Form No. 3400-138 Rev B

TORO®

Count on it.

Operator's Manual

# Z Master® Professional 6000 Series Riding Mower

## with 132cm or 152cm TURBO FORCE® Side Discharge Mower

**Model No. 74919TE—Serial No. 316000001 and Up**

**Model No. 74925TE—Serial No. 316000001 and Up**



g027403

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

CE

*3400-138* B

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

This spark ignition system complies with Canadian ICES-002

**⚠ WARNING**

**Removing standard original equipment parts and accessories may alter the warranty, traction, and safety of the machine. Failure to use original Toro parts could cause serious injury or death. Making unauthorized changes to the engine, fuel or venting system, may violate regulations.**

**Replace all parts including, but not limited to, tires, belts, blades, and fuel system components with original Toro parts.**

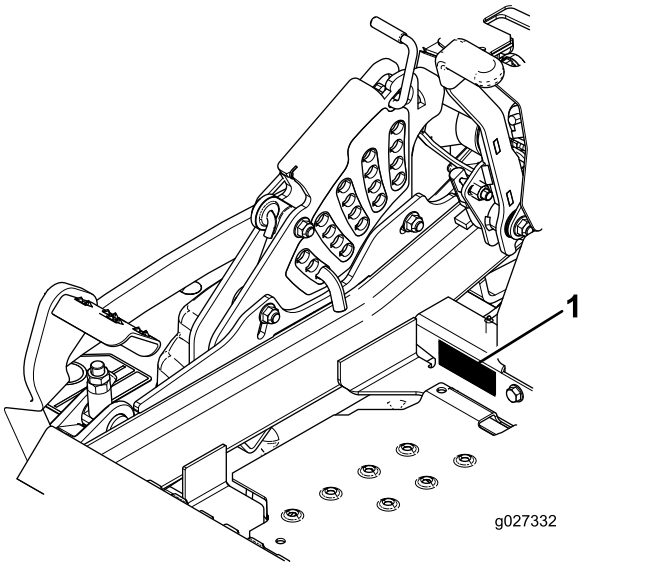
# Introduction

This rotary-blade, riding lawn mower is intended to be used by residential homeowners or 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.

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.




g027332

**Figure 1**

1. Model and serial number location

**Model No.** _____

**Serial No.** _____

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



g000502

**Figure 2**

1. Safety-alert symbol

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

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# Safety

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

Improper use or maintenance by the operator or owner 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 the instruction may result in personal injury or death.

# Safe Operating Practices

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

## Training

- Read the instructions carefully. Be familiar with the controls and the proper use of the equipment.
- Never allow children or people unfamiliar with these instructions to use the lawn mower. Local regulations can restrict the age of the operator.
- Never mow while people, especially children, or pets are nearby.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- Do not carry passengers.
- All drivers should seek and obtain professional and practical instruction. Such instruction should emphasize:
  - the need for care and concentration when working with ride-on machines;
  - control of a ride-on machine sliding on a slope will not be regained by the application of the control levers. The main reasons for loss of control are:
    - ◊ insufficient wheel grip, especially on wet grass;
    - ◊ being driven too fast;
    - ◊ inadequate braking;
    - ◊ the type of machine is unsuitable for its task;
    - ◊ lack of awareness of the effect of ground conditions, especially slopes;
    - ◊ incorrect hitching and load distribution.

## Preparation

- While mowing, always wear substantial, slip-resistant footwear and long trousers. Tie back long hair. Do not wear jewelry.
- Thoroughly inspect the area where you will use the equipment and remove all objects which the machine may throw at you.
- **Warning**–Fuel is highly flammable.
  - Store fuel in containers specifically designed for this purpose.
  - Refuel the machine outdoors only and do not smoke while refuelling.
  - Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot.
  - If you spill fuel, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until the fuel vapors have dissipated.
  - Replace all fuel tanks and container caps securely.
- Replace faulty silencers.
- Before using, always visually inspect to see that the blades, blade bolts, and cutter assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.
- On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.

## Operation

- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.
- Be alert, slow down, and use caution when making turns. Look behind and to the side before changing directions.
- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
- Mow only in daylight or in good artificial light.
- Before attempting to start the engine, disengage all blade-attachment clutches and shift the transmission into neutral.
- Do not use on slopes greater than 15 degrees.
- Remember that there is no such thing as a safe slope. Travel on grass slopes requires particular care. To guard against overturning:
  - do not stop or start suddenly when on a slope;
  - use slow speeds on slopes and during tight turns;
  - stay alert for humps and hollows and other hidden hazards;

- Use care when pulling loads or using heavy equipment.
  - Use only approved drawbar hitch points.
  - Limit loads to those you can safely control.
  - Do not turn sharply. Use care when reversing the machine.
- Watch out for traffic when crossing or near roadways.
- Stop the blades rotating before crossing surfaces other than grass.
- When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the machine while in operation.
- Never operate the machine with damaged guards or without safety protective devices in place.
- Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.
- Before leaving the operator's position:
  - disengage the power takeoff and lower the attachments;
  - change into neutral and set the parking brake;
  - stop the engine and remove the key.
- Disengage drive to attachments, stop the engine, and disconnect the spark plug wire(s) or remove the ignition key
  - before clearing blockages or unclogging the chute;
  - before checking, cleaning, or working on the lawn mower;
  - after striking a foreign object. Inspect the lawn mower for damage and make repairs before starting and operating the equipment; if the machine starts to vibrate abnormally (check immediately).
- Disengage drive to attachments when transporting or not in use.
- Stop the engine and disengage drive to attachment
  - before fuelling;
  - before removing the grass catcher;
  - before adjusting the height unless you can adjust it from the operator's position.
- Reduce the throttle setting during engine run-out and, if the engine is provided with a shutoff valve, turn the fuel off at the conclusion of mowing.

## Maintenance and Storage

- Keep all nuts, bolts and screws tight to be sure that the equipment is in safe working condition.
- Never store the equipment with fuel in the tank inside a building, where fumes can reach an open flame or spark.
- Allow the engine to cool before storing the machine in any enclosure.
- To reduce the fire hazard, keep the engine, silencer, battery compartment, and fuel storage area free of grass, leaves, or excessive grease.
- Check the grass catcher frequently for wear or deterioration.
- Replace worn or damaged parts for safety.
- If you must drain the fuel tank, do it outdoors.
- When machine is to be parked, stored or left unattended, lower the cutting means unless you are using a positive mechanical lock.

# Toro Riding Mower Safety

The following list contains safety information specific to Toro products or other safety information that you must know that is not included in the CEN standard.

- Engine exhaust contains carbon monoxide, which is an odorless, deadly poison that can kill you. Do not run the engine indoors or in an enclosed area.
- Keep your hands, feet, hair and loose clothing away from attachment discharge area, the underside of the mower, and any moving parts while engine is running.
- Do not touch the equipment or attachment parts which may be hot from operation. Allow them to cool before attempting to maintain, adjust, or service them.
- Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes and clothing. Protect your face, eyes, and clothing when working with a battery.
- Battery gases can explode. Keep cigarettes, sparks, and flames away from battery.
- Use only genuine Toro replacement parts to maintain the original standards.
- Use only Toro-approved attachments. You may void the warranty if you use unapproved attachments.

## Slope Operation

- Do not mow slopes greater than 15 degrees.
- Do not mow near drop-offs, ditches, steep banks, or water. Wheels dropping over edges can cause rollovers, which may result in serious injury, death, or drowning.
- Do not mow slopes when grass is wet. Slippery conditions reduce traction and could cause sliding and a loss of control.
- Do not make sudden turns or rapid speed changes.
- Use a walk behind mower and/or a hand trimmer near drop-offs, ditches, steep banks, or water.
- Reduce speed and use extreme caution on slopes.
- Remove or mark obstacles such as rocks, tree limbs, etc. from the mowing area. Tall grass can hide obstacles.
- Watch for ditches, holes, rocks, dips, and rises that change the operating angle, as rough terrain could overturn the machine.
- Avoid sudden starts when mowing uphill, because the mower may tip backward.
- Be aware that loss of traction may occur going downhill. Weight transfer to the front wheels may cause drive wheels to slip and cause loss of braking and steering.
- Always avoid sudden starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly off the slope.
- Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
- Use extreme care with grass catchers or other attachments. These can change the stability of the machine and cause a loss of control.

# Sound Pressure

Model 74919TE has a sound pressure level at the operator’s ear of 92 dBA, which includes an Uncertainty Value (K) of 1 dBA.

Model 74925TE has a sound pressure level at the operator’s ear of 93 dBA, which includes an Uncertainty Value (K) of 1 dBA.

The sound pressure level was determined according to the procedures outlined in EN ISO 5395:2013.

# Sound Power

Model 74919TE has a guaranteed sound power level of 105 dBA, which includes an Uncertainty Value (K) of 1 dBA.

Model 74925TE has a guaranteed sound power level of 105 dBA, which includes an Uncertainty Value (K) of 1 dBA.

The sound power level was determined according to the procedures outlined in ISO 11094.

# Vibration Level

## Model 74919TE

### Hand-Arm

Measured vibration level for right hand = 1.3 $m/s^2$

Measured vibration level for left hand = 1.5 $m/s^2$

Uncertainty Value (K) = 0.8 $m/s^2$

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

### Whole Body

Measured vibration level = 0.32 $m/s^2$

Uncertainty Value (K) = 0.16 $m/s^2$

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

# Vibration Level

## Model 74925TE

### Hand-Arm

Measured vibration level for right hand = 2.7 $m/s^2$

Measured vibration level for left hand = 3.2 $m/s^2$

Uncertainty Value (K) = 1.6 $m/s^2$

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

### Whole Body

Measured vibration level = 0.73 $m/s^2$

Uncertainty Value (K) = 0.37 $m/s^2$

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

# Slope Indicator

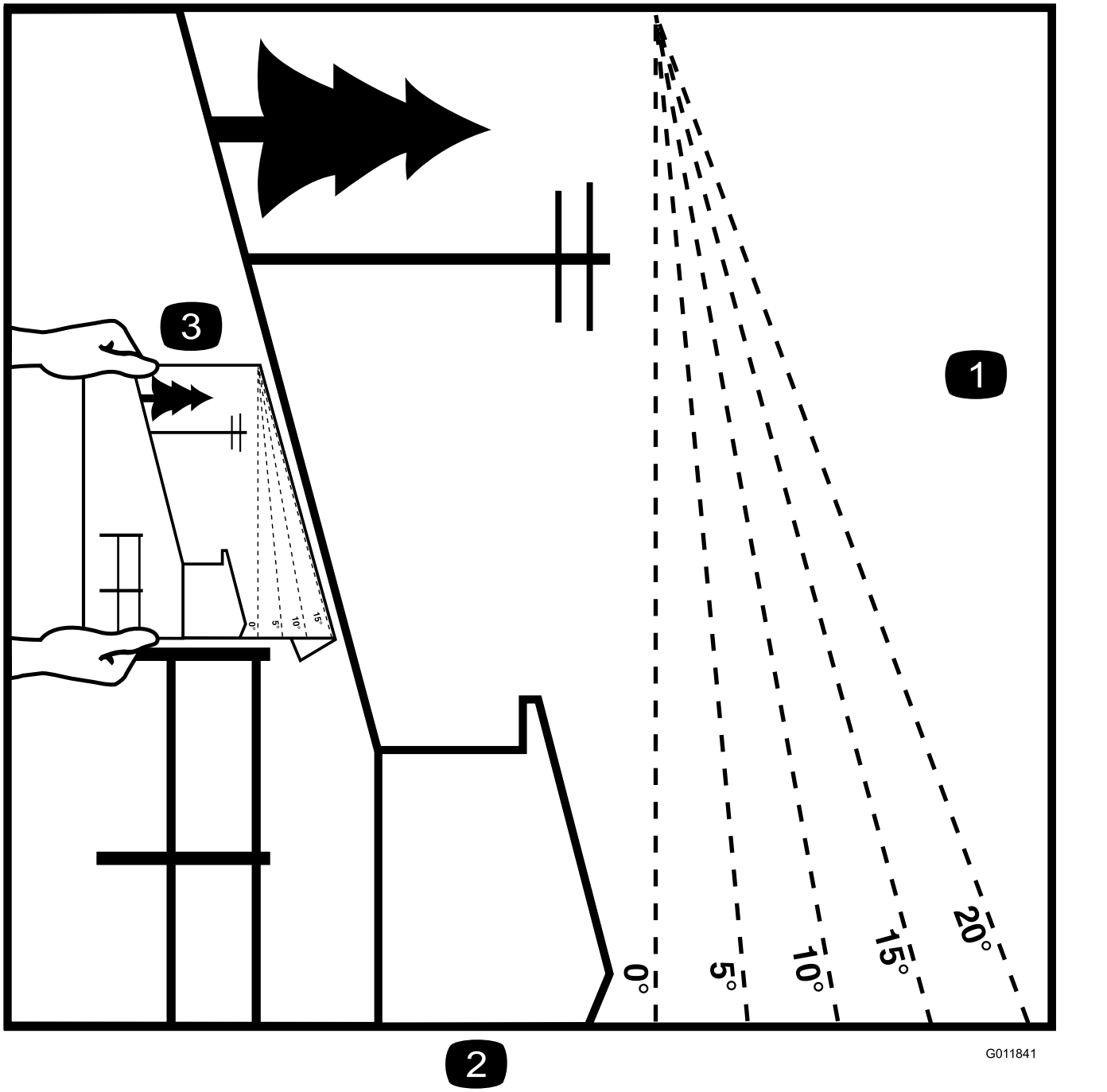


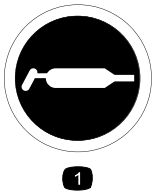

**Figure 3**

This page may be copied for personal use.

1. The maximum slope you can safely 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

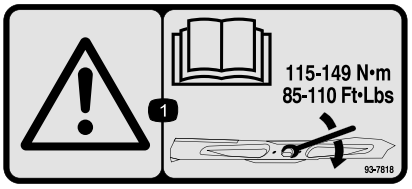
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.




decal58-6520

**58-6520**

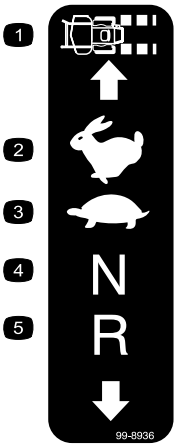
1. Grease




decal93-7818

**93-7818**

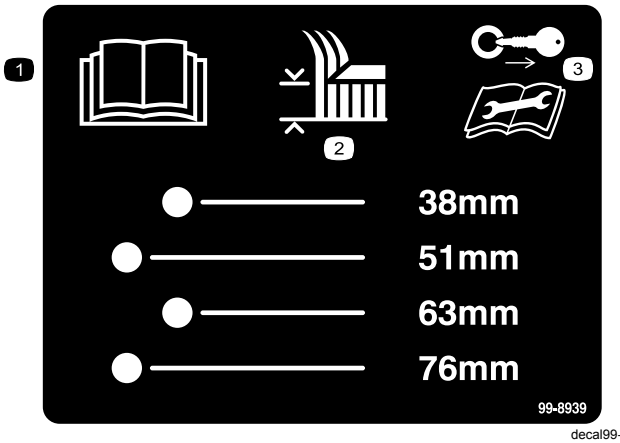
1. Warning—read the *Operator's Manual* for instructions on torquing the blade bolt/nut to 115-149 N·m (85-110 ft-lb).




decal99-8936

**99-8936**

1. Machine speed
2. Fast
3. Slow
4. Neutral
5. Reverse




decal99-8939

**99-8939**

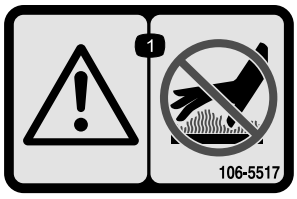
1. Read the *Operator's Manual*.
2. Height of cut
3. Remove the ignition key and read the instructions before servicing or performing maintenance.




decal106-2655

**106-2655**

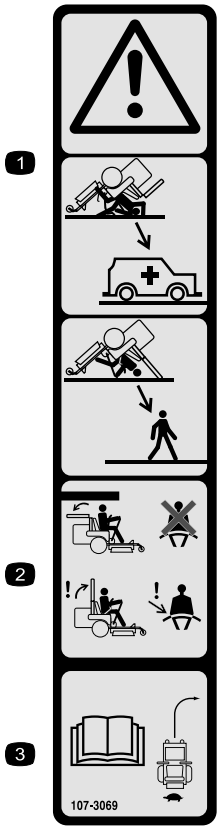
1. Warning—do not touch or approach moving belts; remove the ignition key and read the instructions before servicing or performing maintenance.




decal106-5517

**106-5517**

1. Warning—do not touch the hot surface.

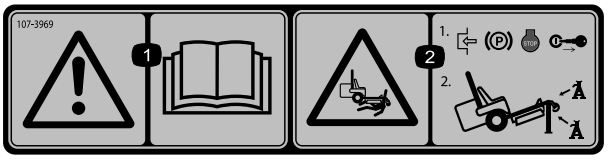



decal107-3069

**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.

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decal107-3969

**107-3969**

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

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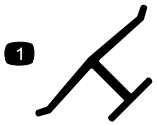

decalbatterysymbols

**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 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.

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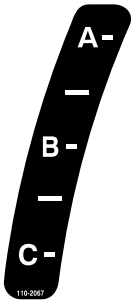



decaloemmarkt

**Manufacturer's Mark**

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

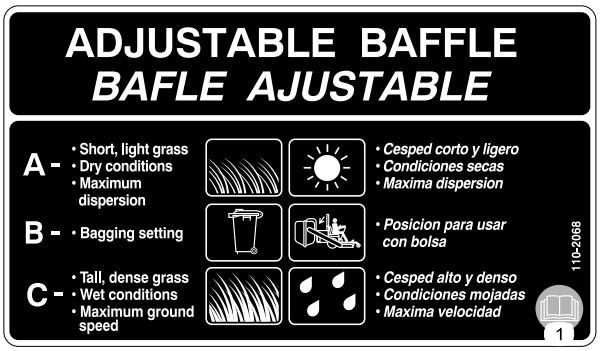
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decal110-2067

**110-2067**

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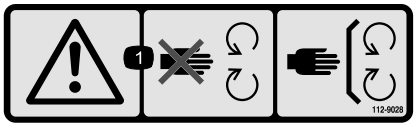



decal110-2068

**110-2068**

1. Read the *Operator's Manual*.

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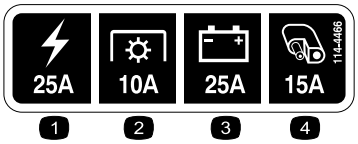



decal112-9028

**112-9028**

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

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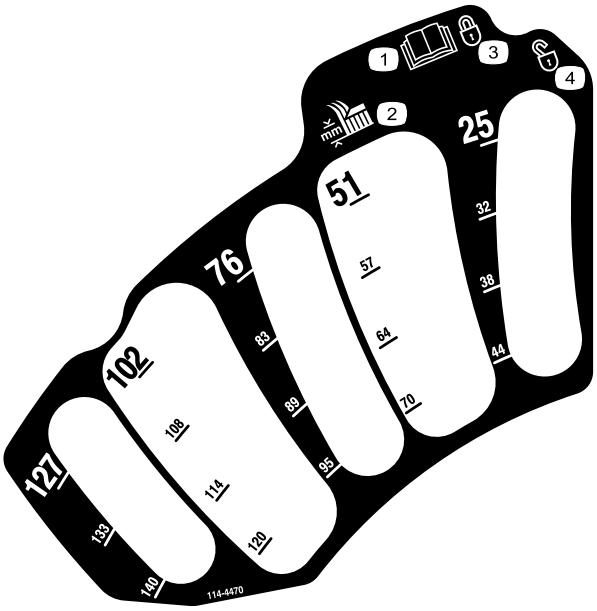



decal114-4466

**114-4466**

1. Main, 25A
2. PTO, 10A
3. Charge, 25A
4. Auxiliary, 15A

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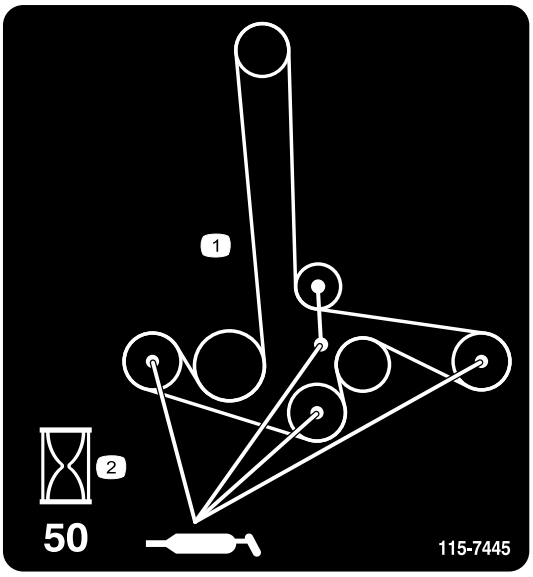



decal114-4470

**114–4470**

1. Read the *Operator's Manual*.
2. Height of cut
3. Locked
4. Unlocked

---

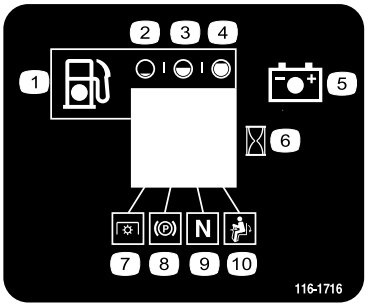



decal115-7445

**115-7445**

1. Grease pulleys and spindles
2. Maintenance interval—50 hours

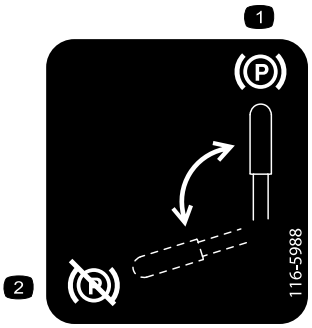
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decal116-1716

**116-1716**

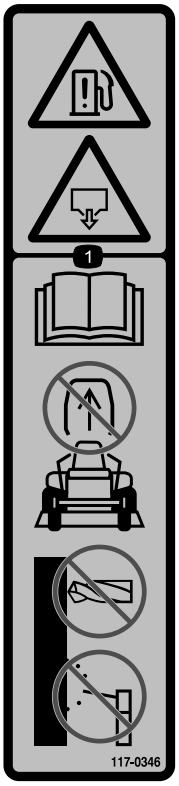
1. Fuel
2. Empty
3. Half
4. Full
5. Battery
6. Hour meter
7. PTO
8. Parking brake
9. Neutral
10. Operator-presence switch




decal116-5988

**116-5988**

1. Parking brake—engaged
2. Parking brake—disengaged




decal117-0346

**117-0346**

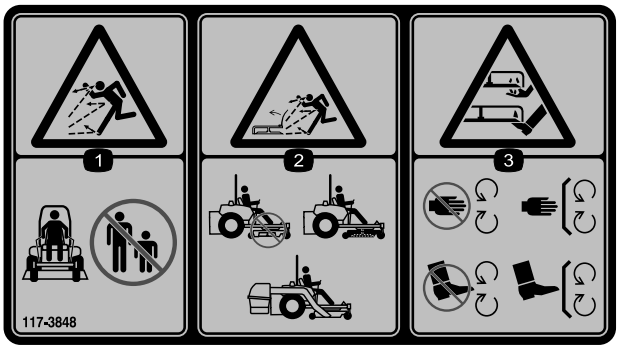
1. Fuel leak hazard—read the *Operator's Manual*; do not attempt to remove the roll bar; do not weld, drill, or modify the roll bar in any way.




decal117-3811

**117-3811**

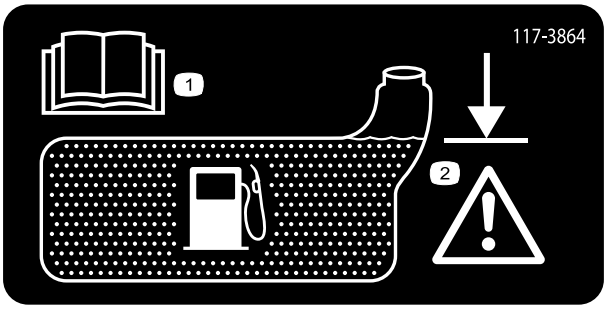
1. Read the *Operator's Manual*.
2. Hydraulic oil




decal117-3848

**117-3848**

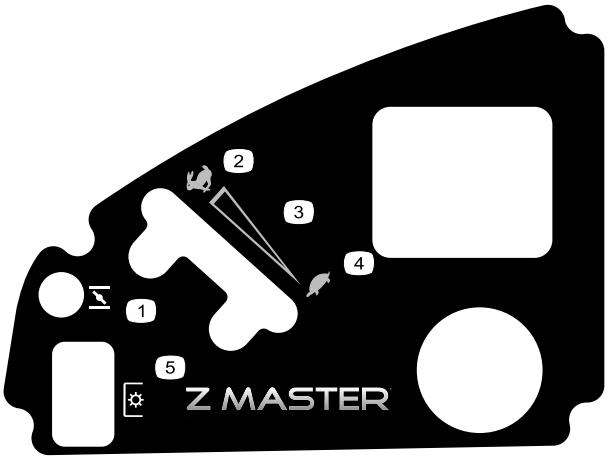
1. Thrown object hazard—keep bystanders a safe distance from the machine.
2. Thrown object hazard, mower—do not operate the machine without deflector, discharge cover, or grass collection system in place.
3. Cutting/dismemberment of hand or foot—stay away from moving parts; keep all guards and shields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




decal117-3864

**117-3864**

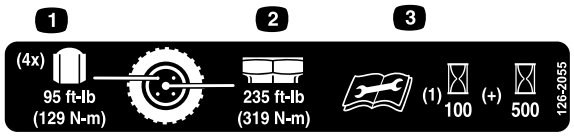
1. Read the *Operator's Manual.*
2. Fill to bottom of filler neck; warning—do not overfill the tank.




decal120-5897

**120-5897**

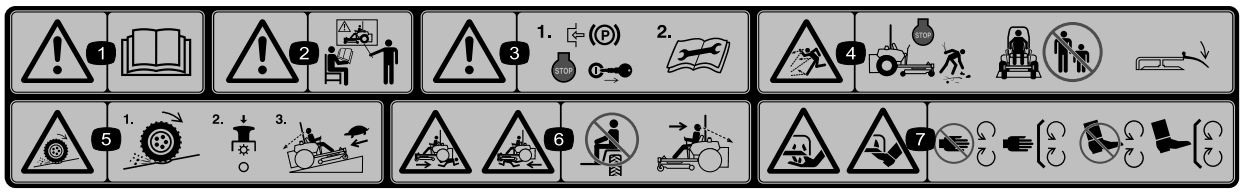
1. Choke
2. Fast
3. Continuous-variable setting
4. Slow
5. Power takeoff (PTO), Blade-control switch




decal126-2055

**126-2055**

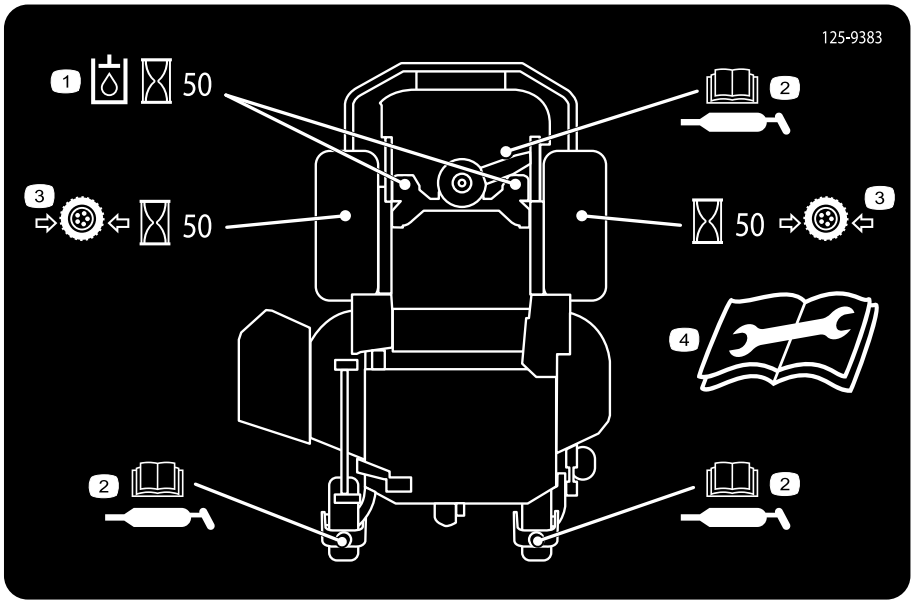
1. Wheel lug nut torque 129 N·m (95 ft-lb) (4x)
2. Wheel hub nut torque 319 N·m (235 ft-lb)
3. Read and understand the Operator's manual before performing any maintenance, check torque after first 100 hours then every 500 hours thereafter.




decal114-4468

**114–4468**

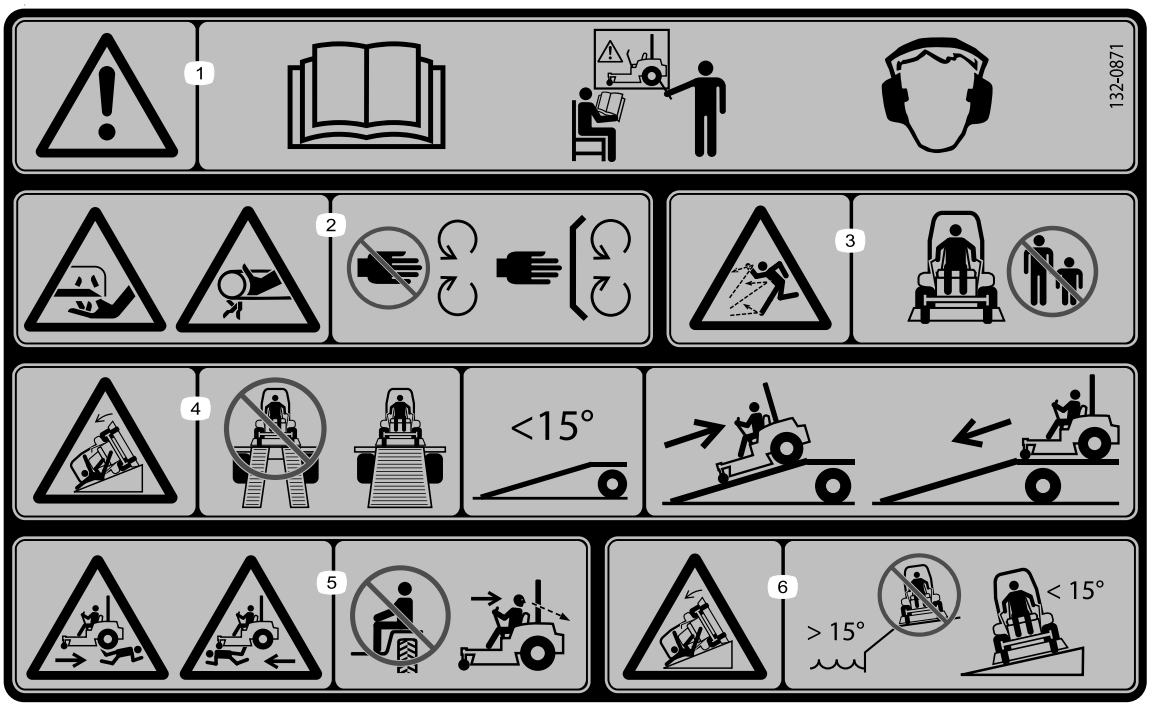
1. Warning—read the *Operator's Manual.*
2. Warning—do not operate this machine unless you are trained.
3. Warning—engage the parking brake, stop the engine and remove the ignition key; read the instructions before servicing or performing maintenance.
4. Thrown object hazard—Stop the engine and pick up debris before operating, keep bystanders a safe distance from the machine, keep deflector in place
5. Loss of traction/control hazard, slopes—loss of traction/control on a slope, disengage the blade control switch (PTO), proceed off the slope slowly.
6. Crushing/dismemberment hazard of bystanders—do not carry passengers, look forward and down when operating the machine, look behind and down when reversing.
7. Cutting/dismemberment hazard; hand or foot—stay away from moving parts and keep all guards and shields in place.




decal125-9383

**125-9383**

1. Check hydraulic oil every 50 operating hours.
2. Read the *Operator's Manual* for information on lubricating the machine.
3. Check the tire pressure every 50 operating hours.
4. Read the *Operator's Manual* before servicing or performing maintenance.




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°.

# Product Overview

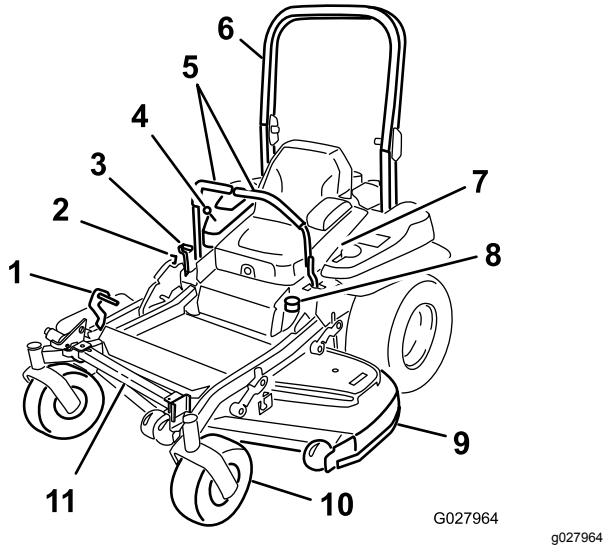



**Figure 4**

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

# Controls

Become familiar with all the controls before you start the engine and operate the machine (Figure 4 and Figure 5).

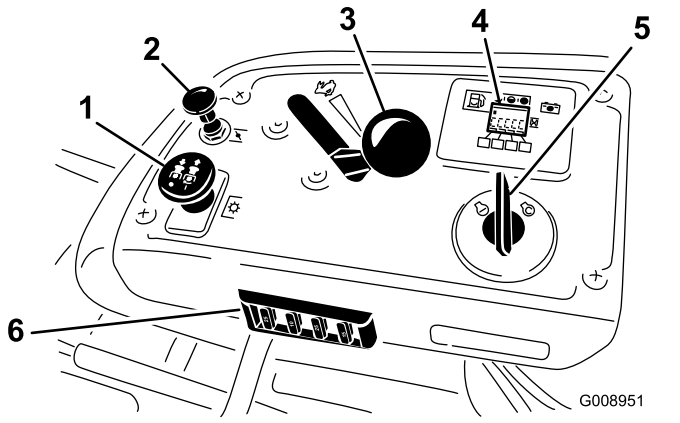



**Figure 5**

1. PTO Switch
2. Choke
3. Throttle control
4. Hour meter/Safety-interlock display
5. Ignition switch
6. Fuses

## 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).

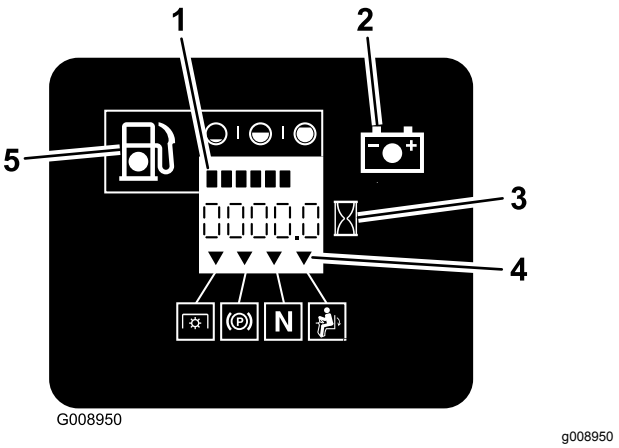



**Figure 6**

1. Fuel gauge (bars)
2. Battery light
3. Hour meter
4. Safety-interlock symbols
5. Low-fuel indicator light

## Fuel Gauge

The fuel gauge is located with the hour meter and the bars light up when the ignition switch is on (Figure 6).

The indicator light appears when the fuel level is low (approximately 1 gallon remaining in the fuel tank).

## Safety-Interlock Indicators

There are symbols on the hour meter and they indicate with a black triangle that the interlock component is in the correct position (Figure 6).

## Battery-Indicator Light

If you turn the ignition key 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 you turn the ignition on and when the charge is below the correct operating level (Figure 6).

## Throttle Control

The throttle control is variable between the FAST and SLOW positions.

## Choke

Use the choke to start a cold engine. Pull the choke knob up to engage it.

## Blade-Control Switch (PTO)

Use the blade-control switch (PTO) to engage the electric clutch and drive the mower blades. Pull the switch up to engage the blades and release. To disengage the blades, push the blade-control switch (PTO) down or move a motion-control lever into the NEUTRAL-LOCK position.

## Ignition Switch

This switch is used to start the mower engine and has 3 positions: START, RUN, and OFF.

## Motion-Control Levers

Use the motion-control levers to drive the machine forward and reverse, and to turn either direction.

## Neutral-Lock Position

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

## Fuel-Shutoff Valve

Close the fuel-shutoff valve (under the seat) when transporting or storing the mower.

## 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 Distributor or go to www.Toro.com for a list of all approved attachments and accessories.

# Specifications

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

**Width:**

| | **132 cm (52 inch) Deck** | **152 cm (60 inch) Deck** |
|---|---|---|
| Cutting Width | 132 cm (52 inches) | 152 cm (60 inches) |
| Without Deck | 116 cm (46 inches) | 134.6 cm (53.0 inches) |
| Deflector—Up | 146 cm (58 inches) | 156.8 cm (61.7 inches) |
| Deflector—Down | 172 cm (68 inches) | 192.2 cm (75.7 inches) |

**Length:**

| | **132 cm (52 inch) Deck** | **152 cm (60 inch) Deck** |
|---|---|---|
| Roll Bar—Up | 201 cm (79 inches) | 211.1 cm (83.1 inches) |
| Roll Bar—Down | 206 cm (81 inches) | 215.4 cm (84.8 inches) |

**Height:**

| **Roll Bar—Up** | **Roll Bar—Down** |
|---|---|
| 179.1 cm (70.5 inches) | 118.9 cm (46.8 inches) |

**Weight:**

| **Model** | **Weight** |
|---|---|
| 74919TE | 537 kg (1183 lb) |
| 74925TE | 590 kg (1301 lb) |

# Operation

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

## Adding Fuel

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

**⚠ DANGER**

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

- **Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any gasoline that spills.**
- **Never fill the fuel tank inside an enclosed trailer.**
- **Do not fill the fuel tank completely full. Add gasoline 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 gasoline to expand.**
- **Never smoke when handling gasoline, and stay away from an open flame or where gasoline fumes may be ignited by a spark.**
- **Store gasoline in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of gasoline.**
- **Do not operate without entire exhaust system in place and in proper working condition.**

**⚠ DANGER**

**In certain conditions during fueling, static electricity can be released, causing a spark that can ignite the gasoline vapors. A fire or explosion from gasoline can burn you and others and can damage property.**

- **Always place gasoline containers on the ground away from your vehicle before filling.**
- **Do not fill gasoline containers inside a vehicle or on a truck or trailer bed, because interior carpets or plastic truck bed liners may insulate the container and slow the loss of any static charge.**
- **When practical, remove gas-powered equipment from the truck or trailer and refuel the equipment with its wheels on the ground.**
- **If this is not possible, then refuel such equipment on a truck or trailer from a portable container rather than from a gasoline-dispenser nozzle.**
- **If you must use a gasoline-dispenser nozzle, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.**

**⚠ WARNING**

**Gasoline is harmful or fatal if swallowed. Long-term exposure to vapors can cause serious injury and illness.**

- **Avoid prolonged breathing of vapors.**
- **Keep your face away from nozzle, gas tank, and conditioner bottle opening.**
- **Avoid contact with skin; wash off spills with soap and water.**

## Using Stabilizer/Conditioner

Use a fuel stabilizer/conditioner in the machine to provide the following benefits:

- Keeps gasoline fresh during storage of 90 days or less. For longer storage it is recommended that the fuel tank be drained.
- Cleans the engine while it runs
- Eliminates gum-like varnish buildup in the fuel system, which causes hard starting

***Important:*** **Do not use fuel additives containing methanol or ethanol.**

Add the correct amount of gasoline stabilizer/conditioner to the gasoline.

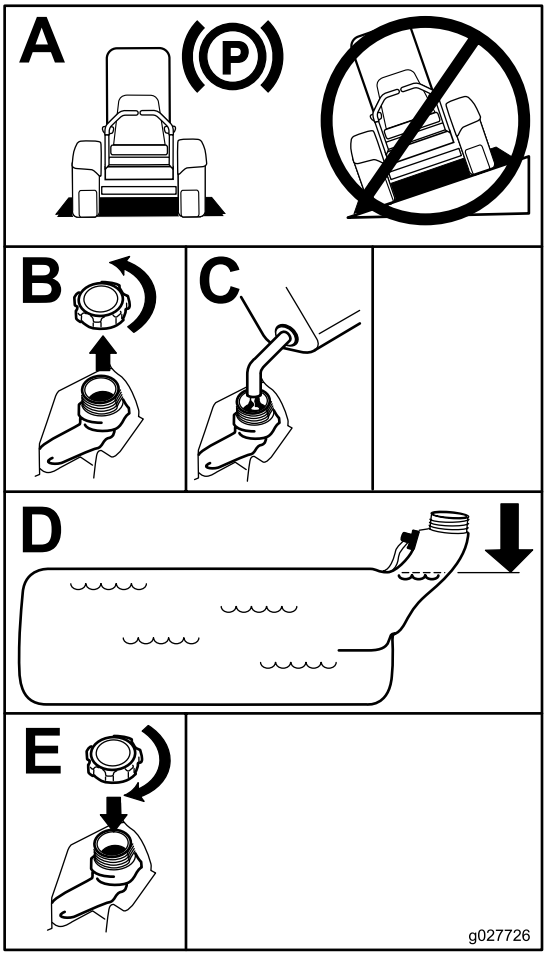
**Note:** A fuel stabilizer/conditioner is most effective when mixed with fresh gasoline. To minimize the chance of varnish deposits in the fuel system, use fuel stabilizer at all times.

## Filling the Fuel Tank

1. Park the machine on level ground.
2. Shut the engine off and set the parking brake.
3. Clean around the fuel-tank cap.
4. Fill the fuel tank to the bottom of the filler neck (Figure 7).

   **Note:** Ensure that there is empty space in the tank to allow the gasoline to expand

   **Note:** Do not fill the fuel tank completely full. Fill the fuel tank to the bottom of the filler neck.




g027726

**Figure 7**

# Checking the Engine-Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to Checking the Engine-Oil Level (page 42).

# 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.**

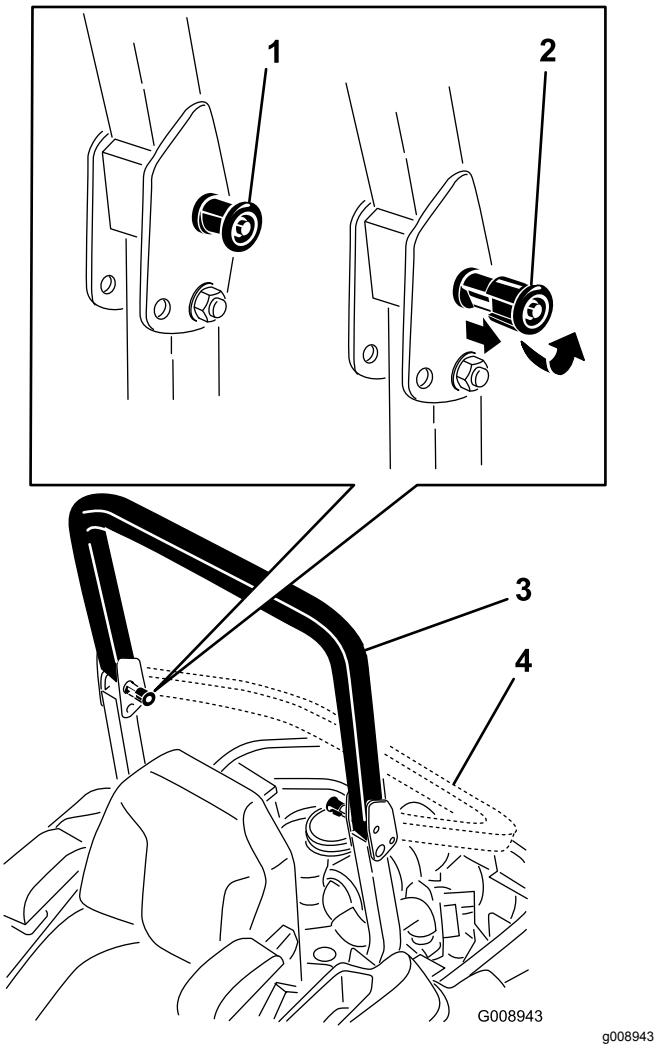
**⚠ WARNING**

**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.**

***Important:*** **Ensure that the seat is secured to the machine.**

1. To lower the roll bar, apply forward pressure to the upper part of the roll bar.
2. Pull both knobs out and rotate them 90 degrees so they are not engaged (Figure 8).
3. Lower the roll bar to the down position (Figure 8).




g008943

**Figure 8**

1. ROPS knob
2. Pull the ROPS knob out and rotate it 90 degrees.
3. Roll bar in the upright position
4. Roll bar in the folded position

4. To raise the roll bar, raise the roll bar to the operate position and rotate the knobs so that they move partially into the grooves (Figure 8).
5. Raise the roll bar to the full upright position while pushing on the upper roll bar so that the pins snap into position when the holes align with the pins (Figure 8).
6. Push on the roll bar and ensure that both pins are engaged.

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

# Think Safety First

Please read all safety instructions and symbols in the safety section. Knowing this information could help you or bystanders avoid injury.

**⚠ DANGER**

**Operating the machine on wet grass or steep slopes can cause sliding and loss of control.**

- **Do not operate on slopes greater than 15 degrees.**
- **Reduce speed and use extreme caution on slopes.**
- **Do not operate the machine near water.**

**⚠ DANGER**

**Wheels dropping over edges can cause rollovers, which may result in serious injury, death, or drowning.**

**Do not operate the machine near drop-offs.**

**⚠ DANGER**

**Operating the machine while the roll bar is down may lead to serious injury or death in the event of a rollover.**

**Always keep the roll bar in the fully raised and locked position and use the seat belt.**

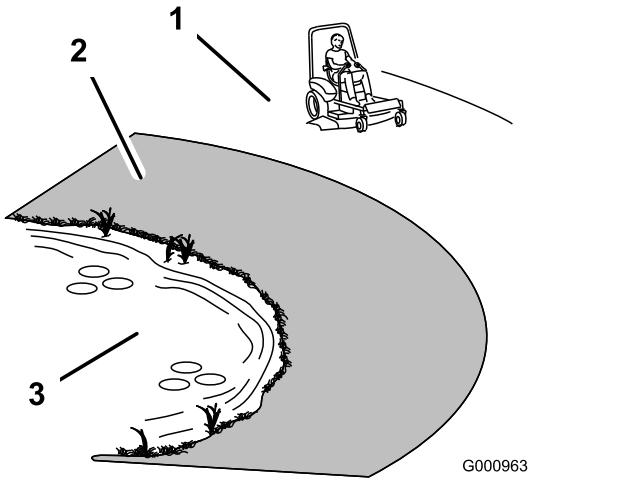



**Figure 9**

1. Safe Zone—use the Z Master 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, near drop-offs and water.
3. Water

**⚠ CAUTION**

**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.**

**Wear hearing protection when operating this machine.**

The use of protective equipment for eyes, ears, hands, feet, and head is recommended.

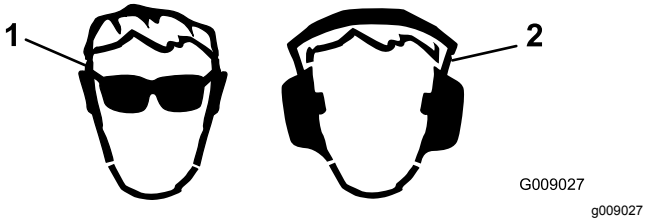



**Figure 10**

1. Wear safety glasses
2. Wear hearing protection

# Operating the Parking Brake

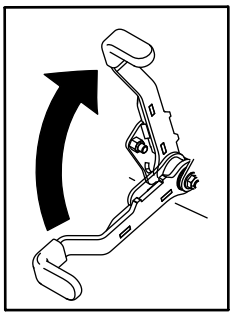
Always set the parking brake when you stop the machine or leave it unattended.

## Setting the Parking Brake

**⚠ WARNING**

**The parking brake may not hold a machine parked on a slope and could cause personal injury or property damage.**

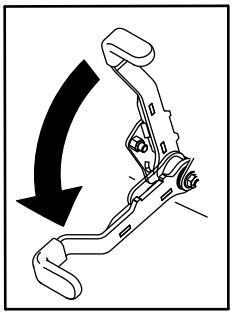
**Do not park the machine on slopes unless the wheels are chocked or blocked.**




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**Figure 11**

## Releasing the Parking Brake



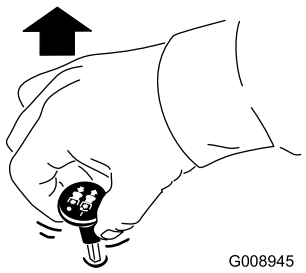

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**Figure 12**

# Operating the Mower Blade-Control Switch (PTO)

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

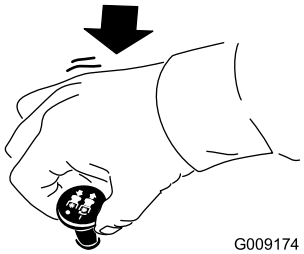
## Engaging the Blade-Control Switch (PTO)




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**Figure 13**

## Disengaging the Blade-Control Switch (PTO)



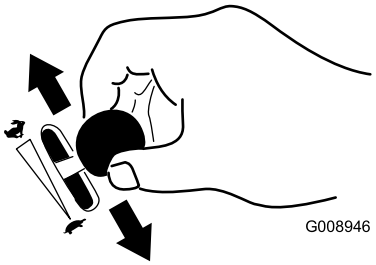

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**Figure 14**

# Operating the Throttle

You can move the throttle control between FAST and SLOW positions (Figure 15).

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




g008946

**Figure 15**

# Operating the Choke

Use the choke to start a cold engine.

1. Pull up the choke knob to engage the choke before using the ignition switch (Figure 16).
2. Push down the choke to disengage the choke after the engine has started (Figure 16).

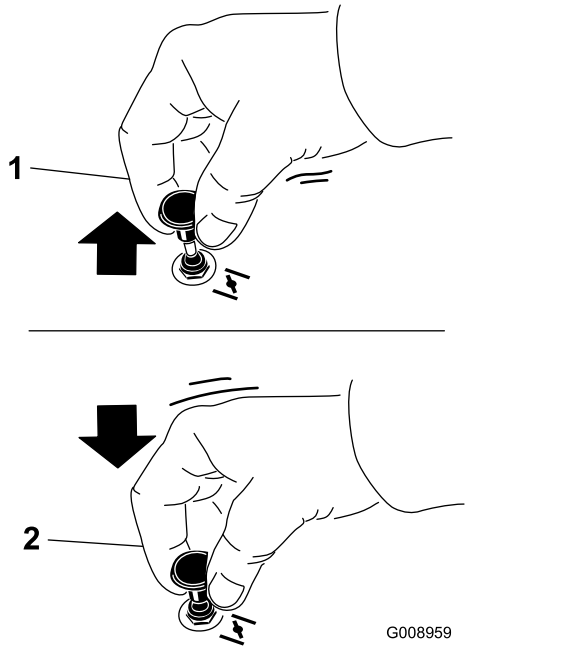



**Figure 16**

1. On
2. Off

# Operating the Ignition Switch

1. Turn the ignition key to the START position (Figure 17).

   **Note:** When the engine starts, release the key.

   ***Important:*** **Do not engage the starter for more than 5 seconds at a time. If the engine fails to start, wait 15 seconds between attempts. Failure to follow these instructions can burn out the starter motor.**

   **Note:** You may need multiple attempts to start the engine when you start it the first time after the fuel system has been without fuel completely.

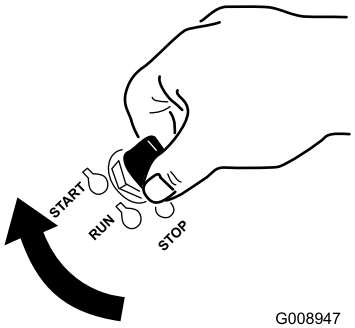



**Figure 17**

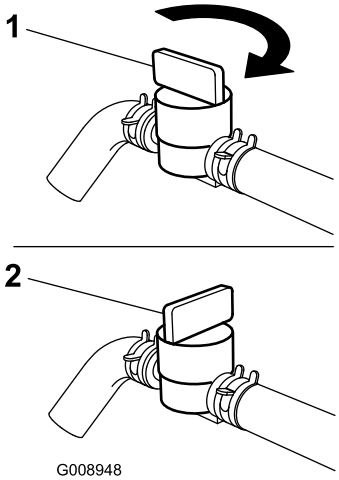
2. Turn the ignition key to the STOP position to stop the engine.

# 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.




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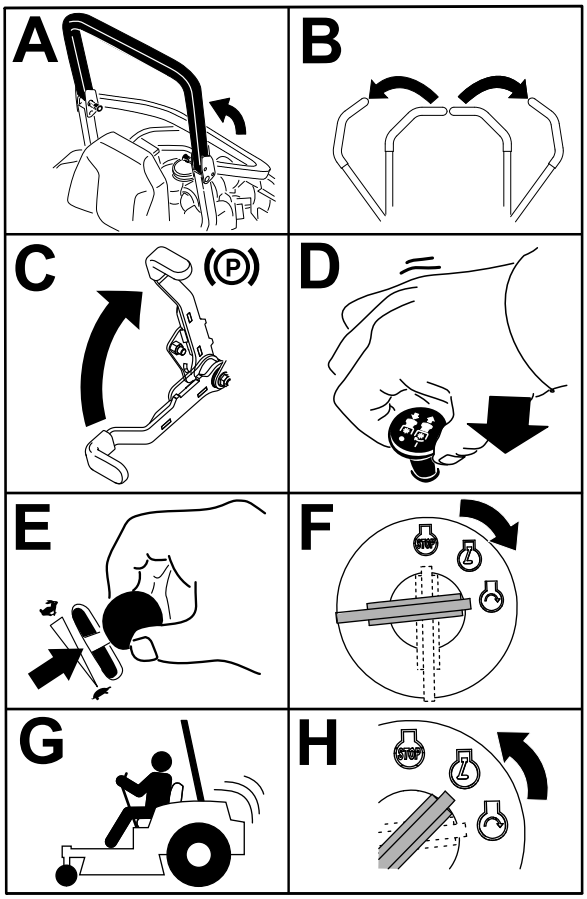
**Figure 18**

1. On
2. Off

# Starting and Stopping the Engine

## Starting the Engine

***Important:*** **Do not engage starter for more than 5 seconds at a time. If the engine fails to start, wait 15 seconds between attempts. Failure to follow these instructions can burn out the starter motor.**




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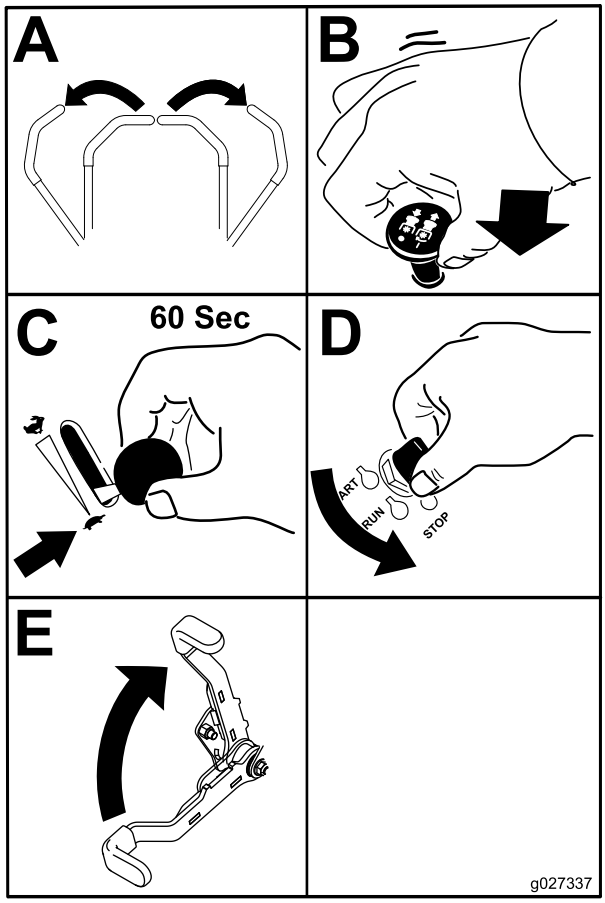
**Figure 19**

## Stopping 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 ignition key and set the parking brake when leaving the machine unattended, even if just for a few minutes.**




g027337

**Figure 20**

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

# Using the Safety-Interlock System

**⚠ CAUTION**

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

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

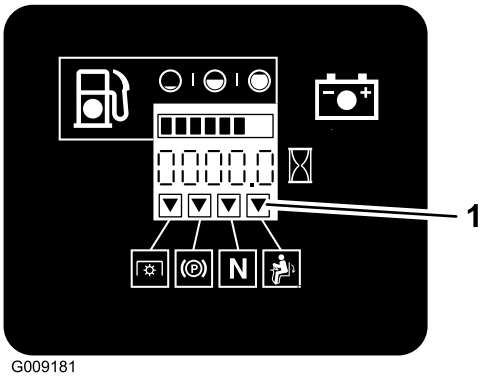
## Understanding the Safety-Interlock System

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 stop the engine when you move the traction controls 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 you 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.




G009181

g009181

**Figure 21**

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. Sit 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 crank.
2. Sit 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 crank. Repeat for other control lever.
3. Sit 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. Start the engine. While the engine is running, release the parking brake, engage the blade-control switch (PTO), and rise slightly from the seat; the engine should stop.
4. Sit on the seat, engage the parking brake, move the blade-control switch (PTO) to the OFF position, and move the motion-control levers to NEUTRAL-LOCK position. Start the engine. While the engine is running, center either motion-control lever and move it forward or reverse; the engine should stop. Repeat for other motion-control lever.
5. Sit on the seat, disengage the parking brake, move the blade-control switch (PTO) to the OFF position, and move the motion-control levers to NEUTRAL-LOCK position. Try starting the engine; the engine should not crank.

# Driving Forward or Backward

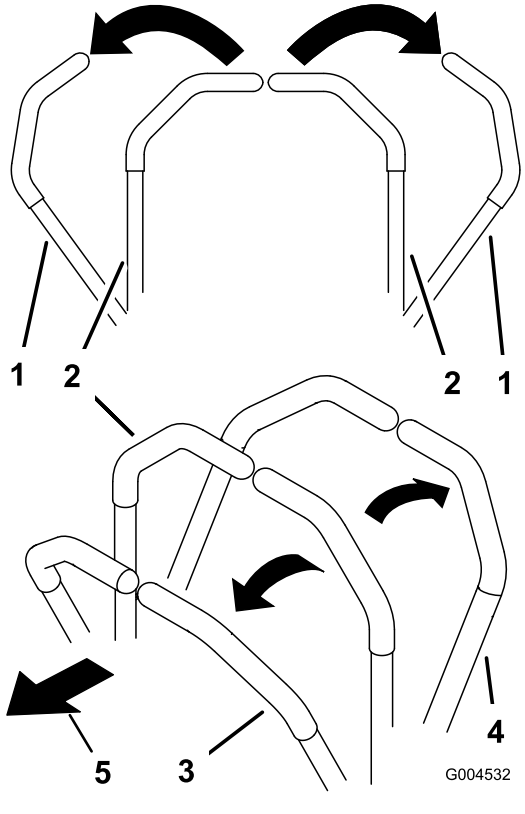
The throttle control regulates the engine speed as measured in rpm (revolutions per minute). Place the throttle control in the FAST position for best performance. Always operate in the full throttle position when mowing.

**⚠ CAUTION**

**Machine can spin very rapidly. You may lose control of machine and injure yourself or damage the machine.**

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

## Using the Motion-Control Levers




g004532

**Figure 22**

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

## Driving Forward

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

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

1. Release the parking brake; refer to Releasing the Parking Brake (page 20).
2. Move the levers to the center, unlocked position.
3. To go forward, slowly push the motion-control levers forward (Figure 23).

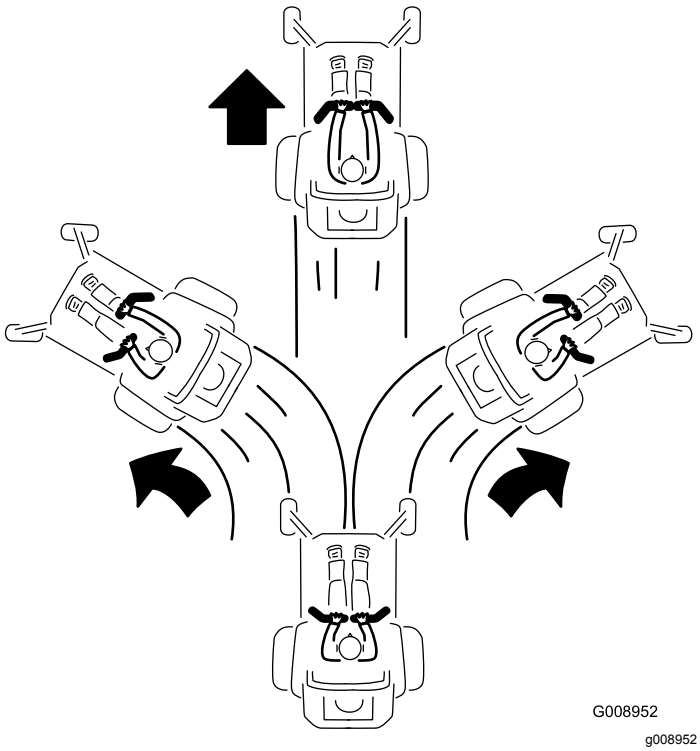



**Figure 23**

## Driving Backward

1. Move the levers to the center, unlocked position.
2. To go backward, slowly pull the motion-control levers rearward (Figure 24).

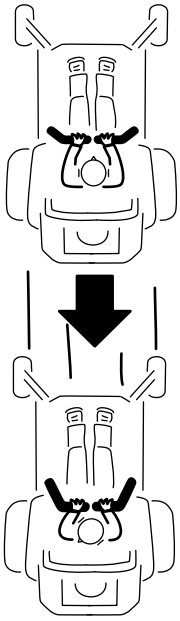



**Figure 24**

# Stopping the Machine

To stop the machine, move the motion-control levers to neutral and then to the NEUTRAL-LOCK position, disengage the blade-control switch (PTO), and turn the ignition key to the OFF position.

Set the parking brake when you leave the machine; refer to Setting the Parking Brake (page 20). Remove the key from the ignition switch.

**⚠ CAUTION**

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

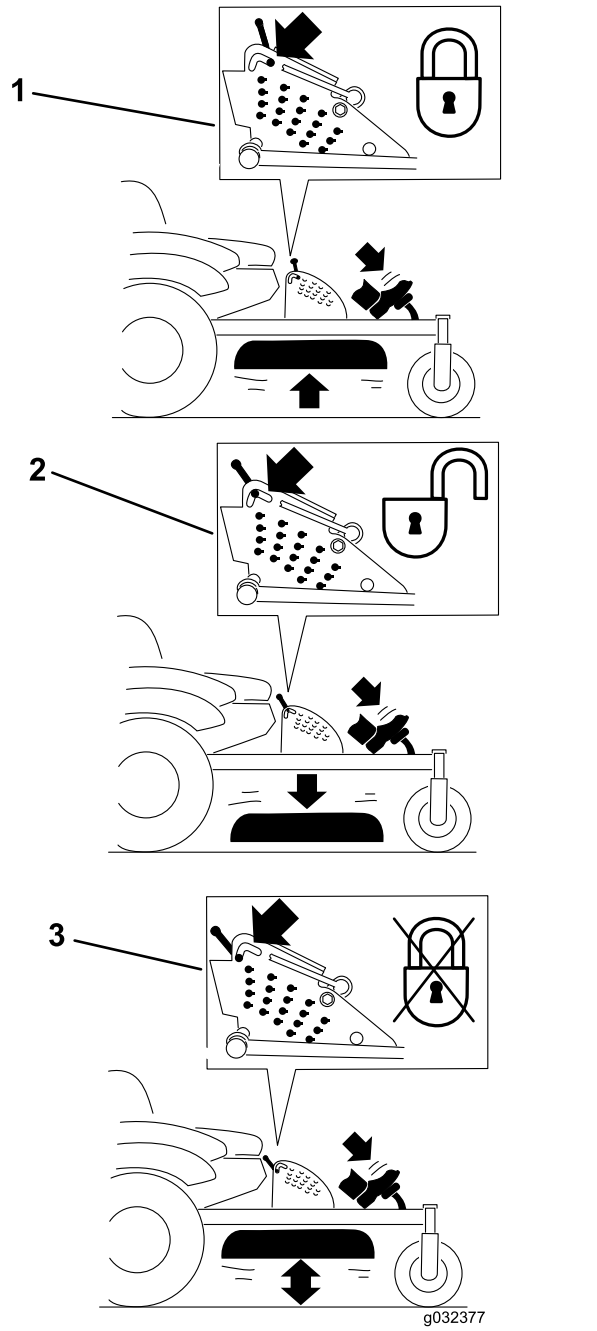
**Always remove the ignition key and set the parking brake when leaving the machine unattended, even if just for a few minutes.**

# 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 25).




g032377

**Figure 25**

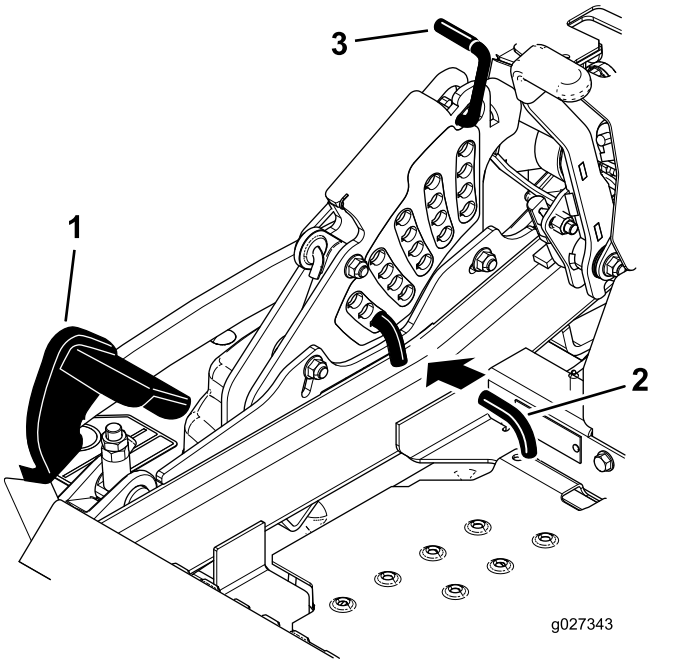
Transport-Lock Positions

1. Transport lock
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

Adjust the height-of-cut from 25 to 140 mm (1 to 5-1/2 inches) in 6 mm (1/4 inch) increments by moving 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 or 5-1/2 inch cutting-height position) as shown in Figure 26.
3. To adjust, rotate the pin 90 degrees and remove the pin from the height-of-cut bracket (Figure 26).
4. Select a hole in the height-of-cut bracket corresponding to the height-of-cut desired, and insert the pin (Figure 26).
5. Push on the deck lift, pull back on the transport lock, and slowly lower the mower deck.




g027343

**Figure 26**

1. Deck-lift pedal
2. Height-of-cut pin
3. Transport lock

# Adjusting the Anti-Scalp Rollers

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

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position and set 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 rollers to match the height of cut.

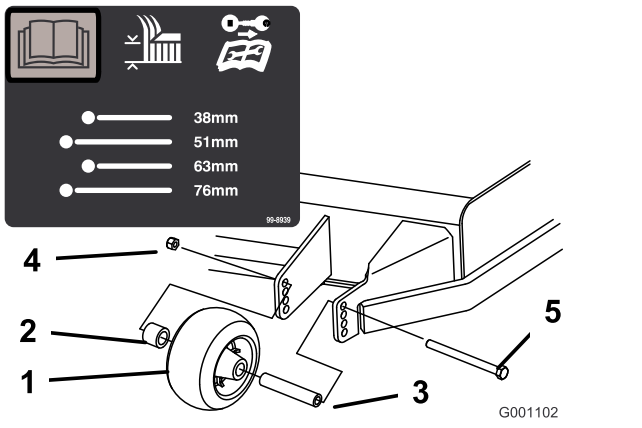



**Figure 27**

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

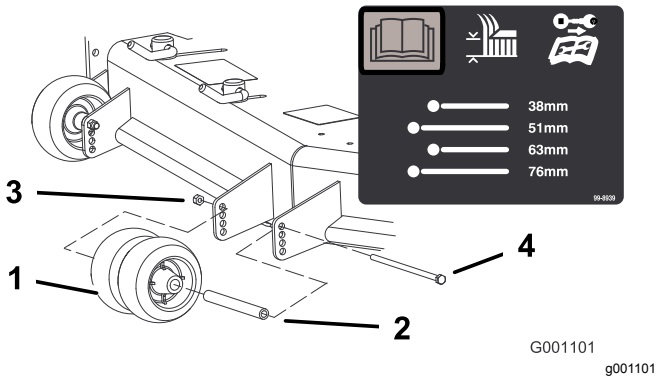



**Figure 28**

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

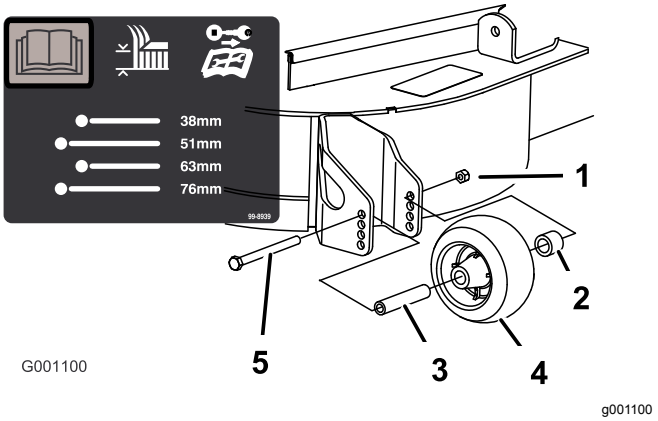



**Figure 29**

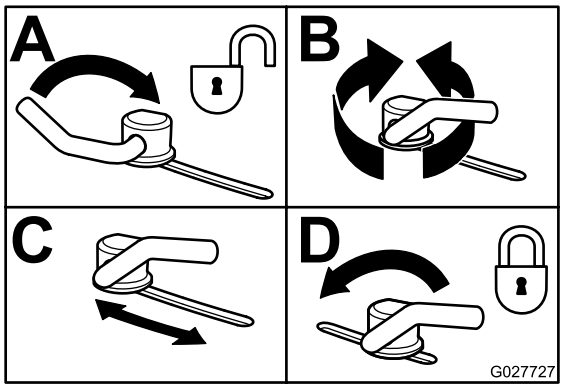
1. Flange nut
2. Spacer
3. Bushing
4. Anti-scalp roller
5. Bolt

# Adjusting the Flow-Baffle-Cam Locks

This procedure is applicable only to machines with 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 achieve the best quality of cut.

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 30).
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 30).
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. Adjust the cam lock until you achieve the desired locking pressure.




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**Figure 30**

# Positioning the Flow Baffle

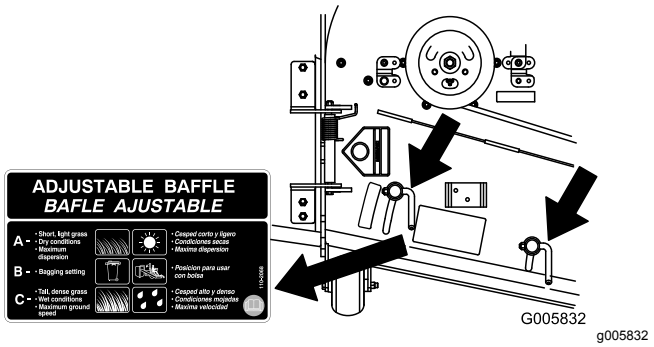
The following figures are only recommendations for use. Adjustments vary by grass type, moisture content, and height of grass.

**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. Use this position for the following.

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




g005832

**Figure 31**

## Position B

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

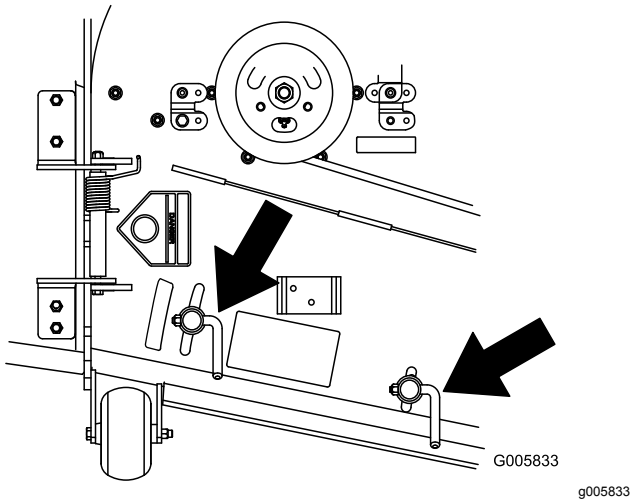



**Figure 32**

## Position C

This is the full open position. Use this position for the following:

- Tall, dense grass mowing conditions.
- Wet conditions.
- Lowering the engine power consumption.
- Increased ground speed in heavy conditions.

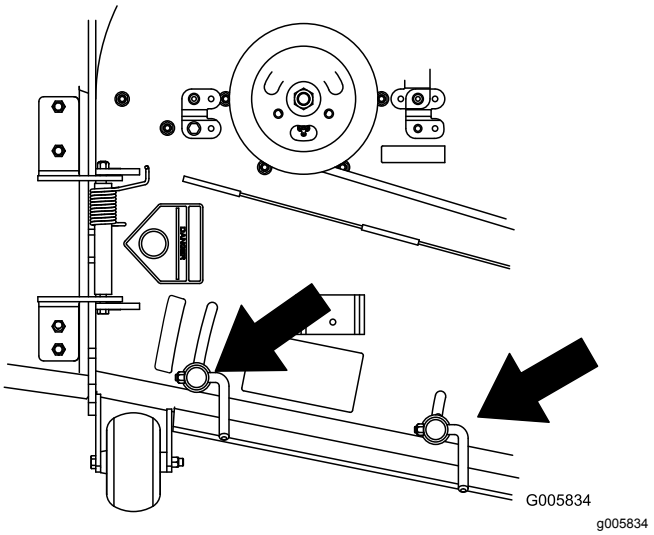



**Figure 33**

**Note:** This position is similar to the benefits of the Toro SFS mower.

# Positioning the Seat

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

To adjust the seat, move the lever sideways to unlock seat (Figure 34).

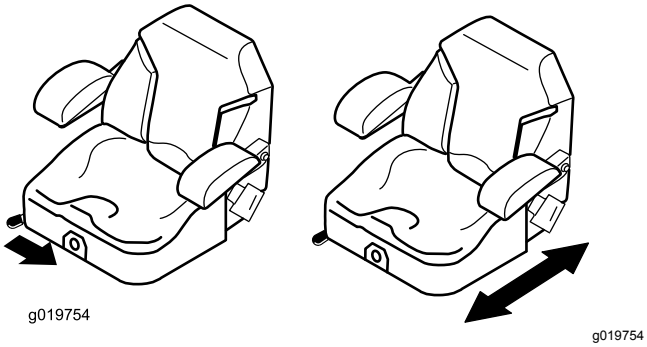



**Figure 34**

# Changing the Seat Suspension

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

To adjust the seat, turn the knob in front either direction to provide the best comfort (Figure 35).

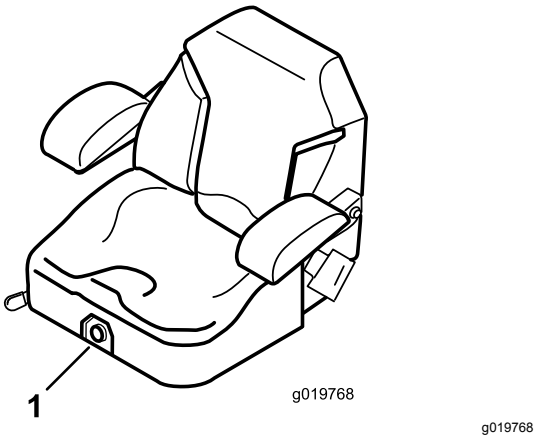



**Figure 35**

1. Seat-suspension knob

# Using the Drive-Wheel Release Valves

**⚠ WARNING**

**Hands may become entangled in the rotating drive components below the engine deck, which could result in serious injury.**

**Shut off the engine, remove the key, and wait for all moving parts to stop before accessing the drive-wheel release valves.**

**⚠ WARNING**

**The engine and hydraulic drive units can become very hot. Touching a hot engine or hydraulic drive units can cause severe burns.**

**Wait for the engine and hydraulic drive units to cool completely before accessing the drive-wheel release valves.**

The drive-wheel release valves are located in the back of each hydraulic drive unit, under the seat.

**Note:** Make sure that the release valves are in the fully horizontal position when operating the machine or severe damage to the hydraulic system can occur.

1. Disengage the blade-control switch (PTO) and turn the ignition key to off. Move the levers to the NEUTRAL-LOCK position and apply the parking brake. Remove the key.
2. Rotate the release-valve levers vertically to push the machine (Figure 36).

   **Note:** This allows hydraulic oil to bypass the pump, enabling the wheels to turn.
3. Disengage the parking brake before pushing the machine.

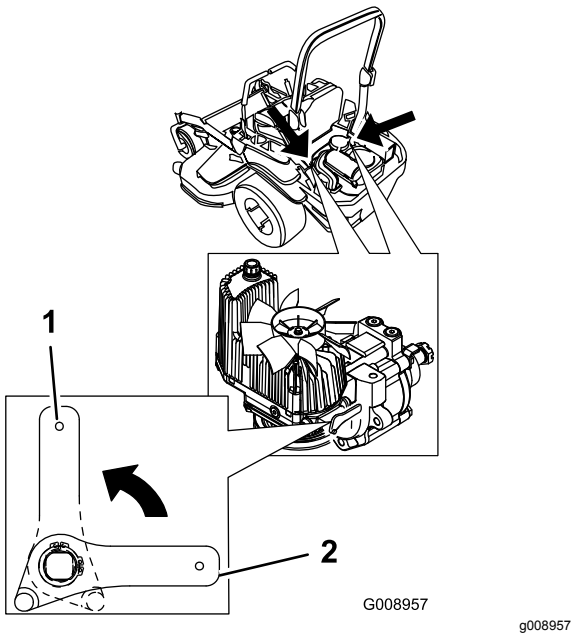



**Figure 36**

1. Vertical to push the machine
2. Horizontal to run the machine

4. Rotate the release-valve levers horizontally to run the machine (Figure 36).

# Using the Side Discharge

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 cause injury or death.**

- **Never remove the grass deflector from the mower 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.**
- **Never try to clear the discharge area or mower blades unless you move the blade-control switch (PTO) to the OFF position, rotate the ignition key to the OFF position, and remove the key.**
- **Make sure that the grass deflector is in the down position.**

# Transporting the Machine

Use a heavy-duty trailer or truck to transport the machine. Ensure that the trailer or truck has all necessary brakes, lighting, and marking as required by law. Please carefully read all the safety instructions. Knowing this information could help you, your family, pets, or bystanders avoid injury.

**⚠ 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.**

To transport the machine:

1. If you are using a trailer, connect it to the towing vehicle and connect the safety chains.
2. If applicable, connect the trailer brakes.
3. Load the machine onto the trailer or truck.
4. Shut off the engine, remove the key, set the brake, and close the fuel valve.
5. Use the metal tie-down loops on the machine to securely fasten the it to the trailer or truck with straps, chains, cable, or ropes (Figure 37).

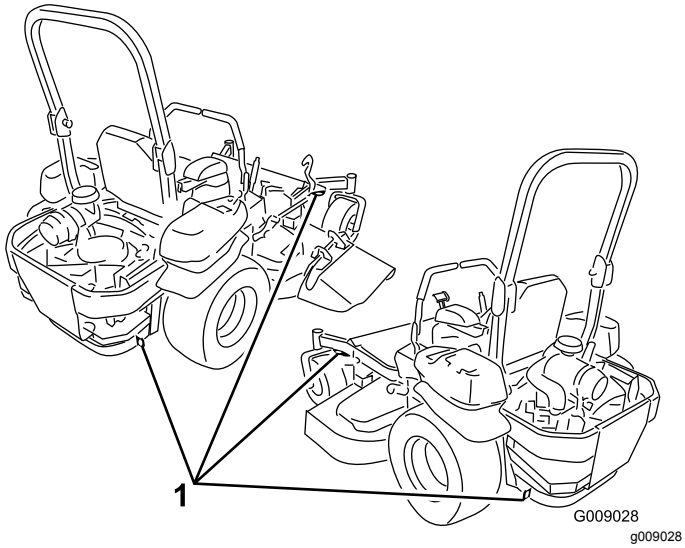



**Figure 37**

1. Traction unit tie-down loops

# Loading the Machine

Use extreme caution when loading or the unloading machine onto a trailer or a truck. Use a full-width ramp that is wider than the machine for this procedure. Back the machine up the ramps and drive it forward down the ramps (Figure 38).

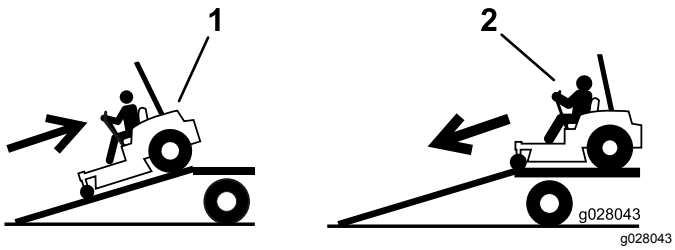



**Figure 38**

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

***Important:*** **Do not use narrow individual ramps for each side of the machine.**

Ensure that the ramp is long enough so that the angle with the ground does not exceed 15 degrees (Figure 39). On flat ground, this requires a ramp to be at least 4 times as long as the height of the trailer or truck bed to the ground. A steeper angle may cause mower components to get caught as the machine moves from the ramp to the trailer or truck. Steeper angles may also cause the machine to tip or lose control. If you are loading the machine on or near a slope, position the trailer or truck so that it is on the down side of the slope and the ramp extends up the slope. This minimizes the ramp angle.

**⚠ WARNING**

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

- **Use extreme caution when operating a machine on a ramp.**
- **Ensure that the ROPS is in the up position and use the seat belt when loading or unloading the machine. Ensure that the ROPS clears the top of an enclosed trailer.**
- **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 ramp is at least 4 times as long as the height of the trailer or truck bed to the ground. This ensures that ramp angle does not exceed 15 degrees on flat ground.**
- **Back the machine up the ramps and drive it forward down the ramps.**
- **Avoid sudden acceleration or deceleration while driving the machine on a ramp as this could cause a loss of control or a tip-over.**

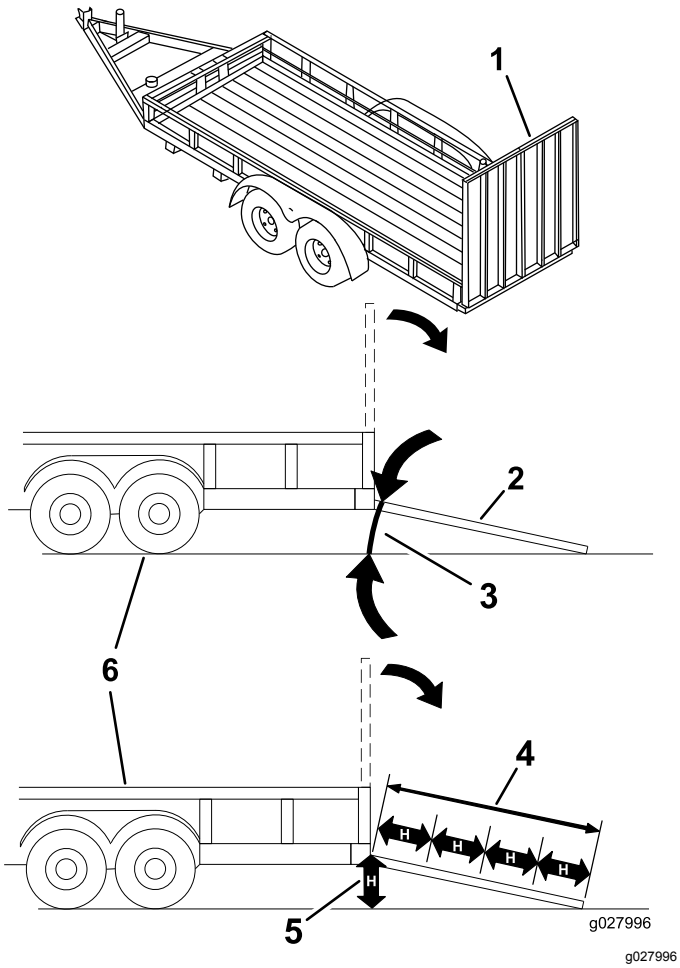



Figure 39

1. Full-width ramp in stowed position
2. Side view of full-width ramp in loading position
3. Not greater than 15 degrees
4. The 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

# 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 only for cleaning the mower and removing the blades.**
- **Do not keep the machine on the Z Stand for extended periods of time.**
- **Always turn the engine off, 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 to the transport position.
2. Remove the bracket pin (Figure 40).

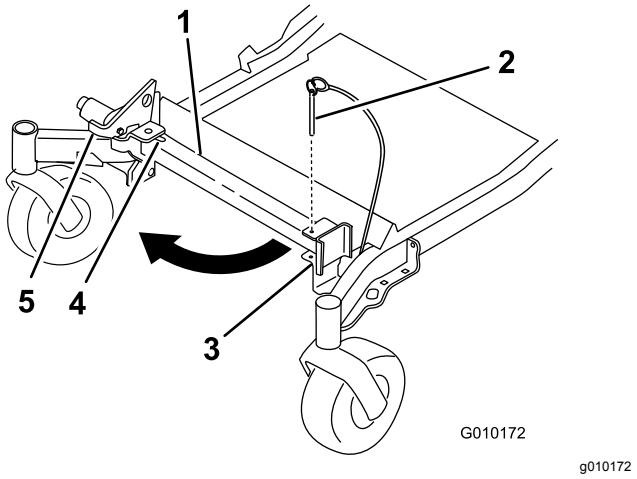



Figure 40

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 40 and Figure 41).

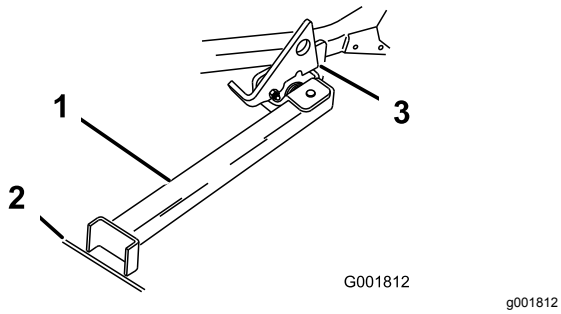



**Figure 41**

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 41).
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 41).
7. Drive the machine onto the stand. Stop when the latch drops over the tab into the locked position (Figure 41).
8. Engage the parking brake and turn off the engine.
9. Chock or block the drive wheels.

   **⚠ WARNING**

   **Parking brake may not hold machine parked on 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 42).

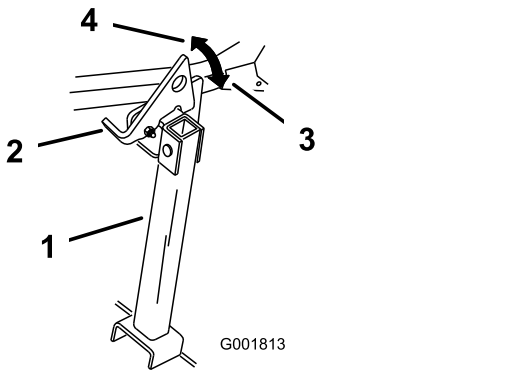



**Figure 42**

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 40).

# Operating Tips

## Using the Fast Throttle Setting

For best mowing and maximum air circulation, operate the engine at the FAST throttle 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 in uncut grass. Always try to have 1 side of the mower free from uncut grass, which allows air to be drawn into the mower.

## Cutting a Lawn for the First Time

Cut the grass slightly longer than normal to ensure that the cutting height of the mower does not scalp any uneven ground. However, the cutting height you have used in the past is generally the best to use. When cutting grass longer than 15.24 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

Normally, mow every 4 days. However, grass grows at different rates at different times. To maintain the same cutting height, which is a good practice, 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.

## Adjusting the Cutting Speed

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

## Avoiding Cutting Too Low

If the cutting width of the mower is wider than the mower that you previously used, raise the cutting height to ensure that uneven turf is not cut too short.

## Cutting Long Grass

If the grass is ever allowed to grow slightly longer than normal, or if it contains a high degree of moisture, raise the cutting height higher than usual and cut the grass at this setting. Then cut the grass again using the lower, normal setting.

## Stopping

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.

## Keeping the Underside of the Mower Clean

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

## Maintaining the Blade

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 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.

# Maintenance

## Recommended Maintenance Schedule(s)

| Maintenance Service Interval | Maintenance Procedure |
|---|---|
| After the first 8 hours | • Change the engine oil. |
| After the first 100 hours | • Check the wheel lug-nut torque.<br>• Check the wheel-hub slotted-nut torque.<br>• Check the parking-brake adjustment (check every time you remove or replace a brake component). |
| After the first 250 hours | • Change the hydraulic filters and hydraulic oil. |
| Before each use or daily | • Check the safety system.<br>• Check the engine-oil level.<br>• Check the seat belt.<br>• Check the rollover-protection-system (ROPS) knobs.<br>• Clean the engine screen and the oil cooler.<br>• Check and clean the hydraulic unit shrouds.<br>• Inspect the blades.<br>• Clean the mower deck. |
| Every 50 hours | • Grease the mower-deck spindles and idler arm.<br>• Check spark arrester (if equipped).<br>• Check the tire pressure.<br>• Inspect the belts for cracks and wear.<br>• Check the hydraulic oil level. |
| Every 100 hours | • Lubricate the mower-deck-lift pivots.<br>• Change the engine oil (more often in dirty or dusty conditions).<br>• Check, clean, and gap the spark plug.<br>• Check and clean engine cooling fins and shrouds. |
| Every 200 hours | • Change the engine-oil filter. |
| Every 250 hours | • Replace the primary air filter (more often in dusty or sandy conditions).<br>• Check the safety air filter.<br>• Change the hydraulic filters and hydraulic oil when using Mobil® 1 oil (more often in dirty or dusty conditions). |
| Every 300 hours | • Check and adjust the valve clearance. See an Authorized Service Dealer. |
| Every 500 hours | • Replace the safety air filter.<br>• Replace the fuel filter (more often in dirty or dusty conditions).<br>• Check the wheel lug-nut torque.<br>• Check the wheel-hub slotted-nut torque.<br>• Adjust the caster-pivot bearing.<br>• Check the parking-brake adjustment.<br>• Change the hydraulic filters and hydraulic oil when using Toro® HYPR-OIL™ 500 hydraulic oil (more often in dirty or dusty conditions). |
| Monthly | • Check the battery. |
| Yearly | • Grease the pump-belt idler arm.<br>• Grease the front caster pivots (more often in dirty or dusty conditions).<br>• Repack the front caster-wheel bearings (more often in dirty or dusty conditions).<br>• Lubricate the caster-wheel hubs. |
| Yearly or before storage | • Paint chipped surfaces.<br>• Check all maintenance procedures listed above before storage. |

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

**⚠ CAUTION**

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

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

# *Pre-Maintenance Procedures*

## Releasing the Mower-Deck Curtain

Loosen the bottom bolt of the curtain to release the mower-deck curtain and access the top of the mower deck (Figure 43). Tighten the bolt after maintenance to install the curtain.

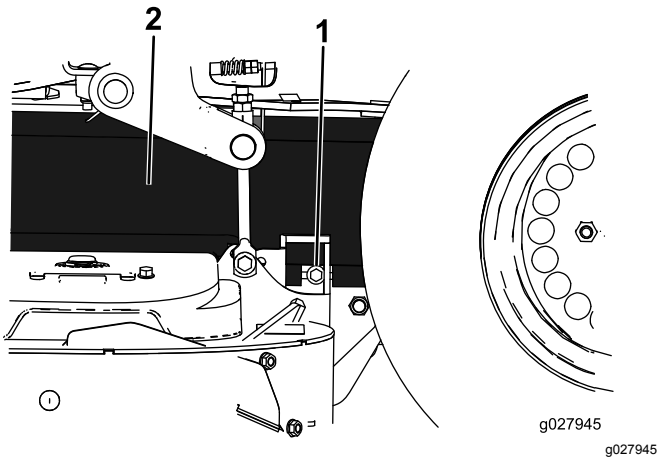



**Figure 43**

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 44). Install the sheet-metal guard and tighten the bolts after maintenance.

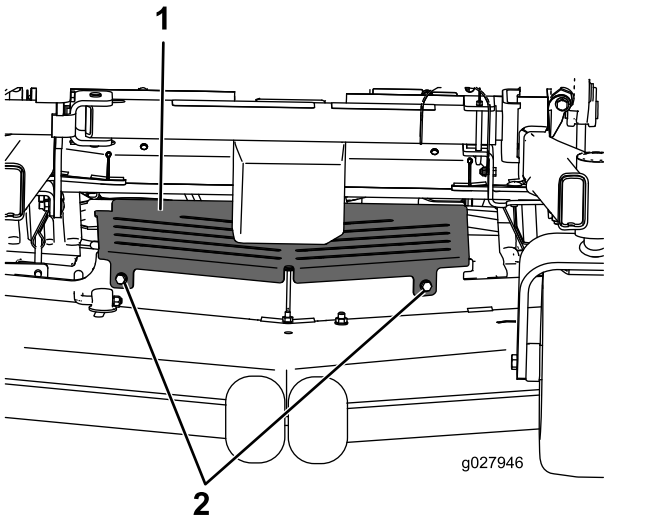



**Figure 44**

1. Sheet-metal guard
2. Bolt

# Lubrication

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

**Grease Type:** No. 2 lithium or molybdenum grease

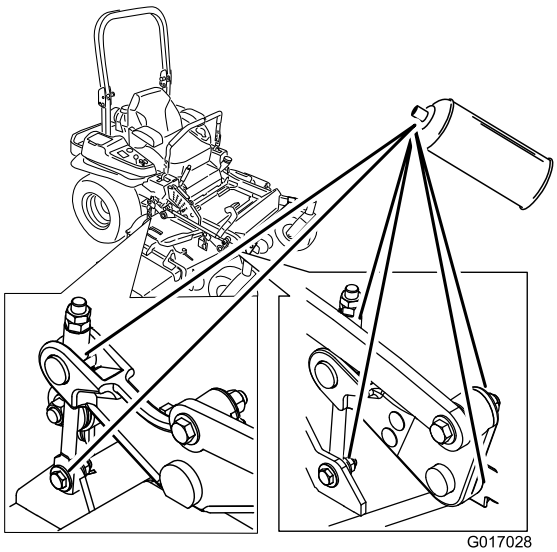
1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the grease fittings with a rag.

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

# Adding Light Oil or Spray Lubrication

**Service Interval:** Every 100 hours

Lubricate the deck-lift pivots.




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**Figure 45**

# Greasing the Mower

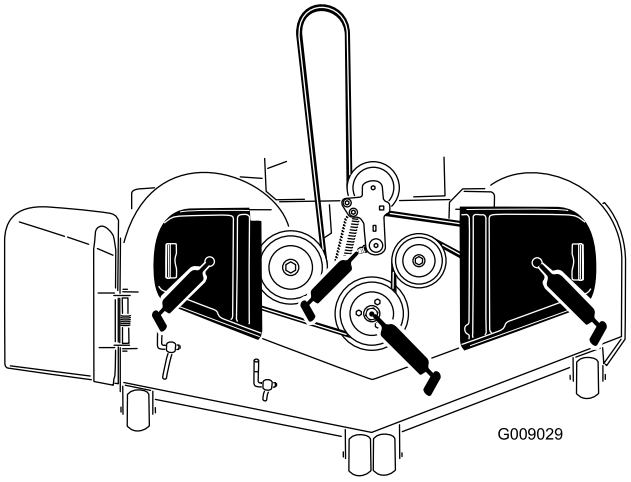
**Service Interval:** Every 50 hours—Grease the mower-deck spindles and idler arm.

Yearly—Grease the pump-belt idler arm.

Yearly—Grease the front caster pivots (more often in dirty or dusty conditions).

Yearly—Repack the front caster-wheel bearings (more often in dirty or dusty conditions).

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 38).
4. Remove the sheet-metal guard. Refer to Removing the Sheet-Metal Guard (page 38).
5. Grease the mower-deck idler-pulley pivot until grease comes out the bottom (Figure 46).
6. Grease the 3 spindle bearings until grease comes out the lower seals (Figure 46).




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**Figure 46**

7. Grease the drive-belt idler arm (Figure 46).

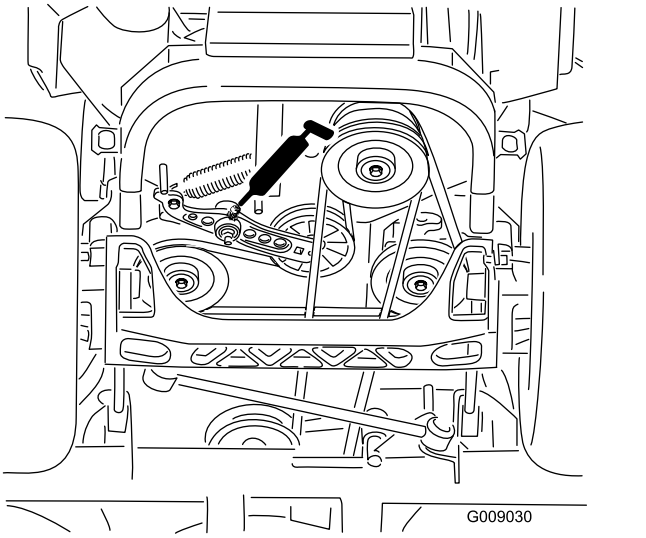



**Figure 47**

8. Remove the dust cap and adjust the caster pivots.

   **Note:** Keep the dust cap off until greasing is complete. Refer to Adjusting the Caster-Pivot Bearing (page 51).

9. Remove the hex plug and thread a grease fitting into the hole.
10. Pump grease into the fitting until it oozes out around the top bearing.
11. Remove the grease fitting from the hole.
12. Install the hex plug and dust cap (Figure 48).

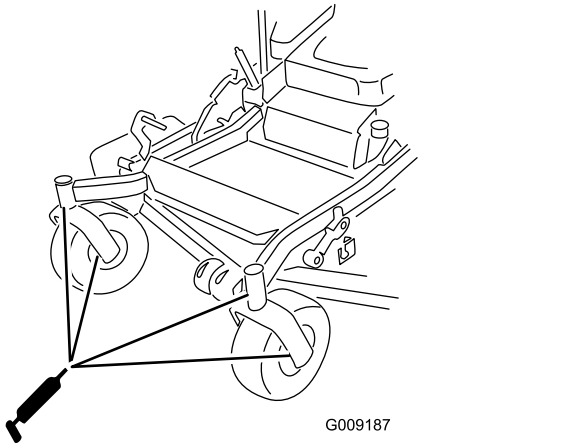



**Figure 48**

13. Install the sheet-metal guard. Refer to Removing the Sheet-Metal Guard (page 38).
14. Tighten the bolt for the mower-deck curtain. Refer to Releasing the Mower-Deck Curtain (page 38).

# Lubricating the Caster-Wheel Hubs

**Service Interval:** Yearly

1. Shut off the engine, wait for all moving parts to stop, remove the key, and engage the parking brake.

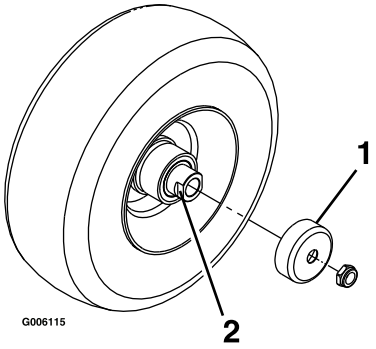



**Figure 49**

1. Seal guard
2. Spacer nut with wrench flats

2. Remove the caster wheel from the caster forks.
3. Remove the seal guards from the wheel hub.
4. Remove a spacer nut from the axle assembly in the caster wheel.

   **Note:** Thread-locking compound has been applied to lock the spacer nuts to the axle.

5. Remove the axle (with the other spacer nut still assembled to it) from the wheel assembly.
6. Pry out seals and inspect bearings for wear or damage and replace if necessary.
7. Pack the bearings with a general-purpose grease.
8. Insert 1 bearing and 1 new seal into the wheel.

   **Note:** Replace the seals.

9. If both spacer nuts have been removed (or broken loose) from the axle assembly, apply a thread-locking compound 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.

10. Insert the assembled nut and axle into the wheel on the side with the new seal and bearing.
11. With the open end of the wheel facing up, fill the area inside the wheel around the axle full of general-purpose grease.

12. Insert the second bearing and new seal into the wheel.
13. Apply a thread-locking compound to the second spacer nut and thread it onto the axle with the wrench flats facing outward.
14. Torque the nut to 8 to 9 N·m (75 to 80 in-lb), loosen the nut, then torque it to 2 to 3 N·m (20 to 25 in-lb).

    **Note:** Make sure that the axle does not extend beyond either nut.
15. Install the seal guards over the wheel hub and insert wheel into the caster fork.
16. 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 compound.**

# Engine Maintenance

**⚠ WARNING**

**Contact with hot surfaces may cause personal injury.**

**Keep hands, feet, face, clothing and other body parts away the muffler and other hot surfaces.**

# Servicing the Air Cleaner

**Service Interval:** Every 300 hours

Every 250 hours—Replace the primary air filter (more often in dusty or sandy conditions).

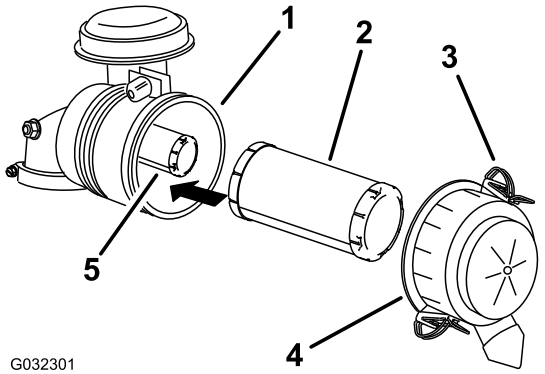
Every 250 hours—Check the safety air filter.

Every 500 hours—Replace the safety air filter.

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

## Removing the Filters

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 50).




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**Figure 50**

1. Air-cleaner body
2. Primary filter
3. Latch
4. Air-cleaner cover
5. Safety filter

4. Clean the inside of the air-cleaner cover with compressed air.
5. Gently slide the primary filter out of the air-cleaner body (Figure 50).

**Note:** Avoid knocking the filter into the side of the body.

6. Remove the safety filter only if you intend to replace it.

   ***Important:*** **Do not attempt to clean the safety filter. If the safety filter is dirty, then the primary filter is damaged. Replace both filters.**

7. Inspect the primary 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.

## Servicing the Primary Filter

- If the primary filter is dirty, bent, or damaged, replace it.
- Do not clean the primary filter.

## Servicing the Safety Filter

Replace the safety filter, never clean it.

***Important:*** **Do not attempt to clean the safety filter. If the safety filter is dirty, then the primary filter is damaged. Replace both filters.**

## Installing the Filters

***Important:*** **To prevent engine damage, always operate the engine with both air filters and the cover installed.**

1. If installing new filters, check each filter for shipping damage.

   **Note:** Do not use a damaged filter.

2. If you are replacing the safety filter, carefully slide it into the filter body (Figure 50).
3. Carefully slide the primary filter over the safety filter (Figure 50).

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

   ***Important:*** **Do not press on the soft inside area of the filter.**

4. Install the air-cleaner cover with the side indicated as **up** facing upward and secure the latches (Figure 50).

# Servicing the Engine Oil

**Oil Type:** Detergent oil (API service SF, SG, SH, SJ, or SL)

**Oil Capacity:**

- **Model 74919TE:** with a filter change, 2.1 L (2.2 US qt); without a filter change, 1.8 L (1.9 US qt)
- **Model 74925TE:** with a filter change, 2.3 L (2.4 US qt); without a filter change, 2.1 L (2.2 US qt)

**Viscosity:** See the table below.

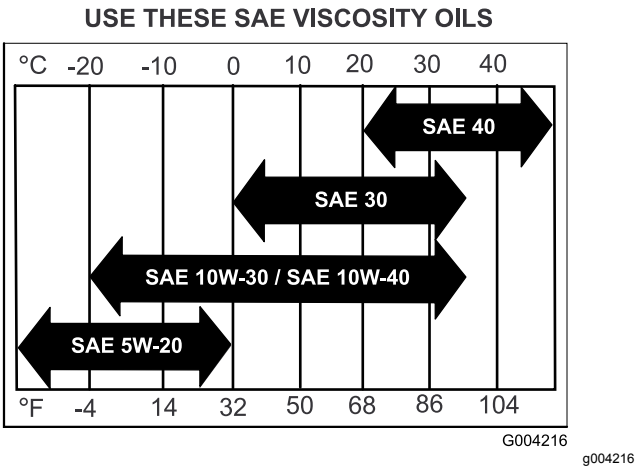



**Figure 51**

**Note:** Use of multi-grade oils (5W-20, 10W-30, or 10W-40) will increase oil consumption. Check the oil level more frequently when using them.

## Checking the Engine-Oil Level

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

**Note:** Check the oil when the engine is cold.

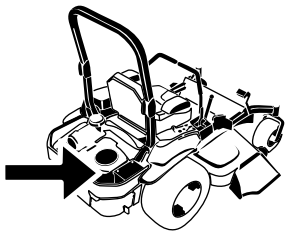
**⚠ WARNING**

**Contact with hot surfaces may cause personal injury.**

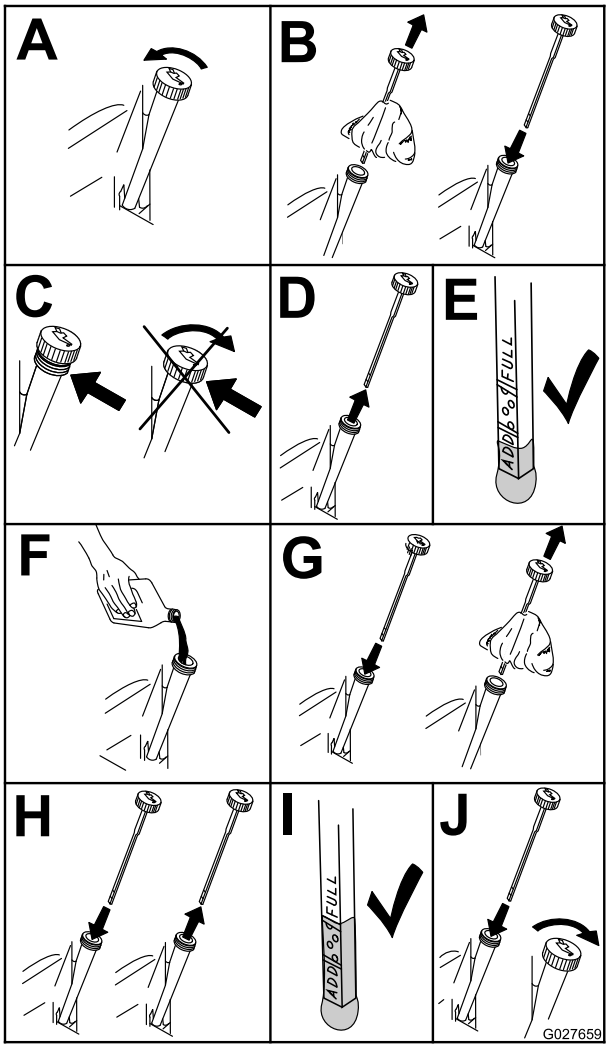
**Keep hands, feet, face, clothing, and other body parts away from the muffler and other hot surfaces.**

***Important:*** **Do not overfill the crankcase with oil because that could damage engine. Do not run engine with oil below the Low mark because the engine may be damaged.**

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 52).



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**Figure 52**

## Changing the Engine Oil

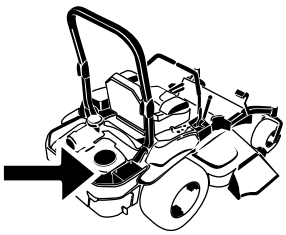
**Service Interval:** After the first 8 hours

Every 100 hours (more often in dirty or dusty conditions).

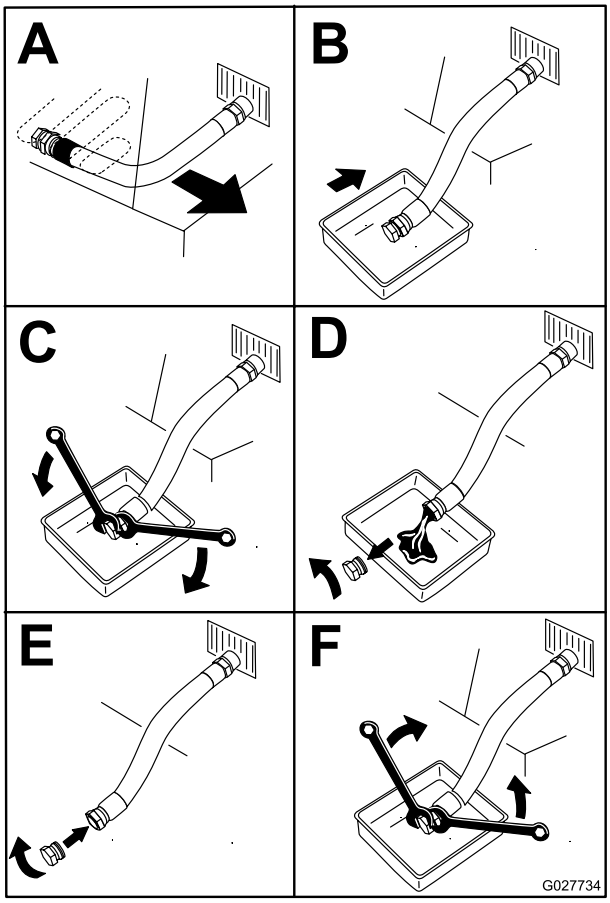
**Note:** Dispose of the used oil at a recycling center.

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

   **Note:** This warms the oil so that it drains better.
2. Park the machine so that the rear is slightly lower than the front to ensure that the oil drains completely.
3. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set the parking brake.
4. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position (Figure 53).



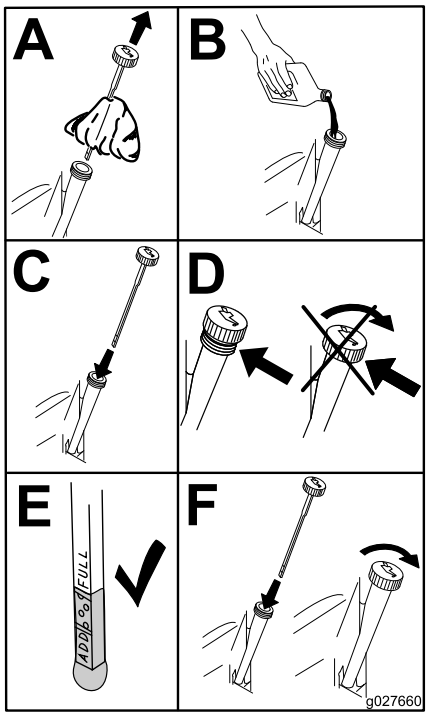
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**Figure 53**

5. Slowly pour approximately 80% of the specified oil into the filler tube and slowly add the additional oil to bring it to the **Full** mark (Figure 54).




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**Figure 54**

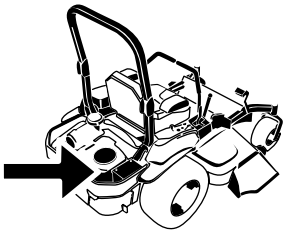
6. Start the engine and drive to a flat area.
7. Check the oil level again.

## Changing the Engine-Oil Filter

**Service Interval:** Every 200 hours

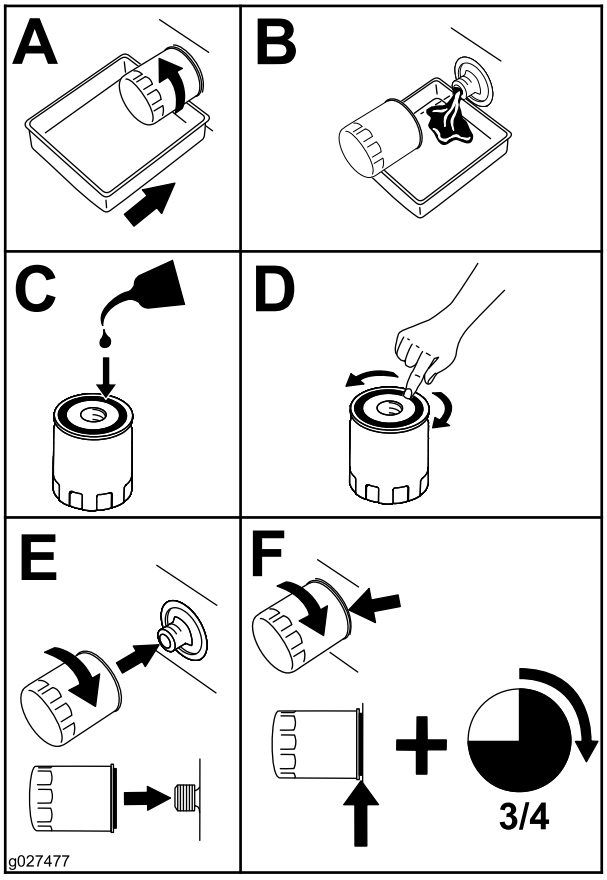
**Note:** Change the engine-oil filter more frequently when operating conditions are extremely dusty or sandy.

1. Drain the oil from the engine; refer to Changing the Engine Oil (page 43).
2. Change the engine-oil filter (Figure 55).



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**Figure 55**

**Note:** Ensure that the oil-filter gasket touches the engine, and then the oil filter an extra 3/4 turn.

3. Fill the crankcase with the proper type of new oil; refer to Changing the Engine Oil (page 43).

# Servicing the Spark Plug

**Service Interval:** Every 100 hours

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

**Type of Spark Plug:** NGK® BPR4ES or equivalent

**Air Gap:** 0.76 mm (0.030 inch)

## Removing the Spark Plugs

***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.**

1. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
2. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set the parking brake.
3. Remove the hydraulic-unit shroud and the 2 bolts attached to it (Figure 56).

   **Note:** This gives you access to the front spark plug.

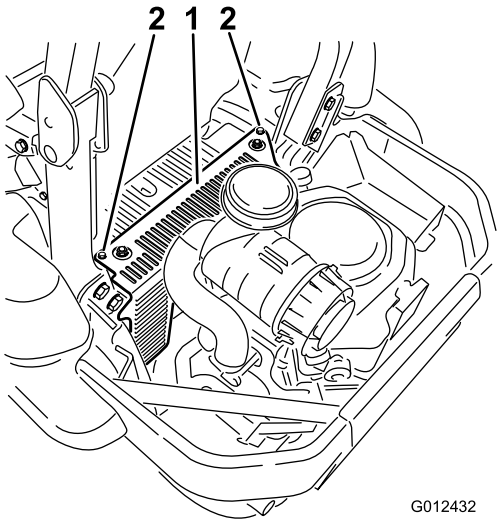
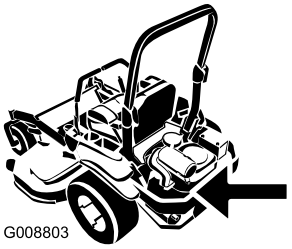



**Figure 56**

1. Hydraulic-unit shroud
2. Loosen these 2 bolts

4. Remove the spark plugs.



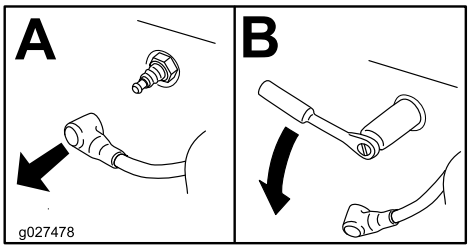




**Figure 57**

5. Install the left-hand hydraulic-unit shroud (Figure 56).

## Checking the Spark Plug

***Important:*** **Never clean the spark plug(s). Always replace the spark plug(s) when it has: a black coating, worn electrodes, an oily film, or cracks.**

If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means the air cleaner is dirty.

Set the gap to 0.76 mm (0.030 inches).

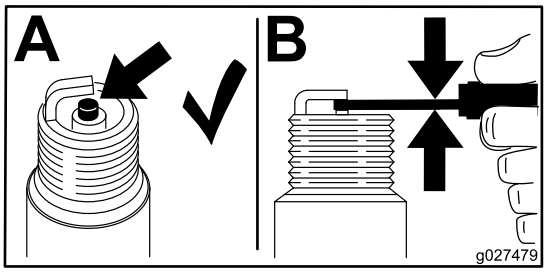
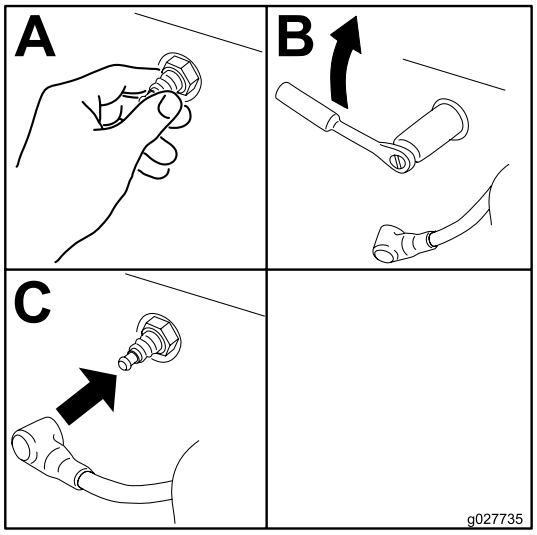



**Figure 58**

## Installing the Spark Plug

Tighten the spark plug(s) to 24.4 to 29.8 N·m (18 to 22 ft-lb).




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**Figure 59**

# Checking the Spark Arrester

## For a Model with a Spark Arrester

**Service Interval:** Every 50 hours

**⚠ WARNING**

**Hot exhaust system components may ignite gasoline vapors even you shut off the engine. Hot particles exhausted during engine operation may ignite flammable materials. Fire may result in personal injury or property damage.**

**Do not refuel or run the engine unless a spark arrester is installed.**

1. Stop engine, wait for all moving parts to stop, and remove key. Engage parking brake.
2. Wait for muffler to cool.
3. If there are any breaks in the screen or welds, replace the arrester.
4. If the screen is plugged, remove the arrester and shake the loose particles out of the arrester and clean the screen with a wire brush (soak it in solvent if necessary). Install the arrester on the exhaust outlet.

# *Fuel System Maintenance*

# Replacing the Fuel Filter

**Service Interval:** Every 500 hours/Yearly (whichever comes first) (more often in dirty or dusty conditions).

The fuel filter is located near the engine on the front or rear side of the engine.

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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. Wait for the machine to cool down.
4. Close the fuel-shutoff valve under the seat (Figure 17).
5. Squeeze the ends of the hose clamps together and slide them away from the filter (Figure 60).

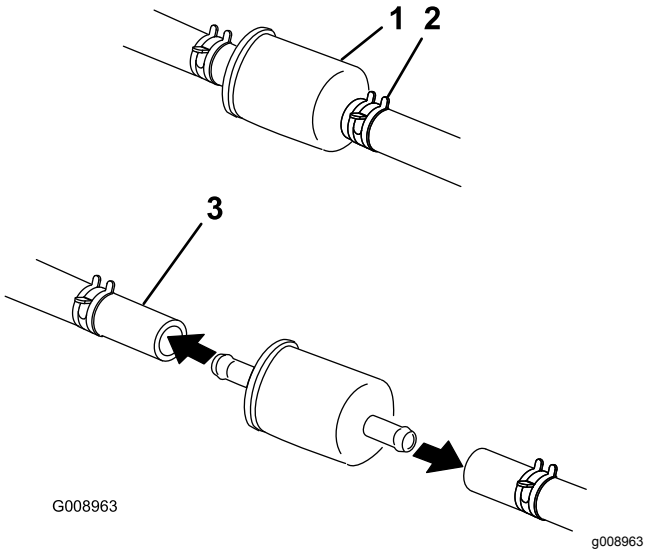



**Figure 60**

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

6. Remove the filter from the fuel lines.
7. Install a new filter and move the hose clamps close to the filter (Figure 60).
8. Open the fuel-shutoff valve.

***Important:*** **Install the fuel line hoses and secure with plastic ties the same as they were originally**

**installed at the factory to keep the fuel line away from components that can cause fuel line damage.**

## 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*

## Servicing the Battery

**Service Interval:** Monthly

**WARNING**

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

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

**⚠ DANGER**

**Battery electrolyte contains sulfuric acid which is a deadly poison and causes severe burns.**

**Do not drink electrolyte and avoid contact with skin, eyes, or clothing. Wear safety glasses to shield your eyes and rubber gloves to protect your hands.**

### 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.**

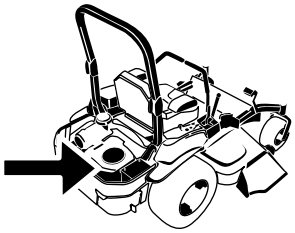
- **When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the machine.**
- **Do not allow metal tools to short between the battery terminals and metal parts of the machine.**

**⚠ WARNING**

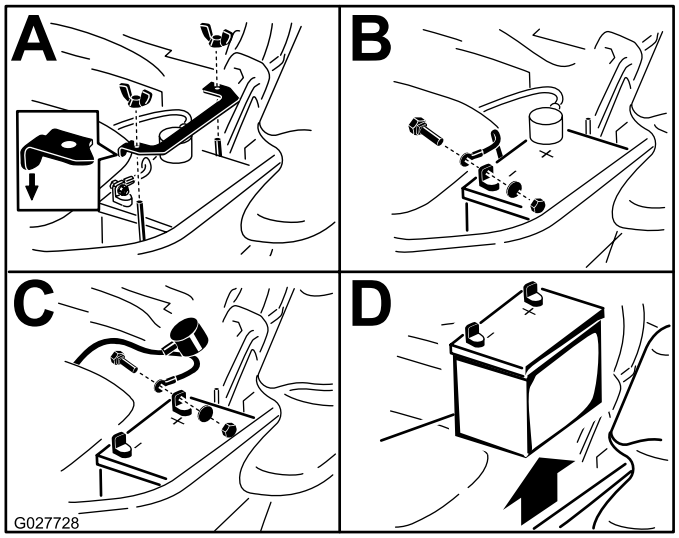
**Incorrect battery cable routing could damage the machine and cables, causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.**

- **Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.**
- **Always connect the positive (red) battery cable before connecting the negative (black) cable.**

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 battery as shown in Figure 61.



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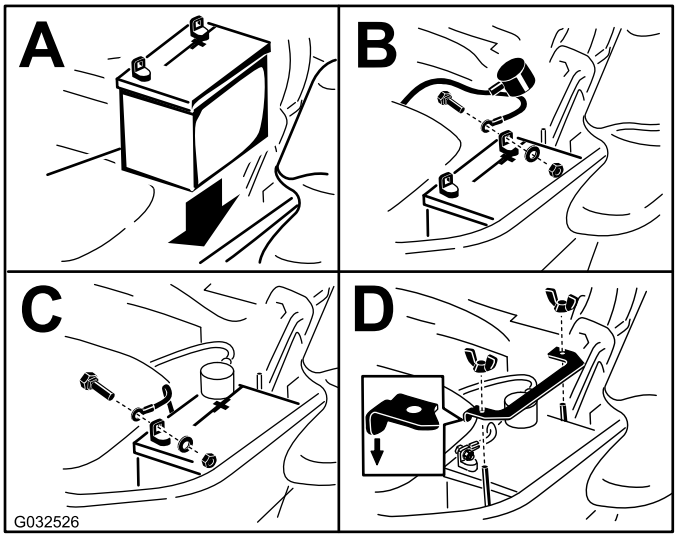



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**Figure 61**

## Installing the Battery

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




g032526

**Figure 62**

## Charging the Battery

**⚠ WARNING**

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

**Never smoke near the battery and keep sparks and flames away from 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. Charge battery for 10 to 15 minutes at 25 to 30 A or for 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 63).
3. Install the battery in the machine and connect the battery cables; refer to Installing the Battery (page 48).

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

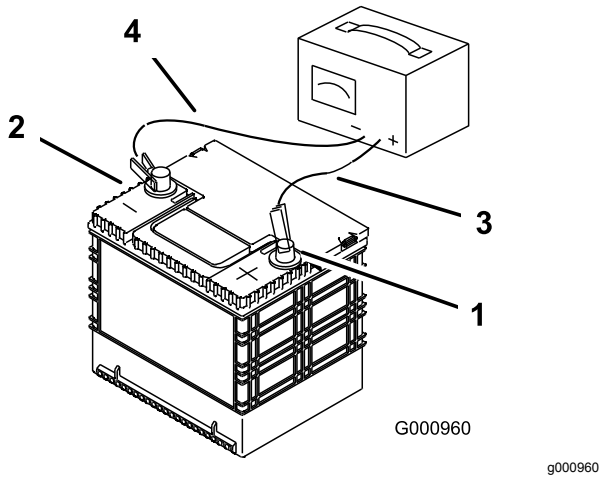



**Figure 63**

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 the component/circuit for a malfunction or short.

1. The fuses are located on right hand console next to the seat (Figure 64).
2. To replace the fuses, pull out on the fuse to remove it.
3. Install a new fuse (Figure 64).

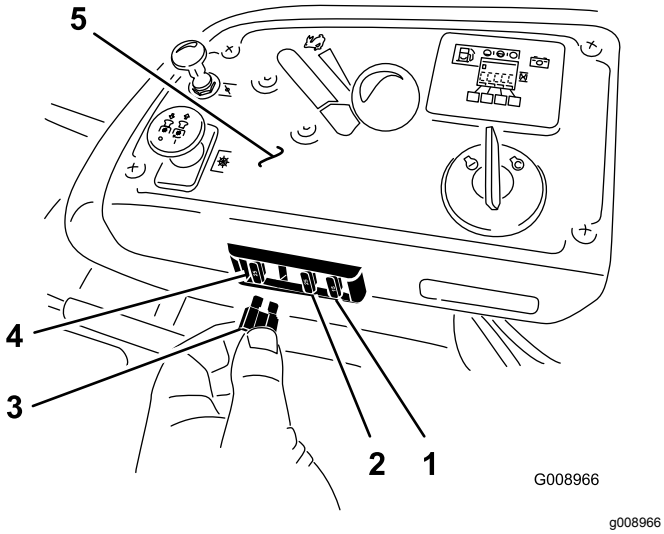



**Figure 64**

1. Optional accesory—15 A
2. Charge—25 A
3. PTO—10 A
4. Main—25 A
5. Console

# *Drive System Maintenance*

## Checking the Seat Belt

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

Inspect the seat belt for wear, cuts, and proper operation of the retractor and buckle. Replace the seat belt if it is damaged.

## Checking the Rollover-Protection-System (ROPS) Knobs

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

**⚠ 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.**

Check that both the mounting hardware and the knobs are in good working condition. Make sure that the knobs are fully engaged with the ROPS in the raised position. The upper hoop of the roll bar may need to be pushed forward or pulled rearward to fully engage both knobs (Figure 65).

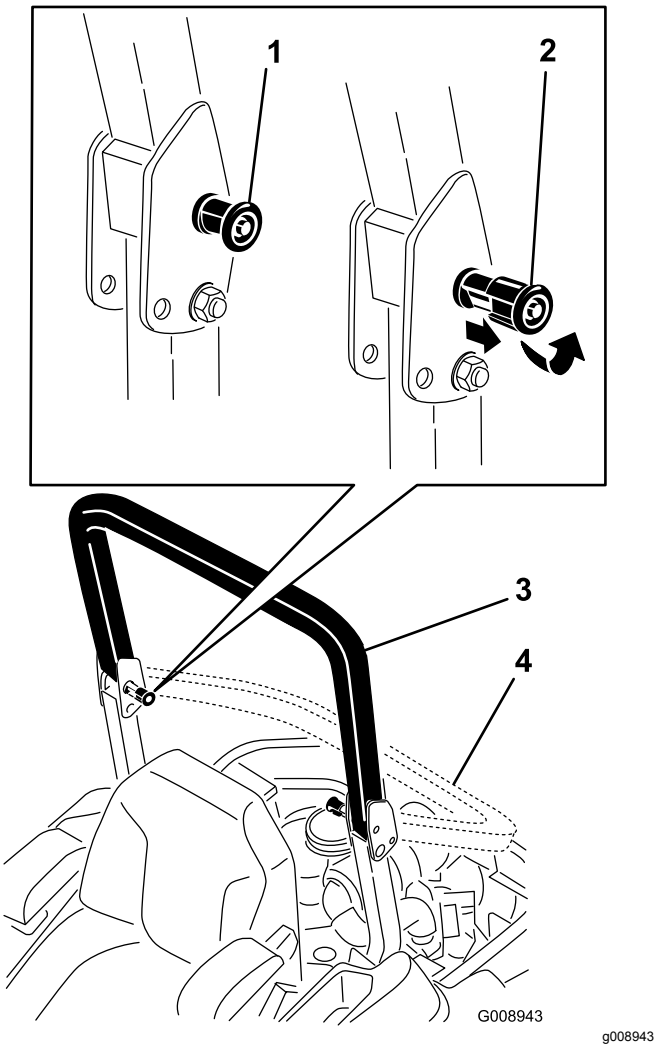



**Figure 65**

1. ROPS knob (locked position)
2. Pull the ROPS knob out, and rotate it 90 degrees to change the roll bar position.
3. Roll bar in the upright position
4. Roll bar in the folded position

# Adjusting the Tracking

1. Disengage the blade-control switch (PTO).
2. Drive to an open, flat area and move the motion-control levers to the NEUTRAL-LOCK position.
3. Move the throttle midway between the FAST and SLOW positions.
4. Move both motion-control levers forward until they both hit the stops in the T-slot.
5. Check which way the machine tracks.
6. If the machine tracks to the right, loosen the bolts and adjust the left stop plate rearward on the left T-slot until the machine tracks straight (Figure 66).
7. If the machine tracks to the left, loosen the bolts and adjust the right stop plate rearward on the right T-slot until the machine tracks straight (Figure 66).
8. Tighten the stop plate (Figure 66).

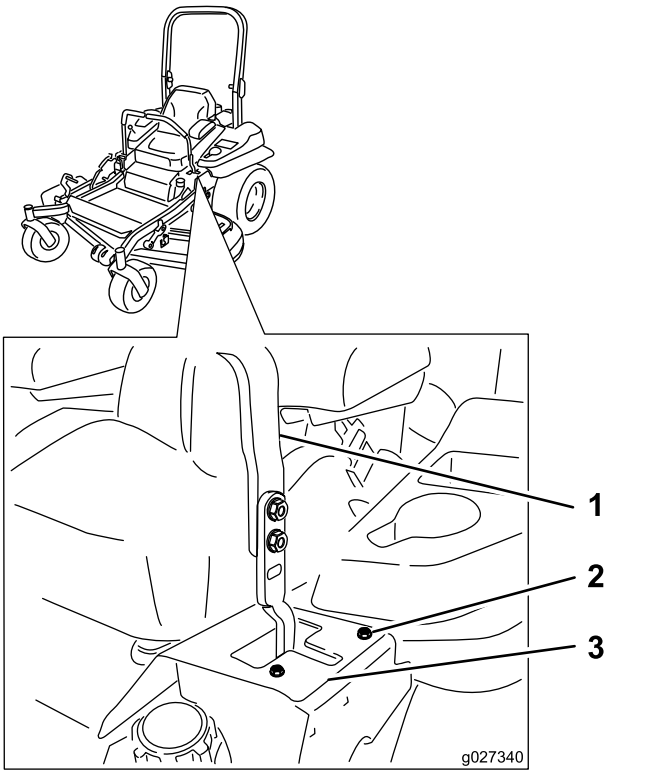



**Figure 66**

Left control lever shown

1. Control lever
2. Bolt
3. Stop plate

# 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.

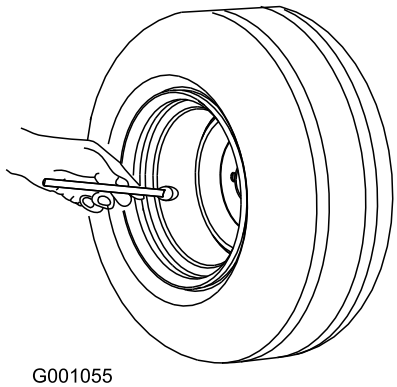



**Figure 67**

# Checking the Wheel Lug Nuts

Check and torque the wheel lug nuts to 122 to 129 N·m (90 to 95 ft-lb).

# Checking the Wheel-Hub Slotted Nut

**Service Interval:** After the first 100 hours

Every 500 hours

Check and ensure that the torque of the slotted nut is 286 to 352 N·m (211 to 260 ft-lb).

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

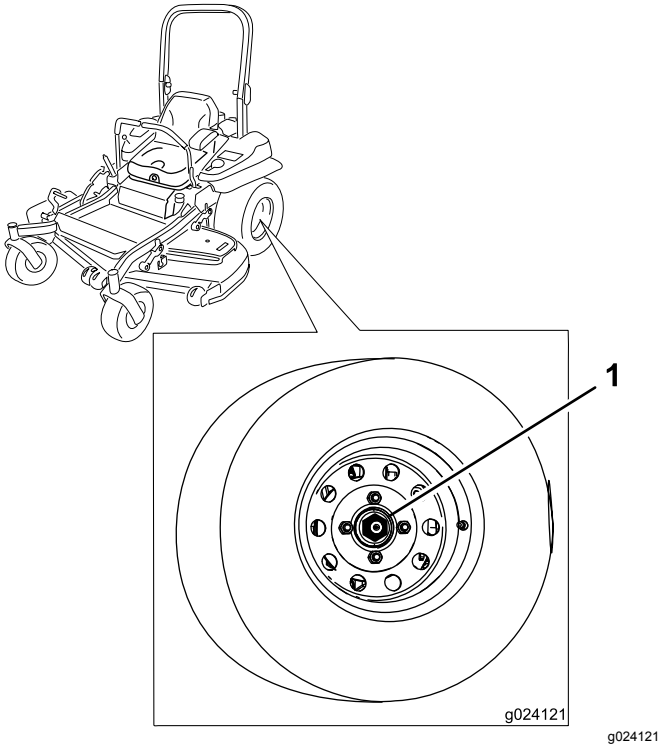



**Figure 68**

1. Slotted nut

# Adjusting the Caster-Pivot Bearing

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

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 69).
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 69).

   ***Important:*** **Make sure that the spring washers are installed correctly as shown in Figure 69.**
5. Install the dust cap (Figure 69).

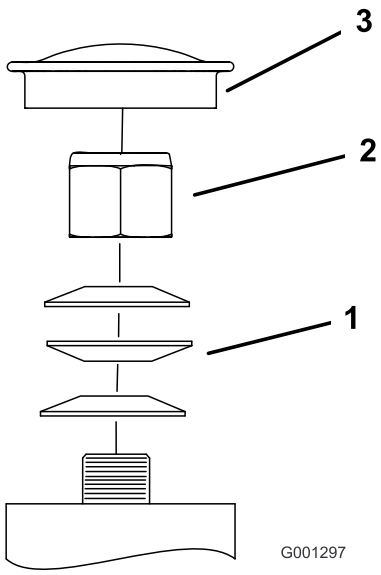



**Figure 69**

1. Spring washers
2. Locknut
3. Dust cap

# Using the Clutch Shim

Some later model year units have been built with clutches that contain a brake shim. When the clutch brake has worn to the point where the clutch no longer engages consistently, you can remove the shim to extend the clutch life.

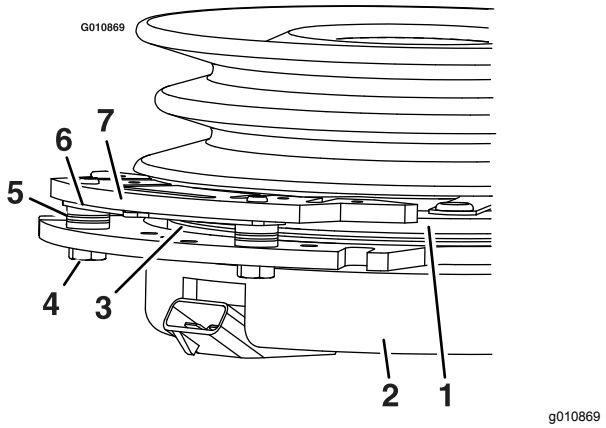
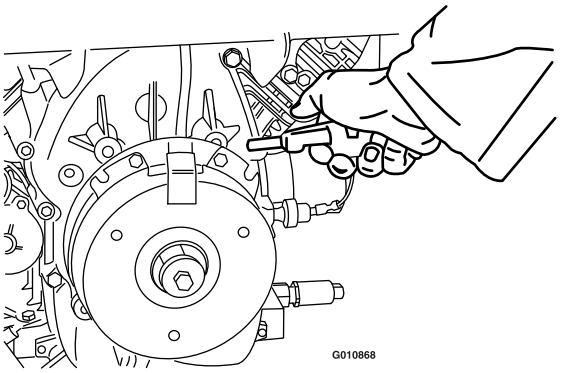



**Figure 70**

1. Armature
2. Field shell
3. Rotor
4. Brake-mounting bolt
5. Brake spacer
6. Regap shim
7. Brake pole

## Removing the Clutch Shim

1. Shut off the engine, wait for all moving parts to stop, and remove the key.
2. Engage the parking brake and wait for machine to cool completely.
3. Using an air compressor, blow out any debris under the brake pole and around the brake spacers.




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**Figure 71**

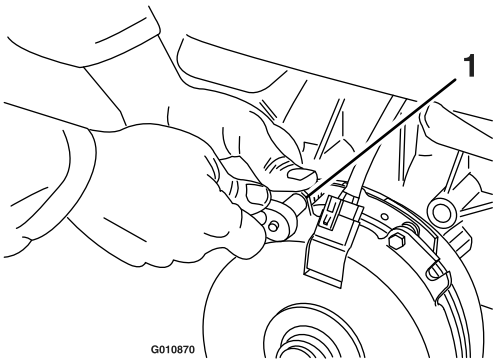
4. Check the condition of the wire-harness leads, connectors, and terminals. Clean or repair them as necessary.

5. Verify that 12 V is present at the clutch connector when the you engage the blade-control switch (PTO).

6. Measure the gap between the rotor and armature. If the gap is greater than 1 mm (0.04 inch), proceed with the following steps:

   A. Loosen both brake mounting bolts 1/2 to 1 full turn as shown in Figure 72.

   **Note:** Do not remove the brake pole from the field shell/armature. The brake pole has worn to match the armature and needs to continue to match after you remove the shim to ensure the proper brake torque.



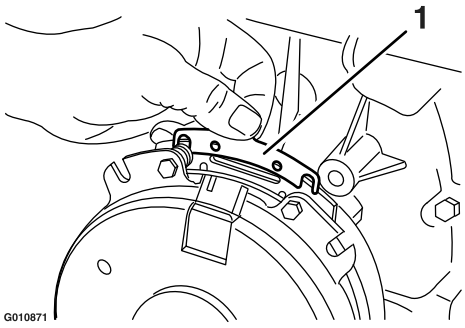

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**Figure 72**

1. Brake-mounting bolt

   B. Using needle-nose pliers, or by hand, remove the shim.

   **Note:** Do not discard the shim until you confirm that the clutch functions properly.




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**Figure 73**

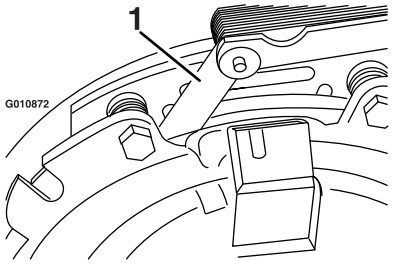
1. Shim

   C. Using a pneumatic line, blow out any debris under the brake pole and around the brake spacers.

   D. Torque each bolt (M6 x 1) to 12.3 to 13.7 N·m (9.5 to 10.5 ft-lb).

E. Using a 0.010 inch thick-feeler gauge, verify that a gap is present between the rotor and armature face on both sides of the brake pole as shown in Figure 74 and Figure 75.

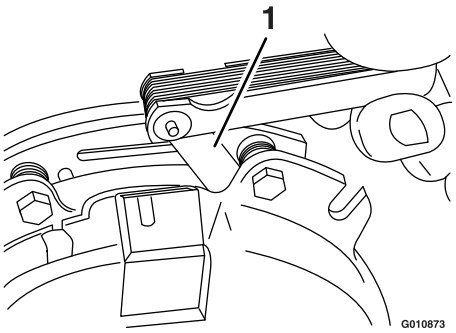
**Note:** Due to the way the rotor and armature faces wear (peaks and valleys), it is sometimes difficult to measure the true gap.




g010872

**Figure 74**

1. Feeler gauge




g010873

**Figure 75**

1. Feeler gauge

- If the gap is less than 0.010 inch, then install the shim and refer to Troubleshooting (page 73).
- If the gap is sufficient, proceed to the safety check in step F.

F. Perform the following safety check:

i. Sit on the seat and start the engine.

ii. Make sure that the blades do not engage when the blade-control switch (PTO) is in the OFF position and the clutch is disengaged.

**Note:** If the clutch does not disengage, install the shim, and refer to Troubleshooting (page 73).

iii. Engage and disengage the blade-control switch (PTO) 10 consecutive times to ensure that the clutch is functioning properly.

**Note:** If the clutch does not engage properly, refer to Troubleshooting (page 73).

# Cooling System Maintenance

## Cleaning the Engine Screen and Engine-Oil Cooler

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

Remove any buildup of grass, dirt, or other debris from the oil cooler (Figure 76). This helps ensure adequate cooling, correct engine speed, and reduces the possibility of overheating and mechanical damage to the engine.

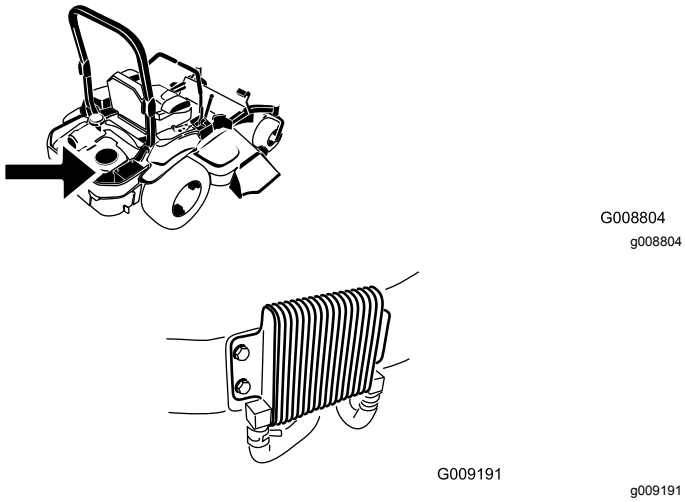



**Figure 76**

## Cleaning the Engine-Cooling Fins and Shrouds

**Service Interval:** Every 100 hours/Yearly (whichever comes first)

1. Disengage the blade-control switch (PTO) and set 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 air intake screen, recoil starter, and fan housing (Figure 77).
4. Clean the debris and grass from the engine parts.
5. Install the air-intake screen, recoil starter, and fan housing (Figure 77).

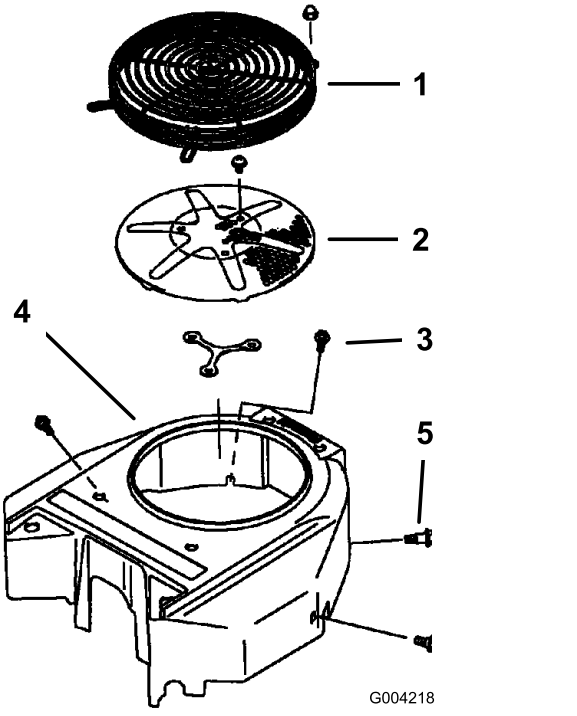



**Figure 77**

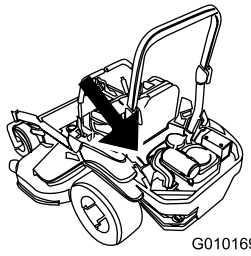
1. Engine guard
2. Engine air-intake screen
3. Bolt
4. Fan housing
5. Screw

## Checking and Cleaning the Hydraulic Unit Shrouds

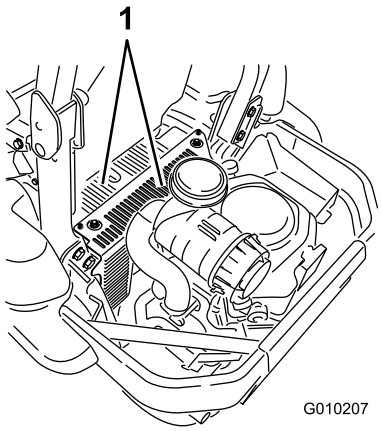
**Service Interval:** Before each use or daily

***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.**

1. Disengage the PTO and set 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. Move the seat forward.
4. Wait for the engine and hydraulic system to cool.
5. Clean the debris and grass from the hydraulic unit shrouds (Figure 78).




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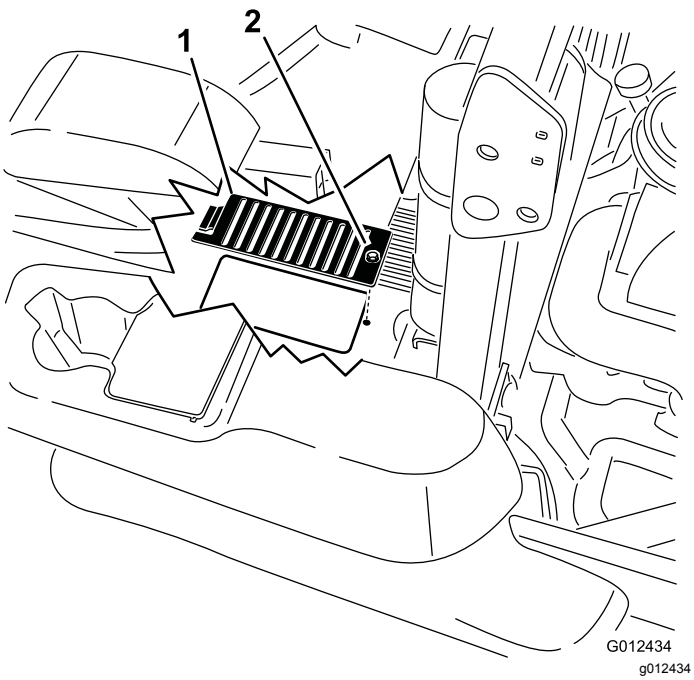



g010207

**Figure 78**

1. Hydraulic unit shrouds

6. Over each dipstick, remove the cover and the bolt attached to the cover . Clean around each dipstick and hydraulic unit (Figure 79).




g012434

**Figure 79**

1. Cover
2. Bolt

7. Position the seat.

# *Brake Maintenance*

## Adjusting the Parking Brake

**Service Interval:** After the first 100 hours

Every 500 hours thereafter

Check that the brake is adjusted properly before adjusting.

1. Drive the machine onto a level surface.
2. 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, wait for all moving parts to stop, and remove the key.
4. Raise the back of the machine and support the machine with jack stands.

**⚠ DANGER**

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

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

5. Remove the rear tires from the machine.
6. Remove any debris from the brake area.
7. Rotate the drive-wheel release handle to the released position. Refer to Using the Drive-Wheel Release Valves (page 31).
8. Check if there is a visible gap between the L-bracket and the linkage stop (Figure 80).

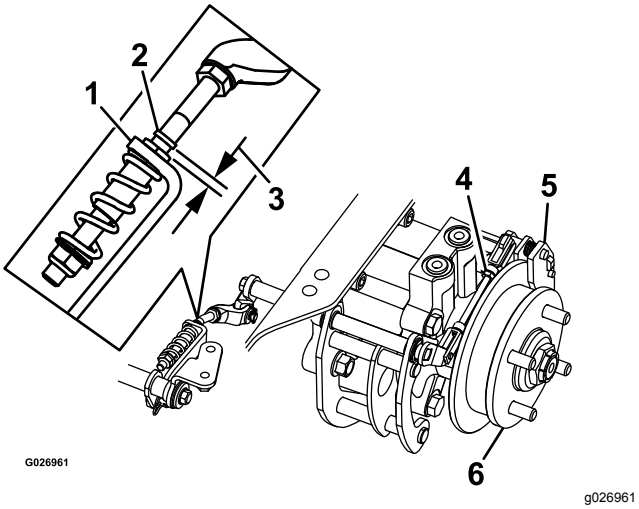



**Figure 80**

Left Side Shown

1. L-bracket
2. Linkage stop
3. Gap
4. Rear-linkage assembly
5. Caliper
6. Wheel hub

9. Disengage the parking brake.
10. Turn the wheel hub by hand in both directions relative to the caliper.

    **Note:** The wheel hub should move freely between the caliper.
11. If a gap is needed or the wheel hub does not move freely:
    A. Disengage the parking brake.
    B. Disconnect and fine-tune the rear linkage assembly:
       - Shorten the link to create a gap.
       - Lengthen the link to allow wheel hub movement.
    C. Connect the rear-linkage assembly.
12. Engage the parking brake and check the gap.
13. Repeat steps 9 through 13 until you achieve a visible gap and the wheel hub rotates freely.
14. Repeat this procedure for the brake on the opposite side.
15. Rotate the drive-wheel release handle to the operating position; refer to Using the Drive-Wheel Release Valves (page 31).
16. Install the rear tires and torque the lug nuts; refer to Checking the Wheel Lug Nuts (page 51).
17. Remove the jack stands.

# Belt Maintenance

## Inspecting the Belts

**Service Interval:** Every 50 hours

Replace the belt if it is worn. The signs of a worn belt include squealing while the belt is rotating; the blades slipping while cutting grass; and frayed edges, burn marks, and cracks on the belt.

## Replacing the Mower Belt

***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.**

1. Disengage the PTO, move the motion-control levers to the NEUTRAL-LOCK position and set 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. Lower the mower to the 76 mm (3 inch) height of cut.
4. Loosen the bottom bolt holding the mower-deck curtain to the mower deck. Refer to Releasing the Mower-Deck Curtain (page 38).
5. Remove the sheet-metal guard. Refer to Removing the Sheet-Metal Guard (page 38)
6. Remove the belt covers and the bolts attached to them (Figure 81).

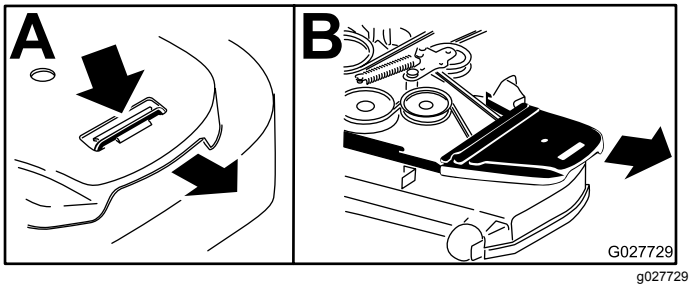



**Figure 81**

1. Loosen the bolt.
2. Remove belt cover.

7. Use a ratchet in the square hole in the idler arm to remove tension on the idler spring (Figure 82).
8. Remove the belt from the mower deck pulleys.
9. Remove the belt guide on the spring loaded idler arm shown in Figure 82.
10. Remove the existing belt.

11. Install the new belt around the mower pulleys and the clutch pulley under the engine (Figure 82).

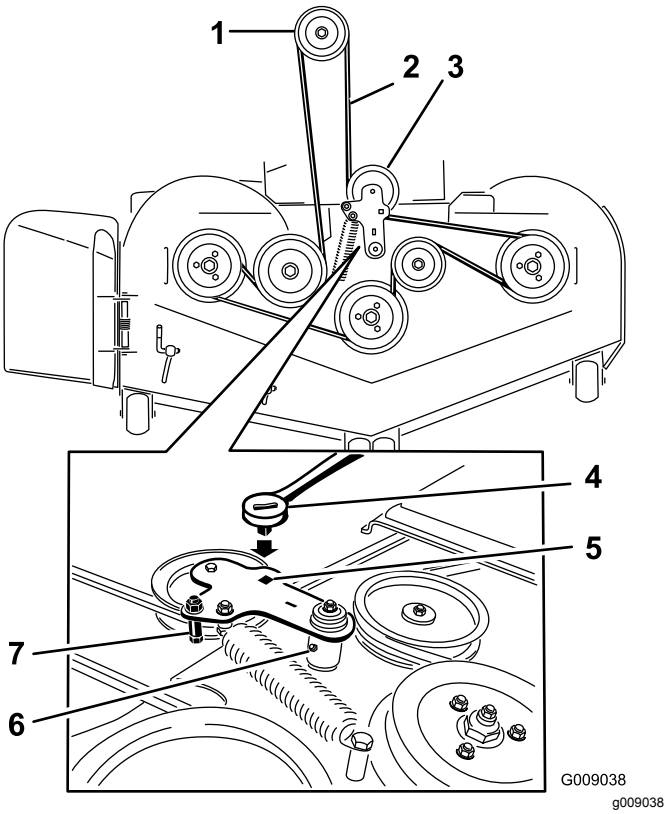



**Figure 82**

1. Clutch pulley
2. Mower belt
3. Spring-loaded idler pulley
4. Ratchet
5. Square hole in the idler arm for the ratchet
6. Idler grease fitting
7. Belt guide

12. Install the belt guide on the idler arm shown in Figure 82.
13. Using the ratchet in the square hole, install the idler spring (Figure 82).

    **Note:** Make sure that the spring ends are seated in the anchor grooves.
14. Install the belt covers and the bolts attached to them (Figure 83).

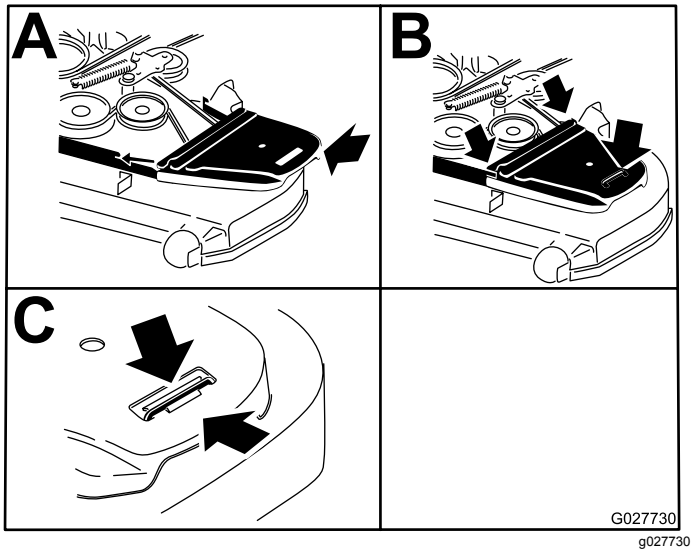



**Figure 83**

1. Position the belt cover.
2. Slide belt cover under the side catches.
3. Tighten the bolt.

# Replacing the Hydraulic-Pump Drive Belt

1. Disengage the blade-control switch (PTO) and set 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 mower belt; refer to Replacing the Mower Belt (page 57).
4. Raise the machine and support it with jack stands (Figure 84).

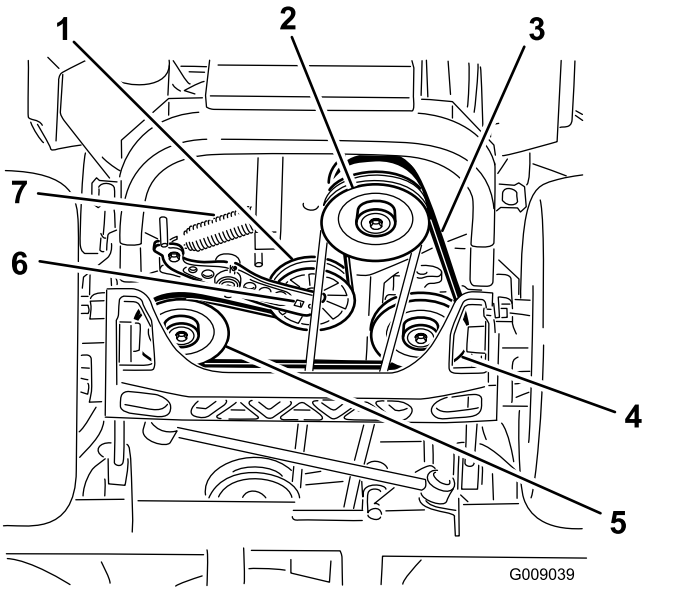



**Figure 84**

1. Idler pulley
2. Clutch pulley
3. Pump-drive belt
4. Right hydraulic-pump pulley
5. Left hydraulic-pump pulley
6. Square hole in idler arm
7. Idler spring

5. Use a ratchet in the square hole in the idler arm to remove the idler spring (Figure 84).
6. Unhook the idler spring from the frame (Figure 84).
7. Remove the belt from the hydraulic-unit-drive pulleys and the engine pulley.
8. Install the new belt around engine pulley and the 2 drive pulleys.
9. Using a ratchet in the square hole in the idler arm, install the idler spring to the frame (Figure 84).
10. Install the mower belt; refer to Replacing the Mower Belt (page 57).

# Controls System Maintenance

## Adjusting the Control-Handle Position

There are 2 height positions for the control levers—high and low. Remove the bolts to adjust the height.

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 bolts and flange nuts installed in the levers (Figure 85).
4. Align the levers in the front-to-rear position by bringing the levers together to the NEUTRAL position, slide them until they are aligned, and tighten the bolts (Figure 85).

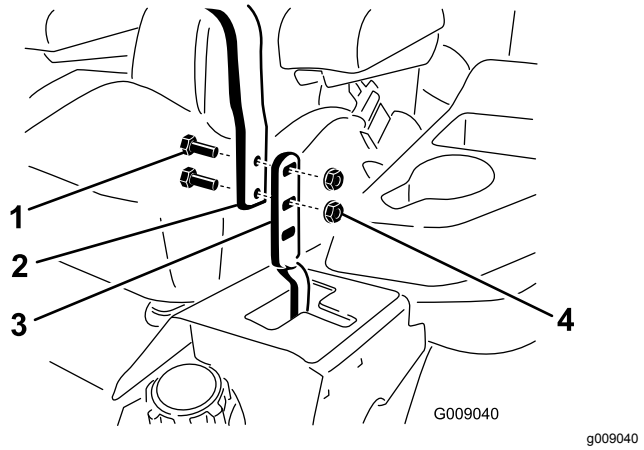
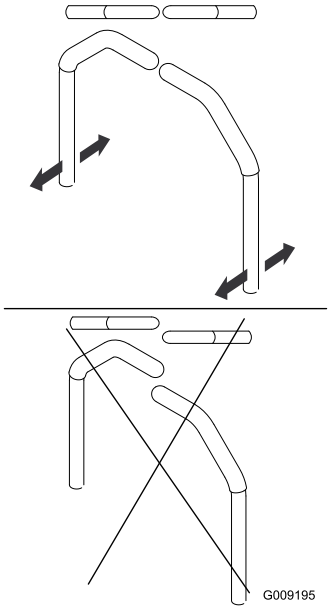



**Figure 85**

1. Bolt
2. Handle
3. Control lever
4. Nut




g009195

**Figure 86**

5. If the ends of the levers hit against each other, refer to Adjusting the Motion-Control Neutral-Lock Pivot (page 61).

# Adjusting the Motion-Control Linkage

The pump-control linkages are located on either side of the fuel tank, below the seat. Rotate the pump linkage with a 1/2 inch wrench for fine-tuning adjustments so that the machine does not move in neutral. Make any adjustments for neutral positioning only.

**⚠ WARNING**

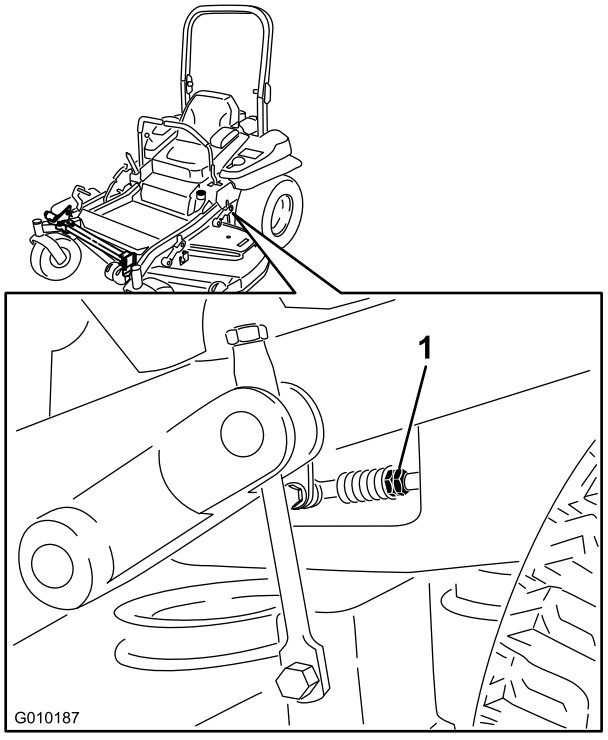
**The engine must be running and the drive wheels must be turning, so the motion-control adjustment can be performed. Contact with moving parts or hot surfaces may cause personal injury.**

**Keep your fingers, hands, and clothing clear of rotating components and hot surfaces.**

1. Prior to starting the engine, push the deck-lift pedal, remove the height-of-cut pin, and lower the deck to the ground.
2. Raise the rear of machine and support it with jack stands (or equivalent support) just high enough to allow the drive wheels to turn freely.
3. Remove the electrical connection from the seat safety switch, located under the bottom cushion of the seat.

   **Note:** The switch is a part of the seat assembly.
4. **Temporarily** install a jumper wire across the terminals in the connector of the main wiring harness.
5. Start the engine.

   **Note:** Engage the parking brake and move the motion-control levers out before starting the engine. You do not need to be in the seat because of the jumper wire being used. Run the engine at full throttle and release the brake.
6. Run the machine at least 5 minutes with the motion-control levers at full forward speed to bring the hydraulic oil up to operating temperature.
7. Bring the motion-control levers into the NEUTRAL position.
8. Adjust the pump-control rod lengths by rotating the double nuts on the rod in the appropriate direction until the wheels slightly creep in reverse (Figure 87).




g010187

**Figure 87**

1. Double nuts

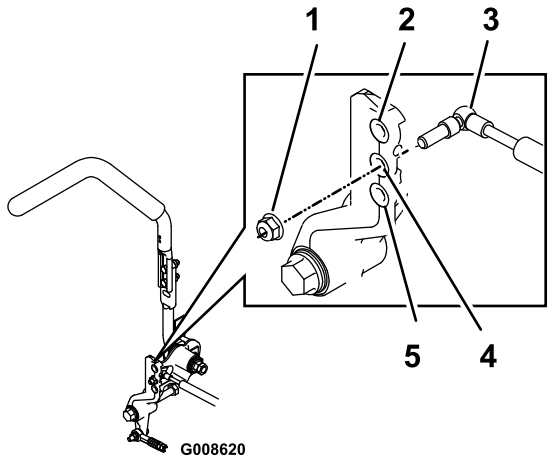
9. Move the motion-control levers to the REVERSE position, and while applying slight pressure to the lever, allow the reverse indicator springs to bring the levers back to neutral.

   **Note:** The wheels must stop turning or slightly creep in reverse.
10. Shut off the machine.
11. Remove the jumper wire from wire harness and plug the connector into the seat switch.

12. Remove the jack stands.
13. Raise the deck and install the height-of-cut pin.
14. Check that the machine does not creep in neutral when you disengage the parking brakes.

# Adjusting the Motion-Control Damper

You can adjust the top damper mounting bolt to obtain a more desired motion-control lever resistance. See Figure 88 for mounting options.




g008620

**Figure 88**

Right motion-control lever shown

1. Torque the locknut to 23 N·m (17 ft-lb). The bolt must protrude past the end of the locknut after torquing.
2. Most resistance (firmest feel)
3. Damper
4. Medium resistance (medium feel)
5. Least resistance (softest feel)

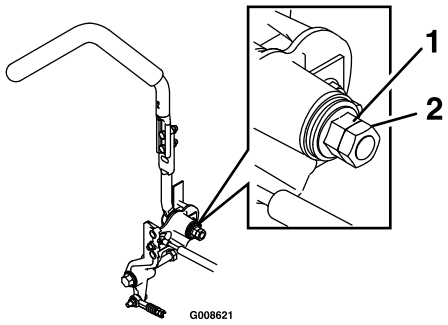
# Adjusting the Motion-Control Neutral-Lock Pivot

You can adjust the flanged nut to obtain the desired motion-control lever resistance when you move them to the NEUTRAL-LOCK position. See Figure 89 for adjustment options.

1. Loosen the jam nut.
2. Tighten or loosen the flanged nut to the desired feel.

   **Note:** For more resistance, tighten the flanged nut.

   **Note:** For less resistance, loosen the flanged nut
3. Tighten the jam nut.




g008621

**Figure 89**

1. Flanged nut
2. Jam nut

# *Hydraulic System Maintenance*

## Servicing the Hydraulic System

**Hydraulic Oil Type:** Toro® HYPR-OIL™ 500 hydraulic oil or Mobil® 1 15W-50.

***Important:*** **Use oil specified. Other fluids could damage the hydraulic system.**

**Each Hydraulic System Oil Capacity:** 1.5 L (52 oz) per side with filter change

## Checking the Hydraulic Oil

**Service Interval:** Every 50 hours—Check the hydraulic oil level.

1. Position the machine on a level surface.
2. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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. Wait for the engine and hydraulic system to cool for 10 minutes.

   **Note:** The oil level on the dipstick is incorrect if you check the oil when the machine is hot.
5. Move the seat forward.
6. Clean the area around the dipsticks of the hydraulic system reservoirs (Figure 90).
7. Remove 1 dipstick from the hydraulic reservoir (Figure 90).
8. Wipe the dipstick off and thread the dipstick into the reservoir.
9. Remove the dipstick and look at the end (Figure 90).

   **Note:** If the oil level is at the add mark, slowly pour only enough oil into the hydraulic reservoir to raise the level to the full or **H** line.

   ***Important:*** **Do not overfill the hydraulic units with oil, as damage may occur. Do not run the machine with the oil below the add mark.**
10. Install the dipstick.
11. Repeat procedure for the opposite dipstick.

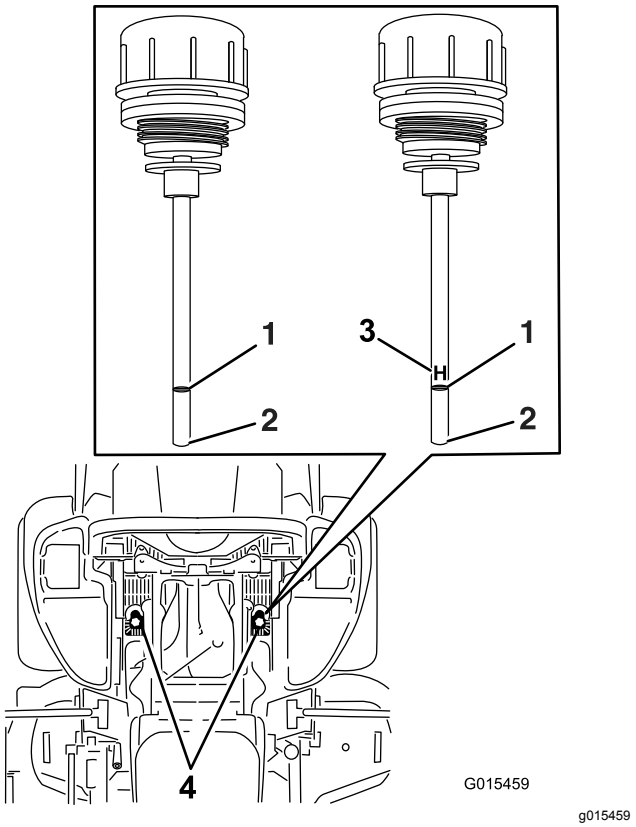



**Figure 90**

Either dipstick is used in the machine

1. Full
2. Add
3. **H**—means high level
4. Dipstick locations under seat

**⚠ WARNING**

**Hydraulic oil escaping under pressure can penetrate skin and cause injury.**

- **If hydraulic oil 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 your body and hands away from pin hole leaks or nozzles that eject high-pressure hydraulic oil.**
- **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 oil hoses and lines are in good condition and that all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.**

# Replacing the Hydraulic Filters and Hydraulic Oil

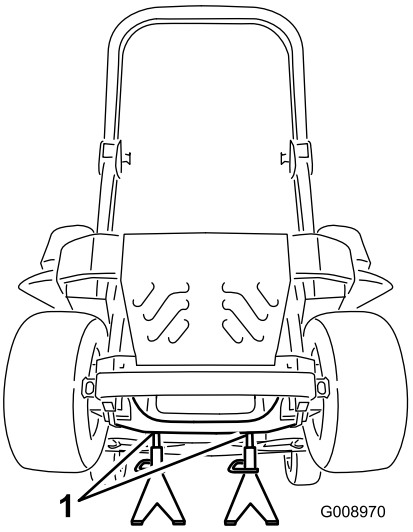
**Service Interval:** After the first 250 hours—Change the hydraulic filters and hydraulic oil.

Every 250 hours—Change the hydraulic filters and hydraulic oil when using Mobil® 1 oil (more often in dirty or dusty conditions).

Every 500 hours—Change the hydraulic filters and hydraulic oil when using Toro® HYPR-OIL™ 500 hydraulic oil (more often in dirty or dusty conditions).

To replace the hydraulic oil, you need to remove the filters. Replace both at the same time; refer to Servicing the Hydraulic System (page 62) for the oil specifications.

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 machine and support it with jack stands (Figure 91).



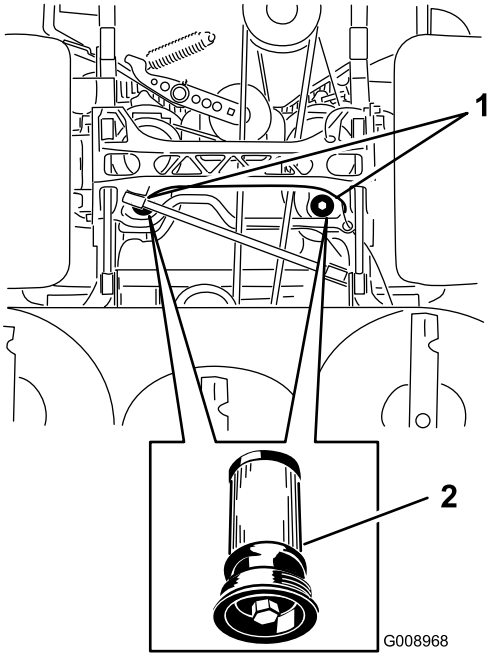

g008970

**Figure 91**

1. Jack stands

4. Remove both the mower belt and the pump-drive belt; refer to Replacing the Mower Belt (page 57) and Replacing the Hydraulic-Pump Drive Belt (page 58).

   **Note:** This prevents oil from getting on the belts.
5. Place a drain pan under the filter, remove the old filter, and wipe the surface clean (Figure 92).




g008968

**Figure 92**

Bottom view of the machine

1. Filter locations
2. Hydraulic filter

6. Apply a thin coat of hydraulic oil to the rubber gasket on the replacement filter (Figure 92).
7. Install the replacement hydraulic filter.
8. Install the pump-drive belt and the mower belt.
9. Remove the jack stands and lower the machine (Figure 91).
10. Add oil to the hydraulic reservoir and check for any leaks.
11. Clean up any spilled oil.
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.
14. Check the oil level while the oil is cold.
15. If required, add oil to the hydraulic reservoir.

    **Note:** Do not overfill.

# *Mower Deck Maintenance*

## Leveling the Mower Deck

### Setting Up the Machine

**Note:** Ensure that the mower deck is level before matching the height of cut (HOC).

1. Position the mower on a flat surface.
2. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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. Check the pressure of the drive tires.

   **Note:** Proper inflation pressure for the tires is 90 kPa (13 psi).
5. Position the mower deck to the 76 mm (3 inch) height-of-cut position.

### Leveling the Deck

1. Position the mower on a flat surface.
2. Shut off the engine, wait for all moving parts to stop, remove the key, and engage the parking brake.
3. Check the tire pressure in the drive tires.

   **Note:** Proper inflation pressure for the tires is 90 kPa (13 psi).
4. Position the transport lock in the latching position.
5. Push the deck-lift pedal all the way forward so that the deck latches at the 14 cm (5-1/2 inches) transport position (Figure 93).

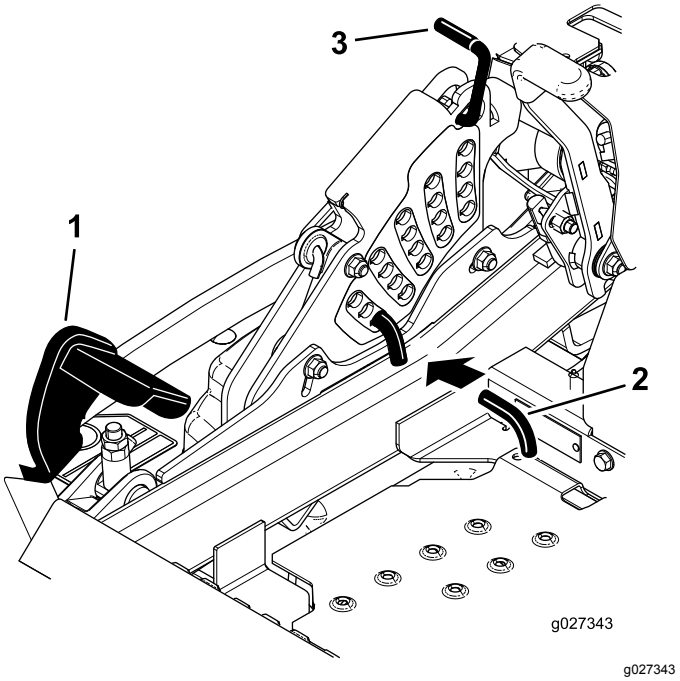



**Figure 93**

1. Deck-lift pedal
2. Height-of-cut pin
3. Transport lock

6. Insert the height adjustment pin into the 7.6 cm (3 inches) cutting height location.
7. Release the transport lock and allow the deck to lower to the cutting height.
8. Raise the discharge chute.
9. On both sides of the deck, measure from the level surface to the front tip of the blade (Postion A) as shown in Figure 94.

   **Note:** The measurement should read 7.6 mm (3 inches)

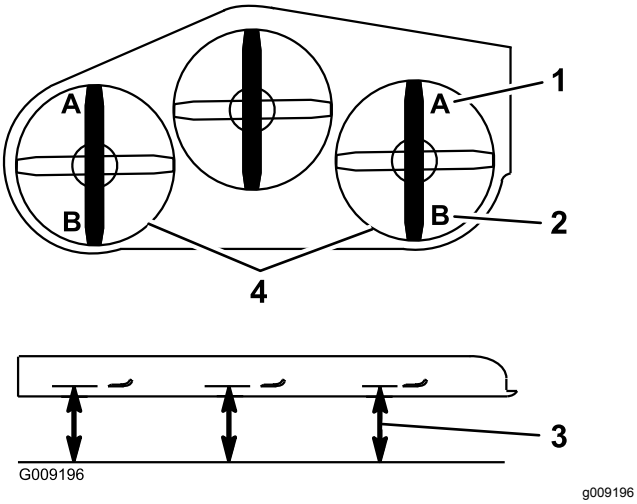



**Figure 94**

1. 7.6 cm (3 inches) at position A is correct
2. 8.3 cm (3-1/4 inches) at position B is correct
3. Measure here from the blade tip to the hard surface
4. Measure at position A and B on both sides

10. Fine-tune the adjustment nut on the front deck-lift assembly by turning it (Figure 95).

    **Note:** To increase the height, turn the adjustment nut clockwise; to decrease the height, turn the nut counterclockwise.

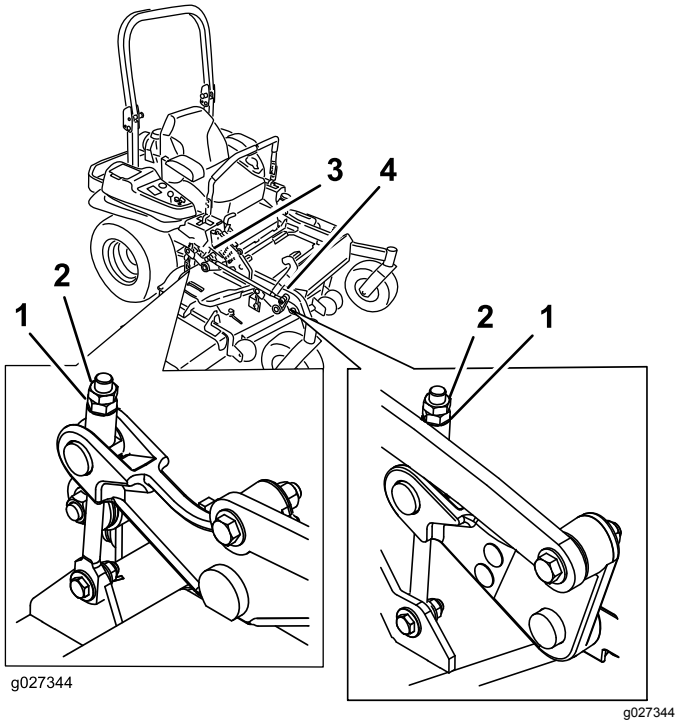



**Figure 95**

1. Adjustment nut
2. Jam nut
3. Rear deck adjustment
4. Front deck adjustment

11. For mower decks shown in Figure 96, fine-tune the adjustment nut on the front deck-lift assembly by turning it (Figure 96).

    **Note:** To increase the height, turn the adjustment nut clockwise; to decrease the height, turn the nut counterclockwise.

    **Note:** If the front deck links do not have enough adjustment to achieve accurate cut height, you can utilize the single-point adjustment to gain more adjustment.

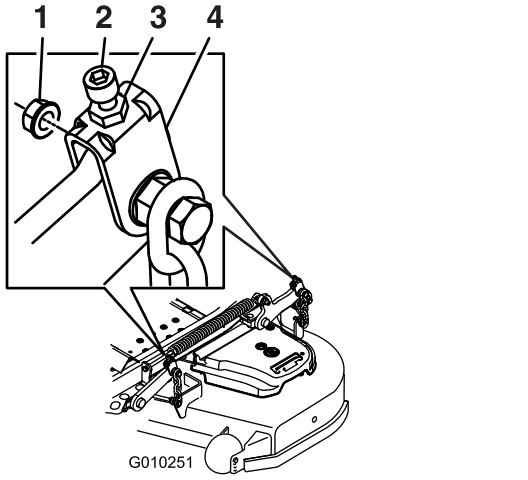



**Figure 96**

1. Adjustment nut
2. Jam nut
3. Rear deck adjustment
4. Front deck adjustment

12. To adjust the single-point system, loosen the 2 bolts at the bottom of the height-of-cut plate (Figure 97).

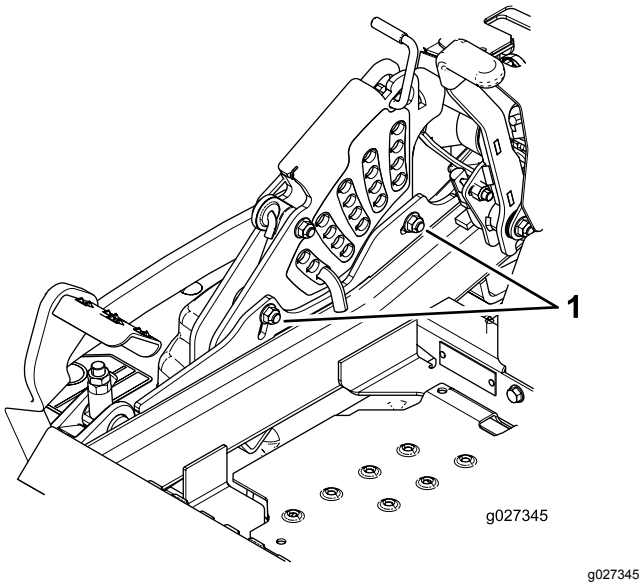



**Figure 97**

1. Bolts at the bottom of the height-of-cut plate

13. If the deck is too low, tighten the single-point adjustment bolt by rotating it clockwise. If the deck is too high, loosen the single point adjustment bolt by rotating it counterclockwise (Figure 98).

    **Note:** Loosen or tighten the single-point adjustment bolt enough to move the height-of-cut plate mounting bolts at least 1/3 the length of the available travel in their slots. This will gain some up and down adjustment on each of the 4 deck links.

14. Tighten the 2 bolts at the bottom of the height-of-cut plate (Figure 98).

    **Note:** In most conditions, the back blade tip should be adjusted 6.4 mm (1/4 inch) higher than the front.

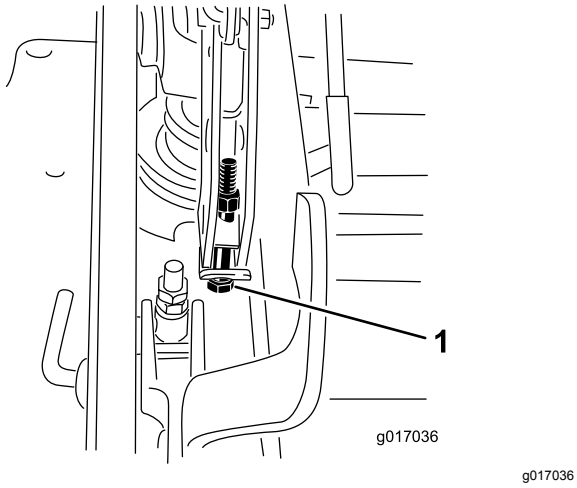



**Figure 98**

1. Single-point adjustment bolt

15. Torque the 2 bolts to 37 to 45 N·m (27 to 33 ft-lb).
16. On both sides of the deck, measure from the level surface to the back tip of the blade (position B) as shown in Figure 94.

    **Note:** The measurement should read 8.3 cm (3-1/4 inches)

17. Fine-tune the screw adjuster by turning it to get 8.3 mm (3-1/4 inches) height (Figure 96).

    **Note:** To increase the height, turn the adjustment nut clockwise; to decrease, turn counterclockwise.

18. Measure until all 4 sides are the correct height.
19. Tighten all the nuts on the deck-lift-arm assemblies.
20. Lower the discharge chute.

# Servicing the Cutting Blades

To ensure a superior quality of cut, keep the blades sharp. For convenient sharpening and replacement, keep extra blades on hand.

**⚠ WARNING**

**A worn or damaged blade can break, and a piece of the blade could be thrown at you or bystanders, resulting in serious personal injury or death.**

- **Inspect the blades periodically for wear or damage.**
- **Replace a worn or damaged blade.**

## Before Inspecting or Servicing the Blades

1. Park the machine on a level surface, disengage the blade-control switch (PTO), and set the parking brake.
2. Turn the ignition key to OFF. Remove the key, and disconnect the spark plug wires from the spark plugs.

## Inspecting the Blades

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

1. Inspect the cutting edges (Figure 99).
2. If the edges are not sharp or have nicks, remove and sharpen the blade; refer to Removing the Blades (page 67) and Sharpening the Blades (page 67).
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 99).

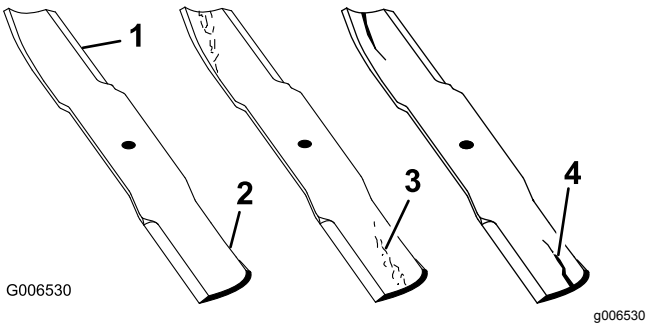



**Figure 99**

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

## Checking for Bent Blades

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 (Figure 100).
4. Measure from a level surface to the cutting edge, position **A**, of the blades (Figure 100).

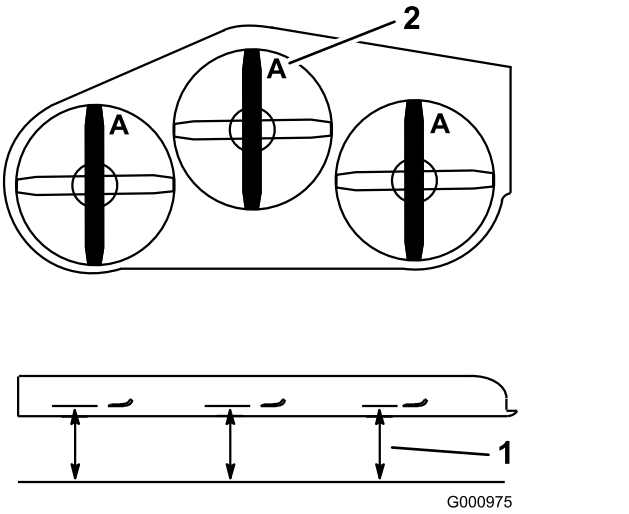



**Figure 100**

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.

   **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 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

Replace a blade if it hits an object, 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, curved washer, and blade from the spindle shaft (Figure 101).

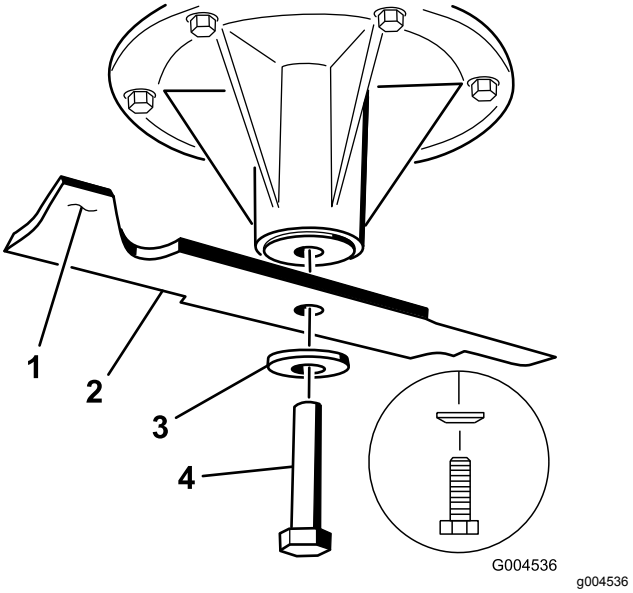



**Figure 101**

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 102).

   **Note:** Maintain the original angle.

   **Note:** The blade retains balance if you remove the same amount of material from both cutting edges.

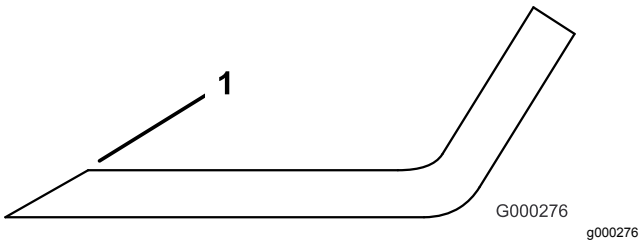



**Figure 102**

1. Sharpen at the original angle

2. Check the balance of the blade by putting it on a blade balancer (Figure 103).

   **Note:** If the blade stays in a horizontal position, the blade is balanced and ready to use.

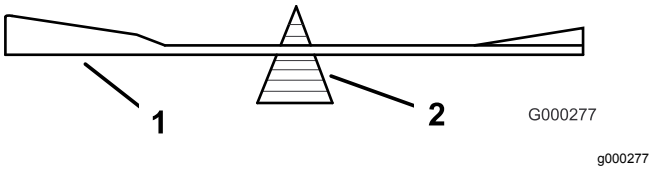



**Figure 103**

1. Blade
2. Balancer

3. If the blade is not balanced, file some metal off the end of the sail area only (Figure 101).
4. Repeat this procedure until the blade is balanced.

## Installing the Blades

1. Install the blade onto the spindle shaft (Figure 104).

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

2. Install the spring disk and blade bolt (Figure 104).

   **Note:** Install the spring-disk cone toward the bolt head.

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

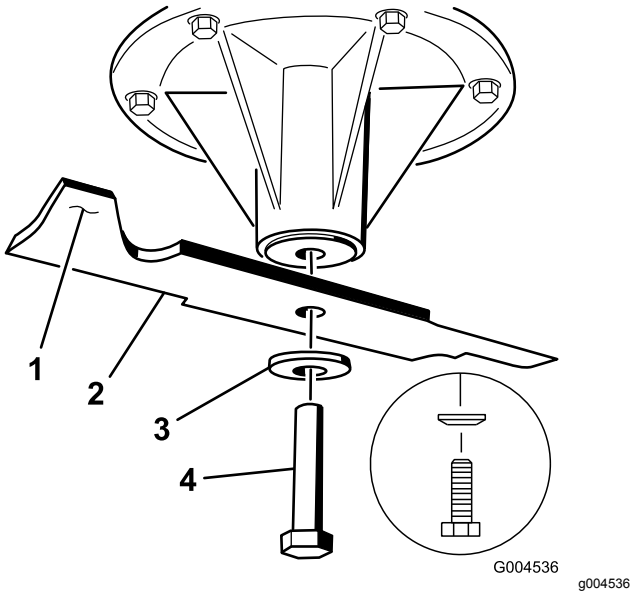



**Figure 104**

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

# Removing the Mower Deck

Before servicing or removing the mower deck, lock out the spring-loaded deck arms.

**⚠ WARNING**

**Deck-lift-arm assemblies have stored energy. Removing the deck without releasing the stored energy can cause serious injury or death.**

**Do not attempt to disassemble the deck from the front frame without locking out the stored energy.**

1. Shut off the engine, wait for all of the moving parts to stop, remove the key, and engage parking brake.
2. Remove the height-adjustment pin and lower the deck to the ground.
3. Place the height-adjustment pin in the 7.6 cm (3 inch) height-of-cut location.

   **Note:** This locks the deck-lift arms in the lowest position so that when you remove the deck, the stored energy in the deck spring is released.

4. Remove the belt covers.
5. Lift the floor pan and insert a ratchet into the square hole in the deck idler (Figure 105).
6. Rotate the deck idler clockwise and remove the mower belt (Figure 105).

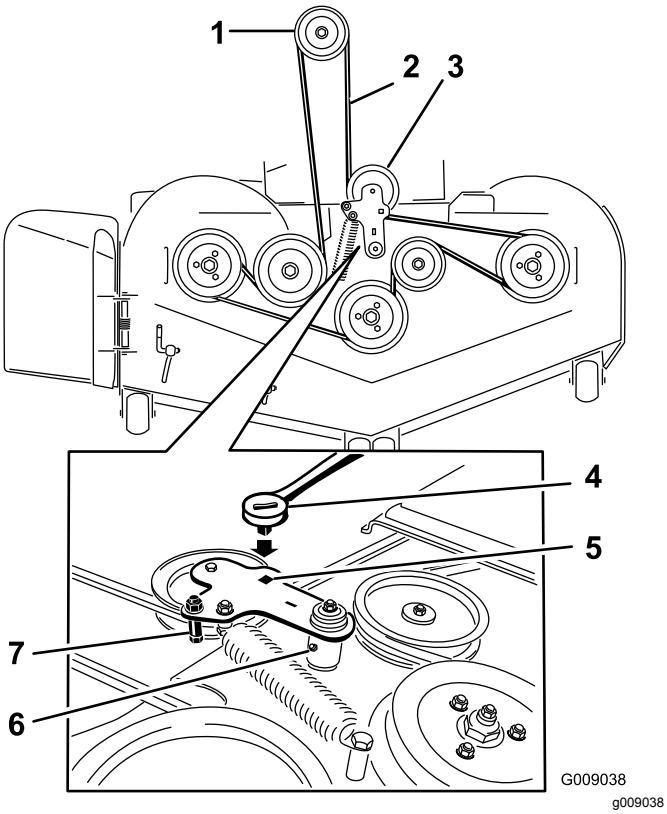



**Figure 105**

1. Clutch pulley
2. Mower belt
3. Spring-loaded idler pulley
4. Ratchet
5. Square hole in the idler arm for the ratchet
6. Idler grease fitting
7. Belt guide

7. Remove and retain the hardware on both sides of the deck as shown in Figure 106.

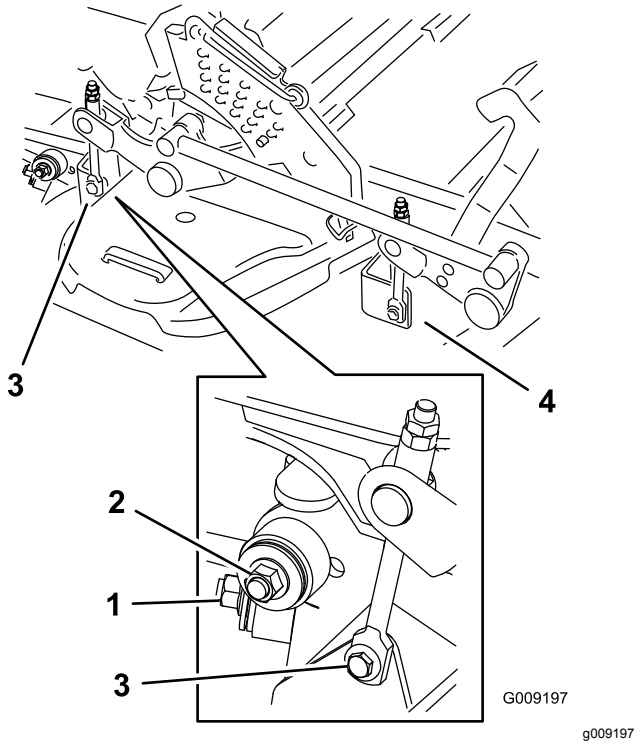



**Figure 106**

1. Right stabilizer
2. Deck strut (right side shown)
3. Remove the shoulder bolt and nut.
4. Remove the shoulder bolt and nut.

8. Raise the deck struts and secure them in the up position.
9. Slide the deck out to the right side of the machine.

# Replacing the Grass Deflector

**⚠ WARNING**

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

**Do not operate the lawn mower unless you install a cover plate, mulch plate, grass deflector, or bagger.**

1. Remove the locknut, bolt, spring, and spacer holding the deflector to the pivot brackets (Figure 107).
2. Remove the damaged or worn grass deflector (Figure 107).

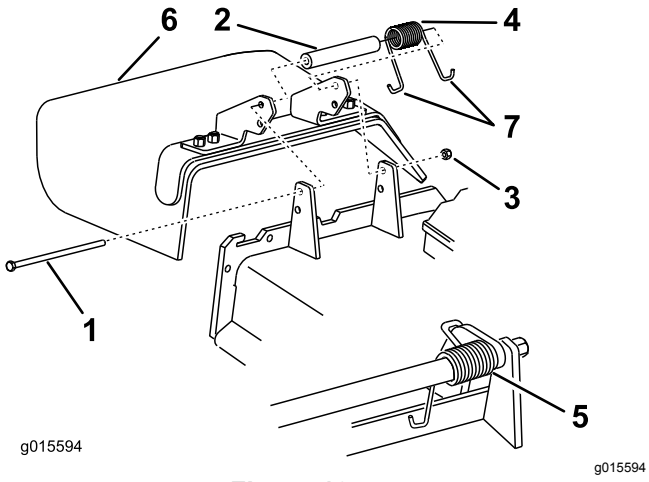



**Figure 107**

1. Bolt
2. Spacer
3. Locknut
4. Spring
5. Spring installed
6. Grass deflector
7. **J**-hook end of spring

3. Place the spacer and the spring onto grass deflector.
4. Place 1 **J**-hook end of the spring behind the deck edge.

   **Note:** Make sure that 1 **J**-hook end of the spring is installed behind the deck edge before installing the bolt as shown in Figure 107.
5. Install the bolt and the nut.
6. Place 1 **J**-hook end of the spring around the grass deflector (Figure 107).

   ***Important:*** **The grass deflector must be able to rotate. Lift the deflector up to the full open position and ensure that it rotates into the full down position.**

# *Cleaning*

## Cleaning under the Mower

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

1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set 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 to the TRANSPORT position.

## Disposing of Waste

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

# Storage

## Cleaning and Storage

1. Disengage the blade-control switch (PTO), set the parking brake, and turn the ignition key to Off. 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.
4. Service the air cleaner; refer to Servicing the Air Cleaner (page 41).
5. Grease the machine; refer to Lubrication (page 39).
6. Change the crankcase oil; refer to Changing the Engine Oil (page 43).
7. Check the tire pressure; refer to Checking the Tire Pressure (page 50).
8. Change the hydraulic filters; refer to Replacing the Hydraulic Filters and Hydraulic Oil (page 63).
9. Charge the battery; refer to Charging the Battery (page 48).
10. 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.
11. Check the condition of the blades; refer to Servicing the Cutting Blades (page 66).
12. Prepare the machine for storage when non-use occurs over 30 days. Prepare the machine for storage as follows:

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

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

    B. Run the engine to distribute conditioned fuel through the fuel system (5 minutes).

    C. Stop the engine, allow it to cool, and drain the fuel tank; refer to Servicing the Fuel Tank (page 47).

    D. Restart the engine and run it until it stops.

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

***Important:*** **Do not store stabilizer/conditioned fuel over 90 days.**

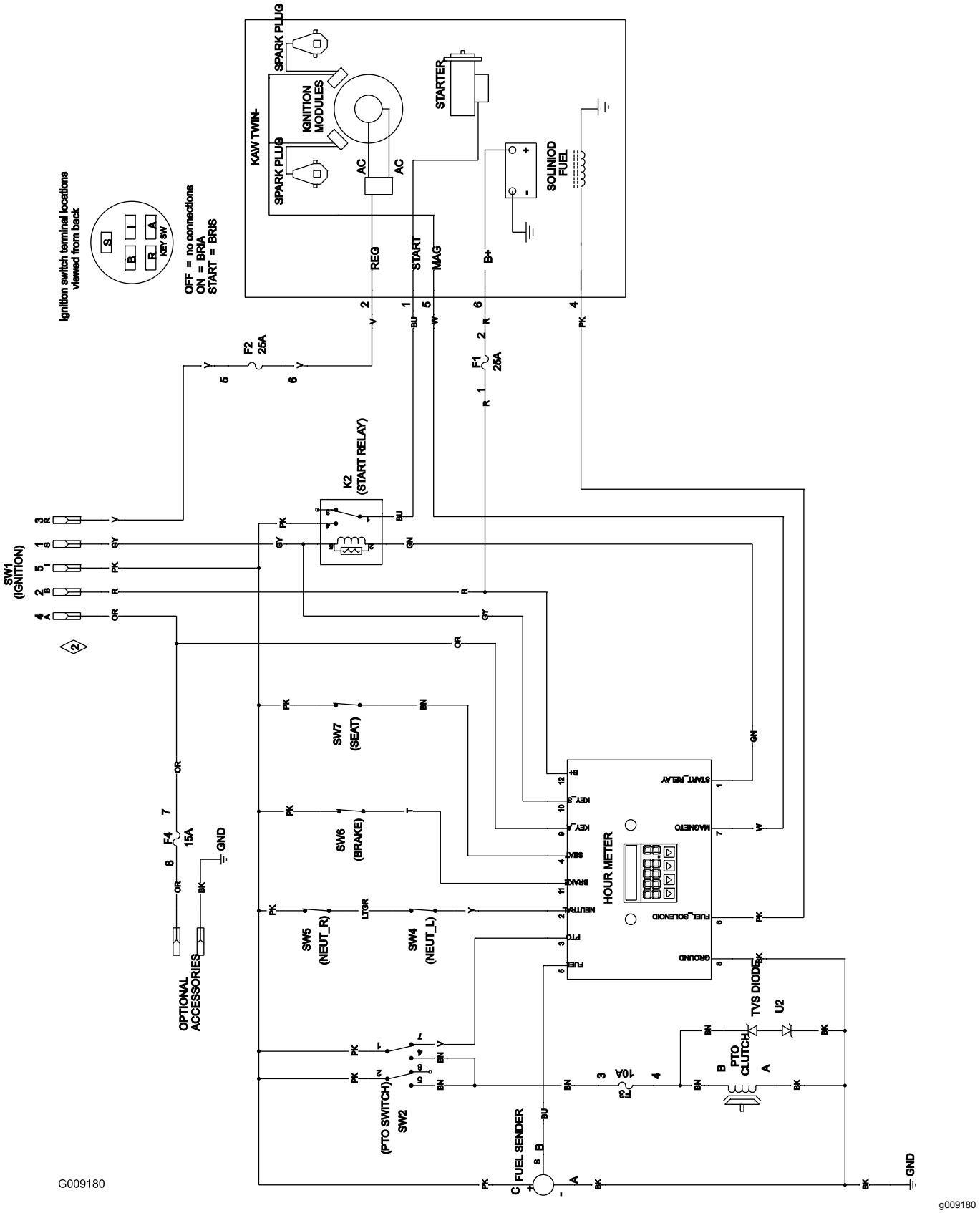
13. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged.
14. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
15. Store the machine in a clean, dry garage or storage area.
16. Remove the key from the ignition switch and keep it out of reach of children or other unauthorized users.
17. 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.<br>2. The parking brake is not engaged.<br>3. The motion-control levers are not in the NEUTRAL-LOCK position.<br>4. The operator is not seated.<br>5. The battery is dead.<br>6. The electrical connections are corroded or loose.<br>7. The fuse is blown.<br>8. The relay or switch is worn or damaged. | 1. Move the blade-control switch (PTO) to the disengaged position.<br>2. Set the parking brake.<br>3. Ensure that the motion-control levers are in the NEUTRAL-LOCK position.<br>4. Sit on the seat.<br>5. Charge the battery.<br>6. Check the electrical connections for good contact.<br>7. Replace the fuse.<br>8. Contact an Authorized Service Dealer. |
| The engine does not start, starts hard, or fails to keep running. | 1. The fuel tank is empty.<br>2. The fuel-shutoff valve is closed.<br>3. The oil level in the crankcase is low.<br>4. The throttle is not in the correct position.<br>5. There is dirt in the fuel filter.<br>6. There is dirt, water, or stale fuel in the fuel system.<br>7. The air cleaner is dirty.<br>8. The seat switch is not functioning properly.<br>9. The electrical connections are corroded, loose, or damaged.<br>10. The relay or switch is worn or damaged.<br>11. The spark plug is fouled or improperly gapped.<br>12. The spark-plug wire is not connected. | 1. Fill the fuel tank.<br>2. Open the fuel-shutoff valve.<br>3. Add oil to the crankcase.<br>4. Be sure that the throttle control is midway between the slow and fast positions.<br>5. Replace the fuel filter.<br>6. Contact an Authorized Service Dealer.<br>7. Clean or replace the air-cleaner element.<br>8. Check the seat-switch indicator. Replace the seat if necessary.<br>9. Check the electrical connections for good contact. Clean the connector terminals thoroughly with electrical-contact cleaner, apply dielectric grease, and make the appropriate connections.<br>10. Contact an Authorized Service Dealer.<br>11. Adjust or replace the spark plug.<br>12. Check the spark-plug wire connection. |
| The engine loses power. | 1. The engine load is excessive.<br>2. The air cleaner is dirty.<br>3. The oil level in the crankcase is low.<br>4. The cooling fins and the air passages above the engine are plugged.<br>5. The vent hole in the fuel cap is plugged.<br>6. There is dirt in the fuel filter.<br>7. There is dirt, water, or stale fuel in the fuel system. | 1. Reduce the ground speed.<br>2. Clean the air-cleaner element.<br>3. Add oil to the crankcase.<br>4. Remove the obstruction from the cooling fins and the air passages.<br>5. Clean or replace the fuel cap.<br>6. Replace the fuel filter.<br>7. Contact an Authorized Service Dealer. |
| The engine overheats. | 1. The engine load is excessive.<br>2. The oil level in the crankcase is low.<br>3. The cooling fins and the air passages above the engine are plugged. | 1. Reduce the ground speed.<br>2. Add oil to the crankcase.<br>3. Remove the obstruction from the cooling fins and the air passages. |
| The mower pulls left or right (with levers fully forward). | 1. The tracking needs adjustment<br>2. The tire pressure is not correct in the drive tires. | 1. Adjust the tracking.<br>2. Adjust tire pressure in the drive tires. |

| Problem | Possible Cause | Corrective Action |
|---|---|---|
| The machine does not drive. | 1. The bypass valves are not closed tight.<br>2. The pump belt is worn, loose or broken.<br>3. The pump belt is off a pulley.<br>4. The idler spring is broken or missing.<br>5. The hydraulic oil level is low or too hot. | 1. Tighten the bypass valves.<br>2. Change the belt.<br>3. Change the belt.<br>4. Replace the spring.<br>5. Add hydraulic oil to reservoirs or let it cool down. |
| There is abnormal vibration. | 1. The cutting blade(s) is/are bent or unbalanced.<br>2. The blade mounting bolt is loose.<br>3. The engine mounting bolts are loose.<br>4. The engine pulley, idler pulley, or blade pulley is loose.<br>5. The engine pulley is damaged.<br>6. The blade spindle is bent.<br>7. The motor mount is loose or worn. | 1. Install new cutting blade(s).<br>2. Tighten the blade mounting bolt.<br>3. Tighten the engine mounting bolts.<br>4. Tighten the appropriate pulley.<br>5. Contact an Authorized Service Dealer.<br>6. Contact an Authorized Service Dealer.<br>7. Contact an Authorized Service Dealer. |
| The machine produces an uneven cutting height. | 1. The blade(s) is/are not sharp.<br>2. The cutting blade(s) is/are bent.<br>3. The mower deck is not level.<br>4. The underside of mower is dirty.<br>5. The tire pressure is not correct.<br>6. The blade spindle is bent. | 1. Sharpen the blade(s).<br>2. Install new cutting blade(s).<br>3. Level the mower deck from side-to-side and front-to-rear.<br>4. Clean the underside of the mower.<br>5. Adjust the tire pressure.<br>6. Contact an Authorized Service Dealer. |
| The blades do not rotate. | 1. The mower deck belt is worn, loose, or broken.<br>2. The mower deck belt is off the pulley.<br>3. The pump drive belt is worn, loose, or broken.<br>4. The idler spring is broken or missing. | 1. Install a new deck belt.<br>2. Install the mower deck pulley and check the idler pulley, idler arm, and spring for correct position and function.<br>3. Check the belt tension or install a new belt.<br>4. Replace the spring. |
| The clutch does not engage. | 1. The fuse is blown.<br>2. There is low voltage supply at the clutch.<br>3. The coil is damaged.<br>4. There is inadequate current supply.<br>5. The rotor/armature air gap is too large. | 1. Replace the fuse. Check the coil resistance, battery charge, charging system, and wiring connections, and replace components if necessary.<br>2. Check the coil resistance, battery charge, charging system, and wiring connections and replace parts if necessary.<br>3. Replace the clutch.<br>4. Repair or replace the clutch lead wire or electrical system. Clean the connector contacts.<br>5. Remove the shim or replace the clutch. |

# Schematics




**Wire Diagram (Rev. A)**

# Notes:

# Notes:

# Notes:

# International Distributor List

| Distributor: | Country: | Phone Number: | Distributor: | Country: | Phone Number: |
|---|---|---|---|---|---|
| Agrolanc Kft | Hungary | 36 27 539 640 | Maquiver S.A. | Colombia | 57 1 236 4079 |
| Asian American Industrial (AAI) | Hong Kong | 852 2497 7804 | Maruyama Mfg. Co. Inc. | Japan | 81 3 3252 2285 |
| B-Ray Corporation | Korea | 82 32 551 2076 | Mountfield a.s. | Czech Republic | 420 255 704 220 |
| Brisa Goods LLC | Mexico | 1 210 495 2417 | Mountfield a.s. | Slovakia | 420 255 704 220 |
| Casco Sales Company | Puerto Rico | 787 788 8383 | Munditol S.A. | Argentina | 54 11 4 821 9999 |
| Ceres S.A. | Costa Rica | 506 239 1138 | Norma Garden | Russia | 7 495 411 61 20 |
| CSSC Turf Equipment (pvt) Ltd. | Sri Lanka | 94 11 2746100 | Oslinger Turf Equipment SA | Ecuador | 593 4 239 6970 |
| Cyril Johnston & Co. | Northern Ireland | 44 2890 813 121 | Oy Hako Ground and Garden Ab | Finland | 358 987 00733 |
| Cyril Johnston & Co. | Republic of Ireland | 44 2890 813 121 | Parkland Products Ltd. | New Zealand | 64 3 34 93760 |
| Fat Dragon | China | 886 10 80841322 | Perfetto | Poland | 48 61 8 208 416 |
| Femco S.A. | Guatemala | 502 442 3277 | Pratoverde SRL. | Italy | 39 049 9128 128 |
| FIVEMANS New-Tech Co., Ltd | China | 86-10-6381 6136 | Prochaska & Cie | Austria | 43 1 278 5100 |
| ForGarder OU | Estonia | 372 384 6060 | RT Cohen 2004 Ltd. | Israel | 972 986 17979 |
| G.Y.K. Company Ltd. | Japan | 81 726 325 861 | Riversa | Spain | 34 9 52 83 7500 |
| Geomechaniki of Athens | Greece | 30 10 935 0054 | Lely Turfcare | Denmark | 45 66 109 200 |
| Golf international Turizm | Turkey | 90 216 336 5993 | Lely (U.K.) Limited | United Kingdom | 44 1480 226 800 |
| Hako Ground and Garden | Sweden | 46 35 10 0000 | Solvert S.A.S. | France | 33 1 30 81 77 00 |
| Hako Ground and Garden | Norway | 47 22 90 7760 | Spypros Stavrinides Limited | Cyprus | 357 22 434131 |
| Hayter Limited (U.K.) | United Kingdom | 44 1279 723 444 | Surge Systems India Limited | India | 91 1 292299901 |
| Hydroturf Int. Co Dubai | United Arab Emirates | 97 14 347 9479 | T-Markt Logistics Ltd. | Hungary | 36 26 525 500 |
| Hydroturf Egypt LLC | Egypt | 202 519 4308 | Toro Australia | Australia | 61 3 9580 7355 |
| Irrimac | Portugal | 351 21 238 8260 | Toro Europe NV | Belgium | 32 14 562 960 |
| Irrigation Products Int'l Pvt Ltd. | India | 0091 44 2449 4387 | Valtech | Morocco | 212 5 3766 3636 |
| Jean Heybroek b.v. | Netherlands | 31 30 639 4611 | Victus Emak | Poland | 48 61 823 8369 |

## European Privacy Notice

The Information Toro Collects
Toro Warranty Company (Toro) respects your privacy. In order to process your warranty claim and contact you in the event of a product recall, we ask you to share certain personal information with us, either directly or through your local Toro company or dealer.

The Toro warranty system is hosted on servers located within the United States where privacy law may not provide the same protection as applies in your country.

BY SHARING YOUR PERSONAL INFORMATION WITH US, YOU ARE CONSENTING TO THE PROCESSING OF YOUR PERSONAL INFORMATION AS DESCRIBED IN THIS PRIVACY NOTICE.

The Way Toro Uses Information
Toro may use your personal information to process warranty claims, to contact you in the event of a product recall and for any other purpose which we tell you about. Toro may share your information with Toro's affiliates, dealers or other business partners in connection with any of these activities. We will not sell your personal information to any other company. We reserve the right to disclose personal information in order to comply with applicable laws and with requests by the appropriate authorities, to operate our systems properly or for our own protection or that of other users.

Retention of your Personal Information
We will keep your personal information as long as we need it for the purposes for which it was originally collected or for other legitimate purposes (such as regulatory compliance), or as required by applicable law.

Toro's Commitment to Security of Your Personal Information
We take reasonable precautions in order to protect the security of your personal information. We also take steps to maintain the accuracy and current status of personal information.

Access and Correction of your Personal Information
If you would like to review or correct your personal information, please contact us by email at legal@toro.com.

## Australian Consumer Law

Australian customers will find details relating to the Australian Consumer Law either inside the box or at your local Toro Dealer.

# The Toro Warranty

Landscape
Contractor
Equipment (LCE)

## Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly promise to the original purchaser to repair the Toro Products listed below if defective in materials or workmanship.

The following time periods apply from the date of purchase:

| Products | Warranty Period |
|---|---|
| Walk Behind Mowers | |
| 53 cm Mowers – Residential use[1] | 2 years |
| 53 cm Mowers – Commercial use | 1 year |
| 76 cm Mowers – Residential use[1] | 2 years |
| 76 cm Mowers – Commercial use | 1 year |
| Mid-Size Walk-Behind Mowers | 2 years |
| • Engine | 2 years[2] |
| Grand Stand® Mowers | 5 years or 1,200 hours[3] |
| • Engine | 2 years |
| Z Master® 2000 Series Mowers | 4 years or 500 hours [3] |
| • Engine | 2 years[2] |
| Z Master® 3000 Series Mowers | 5 years or 1,200 hours[3] |
| • Engine | 2 years[2] |
| Z Master® 5000 and 6000 Series Mowers | 5 years or 1,200 hours[3] |
| • Engine | 2 years[2] |
| Z Master® 7000 Series Mowers | 5 years or 1,200 hours[3] |
| • Engine | 2 years[2] |
| All Mowers | |
| • Battery | 2 years |
| • Attachments | 2 years |

[1]Residential use means use of the product on the same lot as your home. Use at more than one location is considered commercial use and the commercial warranty would apply.

[2]Some engines used on Toro LCE Products are warranted by the engine manufacturer.

[3]Whichever occurs first.

This warranty includes the cost of parts and labor, but you must pay transportation costs.

## Instructions for Obtaining Warranty Service

If you think that your Toro Product contains a defect in materials or workmanship, follow this procedure:

1. Contact your seller to arrange service of the product. If for any reason it is impossible for you to contact your seller, you may contact any Toro Authorized Distributor to arrange service.
2. Bring the product and your proof of purchase (sales receipt) to the Service Dealer.
3. If for any reason you are dissatisfied with the Service Dealer's analysis or with the assistance provided, contact us at:

   Toro Warranty Company
   8111 Lyndale Avenue South
   Bloomington, MN 55420-1196
   001-952-948-4707

   See attached Distributor List.

## Owner Responsibilities

You must maintain your Toro Product by following the maintenance procedures described in the *Operator's Manual*. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

## Items and Conditions Not Covered

There is no other express warranty except for special emission system coverage and engine warranty coverage on some products. This express warranty does not cover the following:

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, oil changes, spark plugs, air filters blade sharpening or worn blades, cable/linkage adjustments, or brake and clutch adjustments
- Components failing due to normal wear
- Any product or part which has been altered or misused or neglected or requires replacement or repair due to accidents or lack of proper maintenance
- Pickup and delivery charges
- Repairs or attempted repairs by anyone other than an Authorized Toro Service Dealer
- Repairs necessary due to failure to follow recommended fuel procedure (consult *Operator's Manual* for more details)
  - Removing contaminants from the fuel system is not covered
  - Use of old fuel (more than one month old) or fuel which contains more than 10% ethanol or more that 15% MTBE
  - Failure to drain the fuel system prior to any period of non-use over one month

## General Conditions

The purchaser is covered by the national laws of each country. The rights to which the purchaser is entitled with the support of these laws are not restricted by this warranty.