

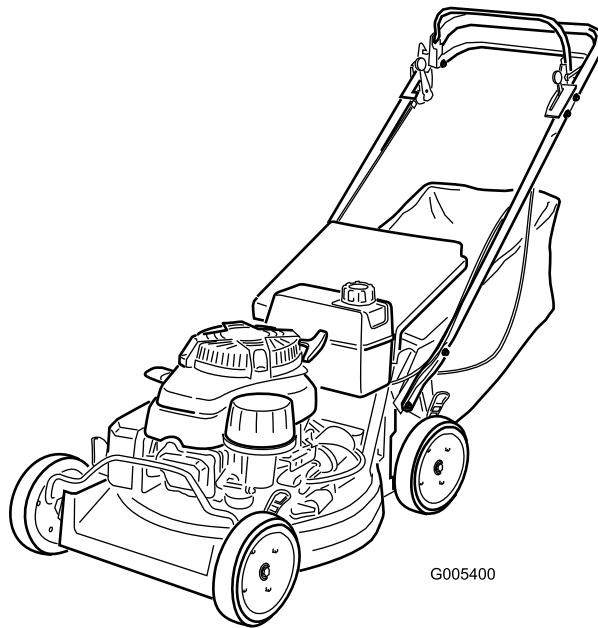


Count on it.

Operator's Manual

21in Heavy-Duty Rear Bagger Lawn Mower

Model No. 22189—Serial No. 290000001 and Up



G005400

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.

Important: This engine is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land. Other states or federal areas may have similar laws.

This spark ignition system complies with Canadian ICES-002.

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.

Introduction

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

You may contact Toro directly at www.Toro.com for product and 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.

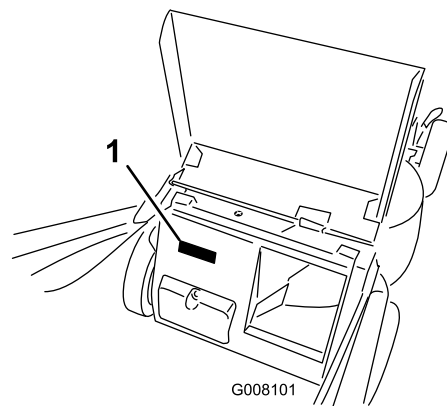


Figure 1

1. Model and serial number plate

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.



Figure 2

1. Safety alert symbol

This manual uses 2 words to highlight information.

Important calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

Contents

Introduction.....	2
Safety	3
General Lawn Mower Safety	3
Safety and Instructional Decals	5
Setup.....	6
1 Installing the Handle.....	6
2 Installing the Fuel Tank and the Fuel Line.....	6
3 Filling the Crankcase with Oil.....	7
Product Overview	8
Controls	8
Operation.....	9
Checking the Engine Oil Level.....	9
Filling the Fuel Tank with Gasoline	10
Starting the Engine	11
Stopping the Engine	11
Operating the Blade.....	11
Operating the Traction Drive.....	12
Checking the Blade Brake Clutch	12
Adjusting the Cutting Height	13
Using the Grass Bag	13
Operating Tips	14
Maintenance.....	16
Recommended Maintenance Schedule(s)	16
Lubrication.....	17
Lubricating the Pivot Arms.....	17
Lubricating the Gear Case.....	17
Engine Maintenance.....	17
Servicing the Air Filter.....	17
Changing the Engine Oil	18
Changing the Oil Filter	19
Servicing the Spark Plug	20
Fuel System Maintenance	20
Emptying the Fuel Tank and Cleaning the Fuel Filter.....	20
Drive System Maintenance	21
Adjusting the Self-propel Drive.....	21
Controls System Maintenance.....	22
Adjusting the Blade Brake Cable	22
Blade Maintenance	23
Maintaining the Cutting Blade.....	23
Cleaning.....	25
Cleaning under the Mower Housing	25
Cleaning the Blade Brake Clutch Shield	25
Storage.....	26
Preparing the Fuel System.....	26
Preparing the Engine.....	26
General Information	26
Removing the Lawn Mower from Storage.....	27
Troubleshooting.....	28

Safety

This lawn mower meets or exceeds the CPSC blade safety requirements for walk-behind rotary lawn mowers and the B71.4 specifications of the American National Standards Institute in effect at the time of production.

Improperly using or maintaining this lawn mower can result in injury. To reduce the potential for injury, comply with these safety instructions.

Toro designed and tested this lawn mower for to offer reasonably safe service; however, **failure to comply with the following instructions may result in personal injury.**



Engine exhaust contains carbon monoxide, an odorless, deadly poison that can kill you.

Do not run the engine indoors or in an enclosed area.

To ensure maximum safety, best performance, and to gain knowledge of the product, it is essential that you and any other operator of the lawn mower read and understand the contents of this manual before the engine is ever started. Pay particular attention to the safety alert symbol (Figure 2) which means **Caution, Warning, or Danger**—“personal safety instruction.” Read and understand the instruction because it has to do with safety. Failure to comply with the instruction may result in personal injury.

General Lawn Mower Safety

This lawn mower is capable of amputating hands and feet and of throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

The following instructions are from the ANSI/OPEI B71.4-2004 standard.

Training

- Read the Operator's Manual and other training material. If the operator(s) or mechanic(s) can not read English it is the owner's responsibility to explain this material to them.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- All operators and mechanics should be trained. The owner is responsible for training the users.

- Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people, or property.

Preparation

- Only use accessories and attachments approved by the manufacturer.
- Wear appropriate clothing including hard hat, safety glasses, and ear protection. Long hair, loose clothing or jewelry may get tangled in moving parts.
- Inspect the area where the equipment is to be used and remove all objects such as rocks, toys and wire which can be thrown by the machine.
- Use extra care when handling gasoline and other fuels. They are flammable and vapors are explosive.
 - Use only an approved container.
 - Never remove gas cap or add fuel with engine running. Allow engine to cool before refueling. Do not smoke.
 - Never refuel or drain the machine indoors.
- Check that operator's presence controls, safety switches and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Operation

- Never run an engine in an enclosed area.
- Only operate in good light, keeping away from holes and hidden hazards.
- Only start engine from the operator's position.
- Be sure of your footing, especially when backing up. Walk, don't run. Never operate on wet grass. Reduced footing could cause slipping.
- Slow down and use extra care on hillsides. Be sure to travel side to side on hillsides. Turf conditions can affect the machine's stability. Use caution while operating near drop-offs.
- Do not operate the lawn mower without either the grass catcher or the guard in place.
- Do not change the engine governor setting or overspeed the engine.
- Stop on level ground and shut off engine before leaving the operator's position for any reason

including emptying the catcher or unclogging the chute.

- Stop equipment and inspect blade after striking objects or if an abnormal vibration occurs. Make necessary repairs before resuming operations.
- Keep hands and feet away from the cutting units.
- Look behind and down before backing up to be sure of a clear path.
- Keep pets and bystanders away.
- Slow down and use caution when crossing roads and sidewalks. Stop blade if you are not mowing.
- Be aware of the mower discharge direction and do not point it at anyone.
- Do not operate the mower under the influence of alcohol or drugs.
- Use care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

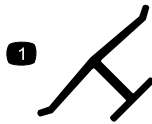
Maintenance and Storage

- Stop engine and disconnect spark plug wire. Wait for all movement to stop before adjusting, cleaning or repairing.
- Clean grass and debris from cutting unit, drive, muffler, and engine to help prevent fires. Clean up oil or fuel spillage.
- Let engine cool before storing and do not store near flame.
- Shut off fuel while storing or transporting. Do not store fuel near flames or drain indoors.
- Never allow untrained personnel to service machine.
- Remove spark plug wire before making any repairs.
- Use care when checking blade. Wrap the blade or wear gloves, and use caution when servicing them. Only replace blade. Never straighten or weld it.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Keep all parts in good working condition and all hardware tightened. Replace all worn or damaged decals.

Safety and Instructional Decals



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



Manufacturer's Mark

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



68-7410



43-8480

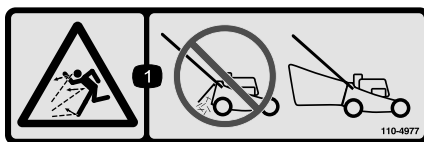


98-4387

1. Warning—wear hearing protection.



110-2114



110-4977

1. Thrown object hazard—do not operate the mower without a bag in place.



110-4989

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Handle	1	Install the handle.
	Bolt (5/16 x 7/8 inch)	2	
	Bolt (5/16 x 1-1/2 inches)	2	
	Washer	4	
	Locknut (5/16 inch)	4	
	Cable tie	3	
2	Self-tapping screw Fuel tank	2 1	Install the fuel tank and fuel line.
3	No parts required	—	Fill the crankcase with oil.

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

1

Installing the Handle

Parts needed for this procedure:

1	Handle
2	Bolt (5/16 x 7/8 inch)
2	Bolt (5/16 x 1-1/2 inches)
4	Washer
4	Locknut (5/16 inch)
3	Cable tie

Procedure

1. Mount the handle to the mower housing with 2 bolts (5/16 x 7/8 inch), 2 bolts (5/16 x 1-1/2 inches), 4 washers, and 4 locknuts (Figure 3).

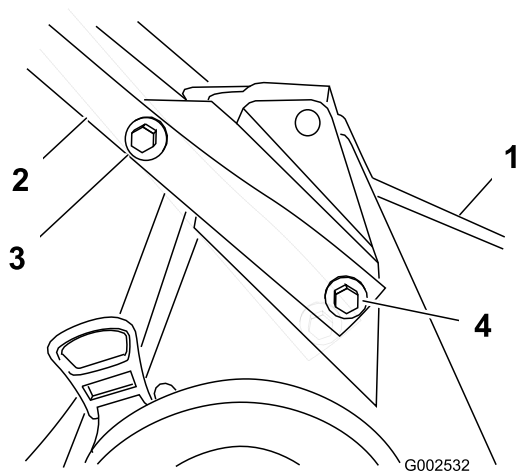


Figure 3

1. Housing
2. Handle
3. Bolt (5/16 x 1-1/2 inches), washer, and locknut
4. Bolt (5/16 x 7/8 inch), washer, and locknut

Note: Install the washers with the cup side facing the handle.

Note: You can adjust the handle height for more comfortable operation. Securing the lower handle end in the upper hole lowers the handle; securing the lower handle end in the lower hole raises the handle.

2. Use the cable ties provided to secure the control cables to the handle.

2

Installing the Fuel Tank and the Fuel Line

Parts needed for this procedure:

2	Self-tapping screw
1	Fuel tank

Procedure

1. Slide the end of the fuel line onto the elbow fitting (Figure 4).

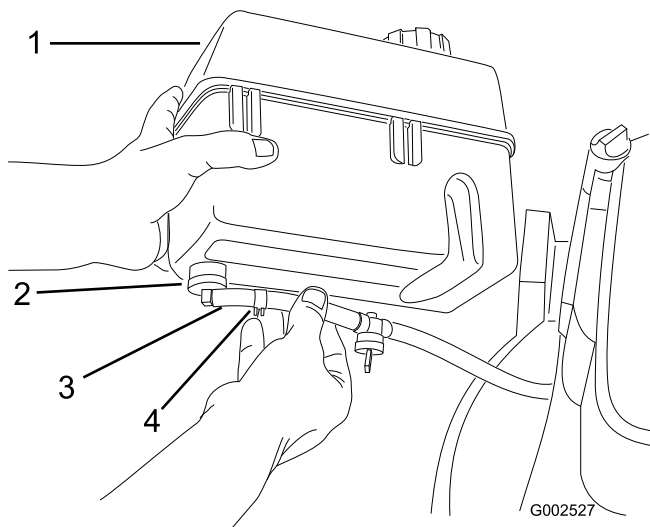


Figure 4

- | | |
|------------------|--------------------|
| 1. Fuel tank | 3. Fuel line |
| 2. Elbow fitting | 4. Fuel line clamp |

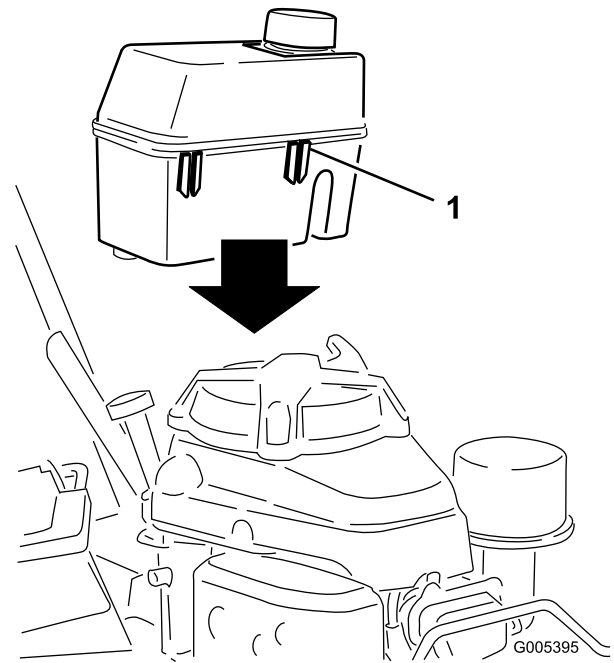


Figure 5

1. Plastic clip (2)

4. Secure the bottom of the fuel tank to the fuel tank bracket by installing the self-tapping screws from the bottom. **Torque the screws to 40 to 50 in-lb (4.5 to 5.6 N-m). Do not overtighten the screws.**

3

Filling the Crankcase with Oil

No Parts Required

Procedure

The engine crankcase is shipped without oil. You must fill it with approximately 30 oz. (0.88 l) of oil before starting the engine. Refer to Checking the Engine Oil Level in the Operation section for oil specifications and instructions.

Product Overview

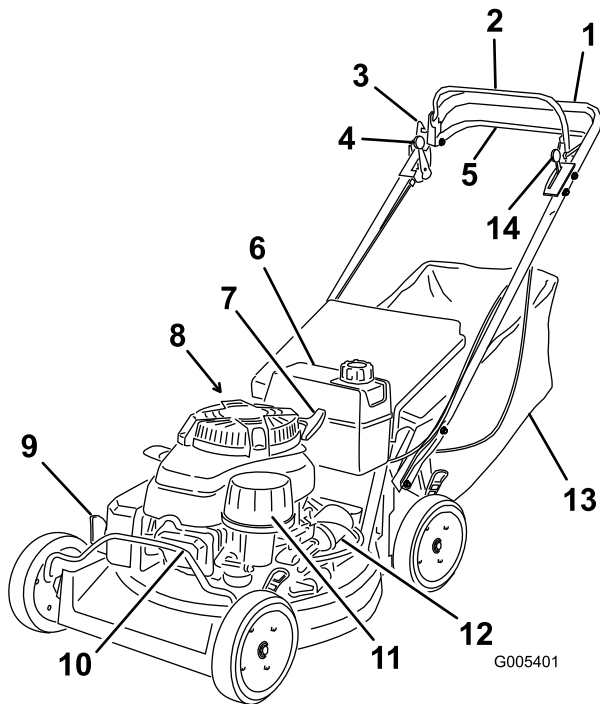


Figure 6

- | | |
|-------------------------------|----------------------------------|
| 1. Handle | 8. Oil fill/dipstick (not shown) |
| 2. Blade control bar | 9. Cutting height lever |
| 3. Control bar lock | 10. Spark plug |
| 4. Ground speed control lever | 11. Air filter |
| 5. Traction control bar | 12. Oil filter |
| 6. Fuel tank | 13. Grass bag |
| 7. Starter handle | 14. Throttle control lever |

Controls

The blade control bar, control bar lock, ground speed control lever, throttle control lever, and traction control bar are on the upper handle as shown in (Figure 7).

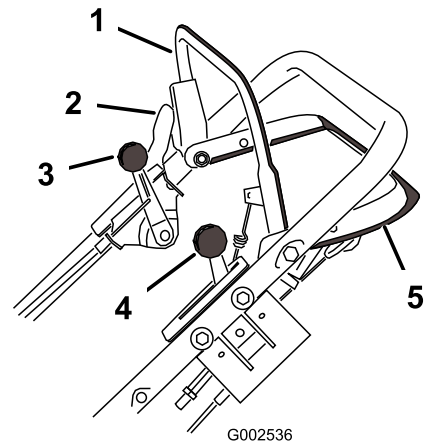


Figure 7

- | | |
|-------------------------------|---------------------------|
| 1. Blade control bar | 4. Throttle control lever |
| 2. Control bar lock | 5. Traction control bar |
| 3. Ground speed control lever | |

The throttle settings are shown in (Figure 8).

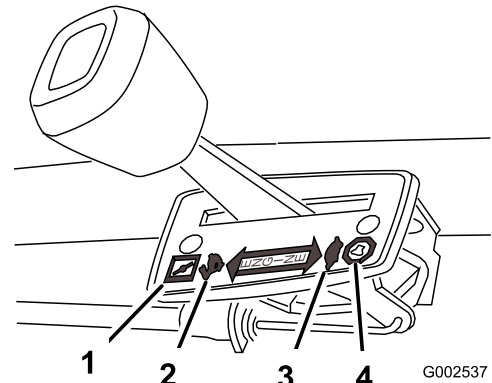


Figure 8

- | | |
|----------|---------|
| 1. Choke | 3. Slow |
| 2. Fast | 4. Stop |

Operation

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

Each time before you mow, make sure that the self-propel drive and the blade control bar operate properly. When you release the blade control bar, the blade should stop. If it does not, contact an Authorized Service Dealer.



This machine produces sound levels in excess of 85dBA at the operator's ear and can cause hearing loss through extended periods of exposure.

Wear hearing protection when operating this machine.



Figure 9

1. Warning—wear hearing protection.

Checking the Engine Oil Level

Service Interval: Before each use or daily

Initially, fill the crankcase with 30 ounces (0.88 liters) of oil. Use only high-quality SAE 30 or SAE 10W30 weight detergent oil that has the American Petroleum Institute (API) service classification SF, SG, SH, or SJ.

Before each use, ensure that the oil level is between the Add and Full marks on the dipstick (Figure 10).

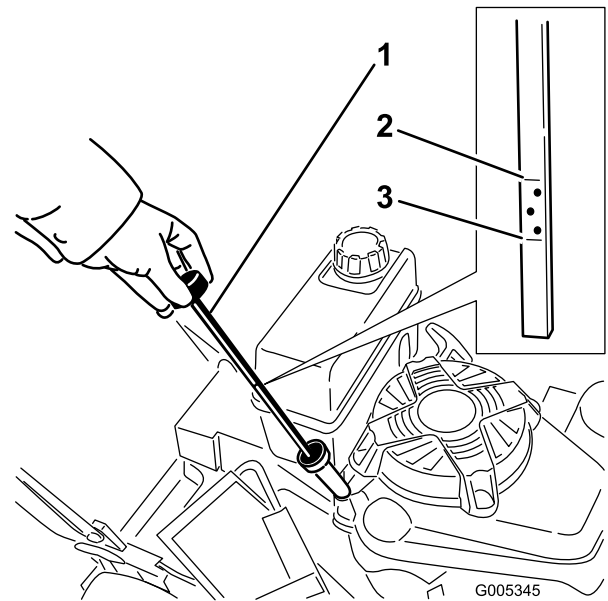


Figure 10

1. Dipstick
2. Full
3. Add

Note: When the crankcase is empty, pour about 3/4 of the crankcase capacity of oil in the crankcase, then follow the procedure in this section.

1. Move the lawn mower to a level surface.
 2. Clean around the dipstick (Figure 10).
 3. Remove the dipstick by rotating the cap counterclockwise and pulling it out.
 4. Wipe the dipstick clean with a clean cloth.
 5. Insert the dipstick into the filler neck, **but do not screw it in**.
 6. Remove the dipstick and read the oil level on the dipstick (Figure 10).
 7. If the oil level reading is below the Add mark on the dipstick, slowly pour only enough oil into the filler hole to raise the oil level to the Full mark on the dipstick.
- Important:** Do not overfill the crankcase with oil and run the engine; engine damage will result. Drain the excess oil until the oil level on the dipstick reads Full.
8. Insert the dipstick into the filler neck and rotate the cap clockwise until it is tight.

Filling the Fuel Tank with Gasoline

For best results, use clean, fresh, lead-free gasoline with an octane rating of 87 or higher. To ensure freshness, purchase only the quantity of gasoline that you expect to use in 30 days. Using unleaded gasoline results in fewer combustion deposits and longer engine life. You may use leaded gasoline if unleaded gasoline is not available.

Important: Do not add oil to the gasoline.

Important: Do not use methanol, gasoline containing methanol, gasohol containing more than 10% ethanol, premium gasoline, or white gas. Using these fuels can damage the engine's fuel system.

Important: Do not use gasoline that has been stored since the last mowing season or longer.



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

- Fill the fuel tank outdoors, in an open area, and when the engine is cold. Wipe up any gasoline that spills.
- Do not fill the fuel tank completely full. Add gasoline to the fuel tank until the level is 1/4 to 1/2 in. (6 to 13 mm) below the bottom of the filler neck. This empty space in the tank allows the gasoline to expand.
- Never smoke when handling gasoline, and stay away from an open flame or where a spark may ignite the gasoline fumes.
- Store gasoline in an approved fuel container and keep it out of the reach of children.
- Never buy more than a 30-day supply of gasoline.



When fueling, under certain circumstances, a static charge can develop, igniting the gasoline. A fire or explosion from gasoline can burn you and others and damage property.

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

Use a fuel stabilizer/conditioner regularly during operation and storage. A stabilizer/conditioner cleans the engine during operation and prevents gum-like varnish deposits from forming in the engine during periods of storage.

Important: Do not use fuel additives other than a fuel stabilizer/conditioner. Do not use fuel stabilizers with an alcohol base such as ethanol, methanol, or isopropanol.

1. Clean around the fuel tank cap (Figure 11).

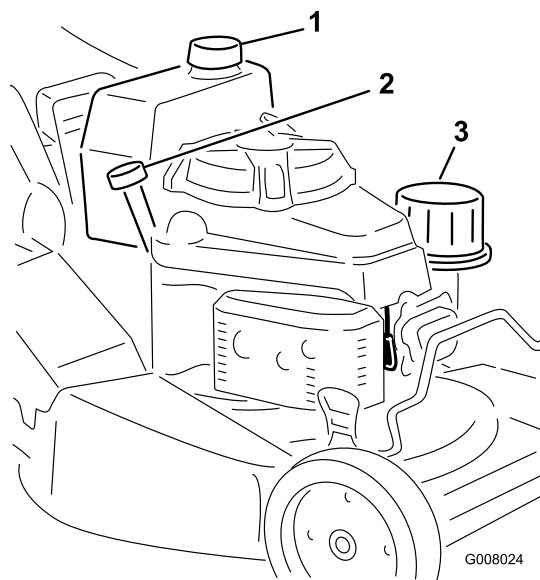


Figure 11

1. Fuel tank cap
2. Oil fill/dipstick
3. Air cleaner

2. Remove the cap from the tank.
3. Fill the fuel tank with unleaded gasoline to within 1/4 to 1/2 inch (6 to 13 mm) from the top of the tank. **Do not fill into the filler neck.**

Important: Do not fill the tank more than 1/4 inch (6 mm) from the top of the tank because the gasoline must have room to expand.

4. Install the fuel tank cap and wipe up any spilled gasoline.

Starting the Engine

1. Connect the wire to the spark plug (Figure 11).
2. Open the fuel valve (Figure 22).
3. Move the throttle control lever to the Choke position (Figure 8).
4. Move the ground speed control lever to the Neutral (N) position.
5. Pull the starter handle lightly until you feel resistance, then pull it sharply.
6. Regulate the throttle and the ground speed control as desired when the engine starts.

Note: If the engine fails to start after 3 pulls, repeat steps 3 through 6.

Stopping the Engine

1. Move the throttle control to the Stop position.
2. Disconnect the wire from the spark plug if you do not use the lawn mower or leave it unattended.

Operating the Blade

Engaging the Blade

When you start your engine, the blade does not turn. You must engage the blade to mow.

1. Push the control bar lock forward (Figure 12).

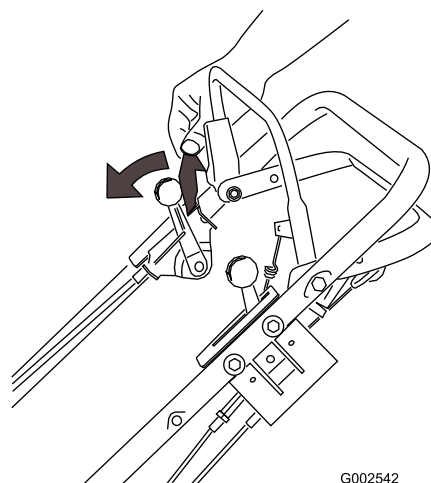


Figure 12

2. Pull the blade control bar to the handle and hold it (Figure 13).

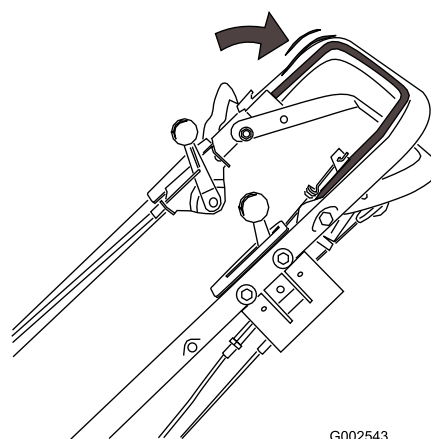


Figure 13

Disengaging the Blade

Release the blade control bar.

Important: When you release the blade control bar, the blade should stop within 3 seconds. If it does not stop properly, stop using your mower immediately and contact an Authorized Service Dealer.

Operating the Traction Drive

Engaging the Traction Drive

1. Release the traction control bar (Figure 14).

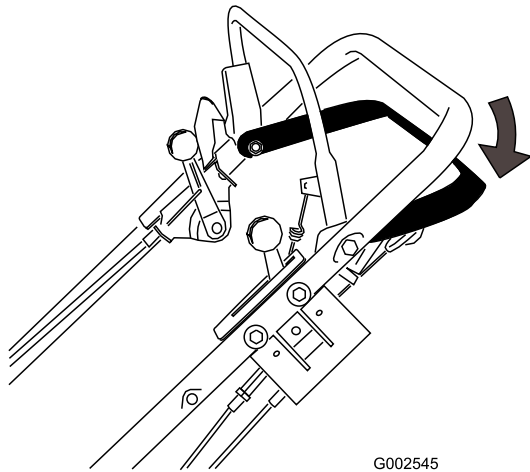


Figure 14

2. Move the ground speed control lever to the desired gear position.
3. Squeeze the traction control bar against the handle (Figure 15).

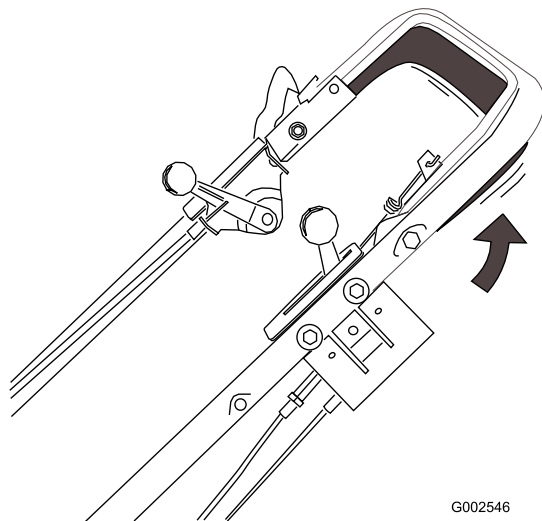


Figure 15

Disengaging the Traction Drive

Release the traction control bar.

Checking the Blade Brake Clutch

Check the blade control bar before each use to ensure that the blade brake clutch system is operating properly.

1. Install the empty grass bag on the discharge tunnel.
2. Start the engine.
3. Pull the blade control bar to the normal blade engaged position. The bag should begin to inflate, indicating that the blade is engaged and rotating.
4. Release the blade control bar. If the bag does not immediately deflate, it indicates that the blade is still rotating. The blade brake clutch may be deteriorating, and, if ignored, could result in an unsafe operating condition. Have the lawn mower inspected and serviced by an Authorized Service Dealer.



If the blade brake clutch system is inoperative, the blade will continue to rotate when you release the blade control bail. Contact with blade could occur, causing serious injury.

- Check the blade brake clutch operation before each use.
- Never use a mower equipped with a blade brake clutch that has an inoperative safety system.
- Take your mower to an Authorized Service Dealer for repair if the safety system fails to operate properly.

Adjusting the Cutting Height

Each wheel is adjusted individually with a wheel height adjustment lever. Cutting heights are 1 inch (25 mm), 1-1/2 inches (38 mm), 2 inches (51 mm), 2-1/2 inches (64 mm), 3 inches (76 mm), 3-1/2 inches (89 mm), and 3-3/4 inches (95 mm).



Adjusting the cutting height levers could bring your hands into contact with a moving blade and result in serious injury.

- Stop the engine and wait for all movement to stop before adjusting the cutting height.
 - Do not put your fingers under the housing when adjusting the cutting height.
1. Pull the wheel height adjustment lever toward the wheel (Figure 16) and move it to the desired setting.

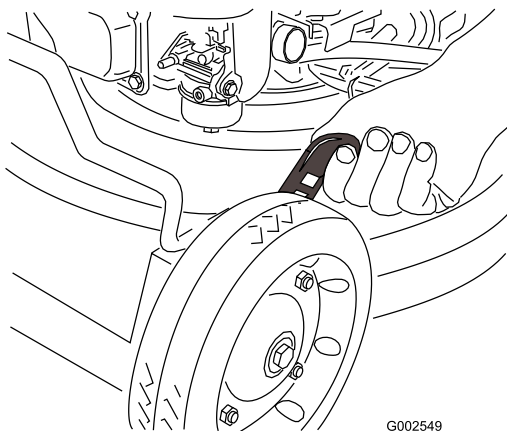


Figure 16

1. Wheel height adjustment lever
-
2. Release the wheel height adjustment lever and seat it securely in the notch.
 3. Adjust all the wheels to the same cutting height setting.

Using the Grass Bag

Installing the Grass Bag

1. Wait for all moving parts to stop.
2. Raise and hold up the rear door (Figure 17).

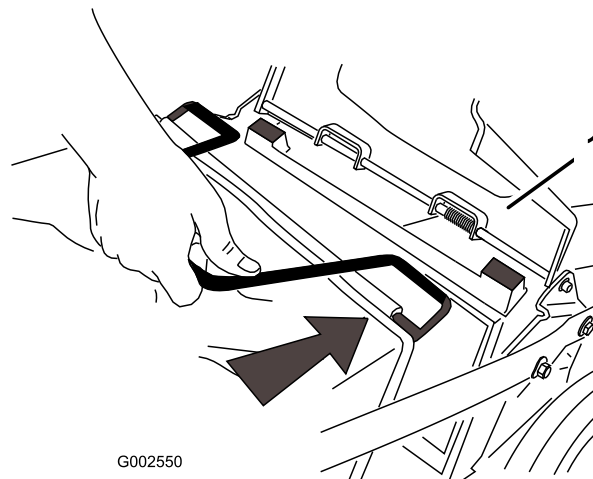


Figure 17

1. Rear door
-
3. Install the bag on the bag mounting posts (Figure 18).

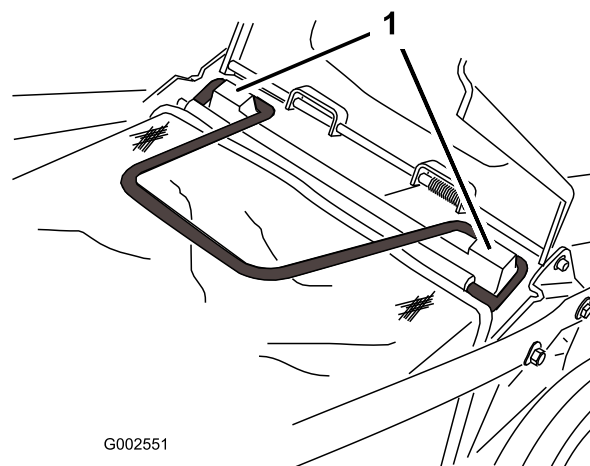


Figure 18

1. Bag mounting posts
-
4. Lower the rear door.

Removing the Grass Bag

To remove the bag, reverse the steps above.



The mower 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 operator or bystander.

Do not operate the mower without a grass bag installed.

Mowing with the Grass Bag



A worn grass bag could allow small stones and other similar debris to be thrown in the operator's or bystander's direction and result in serious personal injury or death to the operator or bystanders.

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

Operating Tips

General Tips

- Maintain a sharp blade throughout the cutting season. Periodically file down nicks on the blade.
- Replace the blade when necessary with an original Toro replacement blade.
- Mow only dry grass or leaves. Wet grass and leaves tend to clump on the yard and can cause the mower to plug or the engine to stall.



Wet grass or leaves can cause serious injury if you slip and contact the blade.

Mow only in dry conditions.

- Clean under the mower housing after each mowing. See Cleaning under the Mower Housing.
- Keep the engine in good running condition.
- Set the engine speed to the fastest position for the best cutting results.



Operating a mower with its engine running at a speed greater than the factory setting can cause the mower to throw a part of the blade or engine into the operator's or bystander's area and result in serious personal injury or death.

- Do not change the engine speed setting.
- If you suspect the engine speed is faster than normal, contact an Authorized Service Dealer.

- Clean the air filter frequently. Mulching stirs up more clippings and dust which clogs the air filter and reduces engine performance.

Cutting Grass

- Grass grows at different rates at different times of the year. In the summer heat, it is best to cut grass at the 2-1/2 inch (64 mm), 3 inch (76 mm), or 3-1/2 inch (89 mm) cutting height settings. Cut only about a third of the grass blade at a time. Do not cut below the 2-1/2 inch (64 mm) setting unless the grass is sparse or it is late fall when grass growth begins to slow down.
- When cutting grass over 6 inches (15 cm) tall, first 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 and the leaves clump on top of the lawn, the mower may plug and cause the engine to stall.
- Alternate the mowing direction. This helps disperse the clippings over the lawn for even fertilization.

If the finished lawn appearance is unsatisfactory, try one or more of the following:

- Sharpen the blade.
- Walk at a slower pace while mowing.
- Raise the cutting height on your mower.
- Cut the grass more frequently.
- Overlap cutting swaths instead of cutting a full swath with each pass.
- Set the cutting height on the front wheels one notch lower than the rear wheels. For example, set the front wheels at 2-1/2 inches (64 mm) and the rear wheels at 3 inches (76 mm).

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 one pass over the leaves.

- For light leaf coverage, set all the wheels at the same cutting height setting.
- If there are more than 5 inches (12.7 cm) of leaves on the lawn, set the front cutting height 1 or 2 notches higher than the rear cutting height. This makes it easier to feed the leaves under the mower housing.
- Slow down your mowing speed if the mower does not cut the leaves finely enough.
- If you mow over oak leaves, you can add lime to the grass in the spring to reduce the acidity of the oak leaves.

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
After the first 8 hours	• Change the engine oil.
Before each use or daily	• Check the engine oil level. • Inspect the mower blades for wear or damage. • Clean under the mower housing.
Every 25 hours	• Clean the foam pre-cleaner (more frequently in dusty conditions).
Every 50 hours	• Lubricate the pivot arms. • Change the engine oil (more often in dusty conditions). • Check the fuel hose and replace it if necessary. • Clean the blade brake clutch shield.
Every 100 hours	• Lubricate the gear case. • Clean the air cooling fins. • Change the oil filter. • Check the spark plug. • Clean the fuel filter.
Every 300 hours	• Replace the paper air filter (more frequently in dusty conditions).
Yearly or before storage	• Empty the fuel tank.

Important: Refer to your *Engine Operator's Manual* for additional maintenance procedures.



If you leave the wire on the spark plug, someone could accidentally start the engine and seriously injure you or other bystanders.

Disconnect the wire from the spark plug before you do any maintenance. Set the wire aside so that it does not accidentally contact the spark plug.

Lubrication

Lubricating the Pivot Arms

Service Interval: Every 50 hours

1. Move the rear wheel cutting height levers to the center setting.
2. Wipe the grease fittings with a clean rag (Figure 19).

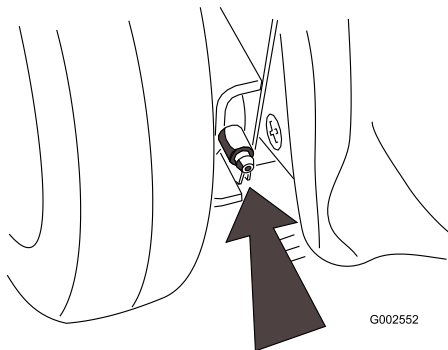


Figure 19

-
3. Install a grease gun onto the fitting and gently apply 2 or 3 pumps of #2 multi-purpose lithium-base grease.

Important: Excessive grease pressure may damage the seals.

Lubricating the Gear Case

Service Interval: Every 100 hours

1. Remove the grass bag.
2. Install a grease gun onto the fitting through the belt cover opening (Figure 20).

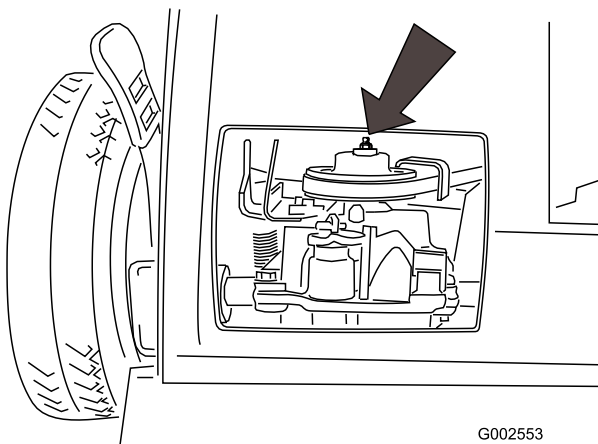


Figure 20

-
3. Gently apply one to 2 pumps of #2 multi-purpose lithium-base grease.
 4. Install the grass bag.

Engine Maintenance

Servicing the Air Filter

Service Interval: Every 25 hours—Clean the foam pre-cleaner (more frequently in dusty conditions).

Every 300 hours—Replace the paper air filter (more frequently in dusty conditions).

Clean the foam pre-cleaner every 25 operating hours. Replace the paper air filter once every season or every 300 operating hours; replace it more frequently in dusty conditions.

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

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug (Figure 11).
3. Remove the cover and clean it thoroughly (Figure 21).

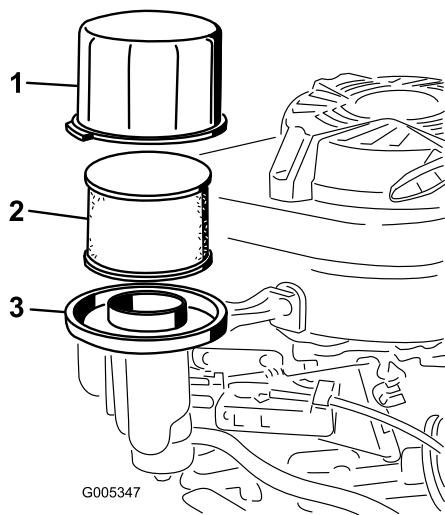


Figure 21

1. Cover
2. Paper air filter
3. Air filter base

4. Remove and inspect the paper air filter (Figure 21), and discard it if it is excessively dirty.

Important: Do not try to clean a paper filter.

5. Remove the foam pre-cleaner and wash it with a mild detergent and water, then blot it dry (Figure 21).
6. Install the foam pre-cleaner onto the paper air filter.
7. Install the air filter assembly.

Note: Install a new paper air filter if you discarded the old one.

8. Install the cover.

Changing the Engine Oil

Service Interval: After the first 8 hours

Every 50 hours

Oil Capacity	
With oil filter	29 ounces (0.85 liters)
Without oil filter	22 ounces (0.65 liters)

Note: The oil capacities in the table above account for the empty crankcase to contain a small amount of residual oil.

1. Run the engine to warm the engine oil.

Note: Warm oil flows better and carries more contaminants.



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

Avoid contacting the hot engine oil when you drain it.

2. Stop the engine and wait for all moving parts to stop.
3. Disconnect the wire from the spark plug (Figure 11).
4. Place a suitable drain pan under the right side of the mower.
5. Remove the dipstick by rotating the cap counterclockwise and pulling it out.
6. Tip the mower onto its **right** side to drain the oil into the drain pan.

Note: You can also remove the oil from the crankcase using an oil extractor.

7. Return the mower to its operating position.
8. Insert the dipstick into the filler neck and rotate the cap clockwise until it is tight.
9. Recycle the used oil according to local codes.
10. Fill the crankcase to the Full line on the dipstick with fresh oil. Refer to the Filling the Crankcase with Oil.
11. Wipe up any spilled oil.

Changing the Oil Filter

Service Interval: Every 100 hours

1. Run the engine to warm the oil.



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.

2. Stop the engine and wait for all moving parts to stop.
3. Disconnect the wire from the spark plug (Figure 11).
4. Drain the engine oil; refer to Changing the Engine Oil.
5. Place a rag under the oil filter to catch any oil that may leak out as you remove the filter (Figure 22).

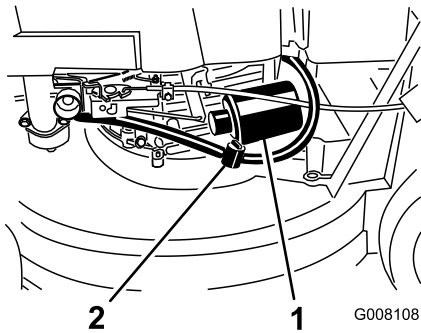


Figure 22

1. Oil filter
2. Fuel valve

6. Remove the oil filter.
7. Use your finger to coat the gasket on the new filter with oil (Figure 23).

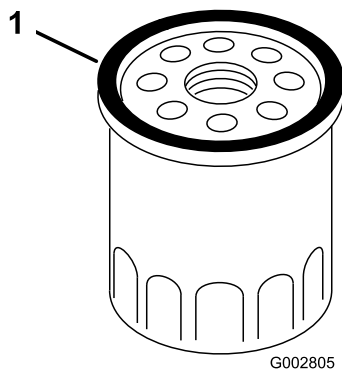


Figure 23

1. Gasket

8. Install the new filter and hand tighten it 2/3 turn only.

9. Fill the crankcase to the Full line on the dipstick with fresh oil. Refer to Filling the Crankcase with Oil.
10. Connect the wire to the spark plug.
11. Run the engine for about 3 minutes.
12. Stop the engine, wait for all moving parts to stop, and check for oil leakage around the filter.
13. Add oil to compensate for the oil in the oil filter. Refer to Checking the Engine Oil Level.
14. Recycle the used oil filter according to local codes.

Servicing the Spark Plug

Service Interval: Every 100 hours—Check the spark plug.

Use an **NGK BPR5ES** spark plug or equivalent.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug (Figure 11).
3. Clean around the spark plug.
4. Remove the spark plug from the cylinder head.

Important: Replace a cracked, fouled, or dirty spark plug. Do not clean the electrodes because grit entering the cylinder can damage the engine.

5. Set the gap on the plug to 0.030 in. (0.76 mm) (Figure 24).

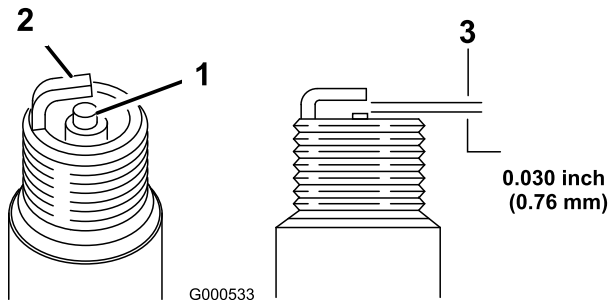


Figure 24

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

-
6. Install the spark plug and the gasket seal.
 7. Torque the plug to 17 ft-lb (23 N-m).
 8. Connect the wire to the spark plug.

Fuel System Maintenance

Emptying the Fuel Tank and Cleaning the Fuel Filter

Service Interval: Every 50 hours—Check the fuel hose and replace it if necessary.

Every 100 hours—Clean the fuel filter.

Yearly or before storage—Empty the fuel tank.

The fuel filter (screen) element is located inside the fuel tank. Clean the fuel filter element every 100 operating hours.

1. Stop the engine and wait for it to cool down.

Important: Drain gasoline from a cold engine only.

2. Disconnect the wire from the spark plug (Figure 11).
3. Close the fuel valve (Figure 22).
4. Disconnect the fuel line by loosening the tube clamp at the carburetor.
5. Open the fuel valve.
6. Drain the gasoline completely from the tank and fuel line into an approved fuel container.
7. Remove the fuel tank from the mower.
8. Close the fuel valve.
9. Pour a small amount of fuel in the fuel tank, move the fuel around in the tank, and pour it out into an approved fuel container.
10. Install the fuel tank and fuel line; refer to Installing the Fuel Tank and the Fuel Line.

Drive System Maintenance

Adjusting the Self-propel Drive

If the mower does not self-propel or has a tendency to creep forward when the control bar is more than 1-1/2 inches (3.8 cm) from the handle, adjust the self-propel drive.

1. Loosen the nut that secures the adjuster (Figure 25).

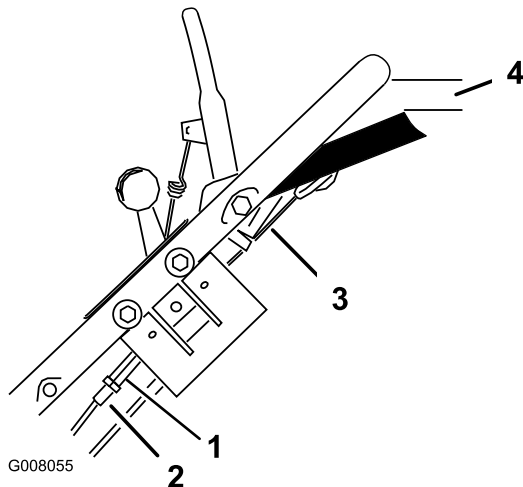


Figure 25

- | | |
|-------------|--------------------------|
| 1. Adjuster | 3. Cable |
| 2. Nut | 4. 1-1/2 inches (3.8 cm) |

2. Turn the adjuster until you remove the slack in the exposed cable (Figure 25).
3. Tighten the nut.

Note: To check the adjustment, slowly pull the mower backward while you gradually move the control bar toward the handle. The adjustment is correct when the rear wheels stop turning and the top of the control bar is about 1-1/2 inches (3.8 cm) from the bottom of the handle.

Note: If the adjuster is fully extended and the mower does not self-propel when the blade control bar is 1-1/2 inches (3.8 cm) from the handle, you will need to adjust the lower anchor bracket. Refer to steps 4 to 9.

4. Move the adjuster to obtain the maximum slack in the cable.
5. Remove the fuel tank.

Note: You do not need to disconnect the fuel line from the fuel tank.

6. Remove the upper and lower belt covers (Figure 26).

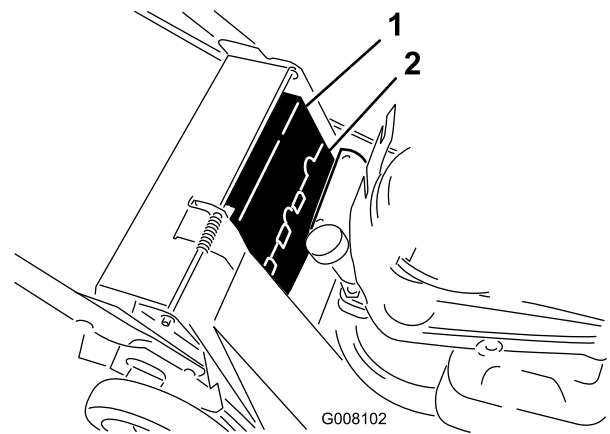


Figure 26

- | | |
|---------------------|---------------------|
| 1. Upper belt cover | 2. Lower belt cover |
|---------------------|---------------------|

7. Remove the screws from the lower anchor bracket (Figure 27).

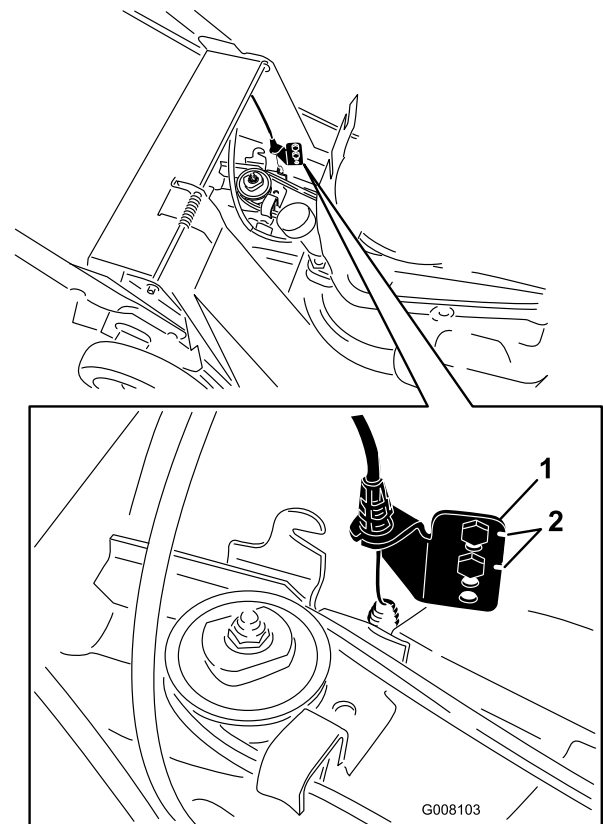


Figure 27

- | | |
|-------------------------|------------|
| 1. Lower anchor bracket | 2. Notches |
|-------------------------|------------|

8. Move the lower anchor bracket up one hole (Figure 27).
9. Repeat steps 1 through 3 to adjust the control bar.

Note: When you install a new belt, move the lower anchor bracket to its original factory position, which is indicated by the notches next to the holes in the bracket (Figure 27).

Controls System Maintenance

Adjusting the Blade Brake Cable

Whenever you install a new blade brake cable assembly or replace the belt, adjust the blade brake cable.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug (Figure 11).
3. Remove the fuel tank from the tank bracket.

Note: You do not need to disconnect the fuel line from the fuel tank.

4. Reset the cable adjuster on the handle so that 1/4 inch (6 mm) of the threads show, then tighten the nut (Figure 28).

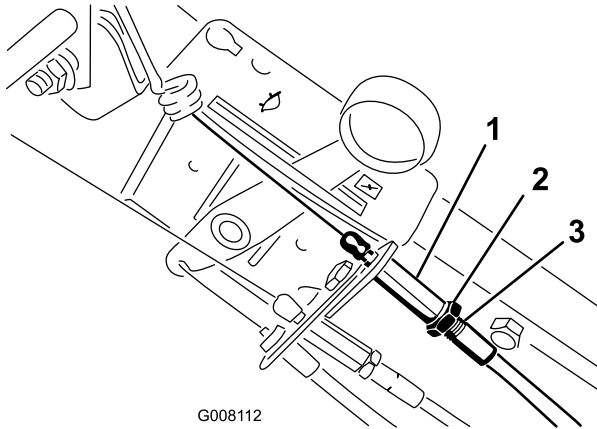


Figure 28

1. Adjuster
2. Nut
3. 1/4 inch (6 mm) of threads

5. Loosen the cable clamp screw until the brake cable conduit slides (Figure 29).

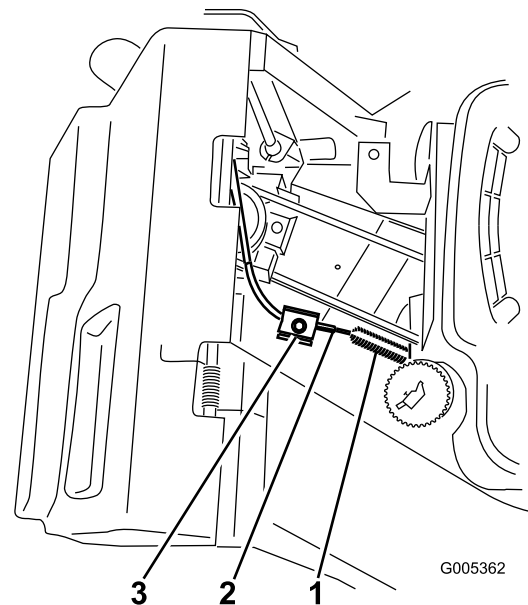


Figure 29

1. Spring
2. Brake cable conduit
3. Cable clamp screw

6. Hold the blade control bar so that the **outside** of the bar is 5-1/2 inches (14 cm) from the **outside** of the handle, and pull the cable to remove the slack, but do not put tension on the spring (Figure 30).

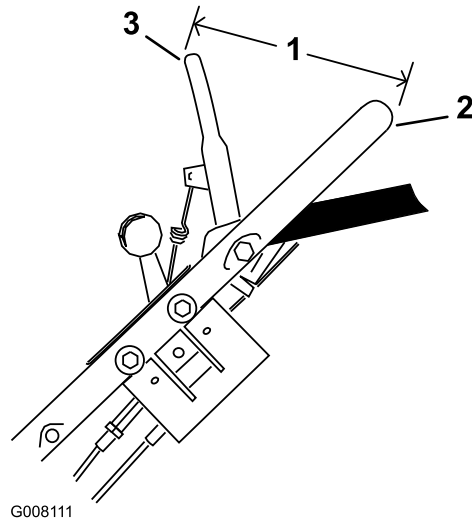


Figure 30

1. 5-1/2 inches (14 cm)
2. Handle
3. Blade control bar

7. Torque the cable clamp screw to 100 to 120 in-lb (11 to 14 N-m) to lock the adjustment in place.
8. Measure the length of the spring both before and after engaging the blade control bar. The difference between these 2 lengths is the spring stretch.

Note: The spring stretch must be between 0.290 and 0.310 inches (7.4 to 7.9 mm). You may need to adjust the cable adjuster to achieve this value.



Do not overtighten the blade brake cable. Overtightening the blade brake cable could prevent the blade brake from contacting the brake drum when you release the control bar. If the blade brake does not contact the brake drum, the blade will not stop rotating, which could cause serious personal injury.

- Each time you adjust the brake cable, ensure that the brake stops the blade in 3 seconds or less.
- If the blade does not stop rotating in 3 seconds or less, bring the mower to an Authorized Service Dealer for inspection and repair.

Blade Maintenance

Maintaining the Cutting Blade

Always mow with a sharp blade. A sharp blade cuts cleanly and without tearing or shredding the grass blades.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug (Figure 11).
3. Drain the gasoline from the fuel tank; refer to Emptying the Fuel Tank and Cleaning the Fuel Filter.
4. Tip the mower onto its **right** side (Figure 31).

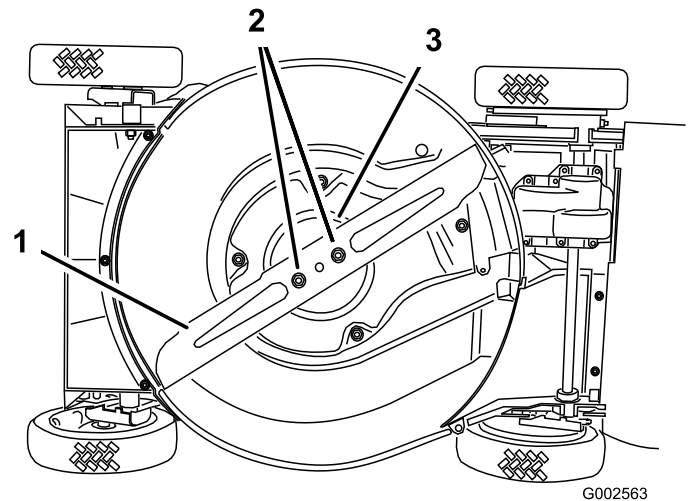


Figure 31

- | | |
|---------------|-------------------|
| 1. Blade | 3. Anti-scalp cup |
| 2. Blade nuts | |

Inspecting the Blade

Service Interval: Before each use or daily

Carefully examine the blade for sharpness and wear, especially where the flat and the curved parts meet (Figure 32A). Because sand and abrasive material can wear away the metal that connects the flat and curved parts of the blade, check the blade before using the mower. If you notice a slot or wear (Figure 32B and Figure 32C), replace the blade; refer to Removing the Blade.

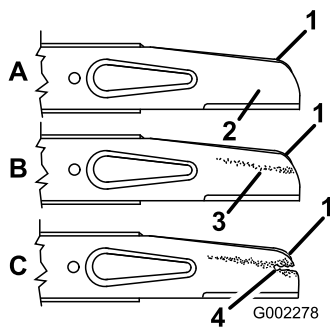


Figure 32

- | | |
|---------------------------|----------------|
| 1. Sail | 3. Wear |
| 2. Flat part of the blade | 4. Slot formed |

Note: For the best performance, install a new blade before the cutting season begins. During the year, file down any small nicks to maintain the cutting edge.



A worn or damaged blade can break, and a piece of the blade could be thrown into the operator's or bystander's area, resulting in serious personal injury or death.

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

Removing the Blade

Grasp the end of the blade using a rag or a thickly padded glove. Remove the blade nuts, the anti-scalp cup, and the blade (Figure 31).

Sharpening the Blade

File the top side of the blade to maintain its original cutting angle (Figure 33A) and inner cutting edge radius (Figure 33B). The blade will remain balanced if you remove the same amount of material from both cutting edges.

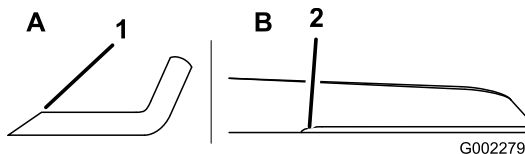


Figure 33

- | | |
|--------------------------------|---------------------------------------|
| 1. Sharpen at this angle only. | 2. Maintain the original radius here. |
|--------------------------------|---------------------------------------|

Balancing the Blade

1. Check the balance of the blade by placing the center hole of the blade over a nail or screwdriver shank clamped horizontally in a vise (Figure 34).

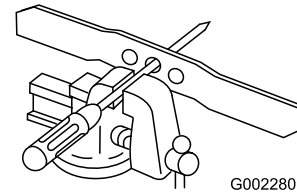


Figure 34

Note: You can also check the balance using a commercially manufactured blade balancer.

2. If either end of the blade rotates downward, file that end (not the cutting edge or the end near the cutting edge). The blade is properly balanced when neither end drops.

Installing the Blade

1. Install a sharp, balanced Toro blade, the anti-scalp cup, and the blade nuts. The sail of the blade must point toward the top of the mower housing for proper installation. Torque the blade nuts to 23 to 27 ft-lb (32 to 37 N-m).
2. Return the mower to its operating position.
3. Connect the wire to the spark plug.

Cleaning

Cleaning under the Mower Housing

To ensure the best performance, keep the underside of the mower housing clean.

Washing Method

Service Interval: Before each use or daily

1. Position the mower on a flat concrete or asphalt surface near a garden hose.
2. Start the engine.
3. Hold the running garden hose at handle level and direct the water to flow on the ground just in front of the **right** rear wheel (Figure 35).

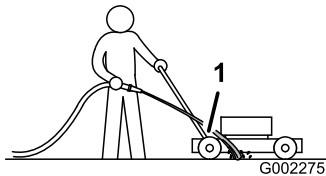


Figure 35

1. Right rear wheel

Note: The blade will splash into the path of the blade, cleaning out the clippings.

4. Stop the engine and wait for all moving parts to stop.
5. Turn off the water.
6. Start the mower and let it run for a few minutes to dry out the moisture on the mower and its components.

Scraping Method

If washing does not remove all debris from under the mower, scrape it clean.

1. Disconnect the wire from the spark plug (Figure 11).
2. Drain the fuel from the fuel tank. Refer to Emptying the Fuel Tank and Cleaning the Fuel Filter.



Tipping the mower may cause the fuel to leak from the carburetor or the fuel tank. Gasoline is extremely flammable, highly explosive, and, under certain conditions, can cause personal injury or property damage.

Avoid fuel spills by running the engine dry or by removing the gasoline with a hand pump; never siphon.

3. Tip the mower onto its **right** side.
4. Remove the dirt and grass clippings with a hardwood scraper. Avoid burrs and sharp edges.
5. Return the mower to its operating position.
6. Fill the fuel tank.
7. Connect the wire to the spark plug.

Cleaning the Blade Brake Clutch Shield

Service Interval: Every 50 hours

Clean inside the blade brake clutch shield when you change the engine oil or when you sharpen the blade, because you need to remove the blade in order to remove the shield.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug (Figure 11).
3. Drain the gasoline from the fuel tank; refer to Emptying the Fuel Tank and Cleaning the Fuel Filter.
4. Tip the mower on its **right** side.



Tipping the mower may cause the fuel to leak from the carburetor or the fuel tank. Gasoline is extremely flammable, highly explosive, and, under certain conditions, can cause personal injury or property damage.

Avoid fuel spills by emptying the fuel tank as directed; never siphon.

5. Remove 2 blade nuts, the anti-scalp cup, and the blade (Figure 31).
6. Remove the 4 screws that hold the shield in place (Figure 36).

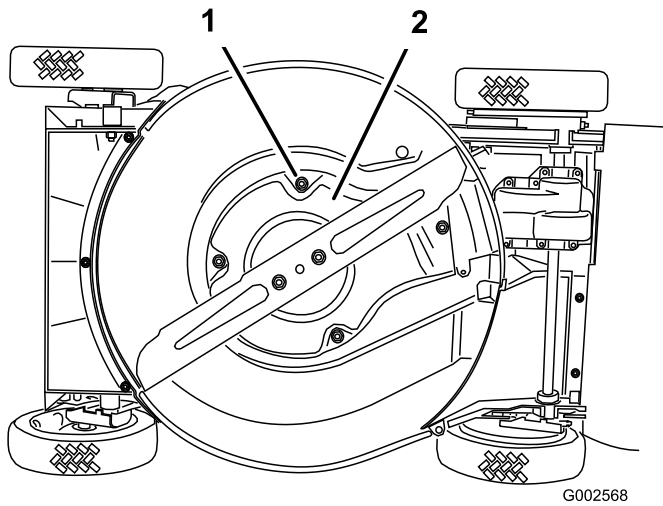


Figure 36

1. Screws (4) 2. Blade brake clutch shield

7. Remove the shield and brush or blow all the debris from under the shield and around the blade brake clutch system.
8. Install the shield using the 4 screws that you previously removed.
9. Install the blade, the anti-scalp cup, and the 2 blade nuts.
10. Return the mower to its operating position.
11. Connect the wire to the spark plug.

Storage

To prepare the mower for off-season storage, perform the recommended maintenance procedures. Refer to Maintenance.

Store the mower in a cool, clean, dry place. Cover the mower to keep it clean and protected.

Preparing the Fuel System



Gasoline can vaporize if you store it over long periods of time and explode if it comes into contact with an open flame.

- **Do not store gasoline over long periods of time.**
- **Do not store the mower with gasoline in the fuel tank or the carburetor in an enclosure with an open flame. (For example, a furnace or a water heater pilot light.)**
- **Allow the engine to cool before storing it in any enclosure.**

Empty the fuel tank when mowing the last time before storing the mower.

1. Run the mower until the engine stops from running out of fuel.
2. Prime the engine and start it again.
3. Allow the engine to run until it stops. When you can no longer start the engine, it is sufficiently dry.

Preparing the Engine

1. While the engine is still warm, change the oil from the crankcase. Refer to Changing the Engine Oil.
2. Remove the spark plug.
3. Using an oil can, add about one tablespoon of oil to the crankcase through the spark plug hole.
4. Slowly rotate the engine several times, using the starter rope, to distribute the oil.
5. Install the spark plug but do not connect the wire to the spark plug.

General Information

1. Clean the mower housing. Refer to Cleaning under the Mower Housing.
2. Clean any dirt and chaff from the cylinder, cylinder head fins, and blower housing.

3. Remove grass clippings, dirt, and grime from the external parts of the engine, the shrouding, and the top of the mower housing.
4. Check the condition of the blade. Refer to Maintaining the Cutting Blade.
5. Clean the blade brake clutch shield; refer to Cleaning the Blade Brake Clutch Shield.
6. Service the air filter; refer to Servicing the Air Filter.
7. Lubricate the pivot arms; refer to Lubricating the Pivot Arms.
8. Tighten all nuts, bolts, and screws.
9. Touch up all rusted or chipped paint surfaces with paint available from an Authorized Service Dealer.

Removing the Lawn Mower from Storage

1. Check and tighten all fasteners.
2. Remove the spark plug and spin the engine rapidly using the starter to blow excess oil from the cylinder.
3. Clean the spark plug or replace it if it is cracked, broken, or if the electrodes are worn.
4. Install the spark plug and torque it to 17 ft-lb (23 N-m).
5. Perform any needed maintenance procedures; refer to Maintenance.
6. Fill the fuel in the fuel tank with fresh gasoline.
7. Check the engine oil level.
8. Connect the wire to the spark plug.

Troubleshooting

Problem	Possible Cause	Corrective Action
Engine does not start	1. The fuel tank is empty or the fuel system contains stale fuel. 2. The throttle lever is not in the Choke position. 3. The wire is not connected to the spark plug. 4. The spark plug is pitted, fouled, or the gap is incorrect.	1. Drain and/or fill the fuel tank with fresh gasoline. If the problem persists, contact an Authorized Service Dealer. 2. Move the throttle lever to the Choke position. 3. Connect the wire to the spark plug. 4. Check the spark plug and adjust the gap if necessary. Replace the spark plug if it is pitted, fouled, or cracked.
Engine starts hard or loses power	1. The fuel tank contains stale fuel. 2. The fuel cap vent hole is plugged. 3. The air filter element is dirty and is restricting the air flow. 4. The underside of the mower housing contains clippings and debris. 5. The spark plug is pitted, fouled, or the gap is incorrect. 6. The engine oil level is low or the oil is dirty.	1. Drain and fill the fuel tank with fresh gasoline. 2. Clean the fuel cap vent hole or replace the fuel cap. 3. Clean the air filter pre-cleaner and/or replace the paper air filter. 4. Clean under the mower housing. 5. Check the spark plug and adjust the gap if necessary. Replace the spark plug if it is pitted, fouled, or cracked. 6. Check the engine oil. Change the oil if it is dirty or add oil if it is low.
Engine runs rough	1. The wire is not connected to the spark plug. 2. The spark plug is pitted, fouled, or the gap is incorrect. 3. The throttle lever is not in the Fast position. 4. The air filter element is dirty and is restricting the air flow.	1. Connect the wire to the spark plug. 2. Check the spark plug and adjust the gap if necessary. Replace the spark plug if it is pitted, fouled, or cracked. 3. Move the throttle lever to the Fast position. 4. Clean the air filter pre-cleaner and/or replace the paper air filter.
Lawn mower or engine vibrates excessively	1. The blade is bent or is out of balance. 2. The blade mounting nuts are loose. 3. The underside of the mower housing contains clippings and debris. 4. The engine mounting bolts are loose.	1. Balance the blade. If the blade is bent, replace it. 2. Tighten the blade mounting nuts. 3. Clean under the mower housing. 4. Tighten the engine mounting bolts.
Uneven cutting pattern	1. All 4 wheels are not at the same height. 2. The blade is dull. 3. You are mowing in the same pattern repeatedly. 4. The underside of the mower housing contains clippings and debris.	1. Place all 4 wheels at the same height. 2. Sharpen and balance the blade. 3. Change the mowing pattern. 4. Clean under the mower housing.
Mower does not self-propel	1. The self-propel drive cable is out of adjustment or is damaged. 2. There is debris under the belt cover.	1. Adjust the self-propel drive cable. Replace the cable if necessary. 2. Clean the debris from under the belt cover.

Notes:

Notes:

Notes:



Toro 21"
Commercial
Walk Power
Mower

The Toro Total Coverage Guarantee

A Two-Year Full Warranty (Limited Warranty for Commercial Use)

Conditions and Products Covered

The Toro® Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly promise to repair any Toro Product, when used for residential purposes*, if defective in materials or workmanship or if it stops functioning due to the failure of a component. The following time periods apply from the date of original purchase:

Products	Warranty Period
All Products and attachments	2-year full warranty

This warranty covers the cost of parts and labor, but you must pay transportation costs. This warranty applies to all Toro Commercial Duty Walk Power Mowers and their attachments.

Limited Warranty for Commercial Use

Toro Products used for commercial, institutional, or rental use are warranted against defects in materials or workmanship for the following time periods from the original date of purchase:

Products	Warranty Period
Engine	2-year limited warranty
All Products and attachments	1-year limited warranty

Components failing due to normal wear are not covered by this warranty.

Items and Conditions Not Covered

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

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, oil changes, air filter, blade sharpening/worn blade on mowers, paddles/scrapers/skids on snowthrowers, cable/linkage adjustments, or brake and clutch adjustments
- Any product or part which has been altered or misused and requires replacement or repair due to accidents or lack of proper maintenance
- Repairs necessary due to improper battery care, electrical supply irregularities, or failure to use fresh fuel (less than one month old), or failure to properly prepare the unit prior to any period of non-use over one month
- Operational misuse, neglect, or accidents
- Repairs or attempted repairs by anyone other than an Authorized Toro Service Dealer.
- Pickup and delivery charges

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

Owner Responsibilities

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

Instructions for Obtaining Warranty Service

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

1. Contact any Toro Authorized Service Dealer to arrange service at their dealership. To locate a dealer convenient to you, refer to the Yellow Pages of your telephone directory (look under "Lawn Mowers" or "Snow Removal") or access our website at www.Toro.com. U.S. Customers may also call the number listed in item #3 to use our 24-hour Toro dealer locator system.
2. Bring the product and your proof of purchase (sales receipt) to the Service Dealer. The dealer will diagnose the problem and determine if it is to be covered under warranty.

If for any reason you are dissatisfied with the Service Dealer's analysis or with the assistance provided, contact us at:

Customer Care Department — Consumer, Toro Warranty Company, 8111 Lyndale Avenue South, Bloomington, MN 55420-1196; or call us toll free at 1-888-865-5676 (U.S. Customers) or 1-888-865-5691 (Canada customers).

General Conditions

All repairs covered by these warranties must be performed by an Authorized Toro Service Dealer using Toro approved replacement parts. Neither The Toro® Company nor Toro Warranty Company is liable for indirect, incidental, or consequential damages in connection with the use of the Toro Products covered by these warranties, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under these warranties.

Some states do not allow exclusions of incidental or consequential damages, so the above exclusions and limitations may not apply to you.

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

Countries Other than the United States or Canada

Customers who have purchased Toro products 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 the Toro importer. If all other remedies fail, you may contact us at Toro Warranty Company.

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