Form No. 3430-991 Rev A

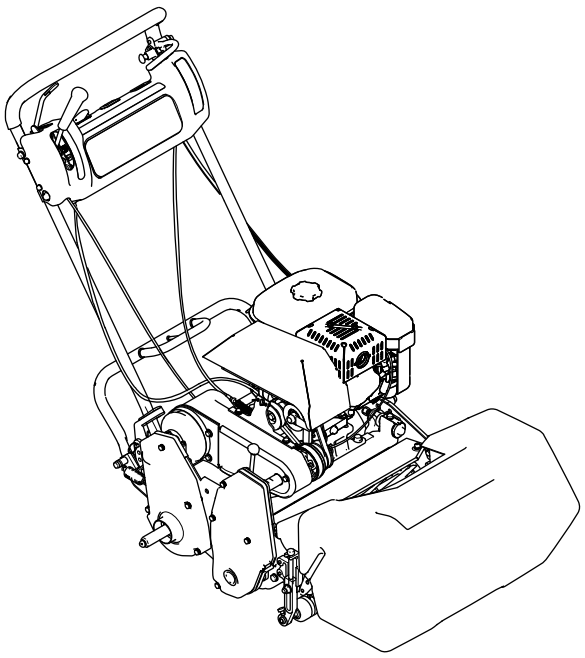
TORO®

Count on it.

Operator's Manual

Greensmaster® 1000 Mower

Model No. 04810—Serial No. 400000000 and Up



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

CE

3430-991 A

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

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

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

Operating this machine 1,500 m (5,000 ft) above sea level requires a high-altitude jet. Refer to your Honda engine owner's manual.

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

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

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

Introduction

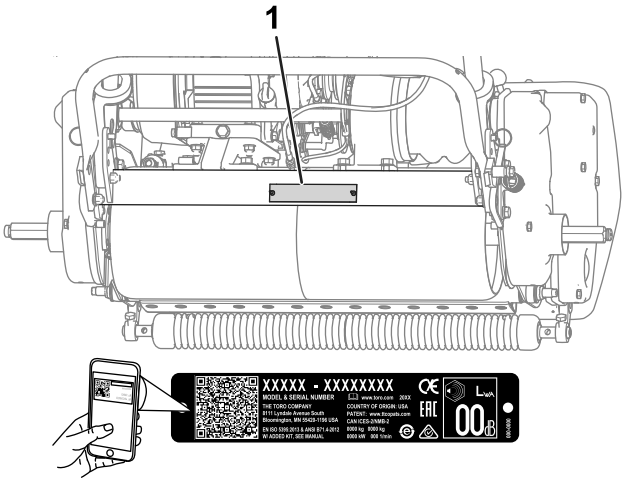
This machine is a walk-behind, reel-blade lawn mower intended to be used by professional, hired operators in commercial applications. It is primarily designed for cutting grass on well-maintained turf. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

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

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

Whenever you need service, genuine Toro parts, or additional information, contact an authorized Toro distributor and have the model and serial numbers of your product ready. The model and serial numbers are located on a plate on the rear frame. Write the numbers in the space provided.

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



g235302

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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Bloomington, MN 55420

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Safety

This machine has been designed in accordance with EN ISO 5395 and ANSI B71.4-2017 and meets these standards when you add the Operator Presence Kit and required decals.

General Safety

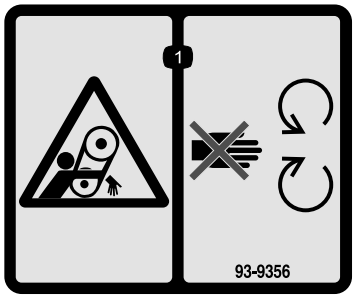
This product is capable of amputating hands and feet and of throwing objects.

- Read and understand the contents of this *Operator's Manual* before starting the machine.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.
- Keep bystanders and children out of the operating area. Never allow children to operate the machine.
- Shut off the engine, remove the key (if equipped), and wait for all movement to stop before you leave the operator's position. Allow the machine to cool before adjusting, servicing, cleaning, or storing it.

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

Safety and Instructional Decals

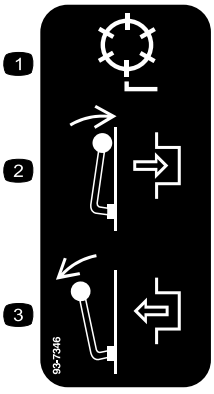
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.



decal93-9356

93-9356

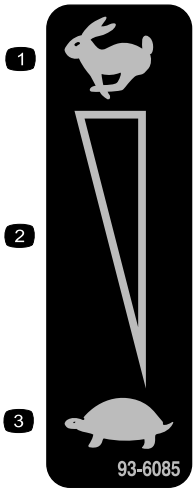
1. Entanglement hazard—stay away from moving parts.



decal93-7346

93-7346

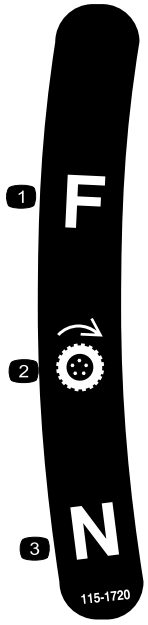
1. Reel drive
2. Engage
3. Disengage



decal93-6085

93-6085

1. Fast
2. Continuous variable setting
3. Slow



decal115-1720

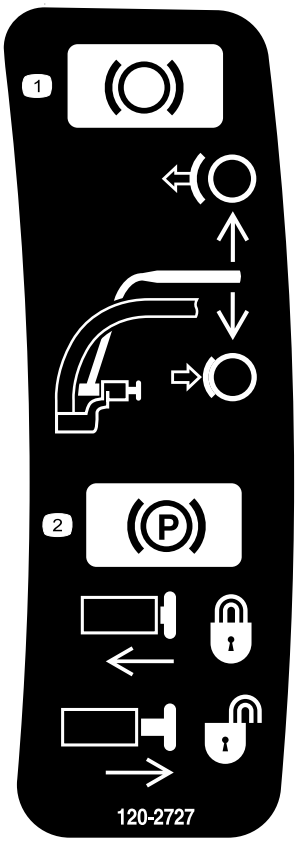
115-1720

1. Forward
2. Drive wheel
3. Neutral



decal133-8062

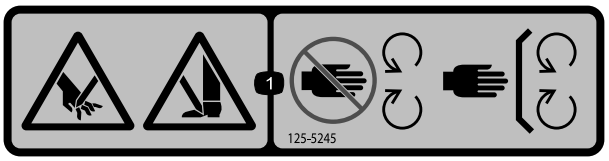
133-8062



decal120-2727

120-2727

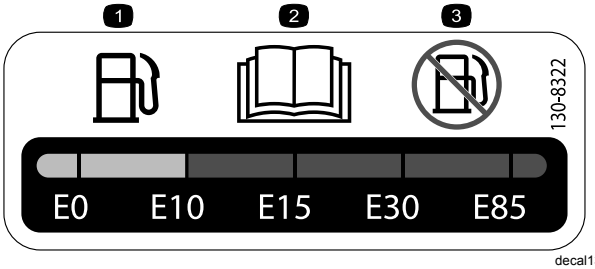
1. Brake—to engage, pull the lever toward the handle; to disengage, release the lever.
2. Parking brake—to lock, pull the lever toward the handle, press the button in and release the lever against the locking button; to release, pull the lever toward the handle until the button releases and release the lever.



decal125-5245

125–5245

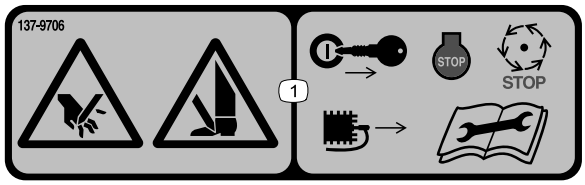
1. Cutting hazard of hand or foot—keep away from moving parts; keep all guards and shields in place.



decal130-8322

130-8322

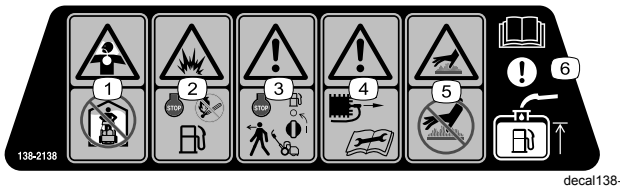
1. Use only gasoline that contains 10% ethanol by volume (E10) or less.
2. Read the *Operator's Manual*.
3. Do not use gasoline that contains more than 10% ethanol by volume (E10).



decal137-9706

137-9706

1. Cutting hazard of the hand or foot—shut off the engine, remove the key, wait for all moving parts to stop, disconnect the spark plug, and read the *Operator's Manual* before performing maintenance.



decal138-2138

138-2138

1. Poisonous fumes or toxic gases, asphyxiation hazard—do not run the engine in an enclosed space.
2. Explosion hazard—shut off the engine before adding fuel; no fire, open flames, or smoking when adding fuel.
3. Warning—shut off the engine and close the fuel shutoff valve before leaving the machine.
4. Warning— disconnect the spark plug wire before performing maintenance.
5. Hot surface hazard—do not touch the hot surface.
6. Attention—read the *Operator's Manual* for information about filling the fuel tank.



decal120-2761

120-2761

1. Warning—read the *Operator's Manual*.
2. Warning—receive training before operating the machine.
3. Warning—wear hearing protection.
4. Thrown object hazard—keep bystanders away from the machine.
5. Warning—keep away from moving parts; keep all guards in place.

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Handle Cable tie	1 4	Install the handle.
2	Right wheel shaft Left wheel shaft	1 1	Install the transport-wheel shafts.
3	Transport wheel	2	Install the transport wheels (optional).
4	No parts required	–	Adjust the cutting unit.
5	Operator Presence Kit (order separately; contact your authorized Toro distributor)	1	Install the operator presence kit.
6	Production-year decal CE-mark decal	1 1	Install the CE decals (if required).
7	Grass basket	1	Install the grass basket.
8	No parts required	–	Break in the machine.

Media and Additional Parts

Description	Qty.	Use
Operator's Manual Engine Owner's Manual Certificate of Compliance	1 1 1	Read or view the items before operating the machine.

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

1

Installing and Adjusting the Handle

Parts needed for this procedure:

1	Handle
4	Cable tie

Installing the Handle

1. Remove the bolts (5/16 inch), locknuts, ring pins, and hairpin cotters that secure the bottom of the handle arms to each side of the machine (Figure 3).

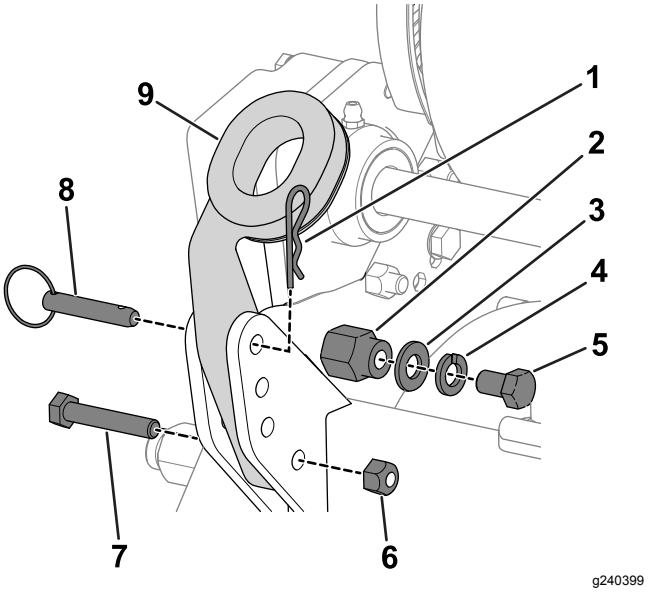


Figure 3

1. Hairpin cotter
2. Mounting pin
3. Washer
4. Lock washer
5. Bolt (3/8 inch)
6. Locknut
7. Bolt (5/16 inch)
8. Ring pin
9. Handle arm

2. Remove the bolts (3/8 inch), washers, and lock washers from the mounting pins on each side of the machine (Figure 3).
3. Insert the handle ends through the holes in the handle arms and align the holes with the mounting pins (Figure 3).
4. Squeeze the handle ends inward and install them on the mounting pins (Figure 4).

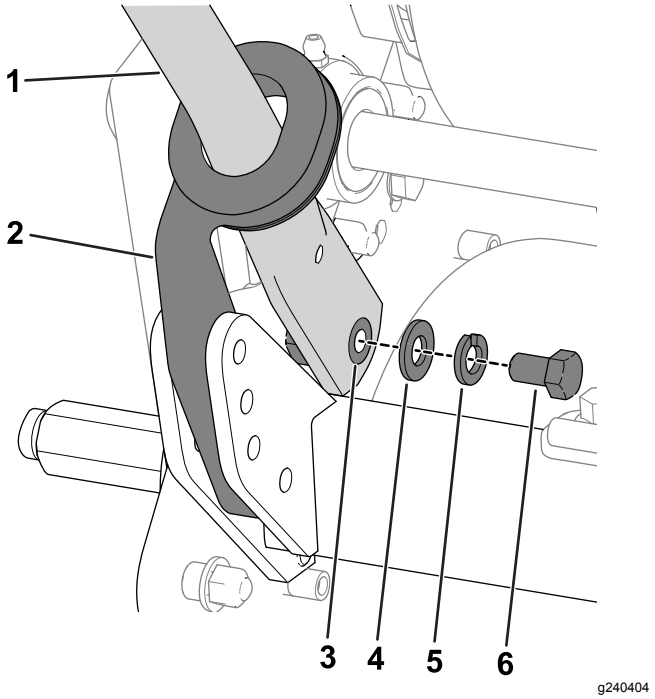


Figure 4

1. Handle
2. Handle arm
3. Mounting pin
4. Washer
5. Lock washer
6. Bolt (3/8 inch)

5. Secure the handle to the mounting pins with the bolts (3/8 inch), washers, and lock washers that you previously removed (Figure 4).
6. Use the bolts (5/16 inch), locknuts, hairpin cotters, and ring pins that you previously removed to secure the handle arms to the rear of the frame (Figure 3).
7. Secure the cables and wire harness to the handle with the cable ties (Figure 5).

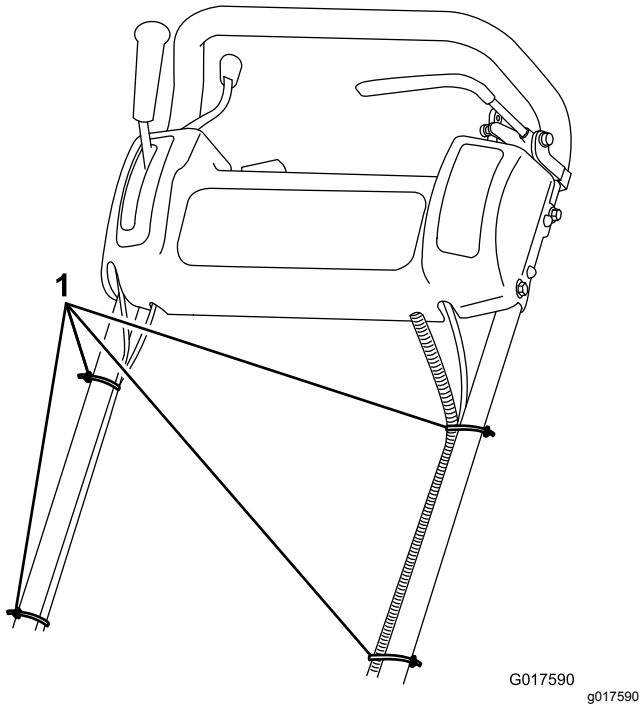


Figure 5

1. Cable ties

Adjusting the Handle

Refer to Figure 6 for this procedure.

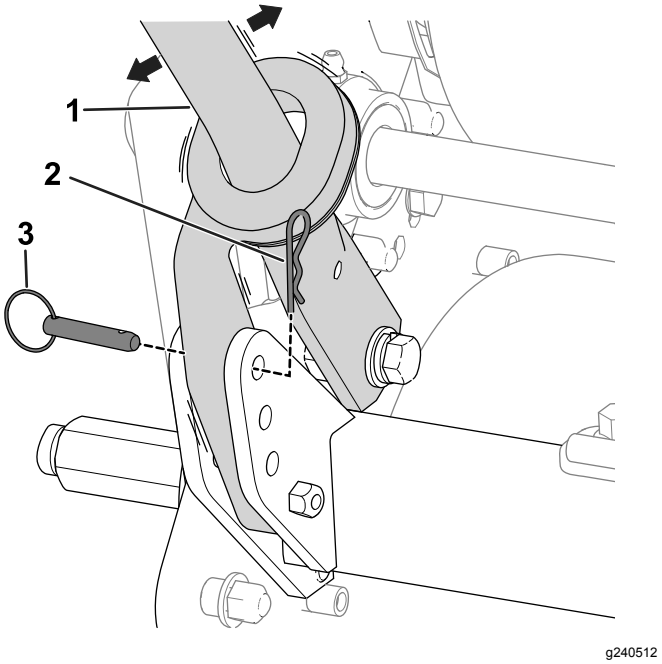


Figure 6

1. Handle
2. Hairpin cotter
3. Ring pin

1. Remove the hairpin cotters from the ring pins on each side of the machine.
2. While supporting the handle, remove the ring pins from each side and raise or lower the handle to the desired operating position.
3. Install the ring pins and hairpin cotters.

2

Installing the Transport-Wheel Shafts

Parts needed for this procedure:

1	Right wheel shaft
1	Left wheel shaft

Procedure

1. Push the kickstand down with your foot and pull up on the handle to support the machine on the kickstand.
2. Apply thread-locking adhesive to the threads of the wheel shafts.

3. Thread the right wheel shaft into the drive pulley on the right side of the machine (Figure 7).

   Note: The right wheel shaft has left-hand threads.

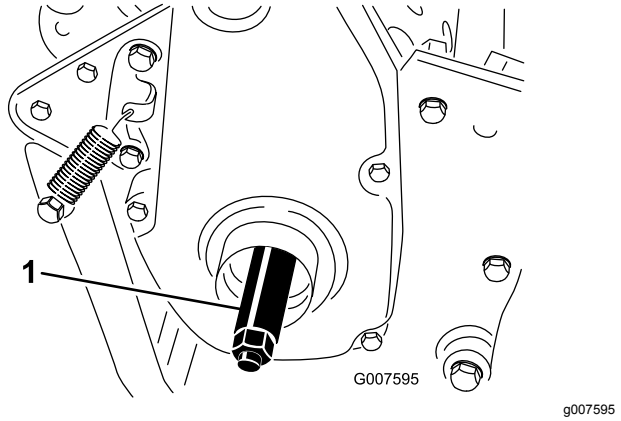


Figure 7

1. Right wheel shaft

4. Torque the shaft to 88 to 101 N·m (65 to 75 ft-lb).
5. Repeat steps 2 through 4 to install the left wheel shaft to the left side of the machine.

3

Installing the Transport Wheels

Optional

Parts needed for this procedure:

2	Transport wheel

Procedure

1. Push the kickstand down with your foot and pull up on the handle to support the machine on the kickstand.
2. Slide a wheel onto an axle.
3. Pivot the wheel locking clip away from center of the wheel, allowing it to slide farther onto the axle (Figure 8).

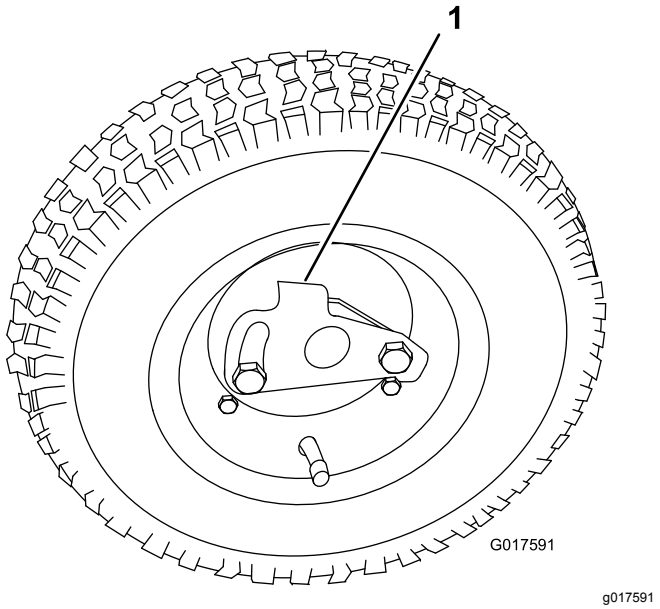


Figure 8

1. Locking clip

4. Rotate the wheel back and forth until it slides completely onto the axle and the locking clip is secured in the groove on the axle shaft.
5. Repeat the procedure on the opposite side of the machine.
6. Inflate the tires to 83 to 103 kPa (12 to 15 psi).
7. Carefully lower the machine off the kickstand.

4

Adjusting the Cutting Unit

No Parts Required

Procedure

Before operating the machine, complete the following adjustments:

- Leveling the Rear Drum to the Reel (page 35)
- Adjusting the Bedknife to the Reel (page 36)
- Adjusting the Height-of-Cut (page 37)
- Adjusting the Grass Shield Height (page 38)
- Adjusting the Cut-Off Bar (page 38)

5

Installing the Operator Presence Kit

Parts needed for this procedure:

1	Operator Presence Kit (order separately; contact your authorized Toro distributor)

Procedure

To comply with EN ISO 5395 and ANSI B71.4-2017, install the Operator Presence Kit (Model No. 112-9282); refer to the kit *Installation Instructions*.

Contact your authorized Toro distributor to acquire this kit.

6

Installing the CE Decals

If Required

Parts needed for this procedure:

1	Production-year decal
1	CE-mark decal

Procedure

If you use this machine in a country that complies to CE standards, apply the production-year decal and the CE-mark decal near the serial plate; refer to Figure 9.

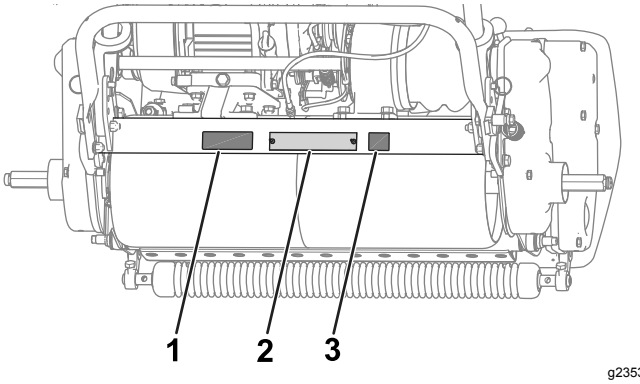


Figure 9

1. Production-year decal
2. Serial plate
3. CE-mark decal

7

Installing the Grass Basket

Parts needed for this procedure:

1	Grass basket

Procedure

Grasp the basket by the top lip and slide it onto the basket mounting rods (Figure 10).

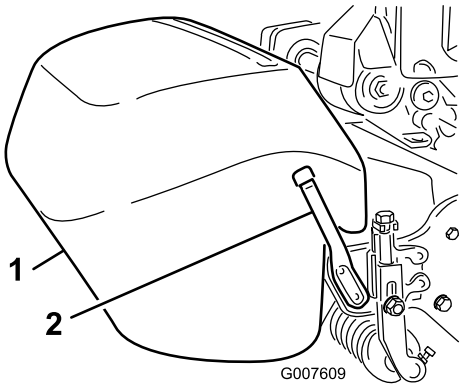


Figure 10

1. Grass basket
2. Basket mounting rod

8

Breaking in the Machine

No Parts Required

Procedure

Only 8 hours of mowing operation is required for the break-in period.

The first several hours of operation are critical to future dependability of the machine. You must monitor the machine performance closely so that minor difficulties, which could lead to major problems, are noted and can be corrected. During the first few hours of operation, inspect the machine frequently for signs of oil leakage, loose fasteners, or any other malfunction.

Refer to the engine owner's manual for the recommended break-in-period oil change and maintenance procedures.

Product Overview

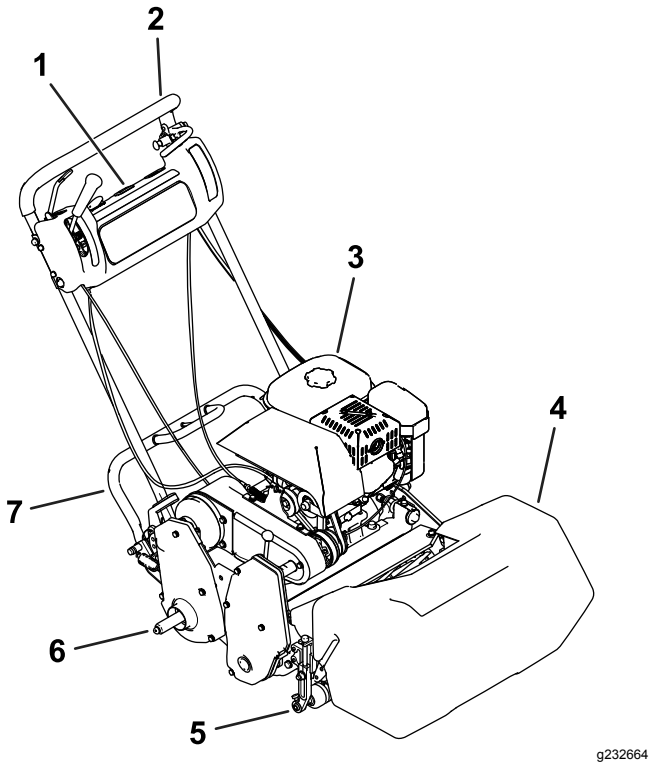


Figure 11

1. Control panel
2. Handle
3. Fuel tank
4. Grass basket
5. Cutting unit
6. Transport wheel axle
7. Kickstand

Controls

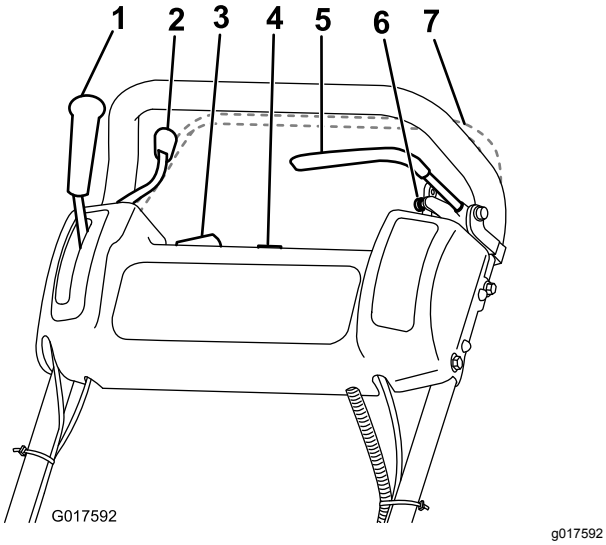


Figure 12

1. Traction-drive lever
2. Throttle control
3. On/Off switch
4. Hour meter
5. Service brake
6. Parking brake
7. Operator-presence control (optional)

Traction-Drive Lever

The traction-drive lever (Figure 12) is located on the front right side of the control panel. It has 2 positions: NEUTRAL and FORWARD. Pushing the lever forward engages the traction drive.

Throttle Control

The throttle control (Figure 12) is located on the rear, right side of the control panel. The lever connects to and operates the throttle linkage to the carburetor. Refer to Specifications (page 14) for the engine speed.

On/Off Switch

The On/Off switch (Figure 12) is located on the top of the control panel. Move the switch to the ON position to start the engine and the OFF position to shut off the engine.

Service Brake

The service brake (Figure 13) is located on the top left, front side of the control panel. You can use the brake to slow or stop the machine.

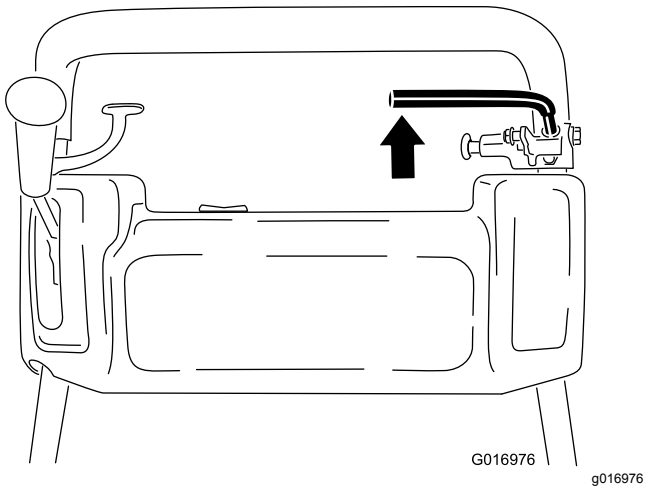


Figure 13

Parking Brake

The parking brake (Figure 14) is located at the base of the service brake. Fully engage the service brake and push the parking-brake knob to allow the service brake to rest on the parking-brake pin. Engage the service brake to release the parking brake. You must release the brake before you engage the traction drive.

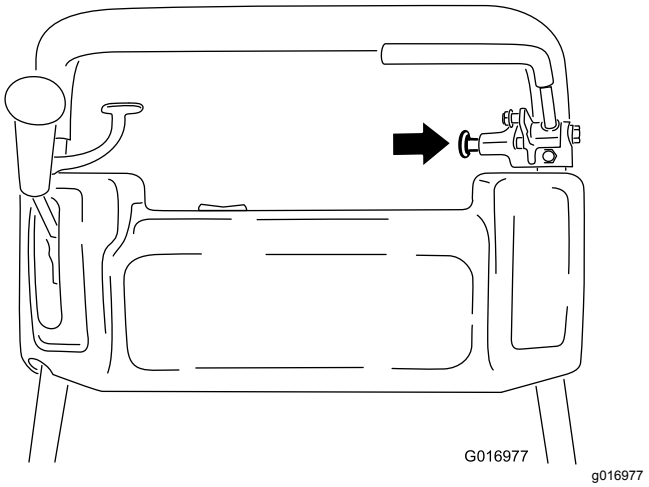


Figure 14

Operator-Presence Control

Optional

If equipped, the operator-presence control (Figure 12) is located on the rear of the handle. Push the operator-presence control against the handle. You must engage, the operator-presence control before moving the traction-drive lever. If you release the operator-presence control, the engine shuts off.

Reel-Drive Lever

The reel-drive lever (Figure 15) is located on the right, front corner of the machine. The lever has 2 positions:

- ENGAGE—move the lever forward to engage the reel.
- DISENGAGE—move the lever rearward to disengage the reel.

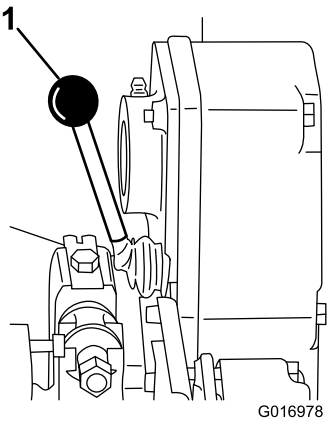


Figure 15

1. Reel-drive lever

Choke Lever

The choke lever (Figure 16) is located on the left front of the engine. Use the lever to aid in starting a cold engine; refer to Using the Choke Lever (page 18).

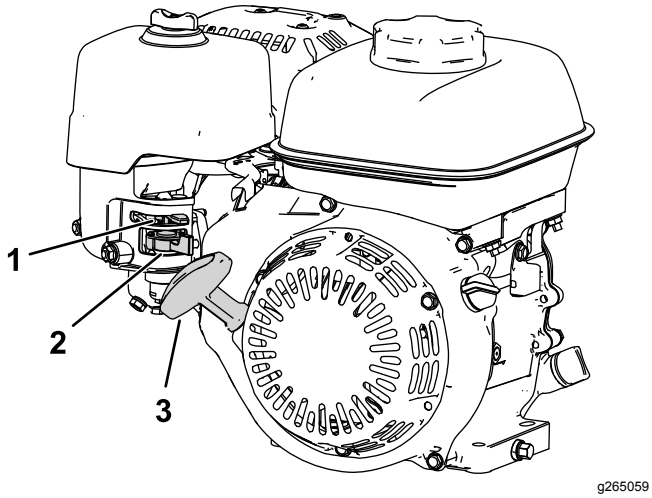


Figure 16

1. Choke lever
2. Fuel-shutoff valve
3. Recoil-starter handle

Fuel-Shutoff Valve

The fuel-shut-off valve is located on the side of the engine below the choke control (Figure 16).

Note: Close the fuel-shutoff valve when the machine is not used for a few days, during transport to and from the job site, or when the machine is parked inside a building; refer to Opening and Closing the Fuel-Shutoff Valve (page 19).

Recoil-Starter Handle

Pull the recoil-starter handle (Figure 16) to start the engine.

Specifications

Model Specifications	Model 04055
Width	91 cm (36 inches)
Height	114 cm (45 inches)
Length with basket	122 cm (48 inches)
Dry weight (with basket and Wiehle roller; without wheels or grooming reel)	98 kg (216 lb)
Width of cut	53 cm (21 inches)
Height of cut	1.6 mm to 31.8 mm (0.063 to 1.25 inches)
Clip	4.3 mm (0.16 inch)
Engine speed	Low idle: 1,800 to 2,000 rpm; High idle: 3,350 to 3,550 rpm

Attachments/Accessories

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

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

Operation

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

Before Operation

Before Operation Safety

General Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Shut off the engine, remove the key (if equipped), and wait for all movement to stop before you leave the operator's position. Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Know how to stop the machine and shut off the machine quickly.
- Check that operator-presence controls, safety switches, and safety protective devices are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- Inspect the area where you will use the machine and remove all objects that the machine could throw.

Fuel Safety

- Use extreme care in handling fuel. It is flammable and its vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or 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.

Performing Daily Maintenance

Perform the daily maintenance procedures; refer to Daily Maintenance Checklist (page 24).

Checking the Engine-Oil Level

Check the engine-oil level before each use or every 8 operating hours, refer to Checking the Engine-Oil Level (page 26).

Fuel Specifications

Fuel tank capacity: 2.0 L (0.59 US gallons)

Recommended fuel: 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).
- **Do not** use gasoline containing methanol.
- **Do not** store fuel either in the fuel tank or fuel containers over the winter unless a fuel stabilizer is used.
- **Do not** add oil to gasoline.
- For best results, use only clean, fresh (less than 30 days old) fuel.
- Using unapproved gasoline may cause performance problems and/or engine damage, which may not be covered under the warranty.

Filling the Fuel Tank

⚠ 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.

- **Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.**
- **Never fill the fuel tank inside an enclosed trailer.**
- **Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 6 to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck. This empty space in the tank allows fuel to expand.**
- **Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.**
- **Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of fuel.**
- **Do not operate without entire exhaust system in place and in proper working condition.**

⚠ DANGER

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

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

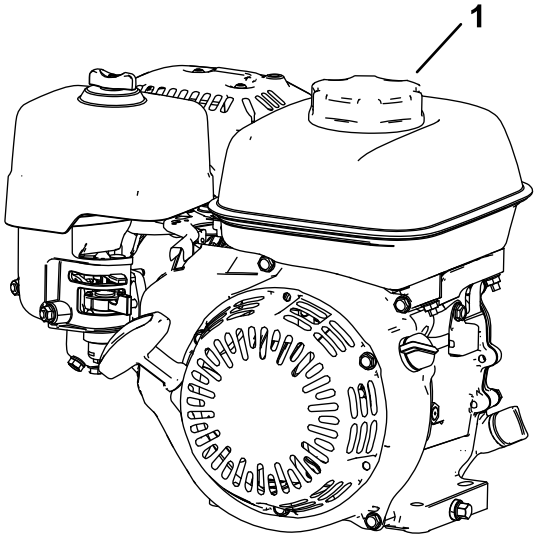
⚠ WARNING

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

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

1. Clean around the fuel-tank cap and remove the cap from the tank (Figure 17). Fill the fuel tank to the bottom of the fill-neck opening.

   Important: **Do not overfill the tank with fuel.**



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Figure 17

1. Fuel-tank cap

2. Install the fuel-tank cap and wipe up any spilled fuel.

Setting the Machine to Match Turf Conditions

Use the following tables to set the machine to match turf conditions.

Bedbars: Standard and Optional

Part Number	Description	Aggressiveness	Comments
112-9281-01	Standard	Less	Standard Greensmaster 1000
112-9279-03	Aggressive	More	

Bedknives: Standard and Optional

Part Number	Description	Height of Cut Range	Comments
93-4262	Microcut	1.57–3.1 mm (0.062–0.125 inch)	
115-1880	EdgeMax Microcut	1.57–3.1 mm (0.062–0.125 inch)	Standard Greensmaster 1000
93-4263	Tournament	3.1–6.0 mm (0.125–0.250 inch)	
115-1881	EdgeMax Tournament	3.1–6.0 mm (0.125–0.250 inch)	Longer wearing
93-4264	Low cut	6.0 mm (0.250 inch) and up	
108-4303	Extended Microcut	1.57–3.1 mm (0.062–0.125 inch)	Less aggressive

Rollers: Standard and Optional

Part Number	Description	Diameter/Material	Comments
99-6241	Narrow Wiehle	50.8 mm (2.0 inches) Aluminum	Standard, 0.20 inch spacing
88-6790	Wide Wiehle	50.8 mm (2.0 inches) Aluminum	More penetration, 0.43 inch spacing
104-2642	Full roller	50.8 mm (2.0 inches) Steel	Least penetration
71-1550	Wiehle roller	50.8 mm (2.0 inches) Cast Iron	More penetration, 0.43 inch spacing
93-9045	Wiehle roller	63.5 mm (2.5 inches) Aluminum	24 inches wide for edge support
52-3590	Swaged roller	63.5 mm (2.5 inches) Aluminum	

Clip

Model	Standard			Clip Kit 65-9000			Traction Kit 115-1886			Clip and Traction Kits		
	Standard reel	Optional reel		Standard reel	Optional reel		Standard reel	Optional reel		Standard reel	Optional reel	
04810	11-blade 4.1 mm (0.16 inch)	14-blade 3.3 mm (0.13 inch)	8-blade 5.8 mm (0.23 inch)	11-blade 6.4 mm (0.25 inch)	14-blade 4.8 mm (0.19 inch)	8-blade 8.6 mm (0.34 inch)	11-blade 3.8 mm (0.15 inch)	14-blade 3.0 mm (0.12 inch)	8-blade 5.1 mm (0.20 inch)	11-blade 5.6 mm (0.22 inch)	14-blade 4.3 mm (0.17 inch)	8-blade 7.6 mm (0.30 inch)
Ground speed	5.39 km/h (3.35 mph)						4.80 km/h (2.98 mph)					

Checking the Interlock-Switch Operation

⚠ CAUTION

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

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

1. Push the kickstand down with your foot and pull up and back on the handle to raise the wheels off the ground.
2. Place the traction lever into the ENGAGE position and the engine controls in the starting position.
3. Attempt to start the engine.

   The engine should not start. If the engine starts, the interlock switch needs service. Correct the problem before operating the machine. Refer to Servicing the Traction-Interlock Switch (page 29)
4. Carefully lift up on the handle to release the kickstand.

Transporting the Machine to a Job Site

Transporting the Machine Using Transport Wheels

Use the transport wheels to transport the machine a shorter distance.

1. Install the transport wheels; refer to 3 Installing the Transport Wheels (page 10)
2. Ensure that the traction and reel-drive controls are in the NEUTRAL position.
3. Start the engine; refer to Starting the Engine (page 20)
4. Set the throttle control to SLOW, tip the front of the machine up, gradually engage the traction drive, and slowly increase the engine speed.
5. Adjust the throttle to operate the mower at the desired ground speed and transport the machine to the desired destination.

Transporting the Machine Using a Trailer

Use a trailer to transport the machine a considerable distance. Use caution while loading and unloading the machine onto the trailer.

1. Carefully drive the machine onto the trailer.
2. Shut off the engine, engage the parking brake, and turn the fuel valve to the OFF position.
3. Use a full-width ramp for loading the machine into a trailer or truck.
4. Securely fasten the machine to the trailer.

Note: You can use the Toro Trans Pro trailer to transport the machine. For instructions on loading the trailer, refer to your trailer *Operator's Manual*.

Important: **Do not run the engine while transporting it on a trailer because damage can occur to the machine.**

Removing the Transport Wheels

1. Return the traction control lever to the NEUTRAL position, the throttle to the SLOW position, and shut off the engine.
2. Push the kickstand down with your foot and pull up on the handle support until the kickstand has rotated forward, over center.
3. Remove the transport wheels by pushing the wheel locking clips out of the hex-shaft grooves.
4. Carefully lower the machine off of the kickstand by pushing forward slowly or by lifting the lower handle support, allowing the kickstand to spring back to the STORAGE position.

Using the Choke Lever

Use the choke lever to aid in starting a cold engine. Move the lever to the CHOKE position when starting a cold engine. After the engine starts, move the lever to the RUN position.

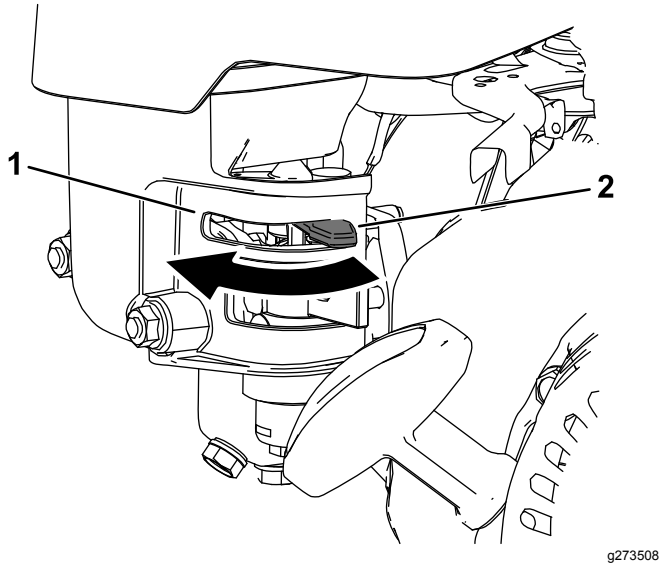


Figure 18

1. Choke lever—CHOKE position
2. Choke lever—RUN position

Opening and Closing the Fuel-Shutoff Valve

Control fuel flow to the engine with the fuel-shutoff valve as follows:

- To open the fuel valve, turn the fuel-shutoff lever toward the recoil starter handle (Figure 19).
- To shut the fuel valve, turn the fuel-shutoff lever away from the recoil starter handle (Figure 19).

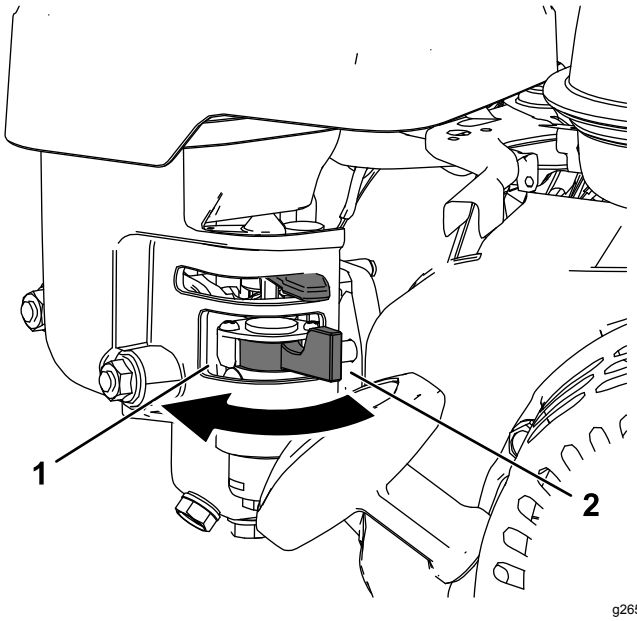


Figure 19

1. Fuel-shutoff lever—CLOSED position
2. Fuel-shutoff lever—OPEN position

During Operation

During Operation Safety

General Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; long pants; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear loose clothing or loose jewelry.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Before you start the machine, ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position.
- Keep bystanders and children out of the operating area. If co-workers must be present, use caution and ensure that the grass basket is installed on the machine.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- Do not operate the machine when there is the risk of lightning.
- Avoid mowing on wet grass. Poor footing could cause a slip-and-fall accident.
- 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 care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.
- Stop the cutting unit whenever you are not mowing.
- Disengage the drive to the cutting unit and shut off the engine before adjusting the height of cut.
- Never run an engine in an area where exhaust gasses are enclosed.
- Never leave a running machine unattended.
- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Disengage the cutting unit.
  - Engage the parking brake.

  - Shut off the machine and remove the key (if equipped).
  - Wait for all movement to stop.
- Shut off the machine before emptying the basket.
- Do not touch the engine, muffler, or exhaust pipe while the engine is running or soon after it has shut off because these areas could be hot enough to cause burns.
- Shut off the machine and disengage the drive to the cutting unit in the following situations:
  - Before fueling
  - Before clearing blockages
  - Before removing the grass basket
  - 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.

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).

Starting the Engine

Note: For illustrations and descriptions of the controls referenced in this section, refer to Controls (page 13).

Note: Ensure that the spark-plug wire is installed on the spark plug.

1. Ensure that the traction and reel drive levers are in the DISENGAGED position.

   Note: The engine will not start if the traction lever is in the ENGAGED position.
2. Ensure that the fuel-shutoff valve is open.
3. Move the On/Off switch to the ON position.
4. Move the throttle control to the FAST position.
5. Move the choke lever halfway between the CHOKE and RUN positions when starting a cold engine.

   Note: The choke may not be required when starting a warm engine.
6. Pull the recoil-start handle out until positive engagement results, then pull it vigorously to start the engine.

   Important: **Do not pull the recoil rope to its limit or let go of the starter handle when the rope is pulled out; the rope may break or the recoil assembly may be damaged.**
7. Move the choke lever to the RUN position as the engine warms up.

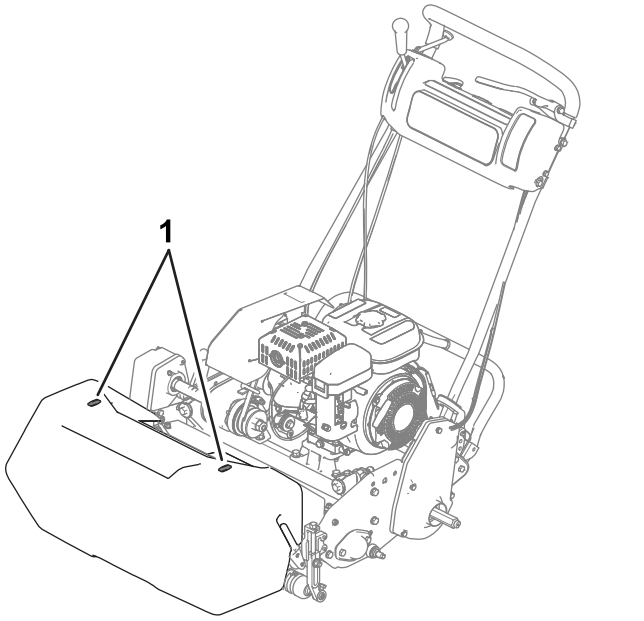
Shutting Off the Engine

1. Move the traction and reel drive controls to the DISENGAGED position.
2. Move the throttle control to the SLOW position.
3. Move the On/Off switch to the OFF position.
4. Close the fuel-shutoff valve before you store or transport the machine

Operating Tips

Important: **Grass clippings act as a lubricant when mowing. Operating the cutting unit excessively without grass clippings can damage the cutting unit.**

- Mow the greens in a straight back-and-forth direction across the green.
- Avoid circular mowing or turning the machine on the greens areas to prevent scuffing.
- Turn the machine off the green by raising the cutting reel (pushing the handle down) and turning on the traction drum.
- Mow at a normal walking pace. Fast speeds saves little time and results in an inferior mowing job.
- To assist in maintaining a straight line across the green and to keep the machine an equal distance from the edge of the previous cut, use the alignment stripes on the basket (Figure 20).



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Figure 20

1. Alignment stripes

Operating the Machine in Low Light Conditions

Use the LED Light Kit when you operate the machine in low light conditions; contact your authorized Toro distributor.

Important: **Do not use other light systems with this machine, as they will not operate properly with the engine AC output.**

Mowing

Proper use of the machine provides the smoothest turf cutting available. Refer also to Operating Tips (page 21) for fundamental suggestions to obtain the utmost performance from your machine.

Important: **Excessive operation of the cutting unit with the absence of grass clippings (lubricant) can damage the cutting unit.**

1. Start the engine, set the throttle at a reduced speed, push down on the handle to raise the cutting unit, move the traction lever to the ENGAGED position, and transport the machine onto the collar of the green.
2. Move the traction lever to the DISENGAGED position and move the reel-drive lever to the ENGAGED position.
3. Move the traction lever to the ENGAGED position, increase the throttle speed until the machine is traveling at the desired ground speed, drive the machine onto the green, lower the front of the machine, and commence operation.
4. When you are finished mowing, drive off the green, move the traction-control lever to the DISENGAGED position, shut off the engine, and push the reel-drive lever into the DISENGAGED position.
5. Empty the grass basket of clippings, install the grass basket, and commence the transport operation.

Operating the Controls after Mowing

1. Drive off the green, move the reel drive and traction control levers to the DISENGAGED position, and shut off the engine.
2. Empty the grass basket of clippings, install the grass basket on the mower, and transport the machine to storage.

After Operation

After Operation Safety

General Safety

- Shut off the engine, remove the key (if equipped), and wait for all movement to stop before you leave the operator's position. Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Clean grass and debris from the machine to help prevent fires. Clean up oil or fuel spills.
- Allow the machine to cool before storing the machine in any enclosure.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.
- Reduce the throttle setting before shutting off the engine and turn off the fuel-shutoff valve (if equipped) after mowing.

Transporting the Machine

After mowing, transport the machine away from the job site; refer to Transporting the Machine Using Transport Wheels (page 18) or Transporting the Machine Using a Trailer (page 18).

Maintenance

⚠ WARNING

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

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

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

Important: **Do not tip the machine at an angle greater than 25°. Tipping the machine beyond 25° leads to oil leaking into the combustion chamber and/or fuel leaking out of the fuel-tank cap.**

Important: **Refer to your engine Owner's Manual for additional maintenance procedures.**

Maintenance Safety

- Before you leave the operator's position, do the following:
  - Park the machine on a level surface.
  - Move the throttle to the low-idle position.
  - Disengage the cutting unit(s).
  - Ensure that the traction is in neutral.
  - Engage the parking brake.
  - Shut off the machine and remove the key (if equipped).
  - Wait for all movement to stop.
- Allow machine components to cool before performing maintenance.
- If possible, do not perform maintenance while the machine is running. Keep away from moving parts.
- 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.
- Clean grass and debris from the cutting unit, drive, muffler, cooling screen, and the engine to help prevent fires. Clean up oil or fuel spills.
- Keep all parts in good working condition. Replace all worn, damaged, or missing parts and decals. Keep all hardware tight to ensure that the machine is in safe working condition.
- Check the grass catcher components frequently and replace them when necessary.
- 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.
- If major repairs are ever needed or if assistance is desired, contact an authorized Toro distributor.

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 20 hours	• Change the engine oil.
Before each use or daily	• Check the interlock switch operation. • Check the engine-oil level. • Inspect the air-filter elements.
Every 25 hours	• Grease the machine. (Grease the fittings immediately after every washing regardless of the interval listed.)
Every 50 hours	• Clean the air-filter elements.
Every 100 hours	• Change the engine oil. • Inspect and adjust the spark plug; replace it if necessary.
Every 300 hours	• Replace the paper filter element (More frequently in dusty operating conditions). • Replace the spark plug.
Every 1,000 hours	• Check the transmission-drive belts. • Check the transmission bearings.

Daily Maintenance Checklist

Important: **Duplicate this page for routine use.**

Maintenance Check Item	For the week of:						
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Check the safety interlock operation.							
Check the parking brake operation.							
Check the fuel level.							
Check the engine oil level.							
Check the air filter.							
Clean the engine cooling fins.							
Check for unusual engine noises.							
Check for unusual operating noises.							
Check the reel-to-bedknife adjustment.							
Check the height-of-cut adjustment.							
Grease all fittings.							
Touch up damaged paint.							

Notation for Areas of Concern

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

Pre-Maintenance Procedures

Preparing the Machine for Maintenance

⚠ WARNING

While you are maintaining or adjusting the machine, someone could start the engine. Accidentally starting the engine could seriously injure you or other bystanders.

Shut off the engine, engage the parking brake, and pull the wire(s) off the spark plug(s) before you do any maintenance. Also push the wire(s) aside so it does not accidentally contact the spark plug(s).

Perform the following before servicing, cleaning, or making any adjustments to the machine.

1. Park the machine on a level surface.
2. Shut off the engine and remove the key from the machine (if equipped).
3. Engage the parking brake.
4. Wait for all moving parts to stop allow the engine to cool before servicing, storing, or making repairs.
5. Disconnect the spark-plug wire (Figure 21).

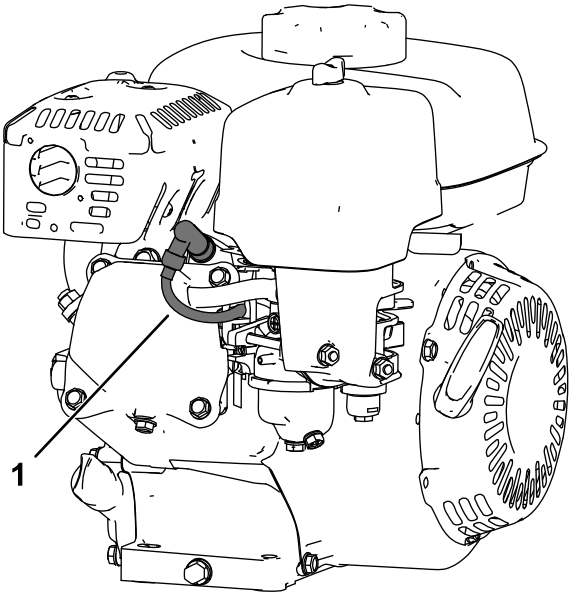


Figure 21

1. Spark-plug wire

Lubrication

Greasing the Machine

Service Interval: Every 25 hours

Lubricate the 12 grease fittings on the mower using No. 2 lithium grease. For best results, use a hand-operated grease gun.

The grease fitting locations are as follows:

- 2 on the front roller (Figure 22)
- 2 on the reel bearings (Figure 22)
- 2 on the drum axles (Figure 23)
- 3 on the differential (Figure 23)
- 2 on the reel countershaft bearings (Figure 24)
- 1 on the belt idler pivots (Figure 25).

1. Wipe each grease fitting with a clean rag.
2. Pump grease into each fitting.

   Important: **Do not apply too much pressure or the grease seals may become permanently damaged.**
3. Wipe off any excess grease.

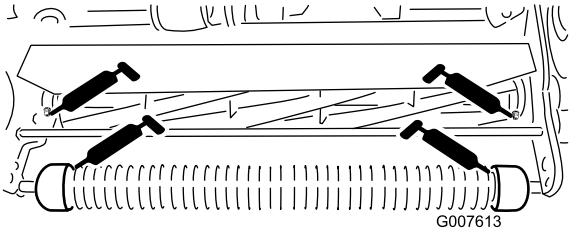


Figure 22

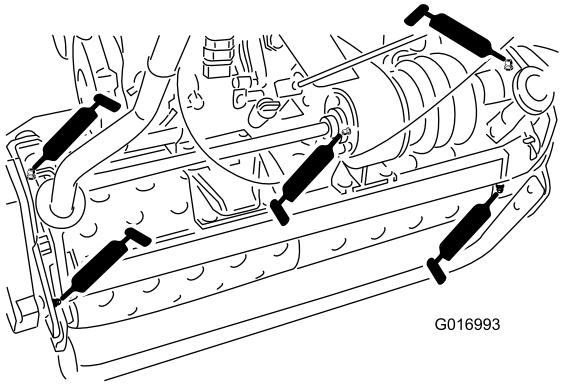
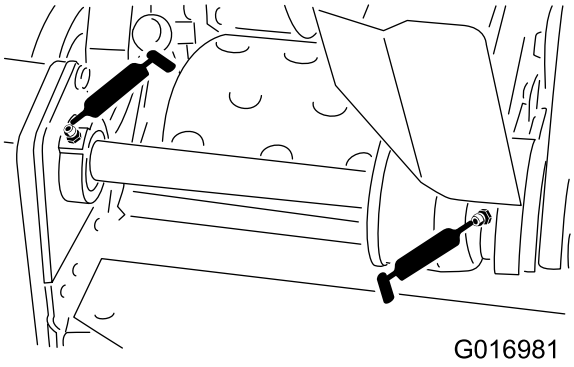
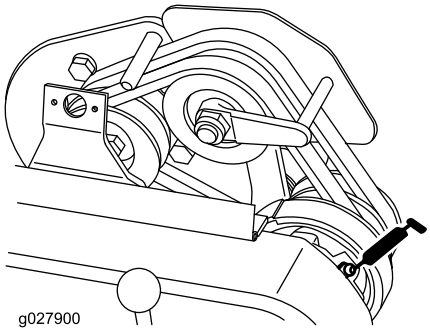


Figure 23



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Figure 24



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Figure 25

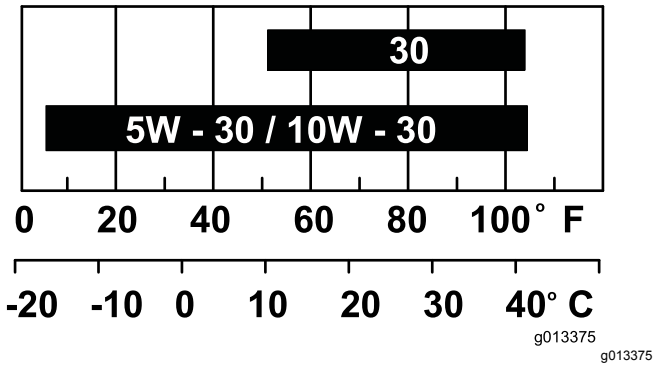
Engine Maintenance

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 Engine Oil

Fill the crankcase with approximately 0.56 L (19 fl oz) of the proper viscosity oil before starting. The engine uses a high-quality oil that has the American Petroleum Institute (API) service classification of SJ or higher. Select the proper oil viscosity (weight) based on the ambient temperature. Figure 26 illustrates the temperature/viscosity recommendations.



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Figure 26

Note: Multi-grade oils (5W-20, 10W-30 and 10W-40) increase oil consumption. Check the engine-oil level more frequently when you use these oils.

Checking the Engine-Oil Level

Service Interval: Before each use or daily

The ideal time to check the engine-oil level is when the engine is cool or before you have started the engine for the day. If you have already ran the engine, allow the oil to drain back down to the sump for at least 10 minutes before you check the engine-oil level.

1. Shut off the engine and wait for all moving parts to stop; refer to Preparing the Machine for Maintenance (page 25).

2. Position the machine so that the engine is level, and clean the area around the oil-fill tube (Figure 27).

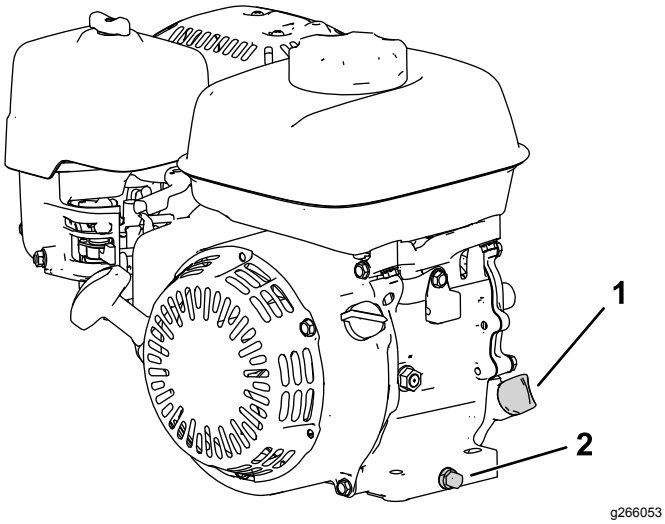


Figure 27

1. Dipstick
2. Drain plug and washer

3. Remove the dipstick by rotating it counterclockwise.
4. Remove the dipstick and wipe the end clean.
5. Insert the dipstick fully into the oil-fill tube, **but do not thread it in**.
6. Remove the dipstick and check the engine-oil level (Figure 28).

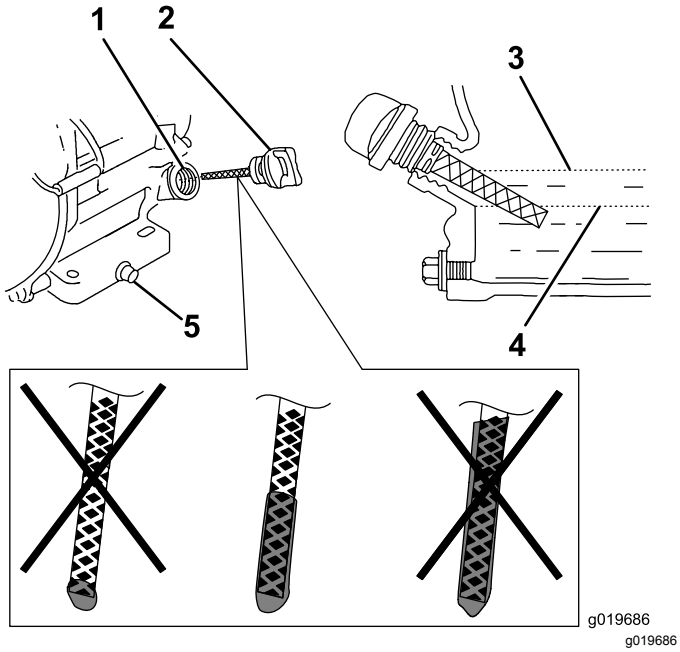


Figure 28

1. Filler tube
2. Dipstick
3. Upper limit
4. Lower limit
5. Drain plug

7. If the engine-oil level is incorrect, add or drain oil to correct the level; refer to Changing the Engine Oil (page 27).

Changing the Engine Oil

Service Interval: After the first 20 hours/After the first month (whichever comes first)

Every 100 hours/Every 6 months (whichever comes first)

⚠ WARNING

Oil may be hot after the engine has been run, and contact with hot oil can cause severe personal injury.

Avoid contacting the hot engine oil when you drain it.

1. Shut off the engine and wait for all moving parts to stop; refer to Preparing the Machine for Maintenance (page 25).
2. Place a pan under the drain plug to catch the oil.
3. Remove the drain plug, washer, and dipstick (Figure 27).
4. Position the engine so that the oil drains from the engine.
5. When the oil has drained completely, move the engine to a level position and install the drain plug and a new washer.

   Note: Dispose of the used oil at a certified recycling center.
6. Slowly pour oil into the oil-fill hole until the oil is at the correct level.
7. Ensure that the oil is at the correct level on the dipstick; refer to Checking the Engine-Oil Level (page 26).
8. Thread the dipstick into the oil-fill hole.
9. Wipe up any spilled oil.
10. Connect the wire to the spark plug.

Servicing the Air Cleaner

Service Interval: Before each use or daily

Every 50 hours/Every 3 months (whichever comes first)

Every 300 hours/Yearly (whichever comes first)

Important: **Do not operate the engine without the air filter assembly; extreme engine damage will occur.**

1. Shut off the engine and wait for all moving parts to stop; refer to Preparing the Machine for Maintenance (page 25).
2. Remove the wingnut securing the air-cleaner cover (Figure 29).
3. Remove the air-cleaner cover.

   Note: Ensure that no dirt or debris from the air-cleaner cover fall into the base.
4. Remove the foam and paper elements from the base.
5. Remove the foam element from the paper element.
6. Inspect the foam and paper elements; replace them if they are damaged or excessively dirty.

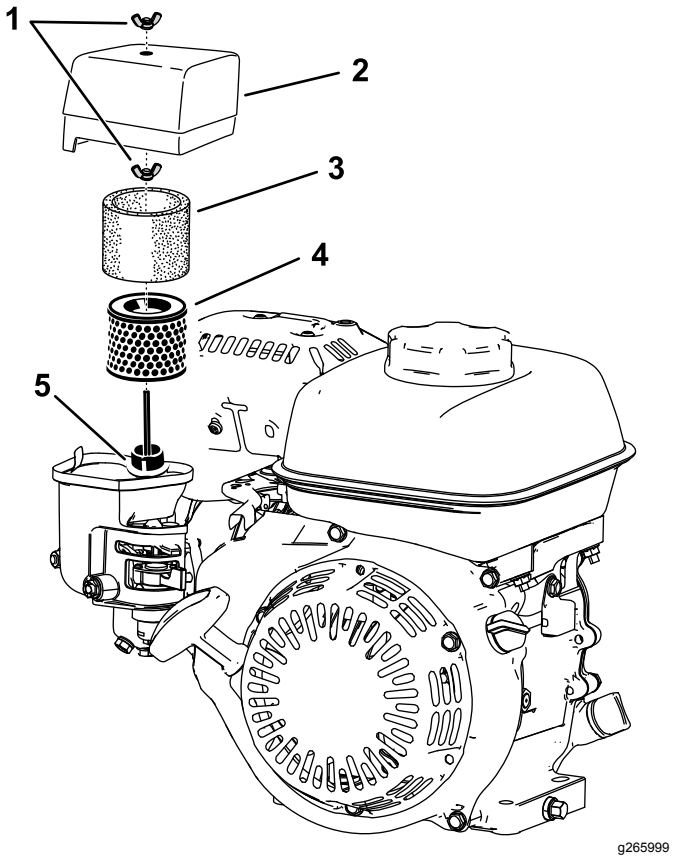


Figure 29

1. Wing nut
2. Air-cleaner cover
3. Foam element
4. Paper filter element
5. Gasket and air duct

7. Clean the paper element by tapping it gently to remove the dirt.

   Note: Do not try to brush dirt off the paper element; brushing forces the dirt into the fibers. Replace the element if tapping it fails to remove the dirt.
8. Clean the foam element in warm, soapy water or in a nonflammable solvent.

   Note: Do not use gasoline to clean the foam element because it could create a risk of fire or explosion.
9. Rinse and dry the foam element thoroughly.
10. Wipe dirt from the base and the cover with a moist rag.

    Note: Ensure that dirt and debris do not enter the air duct leading to the carburetor.
11. Install the air-cleaner elements and ensure that they are properly positioned. Install the lower wing nut.
12. Install the cover and install the upper wing nut to secure it.

Servicing the Spark Plug

Service Interval: Every 100 hours/Every 6 months (whichever comes first)

Every 300 hours/Yearly (whichever comes first)

Use an NGK BPR6ES spark plug or equivalent.

1. Shut off the engine and wait for all moving parts to stop; refer to Preparing the Machine for Maintenance (page 25).
2. Clean around the spark plug.
3. Remove the spark plug from the cylinder head.

   Important: **Replace a cracked, fouled, or dirty spark plug. Do not sand blast, scrape, or clean the electrodes because engine damage could result from grit entering the cylinder.**
4. Set the gap on the plug to 0.7 to 0.8 mm (0.028 to 0.031 inch)

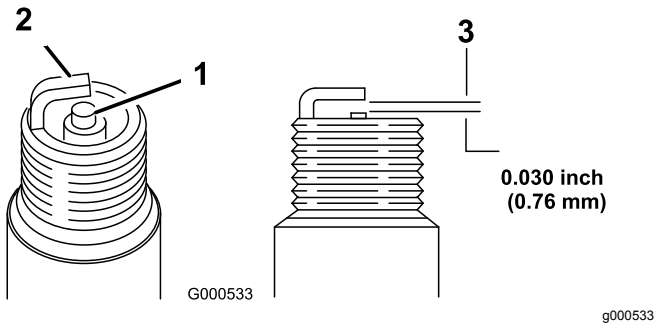


Figure 30

1. Center-electrode insulator
2. Side electrode
3. Air gap

5. Carefully install the spark plug by hand (to avoid cross threading) until it is hand tight.
6. Tighten the spark plug an additional 1/2 turn if it is new; otherwise, tighten it an additional 1/8 to 1/4 turn.

   Important: **A loose spark plug can become very hot and can damage the engine; overtightening a spark plug may damage the threads in the cylinder head.**
7. Connect the wire to the spark plug.

Electrical System Maintenance

Servicing the Traction-Interlock Switch

Use the following procedure if the traction-interlock switch needs adjustment or replacement.

1. Ensure that the engine is off and the traction lever is disengaged and resting against the neutral stop (Figure 31).

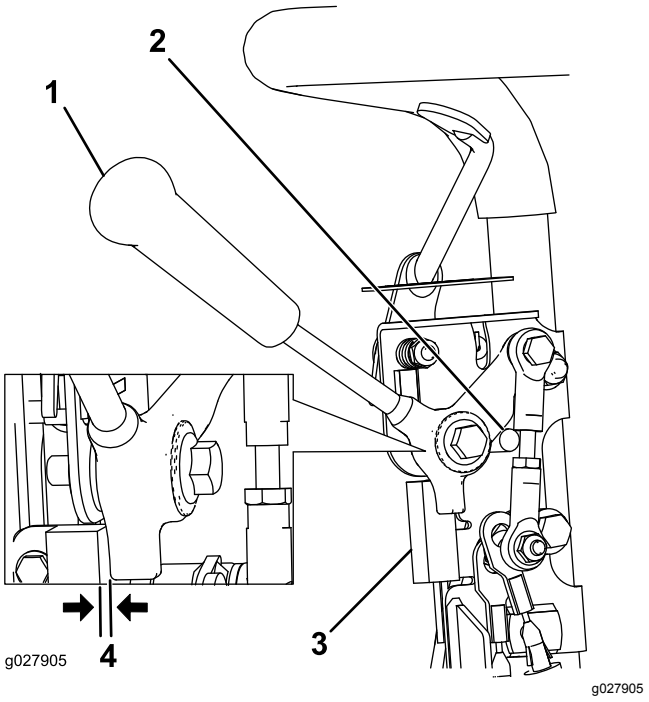


Figure 31

1. Traction lever
2. Neutral stop
3. Interlock switch
4. 0.8 mm (0.032 inch) gap

2. Loosen the interlock switch mounting fasteners (Figure 31).
3. Place a 0.8 mm (0.032 inch) thick shim between the traction lever and the interlock switch (Figure 31).
4. Tighten the interlock switch mounting fasteners and check the gap again.

   Note: The traction lever must not contact the switch.
5. Engage the traction lever and verify that the switch loses continuity.

   Note: Replace the switch if necessary.

Brake Maintenance

Adjusting the Service/Parking Brake

If the service/parking brake slips during operation, adjust it.

1. Engage the service brake, push in the parking brake knob, and allow the service brake to rest on the parking-brake pin (Figure 32).

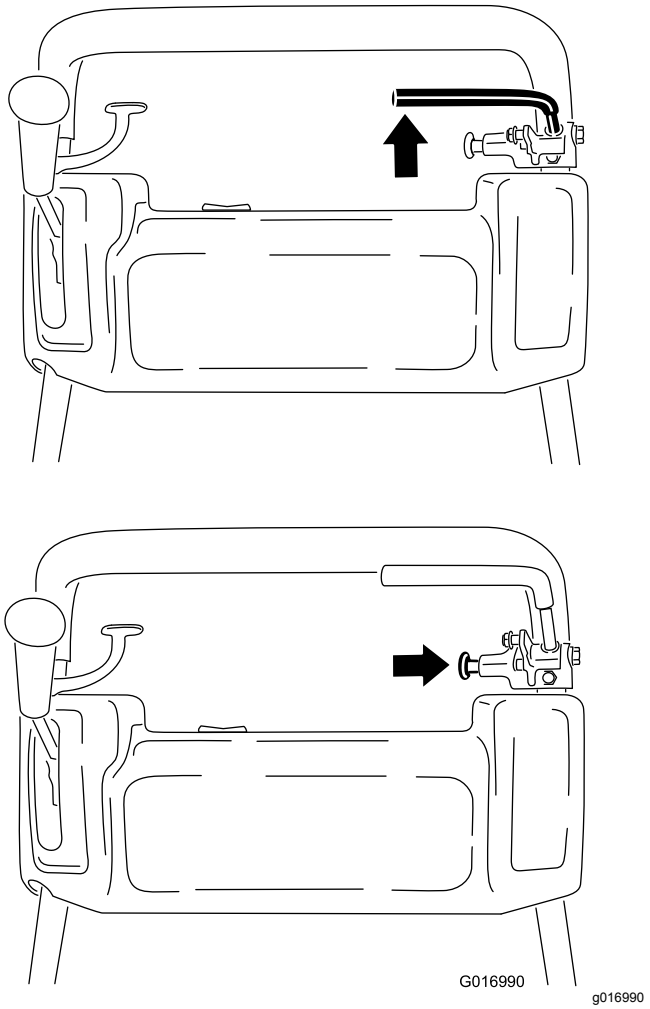


Figure 32

2. Using a spring scale, press rearward on the service-brake lever (Figure 33). The parking brake should release when a force of 13.5 to 18 kg (30 to 40 lb) is attained. If the parking brake releases before 13.5 to 18 kg (30 to 40 lb) of force is attained, adjust the brake cable.

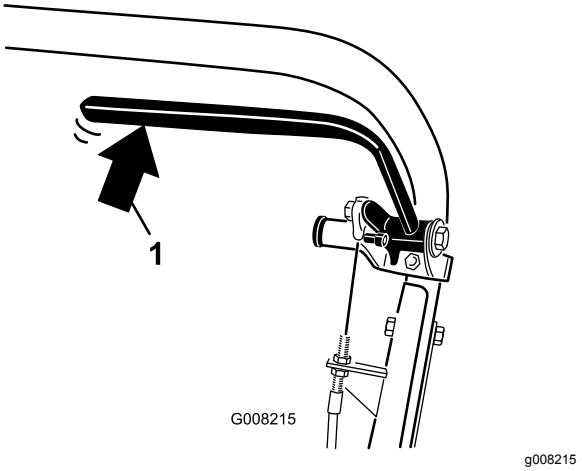


Figure 33

1. Rear pressure on the service-brake lever

3. Loosen the retainer that secures the V-belt cover and pivot the cover open (Figure 34).

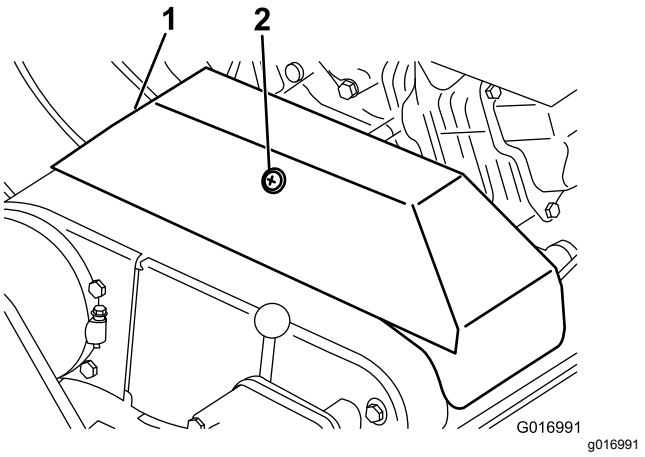
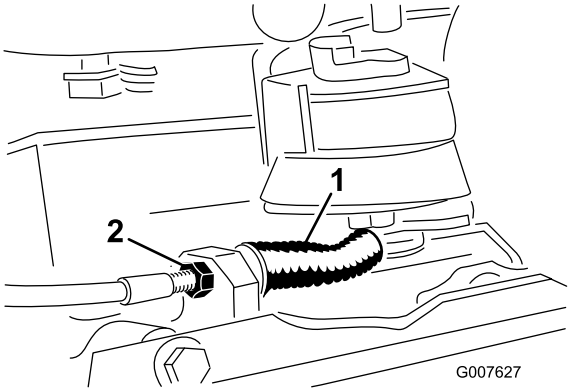


Figure 34

1. V–belt cover
2. Retainer

4. To adjust the brake cable tension, proceed as follows.
   - To decrease the cable tension, loosen the front cable jam nut and tighten the rear jam nut (Figure 35). Repeat steps 1 and 2 and adjust the tension if necessary.
   - To increase the cable tension, tighten the front cable jam nut and loosen the rear jam nut (Figure 35). Repeat steps 1 and 2 and adjust the tension if necessary.

   Note: You can adjust the cable at the jam nut brackets by the control panel or at the bracket at the base of the engine.



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Figure 35

1. Service/parking brake cable
2. Front jam nut

5. Close the cover and secure the retainer.

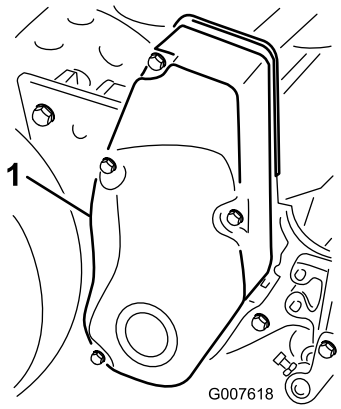
Belt Maintenance

Adjusting the Belts

Ensure that the belts are properly tensioned to ensure proper operation of the machine and prevent unnecessary wear. Check the belts frequently.

Adjusting the Reel-Drive Belt

1. Remove the belt-cover mounting fasteners and the belt cover to expose the belt (Figure 36).

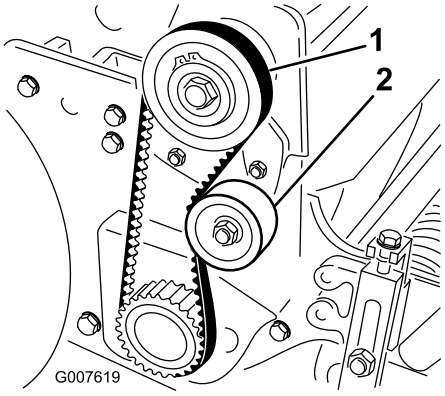


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Figure 36

1. Belt cover

2. Check the tension by pressing the belt at mid-span of the pulleys (Figure 37) with 18 to 22 N (4 to 5 lb) of force. The belt should deflect 6 mm (1/4 inch).



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Figure 37

1. Reel-drive belt
2. Idler pulley

3. Complete the following steps to adjust the belt tension:

   A. Loosen the idler-pulley mounting nut and pivot the idler pulley clockwise against the backside of the belt until you attain the desired belt tension (Figure 37).

Important: **Do not over-tension the belt.**

B. Tighten the nut to lock the adjustment.

4. Install the belt cover by placing it in position.
5. While maintaining a slight gap between the cover seal and the side plate, install each mounting bolt until the threads engage in the insert.

   Note: The gap allows visual alignment of the bolts to the threaded inserts.
6. After all bolts are installed, tighten them until the stand-offs inside the cover contact the side plate.

   Note: Do not overtighten the bolts.

Adjusting the Traction-Drive Belt

1. Remove the belt-cover mounting fasteners and the belt cover to expose the belt (Figure 38).

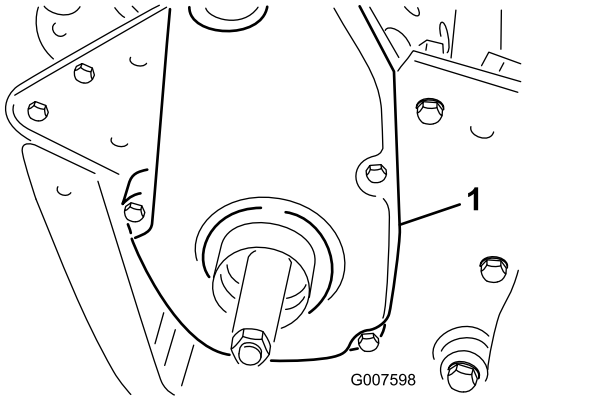


Figure 38

1. Traction-drive-belt cover

2. Check the tension by pressing the belt at mid span of the pulleys (Figure 39) with 18 to 22 N (4 to 5 lb) of force.

   Note: The belt should deflect 6 mm (1/4 inch).

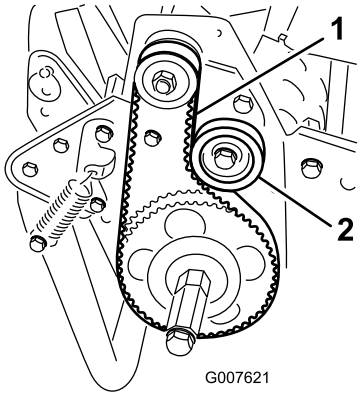


Figure 39

1. Traction-drive belt
2. Idler pulley

3. Complete the following to adjust the belt tension:

   A. Loosen the idler-pulley mounting nut and pivot the idler pulley clockwise against the backside of the belt until the desired belt tension is attained (Figure 39).

   Important: **Do not over-tension the belt.**

   B. Tighten the nut to lock the adjustment.
4. Install the belt cover by placing it in position.
5. While maintaining a slight gap between the cover seal and the side plate, install each mounting bolt until the threads engage in the insert.

   Note: The gap allows visual alignment of the bolts to the threaded inserts.
6. After all bolts are installed, tighten them until the stand-offs inside the cover contact the side plate.

   Note: Do not overtighten the bolts.

Adjusting the Differential Belt

1. Remove the bolts securing the front and rear sections of the differential cover to the differential housing and slide the cover sections away to expose the belt.
2. Check the tension by pressing the belt at mid span of the pulleys (Figure 40) with 22 to 26 N (5 to 6 lb) of force.

   Note: The belt should deflect 6 mm (1/4 inch).

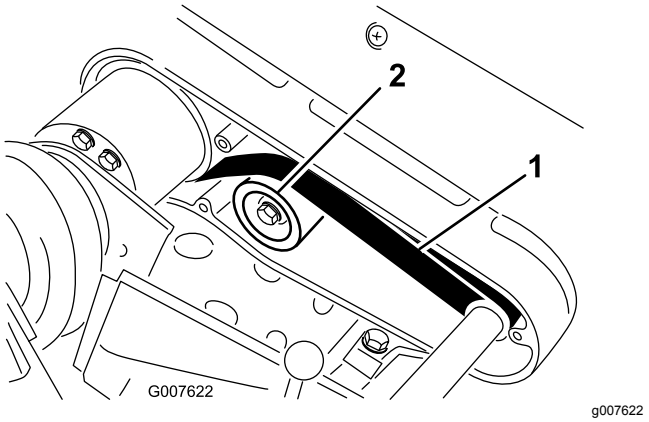


Figure 40

1. Differential belt
2. Idler pulley

3. Complete the following to adjust the belt tension:

   A. Loosen the idler pulley mounting nut and pivot the idler pulley clockwise against the backside of the belt until the desired belt tension is attained (Figure 40).

   Important: **Do not over-tension the belt.**

   B. Tighten the nut to lock the adjustment.
4. Install the belt cover by placing it in position.

5. While maintaining a slight gap between the cover seal and the side plate, install each mounting bolt until the threads engage in the insert. The gap allows visual alignment of the bolts to the threaded inserts.
6. After all bolts are installed, tighten them until the stand-offs inside the cover contact the side plate. Do not overtighten the bolts.

Adjusting the Primary V-Belts

1. To adjust the belt tension on primary V-belts, first check the adjustment of the traction control; refer to Adjusting the Traction Control (page 35).

   If the belts still slip after you adjust the traction control, proceed to the next step.
2. Loosen the retainer that secures the V-belt cover and pivot the cover open (Figure 41).

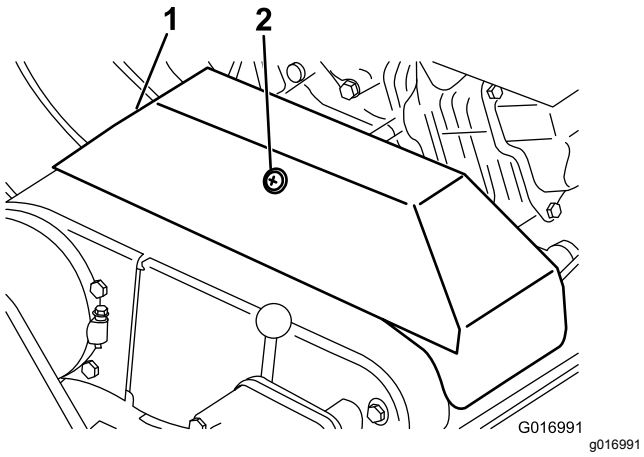


Figure 41

1. V-belt cover
2. Retainer

3. To increase the belt tension, loosen the engine mounting bolts and move the engine backwards in the slots.

   Important: **Do not over-tension the belt.**
4. Tighten the mounting bolts.

   Note: The distance between the center of the drive pulley and the center of the driven pulley should be approximately 12.7 cm (5 inches) after the new V-belts are installed.
5. After tensioning the primary V-belts, check the alignment of the engine output-shaft pulley and the counter-shaft pulley with a straightedge.
6. If the pulleys are misaligned, loosen the screws that secure the engine mounting base to the machine frame and slide the engine from side to side until the pulleys are aligned within 0.7 mm (0.030 inch).
7. Tighten the mounting screws and check the alignment.
8. To push or pull the machine easier without starting the engine, adjust the belt guide (Figure 42, inset) as follows:

   A. Engage the clutch.

   B. Loosen the locknut that secures the idler pulley and the belt guide to the idler arm.

   C. Rotate the belt guide clockwise until a gap of approximately 1.5 mm (0.06 inch) is obtained between the guide finger and the backside of the drive belts.

   D. Tighten the locknut that secures the idler pulley and the belt guide to the idler arm.

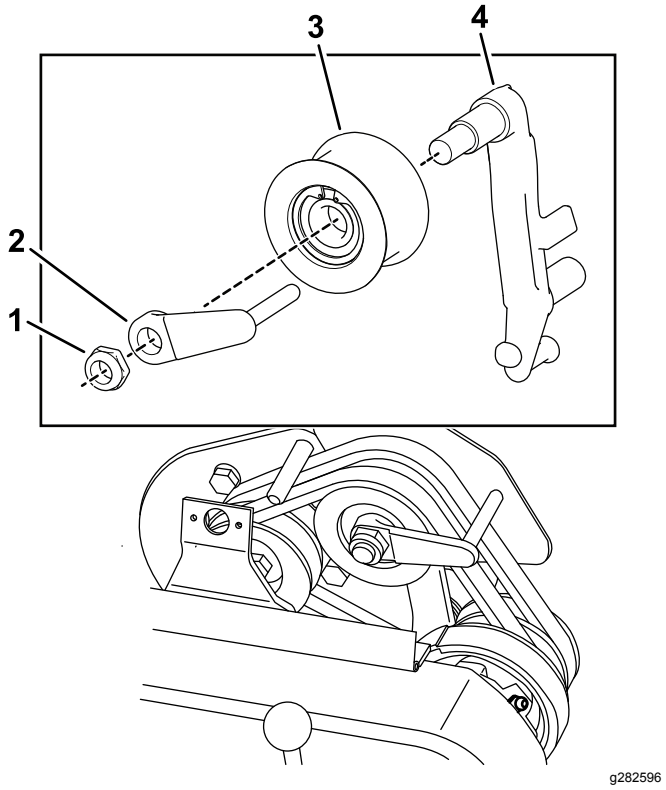


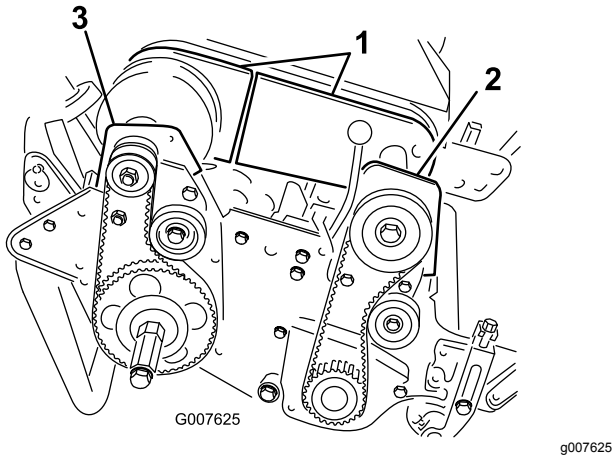
Figure 42

1. Locknut
2. Belt guide
3. Idler pulley assembly
4. Idler arm

9. Close the cover and secure the retainer.

Replacing the Differential Belt

1. Remove the bolts that secure the traction drive and reel-drive belt covers to the right side plate and remove the belt covers.
2. Loosen the idler pulley mounting nut on each idler pulley and pivot each idler pulley counterclockwise away from the backside of each belt to release the belt tension.
3. Remove the belts.
4. Remove the bolts that secure the front and rear sections of the differential cover to the differential housing and slide the cover sections away to expose the belt (Figure 43).



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Figure 43

1. Differential cover sections
2. Front clutch housing
3. Right rear bearing housing

5. Loosen the idler pulley mounting nut on the differential idler pulley and pivot the idler pulley counterclockwise away from the backside of the belt to release the belt tension.
6. Remove the 2 bolts and 2 locknuts that secure the front clutch housing to the side plate (Figure 43).
7. Rotate the housing 180° so that the bottom of the housing points upward.
8. Remove the 2 bolts and 2 locknuts that secure the right rear bearing housing to the side plate (Figure 43).
9. Rotate the housing 180° so that the bottom of the housing points upward.
10. Remove the old belt.
11. Slide the new belt over the rotated housing covers, the differential cover sections, and onto the differential pulleys.
12. Ensure that the idler pulley is positioned against the backside of the belt.
13. Rotate both housings back into the upright position and secure them to the side plate with the bolts and nuts that you previously removed.
14. Adjust the differential belt tension; refer to Adjusting the Differential Belt (page 32).
15. Adjust the belt tension on the traction drive and reel-drive belts; refer to Adjusting the Traction-Drive Belt (page 32), and Adjusting the Reel-Drive Belt (page 31).
16. Install the differential, traction drive, and reel-drive covers.

Controls System Maintenance

Adjusting the Traction Control

Follow these steps to remove slack from the traction control:

1. Move the traction control to the DISENGAGED position.
2. Loosen the retainer that secures the V-belt cover and pivot the cover open (Figure 41).
3. To remove slack from the traction control, loosen the front-cable jam nut and tighten the back-cable jam nut (Figure 44) until all slack is removed.

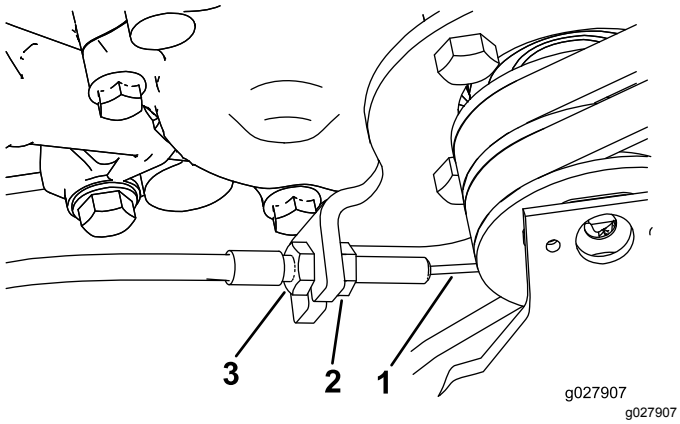


Figure 44

1. Traction cable
2. Front-cable jam nut
3. Back-cable jam nut

4. Tighten the front-cable jam nut.
5. Close the cover and secure the retainer.
6. Check the traction-control operation.

Cutting Unit Maintenance

Blade Safety

Use care when checking the cutting-unit reel. Wear gloves and use caution when servicing the reel.

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

- Inspect the blades and bedknives periodically for excessive wear or damage.
- Use care when checking the blades. Wear gloves and use caution when servicing them. Only replace or backlap the blades and bedknives; never straighten or weld them.

Leveling the Rear Drum to the Reel

1. Park the machine on a flat, level surface, preferably a precision steel work plate.
2. Place a 0.6 x 2.5 cm (1/4 x 1 inch) flat steel strip, approximately 73.6 cm (29 inches) long, under the reel blades and against the front edge of the bedknife to prevent the bedbar from resting on the work surface.
3. Raise the front roller so that only the rear drum and the reel are on the surface.
4. Firmly press down on the machine above the reel so that all reel blades contact the steel strip.
5. While pressing down on the reel, slide a feeler gauge under one end of the drum, then check the other end of the drum.

   Note: If there is a gap between the drum and the work surface, greater than 0.25 mm (0.010 inch), on either end, adjust the drum (proceed to step 6). If the gap is less than 0.25 mm (0.010 inch), no adjustment is required.
6. Remove the rear belt cover from the right side of the machine (Figure 45).

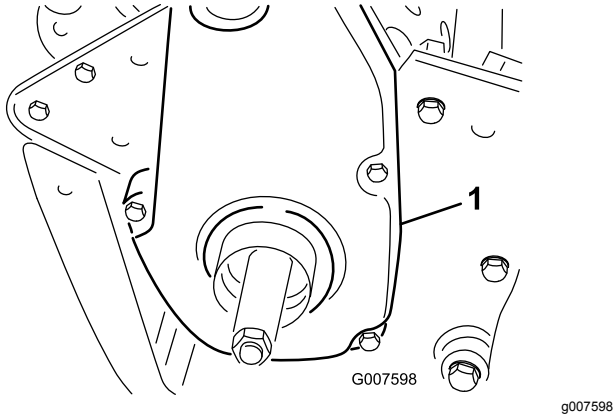


Figure 45

1. Traction-drive belt cover

7. Rotate the driven pulley until the holes align with the 4 roller bearing flange screws (Figure 46).

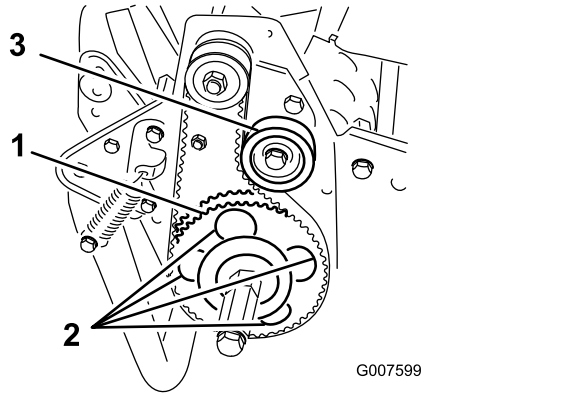


Figure 46

1. Driven pulley
2. 4 holes
3. Idler pulley

8. Loosen the 4 roller bearing screws and the screw that secures the idler pulley.
9. Raise or lower the right side of the roller assembly until the gap is less than 0.25 mm (0.010 inch).
10. Tighten the roller bearing screws.
11. Adjust the belt tension and tighten the idler pulley mounting screw (Figure 46).

Adjusting the Bedknife to the Reel

Adjust the bedknife to the reel after grinding, backlapping, or disassembling the cutting unit. This procedure is not intended as a daily adjustment.

1. Park the machine on a flat, level work surface.
2. Tilt the machine back on the handle to expose the bedknife and the reel.

Important: **Do not tip the machine at an angle greater than 25°. Tipping the machine beyond 25° leads to oil leaking into the combustion chamber and/or fuel leaking out of the fuel-tank cap.**

3. Rotate the reel so that a blade crosses the bedknife edge between the first and second bedknife screw heads on the right side of the cutting unit (Figure 47).

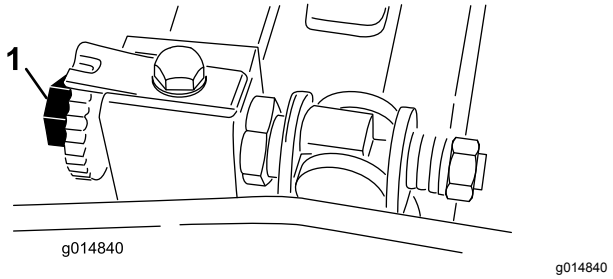


Figure 47

1. Bedbar-adjusting screw

4. Rotate the reel so that a blade crosses the bedknife edge between the first and second bedknife screw heads on the right side of the cutting unit.
5. Insert the 0.05 mm (0.002 inch) shim between the marked blade and the bedknife edge at the point where the marked blade crosses the bedknife edge.
6. Turn the right bedbar-adjusting screw until you feel light pressure (i.e., drag) on the shim by sliding it side-to-side (Figure 47).
7. Remove the shim.
8. For the left side of the cutting unit, slowly rotate the reel so that the closest blade crosses the bedknife edge between the first and second screw heads.
9. Repeat steps 4 through 7 for the left side of the cutting unit and left bedbar-adjusting screw.
10. Repeat steps 5 through 7 until light drag is achieved on both the right and left sides of the cutting unit utilizing the same contact points.
11. To obtain light contact between the reel and bedknife, turn each bedbar-adjusting screw clockwise 3 clicks.

    Note: Each click turned on the bedbar-adjusting screw moves the bedknife 0.018 mm (0.0007 inch). Clockwise rotation moves the bedknife edge closer to the reel and counterclockwise rotation move the bedknife edge away from the reel.
12. Test the cutting performance by inserting a long strip of cutting performance paper between the

reel and bedknife, perpendicular to the bedknife (Figure 48). Slowly rotate the reel forward; it should cut the paper.

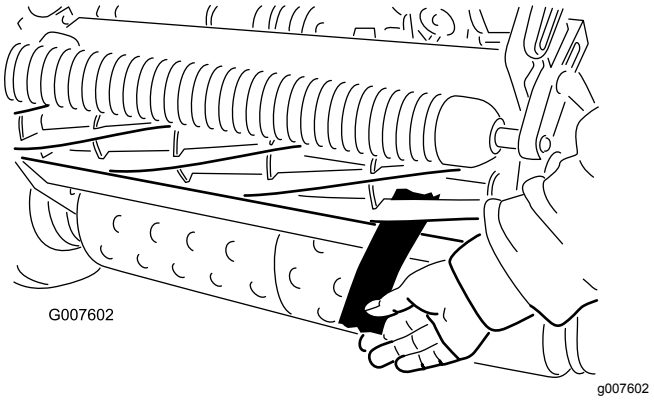


Figure 48

Note: If you see excessive contact/reel drag, it will be necessary to backlap, face the front of the bedknife, or grind the cutting unit to achieve the sharp edges that are necessary for precise cutting.

Adjusting the Height-of-Cut

1. Verify that the rear roller is level and that the bedknife-to-reel contact is correct. Tip the machine back on the handle to expose the front and rear rollers and the bedknife.

   Important: **Do not tip the machine at an angle greater than 25°. Tipping the machine beyond 25 ° leads to oil leaking into the combustion chamber and/or fuel leaking out of the fuel-tank cap.**

2. Loosen the locknuts that secure the height-of-cut arms to the height-of-cut brackets (Figure 49).

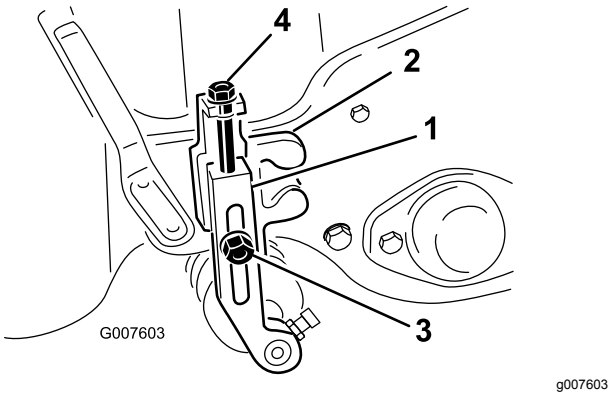


Figure 49

1. Height-of-cut arm
2. Height-of-cut bracket
3. Locknut
4. Adjusting screw

3. Loosen the nut on the gauge bar (Figure 50) and set the adjusting screw to the desired height-of-cut. The distance between the bottom of the screw head and the face of the bar is the height of cut.

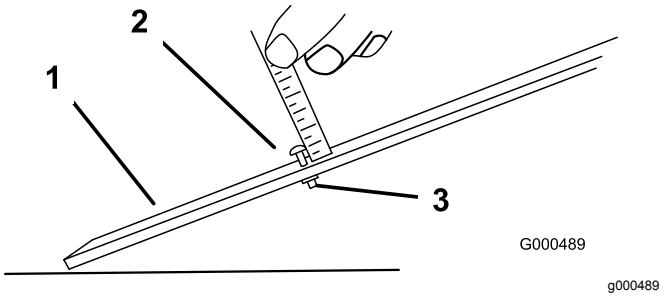


Figure 50

1. Gauge bar
2. Height-adjusting screw
3. Nut

4. Hook the screw head on the cutting edge of the bedknife and rest the rear end of the bar on the rear roller (Figure 51).

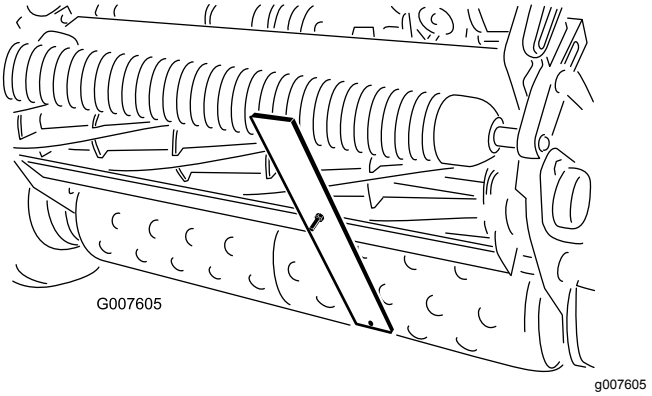


Figure 51

5. Rotate the adjusting screw until the roller contacts the front of the gauge bar.
6. Adjust both ends of the roller until the entire roller is parallel to the bedknife.

   Important: **When set properly, the rear and front rollers contact the gauge bar and the screw is snug against the bedknife. This ensures that the height-of-cut is identical at both ends of the bedknife.**

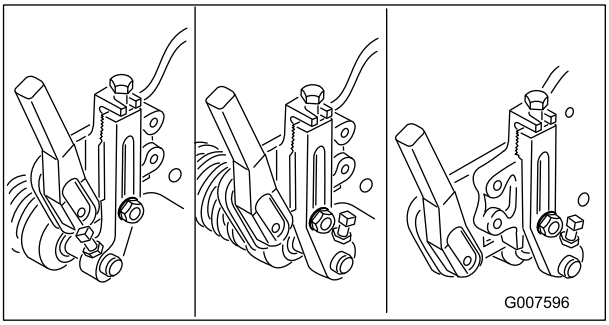
7. Tighten the nuts to lock the adjustment.

   Important: **To avoid scalping on undulating turf, ensure that the roller supports are positioned rearward (the roller closer to the reel).**

   Note: The front roller can be put in 3 different positions (Figure 52), depending on the application and needs of the user.

   - Use the front position when a groomer is installed.

- Use the middle position without a groomer.
- Use the third position in extremely undulating turf conditions.



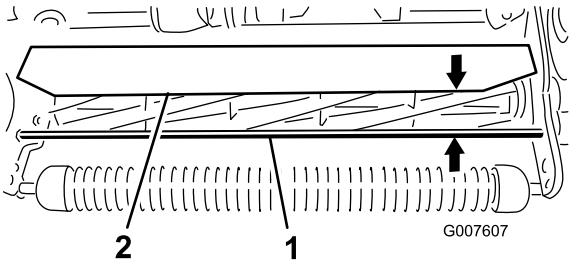
g007596

Figure 52

Adjusting the Grass Shield Height

Adjust the shield to ensure proper grass clipping discharge into the basket.

1. Measure the distance from the top of the front support rod to the front lip of the shield at each end of the cutting unit (Figure 53).



g007607

Figure 53

1. Support rod
2. Shield

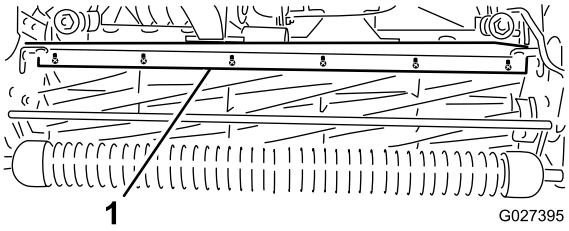
2. The height of the shield from the support rod for normal cutting conditions should be 10 cm (4 inches). Loosen the bolts and nuts that secure each end of the shield to the side plate and adjust the shield to the correct height.
3. Tighten the fasteners.

   Note: You can lower the shield for dry turf conditions (clippings fly over the top of the basket) or raise it to allow for heavy, wet grass conditions (clippings build up on the rear of the basket).

Adjusting the Cut-Off Bar

Adjust the cut-off bar to ensure that the clippings are cleanly discharged from the reel area.

1. Loosen the screws that secure the top bar (Figure 54) to the cutting unit.



g027395

Figure 54

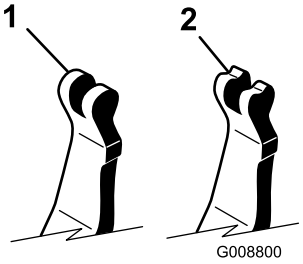
1. Cut-off bar

2. Insert a 1.5 mm (0.060 inch) feeler gauge between the top of the reel and the bar and tighten the screws.
3. Ensure that the bar and reel are equal distances apart across the entire reel.

   Note: The bar is adjustable to compensate for changes in turf conditions. Adjust the bar closer to the reel when the turf is extremely wet. By contrast, adjust the bar further away from the reel when turf conditions are dry. The bar should be parallel to the reel to ensure optimum performance. Adjust the bar when you adjust the shield height or when you sharpen the reel on a reel grinder.

Identifying the Bedbar

To determine if the bedbar is standard or aggressive, check the left bedbar mounting ears. If the mounting ears are rounded, it is a standard bedbar. If the mounting ears have a notch in them, it is an aggressive bedbar (Figure 55).



g008800

Figure 55

1. Standard bedbar
2. Aggressive bedbar

Servicing the Bedbar

Removing the Bedbar

1. Turn the bedbar-adjuster screw counterclockwise to back the bedknife away from the reel (Figure 56).

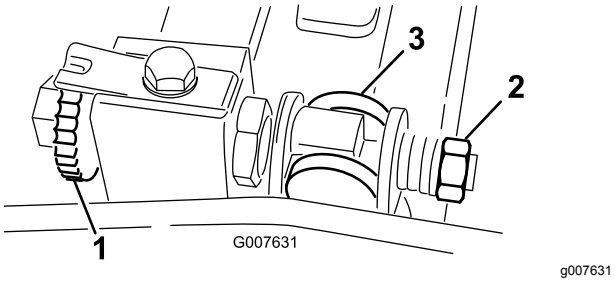


Figure 56

1. Bedbar-adjusting screw
2. Spring-tension nut
3. Bedbar

2. Back out the spring-tension nut until the washer is no longer tensioned against the bedbar (Figure 56).
3. On each side of the machine, loosen the jam nut that secures the bedbar bolt (Figure 57).

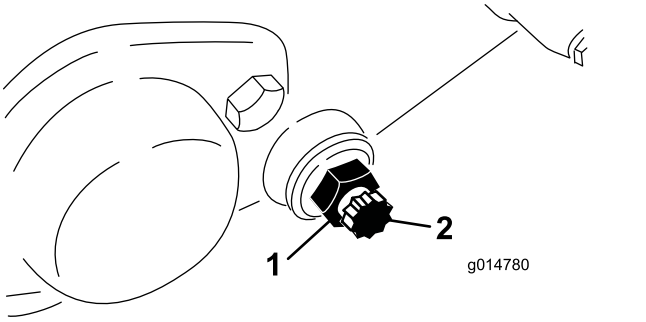


Figure 57

1. Jam nut
2. Bedbar bolt

4. Remove each bedbar bolt allowing the bedbar to be pulled downward and removed from the machine. Save the 2 nylon and 2 stamped steel washers on each end of the bedbar (Figure 57).

Installing the Bedbar

1. Install the bedbar, positioning the mounting ears between the washer and the bedbar adjuster.
2. Secure the bedbar to each side plate with the bedbar bolts (jam nuts on the bolts) and 8 washers.

   Note: Position a nylon washer on each side of the side plate boss. Place a steel washer outside each of the nylon washers.
3. Torque the bolts to 27 to 36 N·m (20 to 27 ft-lb).
4. Tighten the jam nuts until the outside thrust washers just rotate freely.
5. Tighten the spring-tension nut until the spring is collapsed, then back it off 1/2 turn.
6. Adjust the bedbar; refer to Adjusting the Bedknife to the Reel (page 36).

Backlapping the Reel

1. Remove the plug in the right reel-drive cover (Figure 58).

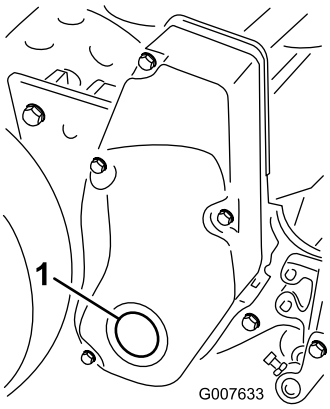


Figure 58

1. Cover plug

2. Insert a 1/2 inch-drive extension bar, connected to the backlapping machine, into the square hole in the center of the reel pulley.
3. Backlap according to the procedure in the Toro *Sharpening Reel and Rotary Mowers Manual*, Form 80-300 PT.

⚠ DANGER

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

- **Stay away from the reel while backlapping.**
- **Do not use a short-handled paint brush for backlapping. Part No. 29-9100 Handle assembly, complete or as individual parts, are available from your local authorized Toro distributor.**

Note: For a better cutting edge, run a file across the front face of the bedknife when the lapping operation is completed. This removes any burrs or rough edges that may have built up on the cutting edge.

4. Install the plug in the cover when you complete this procedure.

Storage

Storage Safety

- Shut off the engine, remove the key (if equipped), and wait for all movement to stop before you leave the operator's position. Allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.

Storing the Machine

1. Remove any grass clippings, dirt, and grime from the external parts of the entire machine, especially the engine. Clean the dirt and chaff from the outside of the engine cylinder-head fins and the blower housing.

   Important: **You can wash the machine with mild detergent and water. Do not pressure-wash the machine. Avoid excessive use of water, especially near the shift-lever plate and the engine.**

2. For long-term storage (more than 30 days) add stabilizer/conditioner additive to the fuel in the tank.

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

   B. Either shut off the engine, allow it to cool, and drain the fuel tank, or operate the engine until it shuts off.

   C. Start the engine and run it until it shuts off. Start the engine again, with the choke closed, until the engine does not start.

   D. Disconnect the spark-plug wire from the spark plug.

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

      Note: Do not store fuel containing stabilizer/conditioner longer than the duration recommended by the fuel-stabilizer manufacturer.

3. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is worn or damaged.
4. Paint all scratched or bare metal surfaces. Paint is available from your authorized Toro distributor.
5. Store the machine in a clean, dry garage or storage area. Cover the machine to protect it and keep it clean.

Notes:

EEA/UK Privacy Notice

Toro's Use of Your Personal Information

The Toro Company ("Toro") respects your privacy. When you purchase our products, we may collect certain personal information about you, either directly from you or through your local Toro company or dealer. Toro uses this information to fulfil contractual obligations - such as to register your warranty, process your warranty claim or to contact you in the event of a product recall - and for legitimate business purposes - such as to gauge customer satisfaction, improve our products or provide you with product information which may be of interest. Toro may share your information with our subsidiaries, affiliates, dealers or other business partners in connection these activities. We may also disclose personal information when required by law or in connection with the sale, purchase or merger of a business. We will never sell your personal information to any other company for marketing purposes.

Retention of your Personal Information

Toro will keep your personal information as long as it is relevant for the above purposes and in accordance with legal requirements. For more information about applicable retention periods please contact legal@toro.com.

Toro's Commitment to Security

Your personal information may be processed in the US or another country which may have less strict data protection laws than your country of residence. Whenever we transfer your information outside of your country of residence, we will take legally required steps to ensure that appropriate safeguards are in place to protect your information and to make sure it is treated securely.

Access and Correction

You may have the right to correct or review your personal data, or object to or restrict the processing of your data. To do so, please contact us by email at legal@toro.com. If you have concerns about the way in which Toro has handled your information, we encourage you to raise this directly with us. Please note that European residents have the right to complain to your Data Protection Authority.

The Toro Warranty

Two-Year or 1,500 Hours Limited Warranty

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Commercial product (“Product”) to be free from defects in materials or workmanship for 2 years or 1,500 operational hours*, whichever occurs first. This warranty is applicable to all products with the exception of Aerators (refer to separate warranty statements for these products). Where a warrantable condition exists, we will repair the Product at no cost to you including diagnostics, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.
* Product equipped with an hour meter.

Instructions for Obtaining Warranty Service

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists. If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Toro Commercial Products Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196

952–888–8801 or 800–952–2740
E-mail: commercial.warranty@toro.com

Owner Responsibilities

As the product owner, you are responsible for required maintenance and adjustments stated in your *Operator's Manual*. Repairs for product issues caused by failure to perform required maintenance and adjustments are not covered under this warranty.

Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, or modified non-Toro branded accessories and products.
- Product failures which result from failure to perform recommended maintenance and/or adjustments.
- Product failures which result from operating the Product in an abusive, negligent, or reckless manner.
- Parts consumed through use that are not defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, brake pads and linings, clutch linings, blades, reels, rollers and bearings (sealed or greasable), bed knives, spark plugs, castor wheels and bearings, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, and check valves.
- Failures caused by outside influence, including, but not limited to, weather, storage practices, contamination, use of unapproved fuels, coolants, lubricants, additives, fertilizers, water, or chemicals.
- Failure or performance issues due to the use of fuels (e.g. gasoline, diesel, or biodiesel) that do not conform to their respective industry standards.
- Normal noise, vibration, wear and tear, and deterioration. Normal “wear and tear” includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows.

Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part. Parts replaced under this warranty are covered for the duration of the original product warranty and become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use remanufactured parts for warranty repairs.

Deep Cycle and Lithium-Ion Battery Warranty

Deep cycle and Lithium-Ion batteries have a specified total number of kilowatt-hours they can deliver during their lifetime. Operating, recharging, and maintenance techniques can extend or reduce total battery life. As the batteries in this product are consumed, the amount of useful work between charging intervals will slowly decrease until the battery is completely worn out. Replacement of worn out batteries, due to normal consumption, is the responsibility of the product owner. Note: (Lithium-Ion battery only): Pro-rated after 2 years. Refer to the battery warranty for additional information.

Maintenance is at Owner’s Expense

Engine tune-up, lubrication, cleaning and polishing, replacement of filters, coolant, and completing recommended maintenance are some of the normal services Toro products require that are at the owner’s expense.

General Conditions

Repair by an Authorized Toro Distributor or Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. Except for the Emissions warranty referenced below, if applicable, there is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty.

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Note Regarding Emissions Warranty

The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA) and/or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the Engine Emission Control Warranty Statement supplied with your product or contained in the engine manufacturer’s documentation.

Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact your Authorized Toro Service Center.

California Proposition 65 Warning Information

What is this warning?

You may see a product for sale that has a warning label like the following:



WARNING: Cancer and Reproductive Harm—www.p65Warnings.ca.gov.

What is Prop 65?

Prop 65 applies to any company operating in California, selling products in California, or manufacturing products that may be sold in or brought into California. It mandates that the Governor of California maintain and publish a list of chemicals known to cause cancer, birth defects, and/or other reproductive harm. The list, which is updated annually, includes hundreds of chemicals found in many everyday items. The purpose of Prop 65 is to inform the public about exposure to these chemicals.

Prop 65 does not ban the sale of products containing these chemicals but instead requires warnings on any product, product packaging, or literature with the product. Moreover, a Prop 65 warning does not mean that a product is in violation of any product safety standards or requirements. In fact, the California government has clarified that a Prop 65 warning "is not the same as a regulatory decision that a product is 'safe' or 'unsafe.'" Many of these chemicals have been used in everyday products for years without documented harm. For more information, go to https://oag.ca.gov/prop65/faqs-view-all.

A Prop 65 warning means that a company has either (1) evaluated the exposure and has concluded that it exceeds the "no significant risk level"; or (2) has chosen to provide a warning based on its understanding about the presence of a listed chemical without attempting to evaluate the exposure.

Does this law apply everywhere?

Prop 65 warnings are required under California law only. These warnings are seen throughout California in a wide range of settings, including but not limited to restaurants, grocery stores, hotels, schools, and hospitals, and on a wide variety of products. Additionally, some online and mail order retailers provide Prop 65 warnings on their websites or in catalogs.

How do the California warnings compare to federal limits?

Prop 65 standards are often more stringent than federal and international standards. There are various substances that require a Prop 65 warning at levels that are far lower than federal action limits. For example, the Prop 65 standard for warnings for lead is 0.5 µg/day, which is well below the federal and international standards.

Why don't all similar products carry the warning?

- Products sold in California require Prop 65 labelling while similar products sold elsewhere do not.
- A company involved in a Prop 65 lawsuit reaching a settlement may be required to use Prop 65 warnings for its products, but other companies making similar products may have no such requirement.
- The enforcement of Prop 65 is inconsistent.
- Companies may elect not to provide warnings because they conclude that they are not required to do so under Prop 65; a lack of warnings for a product does not mean that the product is free of listed chemicals at similar levels.

Why does Toro include this warning?

Toro has chosen to provide consumers with as much information as possible so that they can make informed decisions about the products they buy and use. Toro provides warnings in certain cases based on its knowledge of the presence of one or more listed chemicals without evaluating the level of exposure, as not all the listed chemicals provide exposure limit requirements. While the exposure from Toro products may be negligible or well within the "no significant risk" range, out of an abundance of caution, Toro has elected to provide the Prop 65 warnings. Moreover, if Toro does not provide these warnings, it could be sued by the State of California or by private parties seeking to enforce Prop 65 and subject to substantial penalties.