenance; refer to Preparing the Machine for Maintenance (page 35).
2. Unlatch and open the hood.
3. At the left side of the machine, clean the area around the filter head and place a drain pan under the filter housing (Figure 86).

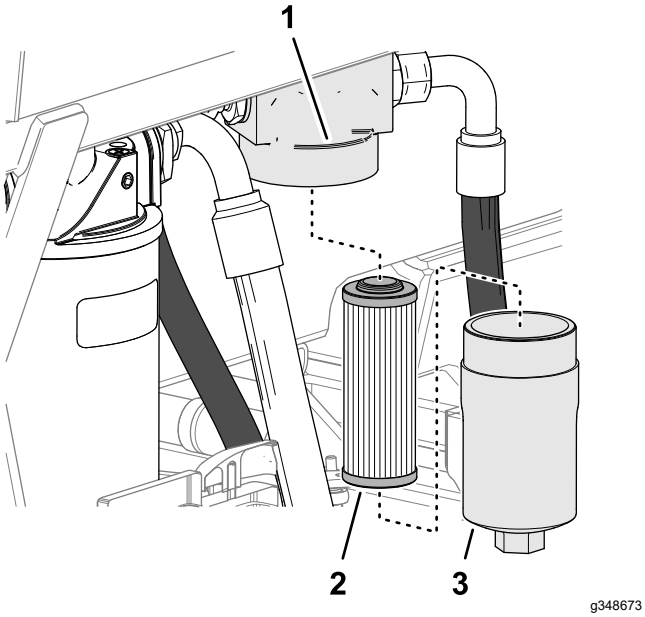



**Figure 86**

1. Filter head
2. Element
3. Filter housing

4. Remove the filter housing from the filter head and remove the element (Figure 86).

   **Note:** Discard the filter element.
5. Install a new filter element onto the filter head (Figure 86).
6. Thread the filter housing onto the filter head, and tighten the housing.
7. Start the engine and let it run for 2 minutes to purge air from the system.
8. Shut off the engine, remove the key, and check for leaks.
9. Close and latch the hood.

# Replacing the Transmission Dampener

**Service Interval:** Every 2 years—Replace the transmission dampener.

Refer to your authorized Toro distributor for a new dampener kit.

1. Raise the platform; refer to Raising the Platform (page 35).
2. Remove the washers and nuts that secure the dampener to the transmission pump and bracket (Figure 87).

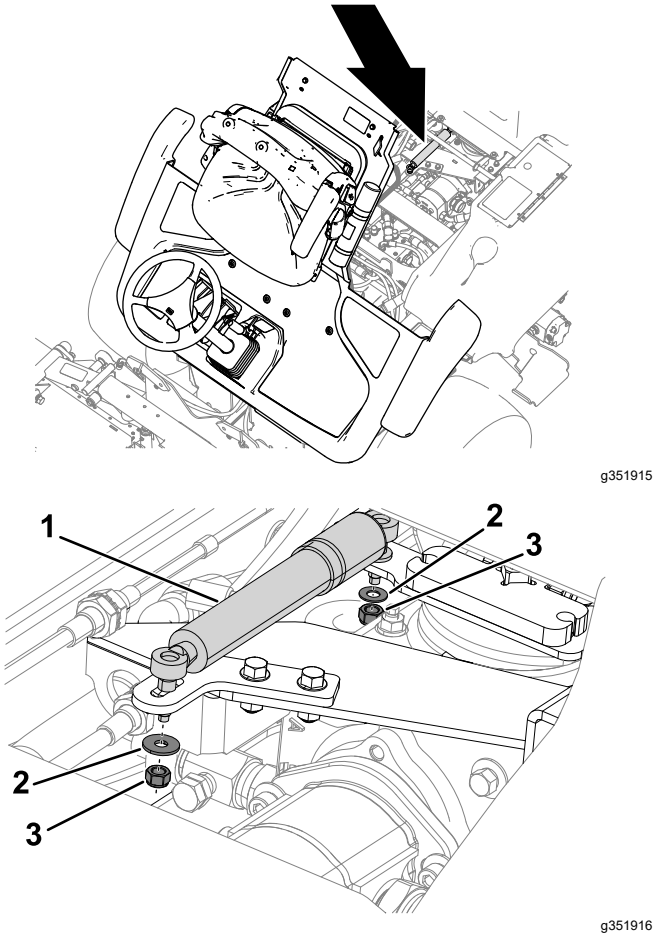



**Figure 87**

1. Dampener
2. Washer
3. Nut

3. Remove the dampener.

4. Use the hardware supplied in the dampener kit to secure the new dampener to the transmission pump and bracket.
5. Lower the platform; refer to Lowering the Platform (page 35).

# Changing the Hydraulic Fluid

**Service Interval:** Every 1,000 hours—**If you are using the recommended hydraulic fluid,** change the hydraulic fluid.

Every 500 hours—**If you are not using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid,** change the hydraulic fluid.

If the fluid becomes contaminated, contact your authorized Toro distributor to flush the system. Contaminated fluid looks milky or black when compared to clean fluid.

## Draining the Hydraulic Fluid

1. Park the machine on a level surface, lower the cutting units, shut off the engine, engage the parking brake, and remove the key.
2. Remove the storage compartment; refer to Removing the Storage Compartment (page 36).
3. Align a drain pan under the hydraulic tank, remove the tank drain plug, and fully drain the hydraulic fluid (Figure 88).

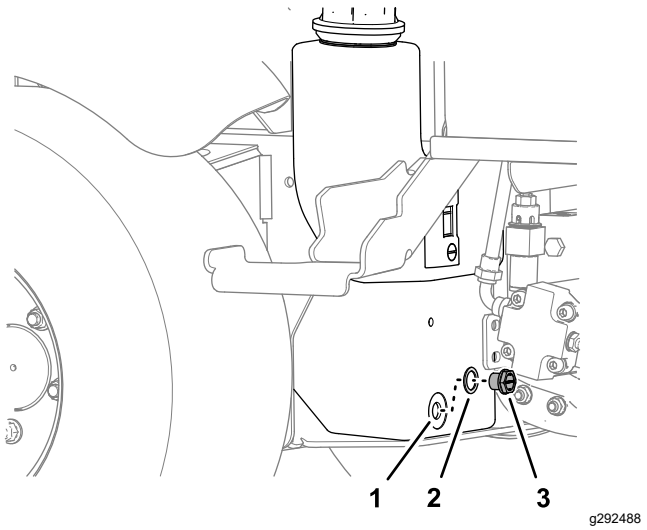



**Figure 88**

1. Hydraulic tank
2. Seal
3. Drain plug

4. Install the drain plug with a new seal.

## Cleaning the Strainers

1. Remove the storage compartment; refer to Removing the Storage Compartment (page 36).
2. Remove the oil tank suction flange to gain access to the suction strainer (Figure 89).

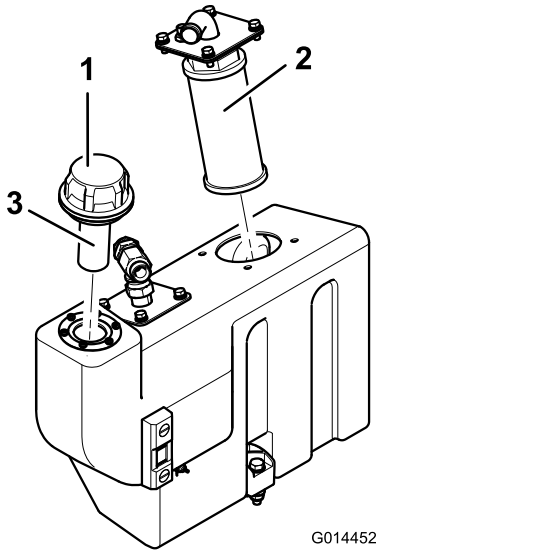



**Figure 89**

1. Oil-tank filler cap
2. Suction strainer
3. Filler strainer

3. Unscrew and remove the strainer and clean with paraffin or petrol before installing (Figure 89).

## Hydraulic Fluid Capacity

32 L (8.5 US gallons); refer to Hydraulic Fluid Specifications (page 53)

## Filling the Hydraulic Tank with Fluid

1. Fill the hydraulic tank with the specified hydraulic fluid; refer to Hydraulic Fluid Specifications (page 53) and Hydraulic Fluid Capacity (page 56).

   ***Important:*** **Use only hydraulic fluids specified; other hydraulic fluids could damage the system.**
2. Run the machine and operate all hydraulic systems until the hydraulic fluid is warm.
3. Check the fluid level and top up as necessary to the upper mark on the sight-level gauge.
4. Install the storage compartment; refer to Installing the Storage Compartment (page 36).

# Cutting Unit Maintenance

## Blade Safety

A worn or damaged blade or bedknife can break, and a piece could be thrown toward you or bystanders, resulting in serious personal injury or death.

- Inspect the blades and bedknives periodically for excessive wear or damage.
- Use care when checking the blades. Wear gloves and use caution when servicing them. Only replace or backlap the blades and bedknives; never straighten or weld them.
- On machines with multiple cutting units, take care when rotating a cutting unit; it can cause the reels in the other cutting units to rotate.

## Backlapping the Cutting Units

**⚠ WARNING**

**Contact with the cutting units or other moving parts can result in personal injury.**

- **Keep fingers, hands, and clothing away from the cutting units or other moving parts.**
- **Never attempt to turn the cutting units by hand or foot while the engine is running.**

Use this process to restore the sharp cutting edges to reels and bedknives, which are needed for good-quality grass cutting.

This process removes a small amount of metal to restore the cutting edges. If the blade edges are seriously worn or damaged, remove the cutting unit and have the reels and bedknife ground.

1. Engage the parking brake, lower the cutting units, shut off the engine, and remove the key.
2. Adjust the reels to the bedknives to obtain light contact.
3. Apply a coat of medium-grade detergent-based carborundum paste to the cutting edges of the reels with a long-handled brush.

**80-Grit Carborundum Paste**

| Part Number | Quantity |
|---|---|
| 63-07-088 | 45 kg (1 lb) |
| 63-07-086 | 11 kg (25 lb) |

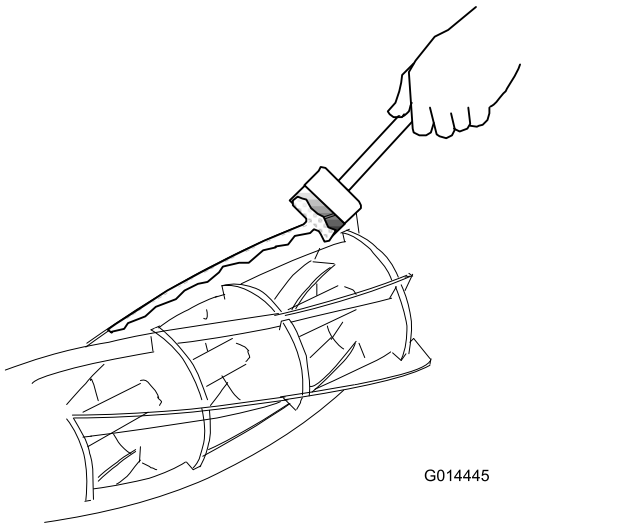



**Figure 90**

4. Sit on the operator seat, start the engine, and set the engine speed to idle.

**⚠ WARNING**

**If you touch the cutting units when the engine is running, the cutting unit could seriously injure you.**

- **Ensure that the area surrounding the cutting units is clear of people.**
- **Keep hands and feet clear of the cutting units during the period when the mower engine is running.**

5. Press cutting unit drive switch to the REVERSE (backlap) position for a short period. Listen to the grinding action.
6. Operate the cutting unit drive switch to the OFF position. When the cutting unit stops running, shut off the engine and remove the key.
7. Thoroughly clean the blade edges and adjust the bedknives to the reels.
8. While rotating the reels by hand, check along the cutting edges that the reel can cleanly cut a thin piece of paper.
9. If further back lapping is needed, repeat steps 2 through 8.
10. Thoroughly clean off all traces of the carborundum paste from the reels and bedknives.

## Grinding the Cutting Units

- Grind reel blades or bedknives to correct excessively rounded or distorted reel edges or bedknife edges.

  ***Important:*** **Replace the bedknives at the end of their wear life.**

- Grind new blades on their holders prior to fitting.
- When grinding reel blades or the bedknives are needed, it is essential that they are ground at the same time.

  **Note:** The only exception to this rule is when a new reel is installed, in which case only grind the bedknife.

- Have your authorized Toro dealer grind your reel blades and bedknives on a quality, well-maintained reel/bedknife grinding machine.

# *Chassis Maintenance*

## Inspecting the Seat Belt

**Service Interval:** Before each use or daily

1. Inspect the seat belt for wear, cuts, and other damage. Replace the seat belt(s) if any component does not operate properly.
2. Clean the seat belt as necessary.

## Checking the Fasteners

**Service Interval:** Before each use or daily

Check the machine for loose and missing fasteners.

**Note:** Tighten any loose fasteners; replace any missing fasteners.

## Extended Maintenance

**Service Interval:** Every 250 hours—Inspect the cooling-system hoses.

Every 1,500 hours—Flush and replace the coolant.

Every 2 years—Replace all moving hoses.

Every 2 years—Replace the transmission cable.

## Disposing of Waste

Engine oil, batteries, hydraulic fluid, and engine coolant are pollutants to the environment. Dispose of these according to your local regulations.

When disposing of hazardous waste products, take them to an authorized disposal site. Do not allow waste products to contaminate surface water, drains, or sewage systems.

***Important:*** **Dispose of hazardous substances correctly.**

**Do not dispose of batteries with a separate collection mark into general waste.**

**When disposing of hazardous waste products, take them to an authorized disposal site.**

# *Cleaning*

## Washing the Machine

Wash the machine as needed using water alone or with a mild detergent. You may use a rag when washing the machine.

***Important:*** **Do not use brackish or reclaimed water to clean the machine.**

***Important:*** **Do not use power-washing equipment to wash the machine. Power-washing equipment may damage the electrical system, loosen important decals, or wash away necessary grease at friction points. Avoid excessive use of water near the control panel, engine, and battery.**

***Important:*** **Do not wash the machine with the engine running. Washing the machine with the engine running may result in internal engine damage.**

# Storage

## Storage Safety

- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Disengage and lower the cutting units.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
  - Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.

## Preparing the Traction Unit

1. Park the machine on a level surface, lower the cutting units, engage the parking brake, shut off the engine, and remove the key.
2. Thoroughly clean the traction unit, cutting units, and the engine.
3. Check the tire pressure; refer to Checking the Tire Pressure (page 47).
4. Check all fasteners for looseness; tighten them as necessary.
5. Grease or oil all grease fittings and pivot points. Wipe up any excess lubricant.
6. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted. Repair any dents in the metal body.

## Preparing the Engine

1. Drain the oil from the engine and install the drain plug.
2. Remove and discard the oil filter. Install a new oil filter.
3. Fill the engine with specified motor oil.
4. Start the engine and run it at idle speed for approximately 2 minutes.
5. Shut off the engine and remove the key.
6. Flush the fuel tank with fresh, clean fuel.
7. Secure all fuel-system fittings.
8. Thoroughly clean and service the air-cleaner assembly.
9. Seal the air-cleaner inlet and the exhaust outlet with weatherproof tape.

10. Check the antifreeze protection and add a 50/50 solution of water and ethylene glycol antifreeze as needed for the expected minimum temperature in your area.

# Preparing the Electrical System

1. Service the battery and cables as follows; refer to Servicing the Battery (page 45).
2. Remove the battery terminals from the battery posts.
3. Clean the battery, terminals, and posts with a wire brush and baking-soda solution.
4. Coat the cable terminals and battery posts with Grafo 112X skin-over grease (Toro Part No. 505-47) or petroleum jelly to prevent corrosion.
5. Slowly charge the battery every 60 days for 24 hours to prevent lead sulfation of the battery.

# Troubleshooting

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| There are areas of uncut grass at the overlap between cutting units. | 1. You are turning too tightly.<br>2. The machine slides sideways when driving the machine across the face of a slope.<br>3. There is no ground contact on 1 end of the cutting unit because of poorly routed hoses or wrongly positioned hydraulic adapters.<br>4. There is no ground contact on 1 end of the cutting unit because a pivot pin is seizing.<br>5. There is no ground contact on 1 end of the cutting unit because of grass buildup under the cutting unit. | 1. Increase the turning radius.<br>2. Mow up/down the slope.<br>3. Correct the hose routing or the position of the hydraulic adapters.<br>4. Release and grease the pivot points.<br>5. Clear the grass buildup. |
| There are full-width ridge lines in the cut across the direction of travel. | 1. The forward speed is too high.<br>2. The reel speed is too slow.<br>3. The height of cut is too low. | 1. Reduce forward speed.<br>2. Increase engine speed.<br>3. Raise the height of cut. |
| There are ridge lines in the cut grass, across the direction of travel, over the cutting width of 1 cutting unit. | 1. A reel is running slow. | 1. Check the reel speed; consult your authorized distributor. |
| There is a step in the cut grass height at the point of overlap between cutting units. | 1. There is an inconsistent height-of-cut setting on 1 cutting unit.<br>2. The raise/lower position control is not in the float position.<br>3. There is no ground contact on 1 end of the cutting unit because of poorly routed hoses or wrongly positioned hydraulic adapters.<br>4. There is no ground contact on 1 end of the cutting unit because of pivot pins seizing.<br>5. There is no ground contact on 1 end of the cutting unit because of grass buildup under the cutting unit | 1. Check and adjust the height-of-cut setting.<br>2. Set the position control to the float position.<br>3. Correct the hose routing and the position of the hydraulic adapters.<br>4. Release and grease the pivot points.<br>5. Remove the grass buildup. |
| There are some uncut or poorly cut strands of grass. | 1. A reel is partially out of contact with the bedknife.<br>2. A reel is in heavy contact with the bedknife.<br>3. The height of cut is too high.<br>4. The cutting edges of the reels/bedknives are rounded. | 1. Adjust the reel-to-bedknife contact.<br>2. Adjust the reel-to-bedknife contact.<br>3. Lower the height of cut.<br>4. Back lap or grind the edges. |
| There are lines of uncut or badly cut grass in the direction of travel. | 1. There is tram lining of the cutting edges due to heavy contact caused by poor reel-to-bedknife adjustment.<br>2. The bedknife is in contact with the ground.<br>3. The bedknife has a nose-down angle.<br>4. The cutting units are bouncing.<br>5. There are worn reel bearings/bearing housing pivots.<br>6. There are loose components in the cutting unit. | 1. Back lap or grind the edges.<br>2. Raise the height of cut.<br>3. Adjust the cutting unit to position the bedknife parallel to the ground.<br>4. Reduce the forward speed and reduce the weight transfer.<br>5. Replace any worn parts.<br>6. Check and tighten components as necessary. |

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| There is scalping of the turf. | 1. The undulations are too severe for the height of cut setting.<br>2. The height of cut is too low. | 1. Use floating cutting units.<br>2. Raise the height of cut. |
| There is excessive bedknife wear. | 1. The bedknife is in heavy contact with the ground.<br>2. The cutting edges of the reel and/or bedknife are rounded.<br>3. The reel is in heavy contact with the bedknife.<br>4. There is a damaged reel or bedknife.<br>5. There are excessively abrasive ground conditions. | 1. Raise the height of cut.<br>2. Back lap or grind the edges.<br>3. Adjust the reel-to-bedknife contact.<br>4. Grind or replace parts as necessary.<br>5. Raise the height of cut. |
| The engine does not start with the ignition key. | 1. The transmission neutral interlock switch is not energized.<br>2. The parking brake interlock switch is not energized.<br>3. The cutting unit drive interlock switch is not energized.<br>4. There is a malfunctioning electrical connection. | 1. Remove your foot from the forward/reverse pedals or check the setting of the transmission neutral interlock switch.<br>2. Move the parking brake switch to the on position.<br>3. Move the cutting unit switch to the off position.<br>4. Locate and correct the fault in the electrical system. |
| The battery has no power. | 1. A terminal connection is loose or corroded.<br>2. The alternator belt is loose or worn.<br>3. The battery is discharged.<br>4. There is an electrical short circuit. | 1. Clean and tighten the terminal connections. Charge the battery.<br>2. Adjust the tension or replace the belt; refer to engine owner's manual.<br>3. Charge or replace the battery.<br>4. Locate the short circuit and fix it. |
| The hydraulic fluid is overheating. | 1. There is a blocked screen.<br>2. The fluid cooler fins are dirty/blocked.<br>3. The engine radiator is dirty/blocked.<br>4. The relief valve setting is low.<br>5. The fluid level is low.<br>6. The brakes are engaged.<br>7. The reels are tight on the bedknives.<br>8. There is a malfunctioning fan or fan drive. | 1. Clean the screen.<br>2. Clean the fins.<br>3. Clean the radiator.<br>4. Have the relief valve pressure checked. Consult your authorized distributor.<br>5. Fill the reservoir to the correct level.<br>6. Disengage the brakes.<br>7. Adjust the settings.<br>8. Check the fan operation and service it as required. |
| The brake system does not operate correctly. | 1. There is a malfunctioning wheel motor brake assembly.<br>2. The brake discs are worn. | 1. Consult your authorized distributor.<br>2. Replace the brake discs; consult your authorized distributor. |
| There is a lack of steering. | 1. The steering valve is malfunctioning.<br>2. A hydraulic cylinder is malfunctioning.<br>3. A steering hose is damaged. | 1. Service or replace the steering valve.<br>2. Service or replace the hydraulic cylinder.<br>3. Replace the hose. |

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| There is no machine movement in forward or reverse. | 1. The parking brake is engaged.<br>2. The fluid level is low.<br>3. The reservoir has the wrong kind of fluid.<br>4. The drive pedal linkage is damaged.<br>5. The transmission pump is damaged.<br>6. The transmission bypass valve is open.<br>7. There is a broken drive coupling. | 1. Disengage the parking brake.<br>2. Fill the reservoir to the correct level.<br>3. Drain the reservoir and fill it with the correct fluid.<br>4. Check the linkage and replace any damaged or worn parts.<br>5. Have the transmission pump overhauled by your authorized distributor.<br>6. Close the bypass valve.<br>7. Replace the drive coupling. |
| The machine creeps forward or backward in neutral. | 1. The transmission neutral adjustment is set incorrectly. | 1. Adjust the transmission neutral linkage setting. |
| There is excessive noise in the hydraulic system. | 1. A pump is malfunctioning.<br>2. A motor is malfunctioning.<br>3. Air is leaking into the system.<br>4. A suction strainer is blocked or damaged.<br>5. The fluid has excessive viscosity due to cold conditions.<br>6. The relief valve setting is low.<br>7. The hydraulic fluid level is low. | 1. Identify the noisy pump and service or replace it.<br>2. Identify the noisy motor and service or replace it.<br>3. Tighten or replace the hydraulic fittings, particularly in the suction lines.<br>4. Clean and reinstall the suction strainer, or replace it as necessary.<br>5. Allow the system to warm up.<br>6. Have the relief valve pressure checked. Consult your authorized distributor.<br>7. Fill the hydraulic fluid reservoir to the correct level. |
| After an initial period of satisfactory operation, the machine loses power. | 1. A pump or motor is worn.<br>2. The hydraulic fluid level is low.<br>3. The fluid in the hydraulic system has the wrong viscosity.<br>4. The fluid-filter element is blocked.<br>5. The pressure relief valve is malfunctioning.<br>6. The system is overheating.<br>7. There are leaks on the suction hose. | 1. Replace the pump or motor as necessary.<br>2. Fill hydraulic fluid tank to the correct level.<br>3. Replace the fluid in the hydraulic tank with the correct viscosity-grade fluid; refer to the Specifications section.<br>4. Change the filter element.<br>5. Have the relief valve cleaned and pressure checked. Consult your authorized distributor.<br>6. Check the reel-to-bedknife adjustment. Reduce the work rate (increase the height of cut or reduce the forward speed).<br>7. Check and tighten the fittings. Replace the hose if necessary. |
| A reel 'knocks' while rotating. | 1. There is a high spot on the reel or the bedknife due to contact with a foreign object.<br>2. The reel bearings are worn. | 1. Remove the high spot with a stone and back lap to restore the cutting edges. Severe damage requires grinding.<br>2. Replace the bearings as necessary. |
| 1 reel rotates slowly. | 1. A reel bearing is seized.<br>2. A motor with incorrect rotation was installed.<br>3. The integral relief valves of the motor are jammed open.<br>4. The reel is tight on the bedknife.<br>5. The motor is worn. | 1. Replace the bearings as necessary.<br>2. Check the motor and replace it if necessary.<br>3. Have the relief valves cleaned and checked.<br>4. Adjust the setting.<br>5. Replace the motor. |

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| A cutting unit fails to lift out of work. | 1. There is a lift cylinder seal failure.<br>2. The pressure relief valve is jammed open or wrongly set.<br>3. There is a malfunctioning control valve.<br>4. There is mechanical blockage. | 1. Replace the seals.<br>2. Have the relief valve pressure checked. Consult your authorized distributor.<br>3. Overhaul the control valve.<br>4. Remove the blockage. |
| The cutting units do not follow the contours of the ground. | 1. The hose routing or the orientation of the hydraulic fittings is incorrect.<br>2. The pivot points are too tight.<br>3. The cutting unit operating in the 'hold' position.<br>4. The weight transfer is set too high. | 1. Move the cutting units throughout the extremes of movement and observe any tightness in the hoses. Correctly route the hoses and orientate the fittings as necessary.<br>2. Release and grease the pivot point as necessary.<br>3. Move the position control switch to 'down / float' position.<br>4. Reduce the weight transfer. |
| The cutting units fail to start up when lowered into work. | 1. The seat sensor switch is malfunctioning.<br>2. The hydraulic-fluid level is low.<br>3. A driveshaft is sheared.<br>4. The pressure relief valve is jammed open or wrongly set.<br>5. A cutting unit is jammed.<br>6. A reel is tight on the bedknife.<br>7. A cutting unit control valve is in the 'off' position, caused by malfunctioning control valve.<br>8. A cutting unit control valve is in the 'off' position, caused by an electrical fault.<br>9. The lift arm proximity switch is incorrectly set. | 1. Check the mechanical and electrical operation of the switch.<br>2. Fill the hydraulic-fluid reservoir to the correct level.<br>3. Check the motor and reel driveshafts and replace them if necessary.<br>4. Have the relief valve pressure checked. Consult your authorized Toro distributor.<br>5. Clear any jams as necessary.<br>6. Adjust the setting.<br>7. Overhaul the control valve.<br>8. Have the electrical system checked for an electrical fault.<br>9. Check and adjust the proximity switch. |
| The reels rotate in the wrong direction. | 1. The hoses are connected wrongly.<br>2. The cutting unit drive switch is connected wrongly. | 1. Check the hydraulic circuit and connect the hoses correctly.<br>2. Check the electrical connections of the switch. |

# Notes:

# EEA/UK Privacy Notice

**Toro's Use of Your Personal Information**

The Toro Company ("Toro") respects your privacy. When you purchase our products, we may collect certain personal information about you, either directly from you or through your local Toro company or dealer. Toro uses this information to fulfil contractual obligations - such as to register your warranty, process your warranty claim or to contact you in the event of a product recall - and for legitimate business purposes - such as to gauge customer satisfaction, improve our products or provide you with product information which may be of interest. Toro may share your information with our subsidiaries, affiliates, dealers or other business partners in connection these activities. We may also disclose personal information when required by law or in connection with the sale, purchase or merger of a business. We will never sell your personal information to any other company for marketing purposes.

**Retention of your Personal Information**

Toro will keep your personal information as long as it is relevant for the above purposes and in accordance with legal requirements. For more information about applicable retention periods please contact legal@toro.com.

**Toro's Commitment to Security**

Your personal information may be processed in the US or another country which may have less strict data protection laws than your country of residence. Whenever we transfer your information outside of your country of residence, we will take legally required steps to ensure that appropriate safeguards are in place to protect your information and to make sure it is treated securely.

**Access and Correction**

You may have the right to correct or review your personal data, or object to or restrict the processing of your data. To do so, please contact us by email at legal@toro.com. If you have concerns about the way in which Toro has handled your information, we encourage you to raise this directly with us. Please note that European residents have the right to complain to your Data Protection Authority.

# The Toro Warranty

Two-Year or 1,500 Hours Limited Warranty

## Conditions and Products Covered

The Toro Company warrants your Toro Commercial product (“Product”) to be free from defects in materials or workmanship for 2 years or 1,500 operational hours*, whichever occurs first. This warranty is applicable to all products with the exception of Aerators (refer to separate warranty statements for these products). Where a warrantable condition exists, we will repair the Product at no cost to you including diagnostics, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.
* Product equipped with an hour meter.

## Instructions for Obtaining Warranty Service

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists. If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Toro Commercial Products Service Department
8111 Lyndale Avenue South
Bloomington, MN 55420-1196

952–888–8801 or 800–952–2740
E-mail: commercial.warranty@toro.com

## Owner Responsibilities

As the product owner, you are responsible for required maintenance and adjustments stated in your *Operator's Manual*. Repairs for product issues caused by failure to perform required maintenance and adjustments are not covered under this warranty.

## Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, or modified non-Toro branded accessories and products.
- Product failures which result from failure to perform recommended maintenance and/or adjustments.
- Product failures which result from operating the Product in an abusive, negligent, or reckless manner.
- Parts consumed through use that are not defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, brake pads and linings, clutch linings, blades, reels, rollers and bearings (sealed or greasable), bed knives, spark plugs, castor wheels and bearings, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, flow meters, and check valves.
- Failures caused by outside influence, including, but not limited to, weather, storage practices, contamination, use of unapproved fuels, coolants, lubricants, additives, fertilizers, water, or chemicals.
- Failure or performance issues due to the use of fuels (e.g. gasoline, diesel, or biodiesel) that do not conform to their respective industry standards.
- Normal noise, vibration, wear and tear, and deterioration. Normal “wear and tear” includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows.

## Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part. Parts replaced under this warranty are covered for the duration of the original product warranty and become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use remanufactured parts for warranty repairs.

## Deep Cycle and Lithium-Ion Battery Warranty

Deep cycle and Lithium-Ion batteries have a specified total number of kilowatt-hours they can deliver during their lifetime. Operating, recharging, and maintenance techniques can extend or reduce total battery life. As the batteries in this product are consumed, the amount of useful work between charging intervals will slowly decrease until the battery is completely worn out. Replacement of worn out batteries, due to normal consumption, is the responsibility of the product owner. Note: (Lithium-Ion battery only): Refer to the battery warranty for additional information.

## Lifetime Crankshaft Warranty (ProStripe 02657 Model Only)

The Prostripe which is fitted with a genuine Toro Friction Disc and Crank-Safe Blade Brake Clutch (integrated Blade Brake Clutch (BBC) + Friction Disc assembly) as original equipment and used by the original purchaser in accordance with recommended operating and maintenance procedures, are covered by a Lifetime Warranty against engine crankshaft bending. Machines fitted with friction washers, Blade Brake Clutch (BBC) units and other such devices are not covered by the Lifetime Crankshaft Warranty.

## Maintenance is at Owner’s Expense

Engine tune-up, lubrication, cleaning and polishing, replacement of filters, coolant, and completing recommended maintenance are some of the normal services Toro products require that are at the owner’s expense.

## General Conditions

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

**The Toro Company is not 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. Except for the Emissions warranty referenced below, if applicable, there is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty.**

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

## Note Regarding Emissions Warranty

The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA) and/or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the Engine Emission Control Warranty Statement supplied with your product or contained in the engine manufacturer’s documentation.

## 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 your Authorized Toro Service Center.




**Count on it.**