Form No. 3405-604 Rev E

TORO®

Count on it.

Operator's Manual

48in, 52in, or 60in TITAN® HD 1500, 2000, or 2500 Series Riding Mower

Model No. 74450—Serial No. 400010798 and Up
Model No. 74451—Serial No. 400010798 and Up
Model No. 74452—Serial No. 400010798 and Up
Model No. 74460—Serial No. 400010798 and Up
Model No. 74461—Serial No. 400010798 and Up
Model No. 74462—Serial No. 400010798 and Up
Model No. 74463—Serial No. 400010798 and Up
Model No. 74470—Serial No. 400010798 and Up
Model No. 74471—Serial No. 400010798 and Up
Model No. 74472—Serial No. 400010798 and Up
Model No. 78450—Serial No. 400010798 and Up

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

3405-604 E

WARNING

CALIFORNIA
Proposition 65 Warning

This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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

This spark ignition system complies with Canadian ICES-002

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

Because in some areas there are local, state, or federal regulations requiring that a spark arrester be used on the engine of this machine, a spark arrester is available as an option. If you require a spark arrester, contact your Authorized Toro Dealer.

Genuine Toro spark arresters are approved by the USDA Forestry Service.

⚠ 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 EPA and CARB regulations.

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

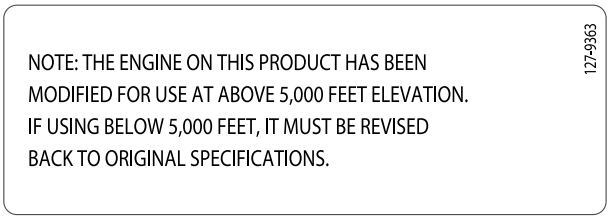
For all models that do not have Toro engines, please refer to the engine manufacturer's information included with the machine.

Labeled power ratings are supplied by the engine manufacturer in accordance with SAE testing and gross/net power rating standards (J1940, J1995, J1349).

Important: **If you are using a machine with a Toro engine above 1500 m (5,000 ft) for a continuous period, ensure that the High Altitude Kit has been installed so that the engine meets CARB/EPA emission regulations. The High Altitude Kit increases engine performance while preventing spark-plug fouling, hard starting, and increased emissions. Once you have installed the kit, attach the high-altitude label next to the serial decal on the machine. Contact any Authorized Toro Service Dealer to obtain the proper High Altitude Kit and high-altitude label for your machine. To locate a dealer convenient to you, access our website at www.Toro.com or contact our Toro Customer Care Department at the number(s) listed in your Emission Control Warranty Statement.**

Remove the kit from the engine and restore the engine to its original factory configuration when running the engine under 1500 m (5,000 ft). Do not operate an engine that has been converted for high-altitude use at lower altitudes; otherwise, you could overheat and damage the engine.

If you are unsure whether or not your machine has been converted for high-altitude use, look for the following label (Figure 3).



decal127-9363

Figure 3

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8111 Lyndale Avenue South
Bloomington, MN 55420

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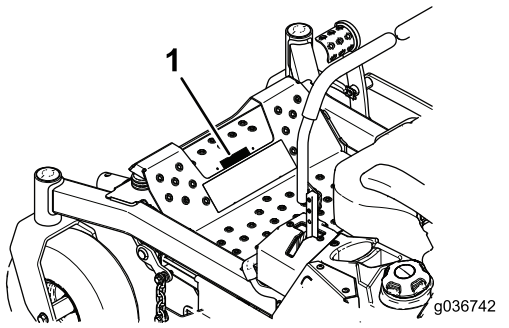
Introduction

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.



g036742

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 ANSI B71.4-2012.

General Safety

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

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

- Read and understand the contents of this *Operator's Manual* before you start the engine. Ensure that everyone using this product knows how to use it and understands the warnings.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and working on the machine.
- Keep clear of any discharge opening. Keep bystanders a safe distance from the machine.
- Keep children out of the operating area. Never allow children to operate the machine.
- Stop the machine and shut off the engine before servicing, fueling, or unclogging the machine.

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

You can find additional items of safety information in their respective sections throughout this manual.

Slope Indicator

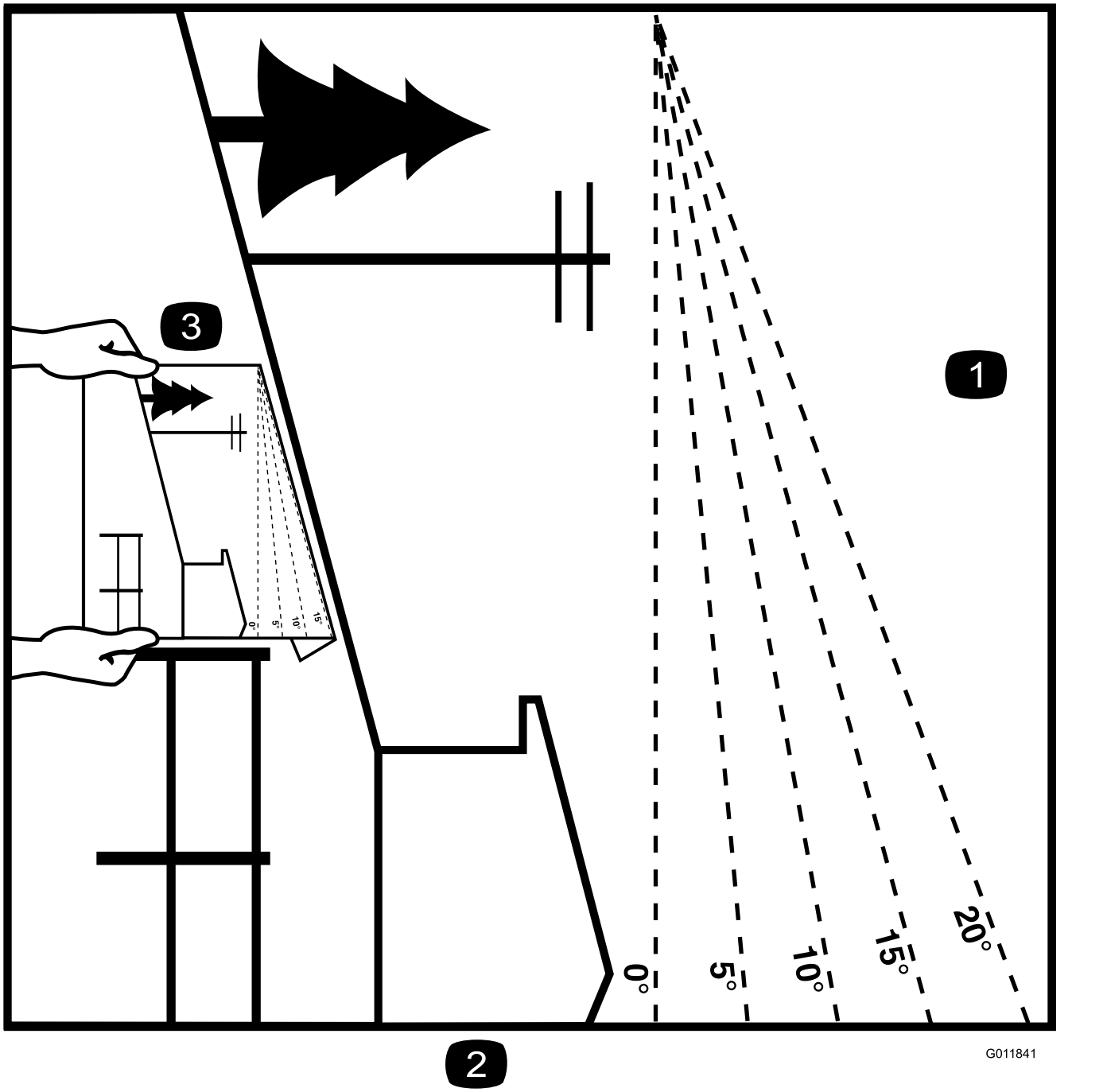


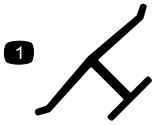
Figure 4

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

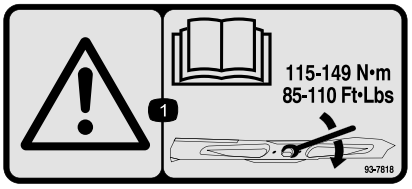
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.



decaloemmarkt

Manufacturer's Mark

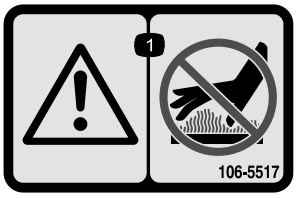
1. Indicates the blade is identified as a part from the original machine manufacturer.



decal93-7818

93-7818

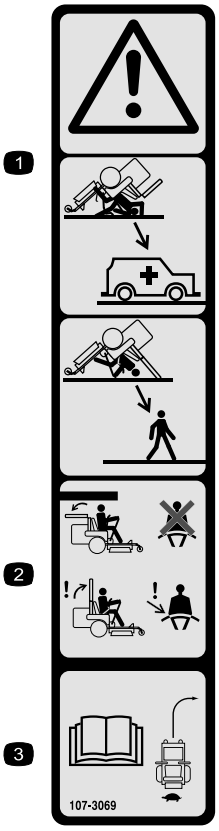
1. Warning—read the *Operator's Manual* for instructions on torquing the blade bolt/nut to 115-149 N·m (85-110 ft-lb).



decal106-5517

106-5517

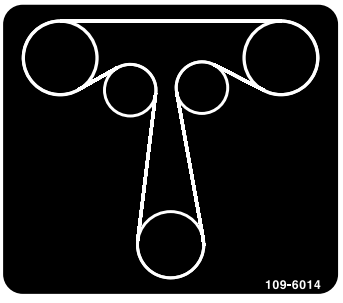
1. Warning—do not touch the hot surface.



decal107-3069

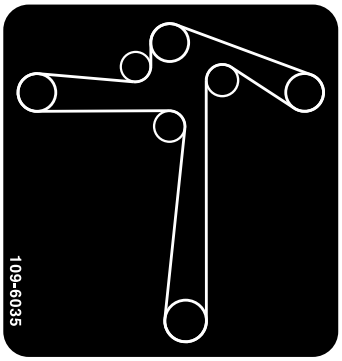
107-3069

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 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.



decal109-6014

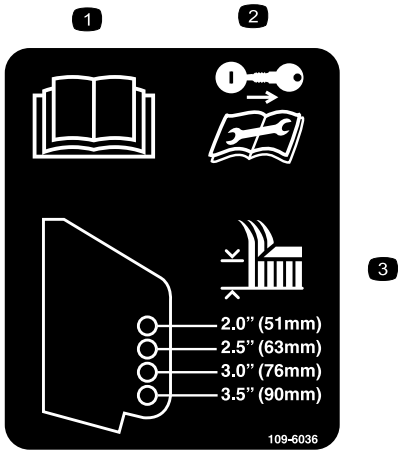
109-6014



decal109-6035

109-6035

2500 Series Side Discharge Machines Only

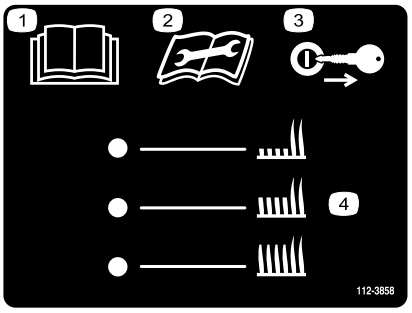


decal109-6036

109-6036

Rear Discharge Machines Only

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

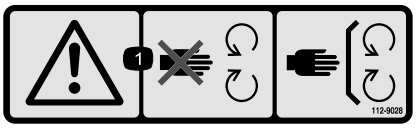


decal112-3858

112-3858

1500 and 2000 Series Side Discharge Machines Only

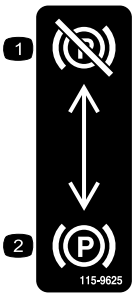
1. Read the *Operator's Manual*.
2. Read the instructions before servicing or performing maintenance.
3. Remove the ignition key before adjusting the height of cut.
4. Height-of-cut settings.



decal112-9028

112-9028

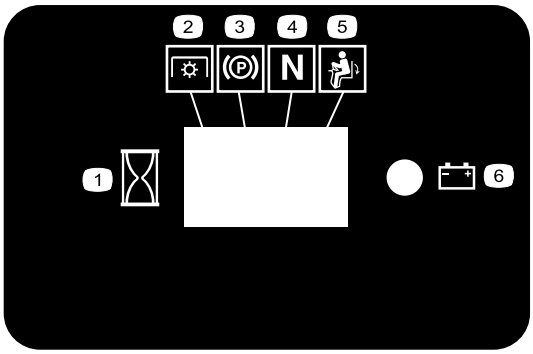
1. Warning—stay away from moving parts; keep all guards in place.



decal115-9625

115-9625

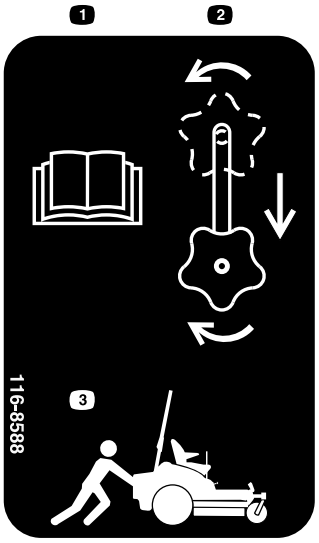
1. Parking brake—disengaged
2. Parking brake—engaged



decalhourmessagedisplay-116-5610

Message Display

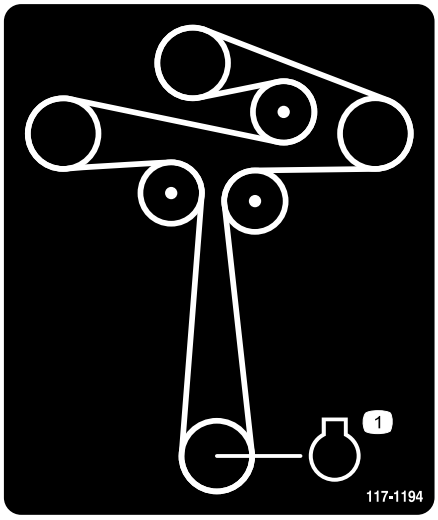
1. Hour
2. PTO
3. Parking brake
4. Neutral
5. Operator-presence switch
6. Battery



decal116-8588

116-8588

1. Read the *Operator's Manual*.
2. Rotate the drive release knob to loosen, slide the knob, and tighten.
3. Push the machine.



decal117-1194

117-1194

1500 and 2000 Series Side-Discharge Machines Only

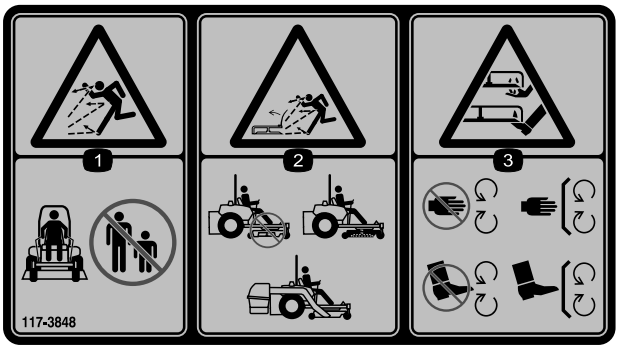
1. Engine

CALIFORNIA SPARK ARRESTER WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements. 117-2718

decal117-2718

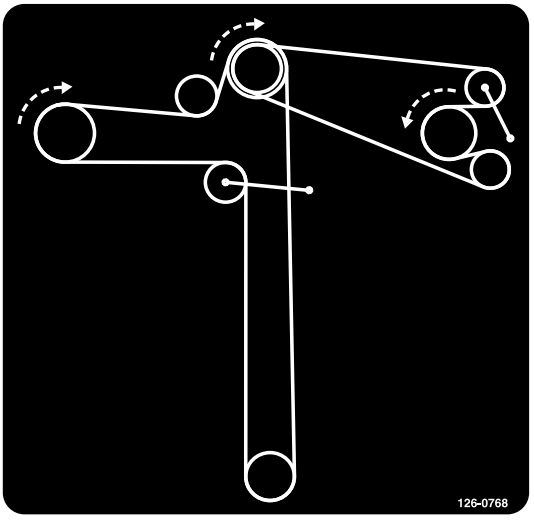
117-2718



decal117-3848

117-3848

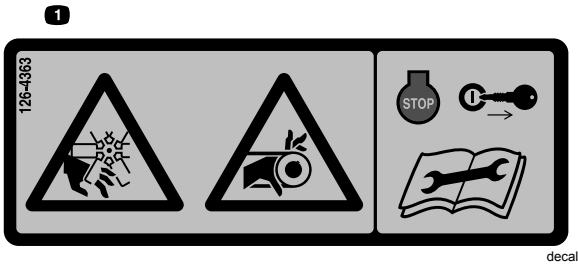
1. Thrown object hazard—keep bystanders a safe distance from the machine.
2. Thrown object hazard, mower—do not operate the machine without deflector, discharge cover, or grass collection system in place.
3. Cutting/dismemberment of hand or foot—stay away from moving parts; keep all guards and shields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



decal126-0768

126-0768

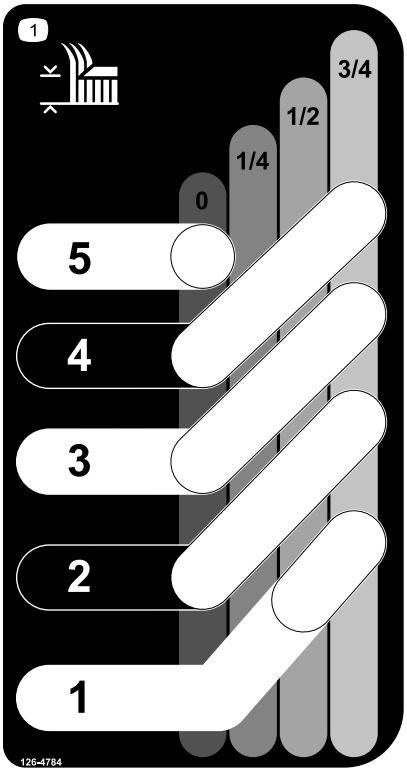
Rear Discharge Units Only



decal126-4363

126-4363

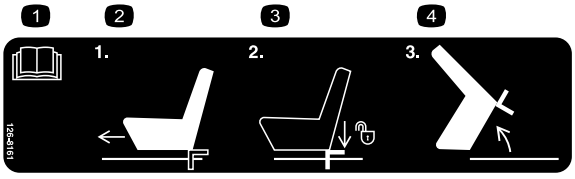
1. Cutting/dismemberment hazard, fan and entanglement hazard, belt. Shut off the engine and remove key before adjusting, servicing or cleaning.



decal126-4784

126-4784

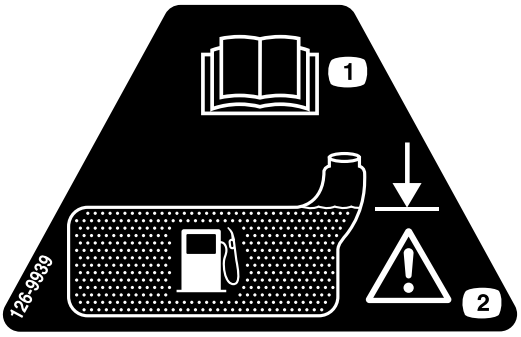
1. Height of cut



decal126-8161

126-8161

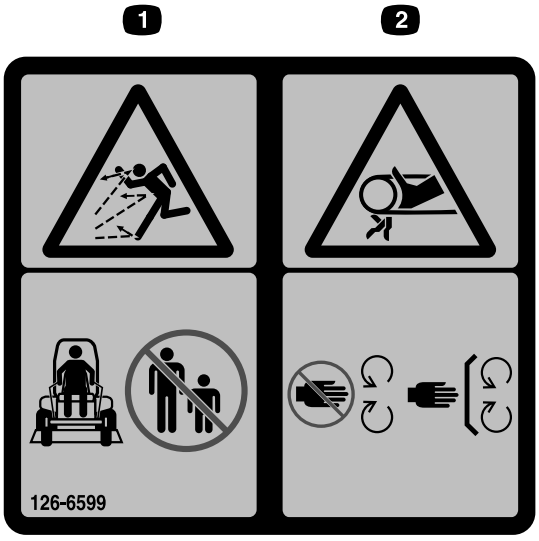
1. Read the *Operator's Manual.*
2. Slide seat forward
3. Press down on latch to unlock seat
4. Rotate seat



decal126-9939

126-9939

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

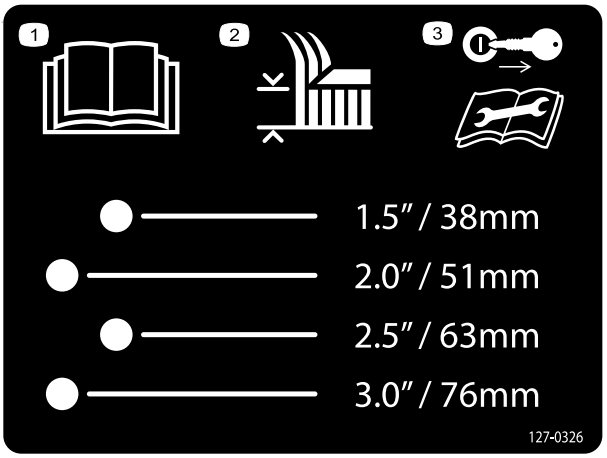


decal126-6599

126-6599

Rear Discharge Units

1. Thrown objects hazard - keep bystanders a safe distance from the machine.
2. Cutting/dismemberment of hand - stay away from moving parts; keep all guards and shields in place.

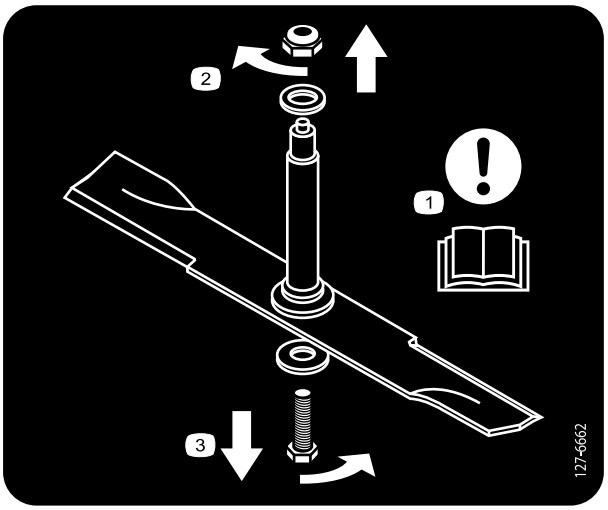


decal127-0326

127-0326

2500 Series Side Discharge Machines Only

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

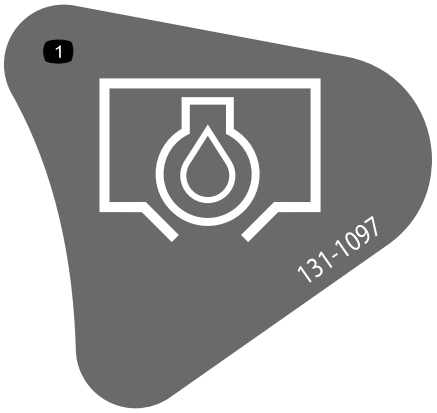


decal127-6662

127-6662

Rear Discharge Mowers Only

1. Attention—read the *Operator's Manual*.
2. Remove the nut by turning it clockwise.
3. Remove the bolt by turning it counter clockwise.

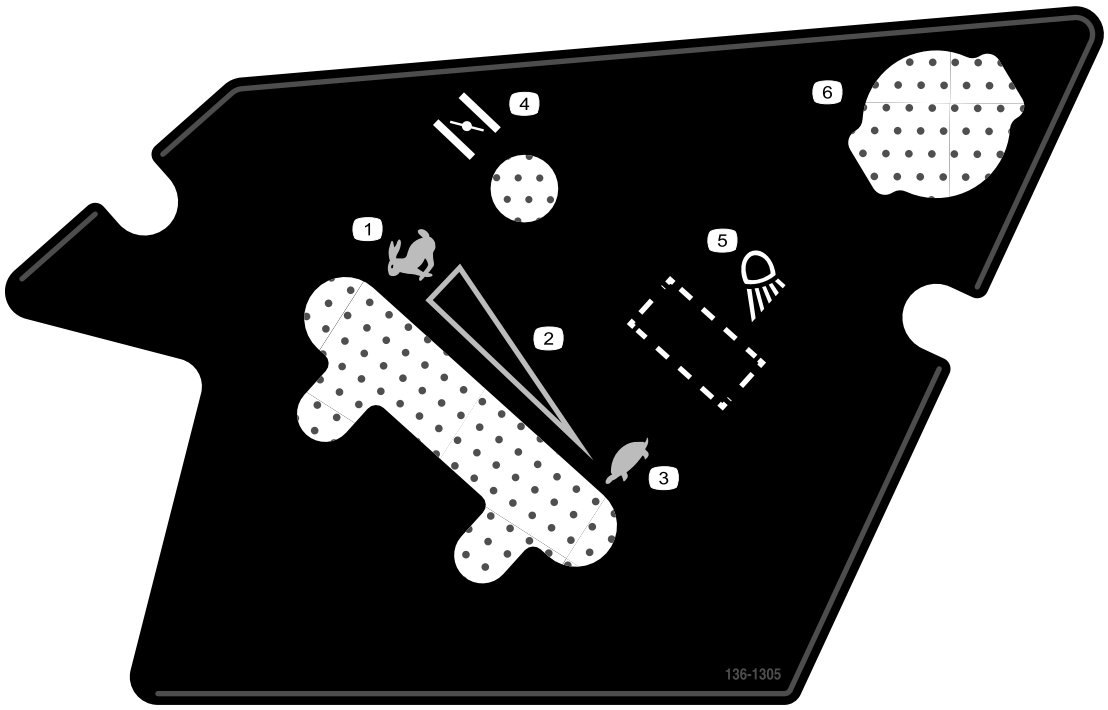


decal131-1097

131-1097

Toro Engines Only

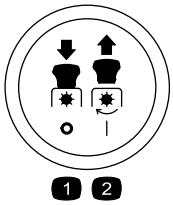
1. Oil drain



decal136-1305

136-1305

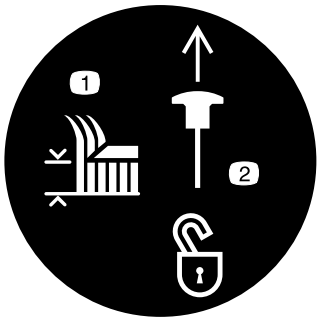
1. Fast
2. Continuous variable setting
3. Slow
4. Choke
5. Work light (optional)
6. Power point



decalptosymbols

PTO Switch Symbols

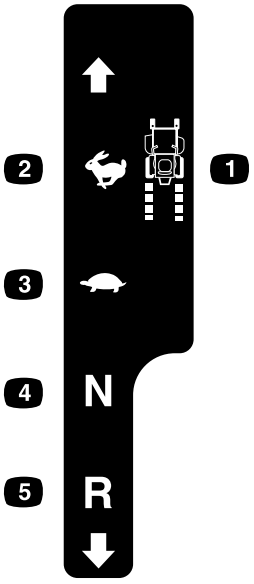
1. PTO–disengage
2. PTO–engage



decaltransportlock

Transport Lock

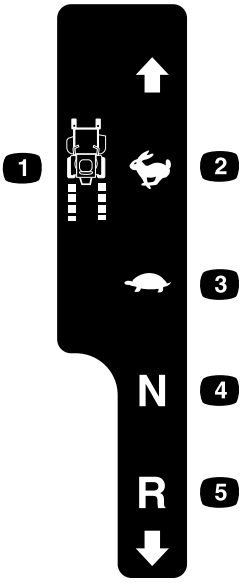
1. Height of cut
2. Pull up to unlock the transport lock



decalmotioncntrllh-126-6194

Left Motion Control

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



decalmotioncntrlrh-126-6183

Right Motion Control

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

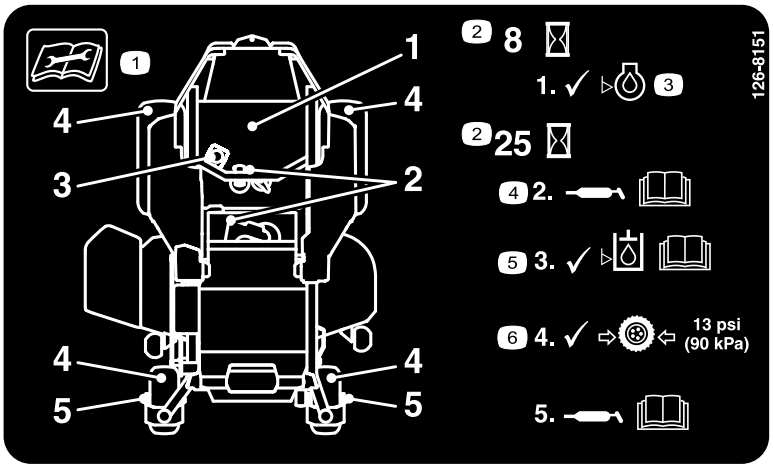


decalbatterysymbols

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



decal126-8151

126-8151

1. Read the instructions before servicing or performing maintenance
2. Time interval
3. Check oil level
4. Refer to the *Operator's Manual* for grease instructions
5. Check the hydraulic-fluid level and refer to the *Operator's Manual* or further instructions
6. Check tire pressure



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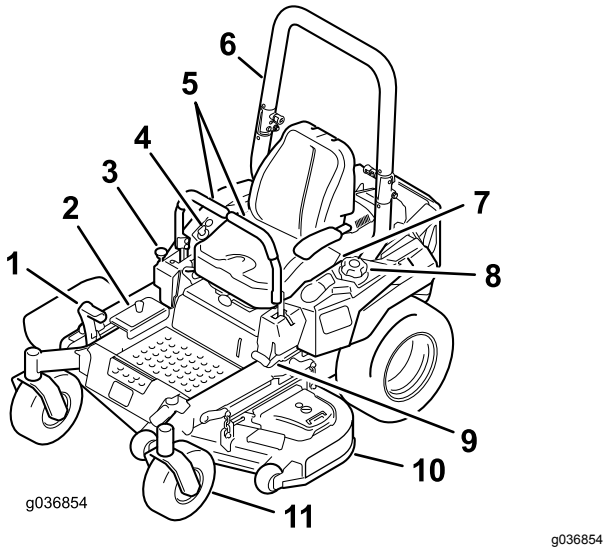
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Machines without MyRide Only

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. 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.
4. Bodily harm hazard—do not carry passengers; look behind you when mowing in reverse.
5. Thrown object hazard—keep bystanders away.
6. Tipping hazard on slopes—do not use on slopes near open water; do not use on slopes greater than 15°.

Product Overview



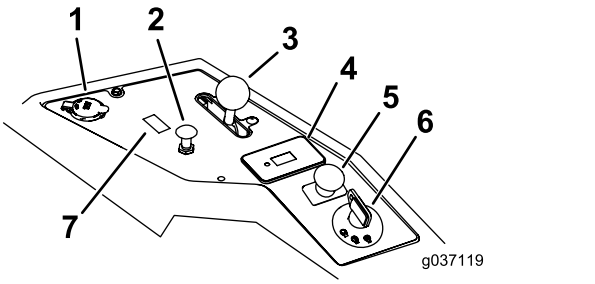
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Figure 5

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

Controls

Become familiar with all the controls before you start the engine and operate the machine (Figure 5 and Figure 6).



g037119

Figure 6

1. Power point
2. Choke
3. Throttle control
4. Hour meter
5. PTO Switch
6. Ignition switch
7. Switch position for optional light kit

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).

Throttle Control

The throttle control is variable between **Fast** and **Slow**.

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

The motion-control levers are used to drive the machine forward, reverse, and 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—Machines with Side Discharge Mower Decks

	48-inch Deck	**52-inch Deck**	**60-inch Deck**
Without mower deck	121 cm (47-1/2 inches)	124 cm (49 inches)	133 cm (52 inches)
Deflector up	133 cm (53 inches)	144 cm (56-3/4 inches)	161 cm (63-1/2 inches)
Deflector down	160 cm (63-1/4 inches)	171 cm (67-1/4 inches)	191 cm (75-1/4 inches)

Width—Machines with Rear Discharge Mower Decks

	60-inch Deck
Without mower deck	133 cm (52 inches)
With mower deck	168 cm (66 inches)

Length—Machines with Side Discharge Mower Decks

	48-inch Deck	**52-inch Deck**	**60-inch Deck**
Length	208 cm (82 inches)	208 cm (82 inches)	209 cm (83 inches)

Length—Machines with Rear Discharge Mower Decks

	60-inch Deck
With mower deck	215 cm (84-1/2 inches)

Height

Roll Bar - Up	**Roll Bar - Down**
179 cm (70-1/2 inches)	49 inches (125 cm)

Weight

Machines	Weight
48-inch side-discharge machines	385 to 425 kg (849 to 937 lb)
52-inch side-discharge machines	391 to 434 kg (862 to 957 lb)
60-inch side-discharge machines	409 to 456 kg (901 to 1006 lb)
60-inch rear-discharge machines	459 kg (1012 lb)

Operation

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

Before Operation

Before Operation Safety

General Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Know how to stop the machine and engine quickly.
- Check that operator-presence controls, safety switches, and shields are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- Before mowing, always inspect the machine to ensure that the blades, blade bolts, and cutting assemblies are in good working condition. Replace worn or damaged blades and bolts in sets to preserve balance.
- Inspect the area where you will use the machine and remove all objects that the machine could throw.
- Evaluate the terrain to determine the appropriate equipment and any attachments or accessories required to operate the machine properly and safely.

Fuel Safety

- To avoid personal injury or property damage, use extreme care in handling fuel. Fuel vapors are flammable and explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or add fuel to the fuel tank while the engine is running or while hot.
- Do not refuel the machine indoors.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.
- Do not fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground, away from your vehicle before filling.
- Remove the equipment from the truck or trailer and refuel it while it is on the ground. If this is not possible, then refuel from a portable container rather than a fuel-dispenser nozzle.
- Do not operate the machine without the entire exhaust system in place and in proper working condition.
- Keep the fuel-dispenser nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- If you spill fuel on your clothing, change your clothing immediately. Wipe up any gasoline that spills.
- Never overfill the fuel tank. Replace the fuel cap and tighten it securely.
- 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 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.
  - Avoid prolonged breathing of vapors.
  - Keep your face away from the nozzle and gas tank opening.
  - Avoid contact with skin; wash off spills with soap and water.

Recommended Fuel

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

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.**

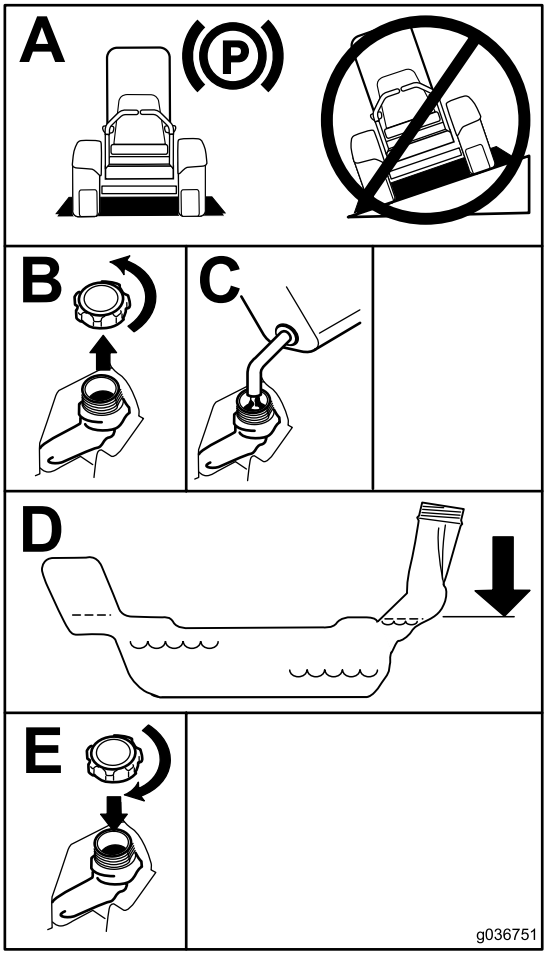
  Add the correct amount of gasoline stabilizer/conditioner to the gasoline.

  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

Note: Do not fill the fuel tank completely full. Fill the fuel tank to the bottom of the filler neck. The empty space in the tank allows the gasoline to expand.

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.
5. Ensure that there is empty space in the tank to allow the gasoline to expand (Figure 7).



g036751

Figure 7

Checking the Engine-Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase. For Kawasaki engines refer to Servicing a Kawasaki® Engine (page 41), for Kohler engines refer to Servicing a Kohler® Engine (page 46), and for Toro engines refer to Servicing a Toro Engine (page 50).

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).

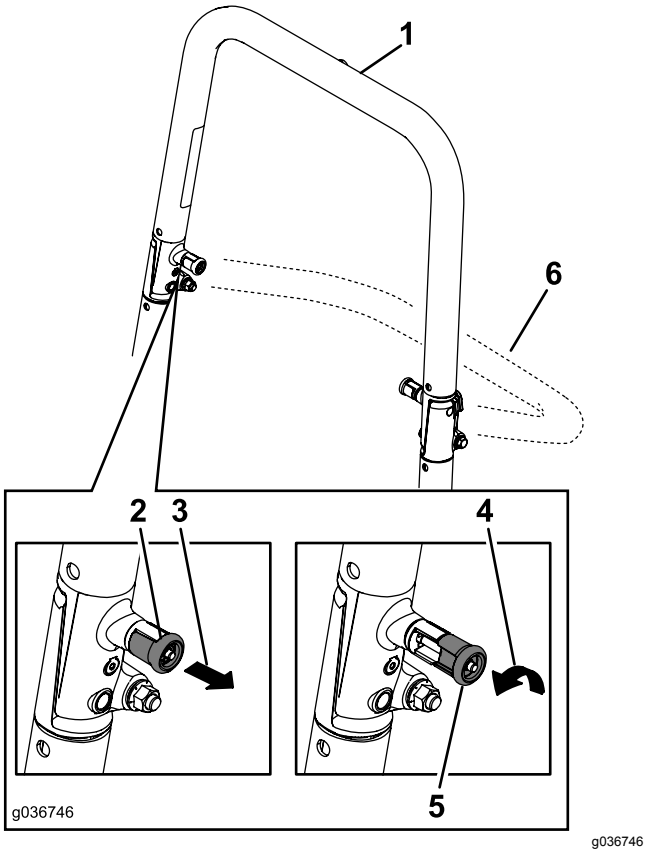


Figure 8

1. Roll bar in the upright position
2. ROPS knob in the latched position
3. Pull the ROPS knob out.
4. Rotate the ROPS knob 90 degrees.
5. ROPS knob in the unlatched position
6. Roll bar in the folded position

4. To raise the roll bar, raise the roll bar to the operating position and rotate the knobs until 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.

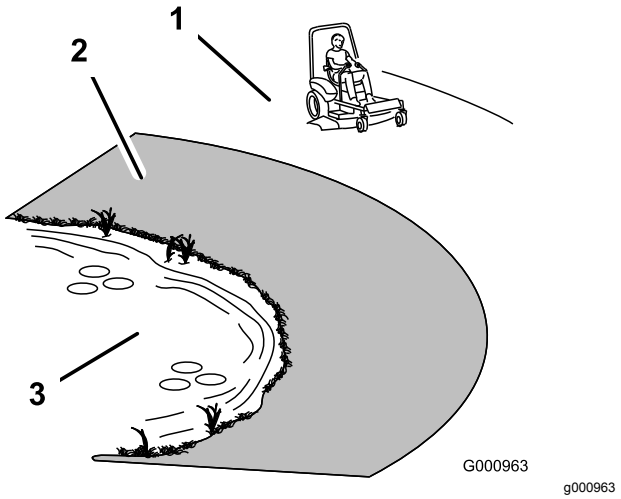


Figure 9

1. Safe Zone—use the machine here on slopes less than 15 degrees or flat areas.
2. Danger Zone—use a walk-behind mower and/or a hand trimmer on slopes greater than 15 degrees, 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.

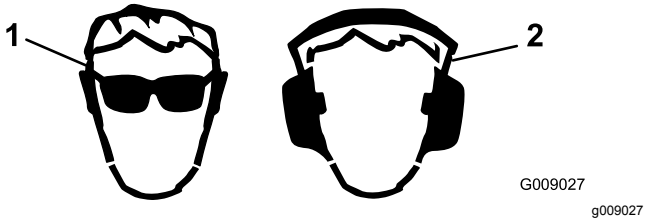


Figure 10

1. Wear eye protection.
2. Wear hearing protection

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 shut off 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.

Testing the Safety-Interlock System

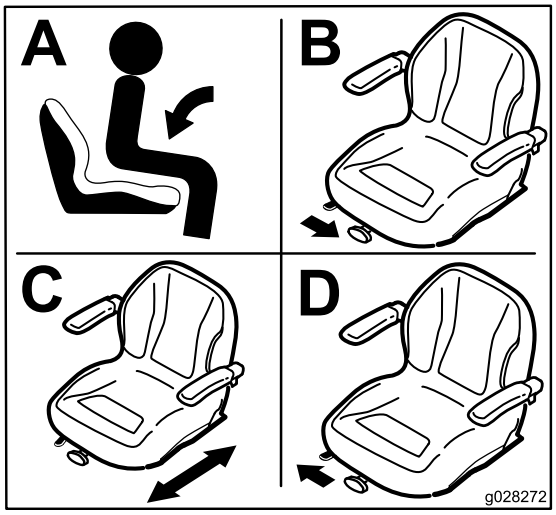
Service Interval: Before each use or daily

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 shut off.
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 shut off. 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.

Positioning the Seat

The seat can move forward and backward (Figure 11). Position the seat where you have the best control of the machine and are most comfortable.



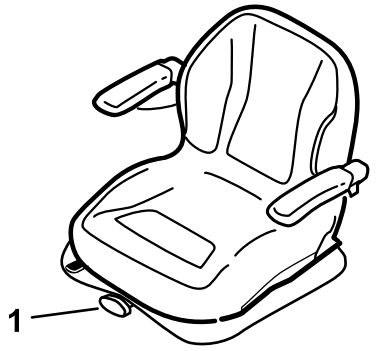
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Figure 11

Changing the Seat Suspension

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

To adjust it, turn the knob in front either direction to provide the best comfort (Figure 12).



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Figure 12

1. Seat-suspension knob

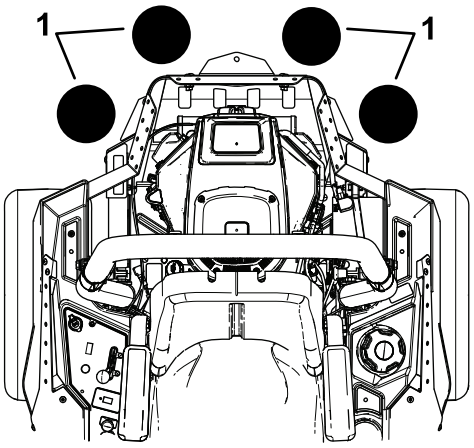
Breaking in a New Machine

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 Attachments and Accessories

Use only Toro approved attachments and accessories.

If more than one accessory-mount kit (i.e. bucket kit or universal mount kit) is added to any of the 4 locations shown in Figure 13, add a front-weight kit. Contact your authorized service dealer for the front-weight kit.



g037417

Figure 13

1. Add a front-weight kit when 2 or more accessory-mount kits are installed at these positions.

During Operation

During Operation Safety

General Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; slip-resistant, substantial footwear; and hearing protection. Tie back long hair and do not wear jewelry.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Never carry passengers on the machine and keep bystanders and pets away from the machine during operation.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- Avoid mowing on wet grass. Reduced traction could cause the machine to slide.
- Ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position before you start the engine.
- Keep your hands and feet away from the cutting units. Keep clear of the discharge opening at all times.
- Look behind and down before backing up to be sure of a clear path.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly roll over if a wheel goes over the edge or if the edge gives way.
- Stop the blades whenever you are not mowing.
- Stop the machine and inspect the blades after striking an object or if there is an abnormal vibration in the machine. Make all necessary repairs before resuming operation.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.
- Disengage the drive to the cutting unit and shut off the engine before adjusting the height of cut (unless you can adjust it from the operating position).
- Never run an engine in an area where exhaust gases are enclosed.
- Never leave a running machine unattended.

- Before leaving the operating position (including to empty the catchers or to unclog the chute), do the following:
  - Stop the machine on level ground.
  - Disengage the power take-off and lower the attachments.
  - Set the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all moving parts to stop.
- Do not operate the machine when there is the risk of lightning.
- Do not use the machine as a towing vehicle.
- Do not change the governor speed or overspeed the engine.
- Use accessories and attachments approved by Toro only.

Rollover Protection System (ROPS) Safety

- **Do not** remove the ROPS from the machine.
- Ensure that the seat belt is attached and that you can release it quickly in an emergency.
- Always wear your seat belt when the ROPS is up.
- Check carefully for overhead obstructions and do not contact them.
- Keep the ROPS in safe operating condition by thoroughly inspecting it periodically for damage and keeping all the mounting fasteners tight.
- Replace a damaged ROPS. Do not repair or alter it.

Slope Safety

- Establish your own procedures and rules for operating on slopes. These procedures must include surveying the site to determine which slopes are safe for machine operation. Always use common sense and good judgment when performing this survey.
- Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. Operating the machine on any slope requires extra caution.
- Operate the machine at a lower speed when you are on a slope.
- If you feel uneasy operating the machine on a slope, do not do it.
- Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Choose a low ground speed so you will not have to stop or shift while on a slope.
- A rollover can occur before the tires lose traction.
- Avoid operating the machine on wet grass. Tires may lose traction; regardless if the brakes are available and functioning.
- Avoid starting, stopping, or turning the machine on a slope.
- Keep all movement on slopes slow and gradual. Do not suddenly change the speed or direction of the machine.
- Do not operate the machine near drop-offs, ditches, embankments, or bodies of water. The machine could suddenly roll over if a wheel goes over the edge or the edge caves in. Establish a safety area between the machine and any hazard (2 machine widths).

Operating the Parking Brake

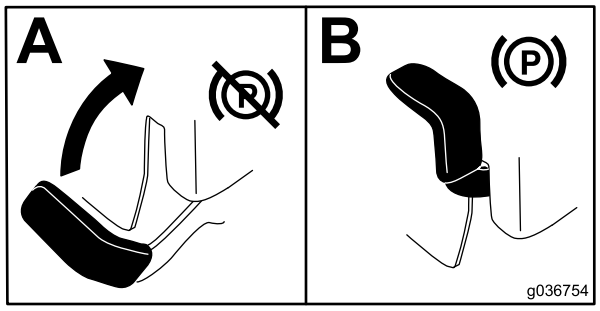
Always set the parking brake when you stop the machine or leave it unattended.

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.

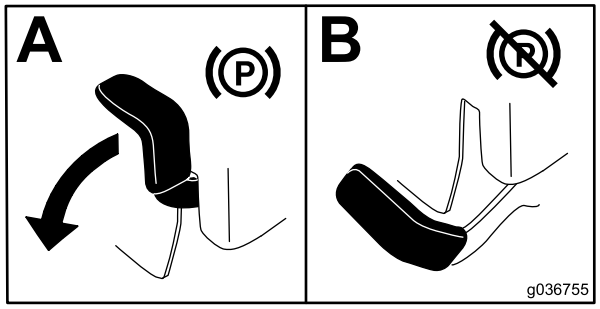
Do not park the machine on slopes unless the wheels are chocked or blocked.



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Figure 14

Releasing the Parking Brake



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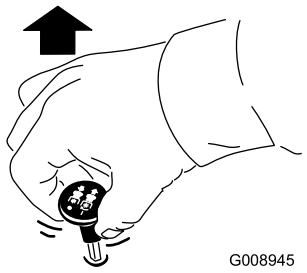
Figure 15

Operating the Mower Blade-Control Switch (PTO)

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

Engaging the Blade-Control Switch (PTO)

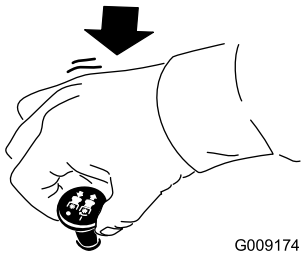
Note: Engaging the blade-control switch (PTO) with the throttle position at half or less causes excessive wear to the drive belts.



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Figure 16

Disengaging the Blade-Control Switch (PTO)



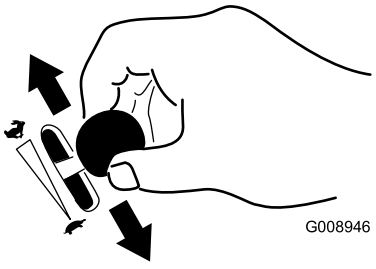
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Figure 17

Operating the Throttle

You can move the throttle control between FAST and SLOW positions (Figure 18).

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



g008946

Figure 18

Operating the Choke

Use the choke to start a cold engine.

1. If the engine is cold, use the choke to start the engine.
2. Pull up the choke knob to engage the choke before using the ignition switch (Figure 19).
3. Push down the choke knob to disengage the choke after starting the engine (Figure 19).

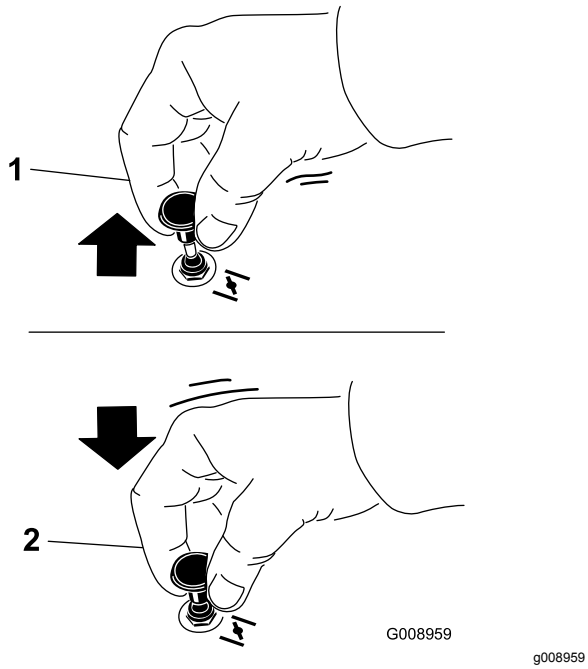


Figure 19

1. ON position
2. OFF position

Operating the Ignition Switch

1. Turn the ignition key to the START position (Figure 20).

   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.

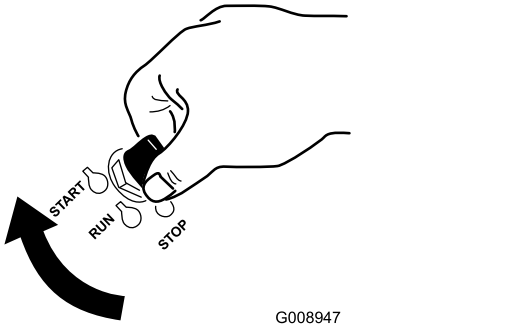
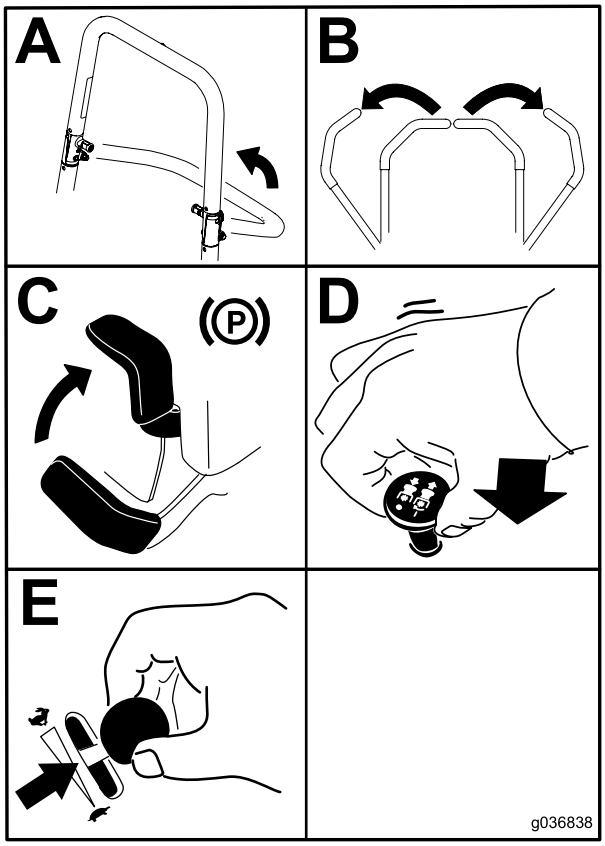


Figure 20

2. Turn the ignition key to the STOP position to shut off the engine.

Starting the Engine

1. Raise the ROPS up, lock it into place, sit on the seat, and fasten the seat belt.
2. Move the motion controls to NEUTRAL-LOCK position.
3. Set the parking brake; refer to Setting the Parking Brake (page 23).
4. Move the blade-control switch (PTO) to the OFF position (Figure 17).
5. Move the throttle lever midway between the SLOW and FAST positions.



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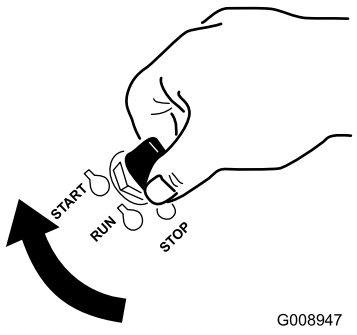
Figure 21

6. Turn the ignition key to the START position (Figure 22).

   Note: When the engine starts, release the key.

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

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



g008947

Figure 22

1. Off
2. Run
3. Start

Shutting Off the Engine

Note: Refer to Figure 40 to determine which engine you have.

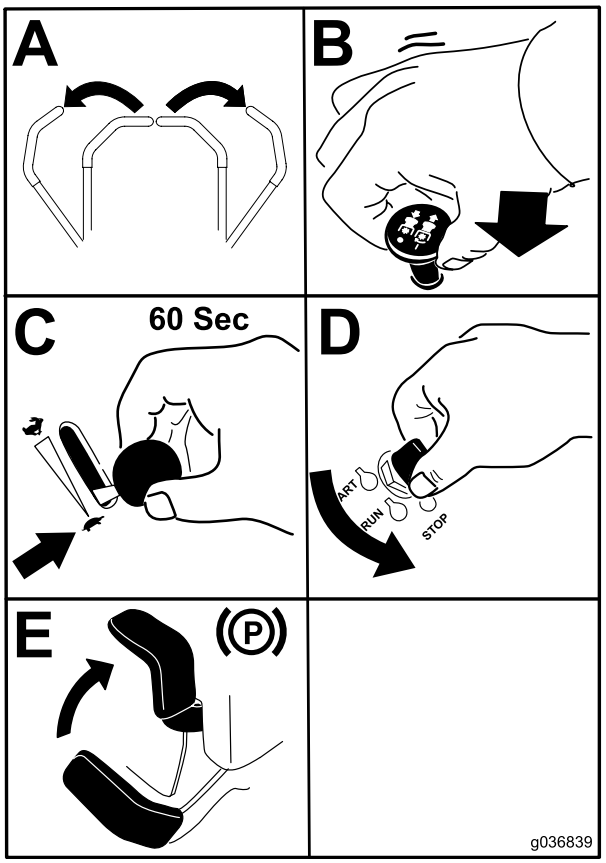
⚠ CAUTION

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.

Shutting Off Kawasaki and Kohler Engines

Let the engine idle at slow throttle for 60 seconds before turning the ignition switch off.



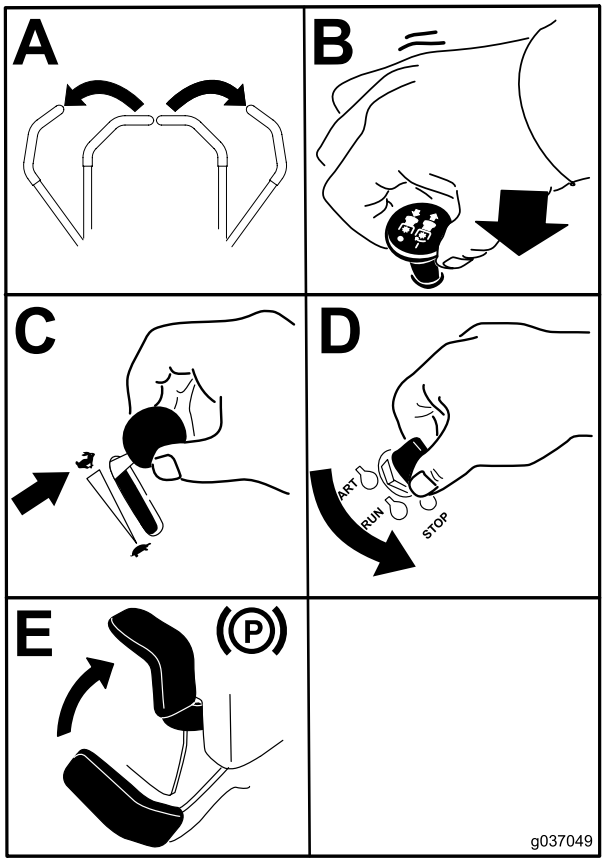
g036839

Figure 23

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

Shutting Off Toro Engines

Note: Ensure the throttle is in the FAST position before shutting off the engine.



g037049

Figure 24

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

Driving Forward or Backward

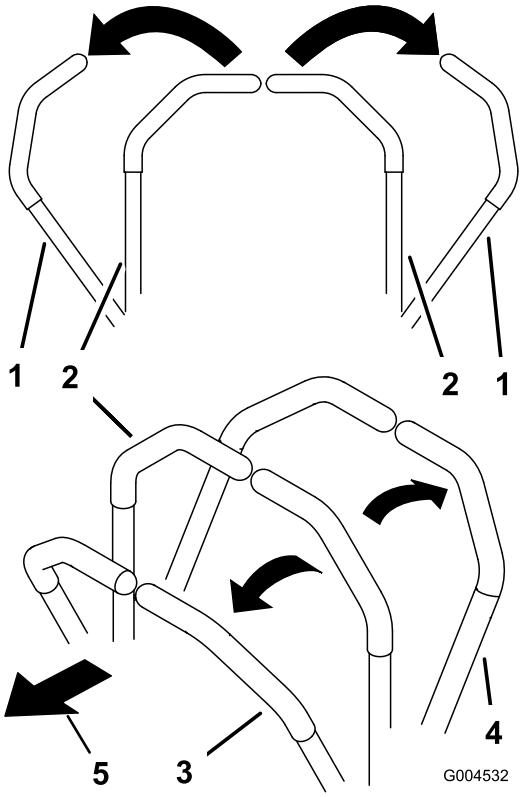
The throttle control regulates the engine speed as measured in rpm (revolutions per minute). Place the throttle control in the FAST position for best performance. Always operate in the full throttle position when mowing.

⚠ CAUTION

Machine can spin very rapidly. You may lose control of the 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



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Figure 25

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

1. Release the parking brake; refer to Releasing the Parking Brake (page 23).
2. Move the levers to the center, unlocked position.
3. To go forward, slowly push the motion-control levers forward (Figure 26).

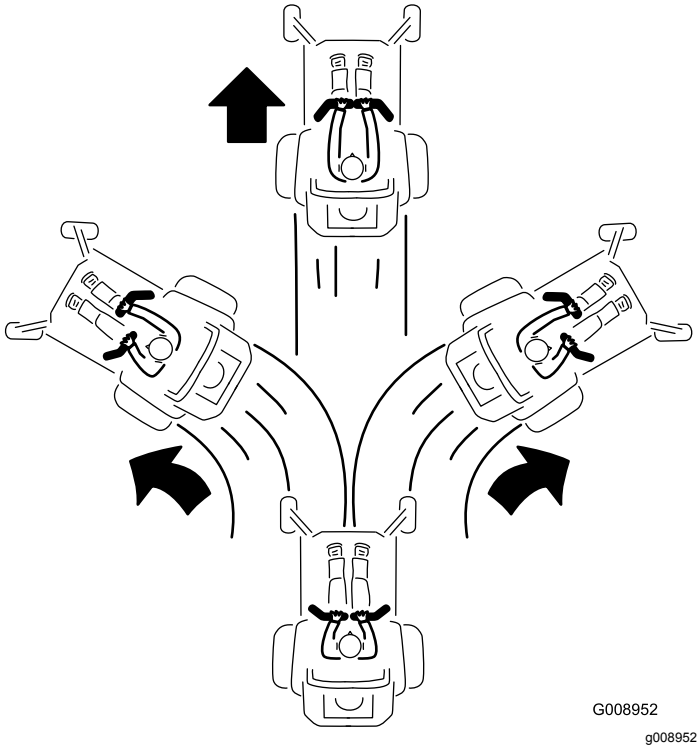


Figure 26

Driving Backward

1. Move the levers to the center, unlocked position.
2. To go backward, slowly pull the motion-control levers rearward (Figure 27).

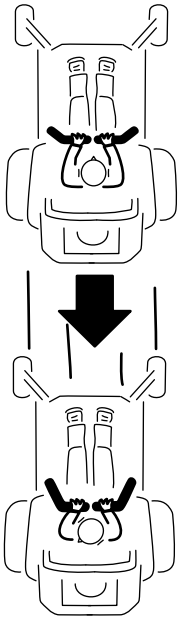


Figure 27

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 28).

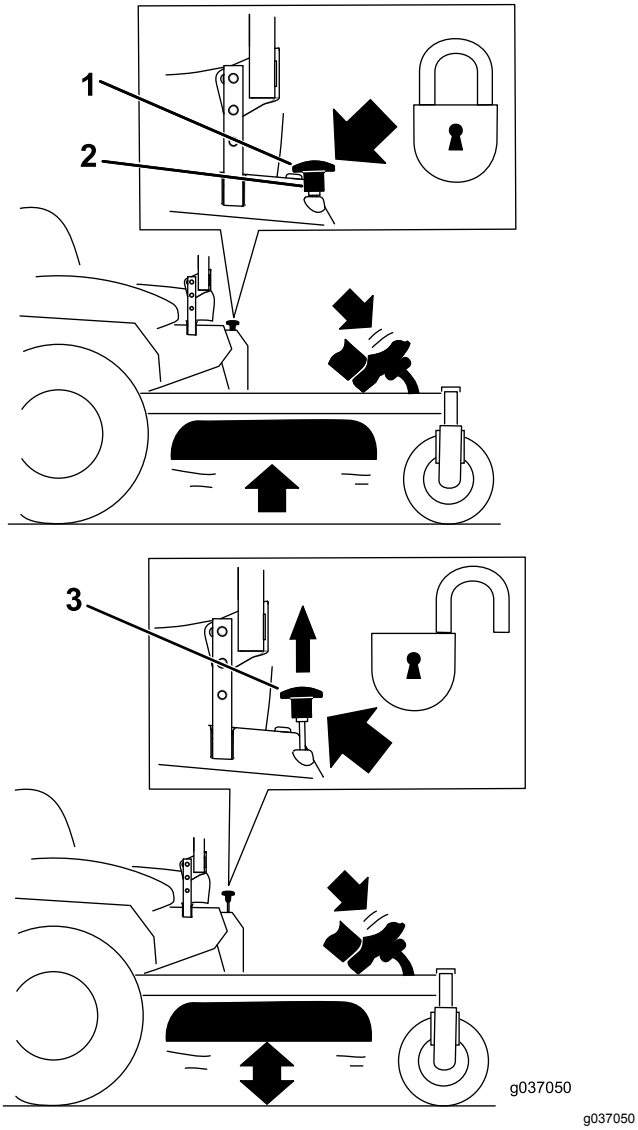


Figure 28

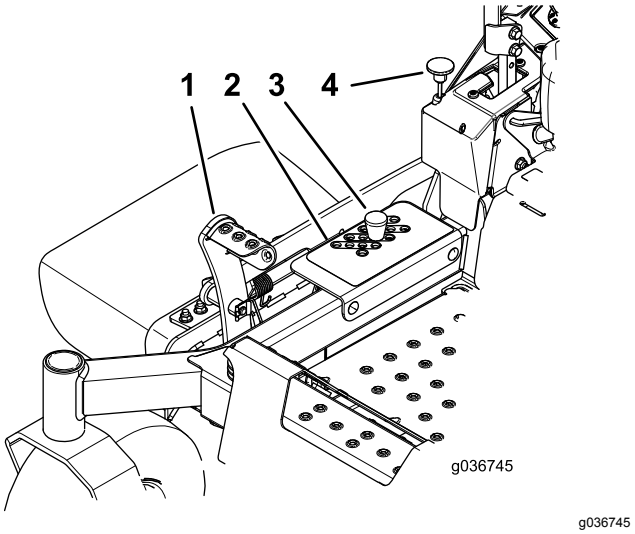
Transport-Lock Positions

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

Adjusting the Height-of-Cut Pin

Adjust the height-of-cut from 38 to 127 mm (1-1/2 to 5 inches) in 6 mm (1/4 inch) increments by moving the height-of-cut 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 127 mm or 5 inch cutting-height position) as shown in Figure 29.
3. To adjust, remove the pin from the height-of-cut bracket (Figure 29).
4. Select a hole in the height-of-cut bracket corresponding to the height-of-cut desired, and insert the pin (Figure 29).
5. Push on the deck lift, pull up on the transport lock knob, and slowly lower the mower deck.



g036745

Figure 29

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

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.

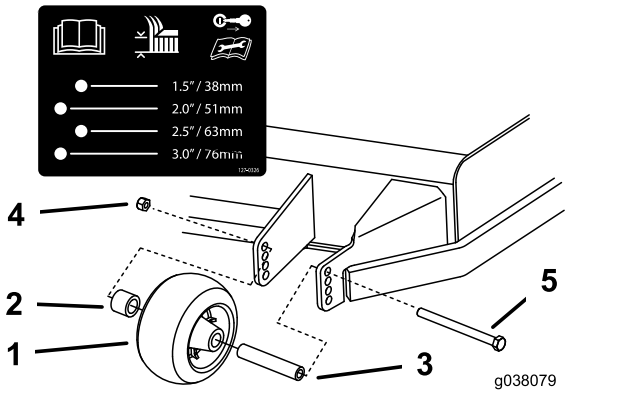


Figure 30

2500 series mower deck shown

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

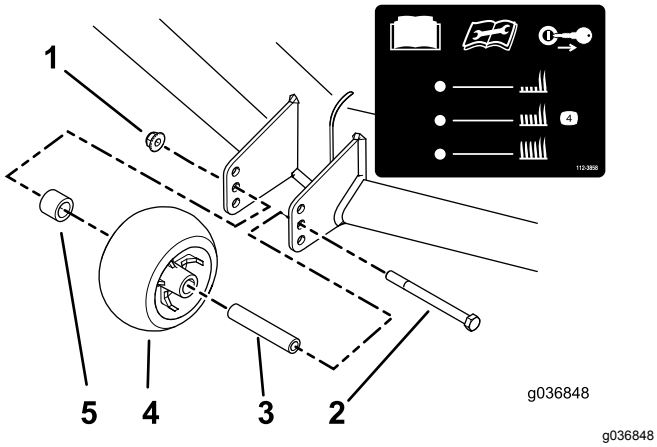


Figure 31

1500 and 2000 series mower deck shown

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

Adjusting the Side Bumpers

(Rear Discharge Machines Only)

Install the side bumpers in the top holes when operating in a height of cut higher than 64 mm (2-1/2 inches) and in the center holes when operating in a height of cut lower than 64 mm (2-1/2 inches).

Note: When the bumpers become worn, switch the bumpers to the opposite sides of the mower and flip them over. This allows the bumpers to be used longer before replacing them.

1. Disengage the blade-control switch (PTO), turn the ignition key to off, move the levers to the NEUTRAL-LOCK position, apply the parking brake, and remove the key.
2. Shut off the engine, remove the key, and wait for all moving parts to stop.
3. Raise the mower to the transport position.
4. Remove the bolts and nuts from each bumper (Figure 32).

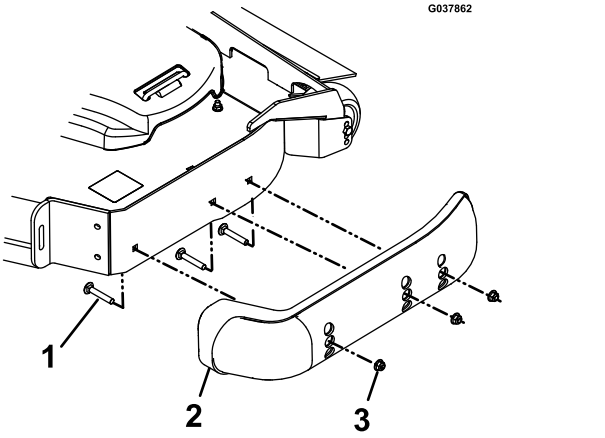


Figure 32

1. Bolt
2. Bumper
3. Nut

5. Move each bumper to the desired position and secure them with the bolts and nuts.

   Note: Use only the top or center sets of holes to adjust the bumpers. Use the bottom holes when switching sides, at which time they become the top holes on the other side of the mower.

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 23). 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.

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 machine 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.**

Operating Tips

Using the Fast Throttle Setting

For best mowing and maximum air circulation, operate the engine at the FAST position. Air is required to thoroughly cut grass clippings, so do not set the height-of-cut so low as to totally surround the mower 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 grass slightly longer than normal to ensure that the cutting height of the mower does not scalp any uneven ground. However, the cutting height used in the past is generally the best one to use. When cutting grass longer than 15 cm (6 inches) tall, you may want to cut the lawn twice to ensure an acceptable quality of cut.

Cutting a Third of the Grass Blade

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

Alternating the Mowing Direction

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

Mowing at Correct Intervals

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

Using a Slower Cutting Speed

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

Avoiding Cutting Too Low

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

Stopping the Machine

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

Keeping the Underside of the Mower Clean

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

Maintaining the Blade(s)

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

After Operation

After Operation Safety

General Safety

- Clean grass and debris from the cutting units, mufflers, and engine compartment to help prevent fires. Clean up oil or fuel spills.
- Shut off the fuel before storing or transporting the machine.
- Disengage the drive to the attachment whenever you are transporting or not using the machine.
- Use full-width ramps for loading the machine into a trailer or truck.
- Tie the machine down securely using straps, chains, cable, or ropes. Both front and rear straps should be directed down and outward from the machine.
- Allow the engine to cool before storing the machine in any enclosure.
- Shut off the fuel before storing or transporting the machine.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.

Using the Fuel-Shutoff Valve

The fuel-shutoff valve is located behind the seat.

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

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

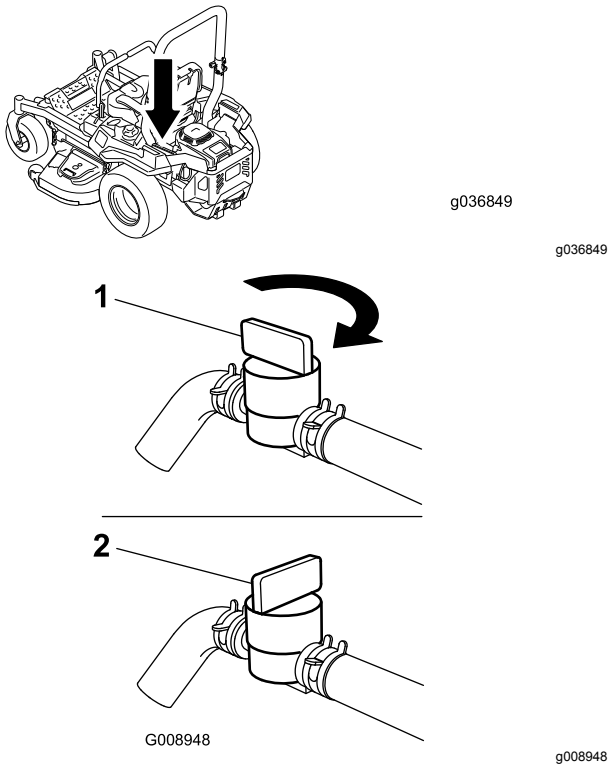


Figure 33

1. ON position
2. OFF position

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 allow 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.

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

The drive-wheel-release valves are located on the left and right sides underneath the engine deck.

1. Disengage the blade-control switch (PTO), turn the ignition key to off, move the levers to the

NEUTRAL-LOCK position, apply the parking brake, and remove the key.

2. Locate the bypass levers behind the seat, down on the left and right side of the frame.
3. To push the machine, move both bypass knobs rearward and lock them into place (Figure 34).
4. Disengage the parking brake before pushing the machine.

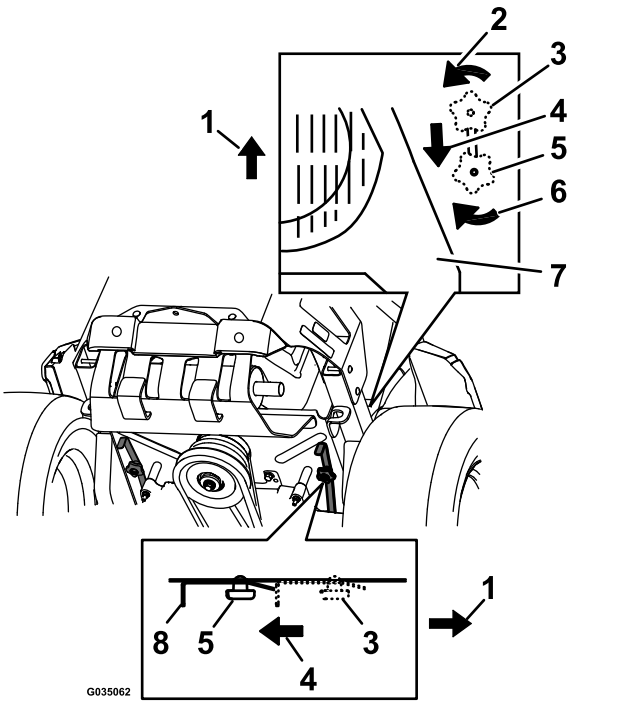


Figure 34

1. Front of the machine
2. Rotate bypass release knob counterclockwise to loosen.
3. Lever position for operating the machine
4. Pull the lever in this direction to push the machine.
5. Lever position for pushing the machine
6. Rotate the bypass-release knob clockwise to tighten.
7. Engine
8. Release lever

5. To run the machine, move the bypass knobs to the FORWARD position and lock them into place (Figure 34).

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.

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 35).

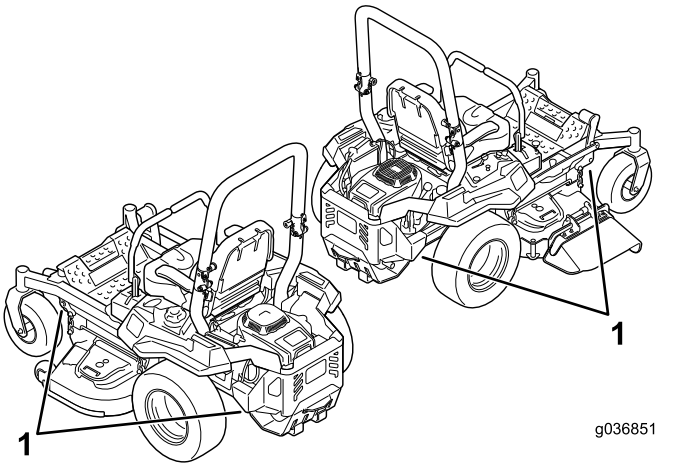


Figure 35

1. Tie-down loops

Loading the Machine

Use extreme caution when loading or unloading the 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 36).

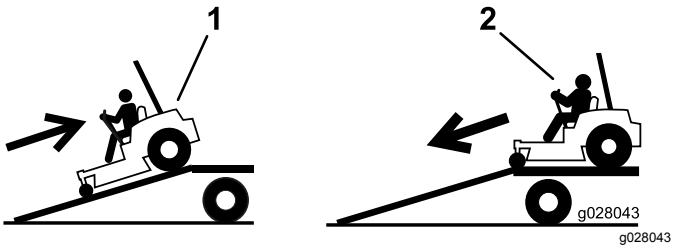


Figure 36

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 37). 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.**

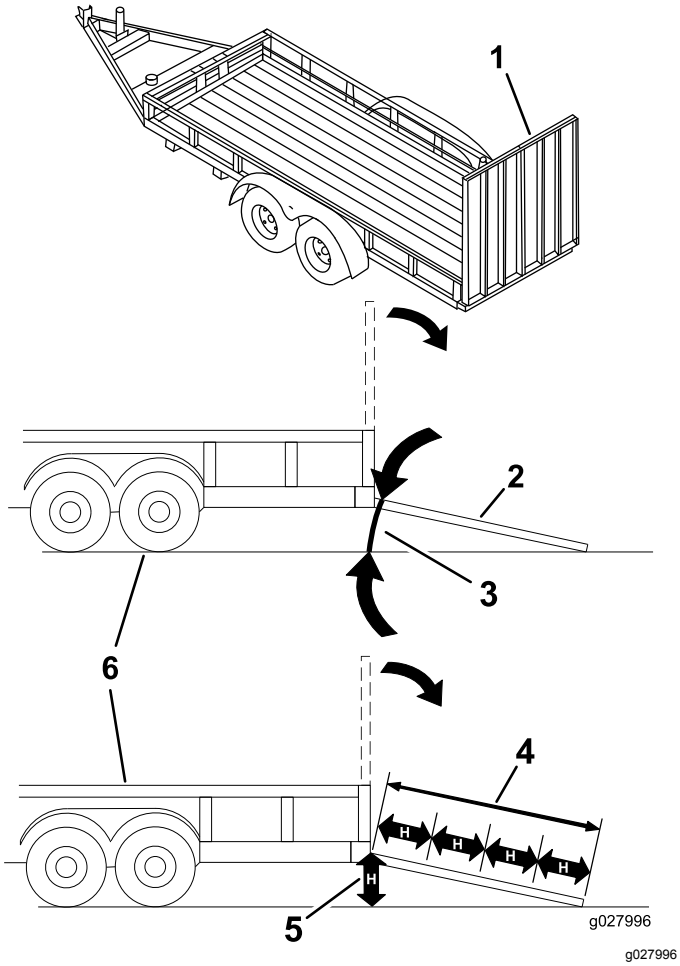


Figure 37

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

Maintenance

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 5 hours	• For Toro engines—change the engine oil and filter.
After the first 75 hours	• Change the hydraulic-system filters and fluid.
Before each use or daily	• Check the safety-interlock system. • For Kawasaki engines—check the engine-oil level. • For Kohler engines—check the air cleaner for dirty, loose or damaged parts. • For Kohler engines—check the engine-oil level. • Clean the blower housing (more often under dusty, dirty conditions). • For Toro engines—check the engine-oil level. • Check the seat belt. • Check the rollover-protection-system (ROPS) knobs. • Clean the engine screen and the area around the engine. • Clean around the engine-exhaust system. • Check the hydraulic fluid level in the expansion tank. • Inspect the blades. • Clean the mower deck.
Every 25 hours	• For 1500 and 2000 Series machines—Grease the front caster axles. (more often in dirty or dusty conditions). • For Kohler engines—service or replace the air-cleaner foam element (more often under dusty, dirty conditions). • For Toro engines—clean the air-cleaner foam element (more often in dusty, dirty conditions).
Every 50 hours	• For 2500 Series machines—Grease the mower deck-idler pivot. • Grease the pump-idler pivot. • Check spark arrester (if equipped). • Check the tire pressure. • Inspect the belts for cracks and wear.
Every 100 hours	• For Kawasaki engines—change the engine oil (more often in dirty or dusty conditions). • For Kawasaki engines—replace or clean and gap the spark plug. • For Kohler engines—replace the air-cleaner paper element (more often under dusty, dirty conditions). • For Kohler engines—change the engine oil and the engine-oil filter. • For Kohler engines—clean the cooling fins (more often under dusty, dirty conditions). • For Toro engines—replace the air-cleaner foam element (more often in dusty, dirty conditions). • For Toro engines—service the air-cleaner paper element (more often in dusty, dirty conditions). • For Toro engines—change the engine oil and oil filter (more often in dusty, dirty conditions). • For Toro engines—check the spark plug(s).
Every 200 hours	• For Kawasaki engines—change the engine-oil filter (more often in dirty or dusty conditions). • For Kohler engines—check the spark plug(s). • For Toro engines—replace the air-cleaner paper element (more often in dusty, dirty conditions). • For Toro engines—replace the spark plug(s).

Maintenance Service Interval	Maintenance Procedure
Every 250 hours	• For Kawasaki engines—replace the primary air filter (more often in dusty or sandy conditions). • For Kawasaki engines—check the safety air filter. • After the initial change—change the hydraulic-system filters and fluid when using Mobil 1 15W50 fluid (change it more often under severe conditions).
Every 300 hours	• For Kawasaki engines—Check and adjust the valve clearance. See an Authorized Service Dealer.
Every 500 hours	• For Kawasaki engines—replace the safety air filter. • For Kohler engines—Check and adjust the valve clearance. See an Authorized Service Dealer. • For Kohler engines—replace the spark plug(s). • Replace the emissions-air intake filter. • Replace the fuel filter (more often in dusty, dirty conditions). • Check the parking brake adjustment. • After the initial change—change the hydraulic-system filters and fluid when using Toro® HYPR-OIL™ 500 oil (change it more often under severe conditions).
Monthly	• Check the battery charge.
Yearly	• For 2500 Series machines—Lubricate the caster-wheel hubs.
Yearly or before storage	• Paint chipped surfaces. • Check all maintenance procedures listed above before storage.

⚠ 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

Maintenance and Storage

- Before repairing the machine do the following:
  - Disengage the drives.
  - Set the parking brake.
  - Shut off the engine and remove the key.
  - Disconnect the spark-plug wire.
- Park the machine on a level surface.
- Clean grass and debris from the cutting unit, drives, mufflers, and engine to help prevent fires.
- Clean up oil or fuel spills.
- Let the engine cool before storing the machine.
- Do not store the machine or fuel near flames or drain the fuel indoors.
- Do not allow untrained personnel to service the machine.
- Use jack stands to support the machine and/or components when required.
- Carefully release pressure from components with stored energy.
- Disconnect the battery or remove the spark-plug wire before making any repairs. Disconnect the negative terminal first and the positive terminal last. Connect the positive terminal first and negative last.
- Use care when checking the blades. Wrap the blade(s) or wear thickly padded gloves, and use caution when servicing them. Only replace blades; do not straighten or weld them.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Keep all parts in good working condition and all hardware tightened, especially the blade-attachment bolts. Replace all worn or damaged decals.
- Never interfere with the intended function of a safety device or reduce the protection provided by a safety device. Check their proper operation regularly.
- To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.
- Check the parking brake operation frequently. Adjust and service as required.

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.
5. Wipe up any excess grease.

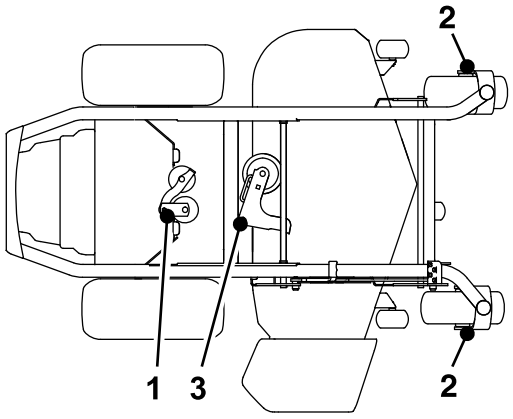
Greasing the Machine

Service Interval: Every 25 hours—For 1500 and 2000 Series machines—Grease the front caster axles. (more often in dirty or dusty conditions).

Every 50 hours—For 2500 Series machines—Grease the mower deck-idler pivot.

Every 50 hours—Grease the pump-idler pivot.

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. Grease the mower deck and pump idler-pulley pivot with 1 or 2 pumps of grease (Figure 38).
4. For 1500 and 2000 Series machines, grease the front caster axles (Figure 38).



g037570

Figure 38

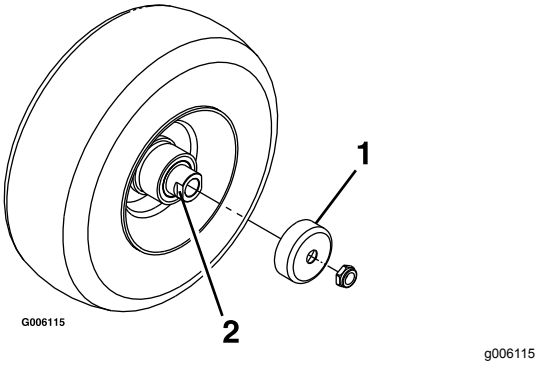
1. Pump-idler pivot
2. Caster axle (1500 and 2000 Series machines only)
3. Mower deck idler-pulley pivot (2500 Series machines only)

Lubricating the Caster-Wheel Hubs

2500 Series Machines Only

Service Interval: Yearly—For 2500 Series machines—Lubricate the caster-wheel hubs.

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



g006115

Figure 39

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

Use the following graphic to identify the engine you have and proceed to the section listed below for service (Figure 40).

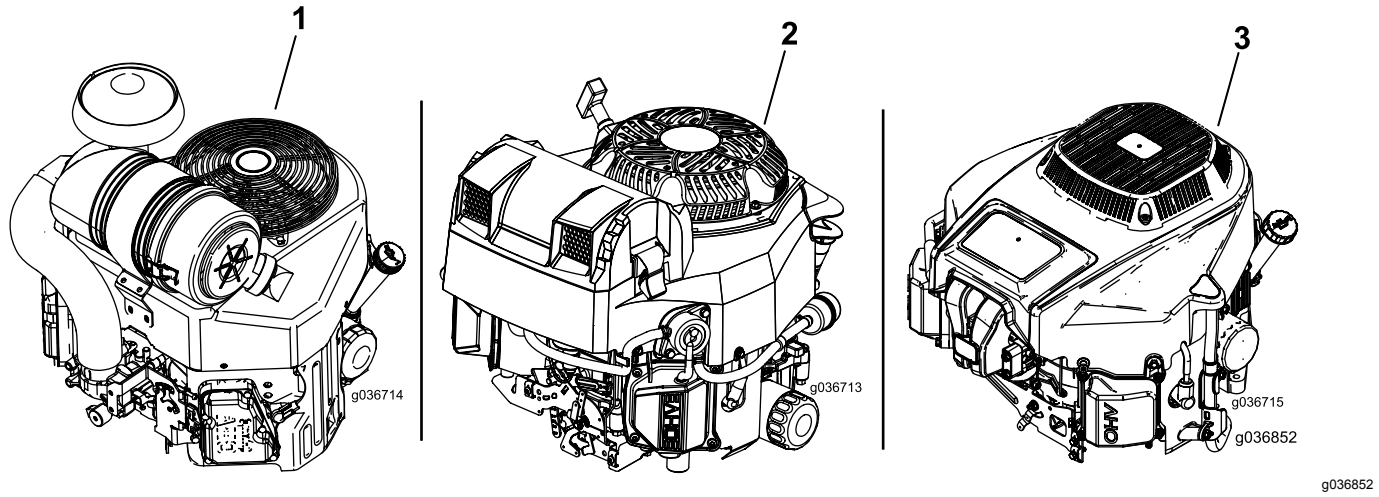


Figure 40

1. Kawasaki engine
2. Kohler engine
3. Toro engine

- For Kawasaki engine maintenance, refer to Servicing a Kawasaki® Engine (page 41).
- For Kohler engine maintenance, refer to Servicing a Kohler® Engine (page 46).
- For Toro engine maintenance, refer to Servicing a Toro Engine (page 50).

⚠ WARNING

Contact with hot surfaces may cause personal injury.

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

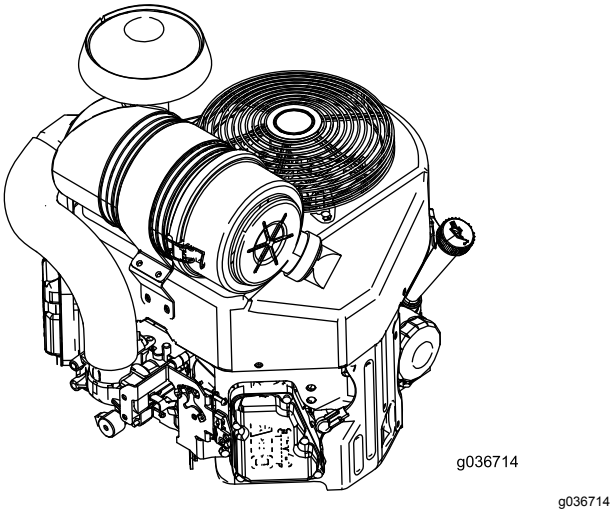
Engine Safety

Shut off the engine before checking the oil or adding oil to the crankcase.

Servicing a Kawasaki® Engine

This section is only for machines with Kawasaki engines. If your engine looks like the one shown in Figure 41, you have a Kawasaki engine.

Important: **Refer to your engine manufacturer's information for additional maintenance procedures.**



g036714

Figure 41

Servicing the Air Cleaner

Service Interval: Every 250 hours—For Kawasaki engines—replace the primary air filter (more often in dusty or sandy conditions).

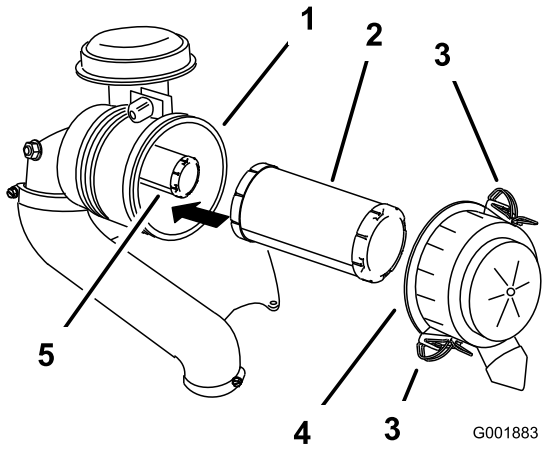
Every 250 hours—For Kawasaki engines—check the safety air filter.

Every 500 hours—For Kawasaki engines—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 42).



g001883

Figure 42

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 42).

   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 42).
3. Carefully slide the primary filter over the safety filter (Figure 42).

   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.**

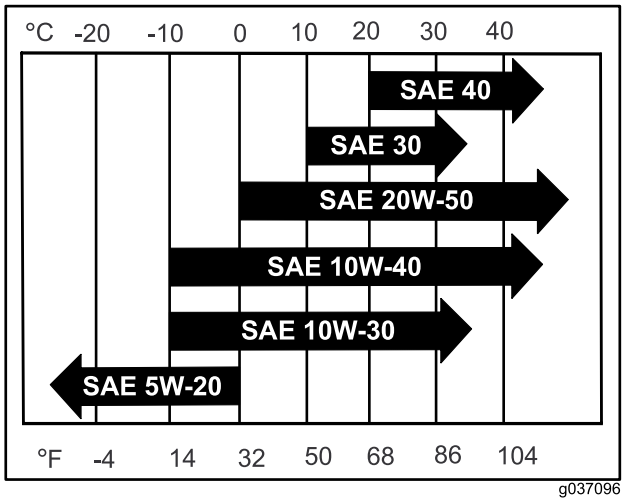
4. Install the air-cleaner cover with the side indicated as **up** facing upward and secure the latches (Figure 42).

Servicing the Engine Oil

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

Crankcase Capacity: with a filter change, 2.1 L (71 oz); without a filter change, 1.8 L (61 oz)

Viscosity: See the table below.



g037096

Figure 43

Note: Although 10W-40 engine oil is recommended for most conditions, you may need to change oil viscosity to accommodate atmospheric conditions. Using 20W-50 engine oil in higher ambient temperatures can reduce oil consumption.

Checking the Engine-Oil Level

Service Interval: Before each use or daily

Note: Check the oil when the engine is cold.

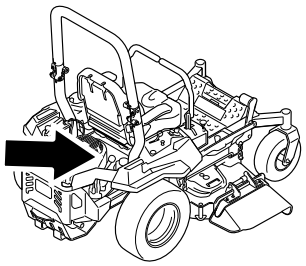
⚠ WARNING

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.

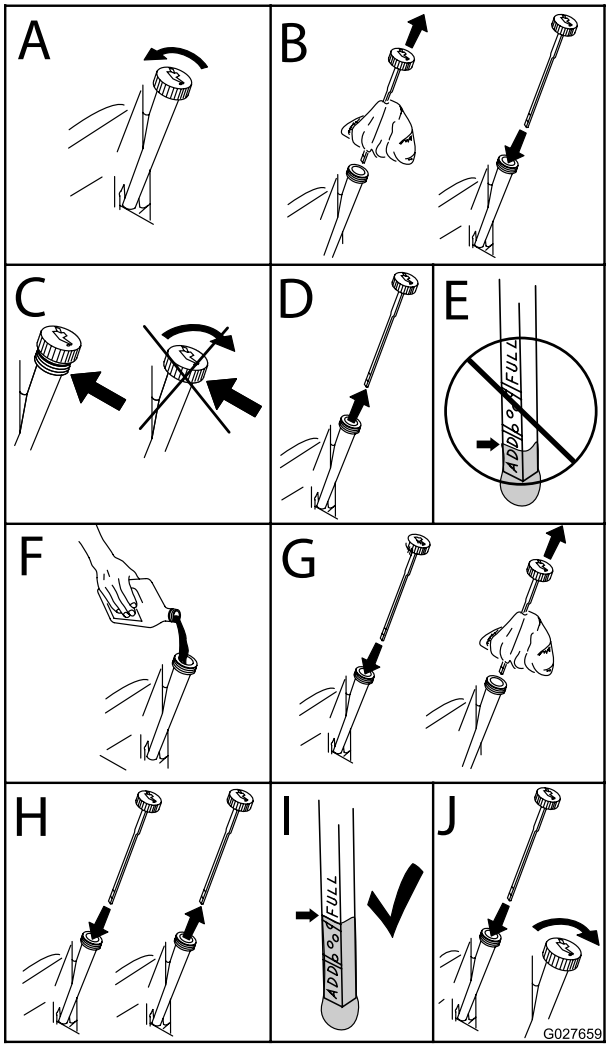
Important: **Do not overfill the crankcase with oil because that could damage engine. Do not run engine with oil below the Low mark because the engine may be damaged.**

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 44).



g036856

g036856



g225269

Figure 44

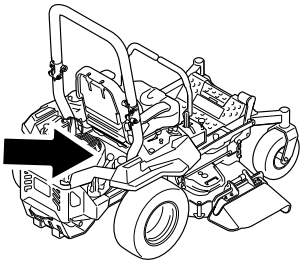
Changing the Engine Oil

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

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

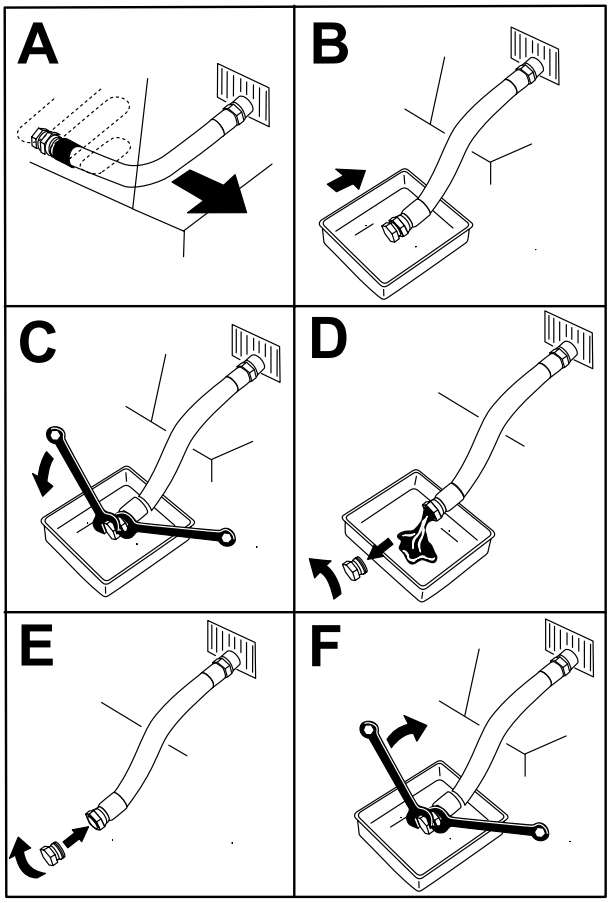
1. Start the engine and let it run for 5 minutes.

   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 45).



g036856

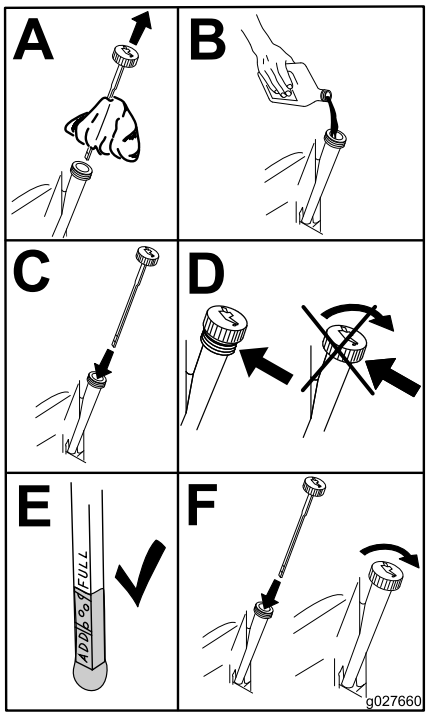
g036856



g225280

Figure 45

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 46).



g027660

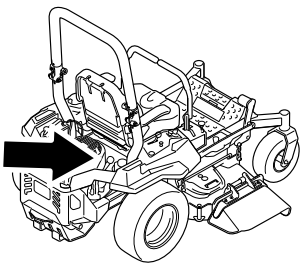
Figure 46

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

Changing the Engine-Oil Filter

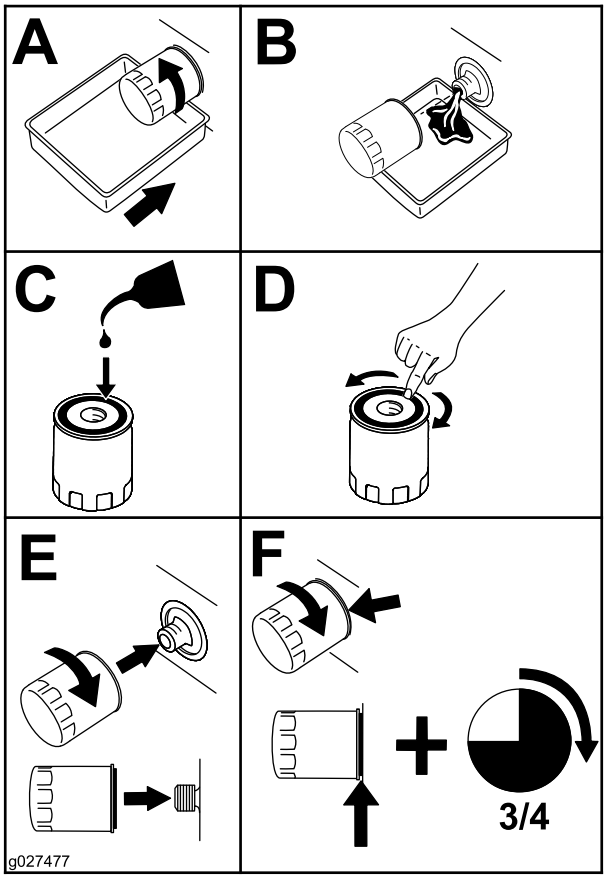
Service Interval: Every 200 hours—For Kawasaki engines—change the engine-oil filter (more often in dirty or dusty conditions).

1. Drain the oil from the engine; refer to Changing the Engine Oil (page 43).
2. Change the engine-oil filter (Figure 47).



g036856

g036856



g027477

Figure 47

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

3. Fill the crankcase with the proper type of new oil; refer to Servicing the Engine Oil (page 42).

Servicing the Spark Plug

Service Interval: Every 100 hours

Make sure that 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 (0.03 inch)

Removing the Spark Plug

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. Locate and remove the spark plugs (Figure 48).

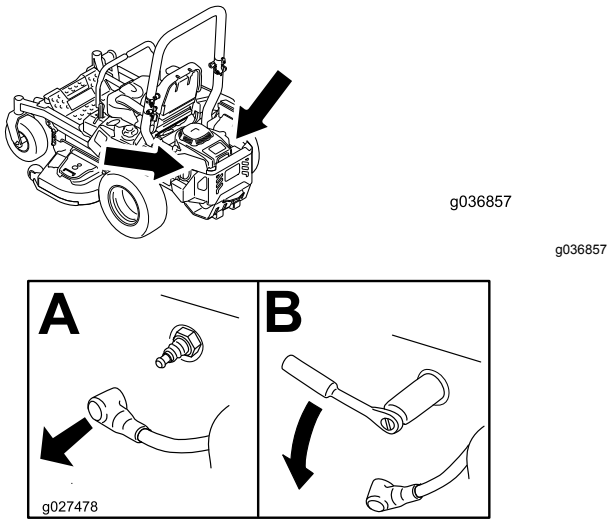


Figure 48

Checking the Spark Plug

Important: **Do not 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 (0.03 inch).

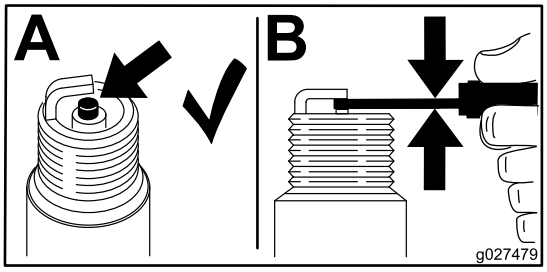


Figure 49

Installing the Spark Plug

Tighten the spark plug(s) to 22 N·m (16 ft-lb).

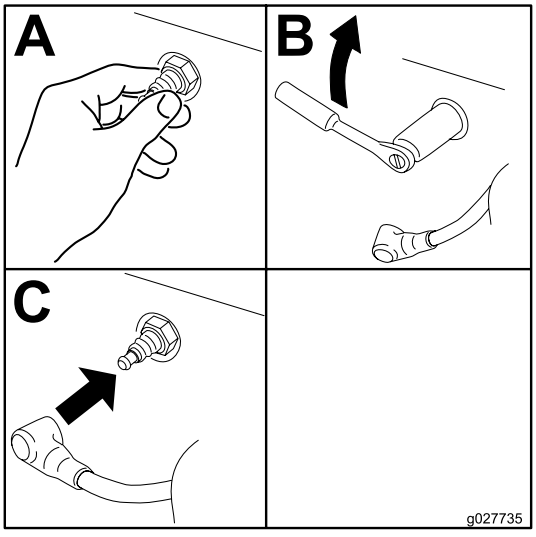
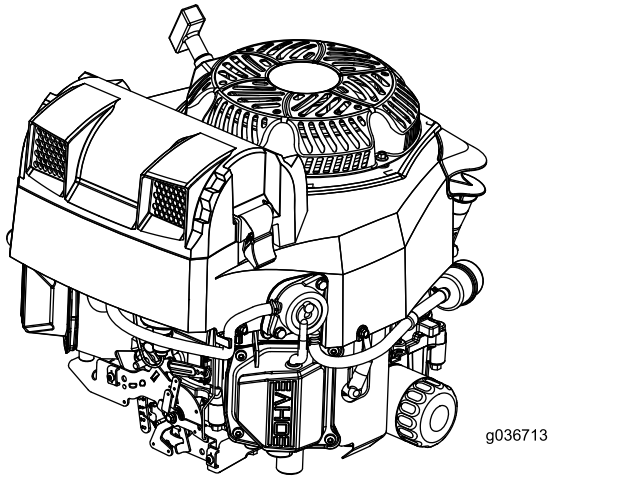


Figure 50

Servicing a Kohler® Engine

This section is only for machines with Kohler engines. If your engine looks like the one shown in Figure 51, you have a Kohler engine.

Important: **Refer to your engine manufacturer's information for additional maintenance procedures.**



g036713

Figure 51

Servicing the Air Cleaner

Service Interval: Before each use or daily—For Kohler engines—check the air cleaner for dirty, loose or damaged parts.

Every 25 hours—For Kohler engines—service or replace the air-cleaner foam element (more often under dusty, dirty conditions).

Every 100 hours—For Kohler engines—replace the air-cleaner paper element (more often under dusty, dirty conditions).

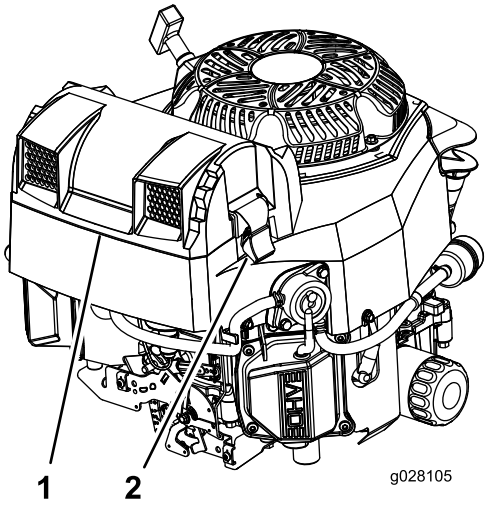
This engine is equipped with a replaceable, high-density paper and foam air-cleaner element. Check the air cleaner daily or before starting the engine. Check for a buildup of dirt and debris around the air-cleaner system. Keep this area clean. Also, check for loose or damaged components. Replace all bent or damaged air-cleaner components.

Note: Operating the engine with loose or damaged air-cleaner components could allow unfiltered air into the engine, causing premature wear and failure.

Note: Service the air cleaner more often under dusty, dirty conditions.

Removing the Elements

1. Rotate the latches outward.
2. Remove the cover to access the air-cleaner elements (Figure 52).

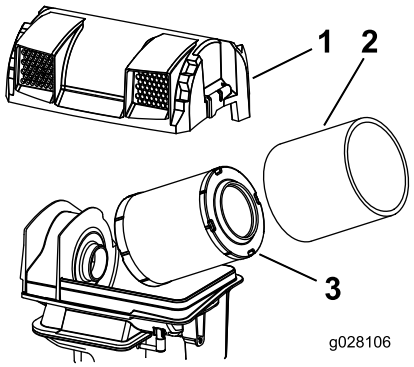


g028105

Figure 52

1. Air-cleaner cover
2. Air-cleaner latch

3. Remove the foam and paper elements (Figure 53).
4. Remove the foam element from the paper element (Figure 53).



g028106

Figure 53

1. Air-cleaner cover
2. Foam element
3. Paper element

Servicing the Foam Element

1. Wash the foam element in warm water and detergent.
2. Rinse and allow it to air dry.
3. Lightly oil the foam element with new oil and squeeze out excess oil.

Servicing the Paper Element

1. Gently tap the paper element to dislodge dirt.

   Note: Do not wash the paper element or use pressurized air, as this will damage the element.

Note: Replace a dirty, bent, or damaged element. Handle the new element carefully; do not use if the sealing surfaces are bent or damaged.

2. Clean the air-cleaner base as required, and check the condition.

Installing the Elements

1. Install the foam element onto the paper element.
2. Install the elements onto the air-cleaner base (Figure 53).
3. Install the cover, and secure it with the latches (Figure 52).

Servicing the Engine Oil

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

Crankcase Capacity: 1.9 L (64 oz) when the filter is changed

Viscosity: See the table below.

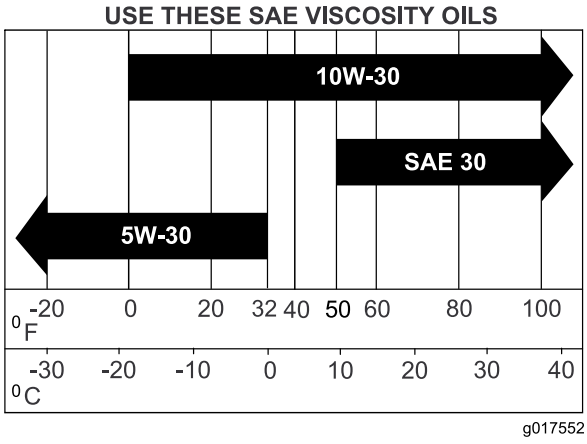


Figure 54

Checking the Engine-Oil Level

Service Interval: Before each use or daily

1. Park the machine on a level surface, disengage the blade-control switch, shut off the engine, and remove the key.
2. Make sure that the engine is shut off, level, and is cool, so the oil has time to drain into the sump.
3. Check the engine-oil level (Figure 55).

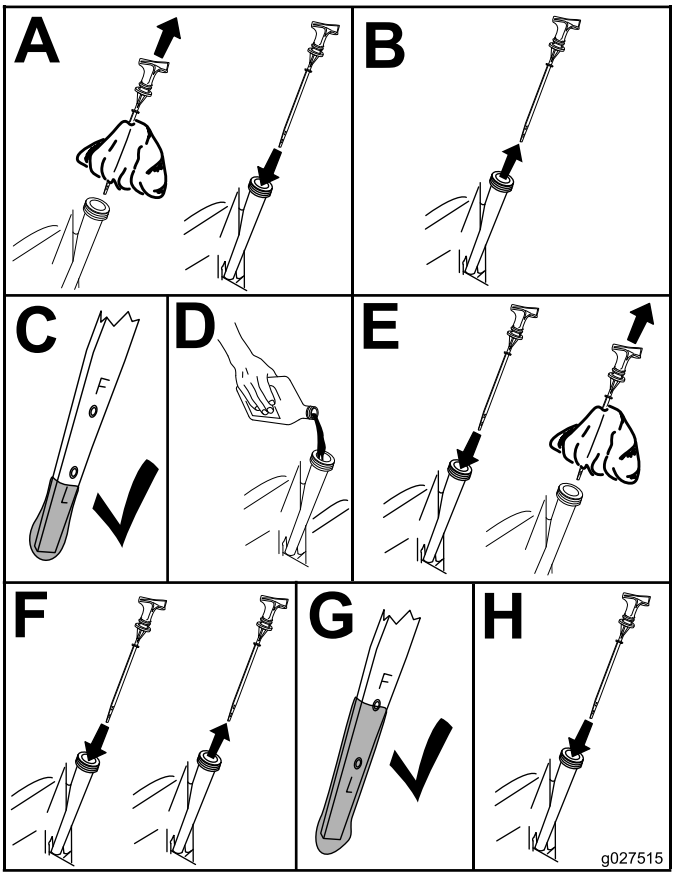


Figure 55

Changing the Engine Oil and the Engine-Oil Filter

Service Interval: Every 100 hours—For Kohler engines—change the engine oil and the engine-oil filter.

Note: The drain plug is attached to the drain hose.

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

Fill with oil as specified in the “Viscosity Grades” table (Figure 54).

1. Park the machine, so that the drain side is slightly lower than the opposite side, to ensure that the oil drains completely.
2. Disengage the blade-control switch and move the motion controls outward to the PARK position.
3. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

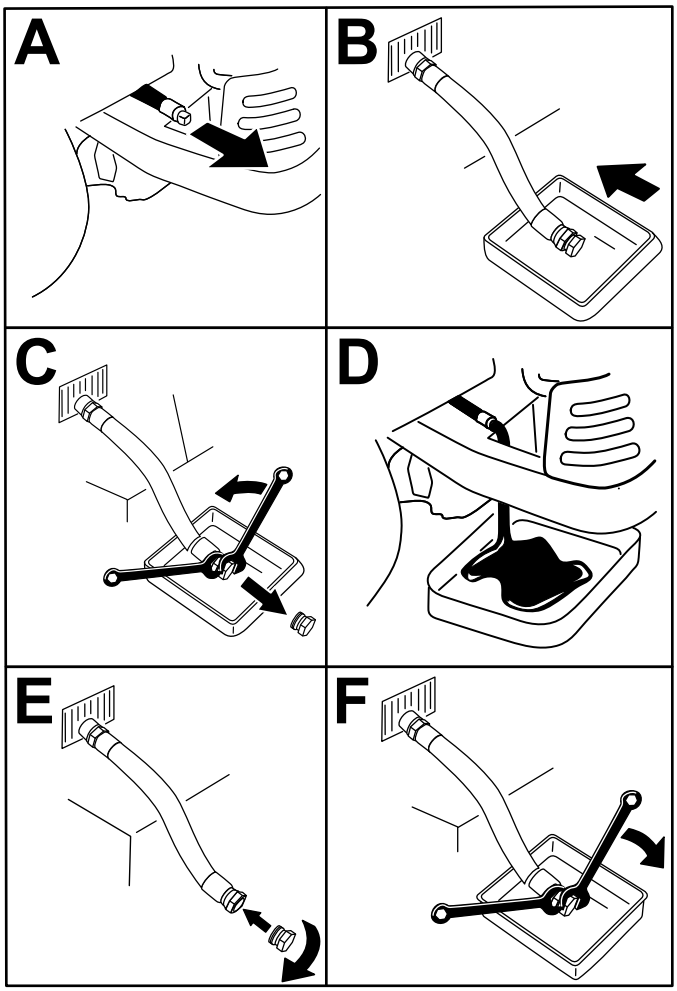


Figure 56

4. Torque the plug to 14 N·m (10 ft-lb).
5. Change the engine-oil filter as shown in Figure 57.

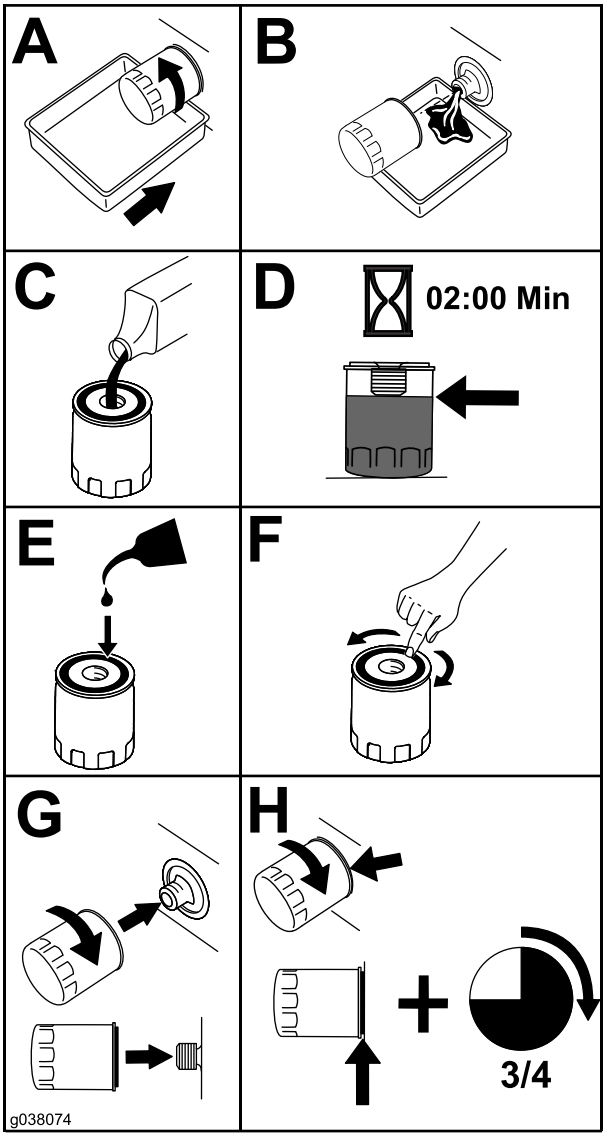
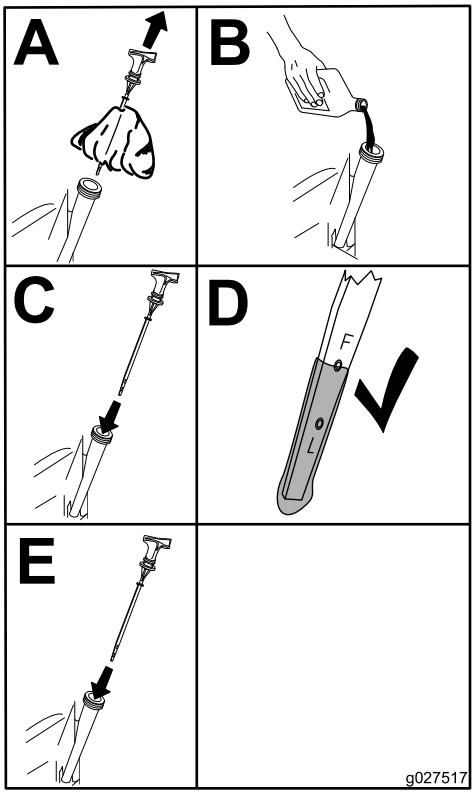


Figure 57

6. Slowly pour approximately 80% of the specified oil into the filler tube (Figure 58).



g027517

Figure 58

Servicing the Spark Plug

Service Interval: Every 200 hours—For Kohler engines—check the spark plug(s).

Every 500 hours—For Kohler engines—replace the spark plug(s).

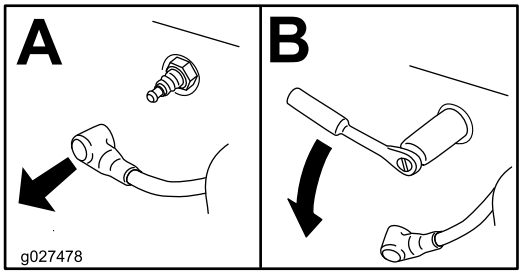
The spark plug is RFI compliant. Equivalent alternate brand plugs can also be used.

Type: Champion XC12YC

Air Gap: 0.76 mm (0.03 inch)

Removing the Spark Plug

1. Disengage the blade-control switch, move the motion controls outward to the park position, shut off the engine, and remove the key.
2. Before removing the spark plug(s), clean the area around the base of the plug to keep dirt and debris out of the engine.
3. Remove the spark plug (Figure 59).



g027478

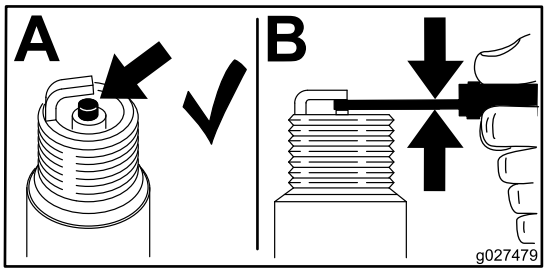
Figure 59

Checking the Spark Plug

Important: **Do not clean the spark plug(s). Always replace the spark plug(s) when it has: a black coating, worn electrodes, an oily film, or cracks.**

Note: 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 (0.03 inch).

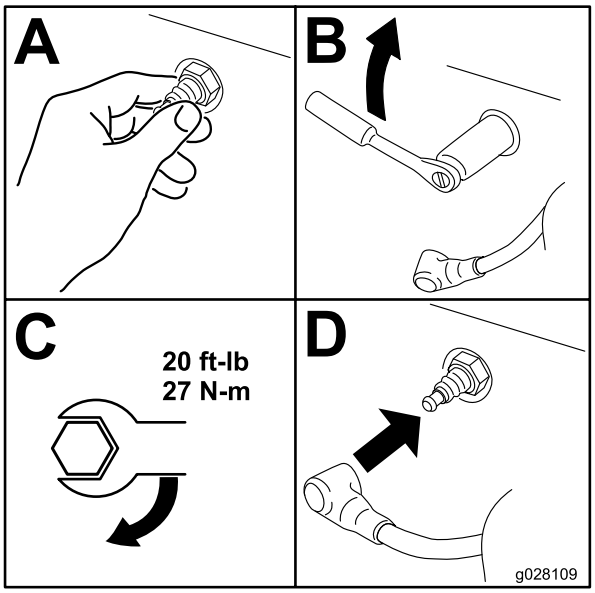


g027479

Figure 60

Installing the Spark Plug

Tighten the spark plug to 27 N·m (20 ft-lb) as shown in Figure 61.



g028109

Figure 61

Cleaning the Blower Housing

Every 100 hours/Yearly (whichever comes first)—For Kohler engines—clean the cooling fins (more often under dusty, dirty conditions).

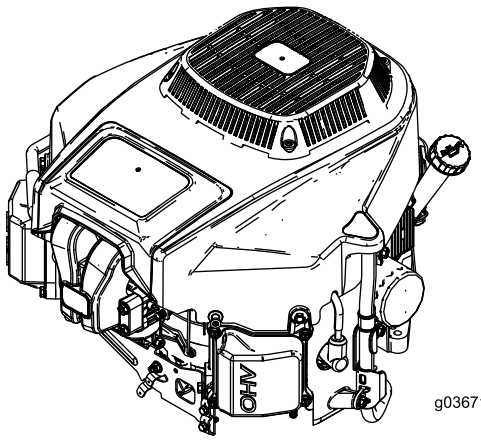
To ensure proper cooling, ensure that the grass screen, cooling fins, and other external surfaces of the engine are kept clean at all times.

For Kohler engines, remove the blower housing, and any other cooling shrouds. Clean the cooling fins and external surfaces as necessary. Make sure that the cooling shrouds are installed.

Important: **Operating the engine with a blocked grass screen, dirty or plugged cooling fins, and/or cooling shrouds removed, will cause engine damage due to overheating.**

Servicing a Toro Engine

This section is only for machines with Toro engines. If your engine looks like what is shown in Figure 62, you have a Toro engine.



g036715

Figure 62

Servicing the Air Cleaner

Service Interval: Every 25 hours/Monthly (whichever comes first)—For Toro engines—clean the air-cleaner foam element (more often in dusty, dirty conditions).

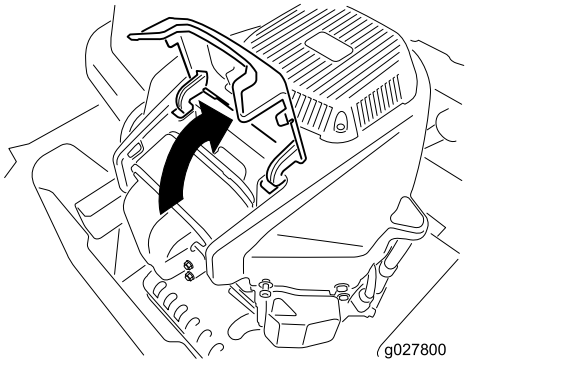
Every 100 hours/Yearly (whichever comes first)—For Toro engines—replace the air-cleaner foam element (more often in dusty, dirty conditions).

Every 100 hours/Yearly (whichever comes first)—For Toro engines—service the air-cleaner paper element (more often in dusty, dirty conditions).

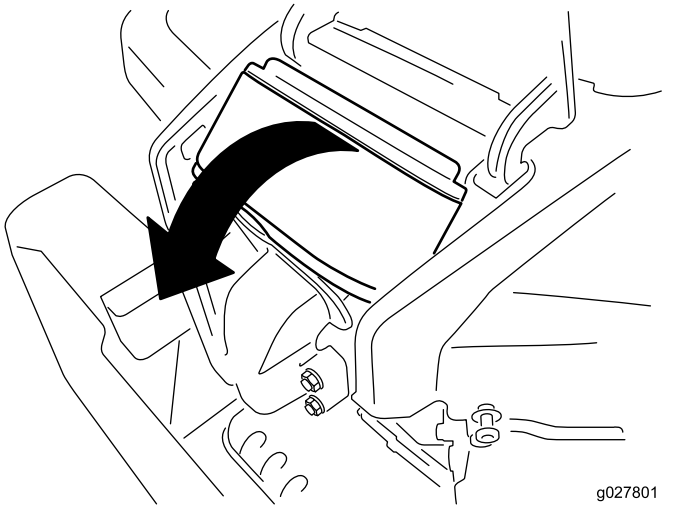
Every 200 hours/Every 2 years (whichever comes first)—For Toro engines—replace the air-cleaner paper element (more often in dusty, dirty conditions).

Removing the Elements

1. Park the machine on a level surface and disengage the blade-control switch (PTO).
2. Engage the parking brake, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean around the air-cleaner cover to prevent dirt from getting into the engine and causing damage.
4. Lift the cover and rotate the air-cleaner assembly out of the engine (Figure 63).



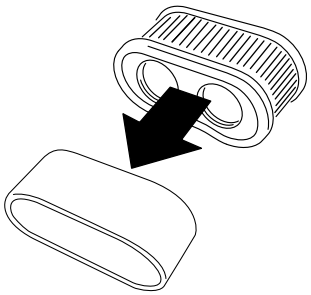
g027800



g027801

Figure 63

5. Remove the foam element from the paper element (Figure 64).



g027802

Figure 64

Servicing the Foam Element

Wash the foam element with water and replace it if it is damaged.

Servicing the Paper Element

1. Lightly tap the element on a flat surface to remove dust and dirt.
2. Inspect the element for tears, an oily film, and damage to the seal.

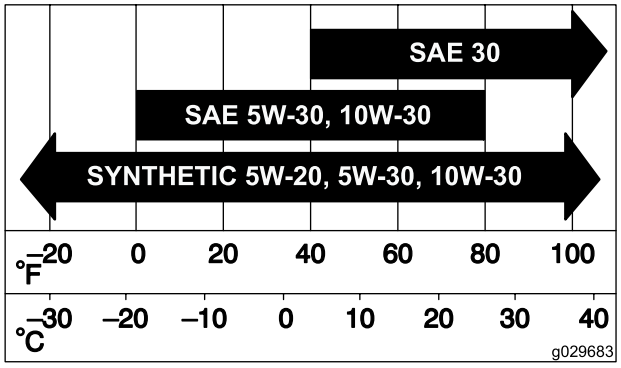
Important: **Do not clean the paper element with pressurized air or liquids, such as solvent, gas, or kerosene. Replace the paper element if it is damaged or cannot be cleaned thoroughly.**

Servicing the Engine Oil

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

Crankcase Capacity: 2.4 L (80 oz) with oil filter

Viscosity: See the table below.



g029683

Figure 65

Checking the Engine-Oil Level

Service Interval: Before each use or daily—For Toro engines—check the engine-oil level.

Note: Check the oil when the engine is cold.

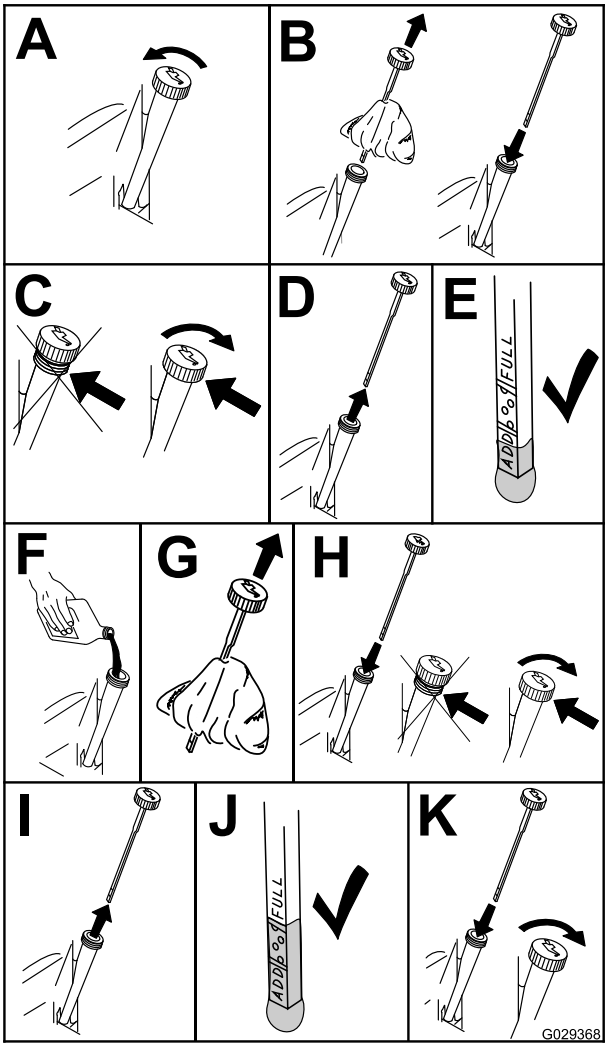
⚠ WARNING

Contact with hot surfaces may cause personal injury.

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

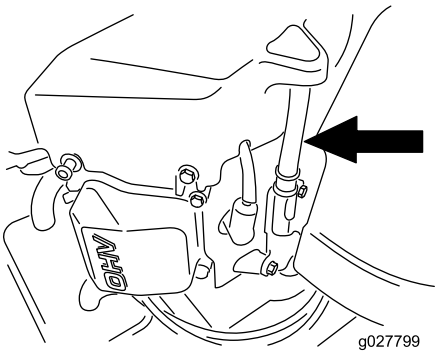
Important: **Do not overfill the crankcase with oil, because damage to the engine may result. Do not run engine with oil below the Low mark, because the engine may be damaged.**

1. Park the machine on a level surface, disengage the blade-control switch, shut off the engine, engage the parking brake, and remove the key.
2. Make sure that the engine is shut off, level, and is cool so that the oil has had time to drain into the sump.
3. To keep dirt, grass clippings, etc., out of the engine, clean the area around the oil-fill cap and dipstick before removing it (Figure 66).

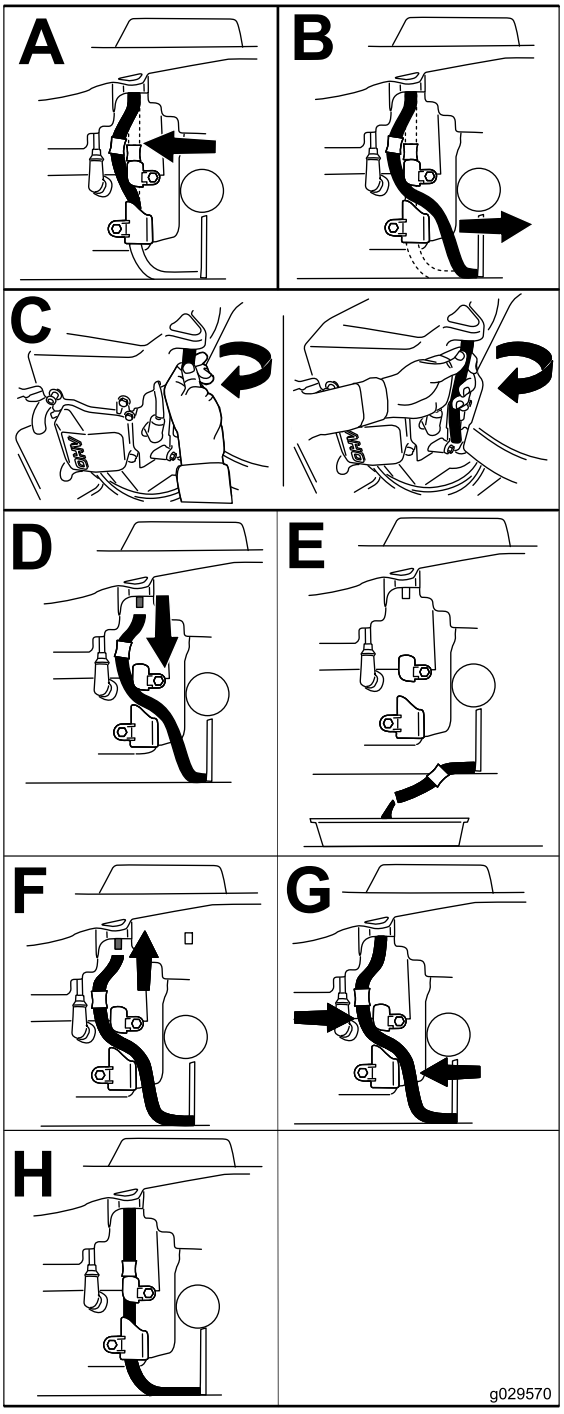


g029368

Figure 66



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g029570

Figure 67

Changing the Engine Oil and Oil Filter

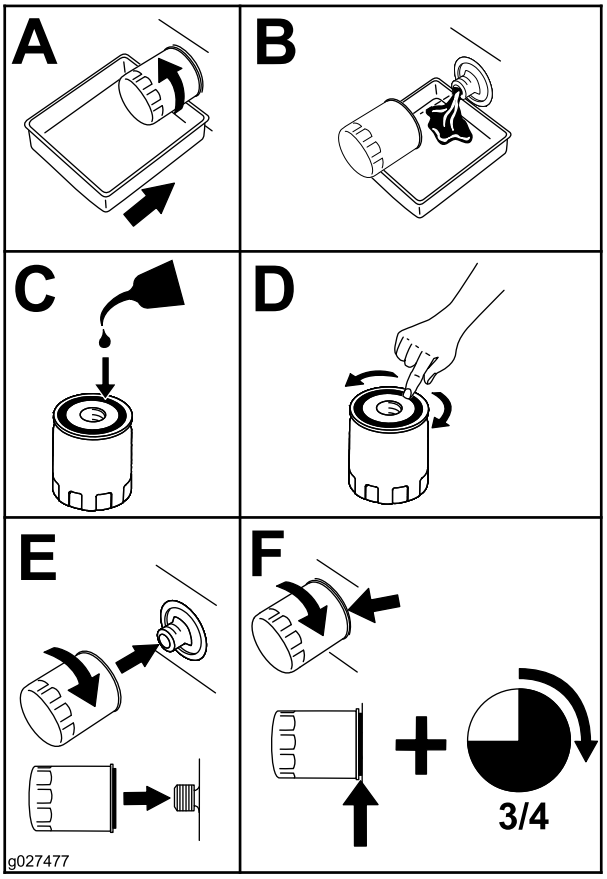
Service Interval: After the first 5 hours/After the first month (whichever comes first)—For Toro engines—change the engine oil and filter.

Every 100 hours/Yearly (whichever comes first)—For Toro engines—change the engine oil and oil filter (more often in dusty, dirty conditions).

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

1. Park the machine on a level surface to ensure the oil drains completely.
2. Disengage the PTO and engage the parking brake.
3. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Drain the engine oil (Figure 67).

5. Change the engine-oil filter (Figure 68).

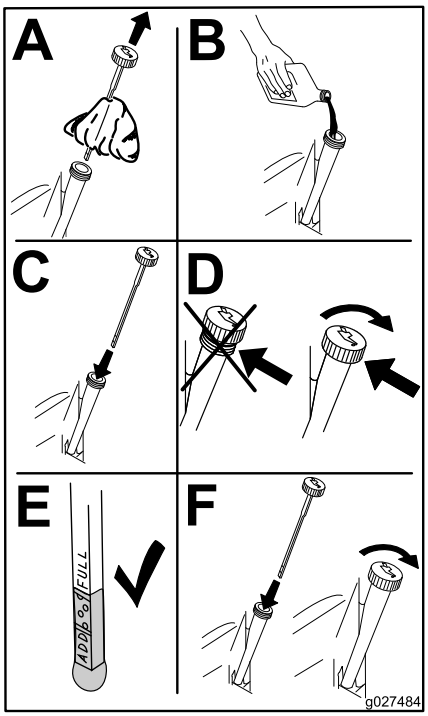


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Figure 68

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

6. 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 69).



g027484

Figure 69

Servicing the Spark Plug

Service Interval: Every 100 hours/Yearly (whichever comes first)—For Toro engines—check the spark plug(s).

Every 200 hours/Every 2 years (whichever comes first)—For Toro engines—replace the spark plug(s).

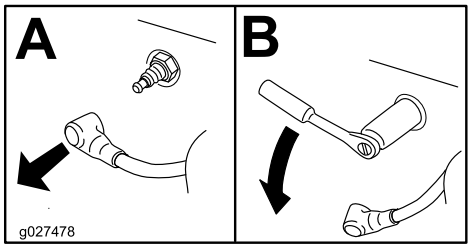
Make sure that the air gap between the center and side electrodes is correct before installing the spark plug. Use a spark-plug wrench to remove and install the spark plug(s) and a gapping tool/feeler gauge to check and adjust the air gap. Install a new spark plug(s) if necessary.

Type: Champion RN9YC or NGK BPR6ES

Air gap: 0.76 mm (0.03 inch)

Removing the Spark Plug

1. Disengage the PTO and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.



g027478

Figure 70

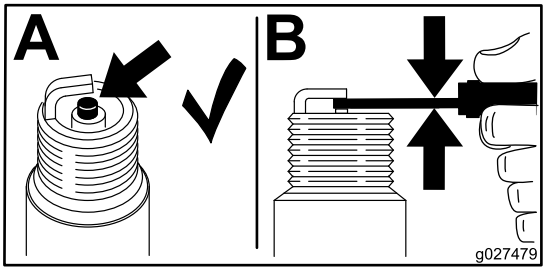
Note: Due to the deep recess around the spark plug, blowing out the cavity with compressed air is usually the most effective method for cleaning. The spark plug is most accessible when the blower housing is removed for cleaning.

Checking the Spark Plug

Important: **Do not 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 inch).

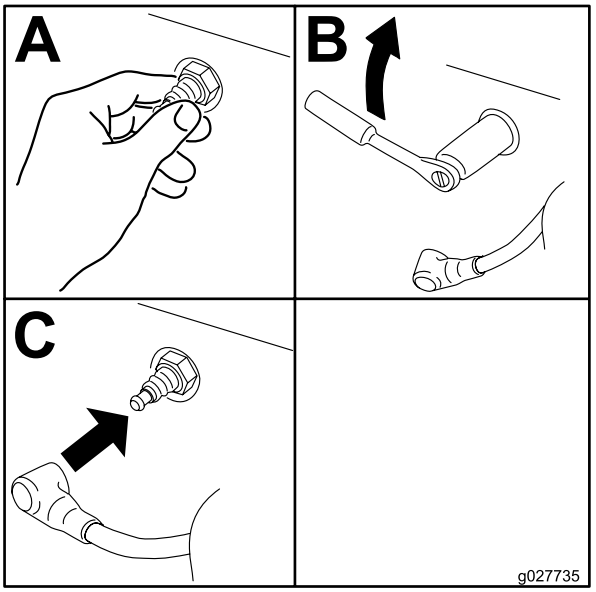


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Figure 71

Installing the Spark Plug

Tighten the spark plug(s) to 25 to 30 N·m (19 to 22 ft-lb).



g027735

Figure 72

Cleaning the Cooling System

Clean the air-intake screen from grass and debris before each use.

1. Disengage the blade-control switch and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the air filter from the engine.
4. Remove the engine shroud.
5. To prevent debris entering the air intake, install the air filter to the filter base.
6. Clean debris and grass from the parts.
7. Remove the air filter and install the engine shroud.
8. Install the air filter.

Checking the Spark Arrester

For Machines with a Spark Arrester

Service Interval: Every 50 hours

⚠ WARNING

Hot exhaust system components may ignite gasoline vapors even after 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. Shut off the 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.

Replacing the Emissions-Air Intake Filter

Service Interval: Every 500 hours

1. Shut off the engine, wait for all moving parts to stop, and remove key. Engage parking brake.
2. Remove the filter from the vent hose.
3. Insert a new filter into the end of the vent hose.

Fuel System Maintenance

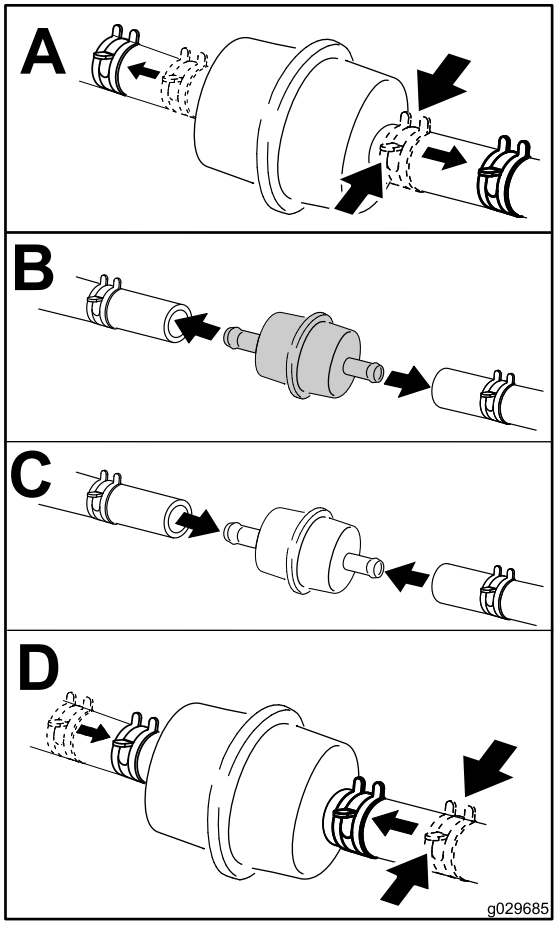
Replacing the Fuel Filter

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

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.**

The fuel filter is located near the engine on the left front 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. Allow the machine to cool down.
4. Close the fuel-shutoff valve under the seat (Figure 33).



g029685

Figure 73
Kohler engine filter shown

5. Open the fuel-shutoff valve.

Servicing the Fuel Tank

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

Electrical System Maintenance

Electrical System Safety

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

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.

Servicing the Battery

Service Interval: Monthly

⚠ 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 wear 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.

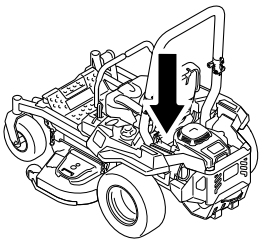
- **When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the machine.**
- **Do not allow metal tools to short between the battery terminals and metal parts of the machine.**

⚠ WARNING

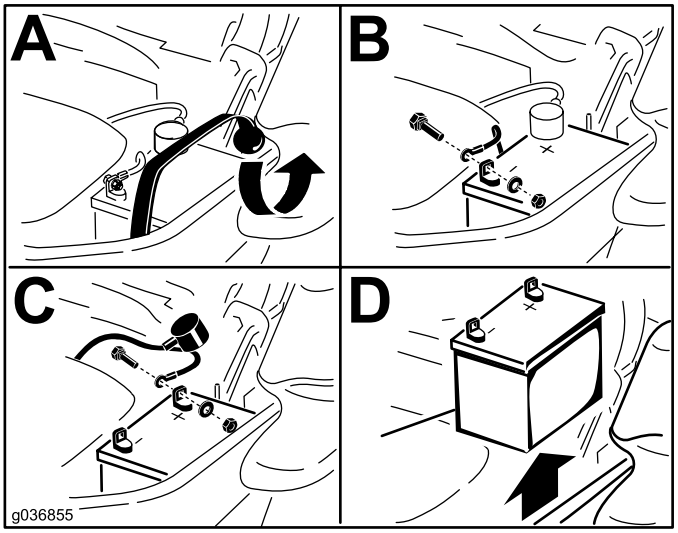
Incorrect battery cable routing could damage the machine and cables, causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.

- **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. Disconnect the negative battery cable (black) from the negative (-) battery terminal (Figure 74).
4. Slide the red terminal boot off the positive (red) battery terminal, and remove the positive (+) battery cable (Figure 74).
5. Remove the rubber strap (Figure 74).
6. Remove the battery.



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g036855

Figure 74

Installing the Battery

1. Position the battery in the tray with the terminal posts opposite from the hydraulic tank (Figure 74).
2. Install the positive (red) battery cable to the positive (+) battery terminal.
3. Install the negative (black) battery cable and ground wire to the negative (-) battery terminal.
4. Secure the cables with 2 bolts, 2 washers, and 2 locknuts (Figure 74).
5. Slide the red terminal boot onto the positive (+) battery terminal.
6. Secure the battery with the rubber strap (Figure 74).

Charging the Battery

⚠ WARNING

Charging the battery produces gasses that can explode.

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

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

1. 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 75).
3. Install the battery in the machine and connect the battery cables; refer to Installing the Battery (page 58).

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

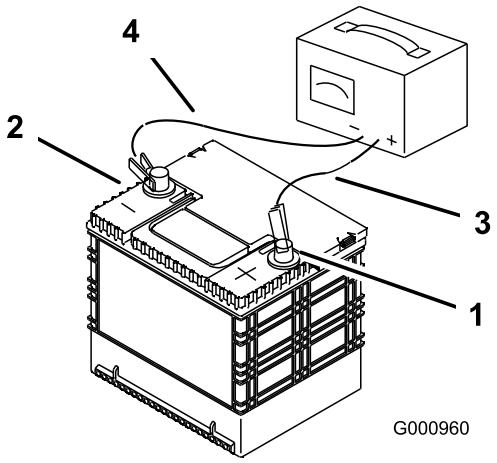


Figure 75

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

Servicing the Fuses

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

The fuses are located on the right console next to the seat (Figure 76).

1. To replace the fuses, pull out the fuse to remove it.
2. Install a new fuse (Figure 76).

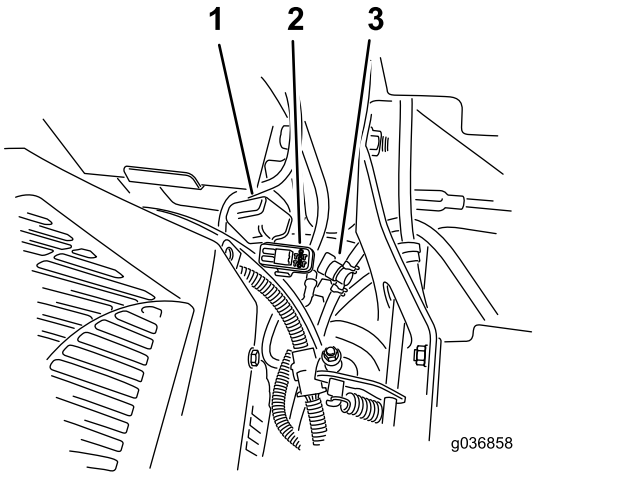


Figure 76

1. Fuse cover
2. Fuse holder
3. Fuel-shutoff valve

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.

  Note: The upper hoop of the roll bar may need to be pushed forward or pulled rearward to fully engage both knobs (Figure 77 and Figure 78).

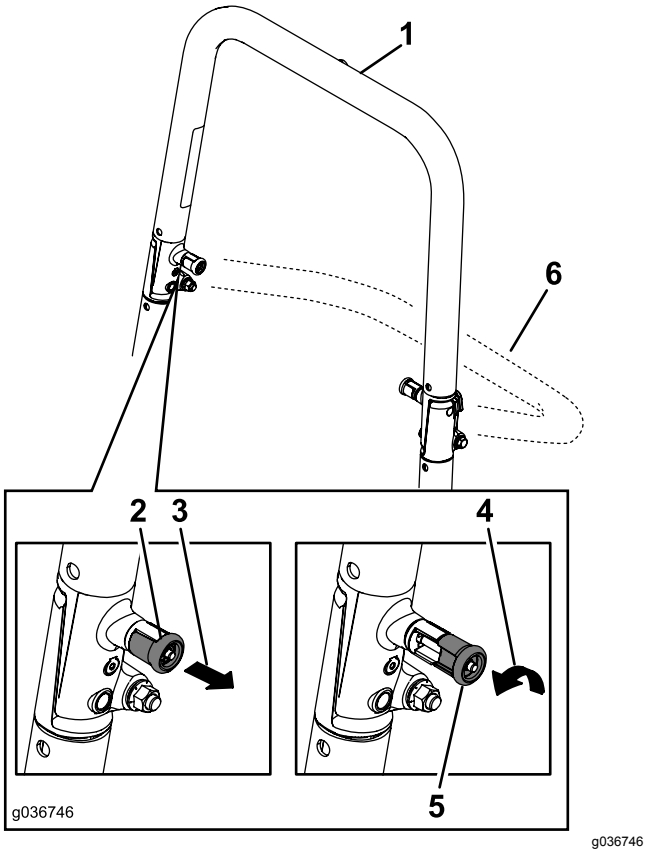


Figure 77

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

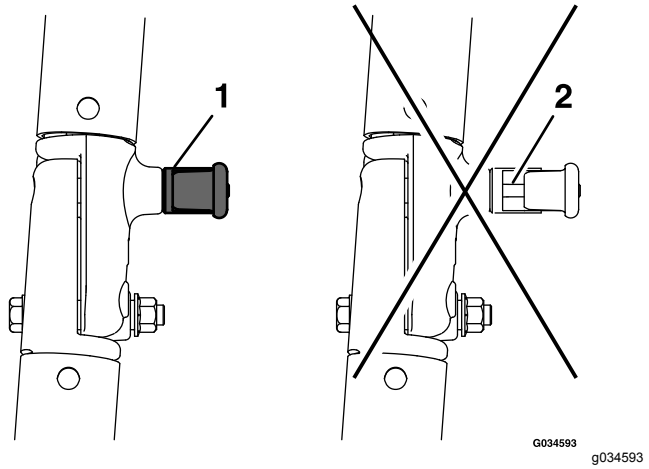


Figure 78

1. Engaged
2. Partially engaged—do not operate with the ROPS in this 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, insert a 3/16-inch hex wrench through the access hole in the right front cover panel and rotate the tracking screw clockwise or counterclockwise to adjust the travel of the lever (Figure 79).
7. If the machine tracks to the left, insert a 3/16-inch hex wrench through the access hole in the right front cover panel and rotate the tracking screw clockwise or counterclockwise to adjust the travel of the lever (Figure 79).
8. Drive the machine and check the full forward tracking.
9. Repeat the adjustment until the desired tracking is obtained.

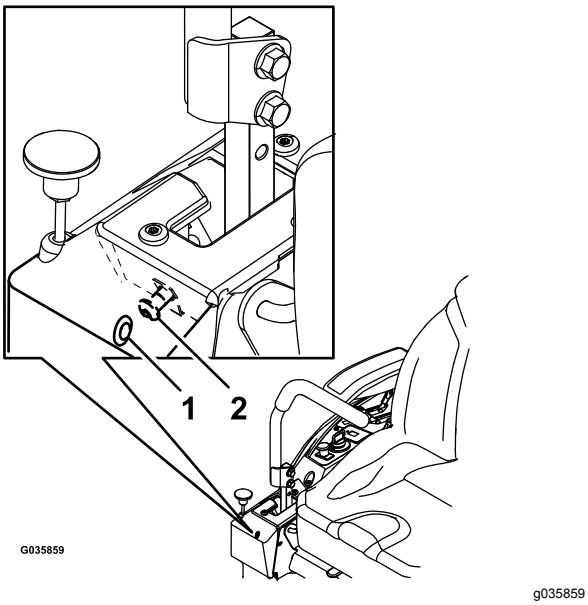


Figure 79

Left control lever shown

1. Access hole on front cover panel
2. Tracking screw

Checking the Tire Pressure

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

Maintain the air pressure in the front and 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.

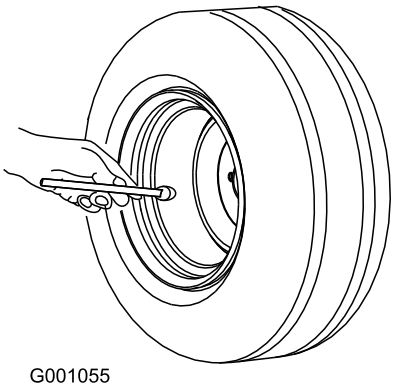


Figure 80

Checking the Wheel Lug Nuts

Check and torque the wheel lug nuts to 122 to 136 N·m (90 to 100 ft-lb).

Cooling System Maintenance

Cleaning the Engine Screen

Service Interval: Before each use or daily

Before each use or daily

Before each use remove any buildup of grass, dirt, or other debris from the engine screen, engine exhaust, and the area around the engine. This helps ensure adequate cooling and correct engine speed and reduces the possibility of overheating and mechanical damage to the engine.

Brake Maintenance

Adjusting the Parking Brake

Service Interval: Every 500 hours

Note: Make sure to follow this procedure when a brake component has been removed or replaced.

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 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. Setup the machine to be pushed by hand. Refer to Using the Drive-Wheel-Release Valves (page 31).
5. Raise the back of the machine up and support the machine with jack stands.

   ⚠ CAUTION

   Raising the machine for service or maintenance relying solely on mechanical or hydraulic jacks could be dangerous. The mechanical or hydraulic jacks may not be enough support or may malfunction allowing the machine to fall, which could cause injury.

   Do not rely solely on mechanical or hydraulic jacks for support. Use adequate jack stands or equivalent support.

6. Engage and disengage the parking brake and check each drive tire to ensure that each brake engages and disengages.
7. If an adjustment is necessary, disengage the parking brake. Remove the cotter pin from the brake linkage shaft (Figure 81).

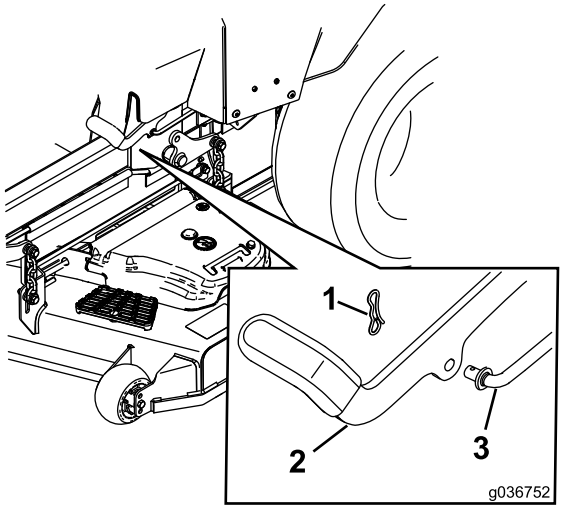


Figure 81

1. Cotter pin
2. Parking brake
3. Brake linkage shaft

8. Check both spring lengths as shown in Figure 82. If an adjustment is necessary, turn the top nut clockwise to shorten the spring and counterclockwise to lengthen it.

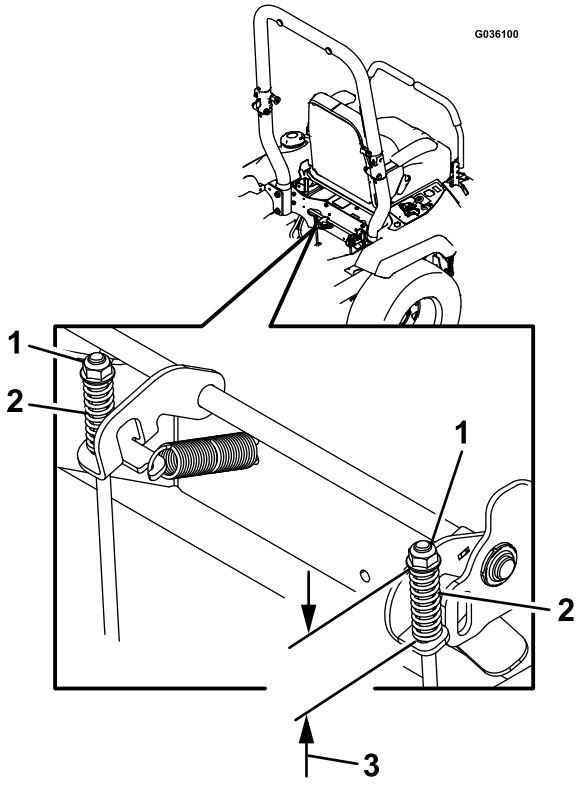


Figure 82

1. Top nut
2. Spring
3. 44 mm (1-3/4 inches)

9. Push the parking brake lever all the way forward and down.

10. Rotate the brake-linkage shaft until the end aligns with the hole in the lever.
    - Shorten the linkage by turning it clockwise.
    - Lengthen the linkage by turning it counterclockwise.
11. Insert the brake-linkage shaft into the parking-brake hole and secure with the cotter pin. Repeat step 6 and adjust if necessary.
12. When adjustment is complete, remove the jack stands or equivalent support and lower the machine.
13. Place the machine into the OPERATING position. Refer to Using the Drive-Wheel-Release Valves (page 31).

Belt Maintenance

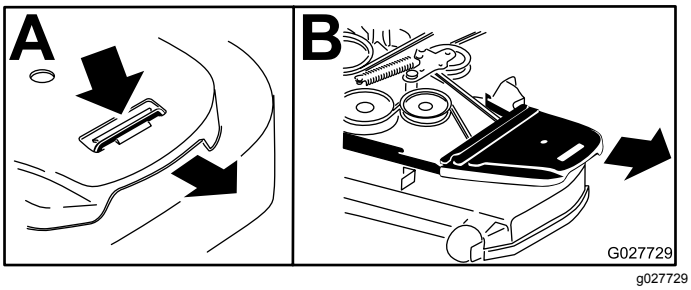
Inspecting the Belts

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 for Side Discharge Mower Decks

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. Lower the mower to the 76 mm (3 inch) height-of-cut.
4. Remove the belt covers (Figure 83).



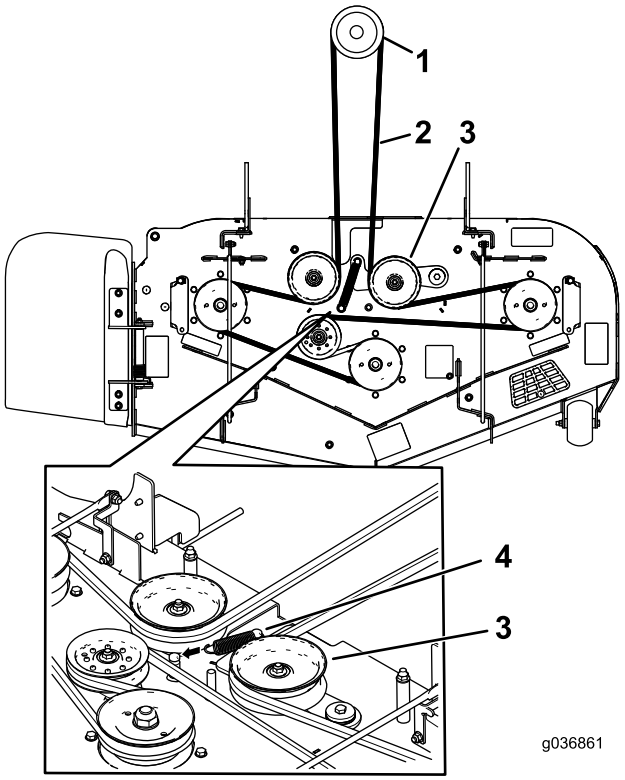
g027729

Figure 83

5. Remove the spring tension from the spring-loaded idler pulley. Refer to Figure 84 or Figure 86.

   Note: For 1500 and 2000 Series mower decks, use the spring removal tool (Toro Part No. 92–5771) to remove the spring from the mower-deck post (Figure 85).

   Note: For 2500 Series mower decks, use a ratchet in the square hole in the idler arm to remove tension on the idler spring (Figure 86).
6. Remove the belt from the mower-deck pulleys and the clutch pulley.
7. Install the new belt around the mower pulleys and the clutch pulley under the engine (Figure 84 or Figure 86).

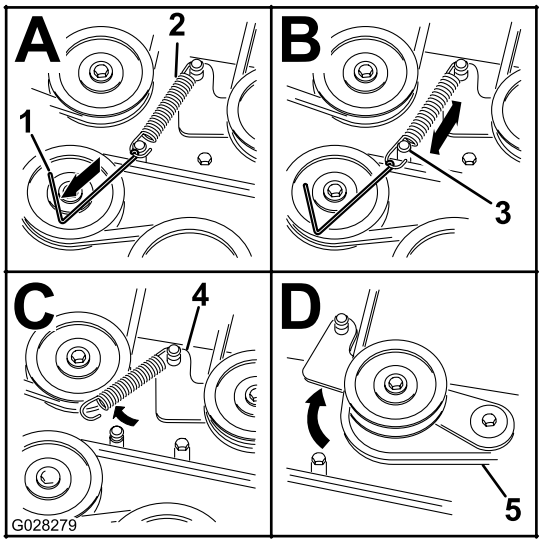


g036861

Figure 84

1500 and 2000 Series Mower Decks

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



g028279

Figure 85

1500 and 2000 Series Mower Decks

1. Spring-removal tool (Toro Part No. 92–5771)
2. Idler spring
3. Mower-deck post
4. Idler arm
5. Mower belt

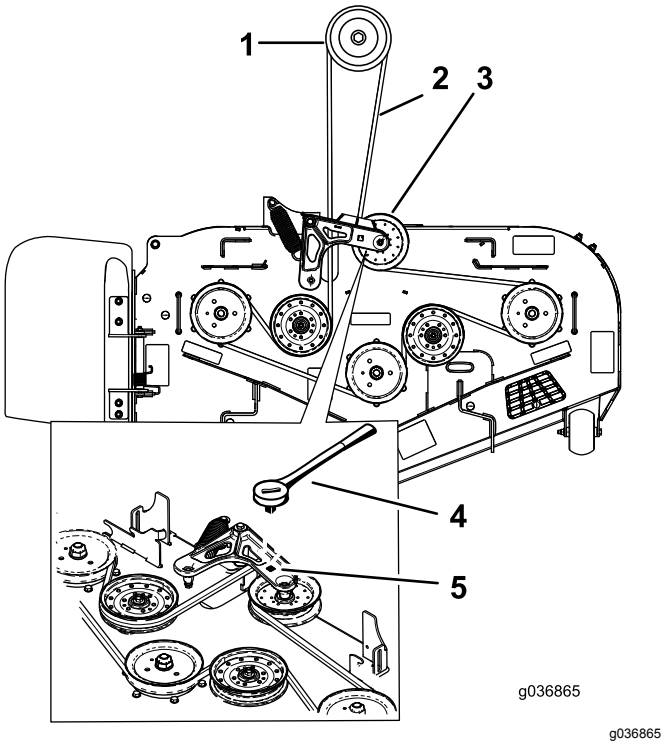


Figure 86
2500 Series Mower Decks

1. Clutch pulley
2. Mower belt
3. Spring-loaded idler pulley
4. Ratchet
5. Square hole in the idler arm for the ratchet

8. Install the idler spring (Figure 84 or Figure 86).

   Note: Make sure to seat the spring ends in the anchor grooves.

9. Install the belt covers (Figure 87).

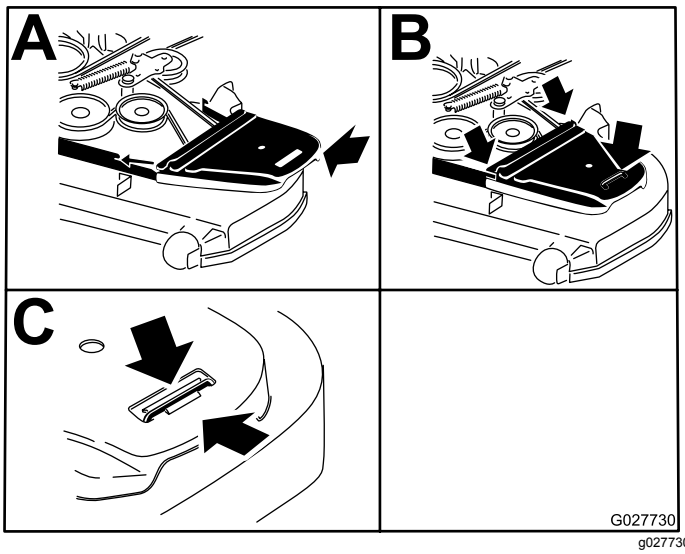


Figure 87

Replacing the Mower Belt for Rear Discharge Mower Decks

Replacing the Counter-Rotating Belt

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. Lower the mower to the 76 mm (3 inches) height of cut.
4. Lift the floor pan up to gain access to the center pulley.
5. Remove the plastic belt cover (Figure 89).
6. Remove the 3 bolts holding the metal belt cover in place and remove the metal belt cover.

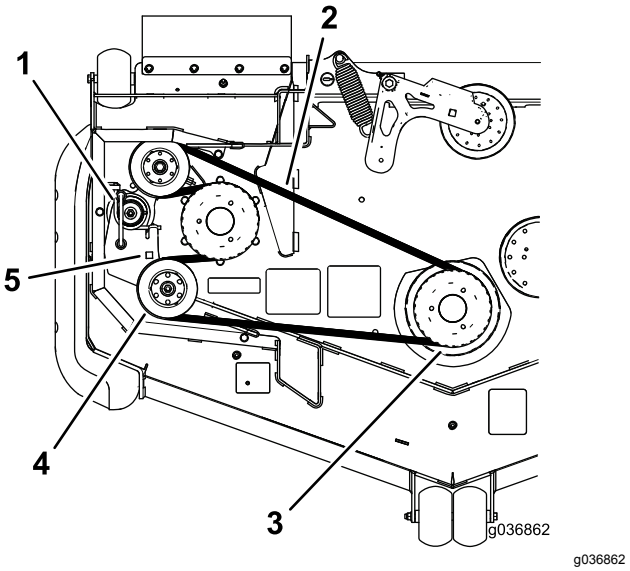


Figure 88

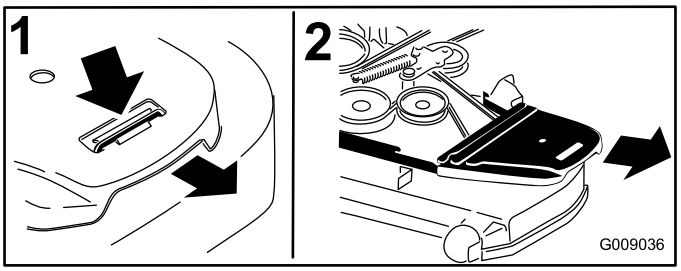
1. Idler spring
2. Counter-rotating belt
3. Double pulley
4. Idler pulley
5. Square hole in the idler arm for the ratchet

7. Use a ratchet in the square hole in the idler arm to remove tension on the idler spring (Figure 88).
8. Remove the belt from the mower deck pulley (Figure 88).
9. Remove the belt from the remaining pulleys (Figure 88).
10. Route the new belt abound the mower pulleys.

11. Using the ratchet in the square hole, remove the tension on the spring, and guide the new belt around the idler pulley (Figure 88).

Replacing the Mower Belt

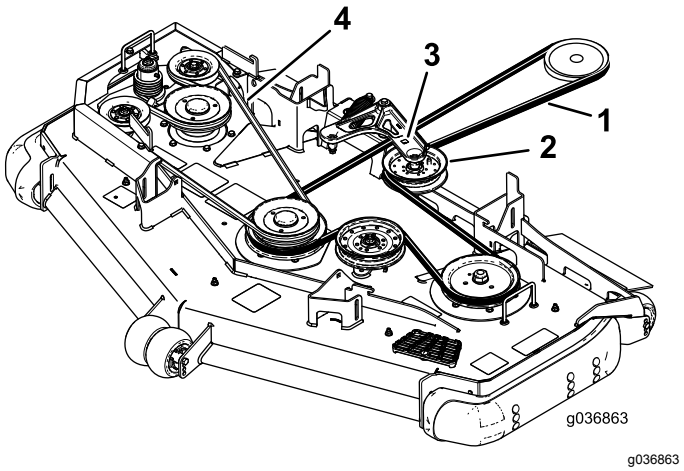
1. Disengage the blade-control switch (PTO), move the motion-control levers to the NEUTRAL-LOCK position, and set the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Lower the mower to the 76 mm (3 inches) height of cut.
4. Remove the belt covers (Figure 89).



g009036

Figure 89

5. Remove the counter-rotating belt; refer to Replacing the Counter-Rotating Belt (page 64).
6. Use a ratchet in the square hole in the idler arm to remove tension on the idler spring (Figure 90).
7. Remove the belt from the mower-deck pulleys and the clutch pulley.
8. Install the new belt around the mower pulleys and the clutch pulley under the engine (Figure 90).



g036863

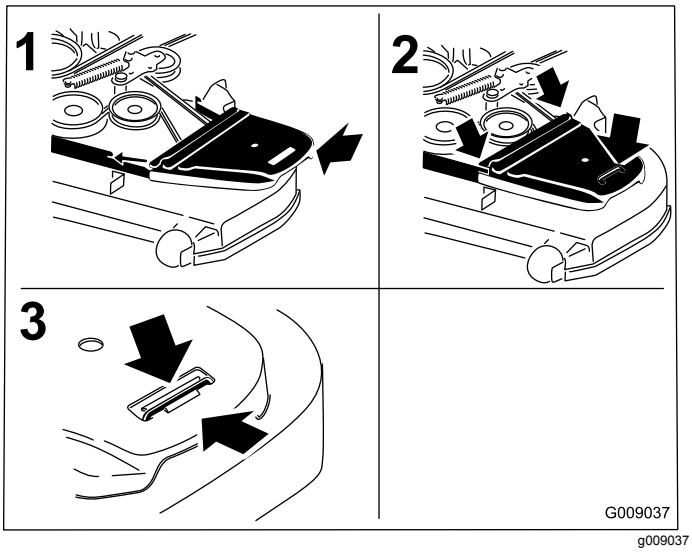
Figure 90

Rear discharge mower deck shown

1. Mower belt
2. Spring-loaded idler pulley
3. Square hole in the idler arm for the ratchet
4. Counter-rotating belt

9. Using the ratchet in the square hole, install the belt around the spring-loaded idler pulley (Figure 90).

   Make sure that the spring ends are seated in the anchor grooves.
10. Install the belt covers (Figure 91).



g009037

Figure 91

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 for Side Discharge Mower Decks (page 63) or Replacing the Mower Belt for Rear Discharge Mower Decks (page 64).
4. Raise the machine and support it with jack stands (Figure 93).
5. Remove the clutch stop (Figure 92).

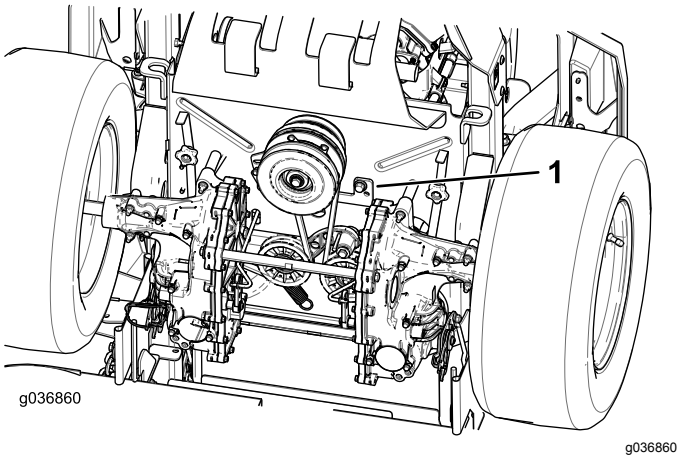


Figure 92

1. Clutch stop

6. Remove the idler spring from the post (Figure 93).
7. Remove the existing belt from the hydraulic-unit-drive pulleys and the engine pulley.
8. Install the new belt around the engine pulley and the 2 hydraulic-pump pulleys (Figure 93).

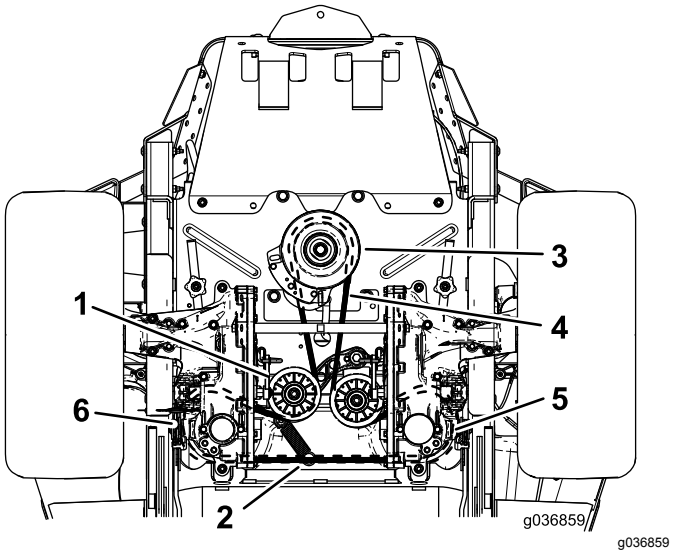


Figure 93

1. Idler pulley
2. Idler-spring post
3. Engine pulley
4. Pump-drive belt
5. Right hydraulic-pump pulley
6. Left hydraulic-pump pulley

9. Install the clutch stop (Figure 92).
10. Install the mower belt; refer to Belt Maintenance (page 63).

Adjusting the Control-Handle Position

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.

   Adjusting the height:

   You can adjust the motion control levers higher or lower for maximum comfort.

   A. Remove the hardware holding the control lever to the control-arm shaft.

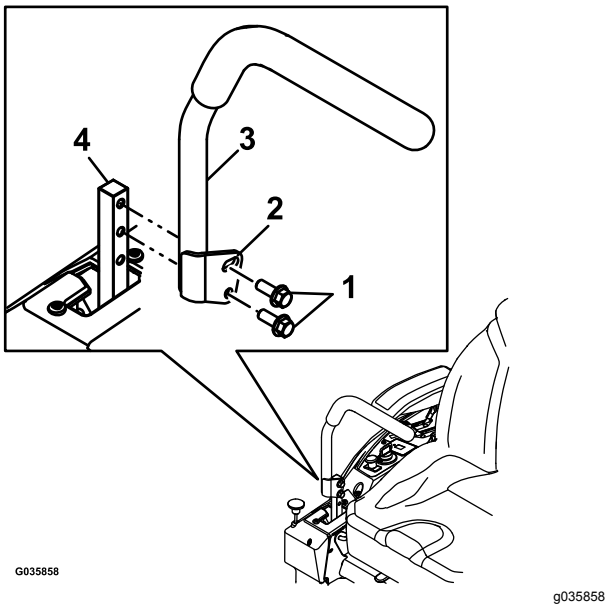


Figure 94

1. Bolts
2. Slotted hole
3. Control lever
4. Control-arm shaft

   B. Move the control lever to the next set of holes. Secure the lever with the hardware.

   C. Repeat the adjustment for the opposite control lever.

   Adjusting the Tilt

   A. Loosen the upper bolt holding the control lever to the control arm shaft.

   B. Loosen the lower bolt just enough to pivot the control lever fore or aft. Tighten both bolts to secure the control in the new position.

   C. Repeat the adjustment for the opposite control lever.

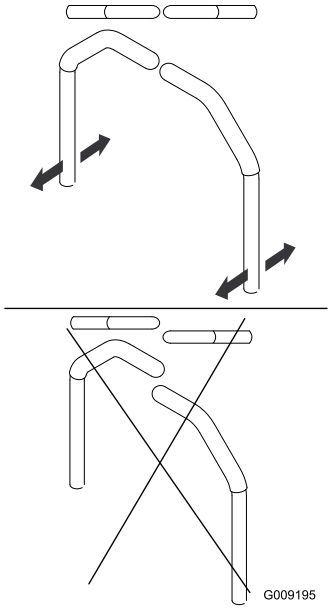


Figure 95

3. If the ends of the levers hit against each other, refer to Adjusting the Motion-Control Linkage (page 67).

Adjusting the Motion-Control Linkage

Located on either side of the machine, below the seat are the pump control linkages. Rotating the end nut with a 1/2 inch deep socket wrench allows fine tuning adjustments so that the machine does not move in neutral. Any adjustments should be made for neutral positioning only.

⚠ WARNING

Engine must be running and drive wheels must be turning so adjustments 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 and remove the height of cut pin. Lower deck to the ground.
2. Raise the rear of machine up and support with jack stands (or equivalent support) just high enough to allow 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 harness.
5. Start the engine. Run the engine at full throttle and release the parking brake.

   Note: Ensure that the parking brake is engaged and that the motion-control levers are out to start the engine. You do not have to be in the seat.
6. Run the machine at least 5 minutes with the drive levers in the full forward speed to bring hydraulic fluid up to operating temperature.

   Note: The motion-control lever must be in neutral while making any necessary adjustments.
7. Bring the motion-control levers into the NEUTRAL position.
8. Check and ensure that the control-plate tabs touch the return-to-neutral plates on the hydraulic units.
9. Adjust the pump-control-rod lengths by turning the nut in the appropriate direction until the wheels slightly creep in reverse (see Figure 96).
10. 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.

    Note: You may need to remove the motion-control cover to gain access.

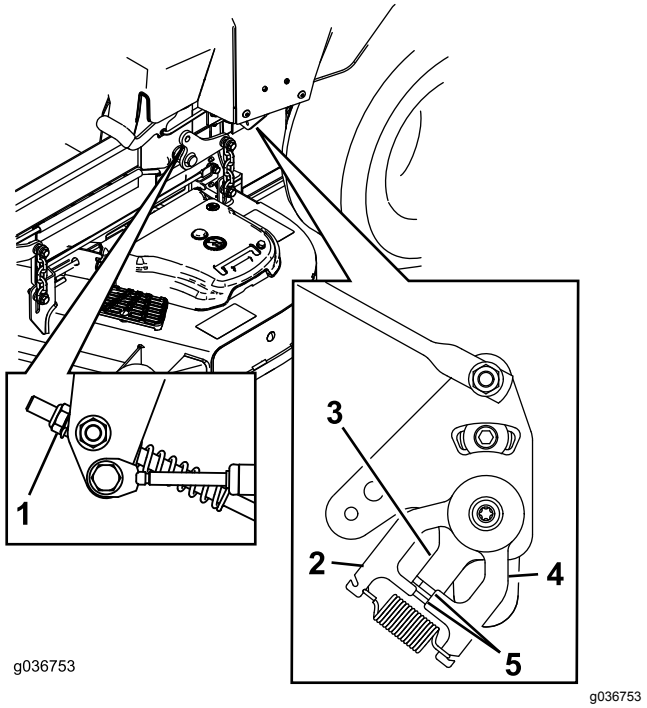


Figure 96

1. Nut
2. Stationary plate
3. Control plate
4. Return-to-neutral plate
5. Tabs touching return to neutral plate

11. Shut off the machine.
12. Remove the jumper wire from the wire harness and plug the connector into the seat switch.
13. Remove the jack stands.
14. Raise the mower deck and install the height of cut pin.
15. Check and ensure that the machine does not creep in neutral with the park brake disengaged.

Hydraulic System Maintenance

Hydraulic System Safety

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

Servicing the Hydraulic System

Hydraulic Fluid Type: Toro® HYPR-OIL™ 500 hydraulic fluid (preferred) or Mobil 1 15W-50 oil.

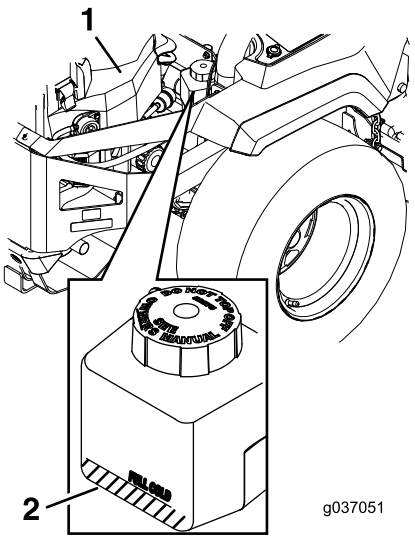
Important: **Use the fluid specified. Other fluids could cause system damage.**

Hydraulic System Capacity (with filters removed): 4.45 L (150 oz)

Checking the Hydraulic Fluid Level

Service Interval: Before each use or daily

1. Allow the hydraulic fluid to cool down. Check the oil level when the oil is cold.
2. Check expansion reservoir and if necessary add Toro® HYPR-OIL™ 500 hydraulic fluid to the FULL COLD line.



g037051

Figure 97

1. Engine
2. Expansion tank

Changing the Hydraulic-System Filters and Fluid

Service Interval: After the first 75 hours—Change the hydraulic-system filters and fluid.

Every 500 hours—After the initial change—change the hydraulic-system filters and fluid when using Toro® HYPR-OIL™ 500 oil (change it more often under severe conditions).

Every 250 hours—After the initial change—change the hydraulic-system filters and fluid when using Mobil 1 15W50 fluid (change it more often under severe conditions).

Change the filters and oil at the same time. **Do not** use the oil again. Purge any air in the system after you install the new filters and add oil. Refer to Bleeding the Hydraulic System (page 72).

Repeat the bleeding process until the oil remains at the FULL COLD line in the reservoir after purging. **Failure to properly perform this procedure can result in irreparable damage to the transaxle drive system.**

Removing Hydraulic-System Filters

1. Shut off the engine, wait for all moving parts to stop, allow the engine to cool, remove the key, and engage the parking brake.
2. Locate the filter and guards on each transaxle-drive system (Figure 98).
3. Remove the 3 screws securing the filter guard and guard (Figure 98).

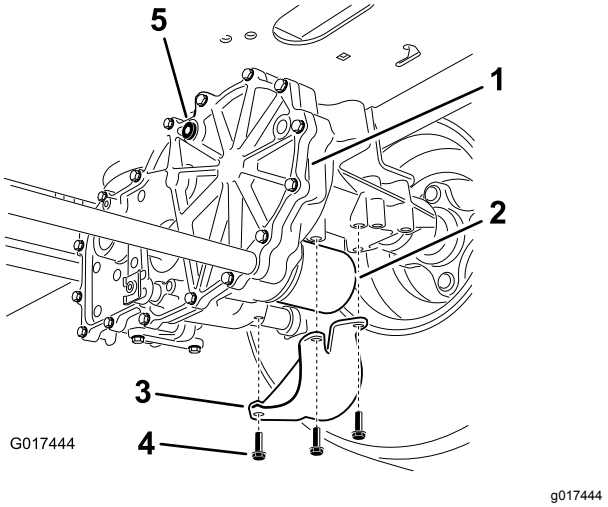


Figure 98
Right side shown

1. Transaxle drive
2. Oil filter
3. Filter guard
4. Screws
5. Vent plug

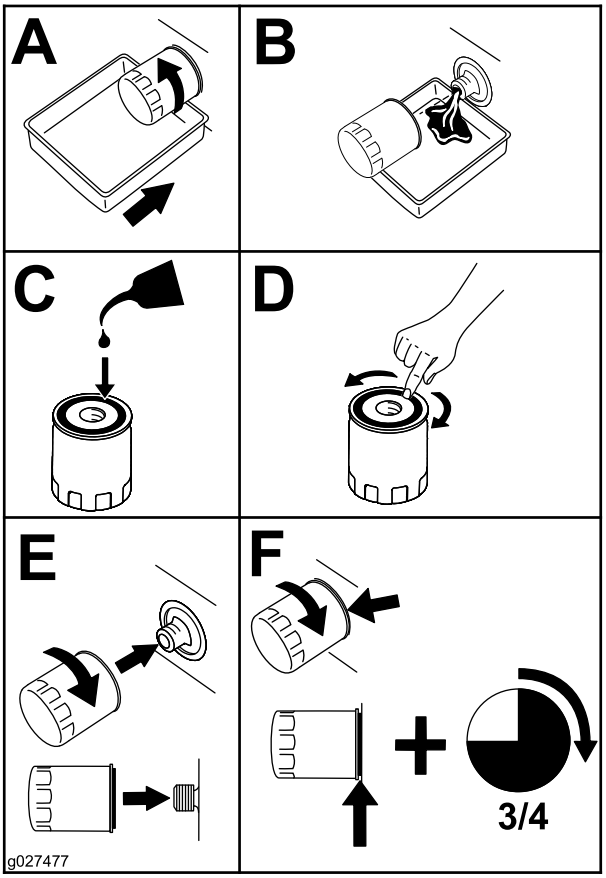
4. Carefully clean the area around the filters.

   Important: **Do not allow dirt to enter the hydraulic system, or contamination may occur.**
5. Place a drain pan below the filter to catch the oil that drains when the filter and vent plugs are removed.
6. Locate and remove the vent plug on each transmission
7. Unscrew the filter to remove it, and allow the oil to drain from the drive system.
8. Repeat this procedure for both filters.

Installing the Hydraulic-System Filters

1. Apply a thin coat of oil on the surface of the rubber seal of each filter.
2. Turn the filter clockwise until the rubber seal contacts the filter adapter, then tighten the filter an additional 3/4 to 1 full turn.
3. Repeat for the opposite filter.
4. Install the filter guards over each filter that you previously removed.
5. Use the 3 screws to secure the filter guards.
6. Verify that the vent plugs are removed before adding the oil.
7. Slowly pour the specified oil through the expansion reservoir until oil comes out of 1 of the vent-plug holes.
8. Install the vent plug.
9. Torque the plug to 20 N·m (15 ft-lb).
10. Continue to add oil through the expansion reservoir until oil comes out of the remaining vent-plug hole on the second transmission.
11. Install the opposite vent plug.
12. Torque the plug to 20 N·m (15 ft-lb).
13. Continue to add oil through the expansion reservoir until it reaches the FULL COLD line on the expansion reservoir.
14. Proceed to Bleeding the Hydraulic System (page 72).

Important: **Failure to perform the *Bleeding the Hydraulic System* procedure after changing hydraulic filters and oil can result in irreparable damage to the transaxle drive system.**



g027477

Figure 99

Bleeding the Hydraulic System

1. 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.

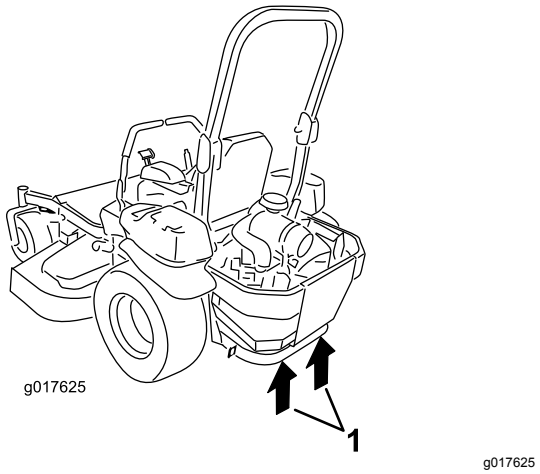


Figure 100

1. Jacking points

2. Start the engine, move the throttle control ahead to the 1/2 throttle position, and disengage the parking brake.
   A. Move the bypass levers into the pushing the machine position. With the bypass valves open and the engine running, slowly move the motion-control levers in both forward and reverse 5 or 6 times.
   B. Move the bypass levers into the operating the machine position.
   C. With the bypass valve closed and the engine running, slowly move the control lever in both forward and reverse directions 5 to 6 times.
   D. Shut off the engine and check the oil level in the expansion reservoir. Add the specified oil until it reaches the FULL COLD line on the expansion reservoir.
3. Repeat step 2 until all the air is completely purged from the system.

   Note: When the transaxle operates at normal noise levels, moves smoothly forward, and reverses at normal speeds, it is purged.
4. Check the oil level in the expansion reservoir a final time. Add the specified oil as until it reaches the FULL COLD line on the expansion reservoir.

Mower Deck Maintenance

Leveling the Mower Deck

Adjusting the Side-to-Side Leveling and the Blade Slope

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 tire pressure in the drive tires. Refer to Checking the Tire Pressure (page 60).
5. Position the mower deck in the transport-lock position.
6. Carefully rotate the blades from side to side.
7. Measure between the blade tip and the flat surface (Figure 101). If both measurements are not within 5 mm (3/16 inch), adjust the leveling; continue with this procedure.

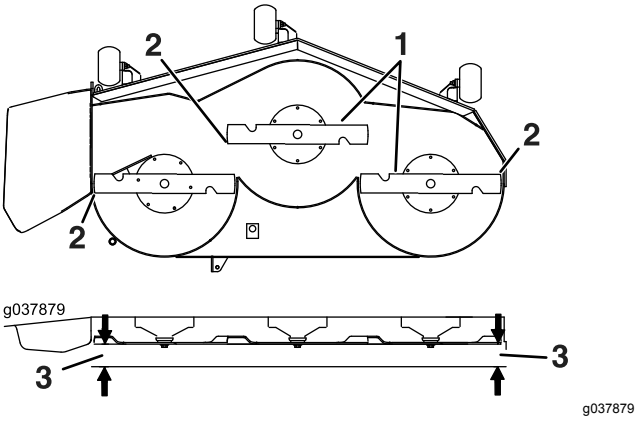
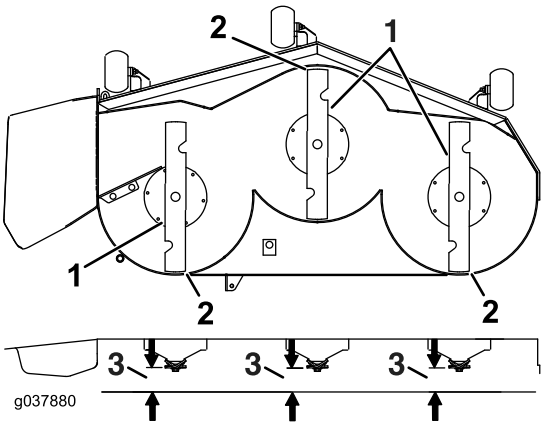


Figure 101

1. Blades side to side
2. Blade tip
3. Measure from the tip of the blade to the flat surface here.

8. Check the front-to-rear blade level (Figure 102). Ensure the front blade tip is lower than the rear blade tip as shown in the block height and rake table. If adjustment is needed, continue with this procedure.



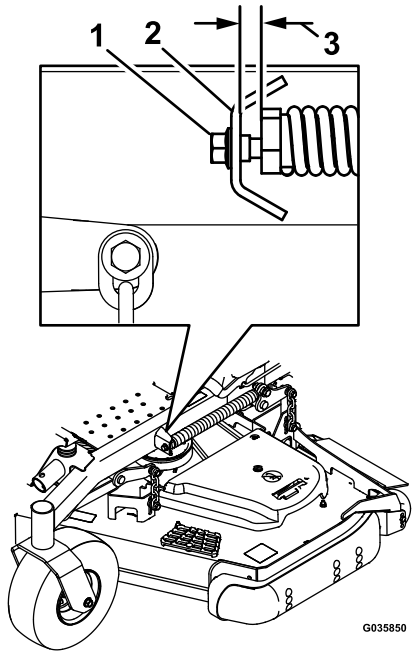
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Figure 102

1. Blades front to rear
2. Blade tip
3. Measure from the tip of the blade to the flat surface here.

9. Set the anti-scalp rollers to top holes or remove them completely for this adjustment.
10. For 60-inch mower decks only:
    A. Raise the deck to the transport position (12.7 cm or 5 inches).
    B. Slowly loosen the adjusting screw on the lift-assist spring until you can remove the screw (see Figure 103).

    Note: Save the screw for installation.



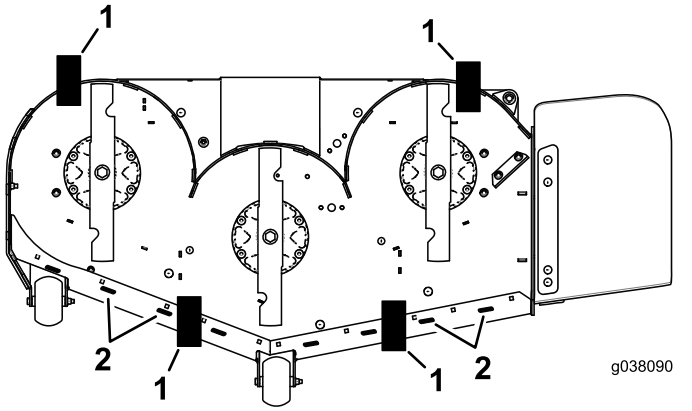
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Figure 103

Rear discharge mower deck shown

1. Adjusting screw
2. Bracket
3. Set the gap to 22 to 29 mm (7/8 to 1-1/8 inch).

11. Place 2 blocks (see Block Height and Rake Table) under the rear edge of the cutting deck skirt; 1 on each side of the cutting deck (Figure 104).
12. Set the height-of-cut lever to the 3 inch (76 mm) position.
13. Place 2 blocks under each side of the front edge of the deck, but not under the anti-scalp roller brackets or welds.



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Figure 104

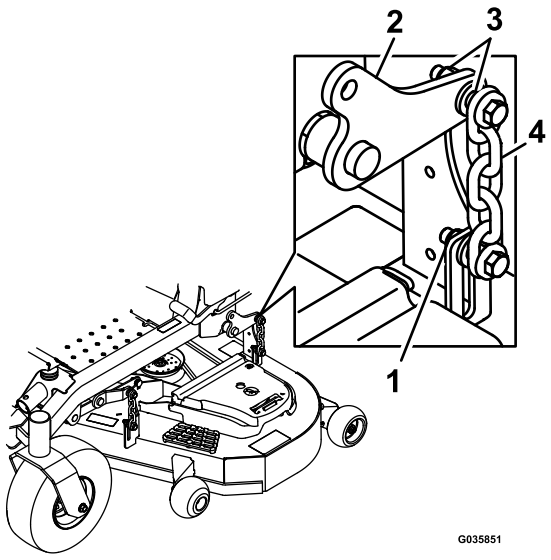
Bottom view

1. Block—7.3 cm (2.87 inches)
2. Welds

Block Height and Rake Table

Deck Size	Front Block Height	Rake
All mower decks	7.3 cm (2.87 inches)	4.8 to 6.4 mm (3/16 to 1/4 inch)

14. Carefully rotate the blades side to side (Figure 101).
15. Loosen the locknuts (Figure 105) on all 4 corners and ensure that the mower deck is sitting securely on all 4 blocks.
16. Remove any slack from the deck hangers and make sure the deck-lift foot lever is pushed back against the stop.
17. Tighten the 4 locknuts.



g035851

Figure 105

1. Locknuts
2. Deck lift arm
3. Deck hanger
4. Chain

18. Ensure that the blocks fit snugly under the deck skirt and that all attachment bolts are tight
19. Continue leveling the deck by checking the front-to-rear blade slope.
20. Check the blades for levelness and repeat deck leveling procedure if necessary.
21. For 60-inch mower decks only:
    A. Raise the deck to the transport position (12.7 cm or 5 inches).
    B. Install the lift-assist spring adjusting screw previously removed in step 10.
    C. Set the gap between the spring and the bracket to 22 to 29 mm (7/8 to 1-1/8 inch).

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.

Blade Safety

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. Trying to repair a damaged blade may result in discontinued safety certification of the product.

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

Before Inspecting or Servicing the Blades

1. Park the machine on a level surface, Disengage the blade-control switch (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 106).
2. If the edges are not sharp or have nicks, remove and sharpen the blade; refer to Sharpening the Blades (page 77).
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 106).

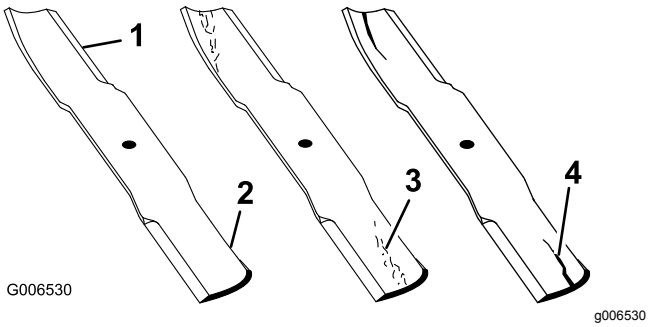


Figure 106

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 107).
4. Measure from a level surface to the cutting edge, position **A**, of the blades (Figure 107).

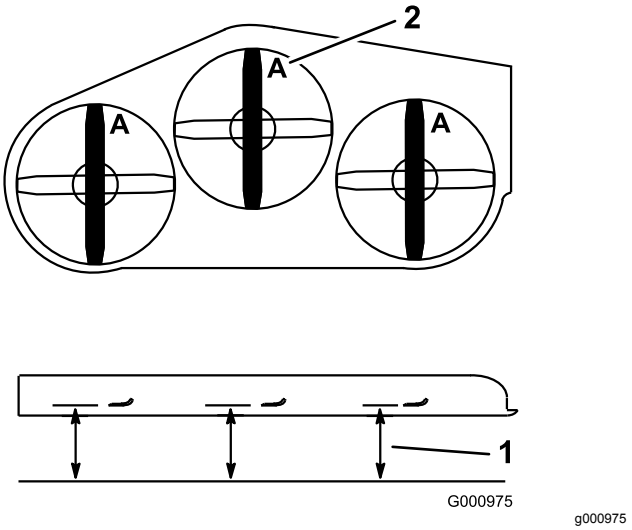


Figure 107

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 5 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.**

Changing the Blades for Side Discharge Mower Decks

Removing the Blades for Side Discharge Mower Decks

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 spindle shaft with a wrench.
2. Remove the blade bolt, curved washer, and blade from the spindle shaft (Figure 108).

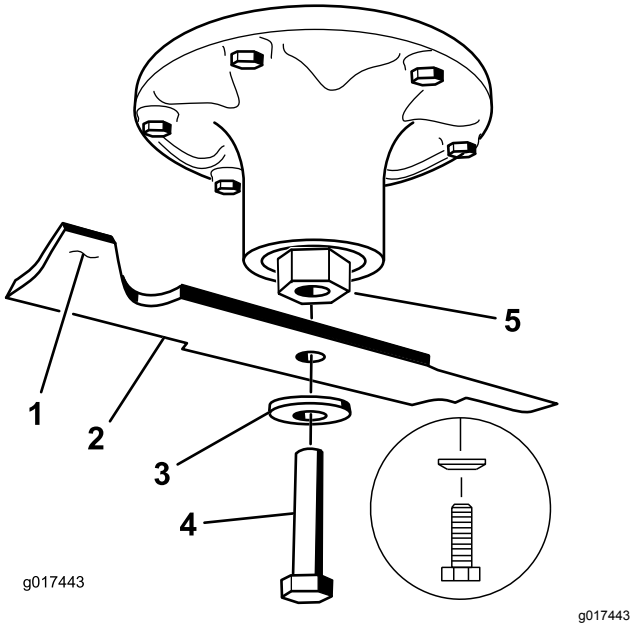


Figure 108

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

Installing the Blades for Side Discharge Mower Decks

1. Install the blade onto the spindle shaft (Figure 108).

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

2. Install the curved washer and blade bolt (Figure 108).

   Note: Install the curved-washer cone toward the bolt head.

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

Changing the Blades for Rear Discharge Mower Decks

Removing the Blades for Rear Discharge Mower Decks

Replace a blade if it hits an object, is out of balance, or if it 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 left and center blade bolt, curved washer, and blade from the spindle shaft (Figure 109).
3. Remove the right blade bolt (left-hand threaded bolt), curved washer, and blade from the spindle shaft (Figure 110).

   Note: Note the type blade and where each blade is installed. See Figure 110 for the correct position.

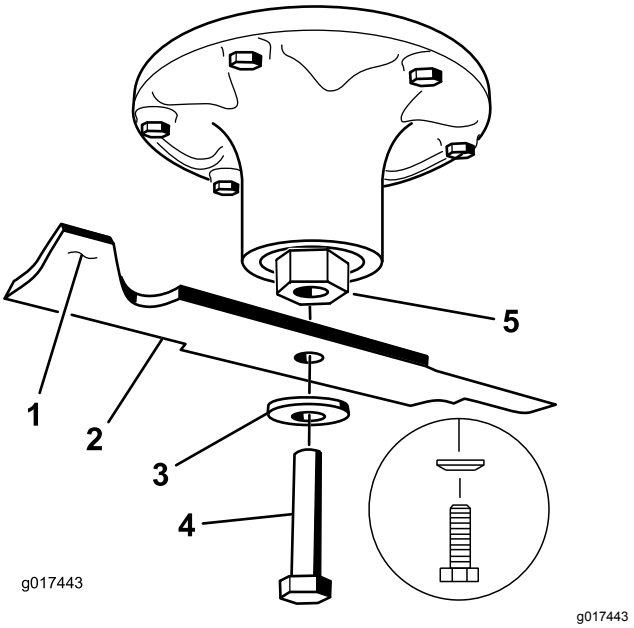


Figure 109
Left and Center Spindle Shown

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

Installing the Blades for Rear Discharge Mower Decks

Important: **The right blade on this mower deck is counter-rotating and uses a left-hand**

threaded blade bolt. Use Figure 110 for the correct placement of the mower blades.

1. Install the left and center blades, curved washers, and blade bolts to the spindle shafts (Figure 109 and Figure 110).

   Note: Ensure the curved part of the blade is pointing upward toward the inside of the mower deck to ensure proper cutting.

   Note: Ensure the curved-washer cone is installed toward the bolt head (Figure 109).

2. Install the right blade, curved washer, and blade bolt (left-hand threaded bolt) to the spindle shaft (Figure 109 and Figure 110).
3. Torque the blade bolts to 115 to 150 N·m (85 to 110 ft-lb); refer to Figure 110.

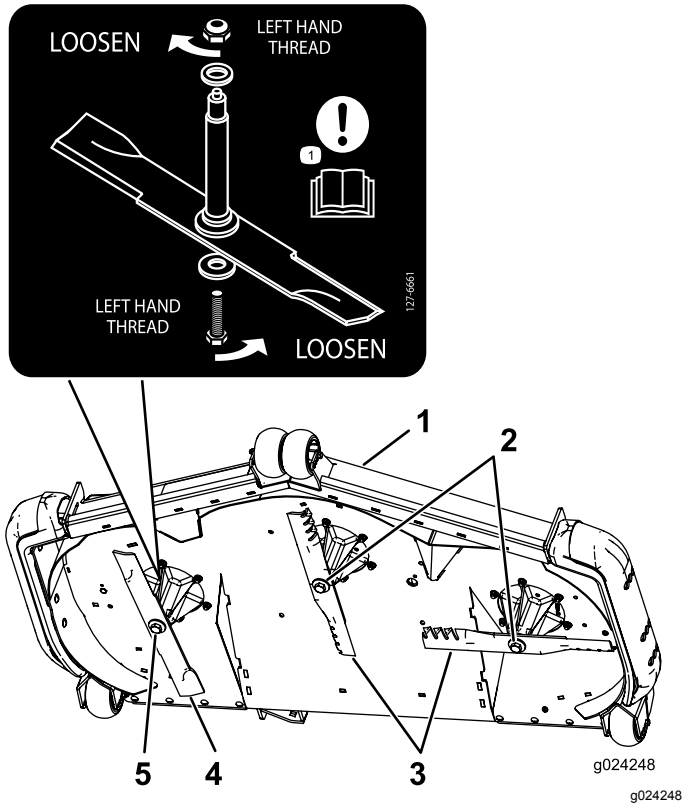


Figure 110

1. Front of mower deck
2. Right-hand threaded blade bolts
3. Regular blades
4. Counter-rotating blade
5. Left-hand threaded blade bolt

Sharpening the Blades

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

   Note: Maintain the original angle.

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

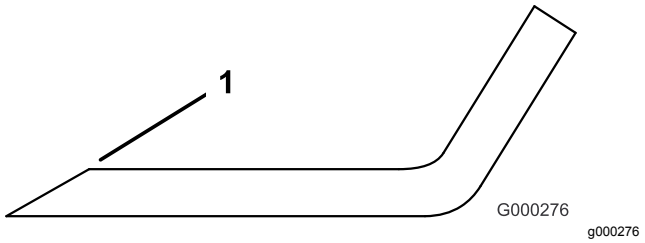


Figure 111

1. Sharpen at the original angle

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

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

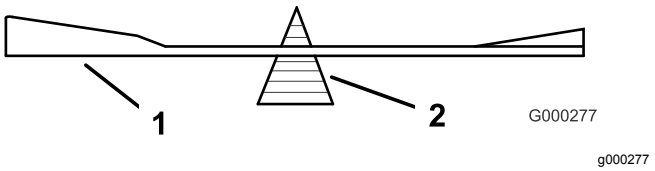


Figure 112

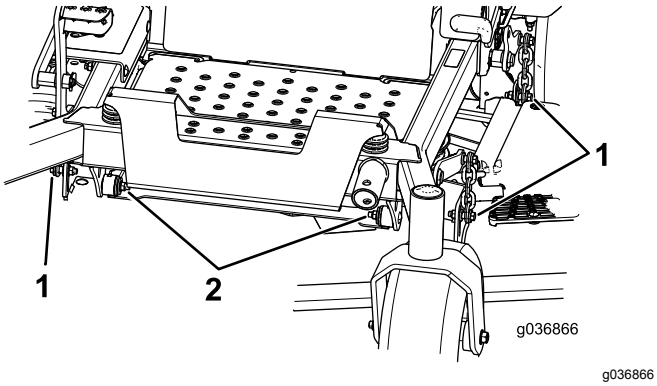
1. Blade
2. Balancer

3. If the blade is not balanced, file some metal off the end of the sail area only (Figure 108).
4. Repeat this procedure until the blade is balanced.

Removing the Mower Deck

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

1. Shut off the engine, wait for all moving parts to stop, and remove key. Engage the 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) cutting-height location.
4. Remove the belt covers.
5. Loosen the mower deck idler and remove the mower belt; refer to Belt Maintenance (page 63).
6. Remove the bolts and nuts from the front of the plate under the footrest.
7. Remove and retain the bolts and nuts on both sides of the machine (Figure 113).



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Figure 113

1. Remove the nuts and bolts here.
2. Remove the nuts and bolts here.

8. Slide the deck out to the right side of the machine.

Replacing the Grass Deflector

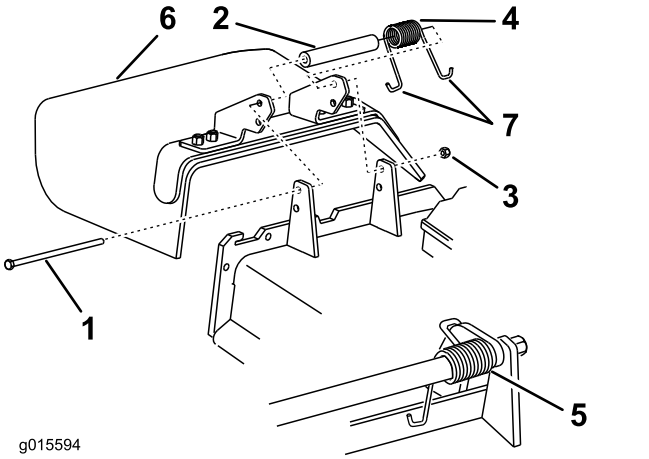
Side Discharge Mowers Only

⚠ WARNING

An uncovered discharge opening could allow the lawn mower to throw objects toward 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 114).
2. Remove the damaged or worn grass deflector (Figure 114).



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Figure 114

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 114.
5. Install the bolt and the nut.
6. Place 1 **J**-hook end of the spring around the grass deflector (Figure 114).

   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 fluid, 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 Engine Maintenance (page 40).
5. Grease the machine; refer to Lubrication (page 38).
6. Change the crankcase oil; refer to Engine Maintenance (page 40).
7. Check the tire pressure; refer to Checking the Tire Pressure (page 60).
8. Change the hydraulic filters; refer to Changing the Hydraulic-System Filters and Fluid (page 70).
9. Charge the battery; refer to Charging the Battery (page 58).
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 74).
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. Shut off the engine, allow it to cool, and drain the fuel tank; refer to Servicing the Fuel Tank (page 56).

    D. Start the engine and run it until it shuts off.

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

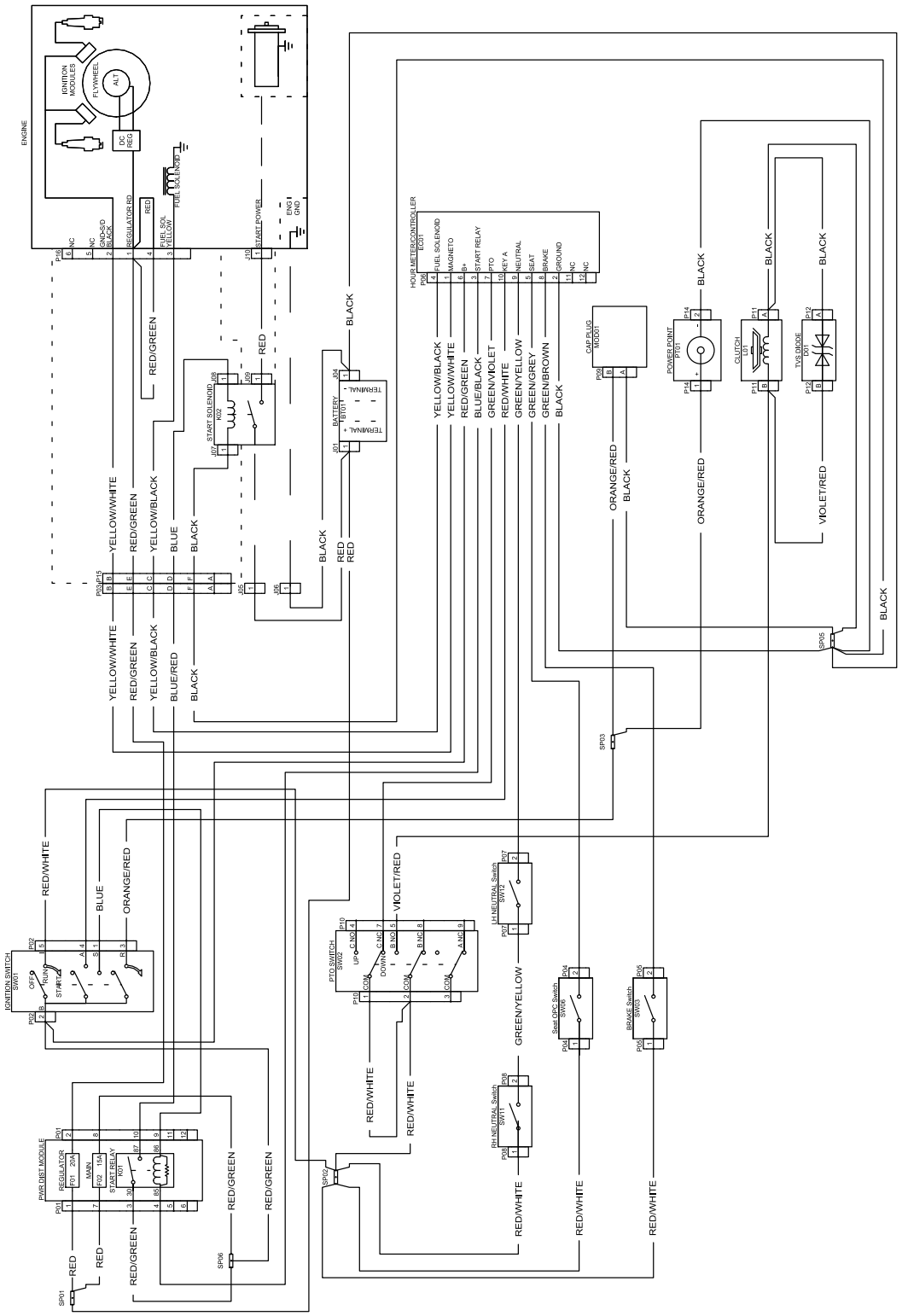
    Important: **Do not store stabilizer/conditioned fuel over 90 days.**
13. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is damaged.
14. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
15. Store the machine in a clean, 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. 2. The parking brake is not engaged. 3. The motion-control levers are not in the NEUTRAL-LOCK position. 4. The operator is not seated. 5. The battery is dead. 6. The electrical connections are corroded or loose. 7. The fuse is blown. 8. The relay or switch is worn or damaged.	1. Move the blade-control switch (PTO) to the disengaged position. 2. Set the parking brake. 3. Ensure that the motion-control levers are in the NEUTRAL-LOCK position. 4. Sit on the seat. 5. Charge the battery. 6. Check the electrical connections for good contact. 7. Replace the fuse. 8. Contact an Authorized Service Dealer.
The engine does not start, starts hard, or fails to keep running.	1. The fuel tank is empty. 2. The fuel-shutoff valve is closed. 3. The oil level in the crankcase is low. 4. The throttle is not in the correct position. 5. There is dirt in the fuel filter. 6. There is dirt, water, or stale fuel in the fuel system. 7. The air cleaner is dirty. 8. The seat switch is not functioning properly. 9. The electrical connections are corroded, loose, or damaged. 10. The relay or switch is worn or damaged. 11. The spark plug is fouled or improperly gapped. 12. The spark-plug wire is not connected.	1. Fill the fuel tank. 2. Open the fuel-shutoff valve. 3. Add oil to the crankcase. 4. Be sure that the throttle control is midway between the slow and fast positions. 5. Replace the fuel filter. 6. Contact an Authorized Service Dealer. 7. Clean or replace the air-cleaner element. 8. Check the seat-switch indicator. Replace the seat if necessary. 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. 10. Contact an Authorized Service Dealer. 11. Adjust or replace the spark plug. 12. Check the spark-plug wire connection.
The engine loses power.	1. The engine load is excessive. 2. The air cleaner is dirty. 3. The oil level in the crankcase is low. 4. The cooling fins and the air passages above the engine are plugged. 5. The vent hole in the fuel cap is plugged. 6. There is dirt in the fuel filter. 7. There is dirt, water, or stale fuel in the fuel system.	1. Reduce the ground speed. 2. Clean the air-cleaner element. 3. Add oil to the crankcase. 4. Remove the obstruction from the cooling fins and the air passages. 5. Clean or replace the fuel cap. 6. Replace the fuel filter. 7. Contact an Authorized Service Dealer.
The engine overheats.	1. The engine load is excessive. 2. The oil level in the crankcase is low. 3. The cooling fins and the air passages above the engine are plugged.	1. Reduce the ground speed. 2. Add oil to the crankcase. 3. Remove the obstruction from the cooling fins and the air passages.
The mower pulls to the left or right (with levers fully forward)	1. The tracking needs adjustment 2. The tire pressure in the drive tires is not correct.	1. Adjust the tracking. 2. Adjust the tire pressure in the drive tires.

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

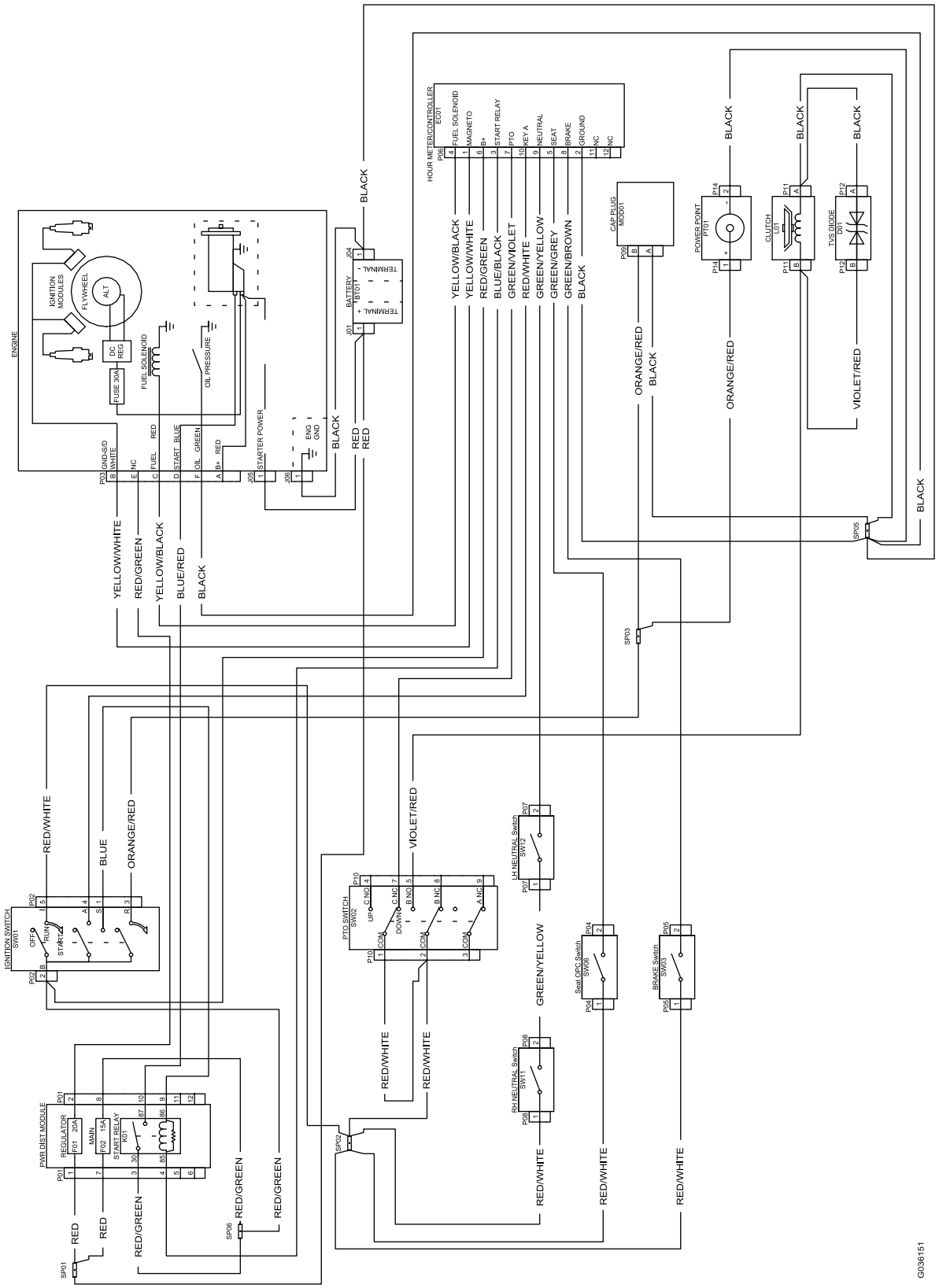
Schematics



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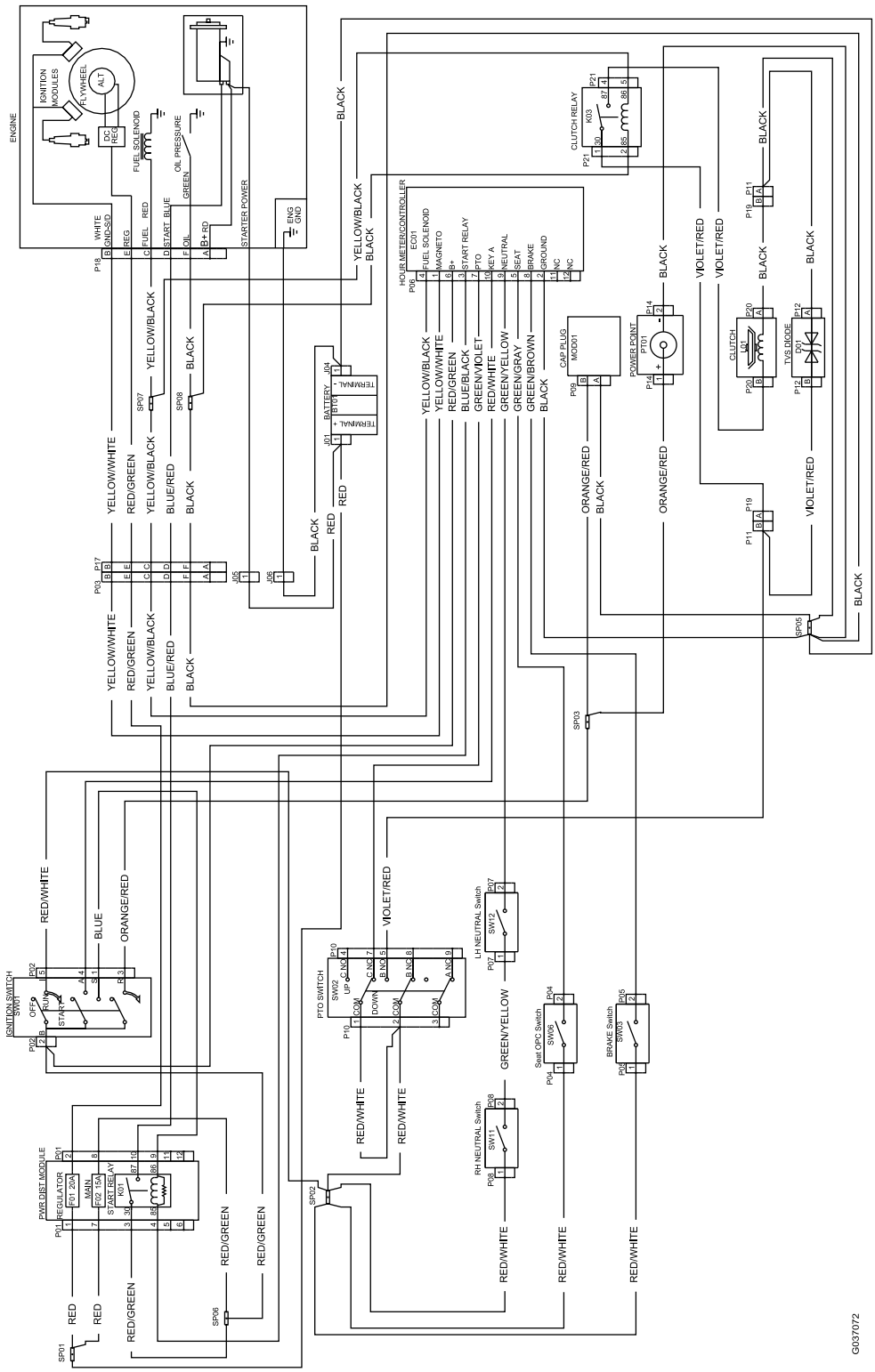
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Wire Diagram—Toro Engines (Rev. A)



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Wire Diagram—Kohler Engines (Rev. A)



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Wire Diagram—Kawasaki Engines (Rev. A)

Notes:

Notes:

The Toro Warranty

A Limited Warranty (see warranty periods below)

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 repair the Toro Products listed below if defective in materials or workmanship.

The following time periods apply from the original date of purchase:

Products	Warranty Period
21 in. Mowers	2 years Residential Use[1] 1 year Commercial Use
• Engines[3]	Honda – 2 years Kawasaki – 3 years
30 in. Mowers	2 years Residential Use[1] 1 year Commercial Use
• Engines[3]	Kawasaki – 3 years
Mid-Size Walk-Behind Mowers	2 years
• Engines[3]	Kawasaki – 3 years
Grand Stand® Mowers	5 years or 1,200 hours[2]
• Engines[3]	3 years
Z Master® 2000 Series Mowers	4 years or 500 hours[2]
• Engines[3]	3 years
Z Master® 3000 Series Mowers	5 years or 1,200 hours[2]
• Engines[3]	3 years
Z Master® 5000 Series Mowers	5 years or 1,200 hours[2]
• Engines[3]	Kohler Command – 2 years Kohler EFI – 3 years
Z Master® 6000 Series Mowers	5 years or 1,200 hours[2]
• Engines[3]	Kawasaki – 3 years
Z Master®7000 Series Mowers	5 years or 1,200 hours[2]
• Engines[3]	2 years
Z Master®8000 Series Mowers	2 years or 1,200 hours[2]
• Engines[3]	2 years
TITAN HD 1500 Series	4 years or 500 Hours [2]
• Engines	Toro – 4 years or 500 hours
TITAN HD 2500 Series	4 years or 1,000 Hours [2]
• Engines[3]	Kawasaki – 3 years
TITAN HD 2000 Series	4 years or 750 Hours [2]
• Engines[3]	Kohler – 3 years
All Mowers	
• Battery	90 days Parts and Labor 1 year Parts only
• Belts and Tires	90 days
• Attachments	1 year

[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]Whichever occurs first.

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

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.

Instructions for Obtaining Warranty Service

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

1. Contact any Authorized Toro Service Dealer to arrange service at their dealership. To locate a dealer convenient to you, access our web site at www.Toro.com. You may also call the numbers listed in item #3 to use the 24-hour Toro Dealer locator system.
2. Bring the product and your proof of purchase (sales receipt) to the Service Dealer. The dealer will diagnose the problem and determine if it is covered under warranty.
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
   Customer Care Department, RLC Division
   8111 Lyndale Avenue South
   Bloomington, MN 55420-1196
   888-865-5676 (U.S. Customers)
   888-865-5691 (Canada customers)

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

All repairs covered by these warranties must be performed by an Authorized Toro Service Dealer using Toro approved replacement parts.

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

All implied warranties of merchantability (that the product is fit for ordinary use) and fitness for use (that the product is fit for a particular purpose) are limited to the duration of the express warranty.

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Countries Other than the United States or Canada

Customers who have purchased Toro products outside the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

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