Form No. 3470-948 Rev D

TORO®

Count on it.

Operator's Manual

Greensmaster® 3250-D 2-Wheel Drive Traction Unit

Model No. 04384—Serial No. 418200000 and Up

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

CE UK CA

3470-948

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

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

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

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

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

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

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

Introduction

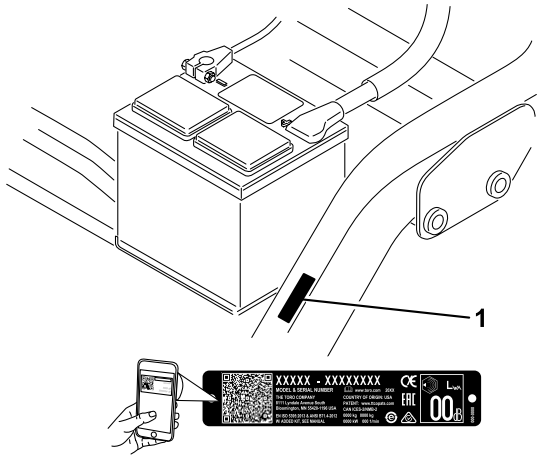
This machine is a ride-on, reel-blade greens mower intended to be used by professional, hired operators in commercial applications. It is primarily designed for cutting grass on well-maintained turf. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

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.

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.**



g234995

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

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



g000502

Figure 2
Safety-alert symbol

This manual uses 2 words to highlight information. **Important** calls attention to special mechanical

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information and **Note** emphasizes general information worthy of special attention.

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Safety

General Safety

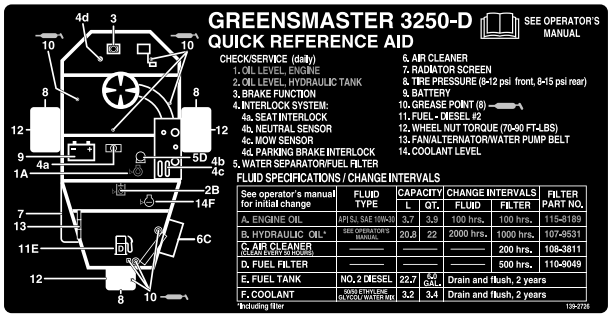
This product is capable of amputating hands and feet and of throwing objects.

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

Improperly using or maintaining this machine can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety-alert symbol ⚠, which means Caution, Warning, or Danger—personal safety instruction. Failure to comply with these instructions may result in personal injury or death.

Safety and Instructional Decals

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



decal139-2726

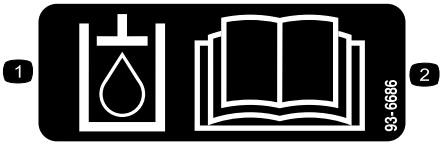
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93–8068

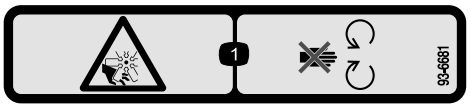
1. Read the *Operator's Manual* for instructions on locking and unlocking the steering arm.



decal93-6686

93-6686

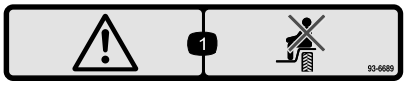
1. Hydraulic fluid
2. Read the *Operator's Manual.*



decal93-6681

93-6681

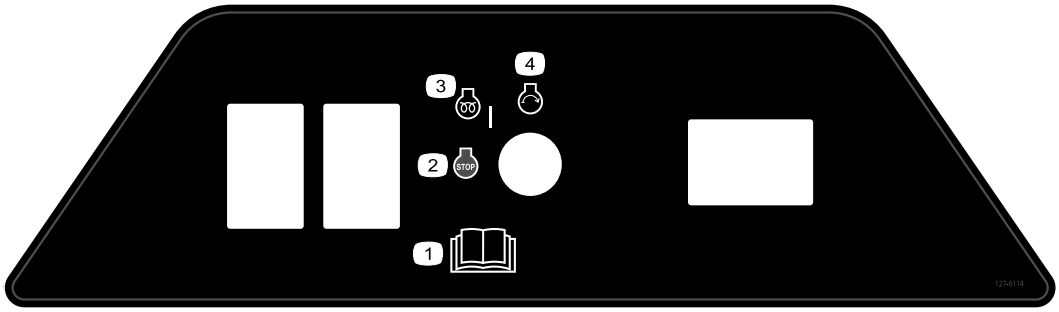
1. Cutting/dismemberment hazard, fan—stay away from moving parts.



decal93-6689

93-6689

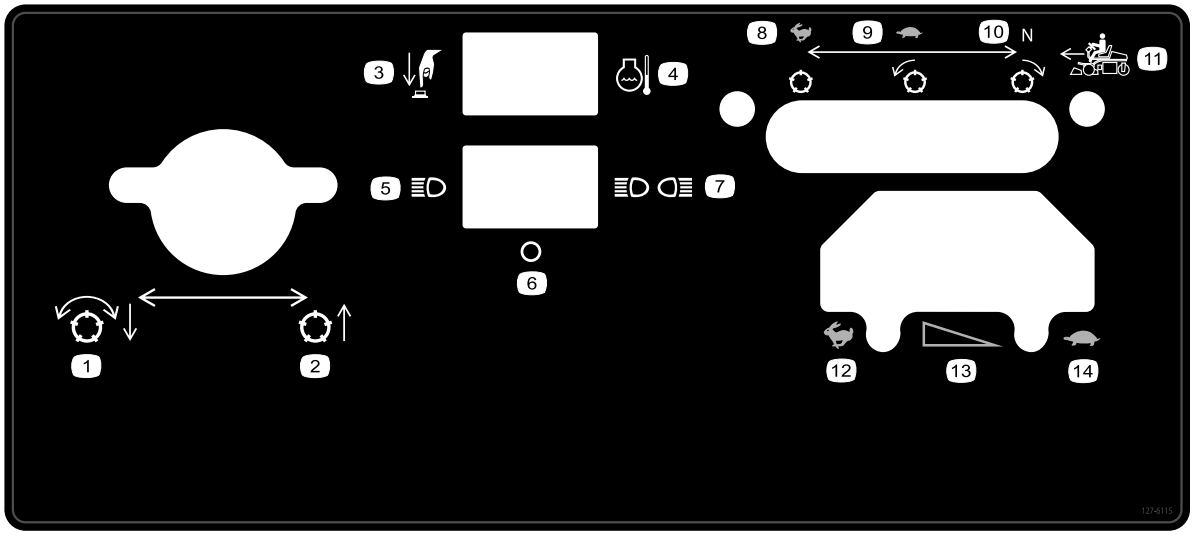
1. Warning—do not carry passengers.



decal127-6114

127-6114

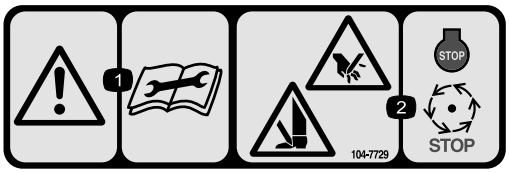
1. Read the *Operator's Manual*.
2. Engine—shut off
3. Engine—preheat
4. Engine—start



decal127-6115

127-6115

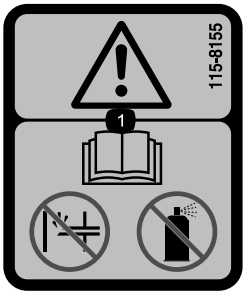
1. Lower and engage the reels
2. Raise the cutting unit
3. Press the button
4. Engine coolant temperature
5. Single light
6. Off
7. Double lights
8. Fast, stationary reel
9. Slow, forward reel
10. Neutral, reverse reel
11. Forward movement
12. FAST
13. Gradual speed change
14. SLOW



decal104-7729

104-7729

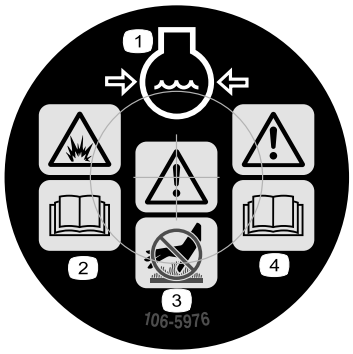
1. Warning—read the instructions before servicing or performing maintenance.
2. Cutting/dismemberment hazard; hand or foot—shut off the engine and wait for moving parts to stop.



decal115-8155

115-8155

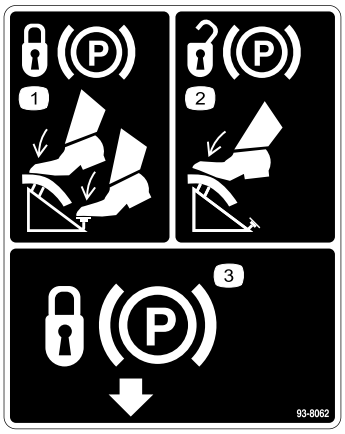
1. Warning—read the *Operator's Manual*, do not prime or use starting fluid.



decal106-5976

106-5976

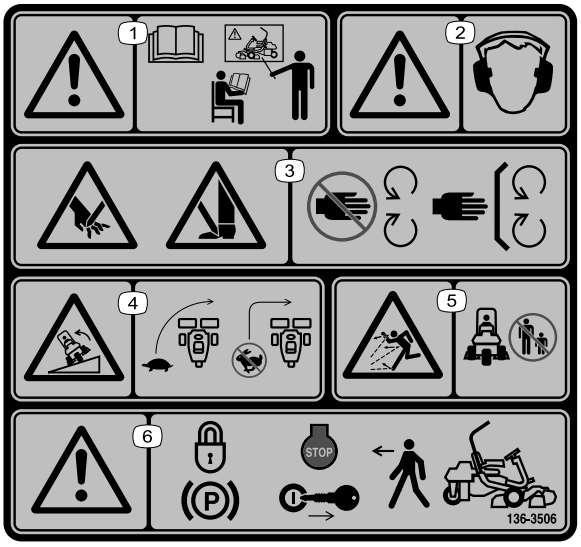
1. Engine coolant under pressure
2. Explosion hazard—read the *Operator's Manual*.
3. Warning—do not touch the hot surface.
4. Warning—read the *Operator's Manual*.



decal93-8062

93-8062

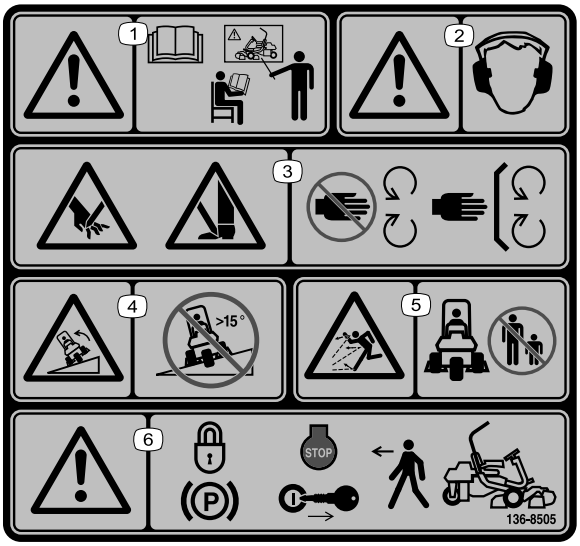
1. To lock the parking brake, press the brake pedal and the parking-brake lock.
2. To unlock the parking brake, press the brake pedal.
3. Parking-brake lock



decal136-8506

136-8506

1. Warning—read the *Operator's Manual*; do not operate this machine unless you are trained.
2. Warning—wear hearing protection.
3. Cutting/dismemberment hazard of hand or foot—stay away from moving parts; keep all guards and shields in place.
4. Tipping hazard—slow the machine before turning; do not turn at high speeds.
5. Thrown object hazard—keep bystanders away.
6. Warning—engage the parking brake, shut off the engine, and remove the key before leaving the machine.



decal136-8505

136-8505

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—read the *Operator's Manual*; do not operate this machine unless you are trained.
2. Warning—wear hearing protection.
3. Cutting/dismemberment hazard of hand or foot—stay away from moving parts; keep all guards and shields in place.
4. Tipping hazard—do not use on slopes greater than 15°.
5. Thrown object hazard—keep bystanders away.
6. Warning—engage the parking brake, shut off the engine, and remove the key before leaving the machine.



decal133-8062

133-8062

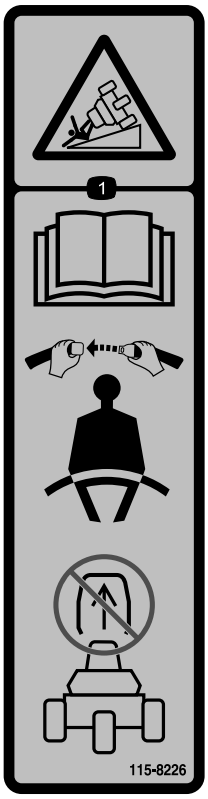


decalbatterysymbols

Battery Symbols

Some or all of these symbols are on your battery.

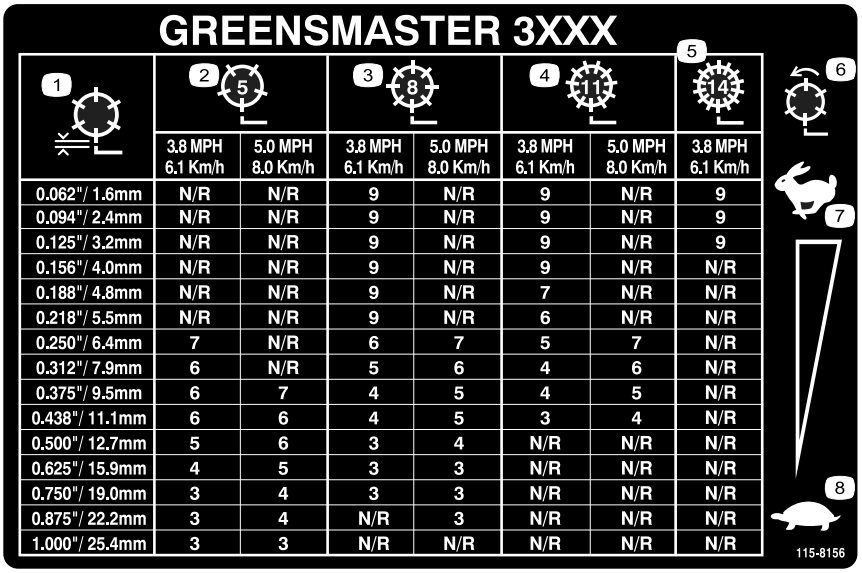
1. Explosion hazard
2. No fire, open flame, or smoking
3. Caustic liquid/chemical burn hazard
4. Wear eye protection.
5. Read the *Operator's Manual*.
6. Keep bystanders away from the battery.
7. Wear eye protection; explosive gases can cause blindness and other injuries.
8. Battery acid can cause blindness or severe burns.
9. Flush eyes immediately with water and get medical help fast.
10. Contains lead; do not discard



decal115-8226

115-8226

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



decal115-8156

115-8156

1. Reel height
2. 5–blade cutting unit
3. 8–blade cutting unit
4. 11–blade cutting unit
5. 14–blade cutting unit
6. Reel speed
7. Fast
8. Slow

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Seat Nut (5/16 inch)	1 4	Mount the seat to the base.
2	No parts required	–	Charge the battery.
3	Roll bar Bolt (5/8 x 4-1/2 inch) Locknut (5/8 inch)	1 4 4	Install the roll bar.
4	Telematics device Device bracket Telematics wire harness Bolt (#10) Nut (#10) U-bolt Nut (3/8 inch)	1 1 1 2 2 1 2	Install the telematics device.
5	No parts required	–	Reduce the tire pressure.
6	Carrier frame Spacer Bolt (1/2 inch x 3-1/4 inches) Locknut (1/2 inch)	2 2 2 2	Mount the front carrier frames.
7	No parts required	–	Adjust the carrier frame rollers.
8	No parts required	–	Install the oil cooler (optional).
9	Offset lift hook (Refer to the Cutting Unit Operator's Manual for the installation instructions) Screw (supplied with the cutting unit) Bolt (#10 x 5/8 inch) Jam nut (#10) Cutting unit (sold separately) Ball stud (supplied with the cutting unit) Grass basket	3 6 1 1 3 6 3	Install the cutting units.
10	No parts required	–	Mark the outer grass baskets.
11	No parts required	–	Adjust the transport height.
12	CE Guard Kit (Part No. 04441; purchase separately)	1	Install the CE Guard Kit.
13	Warning decal (Part No. 136-8505) CE mark decal CE production year decal	1 1 1	Install the CE decals (if required).
14	No parts required	–	Burnish the brakes.

Note: Mounting fasteners for the Greensmaster 3250-D cutting units are included with the cutting units.

1

Mounting the Seat

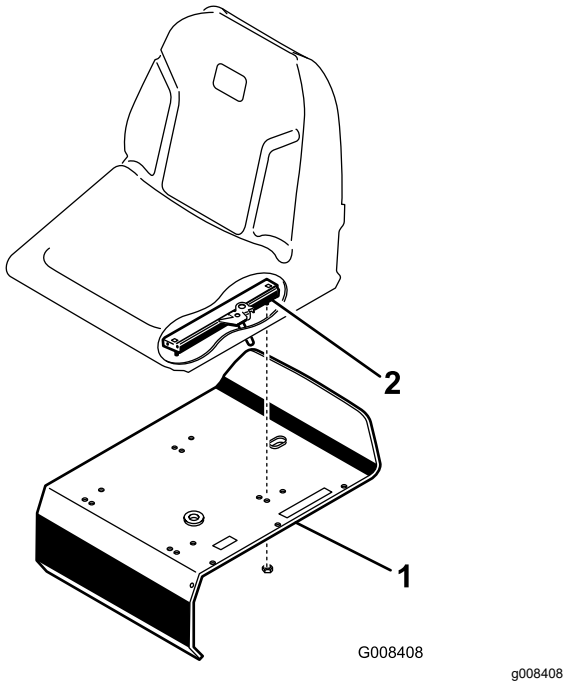
Parts needed for this procedure:

1	Seat
4	Nut (5/16 inch)

Procedure

Note: Mount the seat slides in the front set of mounting holes to gain an additional 7.6 cm (3 inches) in the forward adjustment, or in the rear mounting holes for an additional 7.6 cm (3 inches) in the rearward adjustment.

1. Remove the locknuts securing the seat slides to the shipping base straps. Discard the locknuts.
2. Connect the wire harness to the seat switch.
3. Secure the seat slides to the seat support with the locknuts (5/16 inches) supplied in the loose parts (Figure 3).



g008408

Figure 3

1. Seat support
2. Seat slide

2

Charging the Battery

No Parts Required

Procedure

Charge the battery; refer to Charging the Battery (page 38).

3

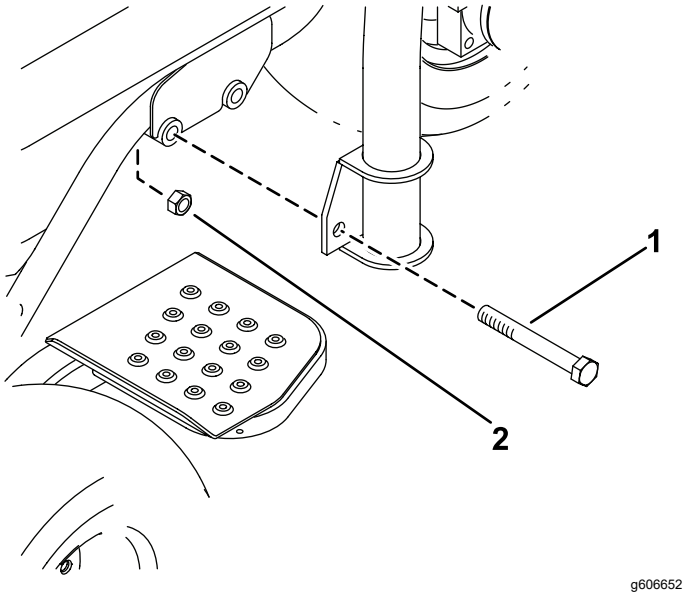
Installing the Roll Bar

Parts needed for this procedure:

1	Roll bar
4	Bolt (5/8 x 4-1/2 inch)
4	Locknut (5/8 inch)

Procedure

1. Position the roll bar so the top of the tube is curved toward the front of the machine.



g606652

Figure 4

1. Bolt (5/8 x 4-1/2 inch)
2. Locknut (5/8 inch)

2. Lower the roll bar onto the frame, aligning it with the mounting holes.

3. Secure each side of the roll bar to the frame with 2 bolts (5/8 x 4-1/2 inches) and locknuts.
4. Torque the fasteners to 183 to 223 N·m (135 to 165 ft-lb).

4

Installing the Telematics Device

Parts needed for this procedure:

1	Telematics device
1	Device bracket
1	Telematics wire harness
2	Bolt (#10)
2	Nut (#10)
1	U-bolt
2	Nut (3/8 inch)

Procedure

1. Use a U-bolt and 2 nuts (3/8 inch) to secure the device bracket to the roll bar.
2. Install the device connector to the connector on the telematics wire harness labeled P02.
3. 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 P48.

   Use 2 bolts (#10) and 2 nuts (#10) to secure the telematics device to the device bracket.

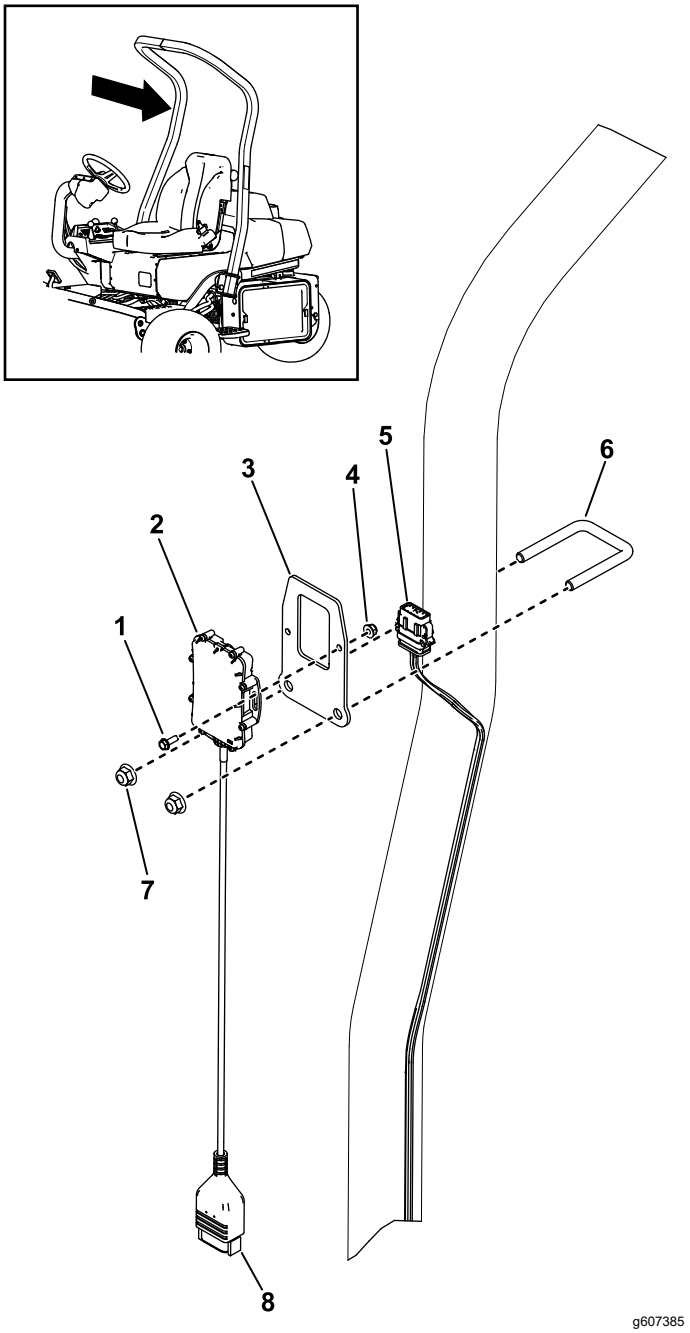


Figure 5

1. Bolt (#10)
2. Telematics device
3. Device bracket
4. Nut (#10)
5. Telematics wire harness
6. U-bolt
7. Nut (3/8 inch)
8. Connector for the telematics wire harness

5

Reducing the Tire Pressure

No Parts Required

Procedure

The tires are over-inflated at the factory for shipping purposes. Reduce the pressure to the proper levels before starting the machine. Refer to Checking the Tire Pressure (page 39).

6

Mounting the Front Carrier Frames

Parts needed for this procedure:

2	Carrier frame
2	Spacer
2	Bolt (1/2 inch x 3-1/4 inches)
2	Locknut (1/2 inch)

Procedure

1. Mount a carrier frame assembly to each clevis with a spacer, bolt (1/2 x 3-1/4 inch), and locknut (1/2 inch); refer to Figure 6. Torque to 91 to 113 N·m (67 to 83 ft/lb).

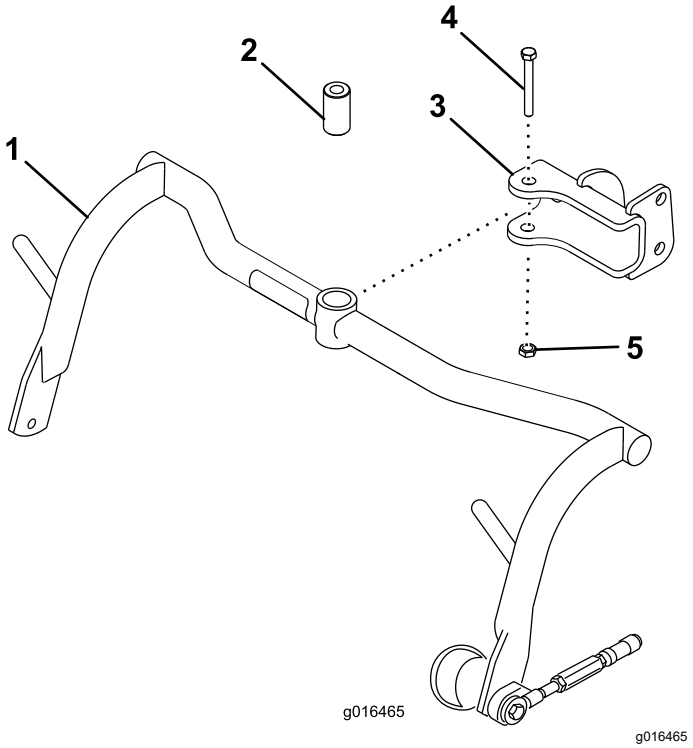


Figure 6

1. Carrier frame
2. Spacer
3. Clevis
4. Bolt (1/2 x 3-1/4 inches)
5. Locknut (1/2 inch)

2. Lubricate the bushings in each carrier frame with No. 2 lithium grease.

7

Adjusting the Carrier Frame Rollers

No Parts Required

Procedure

1. Position the machine on a level surface and lower the cutting unit carrier frames to the floor.
2. Verify that there is 13 mm (1/2 inch) clearance between the carrier frame rollers and the floor.
3. Ensure that the carrier frame rollers are level to the ground. If they are not level, insert a long tool into the end of the carrier frame and apply pressure until the rollers are level.
4. If you must adjust the clearance, loosen the jam nut on the carrier frame stop screw (Figure 7) and rotate the screw up or down to raise or

lower the carrier frame. Tighten the jam nut to secure the adjustment.

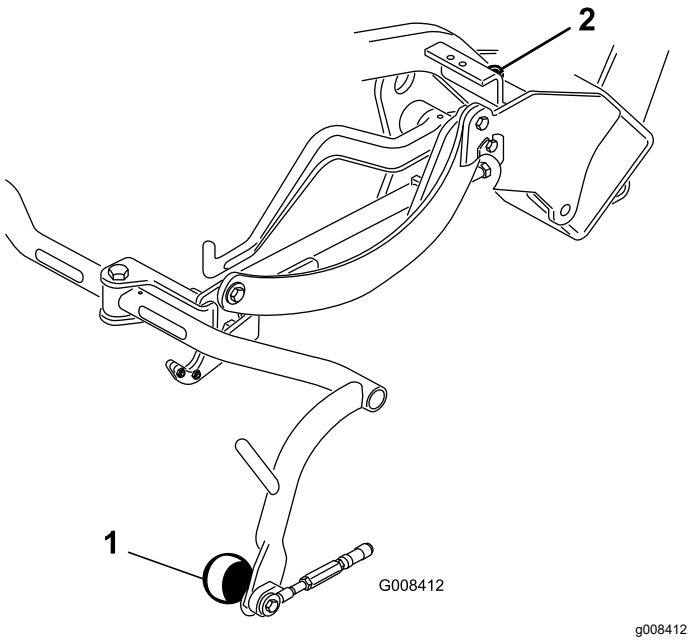


Figure 7

1. Carrier frame roller
2. Carrier frame stop screw

8

Installing the Oil Cooler

Optional

No Parts Required

Procedure

If you are operating the machine in an area where ambient temperatures range from 20 to 49°C (70 to 120°F), or if you use the machine for heavy-duty use (mowing other areas than greens, such as fairways or verticutting), install the Hydraulic Oil Cooler Kit (Part No. 104-7701) to the machine.

9

Installing the Cutting Units

Parts needed for this procedure:

3	Offset lift hook (Refer to the Cutting Unit *Operator's Manual* for the installation instructions)
6	Screw (supplied with the cutting unit)
1	Bolt (#10 x 5/8 inch)
1	Jam nut (#10)
3	Cutting unit (sold separately)
6	Ball stud (supplied with the cutting unit)
3	Grass basket

Procedure

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 support tubes to prevent damage to the hoses.

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.**

1. Remove the cutting units from the cartons. Assemble and adjust them as instructed in the cutting unit *Operator's Manual.*
2. Slide the cutting unit under the pull frame while hooking the lift hoop onto the lift arm.
3. Slide the sleeve back on each ball joint receiver and hook the receiver onto the cutting unit ball stud (Figure 8).

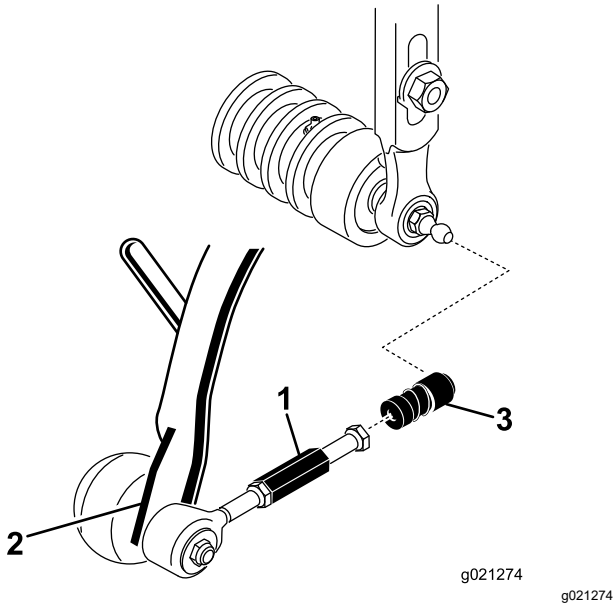


Figure 8

1. Pull link extension
2. Pull arm
3. Ball joint receiver

4. Mount the basket onto the carrier frame.
5. Adjust the pull links until there is 2 to 3 mm (1/16 to 1/8 inch) clearance between the lip of the basket and the reel blades. Ensure that the basket lips are equidistant from the reel blades all the way across the reel blades.
6. Align the sockets in the ball joints so the open side of the socket is centered toward the ball stud. Tighten the jam nuts to secure the sockets in position.
7. Ensure that there is approximately 13 mm (1/2 inch) of the threads exposed on each reel-drive-motor mounting bolt (Figure 9).

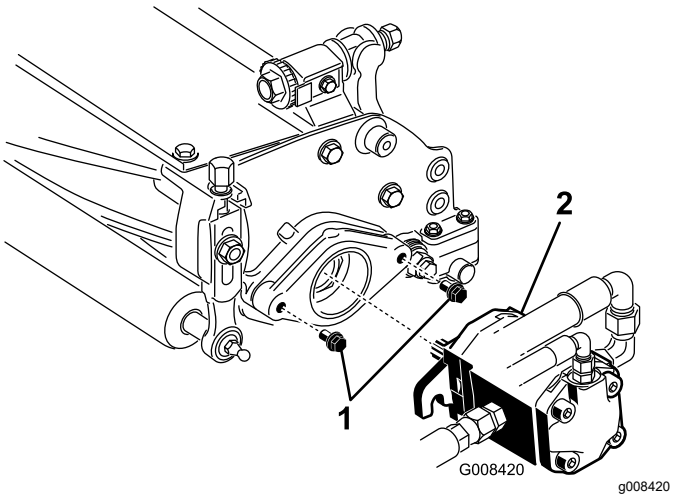


Figure 9

1. Mounting bolts
2. Drive motor

8. Coat the motor spline shaft with clean grease and install the motor by rotating the motor clockwise so that the motor flanges clear the studs. Rotate the motor counterclockwise until the flanges encircle the studs (Figure 9).
9. Tighten the mounting bolts (Figure 9).

10

Marking the Outer Grass Baskets

No Parts Required

Procedure

To assist in aligning the machine for successive cutting passes, do the following procedure to the No. 2 and No. 3 cutting unit baskets:

1. Measure in approximately 12.7 cm (5 inches) from the outer edge of each basket.
2. Either place a strip of white tape or paint a line onto each basket paralleling the outer edge of each basket (Figure 10).

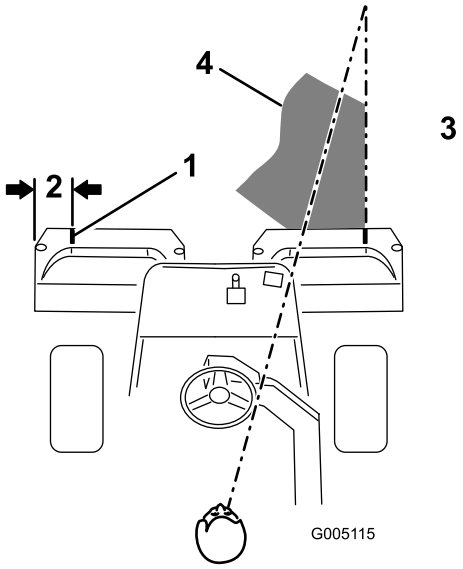


Figure 10

1. Alignment strip
2. Approximately 12.7 cm (5 inches)
3. Cut grass on right
4. Keep focal spot 1.8 to 3 m (6 to 10 ft) ahead of the machine.

11

Adjusting the Transport Height

No Parts Required

Procedure

Check the transport height (Figure 12 and Figure 13) and adjust it if required.

1. Park the machine on a level surface.
2. On cutting units equipped with a offset lift hook (Figure 11 inset), verify that the distance from the top of the carrier frame adjusting screw to the back of the carrier frame is 25 mm (1 inch). If the distance is not 25 mm (1 inch), proceed to step 4.

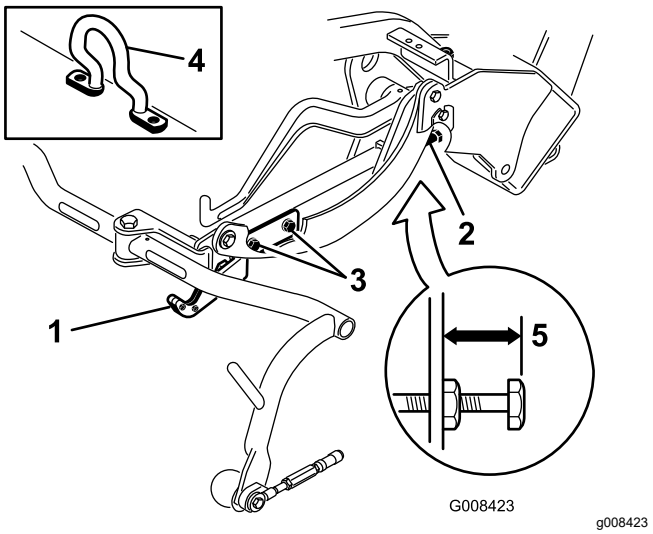


Figure 11

1. Transport plate
2. Adjusting screw
3. Transport-plate mounting screw
4. Offset lift hook
5. 25 mm (1 inch)

3. On cutting units equipped with a chain link or a straight lift hook (Figure 12 and Figure 13 insets), verify that the distance from the top of the carrier frame adjusting screw to the back of the carrier frame is 22 mm (7/8 inch). If the distance is not 22 mm (7/8 inch), proceed to step 4. If the cutting unit is equipped with an offset lift link (Figure 11), proceed to the next step.

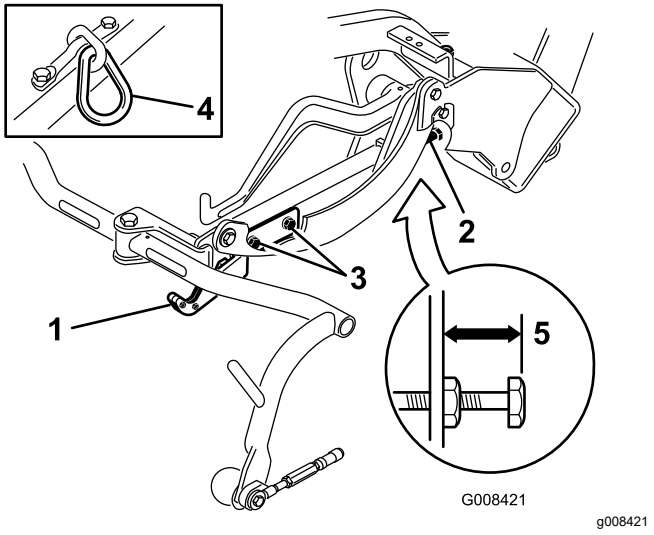


Figure 12

1. Transport plate
2. Adjusting screw
3. Transport-plate mounting screw
4. Chain link
5. 22 mm (7/8 inch)

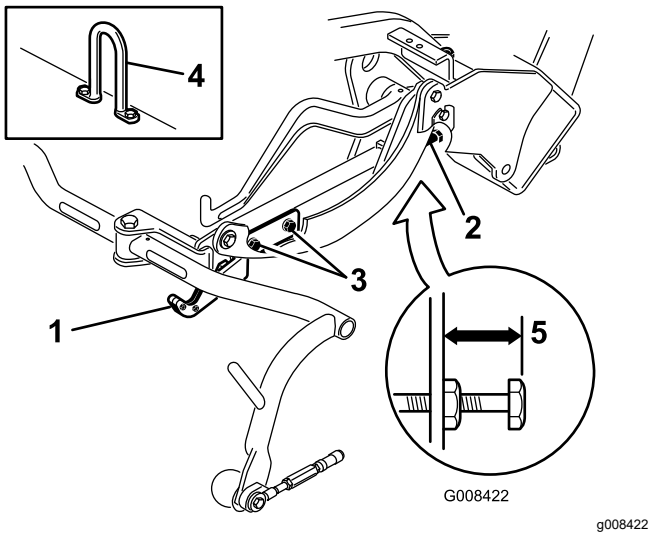


Figure 13

1. Transport plate
2. Adjusting screw
3. Transport —late mounting screw
4. Link hook
5. 22 mm (7/8 inch)

4. Loosen the transport plate mounting screws (Figure 12, Figure 13, and Figure 11).
5. Raise the cutting units to the transport position.

   Important: **Do not raise the suspension to the transport position when the reel motors are in the machine-frame holders. Damage to the motors or hoses could result.**
6. Ensure that each carrier frame is at the same height from the ground. If they are, proceed to step 8.

7. If the carrier frames are not at the same height, loosen the jam nut on the carrier frame adjusting screw (Figure 11, Figure 12, and Figure 13). Rotate the screw outward to raise and inward to lower. Tighten the jam nut after you obtain the proper height.
8. Rotate the transport plate until it locks the pull frame. Tighten the screws.

12
Installing the CE Guard Kit

Parts needed for this procedure:

1	CE Guard Kit (Part No. 04441; purchase separately)

Procedure

Install the CE Guard Kit (Part No. 04441); refer to the kit *Installation Instructions*.

This machine complies with EN ISO 5395:2013 when it is equipped with the guard kit.

13
Installing the CE Decals

Parts needed for this procedure:

1	Warning decal (Part No. 136-8505)
1	CE mark decal
1	CE production year decal

Procedure

If you use this machine in a country that complies to CE standards, perform the following steps after you install the weight kit and guard kit to the machine:

- Apply the CE warning decal (Part No. 136-8505) over the existing warning decal (Part No. 136-8506); refer to Figure 14.

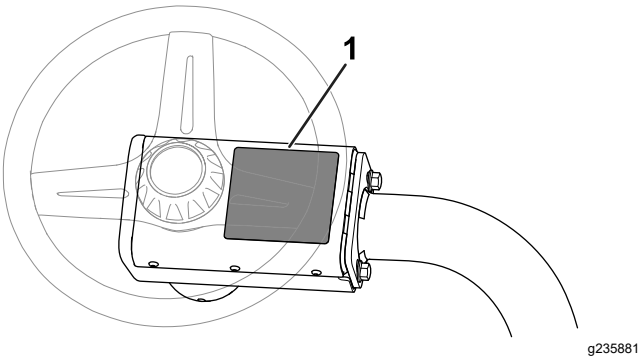


Figure 14

1. Warning decal (Part No. 136-8506)—apply CE warning decal (Part No. 136-8505) here.

- Apply the CE mark decal next to the serial plate (Figure 15).

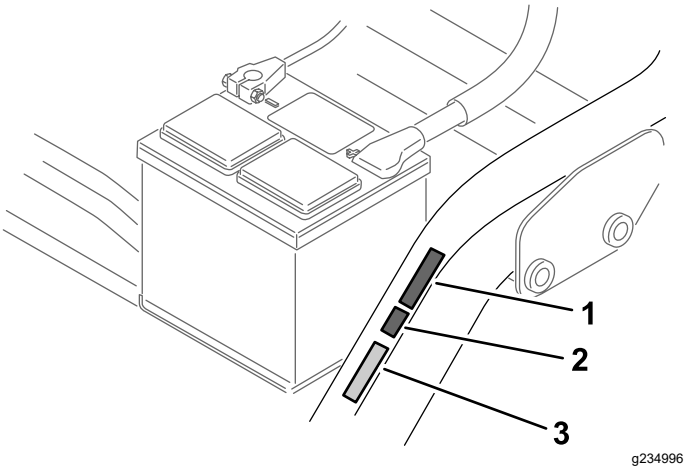


Figure 15

1. CE production year decal
2. CE mark decal
3. Serial plate

- Apply the CE production year decal next to the CE mark decal (Figure 15).

14
Burnishing the Brakes

No Parts Required

Procedure

Burnish the brakes; refer to Burnishing the Brakes (page 42).

Product Overview

Controls

Traction Pedal

The traction pedal (Figure 16) 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 and the bottom of the pedal to move backward or to assist in stopping when moving forward. Also, allow the pedal to move to the NEUTRAL position to stop the machine. Do not rest the heel of your foot on reverse when operating forward (Figure 17).

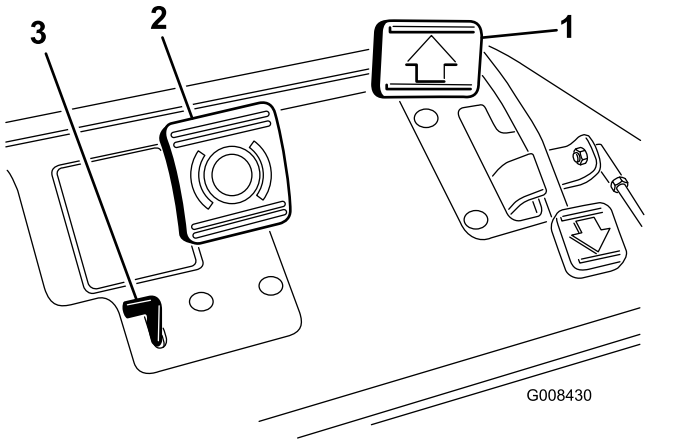


Figure 16

1. Traction pedal
2. Brake pedal
3. Parking-brake tab

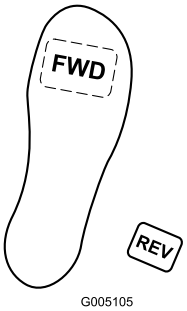


Figure 17

Brake Pedal

Press the brake pedal (Figure 16) to stop the machine by actuating the front-wheel brakes.

Parking-Brake Tab

To set the parking brake, press the brake pedal, then press the parking-brake tab (Figure 16) to engage the brakes. Disengage the tab by pressing the brake pedal. Engage the parking brake before you leave the machine.

Throttle Control

The throttle control (Figure 18) allows you to control the speed of the engine. Moving the throttle control toward the FAST position increases the engine speed; moving the throttle control toward SLOW decreases the engine rpm. Ground speeds are as follows:

- 3.2 to 8 km/h (2 to 5 mph) forward mowing speed
- 14.1 km/h (8.8 mph) maximum transport speed
- 4.0 km/h (2.5 mph) reverse speed

Note: You cannot shut off the engine using the throttle control.

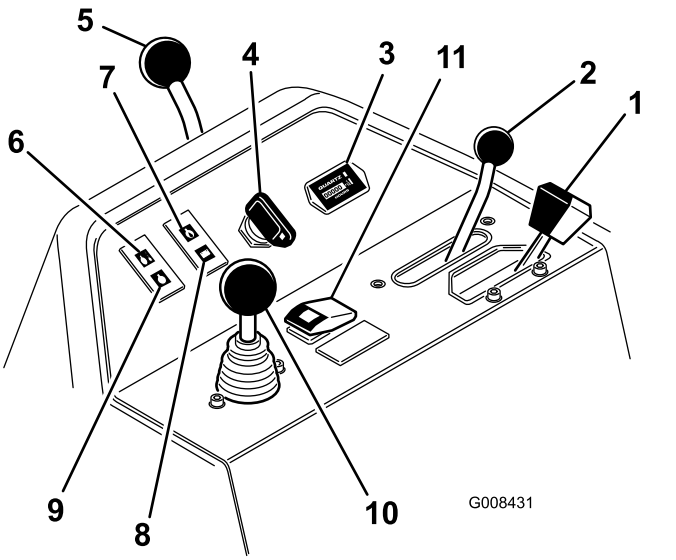


Figure 18

1. Throttle control
2. Functional control lever
3. Hour meter
4. Ignition switch
5. Steering arm locking lever
6. Water temperature light
7. Engine-oil pressure light
8. Battery warning light
9. Glow plug indicator light
10. Raise/Lower mow control
11. High temperature override button

Functional Control Lever

The functional control lever (Figure 18) provides 2 traction selections plus a NEUTRAL position. You can shift from mow to transport or transport to mow (not to neutral) while the machine is in motion; no damage will result.

- REAR position—neutral position; use when backlapping the reels
- MIDDLE position—use when cutting grass
- FRONT position—use when driving the machine between job sites

Hour Meter

The hour meter (Figure 18) indicates the total hours the machine has operated. It starts to function whenever you rotate the key switch to the ON position.

Ignition Switch

Insert the key into the switch (Figure 18) and turn it clockwise to the START position to start the engine. Release the key as soon as the engine starts; the key moves to the ON position. Turn the key counterclockwise to the STOP position to shut off the engine.

Steering Arm Locking Lever

Rotate the lever (Figure 18) rearward to loosen the adjustment, raise or lower the steering arm for your comfort, then, rotate the lever forward to tighten the adjustment.

Water Temperature Light

The light (Figure 18) glows and the engine automatically shuts off whenever the engine coolant temperature is too high.

Engine-Oil Pressure Light

The light (Figure 18) glows if the engine-oil pressure drops below a safe level.

Battery Warning Light

The light (Figure 18) glows if the battery charge is low.

Glow-Plug Indicator Light

When the glow-plug indicator light (Figure 18) is lit, it indicates the glow plugs are on.

Note: The glow-plug indicator light may illuminate for a short time after the engine has started; this is normal.

Raise/Lower Mow Control

Moving the control (Figure 18) forward during cutting operation lowers the cutting units and starts the reels. Pull back on the control to stop the reels and raise the cutting units. To stop the reels without raising the cutting units, pull back on the control momentarily and releasing it. Start the reels by moving the control forward.

High Temperature Override Button

If the engine shuts off because it is overheated, press the override button (Figure 18) in and hold it until you can move the machine to a safe location and allowed to cool down.

Note: When using the override button, you must hold it down continuously to operate. Do not use it for extended periods of time.

Backlap Lever

Use the backlap lever (Figure 19) with the raise/lower mow control lever and the reel speed control for backlapping the reels.

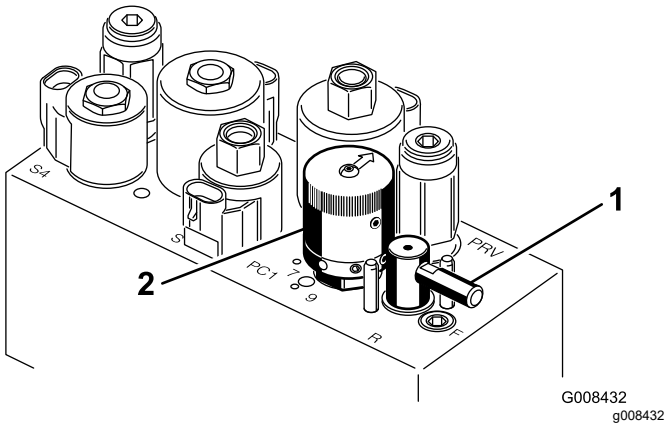


Figure 19

1. Backlap lever
2. Reel-speed control

Reel-Speed Control

Use the reel-speed control (Figure 19) to adjust the speed of the reels.

Seat-Adjustment Lever

The seat-adjustment lever on the left side of the seat (Figure 20) allows an 18 cm (7 inch) foreward and rearward adjustment of the seat.

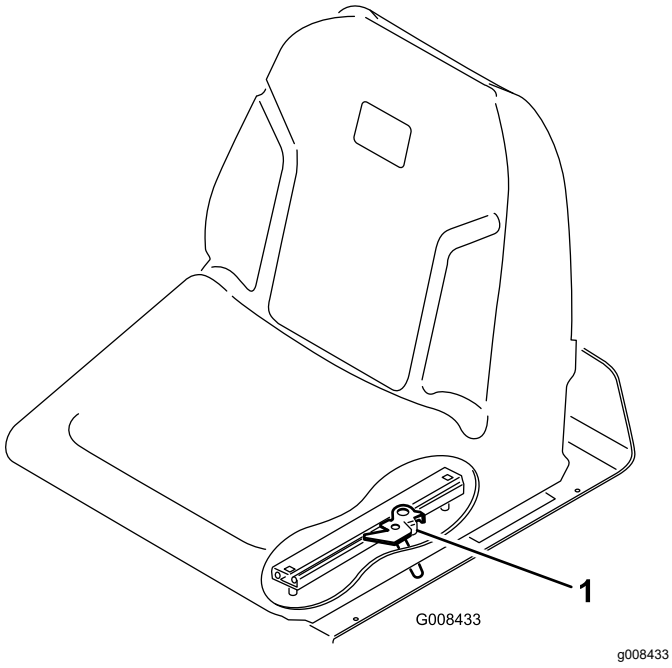


Figure 20

1. Seat-adjustment lever

Fuel-Shutoff Valve

Close the fuel-shutoff valve (Figure 21), under the fuel tank, when storing or transporting the machine on a truck or trailer.

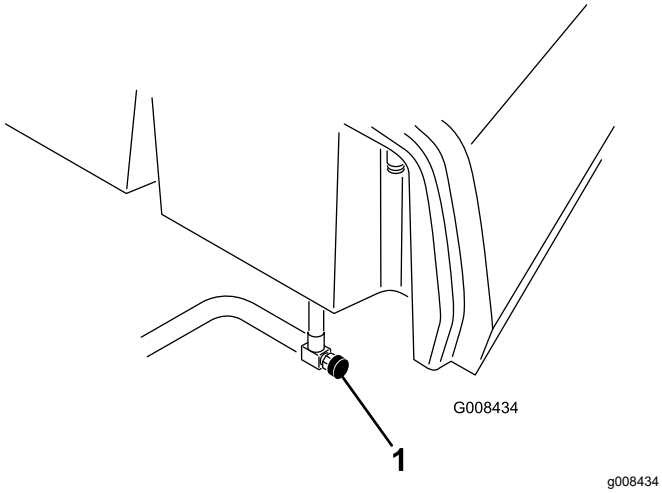


Figure 21

1. Fuel-shutoff valve (under the fuel tank)

Specifications

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

Width of cut	150 cm (59 inches)
Wheel tread	128 cm (50.5 inches)
Wheel base	123 cm (48.6 inches)
Overall length (w/baskets)	238 cm (93.9 inches)
Overall width	173 cm (68 inches)
Overall height	197 cm (77.5 inches)
Engine speed settings	High Idle: 2,710 ± 50 rpm Low Idle: 1,500 ± 50 rpm
Net weight w/11-blade reels	680 kg (1,500 lb)

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 for a list of all approved attachments and accessories.

To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories.

Operation

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

Before Operation

Before Operation Safety

General Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- 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.

Fuel Safety

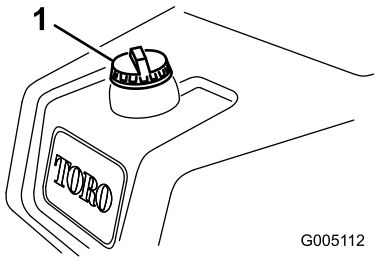
- Use extreme care in handling fuel. It is flammable and its vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or fill the fuel tank while the engine is running or hot.
- Do not add or drain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

Filling the Fuel Tank

- **Fuel tank capacity:** 22.7 L (6 U.S. gallons)
- **Recommended Fuel:**
  - For best results, use only clean, fresh diesel fuel or biodiesel fuels with low (<500 ppm) or ultra low (<15 ppm) sulfur content. The minimum cetane rating should be 40. Purchase fuel in quantities that can be used within 180 days to ensure fuel freshness.
  - Use summer-grade diesel fuel (No. 2-D) at temperatures above -7° C (20° F) and winter-grade (No. 1-D or No. 1-D/2-D blend) below that temperature. Use of winter-grade fuel at lower temperatures provides lower flash point and cold flow characteristics which will ease starting and reduce fuel filter plugging.

    Note: Use of summer-grade fuel above -7° C (20° F) will contribute toward longer fuel pump life and increased power compared to winter-grade fuel.
  - This machine can also use a biodiesel blended fuel of up to B20 (20% biodiesel, 80% petrodiesel). The petrodiesel portion should be low or ultra-low sulfur. Observe the following precautions:
    - ◊ The biodiesel portion of the fuel must meet specification ASTM D6751 or EN14214.
    - ◊ The blended fuel composition should meet ASTM D975 or EN590.
    - ◊ Painted surfaces may be damaged by biodiesel blends.
    - ◊ Use B5 (biodiesel content of 5%) or lesser blends in cold weather.
    - ◊ Monitor seals, hoses, gaskets in contact with fuel as they may be degraded over time.
    - ◊ Fuel filter plugging may be expected for a time after converting to biodiesel blends.
    - ◊ Contact your distributor if you wish for more information on biodiesel.

1. Clean around the fuel-tank cap and remove it (Figure 22).



g005112

Figure 22

1. Fuel-tank cap

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

   Important: **Do not overfill.**

3. Install the cap.
4. Wipe up any fuel that may have spilled.

Performing Daily Maintenance

Service Interval: Before each use or daily

Before starting the machine each day, perform the following procedures:

- Check the engine-oil level—refer to Checking the Engine Oil (page 34).
- Drain water from the fuel filter—refer to Draining Water from the Fuel Filter (page 35).
- Check the cooling system—refer to Cooling System Maintenance (page 41).
- Check the tire pressure—refer to Checking the Tire Pressure (page 39).
- Check the hydraulic-fluid level—refer to Checking the Hydraulic-Fluid Level (page 45).
- Check the reel-to-bedknife contact—refer to Checking the Reel-to-Bedknife Contact (page 46).

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 start the engine, ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position.
- Do not carry passengers on the machine.
- 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.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is lethal if inhaled.
- Do not leave a running machine unattended.
- Before you leave the 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 engine 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

Refer to the engine manual supplied with the machine for oil change and maintenance procedures recommended during the break-in period.

Only 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 oil leakage, loose fasteners, or any other malfunction.

Starting the Engine

Important: **Do not use ether or other types of starting fluid.**

Note: You may need to bleed the fuel system before starting the engine if any of the following situations have occurred:

- Initial start up of a new engine.
- The engine has ceased running due to lack of fuel.
- Maintenance has been performed upon fuel system components.

Refer to your engine *Owner's Manual*.

1. Sit on the seat, lock the parking brake, disengage the raise/lower mow control and move the functional-control lever to the NEUTRAL position.
2. Remove your foot from the traction pedal and make sure the pedal is in the NEUTRAL position.
3. Move the throttle lever to the SLOW position.
4. Insert the key into the switch and rotate it to the ON position. Hold it in the ON position until the glow-plug-indicator light goes off (approximately 6 seconds).
5. Turn the ignition key to the START position.

   Important: **To prevent overheating of the starter motor, do not engage the starter longer than 10 seconds. After 10 seconds of continuous cranking, wait 60 seconds before engaging the starter motor again.**
6. Release the key when the engine starts and allow it to move to the ON position.
7. Allow the engine to warm up for a few minutes before operating.

   Important: **When starting the engine for the first time or after an overhaul of the engine, operate the machine in forward and reverse for 1 to 2 minutes. Turn the steering wheel**

to the left and right to check the steering response. Then shut the engine off and wait for all moving parts to stop; refer to Shutting Off the Engine (page 23). Check for oil leaks, loose parts and any other noticeable malfunctions.

Checking the Machine After Starting the Engine

1. Move the throttle lever to the FAST position.
2. Move the raise/lower mow control lever forward momentarily.

   The cutting units should lower and all the reels should rotate.

   Note: The function lever should be in the middle (mow) position for the reels to run when lowering the cutting units
3. Move the raise/lower mow control lever rearward.

   The cutting reels should stop rotating and the cutting units should raise to the full transport position.
4. Engage the brake to keep the machine from moving, and operate the traction pedal through the forward and reverse positions.
5. Continue the above procedure for 1 to 2 minutes. Move the functional-control lever to the NEUTRAL position, lock the parking brake, and shut off the engine.
6. Check for fluid leaks and tighten the hydraulic fittings if any leaks are found.

   Note: When the machine is new and the bearings and reels are tight, it is necessary to use the FAST throttle lever position for this check. A fast throttle setting may not be required after the break-in period.

   Note: If fluid leaks continue to appear, contact your authorized Toro distributor for assistance and, if necessary, replacement parts.

   Important: **A trace of fluid on the motor or wheel seals is normal. Seals require a small amount of lubrication to perform properly.**

Shutting Off the Engine

1. Move the throttle lever to the SLOW position, pull back the raise/lower mow control, and move the functional-control lever to the NEUTRAL position.
2. Rotate the ignition key to the OFF position to shut off the engine. Remove the key from the switch to prevent accidental starting.
3. Close the fuel-shutoff valve before storing the machine.

Checking the Safety-Interlock System

Service Interval: Before each use or daily

⚠ CAUTION

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

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

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 engine from starting unless:

- The traction pedal is in the NEUTRAL position.
- The functional-control lever is in the NEUTRAL position.

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

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

The safety-interlock system prevents the reels from operating unless the functional-control lever is in the MOW position.

Checking the Traction Pedal

Perform the following system checks daily to ensure that the interlock system is operating correctly:

1. Sit on the seat, move the traction pedal to the NEUTRAL position, move the functional-control lever to the NEUTRAL position, and engage the parking brake.

2. Try to move the traction pedal forward or backward.

   The pedal should not move, which indicates that the interlock system is operating correctly. Correct the problem if it is not operating properly.

Checking the Function Control

1. Sit on the seat, move the traction pedal to the NEUTRAL position, move the functional-control lever to the NEUTRAL position, and engage the parking brake.
2. Move the functional-control lever to the MOW position or the TRANSPORT position and try to start the engine.

   The engine should not turnover or start, which indicates that the interlock system is operating correctly. Correct the problem if it is not operating properly.
3. Sit on the seat, move the traction pedal to the NEUTRAL position, move the functional-control lever to the NEUTRAL position, and engage the parking brake.
4. Start the engine and move the functional-control lever to the MOW position or the TRANSPORT position.

   The engine should shut off, which indicates that the interlock system is operating correctly.

   Correct the problem if it is not operating properly.

Checking the Operator's Presence Switch

1. Sit on the seat, move the traction pedal to the NEUTRAL position, move the functional control lever to the NEUTRAL position, and engage the parking brake.
2. Start the engine.
3. Release the parking brake, move the functional control lever to the MOW position, and rise from the seat.

   The engine should shut off, which indicates that the interlock system is operating correctly. Correct the problem if it is not operating properly.

Checking the Raise/Lower Mow Control

1. Sit on the seat, move the traction pedal to the NEUTRAL position, move the functional control lever to the NEUTRAL position, and engage the parking brake.
2. Start the engine.
3. Move the raise/lower mow control 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.
- Move the functional-control lever to the TRANSPORT position.
- Use the brakes to slow the machine while going down steep hills to avoid loss of control.
- Always approach rough 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

Important: **If the leak detector alarm (if equipped on your model) sounds or you notice an oil leak while cutting on a green, immediately raise the cutting units, drive directly off the green, and stop the machine in an area away from the green. Determine the cause of the leak and correct the problem.**

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

Inspect the green for debris, 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 therefore be difficult to trap between the reel blades and the bedknife.

Cutting the Green

1. Approach the green with the functional-control lever in the MOW position and the throttle at full speed.
2. 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.

3. Push forward the raise/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 drops and raises slightly after the front cutting units do; therefore, you should practice gaining the required timing necessary to minimize the cleanup mowing operation.**

   Note: The delay in raising and lowering the center cutting unit depends on hydraulic fluid temperature. Cold hydraulic fluid results in a longer delay. As the fluid temperature increases, the delay time becomes shorter.

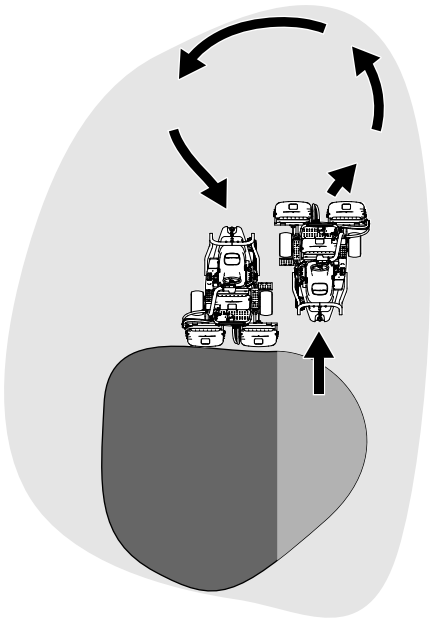
4. Overlap a minimal amount with the previous cut on return passes.

   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 24). 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 raise/lower mow lever 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.**

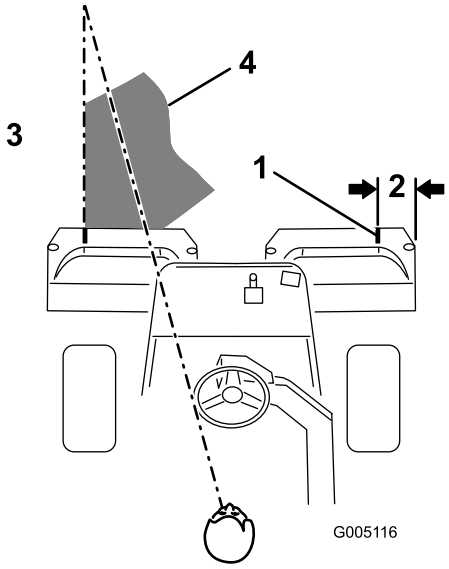
6. To cut down on operating time and to ease the lineup for the next pass, momentarily turn the machine in the opposite direction, then turn it in the direction of the uncut portion. This movement is a tear-shaped turn (Figure 23), which quickly lines the machine up for your next pass.



g229671

Figure 23

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



g005116

Figure 24

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.

Note: The steering wheel does not return to its original position after you complete a turn.

Important: **Never stop the machine on a green while the cutting units are engaged, as damage to the turf may result. Stopping the machine on a wet 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.

   Note: Use the throttle lever to adjust the machine speed when you cut the periphery. This will match the clip to the green and may 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 finished mowing the outer periphery, tap the raise/lower mow lever rearward to stop the reels, then drive off the green. When all the cutting units are off the green, 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 place an undue strain on the baskets and add unnecessary weight to the machine, which increases the load on the machine systems (e.g., engine, hydraulic system, and brakes).

After Operation

After Operation Safety

General Safety

- Engage the parking brake, shut off the engine, remove the key, and wait for all movement to stop before you leave the operator's position. Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Clean grass and debris from the cutting units and drives to help prevent fires. Clean up oil or fuel spills.
- Shut off the fuel 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 or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.

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 and bearings. **Do not wash a warm engine or 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. Avoid excessive use of water near the control panel, engine, and battery.**

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

After cleaning the machine, do the following:

- Inspect the machine for possible hydraulic fluid leaks, damage or wear to hydraulic and mechanical components.
- Inspect the cutting units for sharpness.
- Lubricate the brake-shaft assembly with SAE 30 oil or spray lubricant to deter corrosion and help keep the machine performing satisfactorily during the next mowing operation.

Towing the Machine

In case of an emergency, you can tow the machine for up to 0.4 km (1/4 mi).

Important: **Do not tow the machine faster than 3 to 5 km/h (2 to 3 mph) to avoid damaging the drive system. If you must move the machine more than 0.4 km (1/4 mi), transport it on a truck or trailer.**

1. Locate the bypass valve on the pump (Figure 25).

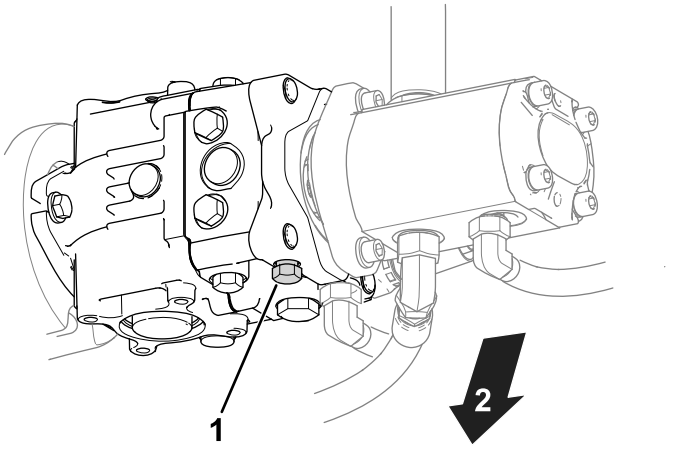


Figure 25

1. Bypass valve
2. Bottom of the machine

2. Open the bypass valve by turning the valve 3 revolutions counterclockwise.
3. Before starting the engine, tighten the bypass valve and torque the valve to 12 N·m (9 ft-lb).

   Important: **Do not start the engine when the bypass valve is open.**

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.

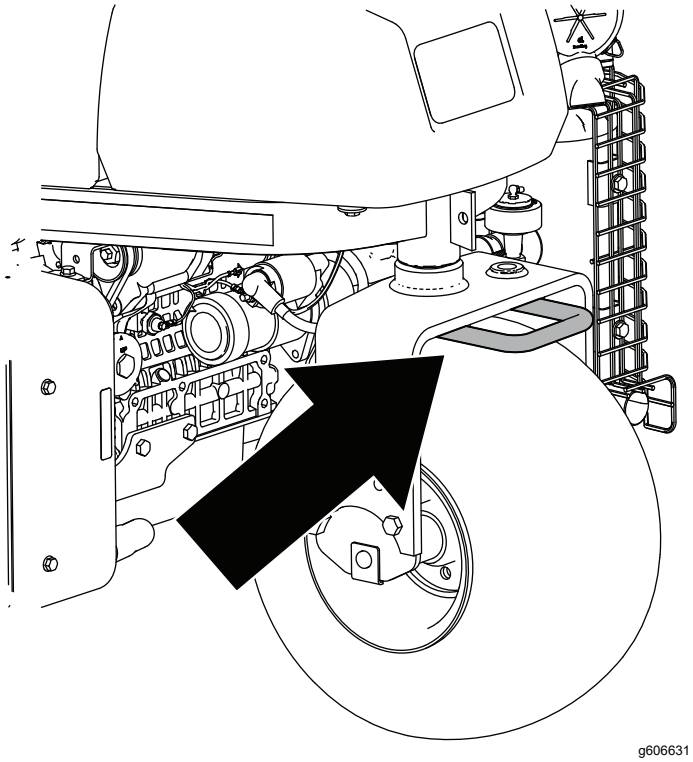


Figure 26

Maintenance

⚠ CAUTION

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

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

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

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

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

⚠ WARNING

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

Remove the key from the ignition before you do any maintenance.

Maintenance Safety

- Before you leave the operator’s position, do the following:
  - Park the machine on a level surface.
  - Disengage the cutting unit(s).
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all movement to stop.
- Allow machine components to cool before performing maintenance.
- If possible, do not perform maintenance while the engine 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 hour	• Torque the wheel hub nuts. • Torque the wheel nuts.
After the first 8 hours	• Check the tension on the alternator belt.
After the first 10 hours	• Torque the wheel hub nuts. • Torque the wheel nuts.
After the first 50 hours	• Change the engine oil and filter.
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 engine oil. • Drain water from the fuel filter. • Check the tire pressure. • Clean the radiator screen. Clean it hourly if conditions are extremely dusty and dirty. • Check the engine-coolant level. • Check the hydraulic-fluid level. • Check the hydraulic lines and hoses. • Check the reel-to-bedknife contact.
Every 50 hours	• Grease the machine. (Also, apply grease after every washing.)
Every 100 hours	• Change the engine oil and filter.
Every 200 hours	• Service the air-cleaner filter (more frequently when operating conditions are dusty or dirty). • Torque the wheel hub nuts. • Torque the wheel nuts.
Every 500 hours	• Replace the fuel filter.
Every 800 hours	• If you are not using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid, change the hydraulic fluid, filter, and tank breather.
Every 1,000 hours	• If you are using the recommended hydraulic fluid, change the hydraulic-fluid filter.
Every 2,000 hours	• If you are using the recommended hydraulic fluid, change the hydraulic fluid.
Yearly	• Burnish the brakes.
Every 2 years	• Check the fuel lines and connections.

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 fuel filter/water separator.							
Check the fuel level.							
Check the engine-oil level.							
Check the hydraulic-fluid level.							
Clean the screen and radiator.							
Inspect the air filter.							
Check any unusual engine noises.							
Check the reel-to-bedknife adjustment.							
Check the hydraulic hoses for damage.							
Check for fluid leaks.							
Check the tire pressure.							
Check the height-of-cut adjustment.							
Lubricate all grease fittings.[1]							
Lubricate the traction and brake linkage.							
Touch-up damaged paint.							
1. Immediately after every washing, regardless of the interval listed.							

Notation for Areas of Concern

Inspection performed by:		
Item	**Date**	**Information**

Pre-Maintenance Procedures

Preparing the Machine for Maintenance

1. Park the machine on a level surface.
2. Lower the cutting units.
3. Engage the parking brake.
4. Shut off the engine.
5. Remove the key.
6. Wait for all moving parts to stop.

Lubrication

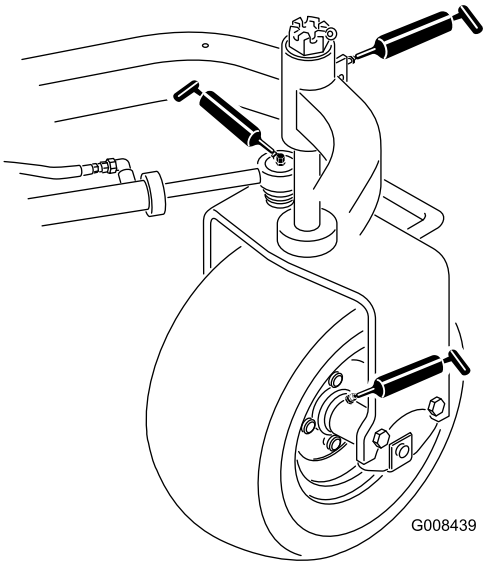
Greasing the Machine

Service Interval: Every 50 hours (Also, apply grease after every washing.)

The machine has grease fittings that must be lubricated regularly with No. 2 general-purpose, lithium-base grease. If the machine is operated under normal conditions, lubricate all bearings and bushings **after every** 50 hours of operation. Lubricate fittings immediately after every washing, regardless of the interval listed.

The following machine bearings and bushings must be lubricated:

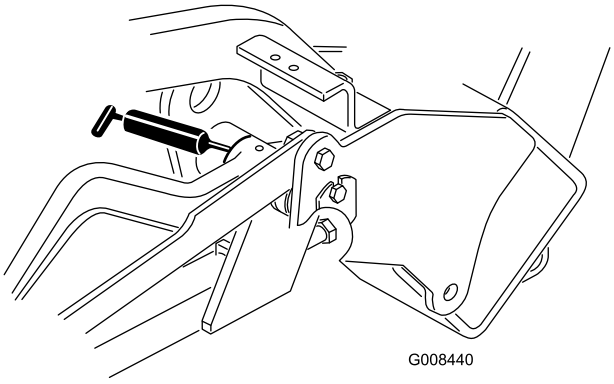
- Rear wheel hub (1) (Figure 27)



g008439

Figure 27

- Castor bearing (1) (Figure 27)
- Steering cylinder (2) (Figure 27)
- Lift arms (3) (Figure 28)



g008440

Figure 28

- Traction pedal pivot (1) (Figure 29)

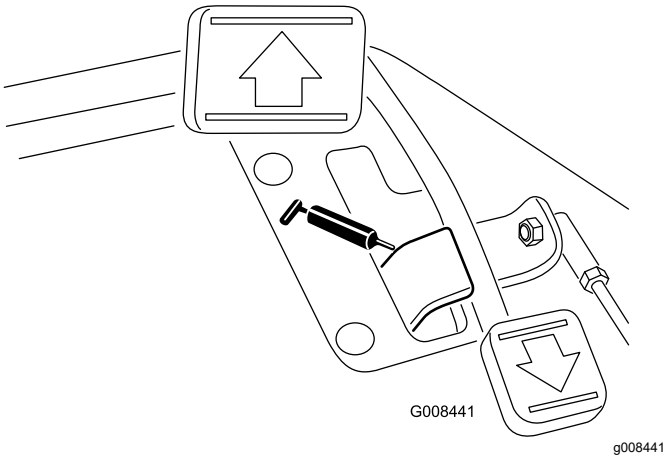


Figure 29

- Carrier frame pivot (3) (Figure 30)

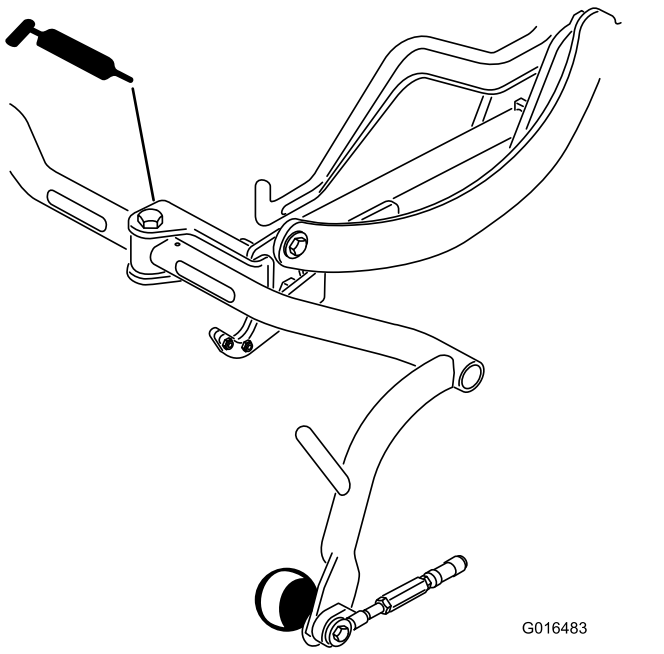


Figure 30

1. Wipe the grease fitting clean so foreign matter cannot be forced into the bearing or bushing.
2. Pump grease into the bearing or bushing.
3. Wipe up excess grease.
4. Apply grease to the reel motor spline shaft and onto the lift arm when the cutting unit is removed for service.
5. Apply a few drops of SAE 30 engine oil or spray lubricant (WD 40) daily to all pivot points after cleaning.

Note: Refer to the Cutting Unit *Operator's Manual* for cutting unit lubrication requirements.

Engine Maintenance

Engine Safety

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

Servicing the Air Cleaner

Service Interval: Every 200 hours—Service the air-cleaner filter (more frequently when operating conditions are dusty or dirty).

- Check the air-cleaner body for damage which could cause an air leak; replace it if it is damaged. Check the whole intake system for leaks, damage, or loose hose clamps.
- Changing the air filter before it is necessary increases the chance of dirt entering the engine when the filter is removed.
- Ensure that the cover is seated correctly and seals with the air cleaner body.

1. Release the latches that secure the air-cleaner cover to the air-cleaner body (Figure 31).

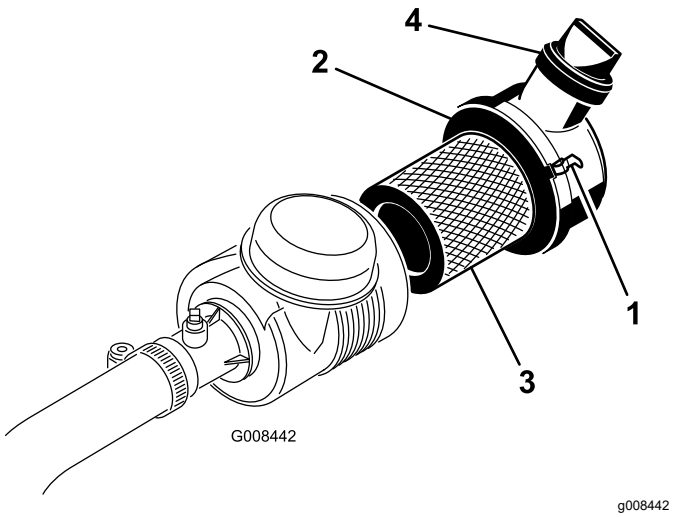


Figure 31

1. Air-cleaner latches
2. Dust cap
3. Filter
4. Outlet valve

2. Remove the cover from the air-cleaner body.
3. Before removing the filter, use low pressure air (275 kPa (40 psi), clean and dry) to help remove large accumulations of debris packed between the outside of the primary filter and the canister. This cleaning process prevents debris getting

into the intake when you remove the primary filter.

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

4. Remove and replace the primary filter, as follows:

   Important: **Do not clean the used element.**

   A. Inspect the new filter for shipping damage; **do not use a damaged element.**

   B. Carefully pull the old filter out of the filter body and discard it.

   C. Insert the new filter by applying pressure to the outer rim of the element to seat it in the canister, checking the sealing end of the filter and the body.

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

5. Clean the dirt ejection port located in the removable cover. Remove the rubber outlet valve from the cover, clean the cavity and replace the outlet valve.
6. Install the cover orienting the rubber outlet valve in a downward position—between approximately 5 o'clock to 7 o'clock when viewed from the end.
7. Ensure that the latches secure the cover to the body (Figure 31).

Servicing the Engine Oil

The engine is shipped with 3.7 L (3.9 US qt) (with filter) of oil in the crankcase; however, you must check the oil level before and after starting the engine the first time.

Engine Oil Specification

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

- API Classification Level Required: CH–4, CI–4 or higher.
- Preferred oil: SAE 10W–30
- Alternate oil: SAE 15W–40

Toro Premium Engine oil is available from your distributor in the 10W–30 viscosity. See the parts catalog for part numbers.

Checking the Engine Oil

Service Interval: Before each use or daily

⚠ CAUTION

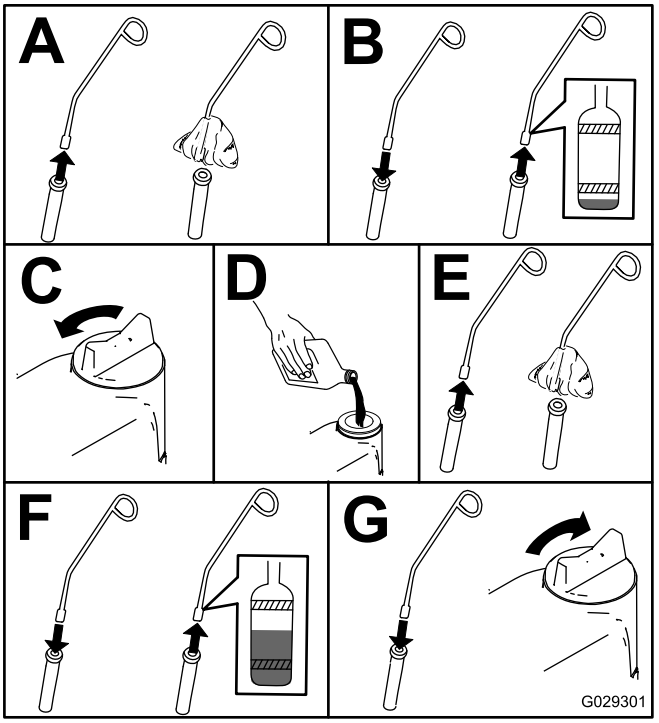
Engines can become extremely hot during normal operation.

Allow the engine to cool before you check the oil or perform any engine maintenance.

1. Prepare the machine for maintenance.
2. Remove the dipstick and wipe it with a clean rag.
3. Insert the dipstick into the dipstick tube.
4. Pull the dipstick out of the tube and check the oil level.
5. If the oil level is low, remove the filler cap from the valve cover and add oil into the engine through the filler neck until the oil level is between the marks on the dipstick.

   Add the oil slowly and check the level often during this process.

   Important: **Do not overfill the engine with oil.**
6. Install the filler cap and dipstick.



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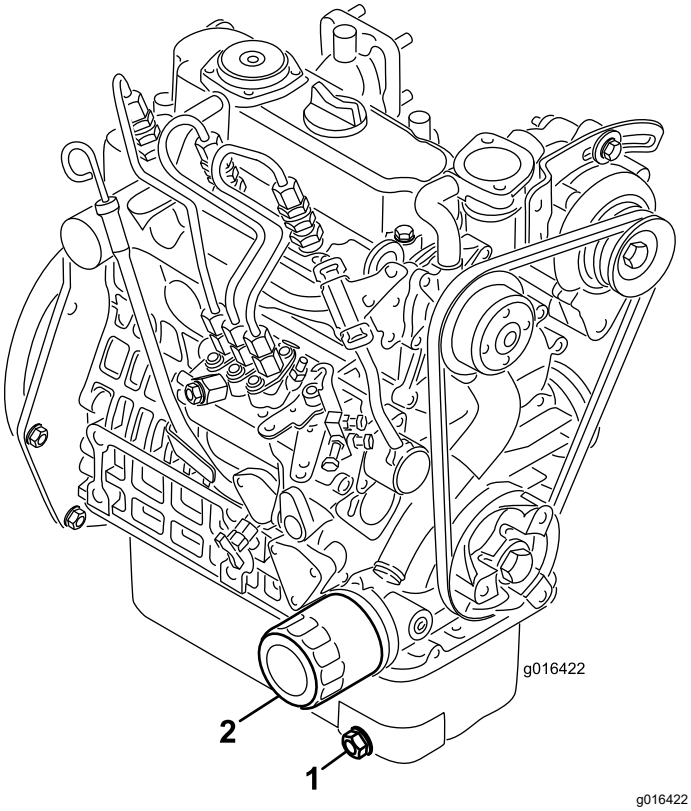
Figure 32

Changing the Engine Oil and Filter

Service Interval: After the first 50 hours

Every 100 hours

1. Remove the drain plug (Figure 33) and let the oil flow into a drain pan. When the oil stops, install the drain plug.



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Figure 33

1. Drain plug
2. Oil filter

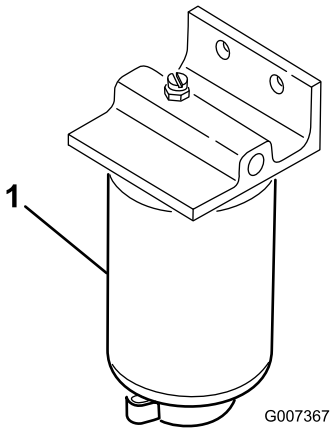
2. Remove the oil filter. Apply a light coat of clean oil to the new filter gasket.
3. Screw the filter on by hand until the gasket contacts the filter adapter, then tighten 1/2 to 3/4 turn further. **Do not overtighten**.
4. Add oil to the crankcase; refer to Changing the Engine Oil and Filter (page 34).
5. Dispose of the used oil and filter properly.

Fuel System Maintenance

Draining Water from the Fuel Filter

Service Interval: Before each use or daily

1. Position the machine on a level surface and shut off the engine.
2. Place a drain pan under the fuel filter.
3. Open the drain plug on the fuel filter approximately one turn and drain any accumulated water (Figure 34).



g007367

Figure 34

1. Fuel filter

4. Tighten the plug after draining.

   Note: Because the accumulated water will be mixed with diesel fuel, drain the fuel filter into a suitable container and dispose of it properly.

Replacing the Fuel Filter

Service Interval: Every 500 hours

1. Close the fuel shutoff valve (Figure 35) below the fuel tank.

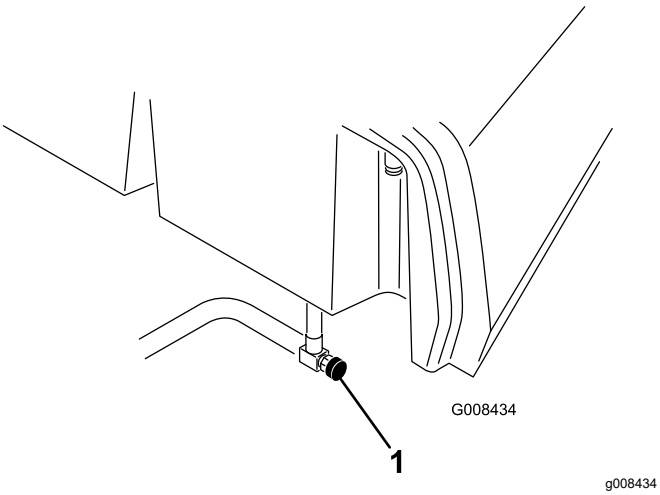


Figure 35

1. Fuel shut-off valve

2. Clean the area where the filter canister mounts.
3. Place a drain pan under the fuel filter.
4. Open the filter drain plug and breather valve (Figure 36).

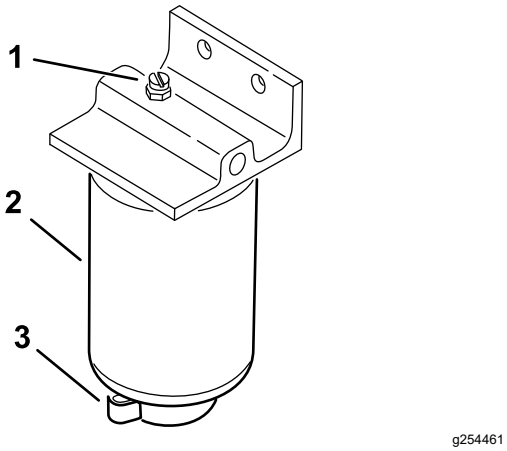


Figure 36

1. Breather valve
2. Fuel filter
3. Filter drain plug

5. Remove the filter canister and clean the mounting surface.
6. Lubricate the gasket on the filter canister with clean oil.
7. Install the filter canister by hand until the gasket contacts the mounting surface, then rotate an additional 1/2 turn.
8. Tighten the drain plug on the bottom of the filter canister and open the fuel shut off valve.
9. Dispose of the fuel and filter according to local regulations.

Inspecting the Fuel Lines and Connections

Service Interval: Every 2 years

Inspect the fuel lines for deterioration, damage, or loose connections.

Electrical System Maintenance

Electrical System Safety

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

Accessing the Battery

The battery is located under the cover to the left of the operator's seat (Figure 37).

Remove the screws (Figure 37), washers, and nuts to remove the cover. After accessing the battery, use the hardware to secure the cover to the machine.

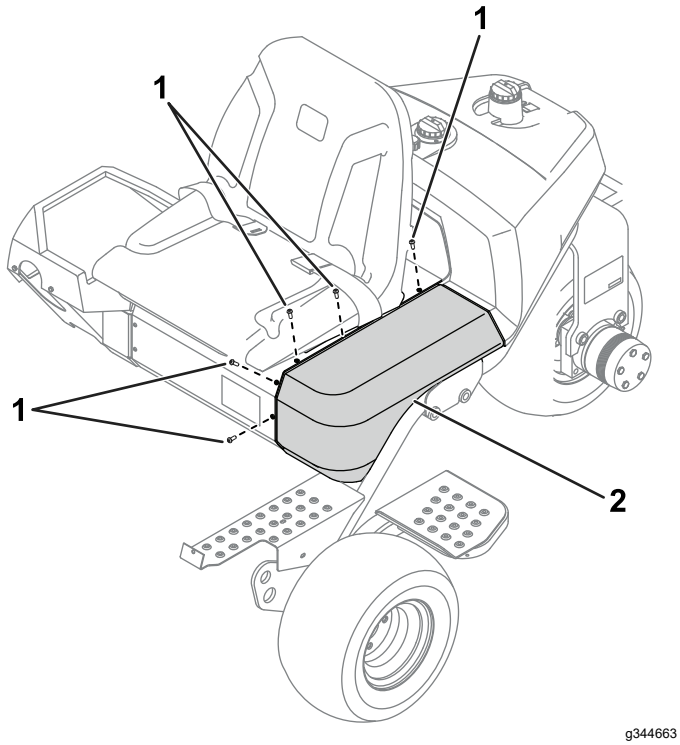


Figure 37

1. Screws
2. Cover

Disconnecting the Battery

⚠ WARNING

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

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

⚠ WARNING

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

Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.

1. Access the battery; refer to Accessing the Battery (page 37).
2. Remove the negative battery cable from the battery post (Figure 38).

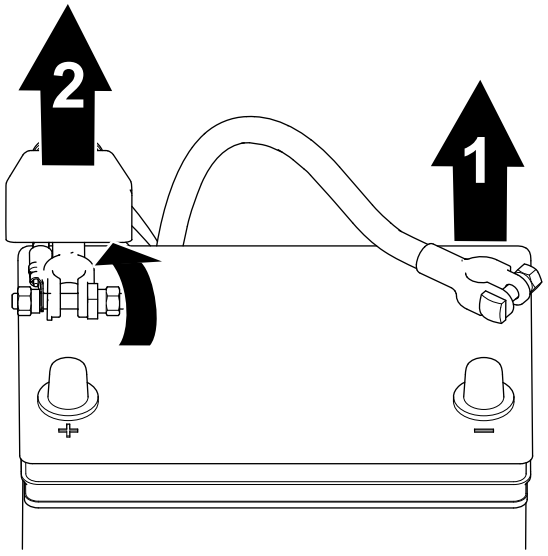


Figure 38

1. Negative battery cable
2. Positive battery cable

3. Lift the insulator and remove the positive battery cable from the battery post (Figure 38).

Connecting the Battery

⚠ WARNING

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

Always connect the positive (red) battery cable before connecting the negative (black) cable.

1. Access the battery; refer to Accessing the Battery (page 37).
2. Connect the positive cable to the battery and tighten the battery-clamp nut (Figure 39).

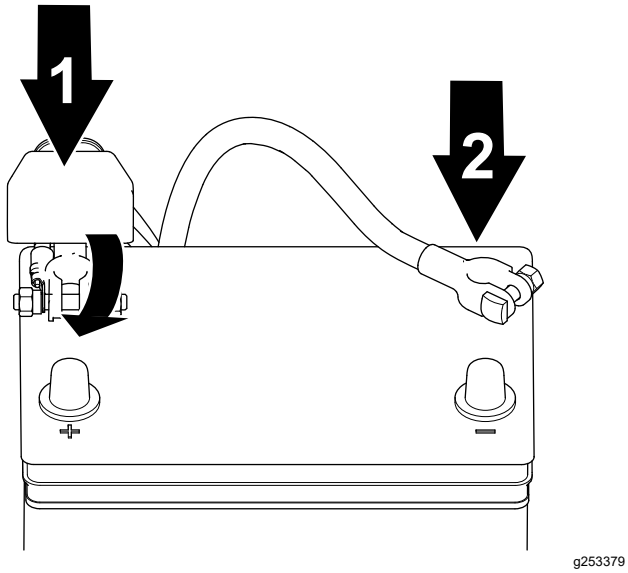


Figure 39

1. Positive battery cable
2. Negative battery cable

3. Connect the negative cable to the battery and tighten the battery-clamp nut (Figure 39).

Charging the Battery

⚠ WARNING

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

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

1. Disconnect the battery; refer to Disconnecting the Battery (page 37).
2. Remove the fasteners that secure the battery to the tray and lift out the battery.
3. Connect a 2 to 4 A battery charger to the battery posts. Charge the battery for at least 2 hours at 4 A or for at least 4 hours at 2 A until the specific gravity is 1.250 or higher and the temperature is at least 16°C (60°F) with all cells gassing freely.

⚠ WARNING

Charging the battery produces gasses that can explode.

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

Important: **If you do not charge the battery for at least the time specified above, you may reduce the life of the battery.**

4. When the battery is charged, disconnect the charger from the electrical outlet and battery posts.
5. Place the battery on the battery tray and secure it with the battery clamp and fasteners removed previously.
6. Connect the battery; refer to Connecting the Battery (page 38).

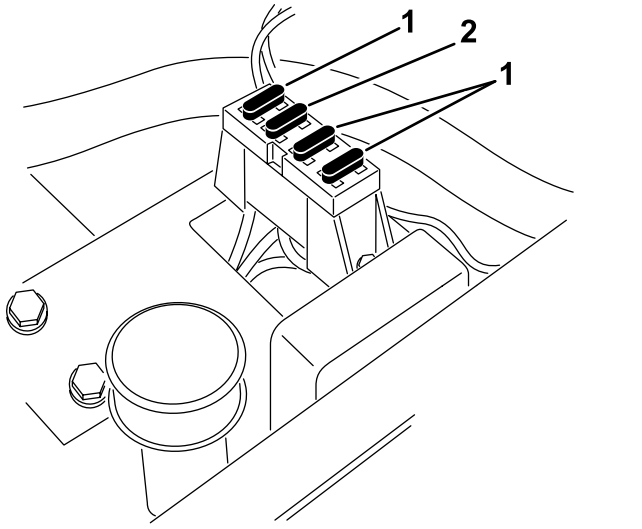
⚠ WARNING

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

Always connect the positive (red) battery cable before connecting the negative (black) cable.

Locating the Fuses

The fuses in the electrical system of the machine are located under the seat (Figure 40).



g564749

Figure 40

1. Fuses—10 A
2. Fuse—15 A

Drive System Maintenance

Checking the Tire Pressure

Service Interval: Before each use or daily

Vary the tire pressure for the front wheels, depending upon your turf conditions, from a minimum of 55 kPa (8 psi) to a maximum of 83 kPa (12 psi).

Vary the tire pressure for the rear wheel from a minimum of 55 kPa (8 psi) to a maximum of 103 kPa (15 psi).

Checking the Torque of the Front Wheel Hub Nuts

Service Interval: After the first hour
After the first 10 hours
Every 200 hours

Wheel hub nut torque specification: 420 to 461 N·m (310 to 340 ft-lb)

Checking the Torque of the Wheel Nuts

Service Interval: After the first hour
After the first 10 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: 95 to 122 N·m (70 to 90 ft-lb)

Note: To ensure even distribution, torque the wheel nuts in a X pattern.

Adjusting the Transmission for Neutral

If the machine creeps when the traction control pedal is in the NEUTRAL position, adjust the neutral-return mechanism.

1. Ensure that the bypass valve is closed.
2. Lift the machine and support it at the frame so that 1 of the front wheels is off the floor.

Note: If the machine is equipped with a 3-Wheel Drive Kit, also raise and block the rear wheel.

3. Start the engine, move the throttle to the SLOW position, and ensure that the front wheel that is off of the floor is not rotating.
4. If the wheel is rotating, shut off the engine and proceed as follows:
   A. Loosen the nut securing the eccentric to the top of the hydrostat.

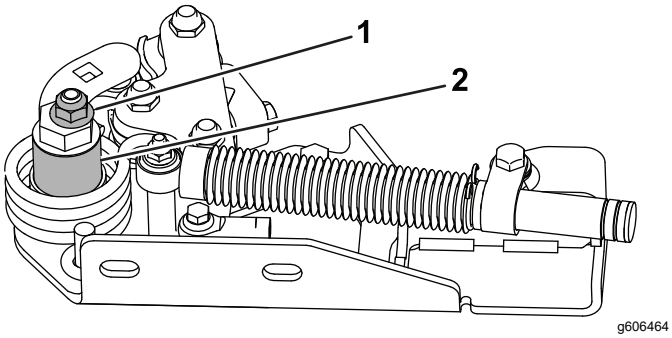


Figure 41

   B. Move the functional-control lever to the NEUTRAL position and the throttle to the SLOW position.
   C. Start the engine.
   D. Rotate the eccentric until creep does not occur in either direction.
   E. When the wheel stops rotating, tighten the nut locking the eccentric and the adjustment. Verify the adjustment with the throttle lever in the SLOW and FAST position.

      Note: If the wheel still turns when the eccentric is at the maximum adjustment, contact your authorized Toro distributor or refer to the *Service Manual* for further adjustment.

Adjusting the Transport Speed

Obtaining the Maximum Transport Speed

The traction pedal comes adjusted for maximum-transport speed, but you may need to adjust it if the pedal reaches full stroke before it contacts the pedal stop, or if you want to a decrease the transport speed.

To obtain the maximum-transport speed, put the functional control lever in the TRANSPORT position and press down on the traction pedal. If the pedal contacts the stop (Figure 42) before you feel tension on the cable, perform the following adjustment procedure:

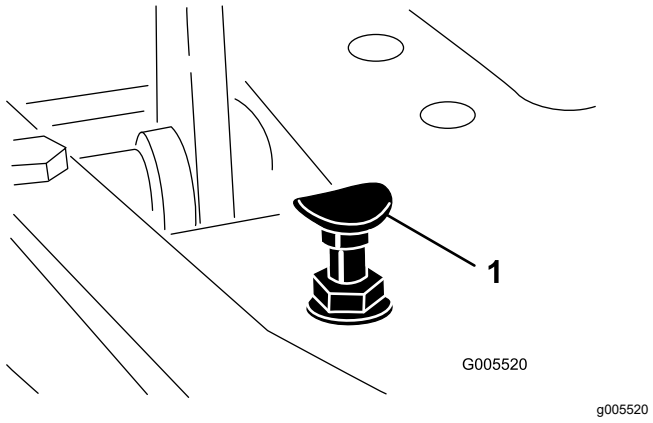


Figure 42

1. Pedal stop

1. Put the functional-control lever in the TRANSPORT position and loosen the locknut securing the pedal stop to the floor plate (Figure 42).
2. Tighten the pedal stop until it does not contact the traction pedal.
3. Continue applying a light load on the transport pedal and adjust the pedal stop so it contacts the pedal rod and tighten the nuts.

   Important: **Ensure that the tension on the cable is not excessive or you will reduce the cable life.**

Reducing the Transport Speed

1. Press down on the traction pedal and loosen the locknut securing the pedal stop to the floor plate.
2. Loosen the pedal stop until you obtain the desired transport speed.
3. Tighten the locknut securing the pedal stop.

Adjusting the Mowing Speed

The machine is adjusted at the factory, but speed may be varied if desired.

1. Loosen the jam nut on the trunnion bolt (Figure 43).
2. Loosen the nut securing the lock and mow brackets on the pedal pivot.

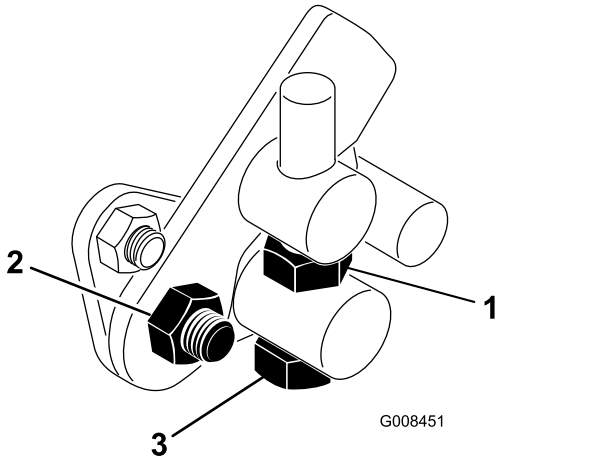


Figure 43

1. Jam nut
2. Nut
3. Trunnion bolt

3. Rotate the trunnion bolt clockwise to reduce the mowing speed and counterclockwise to increase the mowing speed.
4. Tighten the jam nut on the trunnion bolt and the nut on the pedal pivot to lock the adjustment (Figure 43). Check the adjustment and adjust as required.

Cooling System Maintenance

Cooling System Safety

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

Cleaning the Radiator Screen

Service Interval: Before each use or daily Clean it hourly if conditions are extremely dusty and dirty.

To prevent the system from overheating, the radiator screen and radiator must be kept clean. Check and clean the screen and radiator daily or, if necessary, hourly. Clean these components more frequently in dusty, dirty conditions.

1. Remove the radiator screen (Figure 44).
2. Working from the fan side of the radiator, blow out the radiator with compressed air.

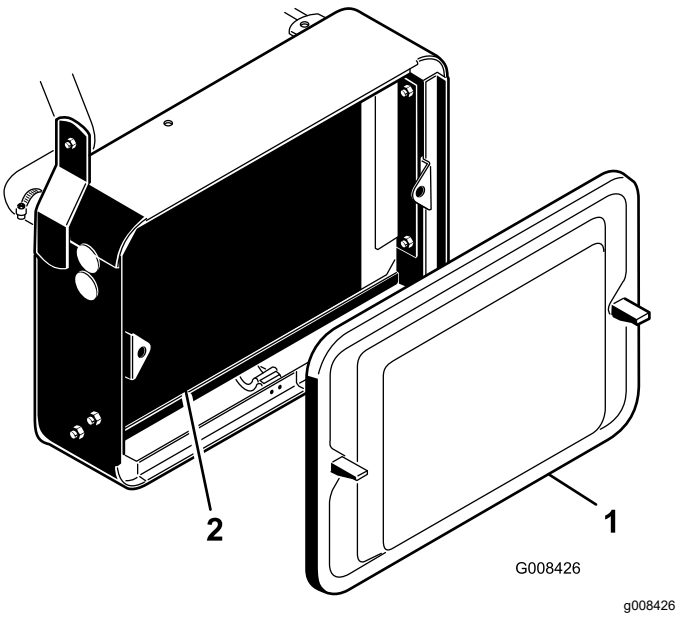


Figure 44

1. Radiator screen
2. Radiator

3. Clean the screen and install it.

Checking the Engine-Coolant Level

The capacity of the cooling system is approximately 3.2 L (3.3 US qt).

Fill the cooling system with a 50/50 solution of water and permanent ethylene glycol antifreeze. Check the level of the coolant at the beginning of each day before starting the engine.

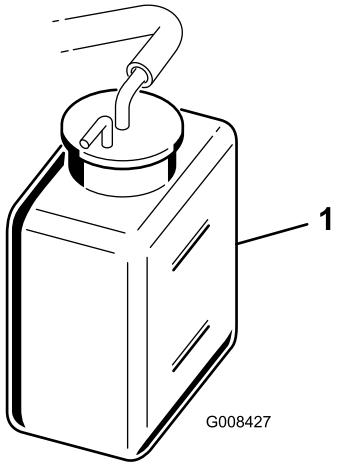
⚠ CAUTION

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

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

1. Park the machine on a level surface.
2. Check the coolant level (Figure 45).

   It should be between the lines on the reserve tank when the engine is cold.



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Figure 45

1. Reserve tank

3. If the coolant is low, remove the reserve tank cap and add a 50/50 mixture of water and permanent ethylene glycol antifreeze. **Do not overfill.**
4. Install the reserve-tank cap.

Brake Maintenance

Burnishing the Brakes

Service Interval: Yearly

Firmly apply the brakes and drive the machine at mowing speed until the brakes are hot, as indicated by their smell. You may need to adjust the brakes after the break-in period; refer to Adjusting the Brakes (page 43).

Adjusting the Brakes

A brake adjustment rod is located on each side of the machine so that you can adjust the brakes equally.

1. While moving forward in transport speed, press the brake pedal; both wheels should lock equally.

⚠ CAUTION

Testing the brakes in a confined area where others are present could cause injury.

Always check the brakes in a wide, open-spaced, flat area free from people and obstructions before and after the adjustment.

2. If the brakes do not lock equally, adjust the brakes as follows:

   A. Disconnect the brake rods by removing the cotter pin and clevis pin (Figure 46).

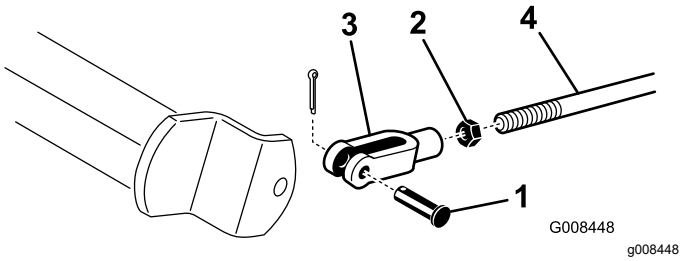


Figure 46

1. Clevis pin and cotter pin
2. Jam nut
3. Clevis
4. Brake shaft

   B. Loosen the jam nut and adjust the clevis accordingly (Figure 46).

   C. Assemble the clevis to the brake shaft (Figure 46).

   D. Check the amount of free travel of the brake pedal. There should be 13 to 26 mm (1/2 to 1 inch) travel before the brake shoes make contact with the brake drums. Adjust, if necessary, to achieve this setting.

   E. While moving forward in transport speed, press the brake pedal; both brakes should lock equally. Adjust them, if necessary.

Important: **Burnish the brakes annually; refer to the Burnishing the Brakes (page 42) section.**

Belt Maintenance

Adjusting the Alternator Belt

Service Interval: After the first 8 hours

Ensure that the belt is properly tensioned to ensure proper operation of the machine and prevent unnecessary wear.

1. Park the machine on a level surface, shut off the engine, engage the parking brake, remove the key, and wait for all moving parts to stop.
2. Apply moderate thumb pressure to the belt between the pulleys (10 kg or 22 lb). The belt should deflect 7 to 9 mm (0.28 to 0.35 inch). If not, complete the following procedure to adjust the belt tension:

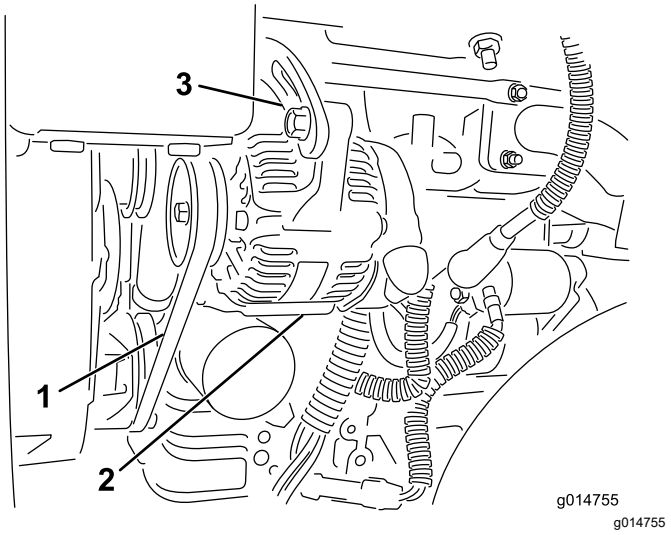


Figure 47

1. Alternator belt—apply pressure here
2. Alternator
3. Adjusting strap

   A. Loosen the bolts securing the alternator to the engine and adjusting strap.

   B. Inspect the belt for wear or damage and replace if it is worn.

   C. Using a lever placed between the alternator and the engine block, pull the alternator out to obtain the correct belt tension and tighten the bolts.

Controls System Maintenance

Adjusting the Cutting Unit Lift/Drop

The cutting unit lift/drop circuit comes with a flow-control valve (Figure 48). This valve is preset at the factory at approximately 3 turns open, but you may need to adjust it to compensate for differences in hydraulic fluid temperatures, mowing speeds, etc.

Note: Allow the hydraulic fluid to reach full operating temperature before adjusting the flow-control valve.

1. Raise the seat and locate the flow-control valve for the center-pull frame (Figure 48), which is located on the side of the hydraulic manifold.

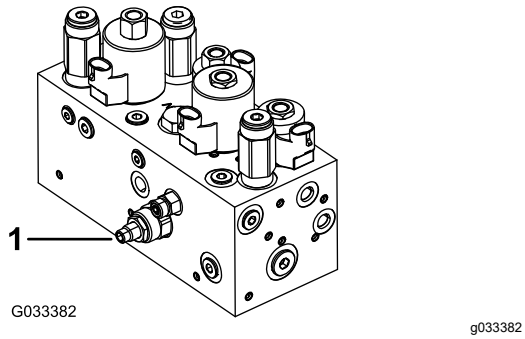


Figure 48

1. Flow-control valve

2. Loosen the jam nut on the adjusting knob on the flow control valve.
3. Rotate the knob counterclockwise if the center cutting unit is dropping too late or clockwise if the center cutting unit is dropping too early. You should not need to rotate it more than **1/32 to 1/16 of a turn.**
4. Test the adjustment and repeat step 3 as needed; when finished, tighten the jam nut.

Hydraulic System Maintenance

Hydraulic System Safety

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

Servicing the Hydraulic Fluid

Important: **Regardless of the hydraulic fluid type used, any traction unit used for off-green applications, verticutting or used during ambient temperatures above 29° C (85°F) should have the Oil Cooler Kit installed; refer to 8 Installing the Oil Cooler (page 13).**

Hydraulic Fluid Specifications

The reservoir is filled at the factory with high-quality hydraulic fluid. Check the level of the hydraulic fluid before you first start the engine and daily thereafter; refer to Checking the Hydraulic-Fluid Level (page 45).

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

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

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

Note: Toro does not assume responsibility for damage caused by improper substitutions, so use

products only from reputable manufacturers who will stand behind their recommendation.

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

Material Properties:

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

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

Important: **Toro Premium Synthetic Biodegradable Hydraulic Fluid is the only synthetic biodegradable fluid approved by Toro. This fluid is compatible with the elastomers used in Toro hydraulic systems and is suitable for a wide-range of temperature conditions. This fluid is compatible with conventional mineral oils, but for maximum biodegradability and performance, the hydraulic system should be thoroughly flushed of conventional fluid. The oil is available in 19 L (5 US gallons) pails or 208 L (55 US gallons) from your authorized Toro distributor.**

Checking the Hydraulic-Fluid Level

1. Park the machine on a level surface. Ensure that the machine has cooled down so the fluid is cold.
2. Remove the cap from the reservoir and check the fluid level. The fluid should be up to the bottom of the screen in the filler neck.

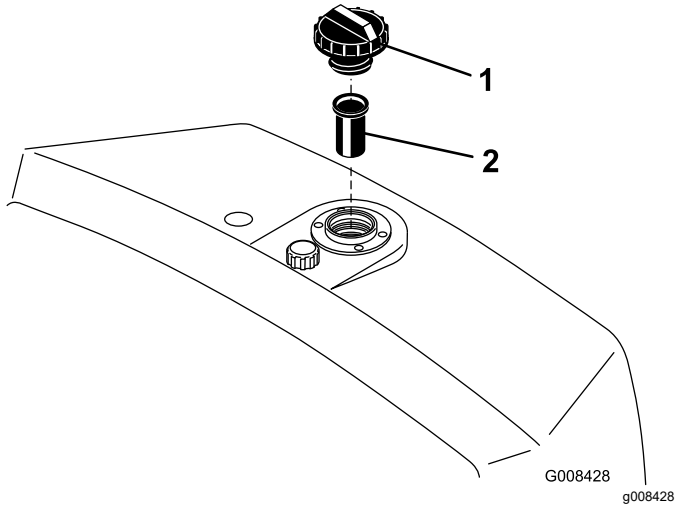


Figure 49

1. Hydraulic reservoir
2. Screen

3. If the fluid level is low, slowly fill the reservoir with the appropriate hydraulic fluid until the level reaches the bottom of the screen. **Do not overfill.**

   Important: **To prevent system contamination, clean the top of the hydraulic fluid containers before puncturing. Ensure the pour spout and funnel are clean.**
4. Install the reservoir cap. Wipe up any fluid that may have spilled.

   Important: **Check level of hydraulic fluid before engine is first started and daily thereafter.**

Changing the Hydraulic Fluid and Filter

Service Interval: Every 800 hours—If you **are not** using the recommended hydraulic fluid or have ever filled the reservoir with an alternative fluid, change the hydraulic fluid, filter, and tank breather.

Every 1,000 hours—If you **are** using the recommended hydraulic fluid, change the hydraulic-fluid filter.

Every 2,000 hours—If you **are** using the recommended hydraulic fluid, change the hydraulic fluid.

Hydraulic Fluid Capacity: 20.8 L (5.5 US gallons)

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

1. Clean the area around the filter mounting area (Figure 50). Place a drain pan under the filter and remove the filter.

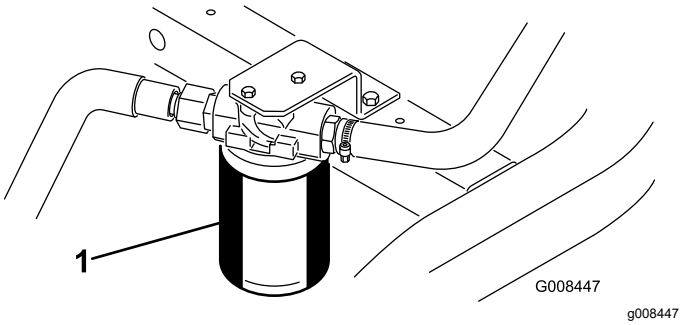


Figure 50

1. Hydraulic-fluid filter

Note: If you will not be draining the fluid, disconnect and plug the hydraulic line going to the filter.

2. Fill the replacement filter with the appropriate hydraulic fluid, lubricate the sealing gasket, and hand turn it until the gasket contacts the filter head. Then tighten it 3/4 turn further.
3. Fill the hydraulic reservoir with hydraulic fluid; refer to Checking the Hydraulic-Fluid Level (page 45) and Hydraulic Fluid Specifications (page 44).
4. Start the machine and run it at idle for 3 to 5 minutes to circulate the fluid and remove any air trapped in the system. Shut off the engine and check the fluid level.
5. Dispose of the fluid and filter properly.

Checking the Hydraulic Lines and Hoses

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

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.

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*.

Setting the Reel Speed

To achieve a consistent, high-quality cut and a uniform after-cut appearance, you must correctly set the reel speed control (located on the manifold block under the cover to the left of the seat). Adjust the reel speed control as follows:

1. Decide the height of cut at which the cutting units are set.
2. Decide the desired ground speed best suited for conditions.
3. Use table that follows to determine the reel-speed setting for your 5-, 8-, 11-, or 14-blade cutting units (Figure 51).

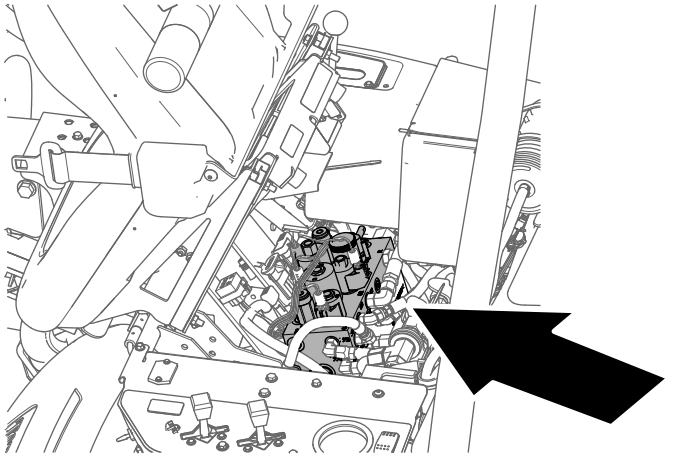
	5		8		11		14
	3.8 MPH 6.1 Km/h	5.0 MPH 8.0 Km/h	3.8 MPH 6.1 Km/h	5.0 MPH 8.0 Km/h	3.8 MPH 6.1 Km/h	5.0 MPH 8.0 Km/h	3.8 MPH 6.1 Km/h
0.062"/ 1.6mm	N/R	N/R	9	N/R	9	N/R	9
0.094"/ 2.4mm	N/R	N/R	9	N/R	9	N/R	9
0.125"/ 3.2mm	N/R	N/R	9	N/R	9	N/R	9
0.156"/ 4.0mm	N/R	N/R	9	N/R	9	N/R	N/R
0.188"/ 4.8mm	N/R	N/R	9	N/R	7	N/R	N/R
0.218"/ 5.5mm	N/R	N/R	9	N/R	6	N/R	N/R
0.250"/ 6.4mm	7	N/R	6	7	5	7	N/R
0.312"/ 7.9mm	6	N/R	5	6	4	6	N/R
0.375"/ 9.5mm	6	7	4	5	4	5	N/R
0.438"/ 11.1mm	6	6	4	5	3	4	N/R
0.500"/ 12.7mm	5	6	3	4	N/R	N/R	N/R
0.625"/ 15.9mm	4	5	3	3	N/R	N/R	N/R
0.750"/ 19.0mm	3	4	3	3	N/R	N/R	N/R
0.875"/ 22.2mm	3	4	N/R	3	N/R	N/R	N/R
1.000"/ 25.4mm	3	3	N/R	N/R	N/R	N/R	N/R

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Figure 51

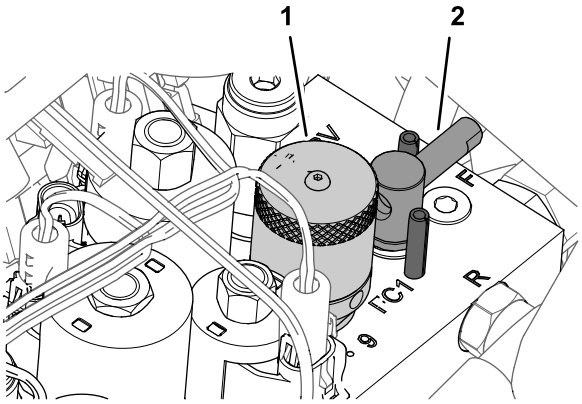
4. Tilt the operator's seat forward and support it with the prop rod (Figure 52).



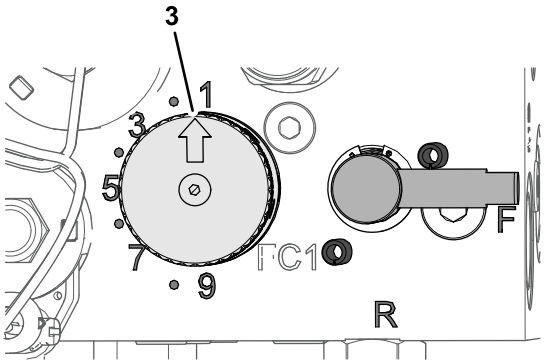
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Figure 52

5. To adjust the reel speed by rotating the knob of the reel-speed control (Figure 53) until the indicator arrow are in line with the number that you determined in step 3.



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Figure 53

1. Knob (reel-speed control)
2. Handle (backlap lever)
3. Indicator arrow

Note: You can increase or decrease the reel speed to compensate for turf conditions.

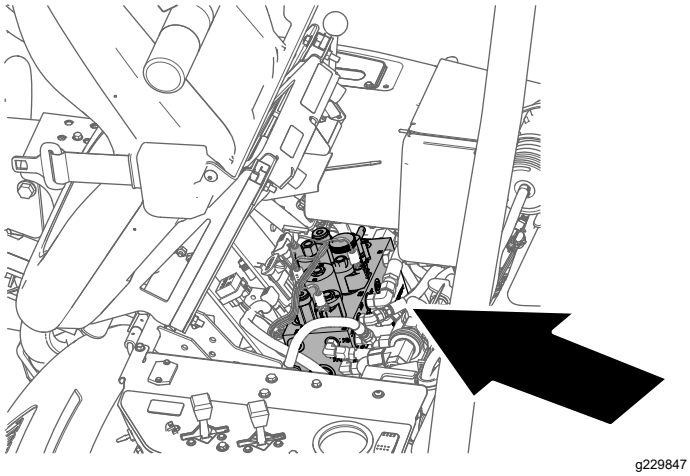
Backlapping the Reels

⚠ WARNING

Contact with the reels or other moving parts can result in personal injury.

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

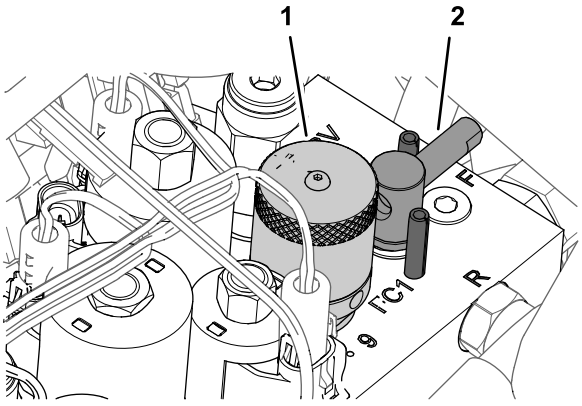
1. Park the machine on a level surface, lower the cutting units, shut off the engine, and engage the parking brake.
2. Tilt the operator's seat forward and support it with the prop rod (Figure 54).



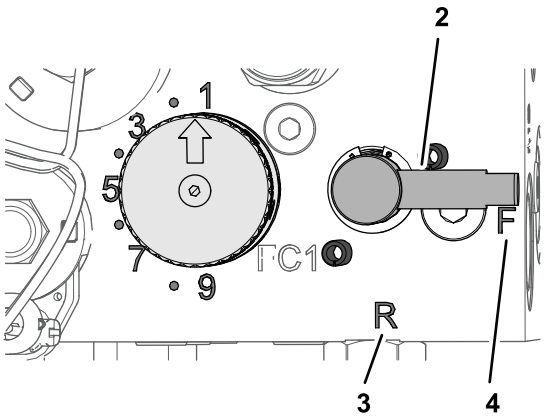
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Figure 54

3. Make initial reel to bedknife adjustments appropriate for honing all the cutting units that you are backlapping; refer to the *Cutting Unit Operator's Manual*.
4. Rotate the backlap lever to the R position (Figure 55).



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Figure 55

1. Knob (reel-speed control)
2. Handle (backlap lever)
3. R position
4. F position

5. Rotate the reel-speed knob to setting 1 (Figure 55).
6. Start the engine and run at low idle speed.

   Important: **Do not change the engine speed while backlapping or the reels may stall. Only backlap at idle engine speed.**
7. With the mow/transport lever in the NEUTRAL position, move the raise/lower mow control forward to start the backlapping operation on the reel.
8. Apply lapping compound with a long-handled brush. Never use a short-handled brush.
   - If the reels stall or become erratic while backlapping, select a higher reel speed setting until the speed stabilizes, then return the reel speed to setting 1 or to your desired speed.
   - To make an adjustment to the cutting units while backlapping, turn the reels off by moving the raise/lower mow control rearward and shut off the engine. After completing adjustments, repeat steps 4 through 8.
9. Repeat the steps 4 through 8 for all cutting units that you want to backlap.

10. When finished, return the backlap lever to the F position, move the reel speed knob to the desired reel-speed setting, lower the seat, and wash all lapping compound off of the cutting units. Adjust cutting unit reel to bedknife as needed.

Important: **If you do not return the backlap lever to the F position after backlapping, the cutting units will not raise or function properly.**

Storage

Storage Safety

- 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 or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.

Preparing the Machine for Storage

If you wish to store the machine for a long period of time, perform the following steps prior to storage:

1. Always park the machine, engage the parking brake, shut off the engine, remove the key, and wait for all movement to stop before cleaning or storing 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*. Use a rust preventive on bedknives and reel blades. Grease and oil all lubrication points; refer to Greasing the Machine (page 32).
3. Block up the wheels to remove any weight on the tires.
4. Drain and replace the hydraulic fluid and filter and inspect the hydraulic lines and fittings. Replace, if necessary; refer to Changing the Hydraulic Fluid and Filter (page 45) and Checking the Hydraulic Lines and Hoses (page 46).
5. Remove all fuel from the fuel tank. Run the engine until it shuts off from lack of fuel. Replace the fuel filter; refer to Replacing the Fuel Filter (page 36).
6. While the engine is still warm, drain the oil from the crankcase. Refill it with fresh oil; refer to Changing the Engine Oil and Filter (page 34).
7. Clean dirt and chaff from the cylinder, cylinder head fins, and blower housing.
8. Remove the battery and charge it fully. Either store it on the shelf or on the machine. Leave the cables disconnected if it is stored on the machine. Store the battery in a cool location to prevent the battery from discharging quickly..
9. Store the machine in a warm, dry location.

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.



Count on it.