Form No. 3417-850 Rev B

TORO®

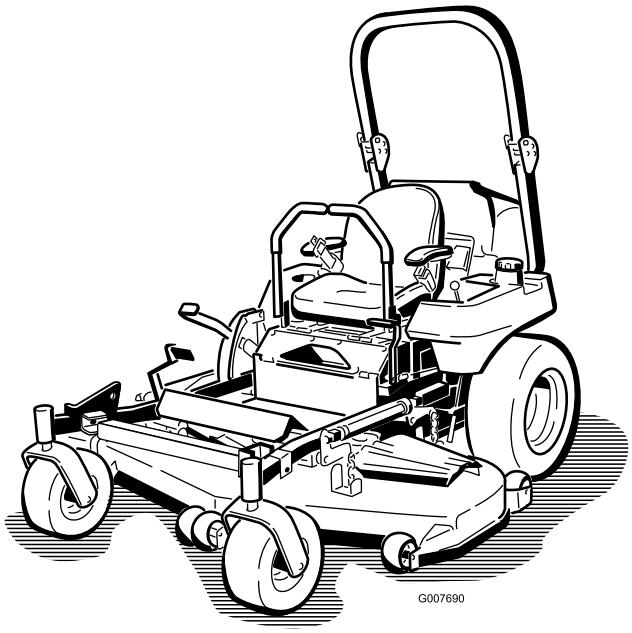
Count on it.

Operator's Manual

Z Master® Professional 7000 Series Riding Mower

With 132cm or 152cm TURBO FORCE® Mower

Model No. 74264TE—Serial No. 402080000 and Up
Model No. 74265TE—Serial No. 402000000 and Up
Model No. 74279TE—Serial No. 402000000 and Up



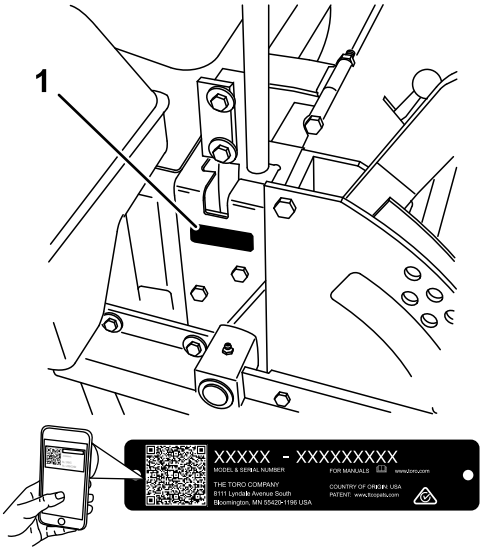
Register at www.Toro.com.
Original Instructions (EN)

CE

3417-850 B

Gross or Net Torque: This product complies with all relevant European directives; for details, please see the separate product specific Declaration of Conformity (DOC) sheet. The gross or net torque of this engine was laboratory rated by the engine manufacturer in accordance with the Society of Automotive Engineers (SAE) J1940 or J2723. As configured to meet safety, emission, and operating requirements, the actual engine torque on this class of mower will be significantly lower. Please refer to the engine manufacturer's information included with the machine.

Please refer to the engine manufacturer's information included with the machine.



g248729

Figure 1

1. Model and serial number location

Introduction

This rotary-blade, riding lawn mower is intended to be used by professional, hired operators. It is designed primarily for cutting grass on well-maintained lawns on residential or commercial properties. It is not designed for cutting brush or for agricultural uses.

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

You may contact Toro directly at www.Toro.com for product safety and operation training materials, accessory information, help finding a dealer, or to register your product.

For the *Operator's Manual*, the complete warranty details, or to register your product, use the QR code or visit www.Toro.com. You may also call us at 1-888-384-9939 to request a written copy of the product warranty.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. Figure 1 identifies the location of the model and serial numbers on the product. Write the numbers in the space provided.

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

Model No. _____

Serial No. _____

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



g000502

Figure 2

Safety-alert symbol

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

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8111 Lyndale Avenue South
Bloomington, MN 55420

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Safety

This machine has been designed in accordance with EN ISO 5395:2013.

General Safety

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

Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

- Always keep the roll bar in the fully raised and locked position and use the seat belt.
- Do not operate the machine near drop-offs, ditches, embankments, water, or other hazards, or on slopes greater than 15 degrees.
- Read and understand the contents of this *Operator's Manual* before starting the engine.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and working on the machine.
- Keep children and bystanders out of the operating area. Never allow children to operate the machine.
- Stop the machine, shut off the engine, and remove the key before servicing, fueling, or unclogging the machine.

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

You can find additional safety information where needed throughout this manual.

Slope Indicator

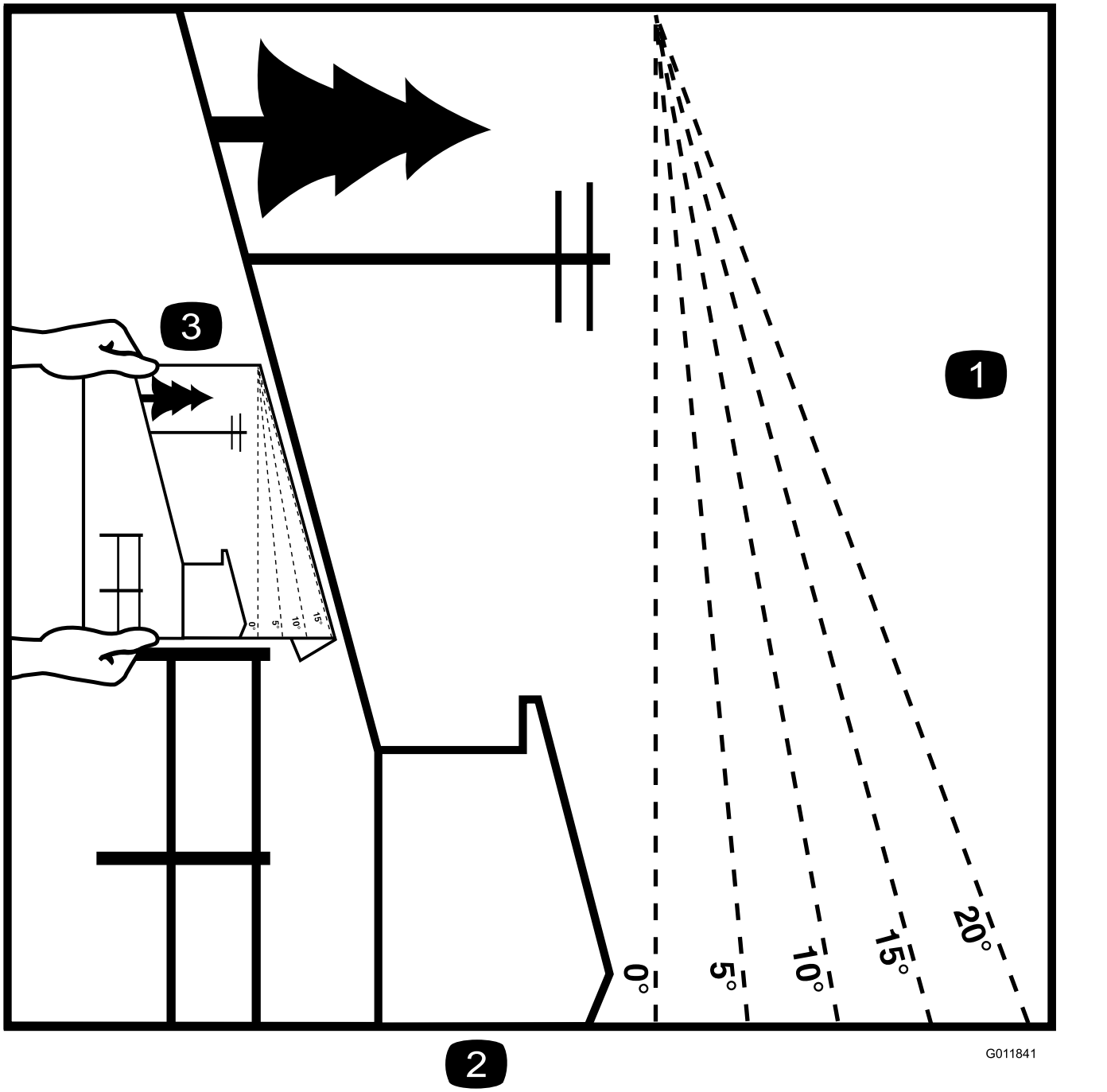


Figure 3

You may copy this page for personal use.

1. The maximum slope you can operate the machine on is **15 degrees**. Use the slope chart to determine the degree of slope of hills before operating. **Do not operate this machine on a slope greater than 15 degrees.** Fold along the appropriate line to match the recommended slope.
2. Align this edge with a vertical surface, a tree, building, fence pole, etc.
3. Example of how to compare slope with folded edge

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.

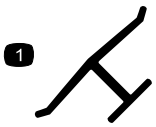


decalbatterysymbols

Battery Symbols

Some or all of these symbols are on your battery.

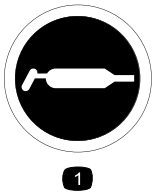
1. Explosion hazard
2. No fire, open flame, or smoking
3. Caustic liquid/chemical burn hazard
4. Wear eye protection.
5. Read the *Operator's Manual.*
6. Keep bystanders a safe distance away from the battery.
7. Wear eye protection; explosive gases can cause blindness and other injuries.
8. Battery acid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



decaloemmarkt

Manufacturer's Mark

1. Indicates the blade is identified as a part from the original machine manufacturer.



decal58-6520

58-6520

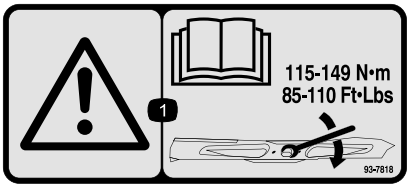
1. Grease



decal93-7010

93-7010

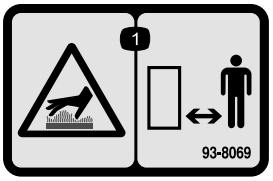
1. Thrown object hazard—keep bystanders a safe distance away from the machine.
2. Thrown object hazard, mower—keep the deflector in place.
3. Cutting/dismemberment of hand or foot—stay away from moving parts.



decal93-7818

93-7818

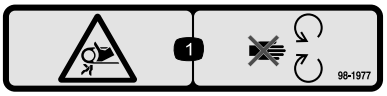
1. Warning—read the *Operator's Manual* for instructions on torquing the blade bolt/nut to 115-149 N·m (85-110 ft-lb).



decal93-8069

93-8069

1. Hot surface/burn hazard—stay a safe distance away from the hot surface.



decal98-1977

98-1977

1. Entanglement hazard, belt—stay away from moving parts.



decal98-4387

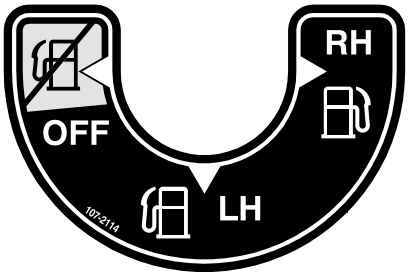
98-4387

1. Warning—wear hearing protection.



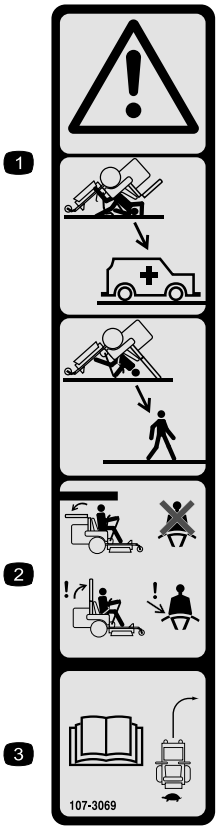
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104-2449



decal107-2114

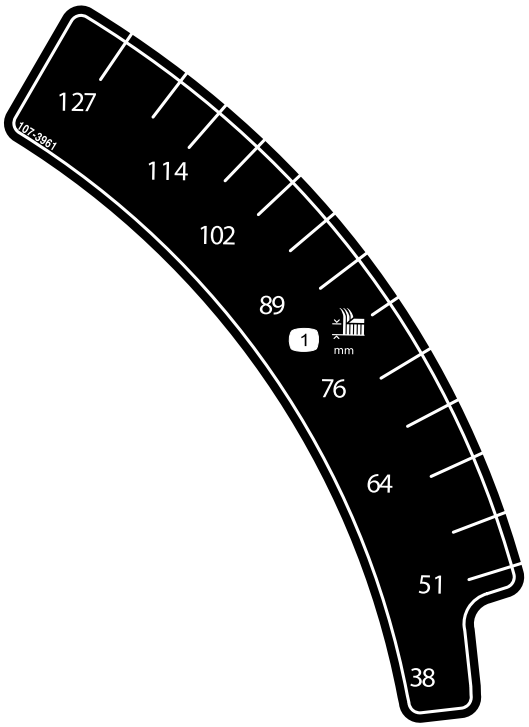
107-2114



decal107-3069

107-3069

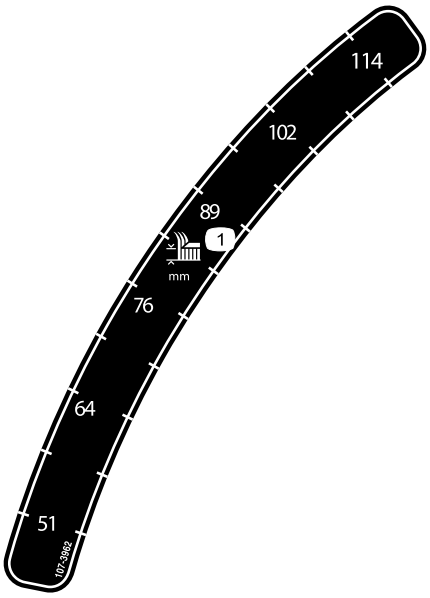
1. Warning—there is no rollover protection when the roll bar is down.
2. To avoid injury or death from a rollover accident, keep the roll bar in the fully raised and locked position and wear the seat belt. Lower the roll bar only when absolutely necessary; do not wear the seat belt when the roll bar is down.
3. Read the *Operator's Manual*; drive slowly and carefully.



decal107-3961

107-3961

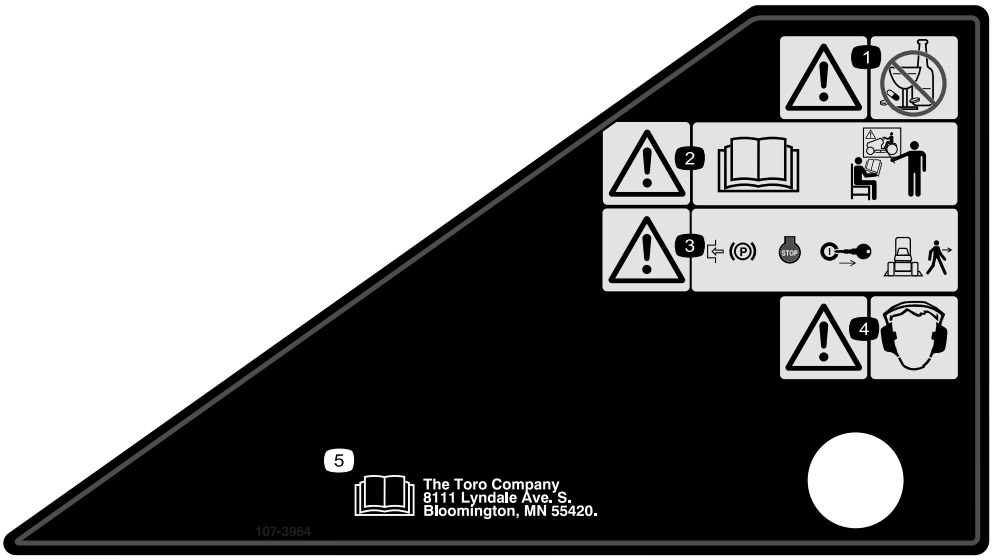
1. Height of cut in millimeters



decal107-3962

107-3962

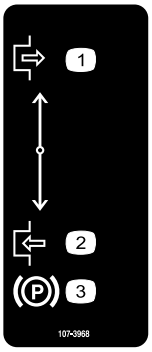
1. Height of cut in millimeters



decal107-3964

107-3964

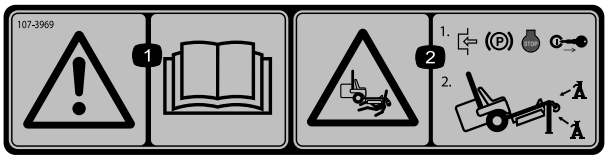
1. Warning—do not use drugs or alcohol.
2. Warning—read the *Operator's Manual* and receive training.
3. Warning—engage the parking brake, shut off the engine, and remove the key before leaving the machine.
4. Warning—wear hearing protection.
5. Read the *Operator's Manual*.



decal107-3968

107-3968

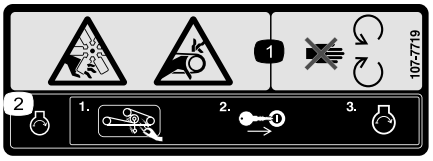
1. Disengage
2. Engage
3. Parking brake



decal107-3969

107-3969

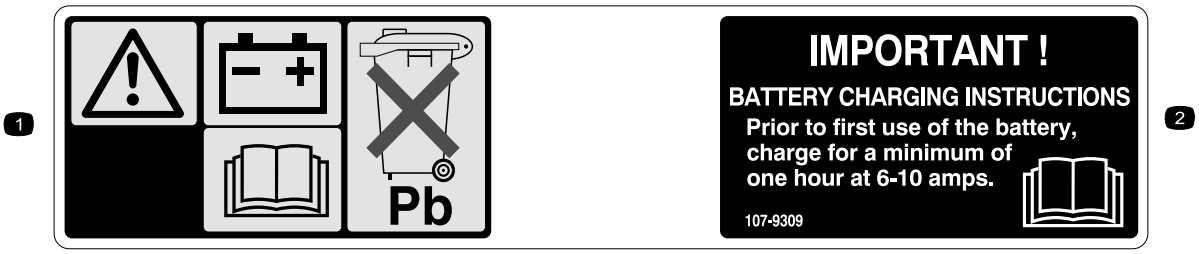
1. Warning—read the *Operator's Manual*.
2. Crushing hazard, mower—engage the parking brake, shut off the engine, and remove the key before working under the mower.



decal107-7719

107-7719

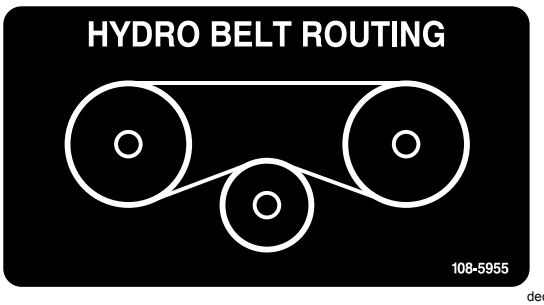
1. Cutting/dismemberment hazard, fan and entanglement hazard, belt—stay away from moving parts.
2. Before starting the engine, clean grass and debris from the mower belt and pulleys, insert the key, and start the engine.



decal107-9309

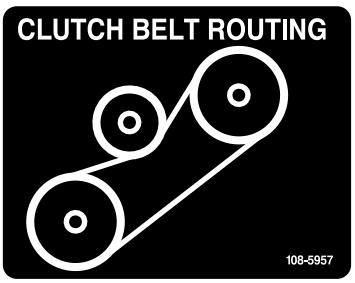
107-9309

1. Warning—read the *Operator's Manual* for information on charging the battery; contains lead; do not discard.
2. Read the *Operator's Manual*.



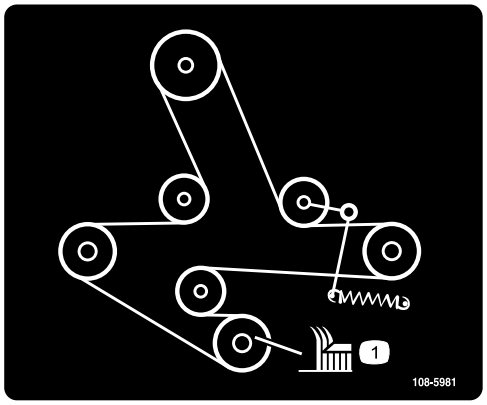
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108-5955



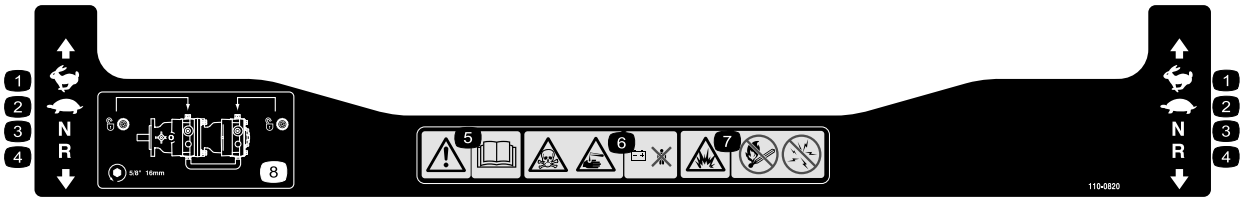
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decal108-5981

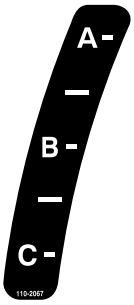
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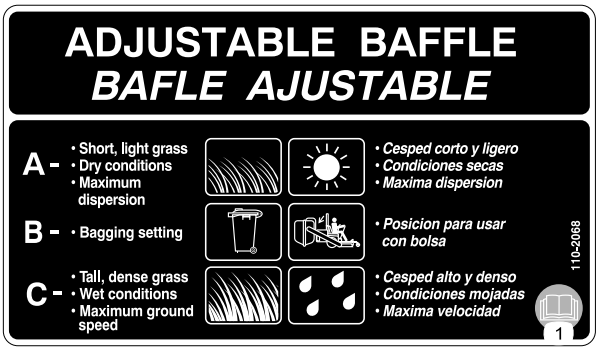
110-0820

1. Fast
2. Slow
3. Neutral
4. Reverse
5. Warning—read the *Operator's Manual*.
6. Poison and caustic liquid/chemical burn hazard—keep children a safe distance from the battery.
7. Explosion hazard—no fire, open flames, or smoking; avoid sparks.
8. To unlock the traction drive, turn the bypass valve 1 complete revolution counterclockwise using a 5/8 inch or 16 mm wrench.



decal110-2067

110-2067

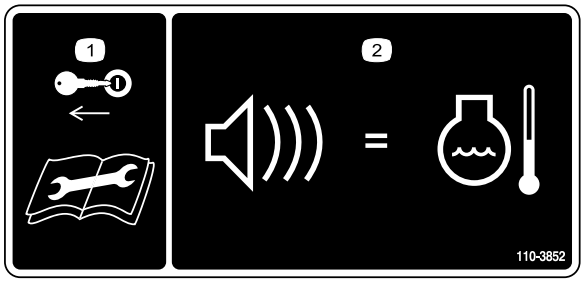


decal110-2068

110-2068

Side Discharge Machines Only

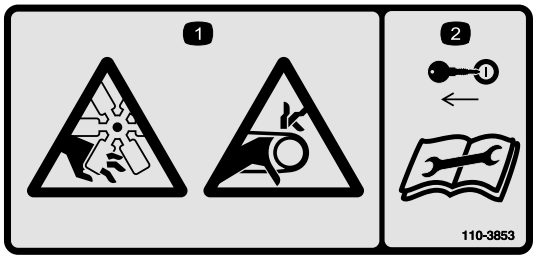
1. Read the *Operator's Manual*.



decal110-3852

110-3852

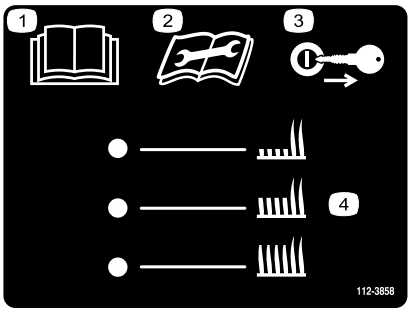
1. Remove the key from the key switch and read the instructions before servicing or performing maintenance.
2. Continuous tone signals the user that the engine is overheating.



decal110-3853

110-3853

1. Cutting/dismemberment hazard, fan and entanglement hazard, belt.
2. Remove the key from the key switch and read the instructions before servicing or performing maintenance.

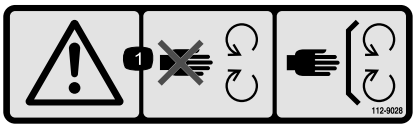


decal112-3858

112-3858

Rear Discharge Machines Only

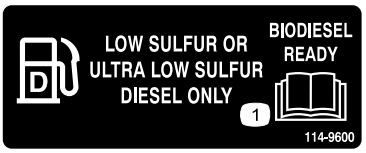
1. Read the *Operator's Manual*.
2. Read the instructions before servicing or performing maintenance.
3. Remove the key from the key switch before adjusting the height of cut.
4. Height-of-cut settings.



decal112-9028

112-9028

1. Warning—stay away from moving parts; keep all guards in place.



decal114-9600

114-9600

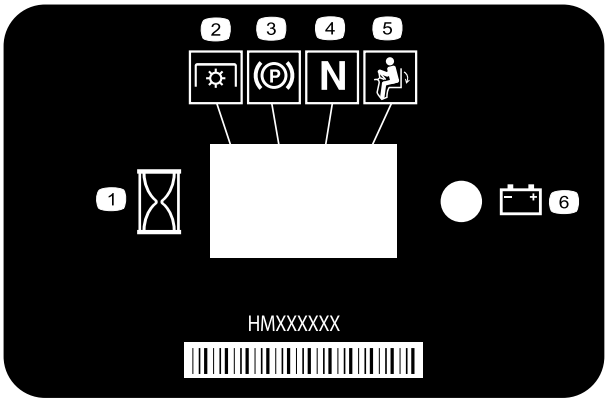
1. Read the *Operator's Manual.*



decal115-4212

115-4212

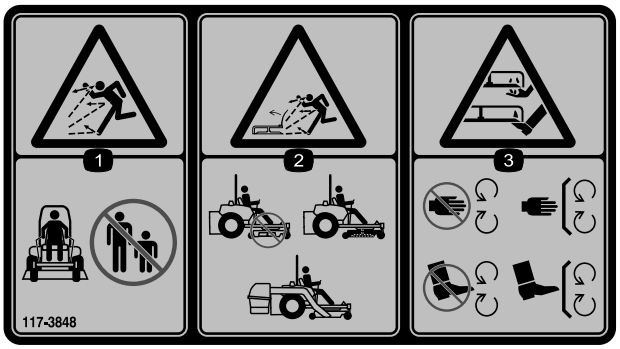
1. Hydraulic-fliud level
2. Read the *Operator's Manual*.
3. Warning—do not touch the hot surface.



decal116-5610

116-5610

1. Hour meter
2. Power take-off (PTO)
3. Parking brake
4. Neutral
5. Operator-presence switch
6. Battery

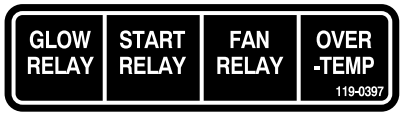


decal117-3848

117-3848

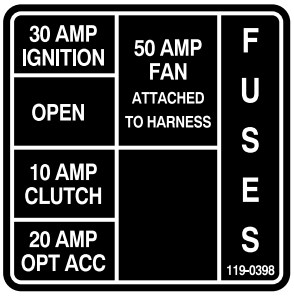
Rear Discharge Machines Only

1. Thrown object hazard—keep bystanders a safe distance away from the machine.
2. Thrown object hazard, mower-do not operate the machine without the deflector, discharge cover, or grass collection system in place.
3. Cutting/dismemberment of hand or foot—stay away from moving parts; keep all guards and shields in place.



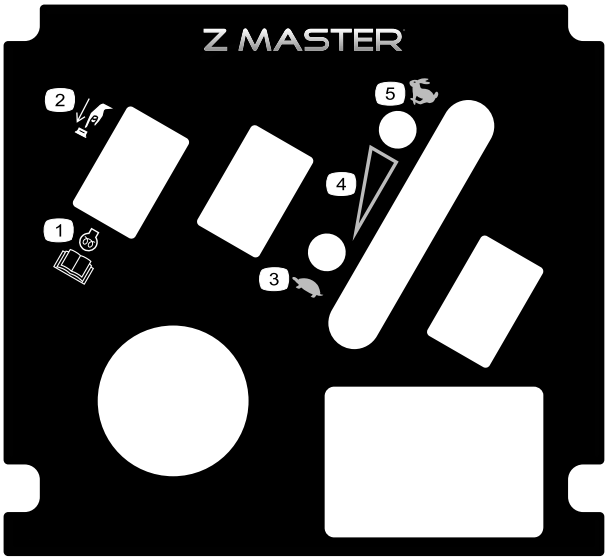
decal119-0397

119-0397



decal119-0398

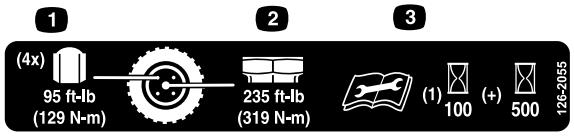
119-0398



decal121-7562

121-7562

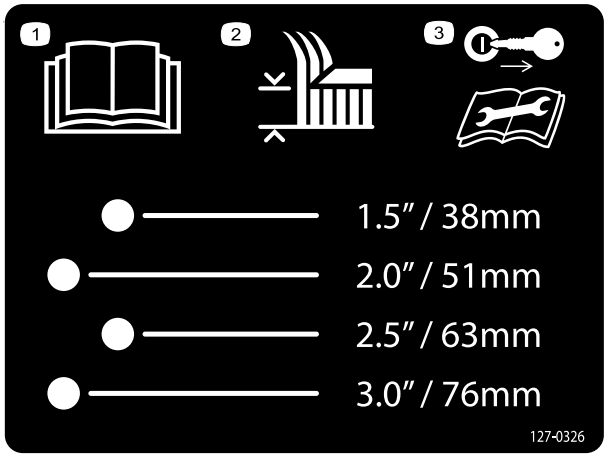
1. Push to start
2. Read the *Operator's Manual* for more information on preheating the engine.
3. Slow
4. Variable speed control
5. Fast



decal126-2055

126-2055

1. Wheel lug nut torque 129 N·m (95 ft-lb) (4x)
2. Wheel hub nut torque 319 N·m (235 ft-lb)
3. Read and understand the *Operator's Manual* before performing any maintenance, check torque after first 100 hours then every 500 hours thereafter.

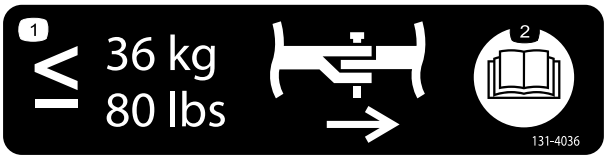


decal127-0326

127-0326

Side Discharge Machines Only

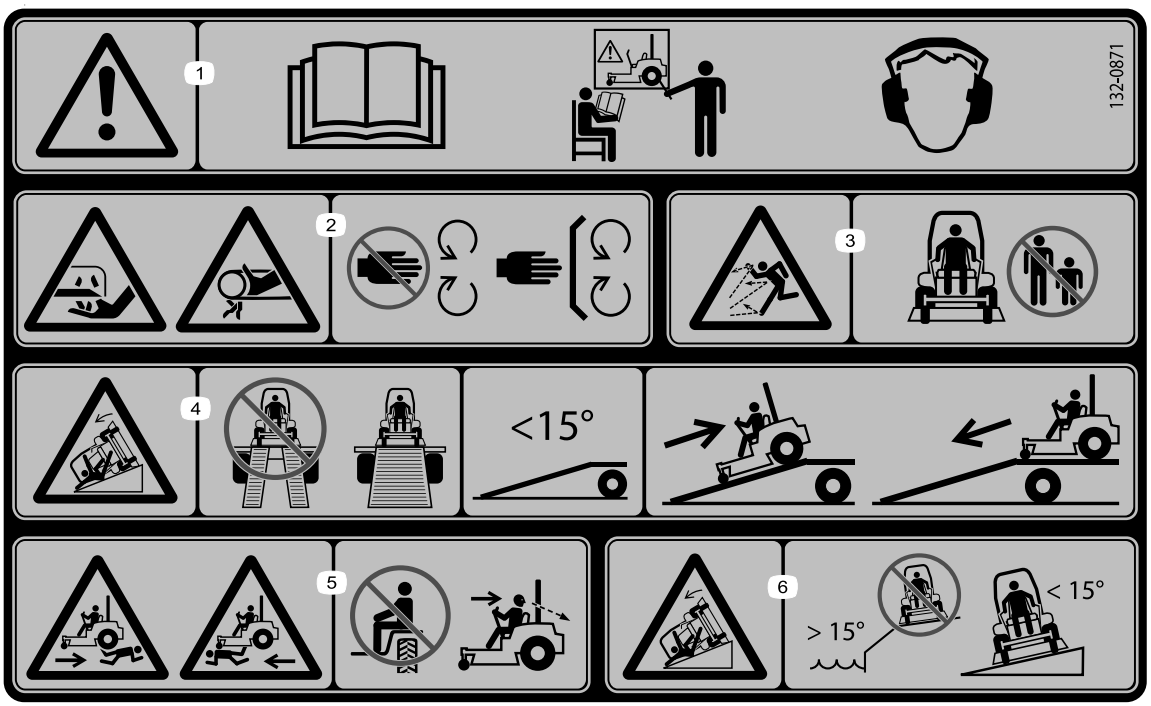
1. Read the *Operator's Manual*.
2. Height of cut
3. Remove the key and read the *Operator's Manual* before performing maintenance or servicing the machine.



decal131-4036

131-4036

1. Maximum draw bar pull 36 kg (80 lb).
2. Read the *Operator's Manual*.

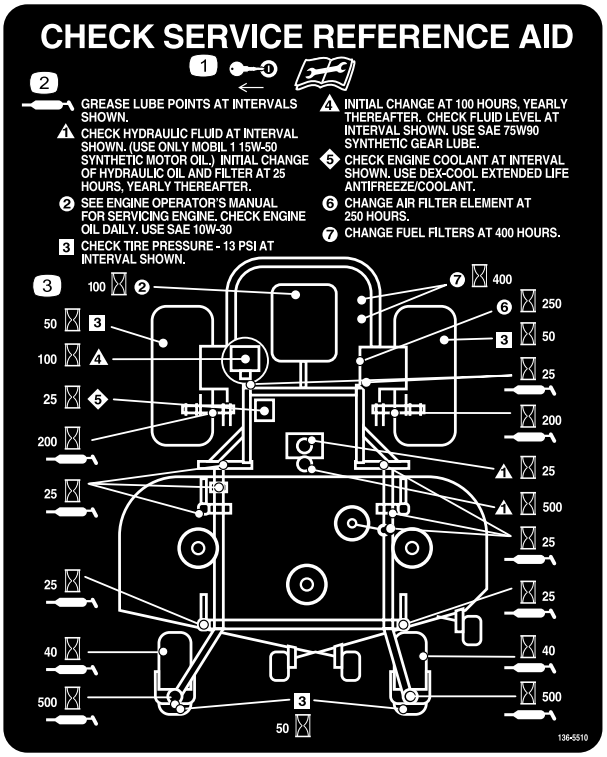


decal132-0871

132-0871

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 those conditions on that day and at that site. Changes in the terrain can result in a change in slope operation for the machine. If possible, keep the cutting units lowered to the ground while operating the machine on slopes. Raising the cutting units while operating on slopes can cause the machine to become unstable.

1. Warning—read the *Operator's Manual*; do not operate this machine unless you are trained; wear hearing protection.
2. Cutting, dismembering, and entanglement hazard—keep hands away from moving parts; keep all guards and shields in place.
3. Thrown object hazard—keep bystanders away.
4. Ramp hazard—when loading onto a trailer, do not use dual ramps; only use a singular ramp wide enough for the machine and that has an incline less than 15°; back up the ramp (in reverse) and drive forward off the ramp.
5. Bodily harm hazard—do not carry passengers; look behind you when mowing in reverse.
6. Tipping hazard on slopes—do not use on slopes near open water; do not use on slopes greater than 15°.

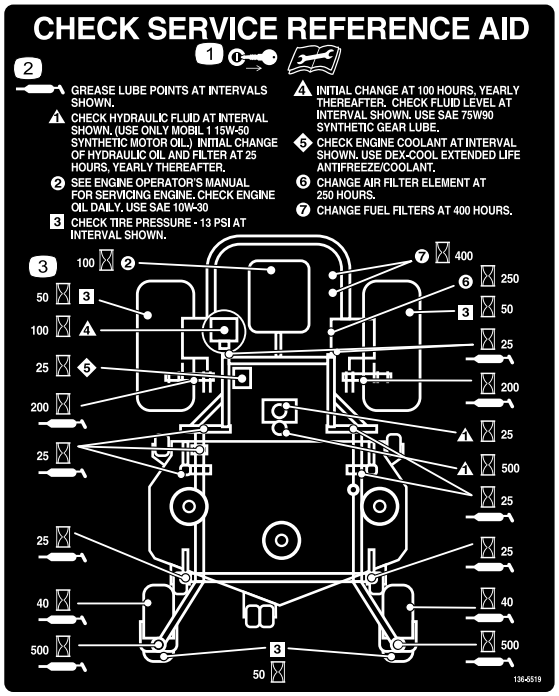


decal136-5510

136-5510

Side Discharge Machines Only

1. Remove the key and read the *Operator's Manual* before performing maintenance.
2. Grease point
3. Hour interval



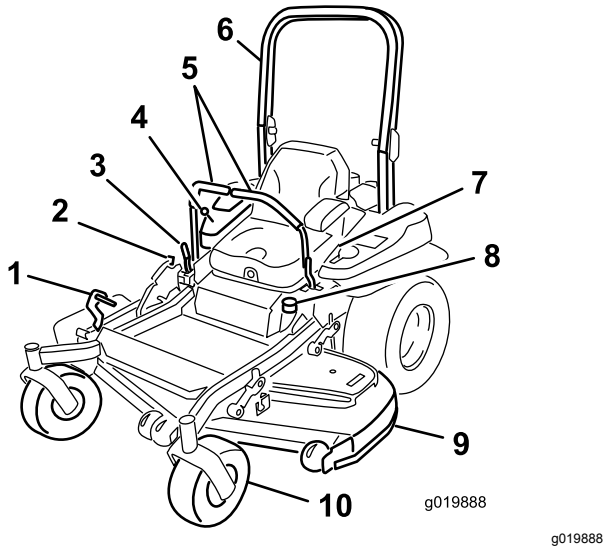
decal136-5519

136-5519

Rear Discharge Machines Only

1. Remove the key and read the *Operator's Manual* before performing maintenance.
2. Grease point
3. Hour interval

Product Overview

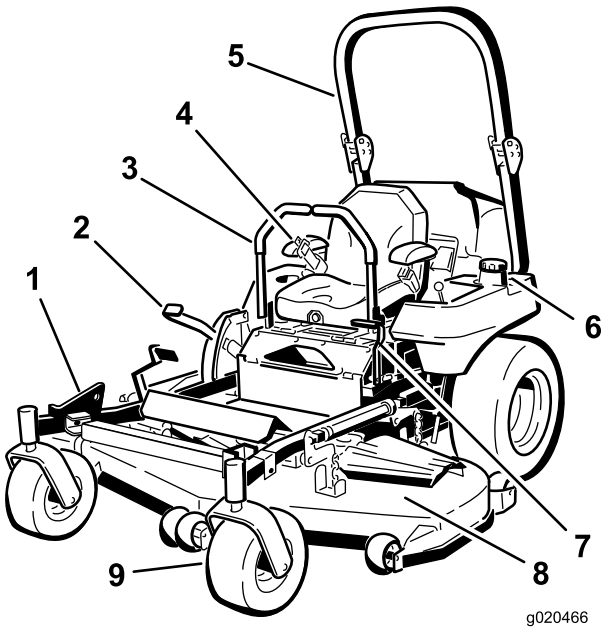


g019888

Figure 4

Side Discharge Machine

1. Height-of-cut deck lift pedal
2. Transport lock
3. Parking-brake lever
4. Controls
5. Motion-control lever
6. Roll bar
7. Seat belt
8. Fuel cap
9. Mower deck
10. Caster wheel



g020466

Figure 5

Rear Discharge Machine

1. Z Stand©
2. Height-of-cut lever
3. Motion-control lever
4. Seat belt
5. Roll bar
6. Fuel cap (both sides)
7. Parking-brake lever
8. Mower deck
9. Caster wheel

Controls

Become familiar with all the controls before you start the engine and operate the machine.

Control Panel

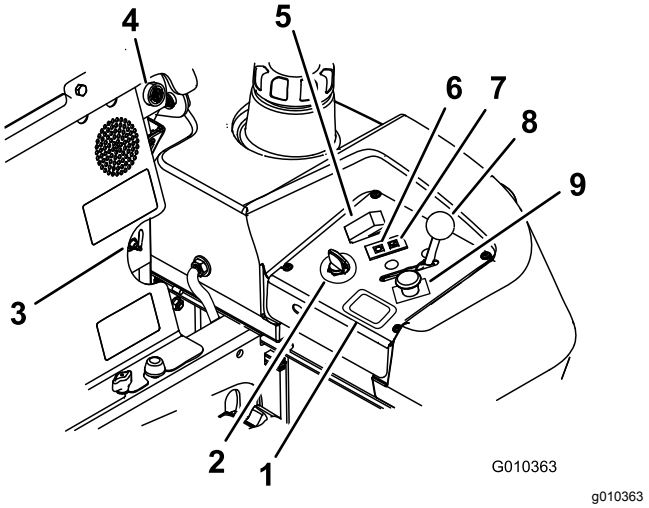


Figure 6

1. Hour meter
2. Key switch
3. Fuel-selector valve
4. Audible alarm
5. Glow-plug switch
6. Glow-plug light
7. Engine-temperature light
8. Throttle control
9. PTO switch

Key Switch

The key switch, used to start and shut off the engine, has 3 positions: OFF, RUN, and START. Refer to Starting and Shutting Off the Engine (page 26).

Hour Meter

The hour meter records the number of hours the engine has operated. It operates when the engine is running. Use these times for scheduling regular maintenance (Figure 6).

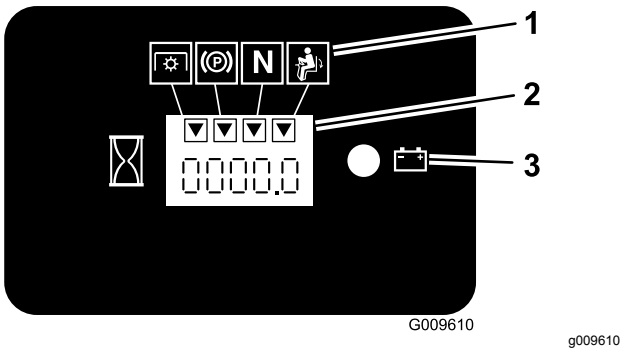
Safety-Interlock Indicators

There are symbols on the hour meter that indicate with a black triangle that the interlock component is positioned correctly (Figure 7).

Battery-Indicator Light

If you turn the key switch to the ON position for a few seconds, the battery voltage displays in the area where the hours are normally displayed.

The battery light turns on when the ignition is turned on and when the charge is below the correct operating level (Figure 7).



g009610

Figure 7

1. Safety-interlock symbols
2. Hour meter
3. Battery light

Throttle Control

The throttle controls the engine speed, and it has a continuous-variable setting from the SLOW to FAST position (Figure 6).

Neutral-Lock Position

Use the NEUTRAL-LOCK position with the safety-interlock system to engage and to determine the NEUTRAL position.

Glow-Plug Light

The glow-plug indicator light turns on when the glow-plug button is engaged (Figure 6).

Glow-Plug Switch

This switch activates the glow plugs and is indicated by the glow-plug light. Hold down the glow-plug switch for 10 seconds prior to starting the machine.

Temperature Light

The temperature light comes on when the engine is over heating (Figure 6).

Audible Alarm

This machine has an audible alarm that alerts the user to shut off the engine; otherwise, engine damage can occur from over heating. Refer to Operating with the Overheat Sensor (page 34).

Fuel-Selector Valve

The fuel-selector valve is located behind the seat.

Close the fuel-selector valve when transporting or storing mower.

Move the selector valve to the left or right position for operation.

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. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

Operation

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

Before Operation

Before Operation Safety

General Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Know how to stop the machine and shut off the engine quickly.
- Check that operator-presence controls, safety switches, and shields 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 blades, blade bolts, and cutting assemblies are in good working condition. Replace worn or damaged blades and bolts in sets to preserve balance.
- Inspect the area where you will use the machine and remove all objects that the machine could throw.
- Evaluate the terrain to determine the appropriate equipment and any attachments or accessories required to operate the machine properly and safely.

Fuel Safety

- To avoid personal injury or property damage, use extreme care in handling fuel. Fuel vapors are flammable and explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or add fuel to the fuel tank while the engine is running or while hot.
- Do not refuel the machine indoors.
- 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.
- Do not fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground, away from your vehicle before filling.
- Remove the equipment from the truck or trailer and refuel it while it is on the ground. If this is not possible, then refuel from a portable container rather than a fuel-dispenser nozzle.
- Do not operate the machine without the entire exhaust system in place and in proper working condition.
- Keep the fuel-dispenser nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- If you spill fuel on your clothing, change your clothing immediately. Wipe up any fuel that spills.
- Never overfill the fuel tank. Replace the fuel cap and tighten it securely.
- Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of fuel.
- Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 6 to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck. This empty space in the tank allows fuel to expand.
  - Avoid prolonged breathing of vapors.
  - Keep your face away from the nozzle and fuel tank opening.
  - Avoid contact with skin; wash off spills with soap and water.

Performing Daily Maintenance

Before starting the machine each day, perform the Each Use/Daily procedures listed in Maintenance (page 40).

Adding Fuel

Recommended Fuel

The engine runs on clean, fresh diesel fuel with a minimum octane rating of 40. Purchase fuel in quantities that can be used within 30 days to ensure fuel freshness.

Use summer-grade diesel fuel (No. 2-D) at temperatures above -7°C (20°F) and winter-grade diesel fuel (No. 1-D or No. 1-D/2-D blend) below -7°C (20°F). Use of winter-grade diesel fuel at lower temperatures provides lower flash point and pour point characteristics, therefore easing startability and lessening chances of chemical separation of the fuel due to lower temperatures (wax appearance, which may plug filters).

Using summer-grade diesel fuel above -7°C (20°F) contributes toward longer life of the pump components.

Important: **Do not use kerosene or gasoline instead of diesel fuel. Failure to observe this caution will damage the engine.**

Biodiesel Ready

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.

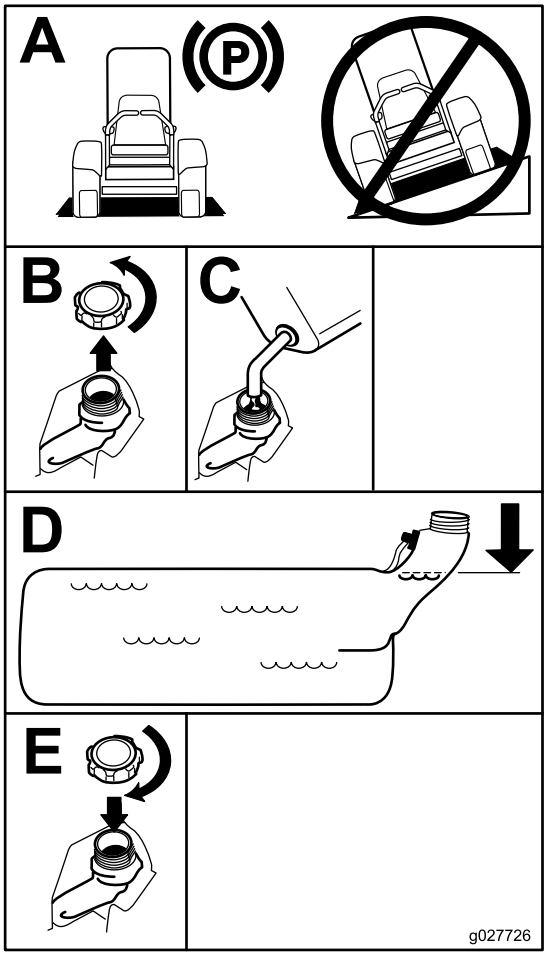
Observe the following precautions:

- The biodiesel portion of the fuel 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 contend of 5%) or lesser blend in cold weather.
- Monitor seals, hoses, gaskets in contact with fuel as they may degrade 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.

Filling the Fuel Tank

1. Park the machine on level ground.
2. Shut off the engine and engage the parking brake.
3. Clean around the fuel-tank cap.
4. Fill the fuel tank to the bottom of the filler neck (Figure 8).

   Note: Do not fill the fuel tank completely full. The empty space in the tank allows the fuel to expand.



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Figure 8

Switching the Fuel Tanks

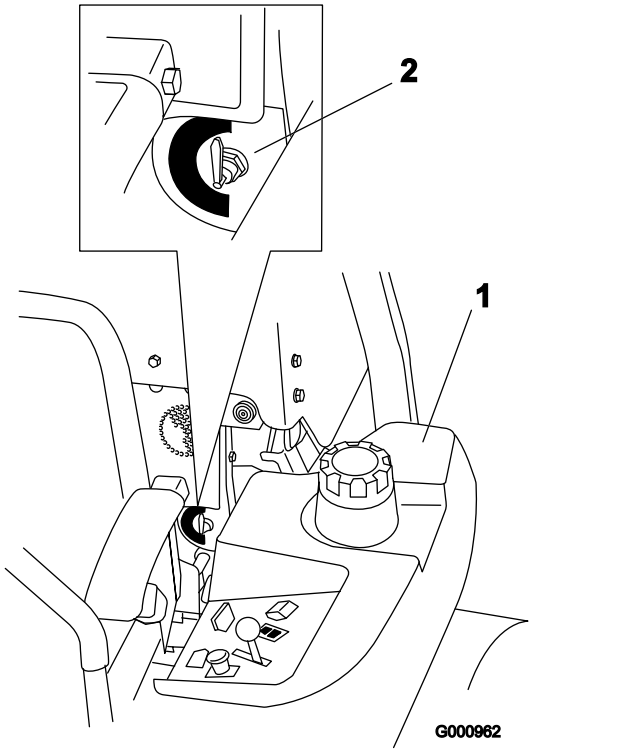
Important: **Do not allow the machine to run out of fuel, as this can damage the machine.**

The fuel-selector valve is located behind the left side of the seat.

The unit has 2 fuel tanks. One tank is on the left side and one on the right side. Each tank connects to the fuel-selector valve. From there a common fuel line leads to the engine (Figure 9).

To use the left fuel tank, rotate the fuel-selector valve to the left. To use the right fuel tank, rotate the fuel-selector valve to the right (Figure 9).

Close the fuel-selector valve before transporting or storing machine.



g000962

Figure 9

1. Left fuel tank
2. Fuel-selector valve

Breaking in a New Machine

New engines take time to develop full power. Mower decks and drive systems have higher friction when new, placing additional load on the engine. Allow 40 to 50 hours of break-in time for new machines to develop full power and best performance.

Using the Rollover-Protection System (ROPS)

⚠ WARNING

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

Ensure that the seat is secured to the machine.

⚠ WARNING

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

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

Lowering the Roll Bar

Important: **Lower the roll bar only when absolutely necessary.**

1. Remove the hairpin cotters and remove the 2 pins (Figure 11).
2. Lower the roll bar to the down position (Figure 10).

   Note: There are 2 down positions; refer to Figure 10.
3. Install the 2 pins and secure them with the hairpin cotters (Figure 11).

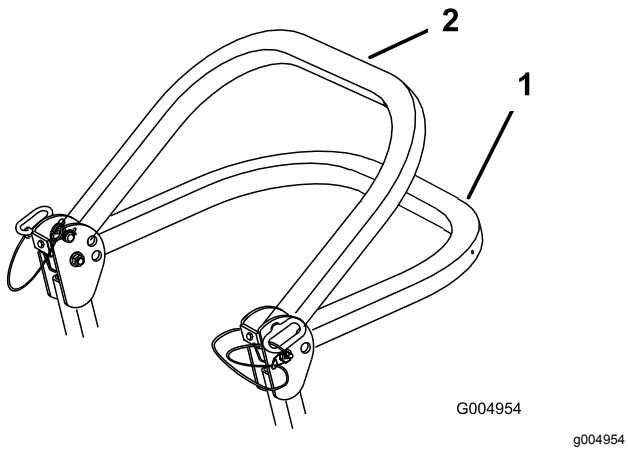


Figure 10

1. Full-down position
2. Down position with the bagger installed

Important: **Ensure that you secure the rear part of the seat with the seat latch.**

Raising the Roll Bar

Important: **Always use the seat belt with the roll bar in the raised position.**

1. Remove the hairpin cotters and remove the 2 pins (Figure 11).
2. Raise the roll bar to the upright position, install the 2 pins, and secure them with the hairpin cotters (Figure 11).

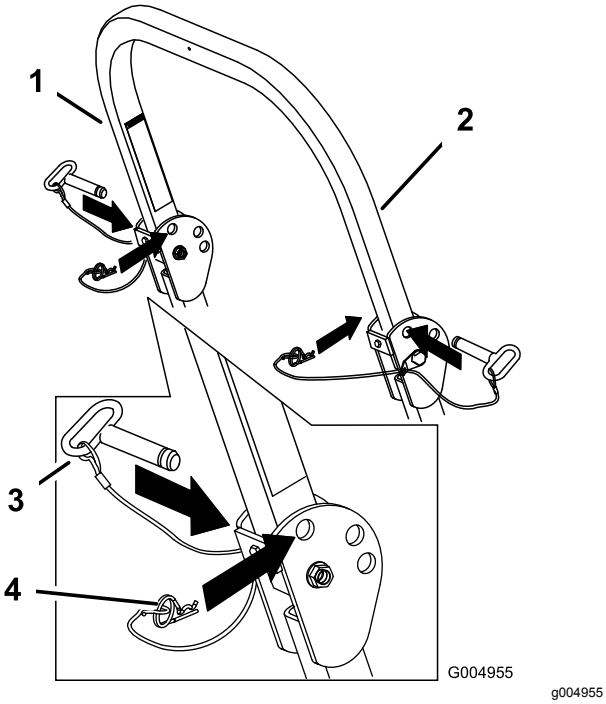


Figure 11

1. Roll bar
2. Raised position
3. Pin
4. Hairpin cotter

Using the Safety-Interlock System

⚠ WARNING

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

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

Understanding the Safety-Interlock System

The safety-interlock system is designed to prevent the engine from starting unless:

- The parking brake is engaged.
- The blade-control switch (PTO) is disengaged.
- The motion-control levers are in the NEUTRAL-LOCK position.

The safety-interlock system also is designed to shut off the engine when the traction controls are moved from the locked position with the parking brake engaged or if you rise from the seat when the PTO is engaged.

The hour meter has symbols to notify the user when the interlock component is in the correct position. When the component is in the correct position, a triangle lights up in the corresponding square.

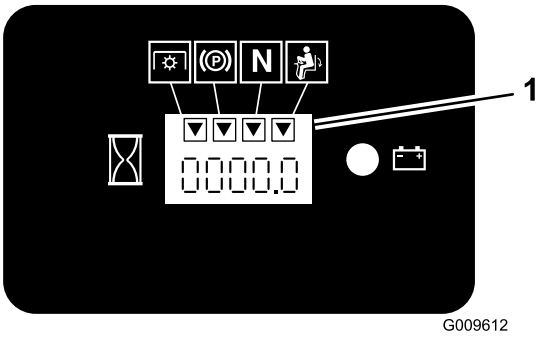


Figure 12

1. Triangles light up when the interlock components are in the correct position

Testing the Safety-Interlock System

Service Interval: Before each use or daily

Test the safety-interlock system before you use the machine each time. If the safety system does not

operate as described below, have an Authorized Service Dealer repair the safety system immediately.

1. Sitting on the seat, engage the parking brake and move the blade-control switch (PTO) to the ON position. Try starting the engine; the engine should not start.
2. Sitting on the seat, engage the parking brake and move the blade-control switch (PTO) to the OFF position. Move either motion-control lever (out of the NEUTRAL-LOCK position). Try starting the engine; the engine should not start. Repeat for the other control lever.
3. Sitting on the seat, engage the parking brake, move the blade-control switch (PTO) to the OFF position, and move the motion-control levers to the NEUTRAL-LOCK position. Now start the engine. While the engine is running, disengage the parking brake, engage the blade-control switch (PTO), and rise slightly from the seat; the engine should shut off.
4. Sitting on the seat, engage the parking brake, move the blade-control switch (PTO) to the OFF position, and move the motion-control levers to the NEUTRAL-LOCK position. Now start the engine. While the engine is running, center either motion control and move (forward or reverse); the engine should shut off. Repeat for other motion control.
5. Sitting on the seat, disengage the parking brake, move the blade-control switch (PTO) to the OFF position, and move the motion-control levers to the NEUTRAL-LOCK position. Try starting the engine; the engine should not start.

Positioning the Seat

The seat moves forward and backward. Position the seat where you have the best control of the machine and are most comfortable.

To adjust, move the lever sideways to unlock the seat (Figure 13).

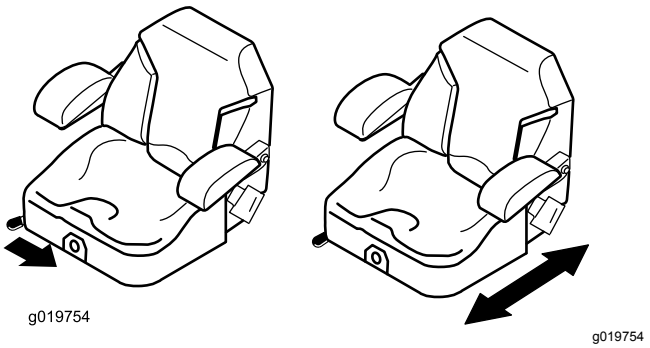


Figure 13

Unlatching the Seat

1. Move the seat to the most rearward position.

   Note: This prevents interference when you raise the seat.
2. Push the seat latch rearward to unlatch the seat.
3. Raise the seat up (Figure 14).

   Note: This allows access to the machine under the seat.

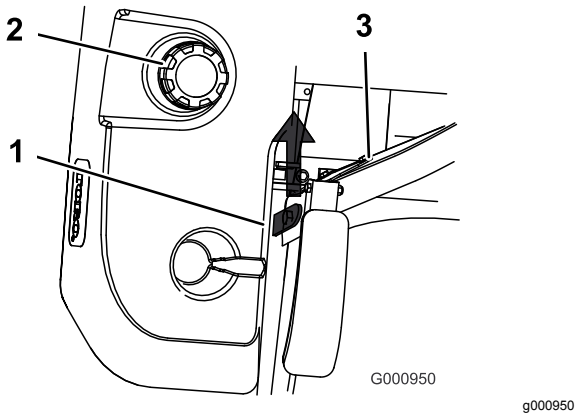


Figure 14

1. Seat latch
2. Fuel cap
3. Seat

Changing the Seat Suspension

The seat is adjustable to provide a smooth and comfortable ride. Position the seat where you are most comfortable.

To adjust it, turn the knob in front either direction to provide the best comfort (Figure 15).

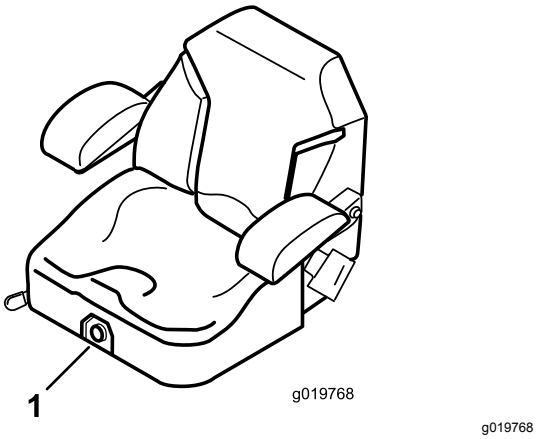


Figure 15

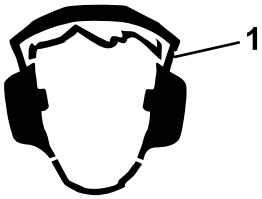
1. Seat-suspension knob

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; slip-resistant, substantial footwear; and hearing protection. Tie back long hair and do not wear loose jewelry.
- 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 operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Never carry passengers on the machine and keep bystanders and pets away from the machine during operation.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- Avoid mowing on wet grass. Reduced traction could cause the machine to slide.
- Ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position before you start the engine.
- Keep your hands and feet away from the cutting units. Keep clear of the discharge opening at all times.
- 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.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly roll over if a wheel goes over the edge or if the edge gives way.
- Stop the blades whenever you are not mowing.
- Stop the machine, shut off the engine, remove the key, and inspect the blades after striking an object or if there is an abnormal vibration in the machine. Make all necessary repairs before resuming operation.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.
- Disengage the drive to the cutting unit, shut off the engine, and remove the key before adjusting the height of cut (unless you can adjust it from the operating position).
- Never run an engine in an area where exhaust gases are enclosed.
- Never leave a running machine unattended.
- Before leaving the operating position (including to empty the catchers or to unclog the chute), do the following:
  - Stop the machine on level ground.
  - Disengage the power takeoff and lower the attachments.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all moving parts to stop.
- Do not operate the machine when there is the risk of lightning.
- Do not use the machine as a towing vehicle unless it has a hitch installed.
- Do not change the governor speed or overspeed the engine.
- Use only accessories and attachments approved by Toro.
- This machine produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss through extended periods of exposure.



g229846

Figure 16

1. Wear hearing protection.

Rollover Protection System (ROPS) Safety

- **Do not** remove the roll bar 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 when the roll bar is up.
- Check carefully for overhead obstructions and do not contact them.
- Keep the roll bar in safe operating condition by thoroughly inspecting it periodically for damage and keeping all the mounting fasteners tight.
- Replace a damaged roll bar. Do not repair or alter it.

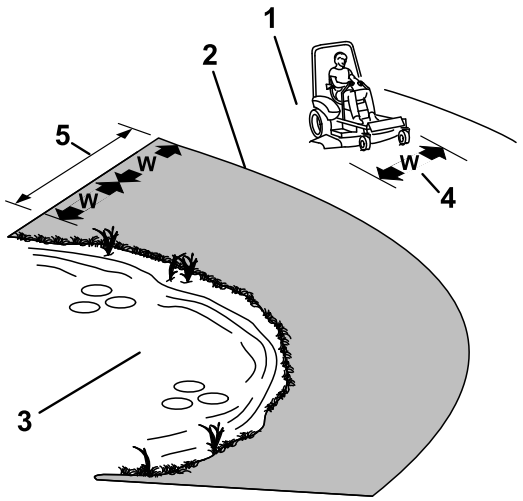
Slope Safety

- Slopes are a major factor related to loss of control and rollover accidents, which can result in severe

injury or death. The operator is responsible for safe slope operation. Operating the machine on any slope requires extra caution. Before using the machine on a slope, do the following:

  – Review and understand the slope instructions in the manual and on the machine.
  – Use an angle indicator to determine the approximate slope angle of the area.
  – Never operate on slopes greater than 15 degrees.
  – Evaluate the site conditions of the day to determine if the slope is safe for machine operation. Use common sense and good judgment when performing this evaluation. Changes in the terrain, such as moisture, can quickly affect the operation of the machine on a slope.

- Identify hazards at the base of the slope. Do not operate the machine near drop-offs, ditches, embankments, water, or other hazards. The machine could suddenly roll over if a wheel goes over the edge or the edge collapses. Keep a safe distance (twice the width of the machine) between the machine and any hazard. Use a walk-behind machine or a hand trimmer to mow the grass in these areas.
- Avoid starting, stopping, or turning the machine on slopes. Avoid making sudden changes in speed or direction; turn slowly and gradually.
- Do not operate a machine under any conditions where traction, steering, or stability is in question. 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. The machine can slide even if the drive wheels are stopped.
- Remove or mark obstacles such as ditches, holes, ruts, bumps, rocks, or other hidden hazards. Tall grass can hide obstacles. Uneven terrain could overturn the machine.
- Use extra care while operating with accessories or attachments, such as grass-collection systems. These can change the stability of the machine and cause a loss of control. Follow directions for counterweights.
- If possible, keep the deck lowered to the ground while operating on slopes. Raising the deck while operating on slopes can cause the machine to become unstable.



g221745

Figure 17

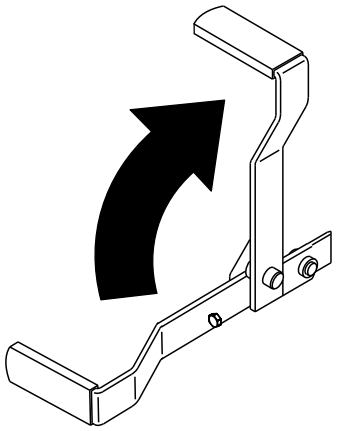
1. Safe Zone—use the machine here on slopes less than 15 degrees or flat areas.
2. Danger Zone—use a walk-behind mower and/or a hand trimmer on slopes greater than 15 degrees and near drop-offs or water.
3. Water
4. W=width of the machine
5. Keep a safe distance (twice the width of the machine) between the machine and any hazard.

Operating the Parking Brake

Always engage the parking brake when you stop the machine or leave it unattended.

Engaging the Parking Brake

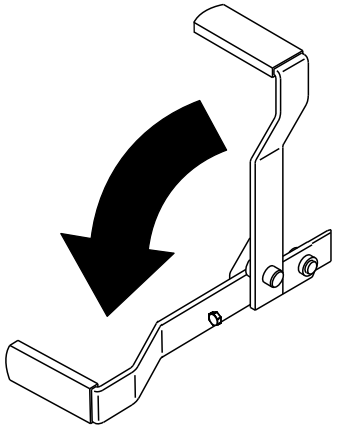
Park the machine on a level surface.



g187227

Figure 18

Disengaging the Parking Brake



g187226

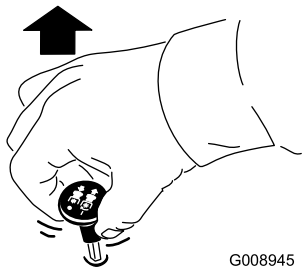
Figure 19

Operating the Mower Blade-Control Switch (PTO)

The blade-control switch (PTO) starts and stops the mower blades and any powered attachments.

Engaging the Blade-Control Switch (PTO)

Note: Engaging the blade-control switch (PTO) with the throttle position at half or less causes excessive wear to the drive belts.

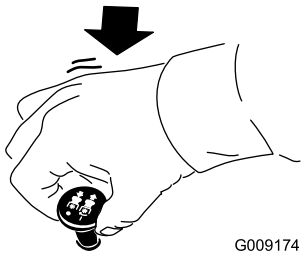


G008945

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Figure 20

Disengaging the Blade-Control Switch (PTO)



G009174

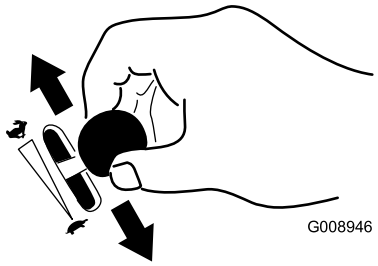
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Figure 21

Operating the Throttle

You can move the throttle control between the FAST and SLOW positions (Figure 22).

Always use the FAST position when turning on the mower deck with the blade-control switch (PTO).



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g008946

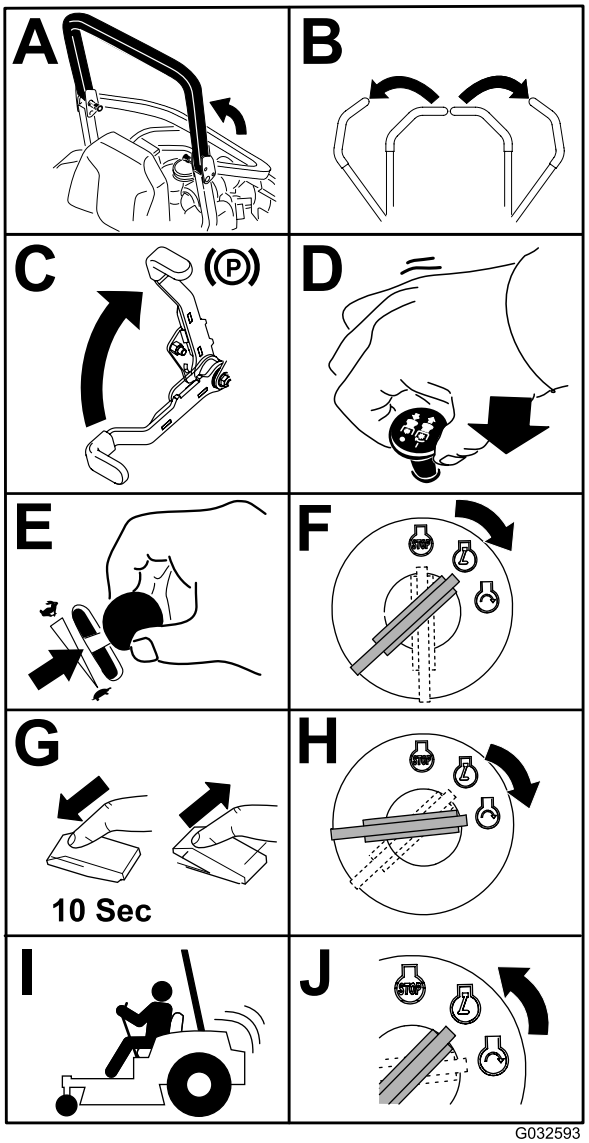
Figure 22

Starting and Shutting Off the Engine

Starting the Engine in Normal Weather

Important: **Use starting cycles of no more than 30 seconds per minute to avoid overheating the starter motor.**

Note: Additional starting cycles may be required when starting the engine for the first time after the fuel system has been completely without fuel.



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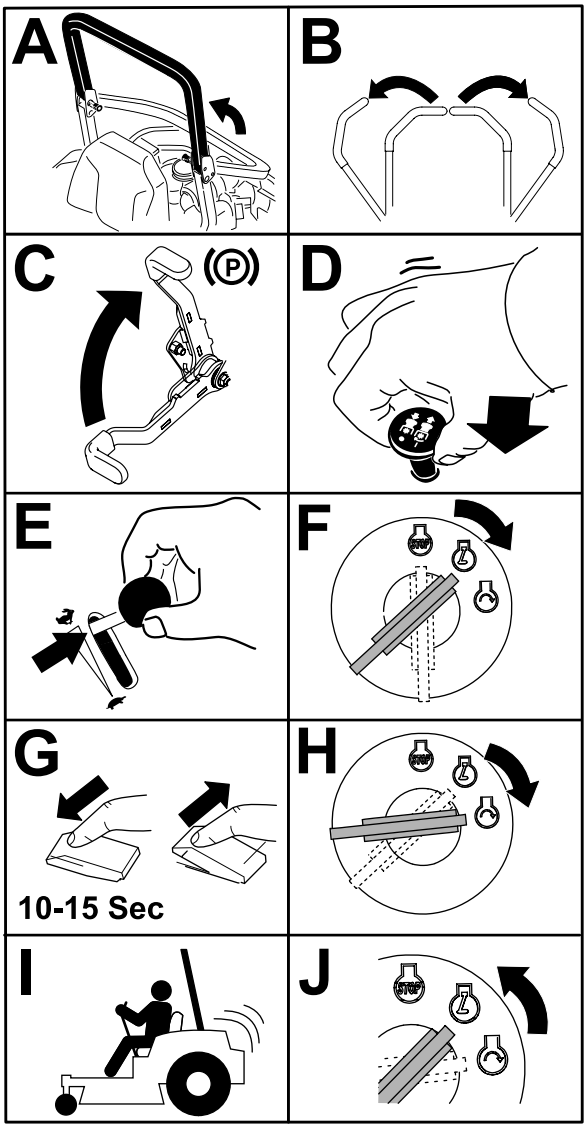
Figure 23

Starting the Engine in Cold Weather (Below 23°F or -5°C)

Use the correct engine oil for the starting temperature; refer to Engine-Oil Specifications (page 47).

Important: **Use starting cycles of no more than 30 seconds per minute to avoid overheating the starter motor.**

Note: Do not use fuel left over from the summer. Use only fresh winter-grade diesel fuel.



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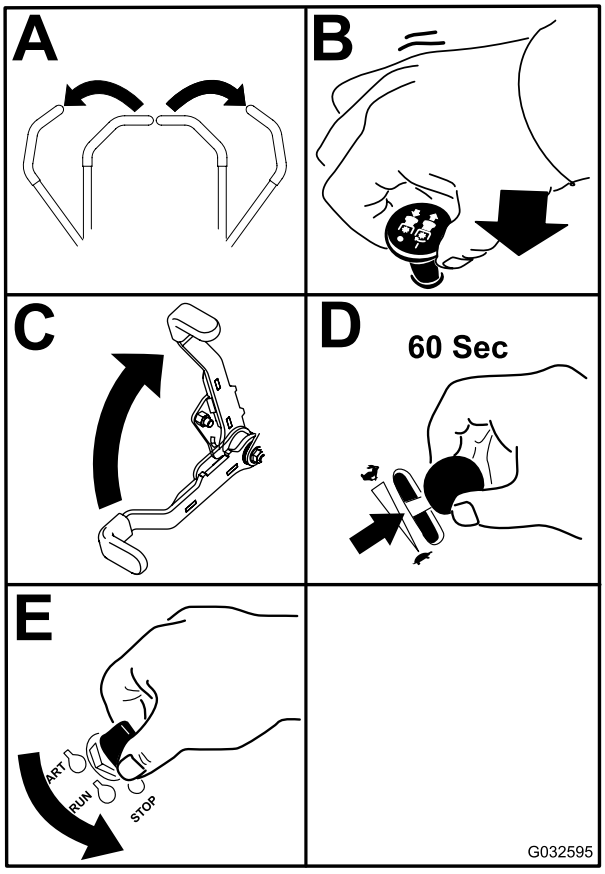
Figure 24

Shutting Off the Engine

⚠ CAUTION

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

Always remove the key and engage the parking brake when leaving the machine unattended.

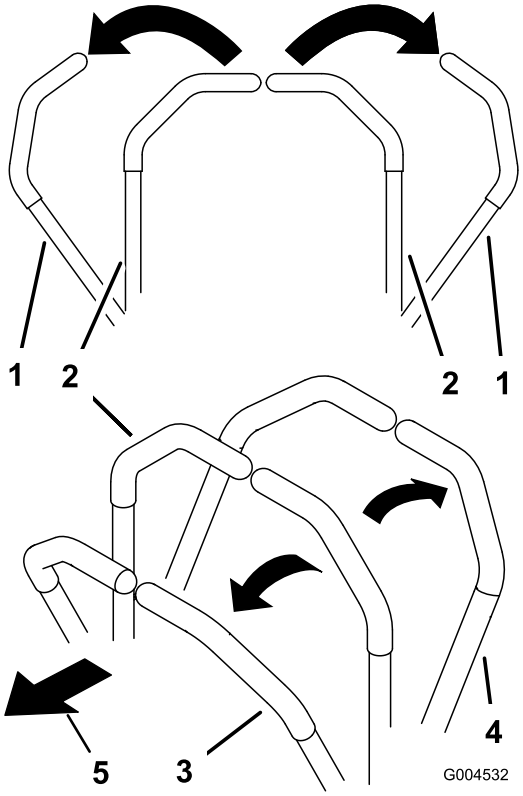


g032595

Figure 25

Important: **Make sure that you close the fuel-shutoff valve before transporting or storing the machine, as fuel leakage may occur. Engage the parking brake before transporting the machine. Make sure that you remove the key as the fuel pump may run and cause the battery to lose charge.**

Using the Motion-Control Levers



g004532

Figure 26

1. Motion-control lever—NEUTRAL-LOCK position
2. Center, unlocked position
3. Forward
4. Backward
5. Front of machine

Driving the Machine

The drive wheels turn independently, powered by hydraulic motors on each axle. You can turn 1 side in reverse while you turn the other forward, causing the machine to spin rather than turn. This greatly improves the machine maneuverability but may require some time for you to adapt to how it moves.

The throttle control regulates the engine speed as measured in rpm (revolutions per minute). Place the throttle control in the FAST position for best performance. Always operate in the full throttle position when mowing.

⚠ WARNING

The machine can spin very rapidly. You may lose control of the machine and cause personal injury or damage to the machine.

- **Use caution when making turns.**
- **Slow the machine down before making sharp turns.**

Driving Forward

Note: The engine shuts off when you move the traction-control with the parking brake engaged.

To stop the machine, pull the motion-control levers to the NEUTRAL position.

1. Disengage the parking brake; refer to Disengaging the Parking Brake (page 25).
2. Move the levers to the center, unlocked position.
3. To go forward, slowly push the motion-control levers forward (Figure 27).

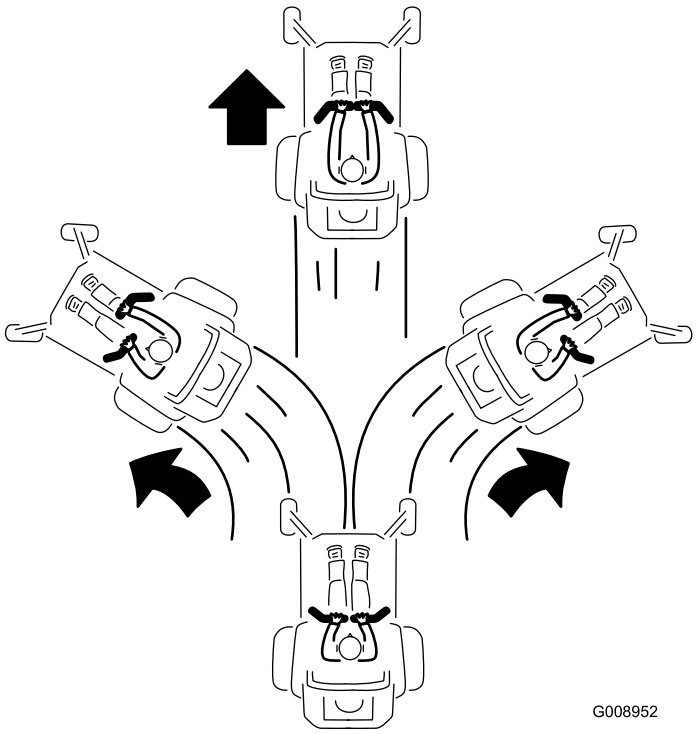


Figure 27

Driving Backward

1. Move the levers to the center, unlocked position.
2. To go backward, slowly pull the motion-control levers rearward (Figure 28).

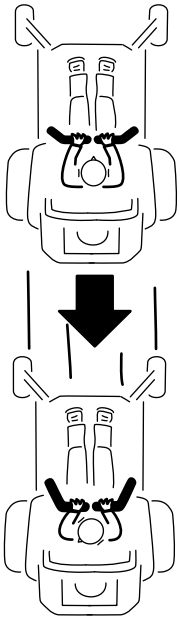


Figure 28

Using the Side Discharge

Machines with Side Discharge Only

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

⚠ DANGER

Without a grass deflector, discharge cover, or a complete grass-catcher assembly mounted in place, you and others are exposed to blade contact and thrown debris. Contact with rotating mower blade(s) and thrown debris will cause injury or death.

- **Never remove the grass deflector from the mower deck because the grass deflector routes material down toward the turf. If the grass deflector is ever damaged, replace it immediately.**
- **Never put your hands or feet under the mower deck.**
- **Never try to clear the discharge area or mower blades unless you move the blade-control switch (PTO) to the OFF position, rotate the key switch to the OFF position, and remove the key from the key switch.**
- **Make sure that the grass deflector is in the down position.**

Adjusting the Height of Cut

Using the Transport Lock

The transport lock has 2 positions, and is used with the deck-lift pedal. There is a LOCK position and an UNLOCK position for the transport position of the mower deck (Figure 29).

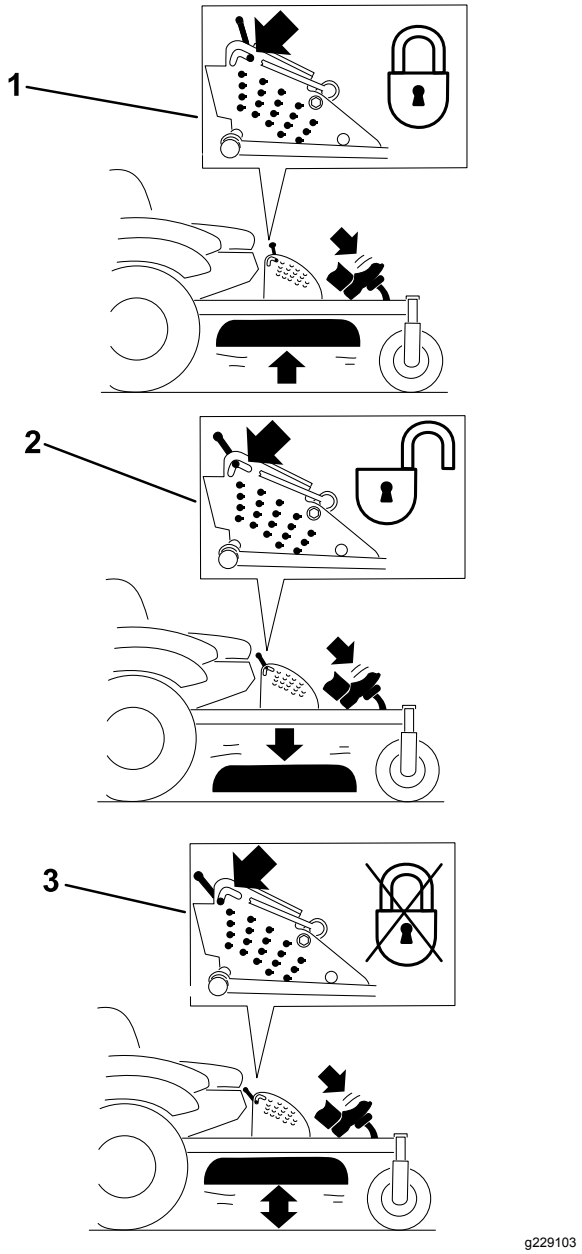


Figure 29

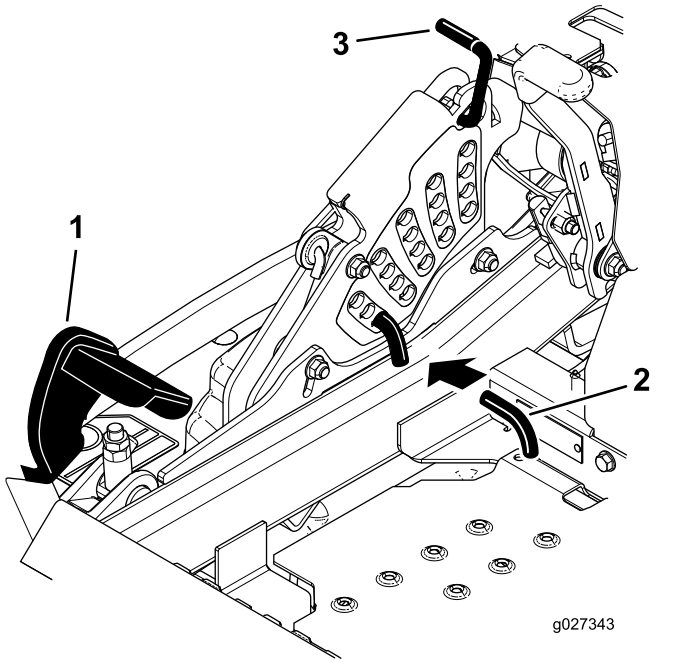
Transport-Lock Positions

1. Transport lock knob
2. LOCK position—The mower deck locks into the transport position.
3. UNLOCK position—The mower deck does not lock into the transport position.

Adjusting the Height-of-Cut Pin

The height-of-cut is adjusted from 25 to 140 mm (1 to 5-1/2 inches) in 6 mm (1/4 inch) increments by relocating the clevis pin into different hole locations.

1. Move the transport lock to the lock position.
2. Push on the deck-lift pedal with your foot, and raise the mower deck to the transport position (also the 140 mm (5-1/2 inch) cutting height position) as shown in Figure 30.
3. To adjust, rotate the pin 90 degrees and remove the pin from the height-of-cut bracket (Figure 30).
4. Select a hole in the height-of-cut bracket corresponding to the height-of-cut desired, and insert the pin (Figure 30).
5. Push on the deck lift, pull back on the transport lock, and slowly lower the mower deck.



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Figure 30

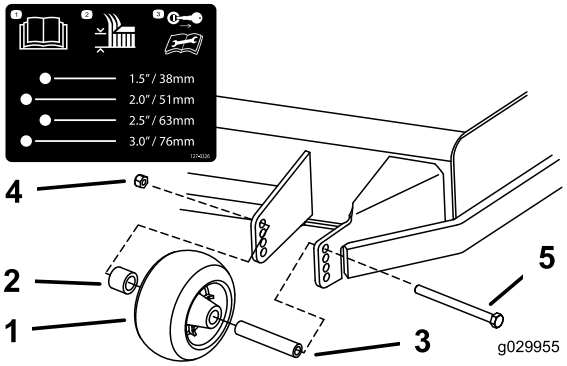
1. Deck-lift pedal
2. Cut-of-height pin
3. Transport lock

Adjusting the Anti-Scalp Rollers

For Machines with Side Discharge

Whenever you change the height-of-cut, adjust the height of the anti-scalp rollers.

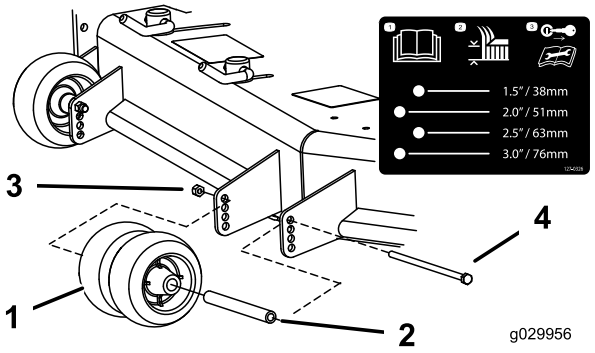
1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Adjust the anti-scalp rollers as shown in Figure 31, Figure 32, and Figure 33.



g029955

Figure 31

1. Anti-scalp roller
2. Spacer
3. Bushing
4. Flange nut
5. Bolt



g029956

Figure 32

1. Anti-scalp roller
2. Bushing
3. Flange nut
4. Bolt

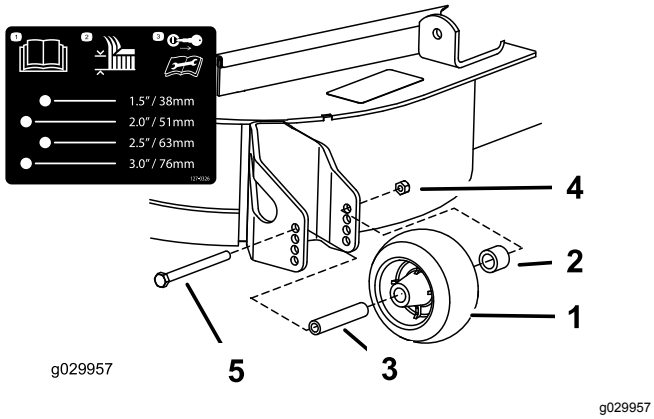


Figure 33

1. Anti-scalp roller
2. Spacer
3. Bushing
4. Flange nut
5. Bolt

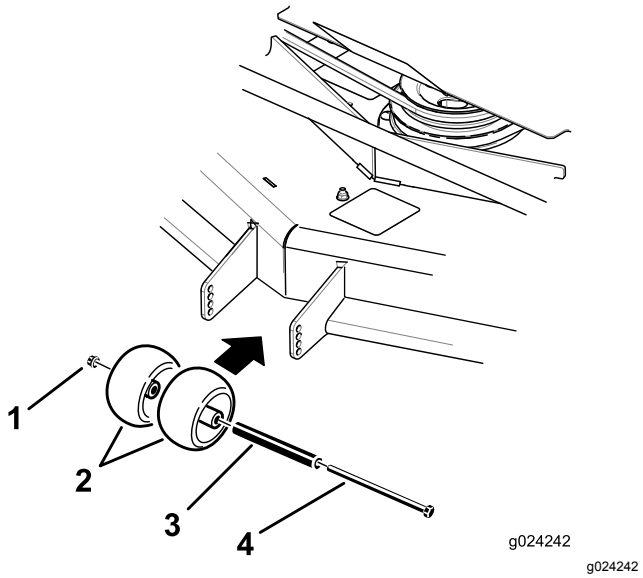


Figure 34

1. Flange nut
2. Anti-scalp roller
3. Bushing
4. Bolt

Adjusting the Anti-Scalp Rollers

For Machines with Rear Discharge

Whenever you change the height of cut, it is recommended to adjust the height of the anti-scalp rollers.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Adjust the anti-scalp rollers as shown in Figure 34 and Figure 35.

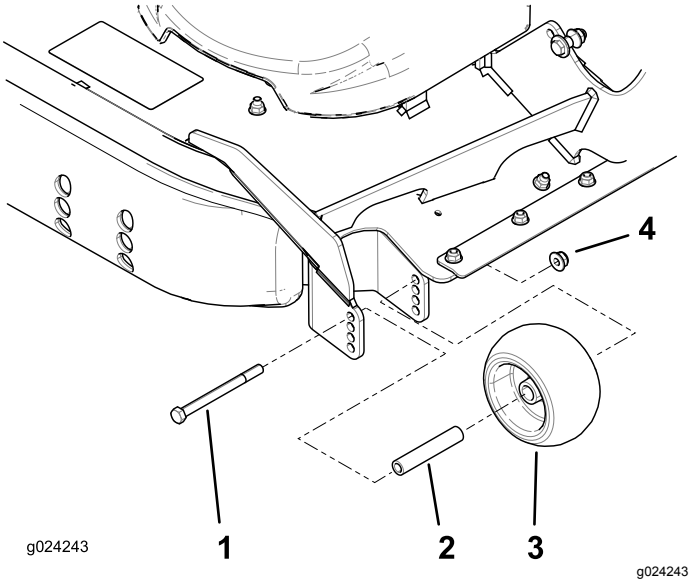


Figure 35

1. Bolt
2. Bushing
3. Anti-scalp roller
4. Flange nut

Adjusting the Skid(s)

For Machines with Rear Discharge

Mount the skids in the lower position when operating in height of cuts higher than 64 mm (2-1/2 inches) and in the higher position when operating in height of cuts lower than 64 mm (2-1/2 inches).

Note: When the skids become worn, switch the skid to the opposite sides of the mower, flipping them over. This allows you to use the skids longer before replacing them.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the carriage bolts and nuts from each skid (Figure 36).

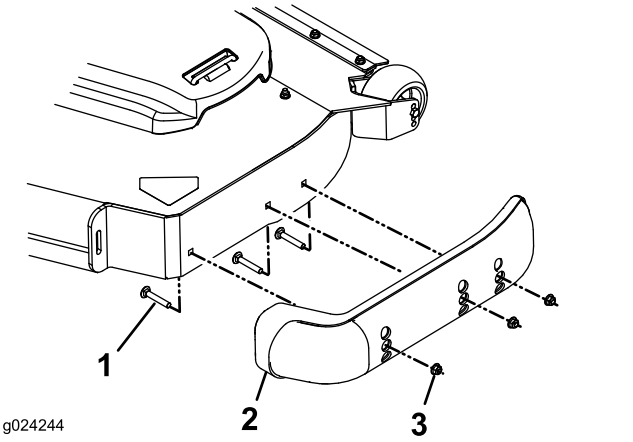


Figure 36

1. Carriage bolt
2. Skid
3. Nut

4. Move each skid to the desired position and secure them with the carriage bolts and nuts.

   Note: Only use the top or center sets of holes to adjust the skids. The bottom holes are used when switching sides on the mower deck, at which time they become the top holes on the other side of the mower.
5. To prevent damaging the skid, torque the carriage bolts and nuts for each skid to 12.4 to 14.7 N·m (110 to 130 in-lb).

Adjusting the Flow Baffle Cam Locks

For Machines with Side Discharge

This procedure is applicable only to machines with the flow-baffle locks. Certain models have nuts and bolts in place of the flow-baffle locks and can be adjusted the same.

You can adjust the mower-discharge flow for different types of mowing conditions. Position the cam locks and baffle to give the best quality of cut.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. To adjust the cam locks, swing the lever up to loosen the cam lock (Figure 37).
4. Adjust the baffle and cam locks in the slots to the desired discharge flow.
5. Swing the lever back over to tighten the baffle and cam locks (Figure 37).
6. If the cam locks do not lock the baffle into place or it is too tight, loosen the lever and then rotate the cam lock.

   Note: Adjust the cam lock until the desired locking pressure is achieved.

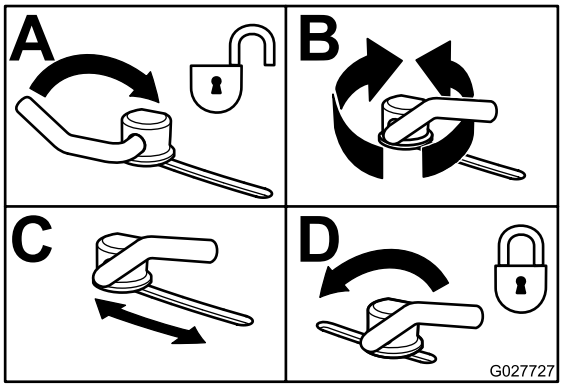


Figure 37

Positioning the Flow Baffle

For Machines with Side Discharge

The following figures are only recommendations for use. Adjustments vary by grass type, moisture content, and the height of the grass.

Note: If the engine power draws down and the mower ground speed is the same, open up the baffle.

Position A

This is the full rear position. The suggested use for this position is as follows:

- Short, light grass mowing conditions
- Dry conditions
- Smaller grass clippings
- Propels grass clippings farther away from the mower

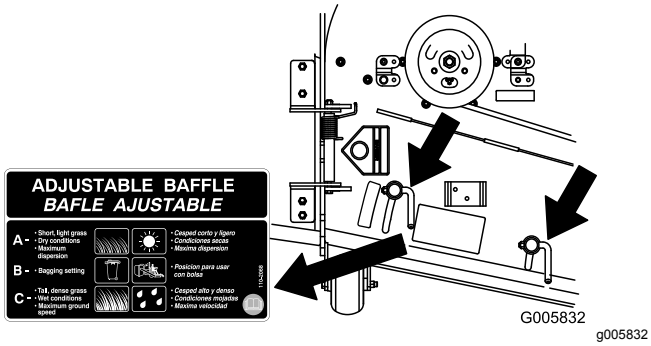


Figure 38

Position B

Use this position when bagging. Always align it with the blower opening.

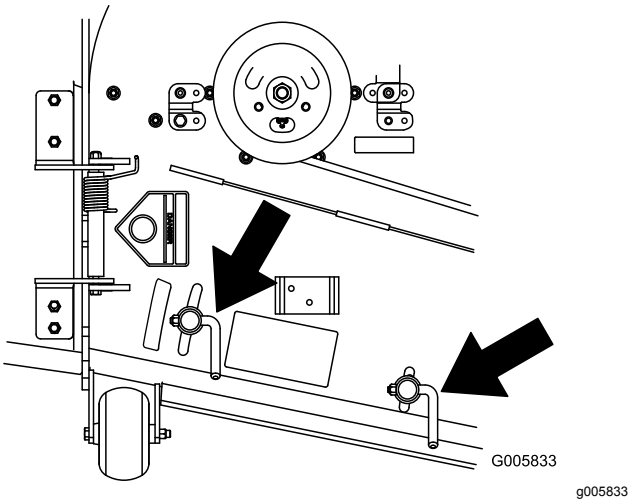


Figure 39

Position C

This is the full open position. The suggested use for this position is as follows:

- Tall, dense grass mowing conditions
- Wet conditions
- Lowers the engine-power consumption
- Allows increased ground speed in heavy conditions

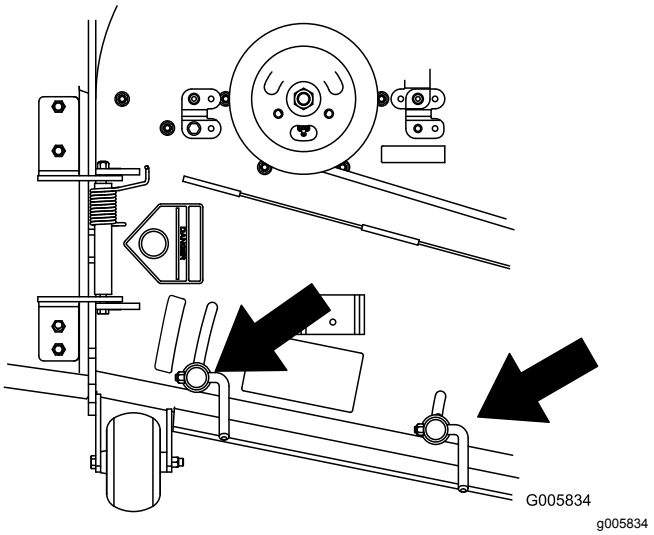


Figure 40

Operating with the Overheat Sensor

This machine has a sensor that turns off the mower deck when the engine overheats. When the engine overheats, the audible alarm and light alarm turns on along with the mower deck turning off.

If the mower deck turns off automatically because of overheating, you will be able to drive the machine to a safe area or to a truck or trailer.

If the machine overheats, ensure that the area around the engine and radiator is clear of any debris. Shut off the engine and allow it to cool before you engage the mower deck. If the engine continues to overheat, take your machine to an Authorized Service Dealer.

Operating Tips

Using the Fast Throttle Setting

For best mowing and maximum air circulation, operate the engine at the FAST position. Air is required to thoroughly cut grass clippings, so do not set the height-of-cut so low as to totally surround the mower deck in uncut grass. Always try to have 1 side of the mower deck free from uncut grass, which allows air to be drawn into the mower deck.

Cutting a Lawn for the First Time

Cut grass slightly longer than normal to ensure that the cutting height of the mower deck does not scalp any uneven ground. However, the cutting height used in the past is generally the best one to use. When cutting grass longer than 15 cm (6 inches) tall, you may want to cut the lawn twice to ensure an acceptable quality of cut.

Cutting a Third of the Grass Blade

It is best to cut only about a third of the grass blade. Cutting more than that is not recommended unless grass is sparse, or it is late fall when grass grows more slowly.

Alternating the Mowing Direction

Alternate the mowing direction to keep the grass standing straight. This also helps disperse clippings, which enhances decomposition and fertilization.

Mowing at Correct Intervals

Grass grows at different rates at different times of the year. To maintain the same cutting height, mow more often in early spring. As the grass growth rate slows in mid summer, mow less frequently. If you cannot mow for an extended period, first mow at a high cutting height, then mow again 2 days later at a lower height setting.

Using a Slower Cutting Speed

To improve cut quality, use a slower ground speed in certain conditions.

Avoiding Cutting Too Low

When mowing uneven turf, raise the cutting height to avoid scalping the turf.

Stopping the Machine

If you must stop the forward motion of the machine while mowing, a clump of grass clippings may drop onto your lawn. To avoid this, move onto a previously cut area with the blades engaged or you can disengage the mower deck while moving forward.

Keeping the Underside of the Mower Deck Clean

Clean clippings and dirt from the underside of the mower deck after each use. If grass and dirt build up inside the mower deck, cutting quality will eventually become unsatisfactory.

Maintaining the Blade(s)

Maintain a sharp blade throughout the cutting season because a sharp blade cuts cleanly without tearing or shredding the grass blades. Tearing and shredding turns grass brown at the edges, which slows growth and increases the chance of disease. Check the mower blades after each use for sharpness, and for any wear or damage. File down any nicks and sharpen the blades as necessary. If a blade is damaged or worn, replace it immediately with a genuine Toro replacement blade.

After Operation

After Operation Safety

General Safety

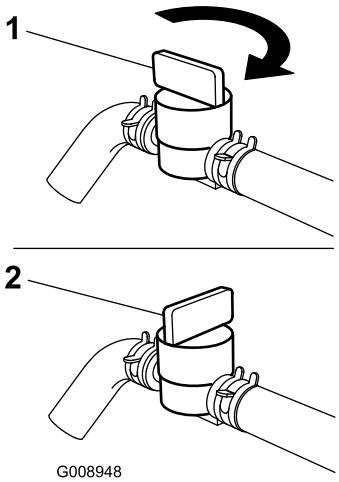
- Clean grass and debris from the cutting units, mufflers, and engine compartment to help prevent fires. Clean up oil or fuel spills.
- Shut off the fuel and remove the key before storing or transporting the machine.
- Disengage the drive to the attachment whenever you are transporting or not using the machine.
- Allow the engine to cool before storing the machine in any enclosure.
- Never 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.

Using the Fuel-Shutoff Valve

The fuel-shutoff valve is located under the seat. Move the seat forward to access it.

Close the fuel-shutoff valve for transport, maintenance, and storage.

Ensure that the fuel-shutoff valve is open when starting the engine.



g008948

Figure 41

1. ON position
2. OFF position

Pushing the Machine by Hand

Important: **Always push the machine by hand. Never tow the machine because hydraulic damage may occur.**

Pushing the Machine

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Rotate the bypass valves counterclockwise 1 turn to push (Figure 42).

   Note: This allows hydraulic fluid to bypass the pump enabling the wheels to turn.

   Important: **Do not rotate bypass valves more than 1 turn. This prevents valves from coming out of the body and causing fluid to run out.**
4. Disengage the parking brake before pushing.

Changing to Machine Operation

Rotate the bypass valves clockwise 1 turn to operate machine (Figure 42).

Note: Do not over-tighten the bypass valves.

Important: **The machine does not drive unless bypass valves are turned in.**

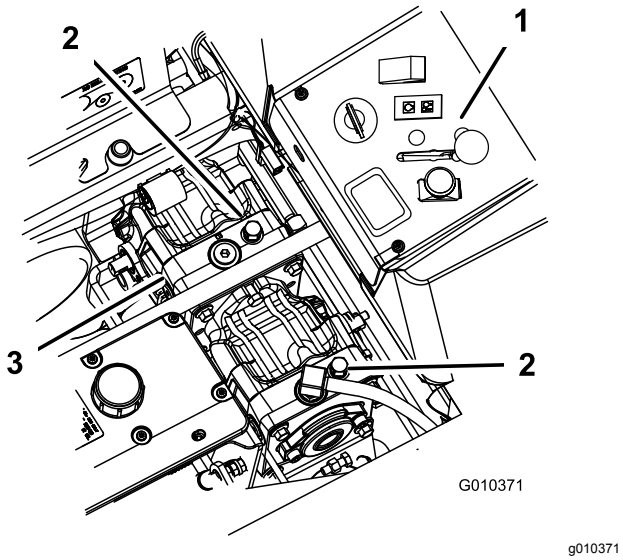


Figure 42

1. Side console controls
2. Bypass valve
3. Hydraulic pumps

Transporting the Machine

Use a heavy-duty trailer or truck to transport the machine. Use a full-width ramp. Ensure that the trailer or truck has all the necessary brakes, lighting, and marking as required by law. Please carefully read all the safety instructions. Knowing this information could help you or bystanders avoid injury. Refer to your local ordinances for trailer and tie-down requirements.

⚠ WARNING

Driving on the street or roadway without turn signals, lights, reflective markings, or a slow-moving-vehicle emblem is dangerous and can lead to accidents, causing personal injury.

Do not drive the machine on a public street or roadway.

Selecting a Trailer

⚠ WARNING

Loading a machine onto a trailer or truck increases the possibility of tip-over and could cause serious injury or death (Figure 43).

- **Use only a full-width ramp; do not use individual ramps for each side of the machine.**
- **Do not exceed a 15-degree angle between the ramp and the ground or between the ramp and the trailer or truck.**
- **Ensure that the length of the ramp is at least 4 times as long as the height of the trailer or truck bed to the ground. This ensures that the ramp angle does not exceed 15 degrees on flat ground.**

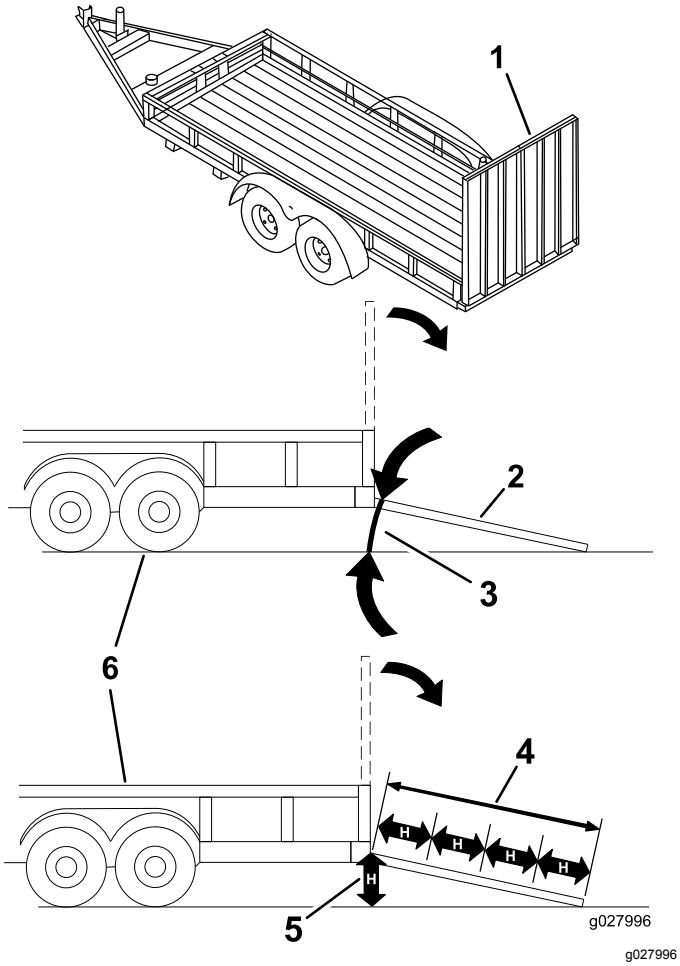


Figure 43

1. Full-width ramp in stowed position
2. Side view of full-width ramp in loading position
3. Not greater than 15 degrees
4. Ramp is at least 4 times as long as the height of the trailer or truck bed to the ground
5. H=height of the trailer or truck bed to the ground
6. Trailer

Loading the Machine

⚠ WARNING

Loading a machine onto a trailer or truck increases the possibility of tip-over and could cause serious injury or death.

- **Use extreme caution when operating a machine on a ramp.**
- **Back the machine up the ramp and drive it forward down the ramp.**
- **Avoid sudden acceleration or deceleration while driving the machine on a ramp as this could cause a loss of control or a tip-over situation.**

1. If using a trailer, connect it to the towing vehicle and connect the safety chains.
2. If applicable, connect the trailer brakes and lights.
3. Lower the ramp, ensuring that the angle between the ramp and the ground does not exceed 15 degrees (Figure 43).
4. Back the machine up the ramp (Figure 44).

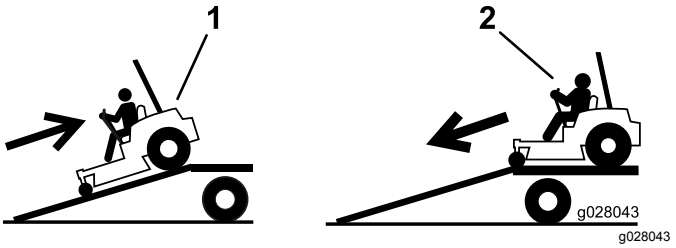


Figure 44

1. Back the machine up the ramp.
2. Drive the machine forward down the ramp.

5. Shut off the engine, remove the key, and engage the parking brake.
6. Tie down the machine near the front caster wheels and the rear bumper with straps, chains, cable, or ropes (Figure 45). Refer to local regulations for tie-down requirements.

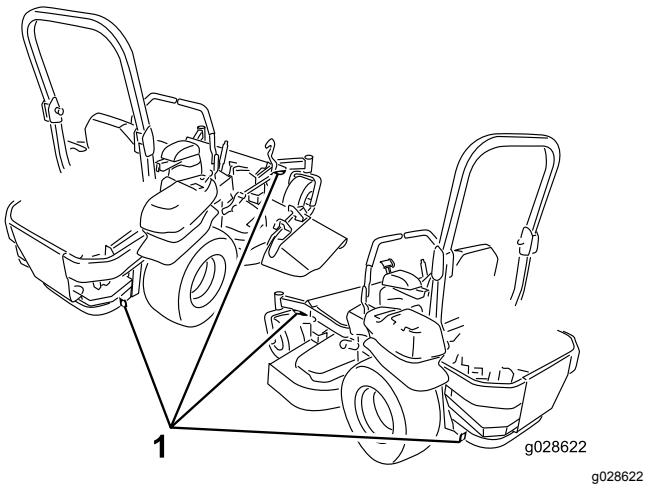


Figure 45

1. Tie-down loops

Unloading the Machine

1. Lower the ramp, ensuring that the angle between the ramp and the ground does not exceed 15 degrees (Figure 43).
2. Drive the machine forward down the ramp (Figure 44).

Using the Z Stand™

The Z Stand raises the front end of the machine to allow you to clean the mower and remove the blades.

⚠ WARNING

The machine could fall onto someone and cause serious injury or death.

- **Use extreme caution when operating the machine on the Z Stand.**
- **Use the Z Stand only for cleaning the mower and removing the blades.**
- **Do not keep the machine on the Z Stand for extended periods of time.**
- **Always shut off the engine, set the parking brake, and remove the key before performing any maintenance to the mower.**

Driving up onto the Z Stand

Important: **Use the Z Stand on a level surface.**

1. Raise the mower deck to the transport position.
2. Remove the bracket pin (Figure 46).

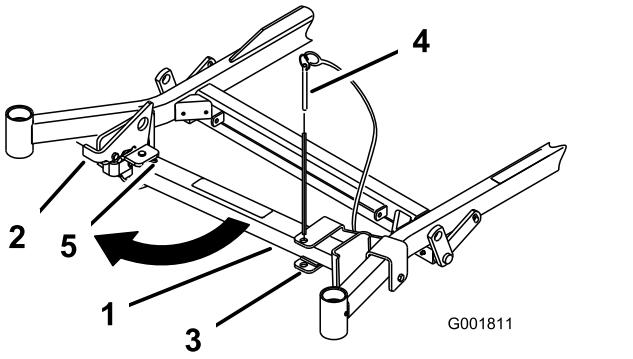


Figure 46

1. Z Stand
2. Bracket pin
3. Bracket
4. Bottom of slot
5. Latch

3. Raise the latch.
4. Swing the stand foot out front and slide it toward machine, into the bottom of slot (Figure 46 and Figure 47).

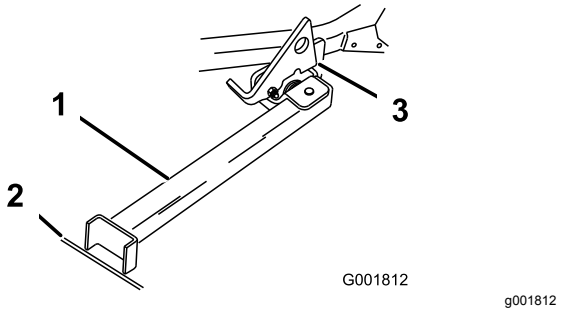


Figure 47

1. Z Stand (positioned in slot)
2. Crack in side walk or turf
3. Latch resting on pivot tab

5. Set the foot of the stand on the ground and rest the latch on the pivot tab (Figure 47).
6. Start the engine and put it at half throttle.

   Note: For best results, place the foot of the stand into the seams in sidewalks or into the turf (Figure 47).
7. Drive the machine onto the stand. Stop when the latch drops over the tab into the locked position (Figure 47).
8. Engage the parking brake and turn off the engine.
9. Chock or block the drive wheels.

⚠ WARNING

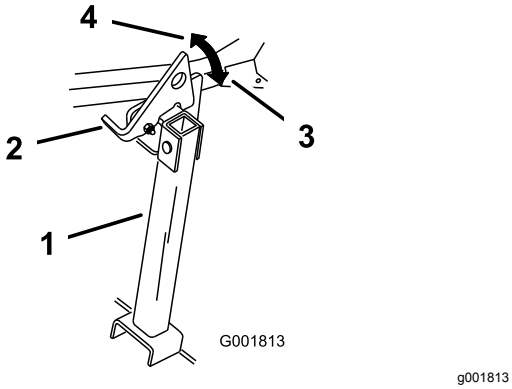
The parking brake may not hold the machine parked on the Z Stand and could cause personal injury or property damage.

Do not park on the Z Stand unless the wheels are chocked or blocked.

10. Perform the maintenance.

Driving off the Z Stand

1. Remove the chocks or blocks.
2. Raise the latch to the unlocked position (Figure 48).



g001813

Figure 48

1. Z Stand
2. Latch
3. Locked position
4. Unlocked position

3. Start the engine and place it at half throttle. Disengage the parking brake.
4. Slowly drive backward off the stand.
5. Return the stand to its rest position (Figure 46).

Maintenance

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

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 8 hours	• Check the engine cooling system level. • Check the hydraulic fluid.
After the first 25 hours	• Change the hydraulic filter.
After the first 50 hours	• Replace the engine oil. • Change the engine-oil filter. • Change the engine oil.
After the first 100 hours	• Check the wheel-hub slotted nut. • Change the gearbox oil.
Before each use or daily	• Check the safety system. • Check the engine-oil level. • Check the engine cooling system level. • Clean the engine-oil cooler. • Inspect the blades. • Clean the mower deck.
Every 25 hours	• Grease the mower deck and spindles. • Grease the mower belt idler arm. • Grease the pump belt idler arm. • Grease the PTO-drive belt idler arm. • Grease the brake lever. • Check the hydraulic fluid.
Every 40 hours	• Drain the water separator.
Every 50 hours	• Check the tire pressure • Check the PTO-drive belt. • Check the pump drive belt. • Check the alternator belt.
Every 100 hours	• Lubricate the deck-lift pivots. • Replace the engine oil. • Change the engine oil. • Check the gearbox-oil level. • Check the engine cooling system hoses. • Inspect the belts for cracks and wear. • Check the hydraulic hoses.
Every 150 hours	• Add light oil or spray lubrication to the machine; refer to lubrication.
Every 200 hours	• Change the engine-oil filter. • Grease the brake pivot.
Every 250 hours	• Check and/or replace the air filter (more often in dirty or dusty conditions). • Change the hydraulic filter and hydraulic fluid when using Mobil® 1 fluid.
Every 400 hours	• Replace the fuel filter (more often in dirty or dusty conditions).

Maintenance Service Interval	Maintenance Procedure
Every 500 hours	• Check the wheel-hub slotted nut. • Adjust the caster-pivot bearing. • Adjust the electric clutch. • Change the hydraulic filter and hydraulic fluid when using Toro® HYPR-OIL™ 500 hydraulic fluid.
Yearly	• Grease the front caster pivots (more often in dirty or dusty conditions). • Lubricate the caster-wheel hubs. • Change the gearbox oil. • Change the engine coolant.

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

⚠ CAUTION

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

Remove the key from the switch before you perform any maintenance.

Pre-Maintenance Procedures

Maintenance Safety

- Before repairing the machine do the following:
  - Disengage the drives.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
- Park the machine on a level surface.
- Clean grass and debris from the cutting unit, drives, mufflers, and engine to help prevent fires.
- Clean up oil or fuel spills.
- Do not allow untrained personnel to service the machine.
- Use jack stands to support the machine and/or components when required.
- Carefully release pressure from components with stored energy.
- Disconnect the battery before making any repairs. Disconnect the negative terminal first and the positive terminal last. Connect the positive terminal first and negative last.
- Use care when checking the blades. Wrap the blade(s) or wear thickly padded gloves, and use caution when servicing them. Only replace blades; do not straighten or weld them.
- Keep your hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Keep all parts in good working condition and all hardware tightened, especially the blade-attachment bolts. Replace all worn or damaged decals.
- Never interfere with the intended function of a safety device or reduce the protection provided by a safety device. Check their proper operation regularly.
- Check the parking brake operation frequently. Adjust and service as required.

Releasing the Mower-Deck Curtain

Loosen the bottom bolt of the curtain to release the mower-deck curtain and get access to the top of the mower deck (Figure 49). After performing maintenance, install the curtain and tighten the bolt.

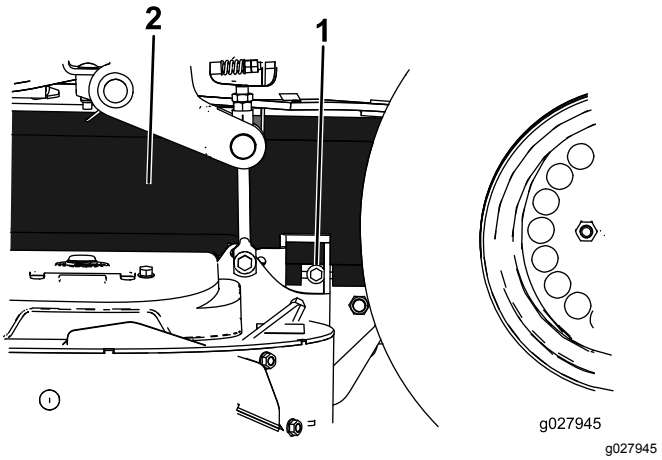


Figure 49

1. Bolt
2. Curtain

Removing the Sheet-Metal Guard

Loosen the 2 front bolts and remove the sheet-metal guard to access the mower belts and spindles (Figure 50). After performing maintenance, install the sheet-metal guard and tighten the bolts.

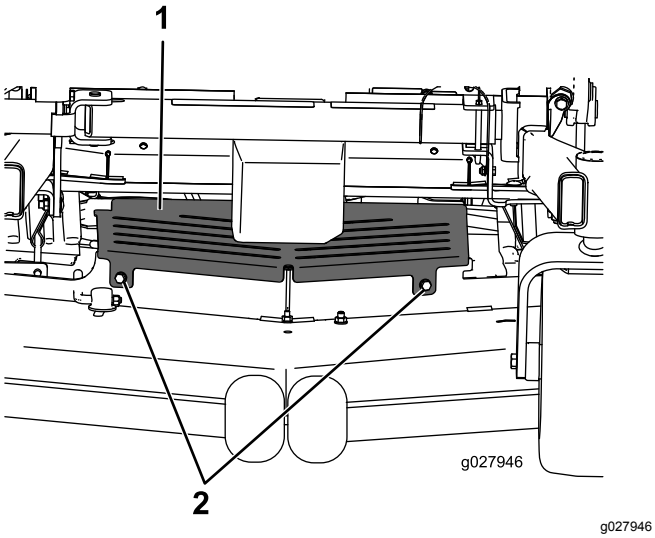


Figure 50

1. Sheet-metal guard
2. Bolt

Lubrication

Greasing the Machine

Grease more frequently when operating conditions are extremely dusty or sandy.

Grease Type: No. 2 lithium or molybdenum grease

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the grease fittings with a rag.

   Note: Make sure that you scrape any paint off the front of the fitting(s).
4. Connect a grease gun to the fitting.
5. Pump grease into the fittings until grease begins to ooze out of the bearings.
6. Wipe up any excess grease.

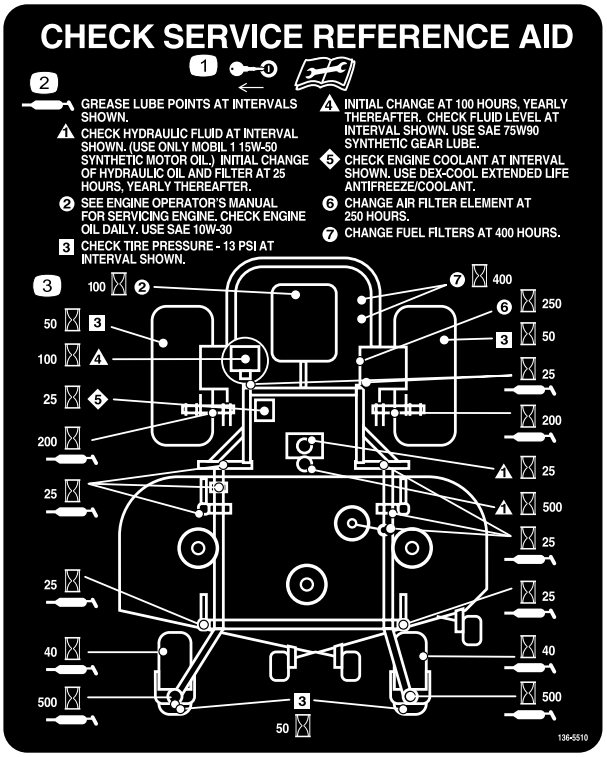
Greasing the Front Caster Pivots

Service Interval: Yearly (more often in dirty or dusty conditions).

1. Remove the dust cap and adjust the caster pivots and keep the dust cap off until greasing is done; refer to Adjusting the Caster-Pivot Bearing (page 56).
2. Remove the hex plug.
3. Thread a grease fitting into the hole.
4. Pump grease into the fitting until it oozes out around the top bearing.
5. Remove the grease fitting from the hole. Install the hex plug and cap.

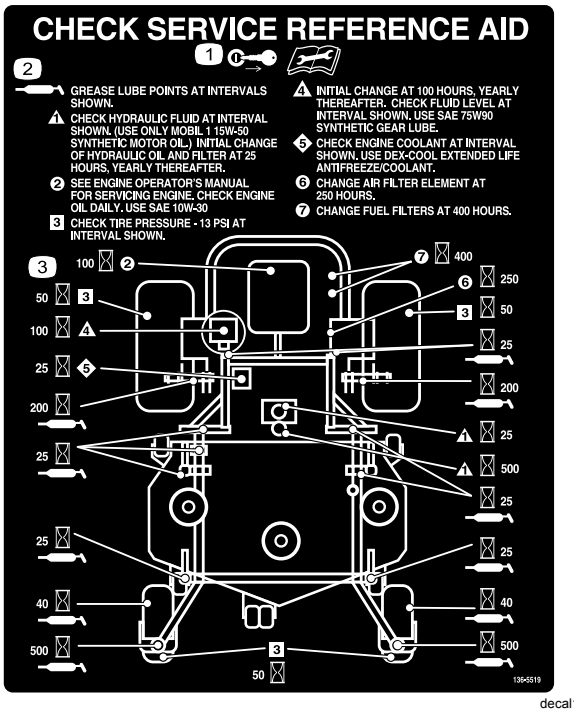
Adding Grease

Lubricate the grease fittings as shown on the Check Service Reference Aid decal (Figure 51 or Figure 52).



decal136-5510

Figure 51
Side Discharge Machines



decal136-5519

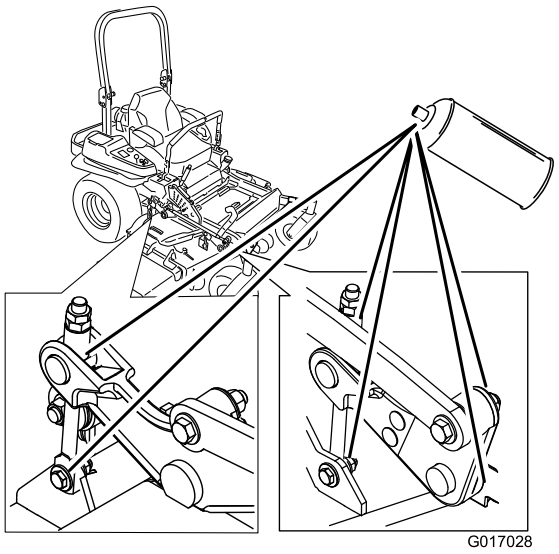
Figure 52
Rear Discharge Machines

Adding Light Oil or Spray Lubrication

Side Discharge Machines

Service Interval: Every 100 hours

Lubricate the deck-lift pivots.



G017028

g017028

Figure 53

Adding Light Oil or Spray Lubrication

Rear Discharge Machines

Service Interval: Every 150 hours

Lubricate the machine in the following areas with spray type lubricant or light oil.

- Seat-switch actuator
- Brake-handle pivot
- Brake-rod bushings
- Motion control bronze bushings

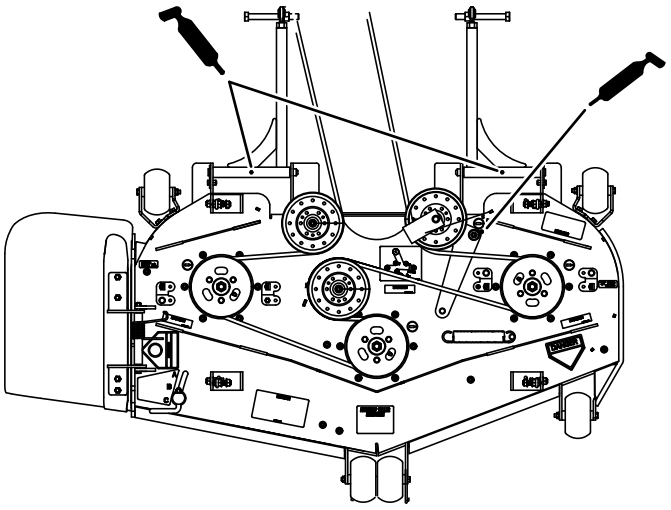
Greasing the Mower Deck and Belt Idlers

Service Interval: Every 25 hours—Grease the mower deck and spindles.

Grease with No. 2 lithium or molybdenum grease.

Important: **Make sure that the cutting-unit spindles are full of grease weekly.**

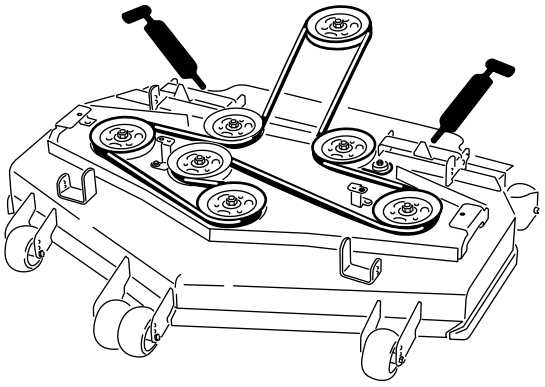
1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Loosen the bottom bolt holding the mower-deck curtain to the mower deck; refer to Releasing the Mower-Deck Curtain (page 42).
4. Remove the sheet-metal guard; refer to Removing the Sheet-Metal Guard (page 42)
5. Remove the belt covers.
6. Grease the idler arm on the mower deck (Figure 54).
7. Grease the fittings on the push arms (Figure 54 or Figure 55).



g187362

Figure 54

Side Discharge Machines

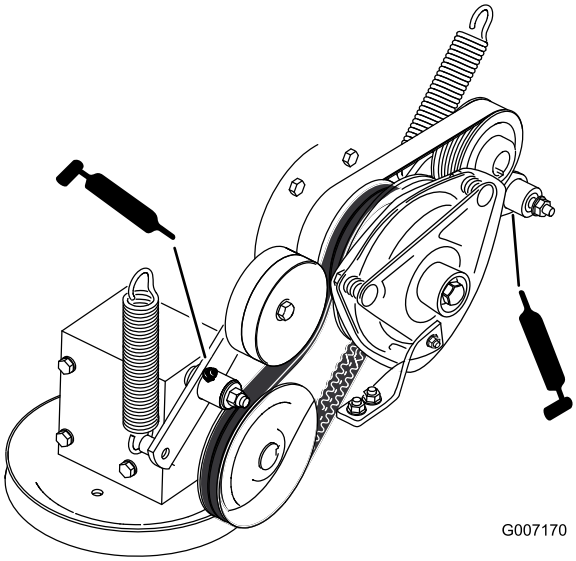


g194085

Figure 55

Rear Discharge Machines

8. Grease the PTO-drive belt idler arm (Figure 56).
9. Grease the pump belt idler arm (Figure 56).



g007170

Figure 56

10. Install the sheet-metal guard.
11. Tighten the bottom bolt holding the mower-deck curtain to the mower deck.

Lubricating the Caster-Wheel Hubs

Service Interval: Yearly

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

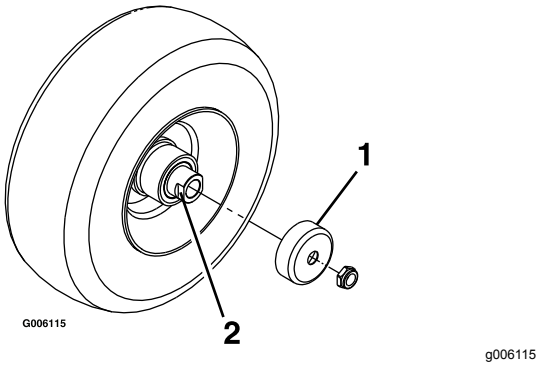


Figure 57

1. Seal guard
2. Spacer nut with wrench flats

3. Raise the mower for access.
4. Remove the caster wheel from the caster forks.
5. Remove the seal guards from the wheel hub.
6. Remove a spacer nut from the axle assembly in the caster wheel.

   Note: Thread-locking adhesive has been applied to lock the spacer nuts to the axle.
7. Remove the axle (with the other spacer nut still assembled to it) from the wheel assembly.
8. Pry out seals and inspect bearings for wear or damage and replace if necessary.
9. Pack the bearings with a general-purpose grease.
10. Insert 1 bearing and 1 new seal into the wheel.

    Note: Replace the seals.
11. If the axle assembly is missing both spacer nuts, apply a thread-locking adhesive to 1 spacer nut and thread it onto the axle with the wrench flats facing outward.

    Note: Do not thread the spacer nut all of the way onto the end of the axle. Leave approximately 3 mm (1/8 inch) from the outer surface of the spacer nut to the end of the axle inside the nut.
12. Insert the assembled nut and axle into the wheel on the side of the wheel with the new seal and bearing.
13. With the open end of the wheel facing up, fill the area inside the wheel around the axle full of general-purpose grease.
14. Insert the second bearing and new seal into the wheel.
15. Apply a thread-locking adhesive to the second spacer nut, and thread it onto the axle with the wrench flats facing outward.
16. Torque the nut to 8 to 9 N·m (75 to 80 in-lb), loosen, then torque to 2 to 3 N·m (20 to 25 in-lb).

    Note: Make sure that the axle does not extend beyond either nut.
17. Install the seal guards over the wheel hub, and insert the wheel into the caster fork.
18. Install the caster bolt and tighten the nut fully.

Important: **To prevent seal and bearing damage, check the bearing adjustment often. Spin the caster tire. The tire should not spin freely (more than 1 or 2 revolutions) or have any side play. If the wheel spins freely, adjust the torque on the spacer nut until there is a slight amount of drag. Apply another layer of thread-locking adhesive.**

Engine Maintenance

Engine Safety

- Shut off the engine and remove the key before checking the oil or adding oil to the crankcase.
- Keep your hands, feet, face, clothing, and other body parts away the muffler and other hot surfaces.

Servicing the Air Cleaner

Note: Check the filters more frequently if operating conditions are extremely dusty or sandy.

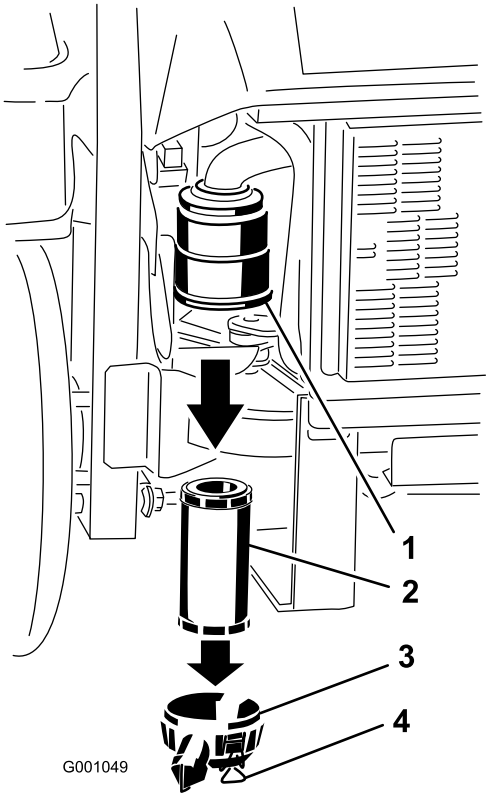
Removing the Air Filter

Service Interval: Every 250 hours (more often in dirty or dusty conditions).

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Release the latches on the air cleaner and pull the air-cleaner cover off the air-cleaner body (Figure 58).
4. Clean the inside of the air-cleaner cover with compressed air.
5. Gently slide the filter out of the air-cleaner body (Figure 58).

   Note: Avoid knocking the filter into the side of the body.
6. Inspect the filter for damage by looking into the filter while shining a bright light on the outside of the filter.

   Note: Holes in the filter appear as bright spots. If the filter is damaged, discard it.



g001049

Figure 58

1. Air-filter body
2. Air filter
3. Air-cleaner cover
4. Latches

Installing the Air Filter

1. If installing a new filter, check the filter for shipping damage. Do not use a damaged filter.
2. Carefully slide the filter into the filter body (Figure 59).

   Note: Ensure that it is fully seated by pushing on the outer rim of the filter while installing it.

   Important: **Do not press on the soft inside area of the filter.**
3. Install the air-cleaner cover and secure the latches (Figure 59).

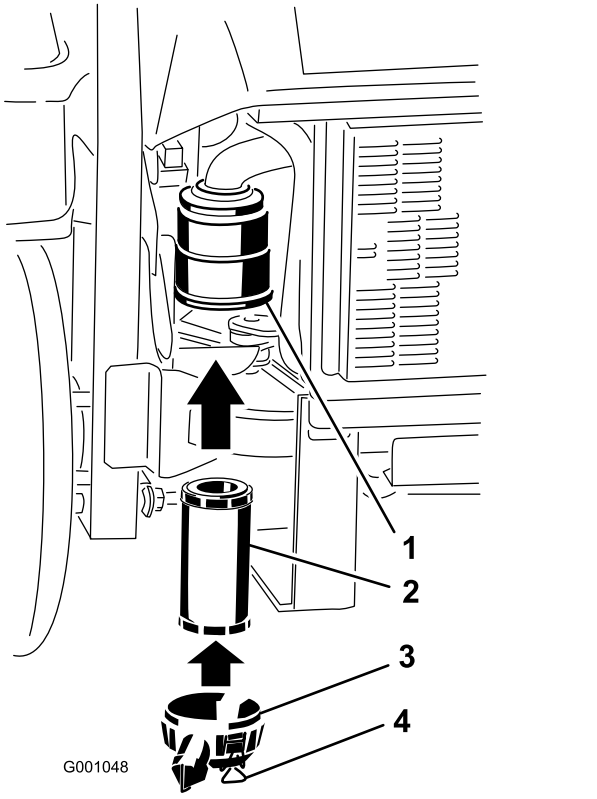


Figure 59

1. Air-filter body
2. Air filter
3. Air-cleaner cover
4. Latches

Servicing the Engine Oil

Engine-Oil Specifications

Oil Type: High-quality detergent oil classified API Service CJ-4 or higher for diesel engines. Do not use special additives with recommended oils.

Crankcase Capacity: 3.7 L (3.9 US qt)

Viscosity: See the table below.

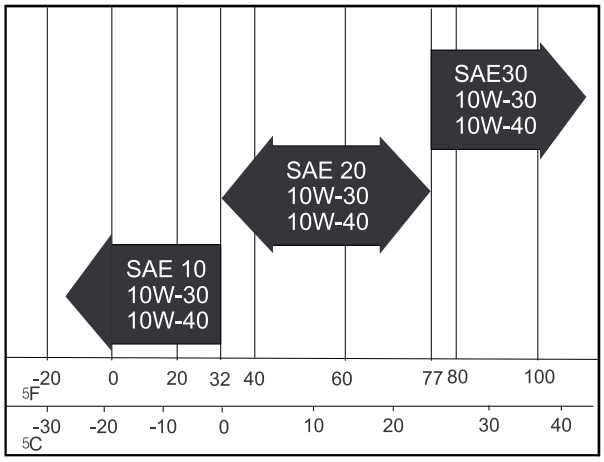


Figure 60

Preparing to Service the Engine Oil

Important: **The fasteners for the front engine panel are designed to remain on the machine after cover removal. Loosen all of the fasteners a few turns so that the panel is loose but still attached, then go back and loosen them until the panel comes free. This prevents you from accidentally stripping the bolts free of the retainers.**

Tilt the seat forward, loosen the bolts holding the front engine panel and remove it (Figure 61).

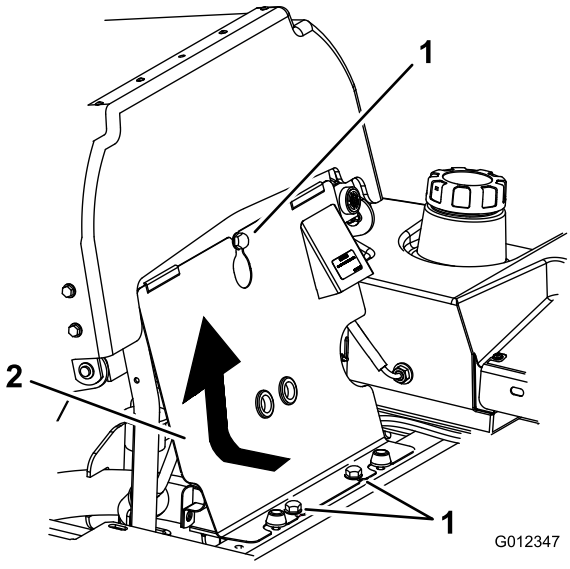


Figure 61

1. Bolt
2. Front engine panel

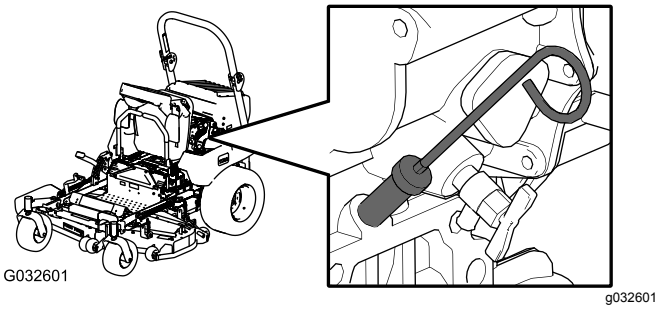
Note: After servicing the engine oil, install the engine panel and tilt the seat into its upright position.

Checking the Engine-Oil Level

Service Interval: Before each use or daily

Note: Check the oil when the engine is cold.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Check the engine-oil level (Figure 62).



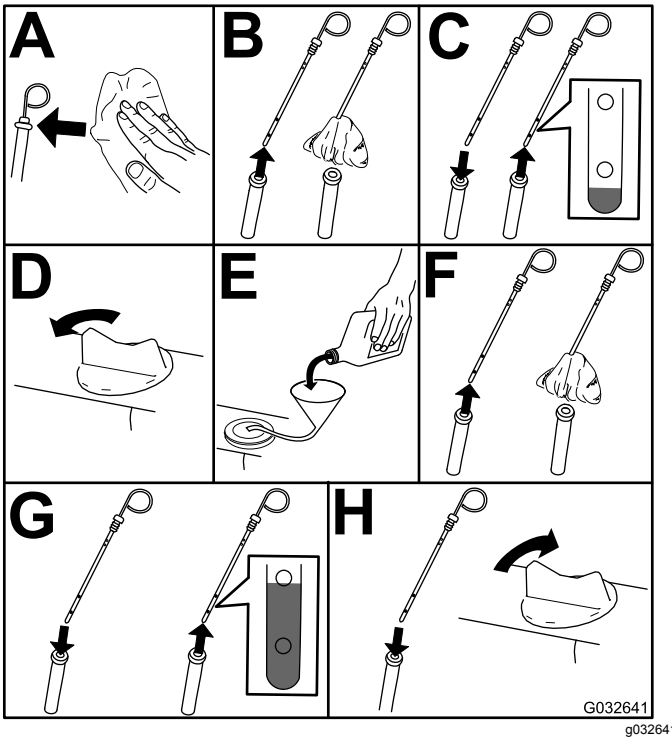


Figure 62

4. Start the engine, run it at idle for 5 minutes, shut off the engine, wait for 3 minutes, and then check the engine-oil level. If needed, add oil up to the FULL mark on the dipstick.

   Important: **Be sure to keep the engine-oil level between the upper and lower limits on the oil gauge. Engine failure may occur as a result.**

   Important: **Add the oil very slowly and do not block the opening of the filler hole (Figure 40). If you add oil too fast or block the hole, the oil could back up and foul the air intakes, causing engine damage.**

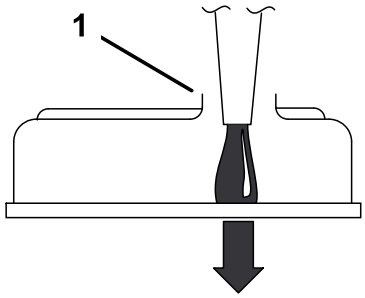


Figure 63

1. Note the clearance left in the filler opening.

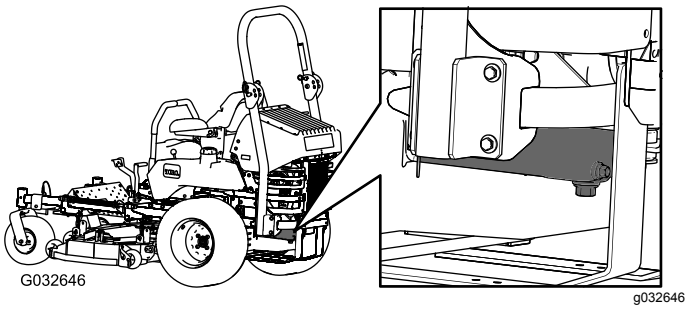
Draining the Engine Oil

Service Interval: After the first 50 hours

Every 100 hours

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

   Note: This warms the oil so it drains better.
2. Park the machine on a level surface, disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
3. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.



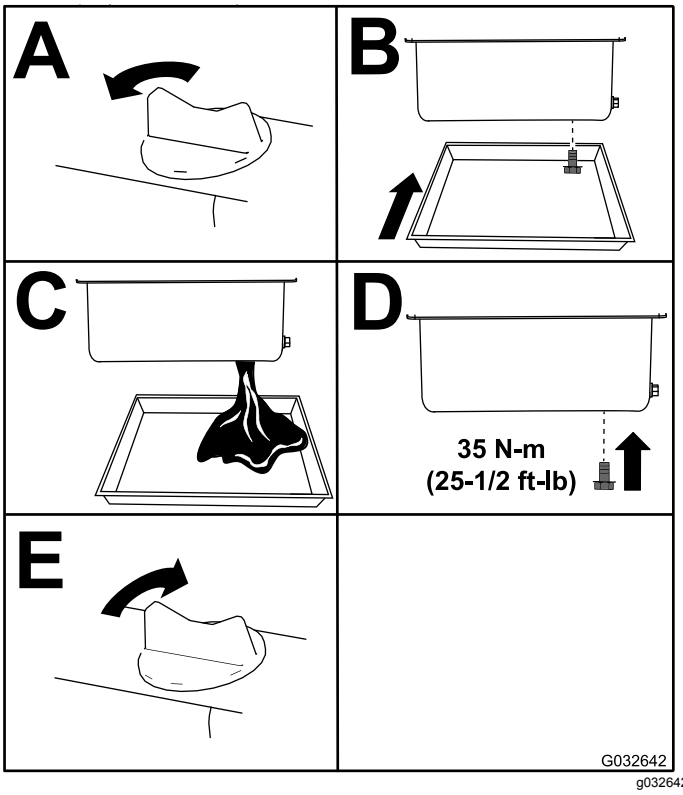


Figure 64

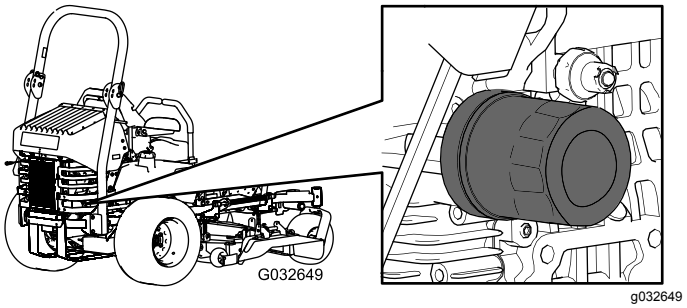
Note: Dispose of the used oil at a recycling center.

Changing the Engine-Oil Filter

Service Interval: After the first 50 hours

Every 200 hours

1. Drain the oil from the engine; refer to Draining the Engine Oil (page 48).
2. Change the engine-oil filter (Figure 65).



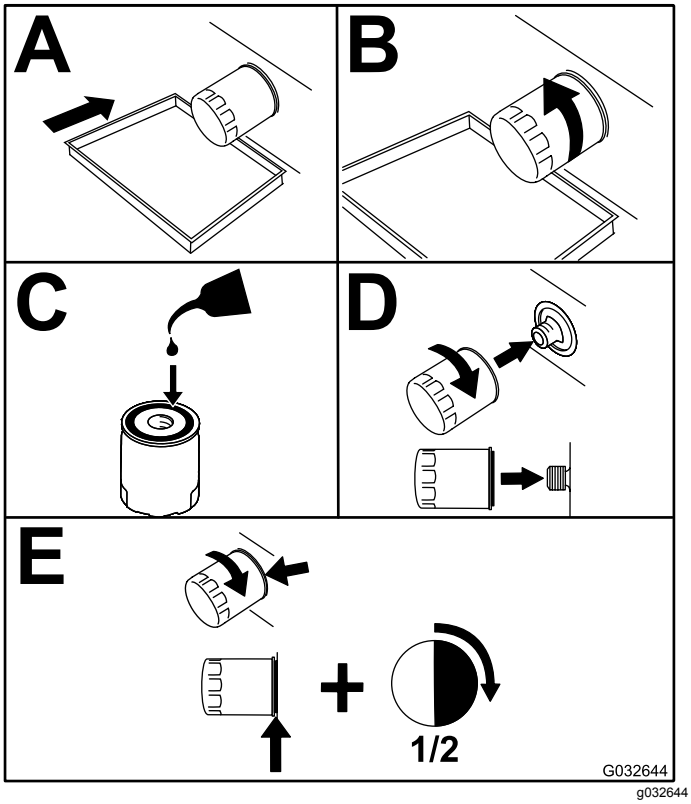


Figure 65

3. Add oil; refer to Changing the Engine Oil (page 50).

Changing the Engine Oil

Service Interval: After the first 50 hours

Every 100 hours

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

   Note: This warms the oil so it drains better.

2. Park the machine on a level surface.
3. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
4. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
5. Place a pan below the oil drain. Remove the drain plug and let the oil drain completely (Figure 66).
6. Remove the oil filler cap from the top of the engine (Figure 68).

   Note: This helps the oil to drain.

7. Install the drain plug and tighten it to 35 N·m (25-1/2 ft-lb).

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

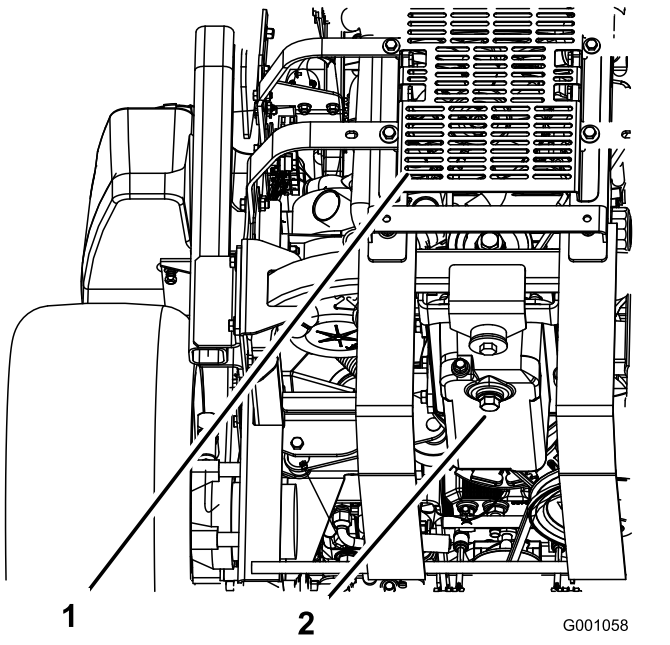


Figure 66

1. Back of the machine
2. Drain plug

Adding Engine Oil

1. Tilt the seat forward and remove the front engine panel (Figure 67).

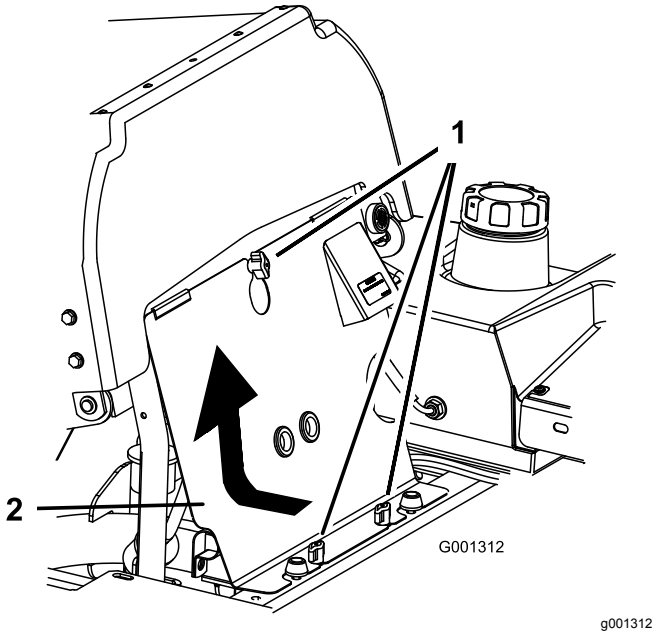


Figure 67

1. Knob
2. Front engine panel

2. Remove the oil-fill cap and dipstick (Figure 68).

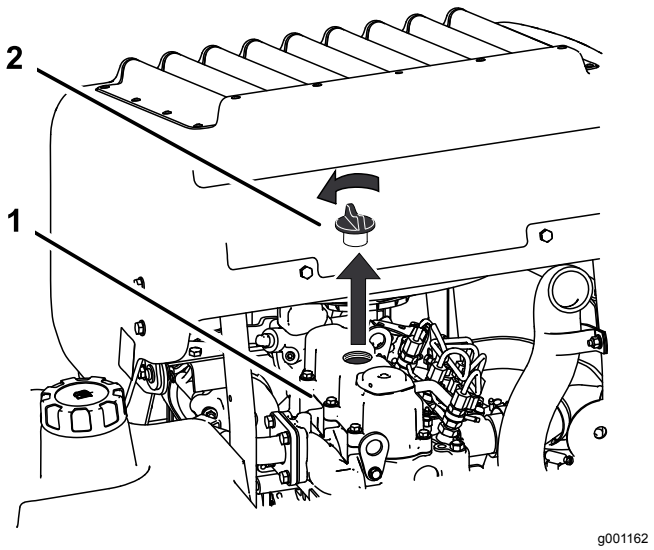


Figure 68

1. Engine
2. Oil-fill cap

3. Use a hose and funnel to add oil to the engine (Figure 69).
4. Add oil slowly, checking the level frequently with the dipstick until the level reaches the upper hole on the dipstick. For the correct oil type and viscosity to use in different temperature conditions, refer to Servicing the Engine Oil (page 47).

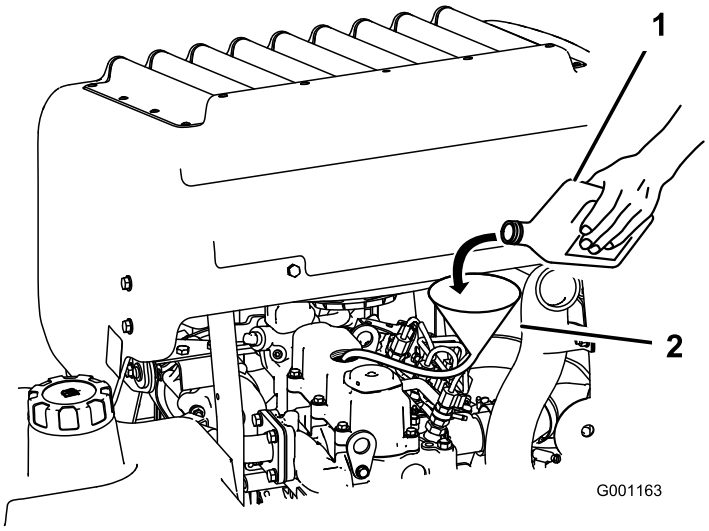


Figure 69

1. Engine oil
2. Funnel and hose

Important: **Add the oil very slowly and do not block the opening of the filler hole (Figure 70). If you add oil too fast or block the hole, the oil could back up and foul the air intakes, causing engine damage.**

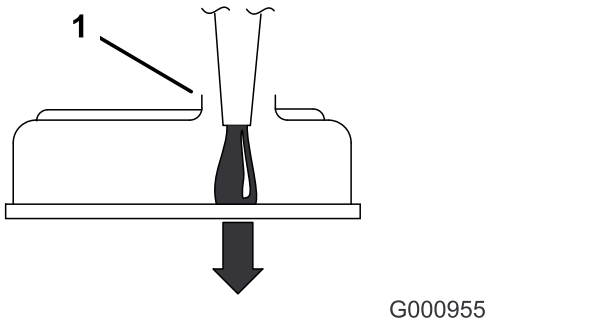


Figure 70

1. Note the clearance left in the filler opening.

5. Replace the dipstick and install the front engine panel.
6. Start the engine and run it at idle for 5 minutes.
7. Shut off the engine.
8. Wait 3 minutes and check the oil level.
9. Add oil, if required, to bring the level to the upper hole on the dipstick.
10. Replace the dipstick, filler cap, and the front engine panel.
11. Check for leaks.

Important: **Do not overfill the crankcase with oil because this may cause engine damage.**

Fuel System Maintenance

⚠ WARNING

Fuel-system components are under high pressure. The use of improper components can result in system failure, fuel leakage, and possible explosion.

Use only approved fuel lines and fuel filters.

Servicing the Fuel Filter and Water Seperator

Service Interval: Every 40 hours—Drain the water separator.

Every 400 hours/Yearly (whichever comes first)—Replace the fuel filter (more often in dirty or dusty conditions).

Draining the Water Separator

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Locate the water separator at the back left of the machine.
4. Place a drain pan below the water separator.
5. Open the drain valve on the water separator approximately 1 turn to allow water and other contaminates to drain (Figure 71).
6. Close the drain valve when only diesel fuel comes out (Figure 71).

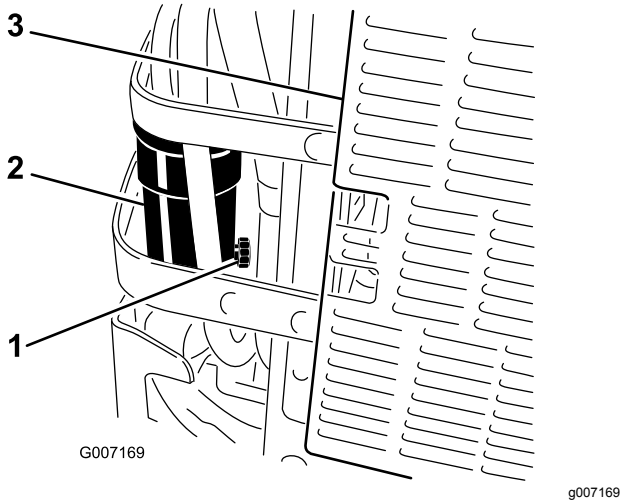


Figure 71

1. Drain valve
2. Water separator
3. Back of machine

Changing the Fuel Filter

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

1. Allow the machine to cool down.
2. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
3. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Close the fuel shut-off valve (Figure 72).
5. Loosen the 2 hose clamps and disconnect the fuel lines from the fuel filter (Figure 72).
6. Install a new filter. Connect the fuel lines to the fuel filter and install the 2 hose clamps (Figure 72).
7. Open the fuel shut-off valve.
8. Start the engine and check for leaks.

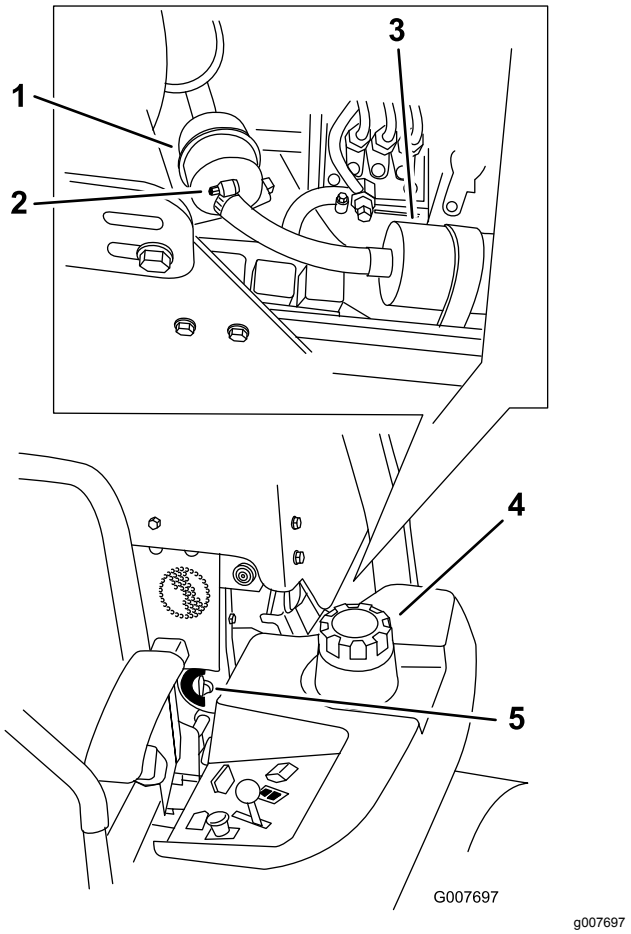


Figure 72

1. Fuel filter
2. Hose clamp
3. Fuel pump
4. Left side of machine
5. Fuel-shutoff valve

Servicing the Fuel Tank

Do not attempt to drain the fuel tank. Ensure that an Authorized Service Dealer drains the fuel tank and services any components of the fuel system.

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.

Servicing the Battery

Removing 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.

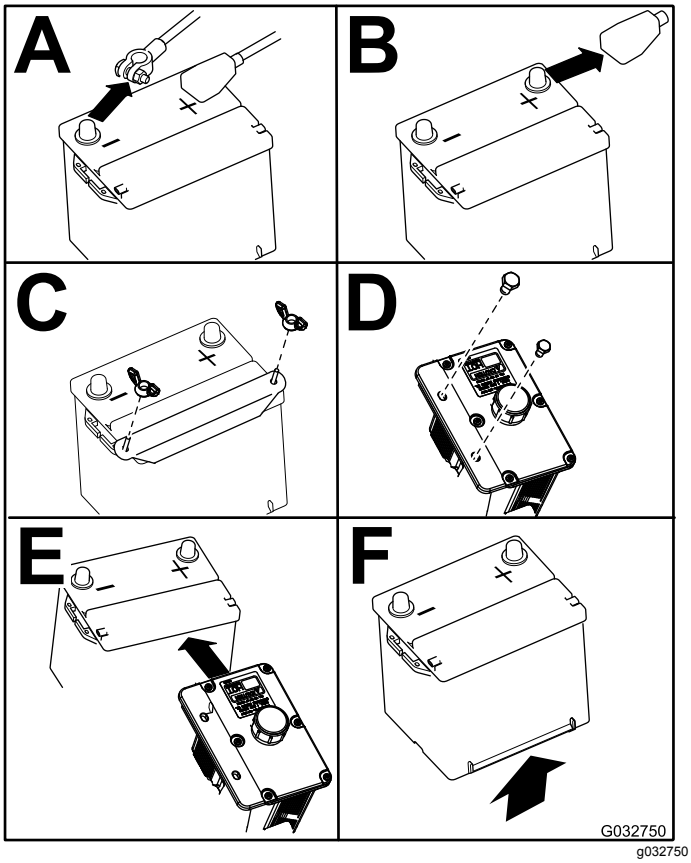
- **When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the machine.**
- **Do not allow metal tools to short between the battery terminals and metal parts of the machine.**

⚠ WARNING

Incorrectly removing the cables from battery 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.**
- **Always connect the positive (red) battery cable before connecting the negative (black) cable.**

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Unlatch the seat and tilt the seat up.
4. Remove the battery as shown in Figure 73.

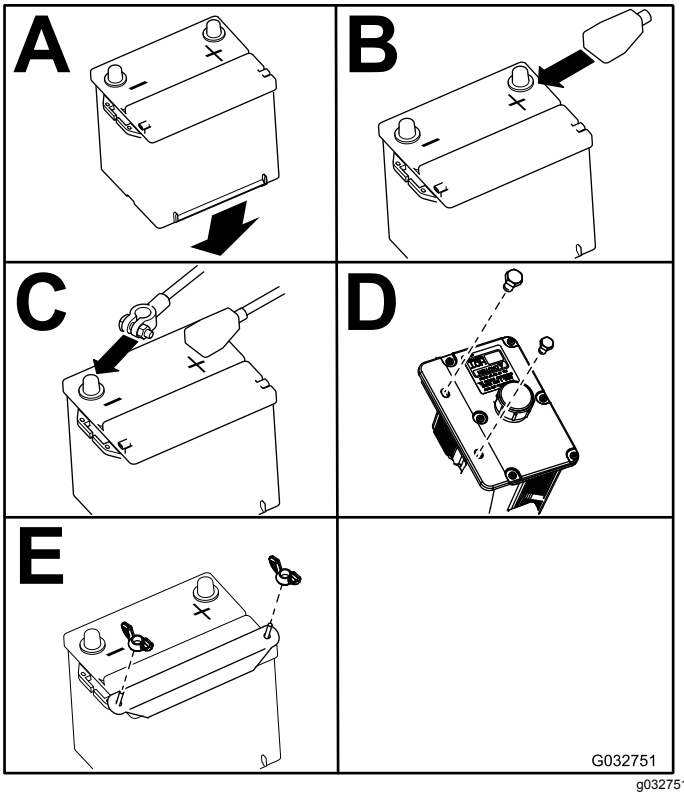


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Figure 73

Installing the Battery

Note: Position the battery in the tray with the terminal posts opposite from the hydraulic tank.



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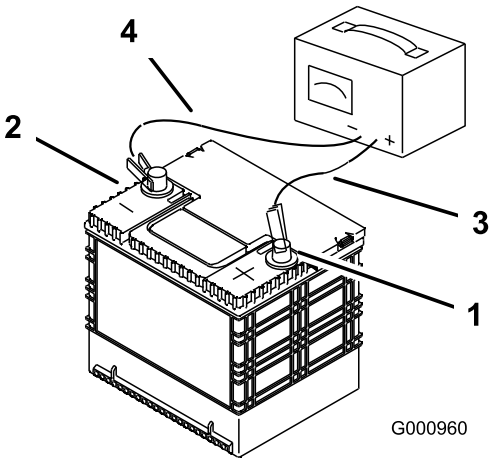
Figure 74

Charging the Battery

Important: **Always keep the battery fully charged (1.265 specific gravity). This is especially important to prevent battery damage when the temperature is below 0°C (32°F).**

1. Make sure that the filler caps are installed in battery. Charge battery for 10 to 15 minutes at 25 to 30 A or 30 minutes at 10 A.
2. When the battery is fully charged, unplug the charger from the electrical outlet, then disconnect the charger leads from the battery posts (Figure 75).
3. Install the battery in the machine and connect the battery cables, refer to Installing the Battery (page 54).

   Note: Do not run the machine with the battery disconnected, electrical damage may occur.



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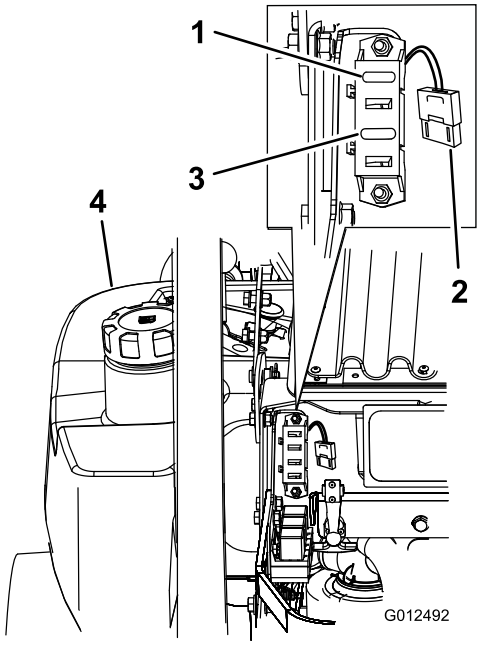
Figure 75

1. Positive battery post
2. Negative battery post
3. Red (+) charger lead
4. Black (-) charger lead

Servicing the Fuses

The electrical system is protected by fuses. It requires no maintenance, however, if a fuse blows check component/circuit for malfunction or short.

1. Unlatch the engine hood and raise the engine hood to gain access to fuse holder (Figure 76).
2. To replace the fuses, pull out on the fuse to remove it.
3. Install a new fuse (Figure 76).



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Figure 76

1. Ignition—30 A (F1)
2. Radiator fan—50 A (large, heavy duty fuse)
3. Clutch—10 A (F3)
4. Left fuel tank

Drive System Maintenance

Adjusting the Tracking

The machine has a knob for adjusting the tracking located under the seat.

Important: **Adjust the handle neutral and hydraulic pump neutral before adjusting the tracking; refer to Adjusting the Control Handle Neutral Position (page 65) and Setting the Hydraulic Pump Neutral Position (page 69).**

1. Push both control levers forward the same distance.
2. Check if the machine pulls to 1 side. If it does, shut off the machine and engage the parking brake.
3. Unlatch the seat and tilt the seat forward to access the tracking knob.

   Note: Determine the left and right sides of the machine from the normal operating position.
4. To make the machine go right, turn the knob toward the right of the machine; refer to Figure 77.
5. To make the machine go left, turn the knob toward the left of the machine; refer to Figure 77.
6. Repeat adjustment until the tracking is correct.

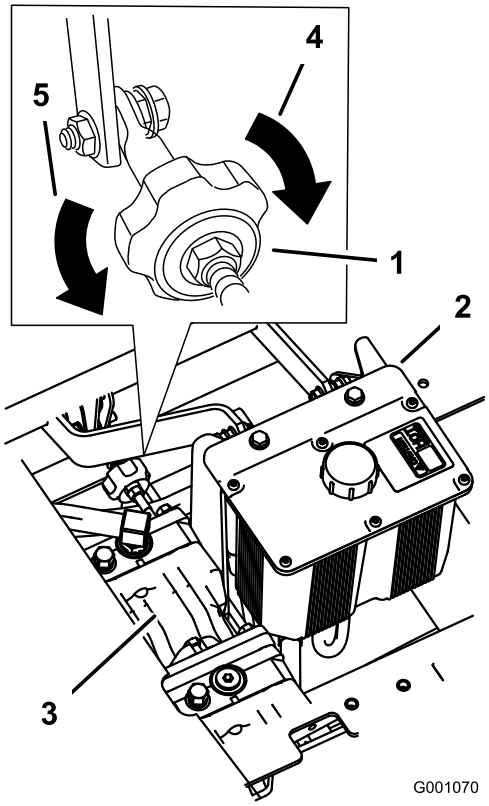


Figure 77

1. Tracking knob
2. Hydraulic tank
3. Hydraulic pumps
4. Turn this way to track right.
5. Turn this way to track left.

Checking the Tire Pressure

Service Interval: Every 50 hours/Monthly (whichever comes first)

Maintain the air pressure in the rear tires at 90 kPa (13 psi). Uneven tire pressure can cause uneven cut. Check the tires when they are cold to get the most accurate pressure reading.

Note: The front tires are semi-pneumatic tires and do not require air pressure maintenance.

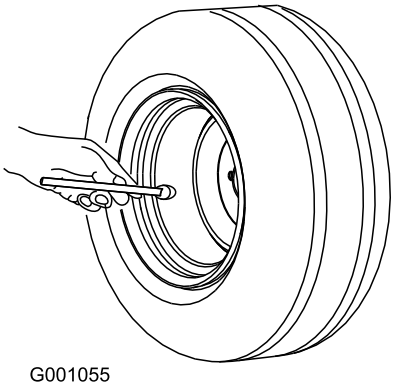


Figure 78

Checking the Wheel-Hub Slotted Nut

Service Interval: After the first 100 hours—Check the wheel-hub slotted nut.

Every 500 hours—Check the wheel-hub slotted nut.

Torque the slottled nut to 286 to 352 N·m (211 to 260 ft-lb).

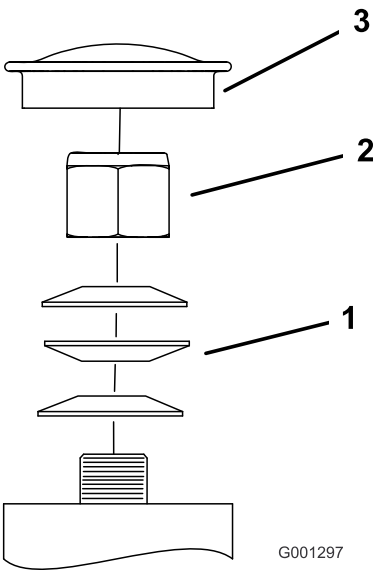
Note: Do not use anti-seize compound on the wheel hub.

Adjusting the Caster-Pivot Bearing

Service Interval: Every 500 hours/Yearly (whichever comes first)

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the dust cap from caster and tighten the locknut (Figure 79).
4. Tighten the locknut until the spring washers are flat, and then back off a 1/4 turn to properly set the preload on the bearings (Figure 79).

   Important: **Make sure that the spring washers are installed correctly as shown in Figure 79.**
5. Install the dust cap (Figure 79).



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Figure 79

1. Spring washers
2. Locknut
3. Dust cap

Servicing the Gearbox

Checking the Gearbox-Oil Level

Service Interval: Every 100 hours

Use SAE 75W-90 synthetic gear lube.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the side or rear plug on the gearbox (Figure 80).
4. The oil should be up to the opening of the gearbox.
5. Add oil if needed to bring it to the correct level.

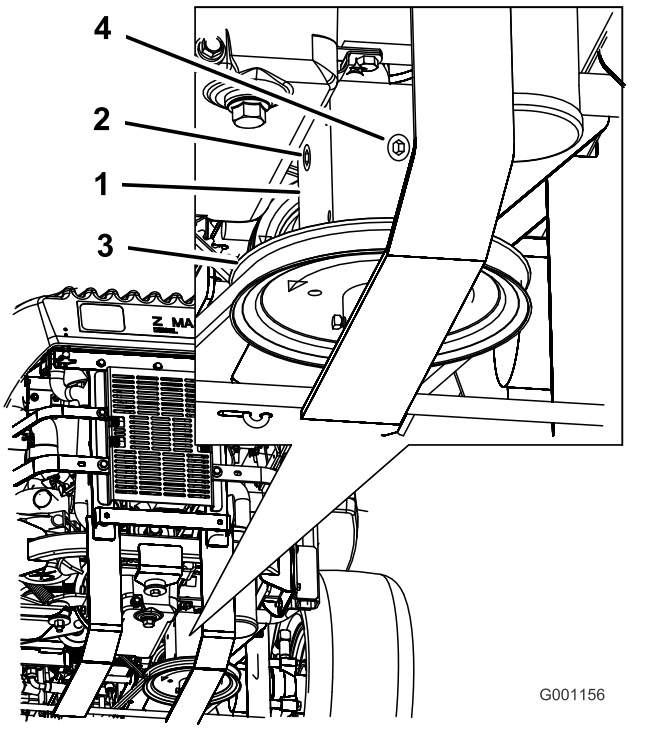


Figure 80

1. Gearbox
2. Side plug
3. Pulley
4. Rear plug

Changing the Gearbox Oil

Service Interval: After the first 100 hours

Yearly

Contact an Authorized Service Dealer to change the gearbox oil.

Adjusting the Electric Clutch

Service Interval: Every 500 hours

The clutch is adjustable to ensure proper engagement and proper braking.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Unlatch the seat and tip it forward.
4. Loosen the front engine panel knobs and remove the panel.
5. Pull up on the spring-loaded idler pulley for the PTO-drive belt and remove the belt from the clutch pulley (Figure 81).

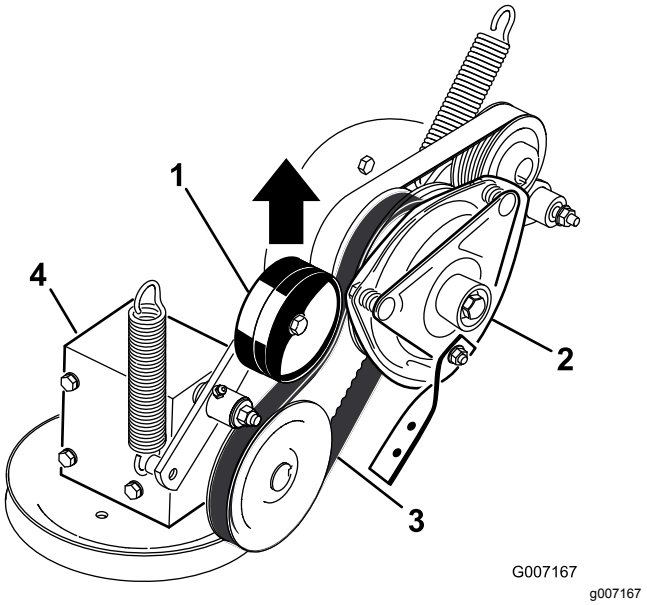


Figure 81

1. Spring-loaded idler pulley
2. Clutch
3. PTO-drive belt
4. Gearbox

6. Unplug the electric connection for the clutch (Figure 82).
7. Remove the 2 bolts holding the rubber clutch strap to the mower frame (Figure 82).
8. Remove the center bolt holding the clutch to the engine shaft and remove the clutch and key (Figure 82).

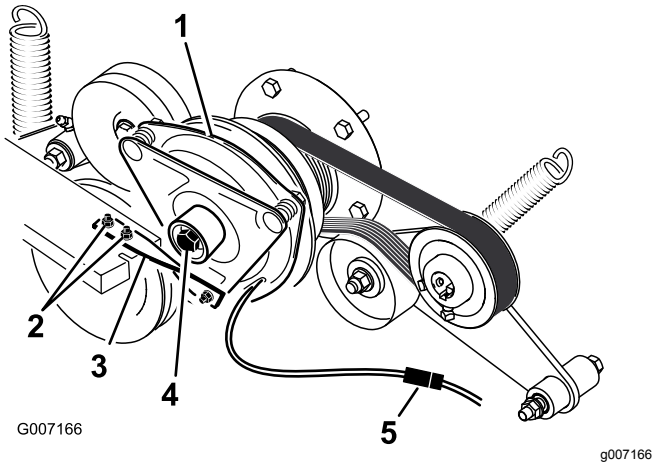


Figure 82

1. Clutch
2. 2 bolts and nuts for clutch strap
3. Rubber clutch strap
4. Clutch center bolt
5. Electrical connection

9. Insert a 0.381 to 0.533 mm (0.015 to 0.021 inch) feeler gauge through an inspection slot in the side of the assembly (Figure 83).

   Note: Make sure that it is between the armature and the rotor friction surfaces.

10. Tighten the locknuts until there is slight binding on the feeler gauge but it can be moved easily within the air gap (Figure 83).
11. Repeat this for the remaining slots.
12. Check each slot again and make slight adjustments until the feeler gauge between the rotor and armature has very slight contact between them.

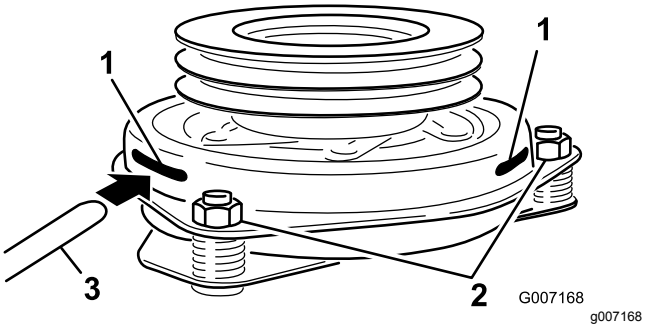


Figure 83

1. Slot
2. Adjusting nut
3. Feeler gauge

13. Install the clutch to the engine shaft with the key.
14. Apply thread-locking adhesive to the center bolt.
15. While holding the crank shaft at the back of the machine, install the center bolt and torque it to 68 N·m (50 ft-lb) (Figure 82).
16. Install the rubber clutch strap to the mower frame with the 2 previously removed bolts and nuts (Figure 82).
17. Pull up on the spring-loaded idler for the PTO-drive belt and install it onto the clutch pulley (Figure 81).
18. Plug in the electric connection for the clutch (Figure 82).
19. Install the front engine panel and tighten the knobs.
20. Lower down the seat.

Cooling System Maintenance

Servicing the Cooling System

⚠ DANGER

Discharge of hot pressurized coolant or touching hot radiator and surrounding parts can cause severe burns.

- **Do not remove the radiator cap when the engine is hot. Always allow the engine to cool at least 15 minutes or until the radiator cap is cool enough to touch without burning your hand before removing the radiator cap.**
- **Do not touch the radiator and surrounding parts that are hot.**

⚠ DANGER

The rotating shaft and fan can cause personal injury.

- **Do not operate the machine without the covers in place.**
- **Keep your fingers, hands, and clothing clear of rotating fan and driveshaft.**
- **Shut off the engine and remove the ignition key before performing maintenance.**

⚠ CAUTION

Swallowing engine coolant can cause poisoning.

- **Do not swallow engine coolant.**
- **Keep out of reach from children and pets.**

Checking the Radiator Coolant

Service Interval: Before each use or daily

After the first 8 hours

Every 100 hours

Fluid Type: 50/50 mix of extended life antifreeze/Dex-Cool® and water

Cooling System Capacity: 4.6 L (156 fl oz)

Note: Do not open the radiator cap. Doing this may induce air into the cooling system.

1. Position the machine on a level surface, shut off the engine, and engage the parking brake.
2. Unlatch the seat and tilt the seat up.
3. With the engine cool, check the overflow bottle level. The fluid needs to be up to the bump on the outside of the overflow bottle (Figure 84).
4. If the coolant level is low, add a 50/50 mix of extended life antifreeze/Dex-Cool® and water to the overflow bottle (Figure 84).
5. Add the 50/50 coolant mix to the overflow bottle and fill it to the indicator line on the bottle (Figure 84).

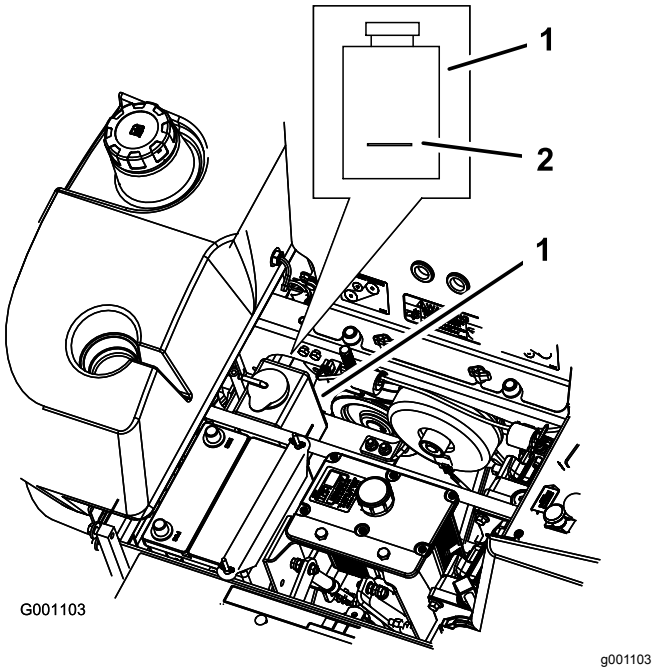


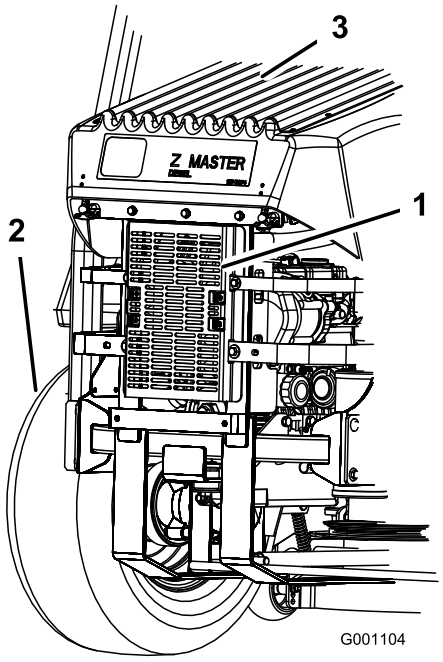
Figure 84

1. Antifreeze overflow bottle
2. Indicator line on side of overflow bottle

Cleaning the Hydraulic-Fluid Cooler and Radiator Screen

Service Interval: Before each use or daily

Before each use, check and clean the radiator screen and oil cooler. Remove any buildup of grass, dirt or other debris from the oil cooler and radiator screen with compressed air (Figure 85).



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Figure 85

1. Hydraulic-fluid cooler
2. Left rear tire
3. Radiator screen

Changing the Engine Coolant

Service Interval: Yearly

Contact an Authorized Service Dealer for changing the coolant.

Brake Maintenance

Adjusting the Parking Brake

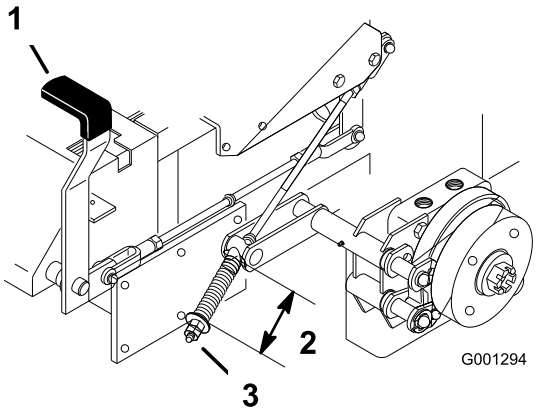
Service Interval: Every 25 hours

Every 200 hours

1. Engage the parking brake.
2. Measure the length of the spring (Figure 86).

   Note: The measurement should be 64 mm (2-1/2 inches) between the washers.
3. If adjustment is necessary, disengage the parking brake, loosen the jam nut below the spring and adjust the nut directly below the spring (Figure 86).
4. Turn the nut until the correct measurement is obtained.

   Note: Turn the nut clockwise to shorten spring length and turn counter-clockwise to lengthen the spring.
5. Tighten the 2 nuts together.
6. Engage the parking brake and check the measurement of the spring again.
7. If an adjustment is necessary, repeat the procedures above.
8. Repeat on the opposite side of machine.



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Figure 86

1. Brake lever in engaged position
2. Spring—64 mm (2-1/2 inches)
3. Adjusting nut and jam nut

Belt Maintenance

Inspecting the Belts

Service Interval: Every 100 hours

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

Replacing the Mower Belt

Side Discharge Machines

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

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Loosen the bottom bolt holding the mower-deck curtain to the mower deck; refer to Releasing the Mower-Deck Curtain (page 42).
4. Remove the sheet-metal guard; refer to Removing the Sheet-Metal Guard (page 42).
5. Remove the belt covers (Figure 87).

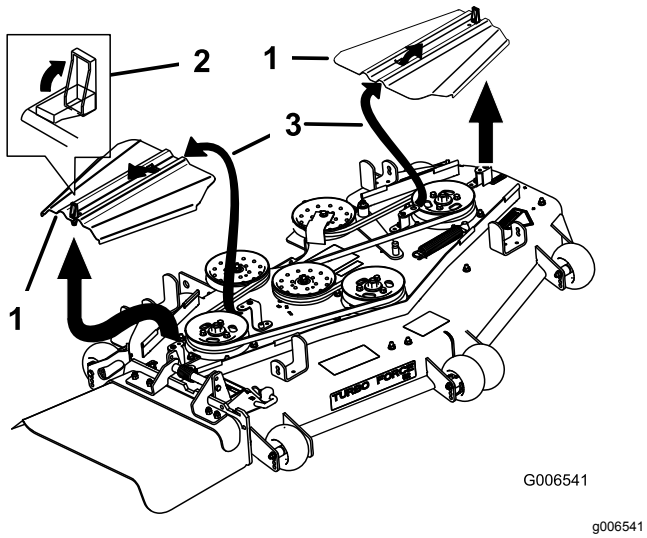


Figure 87

1. Belt cover
2. Latch
3. Insert slot into the tab

6. Remove the idler spring.
7. Remove the belt guide on the spring-loaded idler pulley shown in Figure 88.
8. Remove the existing belt.
9. Install the new belt around the mower pulleys and the gearbox pulley under the engine (Figure 88).

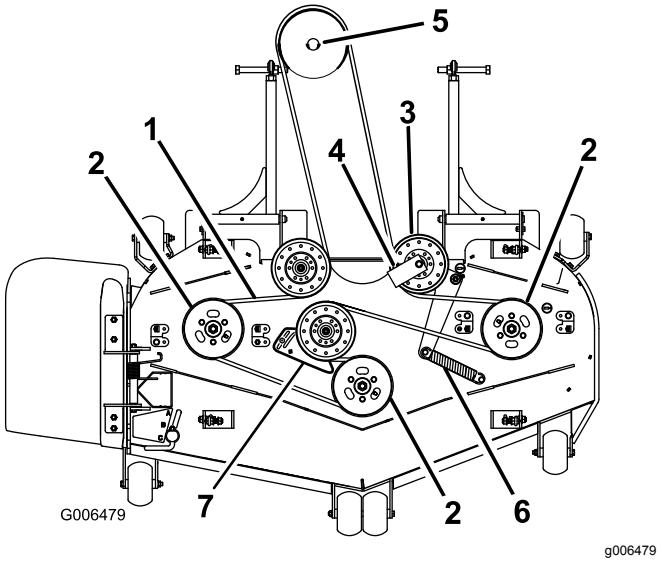


Figure 88

1. Mower belt
2. Mower spindle pulley
3. Spring-loaded idler pulley
4. Belt guide at a 45 degree angle
5. Gearbox pulley
6. Idler spring
7. Idler plate (for 72-inch mowers only)

10. Install the belt guide on the spring-loaded idler at a 45 degree angle as shown in Figure 88. Torque the bolt to 37 to 45 N·m (27 to 33 ft-lb).
11. Install the idler spring to the 2 posts (Figure 88).
12. Install the belt covers by sliding the cover into the tab, install the bolts, and close the latches (Figure 89).

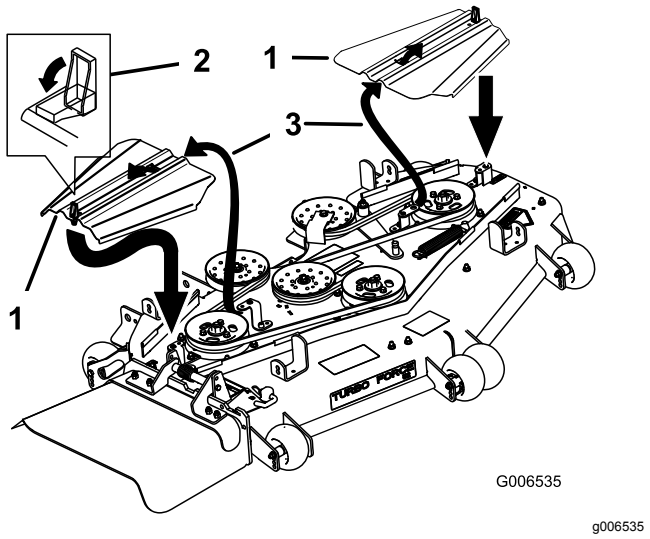


Figure 89

1. Belt cover
2. Latch
3. Insert slot into the tab

13. Install the sheet-metal guard.
14. Tighten the bottom bolt holding the mower-deck curtain to the mower deck.

Replacing the Mower Belt

Rear Discharge Machines

Important: **The fasteners on the covers of this machine are designed to remain on the cover after removal. Loosen all of the fasteners on each cover a few turns so that the cover is loose but still attached, then go back and loosen them until the cover comes free. This prevents you from accidentally stripping the bolts free of the retainers.**

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

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Loosen the bottom bolt holding the mower-deck curtain to the mower deck; refer to Releasing the Mower-Deck Curtain (page 42).
4. Remove the sheet metal guard; refer to Removing the Sheet-Metal Guard (page 42)
5. Remove the belt covers and the bolts attached to them.
6. Loosen the fixed idler arm and adjust it to relieve belt tension (Figure 90).
7. Remove the old belt.
8. Install the new belt on the pulleys.
9. Insert a ratchet with a short extension or a breaker bar into the square hole in the fixed idler arm (Figure 90).
10. Adjust the mower deck to the 76 mm (3 inch) height-of-cut position.
11. To increase the belt tension, rotate the ratchet or breaker bar counterclockwise to move the fixed idler arm until there is 16.5 cm (6-1/2 inches) between the spring hooks (Figure 90).

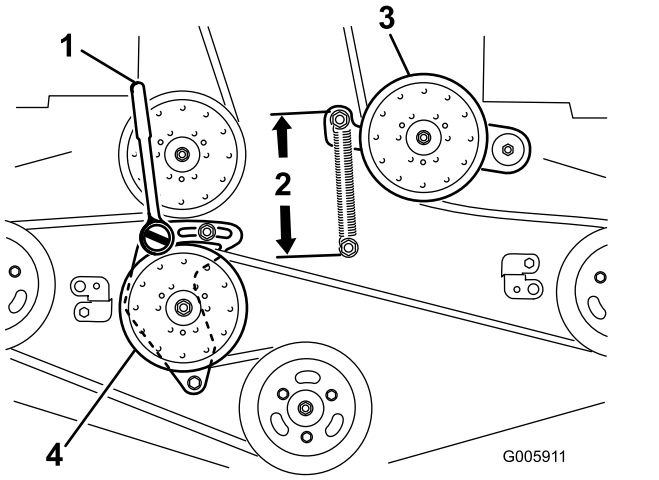


Figure 90

1. Ratchet with short extension or breaker bar
2. 16.5 cm (6-1/2 inches) between the spring hooks
3. Spring-loaded idler pulley
4. Fixed Idler pulley

12. While holding the belt in tension, tighten the 2 bolts that secure the fixed idler arm.
13. Remove the ratchet or breaker bar from the square hole in the fixed idler arm.
14. Install the belt covers with the tabs in the slots. Install the screws and close the latches (Figure 91).

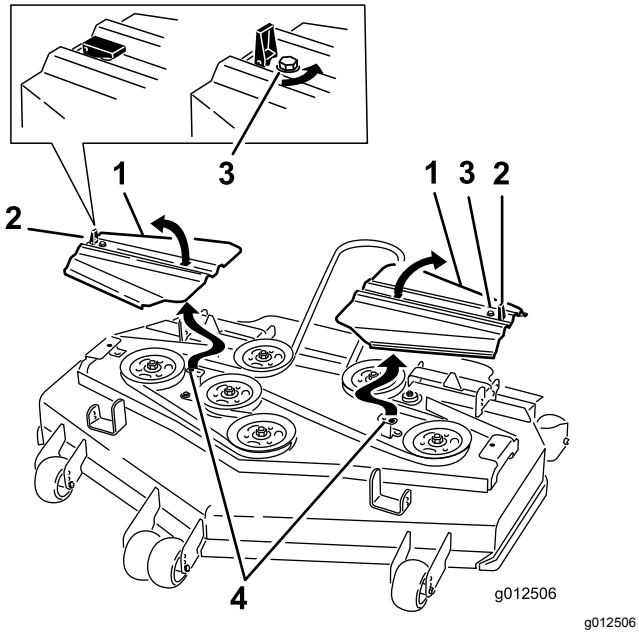


Figure 91

1. Belt cover
2. Latch
3. Bolt
4. Install tab into the slot

15. Install the sheet-metal guard; refer to Removing the Sheet-Metal Guard (page 42).
16. Tighten the bolt for the mower-deck curtain; refer to Releasing the Mower-Deck Curtain (page 42).
17. Check the tension on the drive belts.

Replacing the PTO-Drive Belt

Service Interval: Every 50 hours—Check the PTO-drive belt.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Loosen the front engine panel knobs and remove the panel (Figure 92).

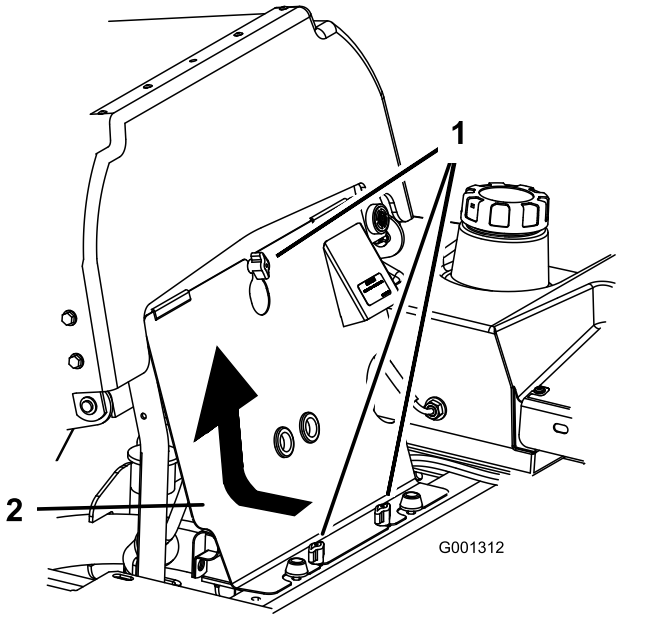


Figure 92

1. Knob
2. Front engine panel

4. Remove the spring from the idler arm (Figure 93).
5. Remove the clutch stop bracket.
6. Remove the old PTO-drive belt.
7. Install the PTO-drive belt around the clutch pulley and the gearbox pulley (Figure 93).
8. Intall the rubber clutch stop.
9. Install the spring to the idler arm (Figure 93).

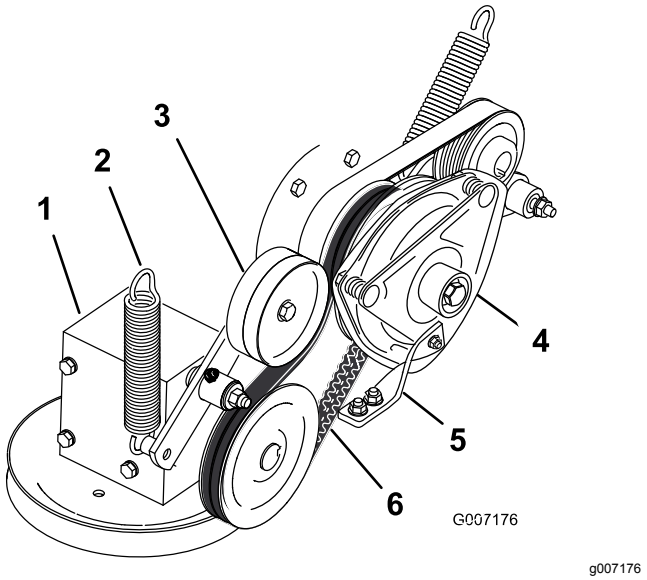


Figure 93

1. Gearbox
2. Spring
3. Spring-loaded idler pulley
4. Clutch
5. Rubber clutch stop
6. PTO-drive belt

Replacing the Pump Drive Belt

Service Interval: Every 50 hours—Check the pump drive belt.

Note: Remove the PTO-drive belt first if the pump drive belt needs to be replaced.

1. Tilt the seat forward and remove the front engine panel.
2. Remove the PTO-drive belt.
3. Remove the spring from the idler arm (Figure 94).
4. Install the new belt around the engine and hydraulic pump pulley (Figure 94).
5. Install the PTO-drive belt.
6. Install the spring to the idler arm (Figure 94).

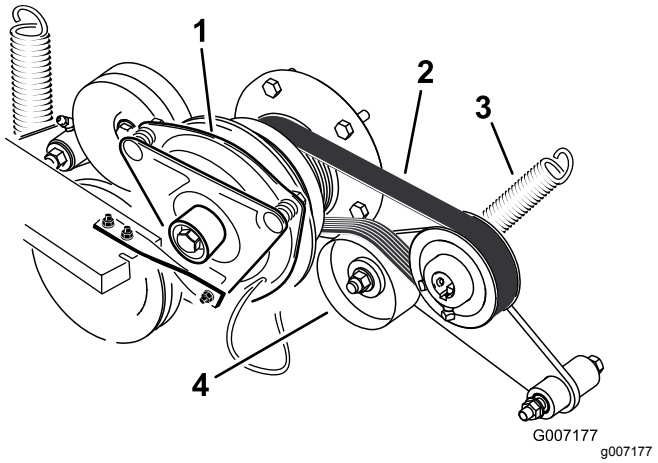


Figure 94

1. Clutch
2. Pump drive belt
3. Spring
4. Spring-loaded idler pulley

Replacing and Tensioning the Alternator Belt

Replacing the Alternator Belt

Service Interval: Every 50 hours—Check the alternator belt.

If the alternator belt needs to be replace, take your machine to an Authorized Service Dealer.

Tensioning the Alternator Belt

1. Place a handle between the alternator and cylinder block.
2. Adjust the alternator to the outside until there is 7 to 9 mm (1/4 to 11/32 inch) deflection in the belt between the engine and the alternator pulleys with 10 kgf (22.1 lb of force) (Figure 95).
3. Tighten the alternator bolts.
4. Check the deflection in the belt again and adjust the belt if needed.
5. If the deflection is correct, tighten the bottom and upper bolt (Figure 95).

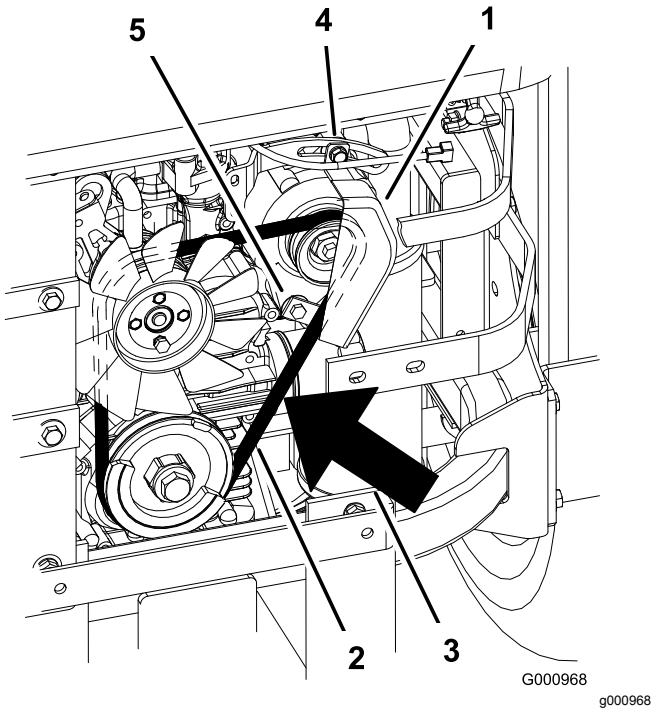


Figure 95

1. Alternator
2. Alternator belt
3. Deflection, 7 to 9 mm (1/4 to 11/32 inch) with 10 kgf (22.1 lb of force)
4. Top bolt
5. Bottom bolt

Controls System Maintenance

Adjusting the Control Handle Neutral Position

If the motion-control levers do not align, or move easily into the console notch, adjustment is required. Adjust each lever, spring and rod separately.

Note: The motion-control levers must be installed correctly.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Unlatch the seat and tilt the seat forward.
4. Begin with either the left or right motion-control lever.
5. Move the lever to the neutral position but not locked (Figure 96).
6. Pull the lever back until the clevis pin (on arm below pivot shaft) contacts the end of the slot (just beginning to put pressure on the spring) as shown in Figure 96.
7. Check where the control lever is relative to notch in console (Figure 96).

   Note: It should be centered, allowing lever to pivot outward to the NEUTRAL-LOCK position.

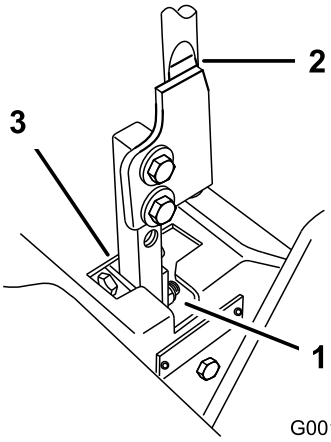


Figure 96

1. NEUTRAL-LOCK position
2. Control lever
3. NEUTRAL position

8. If adjustment is needed, loosen the nut and jam nut against the yoke (Figure 97).

9. Apply slight rearward pressure on the motion-control lever, turn the head of the adjustment bolt in the appropriate direction until the control lever is centered in the NEUTRAL-LOCK position (Figure 97).

   Note: Keeping rearward pressure on the lever keeps the pin at the end of the slot and allow the adjustment bolt to move the lever to the appropriate position.

10. Tighten the nut and jam nut (Figure 97).
11. Repeat for the opposite side of the machine.

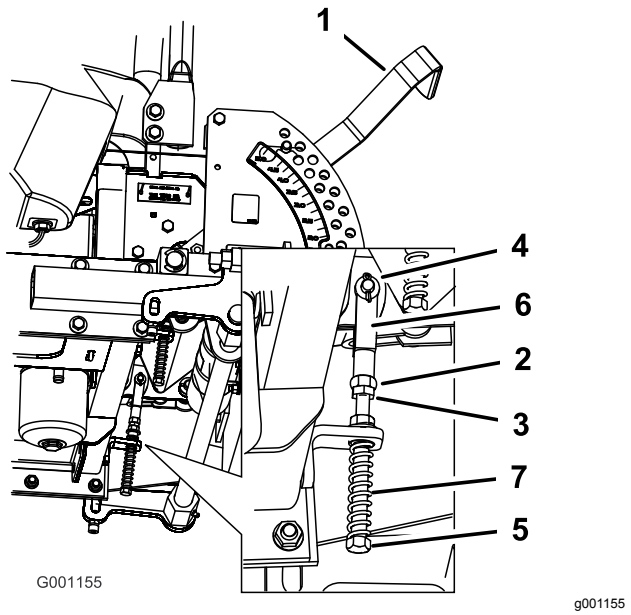


Figure 97

1. Height-of-cut lever
2. Nut against yoke
3. Jam nut
4. Clevis pin in slot
5. Adjustment bolt
6. Yoke
7. Spring

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 System

Hydraulic-Fluid Specifications

Hydraulic-Fluid Type: Toro® HYPR-OIL™ 500 hydraulic fluid or Mobil® 1 15W-50 fluid

Important: **Use the specified fluid. Other fluids could cause system damage.**

Hydraulic-System Fluid Capacity: 3.9 L (132 oz)

Checking the Hydraulic-Fluid Level

Service Interval: After the first 8 hours

Every 25 hours

Note: You can check the hydraulic fluid when the fluid is warm or it is cold. The baffle inside the tank has 2 levels depending if the fluid is warm or cold.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the area around the filler neck of the hydraulic tank (Figure 98).
4. Remove the cap from the filler neck and look inside to check if there is fluid in the reservoir (Figure 98).

5. If there is no fluid, add fluid to the reservoir until it reaches the cold level of the baffle.
6. Run the machine at low idle for 15 minutes to allow any air to purge out of the system and warm the fluid; refer to Starting and Shutting Off the Engine (page 26).

   Note: Check the fluid level while the fluid is warm. The fluid should be between cold and hot.
7. If required, add fluid to the hydraulic tank.

   Note: The fluid level should be to the top of the hot level of the baffle, when the fluid is hot (Figure 98).
8. Install cap on filler neck.

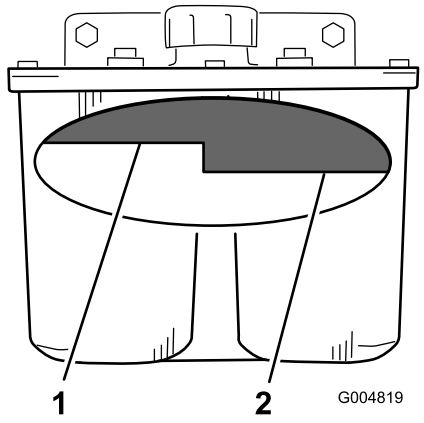


Figure 98

1. Hot fluid level-full
2. Cold fluid level-full

Replacing the Hydraulic Filter and Fluid

Service Interval: After the first 25 hours

Every 250 hours—Change the hydraulic filter and hydraulic fluid when using Mobil® 1 fluid.

Every 500 hours—Change the hydraulic filter and hydraulic fluid when using Toro® HYPR-OIL™ 500 hydraulic fluid.

Use summer filter above 0°C (32°F)

Use winter filter below 0°C (32°F)

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

   Important: **Do not substitute automotive oil filter or severe hydraulic system damage may result.**
3. Place drain pan under filter, remove the old filter and wipe the filter adapter gasket surface clean (Figure 99).

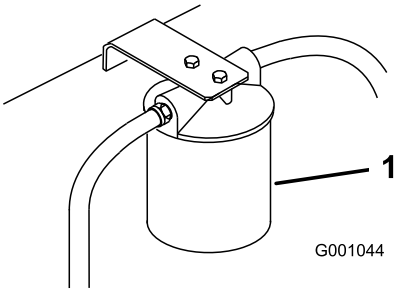


Figure 99

1. Hydraulic filter

4. Remove the right hydraulic line that comes into the adapter (Figure 100).
5. Allow the fluid to drain out of the system into the drain pan.
6. Install the right hydraulic line to the adapter (Figure 100).

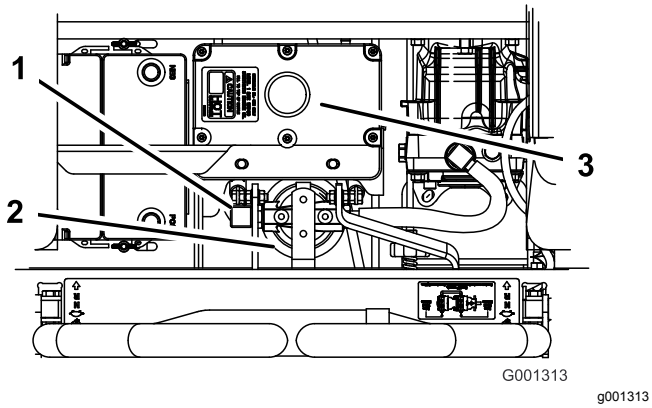


Figure 100

1. Right hydraulic line
2. Hydraulic filter
3. Hydraulic tank

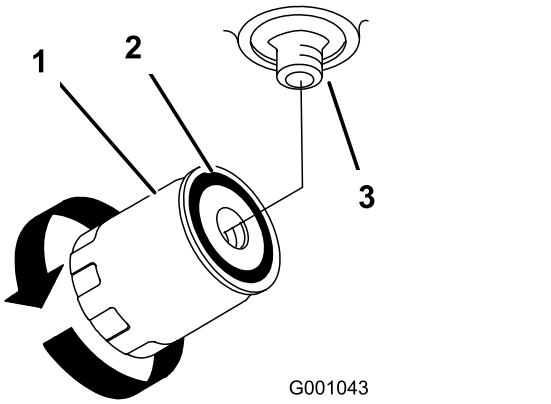


Figure 101

1. Hydraulic filter
2. Gasket
3. Adapter

7. Apply a thin coat to the rubber gasket on the replacement filter (Figure 101).
8. Install the replacement hydraulic filter onto the filter adapter.

   Note: Do not tighten.
9. Fill the hydraulic tank with hydraulic fluid until the fluid overflows the filter and then turn the fluid filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn (Figure 101).
10. Clean up any spilled fluid.
11. Add fluid to the cold level of the baffle in the hydraulic tank.
12. Start the engine and let it run for about 2 minutes to purge air from the system.
13. Shut off the engine and check for leaks.

    Note: If 1 or both wheels do not drive, refer to Bleeding the Hydraulic System (page 68).
14. Check the fluid level while the fluid is warm.

    Note: The fluid should be between cold and hot.
15. If required, add fluid to the hydraulic tank.

    Note: Do not overfill.

Bleeding the Hydraulic System

The traction system is self-bleeding; however, it may be necessary to bleed the system if fluid is changed or after work is performed on the system.

1. Raise the rear of the machine so that the wheels are off the ground and support with jack stands.
2. Start the engine and run at low idle speed and engage the lever and traction on 1 side and spin the wheel by hand.
3. When the wheel begins to spin on its own, keep it engaged until the wheel drives smoothly (minimum 2 minutes).
4. Check the hydraulic-fluid level and add as required to maintain proper level.
5. Repeat this procedure on the opposite wheel.

Checking the Hydraulic Hoses

Service Interval: Every 100 hours

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

Note: Keep areas around the hydraulic system clean from grass and debris buildup.

⚠ WARNING

Hydraulic fluid escaping under pressure can penetrate skin and cause injury.

- **If hydraulic fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this type of injury. Gangrene may result if this is not done.**
- **Keep body and hands away from pin hole 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.**
- **Make sure that all hydraulic-fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to hydraulic system.**

Setting the Hydraulic Pump Neutral Position

Note: Adjust the handle neutral first. That needs to be correct before the following adjustment can be made.

This adjustment must be made with drive wheels turning.

⚠ DANGER

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

- **Use a jack stand when supporting the machine.**
- **Do not use hydraulic jacks.**

⚠ WARNING

The engine must be running so that you can adjust the motion control. Any contact with moving parts or hot surfaces may cause personal injury.

Keep your hands, feet, face, clothing and other body parts away from rotating parts, muffler and other hot surfaces.

1. Raise the frame and block up the machine so that the drive wheels can rotate freely.
2. Disconnect the electrical connector from the seat safety switch. Temporarily install a jumper wire across terminals in the wire-harness connector.
3. Unlatch the seat and slide seat forward.
4. Disconnect the seat rod and tilt the seat fully forward.

Setting the Right Hydraulic Pump Neutral Position

1. Start the engine, open the throttle 1/2 way and disengage parking brake; refer to Starting and Shutting Off the Engine (page 26).

   Note: The motion-control lever must be in neutral while making any adjustments.
2. Adjust the pump rod length by rotating the knob, in the appropriate direction, until the wheel is still or slightly creeping in reverse (Figure 102).
3. Move the motion-control lever forward and reverse, then back to neutral.

   Note: The wheel must stop turning or slightly creep in reverse.

4. Open the throttle to FAST.

   Note: Make sure that the wheel remains stopped or slightly creeps in reverse; adjust if necessary.

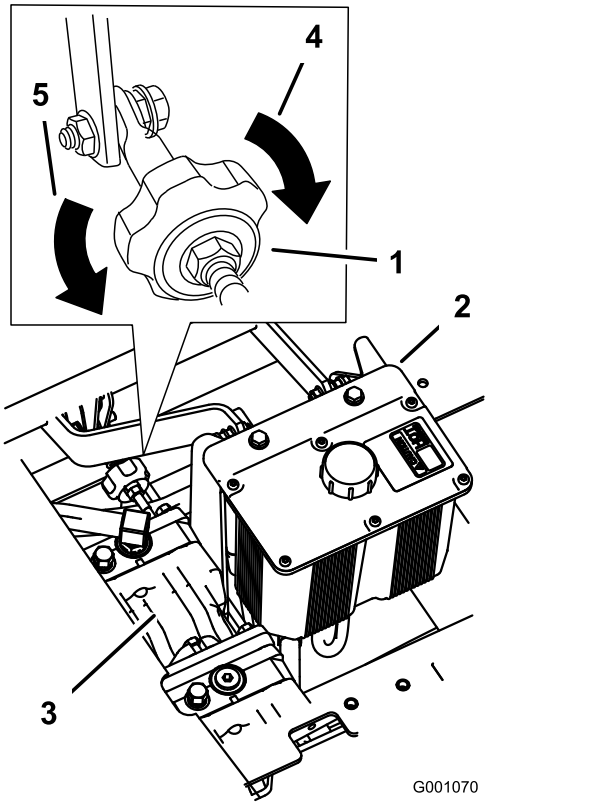


Figure 102

1. Tracking knob
2. Hydraulic tank
3. Hydraulic pumps
4. Turn this way to track right
5. Turn this way to track left

Setting the Left Hydraulic Pump Neutral Position

1. Loosen the locknuts at the ball joints on the pump control rod (Figure 103).
2. Start the engine, open the throttle 1/2 way and disengage parking brake; refer to Starting and Shutting Off the Engine (page 26).

   Note: The motion-control lever must be in neutral while making any adjustments.

   Note: The front nut on the pump rod has left-hand threads.
3. Adjust the pump rod length by rotating double nuts on rod, in the appropriate direction, until wheel is still or slightly creeps in reverse (Figure 103).
4. Move the motion-control lever forward and reverse, then back to neutral. The wheel must stop turning or slightly creep in reverse.
5. Open the throttle to fast. Make sure that the wheel remains stopped or slightly creeps in reverse, adjust if necessary.
6. Tighten the locknuts at the ball joints (Figure 103).

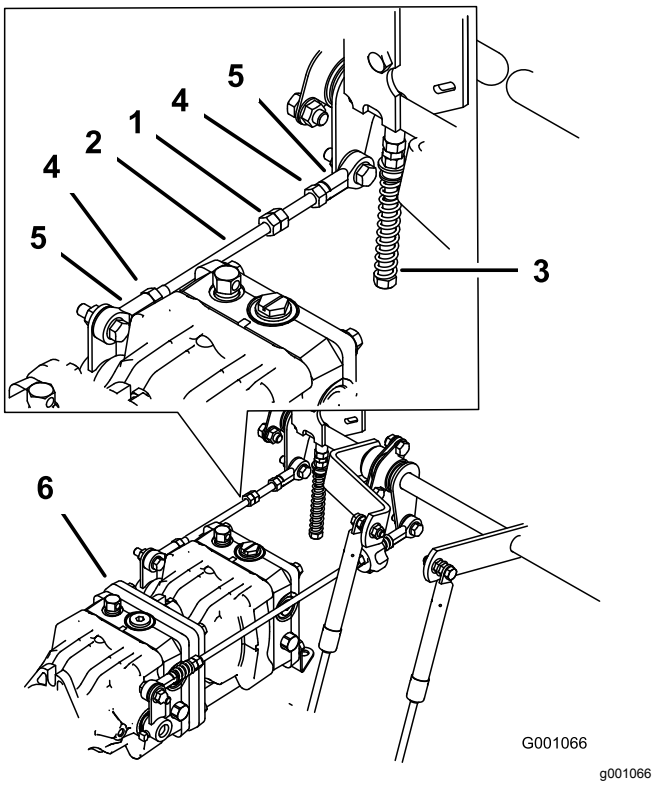


Figure 103

1. Double nuts
2. Pump rod
3. Adjustment bolt
4. Locknut
5. Ball joint
6. Pumps

⚠ WARNING

The electrical system does not perform proper safety shut off with the jumper wire installed.

- **Remove the jumper wire from the wire harness connector and plug the connector into the seat switch when you complete the adjustment.**
- **Never operate the machine with the jumper installed and the seat switch bypassed.**

7. After both pump neutrals are set, shut off the machine.
8. Remove the jumper wire from the wire harness connector and plug the connector into the seat switch.
9. Install the seat rod and lower the seat into position.
10. Remove the jack stands.

Mower Deck Maintenance

Leveling the Mower at 3 Positions

Important: **There are only 3 measuring positions needed to level the mower.**

Setting Up the Machine

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Check tire pressure of the tires; if needed, adjust to 90 kPa (13 psi).
4. Lower the mower to the 76 mm (3 inches) height-of-cut position.
5. Inspect the 4 chains.

   Note: The chains need to have tension.

   Note: Adjust the rear chains to the top of the slot, where they are attached to the mower.

   - If a rear chain is loose, lower (loosen) the front-support arm on the same side; refer to Adjusting the Front-to-Rear Mower Pitch (page 72).
   - If a front chain is loose, raise (tighten) the front-support arm for that chain; refer to Adjusting the Front-to-Rear Mower Pitch (page 72).

Leveling the Mower Side-to-Side

1. Position the **right** blade side-to-side (Figure 104).

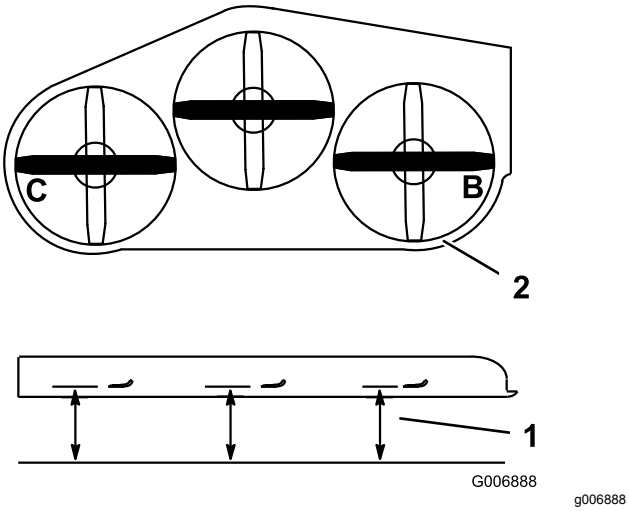


Figure 104

1. Measure here from blade to hard surface
2. Measure at B and C

2. Measure the right blade at the **B** location, from a level surface to the cutting edge of the blade tip (Figure 104).
3. Record this measurement. This measurement needs to be 80 to 83 mm (3-1/8 to 3-1/4 inches).
4. Position the left blade side-to-side (Figure 104).
5. Measure the left blade at the **C** location (Figure 104), from a level surface to the cutting edge of the blade tip.
6. Record this measurement. This measurement needs to be 80 to 83 mm (3-1/8 to 3-1/4 inches).
7. If the measurements at positions **B** or **C** are not correct, loosen the bolt attaching the rear chain to the rear-support arm (Figure 105).

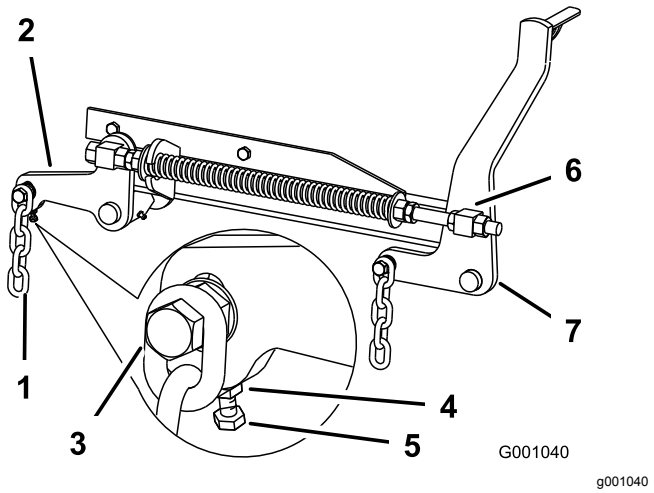


Figure 105

1. Rear chain
2. Rear-support arm
3. Bolt
4. Jam nut
5. Adjustment bolt
6. Front swivel
7. Front-support arm

8. Loosen the jam nut under the rear-support arm and adjust the adjustment bolt to get a measurement of 80 to 83 mm (3-1/8 to 3-1/4 inches); refer to Figure 105.

   Note: It is recommended that both sides of the mower are adjusted the same distance.
9. Tighten the jam nut under the rear-support arm and tighten the bolt securing the chain to the rear-support arm.
10. Adjust the opposite side if needed.

Adjusting the Front-to-Rear Mower Pitch

1. Position the **right** blade front-to-rear (Figure 106).

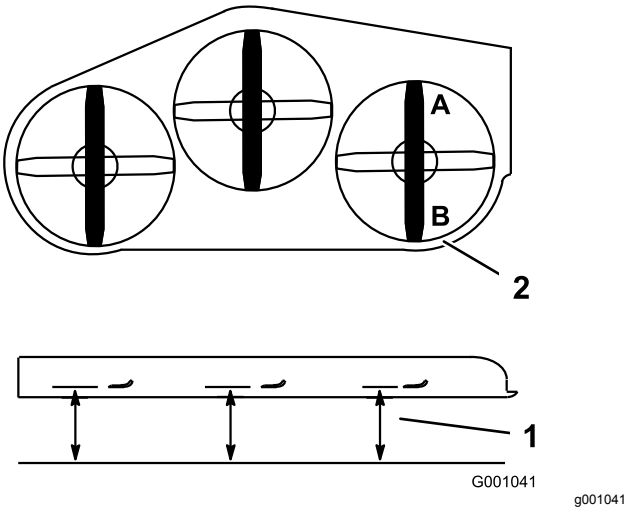


Figure 106

1. Measure here from blade to hard surface
2. Measure at A and B

2. Measure the right blade at the **A** location, from a level surface to the cutting edge of the blade tip (Figure 106).
3. Record this measurement.
4. Measure the right blade at the **B** location, from a level surface to the cutting edge of the blade tip (Figure 106).
5. Record this measurement.
6. The mower blade should be 6 to 10 mm (1/4 to 3/8 inch) lower at position **A** than at position **B** (Figure 106). If it is not correct, proceed to the following steps.

   Note: Both of the front swivels need to be adjusted the same amount to maintain equal chain tension.
7. Loosen the front swivel jam nuts, at the front of the right and left swivels, approximately 13 mm (1/2 inch) (Figure 105).
8. Adjust the lift nuts on both the left and the right side of the machine to achieve 6 to 10 mm (1/4 to 3/8 inch) lower in front at **A** than in the rear at **B** (Figure 105).
9. Tighten both swivel jam nuts against the front swivel to lock the height.
10. Check to make sure that there is equal tension on the chains and adjust again if needed.

Adjusting the Compression Spring

1. Raise the mower lift lever to the transport position.
2. Check the distance between the 2 large washers, it needs to be 28.2 cm (11-1/8 inches) for 52 inch mower decks, 26.7 cm (10-1/2 inches) for 60 inch mower decks, or 29.2 cm (11-1/2 inches) for 72 inch mower decks (Figure 107).

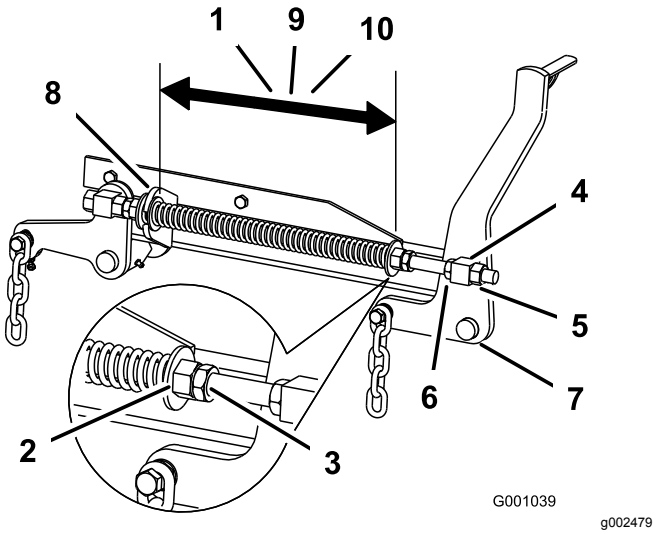


Figure 107

1. 28.2 cm (11-1/8 inches) between the large washers for 52 inch mower decks
2. Front nut
3. Spring-jam nut
4. Front swivel
5. Swivel jam nut
6. Lift nut
7. Front-support arm
8. Large washer
9. 26.7 cm (10-1/2 inches) between the large washers for 60 inch mower decks
10. 29.2 cm (11-1/2 inches) between the large washers for 72 inch mower decks

3. Adjust this distance, by loosening the spring-jam nut and turning the nut in front of each spring (Figure 107).

   Note: Turning the nut clockwise shortens the spring; counter-clockwise lengthens the spring.
4. Lock the nut into position by tightening the spring-jam nut (Figure 107).

Servicing the Cutting Blades

Maintain sharp blades throughout the cutting season because sharp blades cut cleanly without tearing or shredding the grass blades. Tearing and shredding turns grass brown at the edges, which slows growth and increases the chance of disease.

Check the cutter blades daily for sharpness, and for any wear or damage. File down any nicks and sharpen the blades as necessary. If a blade is damaged or worn, replace it immediately with a genuine Toro replacement blade. For convenient sharpening and replacement, you may want to keep extra blades on hand.

Blade Safety

A worn or damaged blade can break, and a piece of the blade could be thrown toward you or bystanders, resulting in serious personal injury or death. Trying to repair a damaged blade may result in discontinued safety certification of the product.

- Inspect the blades periodically for wear or damage.
- Use care when checking the blades. Wrap the blades or wear gloves, and use caution when servicing the blades. Only replace or sharpen the blades; never straighten or weld them.
- On multi-bladed machines, take care as rotating 1 blade can cause other blades to rotate.

Before Inspecting or Servicing the Blades

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

Inspecting the Blades

Service Interval: Before each use or daily

1. Inspect the cutting edges (Figure 108).
2. If the edges are not sharp or have nicks, remove and sharpen the blade; refer to Sharpening the Blades (page 75).
3. Inspect the blades, especially in the curved area.
4. If you notice any cracks, wear, or a slot forming in this area, immediately install a new blade (Figure 108).

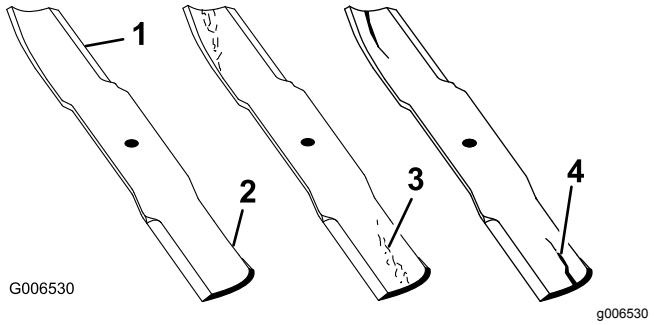


Figure 108

1. Cutting edge
2. Curved area
3. Wear/slot forming
4. Crack

Checking for Bent Blades

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Rotate the blades until the ends face forward and backward.
4. Measure from a level surface to the cutting edge, position **A**, of the blades (Figure 109).

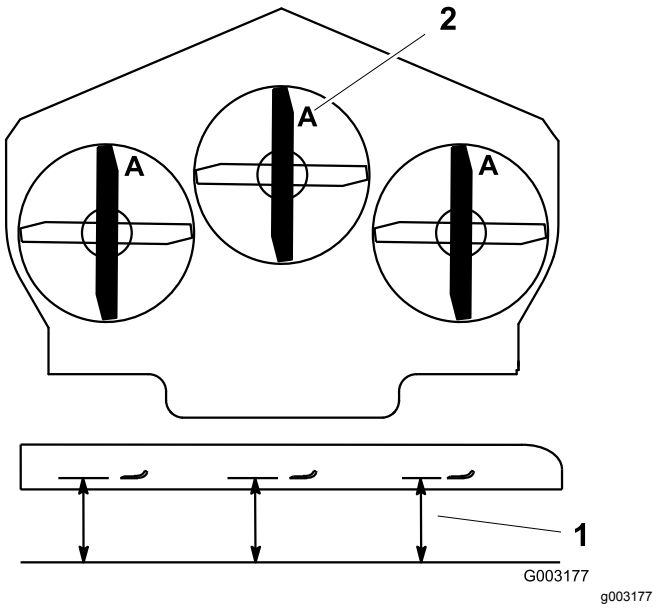


Figure 109

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

5. Rotate the opposite ends of the blades forward.
6. Measure from a level surface to the cutting edge of the blades at the same position as in step 4 above.

Note: The difference between the dimensions obtained in steps 4 and 6 must not exceed 3 mm (1/8 inch).

Note: If this dimension exceeds 3 mm (1/8 inch), the blade is bent and must be replaced.

⚠ WARNING

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

- **Always replace a bent or damaged blade with a new blade.**
- **Do not file or create sharp notches in the edges or surfaces of the blade.**

Removing the Blades

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

1. Hold the blade end using a rag or a thickly-padded glove.
2. Remove the blade bolt, the curved washer, and the blade from the spindle shaft (Figure 110).

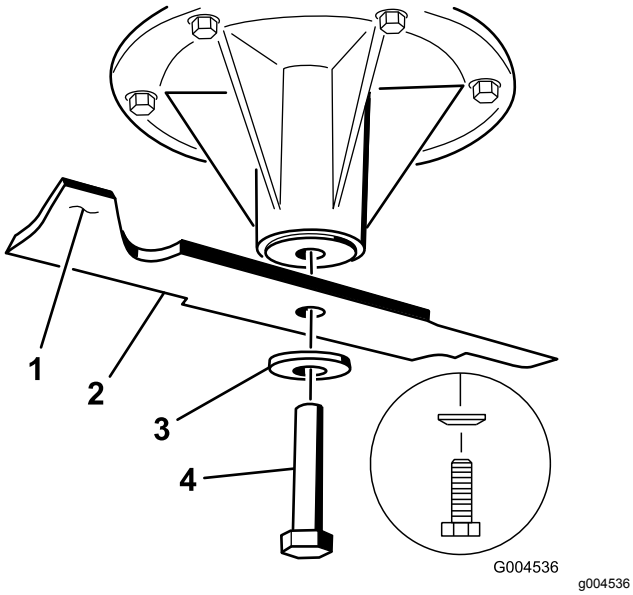


Figure 110

1. Sail area of the blade
2. Blade
3. Curved washer
4. Blade bolt

Sharpening the Blades

1. Use a file to sharpen the cutting edge at both ends of the blade (Figure 111).

   Note: Maintain the original angle.

   Note: The blade retains its balance if the same amount of material is removed from both cutting edges.

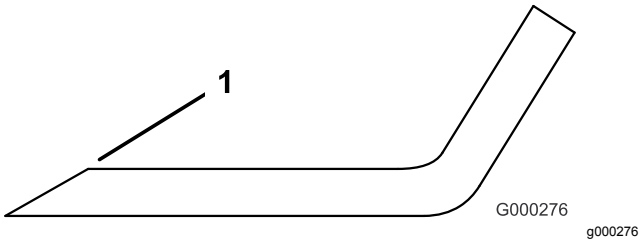


Figure 111

1. Sharpen at original angle.

2. Check the balance of the blade by putting it on a blade balancer (Figure 112).

   Note: If the blade stays in a horizontal position, the blade is balanced and can be used.

   Note: If the blade is not balanced, file some metal off the end of the sail area only (Figure 111).

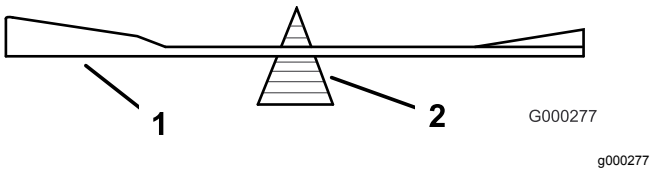


Figure 112

1. Blade
2. Balancer

3. Repeat this procedure until the blade is balanced.

Installing the Blades

1. Install the blade onto the spindle shaft (Figure 113).

   Important: **The curved part of the blade must be pointing upward toward the inside of the mower to ensure proper cutting.**

2. Install the spring disk and blade bolt (Figure 113).

   Note: The spring-disk cone must be installed toward the bolt head (Figure 113).

3. Torque the blade bolt to 115 to 150 N·m (85 to 110 ft-lb).

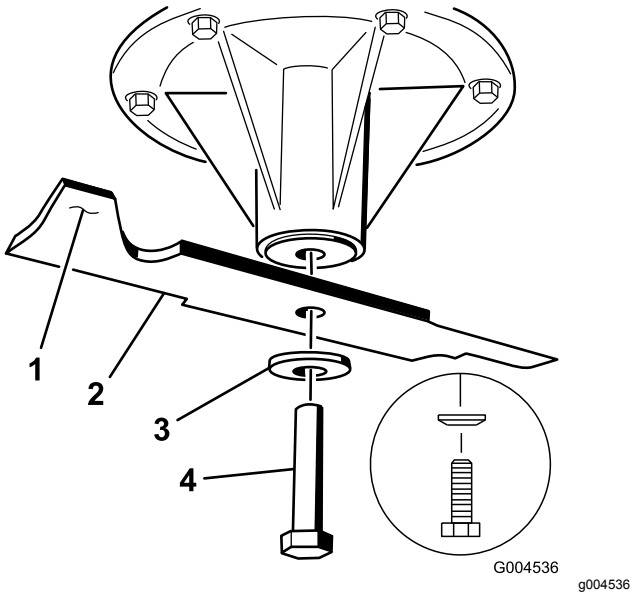


Figure 113

1. Sail area of the blade
2. Blade
3. Spring disk
4. Blade bolt

Replacing the Grass Deflector

Side Discharge Machines Only

⚠ WARNING

An uncovered discharge opening could allow the machine to throw objects toward you or bystanders, resulting in serious injury. Also, contact with the blade could occur.

- **Never operate the machine unless you install a cover plate, a mulch plate, or a grass chute and catcher.**
- **Make sure that the grass deflector is in the down position.**

1. Remove the locknut, bolt, spring and spacer holding the deflector to the pivot brackets (Figure 114).
2. Remove the damaged or worn grass deflector.
3. Place the spacer and spring onto the grass deflector. Place the **L** end of the spring behind the deck edge.

   Note: Make sure that the **L** end of the spring is installed behind the deck edge before installing the bolt as shown in Figure 114

4. Install the bolt and nut.
5. Place the **J**-hook end of the spring around the grass deflector (Figure 114).

   Important: **The grass deflector must be able to lower into position. Lift the deflector up to test that it lowers into the full-down position.**

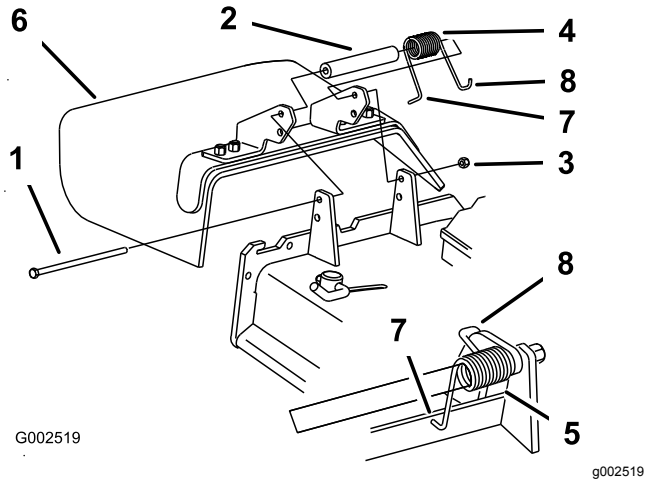


Figure 114

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

Cleaning

Cleaning under the Mower Deck

Service Interval: Before each use or daily

1. Park the machine on a level surface, disengage the blade-control switch (PTO), and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Raise the mower deck to the TRANSPORT position.

Disposing of Waste

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

Storage

Storage Safety

- Shut off the engine, remove the key, wait for all moving parts to stop, and allow the machine to cool before storing it.
- Do not store the machine or fuel near flames or drain the fuel indoors.
- Remove the key and store it in a safe place out of the reach of children.

Cleaning and Storage

1. Disengage the blade-control switch (PTO), engage the parking brake, turn the ignition key to the OFF position, and remove the key.
2. Remove grass clippings, dirt, and grime from the external parts of the entire machine, especially the engine and hydraulic system. Clean dirt and chaff from the outside of the engine cylinder head fins and blower housing.

   Important: **You can wash the machine with mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water, especially near the control panel, engine, hydraulic pumps, and motors.**
3. Check the brake; refer to Brake Maintenance (page 60).

   Service the air cleaner; refer to Servicing the Air Cleaner (page 46).

   Grease the machine; refer to Lubrication (page 42).
4. Change the crankcase oil; refer to Changing the Engine Oil (page 50).

   Check the tire pressure; refer to Checking the Tire Pressure (page 55).

   Change the hydraulic filter; refer to Replacing the Hydraulic Filter and Fluid (page 67).

   Charge the battery; refer to Charging the Battery (page 54).

   Scrape any heavy buildup of grass and dirt from the underside of the mower, then wash the mower with a garden hose.

   Note: Run the machine with the blade-control switch (PTO) engaged and the engine at high idle for 2 to 5 minutes after washing.
5. Check the condition of the blades; refer to Inspecting the Blades (page 74).

   Prepare the machine for storage when non-use occurs over 30 days. Prepare the machine for storage as follows:

   A. Run the engine to distribute conditioned fuel through the fuel system for 5 minutes.

   B. Shut off the engine, allow it to cool, and drain the fuel tank; refer to Servicing the Fuel Tank (page 52).

      Note: Start the engine and run it until it shuts off.

   C. Dispose of fuel properly. Recycle as per local codes.

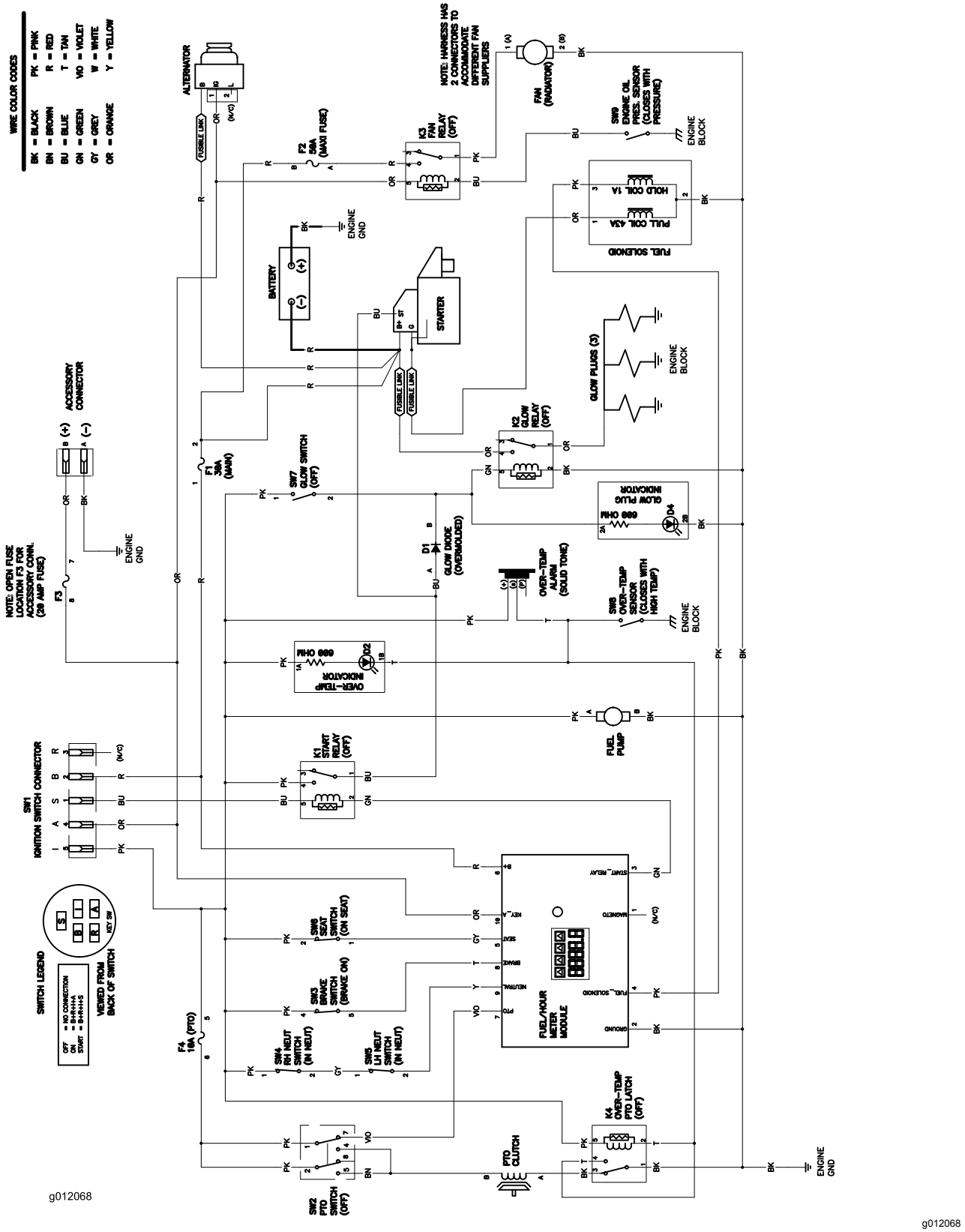
      Important: **Do not store stabilizer/conditioned fuel longer than the duration recommended by the fuel-stabilizer manufacturer.**
6. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged.
7. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
8. Store the machine in a clean, dry garage or storage area. Remove the key from the ignition switch and keep it out of reach of children or other unauthorized users. Cover the machine to protect it and keep it clean.

Troubleshooting

Problem	Possible Cause	Corrective Action
The starter does not crank.	1. The blade-control switch (PTO) is engaged. 2. The parking brake is not engaged. 3. The drive levers are not in the NEUTRAL-LOCK position. 4. The operator is not seated. 5. The battery is dead. 6. The electrical connections are corroded or loose. 7. The fuse is blown. 8. The relay or switch is broken.	1. Move the blade-control switch (PTO) to disengaged. 2. Engage the parking brake. 3. Ensure that the drive levers are in the NEUTRAL-LOCK position. 4. Sit on the seat. 5. Charge the battery. 6. Check the electrical connections for good contact. 7. Replace the fuse. 8. Contact an Authorized Service Dealer.
The engine does not start, starts hard, or fails to keep running	1. The fuel tank is empty. 2. The fuel-shutoff valve is closed. 3. The oil level in the crankcase is low. 4. The throttle is not in the correct position. 5. There is dirt in fuel filter. 6. There is dirt, water, or stale fuel is in the fuel system. 7. The air cleaner is dirty. 8. The seat switch is not functioning properly. 9. The electrical connections are corroded, loose or faulty. 10. The relay or switch is broken.	1. Fill the fuel tank. 2. Open the fuel-shutoff valve. 3. Add oil to the crankcase. 4. Be sure that the throttle control is midway between the SLOW and FAST positions. 5. Replace the fuel filter. 6. Contact an Authorized Service Dealer. 7. Clean or replace the air-cleaner element. 8. Check the seat switch indicator. Replace the seat if needed. 9. Check the electrical connections for good contact. Clean the connector terminals thoroughly with electrical contact cleaner, apply dielectric grease, and connect. 10. Contact an Authorized Service Dealer.
The engine loses power.	1. The engine load is excessive. 2. The air cleaner is dirty. 3. The oil level in the crankcase is low. 4. The cooling fins and air passages above the engine are plugged. 5. The vent hole in the fuel cap is plugged. 6. There is dirt in the fuel filter. 7. There is dirt, water, or stale fuel is in the fuel system.	1. Reduce the ground speed. 2. Clean the air-cleaner element. 3. Add oil to the crankcase. 4. Remove the obstruction from the cooling fins and air passages. 5. Clean or replace the fuel cap. 6. Replace the fuel filter. 7. Contact an Authorized Service Dealer.
The engine overheats.	1. The engine load is excessive. 2. The oil level in the crankcase is low. 3. The cooling fins and air passages above the engine are plugged.	1. Reduce the ground speed. 2. Add oil to the crankcase. 3. Remove the obstruction from the cooling fins and air passages.
The machine does not drive.	1. The by pass valves are not closed tight. 2. The pump belt is worn, loose or broken. 3. The pump belt is off a pulley. 4. The idler spring is broken or missing. 5. The hydraulic-fluid level is low or too hot.	1. Tighten the by pass valves. 2. Change the belt. 3. Change the belt. 4. Replace the spring. 5. Add hydraulic fluid to reservoirs or let it cool down.

Problem	Possible Cause	Corrective Action
There is abnormal vibration.	1. The cutting blade(s) is/are bent or unbalanced.	1. Install new cutting blade(s).
	2. The blade mounting bolt is loose.	2. Tighten the blade mounting bolt.
	3. The engine mounting bolts are loose.	3. Tighten the engine mounting bolts.
	4. The engine pulley, idler pulley, or blade pulley is loose.	4. Tighten the appropriate pulley.
	5. The engine pulley is damaged.	5. Contact an Authorized Service Dealer.
	6. The blade spindle is bent.	6. Contact an Authorized Service Dealer.
	7. The motor mount is loose or worn.	7. Contact an Authorized Service Dealer.
Mowing is resulting in uneven cutting height.	1. The blade(s) is/are not sharp.	1. Sharpen the blade(s).
	2. The cutting blade(s) is/are bent.	2. Install new cutting blade(s).
	3. The mower deck is not level.	3. Level the mower deck from side-to-side and front-to-rear.
	4. The underside of mower is dirty.	4. Clean the underside of the mower.
	5. The tire pressure is not correct.	5. Adjust the tire pressure.
	6. The blade spindle bent.	6. Contact an Authorized Service Dealer.
The blades do not rotate.	1. The mower deck belt is worn, loose or broken.	1. Install a new deck belt.
	2. The mower deck belt is off pulley.	2. Install the mower deck pulley and check the idler pulley, idler arm, and spring for correct position and function.
	3. The pump drive belt is worn, loose or broken.	3. Check the belt tension or install a new belt.
	4. The idler spring is broken or missing.	4. Replace the spring.

Schematics



Wire Diagram (Rev. A)

Notes:

Notes:

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