Form No. 3361-783 Rev A

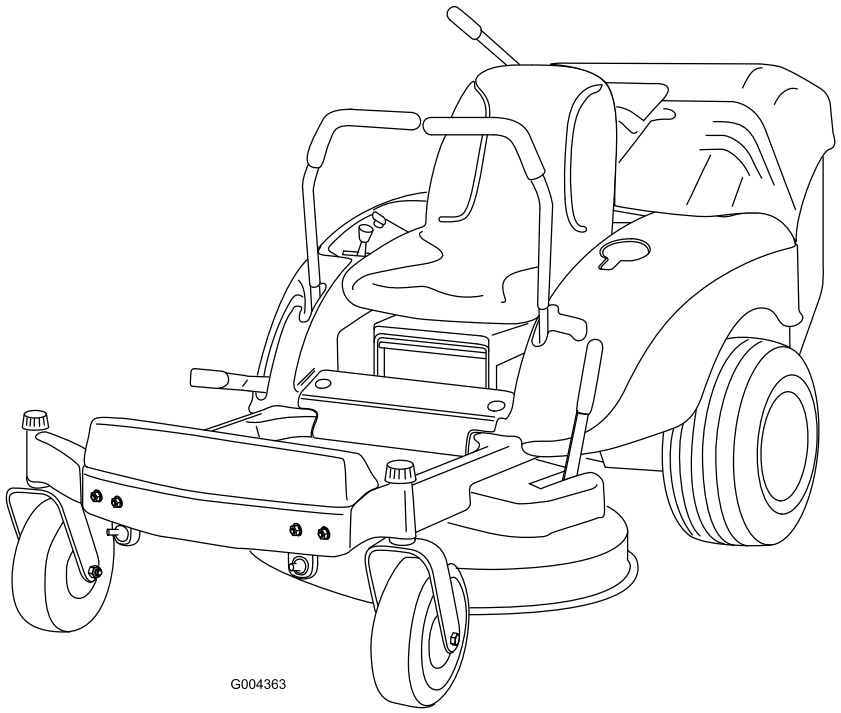
TORO®

Count on it.

Operator's Manual

TimeCutter® ZD420T Riding Mowers

Model No. 74437—Serial No. 290000001 and Up



G004363

CE

Register at www.Toro.com.

Original Instructions (EN)

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.

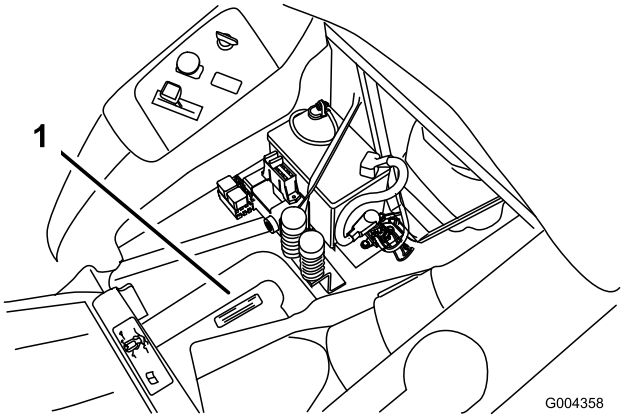


Figure 1

1. Model and serial number plate

Write the product model and serial numbers in the space below:

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

Contents

8111 Lyndale Avenue South
Bloomington, MN 55420

Contact us at www.Toro.com.
Printed in the USA.

Safety

Safe Operation Practices for Ride-on (riding) Rotary Lawnmower Machines

This machine meets or exceeds European Standards in effect at the time of production. However, improper use or maintenance by the operator or owner 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 the instruction may result in personal injury or death.

Safe Operating Practices

The following instructions are from the CEN standard EN 836:1997.

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

Training

- Read the instructions carefully. Be familiar with the controls and the proper use of the equipment.
- Never allow children or people unfamiliar with these instructions to use the lawnmower. Local regulations can restrict the age of the operator.
- Never mow while people, especially children, or pets are nearby.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- Do not carry passengers.
- All drivers should seek and obtain professional and practical instruction. Such instruction should emphasize:
  - the need for care and concentration when working with ride-on machines;
  - control of a ride-on machine sliding on a slope will not be regained by the application of the brake. The main reasons for loss of control are:
    - ◊ insufficient wheel grip;
    - ◊ being driven too fast;
    - ◊ inadequate braking;
    - ◊ the type of machine is unsuitable for its task;

◊ lack of awareness of the effect of ground conditions, especially slopes;

◊ incorrect hitching and load distribution.

Preparation

- While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Thoroughly inspect the area where the equipment is to be used and remove all objects which may be thrown by the machine.
- Warning-Fuel is highly flammable.
  - Store fuel in containers specifically designed for this purpose.
  - Refuel outdoors only and do not smoke while refuelling.
  - Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot.
  - If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
  - Replace all fuel tanks and container caps securely.
- Replace faulty silencers.
- Before using, always visually inspect to see that the blades, blade bolts and cutter assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.
- On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.

Operation

- Be alert, slow down and use caution when making turns. Look behind and to the side before changing directions.
- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
- Mow only in daylight or in good artificial light.
- Before attempting to start the engine, disengage all blade attachment clutches and shift into neutral.
- Do not use on slopes of more than 15 degrees.
- Remember there is no such thing as a safe slope. Travel on grass slopes requires particular care. To guard against overturning:
  - do not stop or start suddenly when going up or downhill;
  - use low speeds on slopes and during tight turns;
  - stay alert for humps and hollows and other hidden hazards;
- Use care when pulling loads.
  - Use only approved drawbar hitch points.
  - Limit loads to those you can safely control.
  - Do not turn sharply. Use care when reversing.
- Watch out for traffic when crossing or near roadways.
- Stop the blades rotating before crossing surfaces other than grass.
- When using any attachments, never direct discharge of material toward bystanders nor allow anyone near the machine while in operation.
- Never operate the machine with damaged guards or without safety protective devices in place.
- Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.
- Before leaving the operator's position:
  - disengage the power take-off and lower the attachments;
  - change into neutral and set the parking brake;
  - stop the engine and remove the key.
- Disengage drive to attachments, stop the engine, and disconnect the spark plug wire(s) or remove the ignition key
  - before clearing blockages or unclogging chute;
  - before checking, cleaning or working on the lawnmower;
  - after striking a foreign object. Inspect the lawnmower for damage and make repairs before restarting and operating the equipment;
  - if the machine starts to vibrate abnormally (check immediately).
- Disengage drive to attachments when transporting or not in use.
- Stop the engine and disengage drive to attachment
  - before refuelling;
  - before removing the grass catcher;
  - before making height adjustment unless adjustment can be made from the operator's position.
- Reduce the throttle setting during engine run-out and, if the engine is provided with a shut-off valve, turn the fuel off at the conclusion of mowing.

Maintenance and Storage

- Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
- Never store the equipment with fuel in the tank inside a building where fumes can reach an open flame or spark.
- Allow the engine to cool before storing in any enclosure.
- To reduce the fire hazard, keep the engine, silencer, battery compartment and fuel storage area free of grass, leaves, or excessive grease.
- Check the grass catcher frequently for wear or deterioration.
- Replace worn or damaged parts for safety.
- If the fuel tank has to be drained, this should be done outdoors.
- When machine is to be parked, stored or left unattended, lower the cutting means.

Toro Riding Mower Safety

The following list contains safety information specific to Toro products or other safety information that you must know that is not included in the CEN standard.

- Engine exhaust contains carbon monoxide, which is an odorless, deadly poison that can kill you. Do not run engine indoors or in an enclosed area.
- Keep hands, feet, hair and loose clothing away from attachment discharge area, underside of mower and any moving parts while engine is running.
- Do not touch equipment or attachment parts which may be hot from operation. Allow to cool before attempting to maintain, adjust, or service.
- Battery acid is poisonous and can cause burns. Avoid contact with skin, eyes and clothing. Protect your face, eyes, and clothing when working with a battery.
- Battery gases can explode. Keep cigarettes, sparks, and flames away from battery.
- Use only genuine Toro replacement parts to ensure that original standards are maintained.
- Use only Toro-approved attachments.

Slope Operation

- Do not mow slopes greater than 15 degrees.
- Do not mow near drop-offs, ditches, steep banks, or water. Wheels dropping over edges can cause rollovers, which may result in serious injury, death, or drowning.
- Do not mow slopes when grass is wet. Slippery conditions reduce traction and could cause sliding and loss of control.
- Do not make sudden turns or rapid speed changes.
- Use a walk behind mower and/or a hand trimmer near drop-offs, ditches, steep banks, or water.
- Reduce speed and use extreme caution on slopes.
- Remove or mark obstacles such as rocks, tree limbs, etc. from mowing area. Tall grass can hide obstacles.
- Watch for ditches, holes, rocks dips, and rises that change the operating angle, as rough terrain could overturn the machine.
- Avoid sudden starts when mowing uphill because the mower may tip backwards.
- Be aware that loss of traction may occur going downhill. Weight transfer to the front wheels may cause drive wheels to slip and cause loss of braking and steering.
- Always avoid sudden starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly off the slope.
- Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
- Use extreme care with grass catchers or other attachments. These can change the stability of the machine and cause loss of control.

Sound Pressure

This unit has an equivalent continuous A-weighted sound pressure level at the operator ear of 88 dBA, based on measurements of identical machines per EN 11094 and EN 836.

Sound Power

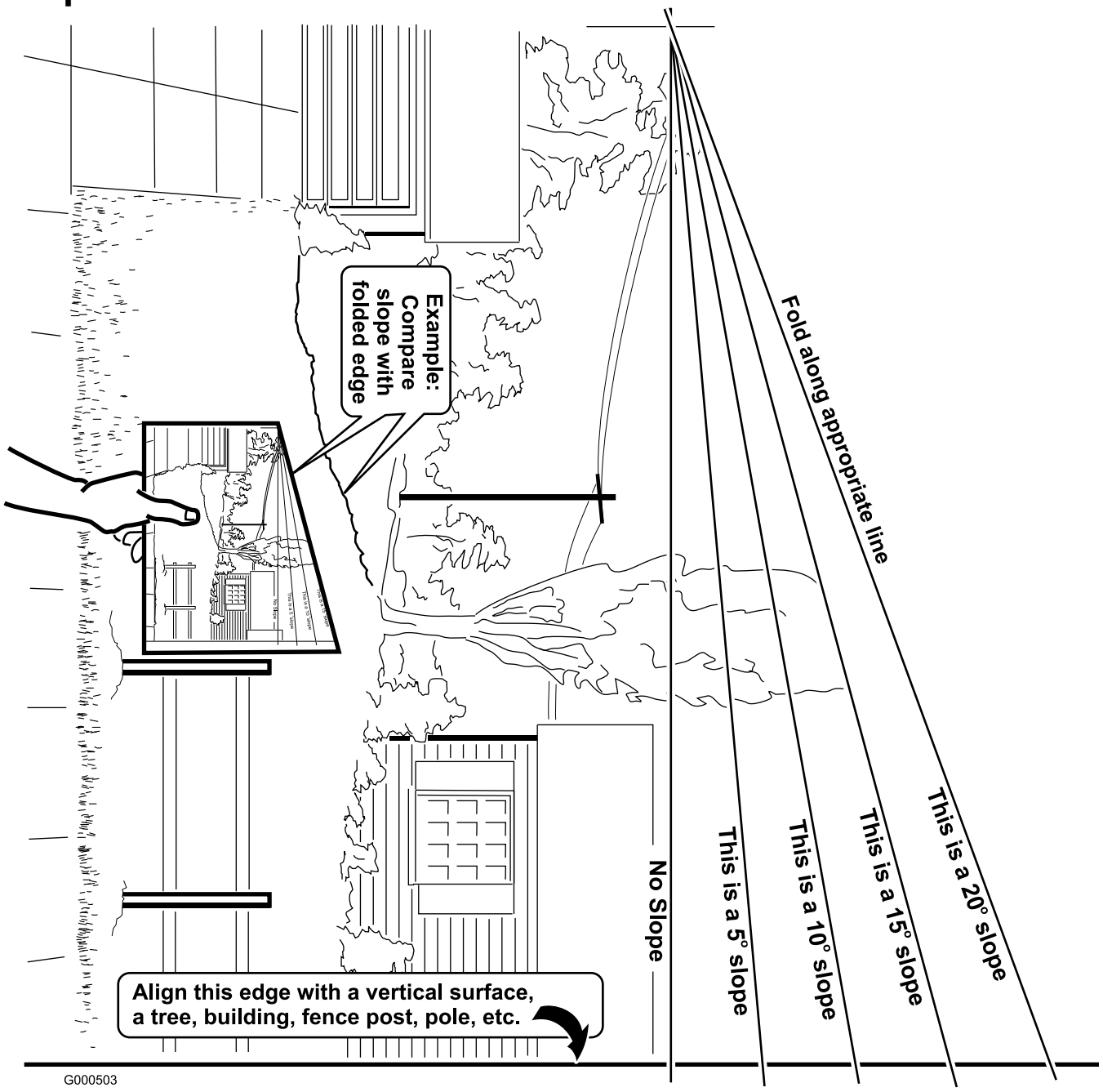
This unit has an equivalent continuous A-weighted sound power level at the operator ear of 100 dBA, based on measurements of identical machines per EN 11094.

Vibration

This unit has an equivalent continuous A-weighted hand/arm vibration level of 2.8 m/s^2, based on measurements of identical machines per EN 1033.

This unit has an equivalent continuous A-weighted whole body vibration level of .07 m/s^2, based on measurements of identical machines per EN 1032.

Slope Chart

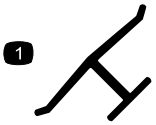

Example: Compare slope with folded edge
Fold along appropriate line
This is a 20° slope
This is a 15° slope
This is a 10° slope
This is a 5° slope
No Slope
Align this edge with a vertical surface, a tree, building, fence post, pole, etc.
G000503

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.

93-7010

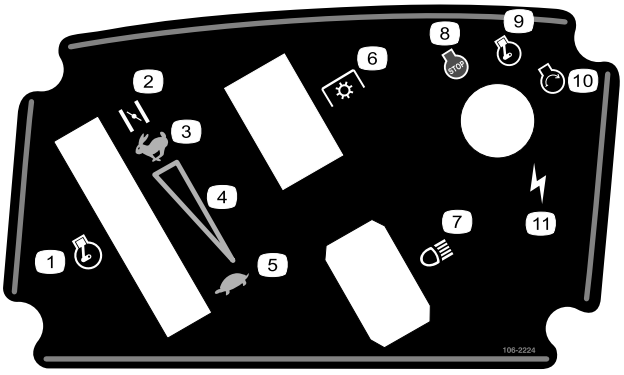
1. Thrown object hazard—keep bystanders a safe distance from the machine.
2. Thrown object hazard, mower—keep the deflector in place.
3. Cutting/dismemberment of hand or foot—stay away from moving parts.



Manufacturer's Mark

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

106-2223

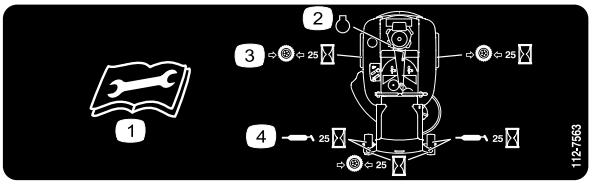


106-2224

1. Throttle
2. Choke
3. Fast
4. Continuous variable setting
5. Slow
6. Power take-off (PTO), Blade control switch on some models
7. Headlights
8. Engine—stop
9. Engine—run
10. Engine—start
11. Ignition

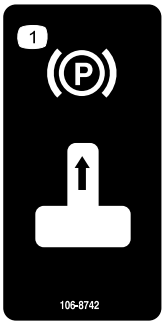
106-7043

1. Do not tow the machine; pull the lever out to ride on the machine or push the lever in to push the machine.



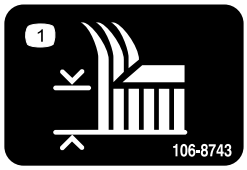
112-7563

1. Read the instructions before servicing or performing maintenance.
2. Engine
3. Check tire pressure every 25 operating hours.
4. Grease every 25 operating hours.



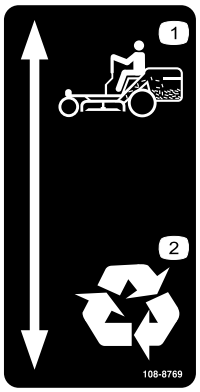
106-8742

1. Parking brake



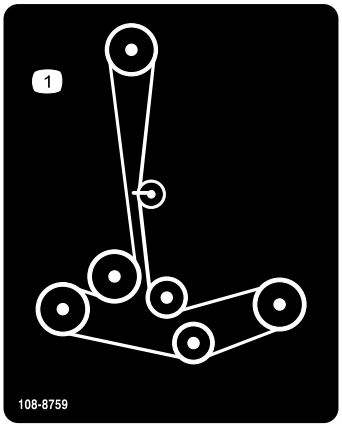
106-8743

1. Height of cut



108-8769

1. Collect position
2. Recycler® position



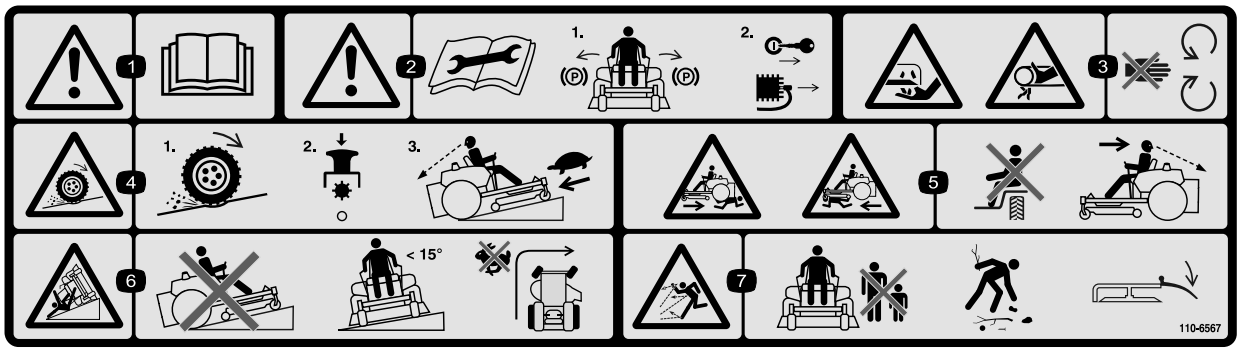
108-8759

1. Belt routing

Battery Symbols

Some or all of these symbols are on your battery

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



110-6567

1. Warning—read the *Operator's Manual.*
2. Warning—read the instructions before servicing or performing maintenance; move the motion control levers to the brake position, remove the ignition key and disconnect the spark plug wire.
3. Cutting/dismemberment hazard, mower blade; entanglement hazard, belt—do not open or remove safety shields while engine is running.
4. Loss of traction/control hazard, slopes—loss of traction/control on a slope, disengage the blade control switch (PTO), proceed off the slope slowly.
5. Crushing/dismemberment hazard of bystanders, reversing; crushing/dismemberment hazard of bystanders—do not carry passengers, look behind and down when reversing.
6. Tipping hazard—do not mow up and down slopes, only mow across slopes less than 15 degrees, avoid sudden and sharp turns while on slopes.
7. Thrown object hazard—keep bystanders a safe distance from the machine, pick up debris before operating, keep deflector in place.

Product Overview

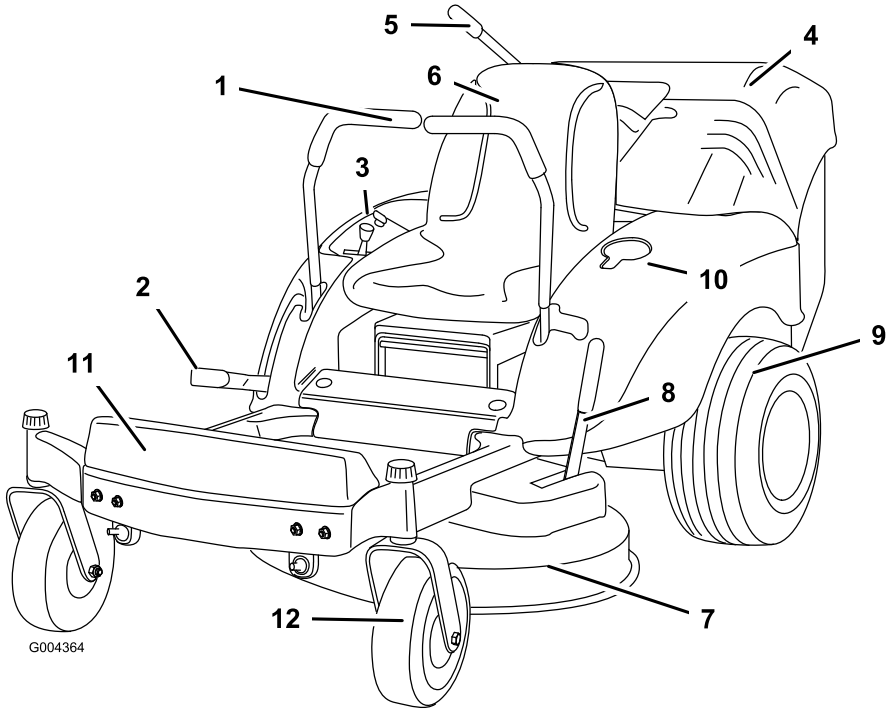


Figure 3

1. Motion control lever
2. Height-of-cut lever
3. Control panel
4. Collection bag
5. DFS lever
6. Operator's position, seat
7. Mower deck
8. Recycle-on-demand lever
9. Rear drive wheel
10. Cup holder
11. Footrest
12. Front caster wheel

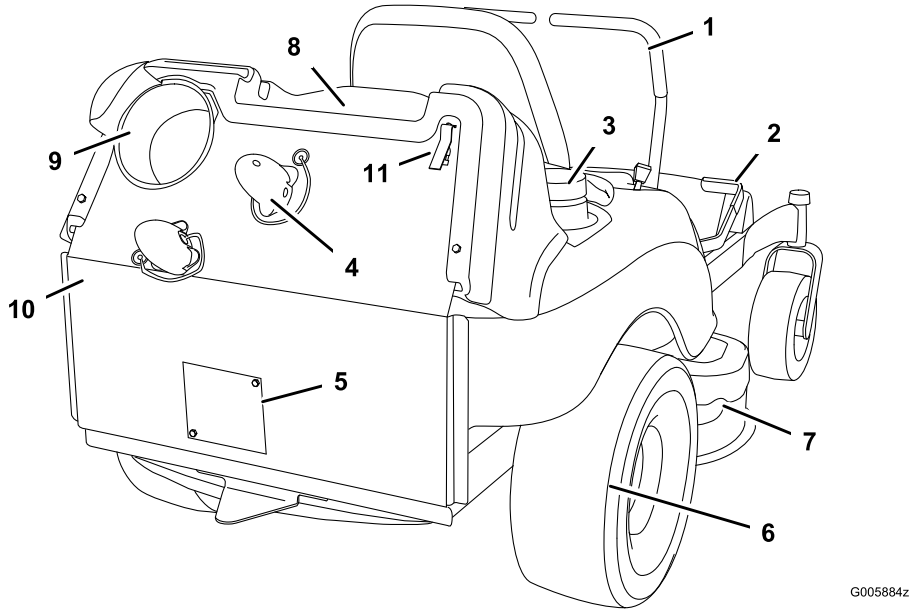


Figure 4

Collection bag removed

1. Motion control lever
2. Height of cut lever
3. Gas tank cap
4. Collection sensors
5. Rear access panel
6. Rear drive wheel
7. Mower deck
8. Engine cover
9. Discharge chute
10. Rear frame
11. Collection bag presence sensor

Controls

Become familiar with all of the controls in Figure 3, Figure 4, Figure 5 and Figure 6 before you start the engine and operate the machine.

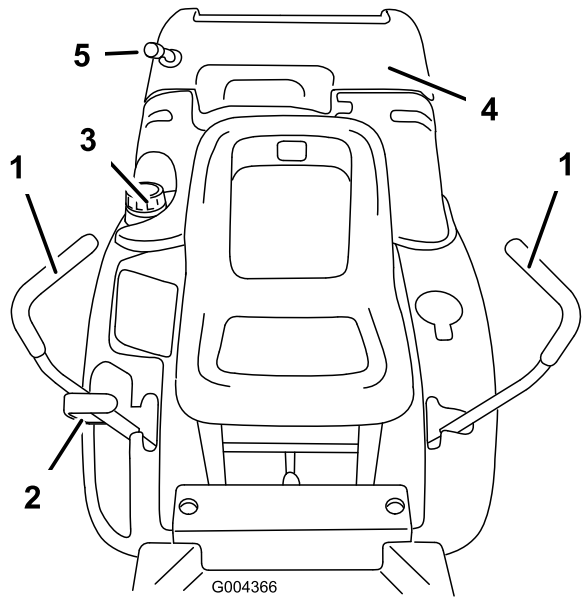


Figure 5

1. Motion control lever, parking brake position
2. Height-of-cut lever
3. Gas tank cap
4. Collection bag
5. DFS lever

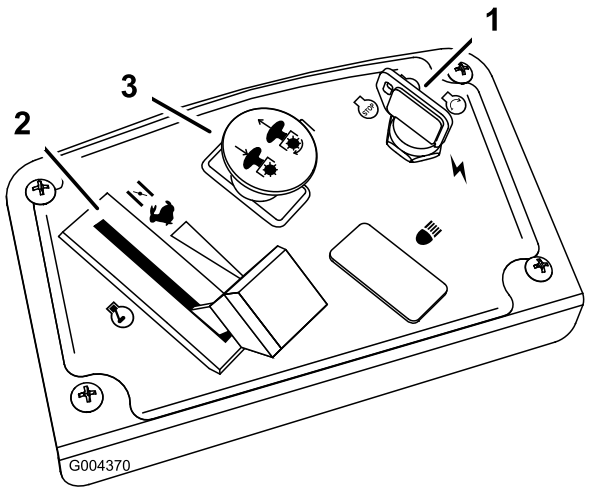


Figure 6

1. Ignition switch
2. Throttle/Choke
3. Blade control switch (power take-off)

Motion Control Levers

The motion control levers are speed sensitive controls of independent wheel motors. Moving a lever forward or backward turns the wheel on the same side forward or in reverse. Moving the control levers outward from the center position engages the parking brake and allows the operator to exit the machine (Figure 5).

Parking Brake

The parking brake is automatically set when the motion control levers are in the brake position. Always position the motion control levers into the brake position when you stop the machine or leave it unattended (Figure 5).

Height-of-Cut Lever

The height of cut lever allows the operator to lower and raise the deck from the seated position. When the lever is moved up, toward the operator the deck is raised from the ground and when moved down, away from the operator it is lowered to the ground. Only adjust the height of cut while machine is not moving (Figure 5).

Recycle-On-Demand Lever

Use the recycle-on-demand lever to switch from collection mode to Recycler® mode. Move the lever forward until it stops to open the deck door to allow clippings to travel to the collection bags. Move the lever rearward until it locks in position to close the deck door and engage the Recycler® mode (Figure 7).

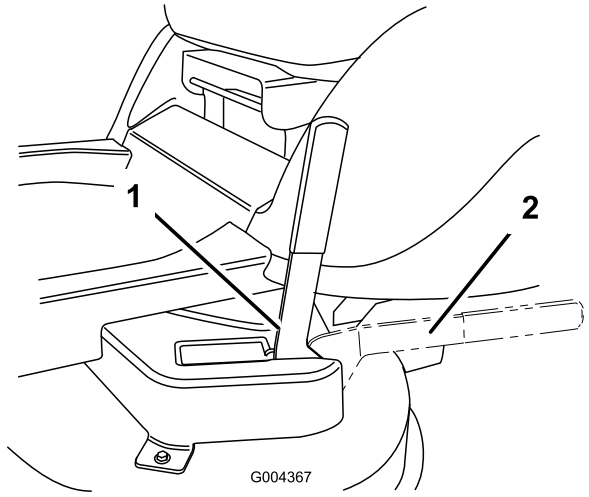


Figure 7

1. Recycle-on-demand lever, collect position
2. Recycle-on-demand lever, Recycler® position

Ignition Switch

The ignition switch has three positions, Off, Run and Start. The key will turn to Start and move back to Run upon release. Turing the key to the Off position will stop the engine; however, always remove the key when leaving the machine to prevent the engine from accidentally starting (Figure 6).

Throttle/Choke Control

The throttle and choke is combined into one control lever. The throttle controls the engine speed and it has a continuous variable setting from Slow to Fast. Engage the choke by moving the lever past the Fast setting until it stops (Figure 6).

Blade Control Switch (Power Take-Off)

The blade control switch, represented by a power take-off (PTO) symbol, engages and disengages power to the mower blades (Figure 6).

DFS (Dump From Seat) Lever

The DFS (Dump From Seat) lever can be operated from the seated, operating position or while standing next to the machine. The lever is seated loosely to allow it to be extended to gain leverage when in use and swivels freely to allow for minimal contact with the operating environment (Figure 5).

Collection Sensors

Once the collection bag fills with enough grass to cover one or both of the sensors and break the infrared beam a beeping alarm will sound to alert the operator. The alarm shuts off once the blade control switch is turned Off. If one or both sensors are unplugged the mower blades will not engage. The collection bag should be emptied immediately. Continued operation of the collection system with a full bag may result in plugging of the deck adapter and discharge chute.

Operation

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

Think Safety First

Please carefully read all of the safety instructions and decals in the safety section. Knowing this information could help you, your family, pets or bystanders avoid injury.

Mowing on wet grass or steep slopes can cause sliding and loss of control.

Wheels dropping over edges can cause rollovers, which may result in serious injury, death or drowning.

To avoid loss of control and possibility of rollover:

- **Do not mow near drop-offs or near water.**
- **Do not mow slopes greater than 15 degrees.**
- **Reduce speed and use extreme caution on slopes.**
- **Avoid sudden turns or rapid speed changes.**

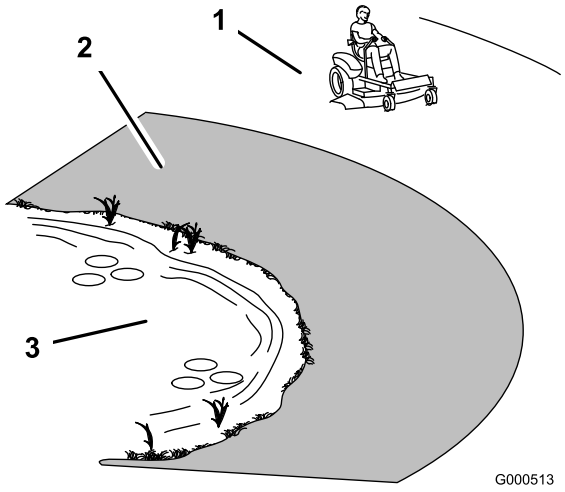


Figure 8

1. Safe Zone-use the TimeCutter here
2. Use walk behind mower and/or hand trimmer near drop-offs and water.
3. Water

Recommended Fuel

Use **Unleaded** Regular Gasoline suitable for automotive use (87 pump octane minimum). Leaded regular gasoline may be used if unleaded regular is not available.

Important: Never use methanol, fuel containing methanol, or gasohol containing more than 10% ethanol because the fuel system could be damaged. Do not mix oil with fuel.

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

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

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

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

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

- **Avoid prolonged breathing of vapors.**
- **Keep face away from nozzle and gas tank or conditioner opening.**
- **Keep gas away from eyes and skin.**

Using Stabilizer/Conditioner

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

- Keeps fuel fresh during storage of 30 days or less. For longer storage it is recommended that the fuel tank be drained.
- Cleans the engine while it runs
- Eliminates gum-like varnish buildup in the fuel system, which causes hard starting

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

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

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

Filling the Fuel Tank

1. Shut the engine off and set the parking brake.
2. Clean around the fuel tank cap and remove the cap. Add unleaded regular fuel to the fuel tank until the level is 1/4 to 1/2 inch (6 to 13 mm) below the bottom of the filler neck. This space in the tank allows fuel to expand. Do not fill the fuel tank completely full.
3. Install the fuel tank cap securely. Wipe up any fuel that may have spilled.

Checking the Engine Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to Checking the Oil Level in , page .

Starting and Stopping the Engine

Starting the Engine

1. Sit down on the seat and move the motion controls to the brake position.
2. Disengage the blades by moving the blade control switch to Off (Figure 9).

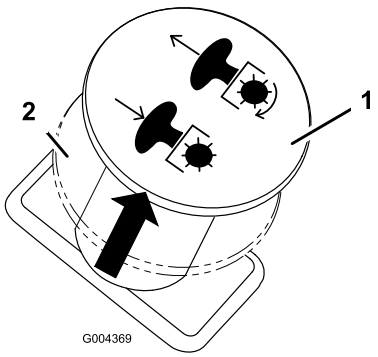


Figure 9

1. Blade control switch—On
2. Blade control switch—Off

3. Move the throttle lever to Choke before starting a cold engine (Figure 10).

Note: A warm or hot engine may not require choking.

4. Turn the ignition key to Start to energize the starter. When the engine starts, release the key.

Important: Do not engage the starter for more than 10 seconds at a time. If the engine fails to start, allow a 60 second cool-down period between attempts. Failure to follow these instructions can burn out the starter motor.

5. After the engine starts, move the throttle lever to Fast (Figure 10). If the engine stalls or hesitates, move the throttle lever back to Choke for a few seconds. Then move the throttle lever to the desired setting. Repeat this as required.

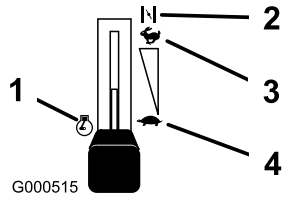


Figure 10

1. Engine
2. Choke
3. Fast
4. Slow

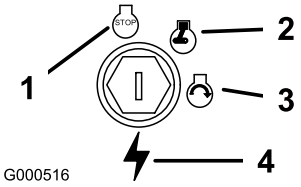


Figure 11

1. Off
2. Run
3. Start
4. Ignition

Stopping the Engine

1. Move the throttle lever to Fast (Figure 10).
2. Disengage the blades by moving the blade control switch to Off (Figure 9).
3. Turn the ignition key to Off (Figure 11).
4. Pull the wire off of the spark plug(s) to prevent the possibility of someone accidentally starting the machine before transporting or storing the machine.
5. Close the fuel shut-off valve under the front of the fuel tank before transporting or storing the machine.

Important: Make sure the fuel shut-off valve is closed before transporting or storing the machine, as fuel leakage may occur.

Driving Forward or Backward

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

The machine can spin very rapidly. The operator may lose control of the machine and cause personal injury or damage to the machine.

- **Use caution when making turns.**
- **Slow the machine down before making sharp turns.**

Forward

1. Move the levers to the center, unlocked position.
2. To go forward, slowly push the motion control levers forward (Figure 12).

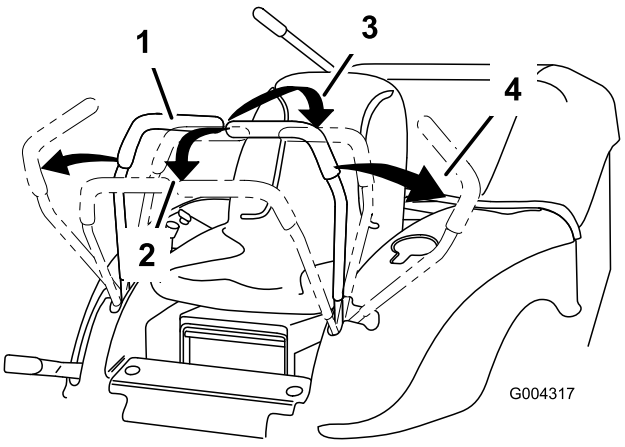


Figure 12

1. Center unlock position
2. Forward
3. Backward
4. Brake position

To go straight, apply equal pressure to both motion control levers (Figure 12).

To turn, release pressure on the motion control lever toward the direction you want to turn (Figure 12).

The farther you move the traction control levers in either direction, the faster the machine will move in that direction.

To stop, pull the motion control levers to neutral.

Backward

1. Move the levers to the center, unlocked position.
2. To go backward, slowly pull the motion control levers rearward (Figure 12).

   To go straight, apply equal pressure to both motion control levers (Figure 12).

   To turn, release the pressure on the motion control lever toward the direction you want to turn (Figure 12).

   To stop, push the motion control levers to neutral.

Operating the Blades

The blade control switch, represented by a power take-off (PTO) symbol, engages and disengages power to the mower blades. This switch controls power to any attachments that draw power from the engine, including the mower deck and cutting blades.

Engaging the Blades

1. Release pressure on the traction control levers and place the machine in neutral.
2. Move the throttle to the Fast position.
3. Pull out on the blade control switch to engage blades (Figure 13).

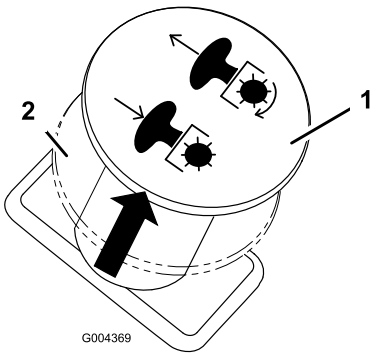


Figure 13

1. Blade control switch-On
2. Blade control switch-Off

Disengaging the Blades

Push the blade control switch to Off to disengage the blades (Figure 13).

Stopping the Machine

To stop the machine, move the traction control levers to neutral and separate to the brake position, disengage the blade control switch, ensure the throttle is in the fast position, and turn the ignition key to off. Remember to remove the key from the ignition switch.

Children or bystanders may be injured if they move or attempt to operate the mower while it is unattended.

Always remove the ignition key and move the motion control levers to the brake position when leaving the machine unattended, even if just for a few minutes.

The Safety Interlock System

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

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

Understanding the Safety Interlock System

The safety interlock system is designed to prevent the engine from starting unless:

- The blades are disengaged.
- The motion control levers are in the brake position.

The safety interlock system also is designed to stop the engine when the control levers are out of the brake position and you rise from the seat when the blades are engaged.

Testing the Safety Interlock System

Service Interval: Before each use or daily

Test the safety interlock system before you use the machine each time. If the safety system does not operate as described below, have an Authorized Service Dealer repair the safety system immediately.

1. While sitting on the seat, with the control levers in brake position, and move the blade control switch to On. Try starting the engine; the engine should not crank.
2. While sitting on the seat, move the blade control switch to Off. Move either motion control lever to the center, unlocked position. Try starting the engine; the engine should not crank. Repeat with the other motion control lever.
3. While sitting on the seat, move the blade control switch to Off, and lock the motion control levers in neutral. Start the engine. While the engine is running, move the motion control levers to the center, unlocked position, engage the blade control switch, and rise slightly from the seat; the engine should stop.
4. Remove the collection bag. While sitting on the seat, start the engine and move the blade control switch to On. The blades should not engage.

Adjusting the Height of Cut

The height of cut is adjusted from 1-1/2 to 4-1/2 inch (38 to 114 mm) in 1/2 inch (13 mm) increments by moving the height-of-cut lever in different locations.

1. Raise the height-of-cut lever to the transport position (also the 4-1/2 inch (114 mm) cutting height position (Figure 14).
2. To adjust, pull up on the height-of-cut lever and move it to the desired position (Figure 14).

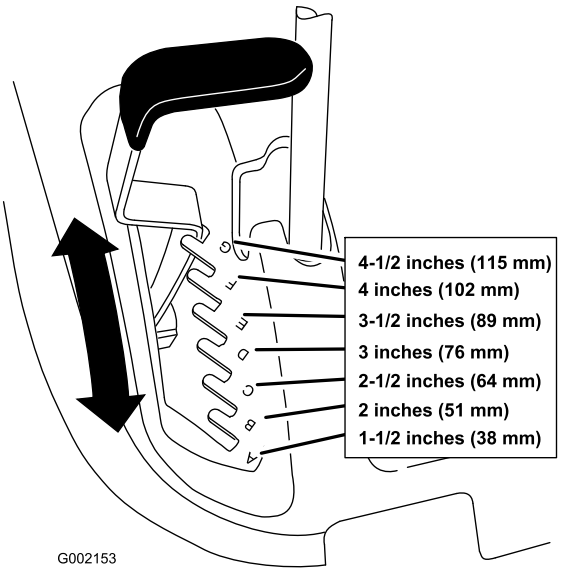


Figure 14

1. Height-of-cut lever
2. Height-of-cut positions

Changing Operation Modes

The recycle-on-demand lever allows the operator to alternate functions between Recycler® and collection modes from the seated, operating position. Use the recycle-on-demand lever to change modes.

1. Park the machine on a level surface, disengage the blade control switch and move the motion control levers to the brake position.
2. Move the throttle to Slow.
3. Move the recycle-on-demand lever (Figure 15) to the desired position:

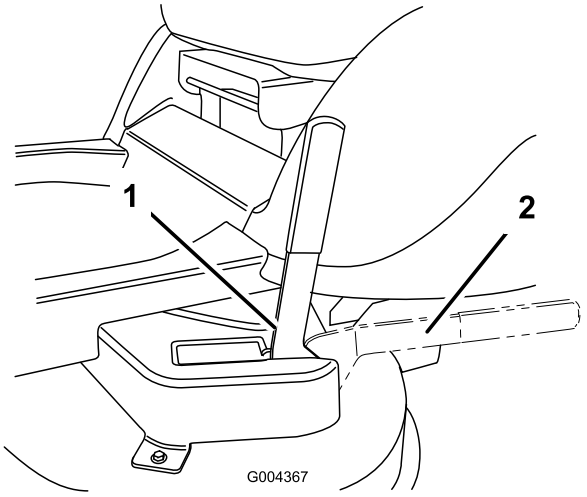


Figure 15

1. Recycle-on-demand lever, collect position
2. Recycle-on-demand lever, Recycler® position

   A. Raise the lever to the upright position to open the deck door and allow clippings to be collected.

   B. Lower the lever to Recycler® position to close the deck door and mulch the clippings.
4. Move the throttle to the Fast position and the motion control levers to the operating position.

Operation in the Collection Mode

As the bagger fills, extra weight is added to the back of the machine. If you stop and start suddenly on hills, you may lose steering control or the machine may tip.

- **Do not start or stop suddenly when going uphill or downhill. Avoid uphill starts.**
- **If you do stop the machine when going uphill, disengage the blade control switch. Then back down the hill using a slow speed.**
- **Do not change speeds or stop on slopes.**

The collection mode uses air flow created by the cutting blades to direct clippings up, through an internal chute and deposit them in the collection bag. Shorter, dry clippings require less force to be moved up the chute and into the collection bag.

Environmental factors can affect the quantity of clippings moved into the collection bag and rate of collection. Cutting tall grass at a low height of cut will remove air flow needed to propel the clippings into the collection bag. Longer, wet or damp clippings require much greater force to be deposited in the collection bag.

Always try to cut grass when it is dry because your lawn will have a neat appearance. If you must cut wet grass, use the Recycler® mode. Several hours later, when the clippings are dry, use the collection mode to gather up the grass clippings.

For the best performance of the direct collection mode:

- Set the throttle to Fast.
- Mow regularly.
- Use an higher height of cut for taller grass.
- Avoid mowing wet or damp grass.
- Travel at slower speeds when mowing taller grass.

Emptying the Collection System

Once the collection bag fills with enough grass to cover one or both of the sensors and break the infrared beam a beeping alarm will sound to alert the operator. The alarm shuts off once the blade control switch is turned Off. If one or both sensors are unplugged the mower blades will not engage.

The machine is equipped with an alarm that sounds to notify the operator the collection bag is full.

1. Park the machine on a level surface, disengage the blade control switch and move the motion control levers to the brake position.
2. Move the throttle to Slow.
3. Raise the collection bag by extending the DFS lever and then pulling down (Figure 16).

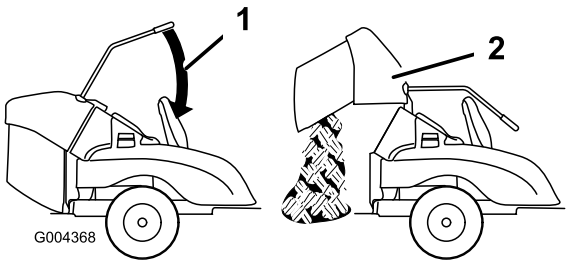


Figure 16

1. Lowering DFS lever
2. Raised collection bag, emptying clippings

4. Lower the collection bag and release the DFS lever.

In the event that the collection bag alarm goes off and the bag is less than full, the sensors should be cleared of any clippings or debris that be blocking the beam. Raise the collection bag and wipe off the faces of the sensors with a soft cloth.

Important: You can wash the machine with mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water, especially near the control panel, engine, hydraulic pumps, and motors.

Collection Bag

The collection bag is retained in the engine cover by seating the lever side pin into a holed bracket in the right hand side of the engine cover. To remove, raise the bag up and first lift the pin in the open notch up and away from the cover. Then slide the lever side pin out the bracket until the bag is clear of the machine. When installing, seat this side first and then place the opposing pin in the open notch in the engine cover. Allow the bag to swing down, into place.

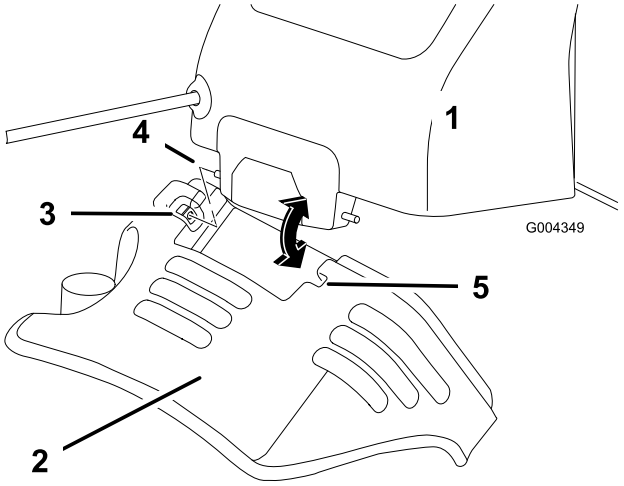


Figure 17

1. Collection bag
2. Engine hood
3. Holed bracket
4. Pin, collection bag
5. Notched bracket

Removing the Collection Chute

As you are bagging, a small amount of grass clippings normally blow out the front of the mower. An excessive amount of clippings blowing out and no audible alarm signalling a full bag may indicate a plugged chute.

The collection chute can be removed to be cleaned and safely cleared of any obstructions. Use the following procedure to remove it:

1. Make sure the collection bag is empty.
2. Park the machine on a level surface and disengage the blade control switch.
3. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position. Raise the operator's seat.
4. Move to the rear of the machine and remove the collection bag.
5. Grasp the discharge chute and remove as follows.

   Important: Use caution and do not use excessive force when removing/installing the chute. "Forcing" the chute can damage it or other internal components.

   A. Pull the chute out from the machine approximately 6-8 inches (15-20 cm).

   B. Rotate the chute a quarter turn downward and proceed to pull chute out further to expose the first bend.

   C. With the bend exposed rotate the chute a quarter turn counter clockwise.

   D. Pull the chute until the key is visible. Line the key in the chute with the keyway.

   E. Remove the chute.

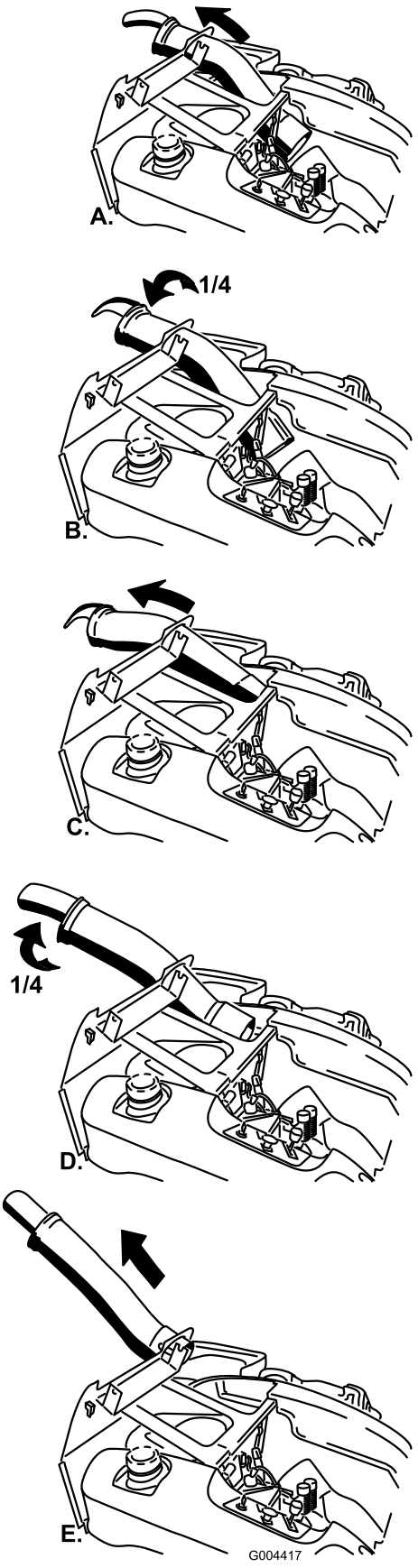


Figure 18

6. Return to the machine. Inspect the internal engine compartment and clear any clippings or debris dislodged during chute removal.

Debris built up in the engine compartment, if not removed, could be ignited by a hot engine. A fire in the engine compartment could can burn you and others and can damage property.

- **Before using and while the engine is cool, check for debris in the engine compartment.**
- **Keep the machine free of grass, leaves, or other debris build-up.**
- **Clean up oil or fuel spillage and fuel soaked debris.**
- **Allow the machine to cool before storing.**

Clearing the Collection Chute

Note: To avoid plugging the collection system, mow the grass at a high height of cut, then lower the mower to your normal cutting height and repeat the collection process.

Remove the collection chute and tap it on the ground to remove any plugged clippings or debris. At this time, visually inspect the chute to verify it is clear and for any damage. If necessary, manually remove any obstructions from the chute.

Installing the Collection Chute

1. Line the key in the chute with the keyway in the frame
   A. Gently move the chute into the machine until the first bend.
   B. Rotate the chute a quarter turn downward and continue installing the chute until the second bend.
   C. Rotate the chute a quarter turn counter clockwise and continue to install the chute.
   D. Look over the engine hood, and into the internal machine. Align the key in the chute with the peg on the deck adapter.
   E. Slide the chute over the deck adapter until the chute seats in the machine frame.

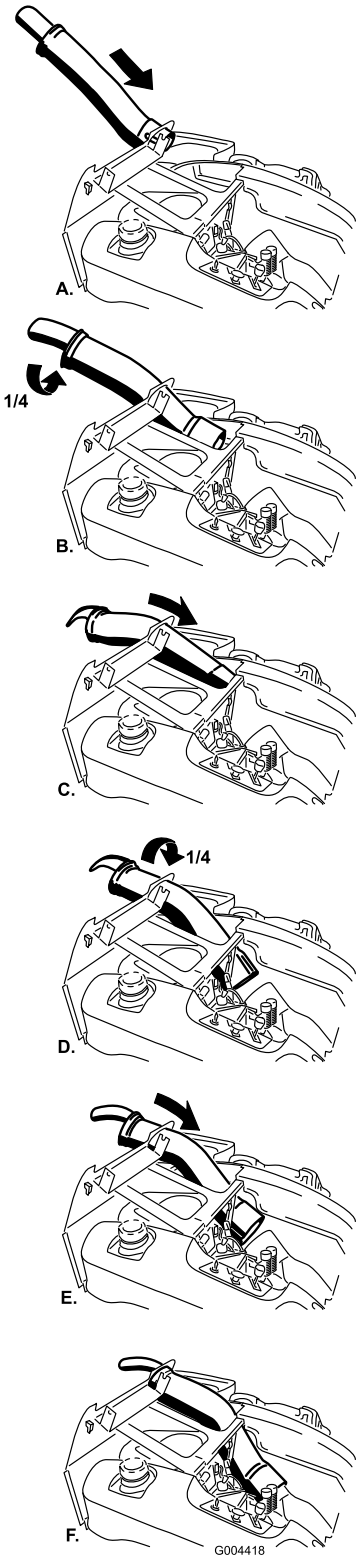


Figure 19

2. Lower the seat and resume operation.

Operation in the Recycler® Mode

Air is required to cut and recut grass clippings in the mower housing, so do not set the height-of-cut too low or completely surround the housing by uncut grass. Always try to have one side of the mower deck free from uncut grass; allowing air to be drawn into the mower deck. When making an initial cut through the center of an uncut area, operate the machine slower and back up if the mower starts to clog.

To ensure optimum performance, clean the underside of the mower housing after each use. If residue is allowed to build up in the mower housing, cutting performance can decrease.

For the best performance of the Recycler® mode:

- Mow regularly.
- Keep air flow high by overlapping cutting paths
- Use an higher height of cut for taller grass.
- Use sharp blades.
- Travel at slower speeds when mowing taller grass.

Positioning the Seat

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

1. Raise the seat and loosen the adjustment knobs enough to move the seat (Figure 20).

   Important: Make sure that the spacers stay in place when loosening the knobs to move the seat. Loss of the spacers can result in damage to the seat.

2. Move the seat to the desired position and tighten the knobs.

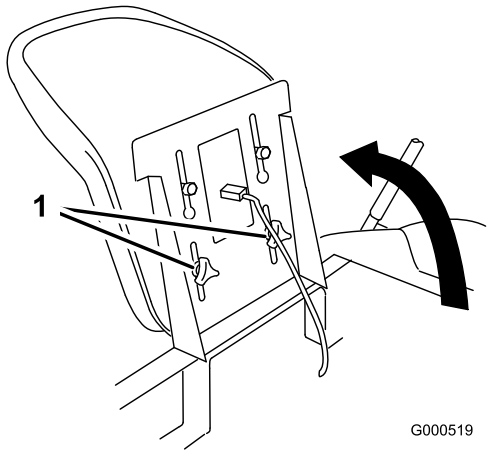


Figure 20

1. Adjustment knobs

Adjusting the Motion Control Levers

The motion control levers can be adjusted higher or lower for maximum operator comfort.

1. Remove the 2 bolts holding the control lever to the control arm shaft (Figure 21).
2. Move the control lever to the next set of holes. Secure the lever with the 2 bolts (Figure 21).

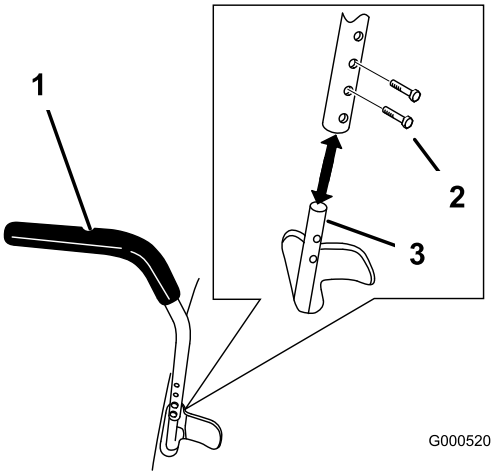


Figure 21

1. Control lever
2. Bolt
3. Control arm shaft

3. Repeat the adjustment for the opposite control lever.

Pushing the Machine by Hand

Important: Always push the machine by hand. Never tow the machine because damage may occur.

To Push the Machine

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to engage the parking brake, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Move the two bypass levers to the inside and push them in until the washer on the rod passes through the slot (Figure 22).
4. Push the levers outward to lock them in place Figure 22.
5. Move the motion control levers inward to disengage the parking brake.

The machine is now able to be pushed by hand.

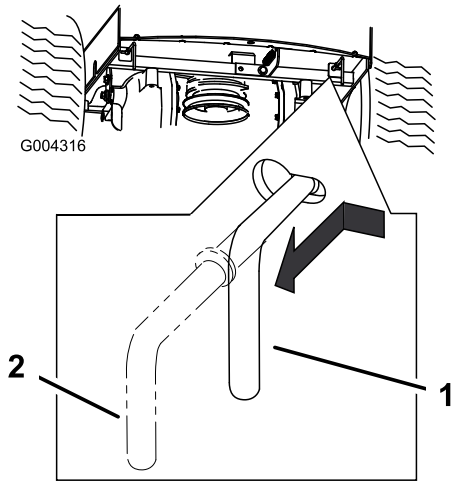


Figure 22

1. Bypass lever, lever position for pushing the machine
2. Lever position for operating the machine

To Operate the Machine

Move each bypass levers to the inside and pull them rearward, completely through the slot (Figure 22). Push the levers outward to lock them in place

Note: The machine will not drive unless the bypass levers are disengaged.

Adjusting the Footrest

The footrest can be adjusted forward or backward for maximum operator comfort.

Lift up the footrest and place the rods in the same hole positions (Figure 23).

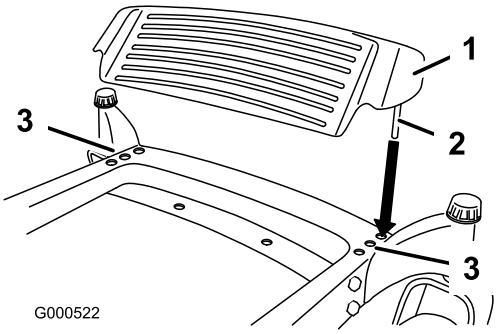


Figure 23

1. Footrest
2. Rod
3. Hole positions

Operating Tips

Fast Throttle Setting

For best mowing and maximum air circulation, operate the engine at the Fast position. Air is required to thoroughly cut grass clippings, so do not set the height-of-cut so low as to totally surround the mower by uncut grass. Always try to have one side of the mower free from uncut grass, which allows air to be drawn into the mower.

Cutting a Lawn for the First Time

Cut grass slightly longer than normal to ensure that the cutting height of the mower does not scalp any uneven ground. However, the cutting height used in the past is generally the best one to use. When cutting grass longer than six inches tall, you may want to cut the lawn twice to ensure an acceptable quality of cut.

Cut 1/3 of the Grass Blade

It is best to cut only about 1/3 of the grass blade. Cutting more than that is not recommended unless grass is sparse, or it is late fall when grass grows more slowly.

Mowing Direction

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

Mow at Correct Intervals

Normally, mow every four days. But remember, grass grows at different rates at different times. So

to maintain the same cutting height, which is a good practice, mow more often in early spring. As the grass growth rate slows in mid summer, mow less frequently. If you cannot mow for an extended period, first mow at a high cutting height; then mow again two days later at a lower height setting.

Cutting Speed

To improve cut quality, use a slower ground speed.

Avoid Cutting Too Low

If the cutting width of the mower is wider than the mower you previously used, raise the cutting height to ensure that uneven turf is not cut too short.

Long Grass

If the grass is ever allowed to grow slightly longer than normal, or if it contains a high degree of moisture, raise the cutting height higher than usual and cut the grass at this setting. Then cut the grass again using the lower, normal setting.

When Stopping

If the machine's forward motion must be stopped while mowing, a clump of grass clippings may drop onto your lawn. To avoid this, move onto a previously cut area with the blades engaged.

Keep the Underside of the Mower Clean

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

Blade Maintenance

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

Safe Towing Practices

Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point. This product has a limited towing capacity for small attachments, such as leaf sweepers, rollers up to 500 lbs (227 kg) or carts up to 5 cubic feet (0.14 m^3). These types of attachments should be limited to flat ground. Never allow children or others in or on towed equipment. On slopes, the weight of towed equipment may cause a loss of traction and control. Travel slowly and allow extra distance to stop.

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	• Test the safety interlock system. • Check the engine oil level. • Check the cutting blades. • Wipe clean the collection sensors. • Clean the mower housing.
Every 25 hours	• Grease all lubrication points. • Service the foam air cleaner. (more often in dusty, dirty conditions) • Check tire pressure. • Check the belts for wear/cracks.
Every 50 hours	• Service the paper air cleaner. (more often in dusty, dirty conditions) • Check the battery electrolyte level.
Every 100 hours	• Change the engine oil. (more often in dusty, dirty conditions) • Check the spark plug(s). • Replace fuel filter.
Every 200 hours	• Replace the paper air cleaner. (more often in dusty, dirty conditions) • Change the oil filter. (more often in dusty, dirty conditions)
Before storage	• Drain the fuel tank. • Charge the battery and disconnect battery cables. • Perform all maintenance procedures listed above before storage. • Paint any chipped surfaces.

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

⚠

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

Remove the key from the ignition and 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.

Premaintenance Procedures

Accessing the Machine

Some internal components can be accessed by simply raising the seat. Use the following procedures to access to the internal components as needed when performing the maintenance procedures described in this manual.

Removing the Engine Hood

Remove the engine hood to gain access to the engine compartment. To remove the engine hood the collection bag must be emptied and removed first.

1. Empty the collection bag as desired.
2. Park the machine on a level surface and disengage the blade control switch.
3. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
4. Grasp the collection bag at the front and rear using the plastic hand holds. Pivot it up and forward and then lift it out of the engine hood. Refer to , page for additional information.

   Note: The rear access panel can be opened when the collection bag is off the machine.
5. Remove the fasteners retaining the engine hood to the machine frame (Figure 24). Retain all parts.

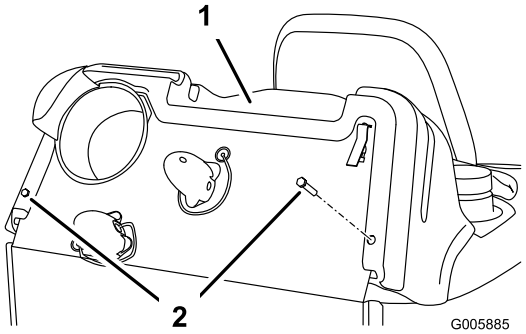


Figure 24

1. Engine hood
2. Fasteners

6. Grasp the engine hood front and rear and lift the engine hood off the frame (Figure 25).

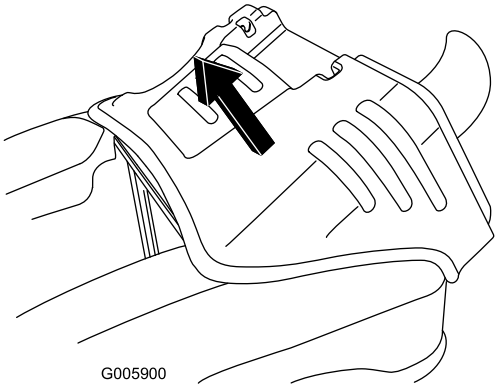


Figure 25

Removing the Engine Duct

Remove the fasteners securing the duct to the machine frame and retain the fasteners. Lift the duct out of the engine compartment. Install the duct as it was removed. Use the fasteners to secure the duct to the frame.

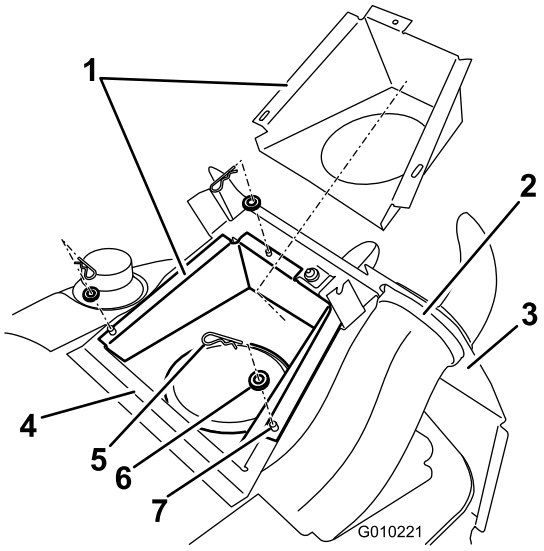


Figure 26

1. Engine duct
2. Discharge chute
3. Rear frame
4. Machine frame
5. Hair pin
6. Rubber washer
7. Post

Rear Access Panel

The rear access panel is located on the back of the machine frame and can be seen when the collection bag is off. Loosen the fasteners to remove the panel and access the engine components (Figure 27). Always make sure the panel is replaced and secured with the fasteners before operating the machine.

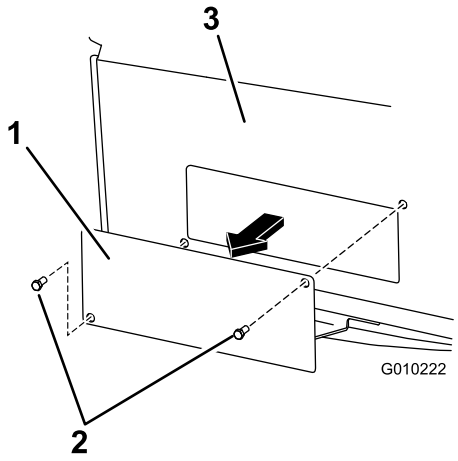


Figure 27

1. Rear access panel
2. Fastener
3. Frame

Installing the Engine Hood

1. To install the hood, align the slot in the hood with the frame and carefully lower it onto the frame (Figure 28). Make sure the frame seated correctly in the engine hood groove before forcing the hood down. Push down gently to seat the retaining pin. Replace the fasteners removed previously.

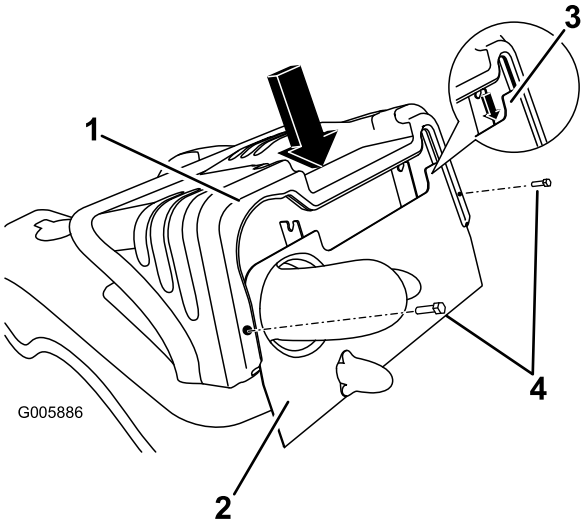


Figure 28

1. Engine hood
2. Frame
3. Frame mating with slot in the hood.
4. Fastners

2. Install the collection bag; refer to , page .

Lubrication

Greasing the Bearings

Service Interval: Every 25 hours

Grease the front caster pivots and wheels (Figure 29).

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Clean the grease fittings (Figure 29 and Figure 30) with a rag. Make sure to scrape any paint off of the front of the fitting(s).

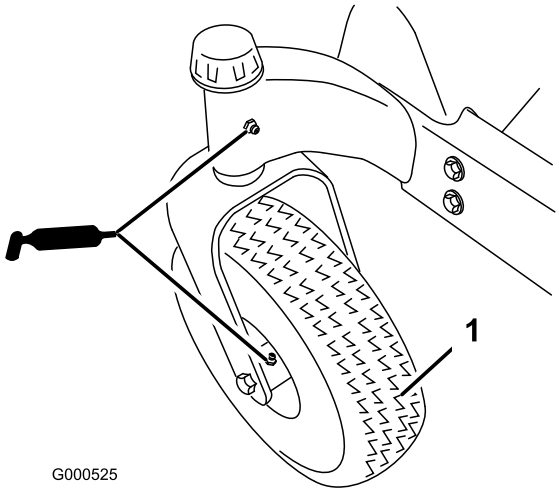


Figure 29

1. Front caster tire

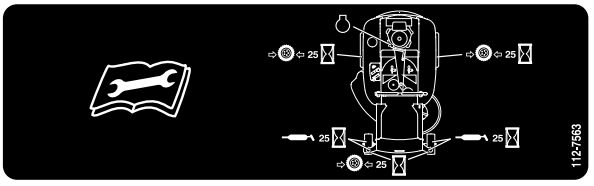


Figure 30

4. Connect a grease gun to each fitting (Figure 29 and Figure 30). Pump grease into the fittings until grease begins to ooze out of the bearings.
5. Wipe up any excess grease.

Engine Maintenance

Servicing the Air Cleaner

Service Interval: Every 25 hours—Service the foam air cleaner. (more often in dusty, dirty conditions)

Every 50 hours—Service the paper air cleaner. (more often in dusty, dirty conditions)

Every 200 hours—Replace the paper air cleaner. (more often in dusty, dirty conditions)

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

Removing the Foam and Paper Elements

1. Park the machine on a level surface and disengage the blade control (PTO).
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the engine hood and engine duct to access the engine components.
4. Clean around the air cleaner to prevent dirt from getting into the engine and causing damage. Unlatch the two side latches and remove the air cleaner cover (Figure 31).
5. Carefully remove the foam element from the paper element (Figure 31).
6. Unscrew the wing nut and remove the paper element (Figure 31).

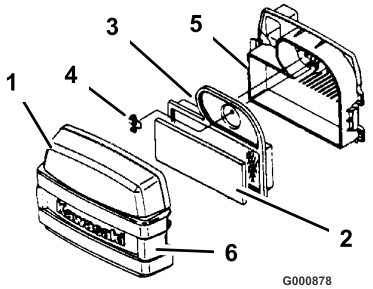


Figure 31

1. Cover
2. Foam element
3. Paper element
4. Wing nut
5. Air cleaner base
6. Latches

Cleaning the Foam and Paper Elements

1. Foam Element
   A. Wash the foam element in liquid soap and warm water. When the element is clean, rinse it thoroughly.
   B. Dry the element by squeezing it in a clean cloth (do not wring). Allow the element to air dry.
   C. Soak the element in new engine oil. (Figure 32). Squeeze the element to remove excess oil.

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

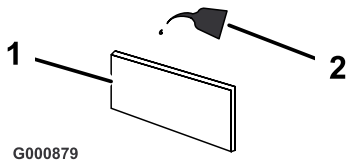


Figure 32

1. Foam element
2. Oil

2. Paper Element
   A. Lightly tap the element on a flat surface to remove dust and dirt (Figure 33).
   B. Inspect the element for tears, an oily film, and damage to the rubber seal.

   Important: Never clean the paper element with pressurized air or liquids, such as solvent, gas, or kerosene. Replace the paper element if it is damaged or cannot be cleaned thoroughly.

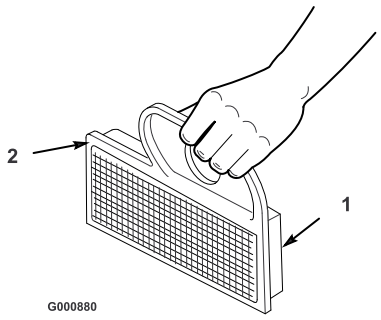


Figure 33

1. Paper element
2. Rubber seal

Installing the Foam and Paper Elements

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

1. Carefully slide the foam element onto the paper air cleaner element (Figure 31).
2. Place the air cleaner assembly onto the air cleaner base and install the wing nut (Figure 31).
3. Install the air cleaner cover and secure the latches (Figure 31).

Servicing the Engine Oil

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

Crankcase Capacity: with filter, 51 ounces (1.5 l)

Viscosity: See the table below.

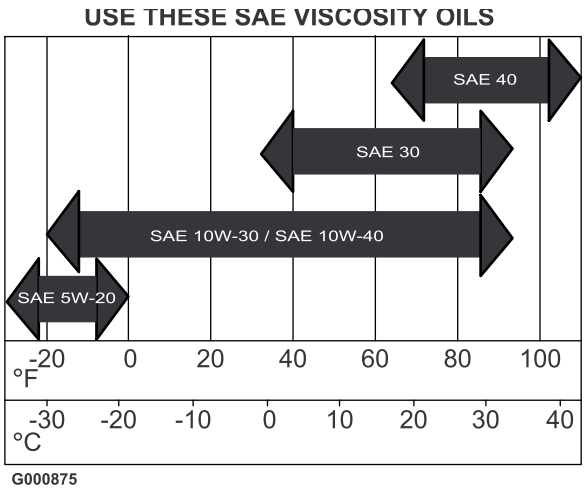


Figure 34

Checking the Oil Level

Service Interval: Before each use or daily—Check the engine oil level.

1. Park the machine on a level surface and disengage the blade control (PTO).
2. Move the motion control levers to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the engine hood and engine duct to access the engine components.
4. Clean around the oil dipstick (Figure 35) so that dirt cannot fall into the fill hole and damage the engine.
5. Unscrew the oil dipstick and wipe the end clean (Figure 35).

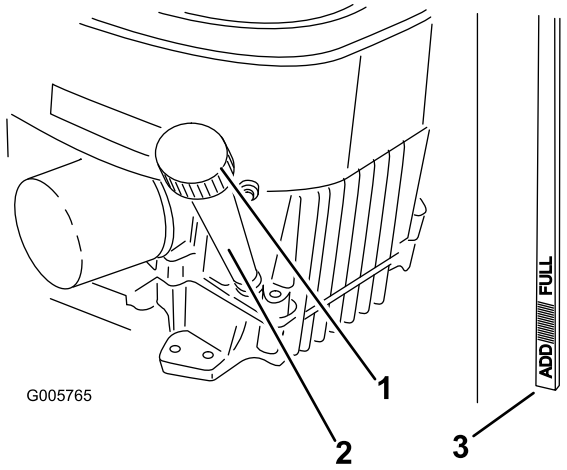


Figure 35

1. Oil dipstick
2. Filler tube
3. Dipstick end

6. Insert the oil dipstick fully into the tube **without screwing it in**. Pull the dipstick out, and look at the end. If the oil level is low, slowly pour only enough oil into the fill hole to raise the level to, but not over, the Full mark on the dipstick.

   Important: Do not overfill the crankcase with oil because the engine may be damaged.

7. Insert and screw the oil dipstick fully into the tube.

Changing and Draining the Oil

Service Interval: After the first 8 hours—Change the engine oil.

Every 100 hours—Change the engine oil. (more often in dusty, dirty conditions)

1. Start the engine and let it run until warm. This warms the oil so it drains better.
2. Park the machine so that the drain side is slightly lower than the opposite side to ensure that the oil drains completely.
3. Disengage the blade control switch and set the parking brake.
4. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

Components will be hot if the machine has been running. If you touch hot components you may be burned.

Allow the machine to cool before performing maintenance or touching components under the hood.

5. Remove the engine hood and engine duct to access the engine the oil drain valve.
6. Place a pan below the drain hose. Open oil drain valve to allow oil to drain (Figure 36).

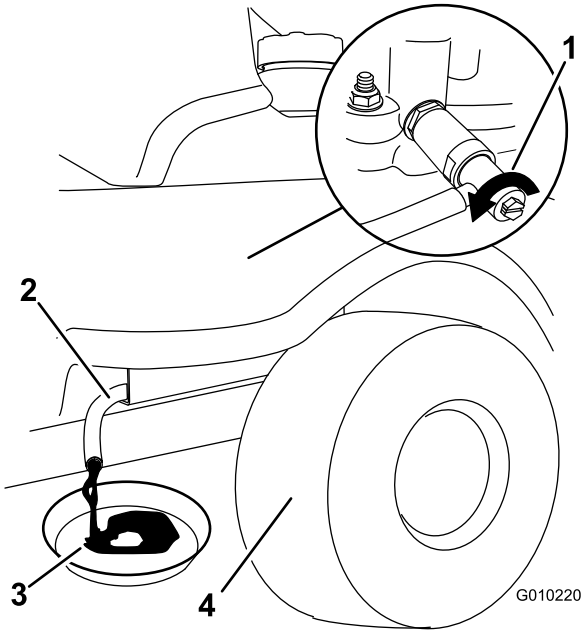


Figure 36

1. Oil drain valve
2. Oil drain tube
3. Oil pan
4. Rear, drive wheel

7. When oil has drained completely, close the drain valve.
8. Remove the drain hose (Figure 36).

   Note: Dispose of the used oil at a recycling center.
9. Change the oil filter, if necessary (Figure 35).
10. Clean around the oil dipstick and unscrew the cap (Figure 35).
11. Slowly pour approximately 80% of the specified oil into the filler tube (Figure 35).
12. Check the oil level; refer to Checking the Oil Level.
13. Slowly add additional oil to bring it to the full mark.

Changing the Oil Filter

Service Interval: Every 200 hours—Change the oil filter. (more often in dusty, dirty conditions)

1. Drain the oil from the engine; refer to Changing and Draining the Oil.
2. Remove the old filter (Figure 37).
3. Apply a thin coat of new oil to the rubber gasket on the replacement filter.

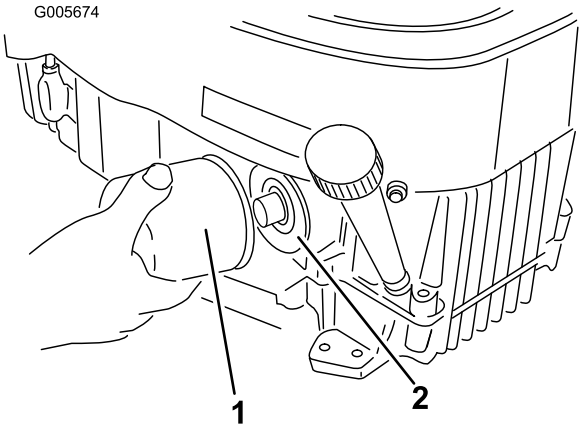


Figure 37

1. Oil filter
2. Adapter

4. Install the replacement oil filter to the adapter. Turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 3/4 turn (Figure 37).
5. Fill the crankcase with the proper type of new oil; refer to Changing and Draining the Oil.
6. Run the engine for about 3 minutes, stop the engine and check for any leakage around the filter.
7. Add oil to compensate for oil level drop due to oil filter capacity; refer to Changing and Draining the Oil.

Servicing the Spark Plug

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

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

Type: Champion RCJ8Y (or equivalent)

Air Gap: 0.030 inch (0.76 mm)

Removing the Spark Plug

1. Disengage the blade control switch and move the control levers to the neutral locked position and apply the parking brake.
2. Stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the engine hood and engine duct to access the engine components.
4. Pull the wires off of the spark plugs (Figure 38). Clean around the spark plugs to prevent dirt from falling into the engine and potentially causing damage.
5. Remove the spark plugs and metal washer.

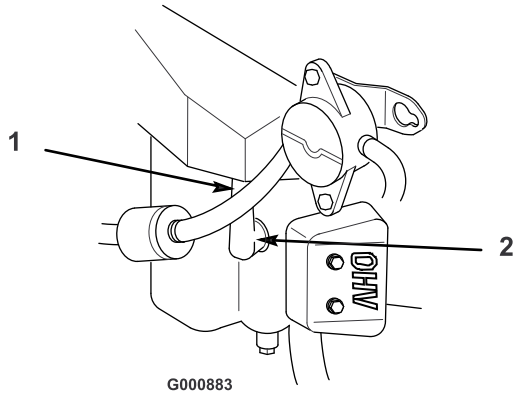


Figure 38

1. Spark plug wire installed 2. Spark plug

Checking the Spark Plug

1. Look at the center of the spark plug (Figure 39). If you see light brown or gray on the insulator, the engine is operating properly. A black coating on the insulator usually means the air cleaner is dirty.

   Important: Never clean the spark plug. Always replace the spark plug when it has a black coating, worn electrodes, an oily film, or cracks.

2. Check the gap between the center and side electrodes (Figure 39). Bend the side electrode (Figure 39) if the gap is not correct.

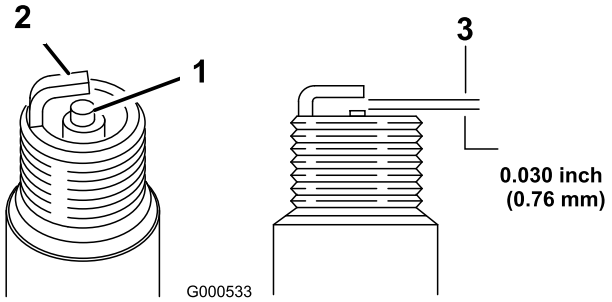


Figure 39

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

Installing the Spark Plug(s)

1. Install the spark plug(s). Make sure that the air gap is set correctly.
2. Tighten the spark plug(s) to 16 ft-lb (22 N-m).
3. Push the wire(s) onto the spark plug(s) (Figure 38).

Fuel System Maintenance

Draining the Fuel Tank

Service Interval: Before storage

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

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

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Close the fuel shut-off valve located under the front of the fuel tank (Figure 40).

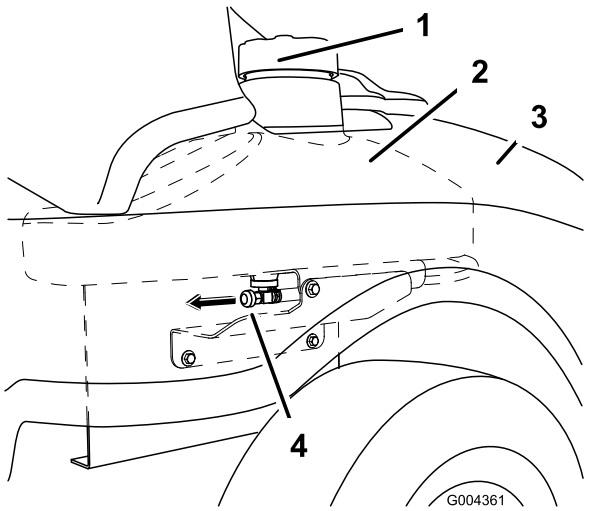


Figure 40

1. Fuel tank cap
2. Fuel tank, inside fender
3. Fender
4. Fuel shut-off valve.

4. Remove the engine hood and engine duct to access the engine components.
5. Loosen the hose clamp at the fuel filter and slide it up the fuel line away from the fuel filter (Figure 41).

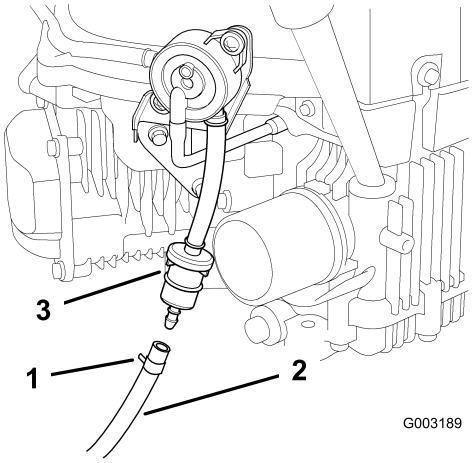


Figure 41

1. Hose clamp
2. Fuel line
3. Filter

6. Pull the fuel line off of the fuel filter (Figure 41).
7. Open the fuel shut-off valve. Allow fuel to drain into a gas can or drain pan (Figure 40).

   Note: Now is the best time to install a new fuel filter because the fuel tank is empty.
8. Install the fuel line onto the fuel filter. Slide the hose clamp close to the fuel filter to secure the fuel line (Figure 41).

Replacing the Fuel Filter

Service Interval: Every 100 hours

Replace the fuel filter after every 100 operating hours or yearly, whichever occurs first.

Never install a dirty filter if it is removed from the fuel line.

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers outward to the park position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Close the fuel shut-off valve located under the front of the fuel tank.
4. Squeeze the ends of the hose clamps together and slide them away from the filter (Figure 41).
5. Remove the filter from the fuel lines.

6. Install a new filter with the flow direction arrow coming from the fuel tank and pointing to the engine and move the hose clamps close to the filter (Figure 41).
7. Open the fuel shut-off valve.

Electrical System Maintenance

Servicing the Battery

Check the electrolyte level in the battery every 25 hours. Always keep the battery clean and fully charged. Use a paper towel to clean the battery case. If the battery terminals are corroded, clean them with a solution of four parts water and one part baking soda. Apply a light coating of grease to the battery terminals to prevent corrosion.

Voltage: 12 V

Removing the Battery

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

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

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Tip the seat forward to see the battery.
4. Disconnect the negative (black) ground cable from the battery post (Figure 42).

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

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

5. Slide the rubber cover up the positive (red) cable. Disconnect the positive (red) cable from the battery post (Figure 42).
6. Remove the battery hold-down (Figure 42) and lift the battery from the battery tray.

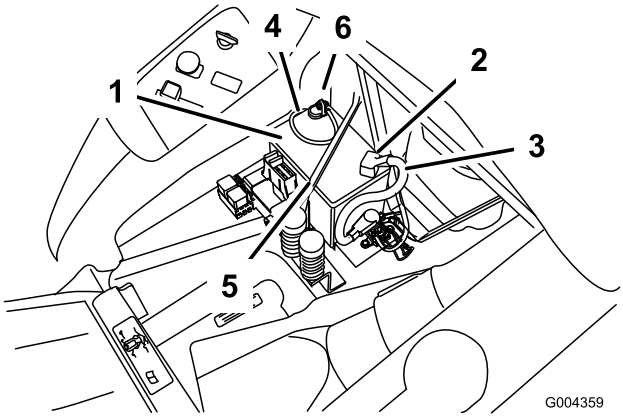


Figure 42

1. Battery
2. Terminal boot
3. Positive battery cable
4. Negative battery cable
5. Battery hold-down
6. Bolt, nut, and washer

Checking the Battery Electrolyte Level

Service Interval: Every 50 hours

Battery electrolyte contains sulfuric acid which is a deadly poison and causes severe burns.

- **Do not drink electrolyte and avoid contact with skin, eyes or clothing. Wear safety glasses to shield your eyes and rubber gloves to protect your hands.**
- **Fill the battery where clean water is always available for flushing the skin.**

1. Tip the seat forward to see the battery.
2. Look at the side of the battery. The electrolyte must be up to the Upper line (Figure 43). Do not allow the electrolyte to fall below the Lower line (Figure 43).

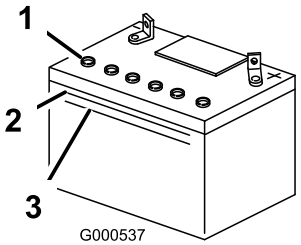


Figure 43

1. Vent caps
2. Upper line
3. Lower line

3. If the electrolyte is low, add the required amount of distilled water; refer to Adding Water to the Battery in the Electrical System Maintenance section..

Adding Water to the Battery

The best time to add distilled water to the battery is just before you operate the machine. This lets the water mix thoroughly with the electrolyte solution.

1. Remove the battery from the machine; refer to Removing the Battery in the Electrical System Maintenance section.

   Important: Never fill the battery with distilled water while the battery is installed in the machine. Electrolyte could be spilled on other parts and cause corrosion.

2. Clean the top of the battery with a paper towel.
3. Remove the vent caps from the battery (Figure 43).
4. Slowly pour distilled water into each battery cell until the electrolyte level is up to the Upper line (Figure 43) on the battery case.

   Important: Do not overfill the battery because electrolyte (sulfuric acid) can cause severe corrosion and damage to the chassis.

5. Wait five to ten minutes after filling the battery cells. Add distilled water, if necessary, until the electrolyte level is up to the Upper line (Figure 43) on the battery case.
6. Reinstall the battery vent caps.

Charging the Battery

Service Interval: Before storage

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

1. Remove the battery from the chassis; refer to Removing the Battery.
2. Check the electrolyte level; refer to Checking the Electrolyte Level.
3. Make sure that the vent caps are installed in the battery. Charge the battery for 1 hour at 25 to 30 amps or 6 hours at 4-6 amps. Do not overcharge the battery.
4. When the battery is fully charged, unplug the charger from the electrical outlet, then disconnect the charger leads from the battery posts (Figure 44).

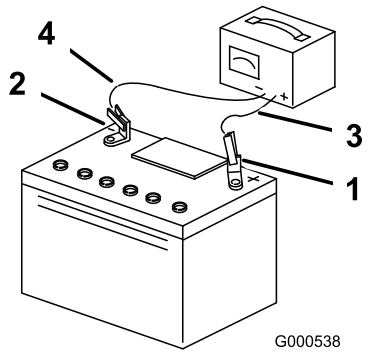


Figure 44

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

5. Install the battery in the machine and connect the battery cables; refer to Installing the Battery.

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

Installing the Battery

1. Position the battery in the tray with the terminal posts away from the control panel (Figure 42).
2. Install the positive (red) battery cable to the positive (+) battery terminal.
3. Install the negative battery cable to the negative (-) battery terminal.
4. Secure the cables with 2 bolts (1/4 x 3/4 inch), washers (1/4 inch), and nuts (1/4 inch) (Figure 42).
5. Slide the red terminal boot onto the positive (red) battery post.
6. Secure the battery with the hold-down (Figure 42).

Servicing the Fuses

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

Fuse:

- Main F1-30 amp, blade-type
- Charge Circuit F2-25 amp, blade-type

1. Raise the seat to gain access to the fuse holder (Figure 45).
2. To replace a fuse, pull out on the fuse to remove it (Figure 45).

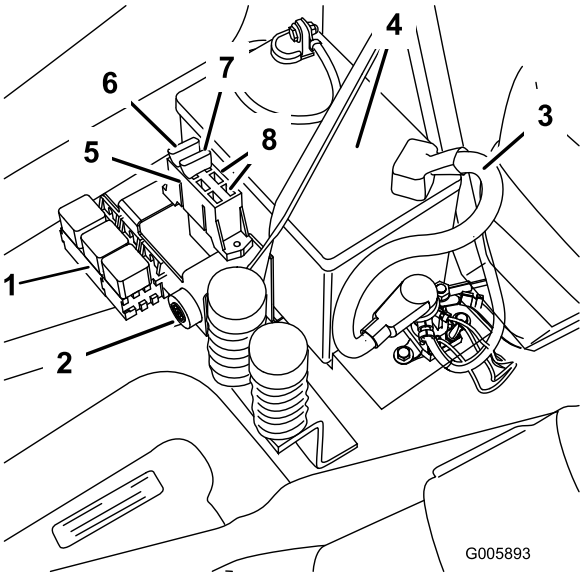


Figure 45

1. Relays
2. Alarm
3. Positive battery cable
4. Battery
5. Fuse block
6. Main-30 amp
7. Charge circuit-25 amp
8. Open slots

Drive System Maintenance

Checking the Tire Pressure

Service Interval: Every 25 hours

Maintain the air pressure in the front and rear tires as specified. Uneven tire pressure can cause uneven cut. Check the pressure at the valve stem after every 50 operating hours or monthly, whichever occurs first (Figure 46). Check the tires when they are cold to get the most accurate pressure reading.

Rear Tires: 13 psi (90 kPa)

Front Tires (castor wheels): 35 psi (139 kPa)

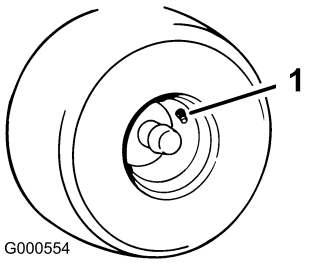


Figure 46

1. Valve stem

Mower Maintenance

Servicing the Cutting Blades

Maintain sharp blades throughout the cutting season because sharp blades cut cleanly without tearing or shredding the grass blades. Tearing and shredding turns grass brown at the edges, which slows growth and increases the chance of disease.

Check the cutter blades daily for sharpness, and for any wear or damage. File down any nicks and sharpen the blades as necessary. If a blade is damaged or worn, replace it immediately with a genuine Toro replacement blade. For convenient sharpening and replacement, you may want to keep extra blades on hand.

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.**

Before Inspecting or Servicing the Blades

Park the machine on a level surface, disengage the blade control switch, and move the motion control levers to the brake position. Stop the engine, remove the key, and disconnect the spark plug wire(s) from the spark plug(s).

Inspecting the Blades

Service Interval: Before each use or daily

1. Inspect the cutting edges (Figure 47). If the edges are not sharp or have nicks, remove and sharpen the blades; refer to Sharpening the Blades.
2. Inspect the blades, especially the curved area (Figure 47). If you notice any damage, wear, or a slot forming in this area (item 3 in Figure 47), immediately install a new blade.

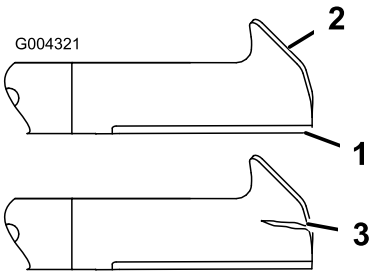


Figure 47

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

Checking for Bent Blades

1. Rotate the blades until the ends face forward and backward (Figure 48). Measure from a level surface to the cutting edge, position **A**, of the blades (Figure 48). Note this dimension.

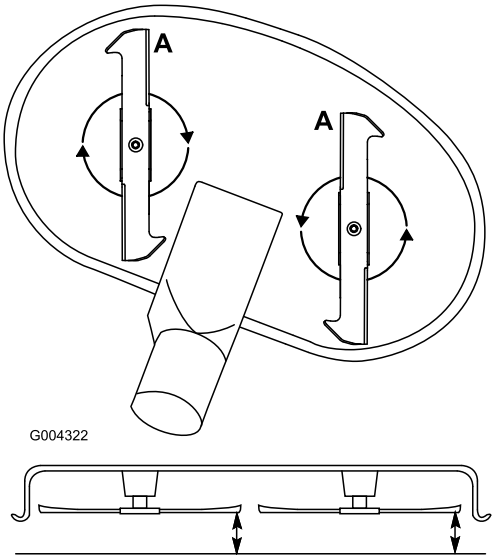


Figure 48

2. Rotate the opposite ends of the blades forward.
3. Measure from a level surface to the cutting edge of the blades at the same position as in step 1. The difference between the dimensions obtained in steps 1 and 2 must not exceed 1/8 inch (3 mm). If this dimension exceeds 1/8 inch (3 mm), the blade is bent and must be replaced. Refer to Removing the Blades and Installing the Blades.

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

- **Always replace bent or damaged blade with a new blade.**
- **Never file or create sharp notches in the edges or surfaces of blade.**

Removing the Blades

The blades must be replaced if a solid object is hit, if the blade is out of balance, or the blade is bent. To ensure optimum performance and continued safety conformance of the machine, use genuine Toro replacement blades. Replacement blades made by other manufacturers may result in non-conformance with safety standards.

Hold the blade end using a rag or thickly-padded glove. Remove the blade bolt, curved washer, blade stiffener, and blade from the spindle shaft (Figure 49).

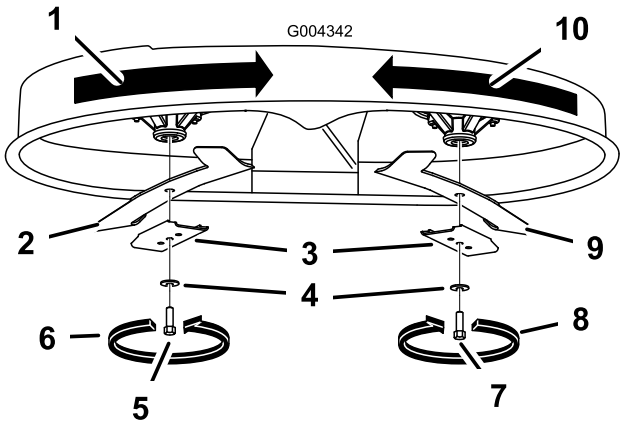


Figure 49

1. Rotational direction of right cutting blade
2. Right cutting blade
3. Blade stiffener
4. Curved washer
5. Counter threaded blade bolt, right cutting blade
6. Fastening direction, counter threaded bolt
7. Blade bolt, left cutting blade
8. Fastening direction, normal threaded bolt
9. Left cutting blade
10. Rotational direction of left cutting blade.

Sharpening the Blades

1. Use a file to sharpen the cutting edge at both ends of the blade (Figure 50). Maintain the original angle. The blade retains its balance if the same amount of material is removed from both cutting edges.

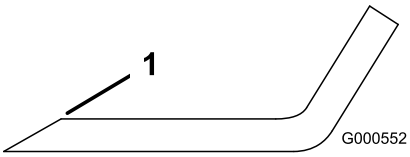


Figure 50

1. Sharpen at original angle

2. Check the balance of the blade by putting it on a blade balancer (Figure 51). If the blade stays in a horizontal position, the blade is balanced and can be used. If the blade is not balanced, file some metal off the end of the sail area only (Figure 50). Repeat this procedure until the blade is balanced.

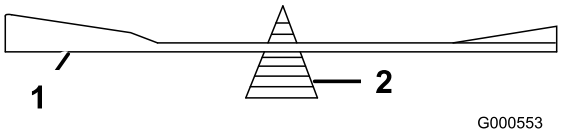


Figure 51

1. Blade
2. Balancer

Installing the Blades

1. Install the blade onto the spindle shaft (Figure 49).

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

2. Install the blade stiffener, the curved washer (cupped side toward the blade) and the blade bolt (Figure 49).
3. Torque the blade bolt to 35-65 ft-lb (47-88 N·m).

Leveling the Mower from Side-to-Side

The mower blades must be level from side to side. Check the side-to-side level any time you install the mower or when you see an uneven cut on your lawn.

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Check the air pressure of all four tires. If needed, adjust to the recommended inflation; refer to Checking the Tire Pressure in , page .
4. Set the height-of-cut lever to position **D** [3 inch (76 mm)].
5. Carefully rotate the blade(s) side to side (Figure 52). Measure between the outside cutting edges and the flat surface (Figure 52). If both measurements are not within 3/16 inch (5 mm), an adjustment is required; continue with this procedure.

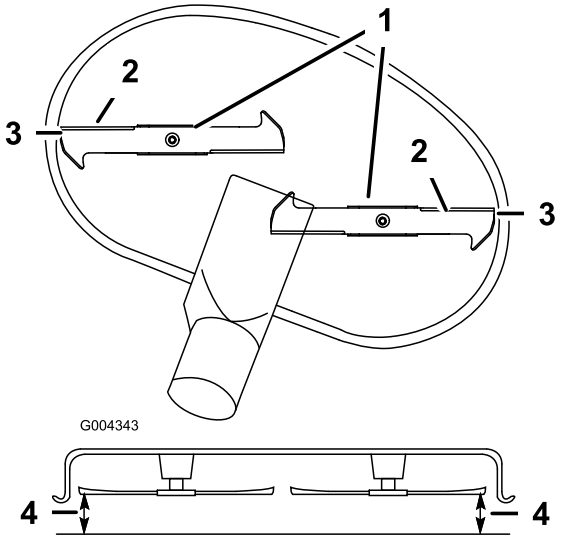


Figure 52

1. Blades side to side
2. Cutting edge
3. Outside cutting edges
4. Measure here

6. Remove the hairpin cotter and washer from the leveling bracket (Figure 53).
7. To level the blade(s), reposition the leveling bracket(s) in a different hole and install the washer and hairpin cotter. (Figure 53). A front hole lowers the blade height and a rear hole raises its height. Adjust both sides as required.

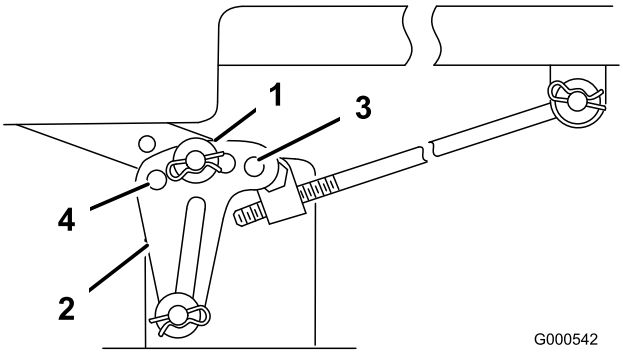


Figure 53

1. Hairpin cotter and washer
2. Leveling bracket
3. Front hole
4. Rear hole

8. Check the front-to-rear blade slope; refer to Adjusting the Front-to-Rear Blade Slope.

Adjusting the Front-to-Rear Blade Slope

Check the front-to-rear blade level any time you install the mower. If the front of the mower is more than 5/16 inch (7.9 mm) lower than the rear of the mower, adjust the blade level using the following instructions:

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Check the air pressure of all four tires. If needed, adjust to the recommended inflation; refer to Checking the Tire Pressure in , page .
4. Check and adjust the side-to-side blade level if you have not checked the setting; refer to Leveling the Mower from Side-to-Side.
5. Measure the length of the rod extending out of the adjusting block on the sides of the chassis (Figure 54).
6. If the rod length is **not** a 3/4 inch (19 mm), remove the hairpin cotter and washer from the end of the adjusting rod (Figure 54) and turn the rod until the 3/4 inch (19 mm) dimension is obtained.
7. Install the end of the rod into the hole in the mower mount and secure it with the washer and hairpin cotter.

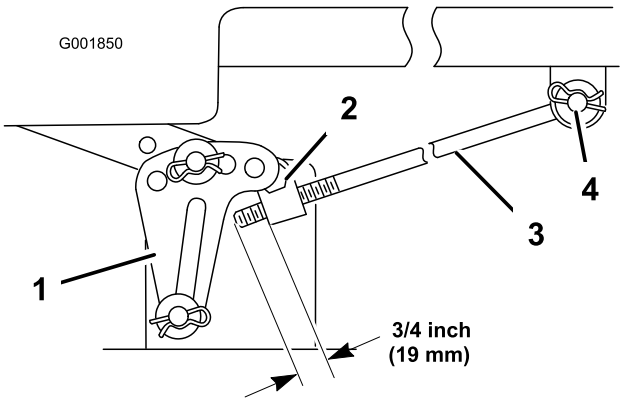


Figure 54

1. Leveling bracket
2. Adjusting block
3. Adjusting rod
4. Hairpin cotter and washer

8. Repeat steps 5 through 7 for the opposite side of the mower.
9. Set the height-of-cut at position **D** [3 inch (76 mm)] and carefully rotate the blades so they are facing front to rear (Figure 55).
10. Measure from the tip of the front blade to the flat surface and the tip of the rear blade to the flat surface (Figure 55). If the front blade tip is not 1/16-5/16 inch (1.6-7.9 mm) lower than the rear blade tip, adjust the front locknuts.

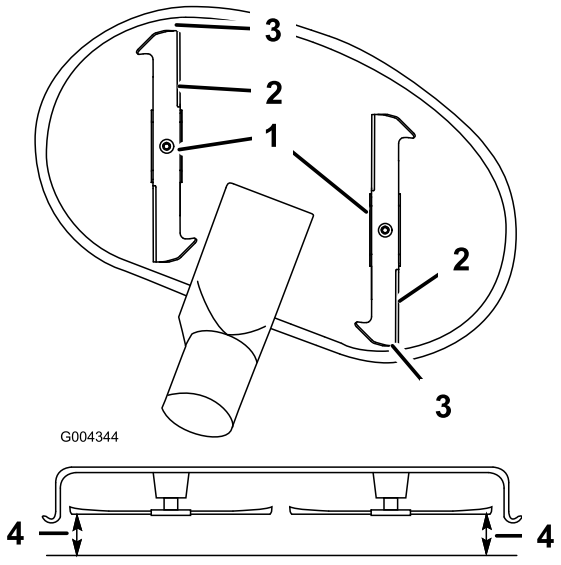


Figure 55

1. Blades side to side
2. Cutting edge
3. Outside cutting edges
4. Measure here

11. To adjust the front-to-rear blade slope, remove the locknuts and then rotate the adjustment nuts in the front of the mower (Figure 56).
12. To raise the front of the mower, tighten the adjustment nuts. To lower the front of the mower, loosen the adjustment nuts.
13. After adjusting both adjustment nuts evenly, check the front-to-rear slope again. Continue adjusting the nuts until the front blade tip is 1/16-5/16 inch (1.6-7.9 mm) lower than the rear blade tip (Figure 56).

Note: After adjusting the adjustment nuts, make sure there is no slack in either support rod (Figure 57). Tighten either one to remove the slack (Figure 56).

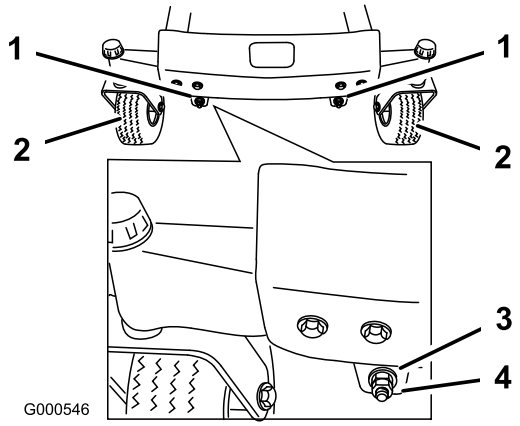


Figure 56

1. Locknut and adjusting nut
2. Front tire
3. Adjustment nut
4. Lock nut

14. When the front-to-rear blade slope is correct, tighten the lock nuts and check the side-to-side level of the mower; refer to Leveling the Mower from Side-to-Side.

Removing the Mower

Note: Before removing the mower, make a note for which holes are used in the leveling brackets (Figure 58).

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Lower the height-of-cut lever to the lowest position.
4. Remove the hairpin cotter and clevis pin from the front support rod on each side of the mower (Figure 57).

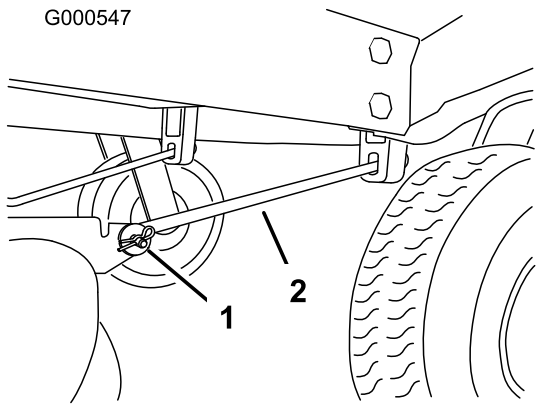


Figure 57

1. Hairpin cotter and clevis pin
2. Support rod

5. Remove the hairpin cotter and washer from the adjusting rod (Figure 58) on each side of the mower.
6. Remove the hairpin cotter and washer at the mower leveling brackets (Figure 58) on each side of the mower. Note which hole the leveling bracket is mounted in for future installation. Slide the brackets off of the mounting pin.

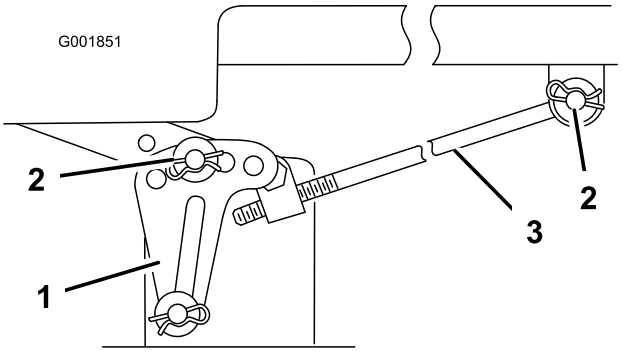


Figure 58

1. Leveling bracket
2. Hairpin cotter and washer
3. Adjusting rod

7. Lift up the front part of the machine and support the machine using jack stands.
8. Slide the mower forward and out from underneath the machine.

   Note: Retain all parts for future installation.

Mower Belt Maintenance

Inspecting the Belts

Service Interval: Every 25 hours

Inspect all belts every 100 hours.

Check the belts for cracks, frayed edges, burn marks, or any other damage. Replace damaged belts.

Replacing the Mower Belt

Squealing when the belt is rotating, blades slipping when cutting grass, frayed belt edges, burn marks, and cracks are signs of a worn mower belt. Replace the mower belt if any of these conditions are evident.

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.

3. Set the height-of-cut at **A** [1-1/2 inch (38 mm)].
4. Remove the belt covers over the outside spindles.
5. Loosen fastener securing the belt guide to the rear pulley (Figure 59).
6. Pull the idler arm in the direction shown in Figure 59 and roll the belt off of the pulleys.

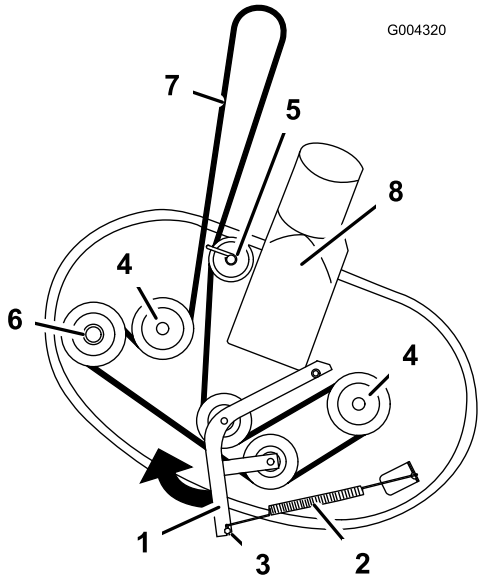


Figure 59

1. Idler arm
2. Spring
3. Bolt, spring retaining
4. Spindle pulleys
5. Belt guide and fastener
6. Outside pulley
7. Mower belt
8. Deck adapter

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

Be careful when moving the idler arm.

7. Route the new belt around the engine pulley and mower pulleys (Figure 59). Install the new belt under the belt guide and around the rear pulley.
8. Pull the idler pulley in the direction shown in Figure 59 and route the belt onto the idler arm pulley and spindle pulleys (Figure 59).
9. Tighten the belt guide fastener on the rear pulley (Figure 59).
10. Install the belt covers over the outside spindles.

Installing the Mower

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Lift the front of the machine and support it with stands.
4. Slide the mower under the machine.
5. Lower the height-of-cut lever to the lowest position.
6. Attach the adjusting rod to the machine with the washer and hairpin cotter (Figure 58) on each side of the mower.
7. Slide the leveling brackets onto the mounting pins and secure them with the washers and hairpin cotters (Figure 58).
8. Attach the front support rods to the machine with the clevis pins and hairpin cotters (Figure 57).
9. Install the mower belt onto the engine pulley; refer to Replacing the Mower Belt.

Cleaning

Cleaning the Collection Sensors

Service Interval: Before each use or daily

The collection sensors do not require any scheduled maintenance, however; in the event that the collection bag alarm goes off and the bag is less than full, gently wipe off the faces of the sensors with a soft cloth. The cloth can be damp with water.

Important: Do not use solvents or chemicals of any kind to clean the face of the sensors.

When finished using the machine, use a soft cloth to clear away blockage between the sensors (crusted or clumped up grass clippings or leaves).

Washing the Underside of the Mower

Service Interval: Before each use or daily

After each use, wash the underside of the mower to prevent grass buildup for improved mulch action and clipping dispersal.

1. Park the machine on a level surface and disengage the blade control switch.
2. Move the motion control levers to the brake position, stop the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Attach the hose to the end of the mower washout fitting, and turn the water on high (Figure 60).

   Note: Spread petroleum jelly on the washout fitting O-ring to make the hose slide on easier and protect the O-ring.

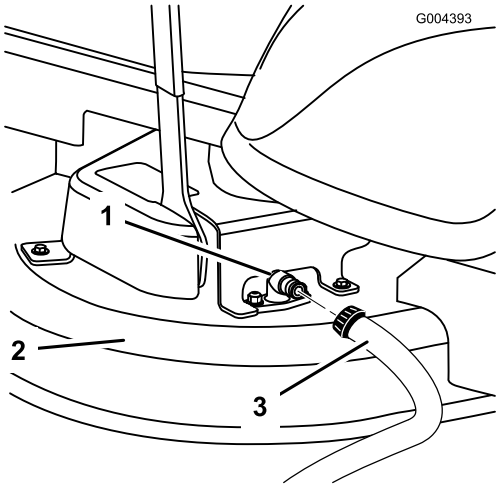


Figure 60

1. Washout fitting
2. Mower deck
3. Hose

4. Lower the mower to the lowest height-of-cut.
5. Sit on the seat and start the engine. Engage the blade control switch and let the mower run for one to three minutes.
6. Disengage the blade control switch, stop the engine, and remove the ignition key. Wait for all moving parts to stop.
7. Turn the water off and remove the hose from the washout fitting.

   Note: If the mower is not clean after one washing, soak it and let it stand for 30 minutes. Then repeat the process.
8. Run the mower again for one to three minutes to remove excess water.

A broken or missing washout fitting could expose you and others to thrown objects or blade contact. Contact with blade or thrown debris can cause injury or death.

- **Replace broken or missing washout fitting immediately, before using mower again.**
- **Plug any hole(s) in mower with bolts and locknuts.**
- **Never put your hands or feet under the mower or through openings in the mower.**

Storage

Cleaning and Storage

1. Disengage the blade control switch, set the parking brake, stop the engine, and remove the key.
2. Remove grass clippings, dirt, and grime from the external parts of the entire machine, especially the engine. Clean dirt and chaff from the outside of the engine cylinder head fins and blower housing.

   Important: You can wash the machine with mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water, especially near the control panel, engine, hydraulic pumps, and motors.
3. Service the air cleaner; refer to Servicing the Air Cleaner in the Engine Maintenance section.
4. Grease and oil the machine; refer to the Lubrication section.
5. Change the crankcase oil and filter; refer to Servicing the Engine Oil in the Engine Maintenance section.
6. Check the tire pressure; refer to Checking the Tire Pressure in the Drive System Maintenance section.
7. Charge the battery; refer to Servicing the Battery in the Electrical System Maintenance section.
8. Check the condition of the blades; refer to Servicing the Cutting Blades in the Mower Maintenance section.
9. Prepare the machine for storage when non-use occurs over 30 days. Prepare the machine for storage as follows.
10. Add a petroleum based stabilizer/conditioner to the fuel in the tank. Follow the mixing instructions from the stabilizer manufacturer. Do not use an alcohol based stabilizer (ethanol or methanol).

    Note: A fuel stabilizer/conditioner is most effective when mixed with fresh fuel and used at all times.

    Run the engine to distribute the conditioned fuel through the fuel system (5 minutes).

    Stop the engine, allow it to cool, and drain the fuel tank; Draining the Fuel Tank in the Fuel System Maintenance section.

    Restart the engine and run it until it stops.

    Choke or prime the engine. Start and run the engine until it will not start. Operate the primer, if equipped, several times to ensure no fuel remains in the primer system.

    Dispose of fuel properly. Recycle as per local codes.

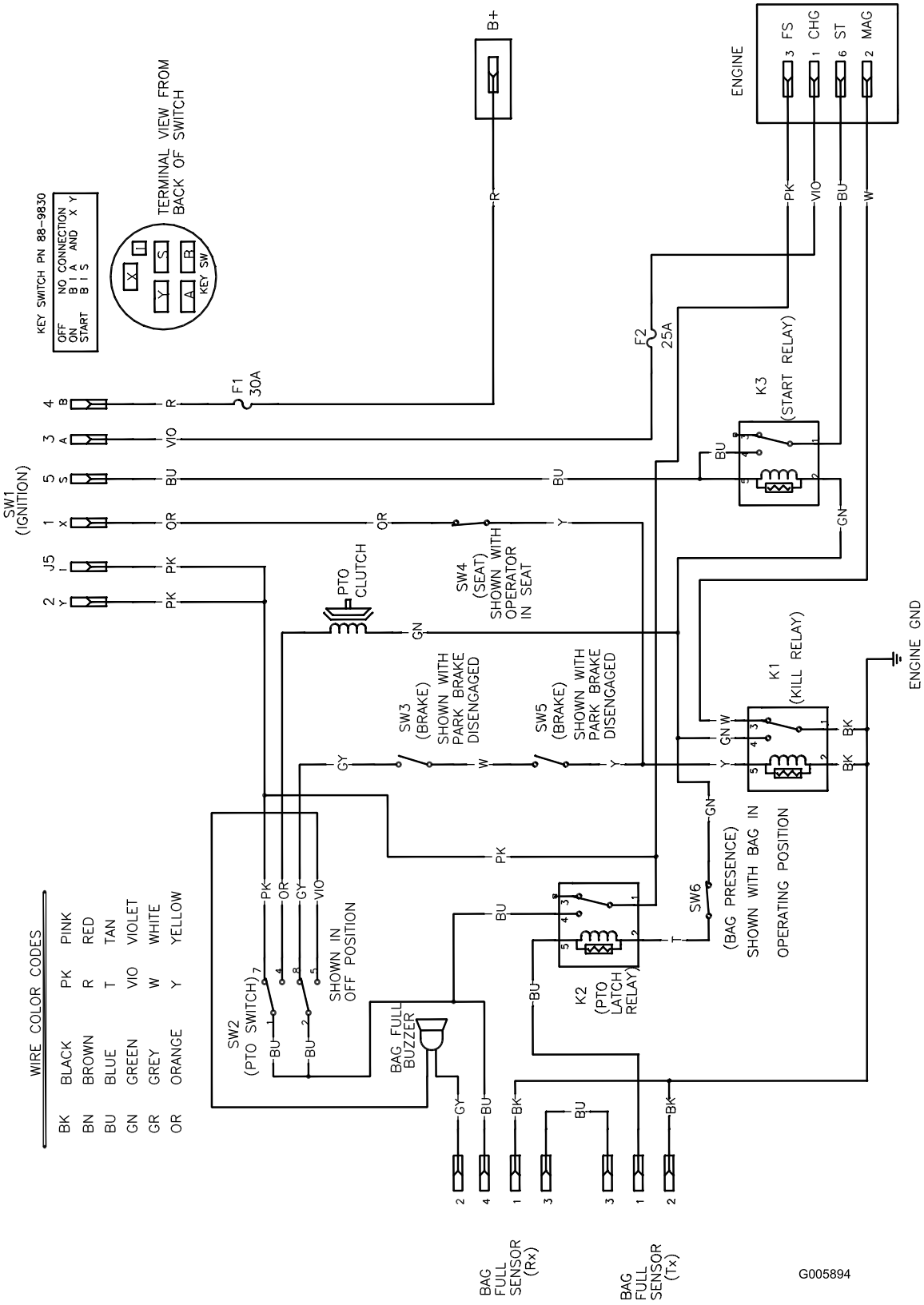
    Important: Do not store stabilizer/conditioned fuel over 30 days.
11. Remove the spark plug(s) and check its condition; refer to Servicing the Spark Plug in the Engine Maintenance section. With the spark plug(s) removed from the engine, pour two tablespoons of engine oil into the spark plug hole. Use the starter to crank the engine and distribute the oil inside the cylinder. Install the spark plug(s). Do not install the wire on the spark plug(s).
12. Clean any dirt and chaff from the top of the mower.
13. Scrape any heavy buildup of grass and dirt from the underside of the mower, then wash the mower with a garden hose.
14. Check the condition of the drive and mower belts.
15. Check and tighten all bolts, nuts, and screws. Repair or replace any part that is worn or damaged.
16. Paint all scratched or bare metal surfaces. Paint is available from your Authorized Service Dealer.
17. Store the machine in a clean, dry garage or storage area. Remove the key from the ignition switch and keep it in a memorable place. Cover the machine to protect it and keep it clean.

Troubleshooting

Problem	Possible Cause	Corrective Action
The engine overheats.	1. The engine load is excessive. 2. The oil level in the crankcase is low. 3. The cooling fins and air passages under the engine blower housing are plugged. 4. The air cleaner is dirty. 5. Dirt, water, or stale fuel is in fuel system.	1. Reduce ground speed. 2. Add oil to the crankcase. 3. Remove the obstruction from the cooling fins and air passages. 4. Clean or replace the air cleaner element. 5. Contact an Authorized Service Dealer
The starter does not crank	1. The blade control switch is engaged. 2. The motion control levers are not in the brake position. 3. The operator is not seated. 4. The battery is dead. 5. The electrical connections are corroded or loose. 6. A fuse is blown. 7. A relay or switch is damaged.	1. Move the blade control switch to Disengaged. 2. Move the motion control levers to the brake position. 3. Sit on the seat. 4. Charge the battery. 5. Check the electrical connections for good contact. 6. Replace the fuse. 7. Contact an Authorized Service Dealer.
The engine will not start, starts hard, or fails to keep running.	1. The fuel tank is empty. 2. The fuel valve turned off. 3. The choke is not on. 4. The air cleaner is dirty. 5. The spark plug wire(s) is loose or disconnected. 6. The spark plug(s) is pitted, fouled, or the gap is incorrect. 7. There is dirt in fuel filter. 8. Dirt, water, or stale fuel is in fuel system. 9. There is incorrect fuel in the fuel tank. 10. The oil level in the crankcase is low.	1. Fill the fuel tank. 2. Open the fuel valve. 3. Move the choke lever to On. 4. Clean or replace the air cleaner element. 5. Install the wire(s) on the spark plug. 6. Install a new, correctly gapped spark plug(s). 7. Replace the fuel filter. 8. Contact an Authorized Service Dealer. 9. Drain the tank and replace the fuel with the proper type. 10. Add oil to the crankcase.
The engine loses power.	1. The engine load is excessive. 2. The air cleaner is dirty. 3. The oil level in the crankcase is low. 4. The cooling fins and air passages under the engine blower housing are plugged. 5. The spark plug(s) is pitted, fouled, or the gap is incorrect. 6. The vent in the fuel cap is closed. 7. There is dirt in the fuel filter. 8. Dirt, water, or stale fuel is in the fuel system. 9. There is incorrect fuel in the fuel tank.	1. Reduce ground speed. 2. Clean the air cleaner element. 3. Add oil to the crankcase. 4. Remove the obstruction from the cooling fins and air passages. 5. Install a new, correctly gapped spark plug(s). 6. Open the vent in the fuel cap. 7. Replace the fuel filter. 8. Contact an Authorized Service Dealer. 9. Drain the tank and replace the fuel with the proper type.
The machine does not drive.	1. The traction belts are worn, loose, or broken. 2. The traction belts are off of the pulleys.	1. Contact an Authorized Service Dealer. 2. Contact an Authorized Service Dealer.

Problem	Possible Cause	Corrective Action
There is abnormal vibration.	1. The engine mounting bolts are loose. 2. The engine pulley, idler pulley, or blade pulley is loose. 3. The engine pulley is damaged. 4. The cutting blade(s) is/are bent or unbalanced. 5. A blade mounting bolt is loose. 6. A blade spindle is bent.	1. Tighten the engine mounting bolts. 2. Tighten the appropriate pulley. 3. Contact an Authorized Service Dealer. 4. Install a new cutting blade(s). 5. Tighten the blade mounting bolt. 6. Contact an Authorized Service Dealer.
Reduced bagging performance.	1. Low engine speed. 2. Plugged chute, deck door. 3. Collection bag is full.	1. Always operate the collection mode at Fast throttle. 2. Remove debris, leaves or grass clippings from the chute system. 3. Empty the collection bag.
Frequent clogging of chute system.	1. Collection bag is full. 2. Low engine speed. 3. Grass is too wet. 4. Grass is too long. 5. Ground speed is too fast.	1. Empty the collection bag. 2. Always operate the collection mode at Fast throttle. 3. Cut grass when dry. 4. Cut 1/3 of the grass height, lower height-of-cut position and repeat. 5. Drive slower at Fast throttle.
Debris blowout.	1. Collection bag is full. 2. Ground speed is too fast. 3. The mower is not level.	1. Empty the collection bag. 2. Drive slower at Fast throttle. 3. Level the mower from side-to-side and front-to-rear.
Collection sensor alarm sounding.	1. Collection bag is full. 2. Debris is covering sensor.	1. Empty the collection bag. 2. Remove collection bag and clean sensors with soft cloth.
Uneven cutting height.	1. The blade(s) is not sharp. 2. A cutting blade(s) is/are bent. 3. The mower is not level. 4. An anti-scalp wheel is not set correctly. 5. The underside of the mower is dirty. 6. The tire pressure is incorrect. 7. A blade spindle is bent.	1. Sharpen the blade(s). 2. Install a new cutting blade(s). 3. Level the mower from side-to-side and front-to-rear. 4. Adjust the anti-scalp wheel height. 5. Clean the underside of the mower. 6. Adjust the tire pressure. 7. Contact an Authorized Service Dealer.
The blades do not rotate.	1. The drive belt is worn, loose or broken. 2. The drive belt is off of the pulley. 3. The mower belt is worn, loose, or broken. 4. Collection bag is not properly installed.	1. Install a new drive belt. 2. Install the drive belt and check the adjusting shafts and belt guides for the correct position. 3. Install a new mower belt. 4. Check the bag and make sure it is seated flush with machine frame and presence switch is engaged.

Schematics



Electrical Diagram (Rev. A)

Notes:

International Distributor List

Distributor:	Country:	Phone Number:
Atlantis Su ve Sulama Sisstemleri Lt	Turkey	90 216 344 86 74
Balama Prima Engineering Equip	Hong Kong	852 2155 2163
B-Ray Corporation	Korea	82 32 551 2076
Casco Sales Company	Puerto Rico	787 788 8383
Ceres S.A	Costa Rica	506 239 1138
CSSC Turf Equipment (pvt) Ltd	Sri Lanka	94 11 2746100
Cyril Johnston & Co	Northern Ireland	44 2890 813 121
Equiver	Mexico	52 55 539 95444
Femco S.A.	Guatemala	502 442 3277
G.Y.K. Company ltd.	Japan	81 726 325 861
Geomechaniki of Athens	Greece	30 10 935 0054
Guandong Golden Star	China	86 20 876 51338
Hako Ground and Garden	Sweden	46 35 10 0000
Hako Ground and Garden	Norway	47 22 90 7760
Hayter Limited (U.K.)	United Kingdom	44 1279 723 444
Hydroturf Int. Co Dubai	United Arab Emirates	97 14 347 9479
Hydroturf Egypt LLC	Egypt	202 519 4308
Ibea S.p.A.	Italy	39 0331 853611
Irriamc	Portugal	351 21 238 8260
Irrigation Products Int'l Pvt Ltd	India	86 22 83960789
Jean Heybroek b.v.	Netherlands	31 30 639 4611
Lely (U.K.) Limited	United Kingdom	44 1480 226 800
Maquiver S.A.	Colombia	57 1 236 4079
Maruyama Mfg. Co. Inc.	Japan	81 3 3252 2285
Metra Kft	Hungary	36 1 326 3880
Mountfield a.s.	Czech Republic	420 255 704 220
Munditol S.A.	Argentina	54 11 4 821 9999
Oslinger Turf Equipment SA	Ecuador	593 4 239 6970
Oy Hako Ground and Garden Ab	Finland	358 987 00733
Parkland Products Ltd	New Zealand	64 3 34 93760
Prochaska & Cie	Austria	43 1 278 5100
RT Cohen 2004 Ltd	Israel	972 986 17979
Riversa	Spain	34 9 52 83 7500
Roth Motorgerate GmBh & Co	Germany	49 7144 2050
Sc Svend Carlsen A/S	Denmark	45 66 109 200
Solvert S.A.S	France	33 1 30 81 77 00
Spypros Stavrinides Limited	Cyprus	357 22 434131
Surge Systems India Limited	India	91 1 292299901
T-Markt Logistics Ltd	Hungary	36 26 525 500
Toro Australia	Australia	61 3 9580 7355
Toro Europe BVBA	Belgium	32 14 562 960

The Toro Warranty

Conditions and Products Covered

The Toro® Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly promises to the original purchaser* to repair any Toro Product used for normal residential purposes* if defective in materials or workmanship. The following time periods apply from the date of original purchase:

Products	Warranty Period
Walk Power Mowers	2-year limited warranty
Rear Engine Riders	2-year limited warranty
Lawn & Garden Tractors	2-year limited warranty
Electric Hand Held Products	2-year limited warranty
Snowthrowers	2-year limited warranty
Consumer Zero Turn	2-year limited warranty

* "Original purchaser" means use the person who originally purchased Toro products.

* "Normal 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.

Limited Warranty for Commercial Use

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

Products	Warranty Period
Walk Power Mowers	90 day warranty
Rear Engine Riders	90 day warranty
Lawn & Garden Tractors	90 day warranty
Electric Hand Held Products	90 day warranty
Snowthrowers	90 day warranty
Consumer Zero Turn	45 day warranty

Instructions for Obtaining Warranty Service

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

1. Contact your seller to arrange service of the product. If for any reason it is impossible for you to contact your seller, you may contact any Toro Authorized Distributor to arrange service.
2. Bring the product and your proof of purchase (sales receipt) to your seller or the Service Dealer.

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

Customer Care Department, Consumer Division
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196
Manager: Technical Product Support: 001-952-887-8248

See attached Distributor List

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.

Items and Conditions Not Covered

This express warranty does not cover:

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, tune-up parts, blade sharpening, brake and clutch adjustments.
- Any product or part which has been altered or misused or required replacement or repair due to normal wear, accidents, or lack of proper maintenance.
- Repairs necessary due to improper fuel, contaminants in the fuel system, or failure to properly prepare the fuel system prior to any period of non-use over three months.
- Engine and transmission. These are covered by the appropriate manufacturer's guarantees with separate terms and conditions.

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

General Conditions

The purchaser is covered by the national laws of each country. The rights to which the purchaser is entitled with the support of these laws are not restricted by this warranty.