Form No. 3393-870 Rev B

TORO®

Count on it.

Operator's Manual

Groundsmaster® 7210 Series Traction Unit

Model No. 30695—Serial No. 315000001 and Up

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

3393-870 B

⚠ 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.

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Because in some areas there are local, state, or federal regulations requiring that a spark arrester be used on the engine of this machine, a spark arrester is available as an option. If you require a spark arrester, contact your Authorized Toro Service Dealer.

Genuine Toro spark arresters are approved by the USDA Forestry Service.

Important: **It is a violation of California Public Resource Code Section 4442 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land without a spark arrester muffler maintained in working order, or the engine constricted, equipped, and maintained for the prevention of fire. Other states or federal areas may have similar laws.**

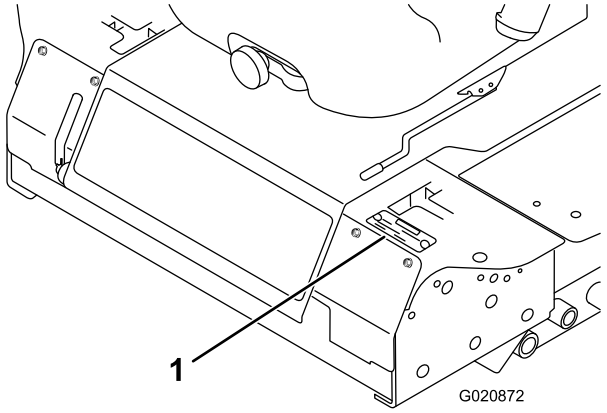
Introduction

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.



g020872

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

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

g000502

Figure 2

1. Safety alert symbol

This manual also 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

These machines meet or exceed ANSI B71.4–2012 specifications in effect at the time of production

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

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

Training

- Read the *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 lawn mower. Local regulations can restrict the age of the operator.
- Never mow while people, especially children, or pets are nearby.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- Do not carry passengers.
- All drivers should seek and obtain professional and practical instruction. Such instruction should emphasize:
  - the need for care and concentration when working with ride-on machines;
  - control of a ride-on machine sliding on a slope will not be regained by the application of the control levers. The main reasons for loss of control are:
    - ◊ insufficient wheel grip, especially on wet grass;
    - ◊ 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 load distribution.

Preparation

- While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Thoroughly inspect the area where the equipment is to be used and remove all objects which may be thrown by the machine.
- **Warning**—fuel is highly flammable.
  - Store fuel in containers specifically designed for this purpose.
  - Refuel outdoors only and do not smoke while refueling.
  - 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 cutter assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.

Operation

- Be alert, slow down and use caution when making turns. Look behind and to the side before changing directions.
- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
- Mow only in daylight or in good artificial light.
- Before attempting to start the engine, disengage all blade attachment clutches and shift into neutral.
- 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 on a slope;
  - use slow speeds on slopes and during tight turns;
  - stay alert for humps and hollows and other hidden hazards;
- 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.
- Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed may increase the hazard of personal injury.
- Before leaving the operator's position:
  - disengage the power take-off and lower the attachments;
  - change into neutral and set the parking brake;
  - stop the engine and remove the key.
- Disengage drive to attachments, stop the engine, and remove the ignition key:
  - before clearing blockages or unclogging chute;
  - before checking, cleaning or working on the lawn mower;
  - after striking a foreign object. Inspect the lawn mower for damage and make repairs before restarting and operating the equipment;
  - if the machine starts to vibrate abnormally (check immediately).
- 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.
- Disengage drive to attachments when transporting or not in use.
- Stop the engine and disengage drive to attachment before refuelling.

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.
- To reduce the fire hazard, keep the engine, silencer/muffler, battery compartment and fuel storage area free of grass, leaves, or excessive grease.
- Replace worn or damaged parts for safety.
- If the fuel tank has to be drained, do this outdoors.
- On multi-bladed mowers, take care as manually rotating one blade can cause other blades to rotate.
- When machine is to be parked, stored or left unattended, lower the mower deck.

Toro Riding Mower Safety

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

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

Slope Operation

- Do not mow near drop-offs, ditches, steep banks or water. Wheels dropping over edges can cause rollovers, which may result in serious injury, death, or drowning.
- Do not mow slopes when grass is wet. Slippery conditions reduce traction and could cause sliding and loss of control.
- Do not make sudden turns or rapid speed changes.
- Use a walk behind mower and/or a hand trimmer near drop-offs, ditches, steep banks or water.
- Reduce speed and use extreme caution on slopes.
- Remove or mark obstacles such as rocks, tree limbs, etc. from the mowing area. Tall grass can hide obstacles.
- Watch for ditches, holes, rocks, dips, and rises that change the operating angle, as rough terrain could overturn the machine.
- Avoid sudden starts when mowing uphill because the mower may tip backwards.

- Be aware that loss of traction may occur going downhill. Weight transfer to the front wheels may cause drive wheels to slip and cause loss of braking and steering.
- Always avoid sudden starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly off the slope.
- Follow the manufacturer's recommendations for wheel weights or counterweights to improve stability.
- Use extreme care with attachments. These can change the stability of the machine and cause loss of control.

Using the Rollover Protection System (ROPS)

- Keep the roll bar in the raised and locked position and use the seat belt when operating the machine.
- Be certain that the seat belt can be released quickly in the event of an emergency.
- Be aware there is no rollover protection when the roll bar is down.
- Check the area to be mowed and never fold the ROPS in areas where there are slopes, drop offs or water.
- Lower the rollbar only when absolutely necessary. **Do not wear the seat belt with the roll bar folded down.**
- Check carefully for overhead clearances (i.e. branches, doorways, electrical wires) before driving under any objects and do not contact them.

Engine Emission Certification

The engine in this machine is EPA Tier 4 Final and stage 3b compliant.

Slope Indicator

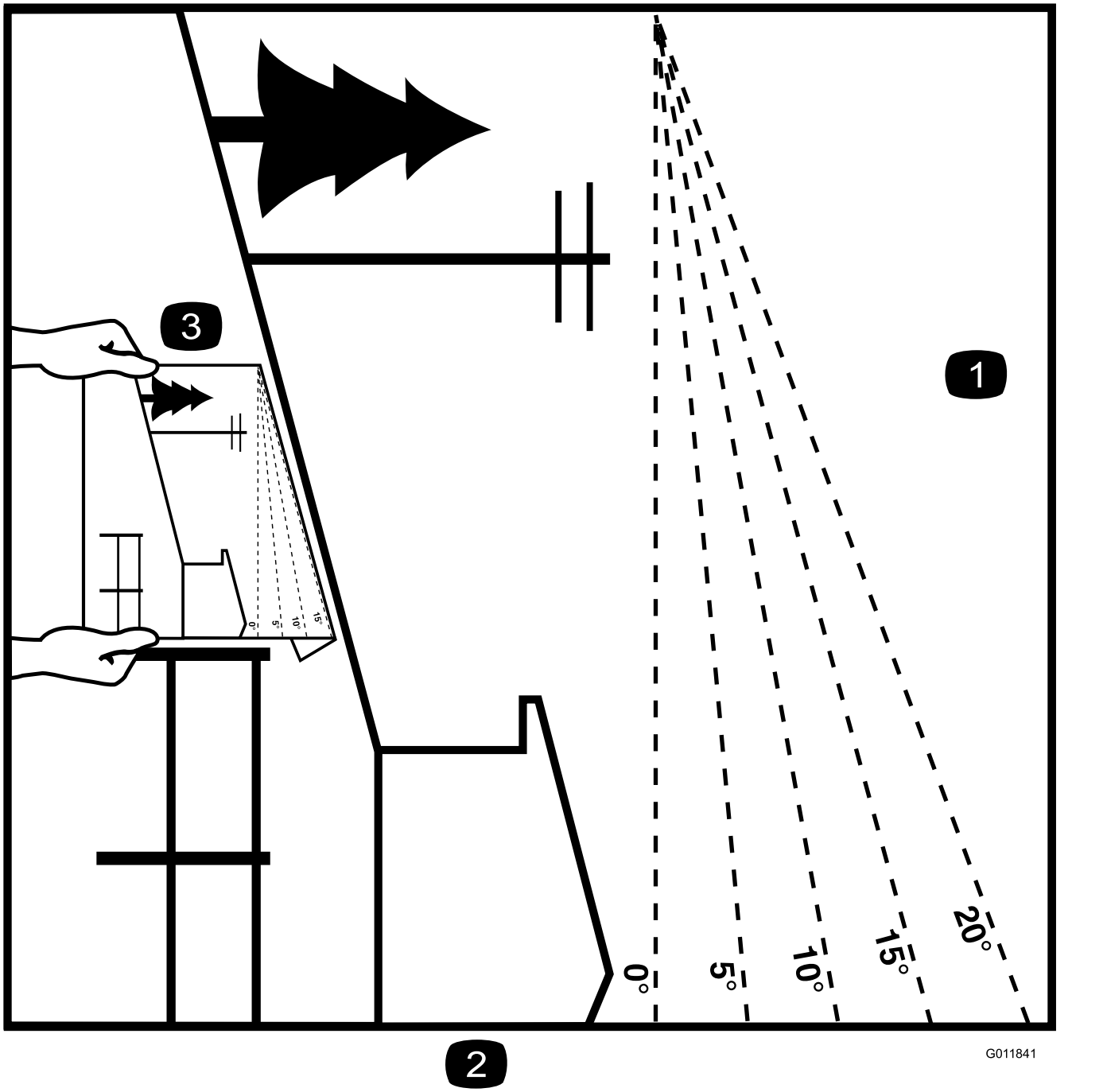


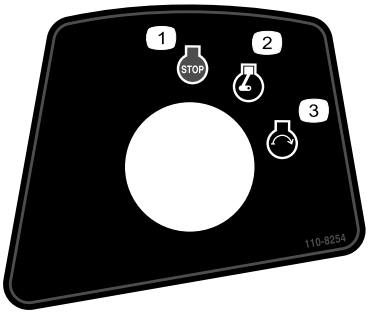
Figure 3

This page may be copied for personal use.

1. The maximum slope you can safely operate the machine on is **15 degrees**. Use the slope chart to determine the degree of slope of hills before operating. **Do not operate this machine on a slope greater than 15 degrees.** Fold along the appropriate line to match the recommended slope.
2. Align this edge with a vertical surface, a tree, building, fence pole, etc.
3. Example of how to compare slope with folded edge.

Safety and Instructional Decals

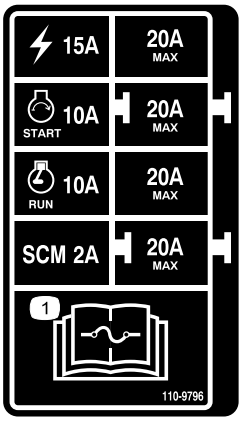
Safety decals and instructions are easily visible to the operator and are located near any area of potential danger. Replace any decal that is damaged or lost.



decal110-8254

110-8254

1. Engine–Stop
2. Engine—Run
3. Engine—Start



decal110-9796

110-9796

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

decal93-6687

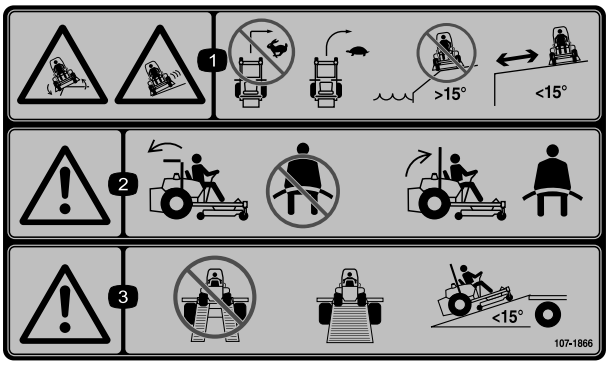
93-6687

1. Do not step here.

decal93-6697

93-6697

1. Read the *Operator's Manual*.
2. Add SAE 80w-90 (API GL-5) oil every 50 hours.



decal107-1866

107-1866

1. Tipping hazard and sliding or loss of control hazard, drop-offs—do not turn sharply while traveling fast, instead, slow down and turn gradually, do not operate the machine near drop-offs, slopes greater than 15 degrees, or water; keep a safe distance from drop-offs.
2. Warning—if the roll bar is lowered, do not wear the seat belt, if the roll bar is raised, wear the seat belt.
3. Warning—do not use split ramps, use a full ramps when transporting machine, only use ramps with inclines less than 15 degrees.

decalbatterysymbols

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.

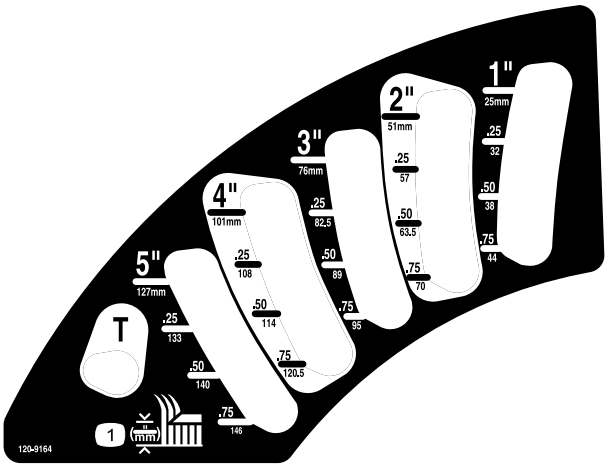
decal117-2718

117–2718

decal117-3276

117-3276

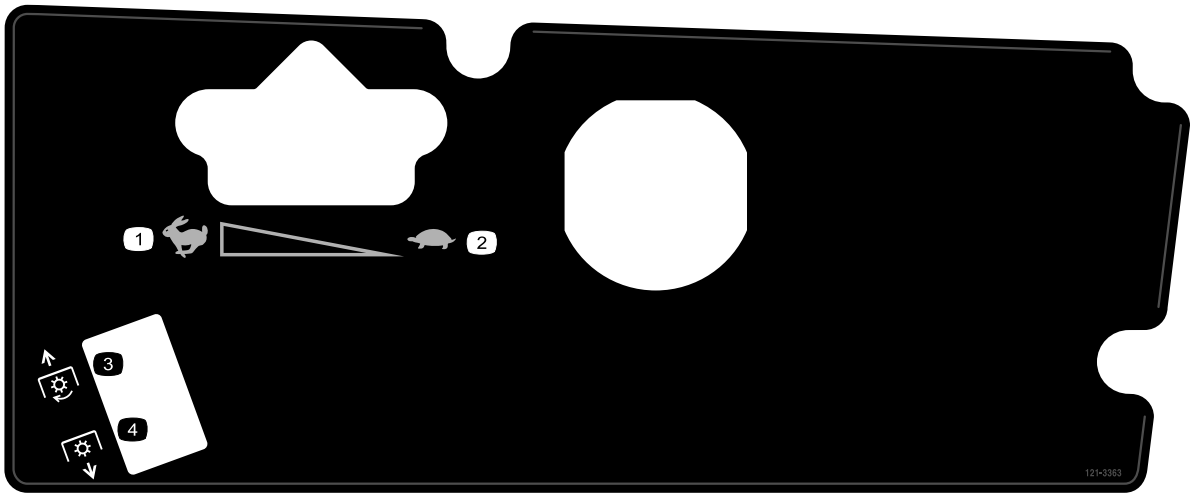
1. Engine coolant under pressure
2. Explosion hazard—read the *Operator's Manual*.
3. Warning—do not touch the hot surface.
4. Warning—read the *Operator's Manual*.



decal120-9164

120–9164

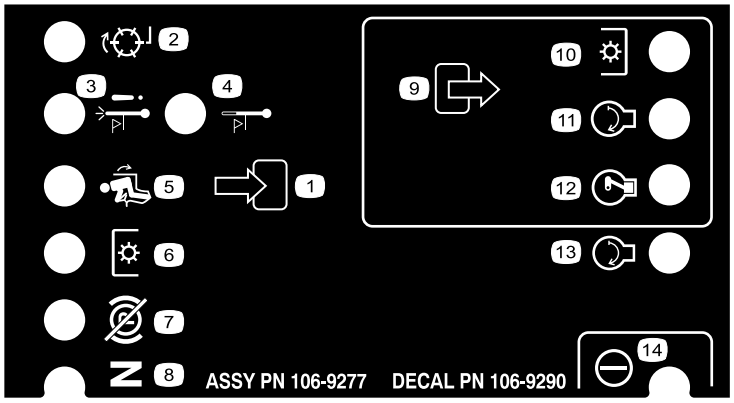
1. Height-of-cut settings



decal121-3363

121–3363

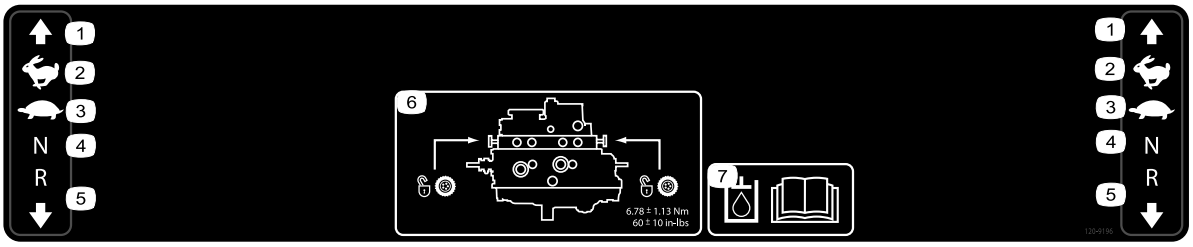
1. Fast
2. Slow
3. Engage PTO
4. Disengage PTO



decal106-9290

106-9290

1. Inputs
2. Not active
3. High temperature shutdown
4. High temperature warning
5. In seat
6. Power Take-off (PTO)
7. Parking brake Off
8. Neutral
9. Outputs
10. Power Take Off (PTO)
11. Start
12. Energize to Run (ETR)
13. Start
14. Power



decal120-9196

120-9196

1. Forward
2. Fast
3. Slow
4. Neutral
5. Reverse
6. Tow valve location; torque the tow valves to 6.78 ± 1.13 N·m (60 ± 10 in-lbs).
7. Read the *Operator's Manual* for more information on the hydraulic oil.

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	No parts required	–	Raise the roll bar.
2	No parts required	–	Check the tire pressure.
3	No parts required	–	Check the hydraulic fluid, engine oil, and coolant levels.

Media and Additional Parts

Description	Qty.	Use
Ignition Key	1	Spare ignition key
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		Review before operating machine

1

Raising the Roll Bar

No Parts Required

Procedure

Raise and secure the roll bar before using the product; refer to Using the Rollover Protection System (ROPS) (page 18) for detailed instructions and information on the rollover protection system.

2

Checking the Tire Pressure

No Parts Required

Procedure

The tires are over inflated for shipping. Therefore, release some of the air to reduce the pressure. The correct air pressure is 124 kPa (18 psi) in the rear tires and 172 kPa (25 psi) in the caster wheels.

3

Checking Fluid Levels

No Parts Required

Procedure

1. Check the hydraulic fluid level before starting the engine, refer to Checking the Hydraulic System (page 59).
2. Check the engine oil level before and after starting the engine, refer to Checking the Engine-Oil Level (page 45).
3. Check the cooling system before starting the engine; refer to Checking the Cooling System (page 51).

Product Overview

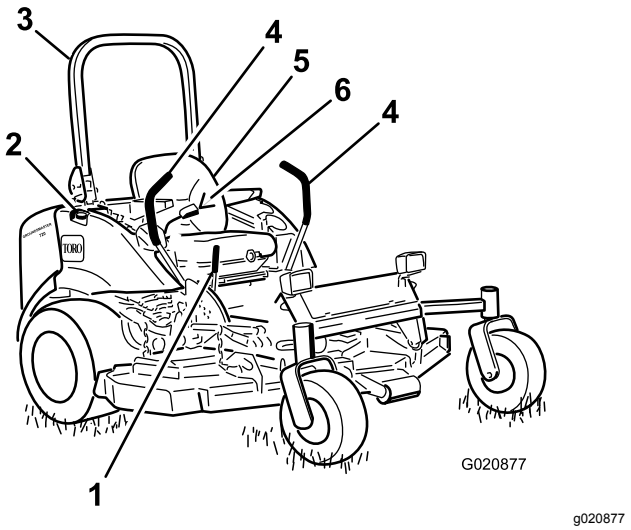


Figure 4

1. Parking brake lever
2. Fuel cap (both sides)
3. Roll bar
4. Motion control lever
5. Seat
6. Seat belt

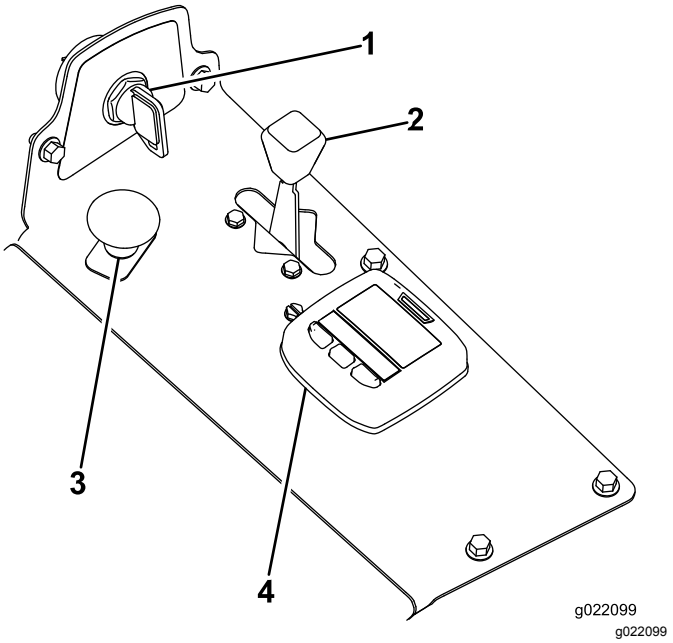


Figure 5

1. Ignition switch
2. Throttle lever
3. Power take off (PTO) Switch
4. InfoCenter

Controls

Become familiar with all the controls before you start the engine and operate the machine (Figure 4 and Figure 5).

Motion-Control Levers

The motion-control levers control the forward and rearward motions as well turn the machine. Refer to Driving the Machine (page 22).

Parking-Brake Lever

Whenever the engine is shut off, engage the parking brake to prevent accidental movement of the machine. To engage the parking brake, pull the parking-brake lever rearward and up (Figure 6). To release the parking brake, push the parking-brake lever forward and down.

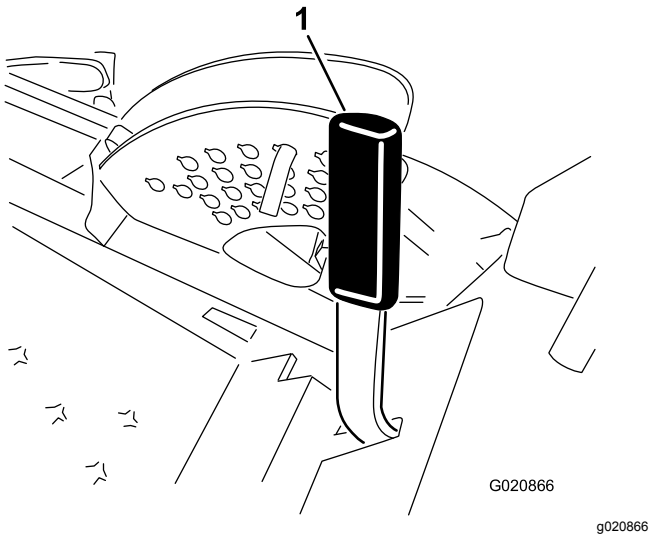


Figure 6

1. Parking-brake lever

⚠ CAUTION

Do not park the traction unit on a slope.

Ignition Switch

The ignition switch has 3 positions: Off, On/Preheat, and Start.

Throttle Lever

The throttle lever controls the speed of the engine. Move the throttle lever forward toward the FAST position to increase the engine speed. Move it rearward toward the SLOW position to decrease the engine speed. The throttle controls the speed of the blades and, in conjunction with motion-control levers, controls ground speed of the machine. Always run the machine with the throttle in the FAST position when cutting grass.

Power Take-off (PTO) Switch

The power take-off (PTO) switch starts and stops the mower blades.

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.

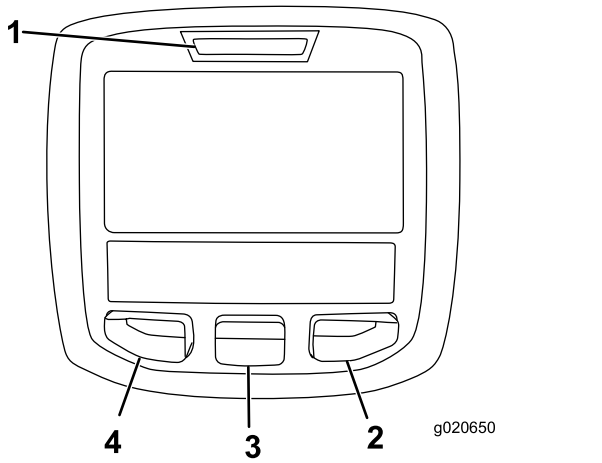


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Figure 7

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

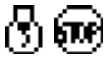
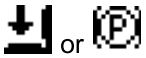
- Left Button, Menu Access/Back Button—press this button to access the InfoCenter menus. You can use it to back out of any menu you are currently using.
- Middle Button—use this button to scroll down menus.
- Right Button—use this button to open a menu where a right arrow indicates additional content.

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

InfoCenter Icon Description

SERVICE DUE	Indicates when scheduled service should be performed
RPM	Engine RPM/status—indicates the engine RPM
	Hour meter
	Info icon
	Stationary regeneration required
	Glow plugs are active
	Operator must sit in seat
	Parking Brake Indicator—indicates when the parking brake is on
	Coolant Temperature-indicates the engine coolant temperature in either °C or °F
	Temperature (hot)
	Denied or not allowed
	Engine start
	Stop or shutdown
	Engine
	Key switch
PIN	PIN code
	Hydraulic oil temperature—indicates the hydraulic oil temperature
CAN	CAN bus
	InfoCenter
Bad	Bad or failed
	Bulb
OUT	Output of TEC controller or control wire in harness
HI	High: over allowed range
LO	Low: under allowed range

InfoCenter Icon Description (cont'd.)

HI / LO	Out of range
	Switch
	Operator must release switch
	Operator should change to indicated state
Symbols are often combined to form sentences. Some examples are shown below	
	Engine start denied
	Engine shutdown
	Engine coolant too hot
 or	Sit down or set parking brake

Using the Menus

To access the InfoCenter menu system, press the menu access button while at the main screen. This brings 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.
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 the machine has been transported and has overheated.

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 a person authorized by your company with the PIN code to access protected menus.

* 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 is 1 operating function that is accessed within the Service Menu of the InfoCenter: Regeneration request; refer to Diesel Particulate Filter Regeneration (page 25). This function is in the Protected Menu.

Accessing Protected Menus

Note: The factory default PIN code for you machine is either 0000 or 1234.

If you changed the PIN code and forgot the code, contact your Authorized Toro Distributor for assistance.

1. From the MAIN MENU, use the center button to scroll down to the SETTINGS MENU and press the right button (Figure 8).

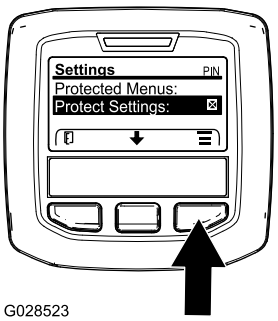


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Figure 8

2. In the SETTINGS MENU, use the center button to scroll down to the PROTECTED MENU and press the right button (Figure 9A).

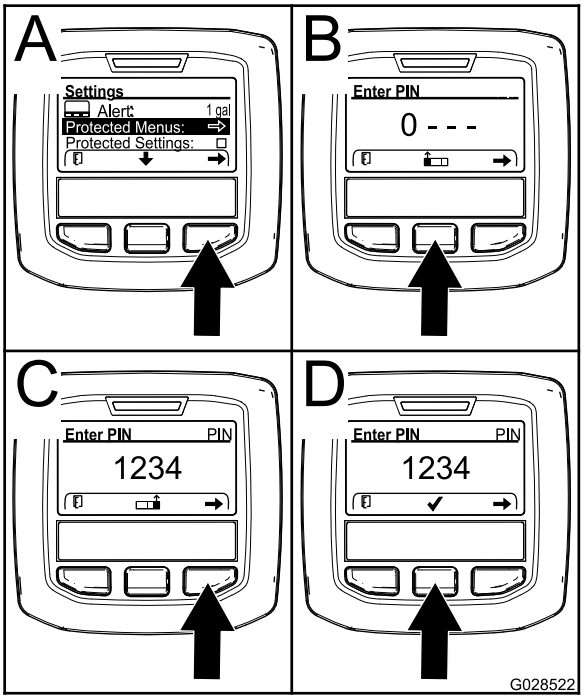

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Figure 9

3. To enter the PIN code, press the center button until the correct first digit appears, then press the right button to move on to the next digit (Figure 9B and Figure 9C). Repeat this step until the last digit is entered and press the right button once more.
4. Press the middle button to enter the PIN code (Figure 9D).

   Wait until the red indicator light of the InfoCenter illuminates.

   Note: If the InfoCenter accepts the PIN code and the protected menu is unlocked, the word “PIN” displays in the upper right corner of the screen.

Note: Rotate the key switch to the OFF position and then to the ON position locks the protected menu.

You have the ability to view and change the settings in the Protected Menu. Once you access the Protected Menu, scroll down to Protect Settings option. Use the right button to change the setting. Setting the Protect Settings to OFF allows you to view and change the settings in the Protected Menu without entering the PIN code. Setting the Protect Settings to ON hides the protected options and requires you to enter the PIN code to change the setting in the Protected Menu. After you set the PIN code, rotate the key switch OFF and back to the ON position to enable and save this feature.

Specifications

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

Length	254 cm (100 inches)
Width (Rear Wheels)	144.8 cm (57 inches)
Height (Roll Bar Up)	182.9 cm (72 inches)
Height (Roll Bar Down)	121.9 cm (48 inches)
Weight with the 72in Side-Discharge Mower (30481)	1052 kg (2320 lb)
Weight with the 60in Side-Discharge Mower (30456)	1036 kg (2284 lb)
Weight with the 72in Base Mower (30353)	1012 kg (2231 lb)
Weight with the 62in Base Mower (30457)	990 kg (2183 lb)
Weight with the 100in Rear-Discharge Mower (31101)	1200 kg (2646 lb)

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.

⚠ 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.

Adding Fuel

⚠ 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 fuel tank or conditioner opening.**
- **Keep fuel away from eyes and skin.**

⚠ 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 180-day supply of fuel.**
- **Do not operate machine without entire exhaust system in place and in proper working condition.**

⚠ DANGER

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

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

Fuel Specification

Important: **Use only ultra-low sulphur diesel fuel. Fuel with higher rates of sulfur degrades the diesel oxidation catalyst (DOC), which causes operational problems and shortens the service life of engine components.**

Failure to observe the following cautions may damage the engine.

- Never use kerosene or gasoline instead of diesel fuel.
- Never mix kerosene or used engine oil with the diesel fuel.
- Never keep fuel in containers with zinc plating on the inside.
- Do not use fuel additives.

Petroleum Diesel

Cetane rating: 45 or higher

Sulfur content: Ultra-low sulfur (<15 ppm)

Fuel Table

Diesel fuel specification	Location
ASTM D975 No. 1-D S15 No. 2-D S15	USA
EN 590	European Union
ISO 8217 DMX	International
JIS K2204 Grade No. 2	Japan
KSM-2610	Korea

- Use only clean, fresh diesel fuel or biodiesel fuels.
- Purchase fuel in quantities that can be used within 180 days to ensure fuel freshness.

Use summer-grade diesel fuel (No. 2-D) at temperatures above -7°C (20°F) and winter-grade fuel (No. 1-D or No. 1-D/2-D blend) below that temperature.

Note: Use of winter-grade fuel at lower temperatures provides lower flash point and cold flow characteristics which eases starting and reduces fuel filter plugging.

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

Biodiesel

This machine can also use a biodiesel blended fuel of up to B20 (20% biodiesel, 80% petroleum diesel).

Sulfur content: Ultra-low sulfur (<15 ppm)

Biodiesel fuel specification: ASTM D6751 or EN14214

Blended fuel specification: ASTM D975, EN590, or JIS K2204

Important: **The petroleum diesel portion must be ultra-low sulfur.**

Observe the following precautions:

- Biodiesel blends may damage painted surfaces.
- Use B5 (biodiesel content of 5%) or lesser blends in cold weather.
- Monitor seals, hoses, gaskets in contact with fuel as they may be degraded over time.
- Fuel filter plugging may be expected for a time after converting to biodiesel blends.
- Contact your Authorized Toro Distributor if you wish for more information on biodiesel.

Fuel Tank Capacity

43.5 L (11.5 US gallons)

Filling the Fuel Tank

1. Park the machine on a level surface.

   Important: **The fuel tanks are connected, but the fuel does not transfer quickly from one tank to the other. It is important when filling that you park on a level surface. If you park on a hill, you may inadvertently overfill the tanks.**

2. Shut the engine off and set the parking brake.
3. Clean around each fuel tank cap and remove the cap.

   Important: **Do not open the fuel tanks when parked on a hill. The fuel could spill out.**

4. Add fuel to both fuel tanks, until the level is even with the bottom of the filler neck (Figure 10). **Do not over fill the fuel tanks.**

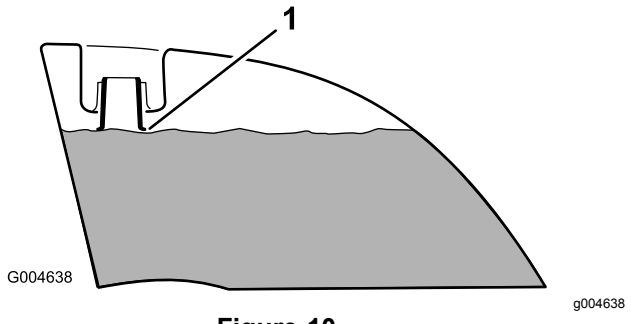


Figure 10

1. Bottom of the filler neck

5. Install the fuel tank caps securely. Wipe up any fuel that may have spilled.

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

Checking the Engine Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to Checking the Engine-Oil Level (page 45).

Checking the Cooling System

Before you start the engine and use the machine, check the cooling system; refer to Checking the Cooling System (page 51).

Checking the Hydraulic System

Before you start the engine and use the machine, check the hydraulic system; refer to Checking the Hydraulic System (page 59).

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 rear part of the seat is secured with the seat latch.

⚠ WARNING

There is no rollover protection when the roll bar is 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, push the roll bar forward against the springs, and remove the 2 pins (Figure 11).

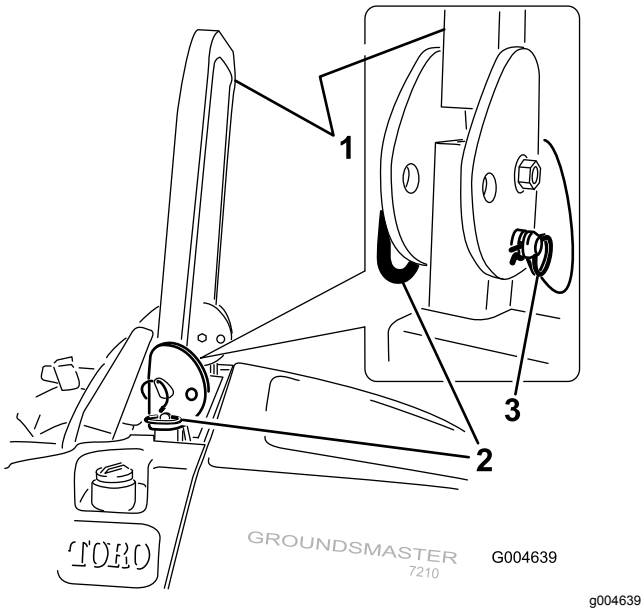


Figure 11

1. Roll bar
2. Pin
3. Hairpin cotter

2. Lower the roll bar to the down position (Figure 12).

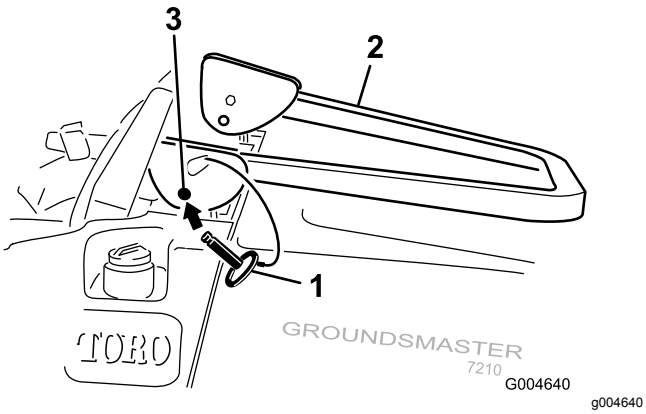


Figure 12

1. Pin
2. Roll bar
3. Mounting hole

3. Install the 2 pins and secure them with the hairpin cotter pins (Figure 11).

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

4. To raise the roll bar, remove the hairpin cotter pins and remove the 2 pins (Figure 11).
5. Raise the roll bar to the upright position and install the two pins and secure them with the hairpin cotter pins (Figure 11).

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.**

Think Safety First

Please read all safety instructions and symbols in the safety section. Knowing this information could help you or bystanders avoid injury.

⚠ DANGER

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

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

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

Always keep the roll bar in the raised and locked position and use the seat belt.

Read and follow the rollover protection instructions and warnings.

To avoid loss of control and possibility of rollover:

- **Do not operate near drop-offs or near water.**
- **Reduce speed and use extreme caution on slopes.**
- **Avoid sudden turns or rapid speed changes.**

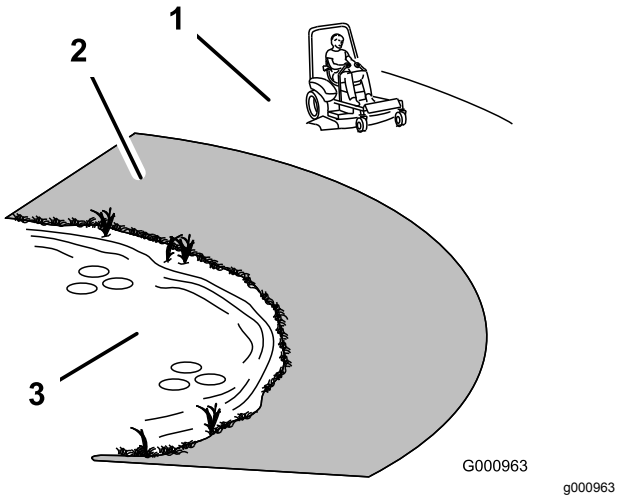


Figure 13

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

⚠ CAUTION

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

Wear hearing protection when operating this machine.

The use of protective equipment for eyes, ears, feet and head is recommended.

Operating the Parking Brake

Always set the parking brake when you stop the machine or leave it unattended.

Setting the Parking Brake

1. Move the motion control levers (Figure 18) out to the neutral locked position.
2. Pull up and back on the parking brake lever to set the parking brake (Figure 14).

   Note: The parking-brake lever should stay firmly in the engaged position.

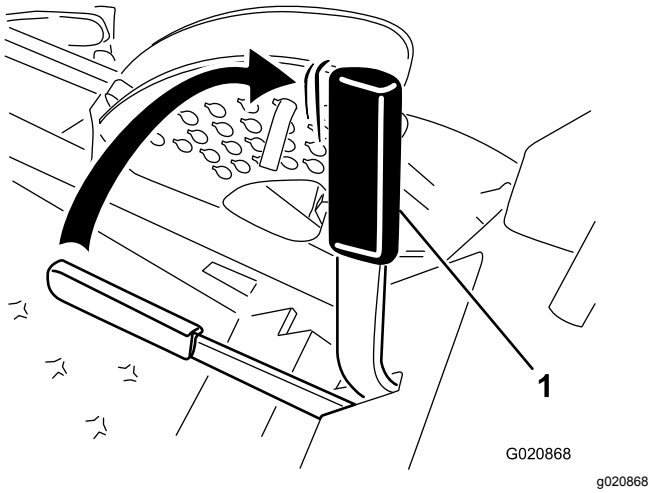


Figure 14

1. Parking-brake lever

⚠ WARNING

The parking brake may not hold the machine parked on a slope and could cause personal injury or property damage.

Do not park the machine on slopes unless the wheels are chocked or blocked.

Releasing the Parking Brake

Push forward and down on the parking brake lever to release the parking brake (Figure 15).

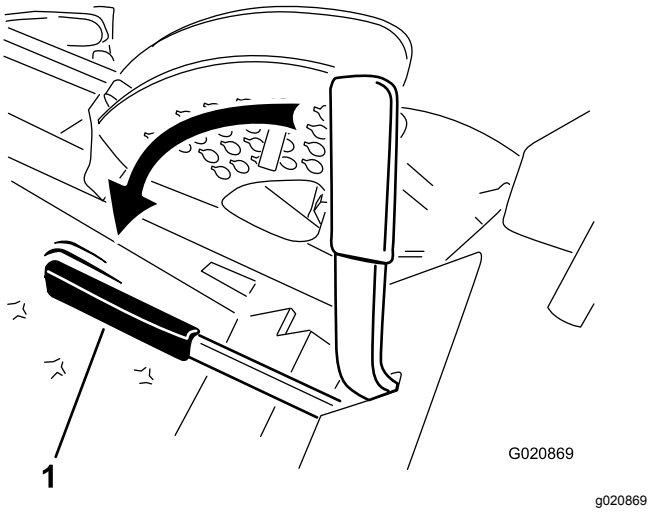


Figure 15

1. Parking-brake lever

Starting and Stopping the Engine

Starting the Engine

1. Raise the roll bar up and lock it into place, sit on the seat, and fasten the seat belt.
2. Ensure that the motion controls are in the neutral locked position.
3. Set the parking brake; refer to Setting the Parking Brake (page 20).
4. Move the PTO (power take-off) switch to the off position (Figure 16).

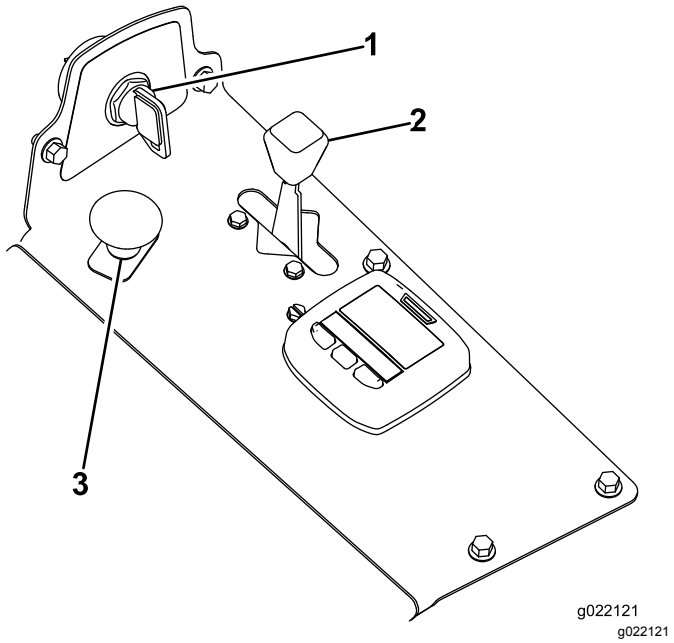


Figure 16

1. Ignition switch
2. Throttle control
3. Power take off switch (PTO)

5. Turn the ignition key clockwise to the Run position (Figure 17).

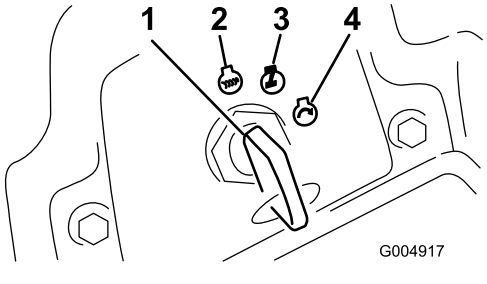


Figure 17

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

6. After the glow plug indicator light dims, turn the key to the Start position. When the engine starts release the key.

   Important: **Use starting cycles of no more than 15 seconds per minute to avoid overheating the starter motor.**

   Note: Additional starting cycles may be required when starting the engine for the first time after the fuel system has been completely drained.

   Important: **When the engine is started for the first time, or after an engine oil change, or an overhaul of the engine, transmission, or wheel motor, operate the machine with the throttle lever in the Slow position in both**

the forward and reverse directions for 1 to 2 minutes. Also operate the lift lever and PTO lever to ensure proper operation of all parts. Then shut the engine off and check fluid levels, check for oil leaks, loose parts, and any other noticeable malfunctions.

⚠ CAUTION

Shut the engine off and wait for all moving parts to stop before checking for oil leaks, loose parts, or other malfunctions.

Stopping the Engine

1. Disengage the PTO, move the motion control levers to the neutral locked position, set the parking brake, and move the throttle lever to the Slow position.
2. Turn the ignition key to the Off position (Figure 17). Wait for all moving parts to stop before leaving the operating position.
3. Remove the key before transporting or storing machine.

   Important: **Make sure to remove the key as the fuel pump or accessories may run and cause the battery to lose charge.**

⚠ CAUTION

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

Always remove the ignition key and set the parking brake when leaving the machine unattended, even if just for a few minutes.

Driving the Machine

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

⚠ CAUTION

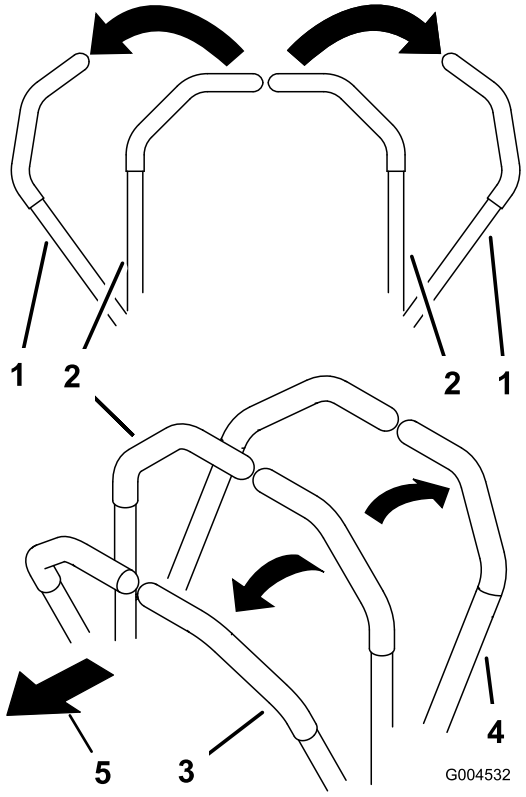
The machine can turn very rapidly. You may lose control of it and cause personal injury or damage to machine.

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

1. Release the parking brake; refer to Releasing the Parking Brake (page 21).

   Note: The engine will kill if the traction control levers are moved with the parking brake engaged.
2. Move the levers to the center, unlocked position.
3. Drive the machine as follows:
   - To go straight forward, slowly push the motion control levers forward (Figure 18).
   - To go Straight backward, slowly pull the motion control levers rearward (Figure 18).
   - To turn, slow the machine by pulling back on both levers and then push forward on the lever on the opposite side from which you want to turn (Figure 18).
   - To stop, pull the motion control levers to the neutral position.

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



g004532

Figure 18

1. Motion control lever-neutral locked position
2. Center unlock position
3. Forward
4. Backward

Stopping the Machine

To stop the machine, move the traction-control levers to neutral and to the locked position, disengage the power take off (PTO), move the throttle to the Slow position, and stop the engine.

Set the parking brake when you leave the machine; refer to Setting the Parking Brake. Remember to remove the key from the ignition switch.

⚠ CAUTION

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

Always remove the ignition key and set the parking brake when leaving the machine unattended, even if just for a few minutes.

Operating the Mower

Raising and Lowering the Mower with the Deck-Lift Switch

The deck-lift switch raises and lowers the mower deck (Figure 19).

Note: The engine must be running for you to use this lever.

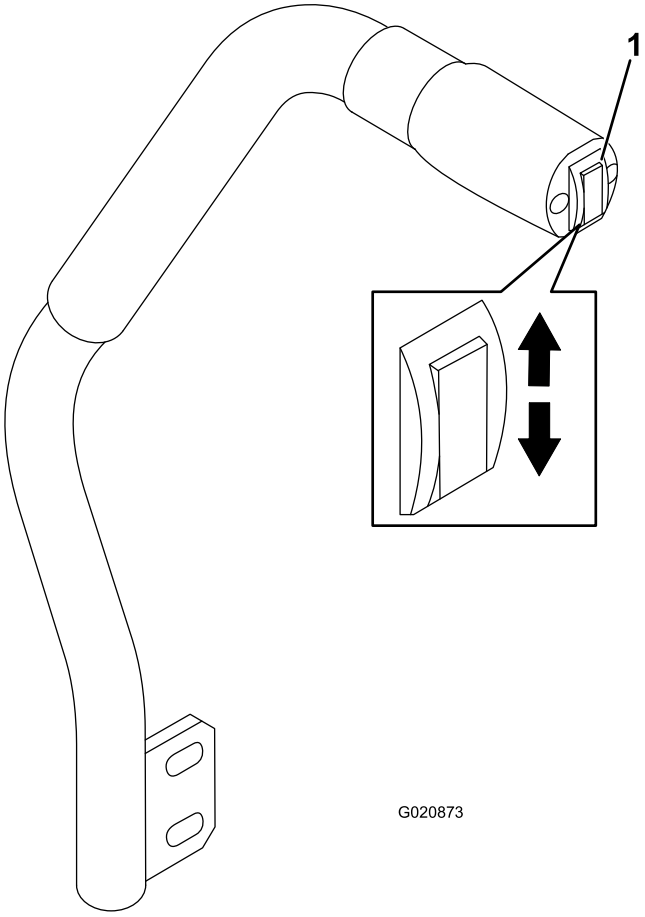


Figure 19

1. Deck-lift switch

- To lower the mower deck, push the deck-lift switch down (Figure 19).

  Note: When you lower the mower deck, it sets in a float/idle position.
- To raise the mover deck, push the deck-lift switch up (Figure 19).

Important: **Do not continue to hold the switch up or down after the mower has fully raised or lowered. Doing so damages the hydraulic system.**

Note: To lock the mower deck in a raised position, raise the deck past the 15 cm (6 inch) position, remove the height-of-cut stop pin (refer to Adjusting the Height-of-Cut (page 24)), and place the pin in the 15 cm (6 inch) height-of-cut position (Figure 21).

Engaging the Power Take-off (PTO)

The power take-off (PTO) switch starts and stops the mower blades and some powered attachments.

1. If the engine is cold, allow the engine to warm up 5 to 10 minutes before engaging the PTO.
2. Sit in the seat, release the pressure on the traction-control levers, and place them in neutral.
3. Pull up on the PTO switch to engage it (Figure 20).

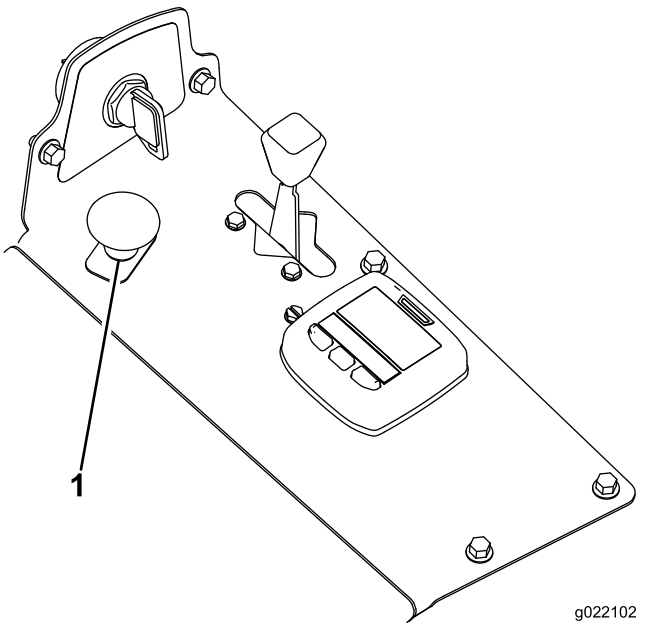


Figure 20

1. PTO switch

Disengaging the PTO

To disengage, push the PTO switch to the OFF position.

Adjusting the Height-of-Cut

You can adjust the height-of-cut from 2.5 to 15.8 cm (1 to 6 inches) in 6 mm (1/4 inch) increments by relocating the stop pin into different hole locations.

1. With the engine running, push the deck-lift switch up until the mower deck is fully raised and **release the switch immediately** (Figure 19).
2. To adjust the height-of-cut, rotate the stop pin until the roll pin in it lines up with the slots in the holes in the height-of-cut bracket and remove it (Figure 21).
3. Select a hole in the height-of-cut bracket corresponding to your desired height-of-cut, insert the pin, and rotate it down to lock it in place (Figure 21).

   Note: There are 4 rows of hole positions (Figure 21). The top row gives you the height-of-cut listed above the pin. The second row down gives you the height listed plus 6 mm (1/4 inch). The third row down gives you the height listed plus 12 mm (1/2 inch). The bottom row gives you the height listed plus 18 mm (3/4 inch). For the 15.8 cm (6 inch) position, there is only 1 hole, located in the second row. This does not add 6 mm (1/4 inch) to the 15.8 cm (6 inch) position.

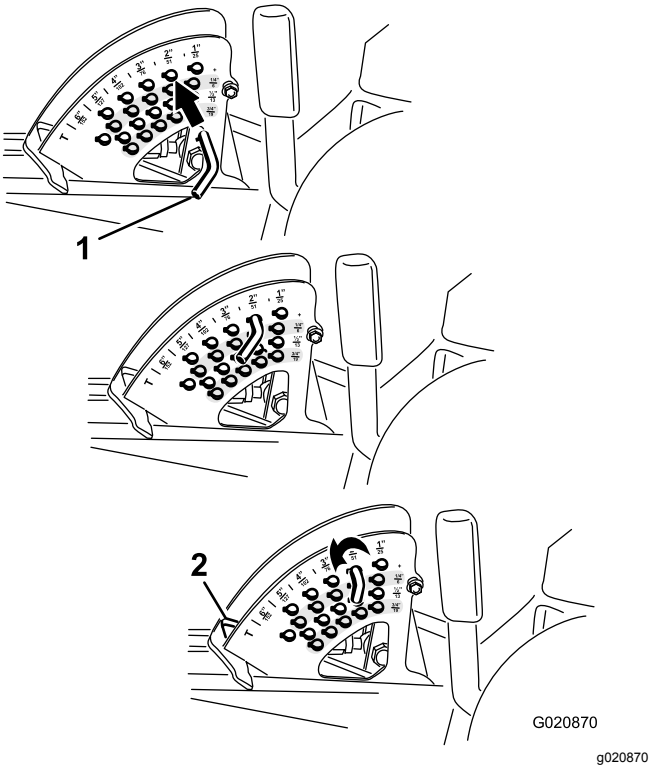


Figure 21

1. Stop pin
2. Height-of-cut stop

4. Adjust the anti-scalp rollers and skids as required.

Cutting Grass with the Machine

Note: Cutting grass at a rate that loads the engine promotes DPF regeneration.

1. Move the machine to the job site.
2. Whenever possible, set the engine-speed switch to high idle.
3. Engage the PTO switch.
4. Gradually move the motion-control levers forward and slowly drive the machine over the mowing area.
5. Once the front of the cutting units are over the mowing area, lower the cutting units.
6. Cut grass so that the blades can cut and discharge clippings at a high rate while producing a good quality of cut.

   Note: If the cutting rate is too high, the quality of cut may deteriorate. Reduce the ground speed of the machine or reduce the width of cut to regain high idle engine speed.
7. When the cutting units are over the far edge of the mowing area, lift the cutting units.
8. Perform a tear-shaped turn to quickly line up for your next pass.

Diesel Particulate Filter Regeneration

The diesel particulate filter (DPF) is part of the exhaust system. The diesel-oxidation catalyst of the DPF reduces harmful gasses and the soot filter removes soot from the engine exhaust.

The DPF regeneration process uses heat from the engine exhaust to incinerate the soot accumulated on the soot filter, converting the soot to ash, and clears the channels of the soot filter so that filtered engine exhaust flows out the DPF.

The engine computer monitors the accumulation of soot by measuring the back pressure in the DPF. If the back pressure is too high, soot is not incinerating in the soot filter through normal engine operation. To keep the DPF clear of soot, remember the following:

- Passive regeneration occurs continuously while the engine is running—run the engine at full engine speed when possible to promote DPF regeneration.
- If the back pressure is too high, the engine computer signals you through the InfoCenter when additional processes (assist and reset regeneration) are running.
- Allow the assist and reset regeneration process to complete before shutting off the engine.

Operate and maintain your machine with the function of the DPF in mind. Engine load at high idle engine speed generally produce adequate exhaust temperature for DPF regeneration.

Important: **Minimize the amount of time that you idle the engine or operate the engine at low-engine speed to help reduce the accumulation of soot in the soot filter.**

⚠ CAUTION

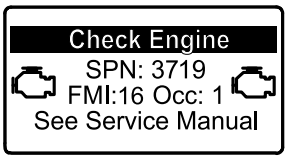
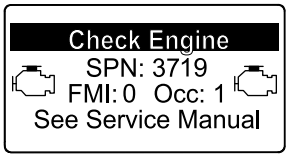
The exhaust temperature is hot (approximately 600°C (1112°F) during DPF parked regeneration or recovery regeneration. Hot exhaust gas can harm you or other people.

- **Never operate the engine in an enclosed area.**
- **Make sure that there are no flammable materials around the exhaust system.**
- **Never touch a hot exhaust system component.**
- **Never stand near or around the exhaust pipe of the machine.**

DPF Soot Accumulation

- Over time, the DPF accumulates soot in the soot filter. The computer for the engine monitors the soot level in the DPF.
- When enough soot accumulates, the computer informs you that it is time to regenerate the diesel particulate filter.
- DPF regeneration is a process that heats the DPF to convert the soot to ash.
- In addition to the warning messages, the computer reduces the power produced by the engine at different soot-accumulation levels.

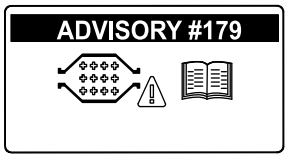
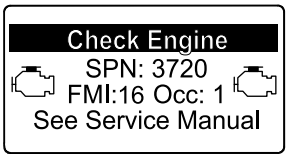
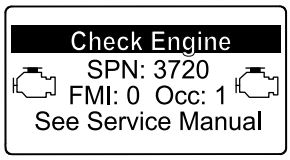
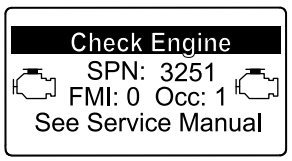
Engine Warning Messages—Soot Accumulation

Indication Level	Fault Code	Engine Power Rating	Recommended Action
Level 1: Engine Warning	 g213866 **Figure 22** Check Engine SPN 3719, FMI 16	The computer de-rates the engine power to 85%	Perform a parked regeneration as soon as possible; refer to Parked Regeneration (page 30).
Level 2: Engine Warning	 g213867 **Figure 23** Check Engine SPN 3719, FMI 0	The computer de-rates the engine power to 50%	Perform a recovery regeneration as soon as possible; refer to Recovery Regeneration (page 33).

DPF Ash Accumulation

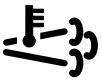
- The lighter ash is discharged through the exhaust system; the heavier ash collects in the soot filter.
- Ash is a residue of the regeneration process. Over time, the diesel particulate filter accumulates ash that does not discharge with the engine exhaust.
- The computer for the engine calculates the amount of ash accumulated in the DPF.
- When enough ash accumulates, the engine computer sends information to the InfoCenter in the form of a system advisory or an engine fault to indicate the accumulation of ash in the DPF.
- The advisory and faults are indications that it is time to service the DPF.
- In addition to the warnings, the computer reduces the power produced by the engine at different ash-accumulation levels.

InfoCenter Advisory and Engine Warning Messages—Ash Accumulation

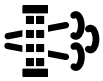
Indication Level	Advisory or Fault Code	Engine Speed Reduction	Engine Power Rating	Recommended Action
Level 1: System Advisory	 g213865 **Figure 24** Advisory #179	None	100%	Notify your service department that advisory #179 displays in the InfoCenter.
Level 2: Engine Warning	 g213863 **Figure 25** Check Engine SPN 3720, FMI 16	None	The computer de-rates the engine power to 85%	Service the DPF; refer to Servicing the Diesel-Oxidation Catalyst (DOC) and the Soot Filter (page 46)
Level 3: Engine Warning	 g213864 **Figure 26** Check Engine SPN 3720, FMI 0	None	The computer de-rates the engine power to 50%	Service the DPF; refer to Servicing the Diesel-Oxidation Catalyst (DOC) and the Soot Filter (page 46)
Level 4: Engine Warning	 g214715 **Figure 27** Check Engine SPN 3251, FMI 0	Engine speed at max torque + 200 rpm	The computer de-rates the engine power to 50%	Service the DPF; refer to Servicing the Diesel-Oxidation Catalyst (DOC) and the Soot Filter (page 46)

Types of Diesel Particulate Filter Regeneration

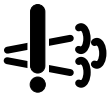
Types of diesel particulate filter regeneration that are performed while the machine is operating:

Type of Regeneration	Conditions for DPF regeneration	DPF description of operation
Passive	Occurs during normal operation of the machine at high-engine speed or high-engine load	The InfoCenter does not display an icon indicating passive regeneration. During passive regeneration, the DPF processes high-heat exhaust gasses; oxidizing harmful emissions and burning soot to ash. Refer to Passive DPF Regeneration (page 29).
Assist	Occurs as a result of low-engine speed, low-engine load, or after the computer detects back pressure in the DPF	 When the assist/reset-regeneration icon is displayed in the InfoCenter, an assist regeneration is in progress. During assist regeneration, the computer controls the intake throttle to increase the exhaust temperature, enabling assist regeneration to occur. Refer to Assist DPF Regeneration (page 29).
Reset	Occurs after assist regeneration only if the computer detects that assist regeneration did not sufficiently reduce the soot level Also occurs every 100 hours to reset baseline sensor readings	 When the assist/reset-regeneration icon is displayed in the InfoCenter, a regeneration is in progress. During reset regeneration, the computer controls the intake throttle and fuel injectors to increase the exhaust temperature during regeneration. Refer to Reset Regeneration (page 30).

Types of diesel particulate filter regeneration that require you to park the machine:

Type of Regeneration	Conditions for DPF regeneration	DPF description of operation
Parked	Soot buildup occurs as a result of prolonged operation at low-engine speed or low-engine load. May also occur as a result of using incorrect fuel or oil The computer detects back pressure due to soot buildup and requests a parked regeneration	 When the parked-regeneration icon is displayed in the InfoCenter, a regeneration is requested. • Perform the parked regeneration as soon as possible to avoid needing a recovery regeneration. • A parked regeneration requires 30 to 60 minutes to complete. • You must have at least a 1/4 tank of fuel in the tank. • You must park the machine to perform a recovery regeneration. Refer to Parked Regeneration (page 30).

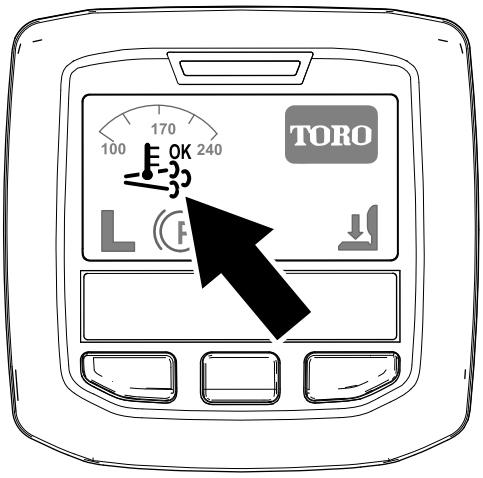
Types of diesel particulate filter regeneration that require you to park the machine: (cont'd.)

Type of Regeneration	Conditions for DPF regeneration	DPF description of operation
Recovery	Occurs as a result of ignoring parked regeneration requests and continuing operation, adding more soot when the DPF is already in need of a parked regeneration	When the recovery-regeneration icon  is displayed in the InfoCenter, a recovery regeneration is requested. Contact your Authorized Toro Distributor to have a service technician perform the recovery regeneration. • A recovery regeneration requires up to 4 hours to complete. • You must have at least a 1/2 tank of fuel in the machine. • You must park the machine to perform a recovery regeneration. Refer to Recovery Regeneration (page 33).

Passive DPF Regeneration

- Passive regeneration occurs as part of normal engine operation.
- While operating the machine, run the engine at full-engine speed when possible to promote DPF regeneration.

Assist DPF Regeneration



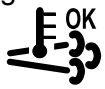
g214711

Figure 28
Assist/reset-regeneration icon

- The assist/reset-regeneration icon displays in the InfoCenter (Figure 28).
- The computer takes control of the intake throttle to increase the temperature of the engine exhaust.
- While operating the machine, run the engine at full engine speed when possible to promote DPF regeneration.
- The 

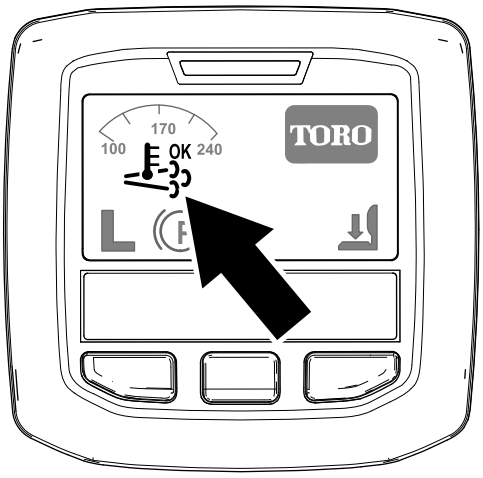
icon displays in the InfoCenter while the assist regeneration is processing.
- Whenever possible, do not shut off the engine or reduce engine speed while the assist regeneration is processing.

Important: **Allow the machine to complete the assist regeneration process before shutting off the engine.**

Note: The assist regeneration is finished processing when the 

icon disappears from the InfoCenter.

Reset Regeneration



g214711

Figure 29
Assist/reset-regeneration icon

- The assist/reset-regeneration icon displays in the InfoCenter (Figure 29).
- The computer takes control of the intake throttle and changes the fuel injection operation to increase the temperature of the engine exhaust.

  Important: **The assist/reset-regeneration icon indicates that the exhaust temperature discharged from of your machine may be hotter than during regular operation.**
- While operating the machine, run the engine at full engine speed when possible to promote DPF regeneration.
- The 

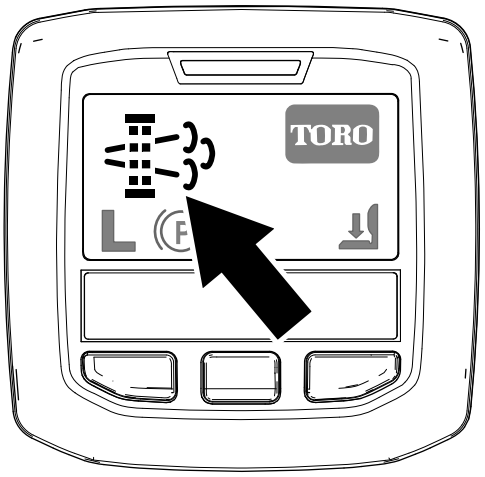
icon displays in the InfoCenter while the reset regeneration is processing.
- Whenever possible, do not shut off the engine or reduce engine speed while the reset regeneration is processing.

  Important: **Allow the machine to complete the reset regeneration process before shutting off the engine.**

  Note: The reset regeneration is finished processing when the 

icon disappears from the InfoCenter.

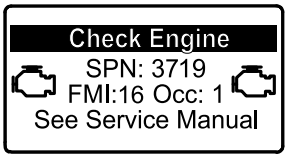
Parked Regeneration



g214713

Figure 30
Parked-regeneration request icon

- The parked-regeneration requested icon displays in the InfoCenter (Figure 30).
- If a parked regeneration is needed, the InfoCenter displays engine warning SPN 3719, FMI 16 (Figure 31) and the engine computer derates engine power to 85%.



g213866

Figure 31

Important: **If you do not complete a parked regeneration within 2 hours, the engine computer derates engine power to 50%.**

- A parked regeneration requires 30 to 60 minutes to complete.
- If you are authorized by your company, you need the PIN code to perform the parked-regeneration process.

Preparing to Perform a Parked or Recovery Regeneration

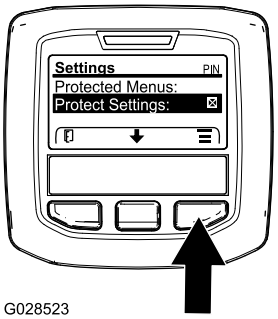
1. Ensure that the machine has at least 1/4 tank of fuel.
2. Move the machine outside to an area away from combustible materials.
3. Park the machine on a level surface.
4. Ensure that the traction control or motion-control levers are in the NEUTRAL position.
5. If applicable, lower the cutting units and shut them off.

6. Engage the parking brake.
7. Set the throttle to the low IDLE position.

Performing a Parked Regeneration

Note: For instructions on unlocking protected menus, refer to Accessing Protected Menus (page 15).

1. Access the protected menu and unlock the protected settings submenu (Figure 32); refer to Accessing Protected Menus (page 15).



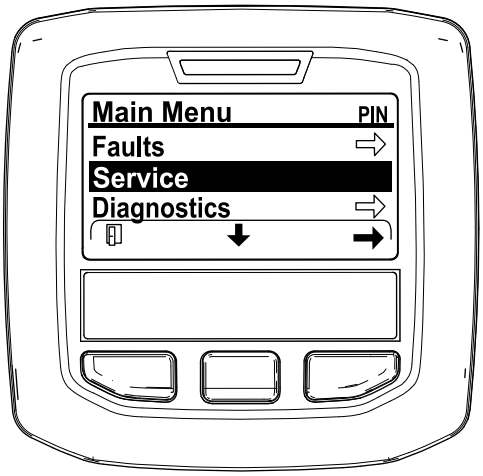
G028523

g028523

Figure 32

2. Navigate to the MAIN MENU, press the center button to scroll down to the SERVICE MENU, and press the right button to select the SERVICE option (Figure 33).

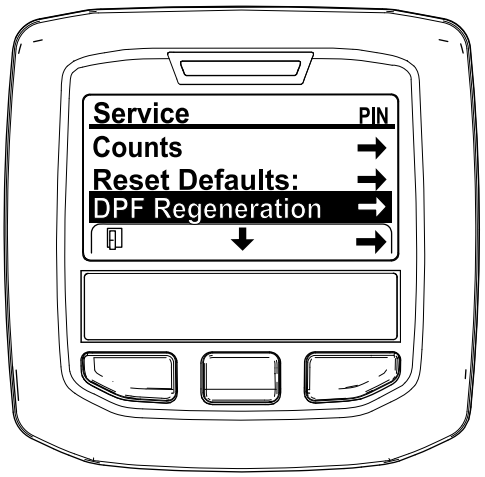
   Note: The InfoCenter should display the PIN indicator in the upper right corner of the display.



g212371

Figure 33

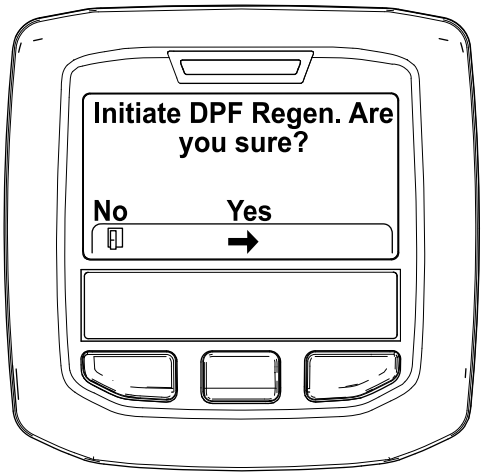
3. In the SERVICE MENU, press the middle button until the DPF REGENERATION options displays, and press the right button to select the DPF REGENERATION option (Figure 34).



g212138

Figure 34

4. When the “Initiate DPF Regen. Are you sure?” message displays, press the center button (Figure 35).



g212125

Figure 35

5. If the coolant temperature is below 60°C (140°F) the “Insure is running and above 60C/140F” message displays. (Figure 36).

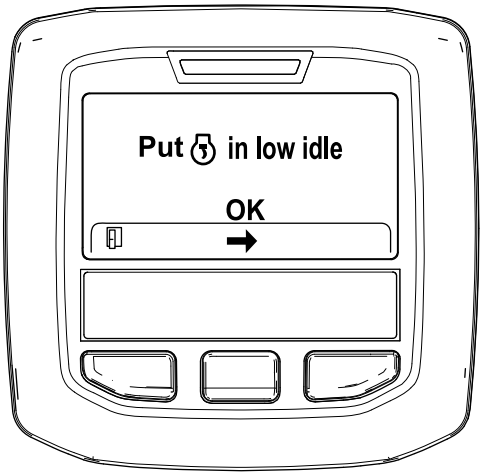
   Observe the temperature in the display, and run the machine at full throttle until the temperature reaches 60°C (140°F), then press the center button.

   Note: If the coolant temperature is above 60°C (140°F) this screen is skipped.

g211986

Figure 36

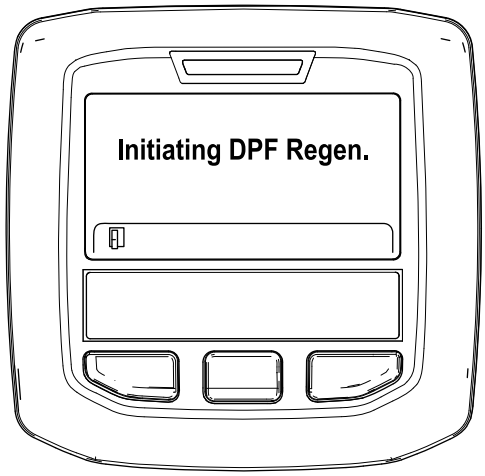
6. Move the throttle control to LOW IDLE and press the center button (Figure 37).



g212372

Figure 37

7. The following messages display as the parked regeneration process begins:
   A. The “Initiating DPF Regen.” message displays (Figure 38).



g212405

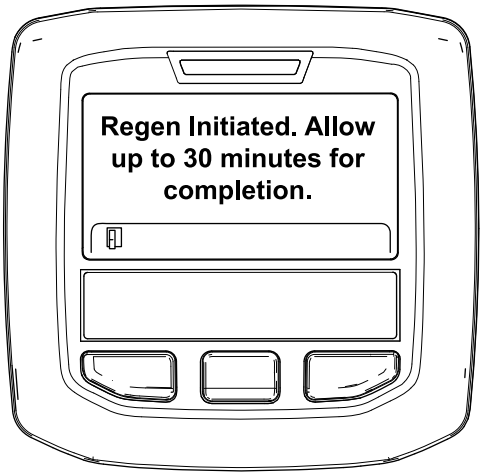
Figure 38

   B. The “Waiting on ” message displays (Figure 39).

g212406

Figure 39

   C. The computer determines whether the regeneration runs. One of the following messages displays in the InfoCenter:
      - If the regeneration is allowed, the “Regen Initiated. Allow up to 30 minutes for completion” message displays in the InfoCenter, wait for the machine to complete the parked regeneration process (Figure 40).

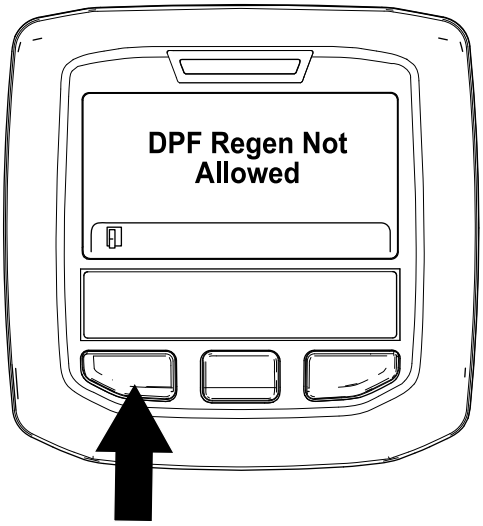


g213424

Figure 40

- If the regeneration process is not allowed by the engine computer, the “DPF Regen Not Allowed” message displays in the InfoCenter (Figure 41). Press the left button to exit to the home screen

  Important: **If you did not meet all the requirements for regeneration or if less than 50 hours have passed since the last regeneration, the “DPF Regen Not Allowed” message appears.**



g212410

Figure 41

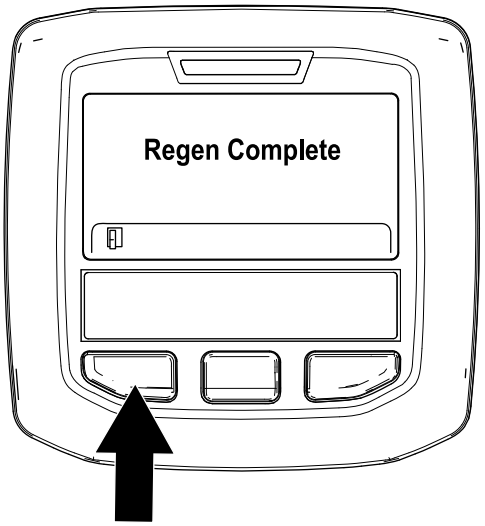
8. While the regeneration is running, the InfoCenter returns to the home screen and shows the following icons:

The engine is cold—wait.

The engine is warm—wait.

The engine hot—regeneration in progress (percent complete).

9. The parked regeneration is complete when the “Regen Complete” message displays in the InfoCenter. Press the left button to exit to the home screen (Figure 42).

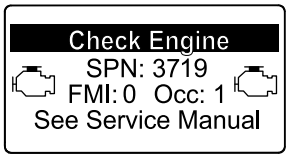


g212404

Figure 42

Recovery Regeneration

- If you ignore the request for a parked regeneration (displayed in the InfoCenter) and continue to operate the machine, a critical amount of soot builds up in the DPF.
- If a recovery regeneration is needed, the InfoCenter displays engine warning SPN 3719, FMI 16 (Figure 43) and the engine computer derates engine power to 85%.



g213867

Figure 43

Important: **If you do not complete a recovery regeneration within 15 minutes, the engine computer derates engine power to 50%.**

- Perform a recovery-regeneration whenever there is a loss of engine power and a parked regeneration cannot effectively clean the DPF of soot.
- A recovery regeneration requires up to 4 hours to complete.
- You need a distributor technician to perform the recovery regeneration process; contact your Authorized Toro Distributor.

The Safety Interlock System

⚠ CAUTION

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

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

Understanding the Safety Interlock System

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

- You are sitting on the seat or the parking brake is engaged.
- The power take-off (PTO) is disengaged.
- The motion-control levers are in the neutral locked position
- The engine temperature is below the maximum operating temperature.

The safety interlock system also is designed to stop the engine when the traction controls are moved from the neutral locked position with the parking brake engaged. If you rise from the seat when the PTO is engaged there is a 1-second delay and then the engine stops.

Testing the Safety Interlock System

Service Interval: Before each use or daily

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

1. Sitting on the seat, engage the parking brake and move the PTO to on. Try starting the engine; the engine should not crank.
2. Sitting on the seat, engage the parking brake and move the PTO to off. Move either motion control lever (out of neutral locked position). Try starting the engine; the engine should not crank. Repeat for other control lever.
3. Sitting on the seat, engage the parking brake, move the PTO switch to off and move the motion control levers to the neutral locked position. Now start the engine. While the engine is running, release the parking brake, engage the PTO and rise slightly from the seat; the engine should stop within 2 seconds.
4. Without an operator on the seat, engage the parking brake, move the PTO switch to off and move the motion control levers to the neutral locked position. Now start the engine. While the engine is running, center either motion control; the engine should stop within 2 seconds. Repeat for the other motion control.
5. Without an operator on the seat, disengage the parking brake, move the PTO switch to off, and move the motion control levers to the neutral locked position. Try starting the engine; the engine should not crank.

Using the SCM to Diagnose System Problems

The machine is equipped with a standard control module (SCM) monitoring system that tracks the function of various key systems. The SCM is located under the right control panel. Access it through the side panel cover (Figure 44). To open the side panel cover, release the 2 latches and pull out on it.

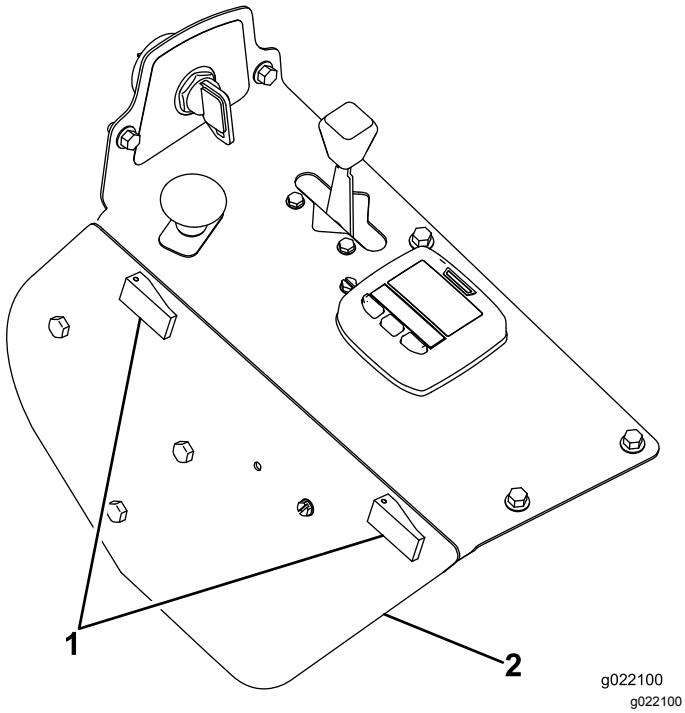


Figure 44

1. Latches
2. Side panel cover

On the face of the SCM are 11 LEDs that illuminate to indicate various system conditions. Seven of these lights can be used by the operator for system diagnosis. Refer to Figure 45 for a description of what each light means. For details on using the rest of the SCM functions, refer to the *Service Manual*, available through your Authorized Toro Distributor.

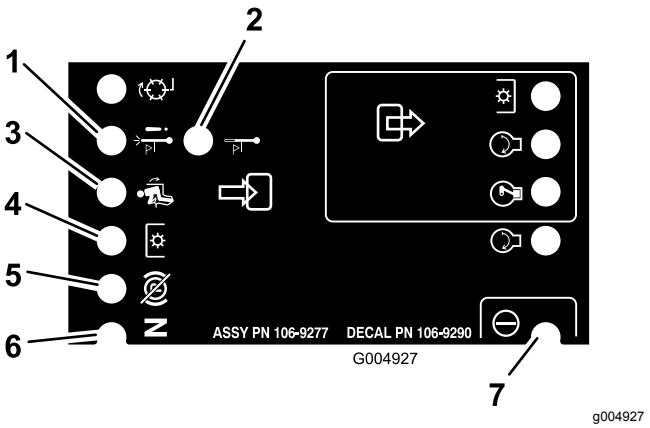


Figure 45

1. High temperature shutdown—the engine temperature has exceeded safe levels and the engine has been shut down. Check the cooling system.
2. High temperature warning—the engine temperature is approaching unsafe levels and the mower deck has been shut down. Check the cooling system.
3. Operator is in the seat
4. The PTO is On
5. The parking brake is not engaged
6. Controls are in Neutral
7. The SCM is receiving power and is operational

Positioning the Seat

Changing the Seat Position

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

1. To adjust, move the lever sideways to unlock the seat (Figure 46).

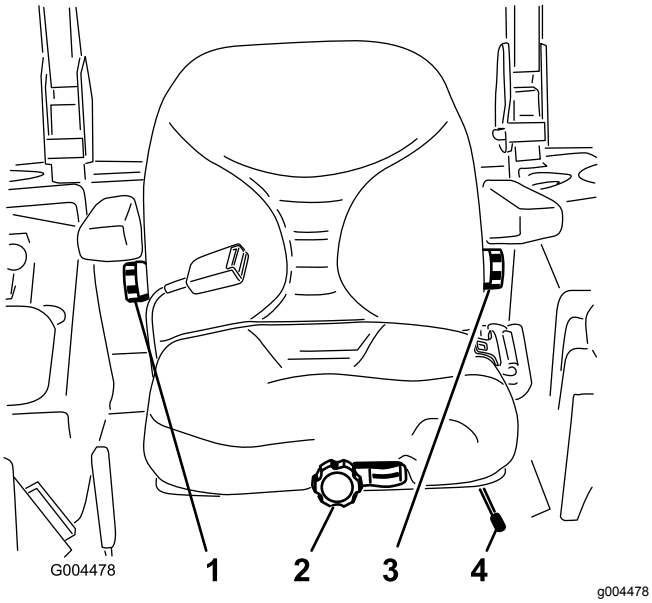


Figure 46

1. Back rest knob
2. Seat suspension knob
3. Lumbar support adjustment knob
4. Seat position adjustment lever

2. Slide the seat to the desired position and release lever to lock in position.
3. Verify that the seat has locked into place by attempting to move it back and forth.

Changing the Seat Suspension

The seat can be adjusted to provide a smooth and comfortable ride. Position the seat where you are most comfortable.

Without sitting on the seat, turn the knob in front either direction to provide the best comfort (Figure 46).

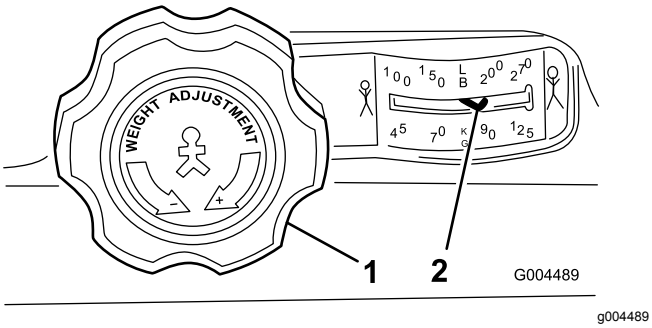


Figure 47

1. Seat suspension knob
2. Operator weight setting

Changing the Back Position

The back of the seat can be adjusted to provide a comfortable ride. Position the back of the seat where it is most comfortable.

To adjust it, turn the knob, under the right-side arm rest, in either direction to provide the best comfort (Figure 46).

Changing the Lumbar Support

The back of the seat can be adjusted to provide a customized lumbar support for your lower back.

To adjust it, turn the knob, under the left-side arm rest, in either direction to provide the best comfort (Figure 46).

Unlatching the Seat

To access the hydraulic and other systems under the seat, unlatch the seat and swing it forward.

1. Use the seat position adjustment lever to slide the seat all the way forward.
2. Pull the seat latch forward and lift up to unlatch the seat (Figure 48).

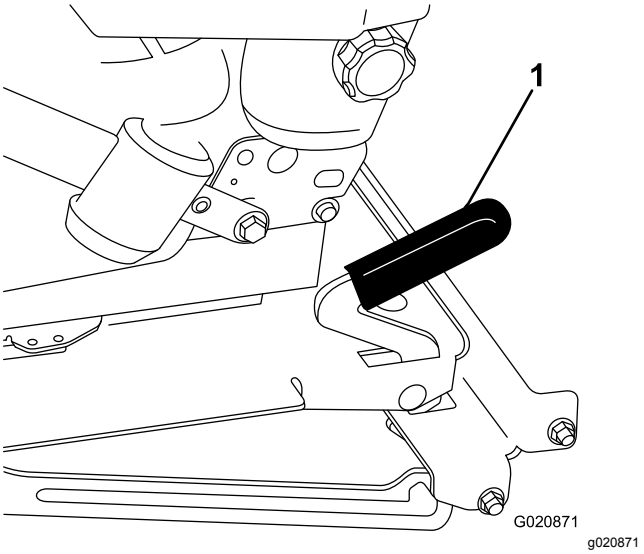


Figure 48

1. Seat latch

Pushing the Machine by Hand

Important: **Never tow the machine because hydraulic damage may occur.**

Pushing the Machine

1. Disengage the power take-off (PTO) and turn the ignition key to off. Move the levers to the neutral locked position and apply the parking brake. Remove the key.
2. Lift the seat.
3. Rotate each by-pass valve counterclockwise 1 turn (Figure 49).

   This allows hydraulic fluid to by-pass the pump enabling the wheels to turn.

   Important: **Do not rotate the by-pass valves more than 1 turn. This prevents valves from coming out of the body and causing fluid to run out.**

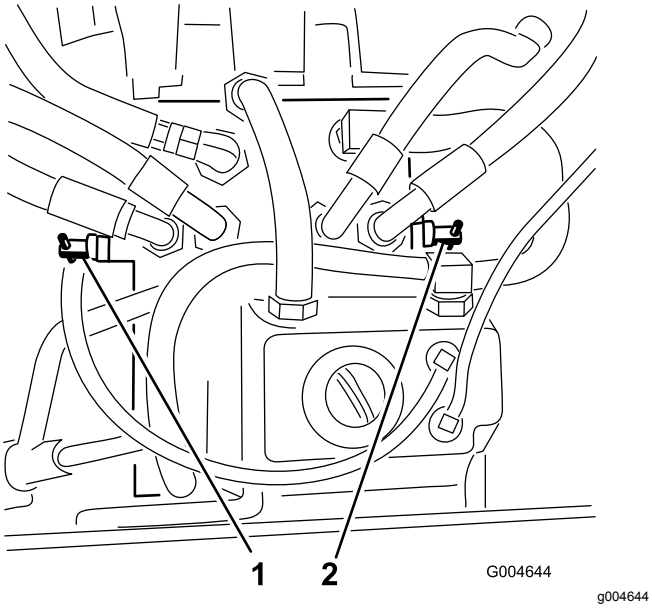


Figure 49

1. Right by-pass valve
2. Left by-pass valve

4. Disengage the parking brake before pushing.

Changing to Machine Operation

Rotate each by-pass valve clockwise 1 turn and hand tighten them (torque of approximately 8 N-m (71 in-lb) (Figure 49).

Note: Do not over tighten the by-pass valves.

The machine will not drive unless the by-pass valves are turned inward.

Loading Machines

Use extreme caution when loading units on trailers or trucks. One full-width ramp that is wide enough to extend beyond the rear tires is recommended instead of individual ramps for each side of the unit (Figure 50). The lower rear section of the tractor frame extends back between the rear wheels and serves as a stop for tipping backward. Having a full-width ramp provides a surface for the frame members to contact if the unit starts to tip backward. If it is not possible to use one full-width ramp, use enough individual ramps to simulate a full-width continuous ramp.

The ramp should be long enough so that the angles do not exceed 15 degrees (Figure 50). A steeper angle may cause mower components to get caught as the unit moves from ramp to trailer or truck. Steeper angles may also cause the unit to tip backward. If loading on or near a slope, position the trailer or truck so it is on the down side of the slope and the ramp extends up the slope. This will minimize the ramp angle. The trailer or truck should be as level as possible.

Important: **Do not attempt to turn the unit while on the ramp; you may lose control and drive off the side.**

Avoid sudden acceleration when driving up a ramp and sudden deceleration when backing down a ramp. Both maneuvers can cause the unit to tip backward.

⚠ WARNING

Loading a unit onto a trailer or truck increases the possibility of backward tip-over and could cause serious injury or death.

- **Use extreme caution when operating a unit on a ramp.**
- **Use only a single, full-width ramp; Do not use individual ramps for each side of the unit.**
- **If individual ramps must be used, use enough ramps to create an unbroken ramp surface wider than the unit.**
- **Do not exceed a 15 degree angle between ramp and ground or between ramp and trailer or truck.**
- **Avoid sudden acceleration while driving unit up a ramp to avoid tipping backward.**
- **Avoid sudden deceleration while backing unit down a ramp to avoid tipping backward.**

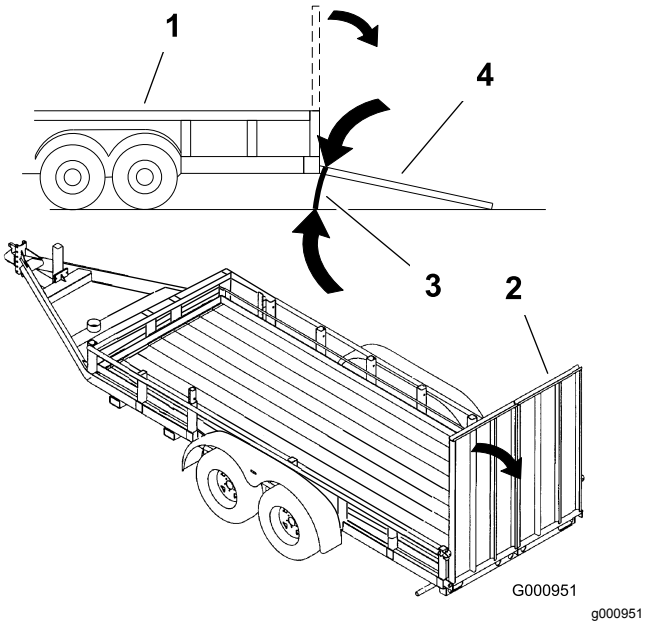


Figure 50

1. Trailer
2. Full-width ramp
3. Not greater than 15 degrees
4. Full-width ramp—side view

Transporting Machines

⚠ WARNING

Driving on the street or roadway without turn signals, lights, reflective markings, or a slow moving vehicle emblem is dangerous and can lead to accidents causing personal injury.

Do not drive machine on a public street or roadway without signs, lights, and/or markings required by local regulations.

Use a heavy-duty trailer or truck to transport the machine. Ensure that the trailer or truck has all necessary lighting and marking as required by law. Please carefully read all the safety instructions. Knowing this information could help you or bystanders avoid injury.

To transport the machine:

- Ensure that your vehicle, hitch, safety chains, and trailer are adequate for the load you are pulling and that they meet all local traffic regulations for your area.
- Lock the brake and block the wheels.
- Securely fasten the machine to the trailer or truck with straps, chains, cable, or ropes as required by local traffic regulations in your area (Figure 51).

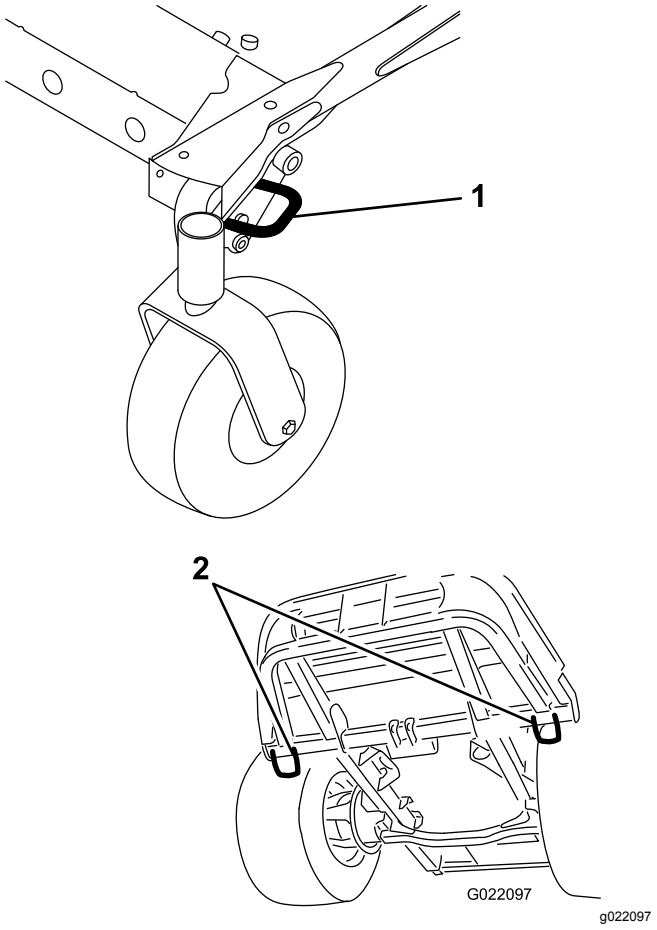


Figure 51

1. Front tie-down (left side shown)
2. Rear tie-downs

Operating Tips

Fast Throttle Setting/Ground Speed

To maintain enough power for the machine and deck while mowing, operate the engine at the fast throttle position and adjust your ground speed for conditions. A good rule to follow is to decrease ground speed as the load on the cutting blades increases; and increase ground speed as the load on the blades decreases.

Mowing Direction

Alternate mowing direction to avoid making ruts in the turf over time. This also helps disperse clippings, which enhances decomposition and fertilization.

Cutting Speed

To improve cut quality, use a slower ground speed in certain conditions.

Avoid Cutting Too Low

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

Select the Proper Height-of-Cut Setting

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

Important: **If cutting more that 1/3 of the grass blade off, or in sparse long grass or dry conditions, the use of flat sail blades is recommended to reduce air-borne chaff, debris, and deck drive component strain.**

Long Grass

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

Keep the Mower Clean

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

To reduce the risk of fire hazard, keep the engine, muffler, battery compartment, parking brake, cutting units, and fuel storage compartment free of grass, leaves, or excessive grease. Clean up any spilled oil or fuel.

Blade Maintenance

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

Maintenance

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

Note: Looking for an *Electrical Schematic* or *Hydraulic Schematic* for your machine? 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.

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 10 hours	• Torque the frame mounting bolts. • Torque wheel lug nuts.
After the first 50 hours	• Change the mower-deck gearbox lubricant.
After the first 200 hours	• Change the hydraulic fluid and filter.
Before each use or daily	• Test the safety system. • Check the engine-oil level. • Check the engine coolant level. • Clean the radiator with compressed air (more often in dirty and dusty conditions). • Check the hydraulic fluid level. • Clean the mower deck.
Every 50 hours	• Grease the bearing and bushing grease fittings (more often in dirty or dusty conditions and after every washing). • Check battery cable connections. • Check the tire pressure.
Every 100 hours	• Check the alternator-belt tension.
Every 150 hours	• Check the lubricant in the mower-deck gearbox.
Every 200 hours	• Inspect the cooling-system hoses and seals. Replace them if cracked or torn. • Torque wheel lug nuts.
Every 250 hours	• Change the engine oil and filter.
Every 400 hours	• Change the mower-deck gearbox lubricant. • Service the air cleaner. • Replace the fuel filter canister for the water separator. • Drain water or other contaminants from the water separator. • Replace the engine fuel filter. • Check the fuel lines and connections.
Every 800 hours	• Change the hydraulic fluid and filter. • Inspect engine valve clearance. Refer to your Engine Operator's Manual.
Every 1,500 hours	• Replace moving hoses.
Every 6,000 hours	• Disassemble, clean, and assemble the soot filter of the DPF. or clean the soot filter if engine faults SPN 3720 FMI 16, SPN 3720 FMI 0, or SPN 3720 FMI 16 display in the InfoCenter.
Every 2 years	• Drain and clean the fuel tank. • Flush and replace the cooling-system fluid.

Important: **Refer to your *Engine Operator's Manual* for additional maintenance procedures. A detailed Service Manual is also available for purchase from your Authorized Toro Distributor.**

Daily Maintenance Checklist

Duplicate this page for routine use.

Maintenance Check Item	For the week of:						
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Check the safety-interlock operation.							
Check the grass deflector in the down position (if applicable).							
Check the parking-brake operation.							
Check the fuel level.							
Check the hydraulic fluid level.							
Check the engine-oil level.							
Check the cooling-system fluid level.							
Check the drain water/fuel separator.							
Check the air-filter restriction indicator.[1]							
Check the radiator and screen for debris							
Check for unusual engine noises.[2]							
Check for unusual operating noises.							
Check the hydraulic hoses for damage							
Check for fluid leaks.							
Check the tire pressure.							
Check the instrument operation.							
Check the condition of the blades.							
Lubricate all grease fittings.[3]							
Touch up damaged paint.							

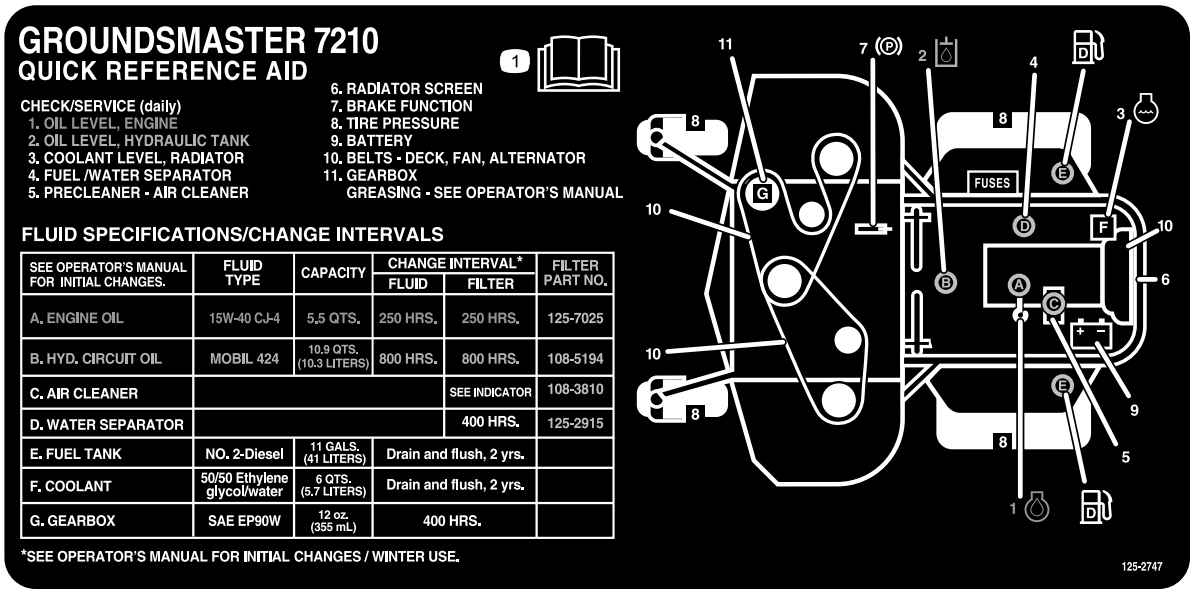
1. If the indicator shows red
2. Check glow plug and injector nozzles if you notice hard starting, excess smoke, or rough running.
3. Immediately after every washing, regardless of the interval listed.

Notation for areas of concern		
Inspection performed by:		
Item	Date	Information

⚠ 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.



SEE OPERATOR'S MANUAL FOR INITIAL CHANGES.	FLUID TYPE	CAPACITY	CHANGE INTERVAL*		FILTER PART NO.
			FLUID	FILTER	
A. ENGINE OIL	15W-40 CJ-4	5,5 QTS.	250 HRS.	250 HRS.	125-7025
B. HYD. CIRCUIT OIL	MOBIL 424	10.9 QTS. (10.3 LITERS)	800 HRS.	800 HRS.	108-5194
C. AIR CLEANER				SEE INDICATOR	108-3810
D. WATER SEPARATOR				400 HRS.	125-2915
E. FUEL TANK	NO. 2-Diesel	11 GALS. (41 LITERS)	Drain and flush, 2 yrs.		
F. COOLANT	50/50 Ethylene glycol/water	6 QTS. (5.7 LITERS)	Drain and flush, 2 yrs.		
G. GEARBOX	SAE EP90W	12 oz. (355 mL)	400 HRS.		

decal125-2747

Figure 52
Service Interval Chart

Pre-Maintenance Procedures

Important: **The fasteners on the covers of this machine are designed to remain on the cover after removal. Loosen all of the fasteners on each cover a few turns so that the cover is loose but still attached, then go back and loosen them until the cover comes free. This will prevent you from accidentally stripping the bolts free of the retainers.**

Pre-Maintenance Safety

- Before adjusting, cleaning, repairing, or leaving the machine, do the following:
  - Park the machine on a level surface.
  - Move the throttle switch to the low-idle position.
  - Disengage the cutting units.
  - Lower the cutting units.
  - Ensure that the traction is in neutral.
  - Engage the parking brake.
  - Shut off the engine and remove the key.
  - Wait for all moving parts to stop.
  - Allow machine components to cool before performing maintenance.
- If the cutting units are in the transport position, use the positive mechanical lock (if available) before you leave the machine unattended.
- If possible, do not perform maintenance while the engine is running. Keep away from moving parts.
- Use jack stands to support the machine or components when required.
- Carefully release pressure from components with stored energy.

Lubrication

Greasing the Bearings and Bushings

Service Interval: Every 50 hours (more often in dirty or dusty conditions and after every washing).

The machine has grease fittings that you must lubricate regularly with No. 2 lithium grease. Lubricate more often in dirty or dusty conditions because dirt can get into the bearings and bushings and cause accelerated wear.

1. Wipe the grease fittings clean so that foreign matter cannot be forced into the bearing or bushing.
2. Pump grease into the fittings.
3. Wipe off excess grease.

Note: Improper wash-down procedures can negatively affect bearing life. Do not wash down the machine when it is still hot and avoid directing high-pressure or high-volume spray at the bearings or seals.

Servicing the Mower-Deck Gear Box Lubricant

The gear box is designed to operate with SAE EP90W gear lube. Although the gear box comes from the factory with lubricant, check the level of the lubricant in the cutting unit before operating it and as recommended in the Daily Maintenance Checklist (page 41).

Checking the Mower-Deck Gearbox Lubricant

Service Interval: Every 150 hours

1. Position the machine and mower deck on a level surface.
2. Lower the mower deck to the 2.5 cm (1 inch) height of cut.
3. Disengage the PTO, move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
4. Move the throttle lever to the SLOW position, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
5. Lift the footrest, exposing the top of the mower deck.
6. Remove the dipstick/fill plug from the top of the gearbox and make sure that the lubricant is between the marks on the dipstick (Figure 53).

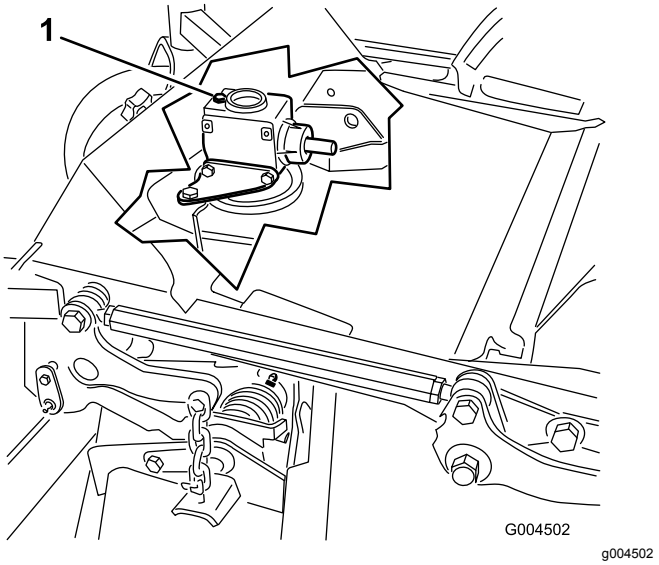


Figure 53

1. Fill plug and dipstick

7. If the lubricant level is low, add enough lubricant until the level is between the marks on the dipstick.

   Important: **Do not overfill the gearbox; overfilling the gearbox may damage it.**

Changing the Mower-Deck Gearbox Lubricant

Service Interval: After the first 50 hours
Every 400 hours

1. Position the machine and cutting unit on a level surface.
2. Lower the mower deck to the 2.5 cm (1 inch) height of cut.
3. Disengage the PTO, move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
4. Move the throttle lever to the SLOW position, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
5. Lift the footrest, exposing the top of the mower deck.
6. Remove the dipstick/fill plug from the top of the gearbox (Figure 53).
7. Place a funnel and drain pan under the drain plug located under the front of the gearbox and remove the plug, draining the lubricant into the pan.

8. Replace the drain plug.
9. Add enough lubricant, approximately 283 ml (12 oz), until the level is between the marks on the dipstick.

   Important: **Do not overfill the gearbox; overfilling the gearbox may damage it.**

Engine Maintenance

Engine Safety

- Shut off the engine before checking the oil or adding oil to the crankcase.
- Do not change the governor speed or overspeed the engine.

Checking the Air Cleaner

1. Check the air cleaner body for damage, which could possibly cause an air leak. Replace a damaged air cleaner body. Check the whole clean air intake system for leaks, damage, or loose hose clamps.
2. Service the air cleaner filter when the air cleaner indicator (Figure 54) shows red or every 400 hours (more frequently in extremely dusty or dirty conditions). Do not over service the air filter.

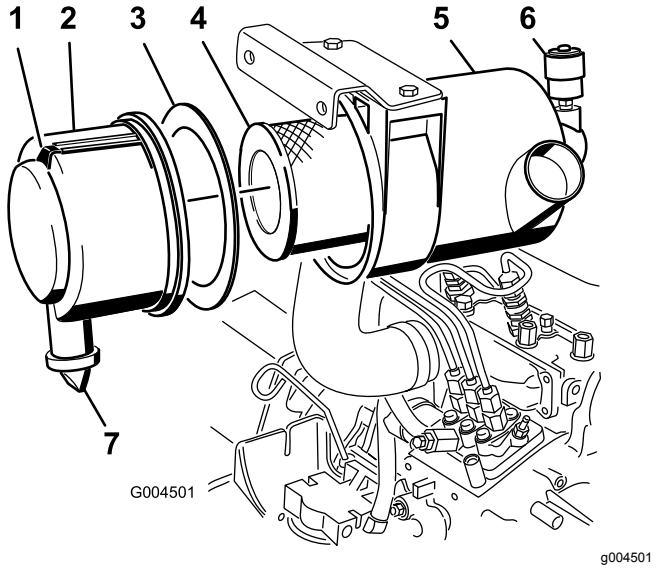


Figure 54

1. Air cleaner cover
2. Air cleaner latch
3. Gasket
4. Filter
5. Air cleaner body
6. Air cleaner indicator
7. Rubber outlet valve

3. Be sure the cover is seated correctly and seals with the air cleaner body.

Servicing the Air Cleaner

Service Interval: Every 400 hours

1. Pull the latch outward and rotate the air-cleaner cover counter-clockwise (Figure 54).
2. Remove the cover from the air-cleaner body (Figure 54).

3. Before removing the filter, use low pressure air (40 psi, clean and dry) to help remove large accumulations of debris packed between outside of primary filter and the canister.

   This cleaning process prevents debris from migrating into the intake when the primary filter is removed.

   Important: **Avoid using high-pressure air which could force dirt through the filter into the intake tract.**

4. Remove and replace the primary filter (Figure 54).

   Important: **Do not clean the used element to avoid damage to the filter media.**

5. Inspect the new filter for shipping damage, checking the sealing end of the filter and the body.

   Important: **Do not use a damaged element.**

6. Ensure that the foam gasket is in place in the cover and that it is not torn or damaged (Figure 54).

   Note: If it is damaged, replace it.

7. Insert the new filter by applying pressure to the outer rim of the element to seat it in the canister.

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

8. Clean the dirt ejection port (located in the removable cover) as follows:

   A. Remove the rubber outlet valve from the cover (Figure 54).

   B. Clean the cavity.

   C. Replace the outlet valve.

9. Install the cover orienting the rubber outlet valve in a downward position—between approximately 5:00 to 7:00 when viewed from the end.

10. Reset the indicator (Figure 54) if showing red.

Servicing the Engine Oil

Oil Specification

Use high-quality, low-ash engine oil that meets or exceeds the following specifications:

- API service category CJ-4 or higher
- ACEA service category E6
- JASO service category DH-2

Important: **Using engine oil other than API CJ-4 or higher, ACEA E6, or JASO DH-2 may cause the diesel particulate filter to plug or cause engine damage.**

Use the following engine oil viscosity grade:

- 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 Authorized Toro Distributor in either 15W-40 or 10W-30 viscosity grades. See the parts catalog for part numbers.

Checking the Engine-Oil Level

Service Interval: Before each use or daily

The engine is shipped with oil in the crankcase; however, the oil level must be checked before and after the engine is first started.

Important: **Check the engine oil daily. If the engine-oil level is above the Full mark on the dipstick, the engine oil may be diluted with fuel; If the engine oil level is above the Full mark, change the engine oil.**

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 the engine with oil**.

Important: **Keep the engine oil level between the upper and lower limits on the dipstick; the engine may fail if you run it with too much or too little oil.**

1. Park the machine on a level surface.
2. Unlock the hood latches and open the hood.
3. Remove the dipstick, wipe it clean, install the dipstick into the tube, and pull it out again.

   The oil level should be in the safe range (Figure 55).

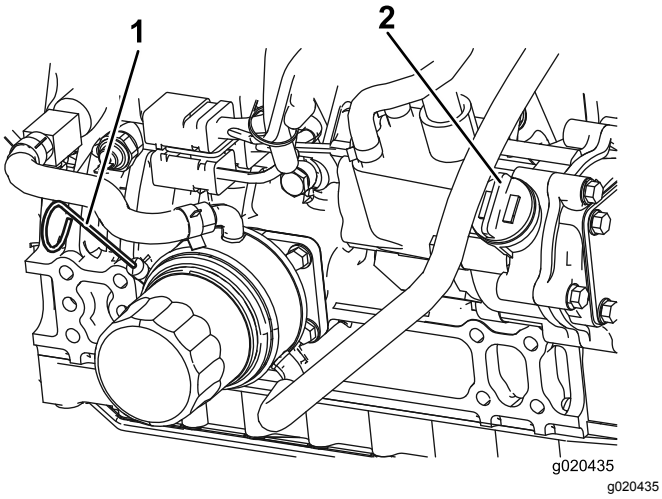


Figure 55

1. Dipstick
2. Oil-fill cap

4. If the oil is below the safe range, remove the fill cap (Figure 55) and add oil until the level reaches the Full mark.

   Important: **Do not overfill the engine with oil.**

   Note: When using different oil, drain all old oil from the crankcase before adding new oil.
5. Install the oil-fill cap and dipstick.
6. Close the hood and secure it with the latches.

Crankcase Oil Capacity

5.2 liters (5.5 qt) with the filter.

Changing the Engine Oil And Filter

Service Interval: Every 250 hours

Change the oil and filter every 250 hours.

1. Remove the engine oil drain plug (Figure 56) and let the oil flow into a drain pan. When all the oil is drained, install the drain plug.

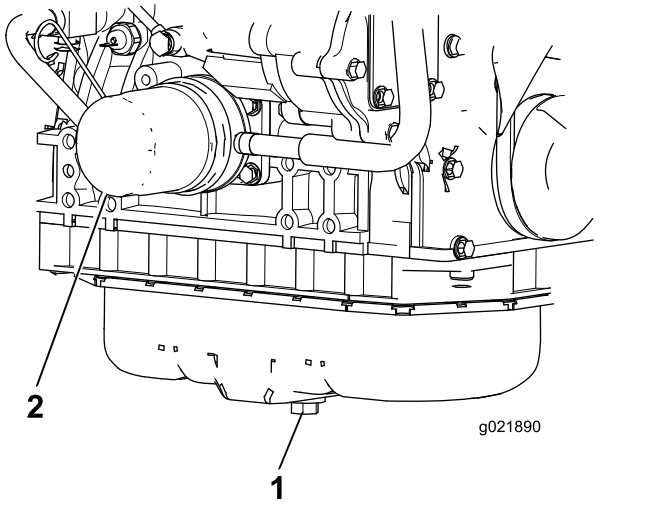


Figure 56

1. Engine oil drain plug
2. Oil filter

2. Remove the oil filter (Figure 56). Apply a light coat of clean oil to the new filter seal before screwing it on. **Do not overtighten.**
3. Add oil to the crankcase; refer to Checking the Engine Oil.

Servicing the Diesel-Oxidation Catalyst (DOC) and the Soot Filter

Service Interval: Every 6,000 hours or clean the soot filter if engine faults SPN 3720 FMI 16, SPN 3720 FMI 0, or SPN 3720 FMI 16 display in the InfoCenter.

- If advisory message ADVISORY 179 displays in the InfoCenter, the DPF is nearing the recommended point for servicing the diesel-oxidation catalyst and the soot filter.

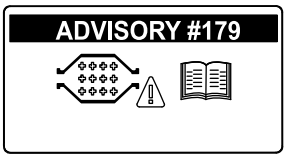
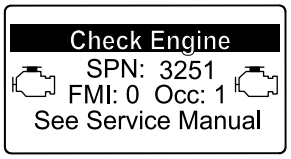


Figure 57

- If engine faults CHECK ENGINE SPN 3251 FMI 0, CHECK ENGINE SPN 3720 FMI 0, or CHECK ENGINE SPN 3720 FMI 16in the InfoCenter (Figure 58) display in the InfoCenter, clean the soot filter using the steps that follow:



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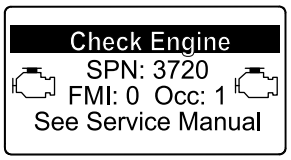

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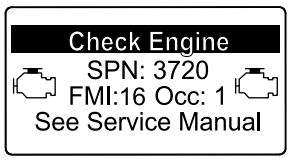

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Figure 58

1. Refer to the Engine section in the *Service Manual* for information on disassembling and assembling the diesel-oxidation catalyst and the soot filter of the DPF.
2. Refer to your Authorized Toro Distributor for diesel-oxidation catalyst and the soot filter replacement parts or service.
3. Contact your Authorized Toro Distributor to have them reset the engine ECU after you install a clean DPF.

Fuel System Maintenance

Note: Refer to Fuel Specification (page 17) for proper fuel recommendations.

⚠ 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 to the bottom of the filler neck.**
- **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.**

Servicing the Water Separator

Service Interval: Every 400 hours

Every 400 hours

Drain water or other contaminants from water separator (Figure 59) daily.

1. Place a clean container under the fuel filter.
2. Loosen the drain plug on the bottom of the filter canister and open the vent on the top of the canister mount.

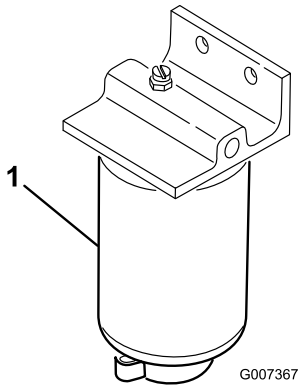

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Figure 59

1. Water separator 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 and close the vent on the top of the canister mount.

Servicing the Engine Fuel Filter

Service Interval: Every 400 hours

The engine fuel filter should be replaced after every 400 hours of operation.

1. Clean the area around the fuel filter head (Figure 60).

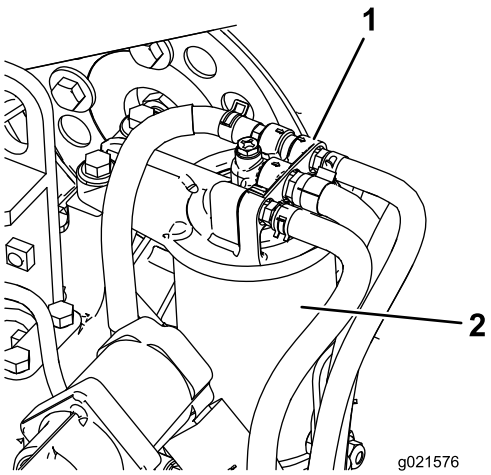

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Figure 60

1. Fuel Filter head
2. Fuel Filter

2. Remove the filter and clean the filter head mounting surface (Figure 60).
3. Lubricate the filter gasket with clean lubricating engine oil. Refer to the Engine Operator's Manual, included with the machine, for additional information.
4. Install the dry filter canister, by hand, until the gasket contacts the filter head, then rotate it an additional 1/2 turn.
5. Start the engine and check for fuel leaks around the filter head.

Cleaning the Fuel Tank

Service Interval: Every 2 years

Remove and clean the in-line strainers after draining the tank. Use clean diesel fuel to flush out the tank.

Important: **Drain and clean the tank if the fuel system becomes contaminated or if you are storing the machine for an extended period.**

Checking the Fuel Lines and Connections

Service Interval: Every 400 hours

Inspect the fuel lines for deterioration, damage, chaffing, or loose connections.

Electrical System Maintenance

Electrical System Safety

- Disconnect the battery before repairing the machine. Disconnect the negative terminal first and the positive last. Connect the positive terminal first and the negative last.
- Charge the battery in an open, well-ventilated area, away from sparks and flames. Unplug the charger before connecting or disconnecting the battery. Wear protective clothing and use insulated tools.

WARNING

CALIFORNIA
Proposition 65 Warning

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

Servicing the Battery

Service Interval: Every 50 hours

WARNING

CALIFORNIA
Proposition 65 Warning

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

Keep the top of the battery clean. If you store the machine in a location where temperatures are extremely high, the battery will run down more rapidly than if the machine is stored in a location where the temperature is cool.

Keep the top of the battery clean by washing it periodically with a brush dipped in ammonia or bicarbonate of soda solution. Flush the top surface with water after cleaning it. Do not remove the fill caps while cleaning the battery.

The battery cables must be tight on the terminals to provide good electrical contact.

If corrosion occurs at the terminals, disconnect the cables, negative (-) cable first, and scrape the clamps and terminals separately. Connect the cables, positive (+) cable first, and coat the terminals with petroleum jelly.

⚠ WARNING

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

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

⚠ 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.**

Storing the Battery

If you are storing the machine more than 30 days, remove the battery and charge it fully. Either store it on a shelf or on the machine. Do not connect the cables if you store it on the machine. Store the battery in a cool environment to prevent the battery from discharging rapidly. To prevent the battery from freezing, make sure it is fully charged. The specific gravity of a fully charged battery is 1.265 to 1.299.

Checking the Fuses

The fuses are located under the control panel. Access them through the side panel cover (Figure 61). To open the side panel cover, release the 2 latches and pull out on it.

If the machine stops or has other electrical system issues, check the fuses. Grasp each fuse in turn and remove them 1 at a time, checking if any are blown.

Important: **If you need to replace a fuse, always use the same type and amperage-rated fuse as the one you are replacing, otherwise you could damage the electrical system. Refer to the decal next to the fuses for a diagram of each fuse and its amperage (Figure 62).**

Note: If a fuse blows frequently, you probably have a short in the electrical system and should have it serviced by a qualified service technician.

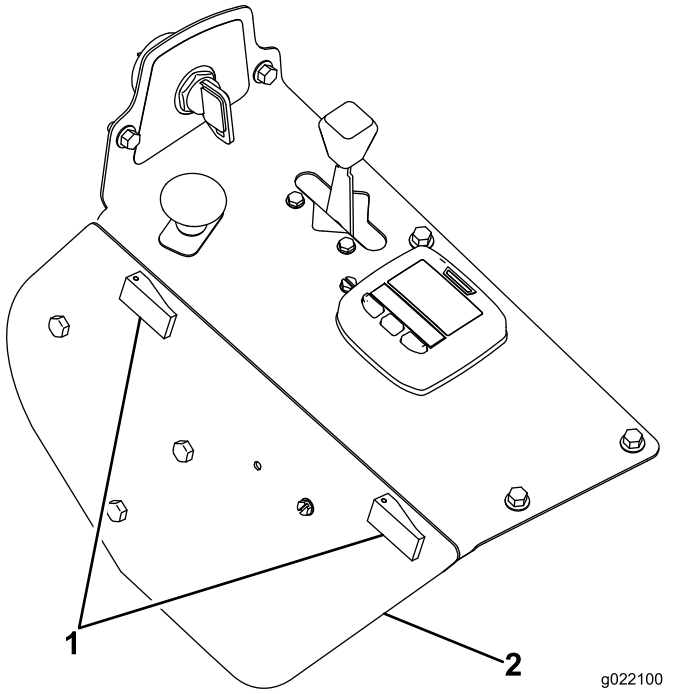

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Figure 61

1. Side panel cover
2. Latch

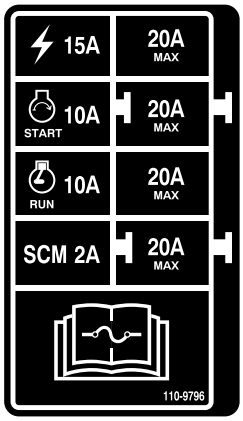

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Figure 62

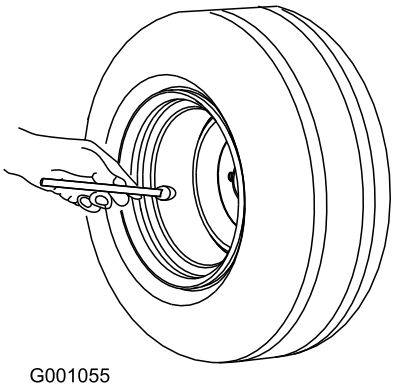
Drive System Maintenance

Checking the Tire Pressure

Service Interval: Every 50 hours/Monthly (whichever comes first)

Maintain the air pressure in the front and rear tires (Figure 63). The correct air pressure is 124 kPa (15 psi) in the rear tires and 103 kPa (25 psi) in the caster wheels. Uneven tire pressure can cause an uneven cut.

Note: Check the tires when they are cold to get the most accurate pressure reading.



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g001055

Figure 63

Replacing the Caster Wheels and Bearings

1. Obtain a new caster-wheel assembly, cone bearings, and bearing seals from your Authorized Toro Distributor.
2. Remove the locknut from the bolt (Figure 64).

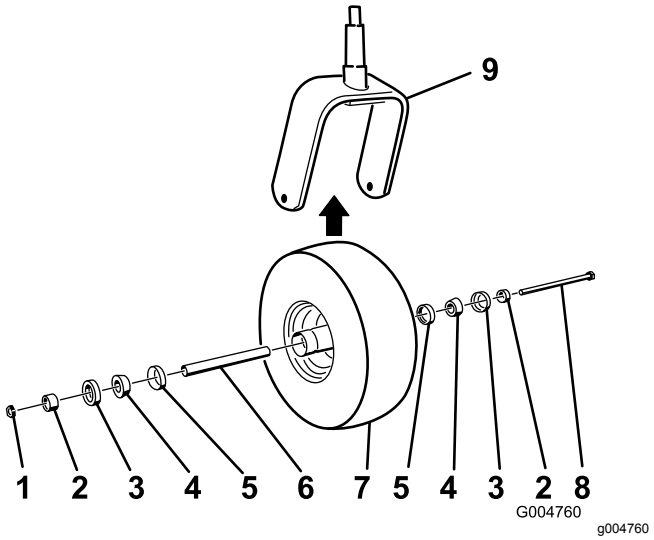

Figure 64

1. Locknut
2. Bearing spacer
3. Outer bearing seal
4. Cone bearing
5. Inner bearing seal
6. Spacer
7. Caster wheel
8. Axle bolt
9. Caster fork

3. Grasp the caster wheel and slide the bolt out of the fork or pivot arm.
4. Discard the old caster wheel and bearings.
5. Assemble the caster wheel by pushing the cone bearings and seals, packed with grease, into the wheel hub, positioned as shown in Figure 64.
6. Slide the spacer into the wheel hub through the bearings, captivating the spacer inside the wheel hub with 2 bearing spacers.

   Important: **Ensure that the seal lips are not folded inward.**
7. Install the caster-wheel assembly between the castor fork and secure it in place with the bolt and locknut.
8. Tighten the locknut until the wheel no longer spins freely, then back it off just until the wheel spins freely.
9. Attach a grease gun to the grease fitting on the caster wheel and fill it with No. 2 lithium grease.

Cooling System Maintenance

Cooling System Safety

- **Swallowing engine coolant can cause poisoning; keep out of reach from children and pets.**
- Discharge of hot, pressurized coolant or touching a hot radiator and surrounding parts can cause severe burns.
  - Always allow the engine to cool at least 15 minutes before removing the radiator cap.
  - Use a rag when opening the radiator cap, and open the cap slowly to allow steam to escape.

Checking the Cooling System

Service Interval: Before each use or daily

The cooling system is filled with a 50/50 solution of water and permanent ethylene glycol anti freeze. The capacity of the cooling system is 7.5 L (6 US qt).

1. Check the level of the coolant in the expansion tank (Figure 65).

   Note: The coolant level should be between the marks on the side of the tank.

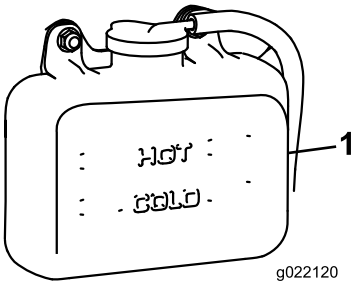

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Figure 65

1. Expansion tank

2. If coolant level is low, remove the expansion-tank cap and replenish the system.

   Important: **Do not overfill.**
3. Install the expansion-tank cap.

Cleaning the Radiator

Service Interval: Before each use or daily

Every 1,500 hours—Replace moving hoses.

Every 200 hours—Inspect the cooling-system hoses and seals. Replace them if cracked or torn.

Every 2 years—Flush and replace the cooling-system fluid.

Clean the radiator to prevent the engine from overheating.

Note: If the mower deck or engine shuts off due to overheating, check the radiator for excessive buildup of debris.

Clean the radiator as follows:

1. Open the hood.
2. Working from the fan side of the radiator, blow out debris with low pressure (345 kPa or 50 psi), compressed air. Repeat from the front of the radiator and the other fan side.

   Important: **Do not use water.**
3. After you thoroughly clean the radiator, clean out debris that may have collected in the channel at the radiator base.
4. Close the hood.

Brake Maintenance

Adjusting the Parking-Brake Interlock Switch

1. Stop the machine, move the motion-control levers to the NEUTRAL-LOCK position, engage the parking brake, and remove the ignition key.
2. Remove the bolts securing the front panel and remove the panel (Figure 66).

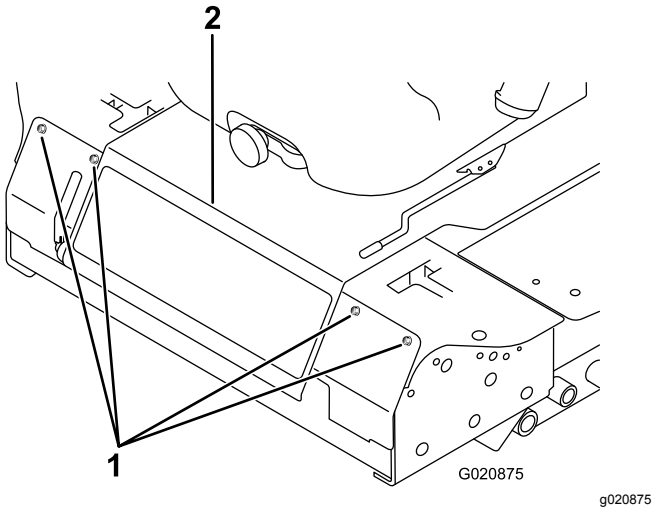

Figure 66

1. Bolt
2. Control panel

3. Loosen the 2 jam nuts securing the parking-brake interlock switch to the mounting bracket.

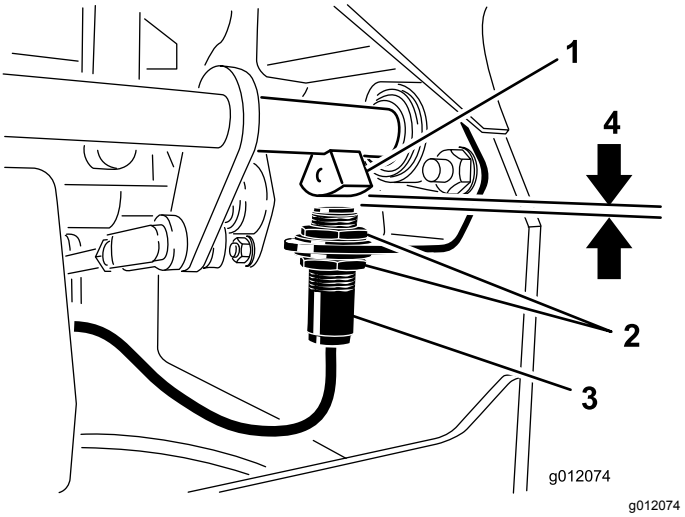

Figure 67

1. Brake-shaft sensor
2. 4 mm (5/32 inch)
3. Jam nut
4. Parking-brake interlock switch

4. Move the switch up or down on the bracket until the distance between the brake-shaft sensor and the switch plunger is 4 mm (5/32 inch) as shown in Figure 67.

   Note: Make sure that the brake-shaft sensor does not contact the switch plunger.

5. Secure the switch jam nuts.
6. Test the adjustment as follows:
   A. Ensure that the parking brake is engaged and you are not sitting on the seat, then start the engine.
   B. Move the control levers out of the NEUTRAL-LOCK position.

      Note: The engine should stop. If not, check the adjustment that you made to the switch.
7. Install the front panel.

Belt Maintenance

Checking the Alternator-Belt Tension

Service Interval: Every 100 hours

1. Apply 44 N (10 lb) of force to the alternator belt, midway between the pulleys.
2. If the deflection is not 10 mm (3/8 inch), loosen the alternator mounting bolts (Figure 68).

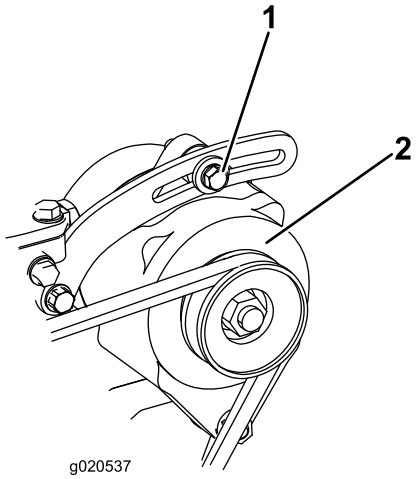

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Figure 68

1. Mounting bolt
2. Alternator

3. Increase or decrease the alternator-belt tension.
4. Tighten the mounting bolts.
5. Check the deflection of the belt again to ensure that the tension is correct.

Adjusting the Control-Lever Neutral-Interlock Switch

1. Stop the machine, move the motion-control levers to the NEUTRAL-LOCK position, engage the parking brake, and remove the ignition key.
2. Remove the bolts securing the front panel and remove the panel (Figure 69).

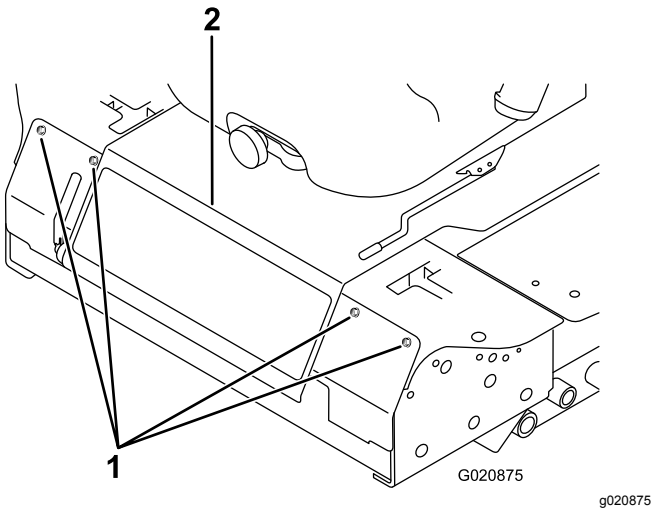

Figure 69

1. Bolt
2. Control panel

3. Loosen the 2 screws securing the interlock switch (Figure 70).

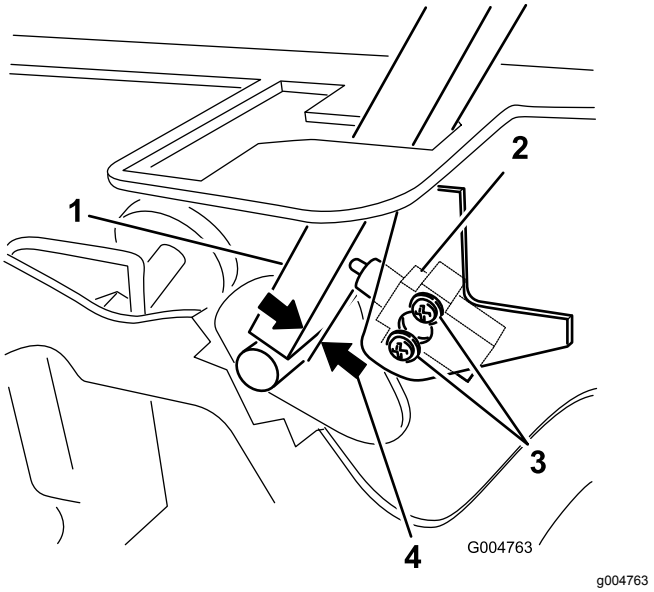

Figure 70

1. Control lever
2. Neutral-interlock switch
3. Screw
4. 0.4 to 1 mm (0.015 to 0.045 inch)

4. Holding the control lever against the frame, move the switch toward the lever until the distance between the lever and switch body is 0.4 to 1 mm (0.015 to 0.045 inch) as shown in Figure 70.
5. Secure the switch.
6. Repeat steps 3 to 5 for the other lever.
7. Install the front panel.

Adjusting the Control-Lever Neutral Return

If the motion-control levers do not align with the neutral slots when released from the REVERSE position, adjustment is required. Adjust each lever, spring, and rod separately.

1. Disengage the PTO, move the control lever to the NEUTRAL-LOCK position, and engage the parking brake.
2. Move the throttle lever to the SLOW position, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the bolts securing the front panel and remove the panel (Figure 71).

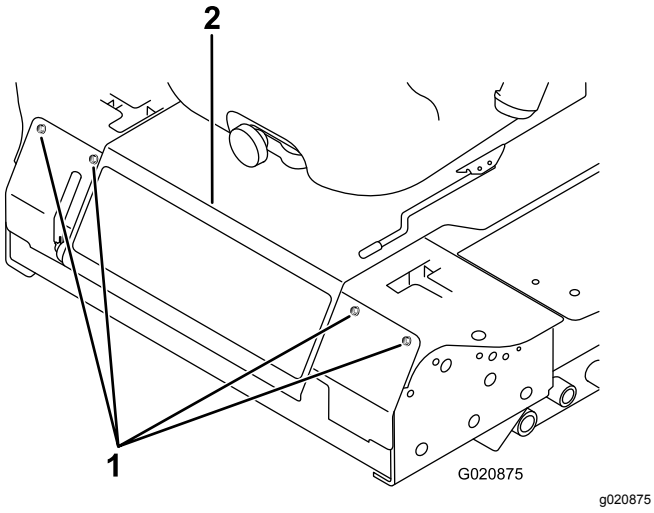

Figure 71

1. Bolt
2. Control panel

4. Move the control lever to the NEUTRAL position but **not locked** (Figure 73).
5. Pull the lever back until the clevis pin (on an arm above the pivot shaft) contacts the end of the slot (just beginning to put pressure on the spring) as shown in Figure 72.

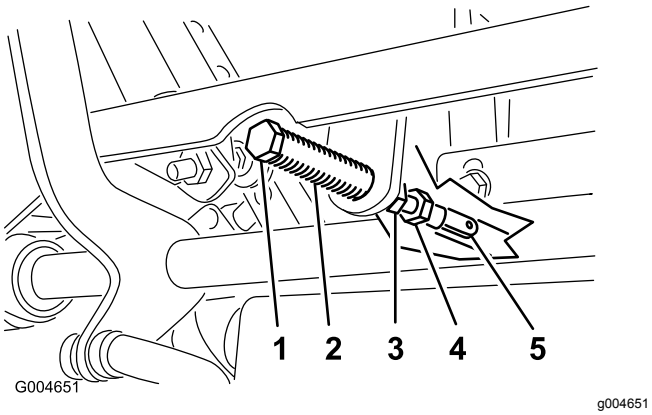

Figure 72

1. Clevis pin
2. Slot
3. Jam nut
4. Adjustment bolt
5. Yoke

6. Check where the control lever is relative to notch in the console (Figure 73).

   Note: The control lever should be centered, allowing lever to pivot outward to the NEUTRAL-LOCK position.

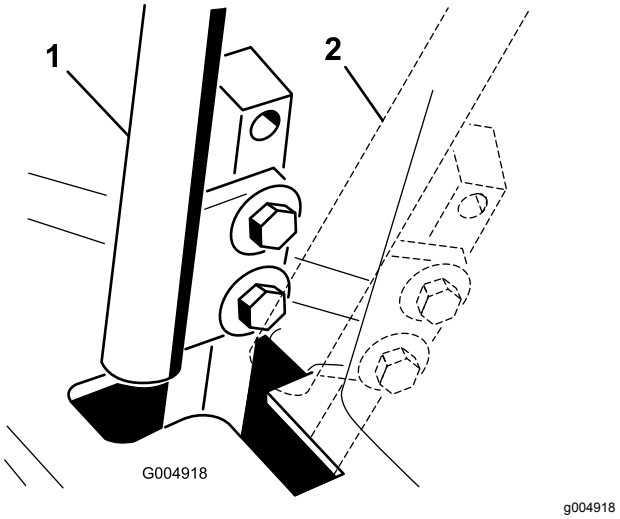

Figure 73

1. NEUTRAL position
2. NEUTRAL-LOCK position

7. If adjustment is needed, loosen the nut and jam nut against the yoke (Figure 72).
8. Applying slight rearward pressure on the motion-control lever, turn the head of the adjustment bolt in the appropriate direction until the control lever is centered in the NEUTRAL-LOCK position (Figure 72).

   Note: Rearward pressure on the lever keeps the pin at the end of the slot and allow the adjustment bolt to move the lever to the appropriate position.
9. Tighten the nut and jam nut (Figure 72).
10. Repeat steps 4 through 9 for the other control lever.
11. Install the front panel.

Adjusting the Traction Drive for Neutral

Make this adjustment with the drive wheels turning.

⚠ DANGER

Mechanical or hydraulic jacks may fail to support the machine and cause a serious injury.

- **Use jack stands when supporting the machine.**
- **Do not use hydraulic jacks.**

⚠ WARNING

The engine must be running to perform this adjustment. Contact with moving parts or hot surfaces may cause personal injury.

Keep hands, feet, face, clothing, and other body parts away from rotating parts, muffler, and other hot surfaces.

1. Raise the frame onto stable jack stands so that the drive wheels can rotate freely.
2. Slide the seat forward, unlatch it, and swing it up and forward.
3. Disconnect the electrical connector from the seat safety switch.
4. Temporarily install a jumper wire across the terminals in the wire harness connector.
5. Start the engine, ensure that the throttle lever is midway between the FAST and SLOW positions, and release the parking brake.

   Note: The motion-control levers must be in the NEUTRAL-LOCK position while you make any adjustments.
6. Adjust the pump rod length on one side by rotating the hex shaft, in the appropriate direction, until the corresponding wheel is still or slightly creeping in reverse (Figure 74).

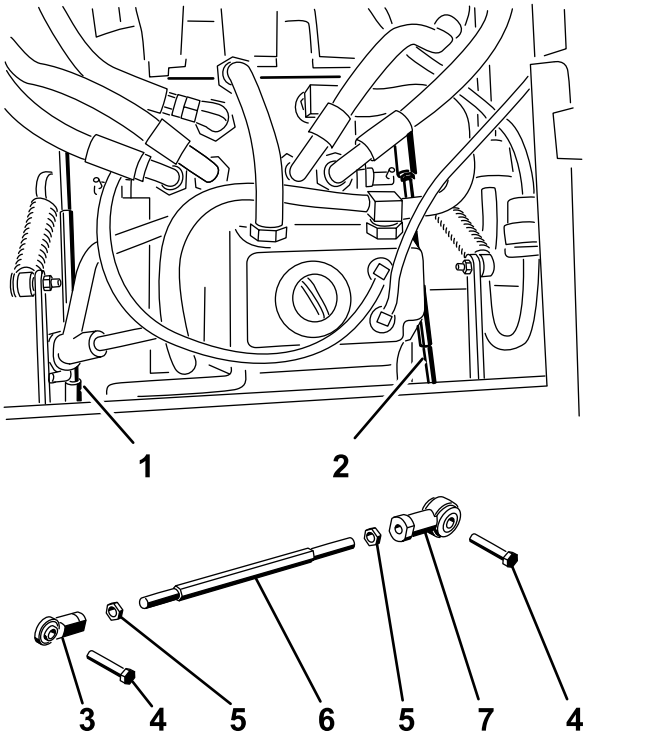

Figure 56
g004488

Figure 74

1. Right pump rod
2. Left pump rod
3. Ball joint
4. Bolt
5. Jam nut
6. Hex shaft
7. Ball joint

7. Move the motion-control lever forward and reverse, then back to neutral.

   Note: The wheel must stop turning or slightly creep in reverse.
8. Move the throttle lever to the FAST position.

   Note: Make sure that the wheel remains stopped or slightly creeps in reverse; adjust it if necessary.
9. Repeat steps 6 through 8 for the other side of the machine.
10. Tighten the jam nuts at the ball joints (Figure 72).
11. Move the throttle lever to the SLOW position and shut off the engine.
12. Remove the jumper wire from the wire harness connector and plug the connector into the seat switch.

⚠ WARNING

The electrical system does not perform proper safety shutoff with the jumper wire installed.

- **Remove the jumper wire from the wire harness connector and plug the connector into the seat switch when you complete adjustment.**
- **Never operate the machine with the jumper installed and the seat switch bypassed.**

13. Lower the seat into position.
14. Remove the jack stands.

Adjusting the Maximum Ground Speed

1. Disengage the PTO, move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
2. Move the throttle lever to the SLOW position, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Remove the bolts securing the front panel and remove the panel (Figure 75).

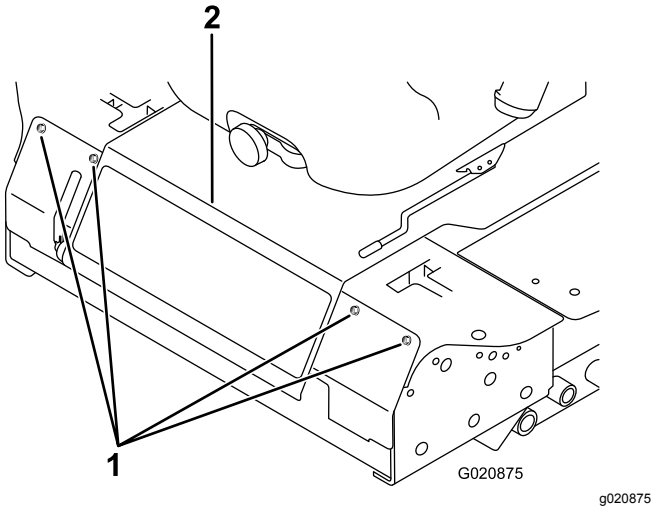

Figure 75

1. Bolt
2. Control panel

4. Loosen the jam nut on the stop bolt for a control lever (Figure 76).

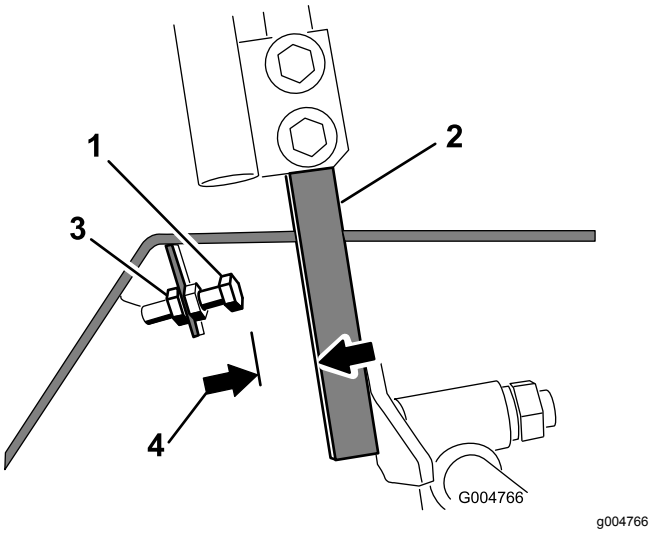

Figure 76

1. Stop bolt
2. Control lever
3. Jam nut
4. 1.5 mm (0.060 inch)

5. Thread the stop bolt all the way in (away from the control lever).
6. Push the control lever all the way forward until it stops and hold it there.
7. Thread the stop bolt out (toward the control lever) until there is a gap of 1.5 mm (0.060 inch) between the head of the stop bolt and the control lever.

   Note: If you want to reduce the maximum machine speed, back each stop bolt out an equal amount toward the control lever until you reach the desired maximum speed. You may need to test your adjustment several times.
8. Tighten the jam nut to secure the stop bolt in place.
9. Repeat steps 4 through 8 for the other control lever.
10. Install the front panel.
11. Ensure that the machine drives straight and does not turn when both control levers are pushed all the way forward.

    Note: If the machine turns, the stop bolts are not evenly set and you need to adjust them further.

Adjusting the Tracking

1. Disengage the PTO, move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
2. Move the throttle lever to the SLOW position, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Loosen the bolts securing the control levers (Figure 77).

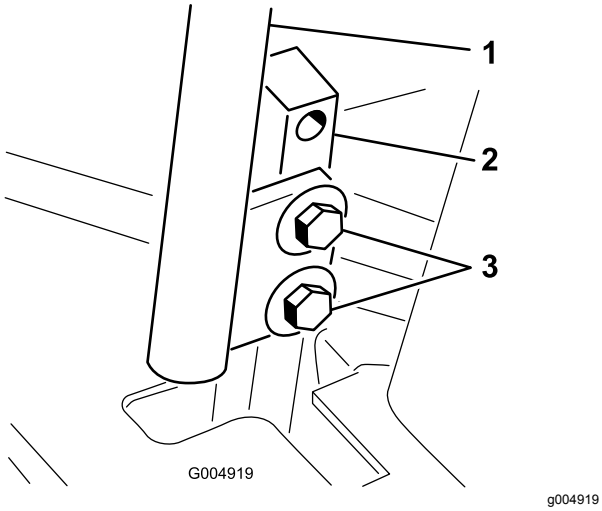

Figure 77

1. Control lever
2. Control-lever post
3. Bolts

4. Have someone push the control-lever posts (not the control levers) all the way forward into the maximum-speed position and hold them there.
5. Adjust the control levers so that they line up and tighten the bolts, securing the levers to the posts (Figure 78).

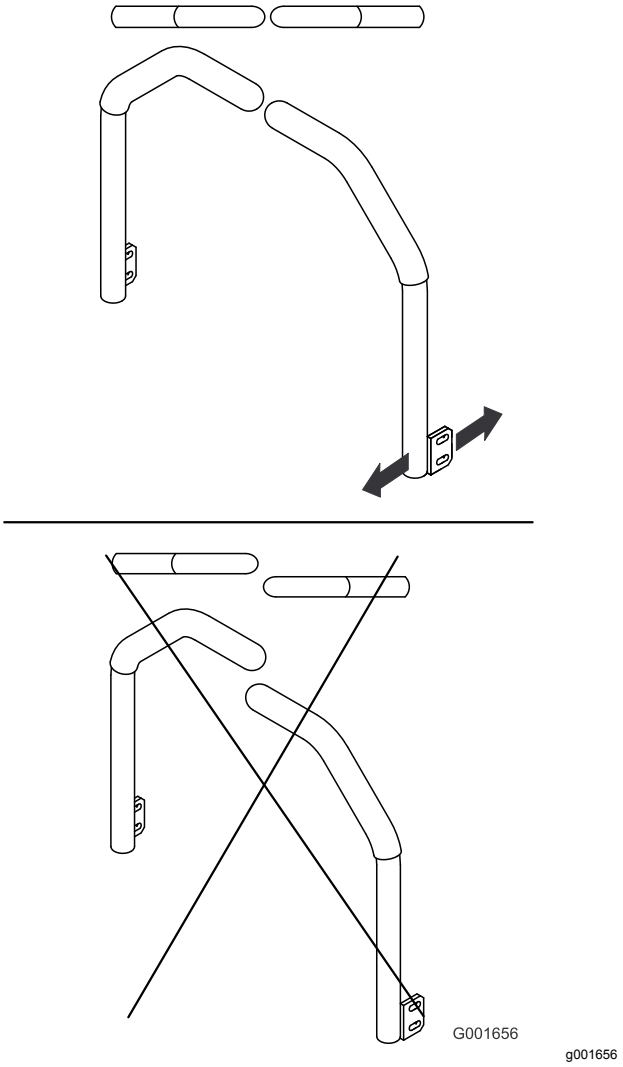

Figure 78

Hydraulic System Maintenance

The reservoir is filled at the factory with approximately 4.7 liters (5 quarts) of high quality tractor transmission/hydraulic fluid. The recommended replacement fluid is as follows:

Toro Premium Transmission/Hydraulic Tractor Fluid
(Available in 5 gallon pails or 55 gallon drums. See parts catalog or Toro distributor for part numbers.)

Alternate fluids: If the Toro fluid is not available, Mobil® 424 hydraulic fluid may be used.

Note: Toro will not assume responsibility for damage caused by improper substitutions.

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. One bottle is sufficient for 15-22 liters (4-6 gallons) of hydraulic fluid. Order part number 44-2500 from your Authorized Toro Distributor.

Hydraulic System Safety

- **Ensure that all hydraulic-fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.**
- **Keep your body and hands away from pinhole 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. Injected fluid must be surgically removed within a few hours by a doctor.**

Checking the Hydraulic System

Service Interval: Before each use or daily

Check the level of the hydraulic fluid before you first start the engine and daily thereafter.

1. Position the machine on a level surface.
2. Move the motion-control levers to the NEUTRAL-LOCK position and start the engine.

   Note: Run the engine at the lowest possible rpm to purge the system of air.

   Important: **Do not engage the PTO.**
3. Raise the deck to extend the lift cylinders, shut off the engine, and remove the key.
4. Raise the seat to access the hydraulic fluid tank.
5. Remove the hydraulic fill cap from the filler neck (Figure 79).

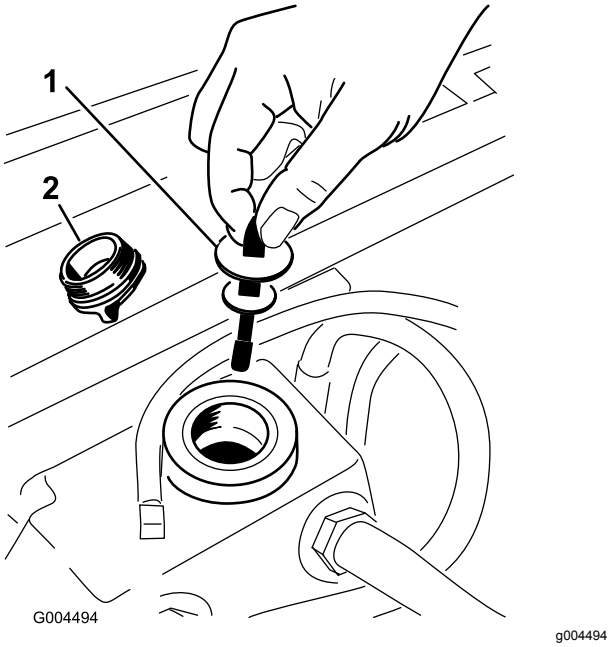

Figure 79

1. Dipstick
2. Fill cap

6. Remove the dipstick and wipe it with a clean rag (Figure 79).
7. Place the dipstick into the filler neck; then remove it and check the level of fluid (Figure 79).

   Note: If the level is not within the notched area of the dipstick, add enough high-quality hydraulic fluid to raise the level to within the notched area.

   Important: **Do not overfill.**
8. Replace the dipstick and thread the fill cap finger-tight onto the filler neck.
9. Check all hoses and fittings for leaks.

Changing the Hydraulic Fluid And Filter

Service Interval: After the first 200 hours

Every 800 hours

1. Disengage the PTO, move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
2. Move the throttle lever to the SLOW position, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Place a large pan under the hydraulic reservoir and transmission case and remove the plugs, draining all of the hydraulic fluid (Figure 80).

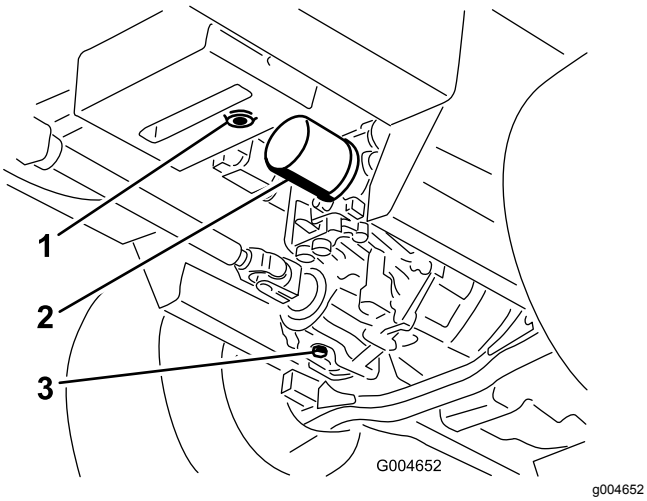

Figure 80

1. Hydraulic-reservoir drain plug
2. Filter
3. Transmission-case drain plug

4. Clean the area around the hydraulic fluid filter and remove the filter (Figure 80).
5. Immediately install a new hydraulic fluid filter.
6. Install the hydraulic-reservoir and transmission-case drain plugs.
7. Fill the reservoir to the proper level (approximately 5.7 L or 6 US qt); refer to Checking the Hydraulic System (page 59).
8. Start the engine and check for oil leaks. Allow the engine to run for about 5 minutes, then shut it off.
9. After 2 minutes, check the level of the hydraulic fluid; refer to Checking the Hydraulic System (page 59).

Cleaning

Cleaning Under the Mower

Service Interval: Before each use or daily

1. Disengage the PTO, move the motion-control levers to the NEUTRAL-LOCK position, and engage the parking brake.
2. Move the throttle lever to the SLOW position, shut off the engine, remove the key, and wait for all moving parts to stop before leaving the operating position.
3. Raise the mower to the transport position.
4. Raise the front of the machine using jack stands.
5. Thoroughly clean the underside of the mower with water.

Disposing of Waste

Engine oil, batteries, hydraulic fluid, and engine coolant are pollutants. Dispose of these according to your state and local regulations.

Storage

Machine

1. Thoroughly clean the machine, deck and the engine, paying special attention to these areas:
   - Radiator and radiator screen
   - Underneath the deck
   - Under the deck belt covers
   - Counterbalance springs
   - PTO shaft assembly
   - All grease fittings and pivot points
   - Remove the control panel and clean out inside of the control box
   - Beneath the seat plate and top of the transmission
2. Check and adjust front and rear tractor tire pressure; refer to Checking the Tire Pressure (page 50).
3. Remove, sharpen, and balance the mower blades. Install the blades and torque the blade fasteners to 115-149 N-m (85-110 ft-lb).
4. Check all fasteners for looseness and tighten them as necessary. Especially torque the 6 bolts securing the mower deck frame to the traction unit (Figure 81) to 359 N-m (265 ft-lb).

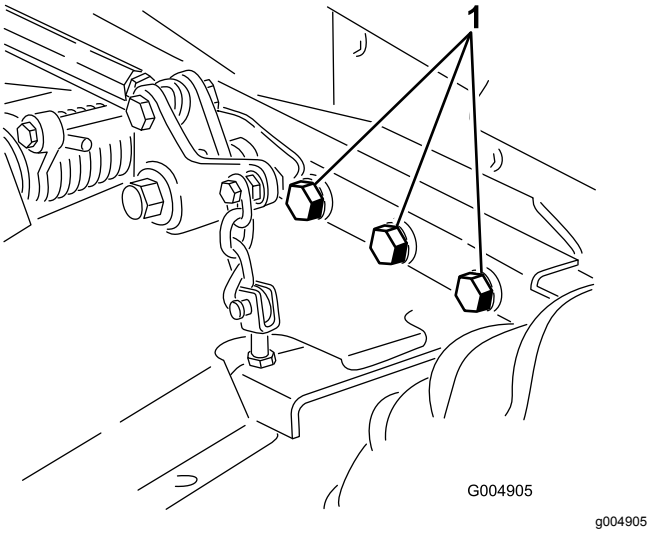

Figure 81

Right side not shown.

1. Bolts

5. Grease or oil all grease fittings, pivot points, and transmission by-pass valve pins. Wipe off any excess lubricant.
6. Lightly sand and use touch up paint on painted areas that are scratched, chipped or rusted. Repair any dents in the metal body.
7. 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 for 24 hours every 60 days to prevent lead sulfation of the battery.

Engine

1. Drain the engine oil from the oil pan and replace the drain plug.
2. Replace the oil filter.
3. Fill the engine with the recommended motor oil.
4. Start the engine and run it at idle speed for 2 minutes.
5. Drain the fuel from the fuel tank, fuel lines, pump, filter, and separator. Flush the fuel tank with clean diesel fuel and connect all fuel lines.
6. Thoroughly clean and service the air cleaner assembly.
7. Seal the air cleaner inlet and the exhaust outlet with weather proof masking tape.
8. Check the oil filler cap and fuel tank cap to ensure that they are securely in place.

Notes:

Notes:

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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