Form No. 3477-907 Rev B

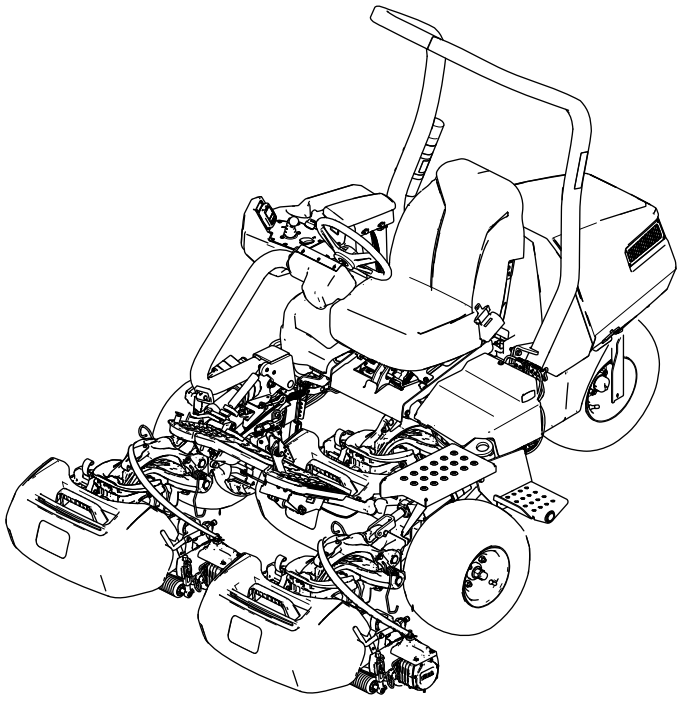
TORO®

Count on it.

Operator's Manual

Greensmaster® eTriFlex® 3370 Traction Unit

Model No. 04591—Serial No. 420000000 and Up



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

CE UK CA

3477-907

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

If this machine is equipped with a telematics device, refer to your authorized Toro distributor for instructions to activate the device.

⚠ WARNING

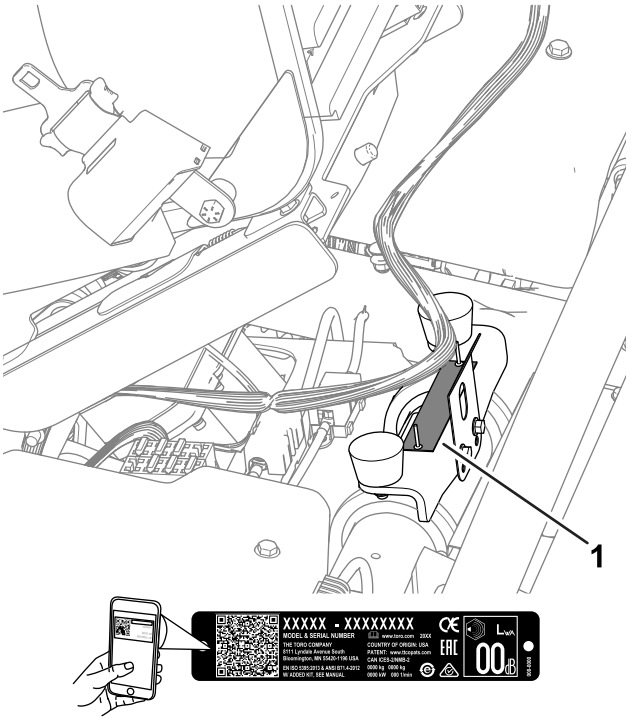
CALIFORNIA
Proposition 65 Warning

The power cord on this product contains lead, a chemical known to the State of California to cause birth defects or other reproductive harm. Wash hands after handling.

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.

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



g279286

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

Introduction

This machine is a ride-on, reel-blade greens 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 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 Toro distributor 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.

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Safety

General Machine Safety Warnings

WARNING—Read all safety warnings, instructions, illustrations and specifications provided with this machine.

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

The term "machine" in all of the warnings listed below refers to your mains-operated (corded) machine or battery-operated (cordless) machine.

1. **Work area safety**
   - A. **Keep work area clean and well lit.** *Cluttered or dark areas invite accidents.*
   - B. **Do not operate the machine in explosive atmospheres, such as in the presence of flammable liquids, gasses, or dust.** *The machine creates sparks, which may ignite the dust or fumes.*
   - C. **Keep children and bystanders away while operating the machine.** *Distractions can cause you to lose control.*
2. **Electrical safety**
   - A. **Machine plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with an earthed (grounded) machine.** *Unmodified plugs and matching outlets will reduce risk of electric shock.*
   - B. **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges, and refrigerators.** *There is an increased risk of electric shock if your body is earthed or grounded.*
   - C. **Do not expose the machine to rain or wet conditions.** *Water entering a machine will increase the risk of electric shock.*
   - D. **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the machine. Keep cord away from heat, oil, sharp edges, or moving parts.** *Damaged or entangled cords increase the risk of electric shock.*
   - E. **When operating the machine outdoors, use an extension cord suitable for outdoor use.** *Use of a cord suitable for outdoor use reduces the risk of electric shock.*
   - F. **If operating the machine in a damp location is unavoidable, use a residual current device (RCD) protected supply.** *Use of an RCD reduces the risk of electric shock.*
3. **Personal safety**
   - A. **Stay alert, watch what you are doing, and use common sense when operating the machine. Do not use the machine while you are tired or under the influence of drugs, alcohol, or medication.** *A moment of inattention while operating the machine may result in serious personal injury.*
   - B. **Use personal protective equipment. Always wear eye protection.** *Protective equipment such as a dust mask, non-skid safety shoes, or hearing protection used for appropriate conditions will reduce personal injuries.*
   - C. **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack.** *Energising a machine that has the switch on invites accidents.*
   - D. **Remove any adjusting key or wrench before turning the machine on.** *A wrench or a key left attached to a rotating part of the machine may result in personal injury.*
   - E. **Do not overreach. Keep proper footing and balance at all times.** *This enables better control of the machine in unexpected situations.*
   - F. **Dress properly. Do not wear loose clothing or jewelry. Keep your hair and clothing away from moving parts.** *Loose clothes, jewelry or long hair can be caught in moving parts.*
   - G. **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** *Use of dust collection can reduce dust-related hazards.*
   - H. **Do not let familiarity gained from frequent use of the machine allow you to become complacent and ignore machine safety principles.** *A careless action can cause severe injury within a fraction of a second.*

4. **Machine use and care**

   A. **Do not force the machine. Use the correct machine for your application.** *The correct machine will do the job better and safer at the rate for which it was designed.*

   B. **Do not use the machine if the switch does not turn it on and off.** *Any machine that cannot be controlled with the switch is dangerous and must be repaired.*

   C. **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the machine before making any adjustments, changing accessories, or storing the machine.** *Such preventive safety measures reduce the risk of starting the machine accidentally.*

   D. **Store an idle machine out of the reach of children and do not allow persons unfamiliar with the machine or these instructions to operate the machine.** *A machine is dangerous in the hands of untrained users.*

   E. **Maintain the machine and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the operation of the machine. If damaged, have the machine repaired before use.** *Many accidents are caused by a poorly maintained machine.*

   F. **Keep cutting tools sharp and clean.** *Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.*

   G. **Use the machine, accessories, and tool bits etc., in accordance with these instructions, taking into account the working conditions and the work to be performed.** *Use of the machine for operations different from those intended could result in a hazardous situation.*

   H. **Keep handles and grasping surfaces dry, clean and free from oil and grease.** *Slippery handles and grasping surfaces do not allow for safe handling and control of the machine in unexpected situations.*

5. **Battery machine use and care**

   A. **Recharge only with the charger specified by a manufacturer.** *A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.*

   B. **Use the machine only with specifically designated batteries.** *Use of any other batteries may create a risk of injury and fire.*

   C. **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** *Shorting the battery terminals together may cause burns or a fire.*

   D. **Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** *Liquid ejected from the battery may cause irritation or burns.*

   E. **Do not use a battery pack or machine that is damaged or modified.** *Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk or injury.*

   F. **Do not expose a battery pack or machine to fire or excessive temperature.** *Exposure to fire temperature above 130°C may cause an explosion.*

   G. **Follow all charging instructions and do not charge the battery pack or machine outside the temperature range specified in the instructions.** *Changing improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.*

6. **Service**

   A. **Have your machine serviced by a qualified repair person using only identical replacement parts.** *This will ensure that the safety of the machine is maintained.*

   B. **Never service damaged battery packs.** *Service of battery packs should be performed only by the manufacturer or authorized service providers.*

Lawn Mower Safety Warnings

A. **Do not use the lawnmower in bad weather conditions, especially when there is a risk of lightning.** *This decreases the risk of being struck by lightning.*

B. **Thoroughly inspect the area for wildlife where the lawnmower is to be used.** *Wildlife*

may be injured by the lawnmower during operation.

C. **Thoroughly inspect the area where the lawnmower is to be used and remove all stones, sticks, wires, bones, and other foreign objects.** *Thrown objects can cause personal injury.*

D. **Before using the lawnmower, always visually inspect to see that the blade and the blade assembly are not worn or damaged.** *Worn or damaged parts increase the risk of injury.*

E. **Keep guards in place. Guards must be in working order and be properly mounted.** *A guard that is loose, damaged, or is not functioning correctly may result in personal injury.*

F. **Keep all cooling air inlets clear of debris.** *Blocked air inlets and debris may result in overheating or risk of fire.*

G. **While operating the lawnmower, always wear non-slip and protective footwear. Do not operate the lawnmower when barefoot or wearing open sandals.** *This reduces the chance of injury to the feet from contact with the moving blade.*

H. **While operating the lawnmower, always wear long trousers.** *Exposed skin increases the likelihood of injury from thrown objects.*

I. **Do not operate the lawnmower on excessively steep slopes.** *This reduces the risk of loss of control, slipping and falling which may result in personal injury.*

J. **When working on slopes, always be sure of your footing, always work across the face of slopes, never up or down and exercise extreme caution when changing direction.** *This reduces the risk of loss of control, slipping and falling which may result in personal injury.*

K. **Use extreme caution when reversing or pulling the lawnmower towards you.** *Always be aware of your surroundings. Always be aware of your surroundings.*

L. **Do not touch blades and other hazardous moving parts while they are still in motion.** *This reduces the risk of injury from moving parts.*

M. **When clearing jammed material or cleaning the lawnmower, make sure all power switches are off and remove (or activate) the disabling device.** *Unexpected operation of the lawnmower may result in serious personal injury.*

Save all warnings and instructions for future reference.

Additional Safety Messages

Safety-Alert Symbol

The safety-alert symbol (Figure 2) shown in this manual and on the machine identifies important safety messages that you must follow to prevent accidents.



g000502

Figure 2
Safety-alert symbol

The safety-alert symbol appears above information that alerts you to unsafe actions or situations and is followed by the word **DANGER**, **WARNING**, or **CAUTION**.

DANGER indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury.

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

General Safety

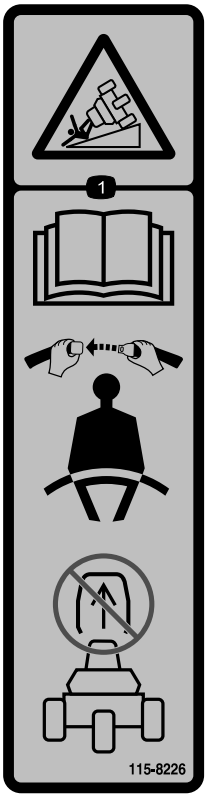
This product is capable of amputating hands and feet and of throwing objects. Always follow all safety instructions to avoid serious personal injury or death.

- Read and understand the contents of this *Operator's Manual* before turning on the machine.
- Allow only responsible and physically capable people to operate the machine.
- 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.
- Shut off the machine, 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.

Safety and Instructional Decals

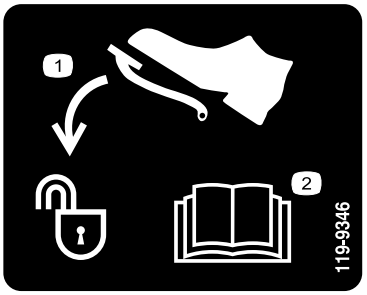
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.



decal115-8226

115-8226

1. Tipping hazard—read the *Operator's Manual*; wear a seatbelt; do not remove the roll bar.



decal119-9346

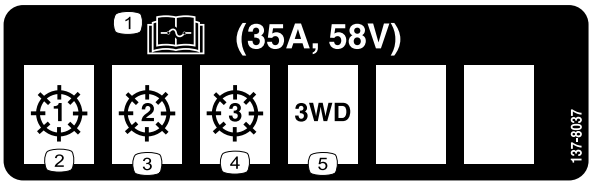
119-9346

1. Press the pedal to unlock.
2. Read the *Operator's Manual* for more information.



decal133-8061

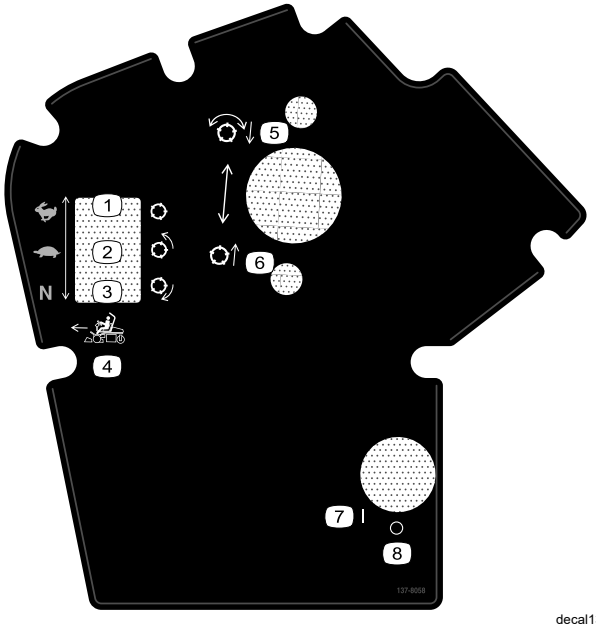
133-8061



decal137-8037

137-8037

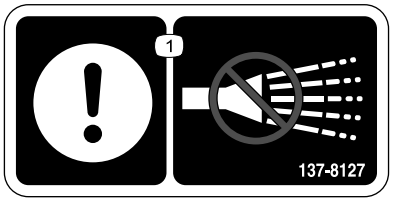
1. Read the *Operator’s Manual* for fuse information.
2. Cutting unit—1
3. Cutting unit—2
4. Cutting unit—3
5. 3-wheel-drive kit



decal137-8058

137-8058

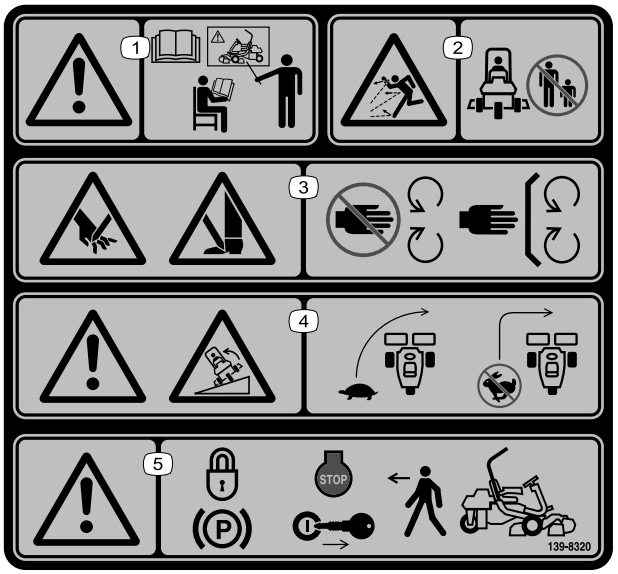
1. Traction speed—fast; reel—transport
2. Traction speed—slow; reel—mow
3. Traction speed—neutral; reel—backlap
4. Forward function controls
5. Lower and engage the reels.
6. Raise and disengage the reels.
7. On
8. Off



decal137-8127

137-8127

1. Attention—do not spray with high-pressure water.



decal139-8320

139-8320

1. Warning—all operators should read the *Operator's Manual* and be trained before operating the machine.
2. Thrown object hazard—keep bystanders away.
3. Cutting/dismemberment hazard of hand; cutting/dismemberment hazard of foot—stay away from moving parts; keep all guards and shields in place.
4. Warning; tipping hazard—drive slowly when turning; do not turn sharply while traveling fast.
5. Warning—engage the parking brake, shut off the machine, and remove the key before leaving the machine.



decal139-8321

139-8321

Note: This machine complies with the industry standard stability test in the static lateral and longitudinal tests with the maximum recommended slope indicated on the decal. Review the instructions for operating the machine on slopes in the *Operator's Manual* as well as the conditions in which you would operate the machine 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.

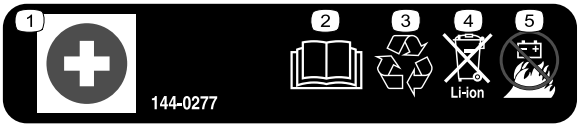
1. Warning—all operators should read the *Operator's Manual* and be trained before operating the machine.
2. Thrown object hazard—keep bystanders away.
3. Cutting/dismemberment hazard of hand; cutting/dismemberment hazard of foot—stay away from moving parts; keep all guards and shields in place.
4. Warning; tipping hazard—do not use on slopes greater than 15°.
5. Warning—engage the parking brake, shut off the machine, and remove the key before leaving the machine.



decal144-0275

144-0275

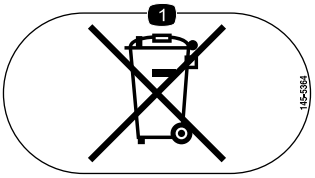
1. Batteries are flammable.



decal144-0277

144-0277

1. Positive terminal
2. Read the *Operator's Manual*.
3. Recycle the battery.
4. Do not dispose improperly.
5. Do not expose to fire.



decal145-5364

145-5364

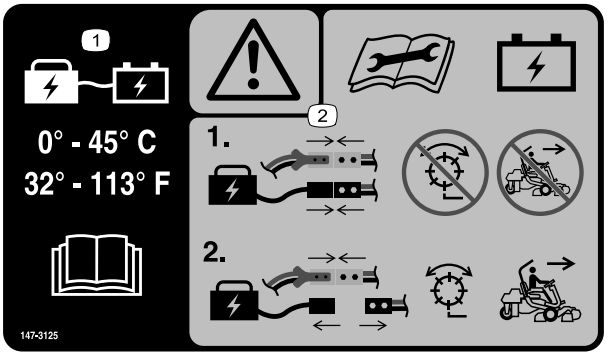
1. Do not dispose improperly.



decal147-0287

147-0287

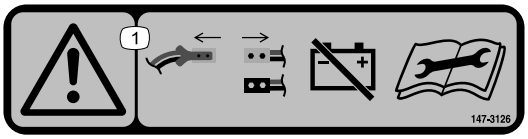
1. Torque to 2.82 to 3.16 N·m (25 to 28 in-lb).



decal147-3125

147-3125

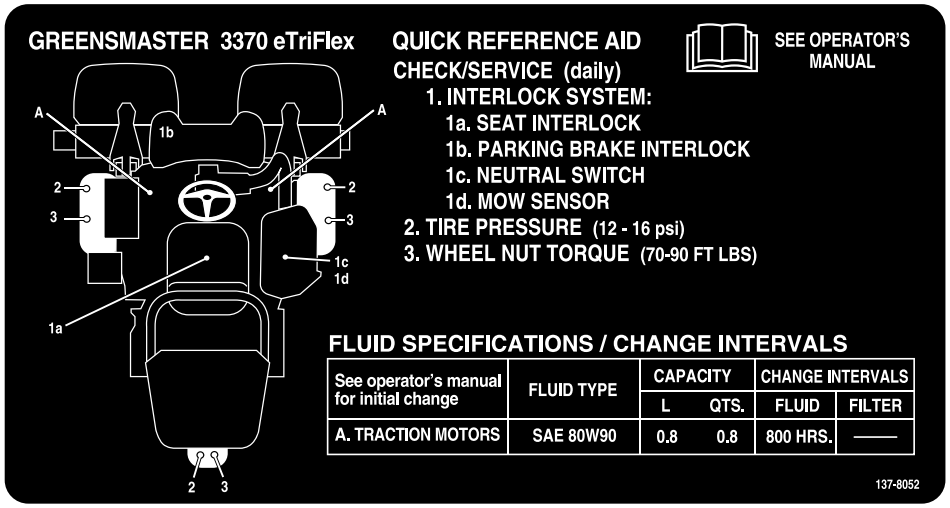
1. Keep the battery at temperatures between 0° to 45° C (32° to 113° F) when charging; read the *Operator's Manual*.
2. Warning—read the *Operator's Manual* before performing maintenance and charging the battery; with the main-power connectors connected, connect the charger to the machine charging connector and do not engage the reels or operate the machine; disconnect the charger to engage the reels and operate the machine.



decal147-3126

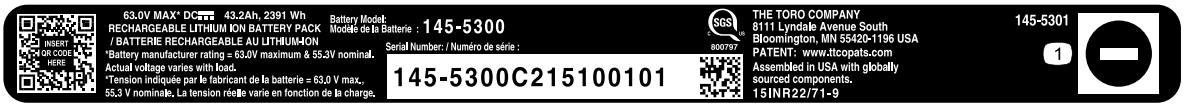
147-3126

1. Warning–disconnect the main-power connectors to disconnect the battery power; read the *Operator's Manual* before performing maintenance.



decal137-8052

137-8052



decal145-5301

145-5301

1. Negative battery terminal



decal145-5338

145-5338

1. Warning—read the *Operator's Manual*.
2. Warning—do not open the battery; do not use a damaged battery.
3. Explosion hazard—do not expose to sparks or open flame.
4. Electric shock hazard—do not perform maintenance on the battery.
5. Electric shock hazard

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Roll bar assembly Hex-head bolt (3/8 x 1-1/2 inch) Nut (3/8 inch)	1 8 8	Install the roll bar.
2	Seat Kit (order separately; contact your authorized Toro distributor)	1	Install the seat.
3	Service decal (Part Number 137-8052)	1	Install the service decal.
4	Steering wheel Cap Washer Locknut	1 1 1 1	Install the steering wheel.
5	Grass-basket hook Flange bolts	6 12	Install the grass-basket hooks.
6	Cutting unit (order separately; contact your authorized Toro distributor) Grass basket Electric counterweight Capscrew O-ring	3 3 3 6 3	Install the cutting units.
7	Telematics device Device bracket Telematics wire harness Hex-head bolt (#10 x 1 inch) Locknut (#10) U-bolt Flange nut (3/8 inch) Cable tie	1 1 1 4 4 1 2 4	Install the telematics device.
8	No parts required	–	Connect the main-power connectors.
9	No parts required	–	Adjust the machine settings.
10	Production year decal CE warning decal (Part Number 139-8321) CE/UKCA decal (Part Number 138-9470)	1 1 1	Install the CE/UKCA decals (if required).
11	No parts required	–	Reduce the tire pressure.
12	No parts required	–	Mount the battery charger on a wall (optional).
13	No parts required	–	Charge the batteries.

1

Installing the Roll Bar

Parts needed for this procedure:

1	Roll bar assembly
8	Hex-head bolt (3/8 x 1-1/2 inch)
8	Nut (3/8 inch)

Procedure

1. Remove the top crate support from the crate.
2. Remove the roll bar from the crate.
3. Use 8 hex-head bolts (3/8 x 1-1/2 inch) and 8 nuts (3/8 inch) to secure the roll bar to the roll-bar brackets on each side of the machine (Figure 3).

   Note: Have an assistant help you to position and secure the roll bar to the machine.

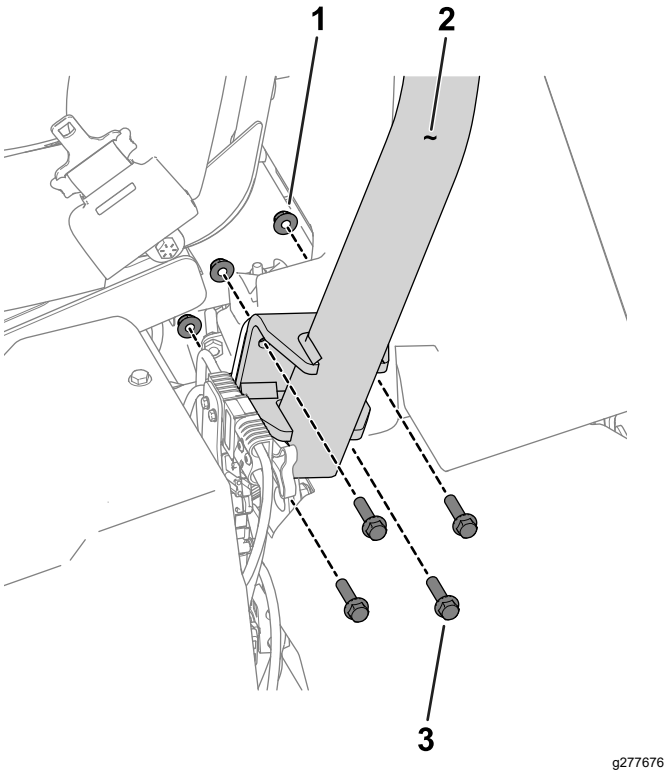


Figure 3
Left side of the machine shown

1. Nut (3/8 inch)
2. Roll bar
3. Hex-head bolt (3/8 x 1-1/2 inch)

4. Torque the fasteners to 51 to 65 N·m (38 to 48 ft-lb).

2

Installing the Seat

Parts needed for this procedure:

1	Seat Kit (order separately; contact your authorized Toro distributor)

Procedure

Acquire the Seat Kit (contact your authorized Toro distributor) and refer to the kit *Installation Instructions* to install the seat.

3

Installing the Service Decal

Parts needed for this procedure:

1	Service decal (Part Number 137-8052)

Procedure

Install the service decal (Part Number 137-8052) to the seat; refer to Figure 4 for the premium seat (Model 04729) or Figure 5 for the standard seat (Model 04508).

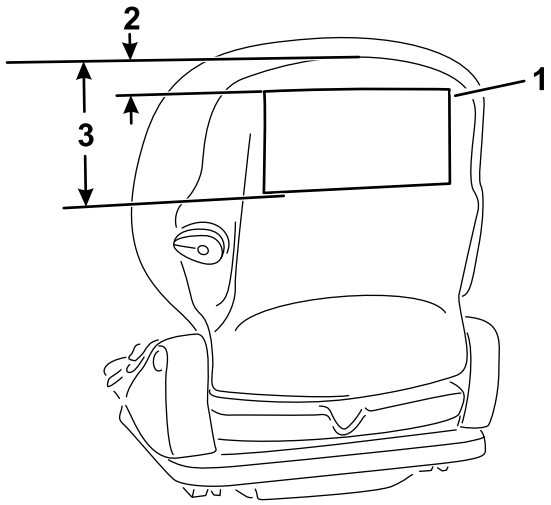


Figure 4
Premium Seat (Model 04729)

1. Service decal
2. 2.5 cm (1 inch)
3. 18.5 cm (6.5 inches)

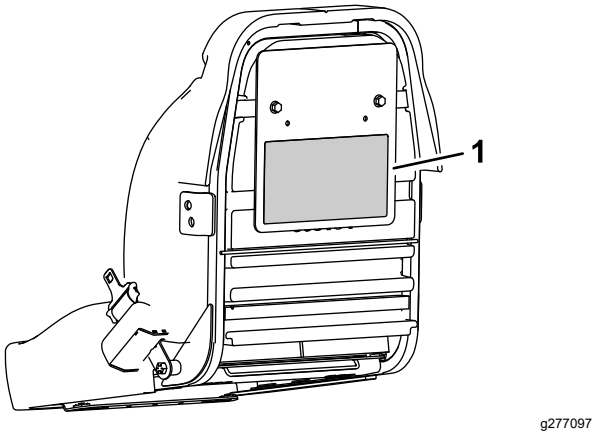


Figure 5
Standard Seat (Model 04508)

1. Service decal

4

Installing the Steering Wheel

Parts needed for this procedure:

1	Steering wheel
1	Cap
1	Washer
1	Locknut

Procedure

1. Apply anti-seize compound to the steering shaft (shown in Figure 6).

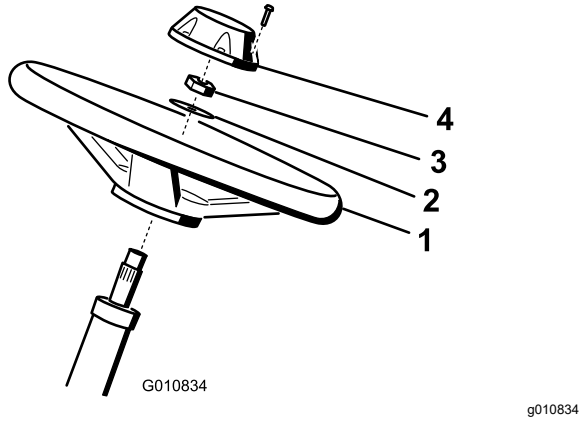


Figure 6

1. Steering shaft
2. Steering wheel
3. Washer
4. Locknut
5. Cap

2. Install the wheel to the steering shaft using the washer and locknut (Figure 6).
3. Torque the locknut to 27 to 35 N·m (20 to 26 ft-lb).
4. Install the cap to the wheel (Figure 6).

5

Installing the Grass-Basket Hooks

Parts needed for this procedure:

6	Grass-basket hook
12	Flange bolts

Procedure

Use 12 flange bolts to install 6 grass-basket hooks onto the ends of the suspension-arm bars (Figure 7).

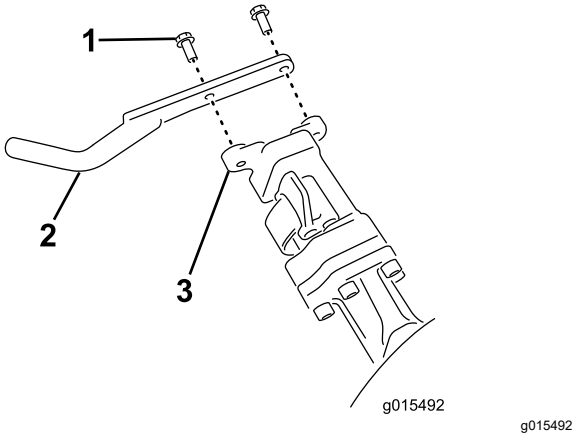


Figure 7

1. Flange bolt
2. Grass-basket hook
3. Suspension-arm bar

6

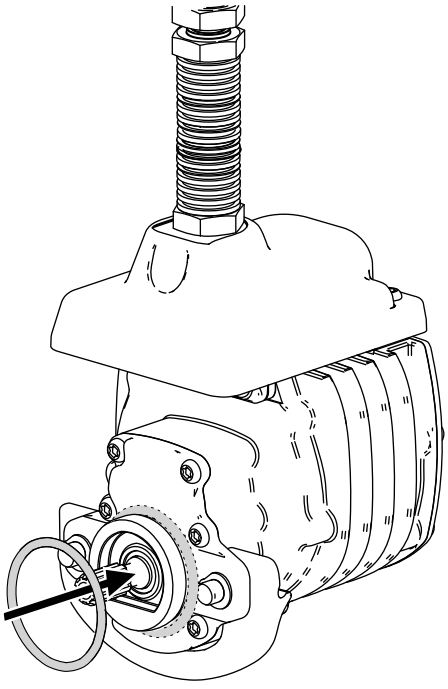
Installing the Cutting Units

Parts needed for this procedure:

3	Cutting unit (order separately; contact your authorized Toro distributor)
3	Grass basket
3	Electric counterweight
6	Capscrew
3	O-ring

Procedure

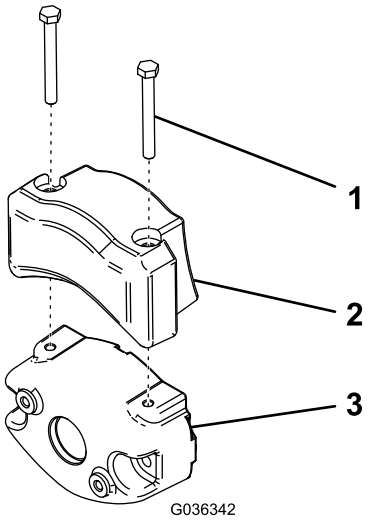
1. Prepare the cutting units for installation; refer to your cutting unit *Operator's Manual*.
2. Apply grease to the inside spline of the drive coupler.
3. Install an O-ring to each reel motor as shown in Figure 8.



g256064

Figure 8

4. Secure the electrical counterweight to the existing counterweight with 2 capscrews as shown in Figure 9.



g036342

Figure 9

1. Capscrew
2. Electrical counterweight
3. Existing counterweight

5. Install the cutting units; refer to Installing the Cutting Units (page 54).
6. Install each grass basket onto the grass-basket hooks.

7

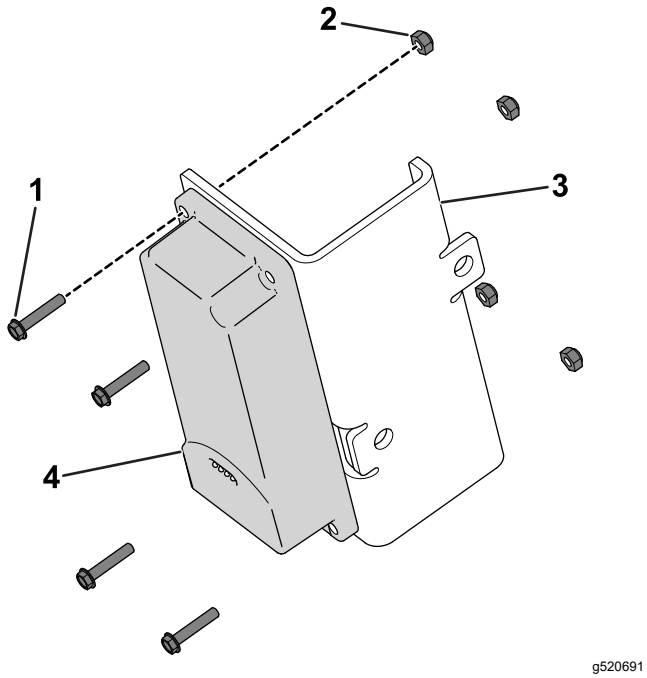
Installing the Telematics Device

Parts needed for this procedure:

1	Telematics device
1	Device bracket
1	Telematics wire harness
4	Hex-head bolt (#10 x 1 inch)
4	Locknut (#10)
1	U-bolt
2	Flange nut (3/8 inch)
4	Cable tie

Procedure

1. Use 4 hex-head bolts (#10 x 1 inch) and 4 locknuts (#10) to secure the telematics device to the device bracket (Figure 10).

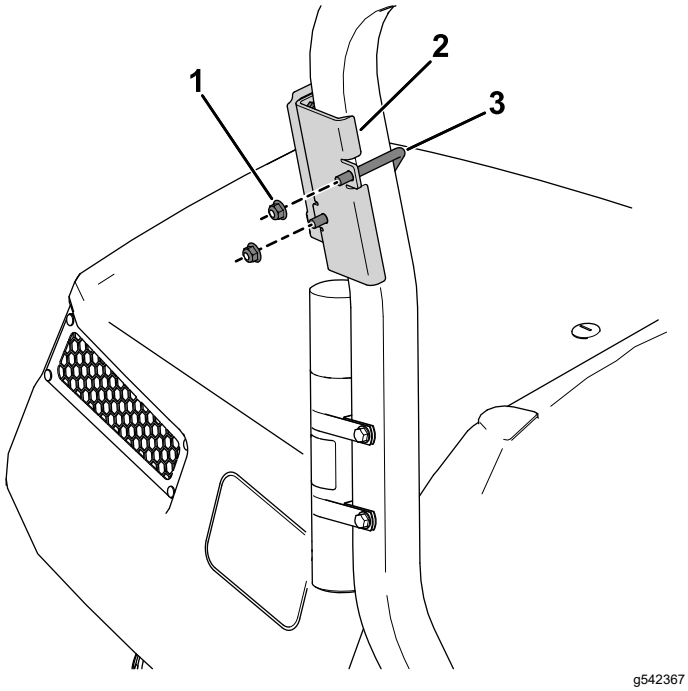


g520691

Figure 10

1. Hex-head bolt (#10 x 1 inch)
2. Locknut (#10)
3. Device bracket
4. Telematics device

2. Use a U-bolt and 2 flange nuts (3/8 inch) to secure the device bracket to the area above the manual tube on the roll bar (Figure 11).

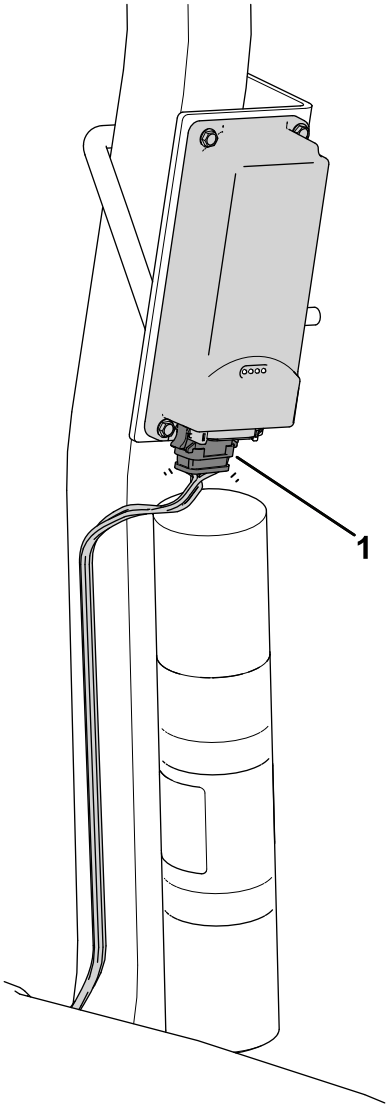


g542367

Figure 11

1. Flange nut (3/8 inch)
2. Device bracket
3. U-bolt

3. Install the connector labeled P02 on the telematics wire harness to the telematics device (Figure 12).

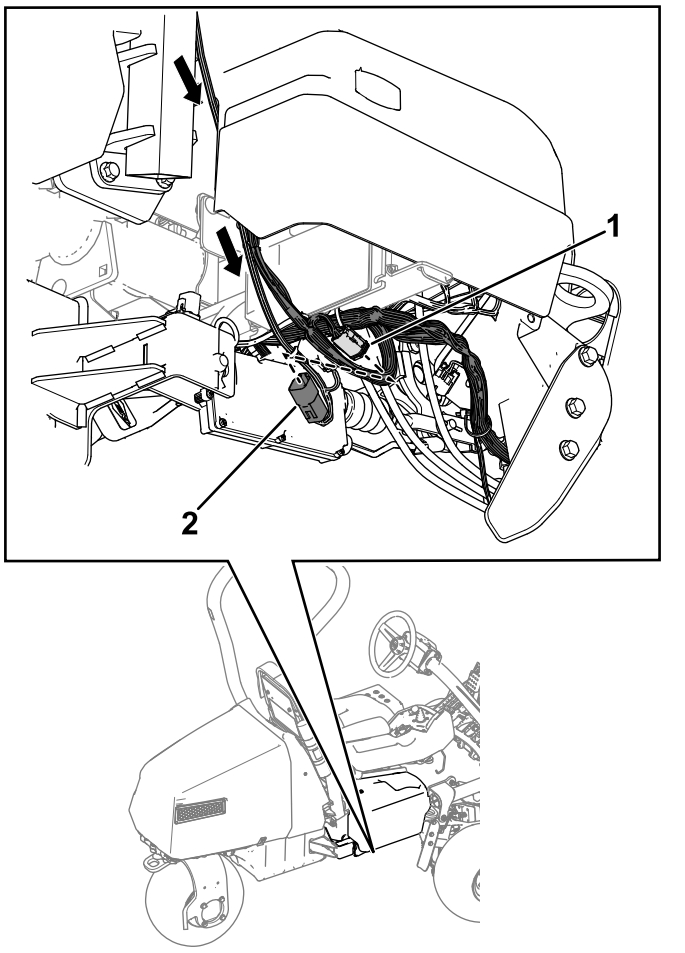


g542368

Figure 12

1. Connector labeled P02

4. Route the wire harness down the roll bar and connect the wire-harness connector labeled P01 to the connector on the machine wire harness labeled P71 (Figure 13).



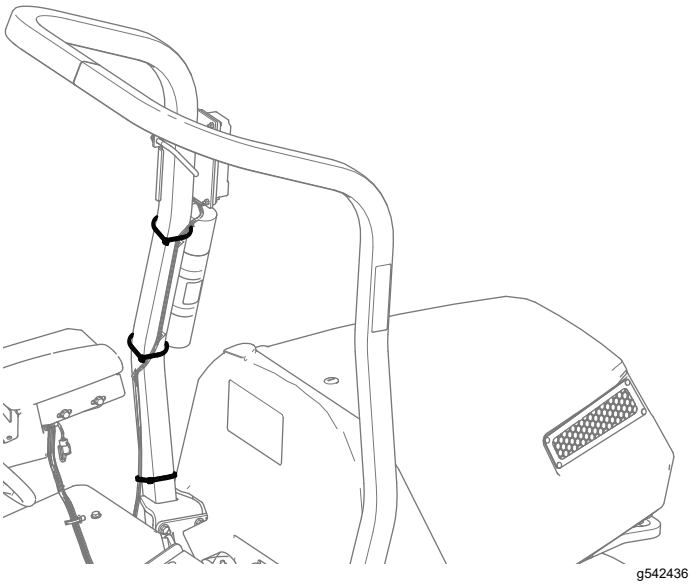
g522300

Figure 13

1. Connector labeled P71—machine wire harness
2. Connector labeled P01—telematics wire harness

5. Secure this connection to the main harness with a cable tie.

6. Secure the harness to the roll bar using cable ties as shown.



g542436

Figure 14

8

Connecting the Main-Power Connectors

No Parts Required

Procedure

Raise the connector cover and plug in the main-power connectors located near the base of the roll bar on the left side of the machine (Figure 15).

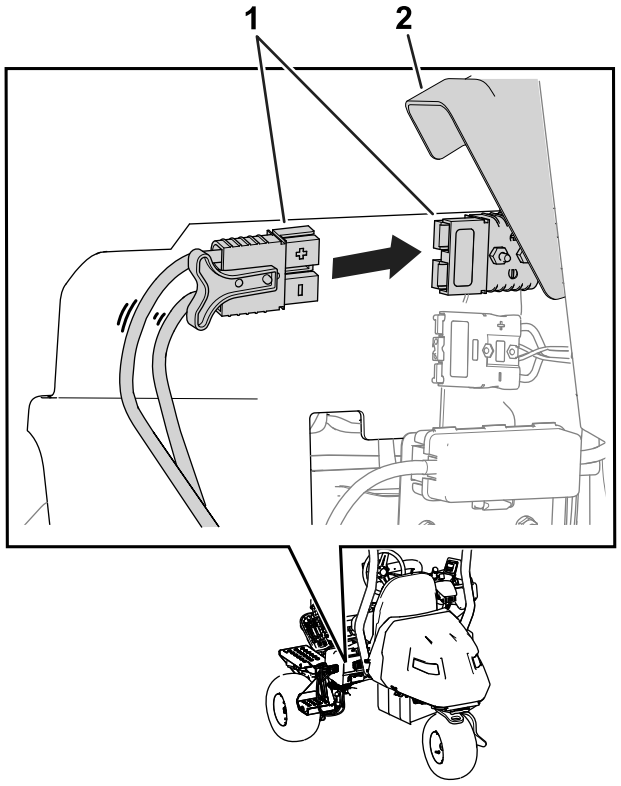


Figure 15

1. Main-power connectors
2. Connector cover

9

Adjusting the Machine Settings

No Parts Required

Procedure

Use the InfoCenter to adjust the machine settings; refer to Using the InfoCenter to Adjust the Machine Settings (page 29).

10

Installing the CE/UKCA Decals

If Required (CE/UKCA-Compliant Countries Only)

Parts needed for this procedure:

1	Production year decal
1	CE warning decal (Part Number 139-8321)
1	CE/UKCA decal (Part Number 138-9470)

Procedure

If you use this machine in a country that complies to CE/UKCA standards, install the following decals and hood latch:

- **Production year decal** and **CE/UKCA decal**: apply the decals on the frame tube below the seat and serial plate; refer to Figure 16.

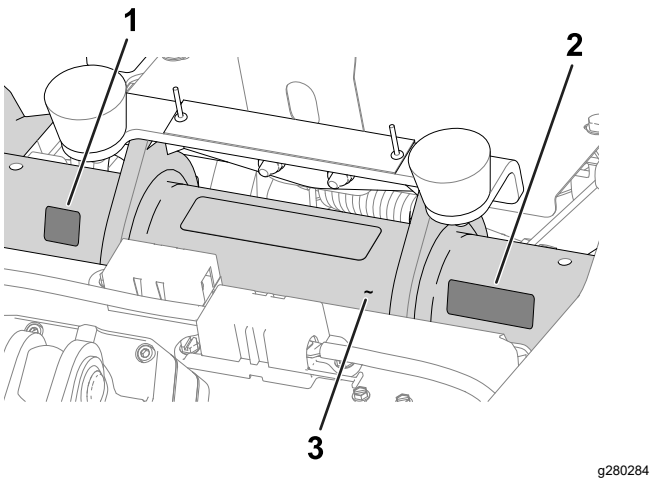


Figure 16

1. CE/UKCA decal
2. Production year decal
3. Frame tube

- **CE warning decal**: Apply the CE warning decal (Part Number 139-8321) over the existing warning decal (Part Number 139-8320) on the steering-wheel cover; refer to Figure 17.

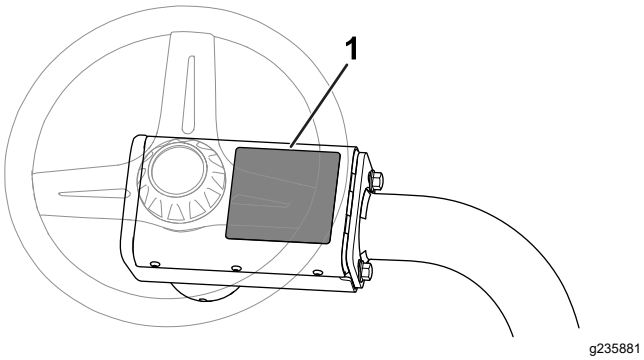


Figure 17

1. CE warning decal

11

Reducing the Tire Pressure

No Parts Required

Procedure

The tires are overinflated at the factory for shipping purposes. Reduce the pressure to the proper levels before turning on the machine; refer to Checking the Tire Pressure (page 51).

12

Mounting the Battery Charger on a Wall

Optional

No Parts Required

Procedure

You can mount the charger on a wall using the wall-mount key holes cut into the back of the unit. Use screws that have a 6 mm (1/4 inch) diameter shaft and a head diameter of 11 mm (0.45 inch).

Important: **Survey your work area and determine a location that best meets the criteria for safe and effective operation of the charger.**

13

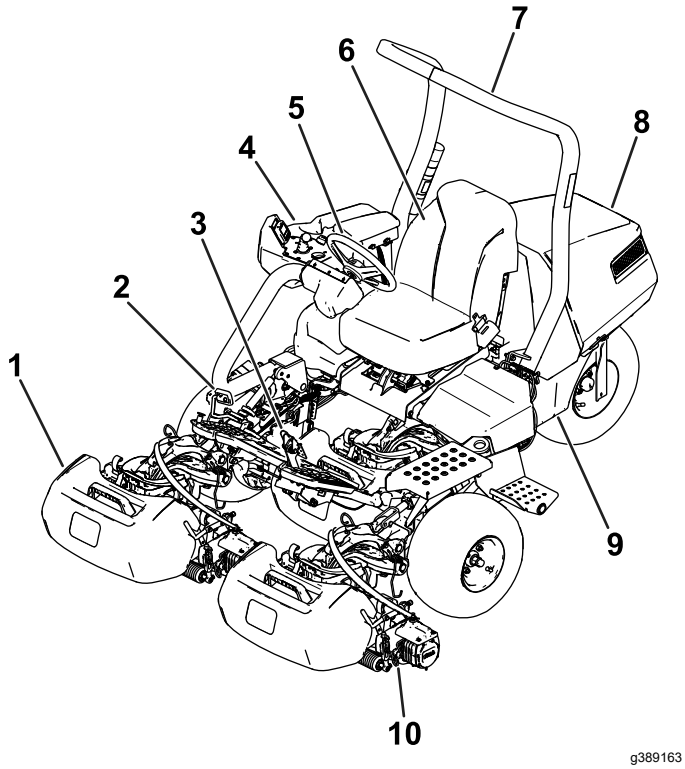
Charging the Batteries

No Parts Required

Procedure

Charge the batteries; refer to Charging the Lithium-Ion Batteries (page 42).

Product Overview

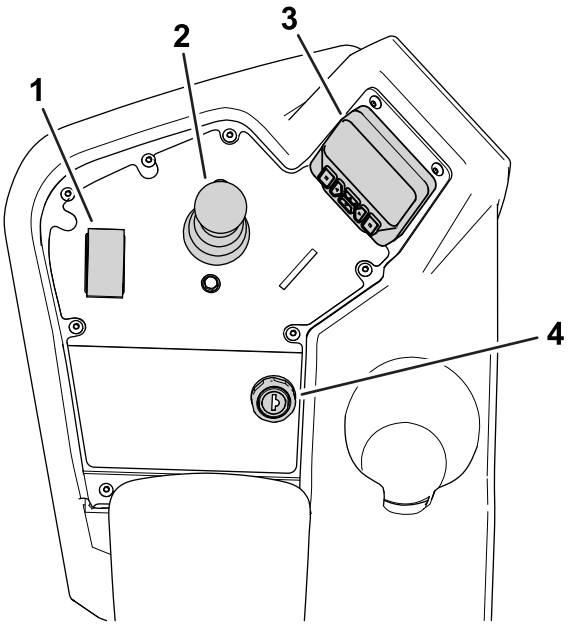


g389163

Figure 18

1. Grass basket
2. Traction pedal
3. Brake pedal
4. Console
5. Steering wheel
6. Operator's seat
7. Roll bar
8. Hood
9. Battery tray
10. Cutting unit

Controls



g485640

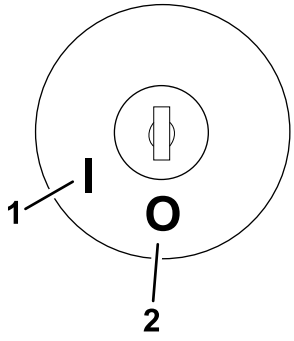
Figure 19

1. Function-control switch
2. Lift/lower joystick
3. InfoCenter
4. Key switch

Key Switch

The key switch has 2 positions: ON and OFF (Figure 20).

Use the key switch to turn on or shut off the machine; refer to Turning On the Machine (page 34) and Shutting Off the Machine (page 37).



g292048

Figure 20

1. ON
2. OFF

Function-Control Switch

The function-control switch (Figure 19) provides 2 traction selections plus a NEUTRAL position.

- NEUTRAL position—neutral and backlapping
- MOW position—used for mowing operation
- TRANSPORT position—used for transport operation

You can shift from MOW to TRANSPORT or TRANSPORT to MOW (not to NEUTRAL) while the machine is in motion; no damage will result

You can move the switch from TRANSPORT or MOW to NEUTRAL and the machine will come to a stop. If you try to switch from NEUTRAL to MOW or TRANSPORT while the pedal is not in the NEUTRAL position, an advisory occurs.

Lift/Lower Joystick

The lift/lower joystick (Figure 19) raises or lowers the cutting units. The joystick can engage or disengage the cutting-unit reels, depending on the function-control-switch position:

- **Function-control switch in the NEUTRAL position**: The cutting units will raise or lower as long as you move the joystick forward or backward, but the reels will not engage unless the machine is in Backlap Mode.
- **Function-control switch in the MOW position**: Move the joystick forward during your cutting operation to lower the cutting units and start the reels. Pull back on the joystick to stop the reels and raise the cutting units.

  To stop the reels without raising the cutting units, pull back on the joystick momentarily and release it. Moving the joystick forward again will start the reels or pulling back again will lift the cutting units. You must engage this feature in the InfoCenter; refer to Adjusting the Tap-Off Delay (page 29).
- **Function-control switch in the TRANSPORT position**: The cutting units can be raised, but the reels will not engage. An advisory appears in the InfoCenter if you attempt to lower the cutting units.

Traction Pedal

The traction pedal (Figure 21) has 3 functions: to make the machine move forward, to move it backward, and to stop the machine. Press the top of the pedal to move forward; press the bottom to move backward or to assist in stopping when moving forward.

To stop the machine, allow the pedal to move to the NEUTRAL position. Do not rest the heel of your foot on the traction pedal in the REVERSE position while the machine is moving forward (Figure 22).

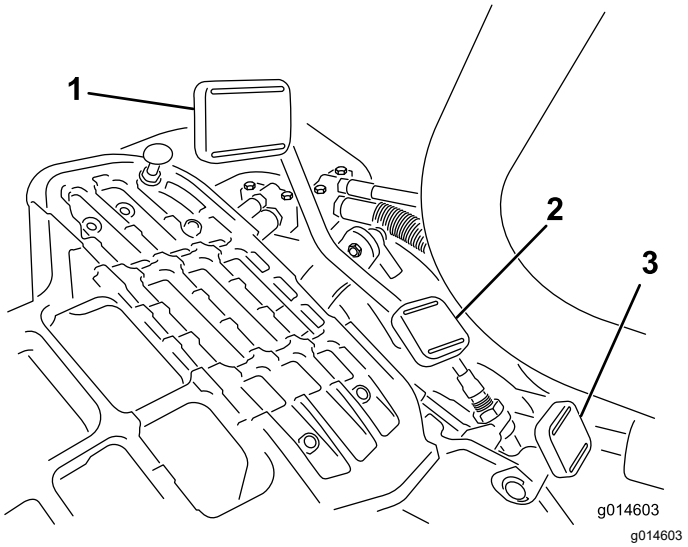


Figure 21

1. Traction pedal—forward
2. Traction pedal—reverse
3. Steering-arm-locking pedal



Figure 22

You can configure the maximum ground speed as follows:

- 3.2 to 8 km/h (3 to 5 mph) forward mowing speed
- 8 to 16 km/h (5 to 10 mph) transport speed
- 3.2 to 4.8 km/h (2 to 3 mph) reverse speed

Steering-Arm-Locking Pedal

Press the pedal (Figure 21) and raise or lower the steering arm for operator comfort, then, release the pedal to lock the arm in place.

Brake Pedal

Press the brake pedal (Figure 23) to stop the machine.

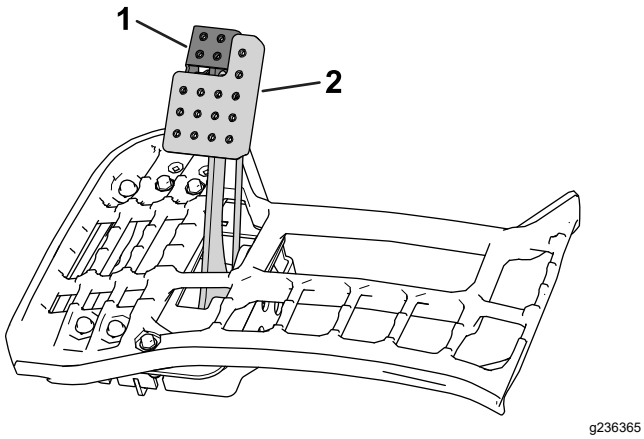


Figure 23

1. Parking brake
2. Brake pedal

Parking Brake

Use the parking brake (Figure 23) to prevent the machine from moving. To engage the parking brake, push down on the brake pedal and press the top forward to latch. To release the parking brake, press the brake pedal until the parking-brake latch retracts.

InfoCenter

Using the InfoCenter Display

The InfoCenter display (Figure 24) shows information about your machine, such as the operating status, various diagnostics, and other information about the machine.

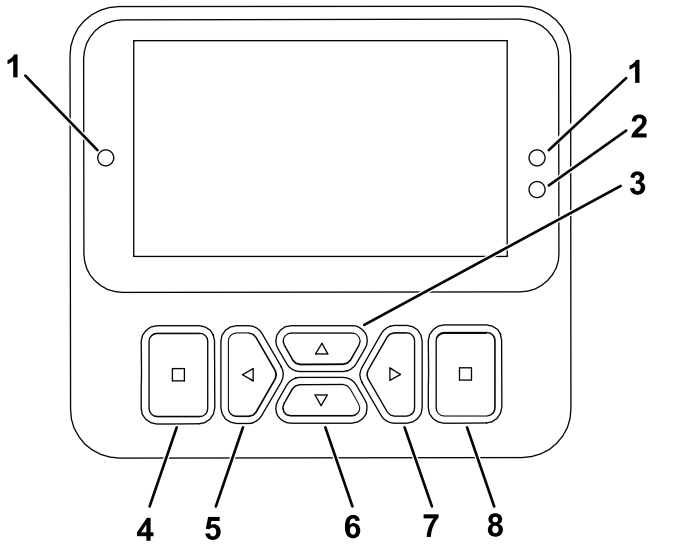


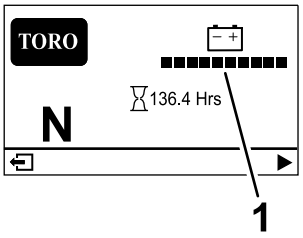
Figure 24

1. Indicator light
2. Display brightness sensor
3. Navigational button—up
4. Back/exit button
5. Navigational button—decrease/ left
6. Navigational button—down
7. Navigational button—increase/ right
8. Enter/select button

Note: The purpose of each button may change depending on what is required at the time. Each button is labeled with an icon displaying its current function.

Use the navigational buttons to navigate between several screens and menu items:

- **Splash screen**: shows current machine information for a few seconds after you move the key to the ON position.
- **Main information screen** (Figure 25): shows current machine information while the key is in the ON position.

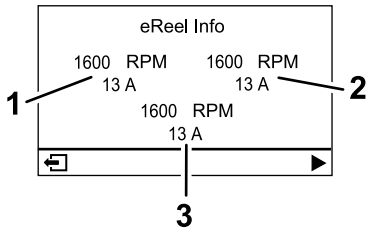


g485335

Figure 25

1. Battery-system charge level

- **eReel motor screen** (Figure 26): shows the speed and current of each cutting-unit motor.

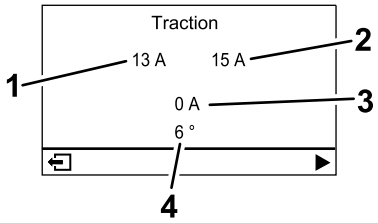


g485252

Figure 26

1. Front left cutting-unit motor
2. Front right cutting-unit motor
3. Center cutting-unit motor

- **Traction motor screen** (Figure 27): shows the current steering angle and the amperage allotted to each traction motor.



g485254

Figure 27

1. Amperage—Front left traction motor
2. Amperage—Front right traction motor
3. Amperage—Center traction motor
4. Steering angle

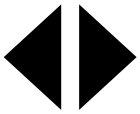
- **Main menu**: refer to Understanding the InfoCenter Menu Items (page 24).

InfoCenter Icon Description

	Hour meter
	Function-control switch is in the NEUTRAL position.
	Function-control switch is in the TRANSPORT position.

InfoCenter Icon Description (cont'd.)

	Function-control switch is in the MOW position.
	The operator must sit in the seat.
	The parking brake is engaged.
	The electric parking brake is engaged.
	The PTO is on.
	The PTO is disengaged.
	Battery
	Indicates when the cutting units are being raised.
	Indicates when the cutting units are being lowered.
	Active
	Inactive
	Previous
	Next
	Increase
	Decrease
	Previous screen

	Next screen
	Increase value
	Decrease value
	Menu
	Scroll up/down
	Scroll left/right

Understanding the InfoCenter Menu Items

To access the main menu, press the back/exit button while at any of the information screens.

Refer to the following tables for a description of the options available from the menus:

Main Menu

Menu Item	Description
FAULTS	The FAULTS menu contains a list of the recent machine faults. Refer to the *Service Manual* or your authorized Toro distributor for more information on the FAULTS menu.
SERVICE	The SERVICE menu contains information on the machine such as hours of use, counts, and calibration. You can also enable the cutting-unit backlap procedure. Refer to the Service (page 24) table.
DIAGNOSTICS	The DIAGNOSTICS menu lists various states and data that the machine currently has. You can use this information to troubleshoot certain issues, as it quickly tells you which machine controls are on/off and lists control levels (e.g., sensor values).
SETTINGS	The SETTINGS menu allows you to modify settings for the InfoCenter display. Refer to the Settings (page 24) table.

MACHINE SETTINGS	The MACHINE SETTINGS menu allows you to adjust machine settings, such as reel speed, maximum mowing speed, and maximum transport speed. Refer to the Machine Settings (page 25) table.
ABOUT	The ABOUT menu lists the model number, serial number, and software version of your machine. Refer to the About (page 25) table.

Service

Menu Item	Description
HOURS	Lists the total number of hours that the key, engine, reels, and backlap have been on, as well as the next service due.
COUNTS	Lists the number of starts, mows, tap-offs, backlaps, and number of times that the engine was cranked longer than 30 seconds.
BACKLAP	Engages/disengages the cutting-unit backlap procedure (when you engage this procedure, you can disengage the mode with this setting or by moving the key to the OFF position).
CALIBRATION 🔒	Allows you to calibrate the steering system, traction system, and lift actuators. Refer to the *Service Manual* for more information on calibration.

Settings

Menu Item	Description
ENTER PIN	Allows a person (superintendent/mechanic) authorized by your company with the PIN code to access protected menus.
BACKLIGHT	Controls the brightness of the LCD display.
LANGUAGE	Controls the language used on the InfoCenter.
FONT SIZE	Controls the size of the font on the InfoCenter.
UNITS	Controls the units used on the InfoCenter. The menu choices are English or metric.

PROTECT SETTINGS 🔒	Controls the protected menus.
RESET DEFAULTS 🔒	Resets the InfoCenter to default settings.

Machine Settings

Menu Item	Description
TAPOFF TIME 🔒	Controls the tap-off delay.
REEL SPEED 🔒	Controls the blade speed on the cutting units.
LOWER SPEED 🔒	Sets the speed that the cutting units lower to the ground for mowing.
BACKLAP SPEED 🔒	Controls the backlap speed.
CLIP CONTROL 🔒	Turns the automatic clip-control feature on or off.
BLADE COUNT 🔒	Set the number of blades in each reel. This setting is only necessary if CLIP CONTROL is set to ON.
HEIGHT OF CUT 🔒	Sets the desired height of cut. This setting is only necessary if CLIP CONTROL is set to ON.
MAX MOW 🔒	Sets the maximum machine speed while mowing.
MAX TRANSPORT 🔒	Sets the maximum machine speed while transporting.
MAX REVERSE 🔒	Sets the maximum machine speed while moving the machine in reverse.
SLOW & TURN 🔒	Enables or disables the slow in turn function.
3WD KIT 🔒	Enables or disables the 3-Wheel Drive Kit.
BATT. RESERVE 🔒	Sets the distance that is needed to transport the machine back to the shop when the battery level becomes low.

About

Menu Item	Description
MODEL	Lists the model number of the machine.
SN	Lists the serial number of the machine.
S/W REV	Lists the software revision of the master controller.
XDM-2700 🔒	Lists the software revision of the InfoCenter.

CUTTING UNIT 1 🔒	Lists the software revision of the center cutting unit motor.
CUTTING UNIT 2 🔒	Lists the software revision of the front, left cutting unit motor.
CUTTING UNIT 3 🔒	List the software revision of the front, right cutting unit motor.
PRECHARGE 🔒	Lists the serial number of the generator.
LIFT LOWER 1 🔒	Lists the software part number and the revision version for the precharge controller
LIFT LOWER 2 🔒	Lists the software part number and the revision version for the front left cutting unit.
LIFT LOWER 3 🔒	Lists the software part number and the revision version for the front right cutting unit.
TRACTION1 🔒	Lists the software part number and the revision version for the front right traction motor.
TRACTION2 🔒	Lists the software part number and the revision version for the front left traction motor.
TRACTION3 🔒	Lists the software part number and the revision version for the 3-Wheel Drive Kit (if equipped).
STEERING 🔒	Lists the software part number and the revision version for the rear steering motor.
BATTERY TB 🔒	Lists the software part number and the revision version for each of the batteries equipped on the machine.

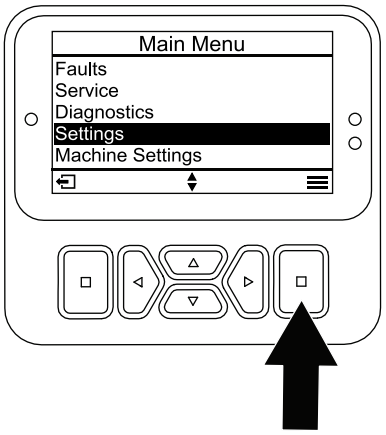
Note: 🔒 Protected under Protected Menus—accessible only by entering PIN; refer to Accessing Protected Menus (page 25).

Accessing Protected Menus

Note: The factory default PIN code for you machine is either 0000 or 1234.

If you changed the PIN code and forgot the code, contact your authorized Toro distributor for assistance.

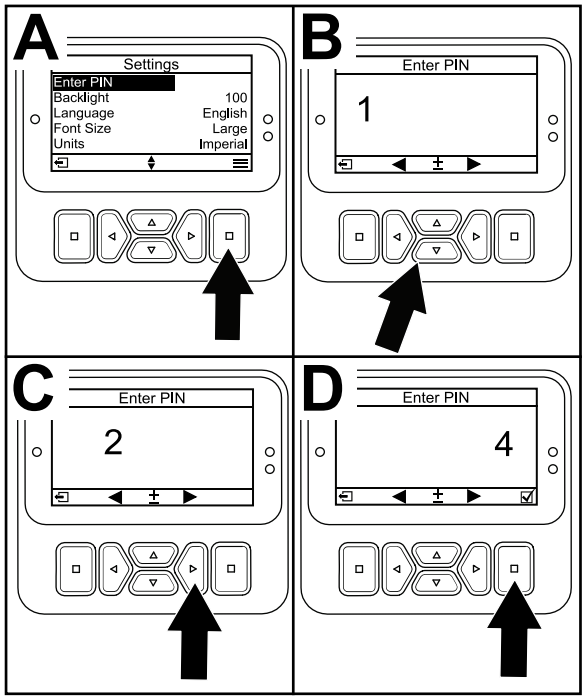
1. From the MAIN MENU, scroll down to the SETTINGS menu and press the select button (Figure 28).



g471349

Figure 28

2. In the SETTINGS menu, scroll to ENTER PIN and press the select button (Figure 29A).



g471350

Figure 29

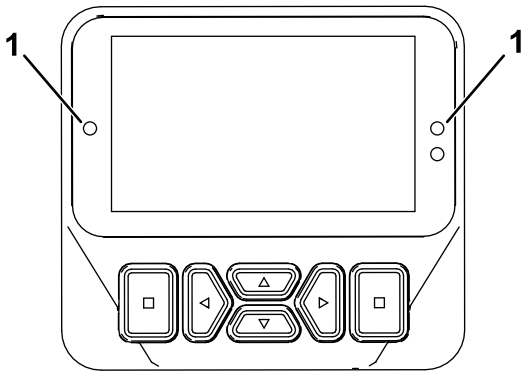
3. To enter the PIN code, press the up/down navigation buttons until the correct first digit appears, then press the right navigation button to move on to the next digit (Figure 29B and Figure 29C). Repeat this step until the last digit is entered.
4. Press the select button (Figure 29D).

   Note: If the display accepts the PIN code and the protected menu is unlocked, **PIN** displays in the upper right corner of the screen.
5. To lock the protected menu, rotate the key switch to the OFF position and then to the ON position.

Viewing and Changing the Protected Menu Settings

1. In SETTINGS, scroll down to PROTECT SETTINGS.
2. To view and change the settings without entering a PIN code, use the select button to change the PROTECT SETTINGS to ☐ (Off).
3. To view and change the settings with a PIN code, use the select button to change the PROTECT SETTINGS to ☑ (On), set the PIN code, and turn the key in the ignition switch to the OFF position and then to the ON position.

Understanding the Diagnostic Light



g462666

Figure 30

1. Diagnostic light

- Flashing red—active fault
- Solid red—active advisory
- Solid blue—calibration/dialog messages
- Solid green—normal operation

Main-Power Connectors

Before you charge the machine, work on the machine, or install, remove, or work on the cutting units, disconnect the machine from the power supply by raising the connector cover and separating the main-power connectors (Figure 31), located at the base of the roll bar on the left side of the traction unit. Plug the connectors together before operating the machine.

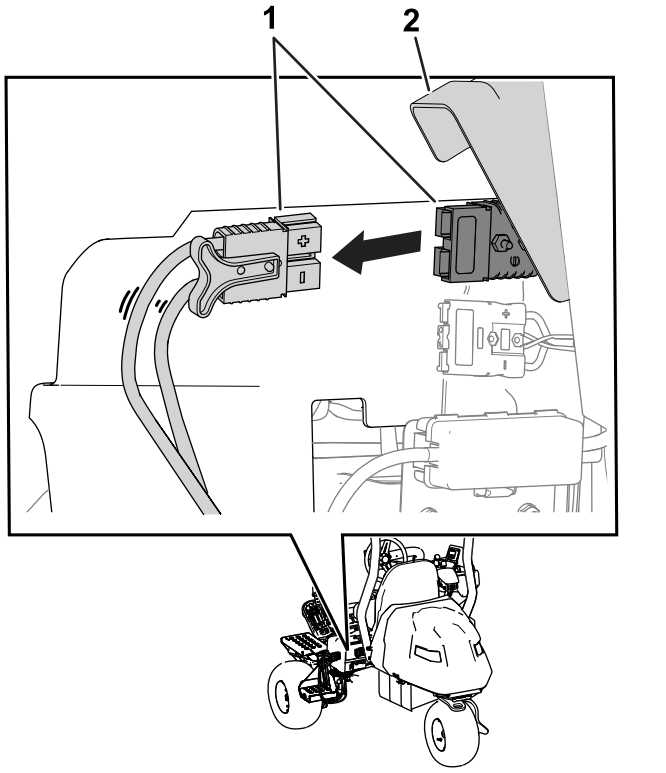


Figure 31

1. Main-power connectors
2. Connector cover

⚠ CAUTION

If you do not disconnect the power to the machine, someone could accidentally turn on the machine, causing serious bodily injury.

Always separate the connectors before working on the machine.

Specifications

Refer to Figure 32 and the Traction-Unit Specifications Table (page 27) for traction-unit dimensions and weight.

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

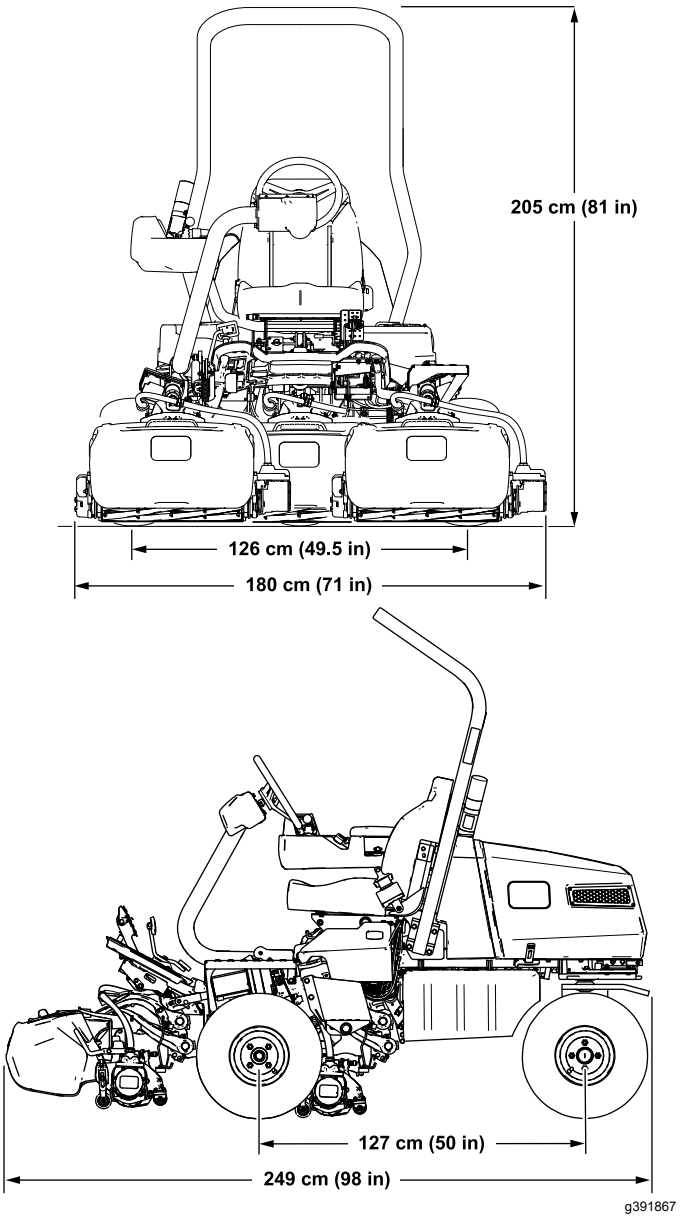


Figure 32

Traction-Unit Specifications Table

Width of cut	151 cm (59.5 inches)
Wheel track	126 cm (49.5 inches)
Wheel base	127 cm (50 inches)
Overall length (w/baskets)	249 cm (98 inches)
Overall width	180 cm (71 inches)
Overall height	205 cm (81 inches)
Weight*	705 kg (1,554 lb)
*Traction unit equipped with 11-blade cutting units, narrow wiehle rollers, no operator, and the standard seat.	

Electrical Specifications Table

Battery Quantity	5
Rated Voltage	60 VDC maximum and 55.2 VDC nominal usage
Amp Hours	199.85

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 or 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

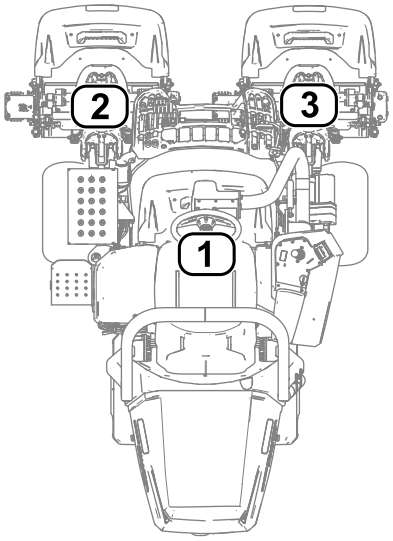
General Safety

- 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.
- Engage the parking brake, shut off the machine, 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.
- Know how to stop the machine and shut off the machine quickly.
- Check that operator-presence controls, safety switches, and safety protective devices are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- 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.

Identifying the Cutting Units

The InfoCenter uses the numbers 1, 2, and 3 to identify each cutting unit (e.g., CU1, CU2, and CU3 in the ABOUT menu).

- **1** refers to the center cutting unit (Figure 33)
- **2** refers to the front left cutting unit (Figure 33)
- **3** refers to the front right cutting unit (Figure 33)



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Figure 33

1. Center cutting unit
2. Front left cutting unit
3. Front right cutting unit

Using the InfoCenter to Adjust the Machine Settings

You can use the InfoCenter to adjust the following machine settings:

- **Tap-off delay**; refer to Adjusting the Tap-Off Delay (page 29).
- **Reel speed while mowing**; refer to Adjusting the Mowing Reel Speed (page 29).
- **Cutting-unit lower speed**; refer to Setting the Cutting-Unit Lower Speed (page 30).
- **Reel speed while backlapping the cutting units**; refer to Adjusting the Backlap Reel Speed (page 30).
- **Clip control**; refer to Setting the Clip-Control Feature (page 30).
- **Height of cut (HOC)**; refer to Adjusting the Height of Cut (HOC) (page 30).
- **Number of cutting-unit blades**; refer to Adjusting the Number of Cutting-Unit Blades (page 31).
- **Maximum mowing speed**; refer to Adjusting the Maximum Mowing Speed (page 31).
- **Maximum transport speed**; refer to Adjusting the Maximum Transport Speed (page 31).
- **Maximum reverse speed**; refer to Adjusting the Maximum Reverse Speed (page 31).
- **Slow and turn**; refer to Setting the Slow and Turn Function (page 31).
- **Disabling an equipped 3-Wheel-Drive Kit**; refer to Disabling an Equipped 3-Wheel-Drive Kit (page 31).
- **Battery-reserve capacity**; refer to Setting the Battery-Reserve Capacity (page 31).

Note: Each setting is passcode-protected. You may need to enter a passcode to edit the settings.

Adjusting the Tap-Off Delay

Navigate to the TAPOFF TIME option to adjust the tap-off delay. The tap-off delay feature allows the cutting units to turn off without raising. The delay setting represents the maximum time for the lift/lower joystick to remain in the rearward position to activate this feature.

Refer to the following table for the delay time options and their corresponding increment numbers:

Tap-Off Delay Options

Increment Number	Delay Time (Seconds)
1	Off
2	0.050
3	0.100
4	0.150
5	0.200
6	0.250
7	0.300
8	0.350
9	0.400
10	0.450

Note: The factory default setting is 1, which disables this feature.

Adjusting the Mowing Reel Speed

Navigate to the REEL SPEED option to adjust the reel speed while mowing. This setting can be adjusted when the clip control setting is OFF; refer to Setting the Clip-Control Feature (page 30).

Refer to the following table for the reel speed options and their corresponding increment numbers:

Mowing Reel Speed Options

Increment Number	Reel Speed (RPM)
1	800
2	950
3	1100
4	1250

Mowing Reel Speed Options (cont'd.)

5	1400
6	1550
7	1700
8	1850
9	2000

Note: The factory default setting is 2000 rpm (increment number 9).

Setting the Cutting-Unit Lower Speed

Navigate to the LOWER SPEED option to set the speed that the cutting units lower to the ground for mowing. You can toggle between 1 (slowest speed) and 9 (quickest speed).

Test the lower speed before you mow. Adjust the speed as desired.

Note: The factory default setting is 5.

Adjusting the Backlap Reel Speed

Navigate to the BACKLAP RPM option to adjust the reel speed while performing a backlap operation.

Refer to the following table for the reel speed options and their corresponding increment numbers:

Backlap Reel Speed Options

Increment Number	Reel Speed (RPM)
1	200
2	240
3	280
4	320
5	360
6	400
7	440
8	480
9	520

Note: The factory default setting is 200 rpm (increment number 1).

Adjusting the Clip-Control Feature

Understanding the Radius-Dependent-Speed (RDS) System

To achieve a consistent, high quality-of-cut and a uniform after cut appearance, the machine is equipped with the patent-pending Radius Dependent Speed™ (RDS) system. The RDS system is a clip-control and independent wheel-speed feature that varies the speeds of each reel motor and each traction motor to maintain a constant clip and reduce turf scrubbing in turns while cutting.

When the machine is turning while cutting (e.g., during the clean-up pass), the reel on the inside of the turn will rotate at a slower rpm than the reel on the outside of the turn. The center reel splits the difference of the inside and outside reel speeds so that all three cutting units have the same clip. The sharper the turn, the greater the difference in reel speeds. Additionally, if the machine speed changes while you are cutting, the RDS system adjusts the reel speed to maintain a constant clip. This feature reduces turf thinning on the inside reel (in comparison to other riding greens mowers), which can reduce triplex ring.

The RDS system also adjusts each wheel-motor speed during a turn, similar to the reel-motor speeds changing in a turn. The inside wheel motor will turn at a slower rpm than the outside wheel motor. This minimizes wheel scrubbing in the turn and can reduce triplex ring.

Setting the Clip-Control Feature

Navigate to the CLIP CONTROL option to set the RDS system feature.

- Clip control set to ON: The machine uses your settings from the HEIGHT OF CUT (HOC) and BLADE COUNT options and the left and right wheel speeds to determine the speed of each reel.
- Clip control set to OFF: The machine uses your setting from the REEL SPEED option. The reels rotate at a constant rate.

Note: The factory default setting is ON.

Adjusting the Height of Cut (HOC)

Navigate to the HEIGHT OF CUT (HOC) option to adjust the height of cut. The clip control feature must be set to ON to use this feature; refer to Setting the Clip-Control Feature (page 30).

Note: The factory default setting is 3.2 mm (0.125 inch).

Adjusting the Number of Cutting-Unit Blades

Navigate to the BLADE COUNT option to adjust the number of cutting-unit blades. Determine the number of blades in your equipped cutting units, and select the appropriate value (5, 8, 11, or 14).

Note: The factory default setting is 11.

Adjusting the Maximum Mowing Speed

Navigate to the MAX MOW option to adjust the maximum mowing speed. You can adjust the speed from 4.8 km/h (3.0 mph) to 8.0 km/h (5.0 mph) in increments of 0.3 km/h (0.2 mph).

Note: The factory default setting is 6.1 km/h (3.8 mph).

Adjusting the Maximum Transport Speed

Navigate to the MAX TRANSPORT option to adjust the maximum transport speed. You can adjust the speed from 8.0 km/h (5.0 mph) to 16.0 km/h (10.0 mph) in increments of 0.8 km/h (0.5 mph).

Note: The factory default setting is 16.0 km/h (10.0 mph).

Adjusting the Maximum Reverse Speed

Navigate to the MAX REVERSE option to adjust the maximum reverse speed. You can adjust the speed from 3.2 km/h (2.0 mph) to 8.0 km/h (5.0 mph) in increments of 0.8 km/h (0.5 mph).

Note: The factory default setting is 4.0 km/h (2.5 mph).

Note: For machine-software versions A through D, the maximum speed is 4.8 km/h (3.0 mph). Update the machine software for the capability to set the maximum speed to 8.0 km/h (5.0 mph).

Setting the Slow and Turn Function

Navigate to the SLOW & TURN option to set the slow and turn function. The slow and turn function slows the machine speed while you turn the machine for another cutting pass on a green.

Note: The factory default setting is OFF.

Disabling an Equipped 3-Wheel-Drive Kit

Navigate to the 3WD KIT option to disable an equipped 3-Wheel-Drive Kit.

If you choose to disable this option, the kit will be enabled again if you cycle the key switch (i.e., turn off, then turn on the machine) with an equipped 3-Wheel-Drive Kit.

Note: When you install the 3-Wheel-Drive Kit, the kit is automatically enabled.

Setting the Battery-Reserve Capacity

Navigate to the BATT. RESERVE option to set the amount of distance needed to transport the machine to the shop. This allows you to have enough battery power (when the battery level becomes too low) to transport the machine to the shop for recharging; refer to Monitoring the Battery-System Charge Level (page 36).

Note: You can adjust the distance from 0.8 km (0.5 mi) to 8 km (5 mi) in 0.8 km (0.5 mi) increments.

Understanding the InfoCenter Dialog Messages

When the machine is being calibrated, dialog messages appear in the InfoCenter. These messages are intended to instruct you through the calibration process.

Refer to the following table for a list of each dialog message:

Dialog Messages

Message Number	InfoCenter Message Text
1	Return pedal to neutral
4	Move pedal to max forward and hold
5	Max forward calibration passed
9	Max forward calibration failed. Voltage out of spec
13	Move pedal to max reverse and hold
14	Max reverse calibration passed
16	Max reverse calibration failed. Voltage out of spec
17	Calibration failed. Pedal position unknown
18	Return pedal to neutral. Continue?
100	Calibration is engaged
101	Calibration is complete

Dialog Messages (cont'd.)

102	Cycle the key switch
110	Inhibit calibration. Component not responding
111	Inhibit calibration. Component not ready
112	Inhibit calibration. Fault active
113	Inhibit calibration. Not in seat
114	Inhibit calibration. Not in neutral
115	Inhibit calibration. In neutral
116	Inhibit calibration. Parking brake is engaged
300	Return pedal to neutral
301	Center steering wheel. Continue?
302	Manually center rear wheel. Continue?
303	Steer rear wheel max left. Continue?
304	Steer rear wheel max right. Continue?
305	Rear wheel center out of range
306	Rear wheel angle out of range
400	Caution: Machine must be on jack stands. Continue?
401	Inhibit calibration. Contactor open
402	Inhibit calibration. Pedal in Neutral
403	Return pedal to neutral
404	Wait for wheels to stop
405	Move pedal to max forward and hold
406	Calibration active. Hold pedal
500	Lift/Lower extend active
501	Lift/Lower retract active
502	Move joystick to lower position
503	Move joystick to raise position
504	Is the cutting unit installed? Continue?
1100	Traction diagnostic messages enabled
1101	Steering diagnostic messages enabled

Tilting the Steering Wheel

You can tilt the steering wheel to a comfortable operating position.

1. Loosen the bolts (Figure 34) that secure the steering-wheel assembly to the steering arm.

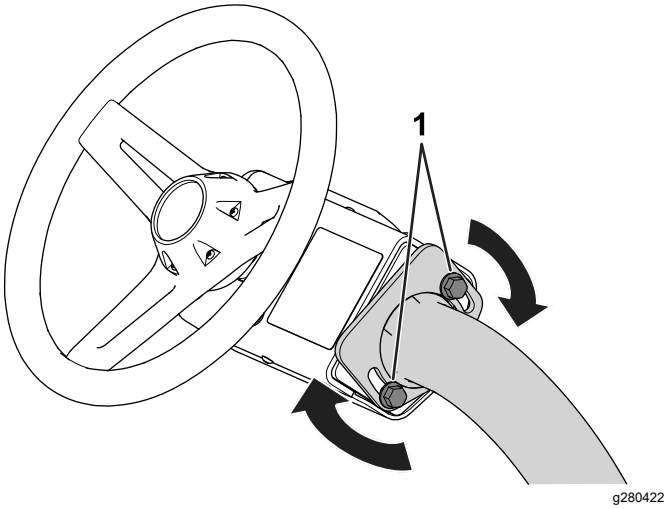


Figure 34

1. Bolt

2. Tilt the steering wheel to a comfortable position.
3. Tighten the bolts (Figure 34) to secure the steering-wheel assembly in your adjusted position.

Performing Daily Maintenance

Service Interval: Before each use or daily

Before turning on the machine each day, perform the following procedures:

- Check the reel-to-bedknife contact; refer to Checking the Reel-to-Bedknife Contact (page 56).
- Check the tire pressure; refer to Checking the Tire Pressure (page 51).
- Check the safety-interlock system; refer to Checking the Safety-Interlock System (page 34).
- Check the parking brake function by actuating the parking brake and ensuring that it engages; refer to Parking Brake (page 22).

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 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 turn on the machine, 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.
- Keep bystanders and children out of the operating area. If co-workers must be present, use caution and ensure that the grass baskets are installed on the machine.
- 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.
- Do not leave an activated machine unattended.
- Before you leave the operating position, do the following:
  - Park the machine on a level surface.
  - Lower the cutting units to the ground and ensure that they are disengaged.
  - Engage the parking brake.
  - Shut off the machine and remove the key.
  - Wait for all movement to stop.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.

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.

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. Loss of traction to the drive wheels may result in sliding and a loss of braking and steering.
- 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.
- Use extreme caution with grass-collection systems or other attachments. These can change the stability of the machine and cause a loss of control.

Breaking in the Machine

8 hours of operation is required for the break-in period.

Since the first hours of operation are critical to future dependability of the machine, monitor its functions and performance closely so that minor difficulties, which could lead to major problems, are noted and can be corrected. Inspect the machine frequently during break-in for signs of loose fasteners or any other malfunction.

Turning On the Machine

Note: Inspect the areas beneath the cutting units to ensure that they are clear of debris.

1. Sit in the operator's seat and fasten the seatbelt.
2. Insert the key into the switch and move it to the ON position.

Checking the Machine after Turning On the Machine

1. Move the function-control switch to the MOW position.
2. Disengage the parking brake.
3. Move the lift/lower joystick forward momentarily.

   The cutting units should lower and all the reels should rotate.
4. Move the lift/lower joystick rearward.

   The cutting reels should stop rotating and the cutting units should raise to the full transport position.

Understanding the Safety-Interlock System

Service Interval: Before each use or daily

⚠ DANGER

If safety-interlock switches are disconnected or damaged, the machine could operate unexpectedly, which will result in serious injury or death.

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

The purpose of the safety-interlock system is to prevent operation of the machine where there is possible injury to you or damage to the machine.

The safety-interlock system prevents the machine from moving unless:

- The parking brake is disengaged.
- You are seated in the operator's seat.
- The function-control switch is in the MOW position or the TRANSPORT position.

Additionally, the safety-interlock system prevents the reels from operating unless the function-control switch is in the MOW position (except when the machine is in Backlap Mode).

Checking the Safety-Interlock System

Perform the following steps to check the interlock system:

- Rise from the seat, turn on the machine, disengage the parking brake, move the function-control switch to the MOW or TRANSPORT position, and engage the traction pedal.

  The machine should not move, as you are not in the seat. This indicates that the interlock system is operating correctly. Correct the problem if it is not operating properly.
- Sit in the seat, turn on the machine, engage the parking brake, move the function-control switch to the MOW or TRANSPORT position, and engage the traction pedal.

  The machine should not move, as the parking brake is engaged. This indicates that the interlock system is operating correctly. Correct the problem if it is not operating properly.
- Sit in the seat, turn on the machine, disengage the parking brake, move the function-control switch to the NEUTRAL position, and engage the traction pedal.

  The machine should not move, as the function-control switch is in the NEUTRAL position. This indicates that the interlock system is operating correctly. Correct the problem if it is not operating properly.
- Sit on the seat, move the traction pedal to the NEUTRAL position, move the function-control switch to the NEUTRAL position, engage the parking brake, turn on the machine, and move the lift/lower joystick forward to lower the cutting units.

  The cutting units should lower but not start rotating. If they start rotating, the interlock system is not operating correctly; correct the problem before operating the machine.

Driving the Machine without Mowing

- Ensure that the cutting units are fully raised.
- Sit in the seat, fasten the seat belt, disengage the parking brake, and move the function-control switch to the TRANSPORT position to drive the machine without mowing.
- Always approach irregular areas at a reduced speed and cross severe undulations carefully.
- Familiarize yourself with the width of the machine. Do not attempt to pass between objects that are close together to prevent costly damage and downtime.

Mowing the Green

Before mowing greens, find a clear area and practice performing basic machine functions (e.g., turning on and stopping the machine, raising and lowering the cutting units, and turning).

Inspect the green for debris, remove anything that may damage the cutting units while mowing, remove the flag from the cup, and determine the best direction to mow. Base the direction to mow on the previous mowing direction. Always mow in an alternate pattern from the previous mowing so that the grass blades are less apt to lay down and will have a greater chance of being cut.

Cutting the Green

1. Start on 1 edge of the green so that you can use the ribbon procedure of cutting.

   Note: This holds compaction to a minimum and leaves a neat, attractive pattern on the greens.

2. Move the function-control switch to the MOW position.

3. Push forward the lift/lower mow lever as the front edges of the grass baskets cross the outer edge of the green.

   Note: This procedure drops the cutting units to the turf and starts the reels.

   Important: **The center cutting unit lifts or lowers slightly after the front cutting units do; therefore, you should practice gaining the required timing necessary to minimize the cleanup mowing operation and prevent scalping of the fringe.**

   The center cutting unit lift and lower is based on ground speed. A slower ground speed increases the lift or lower delay; a faster speed decreases the lift or lower delay. The machine monitors the ground speed and updates this delay so that all three cutting units drop in a line.

4. Overlap a minimal amount with the previous cut on return passes.

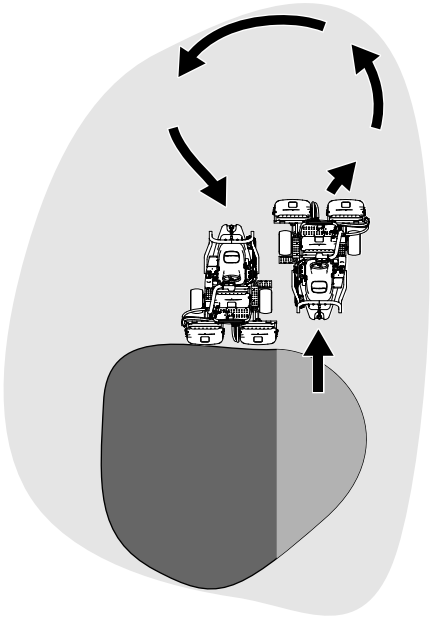
   Note: To assist in maintaining a straight line across the green and keeping the machine an equal distance from the edge of the previous cut, imagine a sight line approximately 1.8 to 3 m (6 to 10 ft) ahead of the machine to the edge of the uncut portion of the green (Figure 36). Include the outer edge of the steering wheel as part of the sight line; i.e., keep the steering wheel edge aligned with a point that is always kept the same distance away from the front of the machine.

5. As the front edges of the baskets cross the edge of the green, pull back the lift/lower joystick rearward and hold it until all the cutting units have risen. This stops the reels and lifts the cutting units.

   Important: **Time this step correctly so that you do not cut into the fringe area, yet cut as much of the green as possible to minimize the amount of grass left to mow around the outer periphery.**

6. To cut down on operating time and to ease the lineup for the next pass, momentarily turn the machine in the opposite direction, then turn it in the direction of the uncut portion. This movement is a tear-shaped turn (Figure 35), which quickly lines the machine up for your next pass.

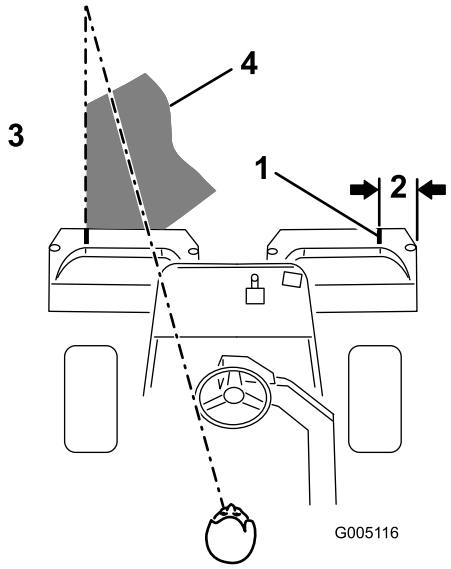
   Note: If the Slow and Turn function is engaged, the machine slows down during the turn without requiring you to release pressure on the traction pedal.



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Figure 35

Note: Try to make as short of a turn as possible, except during warmer weather—a wider arc minimizes the turf bruising.



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Figure 36

1. Alignment strip
2. Approximately 12.7 cm (5 inches)
3. Cut grass on the left.
4. Keep a focal spot 2 to 3 m (6 to 10 ft) ahead of the machine.

Important: **Never stop the machine on a green, especially while the cutting units are engaged; damage to the turf may result. Stopping the machine on a green may leave marks or indentations from the wheels.**

Cutting the Periphery and Finishing the Job

1. Finish cutting the green by mowing the outer periphery. Change the direction of cutting from the previous mowing.

   Refer to Understanding the Radius-Dependent-Speed (RDS) System (page 30) to improve the after-cut appearance and reduce triplex ring.

   Note: Always keep weather and turf conditions in mind and be sure to change the direction of mowing from the previous cutting.

2. When you finish mowing the outer periphery, tap the lift/lower joystick rearward to stop the reels (if the tap-off delay feature is engaged), then drive off the green. When all the cutting units are off the green, move the lift/lower joystick rearward to raise the cutting units.

   Note: This step minimizes grass clumps left on the green.

3. Replace the flag.
4. Empty the grass baskets of all clippings before you transport the machine to the next green.

   Note: Heavy wet clippings cause strain on the baskets, suspensions, and actuators. This adds unnecessary weight to the machine, which decreases energy efficiency.

Monitoring the Battery-System Charge Level

Refer to the main information screen in the InfoCenter to determine the battery-system charge level; refer to Using the InfoCenter Display (page 22).

Understanding the Low Battery-Level Advisories

- When the battery level reaches a low percentage, an low-battery advisory appears on the InfoCenter. When you are operating at this battery percentage, finish cutting the current green, then transport the machine to a designated battery-charging area and charge the batteries; refer to Charging the Lithium-Ion Batteries (page 42).
- If the battery level becomes too low (i.e., below 10%) while you are operating the machine, an advisory appears on the InfoCenter. While you are operating at this battery percentage, you can only transport the machine at a slower speed; the cutting units cannot be engaged. Transport your

machine to a designated battery-charging area and charge the batteries; refer to Charging the Lithium-Ion Batteries (page 42).

Shutting Off the Machine

1. Transport the machine to a level surface.
2. Move the function-control switch to the NEUTRAL position.
3. Engage the parking brake.
4. Rotate the key to the OFF position to shut off the machine.
5. Remove the key.

After Operation

After Operation Safety

General Safety

- Engage the parking brake, shut off the machine, 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.
- Clean grass and debris from the machine, especially the cutting units and drives, to help prevent fires.
- Disconnect the main-power connectors while storing or hauling the machine.
- Disengage the drive to the attachment whenever you are hauling or not using the machine.
- Allow the machine to cool before storing the machine in any enclosure.
- Maintain and clean the seat belt(s) as necessary.
- Do not store the machine where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.

Battery and Charger Safety

General

WARNING: Risk of fire and electric shock—The batteries have no user-serviceable parts.

- Confirm the voltage that is available in your country before using the charger.
- Do not charge the machine in a wet environment; keep it protected from rain and snow.
- A risk of fire, electric shock, or injury may result from using an accessory not recommended or sold by Toro.
- To reduce risk of a battery explosion, follow these instructions and the instructions for any equipment that you intend to use near the charger. To reduce risk of a battery explosion, follow these instructions and the instructions for any equipment that you intend to use near the charger.
- Batteries could emit explosive gasses if they are significantly overcharged.
- Refer to an authorized Toro distributor to service or replace a battery.

Training

- Never allow children or untrained people to operate or service the charger. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Read, understand, and follow all instructions on the charger and in the manual before operating the charger. Be familiar with the proper use of the charger.

Preparation

- Keep bystanders and children away while charging.
- Shut off the machine and wait until the machine has completely powered down before charging. Failure to do this may cause arcing.
- Ensure that the area is well ventilated while charging.
- Use the charger only within the voltage range specified in this *Operator's Manual*, and use only a power cord approved by Toro.
- Contact your authorized Toro distributor for the proper charger and power cord.

Operation

- Do not charge a frozen battery.
- Do not abuse the cord. Do not carry the charger by the cord or pull on the power supply cord to disconnect the charger from the receptacle. Store the cord away from heat, oil, and sharp edges.
- Connect the charger directly to a grounding receptacle. Do not use the charger on an ungrounded outlet, even with a grounding adapter.
- Do not alter the provided power cord or plug.
- Remove metal items such as rings, bracelets, necklaces, and watches when working with a lithium-ion battery. A lithium-ion battery can produce enough current to cause a severe burn.
- Use an extension cord that can handle the charging amperage specified in this *Operator's Manual*. If you are charging outdoors, use an extension cord rated for outdoor use.

- If the power supply cord is damaged while it is plugged in, disconnect the cord from the wall receptacle and contact an authorized Toro distributor for a replacement.
- Unplug the charger from the electrical outlet when not in use, before moving it to another location, or prior to servicing it.

Maintenance and Storage

- Store the charger indoors in a dry, secure place that is out of the reach of unauthorized users.
- Do not disassemble the charger.
- Take the charger to an authorized Toro distributor when service or repair is required.
- Unplug the power cord from the outlet before starting any maintenance or cleaning to reduce risk of electric shock.
- Maintain or replace safety and instruction labels as needed.
- Do not operate the charger with a damaged cord or plug. Contact an authorized Toro distributor to obtain a replacement cord.
- If the charger is damaged, do not use it; take it to an authorized Toro distributor.

Towing Safety

- Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
- Follow the manufacturer’s recommendation for weight limits for towed equipment and towing on slopes. On slopes, the weight of the towed equipment may cause loss of traction and loss of control.
- Never allow children or others in or on towed equipment.
- Travel slowly and allow extra distance to stop when towing.

Inspecting and Cleaning after Mowing

After mowing, thoroughly wash the machine with a garden hose without a nozzle so that excessive water pressure does not contaminate and damage the seals, bearings, and electronics. **Do not wash the electrical connections with water.**

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. It may force water under seals, contaminating oil or grease contained housings. Avoid excessive use of water near the control panel and batteries.**

Inspect the cutting units for sharpness after you clean the machine.

Hauling the Machine

- Use care when loading or unloading the machine into a trailer or a truck.
- Use a full-width ramp for loading the machine into a trailer or a 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 (Figure 37).

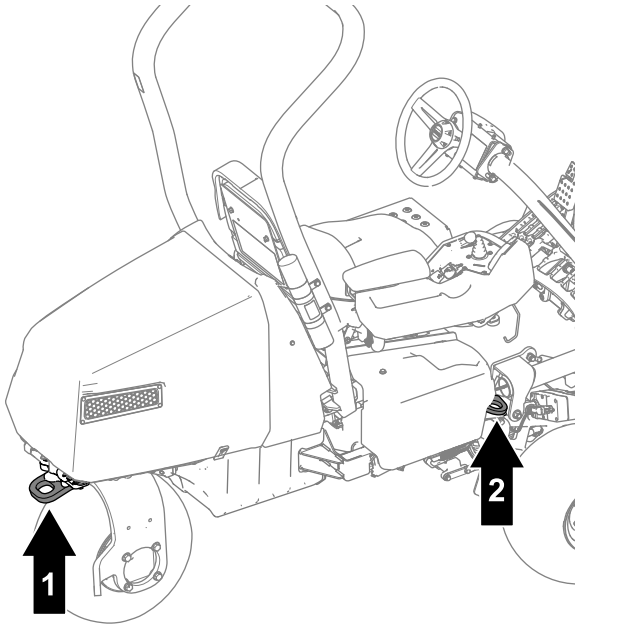


Figure 37

1. Rear tie-down loop
2. Tie-down loop (each side of the machine)

Towing the Machine

Note: Refer to Figure 38 for this procedure.

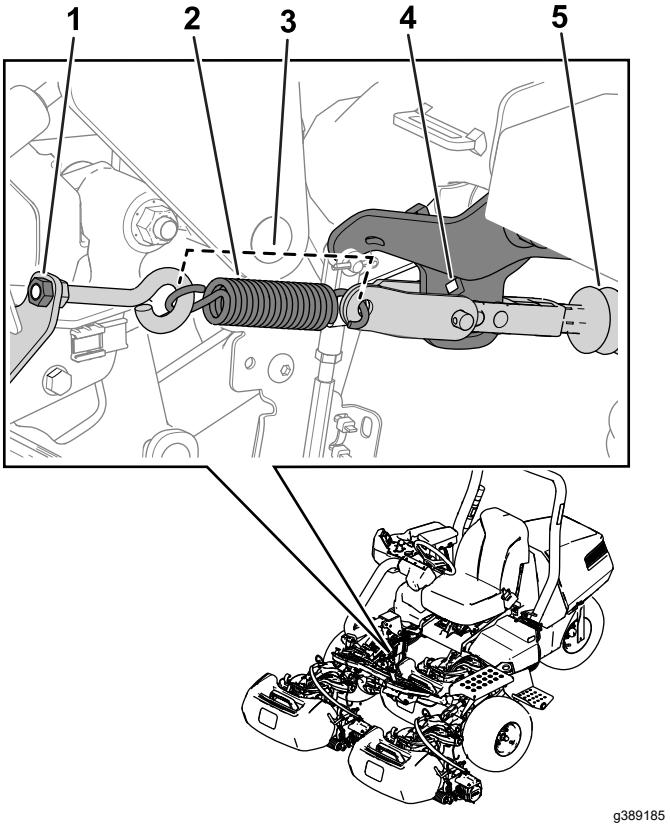


Figure 38

1. Nut
2. Spring
3. Spring length—11.4 cm (4.5 inches)
4. Arm-bracket hole
5. Actuator shaft

To tow the machine, you must perform the following procedure to release the brake actuator:

1. Engage the parking brake.
2. Remove the key and disconnect the main-power connectors.

   Important: **If the main-power connectors are connected while towing, electrical damage may result.**
3. If the 3-Wheel Drive Kit is installed, disconnect the kit-wire-harness connectors from the main wire harness.

   Important: **If the kit and machine wire harnesses are connected while towing, electrical damage may result.**
4. Chock both sides of the front tires.
5. Release tension on the spring by loosening the nut that secures the eyebolt to the spring bracket (Figure 38).
6. Remove the spring.
7. Insert a ratchet (3/8 inch) through the hole of the arm bracket and push in the actuator shaft.

⚠ DANGER

When the actuator is released from the brake, the machine is able to free wheel. A free-wheeling machine can cause serious injury to bystanders.

If the machine is not being towed, engage the parking brake.

8. Have an assistant sit in the seat, fasten the seatbelt, and use the brake while you tow the machine.

   Note: This ensures that the machine is under control when you tow the machine.
9. Remove the chocks from the tires.
10. When the machine is ready to be towed, disengage the parking brake.
11. Use the rear castor fork to tow the machine (Figure 39).

    Important: **Do not exceed 5 km/h (3 mph) while towing the machine. Damage to the electrical components may result.**

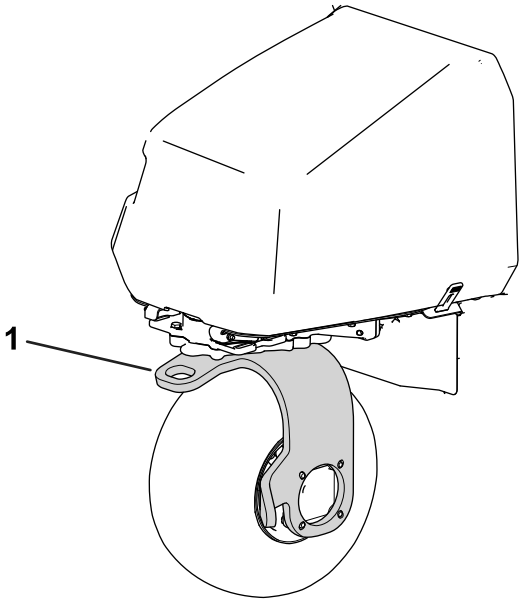


Figure 39

1. Rear castor fork

After you have towed the machine to your intended destination, perform the following steps:

1. Engage the parking brake.
2. Remove the tow strap from the castor fork.
3. Install the spring as shown in Figure 38.

4. Tighten the eyebolt nut so that the spring length is 11.4 cm (4.5 inches) when installed (Figure 38).

Maintaining the Lithium-Ion Batteries

⚠ WARNING

The batteries contain high voltage, which could burn or shock you.

- **Do not attempt to open the batteries.**
- **Use extreme care when handling a battery with a cracked case.**
- **Use only the charger designed for the batteries.**

The lithium-ion batteries hold a sufficient charge to perform intended work during its life span. During the first 4 years of operation, the total area that you can cut per a single full charge is 13,006 m^2 (140,000 ft^2). This performance is based on the following conditions:

- Your reel blades and bedknives are sharp.
- The bedknife and reel contact is adjusted per the *Operator's Manual*.
- The groomer is set at half of the height of cut or higher.
- The rear roller brushes are set to the lightest contact.
- 8 miles of transport distance is needed.
- The golf course that you perform work on is lightly undulated.

As time goes by, the total amount of work that the batteries are able to complete on a single charge gradually diminishes.

Note: Your results may vary depending on the distance that you need to transport the machine, the undulations that you travel across, the contact setting and sharpness of the bedknife and reel, and other factors as discussed in this section.

To achieve maximum life and use from your batteries, follow these guidelines:

- Do not open the battery.
- Store/park the machine in a clean, dry garage or storage area, **away from direct sunlight, heat sources, rain, and wet conditions.** Refer to Battery Storage Requirements (page 57) for temperature requirements.
- If you are mowing in hot conditions or in sunlight, the battery may overheat. If this happens, a high-temperature alert will appear on the InfoCenter. In this condition, the cutting units are disengaged and the machine slows down.

  Immediately drive the machine to a cool location out of the sun, turn off the machine, and allow the batteries to cool fully before resuming operation.
- Adjust the reel-to-bedknife contact to be as light as possible. This reduces the power that is needed to run the cutting units, and increases the amount of work the machine performs on each charge. Refer to Checking the Reel-to-Bedknife Contact (page 56).
- Ensure that the sharpness of the bedknives and reels are maintained. A dull blade increases power consumption and reduces the amount of work that the machine performs on each charge.
- If you are using groomers, the groomer height should not exceed more than half of the height of cut. If the height of cut is over 1/2 inch, the groomer height should not exceed 1/4 inch.
- Adjust the rear-roller-brush contact to be as light as possible. This reduces the power that is needed to run the cutting units, and increases the amount of work the machine performs on each charge.
- Use lights (if your machine is equipped with the Light Kit) only when it is necessary.

Transporting the Lithium-Ion Batteries

The US Department of Transportation and international transportation authorities require that lithium-ion batteries be transported using special packaging and only be transported by carriers certified to haul them. In the US, you are allowed to transport a battery when it is installed on the machine as battery powered equipment, with some regulatory requirements. Contact the US Department of Transportation or the appropriate government body in your country for detailed regulations on transportation of your batteries or the machine with the batteries equipped.

For detailed information on shipping a battery, contact your authorized Toro distributor.

Understanding the Lithium-Ion Battery Charger

Refer to Figure 40 for an overview of the battery-charger displays and cords.

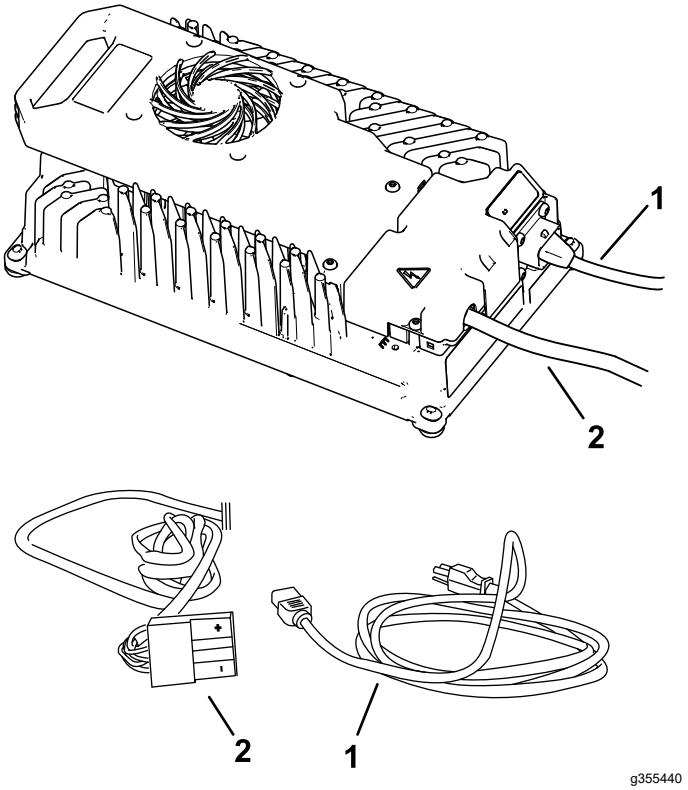


Figure 40

1. Power-supply cord
2. Output connector and cord

Connecting to a Power Source

To reduce the risk of electric shock, this charger has a 3-prong grounded plug (type B). If the plug does not fit into the wall receptacle, other grounded plug types are available; contact an authorized Toro distributor.

Do not change the charger or the power-supply-cord plug in any way.

⚠ DANGER

Contact with water while charging the machine could cause electric shock, causing injury or death.

- **Do not handle the plug or the charger with wet hands or while standing in water.**
- **Do not charge the batteries in the rain or in wet conditions.**

Important: **Check the power supply cord periodically for holes or cracks in the insulation.**

Do not use a damaged cord. Do not run the cord through standing water or wet grass.

1. Insert the charger plug on the power-supply cord into the matching input power socket on the charger.

   ⚠ WARNING

   A damaged charger cord can cause an electrical shock or a fire.

   Thoroughly inspect the power supply cord before using the charger. If the cord is damaged, do not operate the charger until you obtain a replacement.

2. Insert the wall plug end of the power supply cord into a grounded electrical outlet.

Charging the Lithium-Ion Batteries

⚠ CAUTION

Attempting to charge the batteries with a charger not provided by Toro can result in excessive heat and other related product malfunctions, which can lead to property damage and/or injury.

Use the Toro-provided charger to charge the batteries.

Recommended temperature range for charging: 0° to 45°C (32° to 113°F)

Important: **Charge the batteries only in temperatures that are within the recommended range.**

Note: The charger will not function in temperatures exceeding the minimum or maximum temperatures.

1. Park the machine in the designated location for charging.
2. Engage the parking brake and move the function-control switch to the NEUTRAL position.
3. Ensure that the cutting units are disengaged and lower them to the ground.
4. Shut off the machine and remove the key.
5. Disconnect the power from the machine by separating the main-power connectors; refer to Main-Power Connectors (page 26).
6. Ensure that the connectors are free of dust and debris.
7. Raise the connector cover and slide the charger-output connector into the charger connector on the machine (Figure 41).

Note: The machine connector is located below the main-power connector that is secured to the machine.

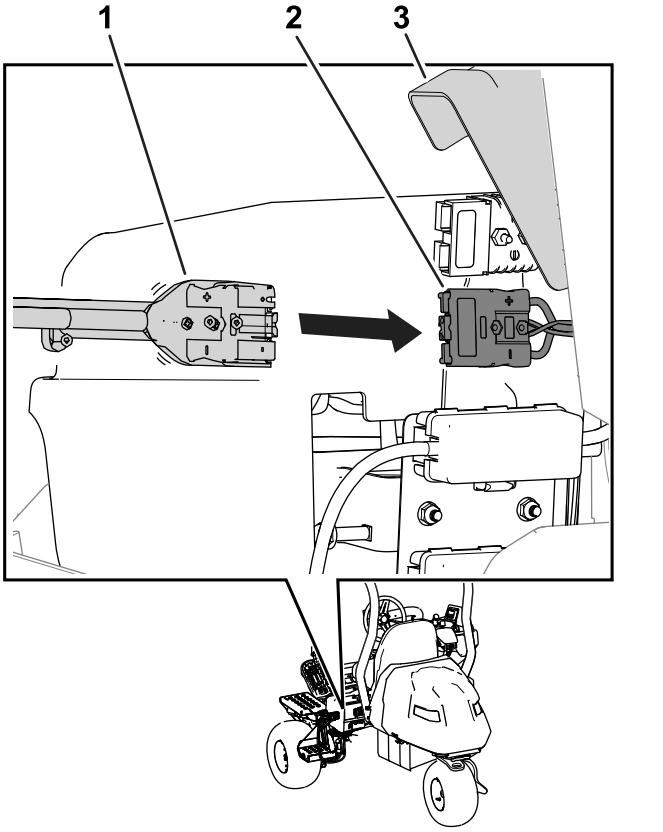


Figure 41

1. Charger connector
2. Machine connector
3. Connector cover

8. Connect the charger power cord to a power source; refer to Connecting to a Power Source (page 42).
9. Observe the charger to ensure that the batteries are charging.

   Note: You can connect the main-power connectors to see the current battery-charge percentage and amperage in the InfoCenter; refer to Monitoring the Charging Process and Troubleshooting (page 43).

   The charger will also illuminate with a green light while the machine is charging.
10. Disconnect the charger when the machine reaches a sufficient level; refer to Completing the Charging Process (page 43).

Monitoring the Charging Process and Troubleshooting

- The InfoCenter shows the battery charge percentage and amperage.

  Batteries with a lower voltage charge first; once they reach the voltage of the other batteries, all batteries charge simultaneously.

  When charging is complete, the machine InfoCenter displays 10 solid bars.

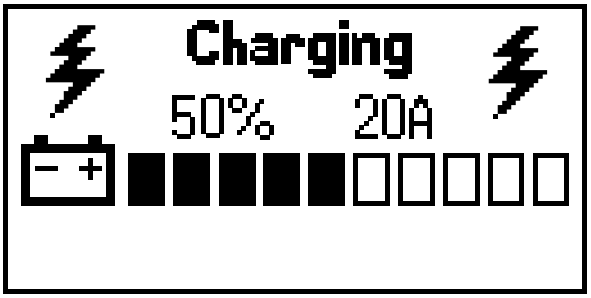


Figure 42

- If there is a fault, an error message will appear in the InfoCenter.

  To correct an error, refer to the machine *Service Manual*. If none of these solutions correct the issue, contact an authorized Toro distributor.

Completing the Charging Process

When charging is complete, the battery-charging indicator light shows solid green and the charging-output indicator light disappears.

1. Disconnect the charger connector from the machine connector.
2. Place the charger connector and cord in a storage position that avoids damage.
3. Ensure that the main-power connectors are clean.
4. Connect the main-power connectors; refer to Main-Power Connectors (page 26).
5. Turn on the machine; refer to Turning On the Machine (page 34).
6. Verify the charge level; refer to Using the InfoCenter Display (page 22).

Maintenance

⚠ WARNING

Modifying the original machine, parts, and/or accessories may alter the warranty, controllability, and safety of the machine. Making unauthorized modifications to the original machine and/or not using genuine Toro parts could lead to serious injury or death.

- **Do not make unauthorized modifications to the machine, parts, and/or accessories.**
- **Use only genuine Toro parts.**

Maintenance Safety

- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Move the function-control switch to the NEUTRAL position.
  - Ensure that the cutting units are disengaged and lower them to the ground.
  - Engage the parking brake.
  - Shut off the machine and remove the key.
  - Wait for all movement to stop.
- Allow machine components to cool before performing maintenance.
- Only allow a qualified repair person to service the machine.
- Disconnect the main-power connectors before performing maintenance.
- If possible, do not perform maintenance while the machine is running. Keep away from moving parts.
- 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 8 hours	• Torque the wheel nuts. • Change the traction-motor-gearbox fluid.
Before each use or daily	• Inspect the seat belt(s) for wear, cuts, and other damage. Replace the seat belt(s) if any component does not operate properly. • Check the safety-interlock system. • Inspect and cleanup after mowing. • Check the tire pressure. • Check the reel-to-bedknife contact. • Wash the machine (do not use high-pressure water).
Every 50 hours	• Check the battery cable connections.
Every 200 hours	• Torque the wheel nuts.
Every 800 hours	• Change the traction-motor-gearbox fluid.

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 instrument operation.							
Check the brake operation.							
Check the tire pressure.							
Check the reel-to-bedknife contact.							
Check the height-of-cut adjustment.							
Touch-up damaged paint.							
Wash the machine.							

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

Pre-Maintenance Procedures

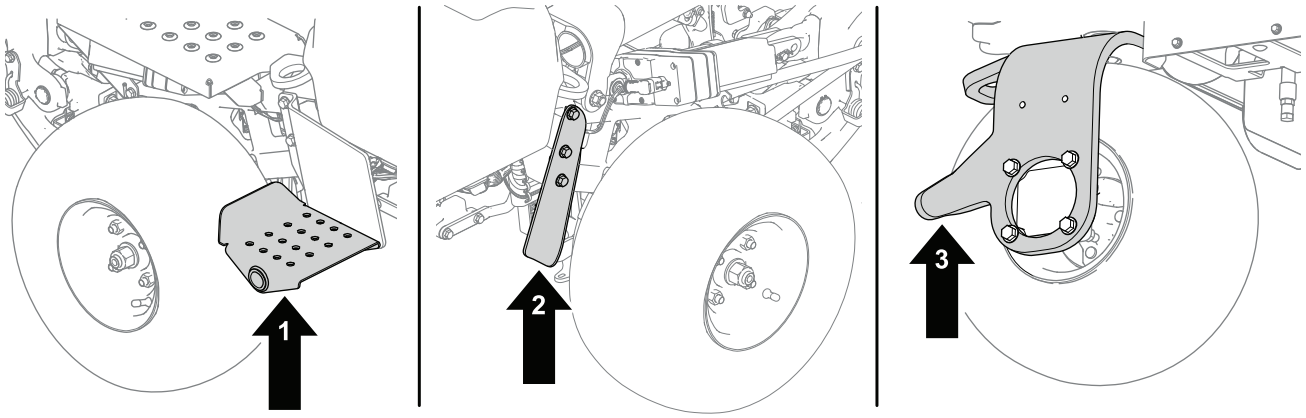
Raising the Machine

⚠ DANGER

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

- **Use jack stands to support the raised machine.**
- **Use only mechanical or hydraulic jacks to lift the machine.**

1. Position a jack at the desired jacking point (Figure 43):
   - Foot step on the left side of the machine
   - Jack bracket on the right side of the machine
   - Caster fork on the rear of the machine

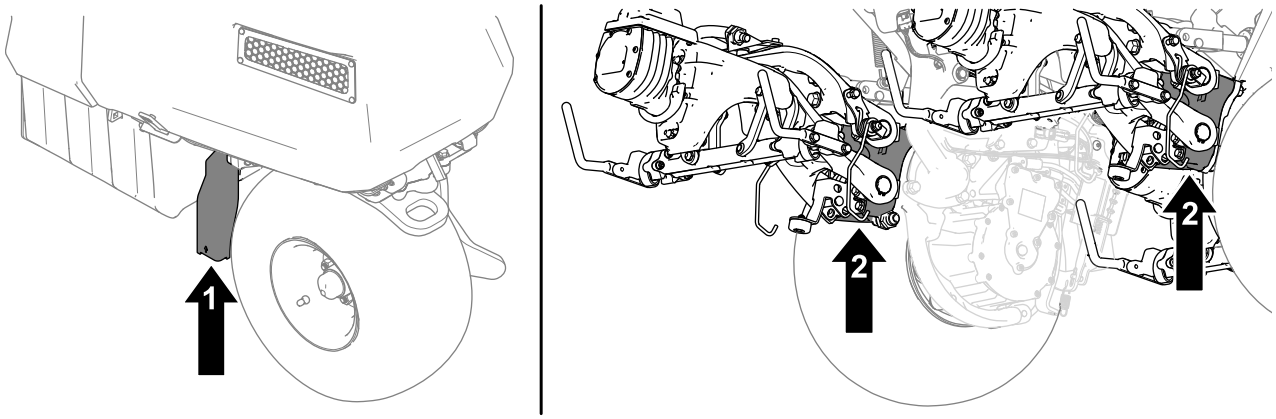


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Figure 43

1. Foot step—left side of the machine
2. Jack bracket—right side of the machine
3. Caster fork—rear of the machine

2. After raising the machine, use an appropriate jack stand under the following areas to support the machine (Figure 44):
   - Jack bracket at the rear of the machine
   - Cutting-unit pivot mounts at the front of the machine



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Figure 44

1. Jack bracket
2. Cutting-unit pivot mounts

Raising the Hood

1. Release the hood latch (Figure 45).

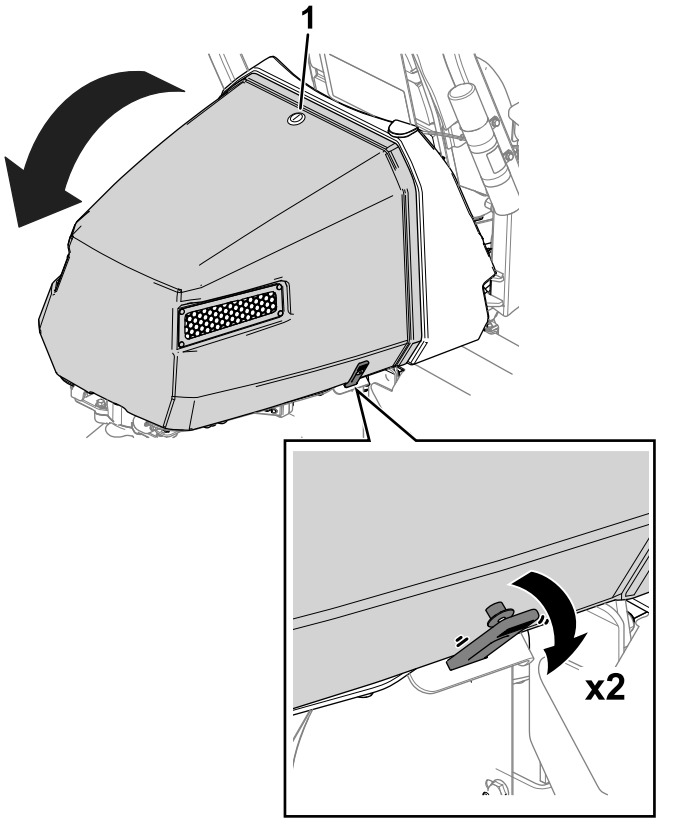


Figure 45

1. Hood latch

2. Release the straps from each side of the hood (Figure 45).
3. Raise the hood.

Electrical System Maintenance

Electrical System Safety

- Disconnect the main-power connectors before repairing the machine.
- 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.

Disconnecting or Connecting Power to the Machine

The main-power connectors provide power from the batteries to the machine. Disconnect the power by separating the connectors; connect the power by installing the connectors together. Refer to Main-Power Connectors (page 26).

Locating the Fuses

Locating the Fuses for the 60V System

The fuses in the 60V electrical system are located under the seat (Figure 46).

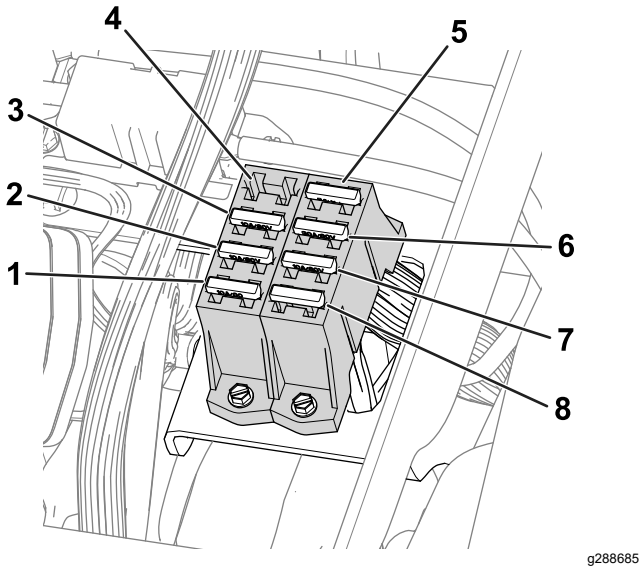


Figure 46

1. Lift actuator (center cutting unit)—10 A
2. Lift actuator (left cutting unit)—10 A
3. Lift actuator (right cutting unit)—10 A
4. Open slot
5. 48V logic relay—5 A
6. Steering unit—30 A
7. DC/DC converter—10 A
8. Work lights (optional kit)—10 A

Locating the Fuses for the 12V System

The fuses for the 12V electrical system are located under the cover (Figure 47) on the right side of the machine.

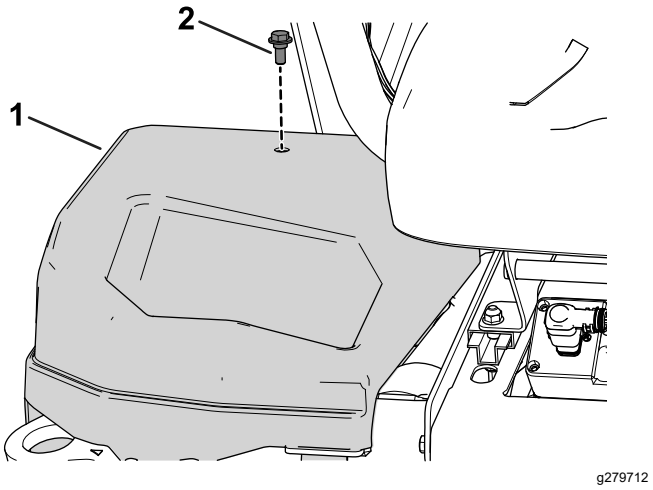


Figure 47

1. Right-side cover
2. Bolt

Refer to Figure 48 for a description of each fuse on the fuse blocks:

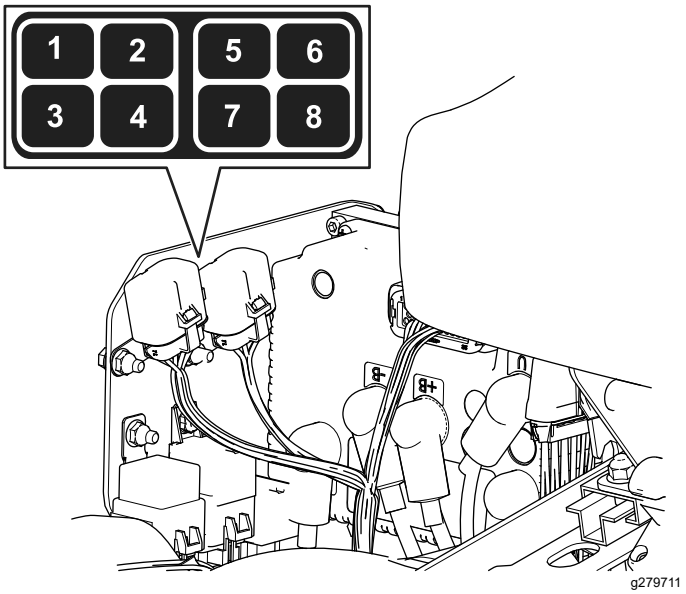
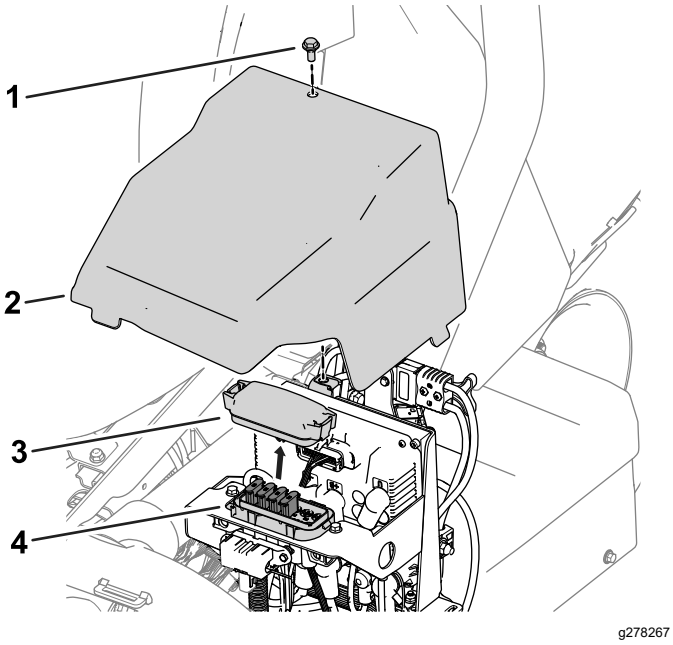


Figure 48

1. Parking brake/key switch/logic relay—7.5 A
2. Open slot
3. Brake actuator—10 A
4. Telematics—2 A
5. Open slot
6. Spare fuse—7.5 A
7. DC/DC converter—15 A
8. TEC controller—2 A

Locating the Reel-Drive Circuit Fuses

The fuses for the reel-drive circuit are located under the cover on the left side of the machine. Access the fuse block by removing the left-side cover and the fuse-block cover (Figure 49).

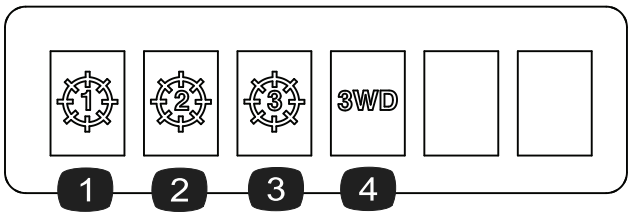


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Figure 49

1. Bolt
2. Left-side cover
3. Fuse-block cover
4. Fuse block

Refer to Figure 50 for a description of each fuse on the fuse-block decal:



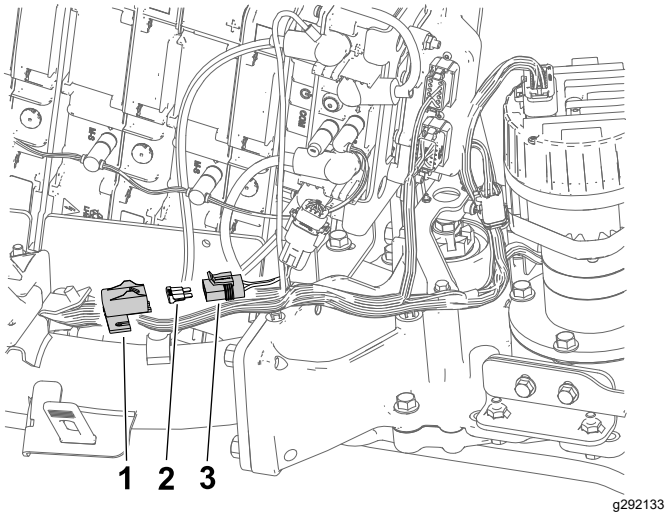
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Figure 50

1. Center cutting unit—35 A
2. Front left cutting unit—35 A
3. Front right cutting unit—35 A
4. 3-Wheel Drive Kit (optional attachment)—35 A

Locating the Precharge Controller Fuse

The fuse that protects the precharge controller is located in its own holder on the machine wire harness to the left of the center (rear) battery set (Figure 51).



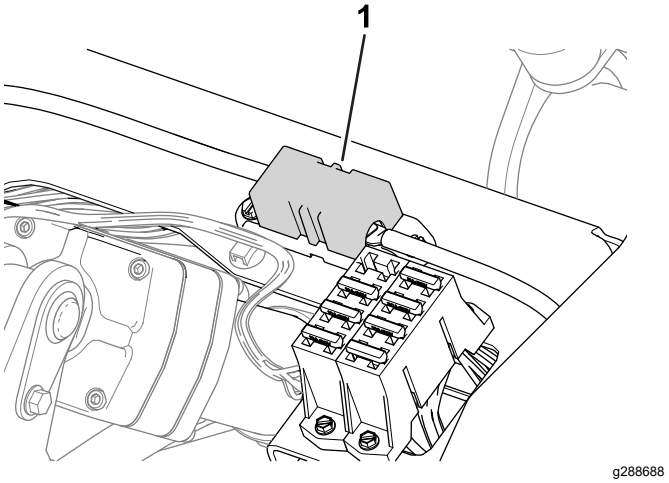
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Figure 51

1. Cap
2. Precharge controller fuse—3 A
3. Fuse holder

Locating the Wheel Motor and Electrical System Fuses

- The fuses for the right wheel motor (60 A) are located under the seat (Figure 52).



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Figure 52

1. Right-wheel-motor fuse—60 A

- The fuse for the left wheel motor (60 A) is located under the cover on the left side of the machine, near the reel-drive-circuit fuses (Figure 53).

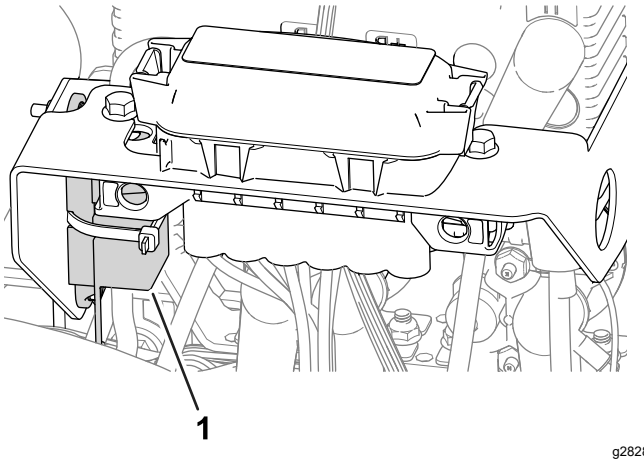


Figure 53

1. Left-wheel-motor fuse—60 A

- The fuse for the electrical system is located under the main-power connectors (Figure 54).

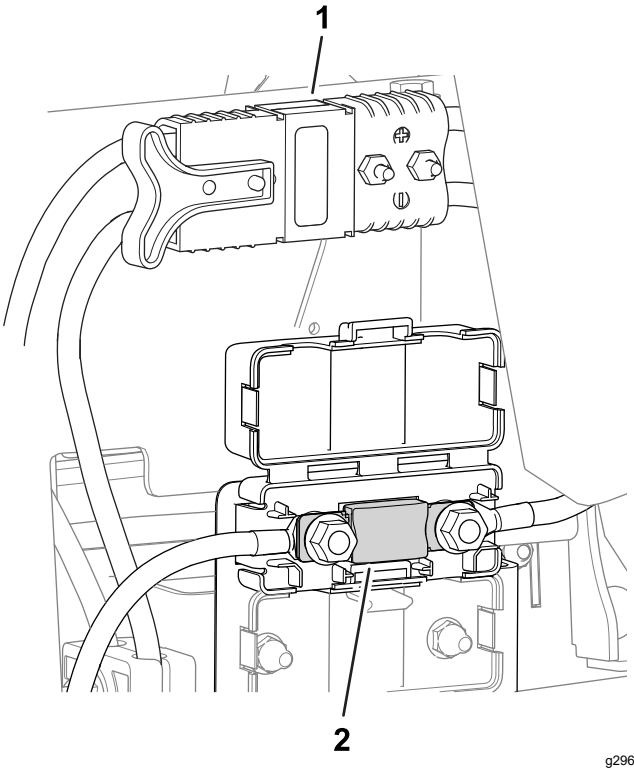


Figure 54

1. Main-power connectors
2. Electrical-system fuse—175 A

Servicing the Batteries

Note: The machine is equipped with 5 lithium-ion batteries.

A lithium-ion battery must be disposed of or recycled in accordance with local and federal regulations. If a battery requires service, contact your authorized Toro distributor for assistance.

The only user serviceable parts on a battery are the labels. If you attempt to open the main compartment of a battery, you will void your warranty. If you are having problems with a battery, contact your authorized Toro distributor for assistance.

Maintaining the Battery Charger

Important: **All electrical repairs should be performed by an Authorized Toro Dealer only.**

The charger requires little maintenance other than protecting it from damage and weather.

- Clean the battery-charger cords and case with a slightly damp cloth after each use.

  Note: Do not clean the dielectric grease from the terminals.

- Coil the cords when not in use.
- Periodically examine the cords for damage, and replace them when necessary with Toro-approved parts.

Drive System Maintenance

Checking the Tire Pressure

Service Interval: Before each use or daily

Vary the tire pressure for all 3 wheels, depending upon your turf conditions, from a minimum of 83 to a maximum of 110 kPa (12 psi to 16 psi).

Important: **Ensure that the tire pressure for each wheel is identical. If the tire pressure for each wheel is different, the performance of the machine is affected.**

Checking the Torque of the Wheel Nuts

Service Interval: After the first 8 hours

Every 200 hours

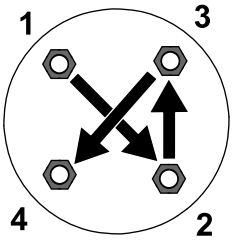
⚠ WARNING

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

Torque the wheel nuts to the specified torque at the specified intervals.

Wheel-nut torque specification: 108 to 122 N·m (80 to 90 ft-lb)

To ensure even distribution, torque the wheel nuts in the pattern shown in Figure 55.



g274650

Figure 55

Changing the Traction-Motor-Gearbox Fluid

Service Interval: After the first 8 hours

Every 800 hours

Fluid specification: SAE 80W90

Gearbox oil capacity: approximately 384 ml (13 fl oz)

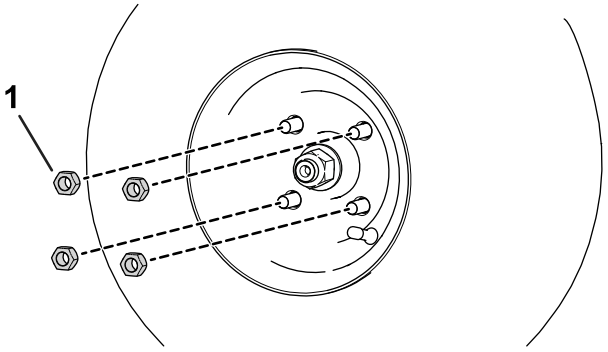
1. Raise the machine; refer to Raising the Machine (page 45).

   Important: **The machine must be level so that the correct amount of fluid can be added to the gearbox.**

   Ensure that the machine is level on the jack stands.

2. Perform the following steps to remove the left and right-sided tires:

   A. Loosen and remove the wheel lug nuts (Figure 56).



g280226

Figure 56

1. Lug nut

   B. Remove the left and right tires.

3. Place a drain pan under the wheel-motor assembly (Figure 57).

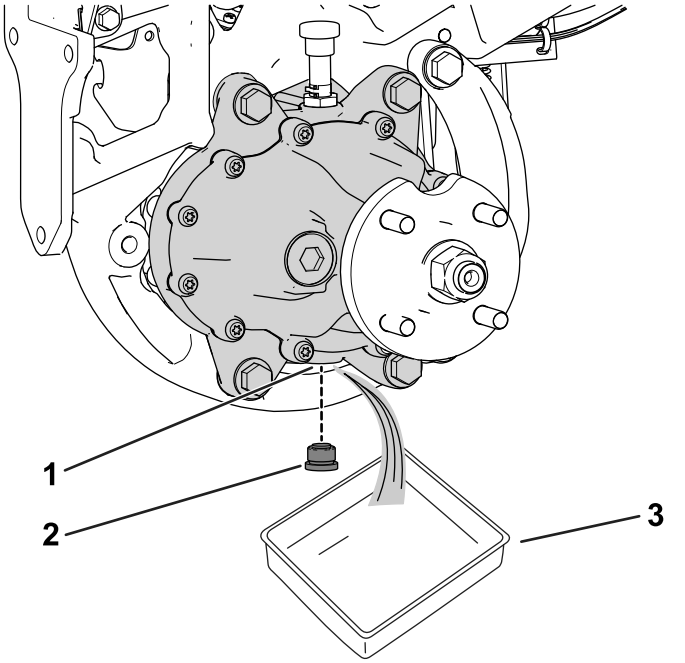


Figure 57

Left side of the machine shown

1. Drain port
2. Drain plug
3. Pan

4. Remove the plug from the drain port (Figure 57).

   Note: The drain port is located on the bottom of the gearbox.

   Note: Allow the oil to drain completely from the gearbox.
5. Clean the plug.
6. Install the drain plug into the drain port (Figure 57).
7. Remove the vent hose and fitting from the top of the gearbox (Figure 58).

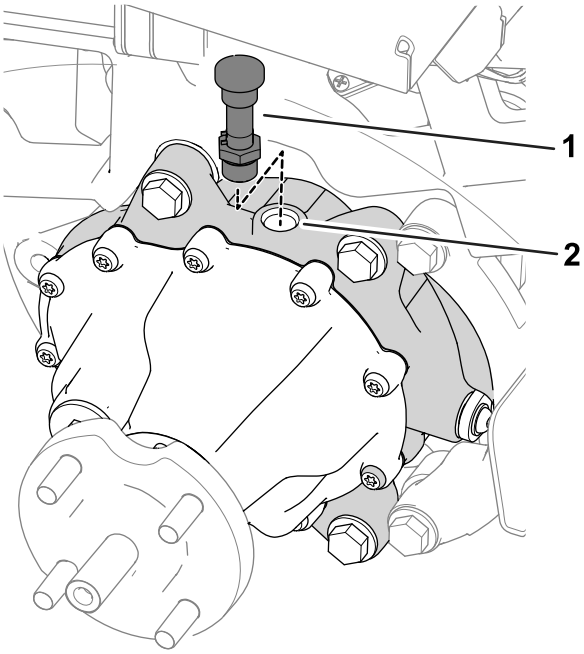


Figure 58

1. Vent hose and fitting
2. Fill port

8. Fill the gearbox with 384 ml (13 fl oz) of the specified fluid through the fill port.
9. Install the vent hose and fitting into the fill port (Figure 58).
10. Perform the following steps to install the tires:
    A. Slide the left and right tires on to the wheel hubs.
    B. Install the wheel lug nuts (Figure 56).
    C. Torque the wheel lug nuts to the specified torque indicated in Checking the Torque of the Wheel Nuts (page 51).

Brake Maintenance

Adjusting the Brakes

If the brake fails to hold the machine while parked, you can adjust the brakes; contact your authorized Toro distributor or refer to the *Service Manual* for more information.

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.

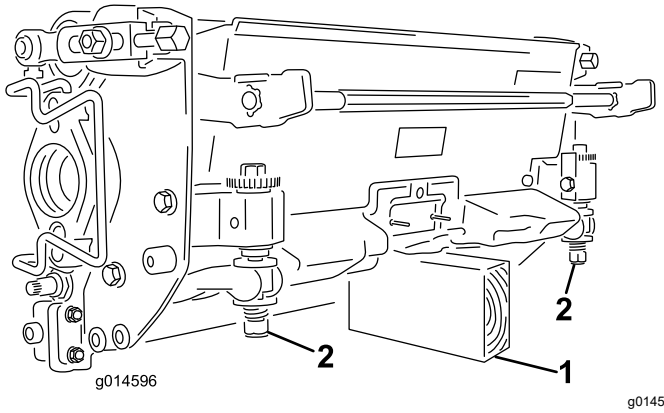
- Inspect the blades and bedknives periodically for excessive wear or damage.
- Use care when checking the blades. Wear gloves and use caution when servicing them. Only replace or backlap the blades and bedknives; never straighten or weld them.
- On machines with multiple cutting units, take care when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

Installing and Removing the Cutting Units

Note: When the cutting units are not connected to the machine, store the cutting unit reel motors in the storage location on the front of the suspension arms to prevent damage to them.

Important: **Do not raise the suspension to the transport position when the reel motors are in the holders in the machine frame. Damage to the motors or hoses could result.**

Important: **Whenever you need to tip the cutting unit, prop up rear of cutting unit to ensure that the nuts on the bedbar adjusting screws are not resting on work surface (Figure 59).**



g014596

Figure 59

1. Prop (not provided)
2. Bedbar-adjusting-screw nut

Installing the Cutting Units

The suspension needs to be lowered in order to install the cutting units. Perform the following steps to lower the suspension:

1. Park the machine on a clean, level surface.
2. Set the function-control switch to the NEUTRAL position.
3. Insert the key into the switch and turn it to the ON position.
4. Lower the suspension using the lift/lower joystick.
5. Engage the parking brake, shut off the machine, and remove the key.

Perform the following steps to install the cutting units:

1. Disconnect the main-power connectors; refer to Main-Power Connectors (page 26).

   ⚠ WARNING

   If you do not disconnect the power to the machine, someone could accidentally start the cutting units, causing serious injury to hands and feet.

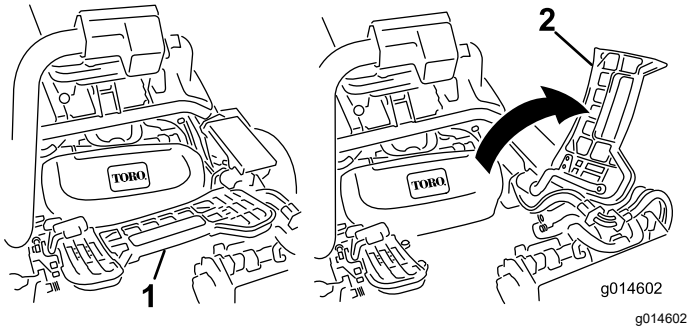
   Always disconnect the main-power connectors before working on the cutting units.

2. Lift up on the foot rest and swing it open, allowing access to the center cutting unit position (Figure 60).

   ⚠ CAUTION

   The foot rest can pinch fingers if it falls into the closed position.

   Keep your fingers clear of the area where the foot rest seats while it is open.

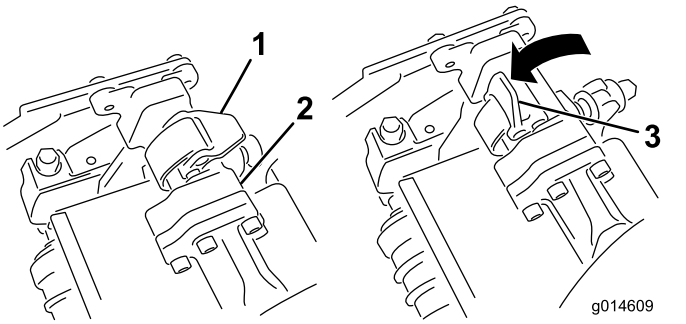


g014602

Figure 60

1. Footrest—closed
2. Footrest—open

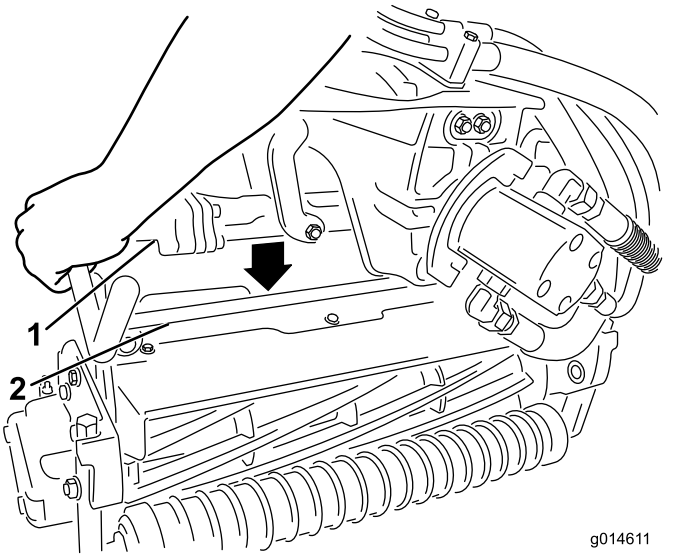
3. Position the cutting unit under the center suspension arm.
4. Open the latches on the suspension-arm bar (Figure 61) and push the suspension arm down so that the bar fits over both pitch arms on the cutting unit and ensure that the latches go underneath the cutting-unit crossbar (Figure 62).



g014609

Figure 61

1. Latch—closed
2. Suspension-arm bar
3. Latch—open



g014611

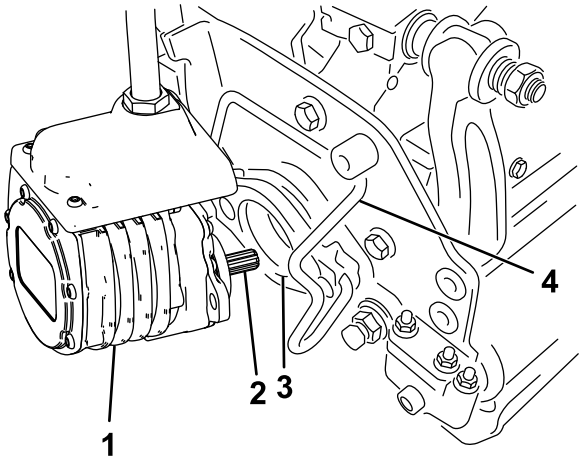
Figure 62

1. Suspension-arm bar
2. Cutting-unit bar

5. Close the latches down and around the cutting-unit bar and lock them in place (Figure 61).

   Note: You can hear a click and feel when the latches are properly locked in place.

6. Coat the spline shaft of the cutting unit motor with clean grease (Figure 63).
7. Insert the motor into the left side of the cutting unit (as viewed from the operator's position) and pull the motor retaining bar on the cutting unit toward the motor until you hear a click from both sides of the motor (Figure 63).



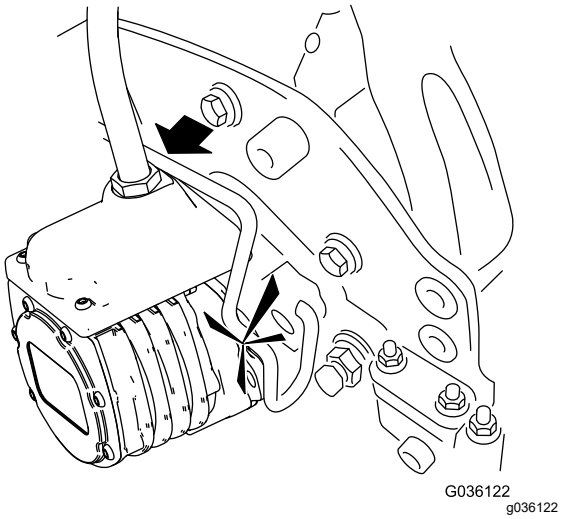


Figure 63

1. Reel motor
2. Spline shaft
3. Cavity
4. Motor-retaining bar

8. Mount a grass basket onto the basket hooks on the suspension arm.
9. Repeat this procedure for the other cutting units.
10. Connect the main-power connectors; refer to Main-Power Connectors (page 26).

Removing the Cutting Units

1. Park the machine on a clean, level surface, set the function-control switch to the NEUTRAL position and use the lift/lower joystick to lower the cutting units.
2. Engage the parking brake, shut off the machine, and remove the key.
3. Disconnect the main-power connectors; refer to Main-Power Connectors (page 26).

⚠ WARNING

If you do not disconnect the power to the machine, someone could accidentally start the cutting units, causing serious injury to hands and feet.

Always separate the disconnect the main-power connectors before working on the cutting units.

4. Push the motor retaining bar out of the slots on the motor toward the cutting unit and remove the motor from the cutting unit.

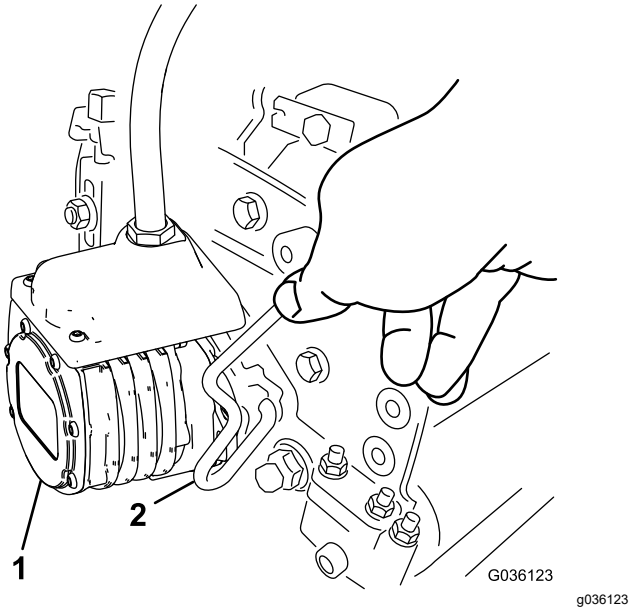


Figure 64

1. Reel motor
2. Motor-retaining bar

5. Move the motor to the storage location on the front of the suspension arm (Figure 65).

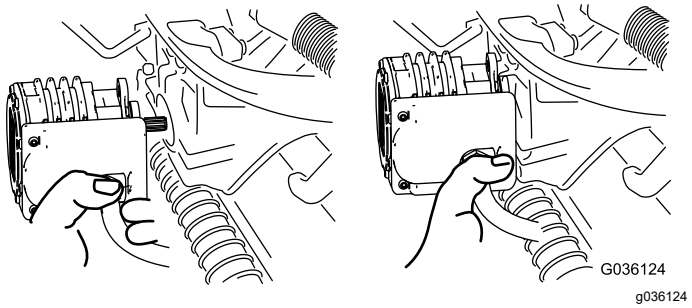


Figure 65

Note: When sharpening, setting the height-of-cut, or performing other maintenance procedures on the cutting units, store the cutting unit reel motors in the storage location on the front of the suspension arms to prevent damage to them.

Important: **Do not raise the suspension to the transport position when the reel motors are in the holders in the machine frame. Damage to the motors or wires could result. If you must move the traction unit without the cutting units installed, secure them to the suspension arms using cable ties.**

6. Open the latches on the suspension-arm bar of the cutting unit you are removing (Figure 61).
7. Disconnect the latches from the cutting-unit bar.
8. Roll the cutting unit out from under the suspension arm.
9. Repeat steps 4 through 8 for the other cutting units as required.
10. Connect the main-power connectors; refer to Main-Power Connectors (page 26).

Checking the Reel-to-Bedknife Contact

Each day before operating the machine, check the reel-to-bedknife contact, regardless if the quality of cut had previously been acceptable. There must be light contact across the full length of the reel and bedknife; refer to the cutting unit *Operator's Manual*.

Before checking the reels, disconnect the main-power connectors; refer to Main-Power Connectors (page 26). Connect them when finished.

Backlapping the Cutting Units

⚠ WARNING

Contact with the bedknives, reel blades, or other moving parts can result in personal injury.

- **Keep your fingers, hands, and clothing away from the bedknives, reel blades, or moving parts.**
- **Never attempt to turn the reels by hand or foot while the machine is running.**

1. Park the machine on a level surface, lower the cutting units, move the function-control switch to the NEUTRAL position, engage the parking brake, shut off the machine, and remove the key.
2. Make initial reel-to-bedknife adjustments appropriate for backlapping on all cutting units that you want to backlap; refer to the cutting unit *Operator's Manual.*
3. Insert the key into the switch and turn on the machine.
4. On the InfoCenter control, from the SERVICE menu, select BACKLAP.
5. Set BACKLAP to ON.
6. Pull up the Main Menu and scroll down to Settings.
7. In the SETTINGS menu scroll down to BACKLAP RPM and use the ± button to select the desired backlap speed.
8. With the function-control switch in the NEUTRAL position, move the lift/lower joystick forward to start the backlapping operation on the designated reels.
9. Apply lapping compound with a long handle brush. Never use a short handled brush.
10. If the reels stall or become erratic while backlapping, select a higher reel speed setting until the speed stabilizes.
11. To make an adjustment to the cutting units while backlapping, turn the reels off by moving the lift/lower joystick rearward, then shut off the machine. After completing adjustments, repeat steps 3 through 9.
12. Repeat the procedure for all cutting units that you want to backlap.
13. When finished, return the InfoCenter BACKLAP setting to OFF or turn the key to the OFF position to return the machine to forward cutting operation.
14. Wash all lapping compound off of the cutting units. Adjust the cutting unit reel to bedknife as needed. Move the cutting-unit reel speed control to the desired mowing position.

Important: **Do not use high pressure water to clean off the cutting units. Damage to the bearings and seals may result.**

Storage

If you wish to store the machine for a long period of time, perform the steps listed in Preparing the Machine for Storage (page 57).

Storage Safety

- Lower the cutting units, engage the parking brake, shut off the machine, 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.
- Do not store the machine where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.
- Store the machine in a dry location indoors, out of the reach of children and away from direct sunlight.

Preparing the Machine for Storage

1. Always shut off the machine, remove the key, wait for all moving parts to stop, and allow the machine to cool before adjusting, cleaning, storing, or repairing the machine.
2. Remove accumulations of dirt and old grass clippings. Sharpen the reels and bedknives, if necessary; refer to the cutting unit *Operator's Manual*. Coat the bedknives and reel blades with a rust preventive.
3. Raise and support the machine to remove its weight from the tires.
4. For prolonged storage, follow the battery storage requirements; refer to Battery Storage Requirements (page 57).

Battery Storage Requirements

Note: You do not need to remove the batteries from the machine for storage.

Refer to the temperature limits for storage in the following table:

Temperature Limits for Storage

Storage Temperature	Appropriate Storage Time
45° to 55°C (113° to 131°F)	1 week
25° to 45°C (77° to 113°F)	3 weeks
-20° to 25°C (-4° to 77°F)	52 weeks

Important: **Temperatures outside of these ranges will damage your batteries.**

The temperature that the batteries are stored at will affect their long-term life. Storage for long periods of time at extreme temperatures will reduce the battery life. For temperatures above 25°C (77°F), only store the machine for the appropriate amount of time indicated in the table.

- Before you store the machine, charge or discharge the batteries between 40% to 60% (54.3V to 57.3V).

  Note: A 50% charge is optimal to ensure a maximum battery life. When the batteries are charged to 100% before storage, the battery life shortens.

  If you anticipate that the machine will be stored for a longer period of time, charge the batteries to around 60%.
- For every 6 months of storage, check the battery-charge level and ensure that it is between 40% to 60%. If the charge is below 40%, charge the batteries between 40% to 60%.
- You can use a multimeter to check the charge level when the machine is off. Refer to the following table for the amount of voltage that is equal to the charge level:

Voltage	Charge Level
57.3V	60%
55.4V	50%
54.3V	40%

- After charging the batteries, disconnect the battery charger from power. Disconnect the power connector during storage to minimize the discharging of the batteries.
- If you leave the charger on the machine, it will shut off after the batteries are fully charged and does not turn back on unless the charger is disconnected and reconnected.

Storing the Charger

1. Disconnect the power to the machine; refer to Disconnecting or Connecting Power to the Machine (page 47).
2. Disconnect the power supply cord from the charger and coil it securely.
3. Examine the power supply cord thoroughly for signs of wear or damage. Replace it if it is worn or damaged.
4. Examine the charger thoroughly for worn, loose, or damaged parts. To repair or replace parts, contact your authorized Toro distributor for assistance.
5. Store the charger with the power supply cord in a clean, dry place where it will not be bumped or damaged and not exposed to caustic fumes.

Notes:

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.

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.