



Form No. 3438-223 Rev B

**Count on it.**

**Operator's Manual**

**Pro Force<sup>®</sup> Debris Blower**

Model No. 44553—Serial No. 405700000 and Up



It is a violation of California Public Resource Code Section 4442 or 4443 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire.

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

The DOT tire information is located on the side of each tire. This information gives load and speed ratings. Replacement tires should have the same or better ratings. Ensure that the tires meet or exceed the weight requirements of your machine.

#### **Electromagnetic Compatibility**

**Domestic:** This device complies with FCC rules Part 15. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference that may be received, including interference that may cause undesirable operation.

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a FCC Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient the receiving antenna, relocate the remote control receiver with respect to the radio/TV antenna or plug the controller into a different outlet so that the controller and radio/TV are on different branch circuits. If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

**FCC ID: W7OMRF24J40MDME-BASE,  
OA3MRF24J40MA-HANDHELD**

**IC: 7693A-24J40MDME-BASE, 7693A-24J40MA-HANDHELD**

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

### **⚠ CAUTION**

**Changing or modifying the machine without the express approval from the party responsible for compliance could void your authority to operate the equipment.**

**Do not change or modify the machine without the express approval from the party responsible for compliance.**

### **⚠ WARNING**

#### **CALIFORNIA Proposition 65 Warning**

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

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

**Use of this product may cause exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.**

# Introduction

The debris blower is towed behind a ride-on machine that is intended to be used by professional, hired operators in commercial applications. It is primarily designed to use wind power to quickly clear large areas of unwanted debris on well-maintained lawns in parks, golf courses, sports fields, and on commercial grounds. 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](http://www.Toro.com) for product safety and operation 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.

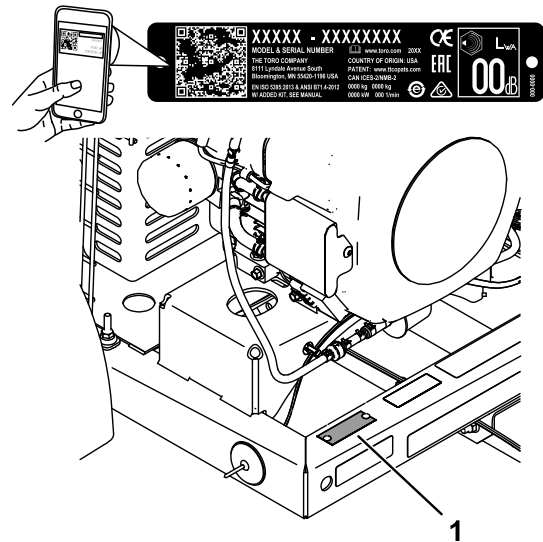


Figure 1

g257159

1. Model and serial number location

<b>Model No.</b> _____
<b>Serial No.</b> _____

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



Figure 2

Safety-alert symbol

g000502

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 ANSI standard B71.4-2017.

## General Safety

This product is capable of throwing objects. Always follow all safety instructions to avoid serious personal injury.

- Read and understand the contents of both this *Operator's Manual* and the operator's manual of the traction unit before using this machine. Ensure that everyone using this product knows how to use this machine and the traction unit and understands the warnings.
- 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 working on the machine.
- Keep children, bystanders, and pets out of the operating area. Never allow children to operate the machine.
- Always shut off the engine, remove the key (if equipped), wait for all moving parts to stop, and allow the machine to cool before adjusting, repairing, cleaning, or storing the machine.

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.



115-5105

decal115-5105

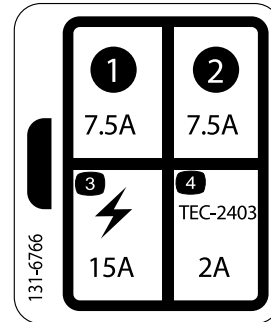
1. Warning—read the *Operator's Manual*.
2. Warning—all operators should read the *Operator's Manual* and be trained before operating the machine.
3. Warning—shut off the engine, remove the key, and read the *Operator's Manual* before performing maintenance.
4. Thrown object hazard—keep bystanders away.
5. Warning—stay away from moving parts; keep all guards and shields in place.
6. Warning—do not start the engine when the machine is disconnected from the tow vehicle; hitch the machine to the tow vehicle before starting the engine.



115-5106

decal115-5106

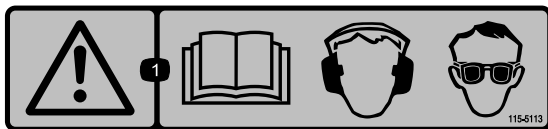
1. Warning—read the *Operator's Manual*.
2. Thrown object hazard—keep bystanders away.
3. Cutting/dismemberment hazard; hand—stay away from moving parts.



131-6766

decal131-6766

- |          |                                |
|----------|--------------------------------|
| 1. 7.5 A | 3. Electrical accessory (15 A) |
| 2. 7.5 A | 4. TEC-2403 (2 A)              |



115-5113

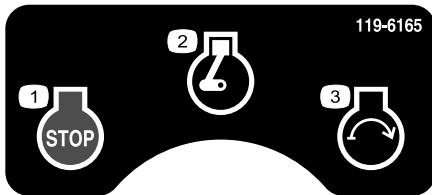
decal115-5113

1. Warning—read the *Operator's Manual*; wear hearing and eye protection.



133-8062

decal133-8062



119-6165

decal119-6165

- |                |                 |
|----------------|-----------------|
| 1. Engine—Stop | 3. Engine—Start |
| 2. Engine—Run  |                 |

# Setup

## Loose Parts

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

Procedure	Description	Qty.	Use
<b>1</b>	Grafo 112X grease (Toro Part No. 505-47)	—	Connect the battery.
<b>2</b>	Machine assembly Hitch Bolt (3/8 x 3 inches) Flange nut (3/8 inch)	1 1 2 2	Mount the hitch to the machine.
<b>3</b>	No parts required	—	Connect the machine to the towing vehicle.
<b>4</b>	Handheld remote AAA batteries Small screws	1 4 6	Assemble the handheld remote.

## Media and Additional Parts

Description	Qty.	Use
Operator's Manual	1	Read before operating.
Engine owner's manual	1	Use to reference the engine operation and maintenance.
Remote control	1	Use to remotely operate the blower.

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

# 1

## Connecting the Battery

Parts needed for this procedure:

—	Grafo 112X grease (Toro Part No. 505-47)
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## Procedure

1. Remove the clips securing the battery cover to the battery box ([Figure 3](#)).

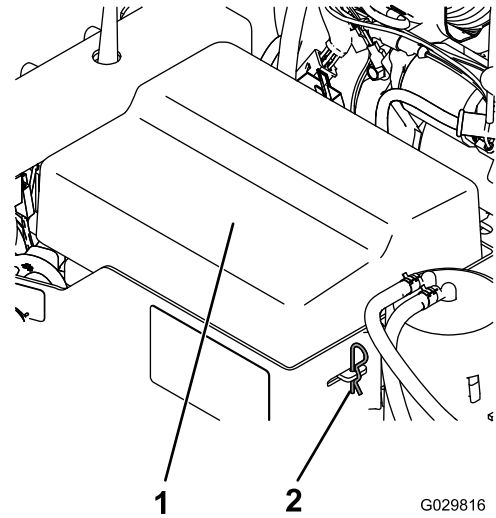


Figure 3

1. Battery cover

2. Battery clip

## **⚠ 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.

2. Attach the positive cable (red cable) to the positive (+) terminal.
3. Attach the negative cable (black cable) to the negative (-) terminal of the battery.
4. Coat the terminals and mounting fasteners with Grafo 112X (skin over) grease (Toro Part No. 505-47) to prevent corrosion.
5. Install the battery cover and secure with the clips.

# 2

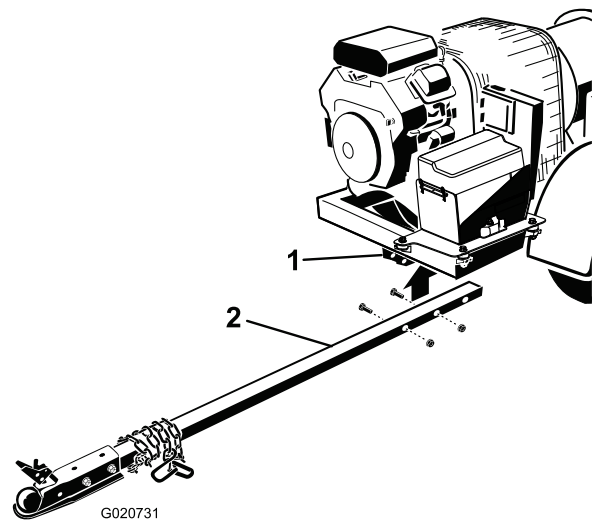
## Mounting the Hitch to the Machine

Parts needed for this procedure:

1	Machine assembly
1	Hitch
2	Bolt (3/8 x 3 inches)
2	Flange nut (3/8 inch)

## Procedure

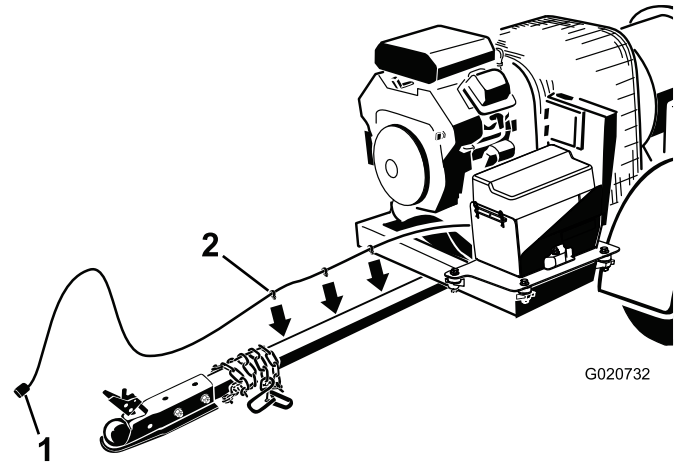
1. Position the machine on a flat, level surface.
2. Insert the hitch tube into the frame brackets (Figure 4). Secure the tube to the frame with 2 bolts (3/8 x 3 inches) and flange nuts (3/8 inch).



**Figure 4**

1. Frame brackets
2. Hitch tube

3. Route the wire harness along the right side of the hitch tube (Figure 5).



**Figure 5**

1. Wire harness
2. Harness clips

4. Plug the harness clips into the holes in the side of the hitch tube to secure it (Figure 5).
5. Store the harness connector in the hitch tube holster (Figure 6).



# 3

## Connecting the Machine to the Towing Vehicle

No Parts Required

### Procedure

This trailer uses a coupler that requires a 2-inch ball for the hitch.

1. Raise the trailer to a suitable height for your hitch.
2. Lift the coupler lever on the tongue while lowering the cover over the ball hitch (Figure 6).

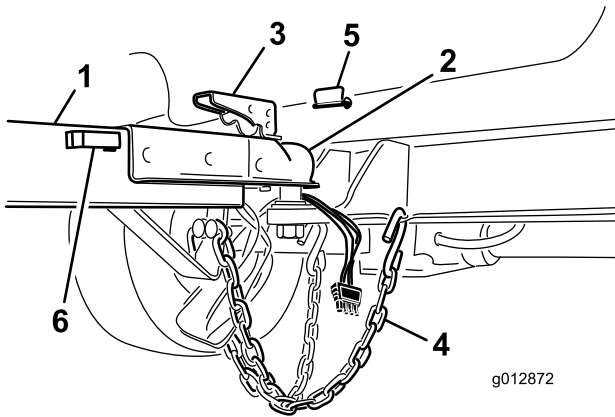


Figure 6

- |                                  |                       |
|----------------------------------|-----------------------|
| 1. Tongue                        | 4. Safety chains      |
| 2. Ball socket                   | 5. Locking pin        |
| 3. Coupler lever—locked position | 6. Hitch tube holster |

3. Close the coupler lever making sure it is securely locked.
4. Install the locking pin to lock the coupler lever (Figure 6).
5. Cross the safety chains and attach them to the holes on the hitch (Figure 6).
6. Plug the machine wire-harness connector to the towing vehicle connector. Ensure that the brake lights illuminate properly with the brake pedal applied and the taillights flash when the turning signals are use.

# 4

## Assembling the Handheld Remote

Parts needed for this procedure:

1	Handheld remote
4	AAA batteries
6	Small screws

### Procedure

1. Remove the rubber bands securing the remote halves together, and remove the back cover.
2. Plug each battery into a terminal cradle, observing proper polarity (Figure 7).

**Note:** If you install the batteries improperly, the remote will not be damaged, but it will fail to operate. The cradle is embossed with polarity markings for each terminal.

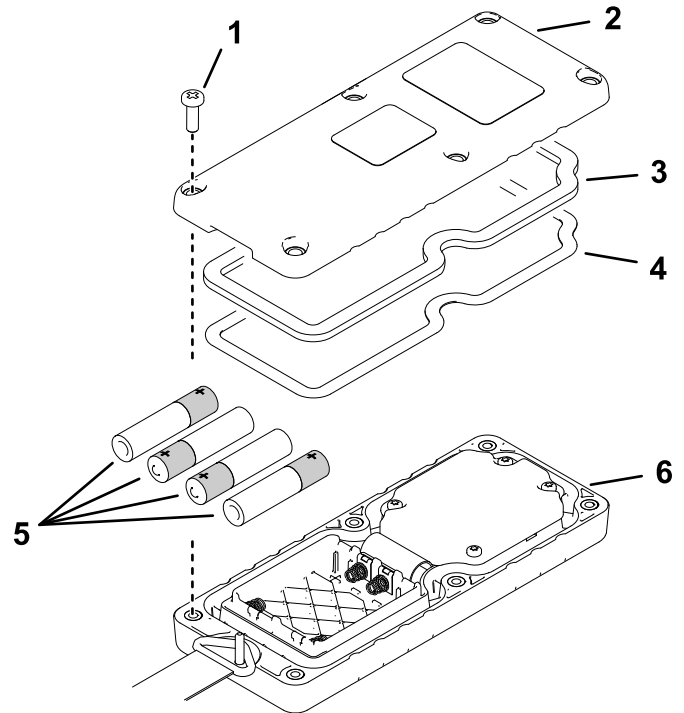


Figure 7

- |          |                    |
|----------|--------------------|
| 1. Screw | 4. Steel gasket    |
| 2. Cover | 5. Batteries       |
| 3. Seal  | 6. Handheld remote |

3. Ensure that the steel gasket and rubber seal are seated in the channel in the remote and set the back cover in place (Figure 7).

- Secure the cover with 6 screws (Figure 7) and torque them to 1.5 to 1.7 N·m (13 to 15 in-lb).

# Product Overview

## Controls

### Engine Stop

Press the ENGINE STOP button to shut off the engine (Figure 8).

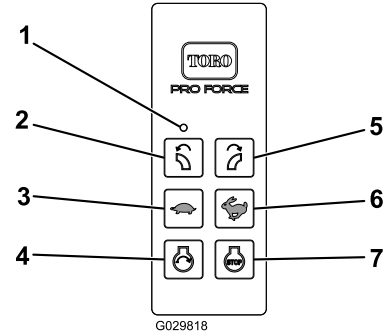


Figure 8

g029818

- |                          |                          |
|--------------------------|--------------------------|
| 1. LED light             | 5. Rotate right          |
| 2. Rotate left           | 6. Increase engine speed |
| 3. Decrease engine speed | 7. Engine stop           |
| 4. Engine start          |                          |

### Engine Start

After completing the starting sequence, press the ENGINE START button to start the engine (Figure 8). Refer to [Starting the Engine \(page 16\)](#) for the starting sequence.

### Blower Nozzle Direction

Press the right or left button to rotate the blower nozzle to the desired direction (Figure 8).

### Engine Speed

Press the INCREASE ENGINE SPEED (rabbit) or DECREASE ENGINE SPEED (turtle) button to increase or decrease the speed of the engine (Figure 8). Pressing the INCREASE ENGINE SPEED and DECREASE ENGINE SPEED buttons at the same time returns the engine to idle.

### Ignition Switch

The ignition switch (Figure 9), which is used to start and shut off the engine, has three positions: OFF, RUN and START. Rotate the key clockwise to START to engage the starter motor. Release the key when the engine starts. The key moves automatically to the RUN position. To shut off the engine, rotate the key counterclockwise to the OFF position.

## Choke Control

To start a cold engine, move the choke control lever (Figure 9) to the ON position.

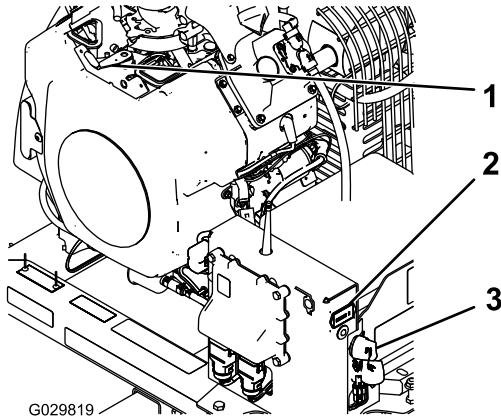


Figure 9

1. Choke control
2. Hour meter
3. Ignition switch

## Hour Meter

The hour meter (Figure 9) indicates the total hours of machine operation.

## Diagnostic Light

The diagnostic light (Figure 10) is located below the hour meter and indicates machine fault codes. After you turn the key to the RUN position, the diagnostic light will illuminate for 5 seconds, turn off for 5 seconds, and then begin flashing 3 times a second until you push a button on the handheld remote. If the light turns on for 5 seconds and then starts blinking 10 times a second (with or without a 5 second pause) there is a fault with the machine; refer to [Troubleshooting \(page 33\)](#).

**Note:** If you have a button pressed on the handheld remote when you start the machine, the light will not flash 3 times a second after it turns off for 5 seconds.

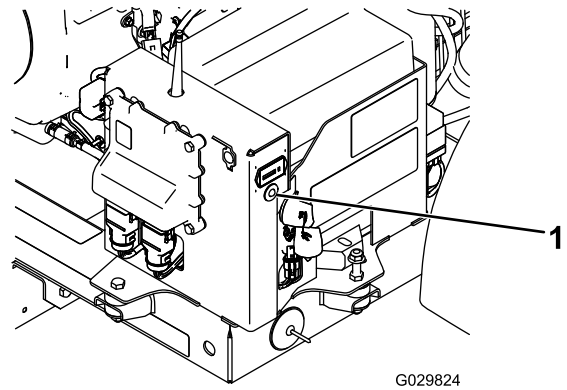


Figure 10

1. Diagnostic light

## Specifications

### Radio Specifications

Frequency	2.4 GHz
Max output power	19.59 dBm

## 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](http://www.Toro.com) 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

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

## *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.
  - Always shut off the engine, remove the key, wait for all moving parts to stop, and allow the machine to cool before adjusting, repairing, cleaning, or storing the machine. Know how to stop the machine and shut off the engine quickly.
  - Keep all guards, safety devices, and decals in place. Repair or replace all safety devices and replace all illegible or missing decals. Do not operate the machine unless they are present and functioning properly.
  - Ensure that the traction unit is suitable for use with an implement of this weight by checking with the traction unit supplier or manufacturer.
  - Do not modify this equipment in any manner.
- Remove the equipment from the truck or trailer and refuel it while it is on the ground. If this is not possible, then refuel from a portable container rather than a fuel-dispenser nozzle.
  - Do not operate the machine without the entire exhaust system in place and in proper working condition.
  - Keep the fuel-dispenser nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
  - If you spill fuel on your clothing, change your clothing immediately. Wipe up any fuel that spills.
  - Never overfill the fuel tank. Replace the fuel cap and tighten it securely.
  - Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of fuel.
  - Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 6 to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck. This empty space in the tank allows fuel to expand.
    - Avoid prolonged breathing of vapors.
    - Keep your face away from the nozzle and gas tank opening.
    - Avoid contact with skin; wash off spills with soap and water.

#### 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.
- Do not fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place

# Attaching the Trailer

This trailer uses a coupler that requires a 2-inch ball for the hitch.

1. Raise the trailer to a suitable height for your hitch.
2. Lift the coupler lever on the tongue while lowering the cover over the ball hitch (Figure 11).

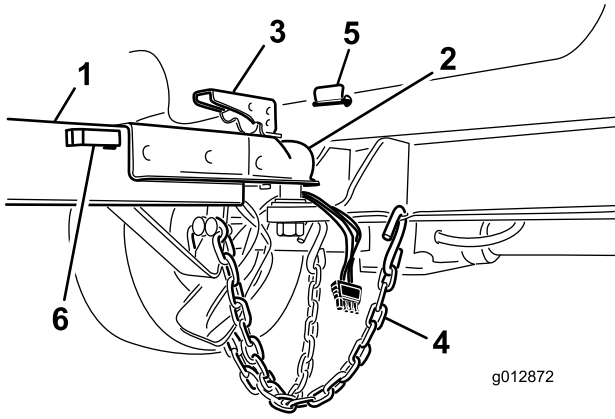


Figure 11

- |                                  |                       |
|----------------------------------|-----------------------|
| 1. Tongue                        | 4. Auxiliary chains   |
| 2. Ball socket                   | 5. Locking pin        |
| 3. Coupler lever—locked position | 6. Hitch tube holster |

3. Close the coupler lever and ensure that it is securely locked.
4. Install the locking pin to lock the coupler lever.
5. Cross the safety chains and attach them to the holes on the hitch. Connect the machine-wire-harness connector to the connector on the towing vehicle.

# Adding Fuel

- **Fuel tank capacity:** 18.9 L (5 US gallons)
- **Recommended Fuel:**
  - For best results, use only clean, fresh (less than 30 days old), unleaded gasoline with an octane rating of 87 or higher ((R+M)/2 rating method).
  - Ethanol: Gasoline with up to 10% ethanol (gasohol) or 15% MTBE (methyl tertiary butyl ether) by volume is acceptable. Ethanol and MTBE are not the same. Gasoline with 15% ethanol (E15) by volume is not approved for use. Never use gasoline that contains more than 10% ethanol by volume, such as E15 (contains 15% ethanol), E20 (contains 20% ethanol), or E85 (contains up to 85% ethanol). Using unapproved gasoline may cause performance problems and/or engine damage which may not be covered under warranty.
  - Do not use fuel containing methanol.
  - Do not store fuel either in the fuel tank or fuel containers over the winter unless a fuel stabilizer is used.
  - Do not add oil to fuel.

**Important:** Do not use fuel additives other than a fuel stabilizer/conditioner. Do not use fuel stabilizers with an alcohol base, such as ethanol, methanol, or isopropanol.

## Filling the Fuel Tank

1. Shut off the engine.
2. Clean the area around the fuel tank cap and remove the cap (Figure 12).

**Note:** The fuel tank cap contains a gauge which shows the fuel level.

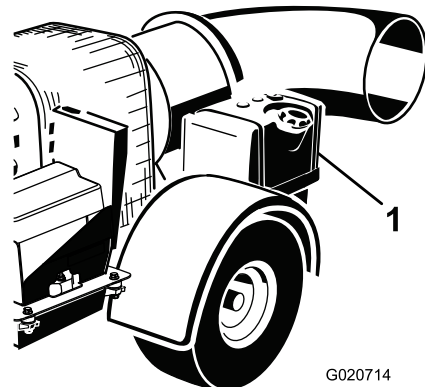


Figure 12

1. Fuel tank

3. Add fuel to the fuel tank, until the level is 6 mm to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck.

**Note:** This space in the tank allows fuel to expand. Do not fill the fuel tanks completely full.

4. Install the fuel-tank cap securely.
5. Wipe up any spilled fuel.

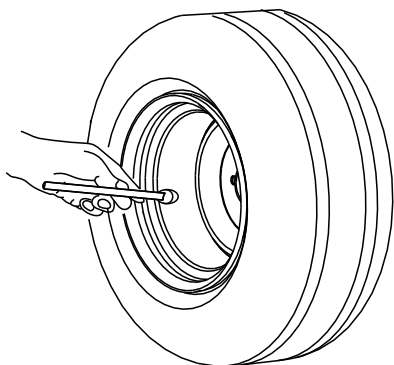
## Checking the Engine-Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to [Checking the Engine-Oil Level \(page 24\)](#).

## Checking the Tire Pressure

Check the tire pressure ([Figure 13](#)).

The correct tire pressure is 241 kPa (35 psi).



G001055

g001055

**Figure 13**

## Checking the Torque of the Wheel Lug Nuts

**Service Interval:** After the first 10 hours

Check the torque of the wheel lug nuts initially and after the first 10 hours of operation.

### **⚠ WARNING**

**Failure to maintain the proper torque could result in failure or loss of the wheel, and could result in personal injury.**

**Torque the wheel lug nuts to 95 to 122 N·m (70 to 90 ft-lb).**

## *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 pants; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear loose jewelry or loose clothing.
- 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.
- Discharged air has considerable force and could cause injury or loss of footing. Stay away from the blower nozzle when the machine is operating.
- Keep all bystanders away; shut off the machine when bystanders enter the area, do not direct discharge toward them.
- Do not operate the machine when it is not connected to a towing vehicle.
- Do not run the engine in or direct the blower nozzle into a confined area without adequate ventilation. Engine exhaust contains carbon monoxide, an odorless gas that is fatal if inhaled.
- Do not carry passengers on the machine and keep bystanders and pets away from the machine during operation.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- 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.
- Never leave a running machine unattended.
- When transporting the machine on public roads, follow all traffic regulations and use any additional accessories that may be required by law, such as lights, turn signals, slow-moving vehicle (SMV) signs, and others as required.
- If the machine ever vibrates abnormally, stop the machine immediately, shut off the engine, remove the key, wait for all moving parts to stop, and inspect for damage. Repair all damage to the machine before resuming operation.

- Reduce speed when operating on rough, uneven terrain, and near curbs, holes, and other sudden changes in terrain.
- To avoid causing the machine to tip over, be careful when turning and avoid unsafe maneuvers.

## 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.
- Review the traction unit specifications to ensure that you do not exceed its slope capabilities.
- 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.

## Remote Control Operation

- Failure to abide by the safety precautions may result in equipment failure, loss of authority to operate the equipment, and personal injury.
- Use and maintain the proper wiring. Follow the equipment manufacturer instructions. Improper, loose, and frayed wiring can cause system failure, equipment damage, and intermittent operation.
- Changes or modifications made to the machine that are not expressly approved by the manufacturer will void the warranty.
- The machine owner and operators must abide by all applicable federal, state, and local laws concerning machine installation and operation. Failure to comply could result in penalties and could void the user's authority to operate the machine.
- Ensure that the machinery and surrounding area is clear before operating. Do not activate the remote control system until you are certain that it is safe to do so.
- You can remove the power from the RF2CAN and TEC2403 controllers by removing the source power from the circuit.
- Use a damp cloth to keep the remote clean. Remove mud, concrete, and dirt after operation to prevent obstructing or clogging the buttons, levers, wiring, and switches.
- Do not allow liquid to enter the remote control or base-unit enclosures. Do not use high-pressure equipment to clean the remote control or base unit.
- Disconnect the RF2CAN and TEC2403 controllers before welding on the machine. Failure to disconnect the controllers may result in destruction of or damage to the controllers.
- Operate and store the machine only within the specified operation and storage temperatures.

# Starting the Engine

## ⚠ WARNING

Rotating parts can cause serious personal injury.

- Keep your hands, feet, hair, and clothing away from all moving parts of the machine to prevent injury.
- Never operate the machine with covers, shrouds, or guards removed.

Before you start the engine, you must attach the machine to the towing vehicle.

1. Move the choke control to the ON position before starting a cold engine.

**Note:** A warm or hot engine may not require choking. After the engine starts, move the choke control to the OFF position.

2. Rotate the engine ignition key to the START position (Figure 14).

**Note:** If the key was left in the RUN position for an extended time, move the key to the OFF position before proceeding to the starting procedure.

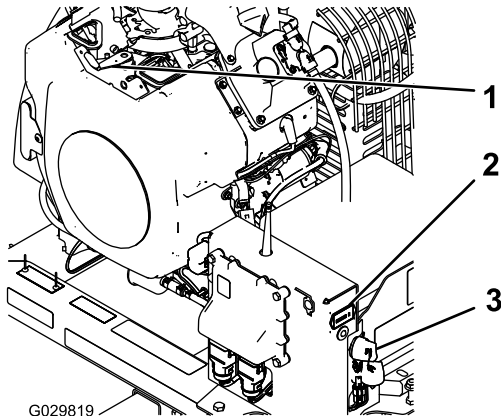


Figure 14

1. Choke control
2. Hour meter
3. Ignition switch

3. Engine Start only becomes energized by pressing the Start button while the Engine Start Enable Condition is active. The Engine Start Enable Condition becomes active only when the following Engine Start Enable Sequence has been performed (Figure 15):

- Press the START button.
- Then, press the rotate left button.
- Then, press the rotate right button.
- Then, press and hold the START button until the engine starts.

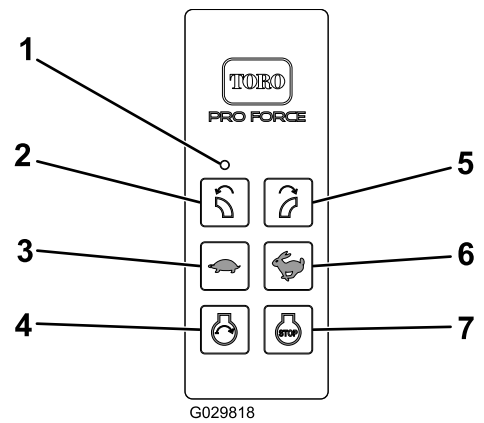


Figure 15

1. LED light
2. Rotate left
3. Decrease engine speed
4. Engine start
5. Rotate right
6. Increase engine speed
7. Engine stop

**Note:** There is a time limit of 3 seconds between each button press. If the next button in the sequence is not pressed within 3 seconds of the last button press, the sequence is aborted and must be started from the beginning.

If any button other than the next appropriate button in the sequence is pressed the sequence is aborted.

**Note:** If the START button is not pressed within 10 seconds after pressing the ROTATE RIGHT button, or any other button is pressed in this period, the Engine Start Enable Condition expires.

**Note:** Engine Start Enable Condition persists for 10 seconds after pressing the ROTATE RIGHT button.

**Note:** Pressing the START button does not extend this time period—the maximum length of time that the Start Relay Control can be active is 10 seconds from pressing the ROTATE RIGHT button.

After the Engine Start Enable Condition expires, you must perform the Engine Start Enable Sequence again in order to energize the Start Relay Control with the START button. This cannot be performed for 10 seconds after the START button is released.

**Note:** If the sequence is aborted or the Engine Start Enable Condition expires, normal functionality of the ROTATE RIGHT and ROTATE LEFT buttons return to control the Chute Motor.

**Important:** Do not engage starter for more than 10 seconds at a time. If engine fails to start allow 10 second cool-down period



**between attempts. Failure to follow these instructions can burn out starter motor.**

4. After the engine starts, move the choke control to the OFF position. If the engine stalls or hesitates, move the choke back to the ON position for a few seconds, then set the engine speed to the desired setting. Repeat this as required.

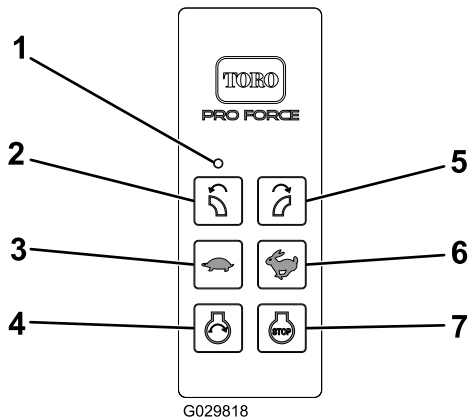
- When in the time-out mode the engine does not run (or quits running) and the remote control does not control any function.
- To wake controller in time-out mode, turn the key switch to the OFF position and then turn the key switch to the RUN position.
- To avoid controller time-out during operation, use the remote control to rotate the chute or change the engine speed at least every 2.5 hours.

## Shutting Off the Engine

1. Decrease the engine speed to 3/4 throttle.
2. Press the STOP button on the remote control.
3. If leaving the machine, rotate the key to the OFF position and remove it from the ignition switch (Figure 14).

## Using the Remote Control

The remote control activates (powers up) when any push button is pressed. To conserve battery power, the remote control stays active for approximately 3 seconds before automatically shutting down unless there is button activity within the 3 second limit. When the unit times out and powers down, all remote control LED activity stops (Figure 16). Pressing any button reactivates the remote control

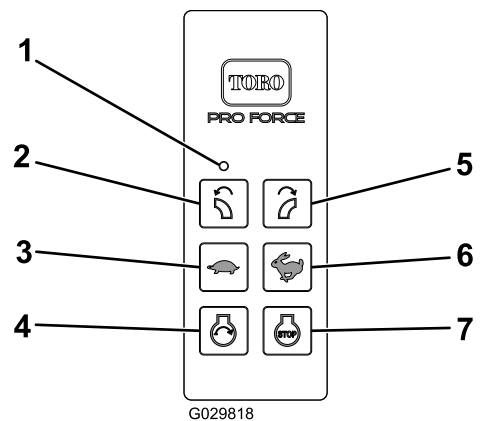


**Figure 16**

- |                          |                          |
|--------------------------|--------------------------|
| 1. LED light             | 5. Rotate right          |
| 2. Rotate left           | 6. Increase engine speed |
| 3. Decrease engine speed | 7. Engine stop           |
| 4. Engine start          |                          |

## Adjusting the Blower Nozzle Direction

You can change the direction of the blower nozzle from right to left by pressing the appropriate button on the remote control (Figure 17).



**Figure 17**

- |                          |                          |
|--------------------------|--------------------------|
| 1. LED light             | 5. Rotate right          |
| 2. Rotate left           | 6. Increase engine speed |
| 3. Decrease engine speed | 7. Engine stop           |
| 4. Engine start          |                          |

The RF2CAN and TEC2403 controllers revert to Power Save Mode if the base unit is inactive for more than 2.5 hours without communication from the remote control. Power Save Mode is a low current state of the machine. The machine does not communicate with the remote control, does not activate outputs, and does not function as normal.

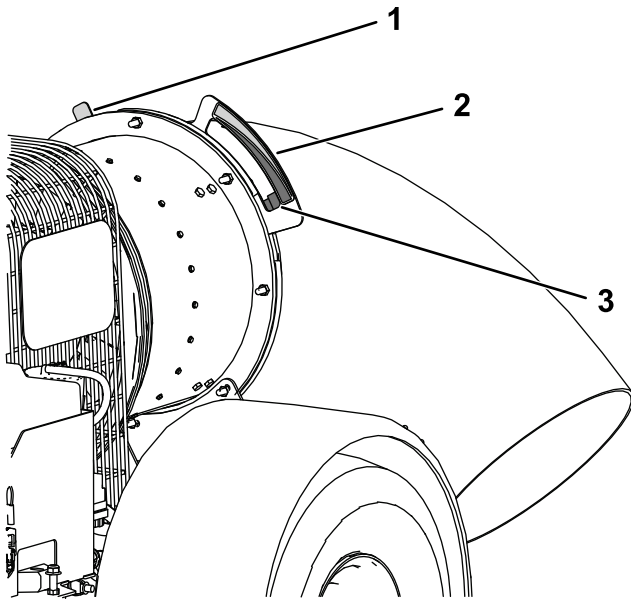
# Using the Chute Position Indicator

When the green indicator tab is visible in the rotation gauge window, the chute is positioned on the left side. When the red indicator tab is visible in the window, the chute is positioned on the right side (Figure 18).

The decal on the rotation gauge indicates the position of the chute relative to the ground.

When an indicator tab is in the same colored region on the decal, that indicates that the chute opening is positioned more parallel to the ground.

When an indicator tab is in the different colored region on the decal, that indicates that the chute opening is positioned more toward the ground.



g314786

**Figure 18**

Left side shown, some parts hidden for clarity.

1. Red indicator tab
2. Rotation gauge and decal
3. Green indicator tab (in gauge window when the chute is toward the left side)

# Operating Tips

- Practice operating the blower. Blow the same direction the wind is blowing to prevent material from blowing back into the cleared area.
- Run the engine at full throttle when operating.
- Adjust the blower nozzle opening so it blows under the debris.
- Use caution when blowing around newly planted sod as the force of the air could disrupt the grass.

**Important:** Raise the blower nozzle before transporting the blower. If you leave the blower nozzle in the down position during transport, it may contact the ground and become damaged.

# After Operation

## After Operation Safety

### General Safety

- Park the machine on a firm, level surface; shut off the engine, remove the key, wait for all moving parts to stop, and allow the machine to cool before adjusting, repairing, cleaning, or storing the machine.
- Only disconnect the machine from the traction unit while on a level surface.
- When disconnecting the machine, always chock the wheels to prevent movement.
- 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.
- Keep all parts of the machine in good working condition and all hardware tightened.
- Replace all worn, damaged, or missing decals.

### Towing Safety

- Before towing the machine, check with your local county or state safety towing regulations, in addition to meeting Department of Transportation (DOT) Safety Towing Regulations.
- Always shut off the engine and point the blower nozzle up before transporting.
- Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
- Always inspect the hitch and coupling for wear. Do not tow the machine with damaged or missing hitches, couplings, or chains.
- Check the tire air pressure on the machine. The tires should be inflated to 241 kpa (35 psi) cold. Also, check the tire-tread wear on the machine.
- Always properly attach the machine safety chains to the towing vehicle.
- Do not tow the machine faster than 88 km/h (55 mph). Recommended off-road towing is not to exceed 24 km/h (15 mph).
- Avoid sudden stops and starts. This can cause skidding or jack knifing. Smooth, gradual starts and stops will improve towing.
- Avoid sharp turns to prevent rolling.
- Chock the wheels to while parked to prevent movement.

## Hauling the Machine

- Use care when loading or unloading the machine into a trailer or truck.
- Use full-width ramps for loading machine into trailer or truck.
- Tie the machine down securely using straps, chains, cable, or ropes. Both front and rear straps should be directed down and outward from the machine.

## Connecting the Machine to the Towing Vehicle

- Check the towing-vehicle hitch ball and machine coupler for signs of wear or damage. Replace any parts that are worn or damaged before towing the machine.
- The machine coupler is 5.1 cm (2 inches). The towing vehicle ball hitch diameter must be. Use of different ball diameter will create an extremely dangerous condition which can result in separation of the coupler and ball or ball failure.
- After the tow bar has been connected to the machine, secure the machine coupler to the towing-vehicle hitch and ensure that the lock lever is in the locked position.

### **⚠ CAUTION**

**The safety chain is intended to prevent complete separation of the machine from the towing vehicle in the event of a tow bar failure.**

**If the safety chain is removed from the machine, do not tow the machine.**

# Maintenance

## ⚠ CAUTION

Failure to properly maintain the machine could result in premature failure of machine systems causing possible harm to you or bystanders.

Keep the machine well maintained and in good working order as indicated in these instructions.

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

**Note:** Download a free copy of the electrical or hydraulic schematic by visiting [www.Toro.com](http://www.Toro.com) and searching for your machine from the Manuals link on the home page.

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

## ⚠ WARNING

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

Remove the key from the ignition and disconnect the wires from the spark plugs before you do any maintenance. Set the wires aside so that they do not accidentally contact the spark plugs.

## Maintenance Safety

- Before cleaning, servicing, or adjusting the machine, do the following:
  - Park the machine on a level surface.
  - Shut off the engine, remove the key, disconnect the spark-plug wire, and wait for all moving parts to stop.
  - Chock the wheels.
  - Remove the machine from the traction unit.
  - Allow machine components to cool before performing maintenance.
- Perform only those maintenance instructions described in this manual. If major repairs are ever needed or you need assistance, contact an authorized Toro distributor.
- Support the machine with blocks or jack stands when working beneath it.
- Ensure that all guards are installed securely after maintaining or adjusting the machine.
- Do not allow untrained personnel to service the machine.
- Carefully release pressure from components with stored energy.
- Do not charge the batteries while servicing the machine.
- To reduce the potential fire hazard, keep the engine area free of excessive grease, grass, leaves, and accumulation of dirt.
- If possible, do not perform maintenance while the engine is running. Keep away from moving parts.
- If you must run the engine to perform a maintenance adjustment, keep your hands, feet, clothing, and all other parts of your body away from the engine and any moving parts. Keep bystanders away from the machine.
- Clean up oil and fuel spills.
- Keep all parts in good working condition and all fasteners tightened. Replace all damaged or missing decals.
- Do not interfere with the intended function of a safety device or reduce the protection provided by a safety device. Check their proper operation regularly.
- Do not overspeed the engine by changing the governor settings. To ensure safety and accuracy, have an authorized Toro distributor to check the maximum engine speed with a tachometer.
- If major repairs are ever necessary or assistance is required, contact an authorized Toro distributor.
- Altering this machine in any manner may affect the operation of the machine, performance, durability, or its use may result in injury or death. Such use could void the product warranty of The Toro® Company.

# Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 8 hours	<ul style="list-style-type: none"> <li>• Check the condition and the tension of the belt.</li> </ul>
After the first 10 hours	<ul style="list-style-type: none"> <li>• Check the torque of the wheel lug nuts.</li> </ul>
Before each use or daily	<ul style="list-style-type: none"> <li>• Check the engine-oil level.</li> <li>• Clean the engine screen and the oil cooler.</li> <li>• Check the blower nozzle clamp and guides.</li> </ul>
Every 50 hours	<ul style="list-style-type: none"> <li>• Check the condition and the tension of the belt.</li> </ul>
Every 100 hours	<ul style="list-style-type: none"> <li>• Replace the air filter element (more frequently if conditions are dusty or sandy).</li> <li>• Change the engine oil.</li> <li>• Check the condition of the tires.</li> </ul>
Every 200 hours	<ul style="list-style-type: none"> <li>• Replace the carbon-canister air filter (Service more frequently if conditions are extremely dusty or sandy).</li> <li>• Replace the carbon-canister purge-line filter.</li> <li>• Replace the oil filter.</li> <li>• Check the spark plugs.</li> </ul>
Every 500 hours	<ul style="list-style-type: none"> <li>• Replace the fuel filter.</li> </ul>

# 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 instrument operation							
Check the fuel level.							
Check the engine-oil level.							
Clean the engine air cooling fins.							
Inspect the air filter pre-cleaner.							
Check for any unusual engine noises.							
Check for fluid leaks.							
Check the tire pressure.							
Check nozzle mounting clamp torque.							
Touch up damaged paint.							

Notation for Areas of Concern		
Inspection performed by:		
Item	Date	Information

## Engine Maintenance

**Note:** Replace a damaged air-cleaner cover or housing.

## Engine Safety

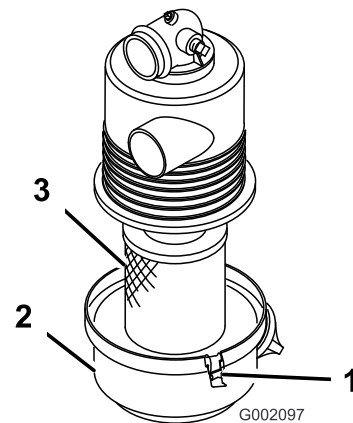
- Shut off the engine before checking the oil or adding oil to the crankcase.
- Do not change the governor speed or overspeed the engine.

## Servicing the Air Cleaner

**Service Interval:** Every 100 hours—Replace the air filter element (more frequently if conditions are dusty or sandy).

## Checking the Air Filter

1. Check the air cleaner body for damage, which could possibly cause an air leak. Ensure that the cover seals around the air-cleaner body (Figure 19).



**Figure 19**

1. Latch
2. Air-filter cover
3. Air-filter element

2. Release the latches securing the air-filter cover to the air-filter housing (Figure 19).
3. Separate the air-filter cover from the air-filter housing, and clean the inside of the cover (Figure 19).
4. Gently slide the air-filter element out of the filter housing.

**Note:** To reduce the amount of dust dislodged, avoid knocking the filter against the air-filter housing.

5. Inspect the air-filter element.
  - If the air-filter element is clean, install the filter element, refer to [Installing the Air Filter \(page 23\)](#).
  - If the air-filter element is damaged, replace the filter element; refer to [Replacing the Air Filter \(page 23\)](#).

## Replacing the Air Filter

1. Remove the air-filter element; refer to [Servicing the Air Cleaner \(page 22\)](#).

2. Inspect the new filter for shipping damage.

**Note:** Check the sealing end of the filter.

**Important:** Do not install a damaged filter.

3. Install the new air filter; refer to [Installing the Air Filter \(page 23\)](#).

## Installing the Air Filter

**Important:** To prevent engine damage, always operate the engine with the complete air cleaner assembly installed.

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

**Note:** Cleaning of the used air-filter element is not recommended due to the possibility of damage to the filter media.

1. Clean the dirt ejection port located on the air-filter cover.
2. Remove the rubber outlet valve from the cover, clean the cavity, and replace the outlet valve.
3. Insert the air-filter element into air-filter housing (Figure 19).

**Note:** Ensure that the filter is sealed properly by applying pressure to the outer rim of the filter when installing it. Do not press on the flexible center of the filter.

4. Align the air-cleaner cover with the air-cleaner housing (Figure 19).
5. Secure the cover to the housing with the latches (Figure 19).

# Servicing the Carbon Canister

## Replacing the Carbon Canister Air Filter

**Service Interval:** Every 200 hours

1. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
2. Remove and discard the carbon canister air filter, but retain the hoses (Figure 20).

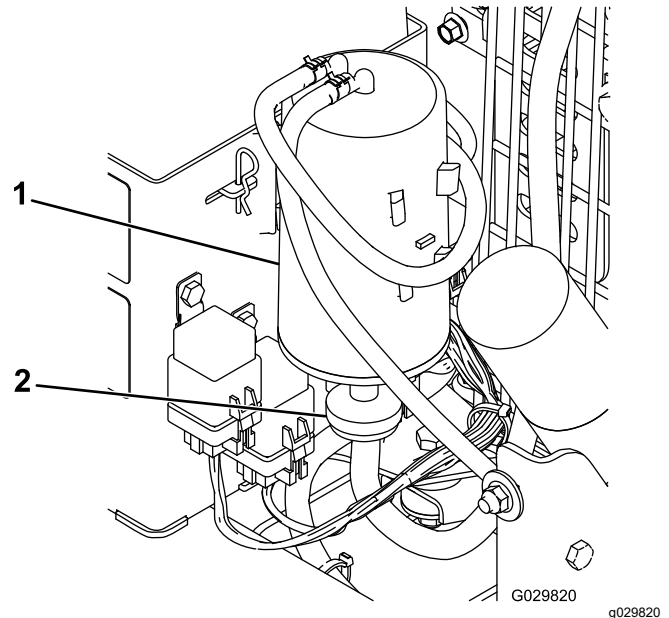


Figure 20

1. Carbon canister
2. Carbon canister air filter

3. Install the new air filter and the previously removed hoses.

## Replacing the Carbon Canister Purge-line Filter

**Service Interval:** Every 200 hours

**Note:** Check the purge-line filter occasionally for dirt. If the filter appears to be dirty, replace it.

1. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
2. Move the spring-type hose clamps on both sides of the carbon canister purge-line filter away from the filter (Figure 21).

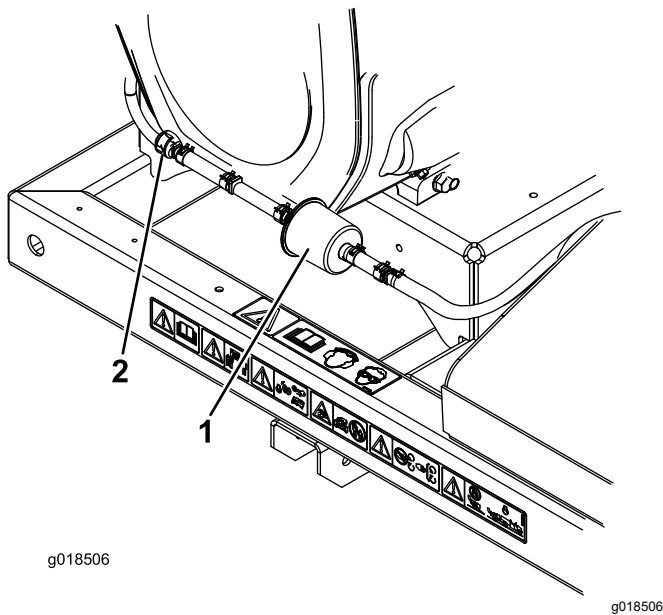


Figure 21

1. Carbon-canister purge-line filter
2. Check valve

3. Remove and discard the carbon filter (Figure 21).
4. Install a new filter into the hose with the arrow on the filter pointing toward the check valve and secure it with the hose clamps (Figure 21).

## Servicing the Engine Oil

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

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

Crankcase Capacity: with filter, 2 L (67 fl oz)

Viscosity: See the table below.

USE THESE SAE VISCOSITY OILS

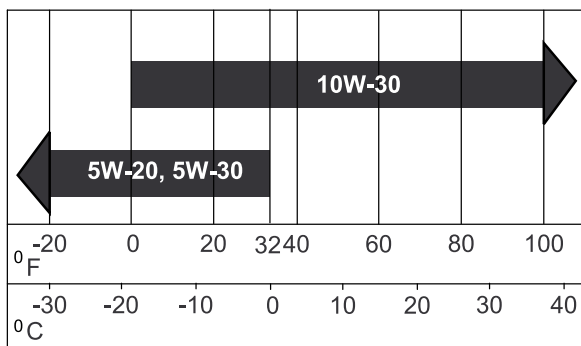


Figure 22

## Checking the Engine-Oil Level

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

**Note:** Check the engine oil before the engine has been started for the day. If you have run the engine, 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.** If the oil level is between the FULL and ADD marks, no oil addition is required.

1. Park the machine on a level surface.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean around the oil dipstick (Figure 23) so that dirt cannot fall into the hole and damage the engine.

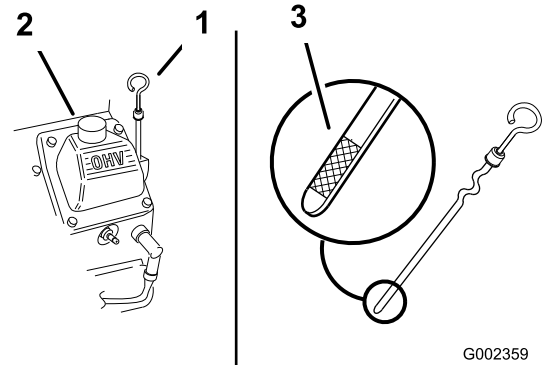


Figure 23

1. Oil dipstick
2. Filler hole
3. Oil-level range

4. Remove the oil dipstick and wipe the end clean (Figure 23).
5. Slide the oil dipstick fully into the filler tube (Figure 23).
6. Pull the dipstick out and look at the metal end. If the oil level is low, slowly pour only enough oil into the filler tube to raise the level to the FULL mark.

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

## Changing the Oil

**Service Interval:** Every 100 hours

1. Start the engine and let it run for 5 minutes.

**Note:** A running engine will warm the oil, allowing it to easily drain from the engine.

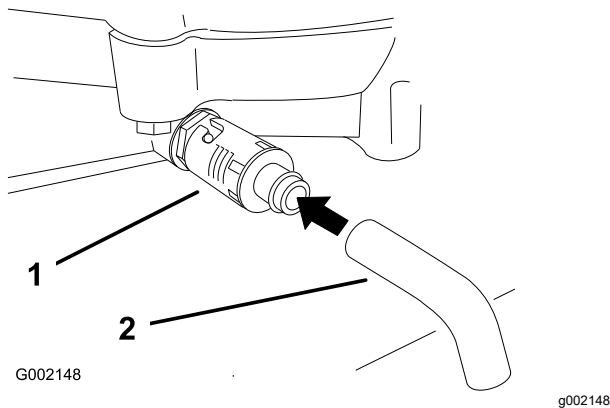


- Park the machine so that the drain side is slightly lower than the opposite side to ensure the oil drains completely.
- Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
- Place a pan below the drain. Rotate the oil drain valve to allow the oil to drain (Figure 24).

**Note:** A hose may be inserted onto the drain valve to direct the oil flow. The hose is not included with the machine.

- When the oil has drained completely, close the drain valve.

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



**Figure 24**

- Oil drain valve
- Oil drain hose (**Not included**)

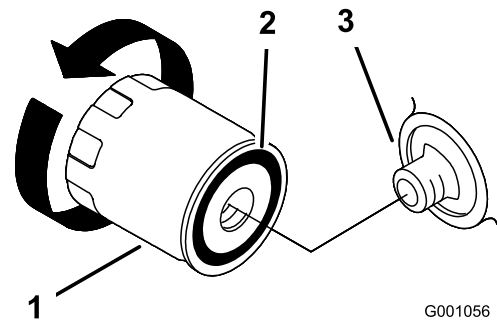
- Slowly pour approximately 80% of the specified oil into the filler hole (Figure 23).
- Check the oil level; refer to [Checking the Engine-Oil Level \(page 14\)](#).

## Changing the Oil Filter

**Service Interval:** Every 200 hours

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

- Drain the oil from the engine; refer to [Changing the Oil \(page 24\)](#).
- Remove the old filter and wipe the filter-gasket surface (Figure 25).



**Figure 25**

- Oil filter
- Gasket
- Adapter

- Apply a thin coat of new oil to the rubber gasket on the replacement filter (Figure 25).
- Install the replacement oil filter to the filter adapter, turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 2/3 to 1 turn (Figure 25).
- Fill the crankcase with the proper type of new oil; refer to [Servicing the Engine Oil \(page 24\)](#).
- Run the engine for about 3 minutes, shut off the engine, and check for oil leaks around the oil filter.
- Check the engine oil level and add oil if needed; refer to [Checking the Engine-Oil Level \(page 24\)](#).

## Servicing the Spark Plugs

Ensure that the air gap between the center and side electrodes is correct before installing the spark plugs. Use a spark plug wrench for removing and installing the spark plugs and a gapping tool/feeler gauge to check and adjust the air gap. Install new spark plugs if necessary.

Type: Champion® RC12YC, Champion® Platinum 3071 or equivalent

Air Gap: 0.76 mm (0.030 inch)

## Checking the Spark Plugs

**Service Interval:** Every 200 hours

- Look at the center of the spark plugs (Figure 26). If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means that the air cleaner is dirty.

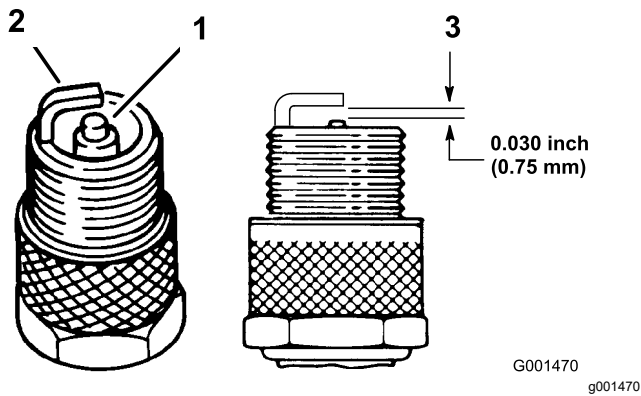


Figure 26

1. Center electrode insulator
2. Side electrode
3. Air gap—0.75 mm or 0.030 inch (not to scale)

**Important:** Always replace a spark plug when it has a black coating, worn electrodes, an oily film, or cracks.

2. Check the gap between the center and side electrodes (Figure 26). Bend the side electrode if the gap is not correct.

## Removing the Spark Plugs

1. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
2. Disconnect the spark-plug wires from the spark plugs (Figure 27).

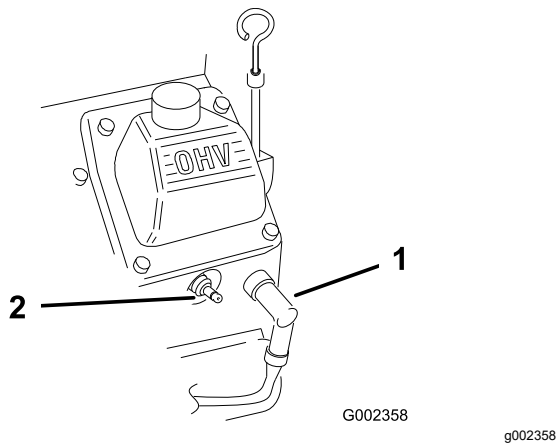


Figure 27

1. Spark-plug wire
2. Spark plug

3. Clean around the spark plugs to prevent dirt from falling into the engine and potentially causing damage.
4. Remove the spark plugs and the metal washers.

## Installing the Spark Plugs

1. Install the spark plugs and the metal washer. Ensure that the air gap is set correctly; refer to [Checking the Spark Plugs \(page 25\)](#).
2. Tighten the spark plugs to 24 to 30 N·m (18 to 22 ft·lb).
3. Connect the spark-plug wires to the spark plugs (Figure 27).

## Cleaning the Engine Screen and the Oil Cooler

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

Before each use, check and clean the engine screen and oil cooler. Remove any build up of grass, dirt or other debris from the oil cooler and engine screen (Figure 28).

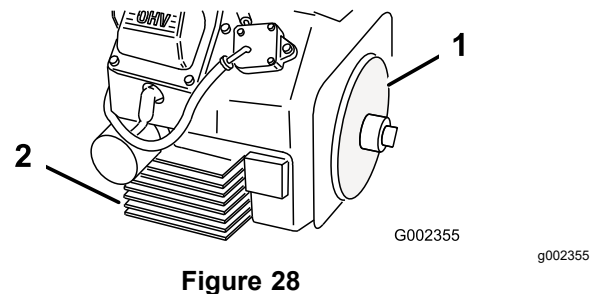


Figure 28

1. Engine screen
2. Oil cooler

# Fuel System Maintenance

## Replacing the Fuel Filter

Service Interval: Every 500 hours

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

1. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
2. Allow the machine to cool down.
3. Squeeze the ends of the hose clamps together and slide them away from the filter (Figure 29).

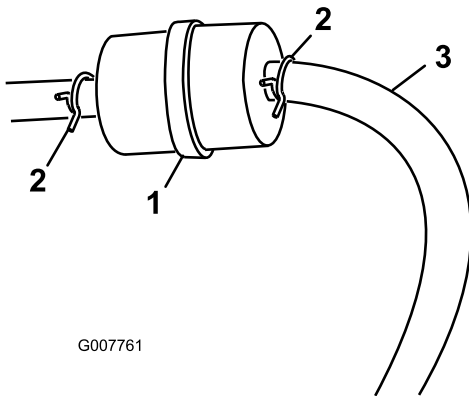


Figure 29

1. Fuel filter
2. Hose clamp
3. Fuel hose

4. Remove the filter from the fuel lines.
5. Install a new filter and move the hose clamps close to the filter (Figure 29).

## Servicing the Fuel Tank

### ⚠ DANGER

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

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

1. Park the machine on a level surface to ensure that the fuel tanks drain completely.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Loosen the hose clamp at the fuel filter and slide it up the fuel line away from the fuel filter (Figure 29).
4. Disconnect the fuel line from the fuel filter (Figure 29).

**Note:** Allow the fuel to drain into a fuel container or drain pan (Figure 29).

**Note:** This is the best time to install a new fuel filter, as the fuel tank is empty.

5. Install the fuel line onto the fuel filter. Slide the hose clamp close to the fuel filter to secure the fuel line (Figure 29).

# Electrical System Maintenance

**Important:** Before welding on the machine, disconnect the controller and the negative cable from the battery to prevent damage to the electrical system.

## 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.

## Replacing the Remote Batteries

The handheld remote is powered by 4 AAA batteries. When installing batteries, be sure to observe the proper polarity as marked on the inside of the compartment.

1. Remove the 6 screws from the back of the remote and remove the cover (Figure 30).

**Note:** If possible, leave the rubber seal and steel gasket in the channel when removing the cover and batteries.

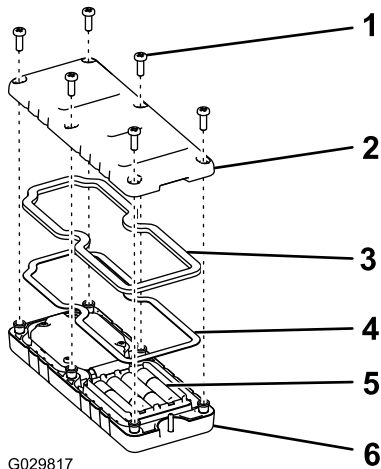


Figure 30

- |          |                    |
|----------|--------------------|
| 1. Screw | 4. Steel gasket    |
| 2. Cover | 5. Batteries       |
| 3. Seal  | 6. Handheld remote |

2. Remove the discharged batteries and properly dispose them in accordance with local regulations.
3. Plug each fresh battery into a terminal cradle. Observe the proper polarity.  
**Note:** If the batteries are improperly installed, the machine will not be damaged, but it will fail to operate.
4. If you accidentally removed the rubber seal and the steel gasket, replace them carefully into the channel in the handheld remote.
5. Replace the cover and secure it with the 6 screws removed previously (Figure 30) and torque them to 1.5 to 1.7 N·m (13 to 15 in-lb).

# Replacing the Fuses

## Engine

An in-line fuse (15A) is incorporated into the engine wiring harness (Figure 31).

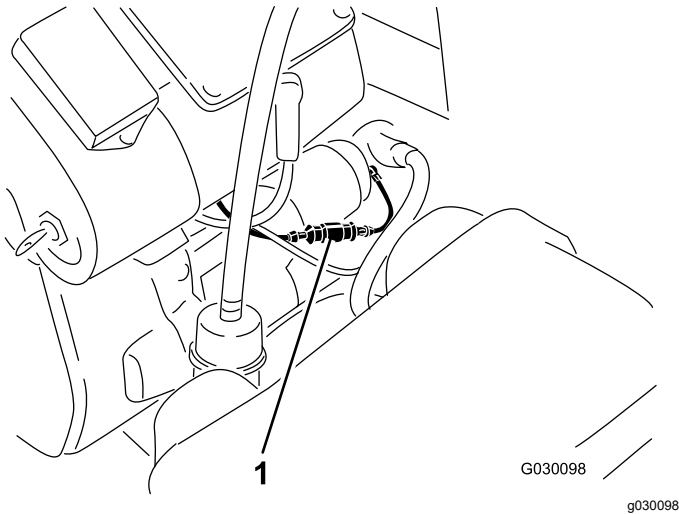


Figure 31

1. Fuse block

## Receiver

A fuse block is incorporated into the receiver wire harness. It is located behind the receiver on the right side of the control tower (Figure 32).

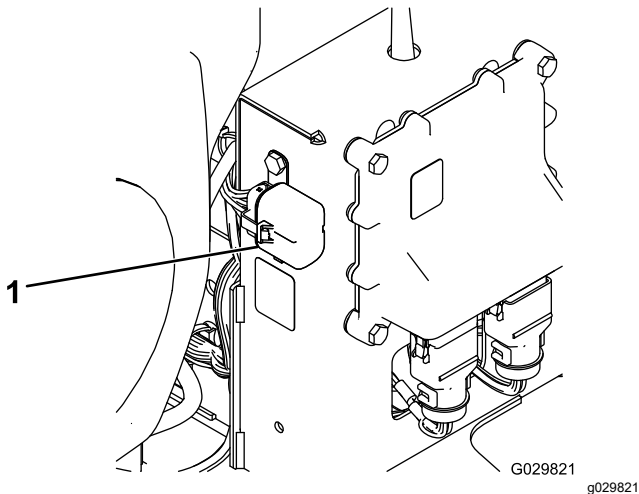


Figure 32

1. Fuse

# Drive System Maintenance

## Inspecting the Tires

**Service Interval:** Every 100 hours

Check the tire pressure frequently to ensure proper inflation (241 kPa (35 psi)). If the tires are not inflated to the correct pressure, the tires will wear prematurely.

Operating accidents can damage a tire or rim, so inspect the tire condition after an accident.

The DOT tire information is located on the side of each tire. This information gives load and speed ratings. Replacement tires should have the same or better ratings.

Figure 33 is an example of tire wear caused by under inflation.

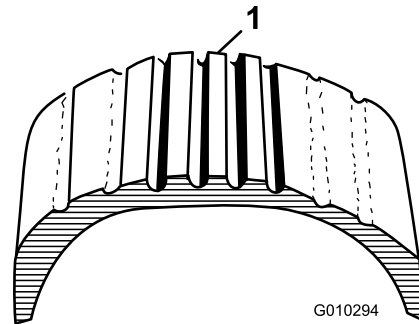


Figure 33

1. Example of tire wear caused by underinflation

Figure 34 is an example of tire wear caused by over inflation.

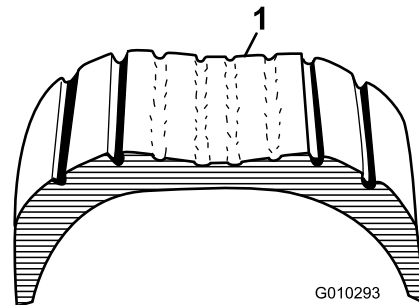


Figure 34

1. Example of tire wear caused by overinflation

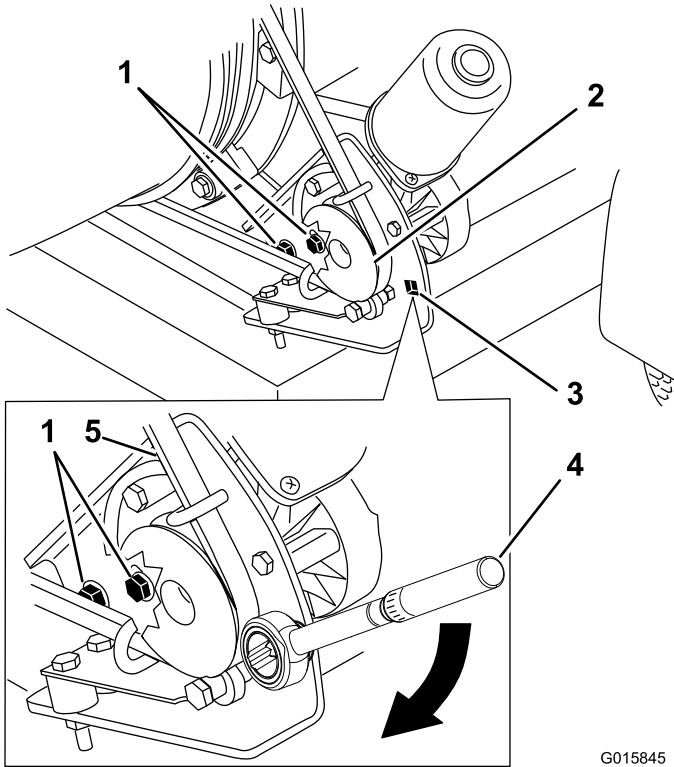
# Belt Maintenance

## Adjusting the Belt

**Service Interval:** After the first 8 hours  
Every 50 hours

If the belt slips when changing the direction of the blower nozzle, an adjustment to the belt is required.

1. Loosen the bolts securing the pulley mounting bracket to the blower frame (Figure 35).
2. Position a torque wrench into the pulley mounting bracket (Figure 35).
3. Pivot the pulley mounting bracket away from the blower nozzle until the torque wrench reads 23 to 26.0 N·m (200 to 230 in-lb) (Figure 35).
4. Tighten the mounting bolts.



**Figure 35**

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g015845

- |                           |   |
|---------------------------|---|
| 1. Mounting bolts         | 4. Torque wrench in pulley mounting bracket (22.6 to 26.0 N·m (200 to 230 in-lb)) |
| 2. Pulley                 | 5. Belt   |
| 3. Hole for torque wrench |   |

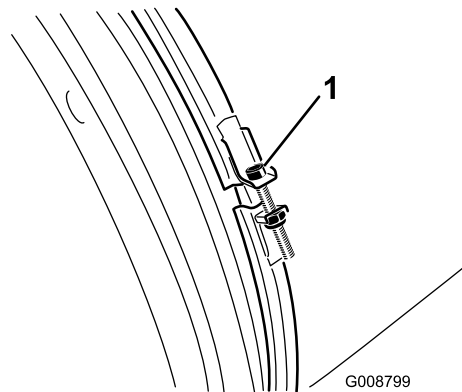
# Miscellaneous Maintenance

## Checking the Blower Nozzle

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

### Checking the Blower Nozzle Clamp

Check the blower nozzle clamp (Figure 36) daily to assure it is tight. If the blower nozzle is dragged over obstacles or through low areas in the terrain it could be knocked loose from the clamp. Torque the clamp fasteners to 5.1 to 5.7 N·m (45 to 50 in-lb).



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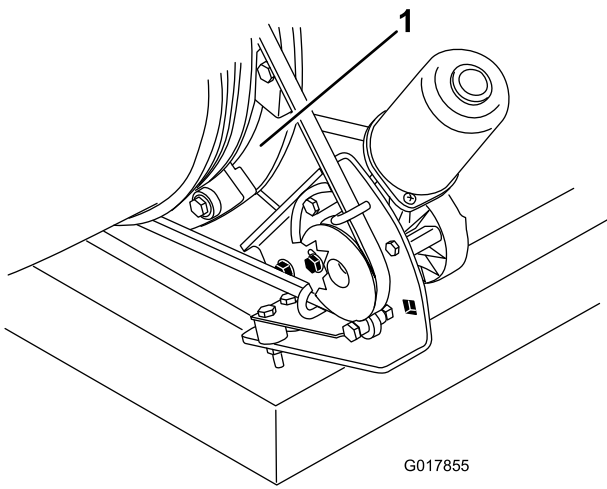
g008799

**Figure 36**

1. Nozzle clamp

### Cleaning the Nozzle Guides

Check and remove any grass, dirt or debris buildup around and in between the nozzle guides (Figure 37). If the nozzle guides are not kept free of debris, the nozzle may not rotate freely, which could cause the motor to stall.



**Figure 37**

1. Nozzle guides

## Associating the Remote Control to the Machine

**Important:** Read the entire procedure before attempting the association procedure.

The remote control is associated to the machine before leaving the factory. The remote control must establish communications with the base unit before the you can use the machine. In situations where it is necessary to reestablish remote control to machine communications (e.g., introducing a new or spare remote control to an existing base unit or changing the signal frequency due to local interference issues), perform the following associating procedure.

Only a Pro Force remote control can be associated to a Pro Force base unit. Associating a Pro Force remote control to a different Pro Force base unit disassociates that remote control from the original base unit.

**Note:** Local interference may disassociate the wireless remote from the base unit during operation. Since the base unit selects the best of numerous signal frequencies during the association process, move the machine to the area of signal disruption or disassociation and perform the association procedure for best results.

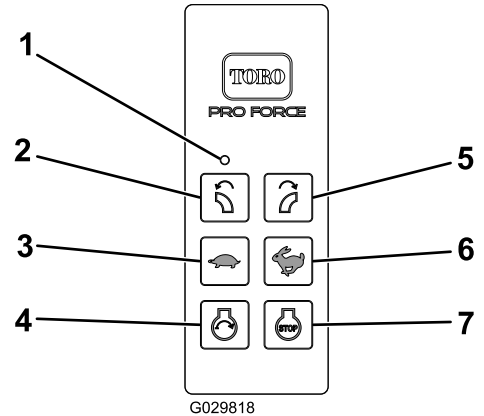
1. Turn the key to the OFF position to turn off the power.
2. Stand near the base unit in an unobstructed, clear line of sight with the remote control in hand.
3. Simultaneously press and hold the ROTATE RIGHT and ROTATE LEFT buttons. The LED light will flash about once per second.
4. Continue to hold both buttons until the LED light begins to flash about twice per second.

5. Release the buttons.
6. Press and hold the ROTATE LEFT button. The LED will flash about twice per second.
7. Turn the key to the RUN position while continuing to hold the ROTATE LEFT button. The LED light will turn solid if the procedure is successful.

**Note:** This could take up to 20 seconds.

8. Release the ROTATE LEFT button.

The system is ready for use with that remote control.



**Figure 38**

- |                          |                          |
|--------------------------|--------------------------|
| 1. LED light             | 5. Rotate right          |
| 2. Rotate left           | 6. Increase engine speed |
| 3. Decrease engine speed | 7. Engine stop           |
| 4. Engine start          |                          |

# Storage

## Storing the Machine

1. Complete the procedure at the start of [Maintenance Safety \(page 20\)](#).
2. Remove grass clippings, dirt, and grime from the external parts of the entire machine, especially the engine. Clean dirt and chaff from the outside of the fins on the engine cylinder head and blower housing.

**Important:** You can wash the machine with mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water.

3. Service the air cleaner; refer to [Servicing the Air Cleaner \(page 22\)](#).
4. Change the crankcase oil; refer to [Changing the Oil \(page 24\)](#).
5. Check the tire pressure; refer to [Checking the Tire Pressure \(page 14\)](#).
6. Prepare the machine for storage when non-use occurs over 30 days. Prepare machine for storage as follows:

A. Add a petroleum-based stabilizer/conditioner to fuel in the tank. Follow the mixing instructions from the stabilizer manufacture. Do not use an alcohol-based stabilizer (ethanol or methanol).

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

- B. Run the engine to distribute conditioned fuel through the fuel system for 5 minutes.
- C. Shut off the engine, allow the engine to cool, and drain the fuel tank; refer to [Servicing the Fuel Tank \(page 27\)](#).
- D. Start the engine and run it until it stops.
- E. Choke the engine. Start and run the engine until it will not start.
- F. Dispose of fuel properly. Recycle as per local codes.

**Important:** Do not store fuel containing stabilizer/conditioner longer than the duration recommended by the fuel-stabilizer manufacturer.

7. Remove and check the condition of the spark plug(s); refer to [Servicing the Spark Plugs \(page 25\)](#). With the spark plug(s) removed from the engine, pour 2 TBS of engine oil into the spark

plug hole. Now use the starter to crank the engine and distribute the oil inside the cylinder. Install the spark plug(s). Do not install the wire on the spark plug(s).

8. Check and tighten all fasteners. Repair or replace any part that is damaged or missing.
9. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
10. Store the machine in a clean, dry garage or storage area. Remove the key from the ignition switch and keep it out of reach of children or other unauthorized users. Cover the machine to protect it and keep it clean.

## Disposing of Waste

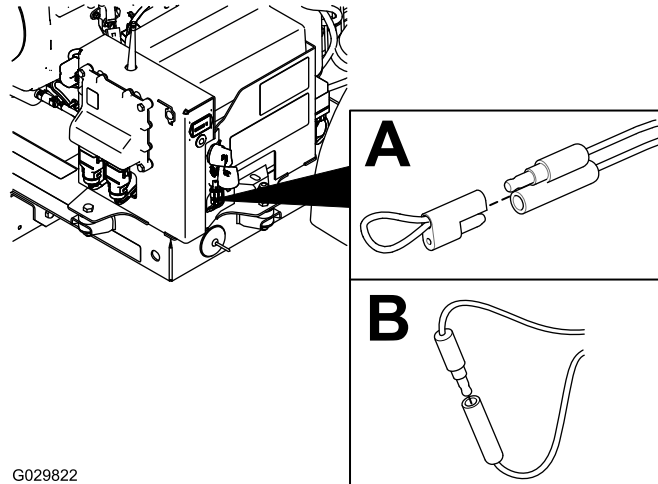
Engine oil, engine and remote control batteries are pollutants to the environment. Dispose of these according to your state and local regulations.



# Troubleshooting

## Entering Diagnostic Mode and Checking the Codes

1. Turn the key to the OFF position to turn off the power.
2. Pull the tethered cap off of the 2 diagnostic, shunt connectors (Figure 39, A).
3. Connect the diagnostic, shunt connectors together (Figure 39, B).



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g029822

Figure 39

- 
4. Turn the key to the RUN position to turn on the power.
  5. Count the number of flashes to determine the fault code, then consult the following table:

**Note:** If there are multiple faults, both faults will flash, then a long pause, then the flash sequences will repeat.

Code	LED Flash Pattern	Behavior	Details
Machine Specific Faults			
11	Blink once, pause, blink once, long pause, then repeat	Lost communication with BASE.	Connector not plugged in; locate the loose or disconnected harness connector and connect it.
			Something wrong in the wiring; contact your authorized Toro distributor.
			BASE is bad; contact your authorized Toro distributor.
12	Blink once, pause, blink twice, long pause, then repeat	Version incompatibility of the BASE and/or HH	Wrong software (install the correct software from TORODIAG); contact your authorized Toro distributor.
13	Blink once, pause, blink 3 times, long pause, then repeat	Wrong HH—not implemented on RevA	Wrong product association (i.e. trying to update software on a MH-400 with a ProPass handheld)
14	Blink once, pause, blink 4 times, long pause, then repeat	ETR dropped due to low oil pressure.	Oil pressure is low; check the oil. If it continues, the oil pressure switch may be damaged.
15	Blink once, pause, blink 5 times, long pause, then repeat	ETR dropped due to low voltage.	Voltage regulator or alternator is bad; contact your authorized Toro distributor.

## Checking Fault Codes

If the diagnostic light indicates that there is a system fault, check the fault codes to determine what is wrong with the machine; refer to [Diagnostic Light \(page 11\)](#).

## Resetting the Fault Codes

After solving the problem, set the ignition key to the RUN position then disconnect and reconnect the diagnostic connectors. The diagnostic light will flash continuously once per second.

## Exiting Diagnostic Mode

1. Turn the key to the OFF position to turn off the power.
2. Disconnect the diagnostic, shunt connectors.
3. Push the tethered cap onto the 2 diagnostic, shunt connectors.
4. Turn the key to the RUN position to turn on the power.

# California Proposition 65 Warning Information

## What is this warning?

You may see a product for sale that has a warning label like the following:



**WARNING: Cancer and Reproductive Harm—[www.p65Warnings.ca.gov](http://www.p65Warnings.ca.gov).**

## What is Prop 65?

Prop 65 applies to any company operating in California, selling products in California, or manufacturing products that may be sold in or brought into California. It mandates that the Governor of California maintain and publish a list of chemicals known to cause cancer, birth defects, and/or other reproductive harm. The list, which is updated annually, includes hundreds of chemicals found in many everyday items. The purpose of Prop 65 is to inform the public about exposure to these chemicals.

Prop 65 does not ban the sale of products containing these chemicals but instead requires warnings on any product, product packaging, or literature with the product. Moreover, a Prop 65 warning does not mean that a product is in violation of any product safety standards or requirements. In fact, the California government has clarified that a Prop 65 warning "is not the same as a regulatory decision that a product is 'safe' or 'unsafe.'" Many of these chemicals have been used in everyday products for years without documented harm. For more information, go to <https://oag.ca.gov/prop65/faqs-view-all>.

A Prop 65 warning means that a company has either (1) evaluated the exposure and has concluded that it exceeds the "no significant risk level"; or (2) has chosen to provide a warning based on its understanding about the presence of a listed chemical without attempting to evaluate the exposure.

## Does this law apply everywhere?

Prop 65 warnings are required under California law only. These warnings are seen throughout California in a wide range of settings, including but not limited to restaurants, grocery stores, hotels, schools, and hospitals, and on a wide variety of products. Additionally, some online and mail order retailers provide Prop 65 warnings on their websites or in catalogs.

## How do the California warnings compare to federal limits?

Prop 65 standards are often more stringent than federal and international standards. There are various substances that require a Prop 65 warning at levels that are far lower than federal action limits. For example, the Prop 65 standard for warnings for lead is 0.5 µg/day, which is well below the federal and international standards.

## Why don't all similar products carry the warning?

- Products sold in California require Prop 65 labelling while similar products sold elsewhere do not.
- A company involved in a Prop 65 lawsuit reaching a settlement may be required to use Prop 65 warnings for its products, but other companies making similar products may have no such requirement.
- The enforcement of Prop 65 is inconsistent.
- Companies may elect not to provide warnings because they conclude that they are not required to do so under Prop 65; a lack of warnings for a product does not mean that the product is free of listed chemicals at similar levels.

## Why does Toro include this warning?

Toro has chosen to provide consumers with as much information as possible so that they can make informed decisions about the products they buy and use. Toro provides warnings in certain cases based on its knowledge of the presence of one or more listed chemicals without evaluating the level of exposure, as not all the listed chemicals provide exposure limit requirements. While the exposure from Toro products may be negligible or well within the "no significant risk" range, out of an abundance of caution, Toro has elected to provide the Prop 65 warnings. Moreover, if Toro does not provide these warnings, it could be sued by the State of California or by private parties seeking to enforce Prop 65 and subject to substantial penalties.



# The Toro Warranty

Two-Year or 1,500 Hours Limited Warranty

## Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant 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  
Toro Warranty Company  
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, 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.

## 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.

## 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): Pro-rated after 2 years. 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.

**Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. 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.