Form No. 3396-188 Rev A

TORO®

Count on it.

Operator's Manual

Groundsmaster® 4000 Rotary Mower

Model No. 30605—Serial No. 315000001 and Up

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

CE

3396-188 A

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

This product contains a chemical or chemicals known to the State of California to cause cancer, birth defects, or reproductive harm.

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

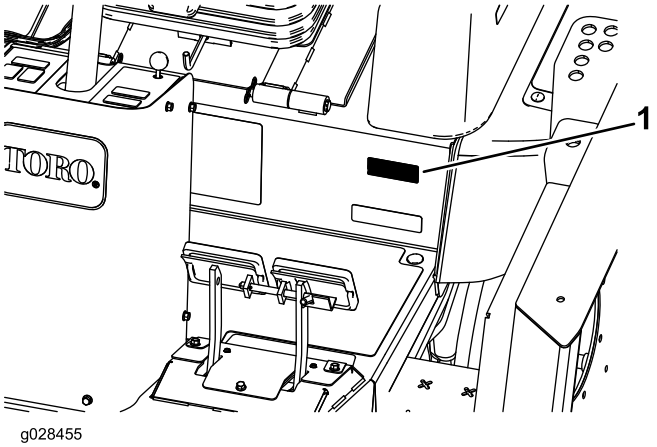
Introduction

This machine is a ride-on, rotary-blade lawn mower intended to be used by professional, hired operators in commercial applications. It is primarily designed for cutting grass on well-maintained lawns in parks, sports fields, and on commercial grounds. It is not designed for cutting brush, mowing grass and other growth alongside highways, or for agricultural uses.

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.



g028455

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

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

Figure 2

1. Safety alert symbol

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

8111 Lyndale Avenue South
Bloomington, MN 55420

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

Contents

Safety

This machine has been designed in accordance with EN ISO 5395:2013 and ANSI B71.4-2012.

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

Training

- Read the *Operator's Manual* and other training material carefully. Be familiar with the controls, safety signs, and the proper use of the equipment.
- Never allow children or people unfamiliar with these instructions to use the mower. Local regulations may 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 himself or herself, other people, or property.
- Do not carry passengers.
- All drivers and mechanics should seek and obtain professional and practical instruction. The owner is responsible for training the users. 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, long trousers, hard hat, safety glasses, and hearing protection. Long hair, loose clothing or jewelry may get tangled in moving parts. 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. Take the following precautions:
  - 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 tank and container caps securely.
- Replace faulty silencers/mufflers.
- Before using, always visually inspect to see that the blades, blade bolts, and cutting 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 1 blade can cause other blades to rotate.
- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Check that operators presence controls, safety switches, and shields are attached and functioning properly. Do not operate unless they are functioning properly.

Operation

- 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 engage the parking brake. Only start the engine from the operator's position. Always use the seat belt and ROPS together.
- 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.
  - The machine speed should be kept low on slopes and during tight turns.
  - Stay alert for humps and hollows and other hidden hazards.
  - Never mow across the face of the slope, unless the machine is designed for that purpose.
- Stay alert for holes in the terrain and other hidden hazards.
- Use care when using heavy equipment.

  - Do not turn sharply. Use care when reversing.
  - Use counterweight(s) or wheel weights when suggested in the *Operator's Manual.*
- Watch out for traffic when crossing or near roadways.
- Stop the blades from 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, shields, or without safety protective devices in place. Be sure all interlocks are attached, adjusted properly, and functioning properly.
- Before leaving the operator's position:
  - Stop on level ground.
  - Disengage the power take-off.
  - Set the parking brake.
  - Stop the engine and remove the key.
- Disengage drive to attachments, stop the engine, and remove the ignition key:
  - before clearing blockages;
  - before checking, cleaning, or working on the machine;
  - after striking a foreign object. Inspect the machine for damage and make repairs before restarting and operating the equipment. Torque all the spindle pulley nuts to 176 to 203 N-m (130 to 150 ft.-lbs.);
  - 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 adjusting the height.
- Reduce the throttle to low idle before stopping engine.
- Keep hands and feet away from the cutting units.
- Look behind before backing up to be sure of a clear path.
- Slow down and use caution when making turns and crossing roads and sidewalks.
- Do not operate the mower under the influence of alcohol or drugs.
- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.
- Use care when loading or unloading the machine into a trailer or truck.
- The operator shall turn on flashing warning lights, if provided, whenever traveling on a public road, except where such use is prohibited by law.

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 may reach an open flame or spark.
- Allow the engine to cool before storing in any enclosure and do not store near flame.
- To reduce the fire hazard, keep the engine, silencer/muffler, battery compartment, cutting units, drives, and fuel storage area free of grass, leaves, or excessive grease. Clean up oil or fuel spillage.
- Replace worn or damaged parts for safety.
- If the fuel tank has to be drained, do this outdoors.
- On multi-bladed machines, take care as rotating 1 blade can cause other blades to rotate.
- When machine is to be parked, stored, or left unattended, lower the cutting units unless a positive mechanical lock is provided.
- Disengage drives, lower the cutting units, move traction pedal to Neutral, set parking brake, stop engine and remove key . Wait for all movement to stop before adjusting, cleaning or repairing.
- Park machine on level ground. Never allow untrained personnel to service machine.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect battery before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- Use care when checking blades. Wrap the blades or wear gloves, and use caution when servicing them. Only replace blades. Never straighten or weld them.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.
- Make sure all hydraulic line connectors are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- Keep your body and hands away from pin hole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not your hands, to search for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate the skin and cause serious injury. If fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

Toro 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, ISO, or ANSI standards.

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

Use of this product for purposes other than its intended use could prove dangerous to user and bystanders.

⚠ WARNING

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.

Operation

- Before operating a machine with ROPS (rollover protection system), be certain that the seat belts are attached and the seat is latched to prevent the seat from pivoting forward.
- Know how to stop the machine and engine quickly.
- Do not operate the machine while wearing tennis shoes or sneakers.
- Wearing safety shoes and long pants is advisable and required by some local ordinances and insurance regulations.
- Keep hands, feet, and clothing away from moving parts and the mower discharge area and underside of the mower while the engine is running.
- Fill fuel tank until level is 25 mm (1 inch) below the bottom of the filler neck. Do not overfill.
- Check the safety interlock switches daily for proper operation. If a switch should fail, replace the switch before operating the machine.
- Check carefully for overhead clearances (i.e., branches, doorways, electrical wires) before driving under any objects and do not contact them.
- Do not mow in reverse unless absolutely necessary.
- Reduce speed when making sharp turns.
- Avoid starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly straight down the slope. Avoid raising the side cutting units on a slope.
- Avoid turning on slopes. If you must turn, turn slowly and gradually downhill, if possible.
- When operating a machine with a ROPS, always use a seat belt.
- Be certain that the seat belt can be released quickly if the machine is driven or rolls into a pond or water.
- Watch for traffic when near or crossing roads. Always yield the right-of-way.
- This machine is not designed or equipped for on-road use and is a slow-moving vehicle. If you must cross or travel on a public road, you should be aware of and comply with local regulations, such as required lights, slow-moving-vehicle signs, and reflectors.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly turn over if a wheel goes over the edge of a cliff or ditch, or if an edge caves in.
- Do not mow on wet grass. Reduced traction could cause sliding.
- Use extra care with other attachments. These can change the stability of the machine.
- Turn off the blades when not mowing.

Maintenance and Storage

- Do not touch equipment or attachment parts which may be hot from operation. Allow them to cool before attempting to maintain, adjust, or service them.
- Never store the machine or fuel container inside where there is an open flame, such as near a water heater or furnace.
- Keep nuts and bolts tight, especially the blade attachment bolts. Keep equipment in good condition.
- If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing, and any parts of the body away from the cutting units, attachments, and any moving parts. Keep everyone away.
- Check brake operation frequently. Adjust and service as required.
- 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 the battery.
- The engine must be shut off before checking the oil or adding oil to the crankcase.
- If major repairs are ever needed or if assistance is desired, contact an Authorized Toro Distributor.
- To make sure of optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

Sound Power Level

This unit has a guaranteed sound power level of 104 dBA, which includes an Uncertainty Value (K) of 1 dBA.

Sound power level was determined according to the procedures outlined in ISO 11094.

Sound Pressure Level

This unit has a sound pressure level at the operator's ear of 91 dBA, which includes an Uncertainty Value (K) of 1 dBA.

Sound pressure level was determined according to the procedures outlined in EN ISO 5395:2013.

⚠ CAUTION

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

Wear hearing protection when operating this machine.

Vibration Level

Hand-Arm

Measured vibration level for right hand = 1.1 m/s^2

Measured vibration level for left hand = 1 m/s^2

Uncertainty Value (K) = 0.5 m/s^2

Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

Whole Body

Measured vibration level = 0.29 m/s^2

Uncertainty Value (K) = 0.5 m/s^2

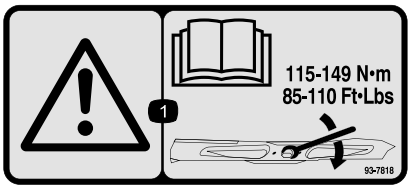
Measured values were determined according to the procedures outlined in EN ISO 5395:2013.

Engine Emission Certification

The engine in this machine is EPA Stage 3a compliant.

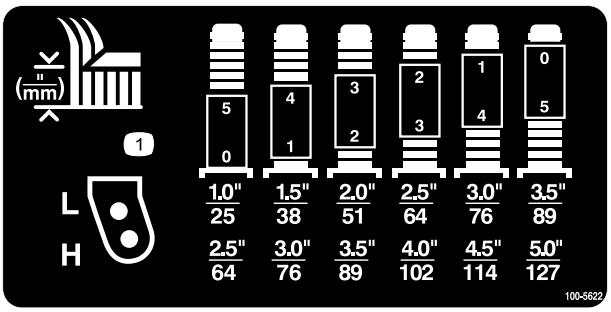
Safety and Instructional Decals

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.



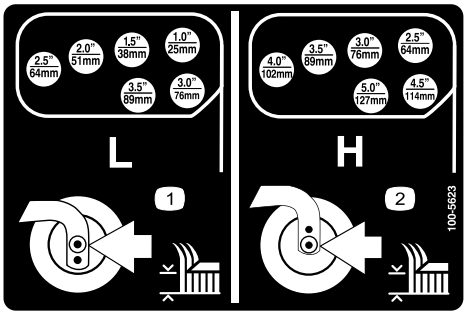
93-7818

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



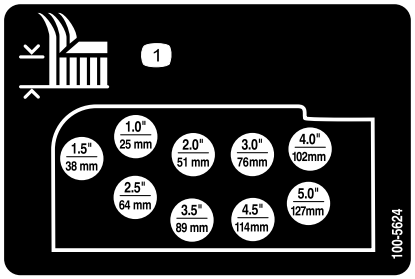
100-5622

1. Height-of-cut adjustment



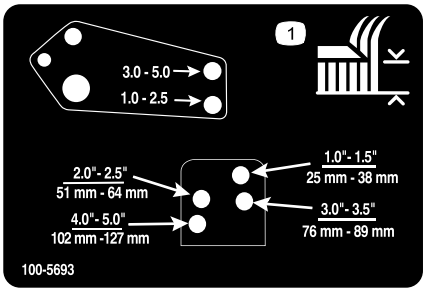
100-5623

1. Low height-of-cut adjustment
2. High height-of-cut adjustment



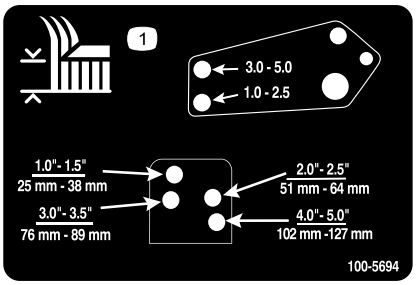
100-5624

1. Height of cut adjustment



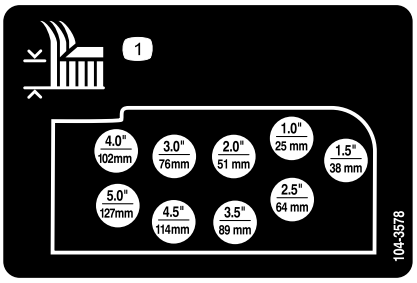
100-5693

1. Height-of-cut adjustment



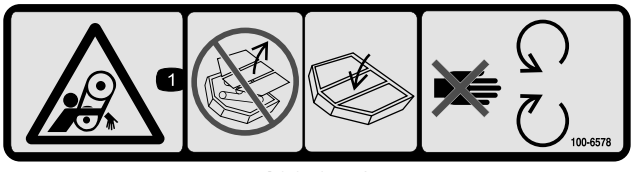
100-5694

1. Height-of-cut adjustment



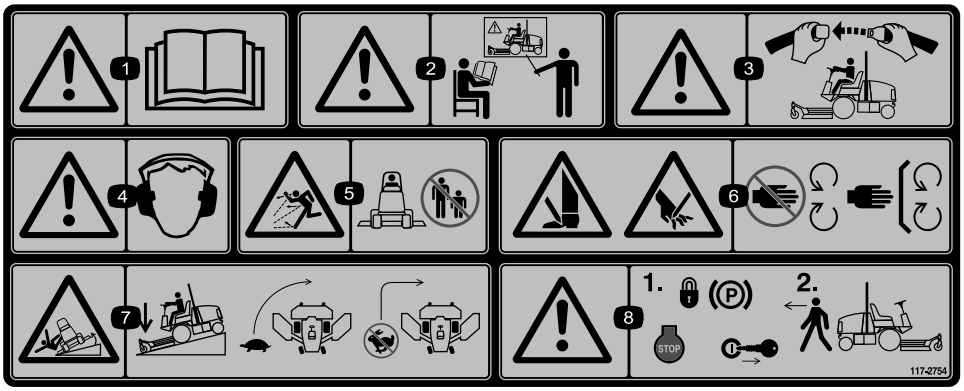
104-3578

1. Height-of-cut adjustment



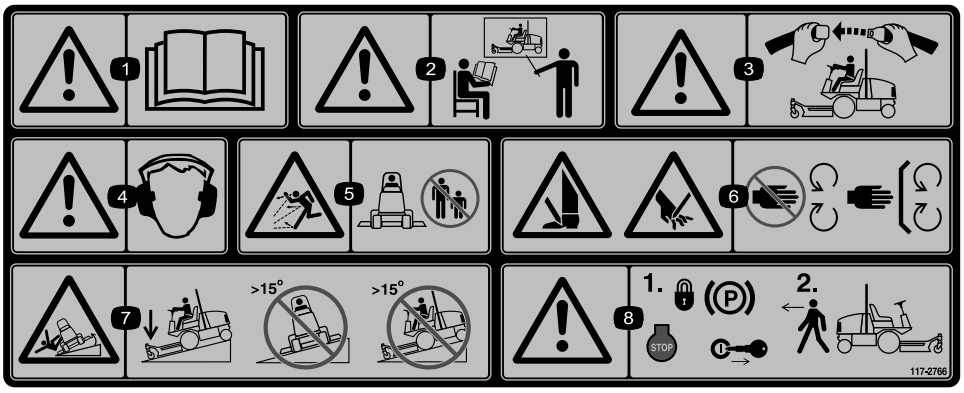
100-6578

1. Entanglement hazard, belt—do not operate the machine with the shields or guards removed; always keep the shields and guards in place; stay away from moving parts.



117–2754

1. Warning—read the *Operator's Manual.*
2. Warning—do not operate this machine unless you are trained.
3. Warning—wear the seat belt when seated in the operator's position.
4. Warning—wear hearing protection.
5. Thrown object hazard—keep bystanders a safe distance from the machine.
6. Cutting hazard of hand or foot—stay away from moving parts; keep all guards in place.
7. Tipping hazard—lower the cutting unit when driving down slopes; slow machine before turning, do not turn at high speeds
8. Warning—lock the parking brake, stop the engine and remove the ignition key before leaving the machine.

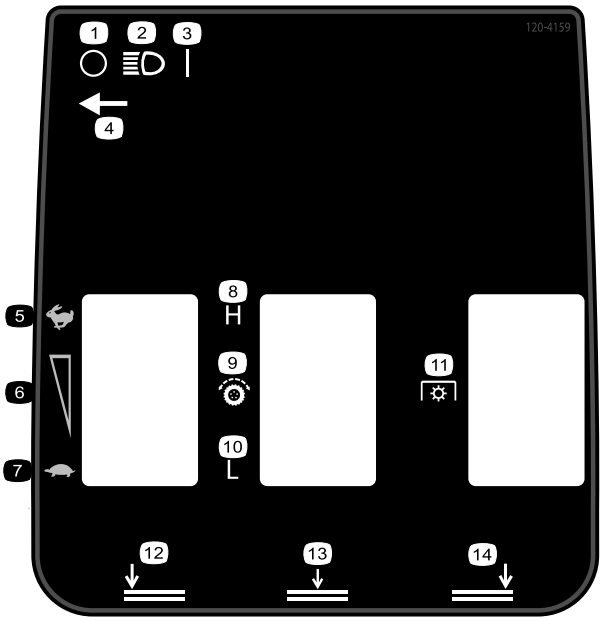


117–2766

(Affix over part no. 117–2754 for CE*)

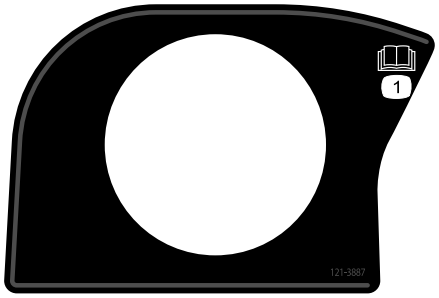
* This safety decal includes a slope warning required on the machine for compliance to the European Lawn Mower Safety Standard EN836:1997. The conservative maximum slope angles indicated for operation of this machine are prescribed by and required by this standard.

1. Warning—read the *Operator's Manual.*
2. Warning—do not operate this machine unless you are trained.
3. Warning—wear the seat belt when seated in the operator's position.
4. Warning—wear hearing protection.
5. Thrown object hazard—keep bystanders a safe distance from the machine.
6. Cutting hazard of hand or foot—stay away from moving parts; keep all guards in place.
7. Tipping hazard—lower the cutting unit when driving down slopes; do not operate machine on slopes greater than 15 degrees.
8. Warning—lock the parking brake, stop the engine and remove the ignition key before leaving the machine.



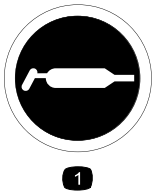
120–4159

1. Off
2. Lights
3. On
4. Light switch location
5. Fast
6. Variable speed adjustment
7. Slow
8. High
9. Traction drive
10. Low
11. Power take-off (PTO)
12. Lower left deck
13. Lower center deck
14. Lower right deck



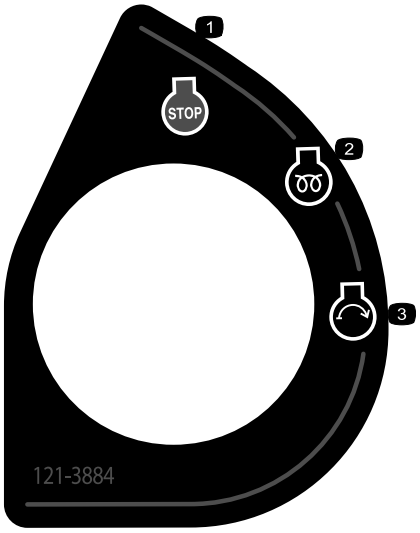
121–3887

1. Read the *Operator's Manual*.



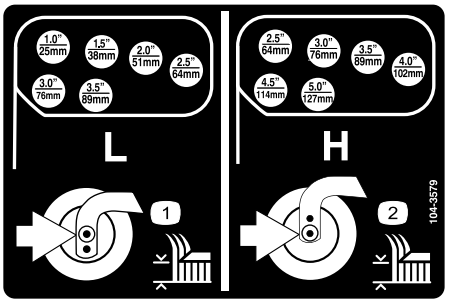
58-6520

1. Grease



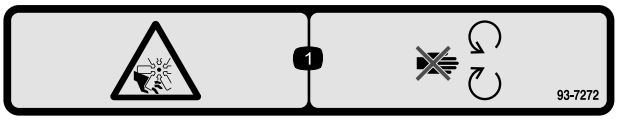
121–3884

1. Engine—stop
2. Engine—preheat
3. Engine—start



104-3579

1. Low height-of-cut adjustment
2. High height-of-cut adjustment



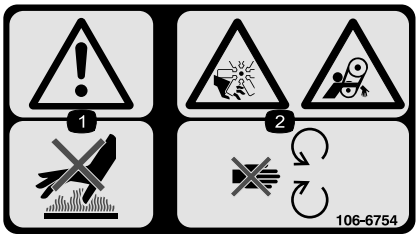
93-7272

1. Cutting/dismemberment hazard; fan—stay away from moving parts.

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.

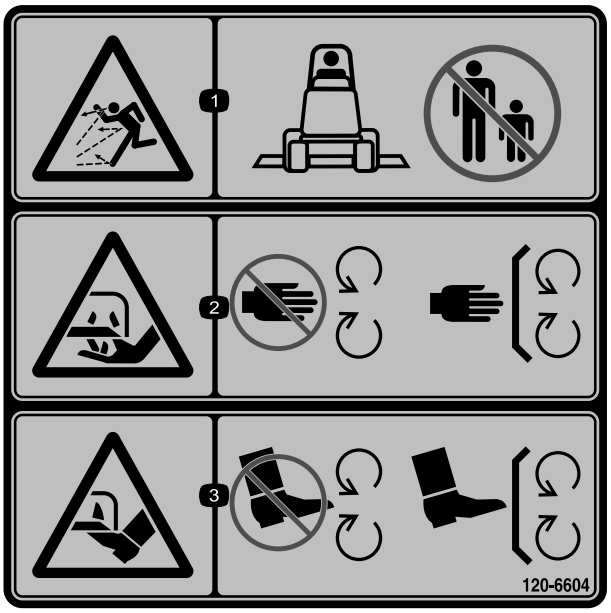


106-6754

1. Warning—do not touch the hot surface.
2. Cutting/dismemberment hazard, fan and entanglement hazard, belt—stay away from moving parts.

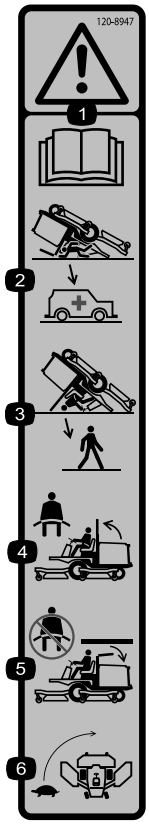
106-6755

1. Engine coolant under pressure.
2. Explosion hazard—read the *Operator's Manual.*
3. Warning—do not touch the hot surface.
4. Warning—read the *Operator's Manual.*



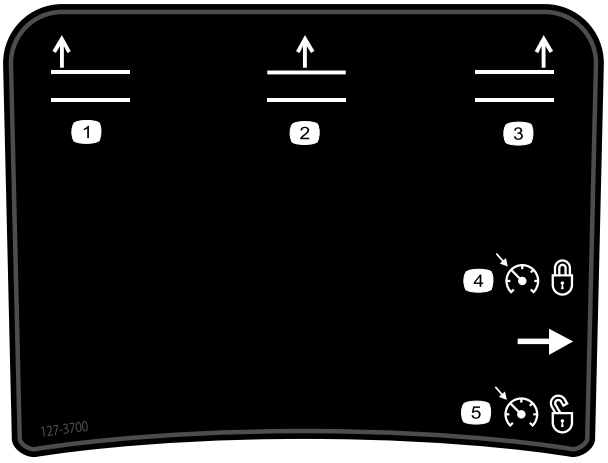
120-6604

1. Thrown object hazard—keep bystanders away from the machine.
2. Cutting/dismemberment hazard of hand, mower blade—stay away from moving parts, keep all guards and shields in place.
3. Cutting/dismemberment hazard of foot, mower blade—stay away from moving parts, keep all guards and shields in place.



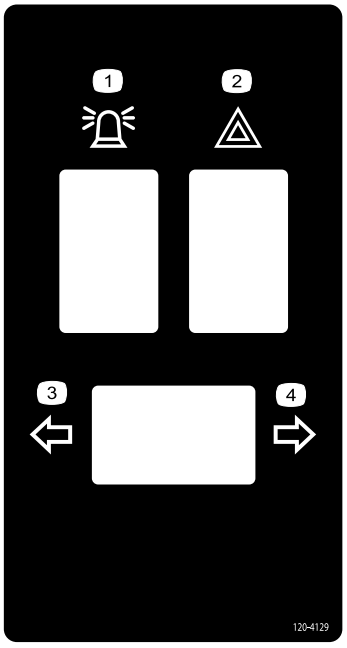
120–8947

1. Warning—read the *Operator's Manual*.
2. There is no rollover protection when the roll bar is down.
3. There is rollover protection when the roll bar is up.
4. If the roll bar is raised, wear the seat belt.
5. If the roll bar is lowered, do not wear the seat belt.
6. Drive slowly when turning.



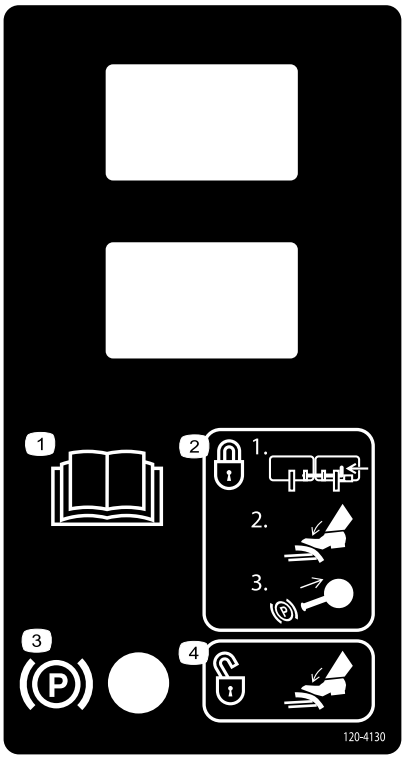
127–3700

1. Raise the left deck
2. Raise the center deck
3. Raise the right deck
4. Lock engine speed
5. Unlock engine speed



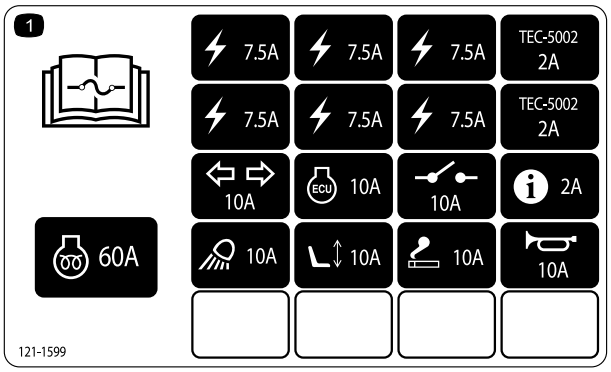
120–4129

1. Beacon
2. Hazard light
3. Left turn signal
4. Right turn signal



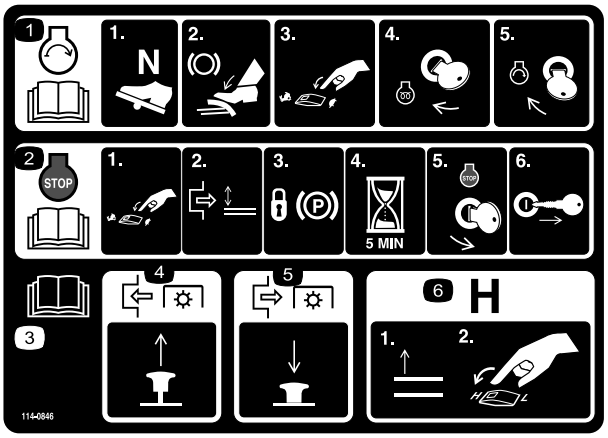
120–4130

1. Read the *Operator's Manual*.
2. To engage the parking brake—1)Lock the pedals together; 2)Push down on the brake; 3)Pull out the parking brake knob.
3. Parking brake
4. To disengage the parking brake, push down on the brake pedal.



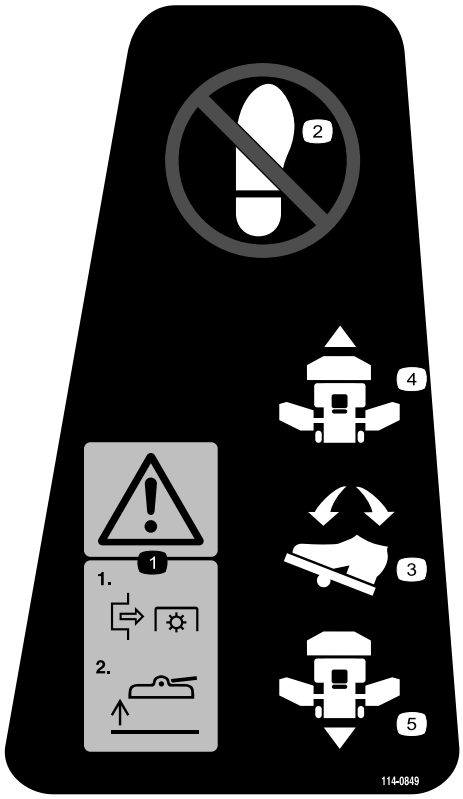
121–1599

1. Read the *Operator's Manual* for information on fuses.



114–0846

1. Read the *Operator's Manual* for information on starting the engine—1) Set to neutral; 2) Engage the brake; 3) Set the engine speed to slow; 4) Turn the ignition key to preheat; 5) Turn the ignition key to engine start.
2. Read the *Operator's Manual* for information on stopping the engine—1) Set the engine speed to slow; 2) Disengage the deck; 3) Lock the parking brake; 4) Wait 5 minutes; 5) Turn the ignition key to engine stop; 6) Remove the key from the ignition.
3. Read the *Operator's Manual*.
4. Pull the knob out to engage the PTO.
5. Push the knob in to disengage the PTO.
6. Raise the decks to go to H range.

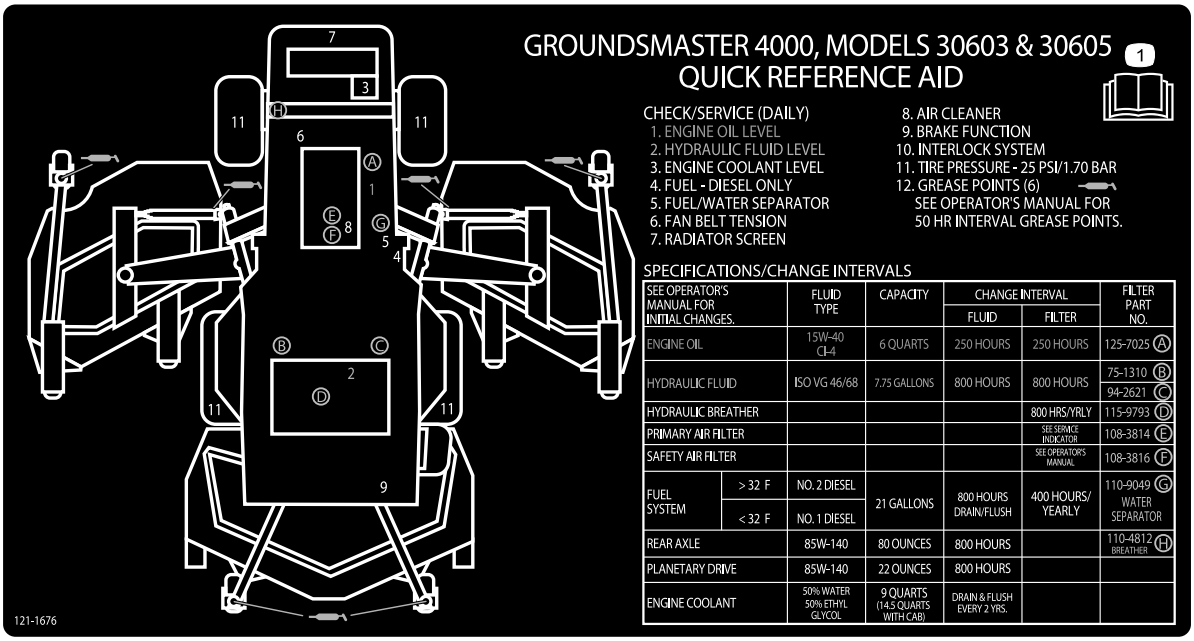


114–0849

1. Warning—1) Disengage the PTO; 2) Raise the deck
2. Do not place your foot here.
3. Direction pedal
4. Forward direction
5. Reverse direction

114–0845

1. Steering wheel tilt lever
2. Horn



121–1676

Groundsmaster 4000 shown

1. Read the *Operator's Manual* for maintenance information.

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	No parts required	–	Grease the machine.
2	Warning Decal	1	Used only on machines requiring European CE compliance.

Media and Additional Parts

Description	Qty.	Use
Operator's Manual	1	Review before operating machine
Engine Operator's Manual	1	Use to reference engine information
Parts Catalog	1	Use to reference part numbers
Operator Training Materials	1	Review before operating machine
Declaration of conformity	1	

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

1

Greasing the Machine

No Parts Required

Procedure

Before operating the machine, greased it to ensure proper lubricating characteristics; refer to Greasing the Bearings and Bushings (page 37). **Failure to properly grease the machine will result in premature failure of critical parts.**

2

Replacing the Warning Decal

Parts needed for this procedure:

1	*Warning Decal*

Procedure

On machines requiring European CE compliance, replace the old warning decal (part no. 117-2754) with the new warning decal (part no. 117-2766).

Product Overview

Controls

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

Traction Pedal

To stop, reduce your foot pressure on the traction pedal and allow it to return to the center position (Figure 3).

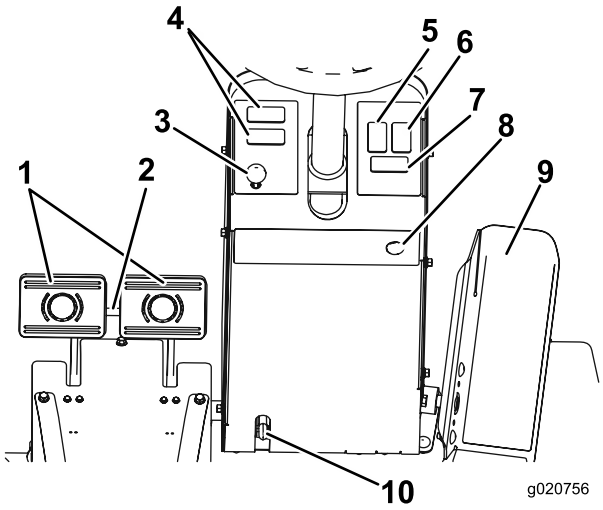


Figure 3

1. Brake pedals
2. Pedal-locking latch
3. Parking-brake latch
4. Space for optional accessory
5. Beacon switch (optional)
6. Hazard-light switch (optional)
7. Turn-signal switch (optional)
8. Horn button (optional)
9. Traction pedal
10. Tilt-steering lever

Brake Pedals

Two foot pedals (Figure 3) operate individual wheel brakes to assist in turning, parking, and side-hill traction. A latch connects the pedals for parking-brake operation and transport.

Pedal-Locking Latch

The pedal-locking latch (Figure 3) connects the pedals together to engage the parking brake.

Tilt-Steering Lever

Press the lever (Figure 3) down to tilt the steering wheel to the desired position. Then release the lever to lock the adjustment.

Parking-Brake Latch

A knob on the left side of the console actuates the parking-brake lock (Figure 3). To engage the parking brake, connect the pedals with the locking latch, push down on both pedals, and pull the parking brake latch out. To release the parking brake, press both pedals until the parking brake latch retracts.

Hazard-Light Switch

Press the hazard-light switch (Figure 3) to activate the hazard lights.

Turn-Signal Switch

Press the left side of the turn-signal switch (Figure 3) to activate the left turn signal and the right side of the switch to activate the right-turn signal. The center position is off.

Key Switch

The key switch (Figure 4) has 3 positions: Off, On/Preheat, and Start.

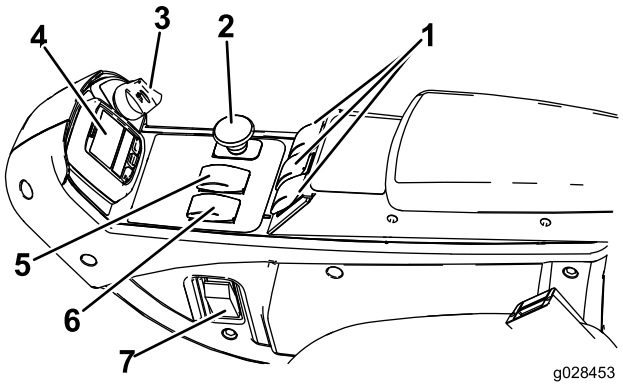


Figure 4

1. Lift switches
2. PTO switch
3. Key switch
4. InfoCenter
5. HI-LO SPEED control
6. ENGINE-SPEED switch
7. Light switch (optional)

PTO Switch

The PTO switch (Figure 4) has 2 positions: Out (start) and In (stop). Pull the PTO button out to engage the cutting-unit blades. Push in the button to disengage the cutting-unit blades.

Hi-Lo Speed Control

The switch (Figure 4) allows the speed range to increase for transport of the machine. Cutting decks do not operate in high range. To switch between the HI and LO range, raise the decks, engage the PTO, disengage the cruise control, move

the traction pedal to the NEUTRAL position, and drive the machine at a slow speed.

Lift Switches

The lift switches (Figure 4) raise and lower the cutting units. Press the switches forward to lower the cutting units and backward to raise the cutting units. When starting the machine, with the cutting units in the down position, press the lift switch down to allow the cutting units to float and mow.

Note: The decks will not lower while in the high-speed range and they will not raise or lower if the operator is out of the seat when the engine is running. Also, the decks will lower with the key in the ON position and the operator in the seat.

Power Point

The power point (Figure 5) is used to power optional electrical accessories.

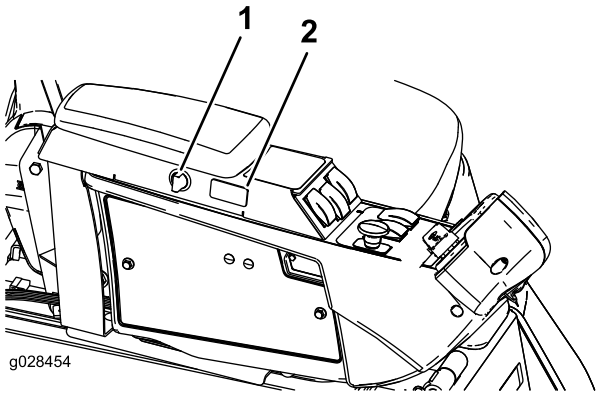


Figure 5

1. Power point
2. Cruise-control switch

Cruise-Control Switch

The cruise-control switch (Figure 5) locks in the pedal position to maintain the desired ground speed. Pressing the rear of the switch turns off the cruise control, the middle position of the switch enables the cruise control function and the front of the switch sets the desired ground speed.

Note: Pressing either brake pedal or moving the traction pedal into the reverse position for 1 second also disengages the pedal position.

Seat Adjustments

Fore-and-Aft-Adjusting Lever

Pull out on the lever to slide the seat fore or aft (Figure 6).

Armrest-Adjusting Knob

Rotate the knob to adjust the armrest angle (Figure 6).

Back-Adjusting Lever

Move the lever to adjust the back angle of the seat (Figure 6).

Weight Gauge

This gauge indicates when the seat is adjusted to the weight of the operator (Figure 6). Adjust the height by positioning the suspension within the range of the green region.

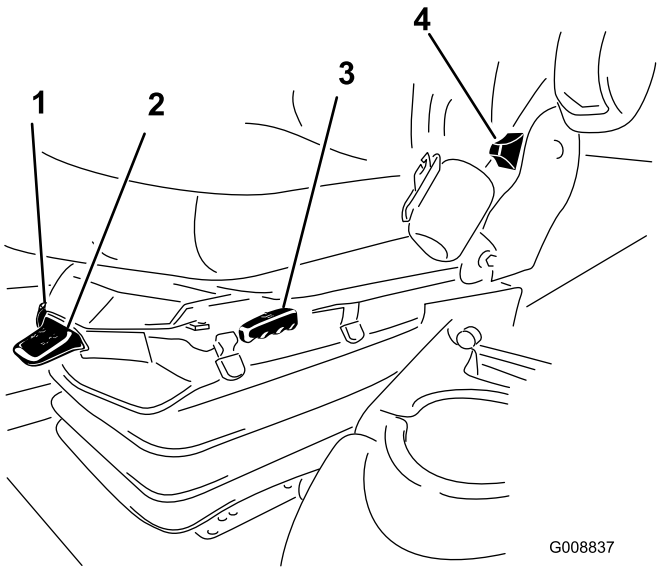


Figure 6

1. Weight gauge
2. Weight-adjusting lever
3. Fore-and-aft-adjusting lever
4. Back-adjusting lever
5. Armrest adjusting knob (not shown-located under armrest)

Weight-Adjusting Lever

Adjust for operator weight (Figure 6). Pull up the lever to increase the air pressure and push down to decrease the air pressure. The adjustment is correct when the weight gauge is in the green region.

Using the InfoCenter LCD Display

The InfoCenter LCD display shows information about your machine such as the operating status, various diagnostics and other information about the machine (Figure 7) There is a splash screen and main information screen of the InfoCenter. You can switch between the splash screen and main information screen, at any time, by pressing any of the InfoCenter buttons and then selecting the appropriate directional arrow.

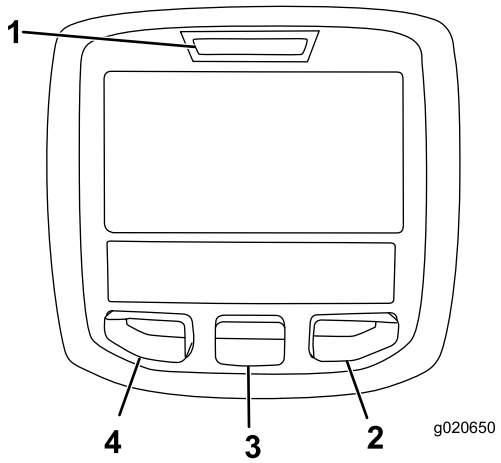


Figure 7

1. Indicator light
2. Right button
3. Middle button
4. Left button

- Left Button, Menu Access/Back Button—press this button to access the InfoCenter menus. You can use it to back out of any menu you are currently using.
- Middle Button—use this button to scroll down menus.
- Right Button—use this button to open a menu where a right arrow indicates additional content.
- Beeper—activated when lowering the decks or for advisories and faults.

Note: The purpose of each button may change depending on what is required at the time. Each button will be labeled with an icon displaying its current function.

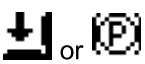
InfoCenter Icon Description

SERVICE DUE	Indicates when scheduled service should be performed
	Engine rpm/status—indicates the engine speed in rpm
	Hour meter
	Info icon
	Sets the maximum traction speed
	Fast
	Slow
	Fan Reversal—indicates when the fan is reversed
	Fuel level
	Stationary regeneration is required
	Air intake heater is active
	Raise the left deck
	Raise the center deck
	Raise the right deck
	Operator must sit in seat
	Parking Brake Indicator—indicates when the parking brake is On
H	Identifies the range as High
N	Neutral
L	Identifies the range as Low
	Coolant temperature-indicates the engine coolant temperature in either °C or °F
	Temperature (hot)
	Traction or Traction pedal

InfoCenter Icon Description (cont'd.)

	Denied or not allowed
	Engine start
	PTO-indicates that the PTO is On
	Stop or shutdown
	Engine
	Key switch
	Indicates when the cutting units are being lowered
	Indicates when the cutting units are being raised
	PIN passcode
	Hydraulic-Oil Temperature-indicates the temperature of the hydraulic oil
	CAN bus
	InfoCenter
	Bad or failed
	Center
	Right
	Left
	Bulb
	Output of TEC controller or control wire in harness
	High: over-allowed range
	Low: under-allowed range
	Out of range
	Switch
	Operator must release the switch

InfoCenter Icon Description (cont'd.)

	Operator should change to the indicated state
Symbols are often combined to form sentences. Some examples are shown below	
	Operator should put machine in neutral
	Engine start denied
	Engine shutdown
	Engine coolant is too hot
	Hydraulic oil is too hot
 or	Sit down or set the parking brake

Using the Menus

To access the InfoCenter menu system, press the menu access button while at the main screen. This will bring you to the main menu. Refer to the following tables for a synopsis of the options available from the menus:

Main Menu	
Menu Item	**Description**
Faults	The Faults menu contains a list of the recent machine faults. Refer to the *Service Manual* or your Authorized Toro Distributor for more information on the Faults menu and the information contained there.
Service	The Service menu contains information on the machine, such as hours of use and other similar numbers.
Diagnostics	The Diagnostics menu displays the state of each machine switch, sensor and control output. You can use this to troubleshoot certain issues, as it will quickly tell you which machine controls are on and which are off.

Settings	The Settings menu allows you to customize and modify configuration variables on the InfoCenter display.
About	The About menu lists the model number, serial number, and software version of your machine.

Service	
Menu Item	**Description**
Hours	Lists the total number of hours that the machine, engine, and fan have been on, as well as the number of hours that the machine has been transported and overheated
Counts	Lists the number of preheats and starts the machine has experienced

Diagnostics	
Menu Item	**Description**
Engine Run	Refer to the *Service Manual* or your Authorized Toro Distributor for more information on the Engine Run menu and the information contained there.
Glowplugs	Indicates if the following items are active: Key start, timeout limited, and glowplugs
Fan	Indicates if the fan is active in the following instances: Engine high temp, oil high temp, engine or hydraulic high temp, and fan on

Settings	
Menu Item	**Description**
Units	Controls the units used on the InfoCenter. The menu choices are English or Metric
Language	Controls the language used on the InfoCenter*
LCD Backlight	Controls the brightness of the LCD display
LCD Contrast	Controls the contrast of the LCD display
Protected Menus	Allows the distributor/engineer to access protected menus by inputting a passcode
Auto Idle	Controls the time that before idling the engine when the machine not in use
Mow Speed	Controls the maximum speed while in mow (low range)
Trans Speed	Controls the maximum speed while in transport (high range)
Smart Power	Smart Power prevents bogging down in heavy turf by automatically controlling the machine speed and optimizing the cutting performance

* Only operator-faced text is translated. Faults, Service, and Diagnostics screens are service-faced. Titles will be in the selected language, but menu items are in English.

About	
Menu Item	**Description**
Model	Lists the model number of the machine
SN	Lists the serial number of the machine
Machine Controller Revision	Lists the software revision of the master controller
InfoCenter Revision	Lists the software revision of the InfoCenter
CAN Bus	Lists the machine communication bus status

Protected Menus

There are 4 operating configuration settings that are adjustable within the Settings Menu of the InfoCenter: auto-idle time delay, maximum mowing ground speed, maximum transport ground speed, and Smart Power. These settings are in the Protected Menu.

Accessing the Protected Menu Settings

To access the Protected Menu Settings:

- From the MAIN Menu, scroll down to the SETTINGS Menu and press the right button.
- In the SETTINGS Menu, scroll down to the PROTECTED Menu and press the right button.
- Enter the passcode by using the center button to set the 1st digit, then press the right button to move on to the next digit.
- Use the center button to set the 2nd digit, then press the right button to move on to the next digit.
- Use the center button to set the 3rd digit, then press the right button to move on to the next digit.
- Use the center button to set the 4th digit, then press the right button.
- Press the middle button to enter the code.

You can change the ability to view and change the settings in the PROTECTED Menu. Once you have accessed the PROTECTED Menu, scroll down to PROTECT Settings. Using the right button, changing PROTECT Settings to Off allows you to view and change the settings in the PROTECTED Menu without entering the passcode. Changing PROTECT Settings

to On hides the protected options and requires entering a passcode to change the setting in the PROTECTED Menu. After you have set the passcode, turn off the keys off and back on to enable and save this feature.

Setting the Auto Idle

- In the SETTINGS Menu, scroll down to Auto Idle.
- Press the right button to change the auto idle time between Off, 8S, 10S, 15S, 20S, and 30S.

Setting the Maximum Allowed Mowing Speed

- In the SETTINGS Menu, Scroll down to Mow Speed and press the right button.
- Use the right button to increase the maximum mowing speed (50%, 75%, or 100%).
- Use the center button to decrease the maximum mowing speed (50%, 75%, or 100%).
- Press the left button to exit.

Setting the Maximum Allowed Transport Speed

- In the SETTINGS Menu, scroll down to Transport Speed and press the right button.
- Use the right button to increase the maximum transport speed (50%, 75%, or 100%).
- Use the center button to decrease the maximum transport speed (50%, 75%, or 100%).
- Press the left button to exit.

When finished with the PROTECTED Menu, press the left button to exit to the MAIN Menu, then press the left button to exit to the RUN Menu.

Specifications

Note: Specifications and design are subject to change without notice.

Width of cut:	
overall	335 cm (132 inches)
front cutting unit	157 cm (62 inches)
side cutting unit	107 cm (42 inches)
front and 1 side cutting unit	246 cm (97 inches)
Overall width:	
cutting units down	345 cm (136 inches)
cutting units up (transports)	183 cm (72 inches)
Overall length	342 cm (135 inches)
Height	140 cm (55 inches)
Height with ROPS	217 cm (85.3 inches)
Ground clearance	17 cm (6-1/2 inches)
Wheel tread (to center of tire)	
front	114 cm (45 inches)
rear	119 cm (47 inches)
Wheel base	141 cm (55-1/2 inches)
Net Weight	1856 kg (4091 lbs.)

Attachments/Accessories

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

Operation

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

Before Operating

⚠ CAUTION

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 before you do any maintenance.

Checking the Engine Oil

Service Interval: Before each use or daily

The engine is shipped with oil in the crankcase; however, check the oil level before and after you start the engine for the first time.

The crankcase capacity is 5.7 L (6 qt) with the filter.

Use high-quality engine oil that meets the following specifications:

- API Classification Level Required: CH-4, CI-4 or higher.
- Preferred oil: SAE 15W-40 (above 0°F)
- Alternate oil: SAE 10W-30 or 5W-30 (all temperatures)

Toro Premium Engine Oil is available from your distributor in either 15W-40 or 10W-30 viscosity. See the parts catalog for part numbers.

Note: The best time to check the engine oil is when the engine is cool before it has been started for the day. If it has already been run, allow the oil to drain back down to the sump for at least 10 minutes before checking. If the oil level is at or below the ADD mark on the dipstick, add oil to bring the oil level to the FULL mark. **Do not overfill**. If the oil level is between the FULL and ADD marks, no additional oil is required.

1. Park the machine on a level surface and unlock the engine-cover latches.
2. Open the engine cover.
3. Remove the dipstick, wipe it clean, install the dipstick into the tube, and pull it out again. The oil level should be up to the FULL mark (Figure 8).

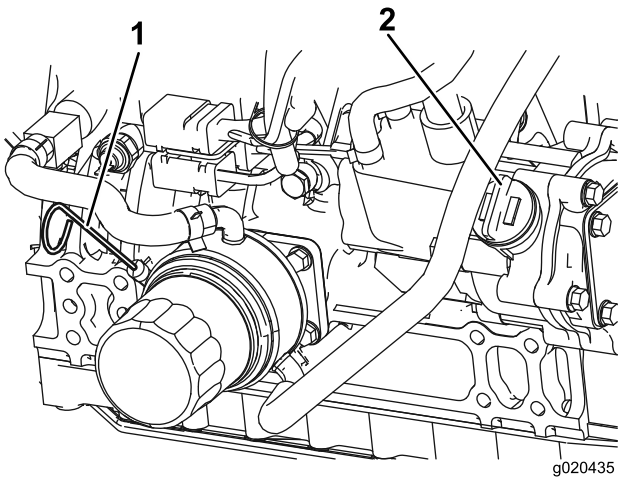


Figure 8

1. Dipstick
2. Oil-fill cap

4. If the oil is below the FULL mark, remove the fill cap (Figure 8) and add oil until the level reaches the FULL mark. **Do not overfill.**
5. Install the oil-fill cap and dipstick.
6. Close the engine cover and secure it with the latches.

Checking the Cooling System

Service Interval: Before each use or daily

Check the level of coolant at the beginning of each day. Capacity of system is 8.5 L (9 qt) for the Groundsmaster 4000 and 20 L (14.5 qt) for the Groundsmaster 4010.

1. Carefully remove the radiator cap and expansion-tank cap (Figure 9).

⚠ CAUTION

If the engine has been running, the pressurized, hot coolant can escape and cause burns.

- **Do not open the radiator cap when the engine is running.**
- **Use a rag when opening the radiator cap, and open the cap slowly to allow steam to escape.**

2. Check the coolant level in the radiator.

Note: The radiator should be filled to the top of the filler neck and the expansion tank filled to the FULL mark.

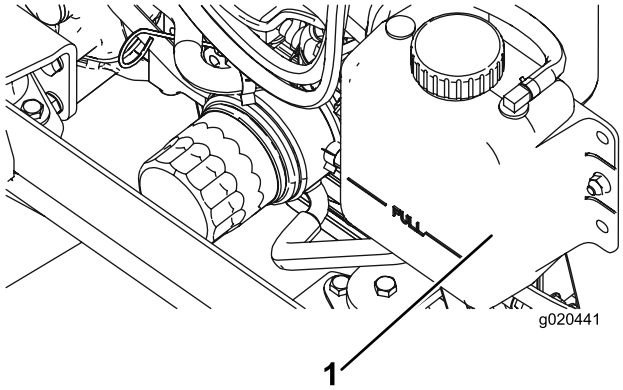


Figure 9

1. Expansion tank

3. If the coolant is low, add a 50/50 mixture of water and ethylene glycol antifreeze. **Do not use water only or alcohol/methanol base coolants.**
4. Install the radiator cap and expansion-tank cap.

Adding Fuel

Use only clean, fresh diesel fuel or biodiesel fuels with low (<500 ppm) or ultra low (<15 ppm) sulfur content. The minimum cetane rating should be 40. Purchase fuel in quantities that can be used within 180 days to ensure fuel freshness.

Fuel tank capacity:79 L (21 US gallons).

Use summer grade diesel fuel (No. 2-D) at temperatures above -7° C (20° F) and winter grade (No. 1-D or No. 1-D/2-D blend) below that temperature. Using winter-grade fuel at lower temperatures provides lower flash point and cold-flow characteristics, which eases starting and reduces plugging of the fuel filter.

Using summer-grade fuel above -7° C (20° F) contributes toward longer fuel-pump life and increased power compared to winter-grade fuel.

Important: Do not use kerosene or gasoline instead of diesel fuel. Failure to observe this caution will damage the engine.

⚠ WARNING

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

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

Biodiesel Ready

This machine can also use a biodiesel blended fuel of up to B20 (20% biodiesel, 80% petrodiesel). The petrodiesel portion should be low or ultra low sulfur. Observe the following precautions:

- The biodiesel portion of the fuel must meet specification ASTM D6751 or EN14214.
- The blended fuel composition should meet ASTM D975 or EN590.
- Painted surfaces may be damaged by biodiesel blends.
- Use B5 (biodiesel content of 5%) or lesser blends in cold weather.
- Monitor seals, hoses, gaskets in contact with fuel as they may degrade over time.
- Expect plugging of the fuel filter for a time after converting to biodiesel blends.
- Contact your distributor for more information about biodiesel fuel.

⚠ DANGER

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

- **Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.**
- **Never fill the fuel tank inside an enclosed trailer.**
- **Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.**
- **Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of fuel.**
- **Do not operate without entire exhaust system in place and in proper working condition.**

⚠ DANGER

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

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

1. Park the machine on a level surface.
2. Using a clean rag, clean area around fuel-tank cap.
3. Remove cap from the fuel tank (Figure 10).

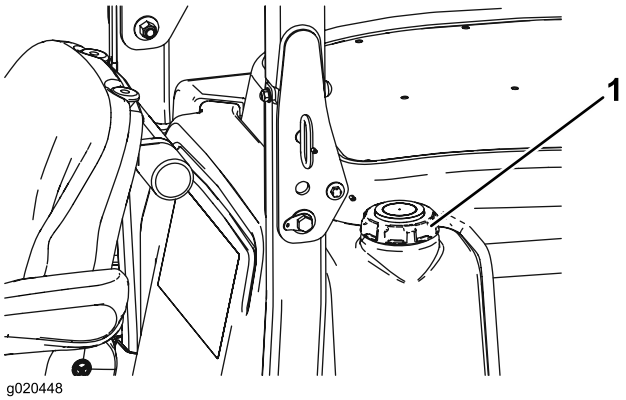


Figure 10

1. Fuel-tank cap

4. Fill the tank until the level is to the bottom of the filler neck with diesel fuel.
5. Install fuel-tank cap tightly after filling tank.

   Note: If possible, fill the fuel tank after each use. This will minimize possible buildup of condensation inside the fuel tank.

Checking the Hydraulic Fluid

Service Interval: Before each use or daily

The machines reservoir is filled at the factory with approximately 29.3 L (7.75 U.S. gallons) of high quality hydraulic fluid. **Check the level of the hydraulic fluid before the engine is first started and daily thereafter.** The recommended replacement fluid is:

Toro Premium All Season Hydraulic Fluid (Available in 18.9 L (5 gallon) pails or 208 L (55 gallon) drums. See parts catalog or Toro distributor for part numbers.)

Alternate fluids: If the Toro fluid is not available, other fluids may be used provided they meet all the following material properties and industry specifications. We do not recommend the use of synthetic fluid. Consult with your lubricant distributor to identify a satisfactory product.

Note: Toro will not assume responsibility for damage caused by improper substitutions, so use only products from reputable manufacturers who will stand behind their recommendation.

High Viscosity Index/Low Pour Point Anti-wear Hydraulic Fluid, ISO VG 46

Material Properties:	
Viscosity, ASTM D445	St @ 40° C 44 to 48
	St @ 100° C 7.9 to 8.5
Viscosity Index ASTM D2270	140 to 160
Pour Point, ASTM D97	-34° F to -49° F
Industry Specifications:	Vickers I-286-S (Quality Level), Vickers M-2950-S (Quality Level), Denison HF-0

Note: Many hydraulic fluids are almost colorless, making it difficult to spot leaks. A red dye additive for the hydraulic system oil is available in 20 ml (2/3 oz) bottles. 1 bottle is sufficient for 15-22 L (4-6 gallons) of hydraulic oil. Order part no. 44-2500 from your authorized Toro distributor.

1. Position the machine on a level surface, lower the cutting units, stop the engine, and remove the key.
2. Unlatch the seat, raise it, and engage the prop rod.
3. Clean the area around the filler neck and cap of the hydraulic tank (Figure 11). Remove the cap from the filler neck.

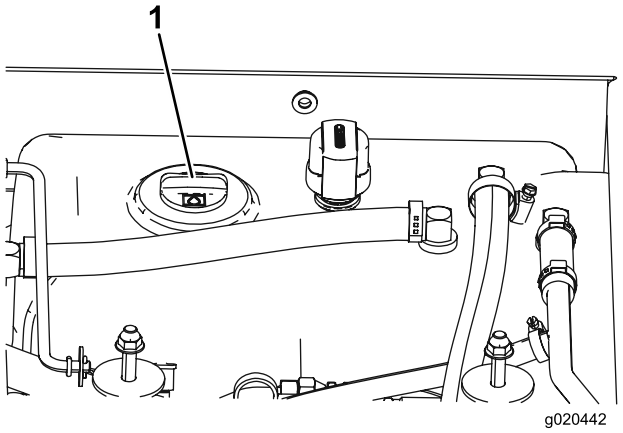


Figure 11

1. Hydraulic-tank cap

4. Remove the dipstick from the filler neck and wipe it with a clean rag. Insert the dipstick into the filler neck; then remove it and check the fluid level. The fluid level should be between the 2 marks on the dipstick.
5. If the level is low, add the appropriate fluid to raise the level to the upper mark.
6. Install the dipstick and cap onto the filler neck.

Checking the Planetary-Gear-Drive Oil

Service Interval: Every 400 hours

Check the oil level after every 400 hours of operation or if external leakage is noted. Use high quality SAE 85W-140 gear lube as a replacement.

1. With machine on level surface, position the wheel so 1 check plug (Figure 12) is at the 12 o'clock position and the other is at 3 o'clock position.

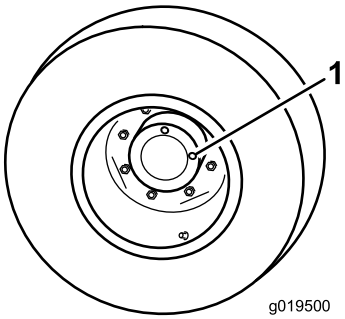


Figure 12

1. Check/drain plug (2)

2. Remove the plug at the 3 o'clock position (Figure 12). Oil level should be at the bottom of the check plug hole.
3. If the oil level is low, remove the plug at the 12 o'clock position and add oil until it begins to flow out of the hole at the 3 o'clock position.
4. Install both plugs.

Checking the Rear-Axle Lubricant

Service Interval: Every 400 hours

The rear axle is filled with SAE 85W-140 gear lube. Check the oil level before the engine is first started and every 400 hours thereafter. The capacity is 2.4 L (80 oz). Visually inspect for leaks daily.

1. Position the machine on a level surface.
2. Remove a check plug from 1 end of the axle (Figure 13) and make sure that the lubricant is up to the bottom of the hole. If the level is low, remove the fill plug (Figure 13) and add enough lubricant to bring the level up to the bottom of the check plug holes.

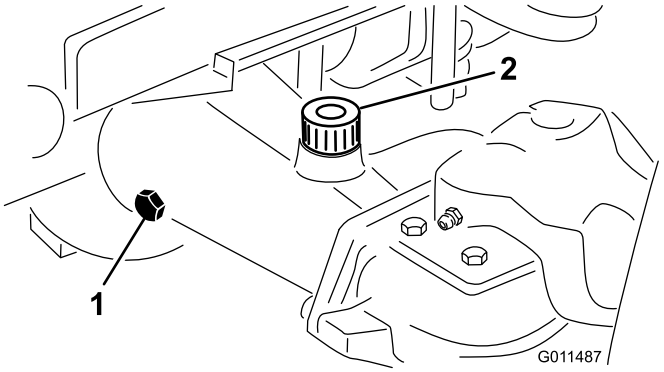


Figure 13

1. Check plug
2. Fill plug

Checking the Rear-Axle-Gearbox Lubricant

Service Interval: Every 400 hours

The gear box is filled with SAE 85W-140 gear lube. Check the oil level before the engine is first started and every 400 hours thereafter. The capacity is 0.5 L (16 oz). Visually inspect for leaks daily.

1. Position the machine on a level surface.
2. Remove the check/fill plug from the left side of the gearbox (Figure 14) and make sure that the lubricant is up to the bottom of the hole. If the level is low, add enough lubricant to bring the level up to the bottom of the hole.

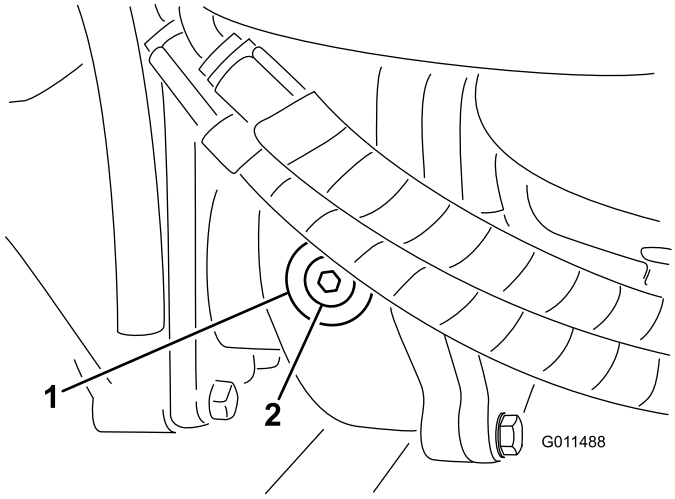


Figure 14

1. Gearbox
2. Check/fill plug

Checking the Tire Pressure

Service Interval: Before each use or daily

The tires are over-inflated for shipping. Therefore, release some of the air to reduce the pressure. The correct air pressure in the front and rear tires is 172 to 207 kPa (25 to 30 psi).

Important: Maintain even pressure in all tires to ensure a good quality-of-cut and proper machine performance. Also, the Automatic Traction Assist will not work properly with improper tire pressure. *Do not under-inflate.* Replace worn or damaged tires with genuine Toro tires that are correctly sized for this machine.

Checking the Torque of the Wheel Nuts or Bolts

Service Interval: After the first 10 hours

Every 200 hours

⚠ WARNING

Failure to maintain proper torque of the wheel nuts could result in failure or loss of wheel and may result in personal injury.

Torque the front wheel nuts and rear bolts to 115 to 136 N-m (85 to 100 ft-lb) after 1 to 4 hours of operation and again after 10 hours of operation. Torque every 200 hours thereafter.

Adjusting the Height of Cut

Front Cutting Unit

You can adjust the height of cut from 25 to 127 mm (1 to 5 inches) in 13 mm (1/2 inch) increments. To adjust the height of cut on the front cutting unit, position the castor wheel axles in the upper or lower holes of the castor forks, add or remove an equal number of spacers from the castor forks, and secure the rear chain to the desired hole.

1. Start the engine and raise the cutting units so that you can change the height of cut. Stop the engine and remove the key after you raise the cutting unit.
2. Position the castor-wheel axles in the same holes in all castor forks (Figure 15).

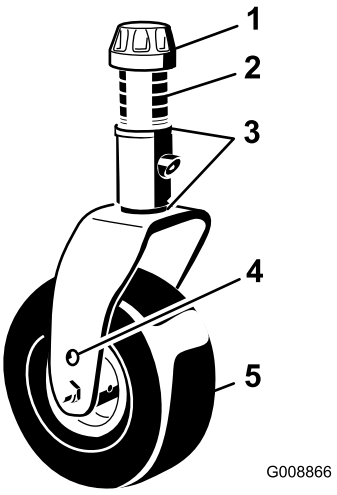


Figure 15

1. Tensioning cap
2. Spacers
3. Shims
4. Top axle-mounting hole
5. Castor wheel

Note: When operating at the 64 mm (2-1/2 inch) height of cut or higher, install the axle bolt in the lower castor-fork hole to prevent grass buildup between the wheel and the fork. When operating in heights of cut lower than 64 mm (2-1/2 inches) and grass buildup is detected, reverse the machines direction to pull any clippings away from the area of the wheel and fork.

3. Remove the tensioning cap from the spindle shaft (Figure 15) and slide the spindle out of the castor arm.
4. Put the 2 shims onto the spindle shaft as they were originally installed.

Note: These shims are required to achieve a level across the entire width of the cutting units. Slide the appropriate number of 13 mm (1/2 inch) spacers (refer to the chart below) onto the spindle shaft to get the desired height-of-cut; then slide the washer onto the shaft. Refer to the following chart to determine the combinations of spacers for the setting:

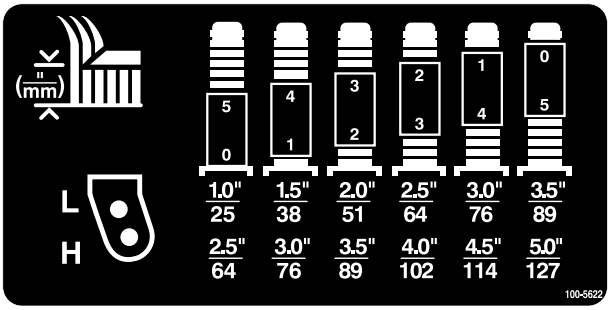


Figure 16

5. Push the castor spindle through the front castor arm.
6. Install the shims (as they were originally installed) and the remaining spacers onto the spindle shaft.
7. Install the tensioning cap to secure the assembly.
8. Remove the hairpin cotter and clevis pin securing the height-of-cut chains to the rear of the cutting unit (Figure 17).

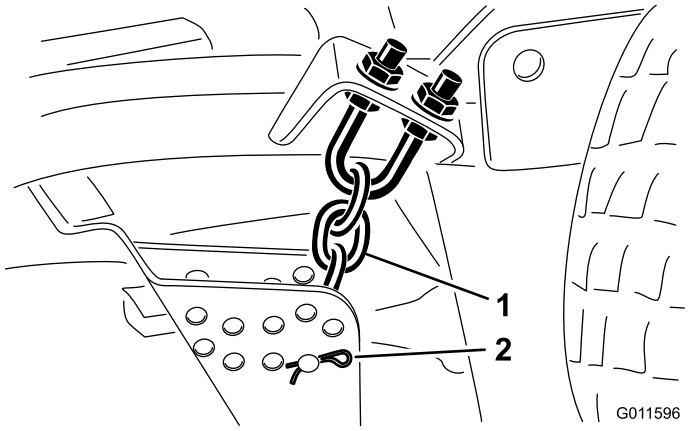


Figure 17

1. Height-of-cut chain
2. Clevis pin and hairpin cotter

9. Mount the height-of-cut chains to the desired height-of-cut hole (Figure 18) with the clevis pin and hairpin cotter.

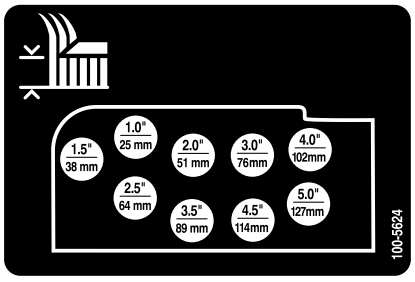


Figure 18

Note: When using 25 mm (1 inch), 38 mm (1-1/2 inch), or occasionally 51 mm (2 inch) height-of-cut, move the skids and gage wheels to the highest position.

Side Cutting Units

To adjust the height-of-cut on the side cutting units, add or remove an equal number of spacers from the castor forks, position the castor wheel axles in the high or low height-of-cut holes in the castor forks, and secure the pivot arms to the selected height-of-cut bracket holes.

1. Position the castor wheel axles in the same holes in all of the castor forks (Figure 19 and Figure 21). Refer to the following chart to determine the correct hole for the setting.

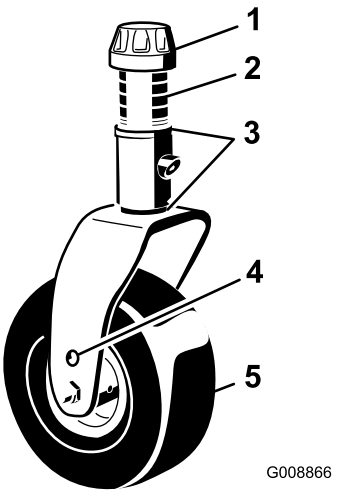


Figure 19

1. Tensioning cap
2. Spacers
3. Shims
4. Top axle-mounting hole
5. Castor wheel

2. Remove the tensioning cap from the spindle shaft (Figure 19) and slide the spindle out of castor arm.
3. Put the 2 shims onto spindle shaft as they were originally installed.

   Note: These shims are required to achieve a level across the entire width of the cutting units. Slide the appropriate number of 13 mm (1/2 inch) spacers onto the spindle shaft to get the desired height-of-cut; then slide the washer onto the shaft. Refer to the following chart to determine the combinations of spacers for the setting.

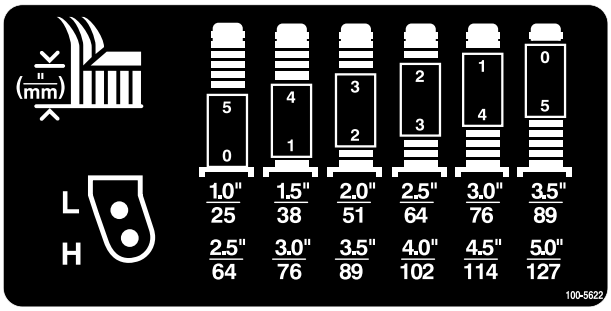


Figure 20

4. Push the castor spindle through the castor arm.

5. Install the shims (as originally installed) and the remaining spacers onto the spindle shaft. Install the tensioning cap to secure the assembly.
6. Remove the hairpin cotter and clevis pins from the castor pivot arms (Figure 21).
7. Rotate tension rod to raise or lower pivot arm until holes are aligned with selected height-of-cut bracket holes in the cutting unit frame (Figure 21 and Figure 22).
8. Insert the clevis pins and install the hairpin cotters.
9. Rotate the tension rod counterclockwise by hand to put tension on the adjustment.

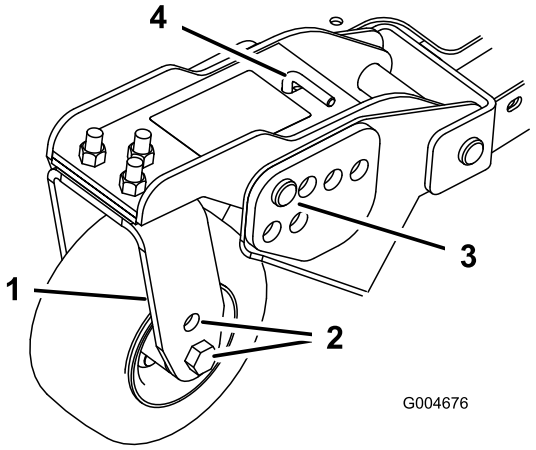


Figure 21

1. Castor pivot arm
2. Axle-mounting holes
3. Clevis pin and hairpin cotter
4. Tension rod

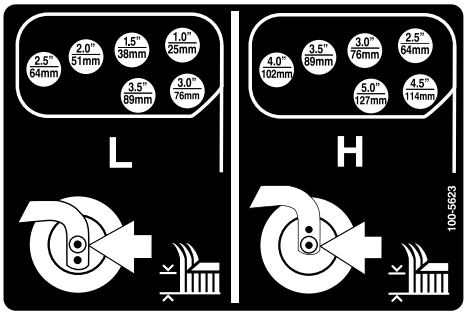


Figure 22

10. Remove the hairpin cotters and clevis pins securing the damper links to the cutting-unit brackets (Figure 23).

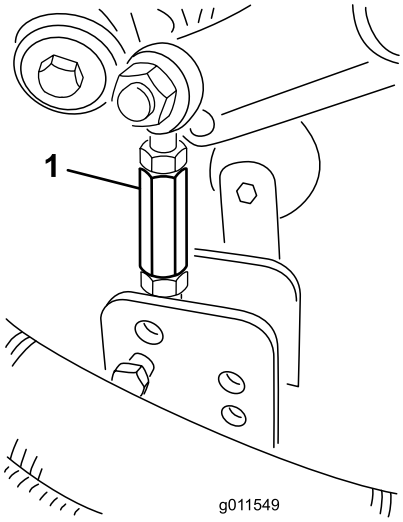


Figure 23

1. Damper link

11. Align the damper-link holes with the selected height-of-cut bracket holes in the cutting-unit frame (Figure 24), insert the clevis pins, and install the hairpin cotters.

Important: Do not adjust the length of the damper link. The length between the hole centers should be 13.7 cm (5-3/8 inches).

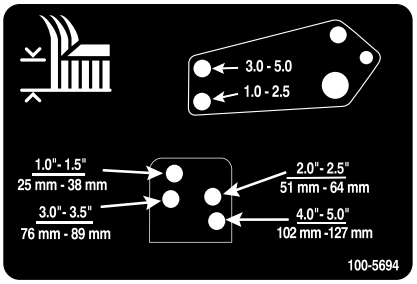


Figure 24

Adjusting the Skids

Mount the skids in the lower position when operating at heights of cut greater than 64 mm (2-1/2 inches) and in the higher position when operating at heights of cut lower than 64 mm (2-1/2 inches).

Note: When the skids become worn, you can switch the skid to the opposite sides of the mower, flipping them over. This allows you to use the skids longer before replacing them.

1. Loosen the screw at the front of each skid (Figure 25).

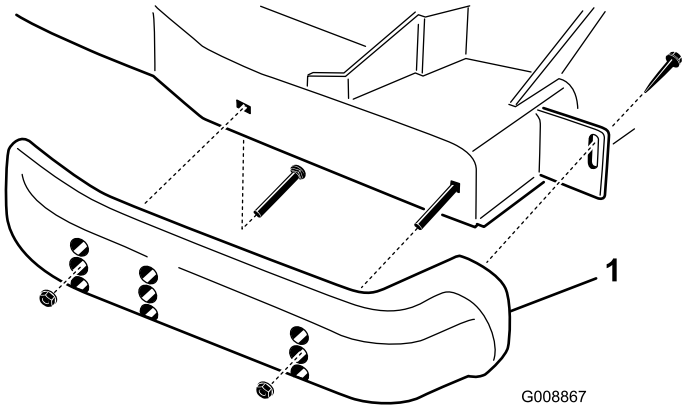


Figure 25

2. Remove the flange-head bolts and nuts from each skid (Figure 25).
3. Move each skid to the desired position and secure them with the flange-head bolts and nuts.

   Note: Use only the top or center sets of holes to adjust the skids. Use the bottom holes when switching sides, at which time they become the top holes on the other side of the mower.
4. Torque the screw at the front of each skid to 9 to 11 N·m (80 to 100 in-lb).

Adjusting the Cutting-Unit Rollers

The cutting-unit rollers should be mounted in the lower position when operating in height of cuts greater than 64 mm (2-1/2 inches) and in the higher position when operating in height of cuts lower than 64 mm (2-1/2 inches).

1. Remove the bolt and nut securing the gage wheel to the cutting-unit brackets (Figure 26).

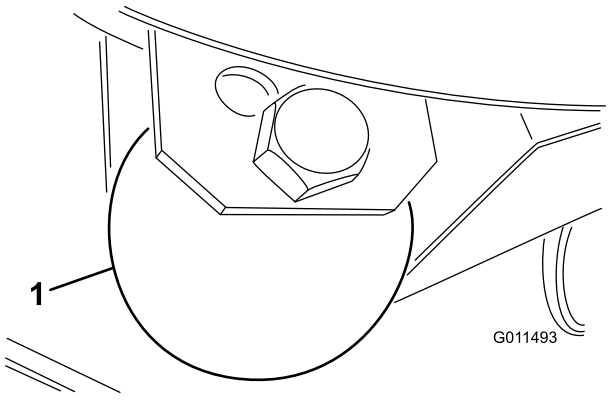


Figure 26

1. Gage wheel

2. Align the roller and spacer with the top holes in the brackets and secure them with the bolt and nut.

Correcting Mismatch Between Cutting Units

Due to differences in grass conditions and the counterbalance setting of the traction unit, cut and inspect a sample area of grass before cutting the entire area.

1. Set all cutting units to the desired height of cut; refer to Adjusting the Height of Cut (page 26).
2. Check and adjust front and rear tractor tire pressure to 172 to 207 kPa (25 to 30 psi).
3. Check and adjust all castor tire pressures to 345 kPa (50 psi).
4. Check charge and counterbalance pressures with the engine at high idle, using test ports defined in Hydraulic Systems Test ports..
5. Adjust the counterbalance to 2241 kPa (325 psi).
6. Check for bent blades; refer to Checking for a Bent Blade (page 53).
7. Cut grass in a test area to determine if all cutting units are cutting at the same height.
8. If cutting unit adjustments are still needed, find a flat surface using a 2 m (6 foot) or longer straight edge.
9. To ease measuring blade plane, raise the height of cut to 7.6 to 10.1 cm (3 to 4 inches); refer to Adjusting the Height of Cut (page 26).
10. Lower the cutting units onto the flat surface.
11. Remove the covers from the top of the cutting units.
12. Loosen the flange nut securing the idler pulley to release the belt tension on each cutting unit.

Front Cutting Unit Setup

Rotate the blade on each spindle until the ends face forward and backward. Measure from the floor to the front tip of the cutting edge. Adjust 3 mm (1/8 inch) shims on front castor fork(s) to match the height of cut to the decal (Figure 27); refer to Adjusting the Cutting Unit Pitch (page 51).

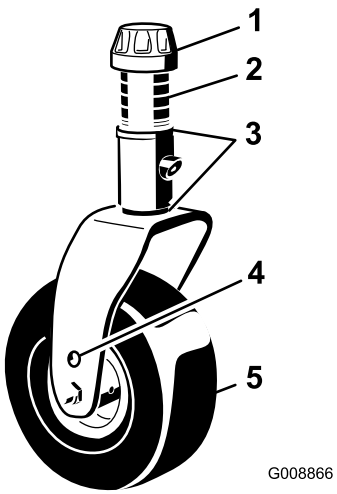


Figure 27

1. Tensioning cap
2. Spacers
3. Shims
4. Top axle-mounting hole
5. Castor wheel

Side Cutting Unit Setup

Rotate the blade of each spindle until the ends face forward and backward. Measure from the floor to the front tip of the cutting edge. Adjust 3 mm (1/8 inch) shims on front castor arm(s) to match the height of cut to the decal (Figure 28). For the outside blade spindle only, refer to Adjusting the Cutting Unit Pitch (page 51).

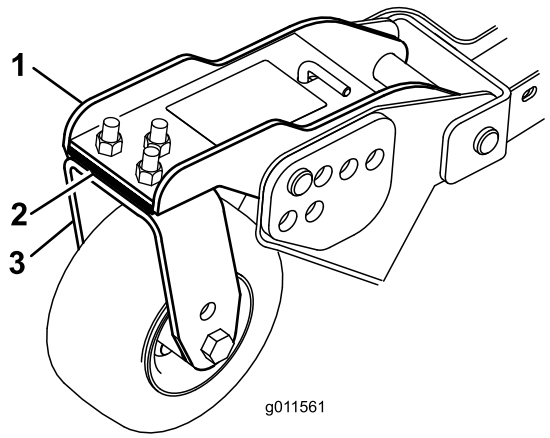


Figure 28

1. Front castor arm
2. Shims
3. Front castor fork

Matching the Height of Cut Between Cutting Units

1. Position the blade side to side on the outside spindle of both side cutting units. Measure from the floor to the tip of the cutting edge on both units and compare. These numbers should be within 3 mm (1/8 inch) of each other. Make no adjustment at this time.
2. Position the blade side to side on the inside spindle of the side cutting unit and the corresponding outside spindle of the front cutting unit. Measure from the floor to the tip of the cutting edge on inside edge of the side cutting unit to the corresponding outside edge of the front cutting unit and compare.

   Note: The side cutting unit measurement should be within 3 mm (1/8 inch) of the front cutting unit.

   Note: All 3 cutting units castor wheels should remain on the ground with counterbalance applied.

   Note: If adjustments need to be made to match the cut between the front and side cutting units, **make the adjustments to the side cutting units only**.
3. If the inside edge of the side cutting unit is too high relative to the outside edge of the front cutting unit, remove 1 shim from the bottom of the front inside castor arm on the side cutting unit (Figure 28). Check the measurement again between outside edges of both side cutting units and inside edge of side cutting unit to outside edge of front cutting unit.
4. If inside edge is still too high, remove an additional shim from bottom of front, inside castor arm of the side cutting unit **and** 1 shim from the front outside castor arm of the side cutting unit.
5. If the inside edge of the side cutting unit is too low relative to the outside edge of the front cutting unit, add 1 shim to the bottom of the front inside castor arm on the side cutting unit. Check the measurement between outside edges of both side cutting units and the inside edge of the side cutting unit to the outside edge of the front cutting unit.
6. If the inside edge is still too low, add an additional shim to the bottom of the front, inside castor arm of the side cutting unit **and** add 1 shim to the front outside castor arm of the side cutting unit.
7. Once the cutting height matches at the edges of front and side cutting units, verify that the side cutting unit pitch is still 8 to 11 mm (5/16 to 7/16 inch). Adjust as necessary.

Aiming the Headlights

1. Loosen the mounting nuts and position each headlight so that it points straight ahead.
2. Tighten the mounting nut just enough to hold the headlight in position.
3. Place a flat piece of sheet metal over the face of the headlight.
4. Mount a magnetic protractor onto the plate.
5. While holding the assembly in place, carefully tilt the headlight downward 3 degrees, then tighten the nut.
6. Repeat the procedure on the other headlight.

Starting and Stopping the Engine

Important: The fuel system automatically bleeds itself when any of the following situations occur:

- Initial start up of a new machine
- The engine has ceased running due to lack of fuel.
- Maintenance has been performed upon the fuel-system components.

1. Ensure that the parking brake is set.
2. Remove your foot from the traction pedal and ensure that it is in neutral.
3. Turn the ignition key to the RUN position.
4. When the glow indicator dims, turn the ignition key to the START position. Release the key immediately when the engine starts and allow it to return to the Run position.

   Note: Allow engine to warm up at medium speed (without a load), then move the THROTTLE control to the desired position.

   Important: Do not run the starter motor more than 30 seconds at a time; otherwise, premature starter failure may result. If the engine fails to start after 30 seconds, turn the key to the OFF position, check the controls and procedures again, wait 30 additional seconds, and repeat the starting procedure.
5. To stop the engine, move the PTO switch to the OFF position, set the parking brake, return the throttle setting to low idle, rotate the ignition key to Off, and remove the key from the switch to prevent accidental starting.

Important: Allow engine to idle for 5 minutes before shutting it off after a full load operation. Failure to do so may lead to turbo-charger trouble.

Using the Smart Power™ Feature

With Toro Smart Power™, you do not need to listen to the engine speed in heavy conditions. Smart Power prevents bogging down in heavy turf by automatically controlling the machine speed and optimizing cutting performance. You can set a maximum ground speed that is comfortable and mow without having to manually reduce the traction speed when mowing in heavy conditions.

Reversing Fan Operation

The fan speed is controlled by the temperature of the hydraulic oil and the engine coolant. A reverse cycle is automatically initiated when either the temperature of the engine coolant or hydraulic oil reaches a certain limit. This reversal helps blow debris off the rear screen and lower the engine- and hydraulic-oil temperatures. By simultaneously pressing the right and left buttons on the InfoCenter, the fan will complete a manually initiated reverse cycle. Manually reverse the fan prior to leaving the work area or entering the shop or storage area.

Auto Idle

The machine is equipped with auto idle, which automatically idles the engine when all of the following functions are not used, for a pre-determined time, previously set in the InfoCenter.

- The traction pedal is returned to the NEUTRAL position
- The PTO is disengaged
- None of the lift switches are activated

  When any of the above functions are initiated, the machine automatically returns to the previous throttle position.

Mowing Speed

Supervisor (Protected Menu)

Mowing speed allows the supervisor to set the maximum mowing speed on the machine in increments of 50%, 75% or 100%, at which the you can mow (low range).

Refer to Using the InfoCenter LCD Display (page 17) for the procedure to set the mow speed.

Operator

Allows you to adjust the maximum mowing speed (low range) on the machine, within the supervisor's pre-adjusted settings. At the InfoCenter splash or main screen, press the middle button ( icon) to adjust the speed.

Note: When switching between low and high ranges, the settings transfer based on the previous setting. The settings are reset when the machine is turned off.

Note: This feature may also be used in conjunction with cruise control.

Transport Speed

Supervisor (Protected Menu)

Transport speed the supervisor to set the maximum transport speed of the machine in increments of 50%, 75% or 100%, at which you can transport the machine (high range).

Refer to Using the InfoCenter LCD Display, in the Operation section of this manual, for the procedure to set the transport speed.

Operator

Allows the operator to adjust the maximum transport speed (high range) of the machine, within the supervisors pre-adjusted settings. When in the InfoCenter splash or main screen, press the middle button (icon) to adjust the speed.

Note: When switching between low and high ranges, the settings transfer based on the previous setting. The settings are reset when the machine is turned off.

Note: This feature may also be used in conjunction with cruise control.

Checking the Interlock Switches

⚠ CAUTION

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.**

The machine has interlock switches in the electrical system. These switches are designed to stop traction when the operator gets off of the seat when the traction pedal is pressed. Although the engine will continue to run, stop the engine before rising from the seat.

1. Drive the machine slowly to a large, relatively open area. Lower the cutting unit, stop the engine, and apply the parking brake.
2. Sit on the seat and press the traction pedal. Try to start the engine; the engine should not crank. If the engine cranks, there is a malfunction in the interlock system that should be corrected before beginning operation.
3. Sit on the seat and start the engine. Rise from the seat and move the PTO lever to On; the PTO should not engage. If the PTO engages, there is a malfunction in the interlock system that should be corrected before beginning operation.
4. Sit on the seat, engage the parking brake, and start the engine. Move the traction pedal out of the NEUTRAL position. The InfoCenter should display "traction not allowed" and the machine should not move. If the engine does move, there is a malfunction in the interlock system that should be corrected before beginning operation.

Using the Rollover Protection System (ROPS)

⚠ WARNING

To avoid injury or death from rollover: keep the roll bar in the raised locked position and use the seat belt.

Ensure that the seat is secured with the seat latch.

⚠ WARNING

There is no rollover protection when the roll bar is in the down position.

- **Do not operate the machine on uneven ground or on a hill side with the ROPS in the down position.**
- **Lower the roll bar only when absolutely necessary.**
- **Do not wear the seat belt when the roll bar is in the down position.**
- **Drive slowly and carefully.**
- **Raise the roll bar as soon as clearance permits.**
- **Check carefully for overhead clearances (i.e. branches, doorways, electrical wires) before driving under any objects and do not contact them.**

Important: Lower the roll bar only when absolutely necessary.

1. To lower the roll bar, remove the hairpin cotters and the 2 pins (Figure 29).

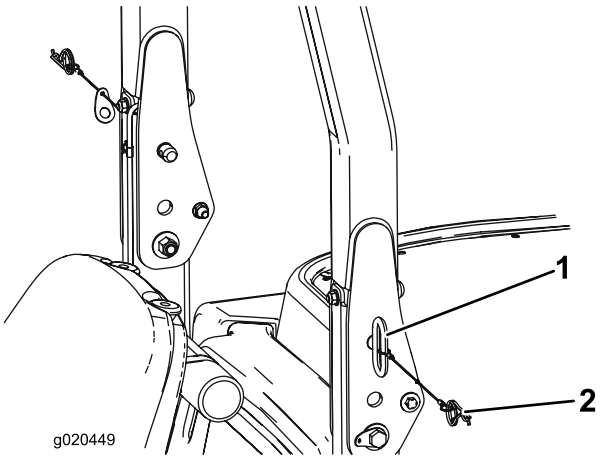


Figure 29

1. Pin (2)
2. Hairpin cotter (2)

2. Lower the roll bar to the down position.
3. Install the 2 pins and secure them with the hairpin cotter pins.

Important: **Ensure that the seat is secured with the seat latch.**

4. To raise the roll bar, remove the hairpin cotter pins and remove the 2 pins.
5. Raise the roll bar to the upright position and install the 2 pins and secure them with the hairpin cotter pins

Important: **Always use the seat belt when the roll bar is in the raised and locked position. Do not use the seat belt when the roll bar is in the lowered position.**

Pushing or Towing the Machine

In an emergency, you can move the machine forward by actuating the bypass valve in the variable displacement hydraulic pump and pushing or towing the machine.

Important: **Do not push or tow the machine faster than 3 to 4.8 km/h (2 to 3 mph); otherwise, internal transmission damage may occur. The bypass valves must be open whenever you push or tow the machine.**

1. Raise the seat.

   Note: The bypass valves are located below the front of the fuel tank (Figure 30).

   Note: Engage the parking brake while altering the valve position.

2. Rotate each valve 3 turns counterclockwise to open and allow oil to bypass internally.

   Note: **Do not open more than 3 turns.** Because fluid is bypassed, you can move the machine slowly without damaging the transmission.

3. Close the bypass valves before starting the engine. Torque to 70 N-m (52 ft-lb) to close the valve.

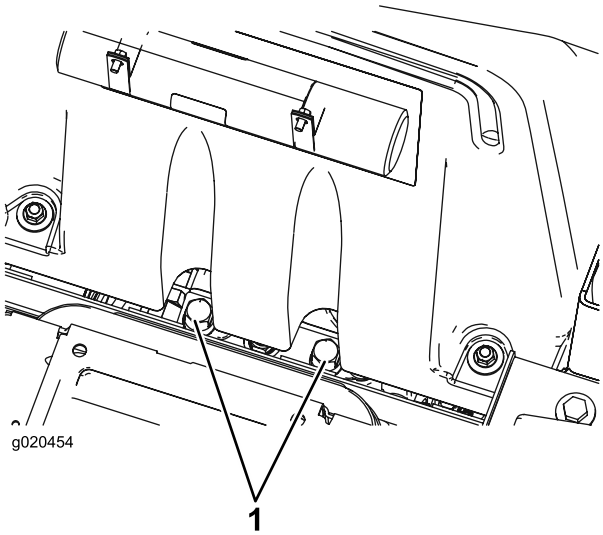


Figure 30

1. Bypass valve (2)

Important: **If the machine must to be pushed or towed in reverse, the check valve in the 4-wheel drive manifold must also be bypassed. To bypass the check valve, connect a hose assembly (Part No. 95-8843, 2 coupler fittings (Part No. 95-0985), and 2 hydraulic fittings (Part No. 340-77) to the reverse-traction-pressure test port, located on the hydrostat, and on the port located between ports M8 and P2 on the rear-traction manifold, which is located behind the front tire.**

Jacking Points

⚠ WARNING

Always support the machine with jack stands. Do not rely on a jack or hoist to hold machine up.

There are jacking points located at the front and rear of the machine.

- On the frame at the inside of each front drive tire
- At the center of the rear axle

Tie Downs

There are tie downs located at the front, rear and sides of the machine.

- Use only DOT-approved straps when securing the machine to a trailer.
- Secure in all 4 corners.
- There are 2 on the front of the operator's platform
- The rear bumper

Operating Characteristics

Practice driving the machine because it has a hydrostatic transmission, and its characteristics are different than many turf maintenance machines. When operating the traction unit, cutting unit, or other implements, consider the transmission, engine speed, load on the cutting blades or other implement components, and the brakes.

With Toro Smart Power™, you do not need to listen to the engine speed in heavy conditions. Smart Power prevents bogging down in heavy turf by automatically controlling the machine speed and optimizing cutting performance.

You can use the brakes to assist in turning the machine. However, use them carefully, especially on soft or wet grass because the turf may be torn accidentally. Another benefit of the brakes is to maintain traction. For example, in some slope conditions, the uphill wheel slips and loses traction. If this occurs, press the uphill-turn pedal gradually and intermittently until the uphill wheel stops slipping, thus increasing traction on the downhill wheel.

Traction Assist is now automatic and requires no operator input. When a wheel starts to slip, flow is automatically split between the front and rear wheels to minimize wheel slip and loss of traction.

Use extra care when operating the machine on slopes. Make sure that the ROPS is in the raised position, the seat latch is properly secured and the seat belt is buckled. Drive slowly and avoid sharp turns on slopes to prevent roll overs. For steering control, lower he cutting unit must be lowered before going downhill.

Before stopping the engine, disengage all controls and change the throttle to Slow, which reduces the high engine speed, noise, and vibration. Turn the key to Off to stop the engine.

Before transporting the machine, raise the cutting units and secure the transport latches (Figure 31).

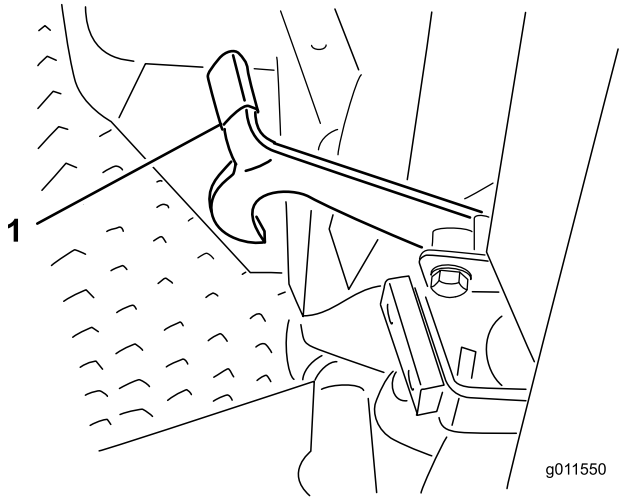


Figure 31

1. Transport latch (side cutting units)

Operating Tips

Mow When Grass Is Dry

Mow either in the late morning to avoid the dew, which causes grass clumping, or in late afternoon to avoid the damage that can be caused by direct sunlight on the sensitive, freshly-mowed grass.

Select the Proper Height-of-Cut Setting to Suit Conditions

Remove approximately 1 inch (25 mm) or no more than 1/3 of the grass blade when cutting. In exceptionally lush and dense grass, you may need to raise the height-of-cut to the next setting.

Mow at Proper Intervals

Under most normal conditions you will need to mow approximately every 4 to 5 days. But remember, grass grows at different rates at different times. This means that in order to maintain the same height of cut, which is a good practice, you will need to cut more frequently in early spring; as the grass growth rate slows in mid summer, cut only every 8 to 10 days. If you are unable to mow for an extended period due to weather conditions or other reasons, mow first with the height of cut at a high level; then mow again 2 to 3 days later with a lower height setting.

Transporting

Use the transport latches when transporting over long distances, rough terrain, or when trailering.

After Operating

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 decreases.

Cutting Unit Pitch

Use a blade pitch of 8 to 11 mm (5/16 to 7/16 inch). A pitch larger than 8 to 11 mm (5/16 to 7/16 inch) results in less power required, larger clippings, and a poorer quality of cut. A pitch less than 8 to 11 mm (5/16 to 7/16 inch) results in more power required, smaller clippings and a better quality of cut.

Maximizing Air Conditioner Performance

- To limit solar heating, park the machine in a shaded area or leave the doors open in direct sun.
- Check to make sure that the air conditioning condenser fins are clean.
- Operate the air-conditioner blower at the middle-speed setting.
- Verify continuous seal between the roof and the headliner. Correct as required.
- Measure the air temperature at the front center vent in the headliner (Typically stabilize at less than or equal to 50 degrees F).
- Refer to the *Service Manual* for additional information.

Maintenance

Note: Download a free copy of the schematic by visiting www.Toro.com and searching for your machine from the Manuals link on the home page.

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

Recommended Maintenance Schedule(s)

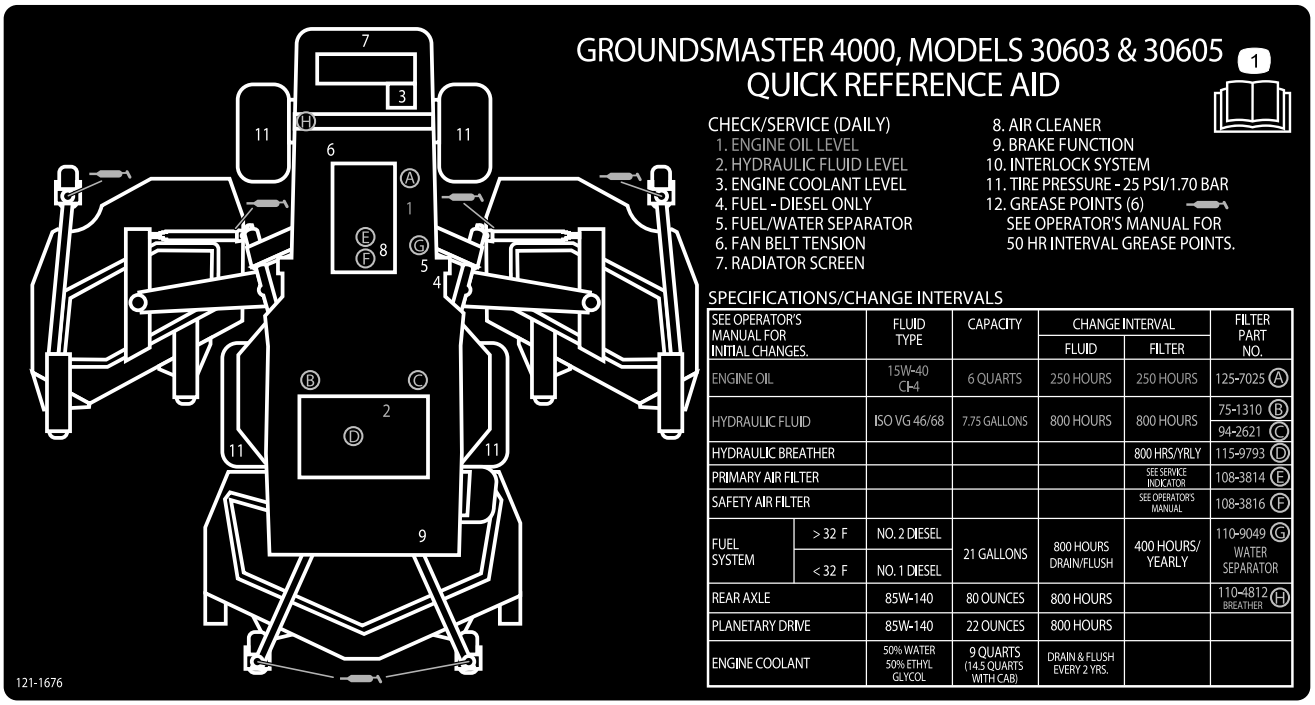
Maintenance Service Interval	Maintenance Procedure
After the first 10 hours	• Torque the wheel-lug nuts. • Check the tension of the alternator belt. • Check the tension of the blade-drive belt.
After the first 200 hours	• Change the front planetary-gear oil. • Change the rear-axle oil.
Before each use or daily	• Check the engine oil level. • Check the coolant level. • Check the hydraulic fluid level. • Check the tire pressure. • Check the air-cleaner indicator • Remove all debris and chaff from the engine compartment, radiator and oil cooler. • Check the interlock switch operation.
Every 50 hours	• Lubricate the grease fittings. Also lubricate the grease fittings after every washing of the machine. • Inspect the air cleaner. • Check the battery condition weekly or after every 50 hours of operation. • Check the tension of the blade-drive belt.
Every 100 hours	• Inspect the cooling-system hoses and clamps. • Check the tension of the alternator belt.
Every 200 hours	• Torque the wheel-lug nuts.
Every 250 hours	• Change the engine oil and filter.
Every 400 hours	• Check the planetary-gear-drive oil. • Check the rear-axle lubricant. • Check the rear-axle-gearbox lubricant. • Service the air filter (if the indicator shows red). • Inspect the fuel lines and connections. • Replace the fuel-filter canister.
Every 800 hours	• Drain and clean the fuel tank. • Change the front planetary-gear oil (or yearly, whichever comes first). • Change the rear-axle oil. • Check the rear wheel toe-in. • Inspect the blade-drive belt. • Change the hydraulic fluid. • Change the hydraulic oil filters. • Inspect the side-cutting-unit damper. • Inspect the castor-wheel assemblies on the cutting unit.
Every 1,000 hours	• Check and adjust the valve clearance.
Every 2 years	• Flush the cooling system and replace the fluid. • Replace moving hoses.

⚠ CAUTION

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 before you do any maintenance.

Service Interval Chart



SEE OPERATOR'S MANUAL FOR INITIAL CHANGES.		FLUID TYPE	CAPACITY	CHANGE INTERVAL		FILTER PART NO.
				FLUID	FILTER	
ENGINE OIL		15W-40 CI-4	6 QUARTS	250 HOURS	250 HOURS	125-7025 Ⓐ
HYDRAULIC FLUID		ISO VG 46/68	7.75 GALLONS	800 HOURS	800 HOURS	75-1310 Ⓑ 94-2621 Ⓒ
HYDRAULIC BREATHER					800 HRS/YRLY	115-9793 Ⓓ
PRIMARY AIR FILTER					SEE SERVICE INDICATOR	108-3814 Ⓔ
SAFETY AIR FILTER					SEE OPERATOR'S MANUAL	108-3816 Ⓕ
FUEL SYSTEM	> 32 F	NO. 2 DIESEL	21 GALLONS	800 HOURS DRAIN/FLUSH	400 HOURS/ YEARLY	110-9049 Ⓖ WATER SEPARATOR
	< 32 F	NO. 1 DIESEL				
REAR AXLE		85W-140	80 OUNCES	800 HOURS		110-4812 Ⓗ BREATHER
PLANETARY DRIVE		85W-140	22 OUNCES	800 HOURS		
ENGINE COOLANT		50% WATER 50% ETHYL GLYCOL	9 QUARTS (14.5 QUARTS WITH CAB)	DRAIN & FLUSH EVERY 2 YRS.		

Figure 32

Lubrication

Greasing the Bearings and Bushings

Service Interval: Every 50 hours—Lubricate the grease fittings. Also lubricate the grease fittings after every washing of the machine.

Note: Use No. 2 general-purpose, lithium-based grease.

The grease fitting locations and quantities are as follows:

Traction Unit

- Brake-pedal, pivot-shaft bearings (2) (Figure 33)
- Front- and rear-axle pivot bushings (2) (Figure 34)
- Steering-cylinder ball joints (2) (Figure 35)
- Tie-rod ball joints (2) (Figure 35)
- King-pin bushings (2) (Figure 35).
  The top fitting on the king pin should be lubricated only annually (2 pumps).

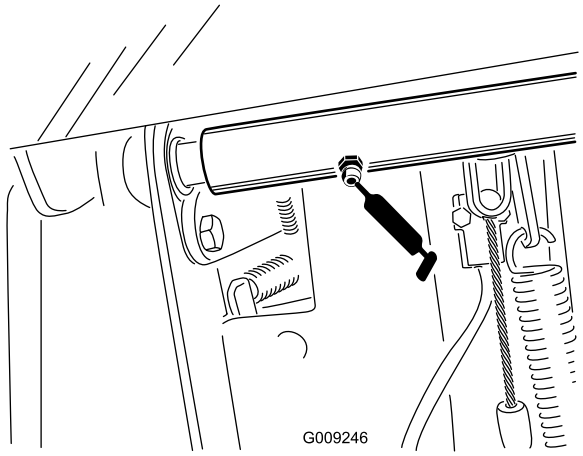


Figure 33

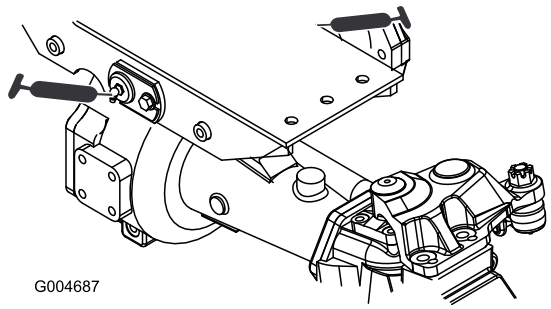


Figure 34

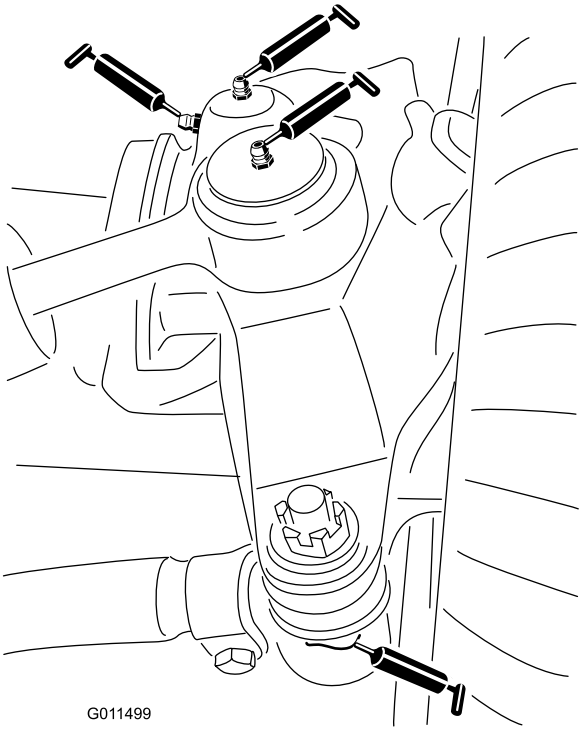


Figure 35

Front Cutting Unit

- Castor-fork-shaft bushings (2) (Figure 36)
- Spindle-shaft bearings (3) (Figure 37)

  Note: These bearings are located under the pulley.
- Idler-arm-pivot bushings (2) (Figure 37)

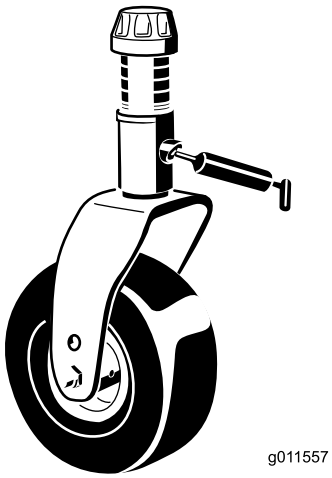


Figure 36

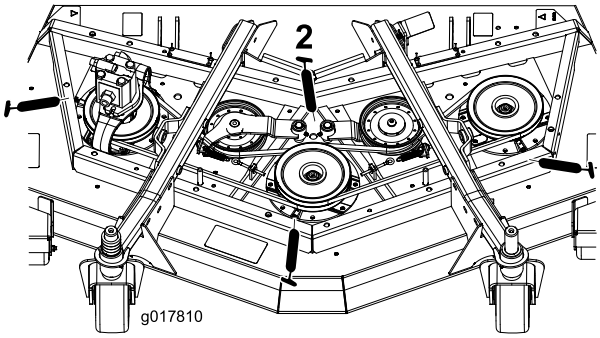


Figure 37

Front-Lift Assemblies

- Lift-arm-cylinder bushings (2 each) (Figure 38)
- Lift-arm ball joints (2) (Figure 39)

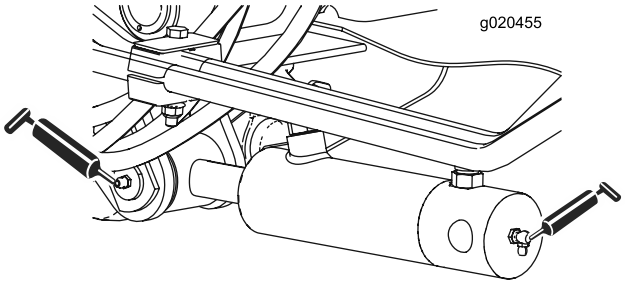


Figure 38

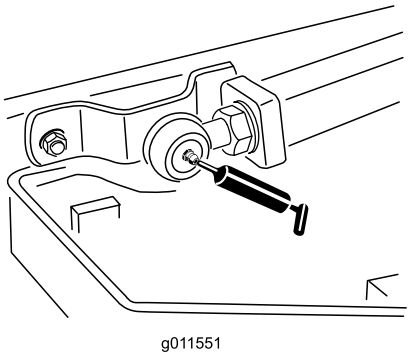


Figure 39

Side Cutting Units

- Castor-fork-shaft bushing (1) (Figure 40)
- Spindle-shaft bearings (2 each)

  Note: These bearings are located under the pulley.
- Idler-arm-pivot bushing (1)

  Note: This bushing is located on the idler arm.

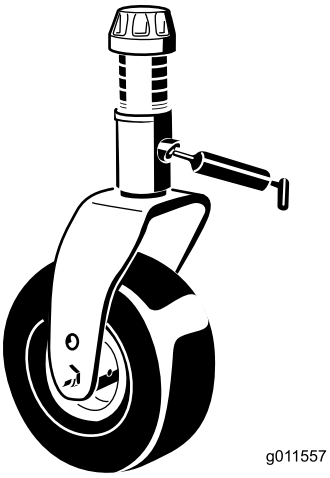


Figure 40

Side-Lift Assemblies

- Main-lift-arm bushings (6) (Figure 41 and Figure 42)
- Bell-crank-pivot bushings (2) (Figure 43)
- Rear-arm bushings (4) (Figure 43)
- Lift-cylinder bushings (4) (Figure 44)

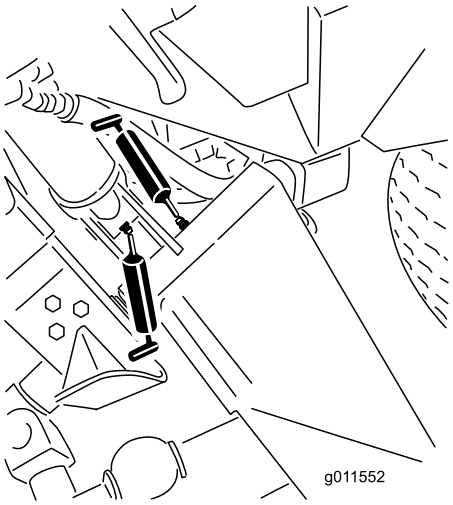


Figure 41

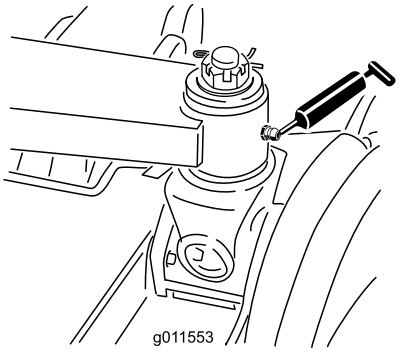


Figure 42

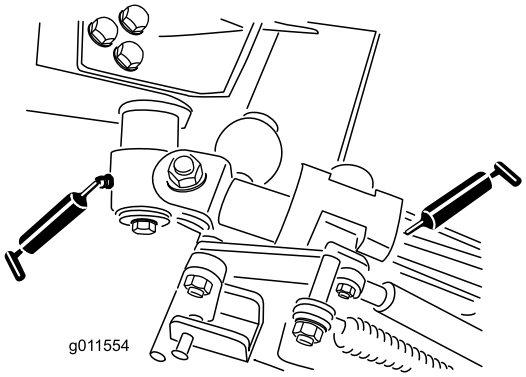


Figure 43

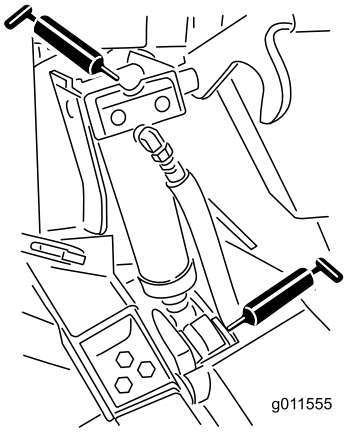


Figure 44

Engine Maintenance

Servicing the Air Cleaner

Service Interval: Before each use or daily

Every 50 hours

Every 400 hours

- Inspect the air-cleaner body for damage, which could cause an air leak. Replace the air-cleaner body if it is damaged. Check the whole intake system for leaks, damage, or loose hose clamps.
- Service the air-cleaner filter only when the service indicator requires it or at the recommended maintenance interval. Changing the air filter more frequently only increases the chance of dirt entering the engine when you remove the filter.
- Be sure that the cover is seated correctly and seals with the air-cleaner body.

1. Pull the latch outward and rotate the air-cleaner cover counterclockwise (Figure 45).
2. Use low-pressure air (40 psi, clean and dry) to remove large accumulations of debris packed between outside of primary filter and the canister. Avoid using high-pressure air, which could force dirt through the filter into the intake area.

   Note: This cleaning process prevents debris from migrating into the intake when you remove the primary filter.
3. Remove the cover from the air-cleaner body (Figure 45).

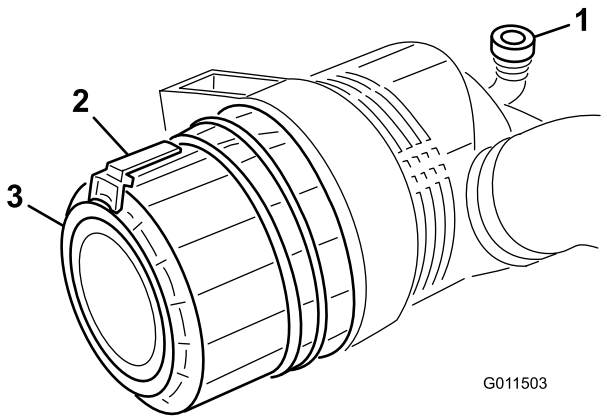


Figure 45

1. Air-cleaner indicator
2. Air-cleaner latch
3. Air-cleaner cover

4. Remove the primary filter (Figure 46).

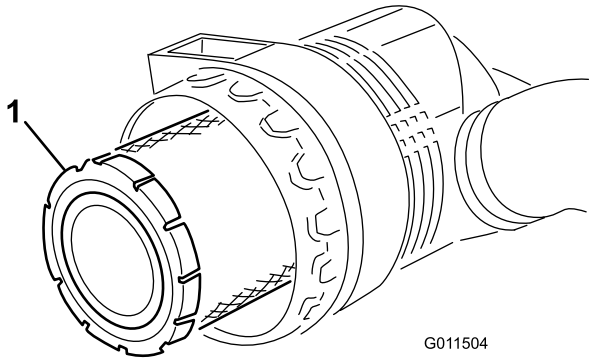


Figure 46

1. Primary filter

5. Do not clean the used element due to the possibility of damage to the filter media.
6. Inspect the new filter for shipping damage, checking the sealing end of the filter and the body.

   Note: Do not use a damaged element. **Do not** remove the safety filter (Figure 47).

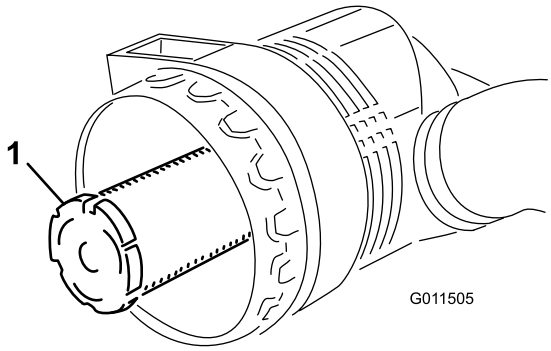


Figure 47

1. Safety filter

   Important: Do not attempt to clean the safety filter (Figure 47); replace the safety filter with a new filter after every 3 primary filter services.

7. Replace the primary filter (Figure 46).
8. Insert the new filter by applying pressure to the outer rim of the element to seat it in the canister.

   Note: Do not apply pressure to the flexible center of the filter.

9. Clean the dirt-ejection port located in the removable cover.
10. Remove the rubber outlet valve from the cover, clean the cavity ,and replace the outlet valve.
11. Install the cover by positioning the rubber outlet valve (Figure 45) downward, between approximately 5 o'clock to 7 o'clock when viewed from the end.
12. Secure the latch.

Servicing the Engine Oil and Filter

Service Interval: Every 250 hours—Change the engine oil and filter.

1. Remove the drain plug (Figure 48) and let the oil flow into a drain pan.

   Note: After the oil is drained, install the drain plug.

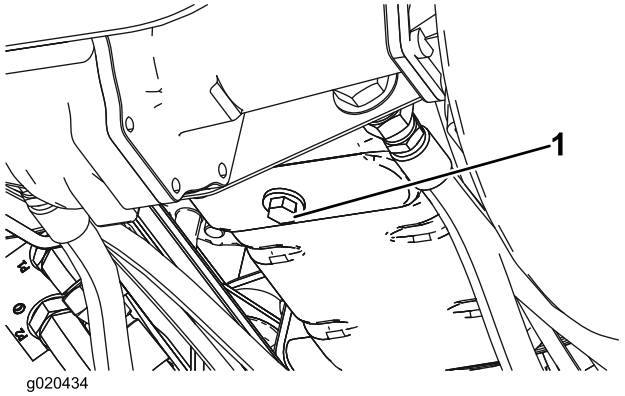


Figure 48

1. Engine-oil-drain plug

2. Remove the oil filter (Figure 49).

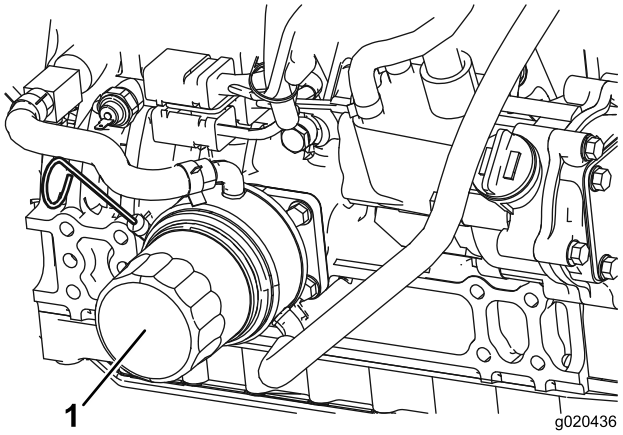


Figure 49

1. Engine-oil filter

3. Apply a light coat of clean oil to the new filter seal before screwing it on.

   Important: Do not overtighten.

4. Add oil to the crankcase; refer to Checking the Engine Oil (page 22).

Fuel System Maintenance

Servicing the Fuel System

⚠ DANGER

Under certain conditions, diesel fuel and fuel vapors are highly flammable and explosive. A fire or explosion from fuel can burn you and others and can cause property damage.

- **Use a funnel and fill the fuel tank outdoors, in an open area, when the engine is off and is cold. Wipe up any fuel that spills.**
- **Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 6 to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck. This empty space in the tank allows the 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 a clean, safety-approved container and keep the cap in place.**

Fuel Tank

Service Interval: Every 800 hours—Drain and clean the fuel tank.

Drain and clean the fuel tank at the recommended service interval, if the fuel system becomes contaminated, or before storing the machine for an extended period of time. Use clean fuel to flush out the tank.

Fuel Lines and Connections

Service Interval: Every 400 hours—Inspect the fuel lines and connections.

Check the fuel lines and connections for deterioration, damage, or loose connections.

Servicing the Water Separator

Service Interval: Every 400 hours—Replace the fuel-filter canister.

Drain the water or other contaminants from the water separator (Figure 50) daily. Replace the filter canister at the recommended service interval.

1. Place a clean container under the fuel filter.
2. Loosen the drain plug on the bottom of the filter canister.

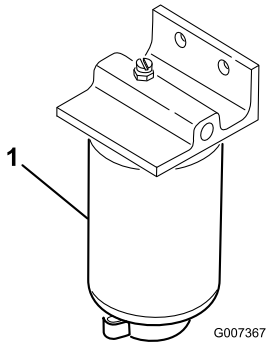


Figure 50

1. Filter canister

3. Clean the area where the filter canister mounts.
4. Remove the filter canister and clean the mounting surface.
5. Lubricate the gasket on the filter canister with clean oil.
6. Install the filter canister by hand until the gasket contacts mounting surface, then rotate it an additional 1/2 turn.
7. Tighten the drain plug on the bottom of the filter canister.

Electrical System Maintenance

Servicing the Battery

Service Interval: Every 50 hours—Check the battery condition weekly or after every 50 hours of operation.

Battery type is group 24.

Important: Before welding on the machine, disconnect the negative cable from the battery to prevent damage to the electrical system.

Note: Keep the terminals and the entire battery case clean because a dirty battery will discharge slowly. To clean the battery, wash the entire case with a solution of baking soda and water. Rinse with clear water. Coat the battery posts and cable connectors with Grafo 112X (skin-over) grease (Toro Part No. 505-47) or petroleum jelly to prevent corrosion.

1. Open the battery cover (Figure 51) on the side of the shroud.

   Note: Press down on the flat surface above the battery cover to make removing the cover easier (Figure 51).

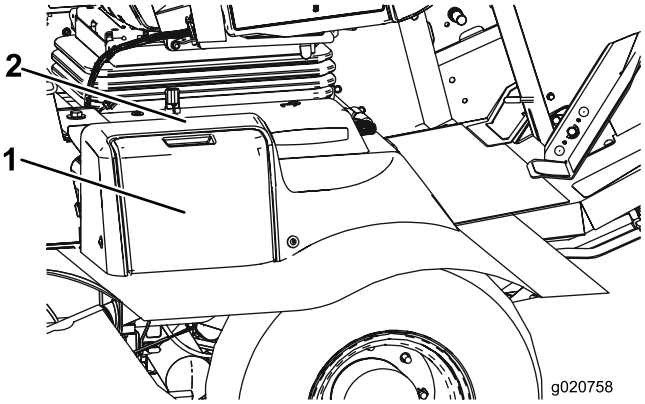


Figure 51

1. Battery cover
2. Press down here.

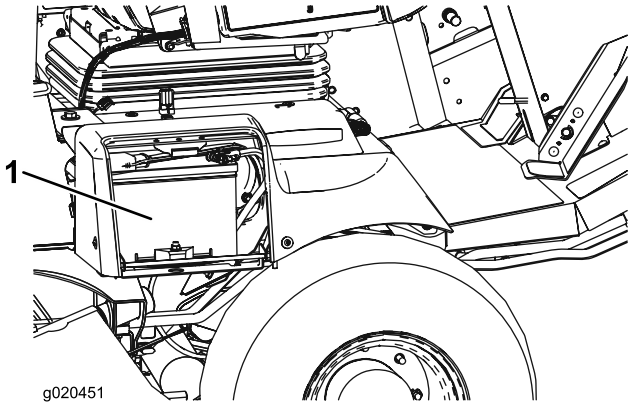


Figure 52

1. Battery

⚠ WARNING

Charging the battery produces gasses that can explode.

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

2. Remove the rubber boot from the positive terminal and inspect the battery.

⚠ WARNING

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

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

⚠ WARNING

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.**

3. Coat both of the battery connections with Grafo 112X (skin-over) grease, Toro Part No. 505-47, petroleum jelly, or light grease to prevent corrosion.

4. Slide the rubber boot over the positive terminal.
5. Close the battery cover.

Accessing the Fuses

The traction-unit fuses (Figure 53 through Figure 55) are located under the power center cover.

Remove the 2 Allen-head screws securing the power-center cover to the frame and remove the cover (Figure 53).

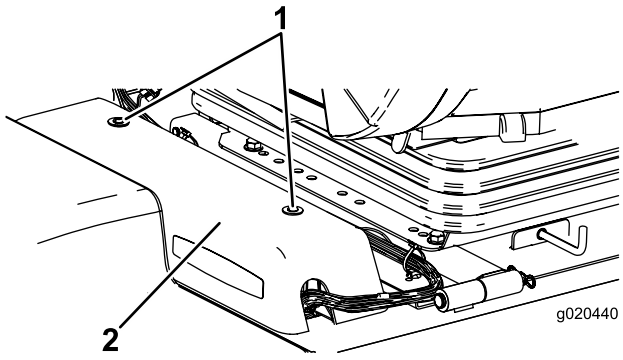


Figure 53

1. Power-center cover
2. Allen-head screws (2)

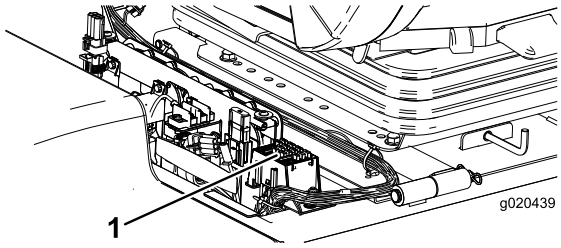


Figure 54

1. Fuses

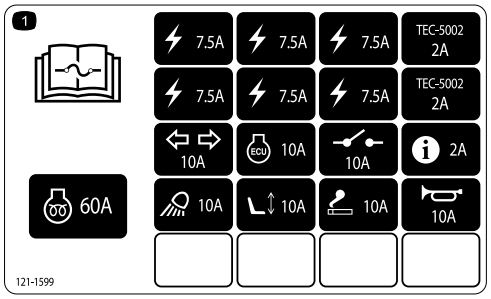


Figure 55

Drive System Maintenance

Adjusting the Traction Pedal Angle

You can adjust the traction pedal operating angle for operating comfort.

1. Loosen the 2 nuts and bolts securing the left side of the traction pedal to the bracket (Figure 56).

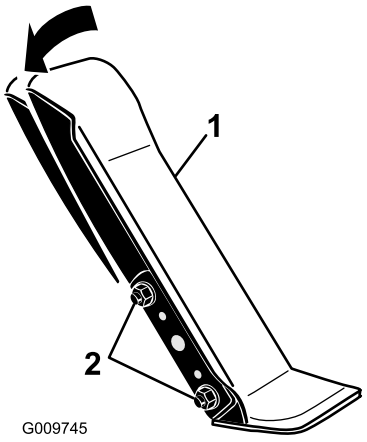


Figure 56

1. Traction pedal
2. Mounting nuts and bolts (2)

2. Pivot the pedal to the desired operating angle and tighten the nuts (Figure 56).

Changing the Planetary-Gear Oil

Service Interval: After the first 200 hours

Every 800 hours

Use a high quality SAE 85W-140 gear lube.

1. With the machine on a level surface, position a wheel so that 1 of the check plugs is at the lowest (6 o'clock) position (Figure 57).

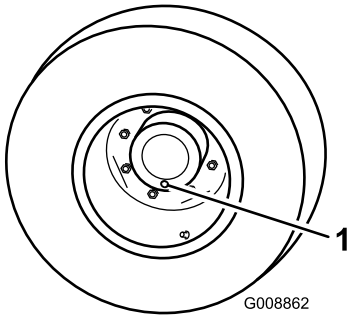


Figure 57

1. Check/drain plug

2. Place a drain pan under the planetary hub, remove the plug, and allow the oil to drain.
3. Place a drain pan under the brake housing, remove the drain plug, and allow the oil to drain (Figure 58).

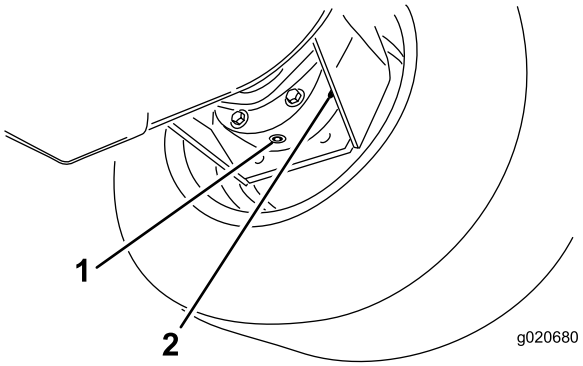


Figure 58

1. Drain plug
2. Brake housing

4. When all of the oil has drained from both locations, install the plug in the brake housing.
5. Rotate the wheel until the open plug hole in the planetary is at the 12 o'clock position.
6. Through the open hole, slowly fill the planetary with 0.5 L (22 oz) of high quality SAE 85W-140 wt. gear lube.

   Important: If the planetary fills before the 0.5 L (22 oz) of oil is added, wait 1 hour or install the plug and move the machine approximately 3 m (10 ft) to distribute the oil through the brake system. Then remove the plug and add the remaining oil.
7. Install the plug.
8. Repeat the procedure on the opposite planetary/brake assembly.

Changing the Rear Axle Lubricant

Service Interval: After the first 200 hours

Every 800 hours

1. Move the machine onto a level surface.
2. Clean the area around the 3 drain plugs; 1 on each end and 1 in the center (Figure 59).
3. Remove the check plugs to ease in draining of the oil.
4. Remove the drain plugs and allow the oil to drain into the pans.

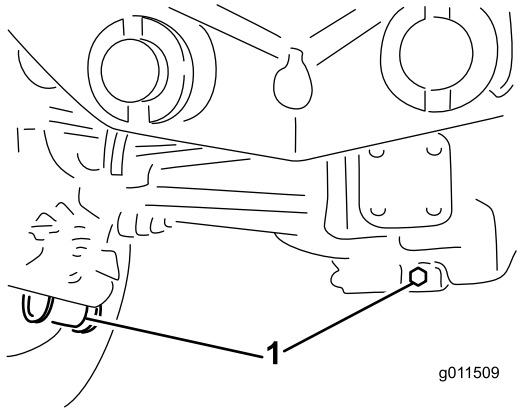


Figure 59

1. Drain plug

5. Clean the area around the drain plug on the bottom of the gearbox (Figure 60).

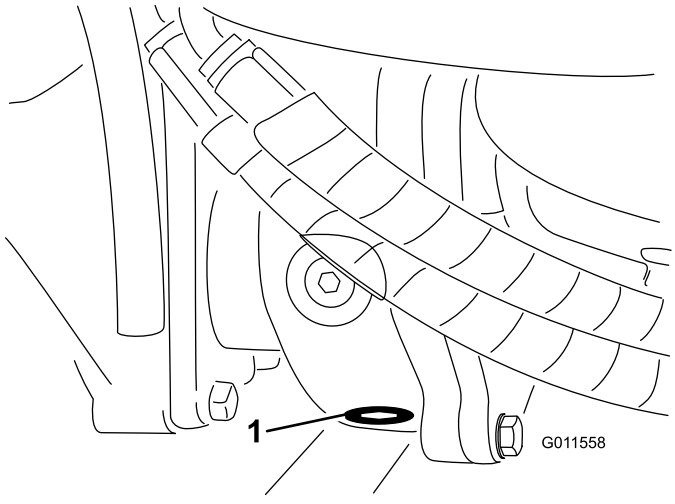


Figure 60

1. Drain plug

6. Remove the drain plug from the gearbox and allow the oil to drain into a pan.
7. Remove the fill plug to ease in draining of the oil.
8. Add enough oil to bring the level up to the bottom of the check plug holes; refer to Servicing the Engine Oil and Filter (page 40).
9. Install the plugs.

Checking the Rear Wheel Toe-in

Service Interval: Every 800 hours

1. Measure the center-to-center distance (at axle height) at the front and the rear of the steering tires.

   Note: The front measurement must be 6 mm (1/4 inch) less than the rear measurement.
2. Loosen the clamps at both ends of the tie rods.
3. Rotate the tie-rod end to move the front of the tire inward or outward.
4. Tighten the tie-rod clamps when the adjustment is correct.

Cooling System Maintenance

Servicing the Engine-Cooling System

Remove debris from the oil radiator/cooler daily. Clean them more frequently in dirty conditions.

This machine is equipped with a hydraulically driven fan drive system that automatically (or manually) reverses to reduce radiator/oil cooler and screen debris buildup. While this feature can help reduce the time required to clean radiator/oil cooler, it does not eliminate the need for routine cleaning. You must periodically clean and inspect the oil radiator/cooler.

1. Turn the engine off and raise the hood.
2. Clean the engine area thoroughly of all debris.
3. Clean both sides of the radiator/oil cooler area (Figure 61) thoroughly with compressed air.

   Note: Start from the fan side and blow the debris out toward the back. Then clean from the back side and blow toward the front. Repeat procedure several times until all chaff and debris are removed.

   Important: Cleaning the radiator/oil cooler with water can promote premature corrosion and damage to components.

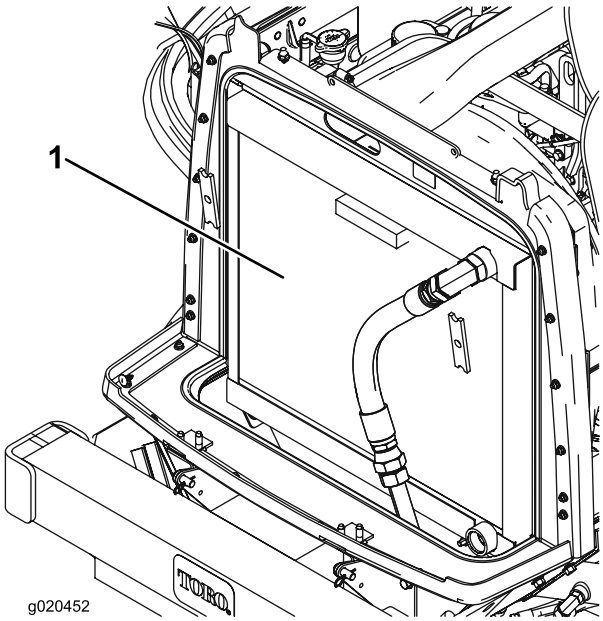


Figure 61

1. Radiator/oil cooler

4. Close the hood.

Brake Maintenance

Adjusting the Service Brakes

Adjust the service brakes when there is more than 25 mm (1 inch) of free travel of the brake pedal, or when the brakes do not work effectively. Free travel is the distance the brake pedal moves before you feel braking resistance.

1. Disengage the locking latch from the brake pedals so that both pedals work independently of each other.
2. To reduce free travel of the brake pedals, tighten the brakes:

   A. Loosen the 2 mounting screws and remove the brake-adjustment cover (Figure 62).

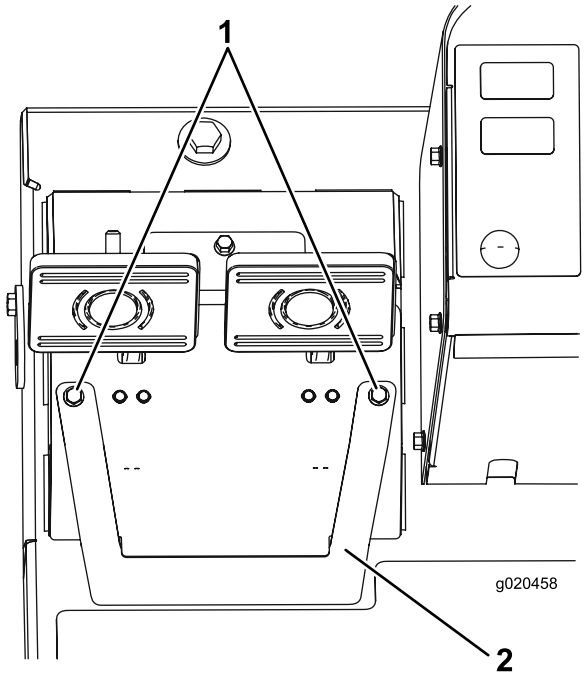


Figure 62

1. Mounting screws
2. Brake-adjustment cover

   B. Loosen the front nut on the threaded end of the brake cable (Figure 63).

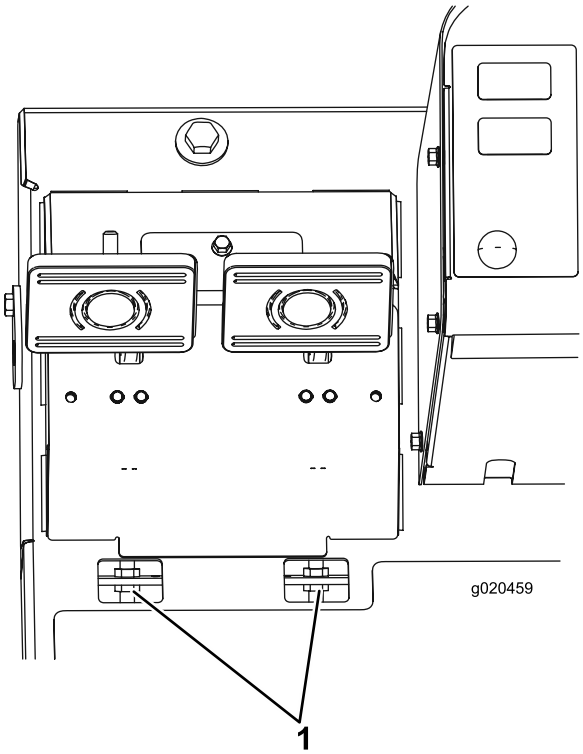


Figure 63

1. Brake-cable adjusting nuts

C. Tighten the rear nut to move the cable rearward until the brake pedals have 13 to 25 mm (1/2 to 1 inch) of free travel.

D. Tighten the front nuts after the brakes are adjusted correctly.

E. Install the brake-adjustment cover.

Belt Maintenance

Servicing the Alternator Belt

Service Interval: After the first 10 hours

Every 100 hours

1. Proper tension allows 10 mm (3/8 inch) deflection when you apply a force of 44 N (10 lb) on the belt, midway between the pulleys.
2. If the deflection is not 10 mm (3/8 inch), loosen the alternator mounting bolts (Figure 64).

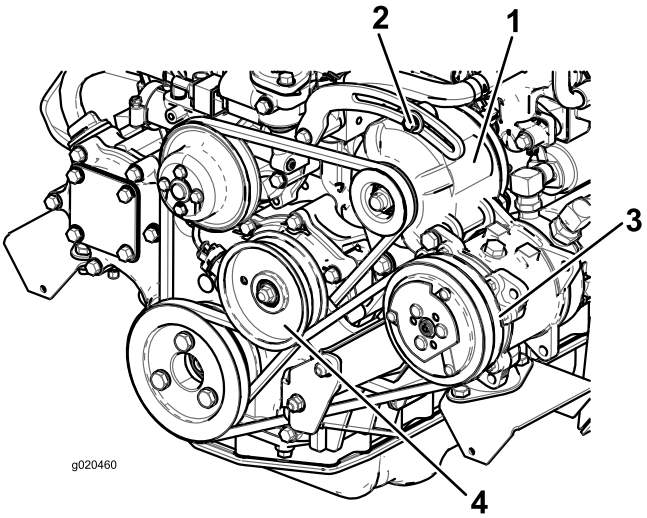


Figure 64

1. Alternator
2. Mounting bolt
3. Compressor
4. Idler pulley

3. Increase or decrease the tension of the alternator belt and tighten the bolts.
4. Check the deflection of the belt again to ensure that the tension is correct.

Tensioning the Blade-Drive Belts

Service Interval: After the first 10 hours—Check the tension of the blade-drive belt.

Every 50 hours—Check the tension of the blade-drive belt.

When properly tensioned, the extension spring (hook to hook) measurement should be approximately 8.9 cm ± 0.63 cm (3.50 ± 0.25 inch) (inside). Once you achieve the correct spring tension, adjust the stop bolt (carriage bolt) until there is approximately 0.32 cm ± 0.152/.000 cm (0.125 +0.060/-0.000 inch) clearance between the head of the bolt and the idler arm (Figure 65).

Note: Make sure that the belt is positioned on the spring side of the belt guide (Figure 65).

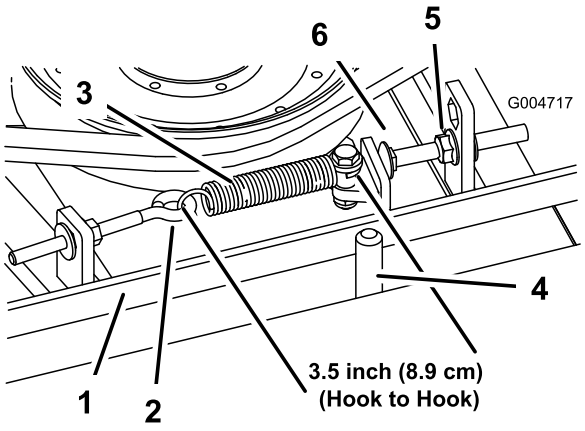


Figure 65

1. Belt
2. Eye bolt
3. Extension spring
4. Belt guide
5. Flange nut
6. Stop bolt

Replacing the Blade-Drive Belt

Service Interval: Every 800 hours

The blade-drive belt, tensioned by the spring-loaded idler pulley, is very durable. However, after many hours of use, the belt will show signs of wear. Signs of a worn belt are squealing when belt is rotating, blades slipping when cutting grass, frayed edges, burn marks, and cracks. Replace the belt if any of these conditions are evident.

1. Lower the cutting unit to the shop floor.
2. Remove the belt covers from the top of the cutting unit and set the covers aside.
3. Loosen the eye bolt allowing the removal of the extension spring (Figure 65).
4. Loosen the flange nut securing the stop bolt to the mounting tab.

   Note: Back off the nut enough to allow the idler arm to pass by the stop bolt (Figure 65). Move the idler pulley away from the belt to release belt tension.

   Note: If you ever remove the stop bolt from the mounting tab, ensure that it is installed in the hole that aligns the stop bolt head with the idler arm.
5. Remove the bolts securing the hydraulic motor to the cutting unit (Figure 66).

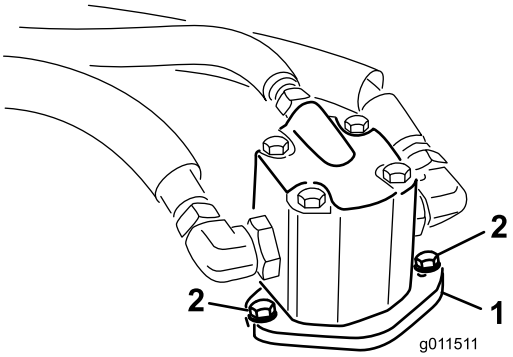


Figure 66

1. Hydraulic motor
2. Mounting bolts

6. Lift the motor off the cutting unit and lay it on top of the cutting unit.
7. Remove the old belt from around the spindle pulleys and idler pulley.
8. Route the new belt around the spindle pulleys and idler pulley assembly.
9. Position the hydraulic motor on the cutting unit after routing the belt around the pulleys.

   Note: Ensure that the belt is positioned on the spring side of the belt guide (Figure 65).
10. Mount the motor to the cutting unit with the bolts previously removed.
11. Connect the extension spring (Figure 65) to the eye bolt and tension the belt as follows:

    - When properly tensioned, the extension spring (hook to hook) measurement should be approximately 8.9 cm ± 0.63 cm (3.50 ± 0.25 inch (inside).
    - Once you achieve the correct spring tension, adjust the stop bolt (carriage bolt) until there is approximately 0.32 cm ± 0.152/0.000 cm (0.125 + 0.060/- 0.000 inch) clearance between the head of the bolt and the idler arm.

Hydraulic System Maintenance

Changing the Hydraulic Fluid

Service Interval: Every 800 hours

If the fluid becomes contaminated, contact your Authorized Toro Distributor to have the system flushed. Contaminated fluid looks milky or black when compared to clean oil.

1. Turn the engine off and raise the hood.
2. Remove the drain plug on the bottom front of the reservoir and let the hydraulic fluid flow into large drain pan.

   Note: Install an tighten the plug when the hydraulic fluid stops draining.
3. Fill the reservoir (Figure 67) with hydraulic fluid; refer to Checking the Hydraulic Fluid (page 24).

   Important: Use only the hydraulic fluids specified. Other fluids could damage the system.

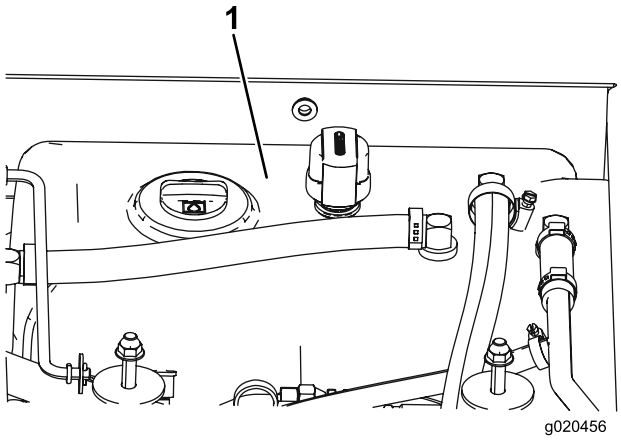


Figure 67

1. Hydraulic reservoir

4. Install the reservoir cap.
5. Start the engine and use all of the hydraulic controls to distribute hydraulic fluid throughout the system.
6. Check for leaks; then stop the engine.
7. Check the fluid level and add enough to raise level the level to the FULL mark on the dipstick. **Do not overfill.**

Replacing the Hydraulic Filters

Service Interval: Every 800 hours

Use Toro replacement filters (Part No. 94-2621 for the left side of the machine and 75-1310 for the right side of the machine).

Important: Using any other filter may void the warranty on some components.

1. Position the machine on a level surface, lower the cutting units, stop the engine, engage the parking brakes, and remove the ignition key.
2. Clean the area around the filter-mounting areas.
3. Place a drain pan under the filter and remove the filter (Figure 68).

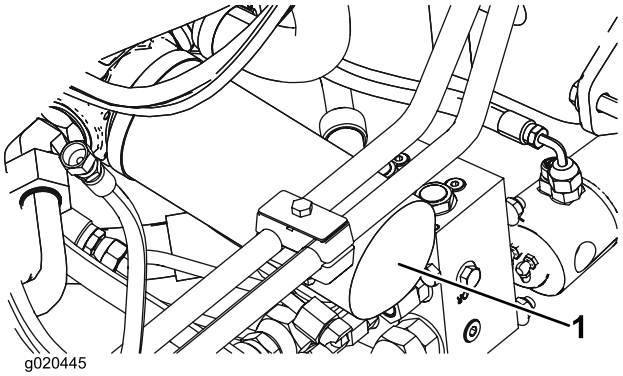


Figure 68

1. Hydraulic filter

4. Lubricate the new filter gasket and fill the filter with hydraulic fluid.
5. Ensure that the filter-mounting area is clean.
6. Screw the filter on until the gasket contacts the mounting plate; then tighten the filter an additional 1/2 turn.
7. Repeat the procedure for the other filter (Figure 69).

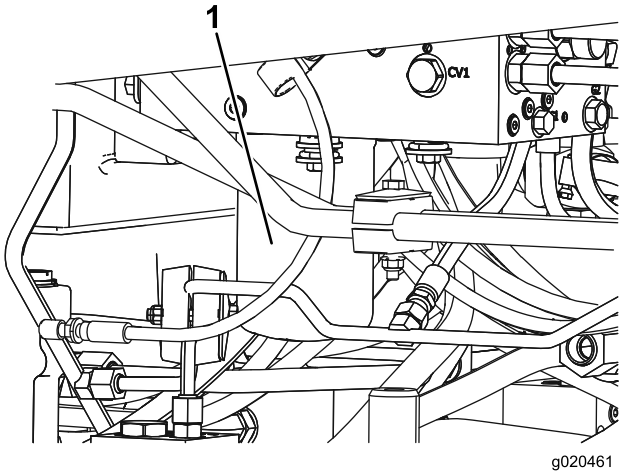


Figure 69

1. Hydraulic filter

8. Once the reservoir is filled, start the engine and let it run at low idle for approximately 2 minutes.
9. Activate the steering and raise and lower the cutting units several times to purge the air from the system.
10. Stop the engine and check for leaks.

Checking the Hydraulic Lines and Hoses

Service Interval: Every 2 years

Inspect the hydraulic lines and hoses daily for leaks, kinked lines, loose mounting supports, wear, loose fittings, weather deterioration, and chemical deterioration. Make all necessary repairs before operating the machine.

⚠ WARNING

Hydraulic fluid escaping under pressure can penetrate skin and cause injury.

- **Make sure that all hydraulic-fluid hoses and lines are in good condition and that all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.**
- **Keep your body and hands away from pin-hole leaks or nozzles that eject high-pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks.**
- **Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.**
- **Seek immediate medical attention if fluid is injected into skin.**

Adjusting the Counterbalance Pressure

The counterbalance test port (Figure 70) is used to test the pressure in the counterbalance circuit. The recommended counterbalance pressure is 2241 kPa (325 psi). To adjust the counterbalance pressure, loosen the locknut, rotate the adjusting screw (Figure 70) clockwise to increase the pressure or counterclockwise to decrease the pressure and tighten the locknut. To check the pressure, you must run the engine and have the deck lowered and in float.

Note: The castor wheels of all 3 cutting units should remain on the ground when adjusting the counterbalance and with counterbalance applied.

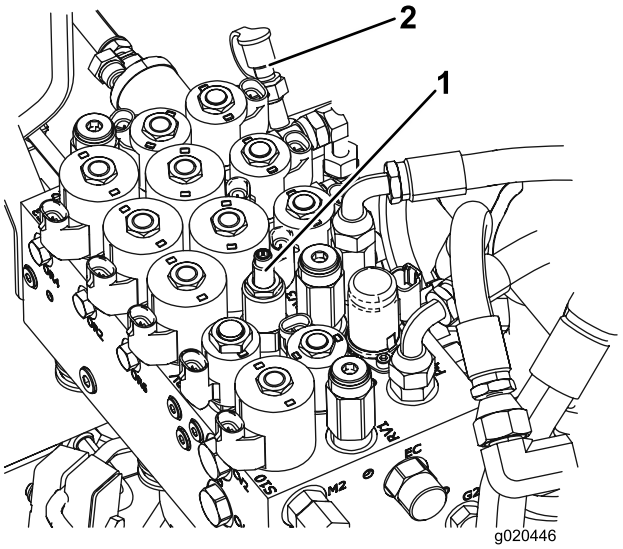


Figure 70

1. Counterbalance adjusting screw
2. Counterbalance test port

Mower Maintenance

Pivoting (Tilting) the Front Cutting Unit Upright

Note: Although not needed for normal maintenance procedures, you can pivot (tilt) the front cutting unit to an upright position.

1. Raise the front cutting unit slightly off of the floor, set the parking brake, and stop the engine.
2. Remove the ignition key.
3. Remove the hairpin cotter and clevis pin securing the deck transport latch to the latch plate.
4. Pivot the latch toward rear of deck.
5. Remove the hairpin cotter and clevis pin securing the height-of-cut chains to the rear of the cutting unit.
6. Start the engine, slowly raise the front cutting unit, and stop the engine.
7. Remove the ignition key.
8. Grasp the front of the cutting unit and lift it to an upright position.
9. Hold the cutting unit upright, fit the cable end over the pin on the cutting unit lift arm, and secure it with the hairpin cotter (Figure 71).

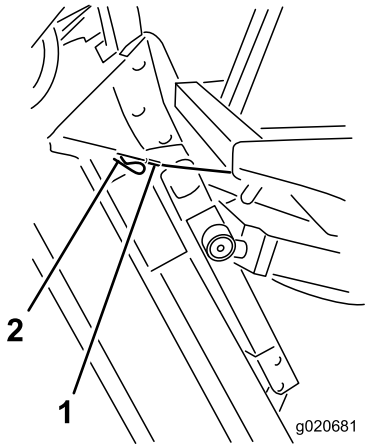


Figure 71

1. Cable
2. Pin

Pivoting the Front Cutting Unit Down

1. With the help of another person, hold the cutting unit upright, remove the hairpin cotter securing the cable end, and remove the cable from the pin.
2. Pivot (tilt) the cutting unit downward.
3. Store the cable under the operator's platform.
4. Sit on the seat, start the engine, and lower the cutting unit until it is slightly off the floor.
5. Secure the height-of-cut chains to the rear of the cutting unit.
6. Pivot transport latch upward into position and secure with clevis pin and cotter pin.

Adjusting the Cutting Unit Pitch

Measuring the Cutting Unit Pitch

Cutting-unit pitch is the difference in height-of-cut from the front of the blade plane to the back of the blade plane. Set a blade pitch so that the back of the blade plane is 8 to 11 mm (5/16 to 7/16 inch) higher than the front.

1. Position the machine on a level surface on the shop floor.
2. Set the cutting unit to the desired height of cut.
3. Rotate 1 blade so that it points straight forward.
4. Using a short ruler, measure from the floor to the front tip of the blade.

   Note: Rotate the blade tip to the rear and measure from the floor to the tip of the blade.
5. Subtract the front dimension from the rear dimension to calculate the blade pitch.

Adjusting the Front Cutting Unit

1. Loosen the jam nuts on the top or bottom of the height-of-cut chain U-bolt (Figure 72).
2. Adjust the other set of nuts to raise or lower the rear of the cutting unit and attain the correct cutting-unit pitch.
3. Tighten the jam nuts.

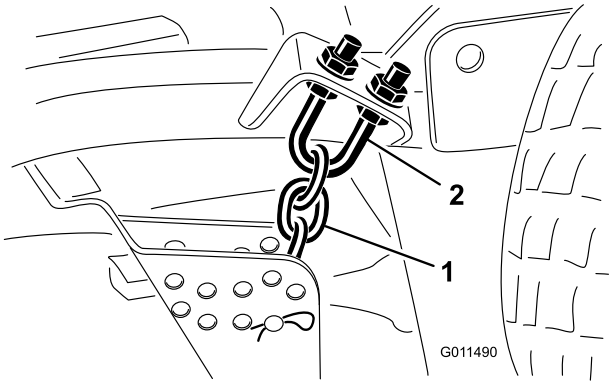


Figure 72

1. Height-of-cut chain
2. U-bolt

Adjusting the Side Cutting Units

Service Interval: Every 800 hours

1. Remove the tensioning cap from the spindle shaft and slide the spindle out of the castor arm (Figure 73).

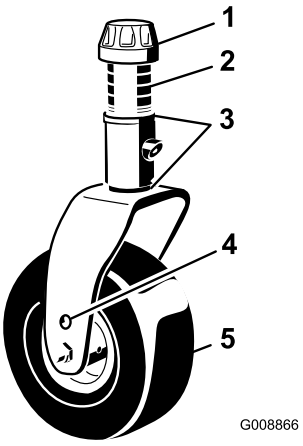


Figure 73

1. Tensioning cap
2. Spacers
3. Shims
4. Axle-mounting holes
5. Castor wheel

2. Position the shims, as required, to raise or lower the castor wheel until the cutting unit has the correct pitch.
3. Install the tensioning cap.

Servicing the Castor Arm Bushings

The castor arms have bushings pressed into the top and bottom of the tube and after many hours of operation, the bushings wear. To check the bushings, move the castor fork back and forth and from side to side. If the castor spindle is loose inside the bushings, the bushings are worn and must be replaced.

1. Raise the cutting unit so that the wheels are off the floor.

   Note: Block the cutting unit so that it cannot accidentally fall.

2. Remove the tensioning cap, spacer(s), and thrust washer from the top of the castor spindle.
3. Pull the castor spindle out of the mounting tube.
4. Allow the thrust washer and spacer(s) to remain on the bottom of the spindle.
5. Insert a pin punch into the top or bottom of the mounting tube and drive the bushing out of the tube (Figure 74).

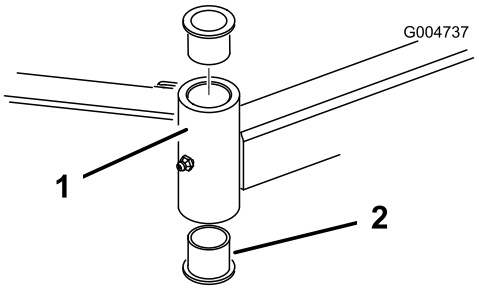


Figure 74

1. Castor arm tube
2. Bushings

6. Drive the other bushing out of the tube.
7. Clean the inside of the tubes to remove dirt.
8. Apply grease to the inside and outside of the new bushings.
9. Using a hammer and flat plate, drive the bushings into the mounting tube.
10. Inspect the castor spindle for wear and replace it if it is damaged.
11. Push the castor spindle through the bushings and mounting tube.
12. Slide the thrust washer and spacer(s) onto the spindle.
13. Install the tensioning cap onto the castor spindle to retain all parts in place.

Servicing the Castor Wheels and Bearings

Service Interval: Every 800 hours

1. Remove the locknut from the bolt holding the castor-wheel assembly between the castor fork (Figure 75) or the castor pivot arm (Figure 76).

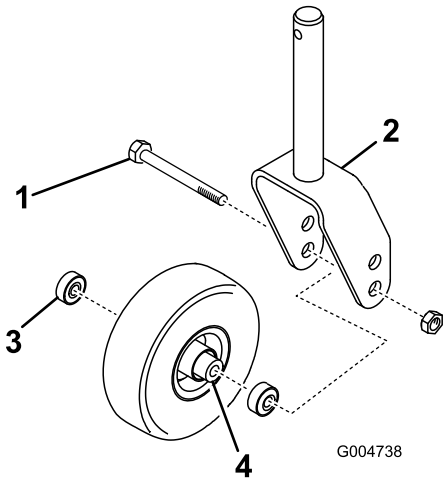


Figure 75

1. Castor bolt
2. Castor fork
3. Bearing
4. Bearing spacer

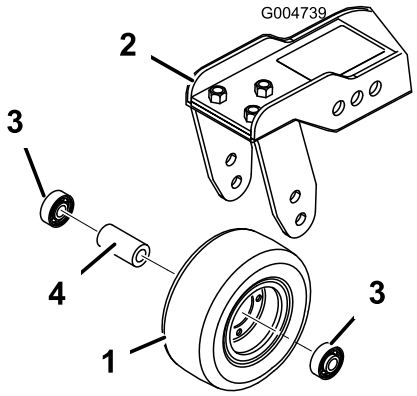


Figure 76

1. Castor wheel
2. Castor pivot arm
3. Bearing
4. Bearing spacer

2. Grasp the castor wheel and slide the bolt out of the fork or pivot arm.
3. Remove the bearing from the wheel hub and allow the bearing spacer to fall out (Figure 75 and Figure 76).
4. Remove the bearing from the opposite side of the wheel hub.
5. Check the bearings, spacer, and inside of the wheel hub for wear.

   Note: Replace any damaged parts.
6. To assemble the castor wheel, push the bearing into the wheel hub.

   Note: When installing the bearings, press on the outer race of the bearing.
7. Slide the bearing spacer into the wheel hub.
8. Push the other bearing into the open end of the wheel hub to capture the bearing spacer inside the wheel hub.
9. Install the castor wheel assembly between the castor fork and secure it in place with the bolt and locknut.

Blade Maintenance

Checking for a Bent Blade

After striking a foreign object, inspect the machine for damage and make repairs before starting and operating the equipment. Torque all the spindle pulley nuts to 176 to 203 N-m (130 to 150 ft-lb).

1. Position the machine on a level surface.
2. Raise the cutting unit, engage the parking brake, put the traction pedal in neutral, and put the PTO lever in the OFF position.
3. Stop the engine and remove the ignition key.
4. Block the cutting unit to prevent it from accidentally falling.
5. Rotate the blade until the ends face forward and backward (Figure 77).

   Note: Measure from the inside of the cutting unit to the cutting edge at the front of the blade.

   Note: Remember this dimension.

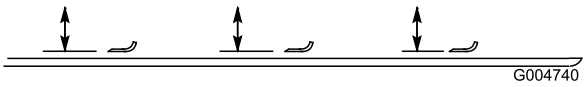


Figure 77

6. Rotate the opposite end of the blade forward and measure between the cutting unit and cutting edge of the blade at the same position as in step 5.

   Note: The difference between the dimensions obtained in steps 5 and 6 must not exceed 3 mm (1/8 inch). If it does, the blade is bent and must be replaced; refer to Removing and Installing the Cutter Blade(s) (page 53).

Removing and Installing the Cutter Blade(s)

Replace the blade if it hits a solid object or the blade is out of balance or bent. Always use genuine Toro replacement blades to be sure of safety and optimum performance. Never use replacement blades made by other manufacturers, because using them could be dangerous.

1. Raise the cutting unit to the highest height of cut.
2. Engage the parking brake, stop the engine, and remove the ignition key.
3. Block the cutting unit to prevent it from accidentally falling.
4. Grasp the end of the blade using a rag or thickly padded glove.
5. Remove the blade bolt, anti-scalp cup, and blade from the spindle shaft (Figure 78).

6. Install the blade, anti-scalp cup, and blade bolt.

   Important: The curved part of the blade must point toward the inside of the cutting unit to ensure proper cutting.

   Note: After striking a foreign object, torque all the spindle pulley nuts to 115 to 149 N-m (85 to 110 ft-lb).

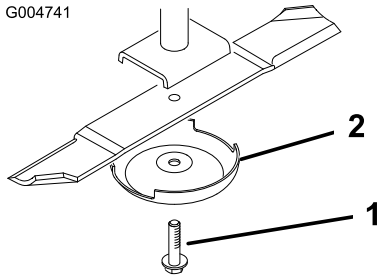


Figure 78

1. Blade bolt
2. Anti-scalp cup

7. Torque the blade bolt to 115 to 149 N-m (85 to 110 ft-lb).

Inspecting and Sharpening the Cutter Blade(s)

⚠ DANGER

A worn or damaged blade can break, and a piece of the blade could be thrown at you or bystanders, resulting in serious personal injury or death. Trying to repair a damaged blade may result in discontinued safety certification of the product.

- **Inspect the blade periodically for wear or damage.**
- **Never try to straighten a blade that is bent or weld a broken or cracked blade.**
- **Replace a worn or damaged blade.**

Two areas to check when servicing the cutter blade are the sail and the cutting edge. Both cutting edges and the sail, which is the turned up portion opposite the cutting edge, contribute to a good quality of cut. The sail lifts the grass up straight, thereby producing an even cut. However, the sail gradually wears down during operation, and this condition is normal. As the sail wears down, the quality of cut degrades, although the cutting edges remain sharp. The cutting edge of the blade must be sharp so that the grass is cut rather than torn. A dull cutting edge is evident when the tips of the grass appear brown and shredded. Sharpen the cutting edges to correct this condition.

1. Move the machine to a level surface.
2. Raise the cutting unit, engage the parking brake, put the traction pedal in neutral, put the PTO lever in the OFF position, stop the engine, and remove the ignition key.
3. Examine the cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Figure 79).

   Note: Since sand and abrasive material can wear away the metal that connects the flat and curved parts of the blade, check the blade before using the mower. If wear is noticed (Figure 79), replace the blade.

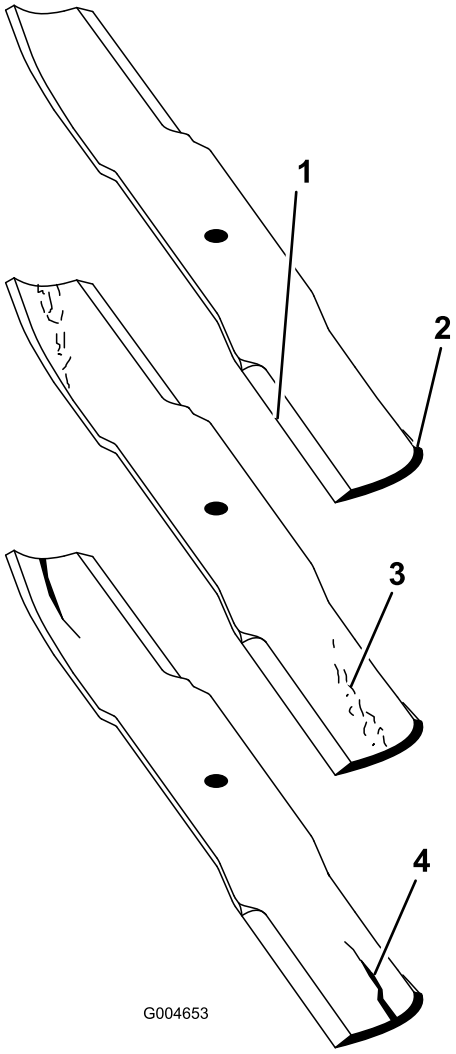


Figure 79

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

4. Examine the cutting edges of all of the blades. Sharpen the cutting edges if they are dull or nicked. Sharpen only the top of the cutting edge and maintain the original cutting angle (Figure 80). The blade remains balanced if the same amount of metal is removed from both cutting edges.

⚠ DANGER

If the blade is allowed to wear, a slot will form between the sail and flat part of the blade. Eventually a piece of the blade may break off and be thrown from under the housing, possibly resulting in serious injury to you or bystanders.

- **Inspect the blade periodically for wear or damage.**
- **Never try to straighten a blade that is bent or weld a broken or cracked blade.**
- **Replace a worn or damaged blade.**

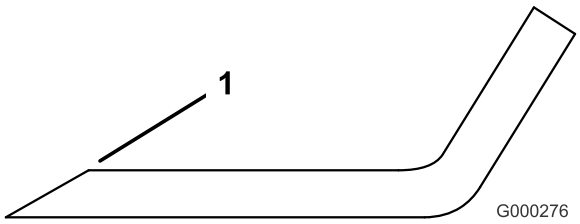


Figure 80

1. Sharpen at original angle

Note: Remove the blades and sharpen them on a grinder. After sharpening the cutting edges, install the blade with the anti-scalp cup and blade bolt; refer to Removing and Installing the Cutter Blade(s) (page 53).

Correcting Cutting Unit Mismatch

If there is mismatch between the blades on a single cutting unit, the grass appears streaked when you cut it. You can correct this problem by making sure that the blades are straight and all the blades are cutting on the same plane.

1. Using a 1 m (3 ft) long carpenters level, find a level surface on the shop floor.
2. Raise the height-of-cut to the highest position; refer to Adjusting the Height of Cut (page 26).
3. Lower the cutting unit onto the flat surface.
4. Remove the covers from the top of the cutting unit.
5. Loosen the flange nut securing the idler pulley to release the belt tension.
6. Rotate the blades until the ends face forward and backward.

   Note: Measure from the floor to the front tip of the cutting edge. Remember this dimension.
7. Rotate the same blade so that the opposite end is forward, and measure again. The difference between the dimensions must not exceed 3 mm (1/8 inch). If it does, replace the blade because it is bent. Make sure to measure all the blades.
8. Compare the measurements of the outer blades with the center blade.

   Note: The center blade must not be more than 10 mm (3/8 inch) lower than the outer blades. If it is lower than the outer blades, proceed to step 10 and add shims between the spindle housing and the bottom of the cutting unit.
9. Remove the bolts, flat washers, lock washers, and nuts from the outer spindle in the area where you must add the shims.
10. To raise or lower the blade, add a shim, Part No. 3256-24, between the spindle housing and the bottom of the cutting unit.

    Note: Continue to check the alignment of the blades and add shims until the tips of the blades are within the required dimension.

    Important: Do not use more than 3 shims at any 1 hole location. Use decreasing numbers of shims in adjacent holes if more than 1 shim is added to any 1 hole location.
11. Adjust the idler pulley and install the belt covers.

Storage

Preparing for Seasonal Storage

Traction Unit

1. Thoroughly clean the traction unit, cutting units, and the engine.
2. Check the tire pressure; refer to Checking the Tire Pressure (page 26).

   Check all fasteners for looseness; tighten as necessary.
3. Grease or oil all grease fittings and pivot points. Wipe up any excess lubricant.
4. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted. Repair any dents in the metal body.
5. Service the battery and cables as follows:
   A. Remove the battery terminals from the battery posts.
   B. Clean the battery, terminals, and posts with a wire brush and baking soda solution.
   C. Coat the cable terminals and battery posts with Grafo 112X skin-over grease (Toro Part No. 505-47) or petroleum jelly to prevent corrosion.
   D. Slowly recharge the battery every 60 days for 24 hours to prevent lead sulfation of the battery.

Engine

1. Drain the engine oil from the oil pan and install the drain plug.
2. Remove and discard the oil filter. Install a new oil filter.
3. Refill the oil pan with motor oil.
4. Start the engine and run it at idle speed for approximately 2 minutes.
5. Stop the engine.
6. Flush the fuel tank with fresh, clean diesel fuel.
7. Secure all of the fuel system fittings.
8. Thoroughly clean and service the air cleaner assembly.
9. Seal the air-cleaner inlet and the exhaust outlet with weatherproof tape.
10. Check the anti-freeze protection and add a 50/50 solution of water and ethylene glycol anti-freeze as needed for the expected minimum temperature in your area.

Notes:

Notes:

International Distributor List

Distributor:	Country:	Phone Number:	Distributor:	Country:	Phone Number:
Agrolanc Kft	Hungary	36 27 539 640	Maquiver S.A.	Colombia	57 1 236 4079
Balama Prima Engineering Equip.	Hong Kong	852 2155 2163	Maruyama Mfg. Co. Inc.	Japan	81 3 3252 2285
B-Ray Corporation	Korea	82 32 551 2076	Mountfield a.s.	Czech Republic	420 255 704 220
Casco Sales Company	Puerto Rico	787 788 8383	Mountfield a.s.	Slovakia	420 255 704 220
Ceres S.A.	Costa Rica	506 239 1138	Munditol S.A.	Argentina	54 11 4 821 9999
CSSC Turf Equipment (pvt) Ltd.	Sri Lanka	94 11 2746100	Norma Garden	Russia	7 495 411 61 20
Cyril Johnston & Co.	Northern Ireland	44 2890 813 121	Oslinger Turf Equipment SA	Ecuador	593 4 239 6970
Cyril Johnston & Co.	Republic of Ireland	44 2890 813 121	Oy Hako Ground and Garden Ab	Finland	358 987 00733
Equiver	Mexico	52 55 539 95444	Parkland Products Ltd.	New Zealand	64 3 34 93760
Femco S.A.	Guatemala	502 442 3277	Perfetto	Poland	48 61 8 208 416
ForGarder OU	Estonia	372 384 6060	Pratoverde SRL.	Italy	39 049 9128 128
G.Y.K. Company Ltd.	Japan	81 726 325 861	Prochaska & Cie	Austria	43 1 278 5100
Geomechaniki of Athens	Greece	30 10 935 0054	RT Cohen 2004 Ltd.	Israel	972 986 17979
Golf international Turizm	Turkey	90 216 336 5993	Riversa	Spain	34 9 52 83 7500
Guandong Golden Star	China	86 20 876 51338	Lely Turfcare	Denmark	45 66 109 200
Hako Ground and Garden	Sweden	46 35 10 0000	Solvert S.A.S.	France	33 1 30 81 77 00
Hako Ground and Garden	Norway	47 22 90 7760	Spypros Stavrinides Limited	Cyprus	357 22 434131
Hayter Limited (U.K.)	United Kingdom	44 1279 723 444	Surge Systems India Limited	India	91 1 292299901
Hydroturf Int. Co Dubai	United Arab Emirates	97 14 347 9479	T-Markt Logistics Ltd.	Hungary	36 26 525 500
Hydroturf Egypt LLC	Egypt	202 519 4308	Toro Australia	Australia	61 3 9580 7355
Irrimac	Portugal	351 21 238 8260	Toro Europe NV	Belgium	32 14 562 960
Irrigation Products Int'l Pvt Ltd.	India	0091 44 2449 4387	Valtech	Morocco	212 5 3766 3636
Jean Heybroek b.v.	Netherlands	31 30 639 4611	Victus Emak	Poland	48 61 823 8369

European Privacy Notice

The Information Toro Collects
Toro Warranty Company (Toro) respects your privacy. In order to process your warranty claim and contact you in the event of a product recall, we ask you to share certain personal information with us, either directly or through your local Toro company or dealer.

The Toro warranty system is hosted on servers located within the United States where privacy law may not provide the same protection as applies in your country.

BY SHARING YOUR PERSONAL INFORMATION WITH US, YOU ARE CONSENTING TO THE PROCESSING OF YOUR PERSONAL INFORMATION AS DESCRIBED IN THIS PRIVACY NOTICE.

The Way Toro Uses Information
Toro may use your personal information to process warranty claims, to contact you in the event of a product recall and for any other purpose which we tell you about. Toro may share your information with Toro's affiliates, dealers or other business partners in connection with any of these activities. We will not sell your personal information to any other company. We reserve the right to disclose personal information in order to comply with applicable laws and with requests by the appropriate authorities, to operate our systems properly or for our own protection or that of other users.

Retention of your Personal Information
We will keep your personal information as long as we need it for the purposes for which it was originally collected or for other legitimate purposes (such as regulatory compliance), or as required by applicable law.

Toro's Commitment to Security of Your Personal Information
We take reasonable precautions in order to protect the security of your personal information. We also take steps to maintain the accuracy and current status of personal information.

Access and Correction of your Personal Information
If you would like to review or correct your personal information, please contact us by email at legal@toro.com.

Australian Consumer Law

Australian customers will find details relating to the Australian Consumer Law either inside the box or at your local Toro Dealer.

Toro General Commercial Product Warranty

A Two-Year Limited Warranty

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Commercial product ("Product") to be free from defects in materials or workmanship for two years or 1500 operational hours*, whichever occurs first. This warranty is applicable to all products with the exception of Aerators (refer to separate warranty statements for these products). Where a warrantable condition exists, we will repair the Product at no cost to you including diagnostics, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.
* Product equipped with an hour meter.

Instructions for Obtaining Warranty Service

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

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

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

Owner Responsibilities

As the Product owner, you are responsible for required maintenance and adjustments stated in your *Operator's Manual*. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Items and Conditions Not Covered

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

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, or modified non-Toro branded accessories and products. A separate warranty may be provided by the manufacturer of these items.
- Product failures which result from failure to perform recommended maintenance and/or adjustments. Failure to properly maintain your Toro product per the Recommended Maintenance listed in the *Operator's Manual* can result in claims for warranty being denied.
- Product failures which result from operating the Product in an abusive, negligent, or reckless manner.
- Parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, brake pads and linings, clutch linings, blades, reels, rollers and bearings (sealed or greasable), bed knives, spark plugs, castor wheels and bearings, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, and check valves, etc.
- Failures caused by outside influence. Conditions considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved fuels, coolants, lubricants, additives, fertilizers, water, or chemicals, etc.
- Failure or performance issues due to the use of fuels (e.g. gasoline, diesel, or biodiesel) that do not conform to their respective industry standards.
- Normal noise, vibration, wear and tear, and deterioration.
- Normal "wear and tear" includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.

Parts

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

Deep Cycle and Lithium-Ion Battery Warranty:

Deep cycle and Lithium-Ion batteries have a specified total number of kilowatt-hours they can deliver during their lifetime. Operating, recharging, and maintenance techniques can extend or reduce total battery life. As the batteries in this product are consumed, the amount of useful work between charging intervals will slowly decrease until the battery is completely worn out. Replacement of worn out batteries, due to normal consumption, is the responsibility of the product owner. Battery replacement may be required during the normal product warranty period at owner's expense. Note: (Lithium-Ion battery only): A Lithium-Ion battery has a part only prorated warranty beginning year 3 through year 5 based on the time in service and kilowatt hours used. Refer to the *Operator's Manual* for additional information.

Maintenance is at Owner's Expense

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

General Conditions

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

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

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

Note regarding engine warranty:

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

Countries Other than the United States or Canada

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

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