Form No. 3463-954 Rev A

TORO®

Count on it.

Operator's Manual

ProLine Commercial Walk-Behind Mower with 91cm or 122cm Cutting Unit

Model No. 44410TE—Serial No. 406500000 and Up
Model No. 44424TE—Serial No. 406500000 and Up

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

CE UK CA

3463-954

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

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

Introduction

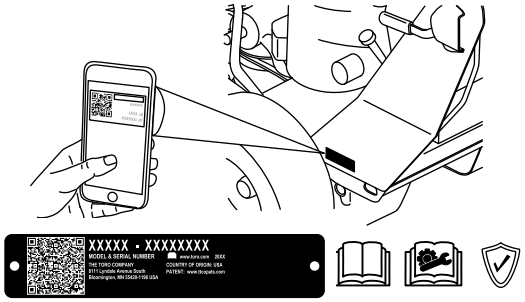
This rotary-blade lawn mower is intended to be used by professional, hired operators. It is designed primarily for cutting grass on well-maintained lawns on residential or commercial properties. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

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

Visit www.Toro.com for more information, including safety tips, training materials, accessory information, help finding a dealer, or to register your product.

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

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



g291703

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

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



g000502

Figure 2

Safety-alert symbol

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

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Safety

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

General Safety

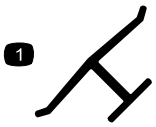
This product is capable of amputating hands and feet and of throwing objects. Always follow all safety instructions to avoid serious personal injury.

- Read, understand, and follow the instructions and warnings in this *Operator's Manual* and on the machine and attachments before starting the engine.
- Do not put your hands or feet near moving parts of or under the machine. Keep clear of any discharge opening.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.
- Keep bystanders and children out of the operating area. Do not allow children to operate the machine. Allow only people who are responsible, trained, familiar with the instructions, and physically capable to operate the machine.
- Stop the machine, shut off the engine, remove the ignition key (if equipped), and wait for all moving parts to stop 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.

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.

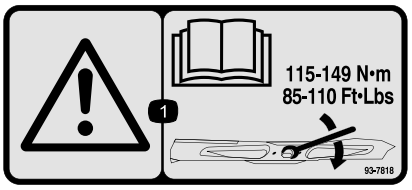


decalbatterysymbols

Battery Symbols

Some or all of these symbols are on your battery.

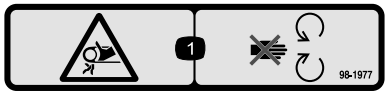
1. Explosion hazard
2. No fire, open flame, or smoking
3. Caustic liquid/chemical burn hazard
4. Wear eye protection.
5. Read the *Operator's Manual*.
6. Keep bystanders away from the battery.
7. Wear eye protection; explosive gases can cause blindness and other injuries.
8. Battery acid can cause blindness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



decal93-7818

93-7818

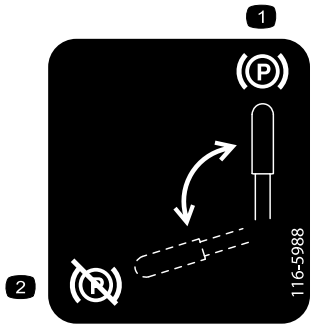
1. Warning—read the *Operator's Manual* for instructions on torquing the blade bolt/nut to 115 to 149 N·m (85 to 110 ft-lb).



decal98-1977

98-1977

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

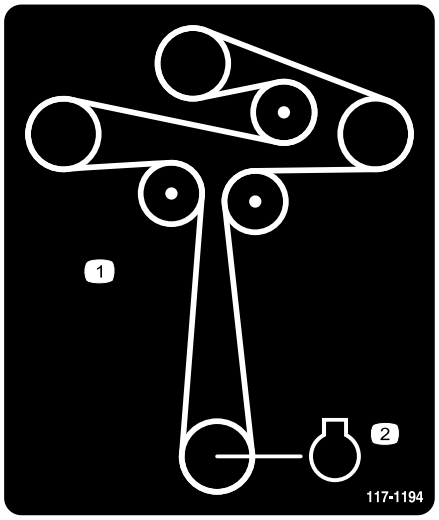


decal116-5988

116-5988

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

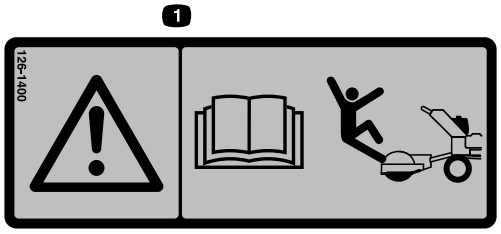
Decal 117-1194 is for 122cm (48-inch) models only.



decal117-1194

117-1194

1. Belt routing
2. Engine



decal126-1400

126-1400

1. Warning—read the *Operator's Manual* for information about attachments; certain attachments can cause you to fall.

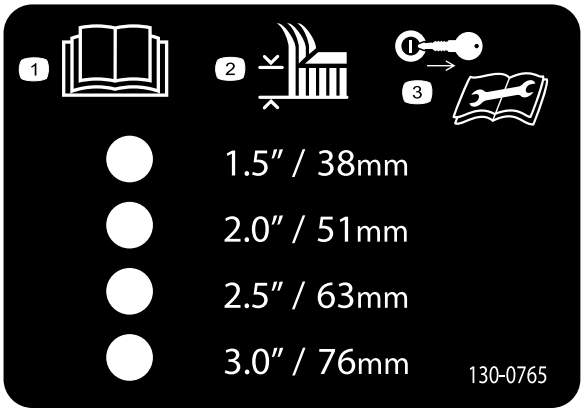


decal130-0731

130-0731

1. Warning—thrown object hazard; keep the deflector shield in place.
2. Cutting hazard of hand or foot, mower blade—keep away from moving parts.

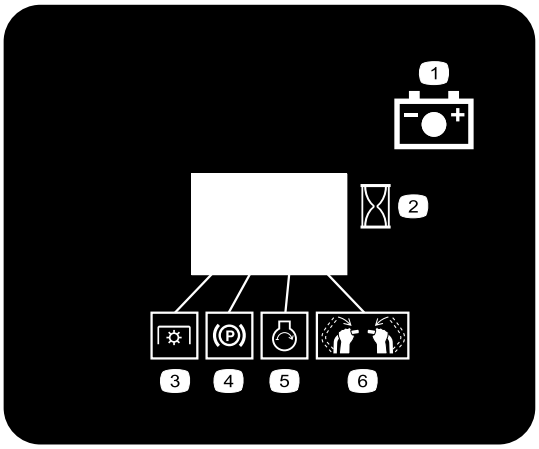
Decal 130-0765 is for 122cm (48-inch) models only.



decal130-0765

130-0765

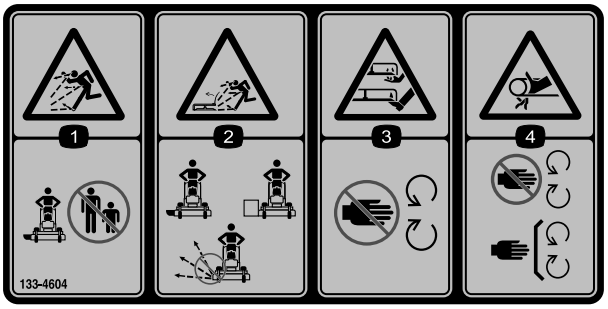
1. Read the *Operator's Manual*.
2. Height-of-cut selection
3. Remove the key before performing maintenance.



decal131-3536

131-3536

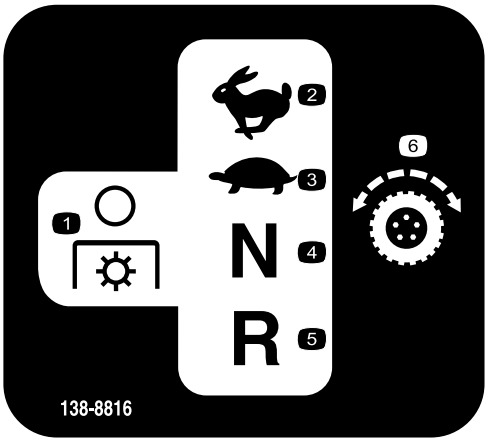
1. Battery
2. Time
3. Power takeoff (PTO)
4. Parking brake
5. Engine—start
6. Engage the handle bars.



decal133-4604

133-4604

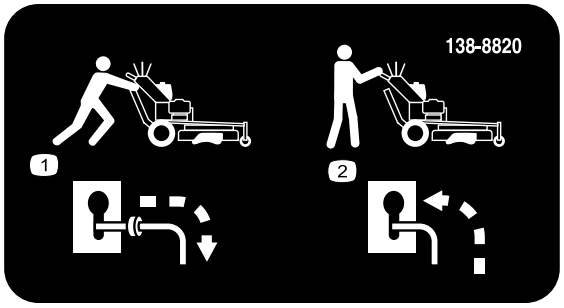
1. Thrown object hazard—keep bystanders away from the machine.
2. Thrown object hazard, open deflector—only operate the machine with a deflector or a grass collector.
3. Severing hazard of hand or foot—keep away from moving parts.
4. Entanglement hazard—keep away from moving parts; keep all guards and shields in place.



decal138-8816

138-8816

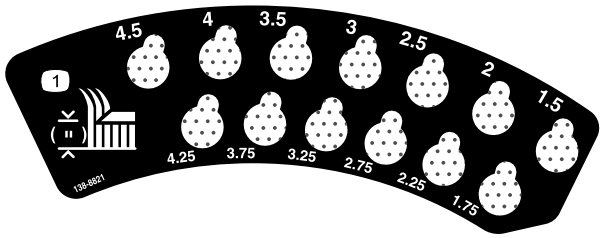
1. PTO—disengage
2. Fast
3. Slow
4. Neutral
5. Reverse
6. Traction controls



decal138-8820

138-8820

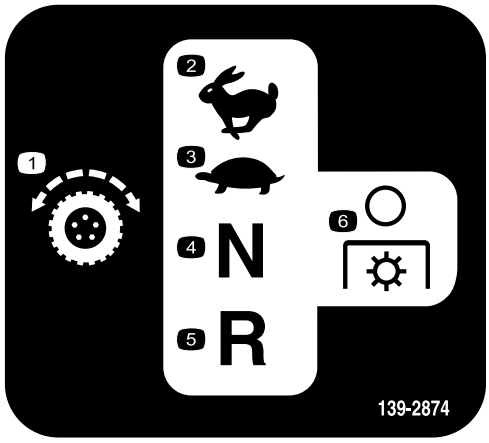
1. Disengage the hydrostatic drive to push the machine.
2. Engage the hydrostatic drive to operate the machine.



decal138-8821

138-8821

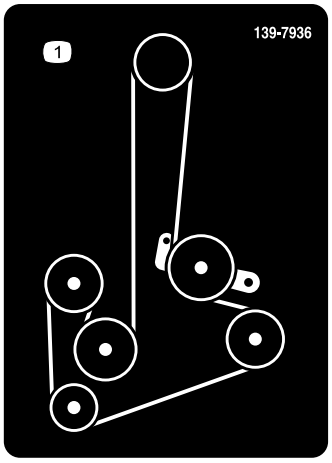
1. Height of cut



decal139-2874

139-2874

1. Traction controls
2. Fast
3. Slow
4. Neutral
5. Reverse
6. PTO—disengage

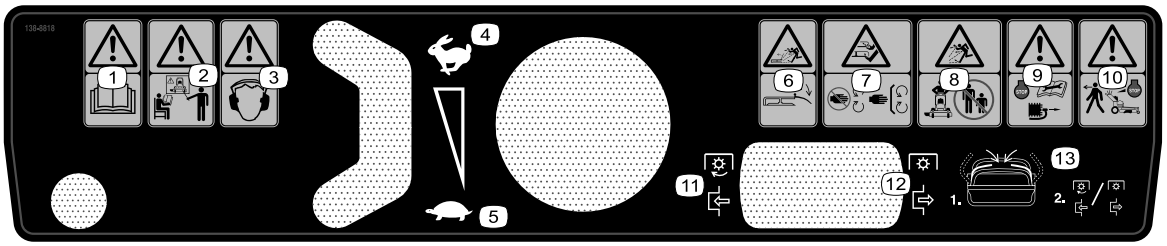


decal139-7936

139-7936

1. Belt routing

Decal 139-7936 is for 91cm (36-inch) models only.



decal138-8818

138-8818

1. Warning—read the *Operator's Manual*.
2. Warning—all operators should be trained before operating the machine.
3. Warning—wear hearing protection.
4. Fast
5. Slow
6. Thrown object hazard—lower the deflector before using the machine.
7. Cutting/dismemberment hazard of hand and foot; mower blade—stay away from moving parts; keep all guards and shields in place.
8. Thrown object hazard—keep bystanders away.
9. Warning—shut off the engine, disconnect the spark plug, and read the *Operator's Manual* before performing maintenance.
10. Warning—shut off the engine before leaving the machine.
11. PTO—engage
12. PTO—disengage
13. Move the traction control levers to the Neutral position; engage or disengage the PTO.

Product Overview

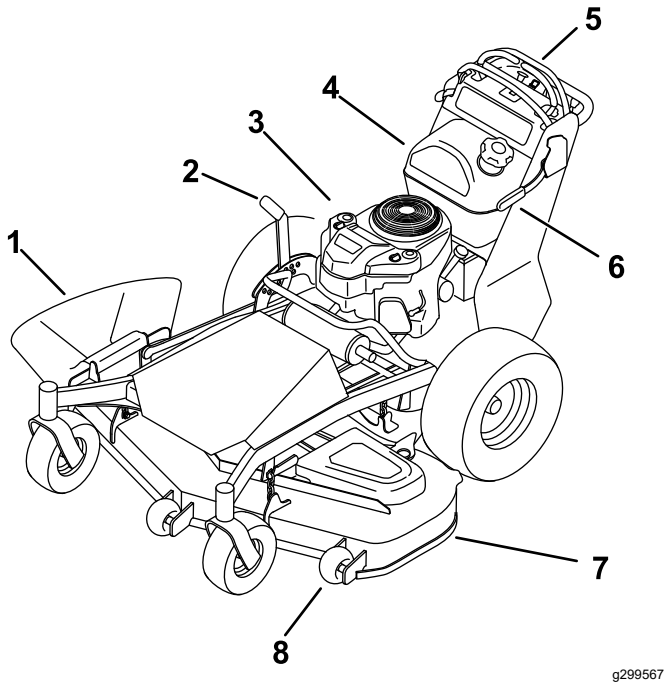


Figure 3

1. Side discharge
2. Height-of-cut lever
3. Engine
4. Fuel tank
5. Control panel
6. Parking-brake lever
7. Mower deck
8. Anti-scalp roller

Controls

Control Panel

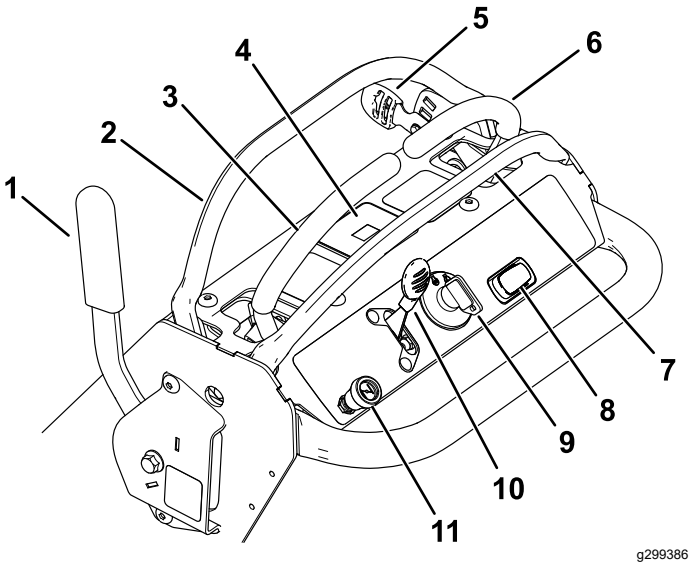


Figure 4

1. Parking-brake lever
2. Adjustable reference bar
3. Left motion-control lever
4. Hour meter
5. Reference bar adjustment lever
6. Right motion-control lever
7. Rear reference bar
8. Blade-control switch (PTO)
9. Key switch
10. Throttle control
11. Choke control

Throttle Control

The throttle controls the engine speed, and it has a continuous-variable setting from the SLOW to FAST position (Figure 4).

Blade-Control Switch (Power Takeoff)

The blade-control switch, represented by a power-takeoff (PTO) symbol, engages and disengages power to the mower blades (Figure 4).

Fuel-Shutoff Valve

Close the fuel-shutoff valve when transporting or storing the machine.

Key Switch

The key switch, used to start and shut off the engine, has 3 positions: OFF, RUN, and START.

Choke

Use the choke to start a cold engine.

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 5).

Safety-Interlock Indicators

There are symbols on the hour meter that indicate with a black triangle that the interlock component is positioned correctly (Figure 5).

Battery-Indicator Light

If you turn the key switch to the ON position for a few seconds, the battery voltage displays in the area where the hours are normally displayed (Figure 5).

The battery light turns on when the key switch is turned on and when the charge is below the correct operating level (Figure 5).

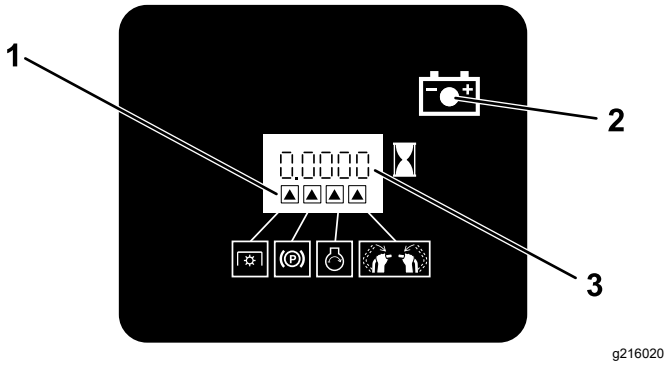


Figure 5

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

Motion-Control Levers

Use the motion-control levers to drive the machine forward, reverse, and turn either direction (Figure 3).

Reference Bar Adjustment Lever

Use the adjustment lever to change the position of the adjustable reference bar (Figure 4).

Specifications

Specifications and design are subject to change without notice.

	91cm (36-inch) Mower Deck	122 cm (48-inch) Mower Deck
Cutting width	91 cm (36 inches)	122 cm (48 inches)
Width with deflector down	94 cm (37 inches)	124 cm (49 inches)
Width with deflector up	130 cm (51 inches)	160 cm (63 inches)
Height	114 cm (45 inches)	117 cm (46 inches)
Length	196 cm (77 inches)	203 cm (80 inches)
Weight	270 kg (595 lb)	297 kg (654 lb)

Attachments/Accessories

A selection of Toro approved attachments and accessories is available for use with the machine to enhance and expand its capabilities. Contact your Authorized Service Dealer or authorized Toro distributor or go to www.Toro.com for a list of all approved attachments and accessories.

To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

Operation

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

Before Operation

Before Operation Safety

General Safety

- Do not 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.
- Always shut off the machine, remove the ignition key (if equipped), wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Know how to stop the machine and shut off the engine quickly.
- Check that operator-presence controls, safety switches, and safety protective devices are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- Inspect the area where you will use the machine, and remove all objects that could interfere with the operation of the machine or that the machine could throw.
- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job.
- Before using, always visually inspect to see that the blades, blade bolts and mower deck are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.

Fuel Safety

- Use extreme care in handling fuel. It is flammable and its vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or add fuel to the tank while the engine is running or hot.
- Do not add or drain fuel in an enclosed space.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.
- If you spill fuel, do not attempt to start the engine; avoid creating a source of ignition until the fuel vapors have dissipated.
- 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 the vehicle before filling.
- Remove equipment from the truck or trailer and refuel it on the ground. If this is not possible, refuel such equipment with a portable container rather than from a fuel-dispenser nozzle.
- Keep the nozzle in contact with the rim of the fuel tank or container operating at all times until fueling is complete.

Adding Fuel

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 you use a fuel stabilizer.
- **Do not** add oil to gasoline.

Using Stabilizer/Conditioner

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

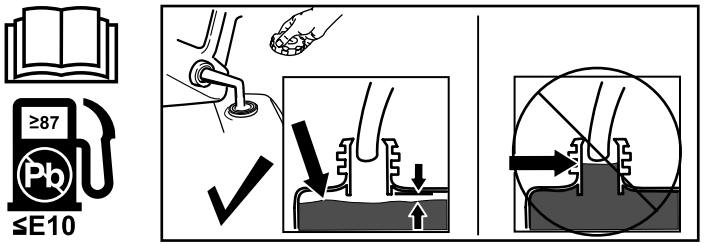
- Keeps fuel fresh longer when used as directed by the fuel-stabilizer manufacturer
- Cleans the engine while it runs
- Eliminates gum-like varnish buildup in the fuel system, which causes hard starting

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

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

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

Filling the Fuel Tank



g302021

Figure 6

Using the Safety-Interlock System

⚠ WARNING

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.**

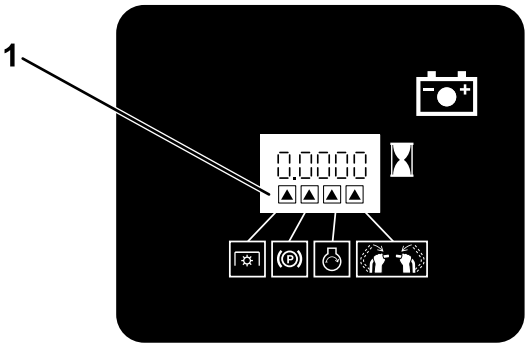
Understanding the Safety-Interlock System

The safety-interlock system is designed to prevent PTO from engaging unless you do the following:

- Move either motion-control lever to the center, unlocked position.
- Move the PTO switch to the ON position.

The safety-interlock system is designed to stop the blades/attachment if you move or release both motion-control levers outward.

The hour meter has symbols to notify the user when each interlock component is in the correct position. When the component is in the correct position, a triangle lights up in the corresponding square (Figure 7).



G031282

g031282

Figure 7

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

Testing the Safety-Interlock System

Service Interval: Before each use or daily

Test the safety-interlock system before you use the machine each time.

Note: If the safety system does not operate as described below, have an Authorized Service Dealer repair the safety system immediately.

1. Engage the parking brake and start the engine.
2. Move the motion-control levers to the center, unlocked position.

   Note: The engine should shut off.
3. Start the engine and disengage the parking brake. Do not move the motion-control levers.

   Note: The engine should idle and then shut off within 5 seconds.
4. Engage the parking brake and start the engine.
5. Press the ON position for the PTO switch.

   Note: The mower blades should not engage.
6. Disengage the parking brake.
7. Hold either motion-control lever in the center position and press the ON position for the PTO switch.

   Note: The mower blades should engage.
8. Release the motion-control lever.

   Note: The engine should idle and then shut off within 5 seconds.
9. Engage the parking brake and start the engine.
10. Disengage the parking brake.
11. Hold either motion-control lever to the center position and press the ON position for the PTO switch.

Note: The mower blades should engage.

12. Press the OFF position for the PTO switch.

    Note: The mower blades should disengage.

13. Press the ON position for the PTO switch.

    Note: The mower blades should engage.

14. Engage the parking brake.

    Note: The mower blades should disengage and the engine should shut off.

15. Press the ON position for the PTO switch.
16. Try starting the engine.

    Note: The engine should not crank.

Performing Daily Maintenance

Before starting the machine each day, perform the Each Use/Daily procedures listed in Maintenance (page 22).

During Operation

During Operation Safety

General Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; long pants; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear loose clothing or loose jewelry.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Before you start the engine, ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position.
- Keep bystanders out of the operating area. Stop the machine if anyone enters the area.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.
- Wet grass or leaves can cause serious injury if you slip and contact the blade. Avoid mowing in wet conditions.
- Keep your hands and feet away from the cutting unit.
- Look behind and down before backing up to be sure of a clear path.
- Use extreme care when approaching blind corners, shrubs, trees, or other objects that may block your view.
- Disengage the drive to the cutting unit and engage the parking brake before adjusting the height of cut.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is lethal if inhaled.
- Do not leave a running machine unattended.
- Before leaving the operating position (including to empty the catchers or to unclog the cutting units), do the following:
  - Park the machine on level ground.
  - Disengage the cutting unit and lower the attachments.
  - Engage the parking brake.
  - Shut off the machine and remove the ignition key (if equipped).
  - Wait for all moving parts to stop.
  - Shut off the machine and disengage the drive to the cutting unit in the following situations:
    - ◊ Before fueling
    - ◊ Before clearing blockages
    - ◊ Before checking, cleaning, or maintaining the cutting unit
    - ◊ After striking a foreign object or if an abnormal vibration occurs. Inspect the cutting unit for damage and make repairs before starting and operating the machine
    - ◊ Before leaving the operating position
  - Use only accessories and attachments approved by The Toro® Company.
  - Be sure of your footing while using this machine, especially when backing up. Walk; do not run.
  - Never operate with the discharge deflector raised, removed or altered, unless you are using a grass catcher.
  - Never carry passengers on the machine.
  - Do not direct the discharge material toward anyone. Avoid discharging material against a wall or obstruction; material may ricochet toward you. Stop the blade(s) when crossing gravel surfaces.
  - Start the engine carefully according to instructions and with your feet well away from

the blade(s) and not in front of the discharge chute.

- Use extreme caution when reversing or pulling the machine toward you.
- Stop the blade if you must transport the machine to and from the mowing area and when crossing surfaces other than grass.

Slope Safety

- Slopes are a major factor related to loss of control and rollover accidents, which can result in severe injury or death. You are responsible for safe slope operation. Operating the machine on any slope requires extra caution. Before using the machine on a slope, do the following:
  - Review and understand the slope instructions in the manual and on the machine.
  - Evaluate the site conditions of the day to determine if the slope is safe for machine operation. Use common sense and good judgment when performing this evaluation. Changes in the terrain, such as moisture, can quickly affect the operation of the machine on a slope.
- Operate across slopes, never up and down. Avoid operation on excessively steep or wet slopes. Poor footing could cause a slip-and-fall accident.
- Identify hazards at the base of the slope. Do not operate the machine near drop-offs, ditches, embankments, water, or other hazards. The machine could suddenly roll over if a wheel goes over the edge or the edge collapses. Keep a safe distance between the machine and any hazard. Use a handheld tool to operate in these areas.
- Avoid starting, stopping, or turning the machine on slopes. Avoid making sudden changes in speed or direction; turn slowly and gradually.
- Do not operate a machine under any conditions where traction, steering or stability is in question. Be aware that operating the machine on wet grass, across slopes or downhill may cause the machine to lose traction. Loss of traction to the drive wheels may result in sliding and a loss of braking and steering. The machine can slide even if the drive wheels are stopped.
- Remove or mark obstacles such as ditches, holes, ruts, bumps, rocks, or other hidden hazards. Tall grass can hide obstacles. Uneven terrain could overturn the machine.
- If you lose control of the machine, step away from the direction of travel of the machine.
- Always keep the machine in gear when going down slopes. Do not coast downhill (applicable only to gear-drive units).

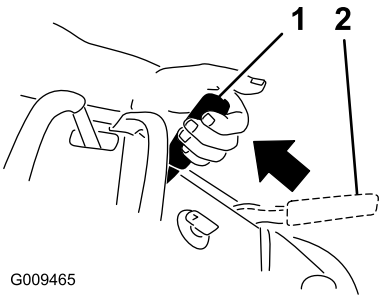
Operating the Parking Brake

Always engage the parking brake when you shut off the machine or leave the operator position. Before each use, check the parking brake for proper operation.

Pull the parking-brake lever rearward to engage it (Figure 8).

Push the parking-brake lever forward to disengage it.

Note: The engine shuts off if you move the motion-control levers while the parking brake is engaged or if the machine idles for 5 seconds while the parking brake is disengaged.



g009465

Figure 8

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

Starting the Engine

Note: If you release the motion-control levers and do not engage the parking brake, the engine will shut off after 5 seconds.

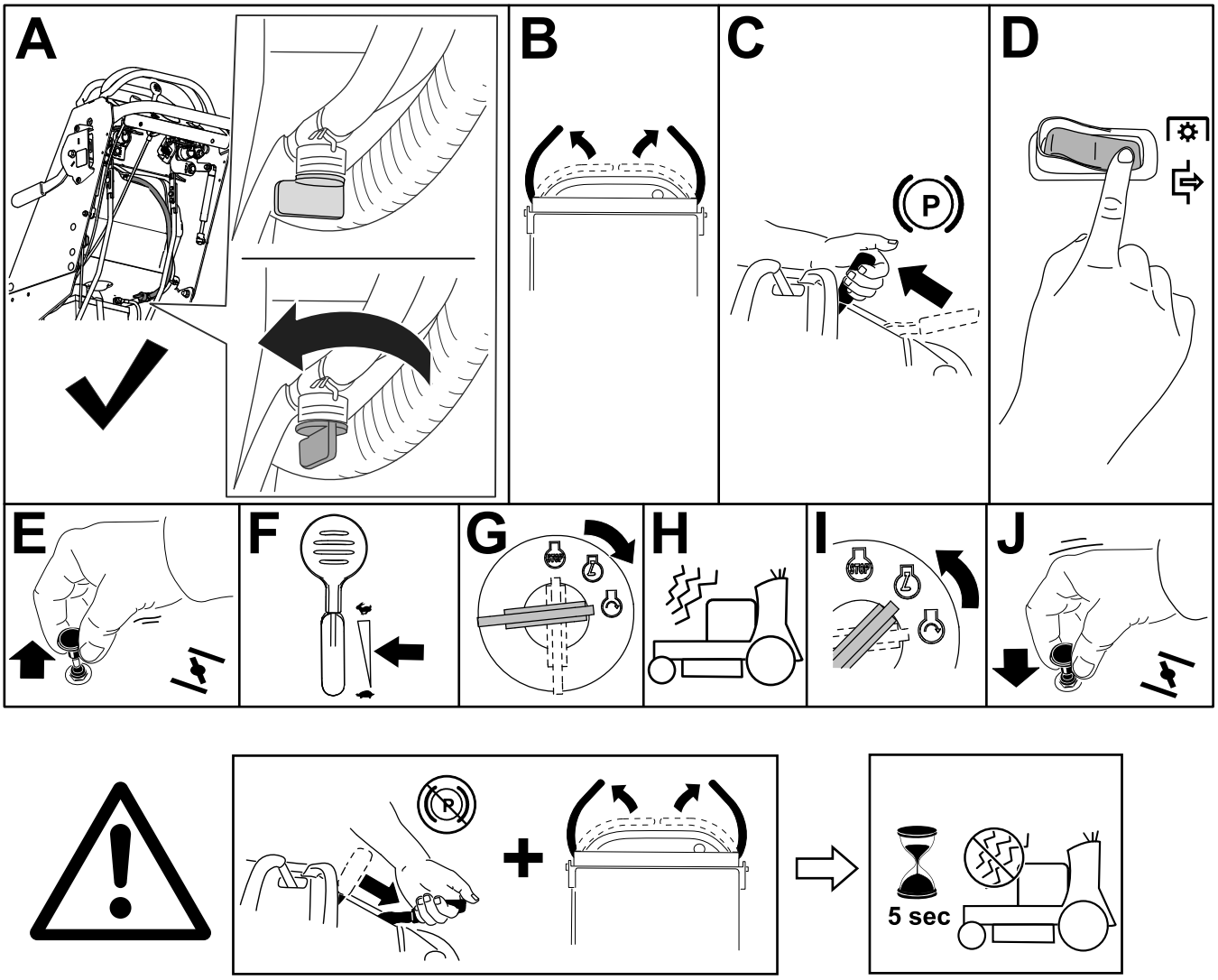


Figure 9

Shutting Off the Engine

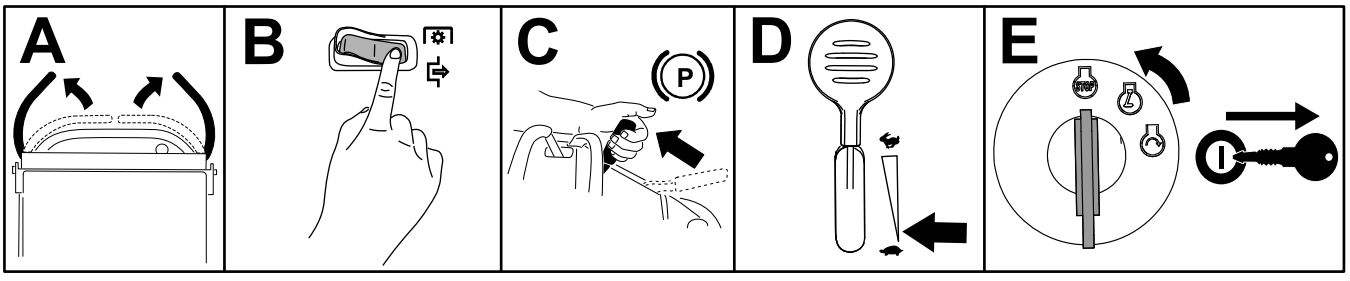
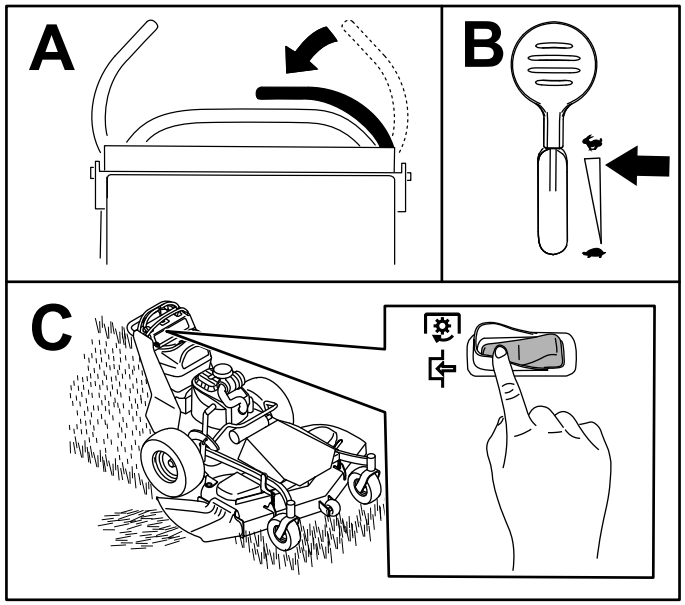


Figure 10

Operating the Mower-Blade-Control Switch (PTO)

Use the blade-control switch (PTO) in conjunction with the motion-control levers to engage and disengage the mower blades.

Engaging the Mower Blades (PTO)

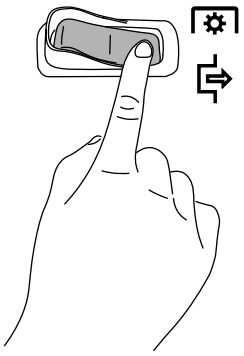


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Figure 11

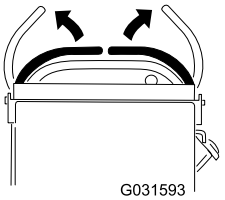
Disengaging the Mower Blades (PTO)

Figure 12 and Figure 13 show 2 ways to disengage the mower blades.



g299432

Figure 12



g031593

Figure 13

Driving the Machine

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.

Note: The engine shuts off if you move the motion-control levers while the parking brake is engaged or if the machine idles for 5 seconds while the parking brake is disengaged.

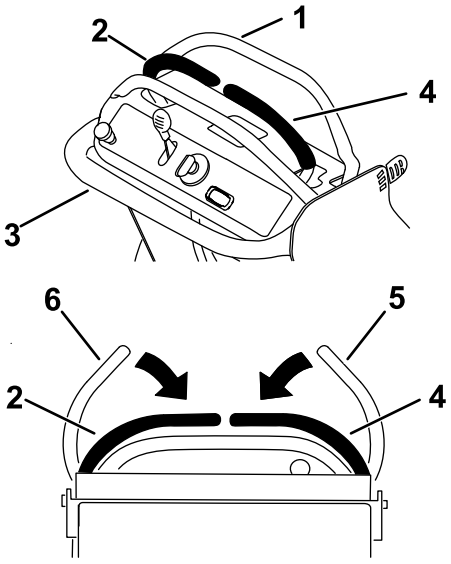
⚠ CAUTION

The machine can spin very rapidly, and you may lose control of the machine, causing personal injury to you and damage to the machine.

Slow down the machine before making sharp turns.

Driving Forward

1. Disengage the parking brake; refer to Operating the Parking Brake (page 13).
2. Move the motion-control levers down to the NEUTRAL position.



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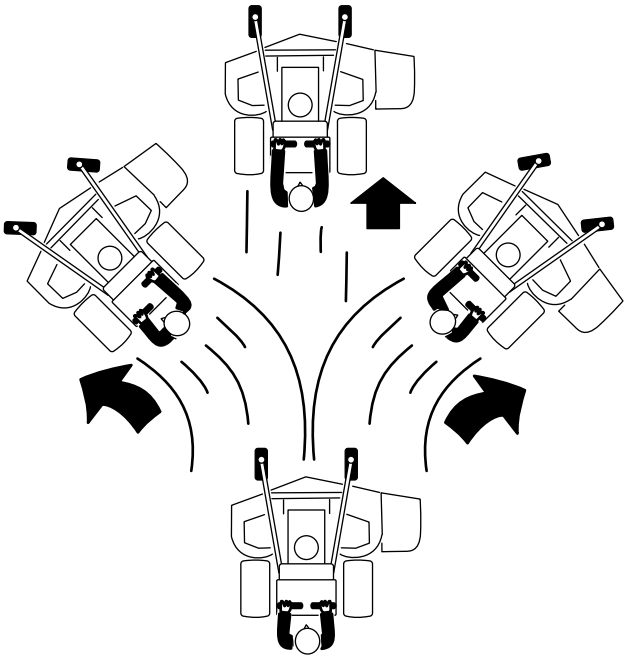
Figure 14

1. Front reference bar
2. Left control lever in NEUTRAL position
3. Rear reference bar
4. Right control lever in NEUTRAL position
5. Right control lever when released
6. Left control lever when released

3. Slowly push the motion-control levers forward (Figure 15).

Note: The farther you move the motion-control levers in either direction, the faster the machine moves in that direction.

Note: To stop, move the motion-control levers back to the NEUTRAL position.

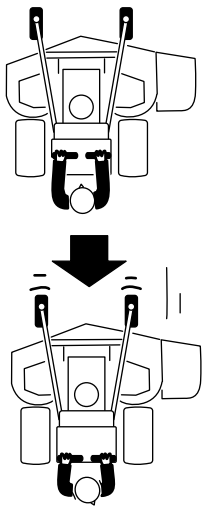


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Figure 15

Driving Backward

1. Move both motion-control levers to the NEUTRAL position.
2. Slowly pull the motion-control levers rearward (Figure 16).



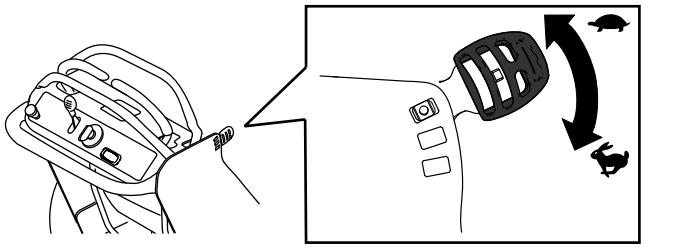
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Figure 16

Using the Adjustable Reference Bar

Use the adjustment lever to change the position of the adjustable reference bar and limit the maximum forward speed (Figure 17).

Move the lever to the upper position to decrease the maximum speed; move the lever to the lower position to increase the maximum speed.



g299434

Figure 17

Side Discharging or Mulching Grass

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

⚠ DANGER

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

- **Never remove the grass deflector from the mower deck, because the grass deflector routes material down toward the turf. If the grass deflector is damaged, replace it immediately.**
- **Never put your hands or feet under the mower deck.**
- **Never try to clear the discharge area or mower blades before you disengage the mower blades. Turn the ignition key to the OFF position. Remove the key and disconnect the spark-plug wires.**

Adjusting the Height of Cut

You can adjust the height of cut from 38 to 114 mm (1-1/2 to 4-1/2 inches) in 6 mm (1/4 inch) increments.

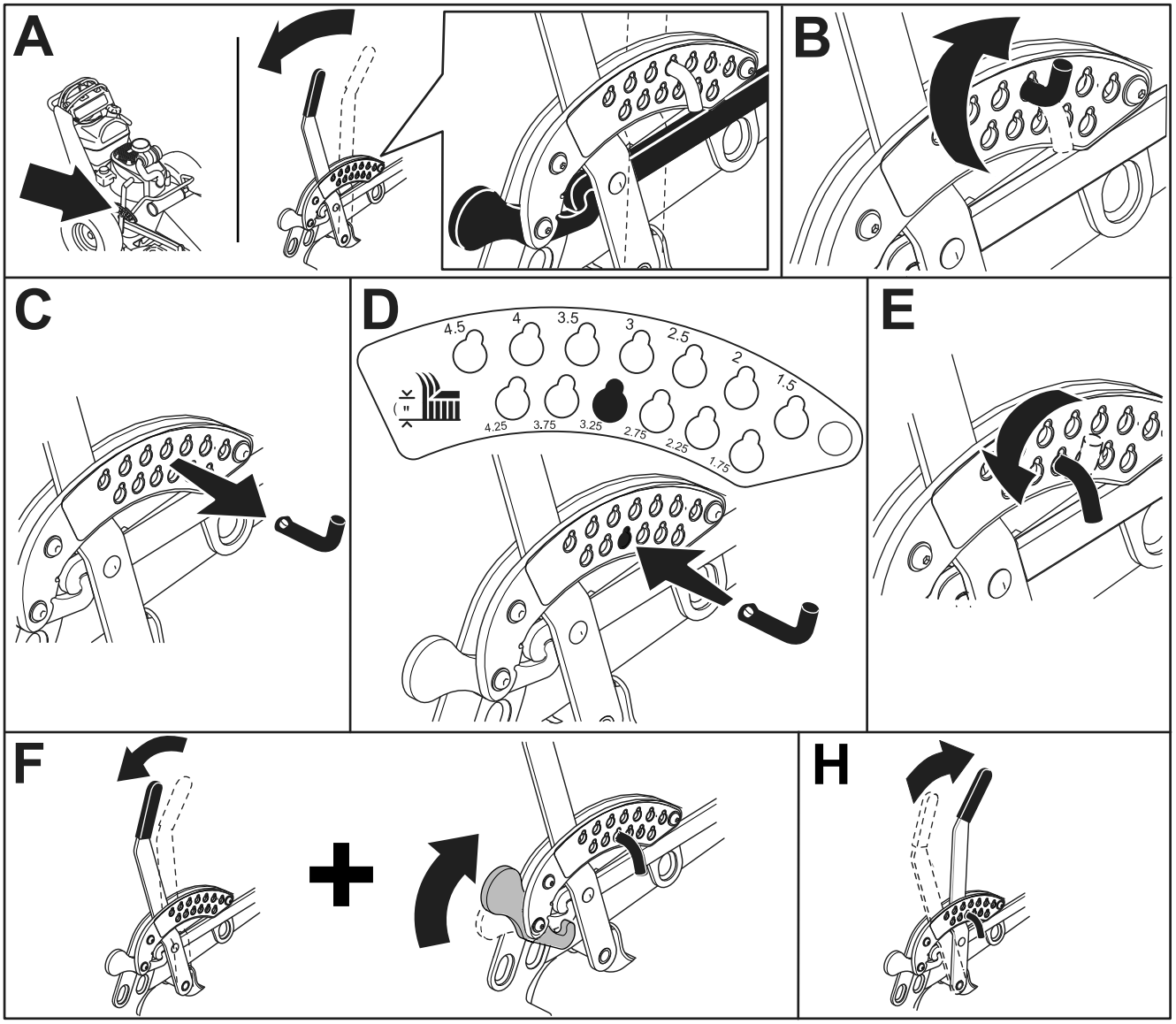


Figure 18

Adjusting the Anti-Scalp Rollers

Models with a 122 cm (48 inch) Deck Only

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

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the nut and bolt position the anti-scalp rollers and install the nut and bolt.
4. Ensure that the spacers and bushings are installed (Figure 19).

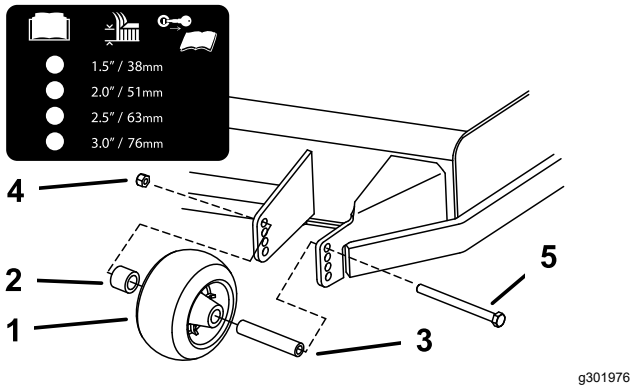


Figure 19

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

After Operation

After Operation Safety

General Safety

- Always shut off the machine, remove the ignition key (if equipped), wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Clean grass and debris from the machine to help prevent fires. Clean up oil or fuel spills.
- 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.
- Use full-width ramps for loading the machine into a trailer or truck.
- Tie the machine down securely using straps, chains, cable, or ropes. Direct both front and rear straps down and outward from the machine.

Using the Fuel-Shutoff Valve

Close the fuel-shutoff valve for transport, maintenance, and storage (Figure 20).

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

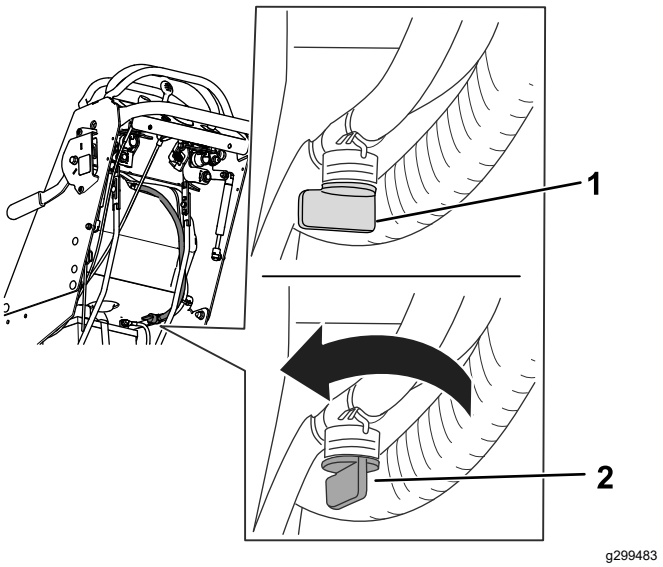


Figure 20

1. OFF position
2. ON position

Pushing the Machine by Hand

Important: **Always push the machine by hand. Do not tow the machine, because towing may damage it.**

Important: **Do not start or operate the machine with the bypass valves open. Damage to system may occur.**

Pushing the Machine

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Locate the bypass levers on the frame on both sides of the engine.
4. Move the bypass levers rearward through the key hole and down to lock them in place (Figure 21).

   Note: Do this for each lever.
5. Disengage the parking brake.

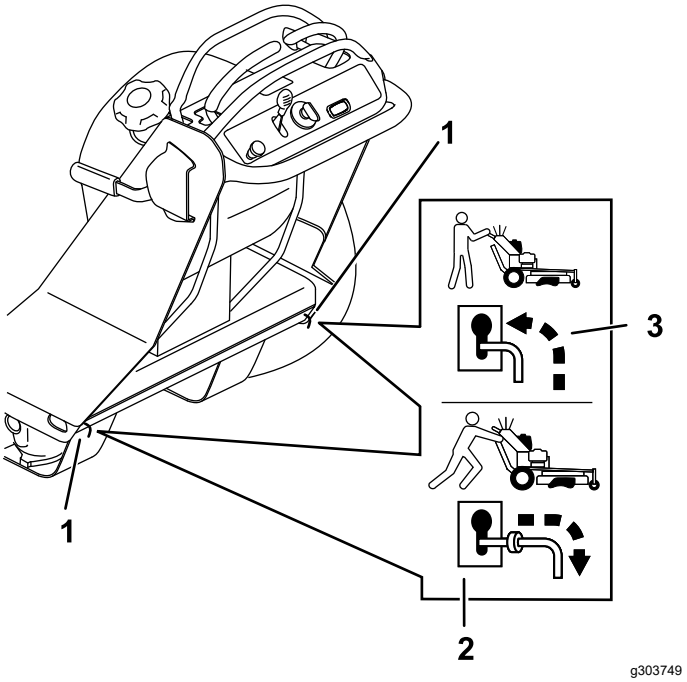


Figure 21

1. Bypass-lever locations
2. Lever position for operating the machine
3. Lever position for pushing the machine

6. When finished, engage the parking brake.

Operating the Machine

Move the bypass levers forward through the keyhole and down to lock them in place as shown in Figure 21.

Note: Do this for each lever.

Transporting the Machine

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

⚠ WARNING

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

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

Selecting a Trailer

⚠ WARNING

Loading a machine onto a trailer or truck increases the possibility of tip-over and could cause serious injury or death (Figure 22).

- **Use only a full-width ramp; do not use individual ramps for each side of the machine.**
- **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.**

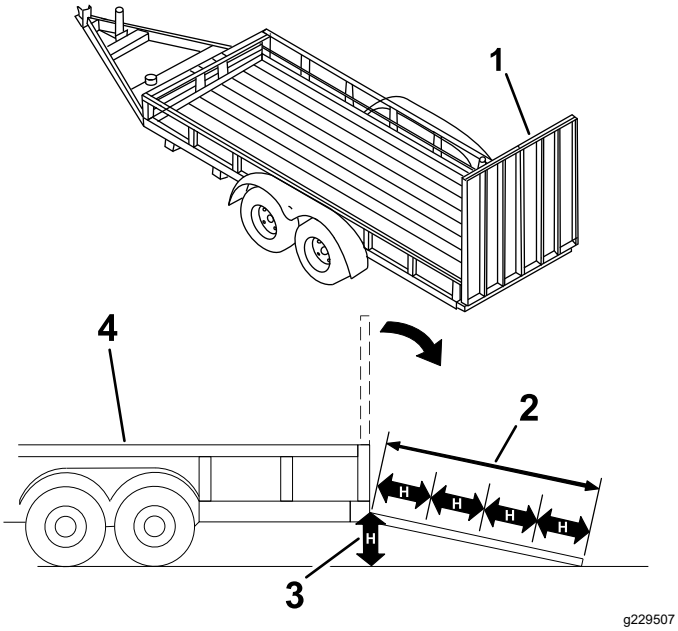


Figure 22

1. Full-width ramp in stowed position
2. Ramp is at least 4 times as long as the height of the trailer or truck bed to the ground
3. H=height of the trailer or truck bed to the ground
4. Trailer

Loading the Machine

⚠ WARNING

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

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

1. If using a trailer, connect it to the towing vehicle and connect the safety chains.
2. If applicable, connect the trailer brakes and lights.
3. Lower the ramp (Figure 22).
4. Back the machine up the ramp (Figure 23).

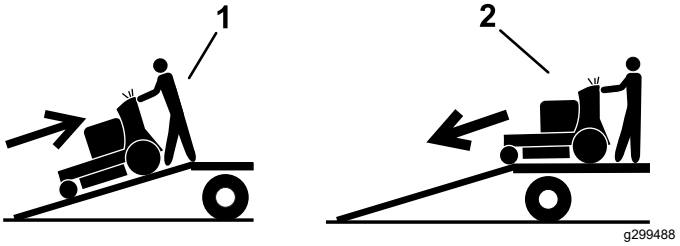


Figure 23

1. Back the machine up the ramp.
2. Walk the machine down the ramp.

5. Shut off the engine, remove the key, and engage the parking brake.
6. Tie down the machine near the front caster wheels and the rear bumper with straps, chains, cable, or ropes (Figure 24). Refer to local regulations for tie-down requirements.

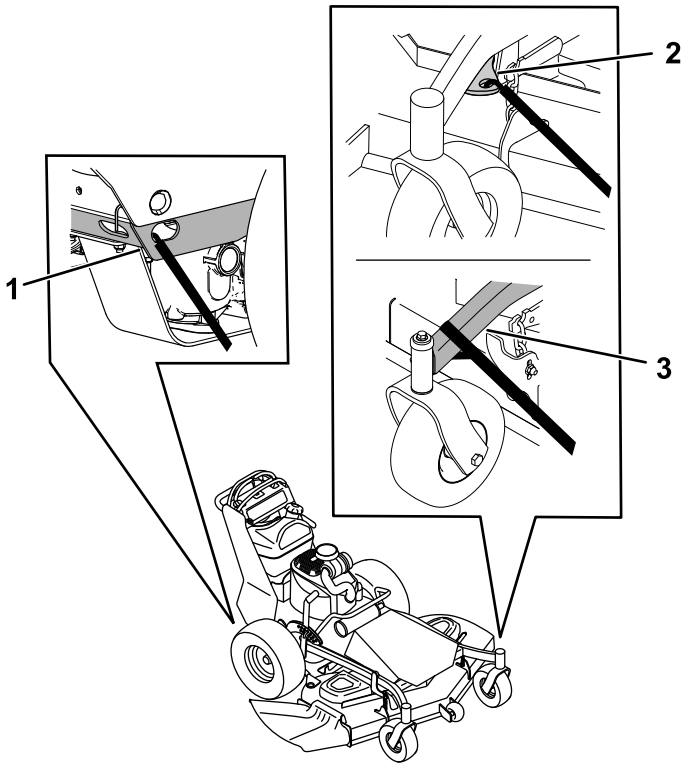


Figure 24

1. Rear tie-down loop
2. Front tie-down loop for 122, 137, and 152 cm (48, 54, and 60 inch) machines
3. Tie down the front caster frame for 91 cm (36 inch) machines.

Maintenance

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

Maintenance Safety

- Before adjusting, cleaning, servicing, or leaving the machine, do the following:
  - Park the machine on a level surface.
  - Move the throttle switch to the low-idle position.
  - Disengage the cutting units.
  - Ensure that the transmission is in neutral.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all moving parts to stop.
  - Allow machine components to cool before performing maintenance.
- Do not allow untrained personnel to service the machine.
- If the engine must be running to perform a maintenance adjustment, keep your hands, feet, clothing, and any parts of the body away from the cutting unit, attachments, and any moving parts. Keep bystanders away.
- Keep all parts in good working condition. Replace all worn, damaged, or missing parts and decals. Keep all fasteners tight to ensure that the machine is in safe working condition.
- Check the grass catcher components frequently and replace them when they are worn or damaged.
- Clean grass and debris from the cutting unit, drives, muffler, cooling screen, and the engine to help prevent fires. Clean up oil or fuel spills.
- Check the brake operation frequently. Adjust and service the brake as needed.
- Carefully release pressure from components with stored energy.
- To ensure safe, optimal performance of the machine, use only genuine Toro replacement parts. Replacement parts made by other manufacturers could be dangerous, and such use could void the product warranty.

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 8 hours	• Change the engine oil.
After the first 50 hours	• Change the hydraulic-system filters and fluid.
After the first 100 hours	• Check the wheel-lug nuts.
Before each use or daily	• Check the safety-interlock system. • Check the engine-oil level. • Clean the air-intake screen. • Clean the grass and debris from the air-intake screen. • Test the parking brake. • Inspect the blades. • Inspect the grass deflector for damage. • Clean the mower deck.
Every 25 hours	• Grease the caster wheel bearings. • Clean the foam air-cleaner element. • Check the belts for wear or cracks.
Every 50 hours	• Check the paper air-cleaner element. • Check the hydraulic fluid.
Every 100 hours	• Change the engine oil. • Check, clean and gap the spark plug. • Check the battery. • Check and clean the engine-cooling fins and shrouds.
Every 200 hours	• Replace the paper air-cleaner element. • Change the engine-oil filter.

Maintenance Service Interval	Maintenance Procedure
Every 300 hours	• Check and adjust the valve clearance. Contact an Authorized Service Dealer.
Every 500 hours	• Adjust the caster-pivot bearing. • After the initial change—change the hydraulic-system filters and fluid when using Toro® HYPR-OIL™ 500 fluid. (Change it more often under dirty or dusty conditions)
Every 800 hours	• Replace the fuel filter.
Yearly	• Grease the front caster pivots (more often in dirty or dusty conditions). • Check the mower deck idler arm for wear. • Inspect the blade bolts and curved washers. Replace if damaged.

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

⚠ CAUTION

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

Shut off the engine and remove the key from the switch before you perform any maintenance.

Pre-Maintenance Procedures

Removing the Mower Deck Guards

Machines with 91cm (36-inch) Decks

1. Park the machine on a level surface, disengage the blade-control switch (PTO), and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the 2 bolts securing the deck cover and remove the deck cover (Figure 25).

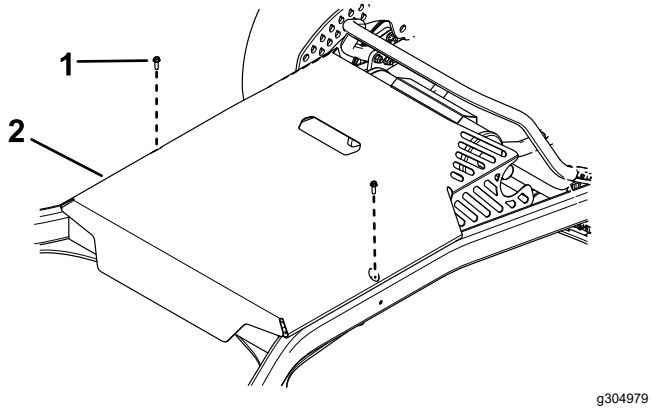


Figure 25

1. Bolt (2)
2. Deck cover

4. Remove the 4 bolts securing the deck guard and remove the guard (Figure 26).

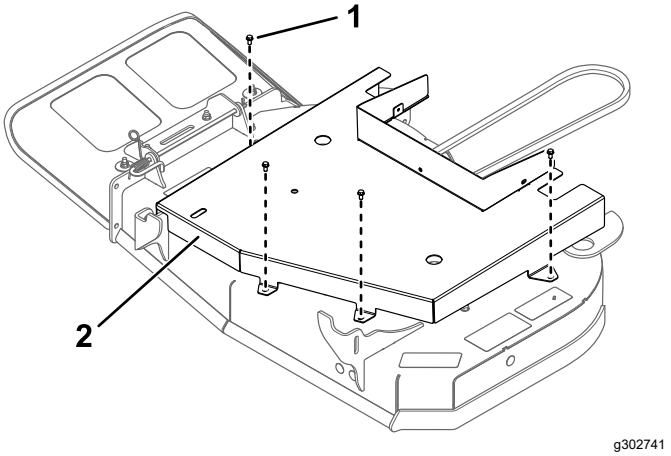


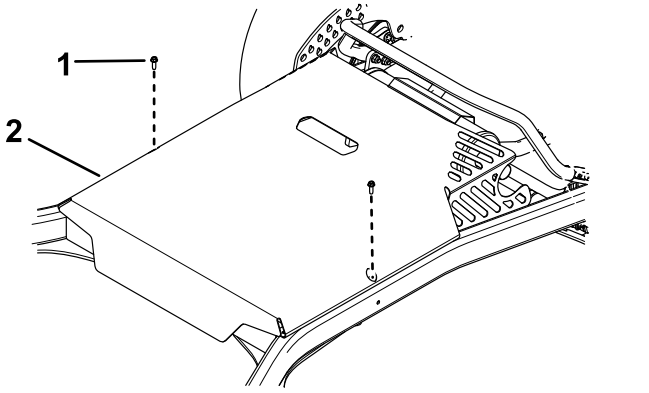
Figure 26

1. Bolt
2. Deck guard

5. Reverse the procedure to install the guards.

Machines with 122cm (48-inch) Decks

1. Park the machine on a level surface, disengage the blade-control switch (PTO), and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the 2 bolts securing the deck cover and remove the deck cover (Figure 27).

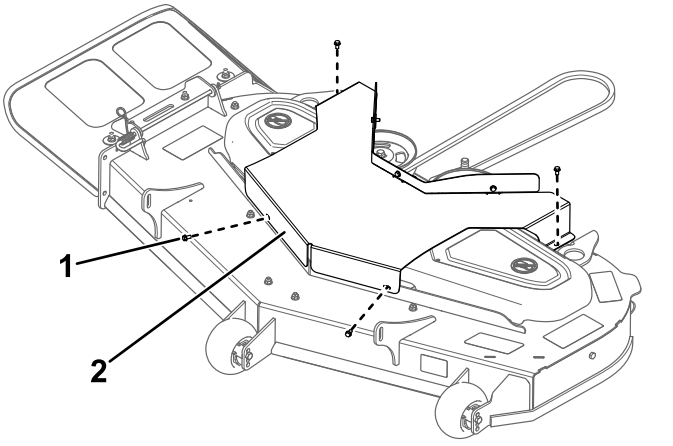


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Figure 27

1. Bolt (2)
2. Deck cover

4. Remove the 4 bolts securing the deck guard and remove the guard (Figure 28).



g302739

Figure 28

1. Bolt (4)
2. Deck guard

5. Reverse the procedure to install the guards.

Lubrication

Greasing the Machine

Grease the machine more often in dirty or dusty conditions.

Grease Type: No. 2 lithium or molybdenum grease

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

   Note: Scrape any paint off the front of the fitting(s).
4. Pump grease into the fittings until grease begins to ooze out of the bearings.
5. Wipe up any excess grease.

Greasing the Front Caster Pivots

Service Interval: Yearly

Grease type: Lithium or molybdenum grease

1. Remove the dust cap and adjust the caster pivots; refer to Adjusting the Caster-Pivot Bearing (page 35).

   Note: Keep the dust cap off until you have finished greasing the caster pivots.
2. Remove the hex plug.
3. Thread a grease fitting into the hole.
4. Pump grease into the fitting until it oozes out around the top bearing.
5. Remove the grease fitting from the hole.
6. Install the hex plug and dust cap.

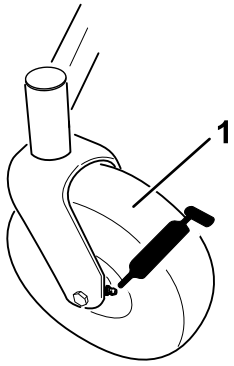
Greasing the Caster Wheel Bearings

Service Interval: Every 25 hours—Grease the caster wheel bearings.

Grease Type: No. 2 lithium grease

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the grease fittings (Figure 29) with a rag.

   Note: Scrape any paint off the front of the fitting(s).



g301977

Figure 29

1. Front caster grease fitting

4. Connect a grease gun to each fitting (Figure 29).
5. Pump grease into the fittings until grease begins to ooze out of the bearings.
6. Wipe up any excess grease.

Engine Maintenance

Engine Safety

- Do not change the governor speed or overspeed the engine.
- Run the engine dry or remove the fuel with a hand pump; never siphon the fuel. If you must drain the fuel tank, do it outdoors.

Servicing the Air Cleaner

Service Interval: Every 25 hours—Clean the foam air-cleaner element.

Every 50 hours—Check the paper air-cleaner element.

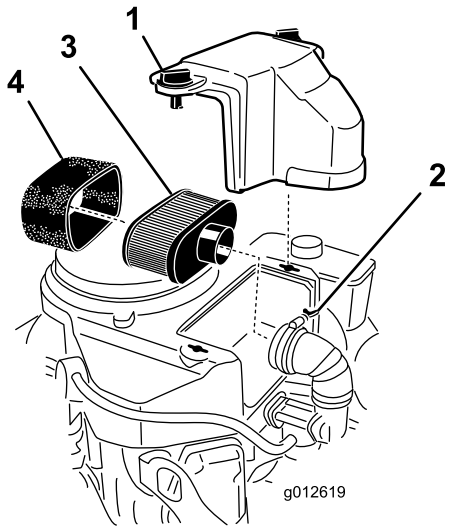
Every 200 hours—Replace the paper air-cleaner element.

Note: Service the air cleaner more frequently (every few operating hours) if the operating conditions are extremely dusty or sandy.

Important: **Do not apply oil to the foam or paper element.**

Removing the Foam and Paper Elements

1. Park the machine on a level surface, 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.
3. Clean the area around the air cleaner to prevent dirt from entering the engine and causing damage (Figure 30).
4. Unscrew the cover knobs and remove the air-cleaner cover (Figure 30).
5. Unscrew the hose clamp and remove the air-cleaner assembly (Figure 30).
6. Carefully pull the foam element off the paper element (Figure 30).



g012619

Figure 30

1. Cover
2. Hose clamp
3. Paper element
4. Foam element

Cleaning the Foam Air-Cleaner Element

1. Wash the foam element in liquid soap and warm water. When the element is clean, rinse it thoroughly.
2. Dry the element by squeezing it in a clean cloth.

   Important: **Replace the foam element if it is torn or worn.**

Servicing the Paper Air-Cleaner Element

Important: **Do not clean the paper filter, replace it (Figure 30).**

1. Inspect the element for tears, an oily film, or damage to the rubber seal.
2. Replace the paper element if it is damaged.

Installing the Foam and Paper Elements

Important: **To prevent engine damage, always operate the engine with the complete foam and paper air-cleaner assembly installed.**

1. Carefully slide the foam element on to the paper air-cleaner element (Figure 30).
2. Place the air-cleaner assembly onto the air cleaner base and secure it with the 2 wing nuts (Figure 30).
3. Place the air-cleaner cover into position and tighten the cover knob (Figure 30).

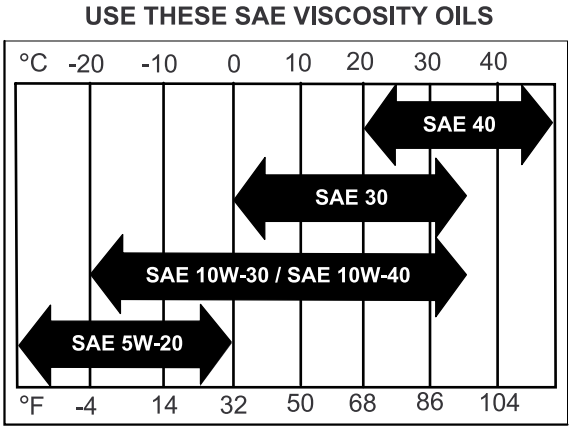
Servicing the Engine Oil

Engine-Oil Specifications

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

Engine Oil Capacity: 1.5 L (51 fl oz) without filter; 1.7 L (57 fl oz) with filter

Viscosity: Refer to the table below.



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Figure 31

Checking the Engine-Oil Level

Service Interval: Before each use or daily

Note: Check the oil when the engine is cold.

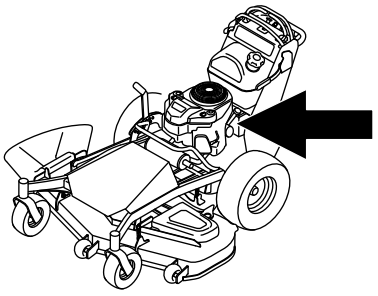
⚠ WARNING

Contact with hot surfaces may cause personal injury.

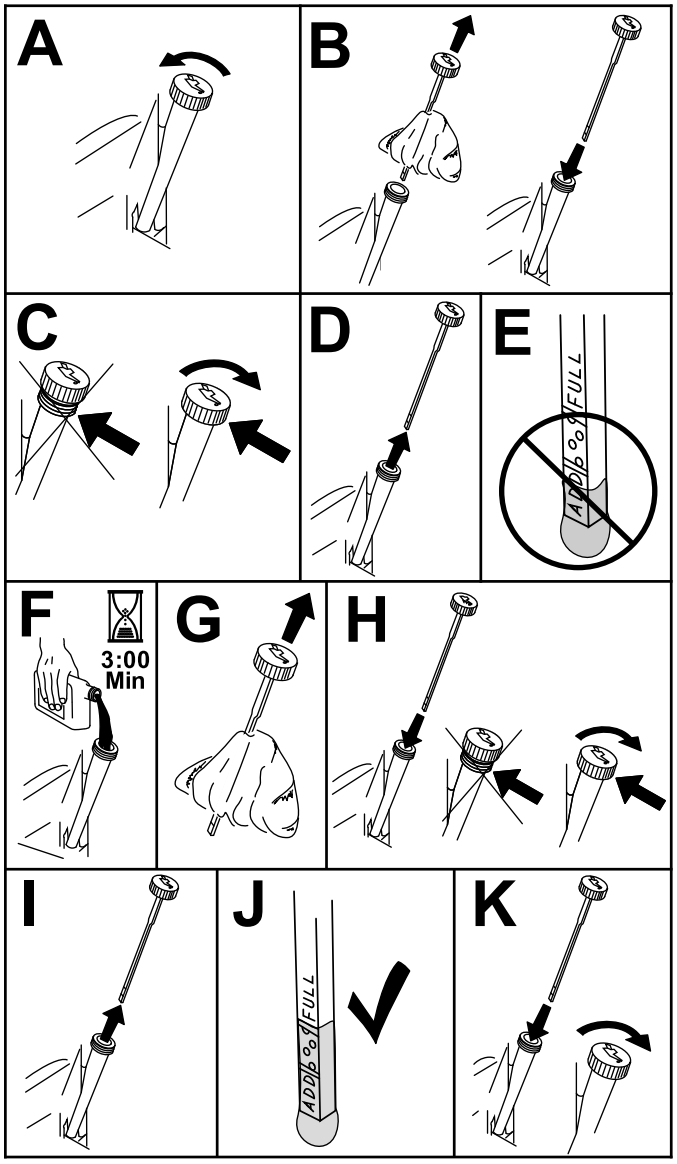
Keep your hands, feet, face, clothing and other body parts away the muffler and other hot surfaces.

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 PTO, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Check the engine-oil level as shown in (Figure 32).



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g311705

Figure 32

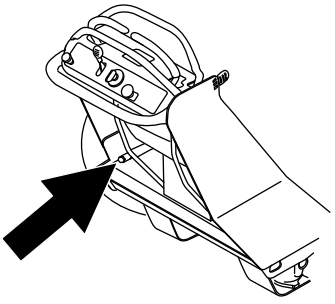
Changing the Engine Oil

Service Interval: After the first 8 hours

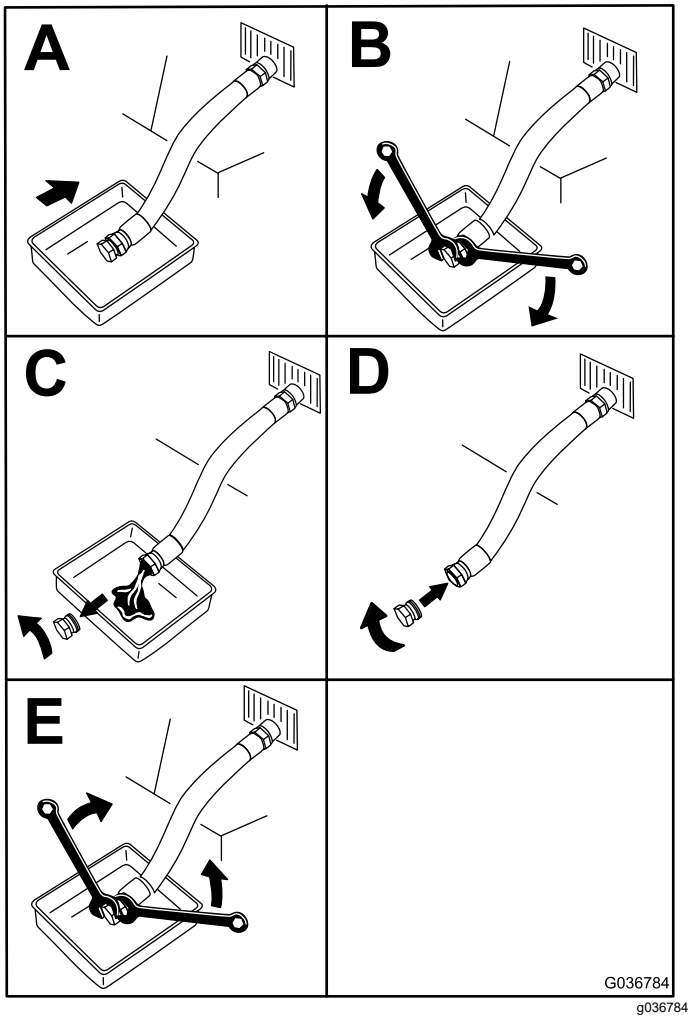
Every 100 hours

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

1. Park the machine so that the drain side is slightly lower than the opposite side to assure 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. Change the engine oil as shown in Figure 33.



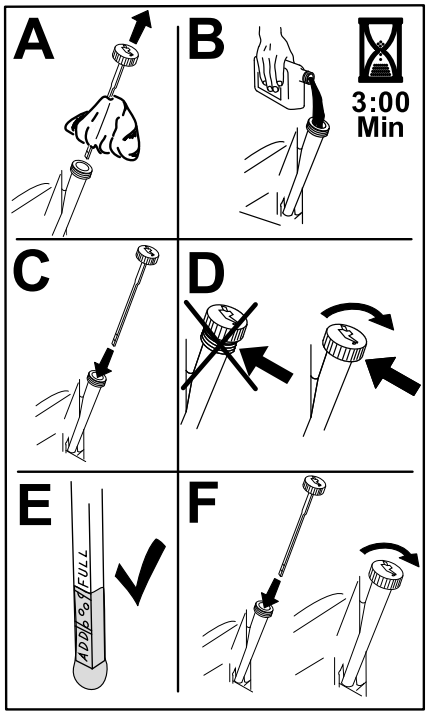
g299570



g036784

Figure 33

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 34).



g235264

Figure 34

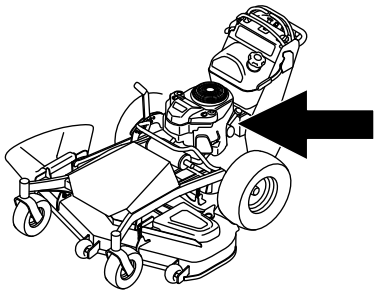
6. Start the engine and drive to a flat area.
7. Check the oil level again.

Changing the Engine-Oil Filter

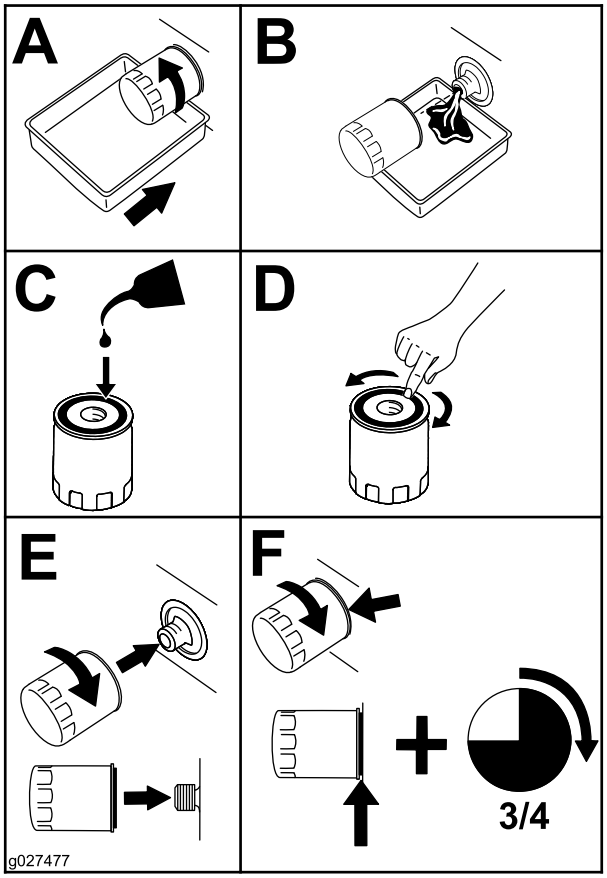
Service Interval: Every 200 hours

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

1. Drain the oil from the engine; refer to Changing the Engine Oil (page 28).
2. Change the engine-oil filter (Figure 35).



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Figure 35

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

3. Fill the crankcase with the proper type of new oil; refer to Engine-Oil Specifications (page 27).

Servicing the Spark Plug

Service Interval: Every 100 hours

Ensure that the air gap between the center and side electrodes is correct before installing the spark plug.

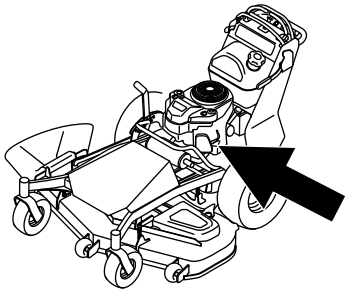
Use a spark plug wrench for removing and installing the spark plug(s) and a gapping tool/feeler gauge to check and adjust the air gap. Install a new spark plug(s) if necessary.

Type: NGK® BPR4ES or equivalent

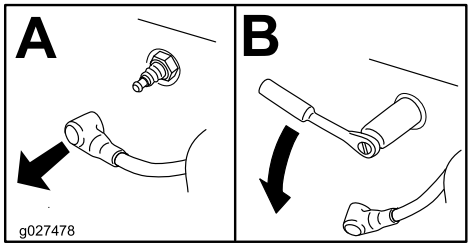
Air gap: 0.75 mm (0.03 inch)

Removing the Spark Plug

1. Park the machine on a level surface, 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.
3. Remove the spark plug as shown in Figure 36.



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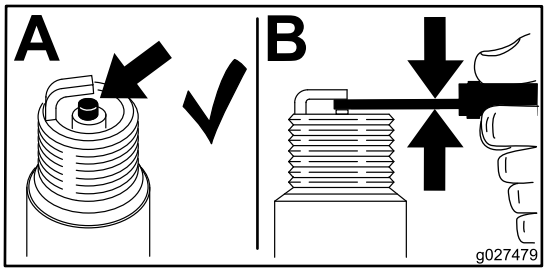
Figure 36

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.

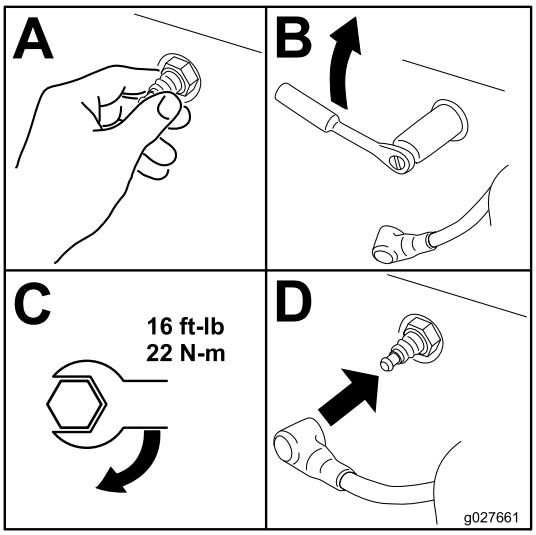
Set the gap to 0.75 mm (0.03 inch).



g027479

Figure 37

Installing the Spark Plug



g027661

Figure 38

Fuel System Maintenance

⚠ DANGER

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

Refer to Fuel Safety (page 10) for a complete list of fuel related precautions.

Draining the Fuel Tank

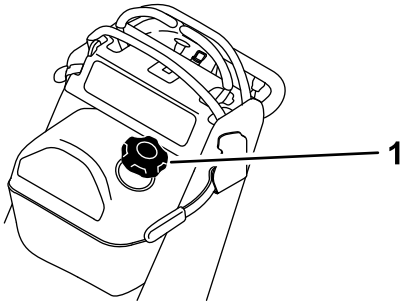
Note: Use a syphon pump to drain fuel from the tank. You can purchase a syphon pump at a hardware store.

⚠ DANGER

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

- **Perform any fuel-related maintenance when the engine is cold. Do this outdoors in an open area. Wipe up any fuel that spills.**
- **Never smoke when draining fuel, and stay away from an open flame or where a spark may ignite the fuel fumes.**

1. Park the machine on a level surface, 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.
3. Clean around the fuel cap to prevent debris from getting into the fuel tank (Figure 39).
4. Remove the fuel cap.
5. Insert a syphon pump into the fuel tank.
6. Using the syphon pump, drain the fuel into a clean fuel can (Figure 39).
7. Wipe up any spilled fuel.



g300374

Figure 39

1. Fuel cap

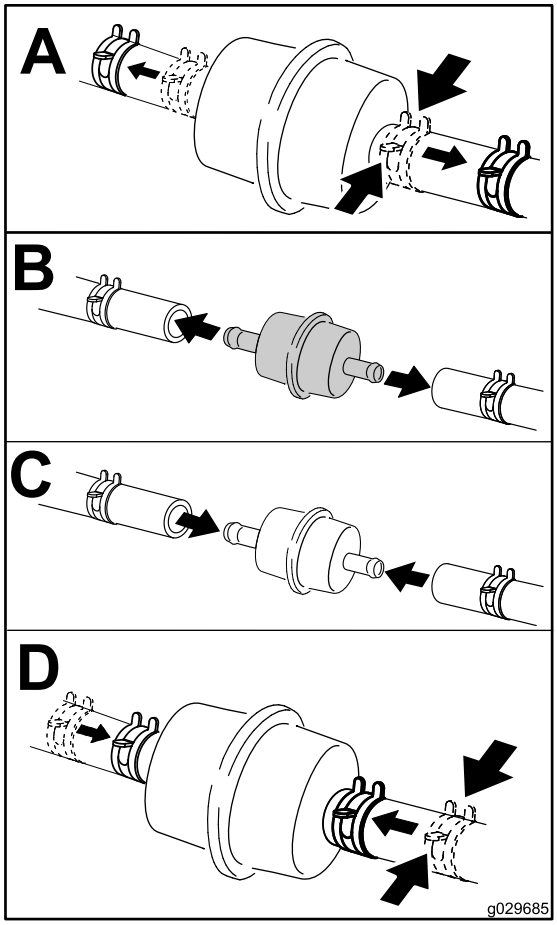
Replacing the Fuel Filter

Service Interval: Every 800 hours/Yearly (whichever comes first)

Do not install a dirty filter if it is removed from the fuel line.

Note: Wipe up any spilled fuel.

1. Park the machine on a level surface, 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.
3. Close the fuel-shutoff valve; refer to Using the Fuel-Shutoff Valve (page 19).
4. Replace the fuel filter as shown in Figure 40.



g029685

Figure 40

Electrical System Maintenance

Electrical System Safety

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

Servicing the Battery

Service Interval: Every 100 hours

Always keep the battery clean and fully charged. Use a paper towel to clean the battery case. If the battery terminals are corroded, clean them with a solution of four parts water and 1 part baking soda. Apply a light coating of grease to the battery terminals to prevent corrosion.

Voltage: 12 V

Removing the Battery

1. Park the machine on a level surface, 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.
3. Disconnect the negative (black) ground cable from the battery post (Figure 41).

   Note: Retain all fasteners.

⚠ WARNING

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

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

⚠ WARNING

Incorrectly removing the cables from battery could damage the machine and cables, causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.

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

4. Slide the rubber cover off the positive (red) cable.
5. Disconnect the positive (red) cable from the battery post (Figure 41).

   Note: Retain all fasteners.
6. Remove the battery hold-down (Figure 41), and lift the battery from the tray.

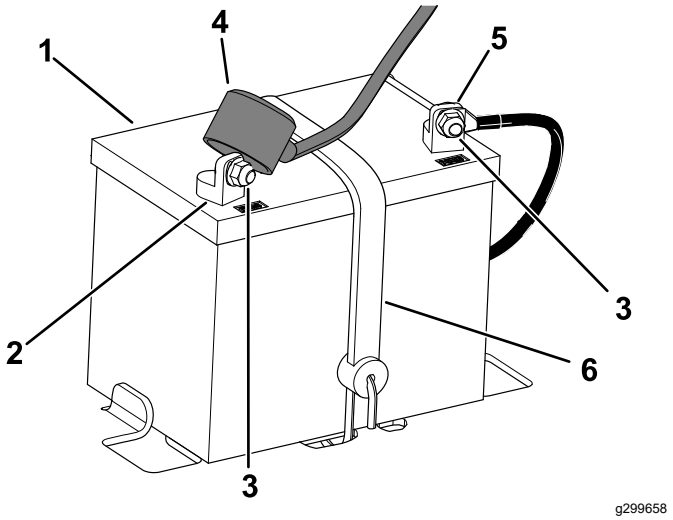


Figure 41

1. Battery
2. Positive (+) battery post
3. Bolt, washer, and nut
4. Terminal boot
5. Negative (–) battery post
6. Battery hold-down

Charging the Battery

⚠ WARNING

Charging the battery produces gasses that can explode.

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

Important: **Always keep the battery fully charged (1.260 specific gravity). This is especially important to prevent battery damage when the temperature is below 0°C (32°F).**

1. Remove the battery from the machine; refer to Removing the Battery (page 32).
2. Connect a 3 to 4 A battery charger to the battery posts. Charge the battery at a rate of 3 to 4 A for 4 to 8 hours (12 V).

   Note: Do not overcharge the battery.
3. When the battery is fully charged, unplug the charger from the electrical outlet, and disconnect the charger leads from the battery posts (Figure 42).
4. Install the battery; refer to Installing the Battery (page 33).

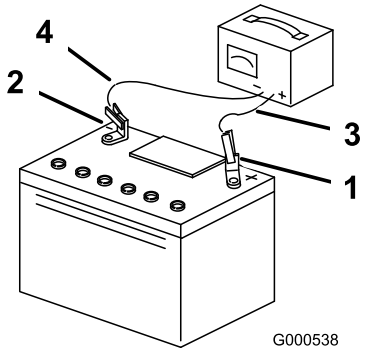


Figure 42

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

Installing the Battery

1. Position the battery in the tray (Figure 41).
2. Using the fasteners previously removed, install the positive (red) battery cable to the positive (+) battery terminal.
3. Using the fasteners previously removed, install the negative battery cable to the negative (-) battery terminal.
4. Slide the red terminal boot onto the positive (red) battery post.
5. Secure the battery with the hold-down (Figure 41).

Servicing the Fuses

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

1. Park the machine on a level surface, 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.
3. Pull out the fuse to remove or replace it.

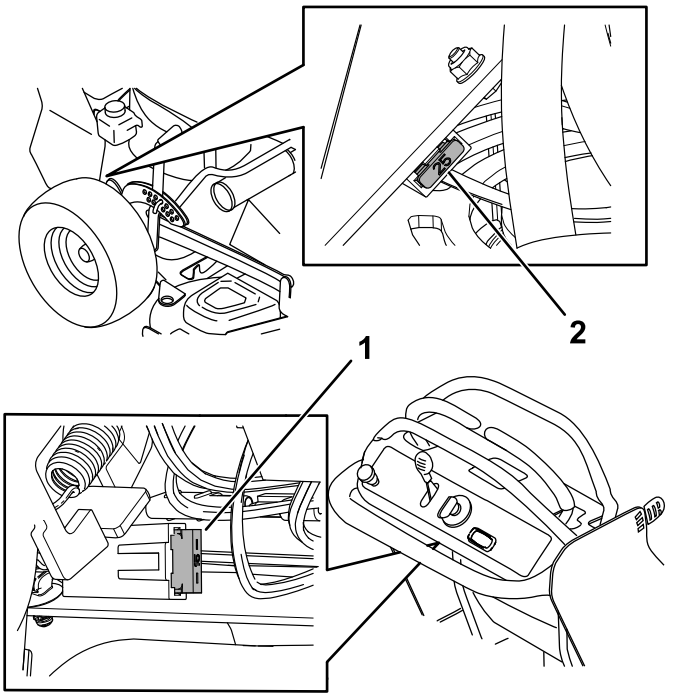
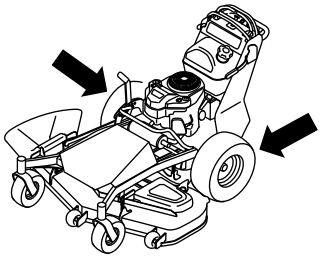


Figure 43

1. Main fuse (15 A)
2. Charging fuse (25 A)

Drive System Maintenance

Checking the Tire Pressure



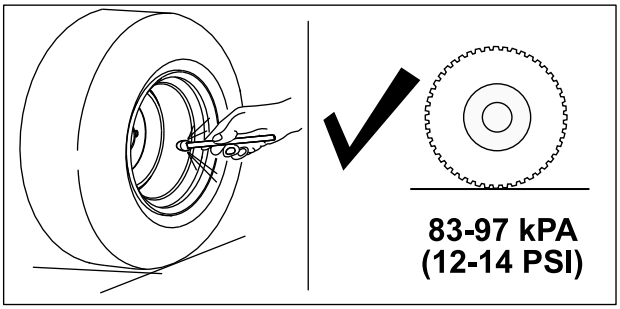


Figure 44

Checking the Wheel-Lug Nuts

Service Interval: After the first 100 hours—Check the wheel-lug nuts.

Check and torque the wheel-lug nuts to 115 to 142 N·m (85 to 105 ft-lb).

Adjusting the Neutral Traction

If the machine creeps while the motion-control levers are in neutral, adjust the neutral traction.

1. Park the machine on a level surface, 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.
3. Raise the rear of the machine onto jack stands high enough to raise the drive wheels off the ground.
4. Loosen the nut for control-rod assembly (Figure 45).

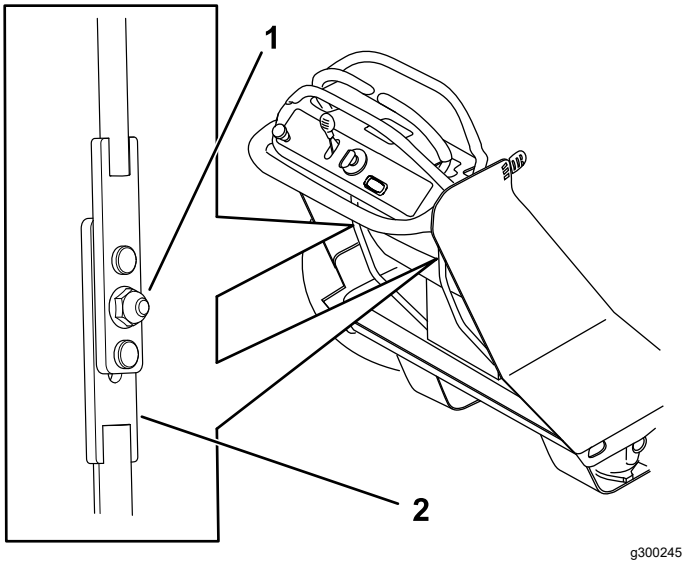


Figure 45

1. Nut
2. Lower control rod

5. Start the machine and move the throttle control to the FAST position.
6. To find the neutral position, move the lower control rod up or down until the tire stops rotating (Figure 45).
7. Tighten the nut (Figure 45).

   Important: **Ensure that the rod does not move; otherwise, you may need to adjust the rod again.**
8. Repeat for the other lever.

Note: You may need to adjust the tracking after adjusting the neutral traction; refer to Adjusting the Tracking (page 35).

Adjusting the Tracking

If you push both motion-control levers forward full speed across a flat, level surface and the machine pulls to 1 side, adjust the tracking as follows.

1. Park the machine on a level surface, 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.
3. Rotate the adjustment screw shown in Figure 45 to increase or decrease the speed for that lever.

   Note: Rotate the screw clockwise to decrease the speed; rotate it counterclockwise to increase the speed.

   If the machine pulls to the left, decrease the speed for the right lever or increase the speed for the left lever.

   If the machine pulls to the right, decrease the speed for the left lever or increase the speed for the right lever.

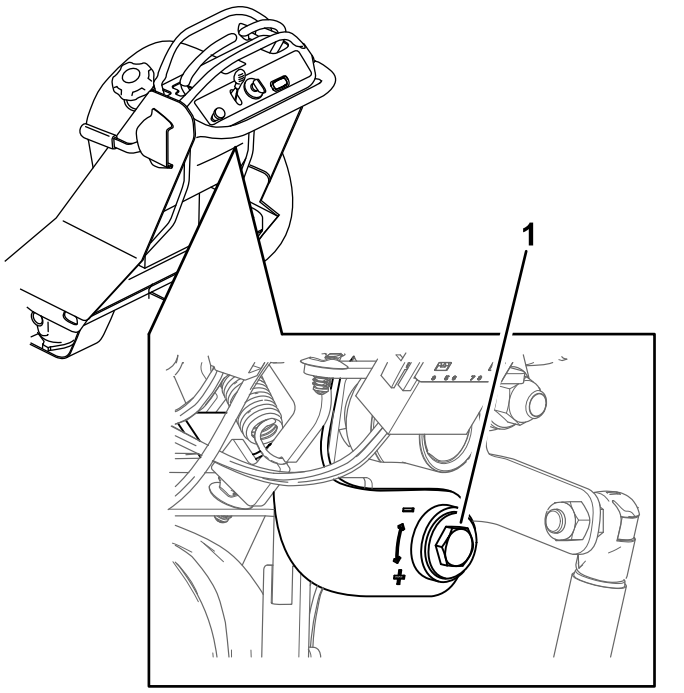


Figure 46

1. Adjustment screw

4. Start the machine and drive forward across a flat, level surface with the motion-control levers fully forward to check if the machine tracks straight. Repeat the procedure as needed.

Adjusting the Caster-Pivot Bearing

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

Note: For 91 cm (36 inch) machines, tighten the top bolt on the caster wheels. For 122 cm (48-inch machines), follow the procedure.

1. Park the machine on a level surface, disengage the blade-control switch, and engage the parking brake.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the dust cap from the caster and tighten the locknut (Figure 47).
4. Tighten the locknut until the spring washers are flat, and then back off a 1/4 turn to properly set the preload on the bearings (Figure 47).

Important: **Make sure that the spring washers are installed correctly as shown in Figure 47.**

5. Install the dust cap (Figure 47).

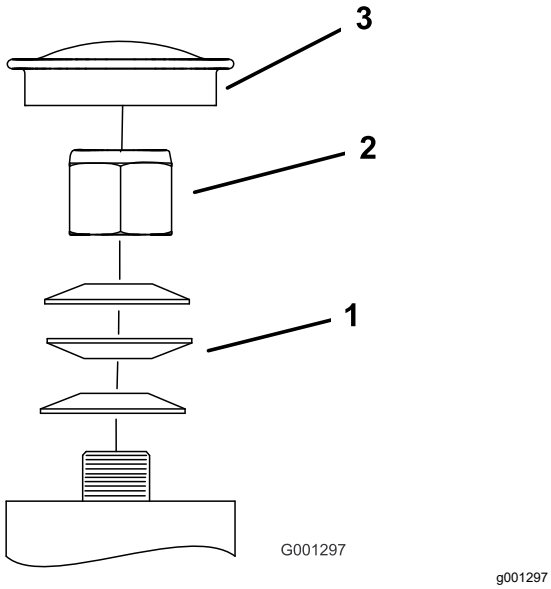


Figure 47

1. Spring washers
2. Locknut
3. Dust cap

Servicing the Caster Wheels and Bearings

The caster wheels rotate on a roller bearing supported by a spanner bushing. If the bearing is kept well lubricated, wear will be minimal. Failure to keep the bearing well lubricated causes rapid wear. A wobbly caster wheel usually indicates a worn bearing.

1. Remove the locknut and wheel bolt holding the caster wheel to the caster fork (Figure 48).

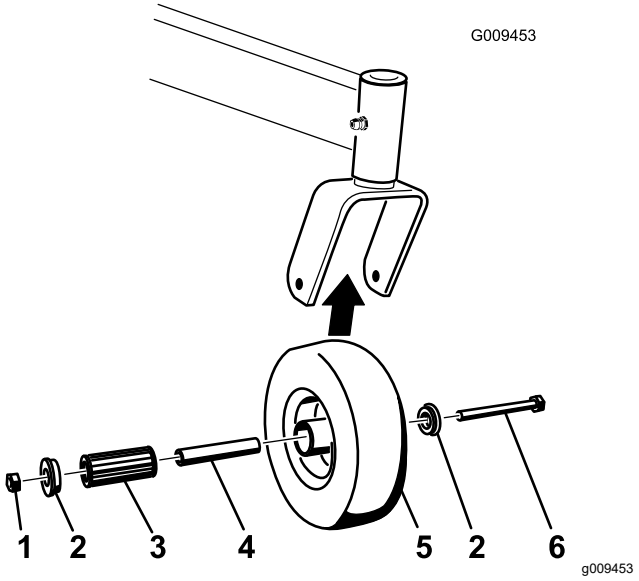


Figure 48

1. Locknut
2. Bushing
3. Spanner bushing
4. Roller bearing
5. Caster wheel
6. Wheel bolt

2. Remove 1 bushing, then pull the spanner bushing and roller bearing out of the wheel hub (Figure 48).
3. Remove the other bushing from the wheel hub and clean any grease and dirt from the wheel hub (Figure 48).
4. Inspect the roller bearing, bushings, spanner bushing and the inside of the wheel hub for wear.

   Note: Replace any damaged or worn parts (Figure 48).
5. Place 1 bushing into the wheel hub (Figure 48).
6. Grease the roller bearing and spanner bushing, and slide them into the wheel hub (Figure 48).
7. Place the second bushing into the wheel hub (Figure 48).
8. Install the caster wheel into the caster fork and secure it with the wheel bolt and locknut (Figure 48).
9. Tighten the locknut until the spanner bushing bottoms against the inside of the caster forks (Figure 48).
10. Grease the fitting on the caster wheel.

Cooling System Maintenance

Cleaning the Air-Intake Screen

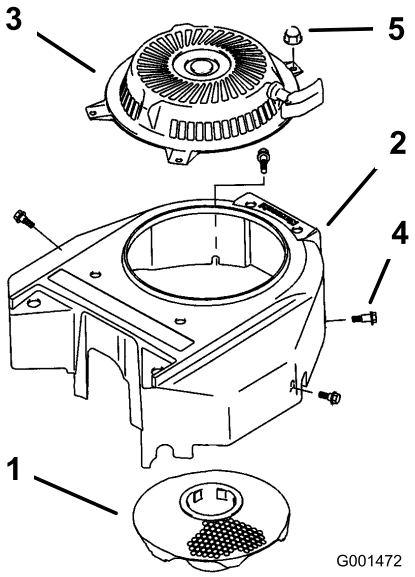
Remove any buildup of grass, dirt, or other debris from the cylinder and cylinder head cooling fins, the air-intake screen on the flywheel end, and the carburetor-governor levers and linkage. This helps ensure adequate cooling and correct engine speed to reduce the possibility of overheating or mechanical damage to the engine.

Cleaning the Cooling System

Service Interval: Before each use or daily

Every 100 hours/Yearly (whichever comes first)

1. Park the machine on a level surface, 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.
3. Remove the air-intake screen, recoil starter, and fan housing (Figure 49).
4. Clean the debris and grass from the engine parts.
5. Install the air-intake screen, recoil starter, and fan housing (Figure 49).



g001472

Figure 49

1. Air-intake screen
2. Fan housing
3. Recoil starter
4. Bolt
5. Nut

Brake Maintenance

Testing the Parking Brake

Service Interval: Before each use or daily

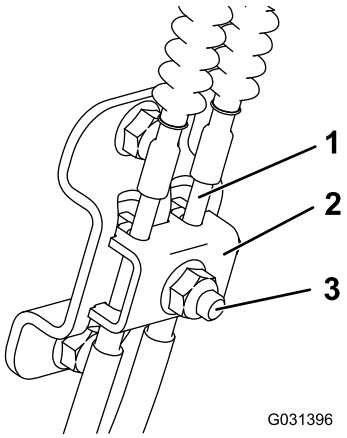
Before each use, test the parking brake on both a level surface and slope.

Always engage the parking brake when you stop the machine or leave it unattended. If the parking brake does not hold securely, adjust it.

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.
3. Disengage the parking brake.
4. Engage the brake lever and ensure that the machine does not move.
5. Adjust the brake if needed.

Adjusting the Parking Brake

1. Park the machine on a level surface and disengage the PTO.
2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Release the parking brake.
4. Loosen the bolt on the cable clamp on the left side of the machine (Figure 50).



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Figure 50

1. Cable
2. Cable clamp
3. Bolt and nut

5. Pull down on the cables until they are tight.
6. Tighten the nut.
7. Check the parking brake function; refer to Testing the Parking Brake (page 38).

Belt Maintenance

Inspecting the Belts

Service Interval: Every 25 hours—Check the belts for wear or cracks.

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-Deck Belt

⚠ WARNING

The spring is under tension when installed and can cause personal injury.

Be careful when removing the belt.

1. Park the machine on a level surface, 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.
3. Remove the deck guards; refer to Removing the Mower Deck Guards (page 23).
4. For 122 cm (48-inch) decks, loosen the 4 screws for both pulley covers and remove the covers (Figure 51).

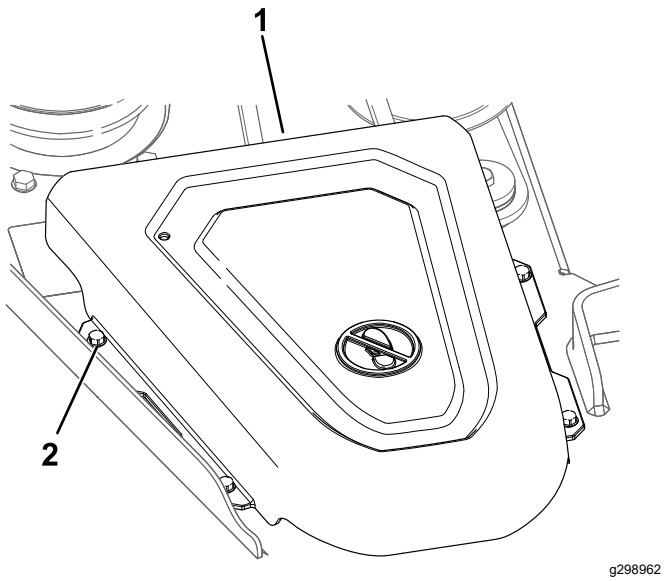


Figure 51

1. Cover
2. Screw (4)

5. Using a spring-removal tool (Toro Part No. 92-5771), remove the idler spring from the deck hook to remove tension on the idler pulley, and roll the belt off the pulleys (Figure 52 or Figure 53).

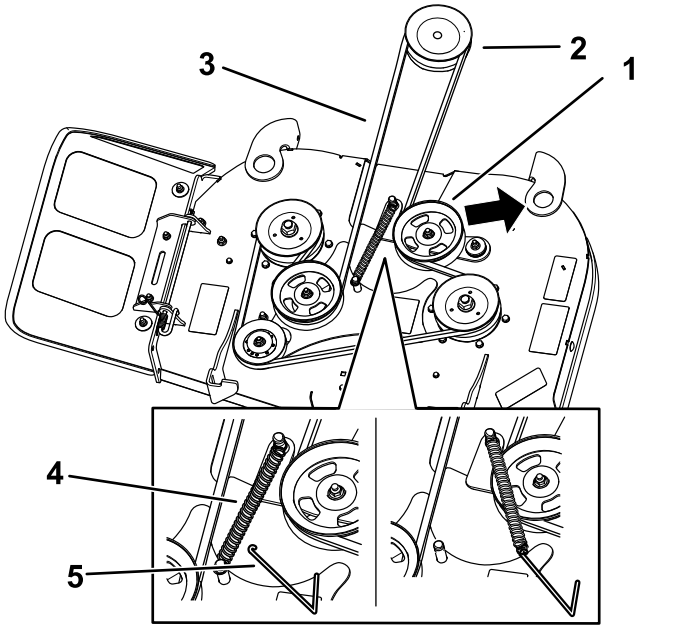


Figure 52

91cm Mower Decks

1. Idler pulley
2. Clutch pulley
3. Mower belt
4. Spring
5. Spring-removal tool

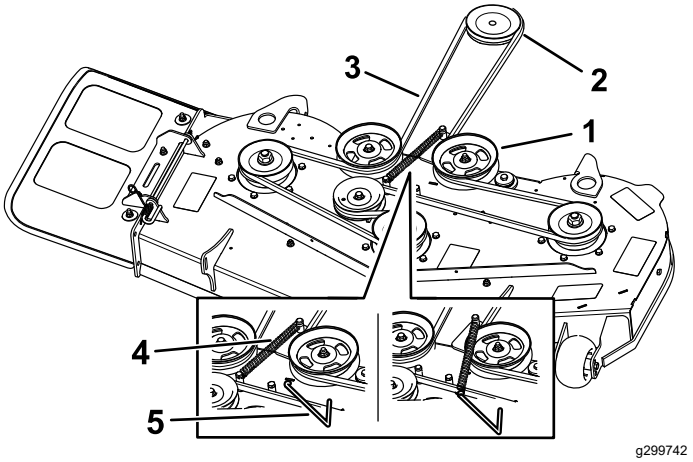


Figure 53

122cm Mower Decks

1. Idler pulley
2. Clutch pulley
3. Mower belt
4. Spring
5. Spring-removal tool

6. Route the new belt around the clutch pulley and mower pulleys (Figure 52 or Figure 53).
7. Install the idler spring to the deck hook (Figure 52 or Figure 53).

8. Check the length of the spring. If it is less than 15.2 cm (6 inches), adjust the idler pulley arm; proceed to step 4 in Adjusting the Idler Pulley Arm (page 40).
9. For 91 cm (36-inch) decks, install the pulley covers (Figure 51).
10. Install the deck guards; refer to Removing the Mower Deck Guards (page 23).

Adjusting the Idler Pulley Arm

Service Interval: Yearly—Check the mower deck idler arm for wear.

If the length of the spring is less than 15.2 cm (6 inches) or if the idler pulley arm contacts the idler stop shown in Figure 54, adjust the idler pulley arm.

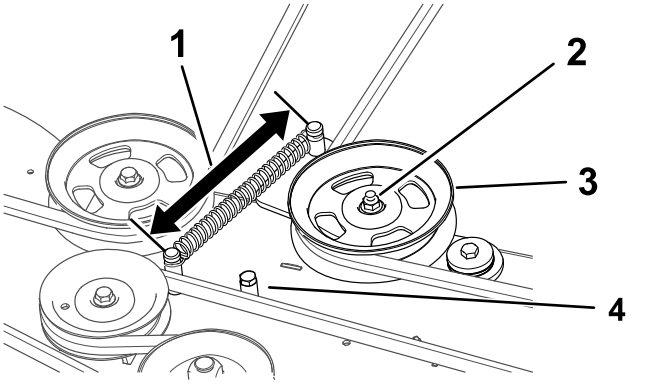


Figure 54

122cm (48-inch) deck shown

1. Spring length at least 15.2 cm (6 inches)
2. Nut
3. Idler pulley
4. Idler stop

1. Park the machine on a level surface, 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.
3. Remove the deck guards; refer to Removing the Mower Deck Guards (page 23)
4. Loosen the nut on the idler pulley (Figure 54).
5. Adjust the pulley in the slot as needed (Figure 55).

   Slide the pulley to the left of the slot for a worn belt or if the spring length is more than 15.2 cm (6 inches).

   Slide the pulley to the right of the slot for a new belt or if the spring length is less than 15.2 cm (6 inches)

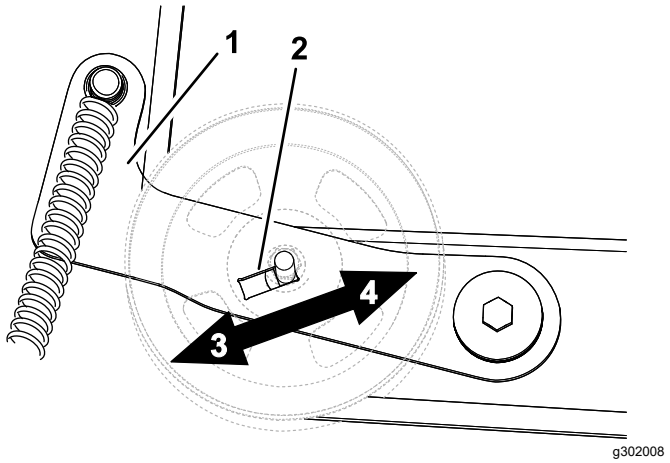


Figure 55

122cm (48-inch) deck shown

1. Idler arm
2. Slot
3. Slide pulley to the left for worn belt.
4. Slide pulley to the right for new belt

6. Tighten the nut (Figure 54).
7. Install the deck guard; refer to Removing the Mower Deck Guards (page 23).

Replacing the Transmission Belt

1. Park the machine on a level surface, 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.
3. Remove the mower-deck belt from the clutch pulley; refer to Replacing the Mower-Deck Belt (page 39).
4. Remove the 2 bolts and guard plate (Figure 56).

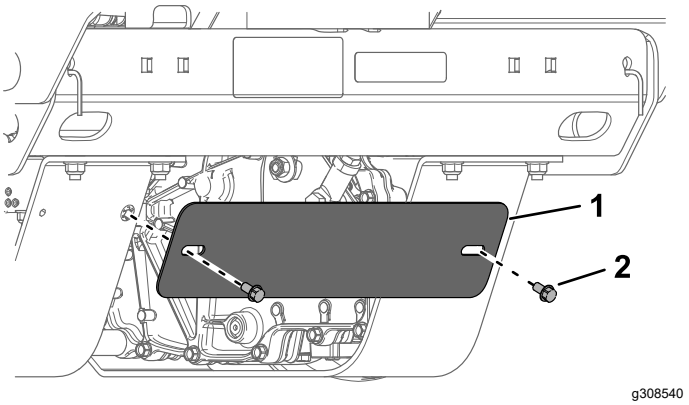


Figure 56

1. Guard plate
2. Bolt (2)

5. Remove the clutch pulley (Figure 57).

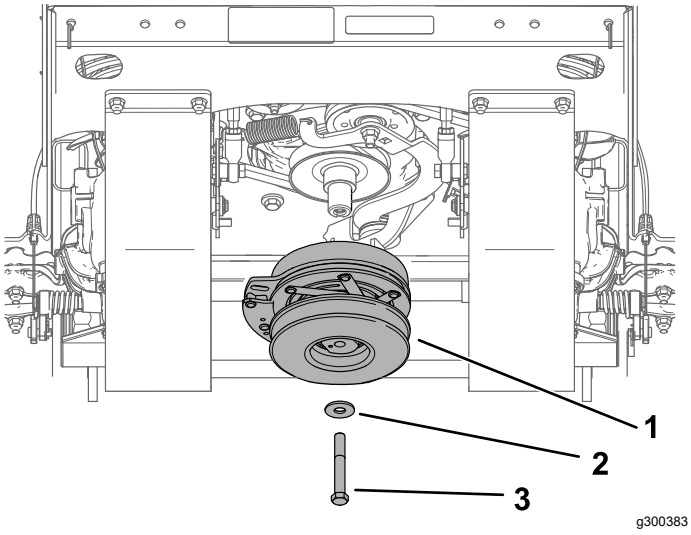


Figure 57

1. Clutch pulley
2. Washer
3. Bolt

6. Insert a drive ratchet in the square hole of the idler arm to release the belt tension (Figure 58).

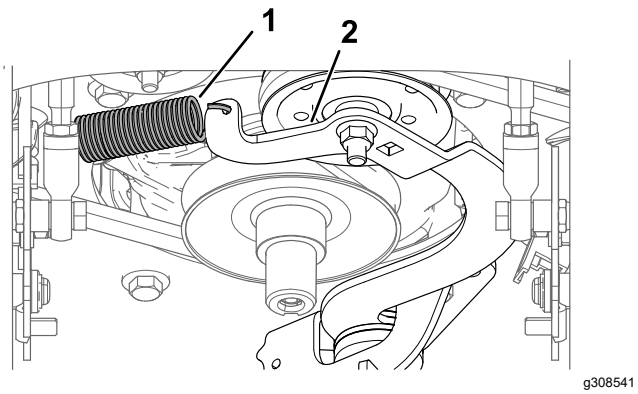


Figure 58

1. Spring
2. Idler pulley
3. Square hole

7. Remove the belt (Figure 59).
8. Slowly release the driver to release the spring tension. Remove the spring from the anchor on the frame, if needed.
9. Install the new belt, routing it around the pulleys as shown in Figure 59.

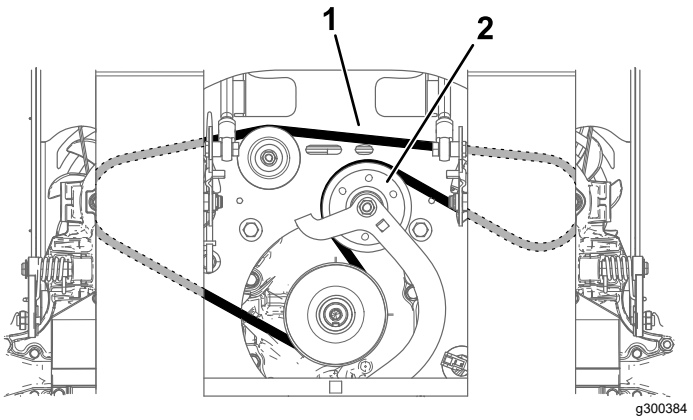


Figure 59

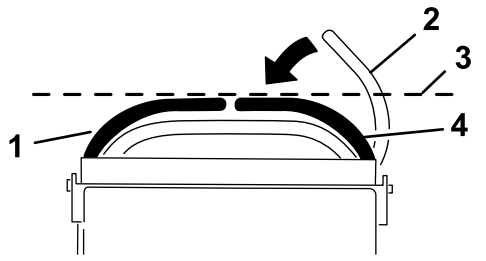
1. Belt
2. Idler pulley

10. Install the spring to the spring anchor. Use the drive ratchet to apply tension to the spring to allow the belt to pass over the lip of the idler pulley (Figure 58).
11. Release the tension in the spring to apply tension to the belt.
12. Check that the belt is seated properly in all the pulleys.
13. Install the clutch pulley (Figure 57). Torque the bolt to 68 to 81 N·m (50 to 60 ft-lb).
14. Install the guard plate (Figure 57).
15. Install the mower-deck belt to the clutch pulley; refer to Replacing the Mower-Deck Belt (page 39).

Adjusting the Motion-Control Levers

If the motion-control levers do not align horizontally, adjust the motion-control levers.

1. Park the machine on a level surface, 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.
3. Push the motion-control levers down to the operating position .

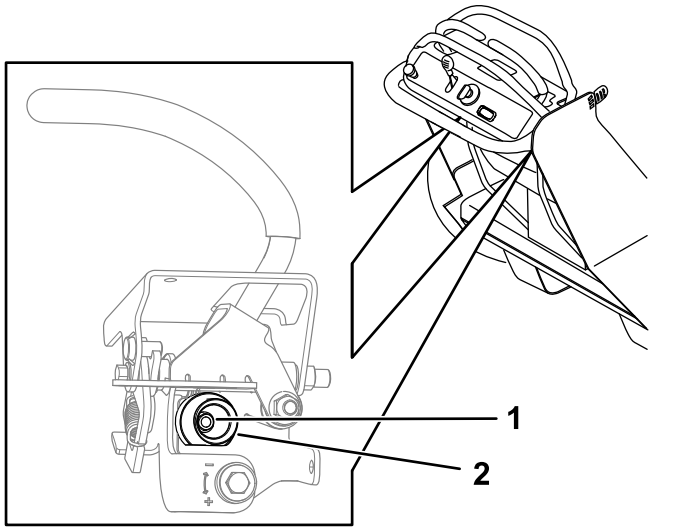


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Figure 60

1. Left motion-control lever in operating position
2. Right motion-control lever in neutral position
3. Check the horizontal alignment here.
4. Right motion-control lever in operating position

4. Check the horizontal alignment of the motion-control levers (Figure 60).
5. Loosen the nut holding the cam for the motion-control lever you are adjusting (Figure 61).



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Figure 61

1. Nut
2. Cam

6. Adjust the cam until it aligns with the other motion-control lever and tighten the nut for the cam (Figure 61).

   Note: Moving the cam clockwise lowers the lever; moving the cam counterclockwise raises the lever.

   Important: **Do not rotate the flat of the cam past vertical. The operator-presence control switch should never contact the flat of the cam.**

Hydraulic System Maintenance

Hydraulic System Safety

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

Hydraulic System Specifications

Hydraulic Fluid Type: Toro® HYPR-OIL™ 500 hydraulic fluid

Hydraulic System Fluid Capacity: 4.7 L (159 fl oz)

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

Checking the Hydraulic Fluid Level

Service Interval: Every 50 hours

1. Park the machine on a level surface, 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.
3. All the machine to cool completely.
4. Check the fluid level on the side of the hydraulic tank (Figure 62). Continue the procedure if the level is below the cold fill level.
5. Clean the area around the cap of the hydraulic tank (Figure 62).
6. Remove the cap from the filler neck and add fluid to the reservoir until it reaches the cold fill level (Figure 62).
7. Install the cap on the tank (Figure 62).

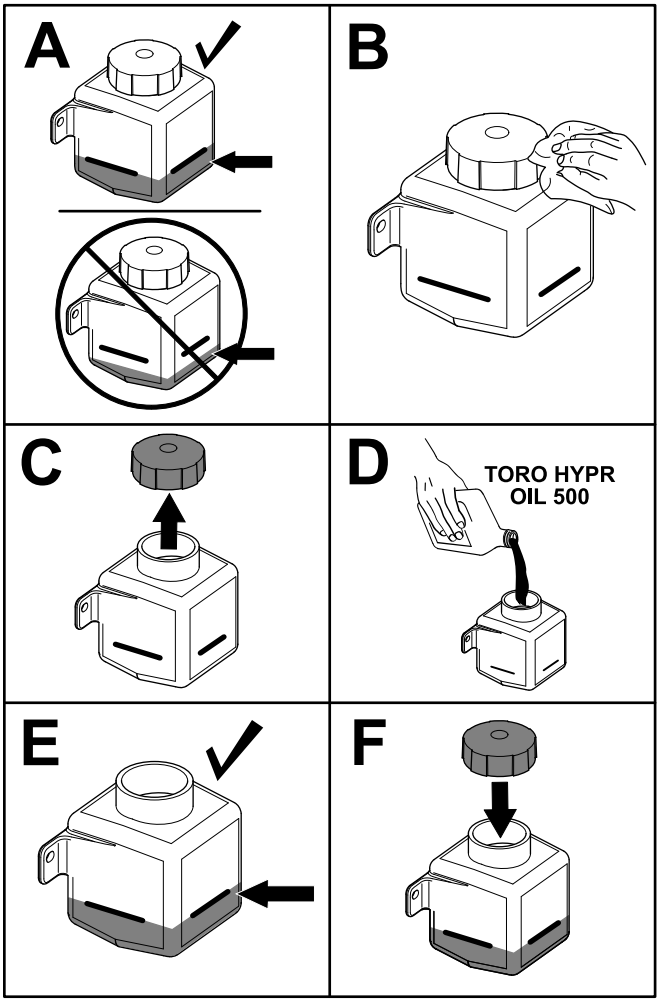


Figure 62

Changing the Hydraulic Fluid and Filters

Service Interval: After the first 50 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 fluid. (Change it more often under dirty or dusty conditions)

To replace the hydraulic fluid, the filters need to be removed. Replace both at the same time; refer to Hydraulic System Specifications (page 43) for fluid specifications.

Removing the Filters and Draining the Fluid

1. Park the machine on a level surface, disengage the blade-control switch (PTO), and engage the parking brake.

2. Shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Allow the engine to cool.
4. Remove the 2 bolts and guard plate Figure 63).

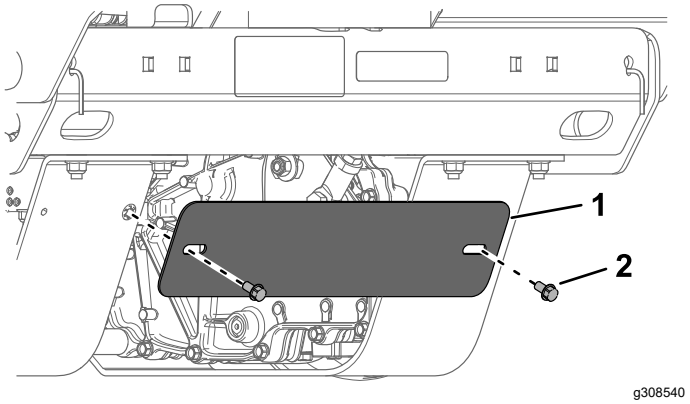


Figure 63

1. Guard plate
2. Bolt (2)

5. Remove the 2 bolts and nuts from both transaxle guards (Figure 64).

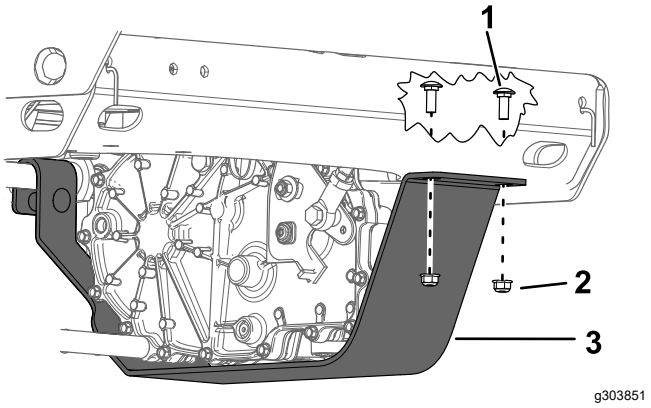


Figure 64

1. Short carriage bolt
2. Nut—5/16 inch (2)
3. Transaxle guard

6. Pivot the guards down.
7. Locate the filter and guards on each transaxle-drive system (Figure 65).
8. Remove the 3 screws securing the filter guard and remove the guard (Figure 65).

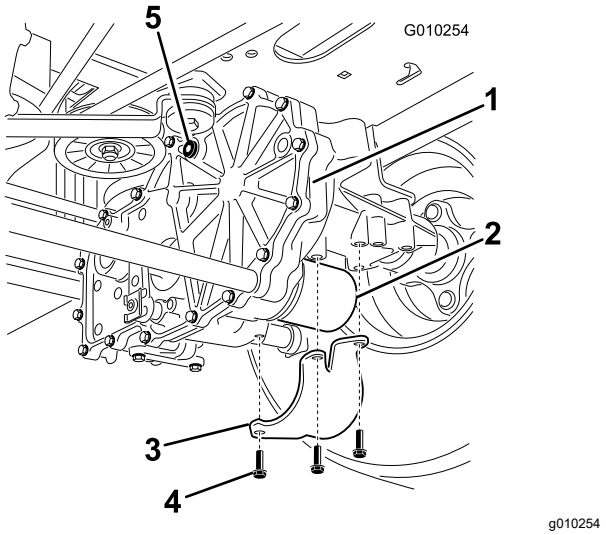


Figure 65

Right side shown

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

9. Carefully clean the area around the filters.

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

Installing the Hydraulic Filters

1. Apply a thin coat of hydraulic fluid 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.

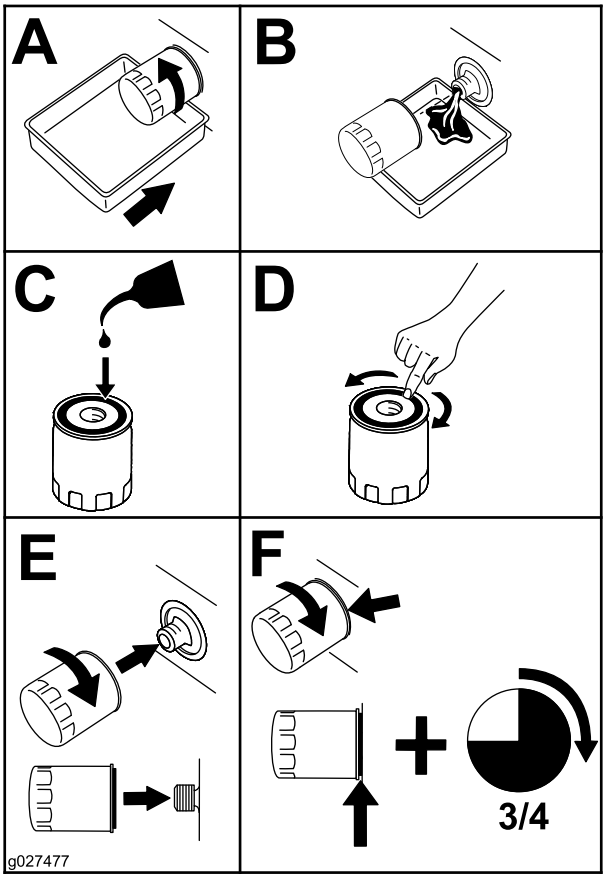


Figure 66

3. Repeat for the opposite filter.
4. Install the filter guards over each filter that you previously removed (Figure 65).
5. Use the 3 screws to secure the filter guards (Figure 65).

Adding Hydraulic Fluid

1. Verify that the vent plugs are removed before adding the fluid.
2. Slowly pour the specified fluid through the expansion reservoir until fluid comes out of 1 of the vent-plug holes; refer to Hydraulic System Specifications (page 43).
3. Install the vent plug (Figure 65).
4. Torque the plug to 20 N·m (15 ft-lb).
5. Continue to add fluid through the expansion reservoir until fluid comes out of the remaining vent-plug hole on the second transmission.
6. Install the opposite vent plug.
7. Torque the plug to 20 N·m (15 ft-lb).
8. Pivot the transaxle guards up and secure both with 2 bolts and 2 nuts (Figure 64).
9. Install the guard plate (Figure 63).
10. Continue to add fluid through the expansion reservoir until it reaches the FULL COLD line on the expansion reservoir.
11. Proceed to Bleeding the Hydraulic System (page 45).

Important: **Failure to bleed the hydraulic system after changing the hydraulic filters and fluid can result in irreparable damage to the transaxle drive system.**

Bleeding the Hydraulic System

1. Park the machine on a level surface, 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.
3. Raise the rear of the machine onto jack stands high enough to raise the drive wheels off the ground.
4. Move both bypass levers rearward through the key hole and down to lock them in place (Figure 67).

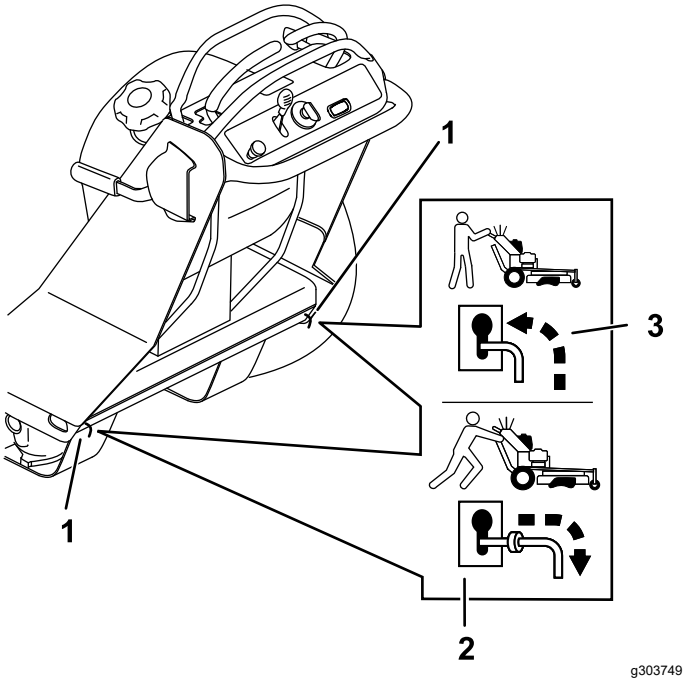


Figure 67

1. Bypass-lever locations
2. Lever position for operating the machine
3. Lever position for bleeding the transmission

5. Start the engine. and move the throttle control to half throttle.

6. Slowly move the motion-control levers between the full forward and full reverse positions 5 times.
7. Shut off the engine and move the bypass levers forward through the keyhole and down to lock them in place (Figure 67).
8. Start the engine.
9. Slowly move the motion-control levers between the full forward and full reverse positions 5 times.
10. Shut off the engine and check the hydraulic fluid level as it drops, and add fluid as required to maintain the proper level.
11. Repeat the procedure until air is completely purged from the system.

    Note: Air is purged from the system when the transaxle operates at normal noise levels and moves smoothly forward and in reverse at normal speeds.
12. Check the hydraulic fluid level in the expansion reservoir a final time, and add fluid as required.

Mower Deck Maintenance

Blade Safety

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

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

Servicing the Cutting Blades

Before Inspecting or Servicing the Blades

1. Park the machine on a level surface, disengage the PTO, and engage the parking brake.
2. Shut off the engine, 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 68).
2. If the edges are not sharp or have nicks, remove and sharpen the blade; refer to Sharpening the Blades (page 47).
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 68).

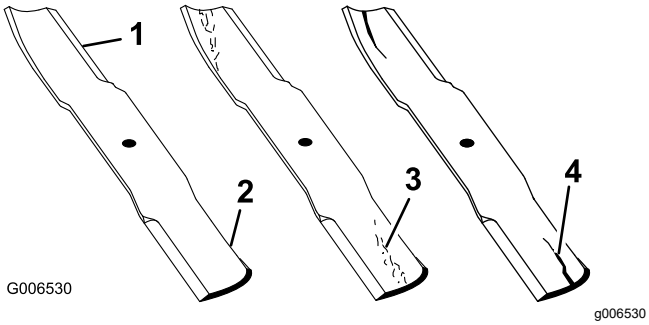


Figure 68

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

Checking for Bent Blades

1. Rotate the blades until the ends face forward and backward.
2. Measure from a level surface to the cutting edge, position **A**, of the blades (Figure 69).

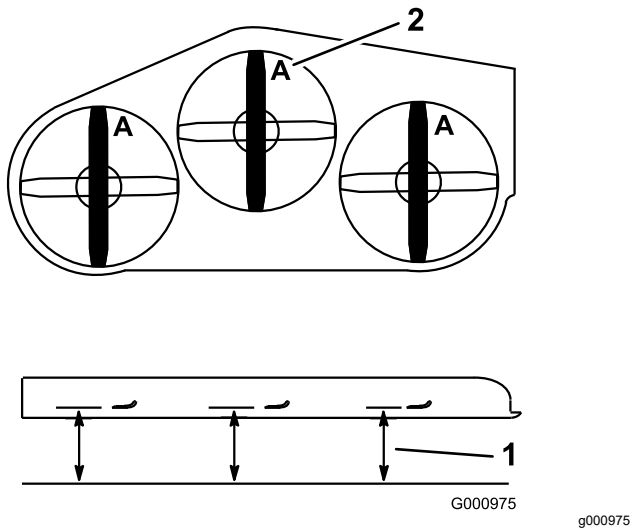


Figure 69

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

3. Rotate the opposite ends of the blades forward.
4. Measure from a level surface to the cutting edge of the blades at the same position as in step 2 above.

   Note: The difference between the dimensions obtained in steps 2 and 3 must not exceed 3 mm (1/8 inch).

   Note: If this dimension exceeds 3 mm (1/8 inch), replace the blade.

⚠ WARNING

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

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

Removing the Blades

Replace the blade if a blade hits a solid object, is out of balance, or is bent. For best performance and continued safety conformance of the machine, use genuine Toro replacement blades. Replacement blades made by other manufacturers may result in non-conformance with safety standards.

1. Hold the blade end using a rag or thickly padded glove.
2. Remove the blade bolt, curved washer, and blade from the spindle shaft (Figure 70).

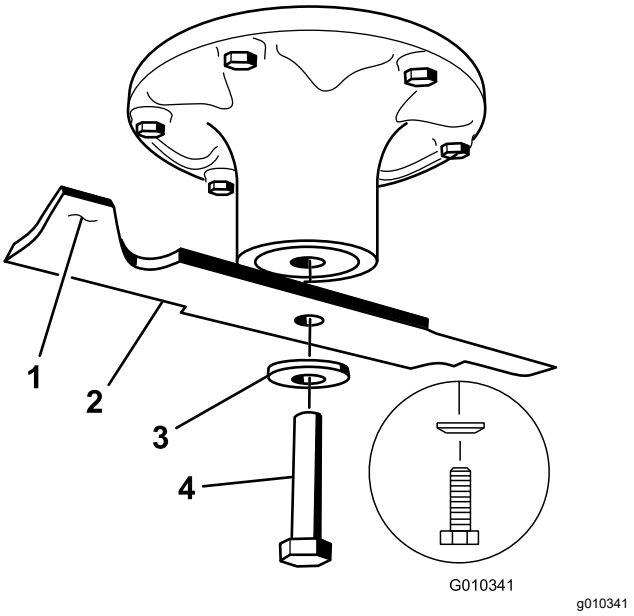


Figure 70

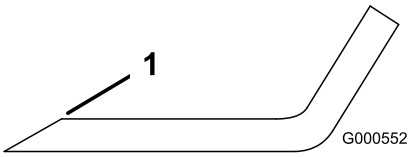
1. Sail area of the blade
2. Blade
3. Curved washer
4. Blade bolt

Sharpening the Blades

1. Use a file to sharpen the cutting edge at both ends of the blade (Figure 71).

   Note: Maintain the original angle.

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



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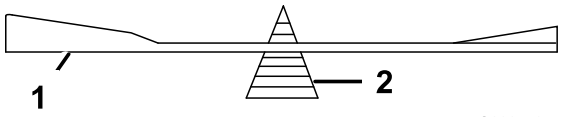
Figure 71

1. Sharpen at original angle.

2. Check the balance of the blade by putting it on a blade balancer (Figure 72).

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

   Note: If the blade is not balanced, file some metal off the end of the sail area only (Figure 71).



g000553

Figure 72

1. Blade
2. Balancer

3. Repeat this procedure until the blade is balanced.

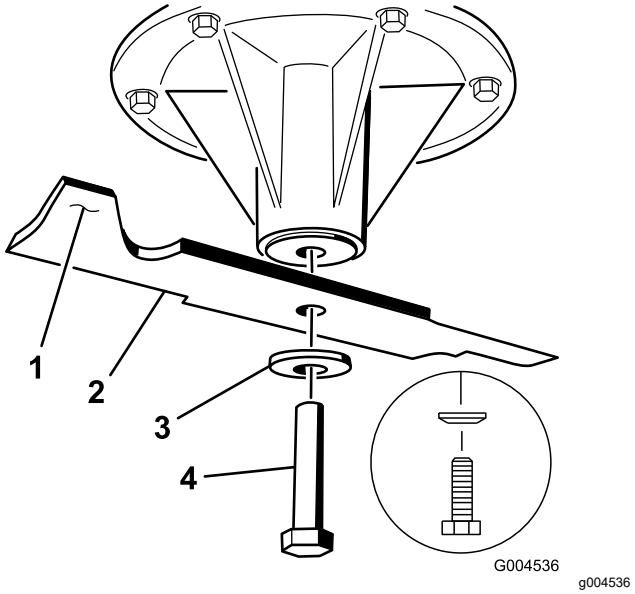
Installing the Blades

Service Interval: Yearly

1. Inspect the blade bolt for damaged threads. Replace the bolt and curved washer as necessary.
2. Install the blade onto the spindle shaft (Figure 73).

   Important: **The curved part of the blade must be pointing upward toward the inside of the deck to ensure proper cutting.**
3. Install the curved washer and blade bolt (Figure 73).

   Note: The curved washer cone must be installed toward the bolt head (Figure 73).
4. Torque the blade bolt to 115 to 150 N·m (85 to 110 ft-lb).



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Figure 73

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

Leveling the Mower Deck

Preparing the Machine

Ensure that the mower deck is level any time you install the mower deck or when you see an uneven cut on your lawn.

Level the mower deck side to side before adjusting the front-to-rear slope.

1. Park the machine on a level surface, disengage the PTO, and engage the parking brake.
2. Shut off the engine, remove the key, and disconnect the spark-plug wires from the spark plugs.
3. Check the tire pressure of both drive tires; refer to Checking the Tire Pressure (page 34).
4. Check the mower deck for bent blades; remove and replace any bent blades; refer to Servicing the Cutting Blades (page 46).
5. Lower the mower deck to the 76 mm (3 inch) height-of-cut position.

Checking the Side-to-Side Level

1. Position the blades side to side.
2. Measure at the **B** and **C** locations from a level surface to the cutting edge of blade tips (Figure 74).

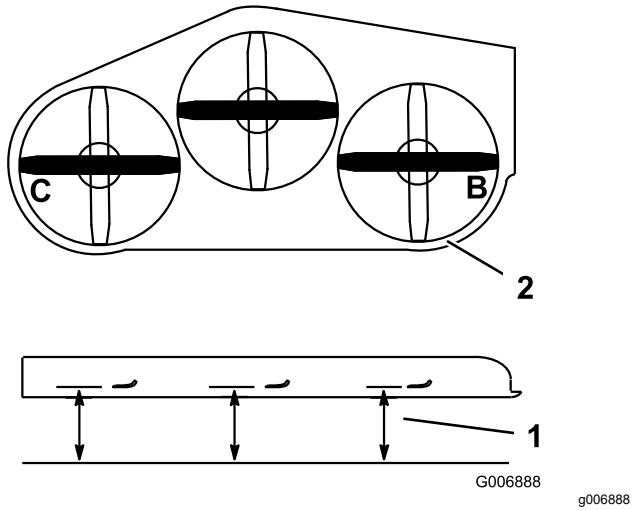


Figure 74

1. Measure from a level surface
2. Measure the blade at points **B** and **C**

3. The difference between measurements **B** and **C** should be no more than 6 mm (1/4 inch).

   Note: If it is not correct, refer to Leveling the Mower Deck (page 49).

Checking the Mower Deck Front-to-Rear Pitch

1. Adjust the tire pressure in the rear tires to the correct specifications.
2. Position 1 blade front-to-rear. Measure at **A** and **B** locations from a level surface to the cutting edge of the blade tips (Figure 75).

   Note: The mower blade should be 6 mm (1/4 inch) lower in front at **A** than in the rear at **B**.
3. Rotate the blades and repeat for other blades.

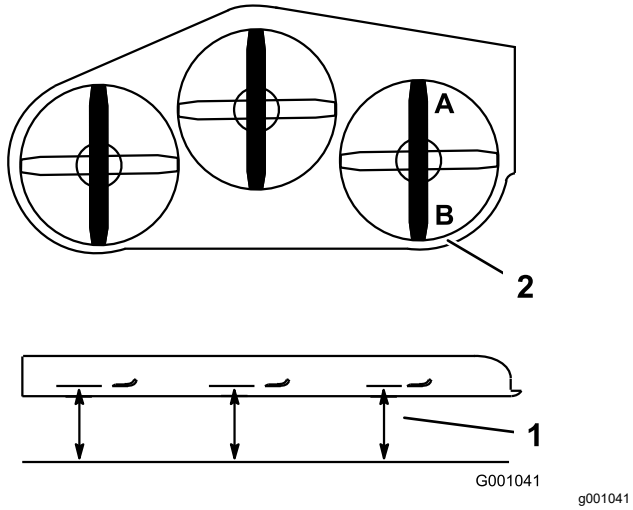


Figure 75

1. Measure the blade at points **A** and **B**
2. Measure from a level surface

4. If the front-to-rear pitch is not correct, refer to Leveling the Mower Deck (page 48).

Leveling the Mower Deck

1. Park the machine on a level surface, 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.
3. Set the height-of-cut lever to the 76 mm (3 inch) position; refer to Adjusting the Height of Cut (page 18)
4. Place 2 blocks, each having a thickness of 6.6 cm (2-5/8 inches), under each side of the front edge of the deck but not under the anti-scalp roller brackets (Figure 76).
5. Place 2 blocks, each having a thickness of 7.3 cm (2-7/8 inches), under the rear edge of the cutting deck skirt, 1 on each side of the cutting deck (Figure 76).

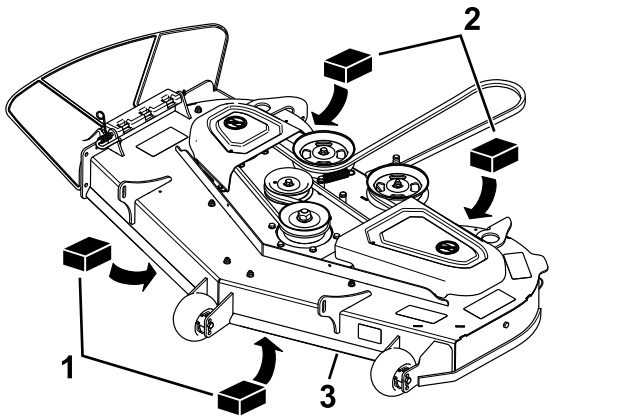


Figure 76

122 cm (48-inch) Deck Shown

1. Wood block—6.6 cm (2-5/8 inches) thick
2. Wood block—7.3 cm (2-7/8 inches) thick
3. Front edge

6. Loosen the adjustment bolts on all 4 corners of the deck so that the deck is sitting on all 4 blocks.

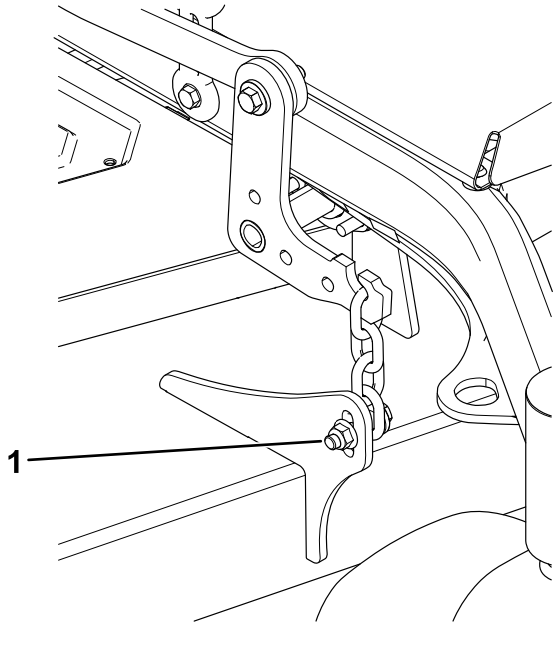


Figure 77

1. Adjustment bolt

7. Ensure that the chains are taut and tighten the bolts.
8. Check the side-to-side level and the front-to-rear pitch; refer to Checking the Side-to-Side Level (page 48) and Checking the Mower Deck Front-to-Rear Pitch (page 49).

Replacing the Grass Deflector

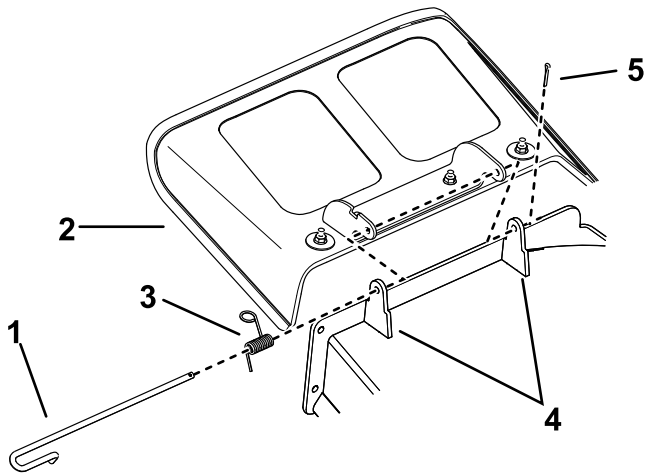
Service Interval: Before each use or daily—Inspect the grass deflector for damage.

⚠ WARNING

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

Never operate the machine unless you install a mulch plate, discharge deflector, or grass collection system.

1. Disengage the spring from the notch in the deflector bracket and slide the rod out of the welded deck brackets, spring, and discharge deflector (Figure 78).



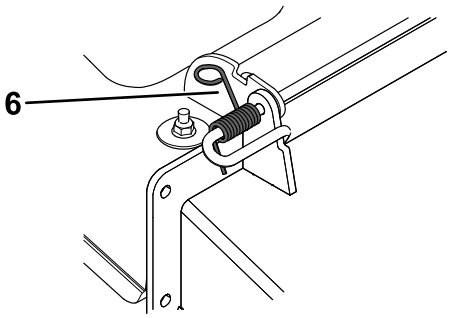


Figure 78

1. Rod
2. Deflector
3. Spring
4. Deck brackets
5. Hairpin cotter
6. Spring installed over the rod

2. Remove the damaged or worn discharge deflector.

3. Position the new discharge deflector with the bracket ends between the welded brackets on the deck as shown in Figure 79.
4. Install the spring onto the straight end of the rod.
5. Position the spring on the rod as shown in Figure 79 so that the shorter spring end comes from under the rod before the bend and going over the rod as it returns from the bend.
6. Lift the loop end of the spring and place it into the notch on the deflector bracket (Figure 79).

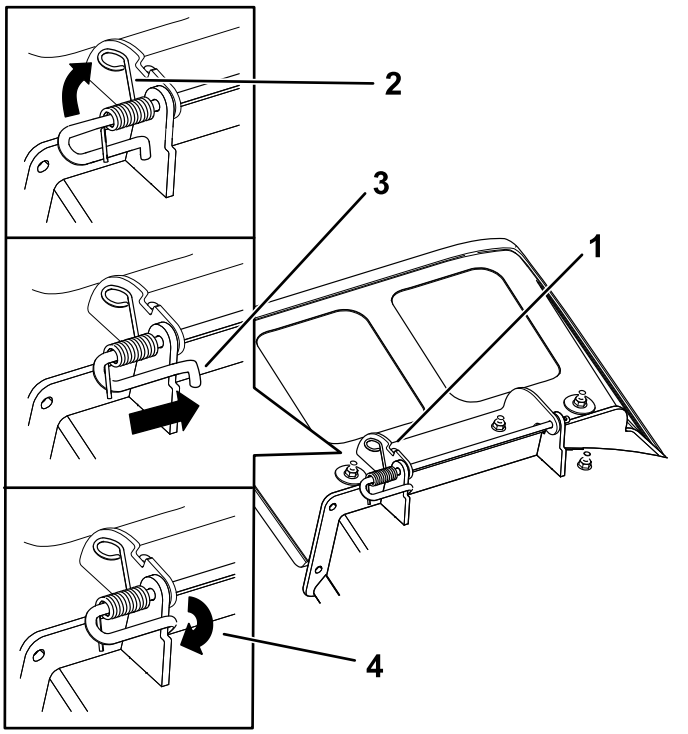


Figure 79

1. Rod and spring assembly installed
2. Loop end of the spring installed into the notch in the deflector bracket
3. Rod, short end, moved behind the mower bracket
4. Short end, retained by mower bracket.

7. Secure the rod and spring assembly by twisting it so that the short end of the rod is behind the mower bracket welded to the deck (Figure 79).

   Important: **The grass deflector must be spring loaded in the down position. Lift the deflector up to test that it snaps to the full down position.**

Cleaning

Cleaning under the Mower

Service Interval: Before each use or daily

Remove the grass buildup under the mower daily.

1. Park the machine on a level surface, disengage the PTO, and engage the parking brake.
2. Shut off the engine, remove the key, and disconnect the spark-plug wires from the spark plugs.
3. Raise the front of the machine using a jack and use jack stands to support the machine.
4. Clean the machine with a rag. Do not spray the machine.

Disposing of Waste

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

Storage

Storage Safety

- Always shut off the machine, remove the ignition key, wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Let the engine cool before storing the machine.
- Do not store the machine or fuel near flames or drain the fuel indoors.

Cleaning and Storing the Machine

1. Park the machine on a level surface, 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.
3. Remove grass clippings, dirt, and grime from the external parts of the entire machine, especially the engine and hydraulic system.

   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.**
4. Check the parking brake operation; refer to Testing the Parking Brake (page 38).
5. Service the air cleaner; refer to Servicing the Air Cleaner (page 26).
6. Grease the machine; refer to Greasing the Machine (page 24).
7. Change the crankcase oil; refer to Changing the Engine Oil (page 28).
8. Check the tire pressure; refer to Checking the Tire Pressure (page 34).
9. Charge the battery; refer to Servicing the Battery (page 32).
10. Scrape any heavy buildup of grass and dirt from the underside of the mower, then wash the machine 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 46).
12. Prepare the machine for storage for over 30 days as follows:

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

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

    C. Shut off the engine, allow it to cool, and drain the fuel tank.

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

    E. Dispose of fuel properly. Recycle the fuel according to local codes.

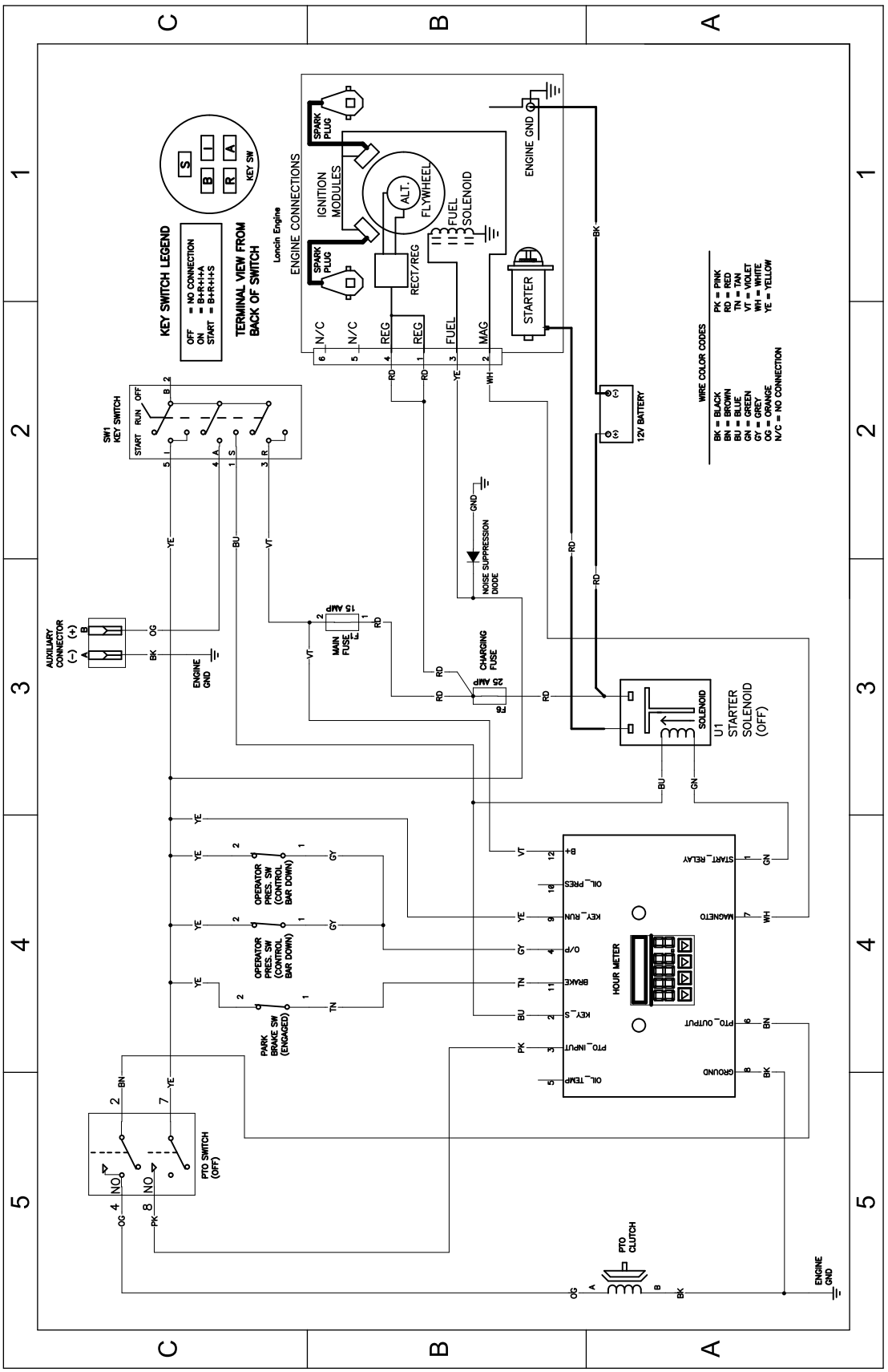
    Important: **Do not store fuel containing stabilizer/conditioner longer than the duration recommended by the fuel-stabilizer manufacturer.**
13. Remove and check the condition of the spark plug(s); refer to Servicing the Spark Plug (page 30). With the spark plug(s) removed from the engine, pour 30 ml (2 tablespoons) of engine oil into the spark plug hole. Use the starter to crank the engine and distribute the oil inside the cylinder. Install the spark plug(s). Do not install the wire on the spark plug(s).
14. Check and tighten all fasteners. Repair or replace any part that is damaged.
15. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
16. Store the machine in a clean, dry garage or storage area. Remove the key from the switch and keep it out of reach of children or other unauthorized users. Cover the machine to protect it and keep it clean.

Troubleshooting

Problem	Possible Cause	Corrective Action
The fuel tank is showing signs of collapsing or the machine is frequently showing signs of running out of fuel.	1. The air-cleaner paper element clogged.	1. Clean the paper element.
The engine overheats.	1. The engine load is excessive. 2. The oil level in the crankcase is low. 3. The cooling fins and air passages under the engine-blower housing are plugged. 4. The air cleaner is dirty. 5. Dirt, water, or stale fuel is in the fuel system.	1. Reduce the ground speed. 2. Add oil to the crankcase. 3. Remove the obstruction from the cooling fins and air passages. 4. Clean or replace the air-cleaner element. 5. Contact an Authorized Service Dealer
The starter does not crank.	1. The PTO is engaged. 2. The battery is dead. 3. The electrical connections are corroded or loose. 4. A fuse is blown. 5. A relay or switch is damaged.	1. Disengage the PTO. 2. Charge the battery. 3. Check the electrical connections for good contact. 4. Replace the fuse. 5. 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 choke (if applicable) is not on. 3. The air cleaner is dirty. 4. The spark-plug wire(s) is loose or disconnected. 5. The spark plug(s) is pitted, fouled, or the gap is incorrect. 6. There is dirt in fuel filter. 7. Dirt, water, or stale fuel is in fuel system. 8. There is incorrect fuel in the fuel tank. 9. The oil level in the crankcase is low.	1. Fill the fuel tank. 2. Move the choke lever to the ON position. 3. Clean or replace the air-cleaner element. 4. Install the wire(s) on the spark plug. 5. Install a new, correctly gapped spark plug(s). 6. Replace the fuel filter. 7. Contact an Authorized Service Dealer. 8. Drain the tank and replace the fuel with the proper type. 9. Add oil to the crankcase.
The engine loses power.	1. The engine load is excessive. 2. The air cleaner is dirty. 3. The oil level in the crankcase is low. 4. The cooling fins and air passages under the engine blower housing are plugged. 5. The spark plug(s) is pitted, fouled, or the gap is incorrect. 6. The fuel-tank vent is blocked. 7. There is dirt in the fuel filter. 8. Dirt, water, or stale fuel is in the fuel system. 9. There is incorrect fuel in the fuel tank.	1. Reduce the ground speed. 2. Clean the air-cleaner element. 3. Add oil to the crankcase. 4. Remove the obstruction from the cooling fins and air passages. 5. Install a new, correctly gapped spark plug(s). 6. Contact an Authorized Service Dealer. 7. Replace the fuel filter. 8. Contact an Authorized Service Dealer. 9. Drain the tank and replace the fuel with the proper type.

Problem	Possible Cause	Corrective Action
The machine does not drive.	1. The hydraulic-fluid reservoir is low. 2. Air is in the hydraulic system. 3. A pump-drive belt slips. 4. A pump-drive belt idler spring is missing. 5. The pump-bypass valves are open.	1. Add hydraulic fluid to the reservoir. 2. Bleed the air out the hydraulic system. 3. Replace the pump-drive belt. 4. Replace the pump-drive belt idler spring. 5. Tighten the bypass valves. Torque to 12 to 15 N·m (9 to 11 ft-lb).
There is abnormal vibration.	1. Cutting blade(s) is/are bent or unbalanced. 2. A blade-mounting bolt is loose. 3. The engine-mounting bolts are loose. 4. An engine pulley, idler pulley, or blade pulley is loose. 5. An engine pulley is damaged. 6. A blade spindle is bent.	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.
The cutting height is uneven.	1. Blade(s) are not sharp. 2. Cutting blade(s) is/are bent. 3. The mower deck is not level. 4. The mower deck pitch is wrong. 5. The underside of mower deck is dirty. 6. The tire pressure is not correct. 7. A blade spindle is bent.	1. Sharpen the blade(s). 2. Install new cutting blade(s). 3. Level the mower deck side-to-side position. 4. Adjust the front-to-rear pitch. 5. Clean the underside of the mower deck. 6. Adjust the tire pressure. 7. Contact an Authorized Service Dealer.
The blades do not rotate.	1. A pump-drive belt is worn, loose or broken. 2. A pump-drive belt is off pulley. 3. A mower-deck belt is worn, loose or broken. 4. A mower-deck belt is off the pulley. 5. An idler spring is broken or missing. 6. The electric clutch is out of adjustment. 7. The clutch connector or wire is damaged. 8. The electric clutch is damaged. 9. The safety-interlock system prevents blade rotation. 10. The PTO switch is faulty.	1. Check the belt tension. 2. Install the drive belt and check the adjusting shafts and belt guides for the correct position. 3. Install the new deck belt. 4. Install the deck pulley and check the idler pulley, idler arm and spring for the correct position and function. 5. Replace the spring. 6. Adjust the clutch air gap. 7. Contact an Authorized Service Dealer. 8. Contact an Authorized Service Dealer. 9. Contact an Authorized Service Dealer. 10. Contact an Authorized Service Dealer.
The mower deck idler is making noise.	1. The idler arm is contacting the idler stop.	1. Adjust the idler arm.

Schematics



g302778

Electrical Schematic—139-2853 (Rev. A)

EEA/UK Privacy Notice

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