Form No. 3470-623 Rev A

46cm Lawn Mower

Model No. 20949—Serial No. 324000000 and Up

Operator's Manual

Introduction

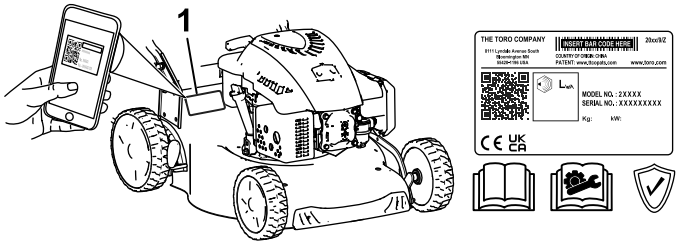
This rotary-blade, walk-behind lawn mower is intended to be used by residential homeowners. It is designed primarily for cutting grass on well-maintained lawns on residential properties. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

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

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

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

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



g519210

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.

Safety-Alert Symbol

The safety-alert symbol (Figure 2) shown in this manual and on the machine identifies important safety messages that you must follow to prevent accidents.



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Figure 2

Safety-alert symbol

The safety-alert symbol appears above information that alerts you to unsafe actions or situations and is followed by the word **DANGER**, **WARNING**, or **CAUTION**.

DANGER indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury.

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

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

Gross or Net Torque: The gross or net torque of this engine was laboratory rated by the engine manufacturer in accordance with the Society of Automotive Engineers (SAE) J1940 or J2723. As configured to meet safety, emission, and operating requirements, the actual engine torque on this class of mower will be significantly lower. Please refer to the engine manufacturer's information included with the machine.

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Bloomington, MN 55420

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3470-623

Do not tamper with or disable safety devices on the machine, and check their proper operation regularly. Do not attempt to adjust or tamper with the engine speed control; doing so may create an unsafe operating condition, resulting in personal injury.

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Safety

General Safety

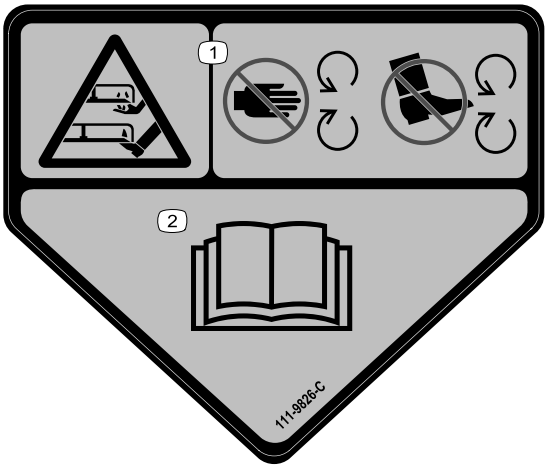
This product is capable of amputating hands and feet and of throwing objects. Always follow all safety instructions to avoid serious personal injury or death.

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

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

Safety and Instructional Decals

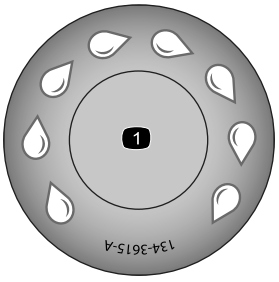
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or missing.



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111-9826

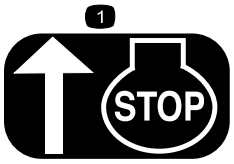
1. Cutting/dismemberment hazard of hand or foot, cutting unit—keep your hands and feet away from moving parts.
2. Read the *Operator's Manual*.



decal134-3615

134-3615

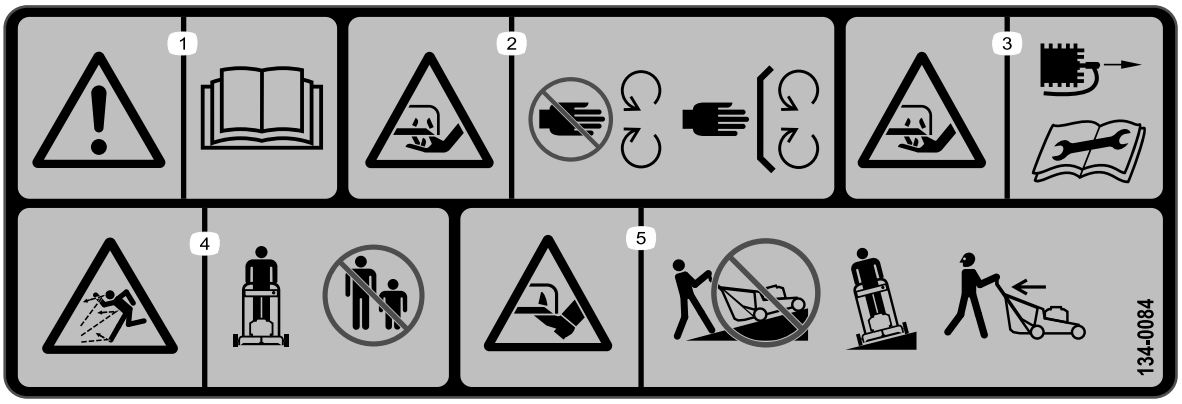
1. Quick-wash port



decalh295159

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1. Engine stop



decal134-0084

134-0084

1. Warning—read the *Operator's Manual*.
2. Cutting hazard—keep away from moving parts; keep all guards and shields in place.
3. Cutting hazard—disconnect the spark plug and read the *Operator's Manual* before performing maintenance.
4. Thrown object hazard—keep bystanders away from the machine.
5. Cutting hazard—do not mow up a slope; always mow from side to side; ensure that the blade is stopped and the engine is shut off before picking up nearby debris; always look behind you when backing up with the machine.

Setup

Important: **Remove and discard the protective plastic sheet that covers the engine and any other plastic or wrapping on the machine.**

1

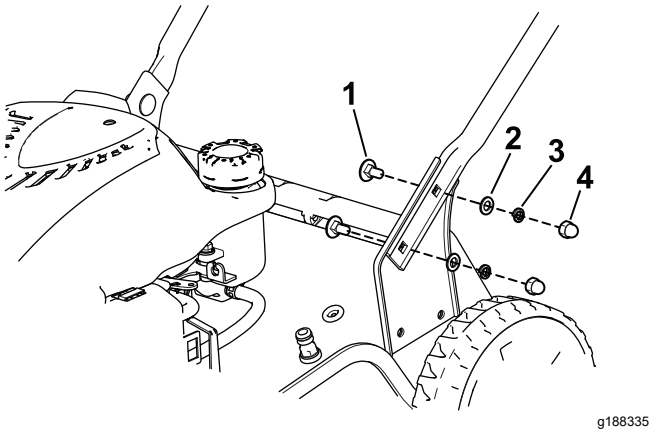
Assembling the Handle

Parts needed for this procedure:

2	Lower handle
4	Short bolt
4	Flat washer
4	Split washer
4	Nut
1	Upper handle
2	Handle knob
2	Curved washer
2	Long bolt

Procedure

1. Attach the lower handle to the mower housing with the 4 bolts, 4 flat washers, 4 split washers, and 4 nuts (Figure 3).

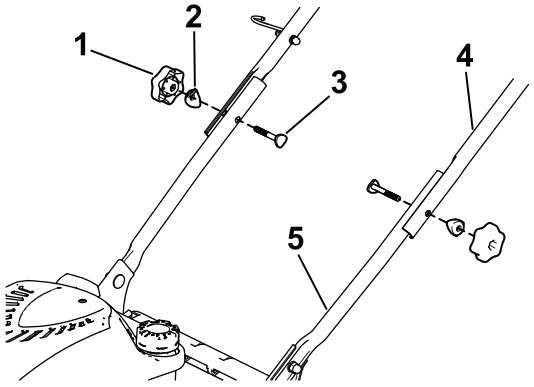


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Figure 3

1. Bolt (4)
2. Flat washer (4)
3. Split washer (4)
4. Nut (4)

2. Attach the upper handle to the lower handle using 2 handle knobs, 2 curved washers, and 2 bolts. Tighten the handle knobs securely by hand (Figure 4).

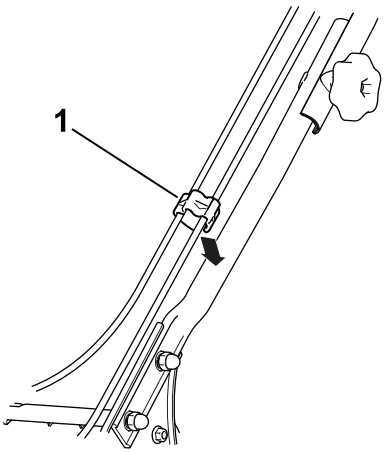


g188346

Figure 4

1. Handle knob (2)
2. Curved washer (2)
3. Bolt (2)
4. Upper handle
5. Lower handle

3. Insert the cables into the cable clamp and attach the cable clip to the handle as shown in Figure 5.



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Figure 5

1. Cable clip

2

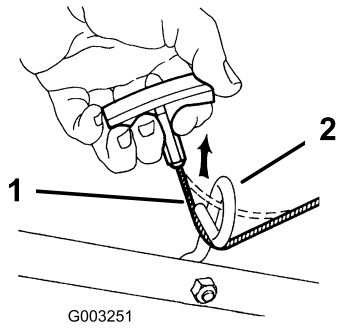
Installing the Recoil-Starter Rope in the Rope Guide

No Parts Required

Procedure

Important: **To start the engine safely and easily whenever you use the machine, install the recoil-starter rope in the rope guide.**

Hold the blade-control bar to the upper handle (Figure 9) and pull the recoil-starter rope through the rope guide on the handle (Figure 6).



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Figure 6

1. Recoil-starter rope
2. Rope guide

3

Filling the Engine with Oil

No Parts Required

Procedure

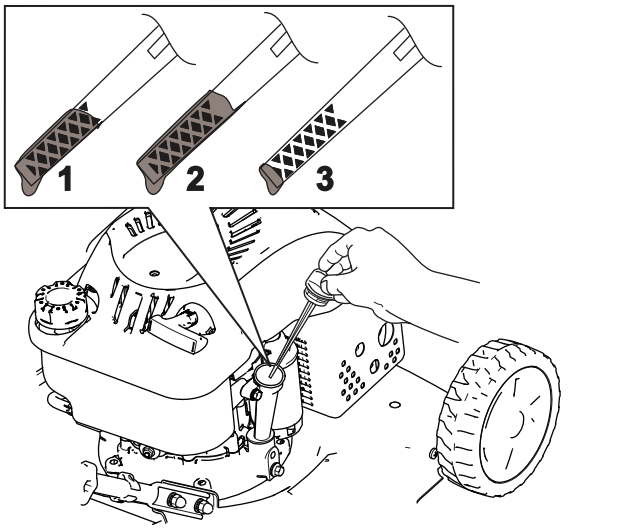
Important: **Your machine does not come with oil in the engine. Before starting the engine, fill the engine with oil.**

Engine oil capacity: 0.55 L

Oil viscosity: SAE 30 or SAE 10W-30 detergent oil

API service classification: SJ or higher

1. Move the machine to a level surface.
2. Remove the dipstick by rotating the cap counterclockwise and pulling it out (Figure 7).



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Figure 7

1. Full
2. High
3. Low

3. Carefully pour about 3/4 of the engine capacity of oil into the oil-fill tube.
4. Wait about 3 minutes for the oil to settle in the engine.
5. Wipe the dipstick clean with a clean cloth.
6. Insert the dipstick into the oil-fill tube, then remove the dipstick.
7. Read the oil level on the dipstick (Figure 7).
   - If the oil level on the dipstick is too low, carefully pour a small amount of oil into the oil-fill tube, wait 3 minutes, and repeat steps 5 through 7 until the oil on the dipstick is at the correct level.
   - If the oil level on the dipstick is too high, drain the excess oil until the oil on the dipstick is at the correct level; refer to Changing the Engine Oil (page 17).

   Important: **If the oil level in the engine is too low or too high and you run the engine, you may damage the engine.**
8. Install the dipstick securely.

4

Assembling the Grass Bag

Parts needed for this procedure:

1	Grass bag
1	Grass-bag frame

Procedure

1. Slide the grass-bag frame into the grass bag (Figure 8).
2. Position all 6 grass-bag clips over the grass-bag frame (Figure 8).

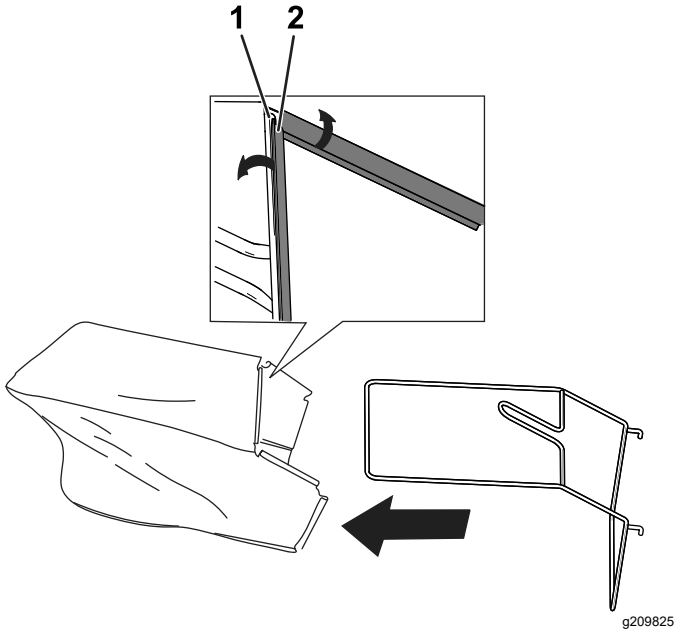


Figure 8

1. Grass-bag frame
2. Grass-bag clip

Product Overview

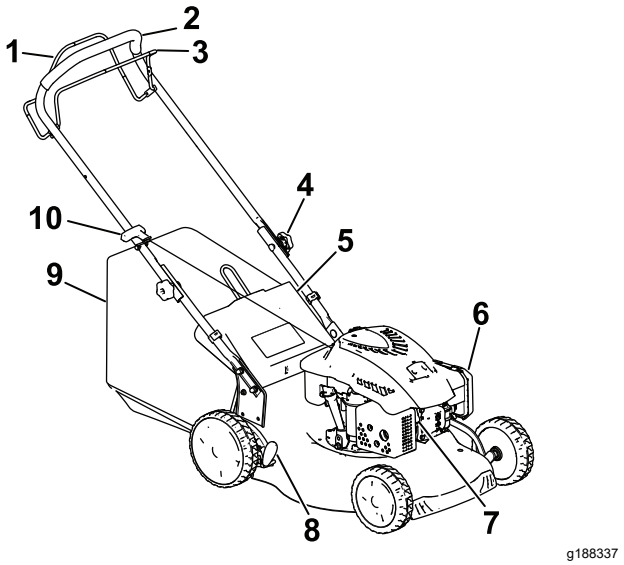


Figure 9

1. Self-propel-drive bar
2. Handle
3. Blade-control bar
4. Handle knob
5. Rear door
6. Air filter
7. Spark plug
8. Cutting-height lever
9. Grass bag
10. Recoil-start handle

Specifications

Model	Weight	Length	Width	Cutting Width	Height
20949	33 kg	140 cm	53 cm	46 cm	105 cm

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

- Always shut off the machine, wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Check that all guards and safety devices, such as deflectors and/or grass catcher, are in place and functioning properly.
- Always inspect the machine to ensure that the blades and blade bolts are not worn or damaged.
- Inspect the area where you will use the machine, and remove all objects that could interfere with the operation of the machine or that the machine could throw.
- Contact with the moving blade will cause serious injury. Do not put your fingers under the housing.

Fuel Safety

- Fuel is extremely flammable and highly explosive. A fire or explosion from fuel can burn you and others and can damage property.
  - To prevent a static charge from igniting the fuel, place the container and/or machine directly on the ground before filling, not in a vehicle or on an object.
  - Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.
  - Do not handle fuel when smoking or around an open flame or sparks.
  - Do not remove the fuel cap or add fuel to the tank while the engine is running or hot.
  - If you spill fuel, do not attempt to start the engine. Avoid creating a source of ignition until the fuel vapors have dissipated.
  - Store fuel in an approved container and keep it out of the reach of children.
- 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 hands and face away from the nozzle and the fuel-tank opening.
  - Keep fuel away from your eyes and skin.

Filling the Fuel Tank

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

Important: **To reduce starting problems, add fuel stabilizer to the fuel all season, mixing it with gasoline less than 30 days old.**

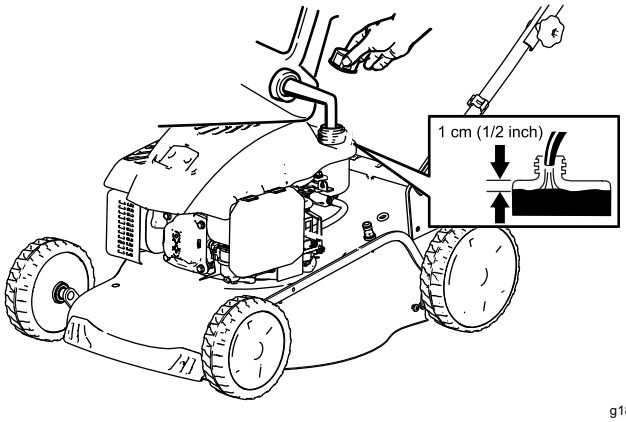
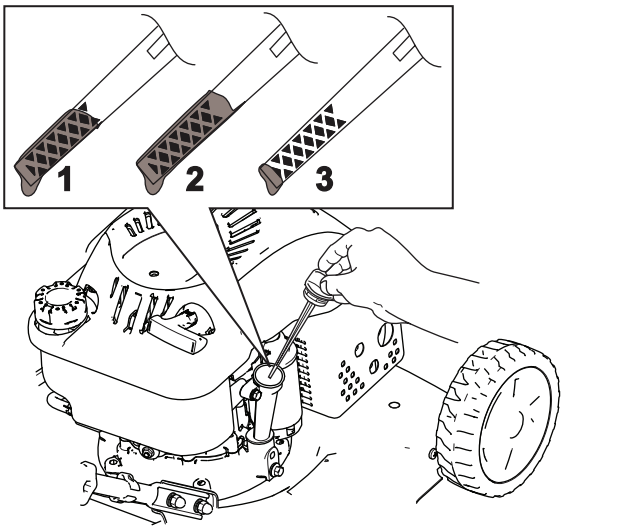


Figure 10

Checking the Engine-Oil Level

Service Interval: Before each use or daily

1. Move the machine to a level surface.
2. Remove the dipstick by rotating the cap counterclockwise and pulling it out (Figure 11).



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Figure 11

1. Full
2. High
3. Low

3. Wipe the dipstick clean with a clean cloth.
4. Insert the dipstick into the oil-fill tube, then remove the dipstick.
5. Read the oil level on the dipstick (Figure 11).
   - If the oil level on the dipstick is too low, slowly pour a small amount of oil into the oil-fill tube, wait 3 minutes, and then repeat steps 3 through 5 until the oil on the dipstick is at the correct level.
   - If the oil level on the dipstick is too high, drain the excess oil until the oil on the dipstick is at the correct level. To drain the excess oil, refer to Changing the Engine Oil (page 17).

   Important: **If the oil level in the crankcase is too low or too high and you run the engine, you may damage the engine.**
6. Install the dipstick into the oil-fill tube securely.

Adjusting the Cutting Height

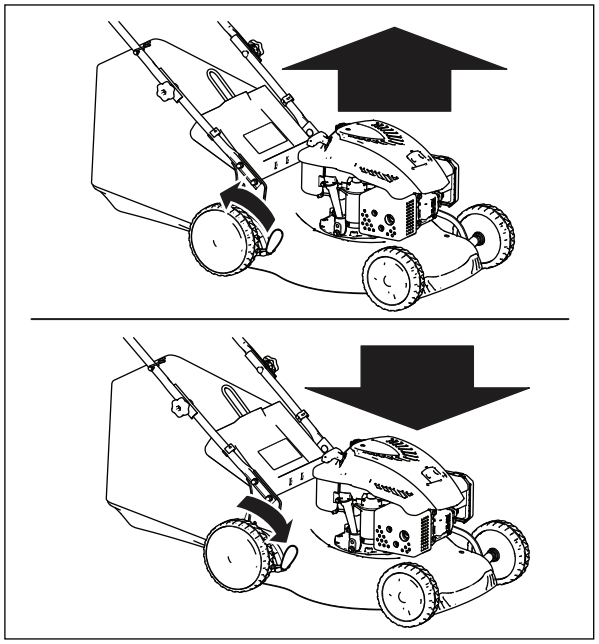
⚠ WARNING

Adjusting the cutting height may bring you into contact with the moving blade, causing serious injury.

- **Shut off the engine and wait for all moving parts to stop.**
- **Do not put your fingers under the housing when adjusting the cutting height.**

There are 7 cutting-height settings from 25 to 70 mm. Adjust the cutting height as desired. Set the front wheels to the same height as the rear wheels.

To adjust the cutting height, disengage the lever (Figure 12), raise or lower the machine, and then engage the lever.



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Figure 12

The cutting height positions are shown in Figure 13.

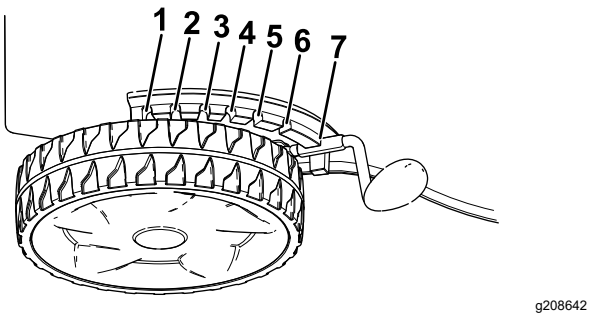


Figure 13

1. 70.0 mm
2. 62.5 mm
3. 55.0 mm
4. 47.5 mm
5. 40.0 mm
6. 32.5 mm
7. 25.0 mm

During Operation

During Operation Safety

General Safety

- Wear appropriate clothing, including eye protection; long trousers; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear loose clothing or loose jewelry.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- The blade is sharp; contacting the blade can result in serious personal injury. Shut off the engine and wait for all moving parts to stop before leaving the operating position.
- When you release the blade-control bar, the engine should shut off and the blade should stop within 3 seconds. If not, stop using your machine immediately and contact an Authorized Service Dealer.
- Keep bystanders out of the operating area. Keep small children out of the operating area and under the watchful care of a responsible adult who is not operating the machine. Stop the machine if anyone enters the area.
- Always look down and behind you before moving the machine in reverse.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.
- Wet grass or leaves can cause serious injury if you slip and contact the blade. Avoid mowing in wet conditions.
- Use extreme care when approaching blind corners, shrubs, trees, or other objects that may block your view.
- Do not direct the discharge material toward anyone. Avoid discharging material against a wall or obstruction; material may ricochet toward you. Stop the blade(s) when crossing gravel surfaces.
- Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could cause you to lose your balance or footing.
- If the machine strikes an object or starts to vibrate, immediately shut off the engine, wait for all moving parts to stop, and disconnect the wire from the spark plug before examining the machine for damage. Make all necessary repairs before resuming operation.
- Before leaving the operating position, shut off the engine and wait for all moving parts to stop.
- If the engine has been running, it will be hot and can severely burn you. Keep away from the hot engine.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is an odorless, deadly poison.
- Check the grass catcher components and the discharge chute frequently for any wear or deterioration and replace them with genuine Toro parts when necessary.

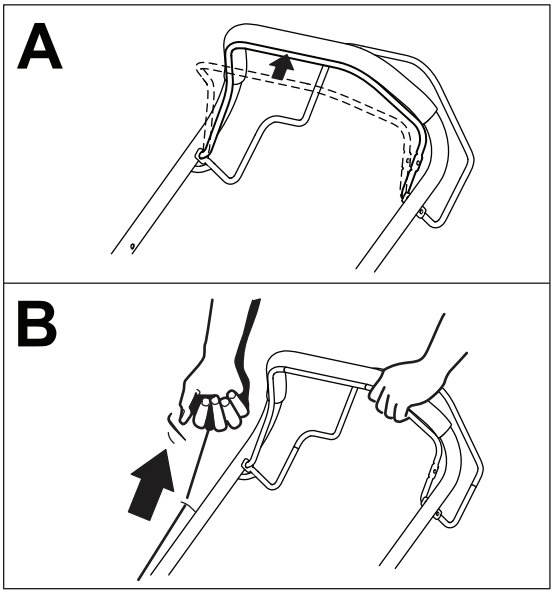
Slope Safety

- Mow across the face of slopes; never up and down. Use extreme caution when changing direction on slopes.
- Do not mow on excessively steep slopes. Poor footing could cause a slip-and-fall accident.
- Mow with caution near drop-offs, ditches, or embankments.

Starting the Engine

Important: **This machine comes with a rubber boot over the end of the spark plug. Ensure that the metal loop on the end of the spark-plug wire (inside the rubber boot) is fastened securely on the metal tip on the spark plug.**

1. Hold the blade-control bar against the handle (Figure 14A).



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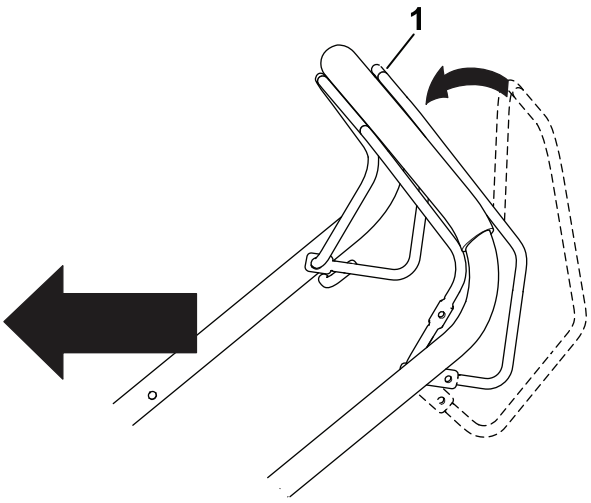
Figure 14

1. Blade-control bar

2. Pull the recoil-start handle lightly until you feel resistance, then pull it sharply (Figure 14B). When the engine starts, allow the rope to return to the handle slowly.

Using the Self-Propel Drive

To operate the self-propel drive, squeeze the self-propel-drive bar (Figure 15) toward the handle and hold it.



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Figure 15

1. Self-propel-drive bar

Note: The machine has a fixed maximum speed of approximately 3.7 km/h.

To disengage the self-propel drive, release the self-propel-drive bar.

Shutting Off the Engine

To shut off the engine, release the blade-control bar.

Note: Disconnect and ground the spark-plug wire before you leave the machine to prevent someone from accidently starting the engine.

Mulching the Grass Clippings

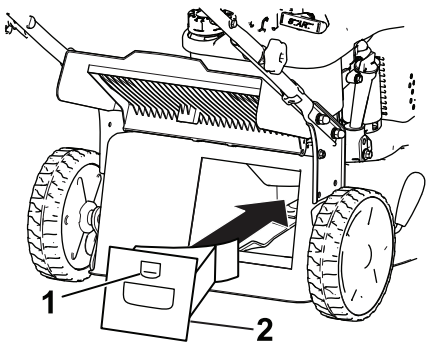
⚠ WARNING

The blade is sharp; contacting the blade can result in serious personal injury.

- **Ensure that the mulching plug is in place before you mulch the clippings.**
- **Never engage the blade without the mulching plug in place, the grass bag installed, or the rear door down.**

If the grass bag is on the machine, remove it; refer to Removing the Grass Bag (page 11).

1. Raise and hold up the rear door (Figure 16).



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Figure 16

1. Latch
2. Mulching plug

2. Install the mulching plug into the housing and lock the plug into the opening in the housing (Figure 16).
3. Lower the rear door.

Bagging the Grass Clippings

Use the grass bag when you want to collect grass and leaf clippings from the lawn.

⚠ DANGER

A worn grass bag could allow small stones and other similar debris to be thrown toward you or bystanders, resulting in serious personal injury or death.

Check the grass bag frequently. If it is damaged, install a new Toro replacement bag.

⚠ WARNING

The blade is sharp; contacting the blade can result in serious personal injury.

- **Ensure that the grass bag is in place before you bag the clippings.**
- **Never engage the blade without the mulching plug in place, the grass bag installed, or the rear door down.**

⚠ DANGER

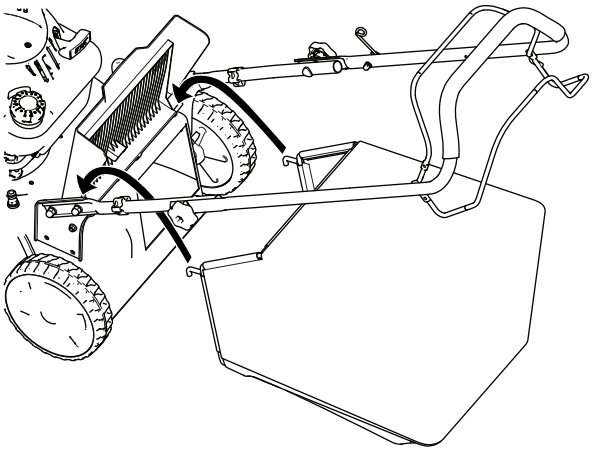
The machine can throw grass clippings and other objects through an open discharge tunnel. Objects thrown with enough force could cause serious personal injury or death to the you or a bystander.

Never open the door on the discharge tunnel when the engine is running.

If the mulching wedge is installed on the machine, raise the rear door, remove the mulching wedge, and lower the rear door.

Installing the Grass Bag

1. If necessary, assemble the grass bag; refer to 4 Assembling the Grass Bag (page 5).
2. Raise and hold up the rear door (Figure 17).



g188333

Figure 17

3. Install the grass bag, ensuring that the pins on the bag rest in the notches on the handle (Figure 17).
4. Lower the rear door.

Removing the Grass Bag

1. Raise and hold up the rear door (Figure 17).
2. Remove the bag.
3. Lower the rear door.

Rear-Discharging the Grass Clippings

1. If the grass bag is on the machine, remove it before rear-discharging the clippings; refer to Removing the Grass Bag (page 11).
2. If the mulching wedge is installed on the machine, raise the rear door, remove the mulching wedge, and lower the rear door.

⚠ WARNING

The blade is sharp; contacting the blade can result in serious personal injury.

- **Ensure that the rear door is down before rear-discharging the grass clippings.**
- **Never engage the blade without the mulching plug in place, the grass bag installed, or the rear door down.**

Operating Tips

Cutting Grass

- Cut only about a third of the grass blade at a time. Do not cut below 50 mm unless the grass is sparse or it is late fall when grass growth begins to slow down.
- When cutting grass over 15 cm tall, mow at the highest cutting height setting and walk slower; then mow again at a lower setting for the best lawn appearance. If the grass is too long, the machine may plug and cause the engine to stall.
- Wet grass and leaves tend to clump on the yard and can cause the machine to plug or the engine to stall. Avoid mowing in wet conditions.
- Be aware of a potential fire hazard in very dry conditions, follow all local fire warnings, and keep the machine free of dry grass and leaf debris.
- Alternate the mowing direction. This helps disperse the clippings over the lawn for even fertilization.
- If the finished lawn appearance is unsatisfactory, try 1 or more of the following:
  - Replace the blade or have it sharpened.
  - Walk at a slower pace while mowing.
  - Raise the cutting height on your machine.
  - Cut the grass more frequently.
  - Overlap cutting swaths instead of cutting a full swath with each pass.

Cutting Leaves

- After cutting the lawn, ensure that half of the lawn shows through the cut leaf cover. You may need to make more than a single pass over the leaves.
- If there are more than 15 cm of leaves on the lawn, mow at a higher cutting height and then again at the desired cutting height.
- Slow down your mowing speed if the machine does not cut the leaves finely enough.

After Operation

After Operation Safety

General Safety

- Always shut off the machine, wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Clean grass and debris from the machine to help prevent fires. Clean up oil or fuel spills.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.

Hauling Safety

- Use care when loading or unloading the machine.
- Secure the machine from rolling.

Cleaning under the Machine

Service Interval: Before each use or daily

⚠ WARNING

The machine may dislodge material from under the machine.

- **Wear eye protection.**
- **Stay in the operating position (behind the handle) when the engine is running.**
- **Do not allow bystanders in the area.**

For best results, clean the machine soon after you have completed mowing.

1. Move the machine onto a flat paved surface.
2. Shut off the engine and wait for all moving parts to stop before leaving the operating position.
3. Lower the machine to its lowest cutting-height setting; refer to Adjusting the Cutting Height (page 8).
4. Wash out the area under the rear door where the clippings go from the housing to the grass bag.

   Note: Wash out the area with the bag-on-demand in both the fully forward and fully rearward positions.
5. Attach a garden hose that is connected to a water supply to the quick-wash port (Figure 18).

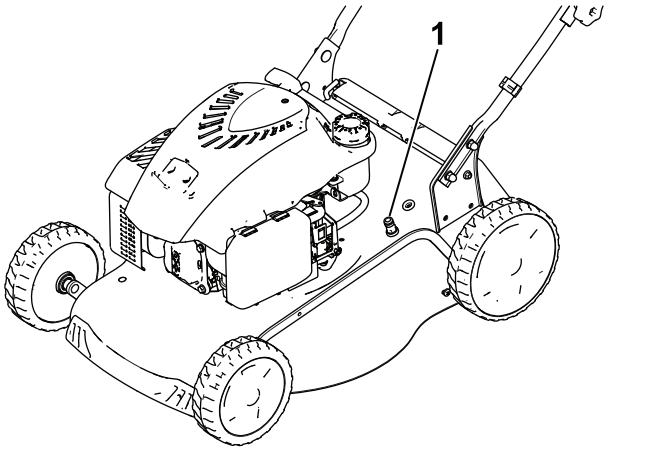


Figure 18

1. Quick-wash port

6. Turn the water on.
7. Start the engine and run it until there are no more clippings that come out from under the machine.
8. Shut off the engine.
9. Shut off the water and disconnect the garden hose from the machine.
10. Start the engine and run it for a few minutes to dry the underside of the machine to prevent it from rusting.
11. Allow the engine to cool before storing the machine in an enclosed area.

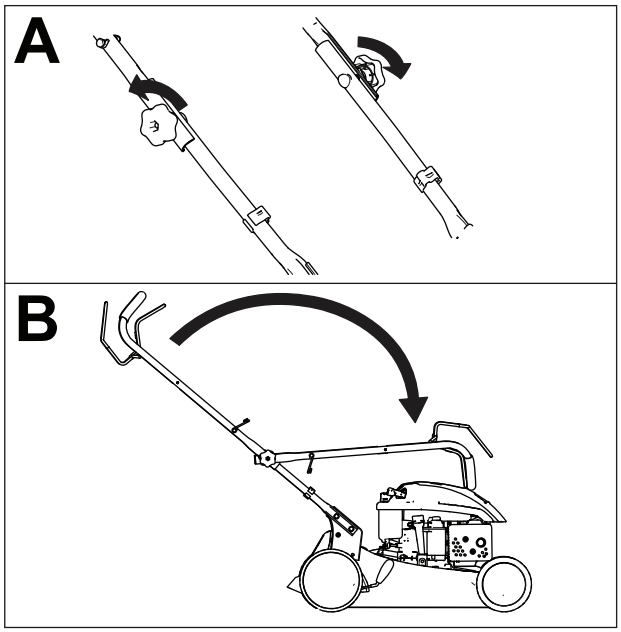
Folding the Handle

⚠ WARNING

Folding or unfolding the handle improperly can damage the cables, causing an unsafe operating condition.

- **Do not damage the cables when folding or unfolding the handle.**
- **If a cable is damaged, contact an Authorized Service Dealer.**

1. Loosen the 2 handle knobs (Figure 19A).



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Figure 19

2. Fold the handle by rotating it forward (Figure 19B).

Maintenance

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

Recommended Maintenance Schedule(s)

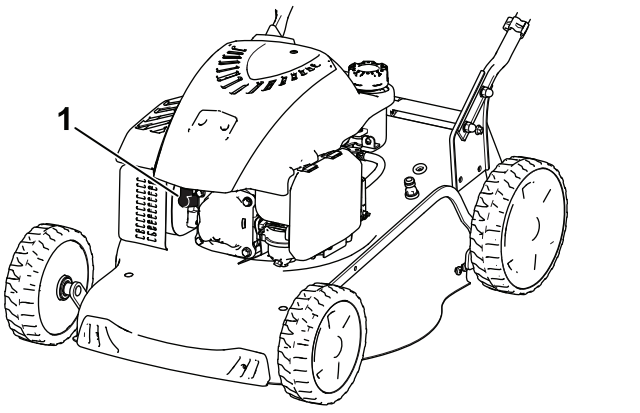
Maintenance Service Interval	Maintenance Procedure
Before each use or daily	• Check the engine-oil level. • Clean grass clippings and dirt from under the machine.
Every 100 hours	• Replace the spark plug.
Yearly	• Replace the air filter; replace it more frequently in dusty operating conditions. • Replace the blade or have it sharpened (more frequently if the edge dulls quickly). • Clean the air-cooling system; clean it more frequently in dusty operating conditions. Refer to your engine manual.
Yearly or before storage	• Lubricate the wheels. • Empty the fuel tank before repairs as directed and before yearly storage.

Maintenance Safety

- Always shut off the machine, wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Disconnect the spark-plug wire from the spark plug before performing any maintenance procedure.
- Wear gloves and eye protection when servicing the machine.
- The blade is sharp; contacting the blade can result in serious personal injury. Wear gloves when servicing the blade. Do not repair or alter the blade(s).
- Never tamper with safety devices. Check their proper operation regularly.
- Tipping the machine may cause the fuel to leak. Fuel is flammable and explosive, and can cause personal injury. Run the engine dry or remove the fuel with a hand pump; never siphon the fuel.
- To ensure optimum performance 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.

Preparing for Maintenance

1. Shut off the engine and wait for all moving parts to stop.
2. Disconnect the spark-plug wire from the spark plug (Figure 20).



g188342

Figure 20

3. After performing the maintenance procedure(s), connect the spark-plug wire to the spark plug.

Important: **Before tipping the machine to change the oil or replace the blade, allow the fuel tank to run dry through normal usage. If you must tip the machine prior to running out of fuel, use a hand fuel pump to remove the fuel. Always tip the machine onto its side, with the dipstick down.**

⚠ WARNING

Tipping the machine may cause the fuel to leak. Fuel is flammable and explosive and can cause personal injury.

Run the engine dry or remove the fuel with a hand pump; never siphon.

Replacing the Spark Plug

Service Interval: Every 100 hours

Use a Champion RN9YC spark plug or equivalent.

1. Shut off the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Clean around the spark plug.
4. Remove the spark plug from the engine.

   Important: **Replace a cracked, fouled, or dirty spark plug. Do not clean the electrodes because grit entering the engine can damage the engine.**
5. Set the gap on the new plug to 0.76 mm as shown in Figure 21.

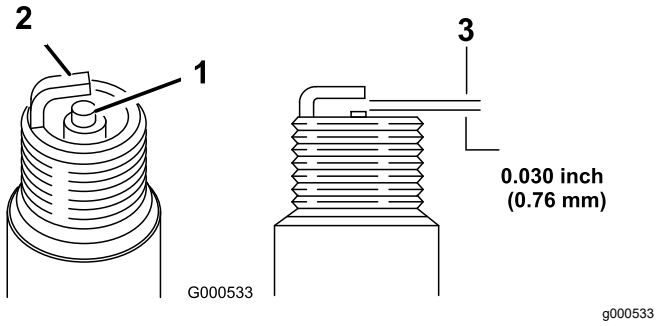


Figure 21

1. Center electrode
2. Side electrode
3. Air gap (not to scale)

6. Install the spark plug.
7. Tighten the plug to 20 N·m.
8. Connect the wire to the spark plug.

Replacing the Air Filter

Service Interval: Yearly

1. Press down on the latch tabs on top of the air-filter cover (Figure 22).

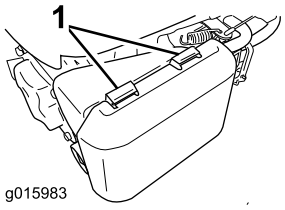


Figure 22

1. Latch tabs

2. Open the cover.
3. Remove the paper air filter and the foam pre-filter (Figure 23).

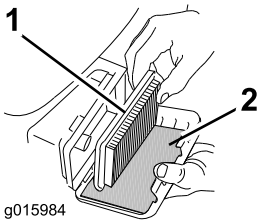


Figure 23

1. Paper air filter
2. Foam pre-filter

4. Inspect the foam pre-filter and replace it if it is damaged or excessively dirty.
5. Inspect the paper air filter.
   A. If the paper air filter is damaged or is wet with oil or fuel, replace it.
   B. If the paper air filter is dirty, tap it on a hard surface several times or blow compressed air less than 207 kPa (30 psi) through the side of the filter that faces the engine.

      Note: Do not brush the dirt off the filter; brushing forces dirt into the fibers.
6. Use a moist rag to remove dirt from the air-cleaner body and cover. **Do not wipe dirt into the air duct.**
7. Insert the foam pre-filter and the paper air filter into the air cleaner.
8. Install the cover.

Changing the Engine Oil

Changing the engine oil is not required, but if you desire to change the oil, use the following procedure.

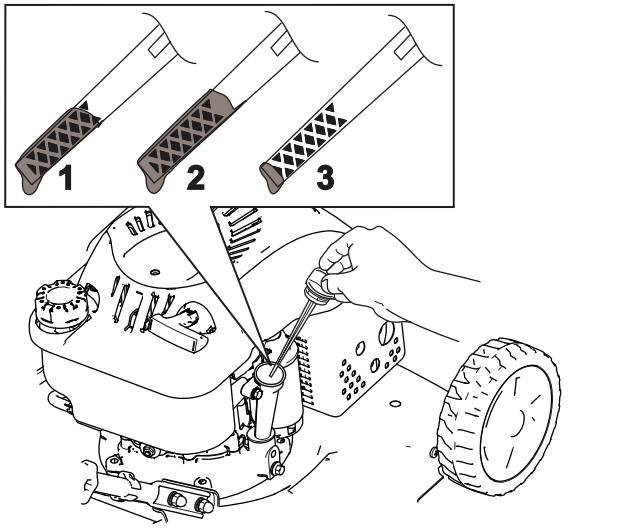
Engine oil capacity: 0.55 L

Oil viscosity: SAE 30 or SAE 10W-30 detergent oil

API service classification: SJ or higher

Note: Run the engine a few minutes before changing the oil to warm it. Warm oil flows better and carries more contaminants.

1. Move the machine to a level surface.
2. Refer to Preparing for Maintenance (page 15).
3. Remove the dipstick by rotating the cap counterclockwise and pulling it out (Figure 24).

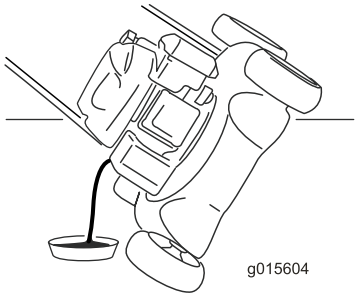


g188326

Figure 24

1. Full
2. High
3. Low

4. Tip the machine onto its side (so that the air filter is up) to drain the used oil from the oil-fill tube (Figure 25).



g015604

Figure 25

5. After draining the used oil, return the machine to the operating position.
6. Carefully pour about 3/4 of the engine capacity of oil into the oil-fill tube.
7. Wait about 3 minutes for the oil to settle in the engine.
8. Wipe the dipstick clean with a clean cloth.
9. Insert the dipstick into the oil-fill tube, then remove the dipstick.
10. Read the oil level on the dipstick (Figure 25).
    - If the oil level on the dipstick is too low, carefully pour a small amount of oil into the oil-fill tube, wait 3 minutes, and repeat steps 8 through 10 until the oil on the dipstick is at the correct level.
    - If the oil level on the dipstick is too high, drain the excess oil until the oil on the dipstick is at the correct level.

    Important: **If the oil level in the engine is too low or too high and you run the engine, you may damage the engine.**
11. Install the dipstick securely.
12. Recycle the used oil properly.

Replacing the Blade

Service Interval: Yearly

***Important:* You will need a torque wrench to install the blade properly. If you do not have a torque wrench or are uncomfortable performing this procedure, contact an Authorized Service Dealer.**

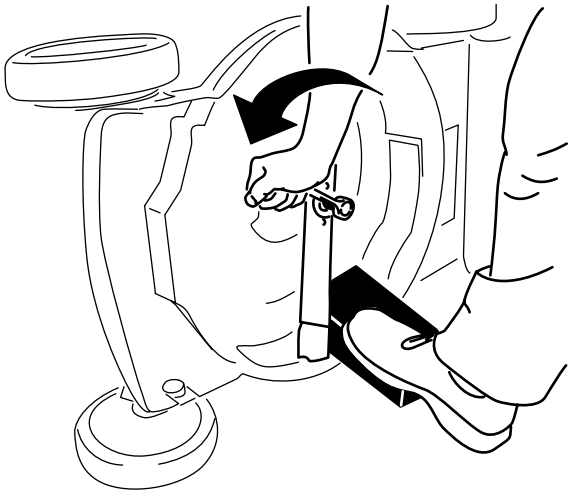
Examine the blade whenever you run out of fuel. If the blade is damaged or cracked, replace it immediately. If the blade edge is dull or nicked, have it sharpened and balanced, or replace it.

⚠ WARNING

The blade is sharp; contacting the blade can result in serious personal injury.

Wear gloves when servicing the blade.

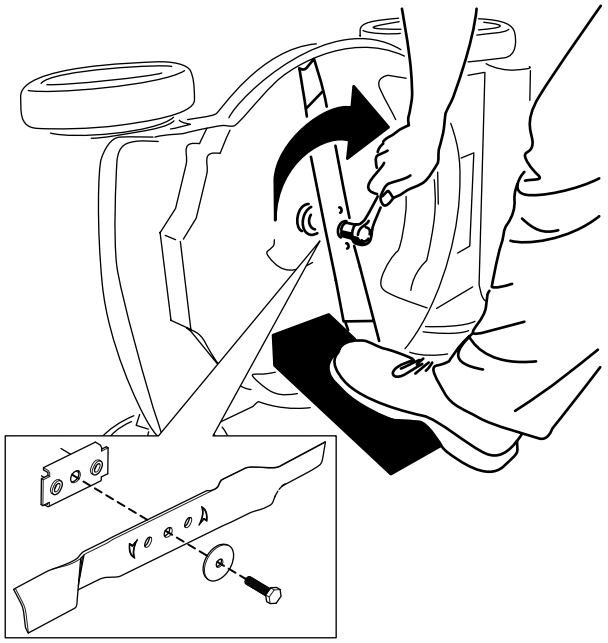
1. Refer to Preparing for Maintenance (page 15).
2. Tip the machine onto its side with the dipstick down.
3. Use a block of wood to hold the blade steady (Figure 26).



g188339

Figure 26

4. Remove the blade, saving all mounting hardware (Figure 26).
5. Install the new blade and all mounting hardware (Figure 27).



g188330

Figure 27

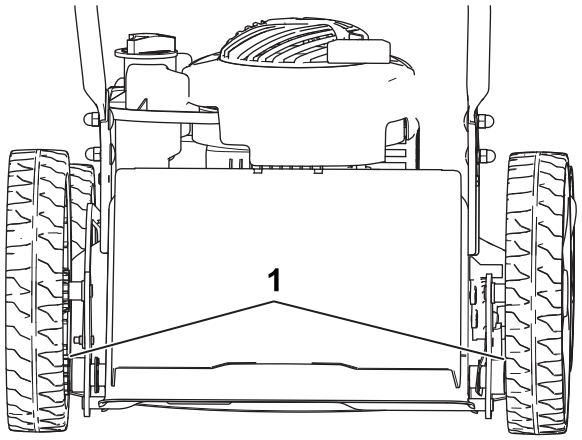
***Important:* Position the curved ends of the blade to point toward the mower housing.**

6. Use a torque wrench to tighten the blade bolt to 45 N·m (33 ft-lb).

Lubricating the Wheels

Service Interval: Yearly or before storage

Apply a few drops of No. 2 lithium grease to the ball bearings on each of the wheels (Figure 28).



g189817

Figure 28

1. Ball bearings

Storage

Store the machine in a cool, clean, dry place.

Storage Safety

Always shut off the machine, wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.

Preparing the Machine for Storage

1. On the last refueling of the year, add fuel stabilizer (such as Toro Premium Fuel Treatment) to the fuel.
2. Dispose of any unused fuel properly. Recycle it according to local codes, or use it in your automobile.

   Note: Old fuel in the fuel tank is the leading cause of hard starting. Do not store fuel without stabilizer more than 30 days, and do not store stabilized fuel more than 90 days.
3. Run the machine until the engine shuts off from running out of fuel.
4. Start the engine again.
5. Allow the engine to run until it shuts off. When you can no longer start the engine, it is sufficiently dry.
6. Disconnect the wire from the spark plug.
7. Remove the spark plug, add 30 ml of engine oil through the spark-plug hole, and pull the starter rope slowly several times to distribute oil throughout the cylinder to prevent cylinder corrosion during the off-season.
8. Loosely install the spark plug.
9. Tighten all nuts, bolts, and screws.

Removing the Machine from Storage

1. Check and tighten all fasteners.
2. Remove the spark plug and spin the engine rapidly by pulling the recoil-start handle to blow the excess oil from the cylinder.
3. Install the spark plug and tighten it with a torque wrench to 20 N·m.
4. Perform any maintenance procedures; refer to Maintenance (page 15).
5. Check the engine-oil level; refer to Checking the Engine-Oil Level (page 8).
6. Fill the fuel tank with fresh fuel; refer to Filling the Fuel Tank (page 7).
7. Connect the wire to the spark plug.

Notes: