Form No. 3410-633 Rev A

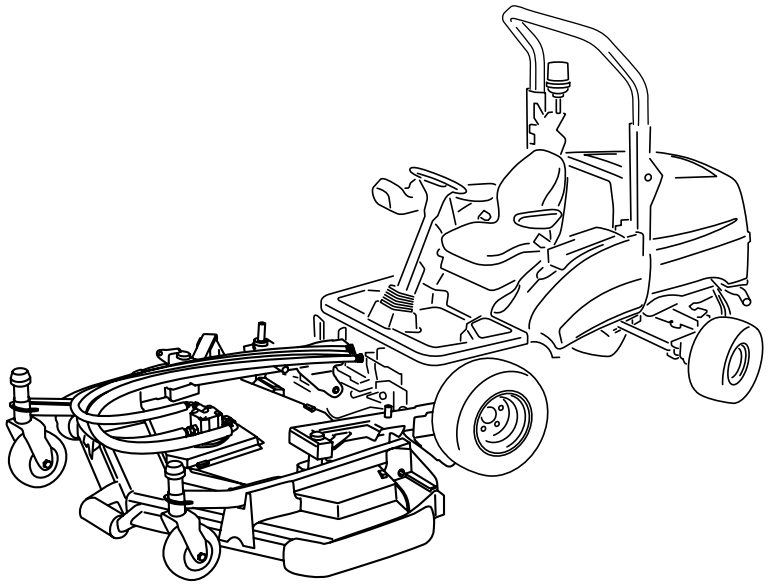
TORO®

Count on it.

Operator's Manual

Groundsmaster® 3400 4-Wheel Drive Traction Unit

Model No. 30651—Serial No. 400000000 and Up



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

CE

3410-633 A

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

Introduction

This machine is a ride-on, rotary-blade lawn mower intended to be used by professional, hired operators in commercial applications. It is primarily designed for cutting grass on parks, sports fields, caravan parks, cemeteries and commercial grounds. It is not designed for cutting brush or for agricultural use.

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 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. The model and serial numbers are on a plate mounted on the left side of the frame. Write the numbers in the space provided.

Model No. _____

Serial No. _____

This manual identifies potential hazards and has safety messages identified by the safety-alert symbol (Figure 1), which signals a hazard that may cause serious injury or death if you do not follow the recommended precautions.

g000502

Figure 1

1. Safety-alert symbol

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

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

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Safety

This machine has been designed in accordance with EN ISO 5395:2013.

General Safety

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

Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

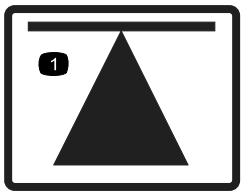
- Read and understand the contents of this *Operator's Manual* before starting the engine.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and working on the machine.
- Keep clear of any discharge opening. Keep bystanders and pets a safe distance away from the machine.
- Keep children out of the operating area. Never allow children to operate the machine.
- Stop the machine and shut off the engine before servicing, fueling, or unclogging the machine.

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

You can find additional safety information where needed throughout this *Operator's Manual*.

Safety and Instructional Decals

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



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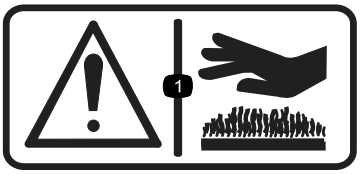
70-13-072

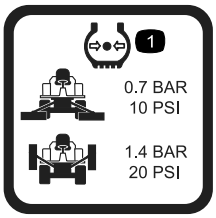
1. Jacking point



decal950889

950889

1. Warning—hot surfaces.



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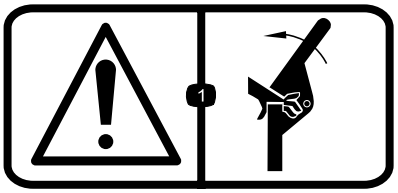
950832

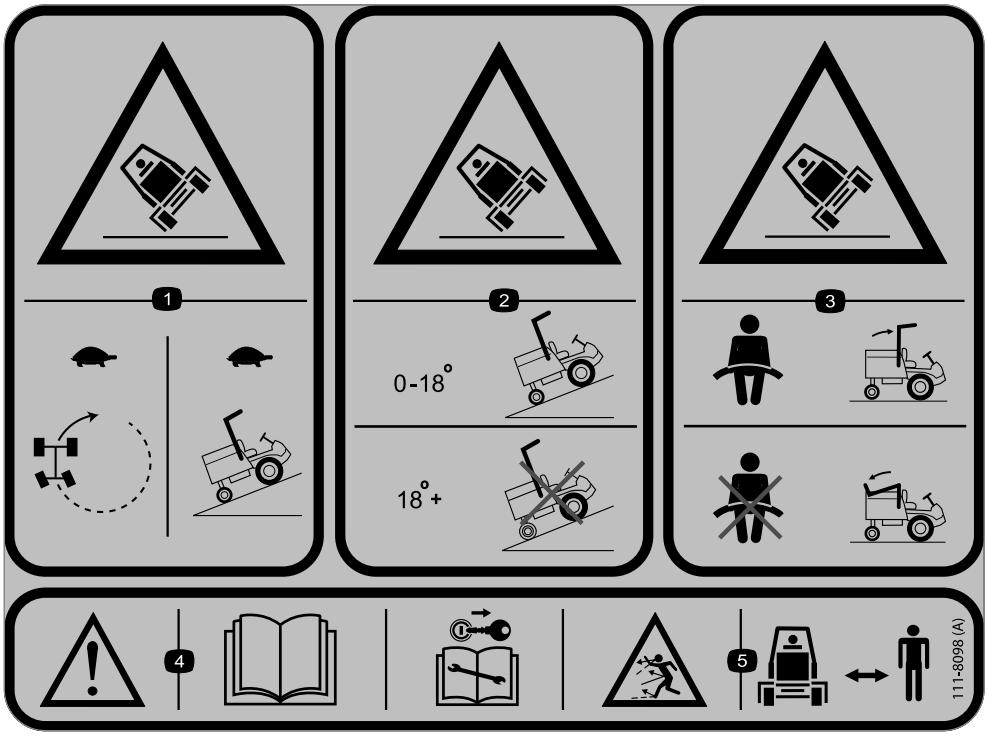
1. Tire pressure



decal111-0773

111-0773

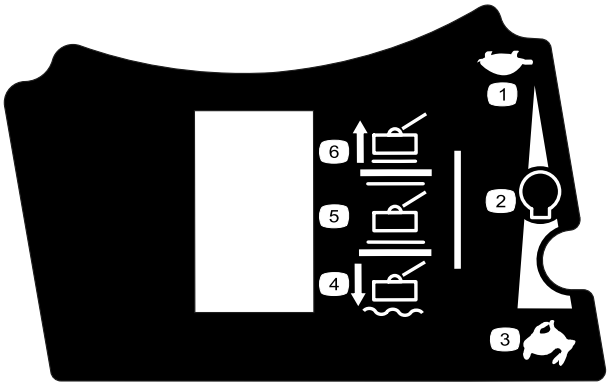
1. Warning—crushing of fingers, force applied from side.



decal111-8098

111-8098

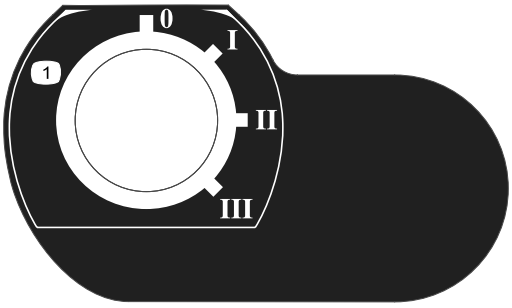
1. Tipping hazard—drive slowly when turning or going up slopes.
2. TIpping hazard—only drive up slopes that are between 0 and 18 degrees; do not drive up slopes that are greater than 18 degrees.
3. Tipping hazard—wear a seatbelt when the roll bar is up; do not wear a seatbelt when the roll bar is down.
4. Warning—read the *Operator's Manual*; remove the key from the ignition and read the *Operator's Manual* before servicing or performing maintenance; thrown object hazard; keep bystanders away from the machine.



decal111-5233

111–5233

1. Slow
2. Continuous variable engine speed
3. Fast
4. Float the cutting unit over the ground
5. Neutral cutting unit
6. Raise the cutting unit



decal111-3344

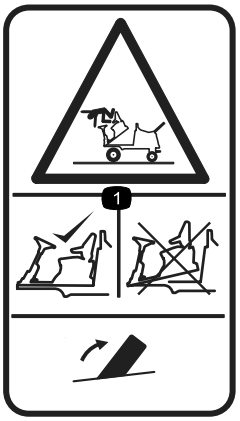
111-3344

1. Ignition switch

decal111-3562

111-3562

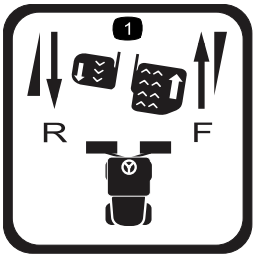
1. Press pedal to adjust steering wheel tilt.



decal111-3566

111-3566

1. Falling, crushing hazard—ensure platform latch in engaged before operating.



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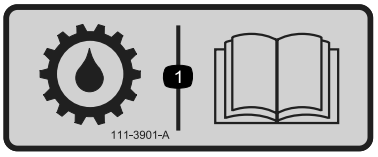
111-3567

1. Pedal operation



decal111-3901

111-3901

1. Transmission oil—read the *Operator's Manual* for more information.

decal111-3902

111-3902

1. Warning—cutting hazard of hand, fan.
2. Hot surfaces—read the *Operator's Manual* for more information.

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Tire pressure gauge (not supplied)	1	Check the tire pressure.
2	Operator's Manual Engine Operator's Manual Parts Catalog CE certificate	1 1 1 1	Read the Operator's Manual before operating the machine.

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

1

Checking the Tire Pressure

Parts needed for this procedure:

1	Tire pressure gauge (not supplied)

Procedure

Correct air pressure in the front and rear tires. See the chart below for the correct pressure.

Important: Maintain correct tire pressures in all tires to ensure correct contact with the turf.

Tires	Tire Type	Recommended Tire Pressures		
		Turf Conditions	Road Conditions	Max Pressure
Front Axle	26 x 12.00 - 12 BKT turf pattern	0.7 bar (10 psi)	1.4 bar (20 psi)	1.7 bar (25 psi)
Rear Axle	20 x 10.00 - 8 6 BKT turf pattern	0.7 bar (10 psi)	1.4 bar (20 psi)	1.7 bar (25 psi)

2

Reading the Manual

Parts needed for this procedure:

1	*Operator's Manual*
1	*Engine Operator's Manual*
1	*Parts Catalog*
1	CE certificate

Procedure

- Read the *Operator's Manual*.
- Store all documentation in a safe place for future use.

Product Overview

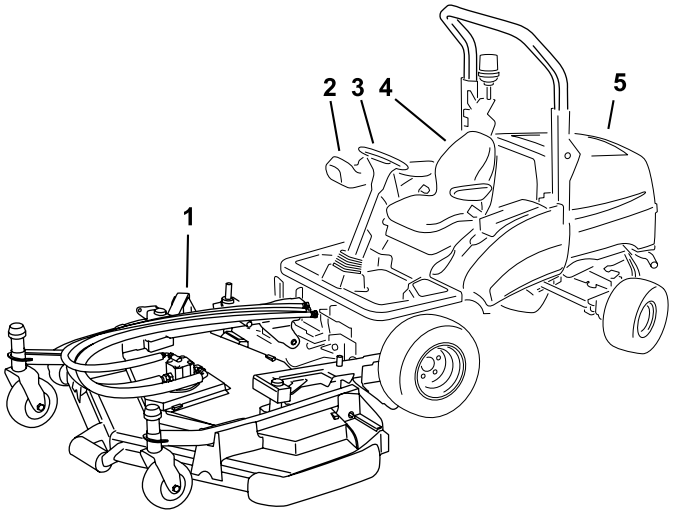


Figure 2

1. Cutting unit
2. Control arm
3. Steering wheel
4. Seat
5. Hood

Controls

Control Panel Components

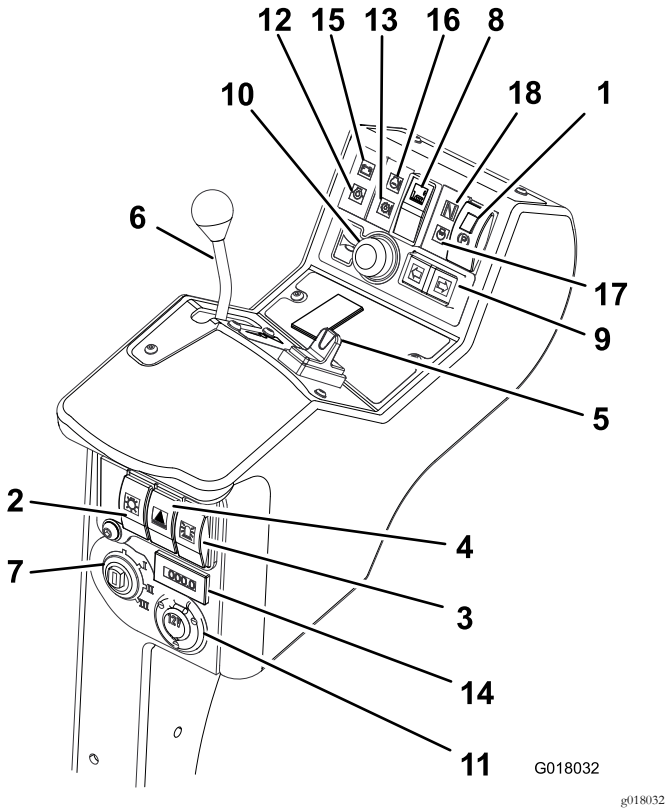


Figure 3

1. Parking-brake switch
2. Light switch (supplied with light kit)
3. Warning-beacon switch (supplied with beacon kit)
4. Hazard-warning switch (supplied with lighting kit)
5. Cutting-unit position control
6. Throttle-control lever
7. Ignition switch
8. Cutting-unit drive switch
9. Direction-indicator switch (supplied with lighting kit)
10. Horn button (supplied with light kit)
11. Auxiliary 12 V socket (supplied with a 12 V kit)
12. Oil-pressure indicator
13. Transmission-temperature indicator
14. Hour meter
15. Battery-warning indicator
16. Engine-temperature warning indicator
17. Glow-plug indicator
18. Transmission-neutral indicator

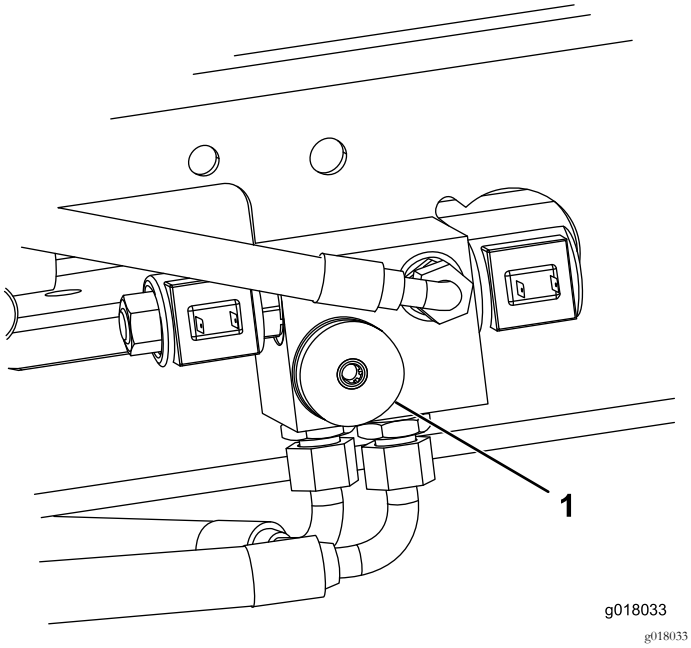


Figure 4

1. Weight-transfer control

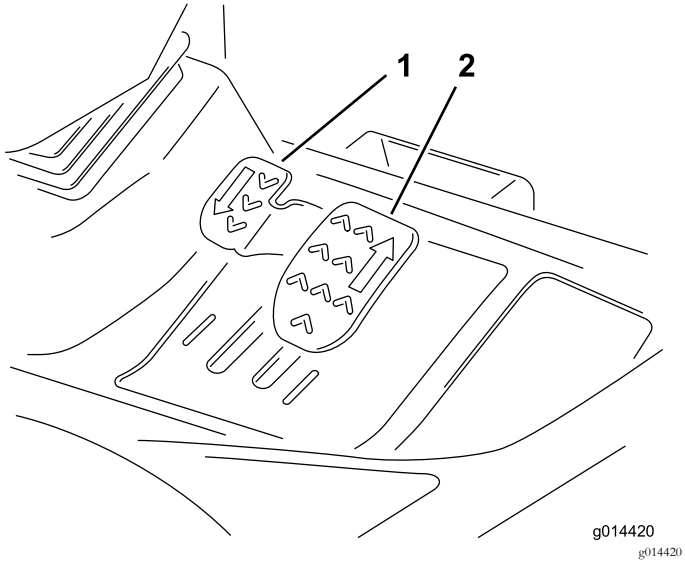


Figure 5

1. Reverse-travel pedal
2. Forward-travel pedal

Parking Brake

Move the parking-brake switch to its forward position by depressing the smaller locking button and moving the switch forward to engage the parking brake (Figure 6).

Note: Do not operate the mower with the parking brake engaged and do not engage the parking brake while the mower is moving.

This light illuminates when the parking brake is engaged and the ignition key is turned to position **I**.

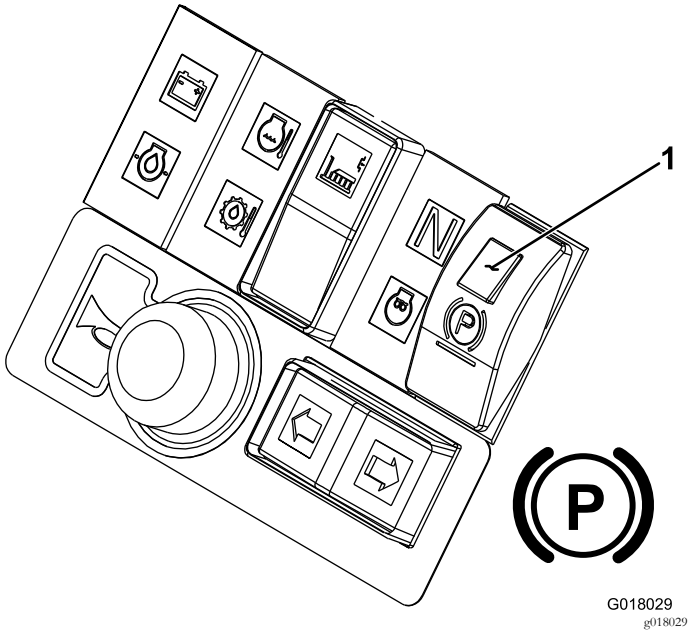


Figure 6

1. Parking brake

Throttle Control

Move the throttle control in a forward direction to increase the engine speed. Move the throttle control rearward to reduce engine speed (Figure 7).

Note: The engine speed dictates the speed of the other functions (i.e., travel, cutting-blade rotation speed, and cutting unit lift speed).

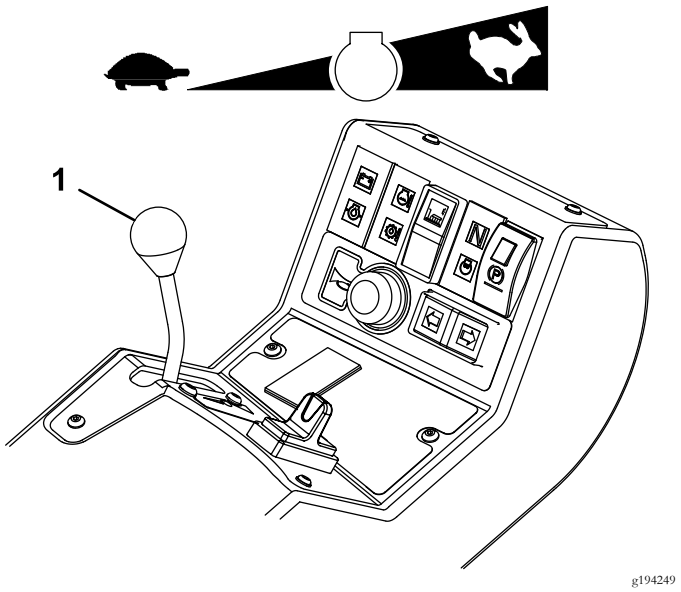


Figure 7

1. Throttle control

Traction Pedals

Press the forward-traction pedal to move forward. The ground speed depends on how far you press the pedal. For maximum speed, fully press the pedal with the throttle in the FAST position.

Press the reverse-traction pedal to move rearward. To stop the machine, reduce your foot pressure on the traction pedal and allow the pedal to return to neutral.

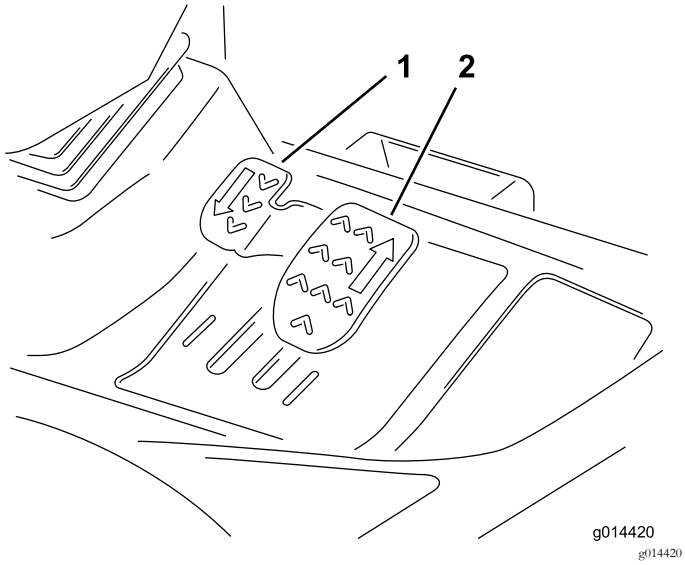


Figure 8

1. Reverse-traction pedal
2. Forward-traction pedal

Cutting-Unit Drive Switch

Always put the cutting unit drive switch in the OFF position when travelling between work areas.

Adjustable-Steering Column

⚠ WARNING

The operator may lose control causing injury or property damage if the steering column adjuster mechanism is not in good working order.

Never operate the mower without first checking that the steering column adjuster mechanism is in good working order and that, once adjusted and locked, the steering wheel remains securely in position.

Adjust the steering wheel and steering column only when the mower is at a standstill with the parking brake engaged.

1. To tilt the steering wheel, press the foot pedal down.
2. Position the steering tower to the most comfortable position and release the pedal (Figure 9).

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Figure 9

Operator Seat

⚠ WARNING

Adjustment of the seat mechanisms should only be carried out when the mower is at a standstill with the parking brake engaged.

Fore/Aft Adjustment: The seat-adjustment lever allows you to adjust the seat forward and rearward (Figure 10).

Operator weight adjustment: Rotate the handle clockwise to increase suspension stiffness and counter-clockwise to decrease it (Figure 10).

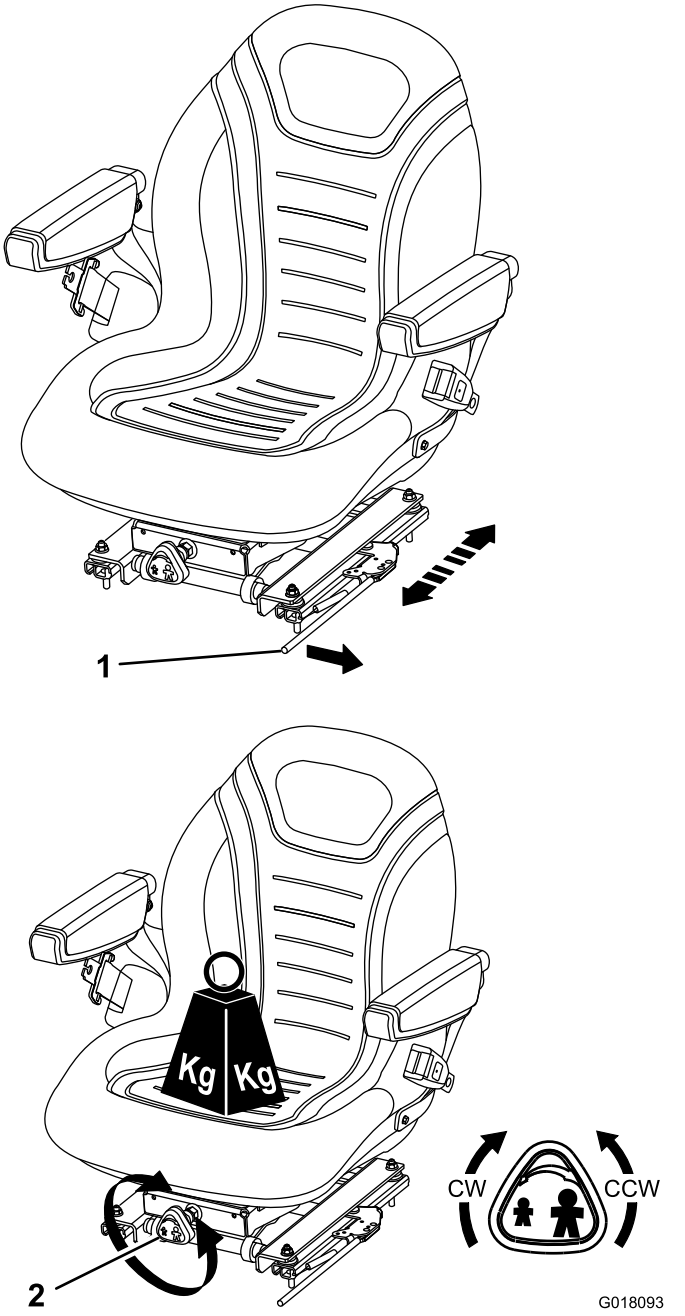

Figure 10

1. Seat-adjustment lever
2. Operator-weight handle

Warning Systems

Hydraulic-Fluid Overheating Warning Light and Horn

The hydraulic-fluid warning light illuminates when overheating occurs. The horn is actuated when the hydraulic fluid in the reservoir exceeds 95 degrees C (203 degrees F) as shown in Figure 11.

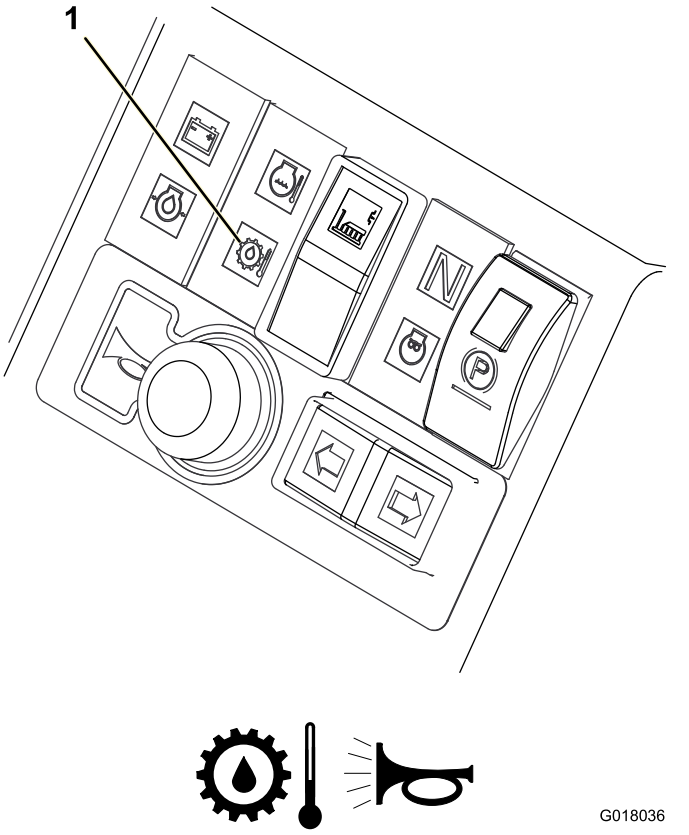

Figure 11

1. Hydraulic-fluid overheating warning light

Low Battery-Charge Warning Light

The battery-charge warning light illuminates when the low battery charge is low (Figure 12).

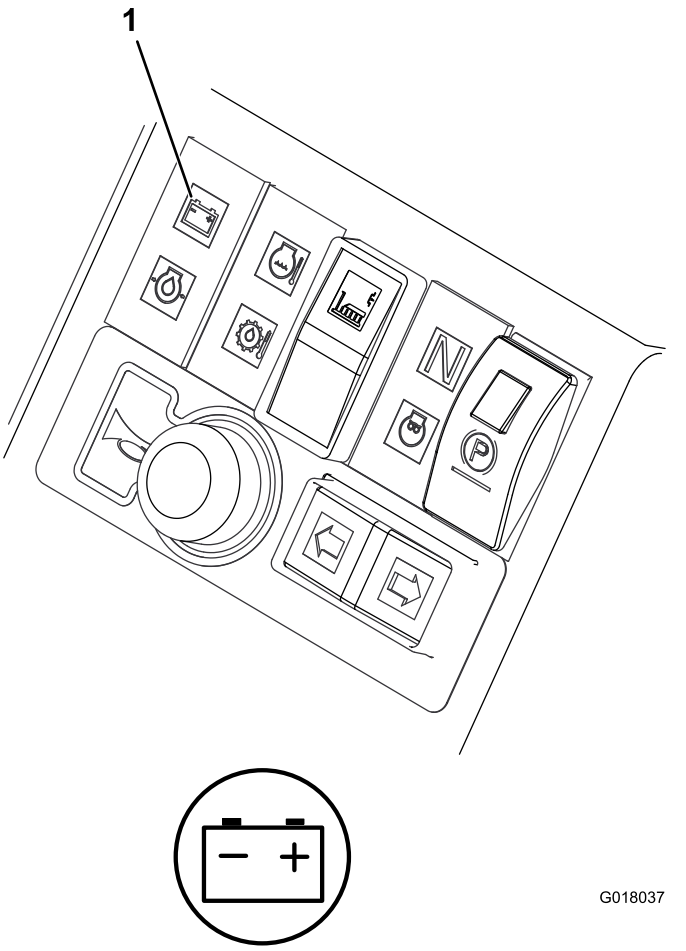

Figure 12

1. Low battery-charge warning light

Low Engine-Oil Pressure Warning Light

The engine-oil pressure warning light illuminates when the oil pressure is too low (Figure 13).

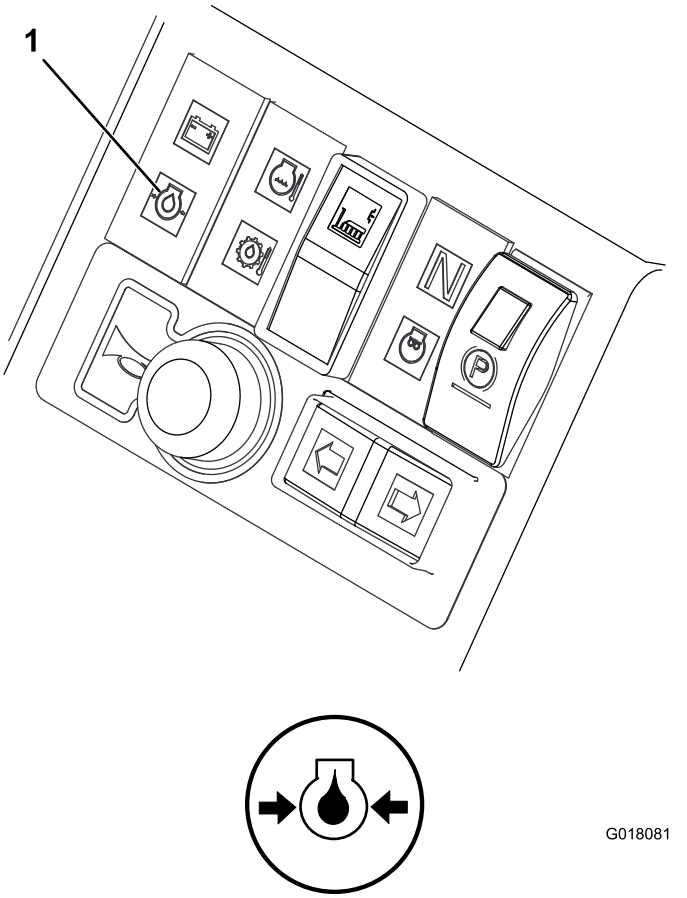

Figure 13

1. Low engine-oil pressure warning light

Ignition Key

0 = Engine off
I = Engine run/Auxiliary on
II = Engine pre-heat
III = Engine start

⚠ CAUTION

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

Lower the cutting units to the ground, engage the parking brake and remove the key from the ignition switch before servicing or making adjustments to the machine.

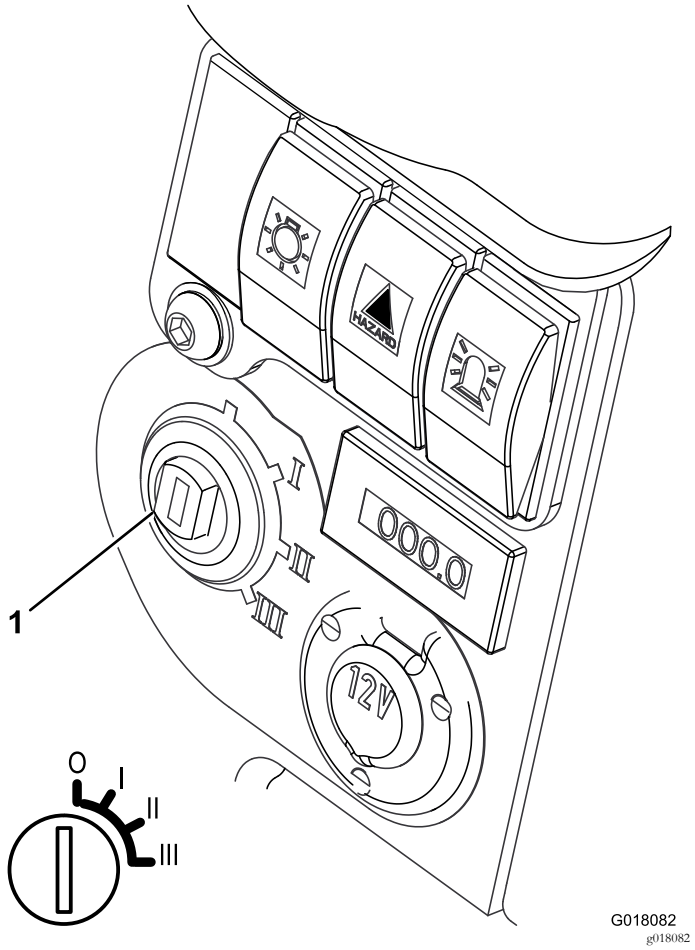

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Figure 14

1. Ignition switch

Engine Pre-Heat Indicator Light

Turn the ignition key to position **II**. The engine pre-heat indicator light illuminates and heats the glow plugs (Figure 15).

Important: Attempting to start a cold engine before using the pre-heat can cause unnecessary wear to the battery.

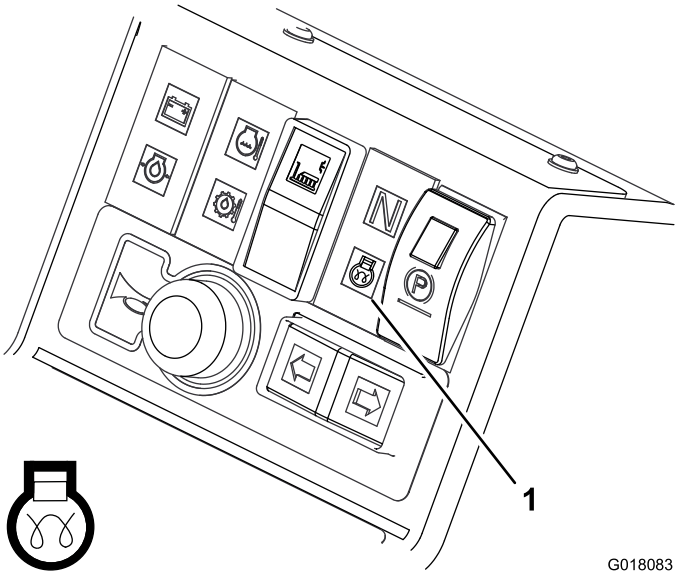

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Figure 15

1. Engine pre-heat indicator light

Fuel Gauge

The fuel gauge shows the amount of fuel in the tank (Figure 16).

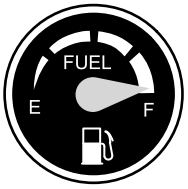

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Figure 16

Hour Meter

The hour meter shows the total hours that the machine has been operated (Figure 17).

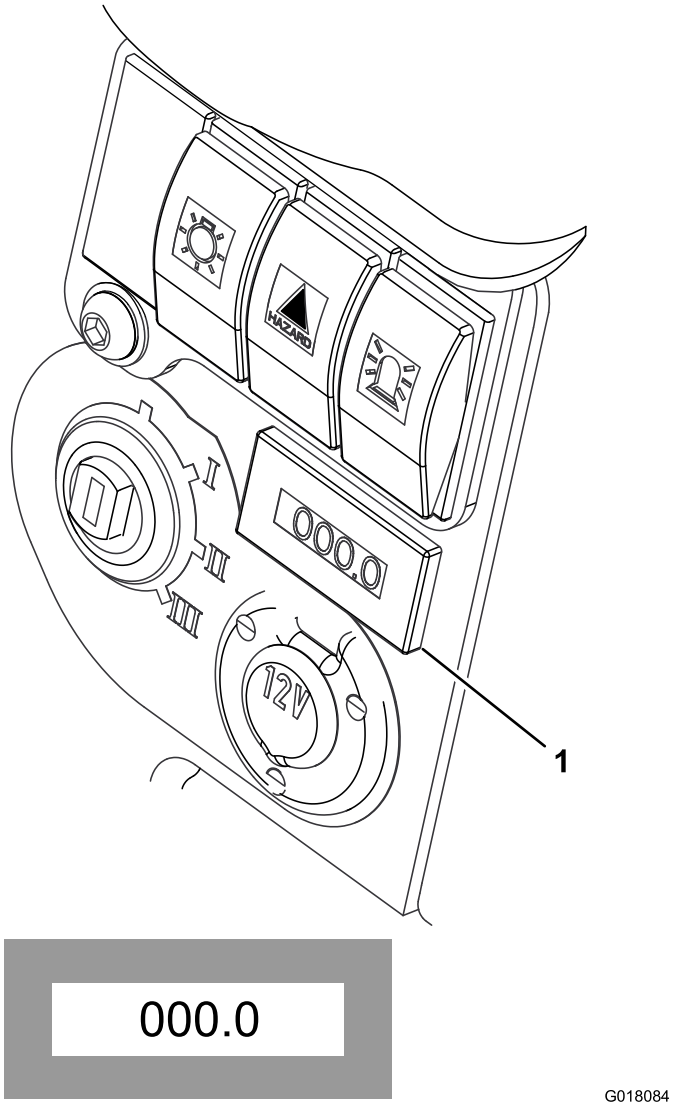

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Figure 17

1. Hour meter

Transmission Neutral-Indicator Light

This light illuminates when the travel control pedal is in the NEUTRAL position and the ignition key is turned to position **I** (Figure 18).

Note: The parking brake must be engaged for the transmission neutral-indicator light to illuminate.

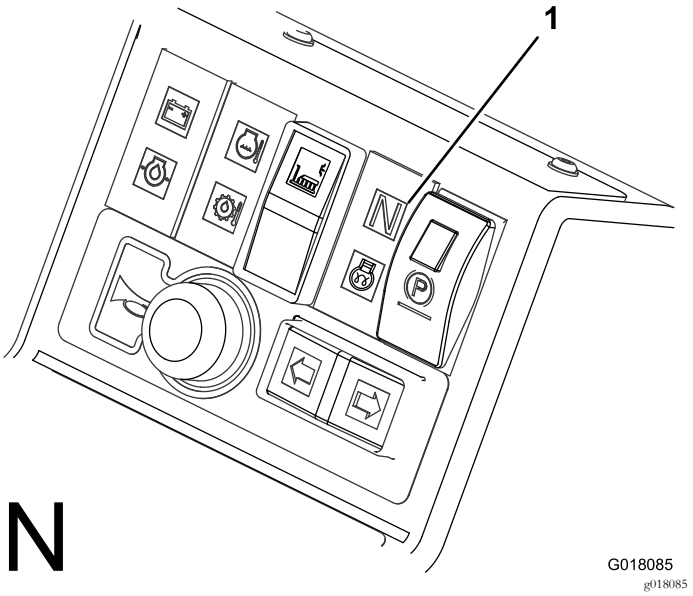

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Figure 18

1. Transmission neutral-indicator light

Indicator Light for the Cutting Unit Drive-Switch

This light illuminates when the cutting-unit-drive switch is in the FORWARD position and the ignition key is turned to position **I** (Figure 19).

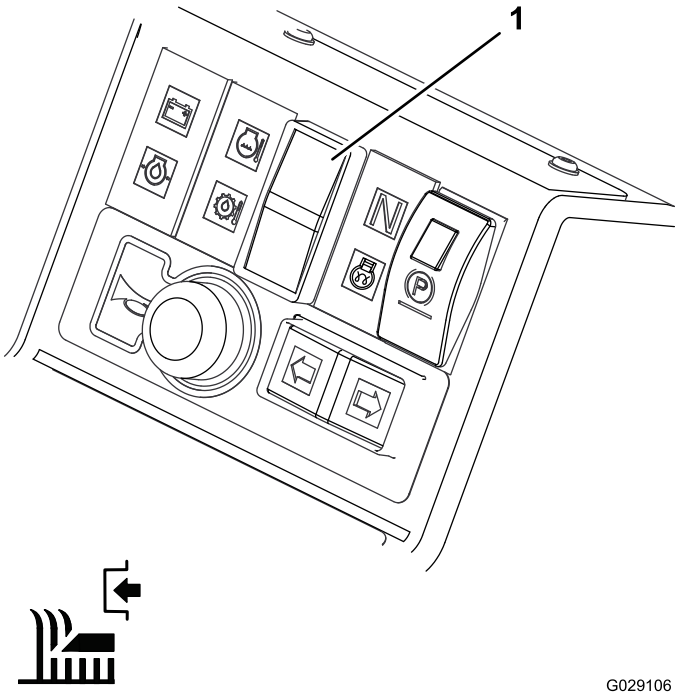

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Figure 19

1. Indicator light for the cutting-unit-drive switch

Specifications

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

Width	1490 mm (58.7 inches)
Length	2410 mm (94.9 inches)
Height	1681 mm (66.2 inches) with ROPS folded 2160 mm (85 inches) with ROPS in its vertical operating position
Weight (without cutting unit)	880 kg (1940 lb)
Fuel-tank capacity	45.7 L (10 UK gallons)
Maximum forward speed	25 km/h (15.5 mph)
Maximum reverse speed	12.5 km/h (8 mph)
Hydraulic-system capacity	32 L (7.04 UK gallons)
Engine	Kubota 26.5 kw (35.5 hp) at 2,000 rpm DIN 70020

Attachments/Accessories

A selection of Toro approved attachments and accessories are available for use with the machine to enhance and expand its capabilities. Contact your Authorized Service Dealer or Distributor.

Operation

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

Before Operation

Before Operation Safety

General Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Know how to stop the machine and engine quickly.
- Check that operator-presence controls, safety switches, and shields are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- Before mowing, always inspect the machine to ensure that the blades, blade bolts, and cutting assemblies are in good working condition. Replace worn or damaged blades and bolts in sets to preserve balance.
- Inspect the area where you will use the machine and remove all objects that the machine could throw.

Fuel Safety

- Use extreme care in handling fuel. It is flammable and its vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Never remove the fuel cap or fill the fuel tank while the engine is running or hot.
- Never refuel the machine in an enclosed space.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.
- If you spill fuel, do not attempt to start the engine; avoid creating any source of ignition until the fuel vapors have dissipated.

Adding Fuel

Service Interval: Before each use or daily

Use only clean, fresh diesel fuel with low (<501 ppm) or ultra low (<15 ppm) sulfur content. The minimum cetane rating is 40. To ensure fuel freshness, purchase fuel in quantities that is used within 180 days.

Fuel tank capacity: 25 L (10 UK gallons).

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

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

Important: Do not use kerosene or gasoline instead of diesel fuel. This product is suitable for use with Biodiesel of up to B7. Failure to observe this caution will damage the engine.

⚠ WARNING

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

- **Avoid prolonged breathing of vapors.**
- **Keep face away from nozzle and 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 30-day supply of fuel.**
- **Do not operate without entire exhaust system in place and in proper working condition.**

⚠ DANGER

In certain conditions during fueling, static electricity can be released, causing a spark 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.**
- **When practical, remove equipment from the truck or trailer and refuel the equipment with its wheels on the ground.**
- **If this is not possible, then refuel such equipment on a truck or trailer from a portable container, rather than from a fuel-dispenser nozzle.**
- **If you must use a fuel-dispenser nozzle, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete.**

1. Park the machine on a level surface, engage the parking brake, and shut off the engine.
2. Using a clean rag, clean the area around the fuel tank cap.
3. Remove the cap from the fuel tank.
4. Fill the tank until the level is to the bottom of the filler neck with fuel.
5. Install the fuel tank cap tightly after filling the tank.

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

Checking the Engine-Oil Level

Service Interval: Before each use or daily

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

Crankcase capacity is 6 L (203 oz) with the filter.

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

- API Classification Level Required: CH-4, CI-4 or higher
- Preferred oil: SAE 15W-40 above -18 degrees C (above 0 degrees F)
- Alternate oil: SAE 10W-30 or 5W-30 (all temperatures)

Toro Premium Engine Oil is available from your distributor in either 15W-40 or 10W-30 viscosity.

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

1. Park the machine on a level surface, shut off the engine, engage the parking brake and remove the key from the ignition switch.
2. Open the hood.
3. Remove the dipstick, wipe it clean, and install it (Figure 20).

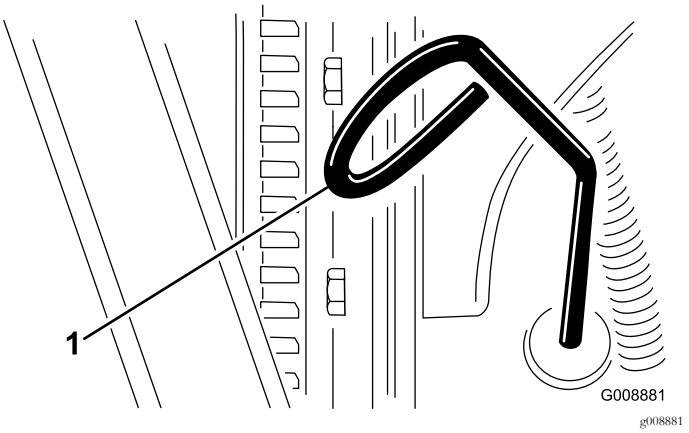


Figure 20

1. Dipstick

4. Remove dipstick and check oil level on dipstick. The oil level should be up to the FULL mark.
5. If the oil level is below the Full mark, remove the fill cap (Figure 21) and add oil until the level reaches the FULL mark on dipstick. **Do not overfill.**

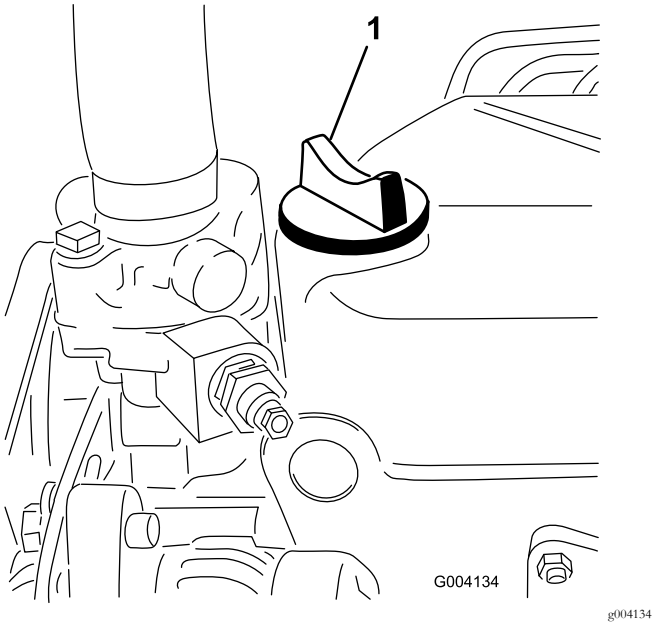


Figure 21

1. Oil-fill cap

6. Install the oil-fill cap and close the hood.

Checking the Cooling System

Service Interval: Before each use or daily

⚠ CAUTION

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

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

The cooling system is filled with a 50/50 solution of water and permanent ethylene glycol antifreeze.

1. Clean any debris off the screen, oil cooler, and the front of the radiator daily and more often if conditions are extremely dusty and dirty. Refer to Removing Debris from the Cooling System (page 38).
2. Check the level of the coolant in the expansion tank (Figure 22).

   Note: Check and ensure that the coolant level is between the marks on the side of the tank.

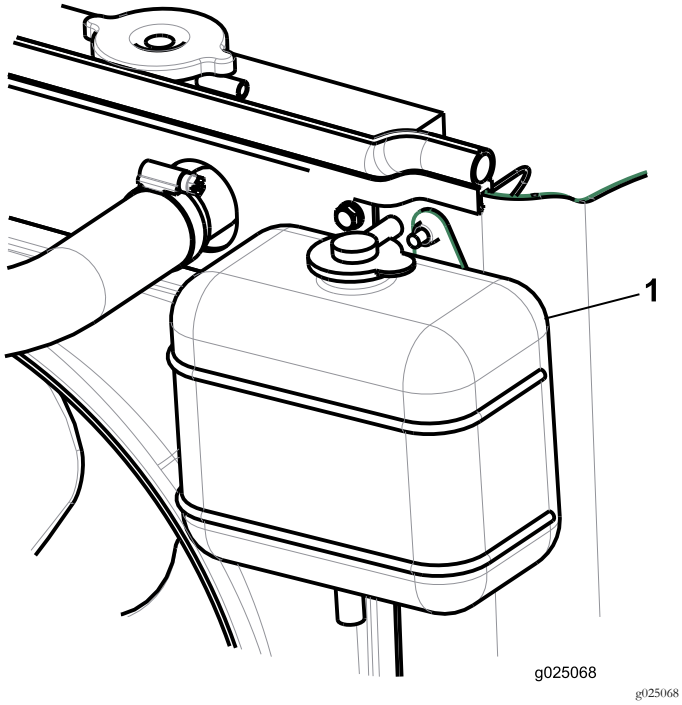


Figure 22

1. Expansion tank

3. If the coolant level is low, remove the expansion tank cap and replenish the system. Do not overfill.
4. Install the expansion tank cap.

Checking the Hydraulic Fluid

The machines reservoir is filled at the factory with approximately 32 L (7.0 UK gallons) of high-quality hydraulic fluid. Check the level of the hydraulic fluid before you start the engine for the first time and daily thereafter. The recommended replacement fluid is as follows:

Toro Premium All Season Hydraulic Fluid (Available in 19 L (5 gallon) pails or 208 L (55 gallon) drums. See parts catalog or Toro Distributor for part numbers.)

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

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

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

Material Properties:

Viscosity, ASTM D445	cSt @ 40°C 44 to 48 cSt @ 100°C 7.9 to 8.5
Viscosity Index ASTM D2270	140 to 160
Pour Point, ASTM D97	-34°F to -49°F

Industry Specifications:

Vickers I-286-S (Quality Level), Vickers M-2950-S (Quality Level), Denison HF-0

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

Biodegradable Hydraulic Fluid - Toro Premium Synthetic Bio Hyd Fluid

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

Note: Toro Premium Synthetic Bio Hyd Fluid is the only synthetic biodegradable fluid approved by Toro. This fluid is compatible with the elastomers used in Toro hydraulic systems and is suitable for a wide range of temperature conditions. This fluid is compatible with conventional mineral oils, but for maximum biodegradability and performance the hydraulic system should be thoroughly flushed of conventional fluid. Contact your local Toro Distributor for details.

1. Position the machine on a level surface, lower the cutting units, and shut off the engine.
2. Check the sight level gauge on the side of the tank. The level needs to be at the upper mark.
3. If hydraulic fluid is needed, clean area around the cap of hydraulic tank (Figure 23).
4. Remove the cap from the tank.

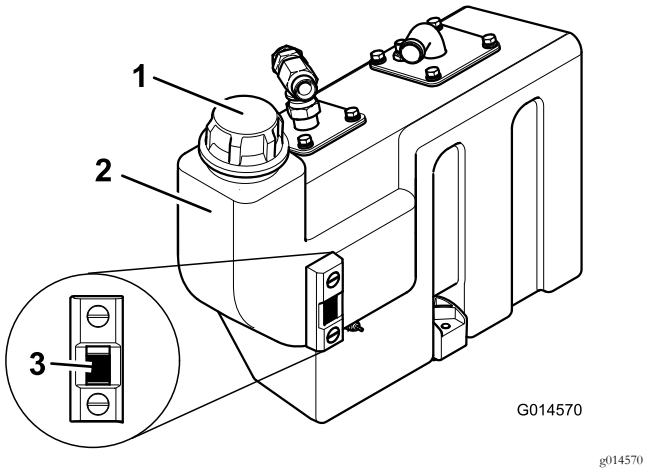


Figure 23

1. Hydraulic-tank cap
2. Hydraulic-fluid tank
3. Sight-level gauge

5. Remove the cap and fill the tank to the upper mark on the sight level gauge. Do not overfill.
6. Install the cap onto the tank.

Folding the ROPS

You can fold the ROPS frame down to allow access into areas of restricted height.

⚠ WARNING

The machine does not have a Rollover Protection System when the roll bar is folded down and should not be considered as Rollover Protection System.

Do not wear a seatbelt when the roll bar is lowered.

1. Park the machine on a level surface, shut off the engine, engage the parking brake, and remove the key from the ignition switch.
2. Support the weight of the upper frame while removing the R-clips and pins from the pivot brackets (Figure 24).
3. Carefully lower the frame downwards until it rests on the stops.
4. Insert the pins in the lower holes and secure with the R-clips to support the upper frame in its lowered position.
5. To raise the frame, follow these instructions in reverse order.

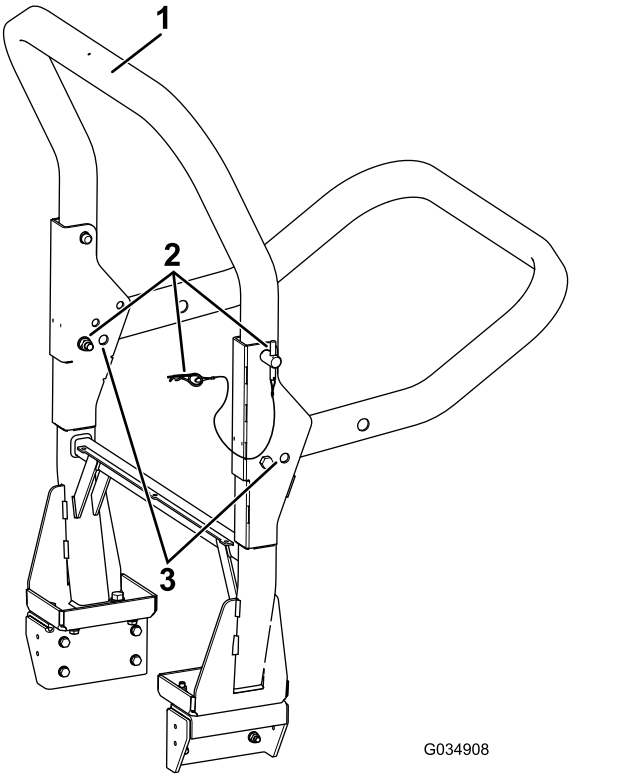


Figure 24

1. Upper frame
2. Pins and R-clips
3. Lower holes

⚠ WARNING

The ROPS protection system may not be effective if the ROPS retaining bolt assemblies are loose which may cause serious injury or even death in the event of a rollover.

When in the raised position, both retaining bolt assemblies must be installed and fully tightened to ensure full ROPS protection.

⚠ WARNING

When lowering and raising the ROPS frame, fingers may get pinched between the machine and the ROPS.

Use caution when lowering and raising the ROPS to prevent entrapment of fingers between fixed part and pivot part of the structure.

- Keep all nuts, bolts, and screws correctly torqued ensure that the equipment is in safe working condition.
- Replace worn or damaged parts for safety.
- Ensure that the seat belt and mountings are in safe working order.
- Wear the seat belt when the roll bar is raised and no seat belt when the roll bar is lowered.

Important: The roll bar is an integral safety device. Keep the roll bar in the raised position when operating the mower. Lower the roll bar temporarily only when absolutely necessary.

Understanding the Operator-Presence Control

Note: The engine shuts off when you leave the seat without engaging the parking brake.

Engine Start Lockout: The engine starts only when the forward/reverse travel pedal is in the NEUTRAL position, the cutting unit switch is in the OFF position, and the parking brake is engaged. When these circumstances are satisfied, the engine starts.

Engine Run Interlock: While the engine is running, you must stay seated before releasing the parking brake.

Cutting Unit Drive Lockout: The cutting units only engage when you are seated. The cutting units disengage when you rise from the seat for more than 1 second. To engage cutting unit, you must return to the seat and move the cutting unit drive switch to the OFF position before moving it back to the ON position.

Note: If you rise from the seat for a brief moment during normal work, the cutting unit is not affected.

You can start the engine only with the cutting-unit switch in the OFF position.

⚠ WARNING

Do not operate the mower if the operator-presence controls are not functioning.

***Always* replace parts that are not functioning and check that they function correctly before operating the mower.**

⚠ 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.**

Using the Platform-Latching Mechanism

Do not operate the mower without first checking that the platform-latching mechanism is fully engaged and in good working order.

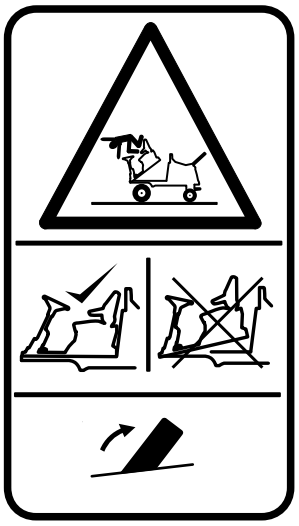
Releasing the Platform

1. Move the locking handle toward the front of the mower until the latch hooks clear the locking bar.
2. Raise the platform. The gas spring will provide assistance.

Securing the Platform

1. Lower the platform carefully. The gas spring provides assistance.
2. Move the locking handle towards the front of the mower as the platform nears the fully lowered position.

   Note: This ensures that the latch hooks clear the locking bar.
3. Lower the platform and move the locking handle towards the rear of the mower until the latch hooks engage the locking bar.



g014422

Figure 25

Checking the Wheel Nut Torque

Service Interval: Before each use or daily

Torque the wheel nuts to 200 N·m (148 ft-lb) for the front axle, and 54 N·m (40 ft-lb) for the rear axle.

⚠ WARNING

Failure to maintain proper torque of the wheel nuts could result in personal injury.

Ensure that the wheel nuts are tightened to the proper torque.

Using the Weight Transfer/Traction Assistance

A hydraulic weight-transfer system is provided for improving traction with the terrain.

Weight transfer is using the cutting-unit hydraulic pressure in the lift system to provide a lifting force to reduce the cutting-unit weight on the ground and transfers the weight as a downward force onto the tires.

The amount of weight transfer is variable to suit operating conditions by rotating the weight-transfer hand wheel as follows:

1. Release the valve locknut 1/2 turn counter-clockwise and hold.
2. Rotate the valve hand wheel.
   - Rotate counterclockwise to reduce the weight transfer.
   - Rotate clockwise to increase the weight transfer.
3. Tighten the nut.

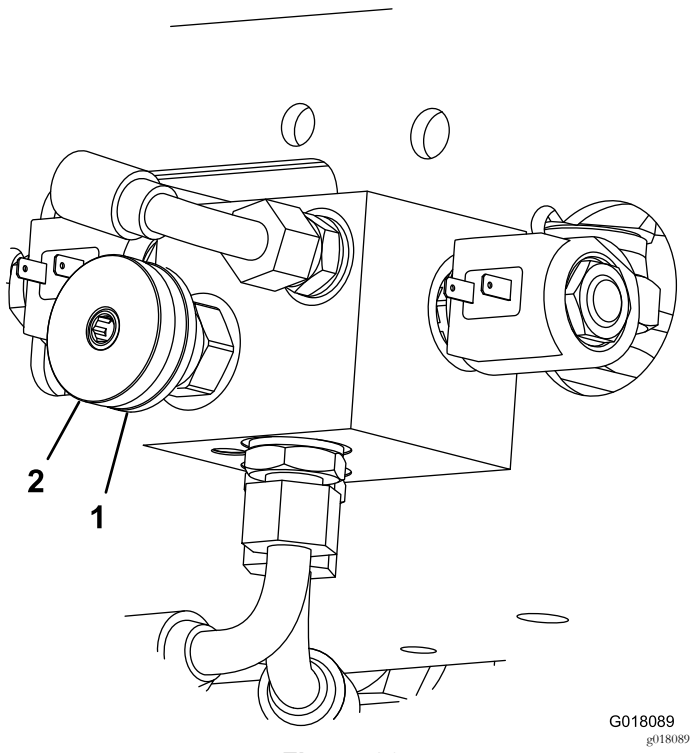


Figure 26

1. Lock wheel
2. Weight-transfer hand wheel

During Operation

During Operation Safety

General Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; slip-resistant, substantial foot protection; and hearing protection. Tie back long hair and do not wear jewelry.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Never carry passengers on the machine and keep bystanders and pets away from the machine during operation.
- Operate the machine only in good visibility to avoid holes or hidden hazards.
- Avoid mowing on wet grass. Reduced traction could cause the machine to slide.
- Before you start the engine, ensure that all drives are in neutral, the parking brake is engaged, and you are in the operating position.
- Keep your hands and feet away from the cutting units. Keep clear of the discharge opening at all times.
- Look behind and down before backing up to be sure of a clear path.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly roll over if a wheel goes over the edge or if the edge gives way.
- Stop the blades whenever you are not mowing.
- Stop the machine and inspect the blades after striking an object or if there is an abnormal vibration in the machine. Make all necessary repairs before resuming operation.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.
- Disengage the drive to the cutting unit and shut off the engine before adjusting the height of cut (unless you can adjust it from the operating position).
- Never run an engine in an area where exhaust gasses are enclosed.
- Never leave a running machine unattended.
- Before leaving the operating position (including to empty the catchers or to unclog the chute), do the following:
  - Park the machine on level ground.
  - Disengage the power take-off and lower the attachments.
  - Engage the parking brake.
  - Shut off the engine and remove the key.

– Wait for all moving parts to stop.

- Do not operate the machine when there is the risk of lightning.
- Do not use the machine as a towing vehicle.
- Use accessories, attachments, and replacement parts approved by The Toro® Company only.

Rollover Protection System (ROPS) Safety

- **Do not** remove the ROPS from the machine.
- Ensure that the seat belt is attached and that you can release it quickly in an emergency.
- Check carefully for overhead obstructions and do not contact them.
- Keep the ROPS in safe operating condition by thoroughly inspecting it periodically for damage and keeping all the mounting fasteners tight.
- Replace a damaged ROPS. Do not repair or alter it.

Machines with a Foldable Roll Bar

- Always use the seat belt with the roll bar in the raised position.
- The ROPS is an integral safety device. Keep a folding roll bar in the raised and locked position, and use the seat belt when operating the machine with the roll bar in the raised position.
- Lower a folding roll bar temporarily only when necessary. Do not wear the seat belt when the roll bar is folded down.
- Be aware that there is no rollover protection when a folded roll bar is in the down position.
- Check the area that you will be mowing and never fold down a folding roll bar in areas where there are slopes, drop-offs, or water.

Slope Safety

- Slow down the machine and use extra care on hillsides. Travel up and down on hillsides. Turf conditions can affect the stability of the machine.
- Avoid turning the machine on slopes. If you must turn the machine, turn it slowly and gradually downhill, if possible.
- Do not turn the machine sharply. Use care when reversing the machine.
- Use extra care while operating the machine with attachments; they can affect the stability of the machine.

Starting and Shutting Off the Engine

Important: You must bleed the fuel system before starting the engine if you are starting the engine for the first time, the engine has shut off due to lack of fuel, or you have performed maintenance on the fuel system; refer to Bleeding the Fuel System (page 35).

⚠ WARNING

Before starting the engine check that:

- **You have read and understood the Safety Precautions section in this manual.**
- **The area is clear of bystanders.**
- **The cutting unit drive is disengaged.**
- **The parking brake is engaged.**
- **The travel control pedals are in neutral.**

Important: This machine is fitted with an engine-start lockout, refer to Understanding the Operator-Presence Control (page 21).

Starting a Cold Engine

1. Sit in the seat, keep your foot off the traction pedals to ensure they are in the NEUTRAL position, engage the parking brake, and set the throttle to the 70 percent full throttle position.
2. Turn the ignition key to the ON position (**I**) and check that the engine oil pressure and battery-charge-warning lights illuminate.
3. Turn the ignition key to the PREHEAT position (**II**) and ensure the pre-heat indicator light is on. Hold it for 5 seconds to heat the glow plugs.
4. After preheating the glow plugs, turn key to the START position (**III**) and hold it to start the engine.

   Note: Crank the engine for no longer than 15 seconds.
5. Release the ignition key back to the ON position (**I**) when the engine starts.
6. Run the engine at low idle speed until it warms up.

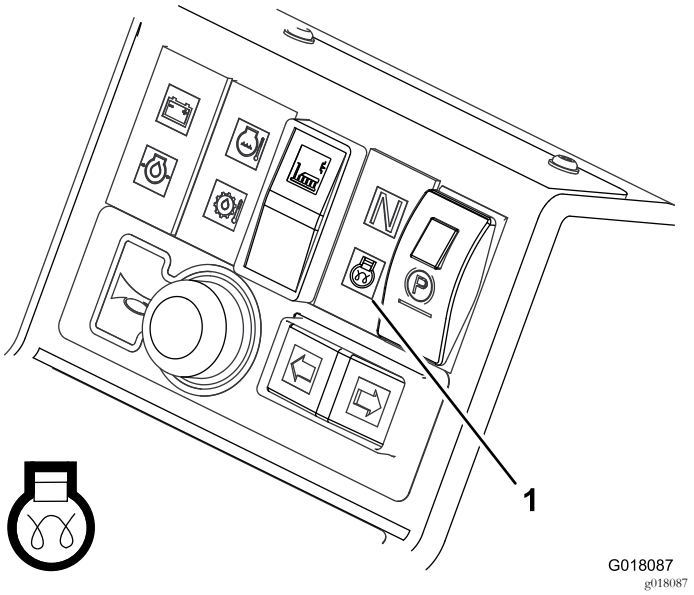


Figure 27

1. Engine pre-heat indicator light

⚠ WARNING

When the engine is operating, all warning lights should be off. If a warning light illuminates, shut off the engine immediately and have the fault rectified before starting the machine.

Damage to the engine could occur if the fault is not rectified.

Starting a Warm Engine

1. Sit in the seat, keep your foot off of the traction pedals to ensure they are in the NEUTRAL position, engage the parking brake, and set the throttle to the 70% full throttle position.
2. Turn the ignition key to the ON position (**I**) and check that the engine oil pressure and battery-charge-warning lights illuminate.
3. Turn the ignition key to the START position (**III**) and hold it to start the engine.

   Note: Crank the engine for no longer than 15 seconds.
4. Release the ignition key back to the ON position (**I**) when the engine starts.
5. Run the engine at low idle speed until it warms up.

Shutting Off the Engine

1. Move all controls to the NEUTRAL position, engage the parking brake, move the throttle to the low-idle position, and allow the engine to reach low-idle speed.

   Important: Allow the engine to idle for 5 minutes before shutting it off after a full-load operation. Failure to do so may lead to trouble on a turbo-charged engine.
2. Let the engine idle for 5 minutes.
3. Turn the ignition key to the OFF position (**0**).

   If the engine fails to shut off when the ignition key is turned to the OFF position (**0**), move the engine-stop lever forward (Figure 28).

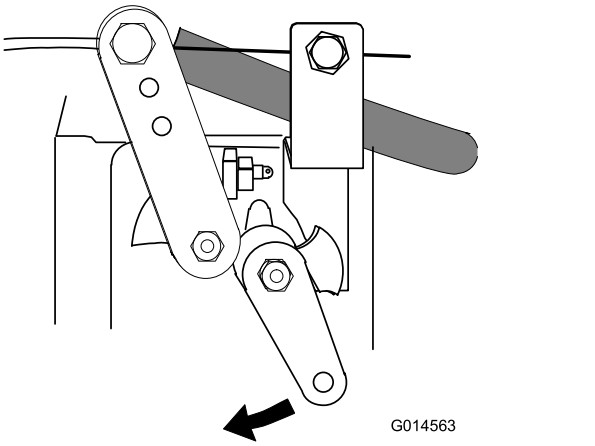


Figure 28

Controlling the Cutting-Unit Position

Use the lift-control switch to raise or lower the cutting unit.

1. To lower the cutting unit, operate the lift control switch in a downward direction and release.

   The cutting unit is now in the Float mode and will follow the ground contours.
2. To raise the cutting unit, press the lift-control switch in the upward direction and hold it.
3. Release the lift-control switch when the cutting unit is at the required height.

   The control switch automatically returns to the NEUTRAL position and the arms are hydraulically locked into position.

Engaging the Cutting Unit Drive

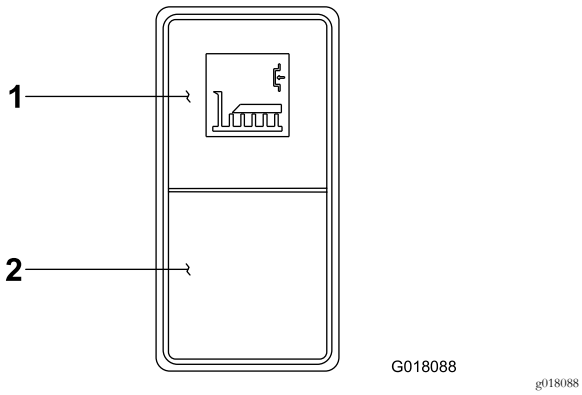


Figure 29

1. On
2. Off

The cutting unit engages only when you are in the seat correctly, refer to Operating the Presence Seat Switch (page 42).

Cutting-unit-drive engagement: Press the top of the cutting-unit-drive switch to the FORWARD position.

Cutting-unit-drive disengagement: Press the bottom of the cutting-unit-drive switch to the REARWARD position.

Operating Tips

Familiarization

Before mowing grass, practice operating the machine in an open area. Start and shut off the engine. Operate the machine in forward and reverse. Lower and raise the cutting unit and engage and disengage the cutting unit. When you feel familiar with the machine, practice operating it up and down slopes at different speeds.

Warning System

If a warning light comes on during operation, stop the machine immediately, and correct the problem before continuing operation. Serious damage could occur if you operate the machine with a malfunction.

Mowing

The speed of the cutting unit blades should always be kept as high as possible in order to maintain the highest quality of cut. This in turn requires that the engine speed be kept as high as possible.

Cutting performance is best when cutting against the lie of the grass. You should attempt to alternate the direction of mowing between cuts.

Quality of Cut

The quality of cut deteriorates if the forward speed is excessive. Always balance the quality of cut with the work rate required and set the forward speed accordingly.

Engine

Never let the engine labor. Reduce the forward speed or increase the height of cut.

Transporting

Always disengage the cutting unit drive when travelling across un-grassed areas. Be careful when driving between objects so that you do not accidentally damage the machine or cutting units.

Important: Take care when traveling over obstacles, such as roadside curbs. Always travel at a slow speed over obstacles to prevent damage to the tires, wheels, and steering system. Ensure that tires are inflated to the recommended pressures.

Slopes

Use extra care when operating the machine on slopes. Drive slowly and avoid sharp turns on slopes to prevent rollovers. Lower the cutting unit when going downhill for steering control.

After Operation

After Operation Safety

- Clean grass and debris from the cutting units, mufflers, and engine compartment to help prevent fires. Clean up oil or fuel spills.
- If the cutting units are in the transport position, use the positive mechanical lock (if available) before you leave the machine unattended.
- Allow the engine to cool before storing the machine in any enclosure.
- Shut off the fuel before storing or transporting the machine.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.
- Keep all parts of the machine in good working condition and all hardware tightened, especially blade-attachment hardware.
- Replace all worn or damaged decals.

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 the 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.

Maintenance

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

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

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 8 hours	• Check the condition and tension of the alternator belt.
After the first 50 hours	• Change the engine oil and filter. • Change the transmission-oil filter. • Change the hydraulic-fluid-return filter. • Check the engine speed (idle and full throttle).
Before each use or daily	• Check fuel level. • Check the engine-oil level. • Check the cooling system. • Check the hydraulic fluid level. • Torque the lug nuts. • Check the tire pressure. • Check the air cleaner blockage indicator. (Service the air cleaner earlier if the air cleaner indicator shows red. Service it more frequently in extremely dirty or dusty conditions.) • Remove debris from the screen, oil coolers, and radiator (more frequently in dirty operating conditions). • Check the safety-interlock system. • Check the hydraulic lines and hoses for leaks, kinked lines, loose mounting supports, wear, loose fittings, weather deterioration, and chemical deterioration.
Every 50 hours	• Grease the bearings, bushings, and pivots (Grease them immediately after every washing regardless of the interval listed.)
Every 100 hours	• Inspect the cooling system hoses. • Check the condition and tension of the alternator belt.
Every 150 hours	• Change the engine oil and filter.
Every 200 hours	• Drain moisture from the fuel and hydraulic-fluid tanks.
Every 250 hours	• Check the battery condition. • Check the condition of and clean the battery. • Check the transmission control cable.
Every 400 hours	• Replace the fuel filter canister. • Check the fuel lines and connections. • Check the engine speed (idle and full throttle).
Every 500 hours	• Check the engine overheat-warning system. • Replace the primary air filter. (More frequently in extreme dusty or dirty conditions) • Check the electrical system. • Change the transmission-oil filter. • Change the hydraulic-fluid-return filter. • Check the rear wheel alignment. • Service the hydraulic system. • Check the hydraulic-fluid overheat warning system.
Every 800 hours	• Drain and clean the fuel tank. • Adjust the engine valves (refer to the engine owner's manual).

Maintenance Service Interval	Maintenance Procedure
Before storage	• Drain and clean the fuel tank.
Every 2 years	• Flush and replace the cooling system fluid. • Replace all moving hoses. • Replace the transmission cable.

Daily Maintenance Checklist

Duplicate this page for routine use.

	For the week of:						
Maintenance Check Item	**Mon.**	**Tues.**	**Wed.**	**Thurs.**	**Fri.**	**Sat.**	**Sun.**
Check the safety-interlock operation.							
Check the brake operation.							
Ensure that the ROPS is in the vertical/upright and locked position.							
Check the engine oil and fuel level.							
Check the air filter restriction indicator.							
Check the radiator and screen for debris.							
Check unusual engine noises.[1]							
Check for unusual operating noises.							
Check the hydraulic fluid oil level.							
Check the hydraulic hoses for damage.							
Check for fluid leaks.							
Check the tire pressure.							
Check the instrument operation.							
Check all grease fittings for lubrication.[2]							
Touch-up damaged paint.							

1. Check the glow plug and injector nozzles if hard starting, excess smoke, or rough running is noted.

2. Immediately after every washing, regardless of the interval listed

Notation for Areas of Concern

Inspection performed by:		
Item	**Date**	**Information**
1		
2		
3		
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8		

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

Pre-Maintenance Procedures

Important: Regular maintenance is essential for the continued safe operation of the machine. Correct servicing will prolong the working life of the machine and safeguard the warranty. Always use genuine Toro service parts as these are accurately matched to the required duty.

Dirt and contamination are the enemies of any hydraulic system. When performing maintenance procedures on the hydraulic system, always ensure that the work area and the components are thoroughly clean before, during, and after procedure. Ensure that all open hydraulic lines and ports, etc., are plugged during maintenance procedures.

The recommended service intervals are based on normal operating conditions. Severe or unusual conditions will necessitate shorter service intervals.

Always grease the pivot points immediately after pressure washing or steam cleaning.

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.

Jacking Points

Note: Use jack stands to support the machine when required (Figure 30).

- Front—under the rear lift cylinder mount.
- Rear—axle tube on the rear axle.

Raising the Mower off the Ground

⚠ WARNING

A raised mower deck that is not properly supported can fall, crushing you or bystanders who are underneath it.

When the mower is raised off the ground:

- **Never crawl under the mower.**
- **Never start the engine.**

Important: Before raising the mower ensure that the lifting device to be used is in good condition and capable of supporting the weight of the mower securely. Minimum lift capacity: 2 Tonnes (4,409 lb).

1. Park the mower on level ground.
2. Engage the parking brake.
3. Turn the engine switch to the OFF position and remove the ignition key.
4. Ensure the ground under the lifting device is level and firm.
5. Align and ensure the lifting device is secure against 1 of the mowers lifting points.
6. If raising the front of the mower, chock the rear wheels to prevent the mower rolling away.

   Note: The parking brake only operates on the front wheels.

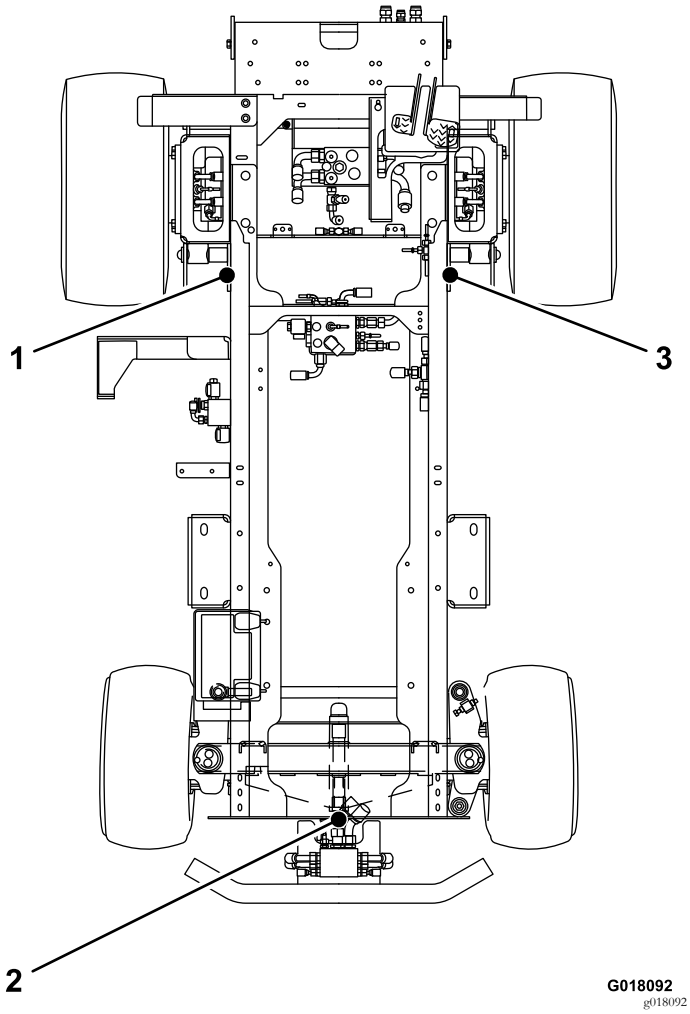


Figure 30

1. Front-lifting point
2. Rear-lifting point
3. Front, right lifting point

Lubrication

Greasing the Bearings, Bushings, and Pivots

Service Interval: Every 50 hours

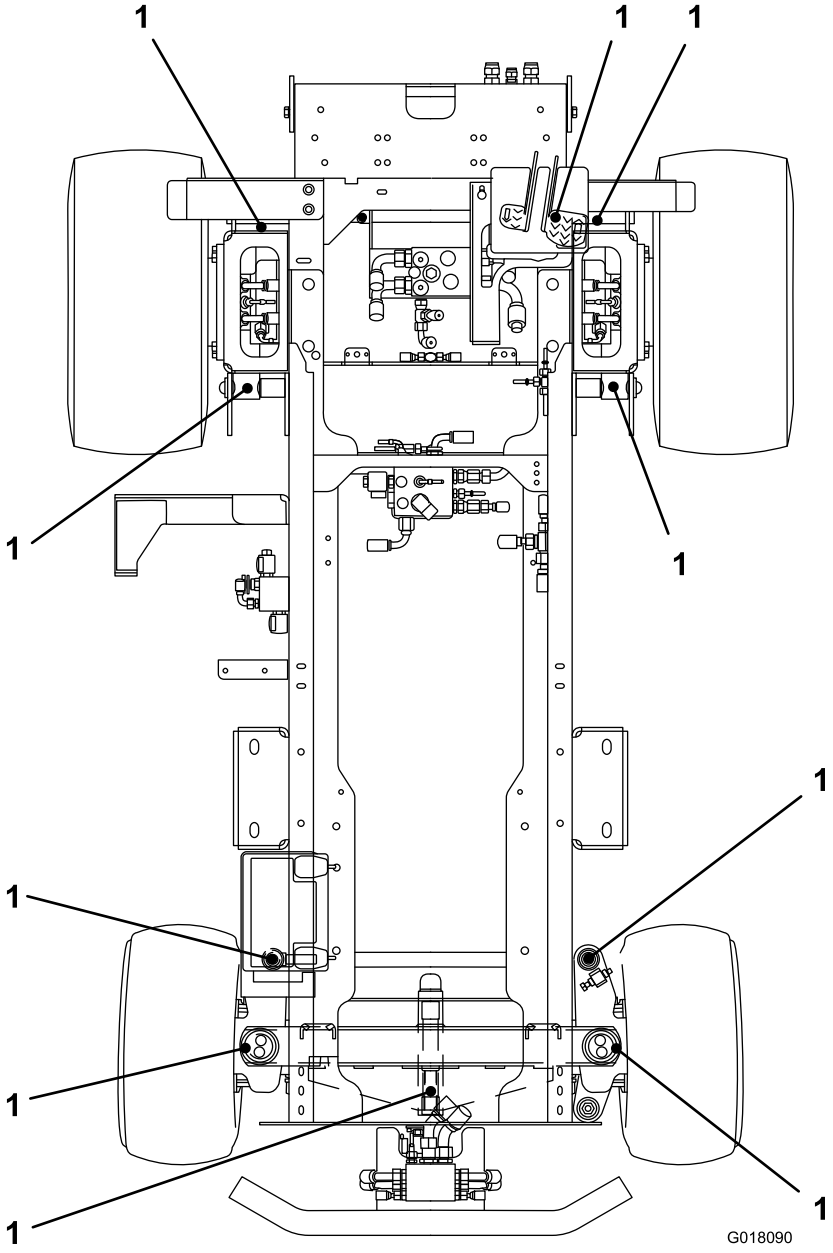
Grease Type: No. 2 lithium or molybdenum grease

Lubricate bearings and bushings **immediately** after every washing, regardless of the interval listed.

Replace any damaged grease fittings.

Grease all grease points and ensure that sufficient grease is injected such that clean grease is seen to escape. This ensures maximum working life.

The grease fitting locations are as follows:



g018090

Figure 31

1. Grease every 50 hours

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 Engine-Overheat-Warning System

Service Interval: Every 500 hours

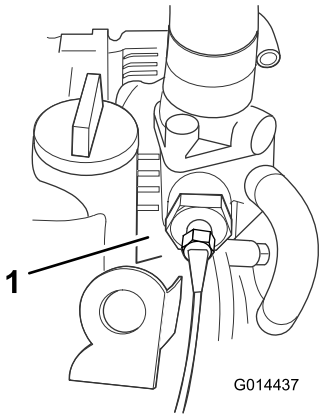


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Figure 32

1. Temperature switch

1. Turn the ignition key to position I.
2. Disconnect the red/blue wire terminal from the engine-temperature switch.
3. Touch the metal terminal of this wire onto a suitable earth point, ensuring that the metal surfaces make good contact.

The horn will sound and the engine-coolant-temperature warning light will illuminate to confirm correct operation. If the system is not functioning, make repairs before operating the mower.

Servicing the Air Cleaner

Service Interval: Before each use or daily

Every 500 hours

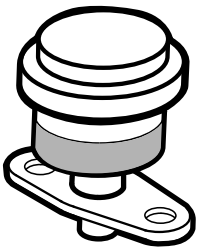
Servicing the Primary Air Filter

Check the air cleaner body for damage which could cause an air leak. Replace if damaged. Check the whole intake system for leaks, damage, or loose hose clamps.

Service the primary air cleaner filter only when the service indicator (Figure 33) requires it. Changing the air filter before it is necessary only increases the chance of dirt entering the engine when the filter is removed.

Important: Be sure that the cover is seated correctly and seals with the air cleaner body.

1. Check the filter-blockage indicator. If the indicator is red, replace the air filter (Figure 33).



g014565

Figure 33

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

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

   Note: This cleaning process prevents debris from migrating into the intake when you remove the filter.

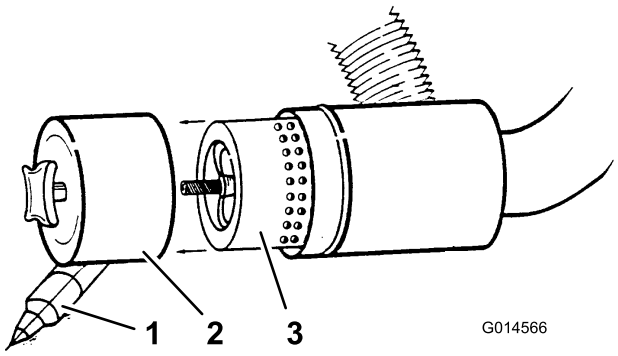


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Figure 34

1. Dust boot
2. Dust bowl
3. Air filter

3. Remove the cover from the air-cleaner body.
4. Remove and replace the filter (Figure 34).

   Note: Cleaning a used filter element could damage the filter media.

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

   Note: Do not use a damaged element.

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

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

7. Clean the dirt ejection port located in the removable cover. Remove the rubber outlet valve from the cover, clean the cavity, and replace the outlet valve.
8. Install the cover orienting the rubber outlet valve in a downward position—between approximately 5 o'clock to 7 o'clock when viewed from the end.
9. Check the condition of the air cleaner hoses.
10. Secure the cover.

Servicing the Safety Filter

The air filter has a secondary safety-filter element inside the primary air filter to prevent dislodged dust and other items from entering the engine while changing the main element.

Important: Replace the safety filter; never clean it. If the safety filter is dirty, then the primary filter is damaged. Replace both filters.

Servicing the Engine Oil and Filter

Service Interval: After the first 50 hours

Every 150 hours

1. Remove the drain plug (Figure 35) and let the oil flow into a drain pan.

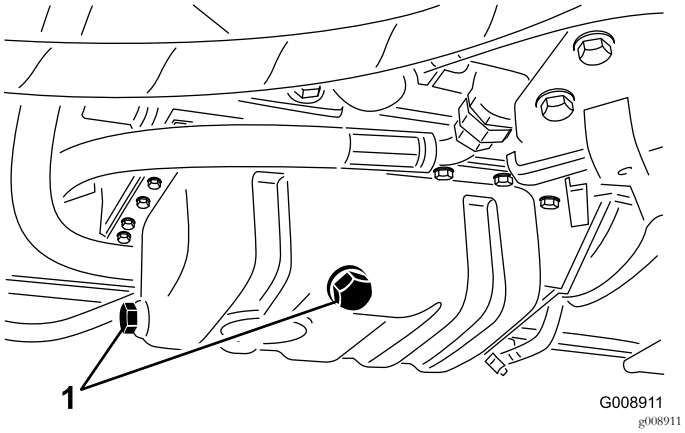

Figure 35

1. Oil drain plug

2. When the oil stops, install the drain plug.
3. Remove the oil filter (Figure 36).

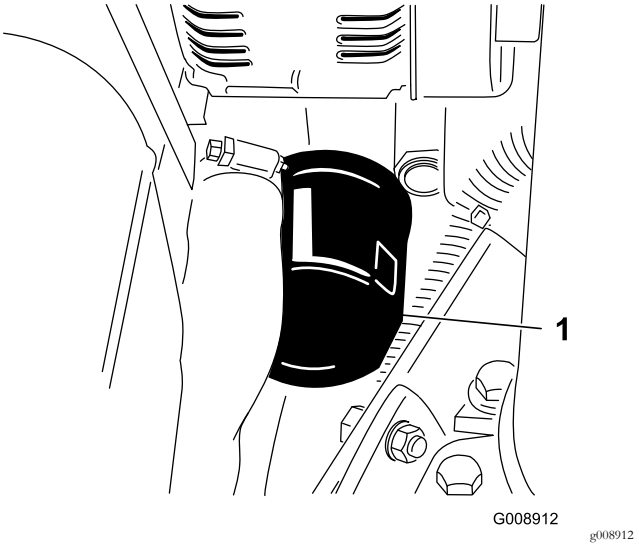

Figure 36

1. Oil filter

4. Apply a light coat of clean oil to the new filter seal.
5. Install the replacement oil filter to the filter adapter. Turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn.

   Important: Do not over-tighten the filter.
6. Add oil to the crankcase; refer to Checking the Engine-Oil Level (page 18).

Fuel System Maintenance

⚠ DANGER

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

- **Use a funnel and fill the fuel tank outdoors, in an open area, when the engine is off and is cold. Wipe up any fuel that spills.**
- **Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 6 to 12 mm (1/4 to 1/2 inches) below the bottom of the filler neck. This empty space in the tank allows the fuel to expand.**
- **Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.**
- **Store fuel in a clean, safety-approved container and keep the cap in place.**

Replacing the Fuel Filter

Service Interval: Every 400 hours

Important: Replace the fuel filter canister periodically to prevent wear of the fuel injection pump plunger or the injection nozzle, due to dirt in the fuel.

1. Place a clean container under the fuel filter canister (Figure 37).
2. Clean the area where the filter canister mounts.

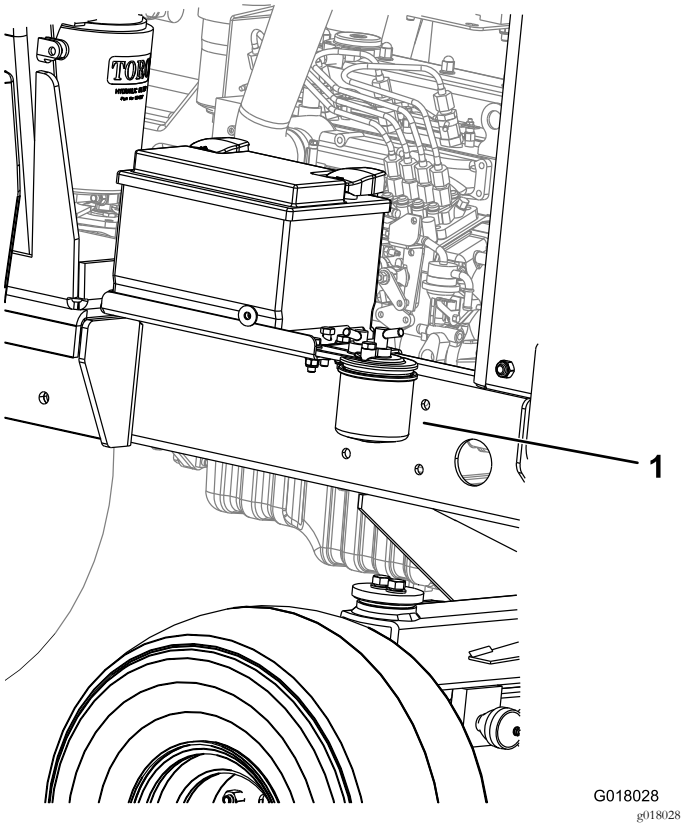

Figure 37

1. Fuel filter

3. Remove the filter canister and clean the mounting surface
4. Lubricate the gasket on the filter canister with clean oil.
5. Install the new filter canister by hand until the gasket contacts mounting surface.
6. Bleed the fuel system; refer to Bleeding the Fuel System (page 35).

Bleeding the Fuel System

You must bleed the fuel system before starting the engine if any of the following situations have occurred:

- Initial start up of a new machine.
- Engine has ceased running due to lack of fuel.
- Maintenance has been performed upon fuel system components; i.e., filter is replaced, separator is serviced, etc.

1. Park the machine on a level surface and ensure that the fuel tank is at least half full.
2. Open the hood.
3. Turn the key in the ignition switch to the ON position and crank the engine.

   Note: The mechanical pump sucks fuel out of the tank, fills the fuel filter and fuel hose, and forces the air into the engine. Fully purge all the air out of the system; the engine might fire erratically until all air is purged out. When all the air is purged and the engine is running smoothly, run the engine for a few minutes to ensure that the air is fully purged.

Draining the Fuel Tank

Service Interval: Every 800 hours

Before storage

Drain and clean the fuel tank if the fuel system becomes contaminated or if the machine is to be stored for an extended period. Use clean fuel to flush out the tank.

Checking the Fuel Lines and Connections

Service Interval: Every 400 hours/Yearly (whichever comes first)

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

Electrical System Maintenance

Important: Before welding on the machine, disconnect both cables from the battery and the terminal connector from the alternator to prevent damage to the electrical system.

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.

Checking the Electrical System

Service Interval: Every 500 hours

Inspect all electrical connections and cables and replace any which are damaged or corroded. Spray a good-quality water inhibitor onto exposed connections to keep moisture out.

Checking the Battery Condition

Service Interval: Every 250 hours

Note: When removing the battery, always disconnect the negative (-) cable first.

Note: When installing the battery, always connect the negative (-) cable last.

Raise the engine cover. Remove any corrosion from the battery terminals using a wire brush and apply petroleum jelly to the terminals to prevent further corrosion. Clean the battery compartment.

Under normal operating conditions the battery does not require any further attention. If the machine has been subject to continuous use under high ambient temperature conditions, the battery electrolyte may require topping up.

Remove the cell covers and fill with distilled water to 15 mm (1/2 inch) below the top of the battery. Install the cell covers.

Note: Check the condition of the battery cables. Install new cables when current ones are showing signs of wear or damage and tighten any loose connections as necessary.

Servicing the Battery

Service Interval: Every 250 hours

⚠ DANGER

Battery electrolyte contains sulfuric acid, a deadly poison that can cause severe burns.

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

⚠ WARNING

Charging the battery produces gasses that can explode.

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

Check the battery condition. Keep the terminals and the entire battery case clean because a dirty battery discharges slowly. To clean the battery, wash the entire case with a solution of baking soda and water. Rinse it with clear water.

Drive System Maintenance

Changing the Transmission-Oil Filter

Service Interval: After the first 50 hours

Every 500 hours

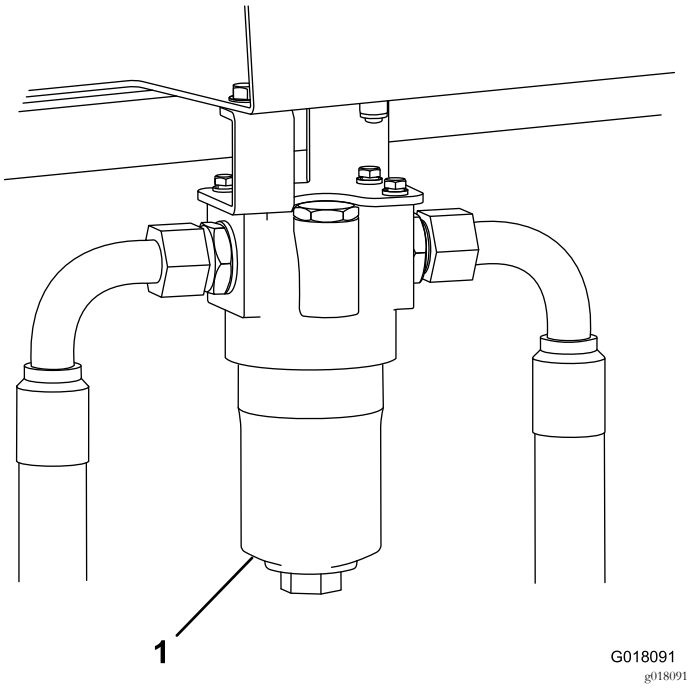

Figure 38
Right side of the machine

1. Transmission-oil filter

1. Unscrew and remove the bottom of the transmission-oil filter housing.
2. Withdraw the filter element and discard it.
3. Install a new filter element (Part No. 924709).
4. Install the housing.

Changing the Hydraulic-Fluid-Return Filter

Service Interval: After the first 50 hours

Every 500 hours

1. Remove the return filter.
2. Wipe oil onto the new return-filter gasket.
3. Install the new return filter to the machine.

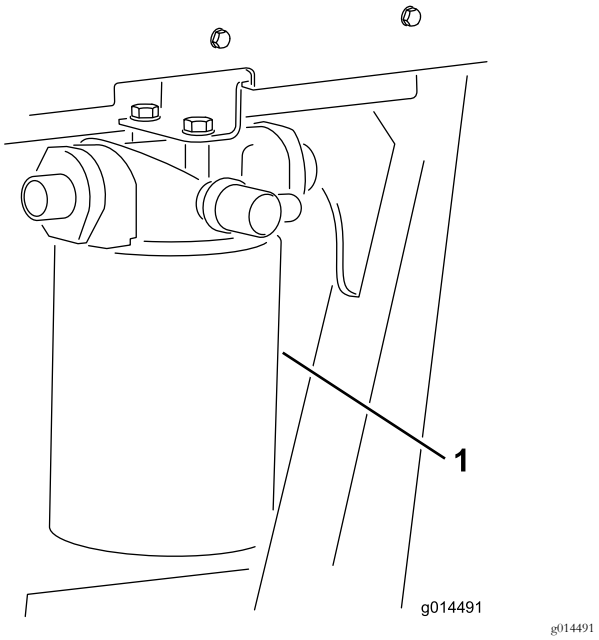

Figure 39
Left side of the machine

1. Hydraulic-fluid-return filter

Checking the Rear Wheel Alignment

Service Interval: Every 500 hours

To prevent excessive tire wear and ensure safe machine operation, align the rear wheels to 3 to 8 mm (0.12 to 0.31 inch).

1. Set the rear wheels in the straight ahead position.
2. Measure and compare the distance between the front sidewalls and the rear sidewalls at the wheel center height. The distance between the front sidewalls must be set 3 to 8 mm (0.12 to 0.31 inches) less than the distance between the rear sidewalls.

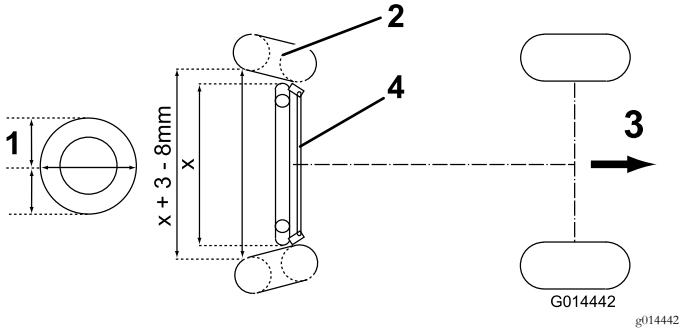

Figure 40

1. Wheel center height
2. Tire
3. Direction of forward travel
4. Track-rod assembly

3. To adjust the alignment of the rear wheels, back off the left and right locknuts on the track rod assembly.

   Note: The left locknut is a left-hand thread

4. Rotate the track rod to achieve the correct distance as described above and tighten the locknuts securely.

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.

Removing Debris from the Cooling System

Service Interval: Before each use or daily

Every 100 hours

Every 2 years

Note: To prevent the engine from overheating, keep the radiator and oil cooler clean. Check the cooling system daily and, if necessary, clean any debris off these parts. However, it will be necessary to check and clean it more frequently in extremely dusty and dirty conditions.

1. Park the machine on a level surface, shut off the engine, engage the parking brake, and remove the key from the ignition switch.
2. Clean the radiator screen.
3. Thoroughly clean all debris out of the engine area.
4. Release the latch and open the engine cover (Figure 41).

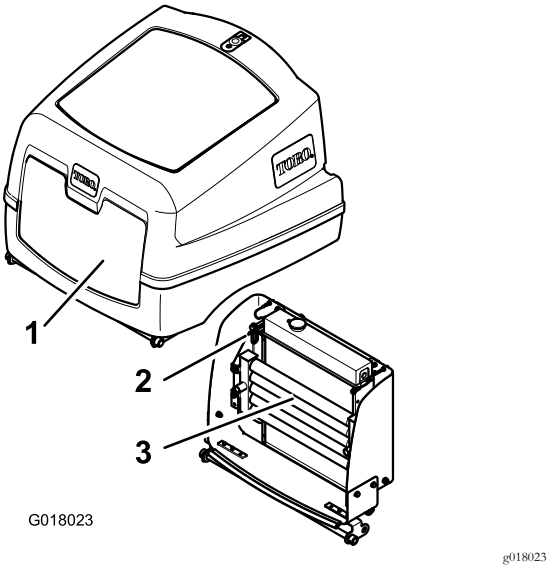

Figure 41

1. Engine cover
2. Oil cooler
3. Oil-cooler release clip

5. Clean the screen thoroughly with compressed air.
6. Pivot the latch inward to release the oil cooler (Figure 42).

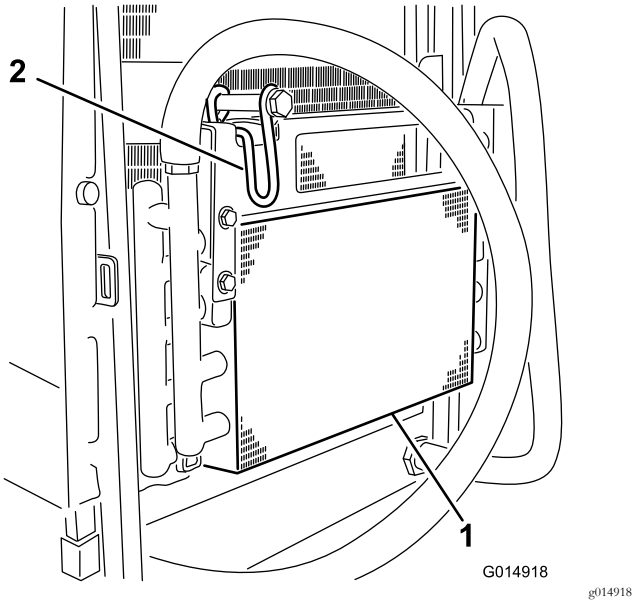

Figure 42

1. Oil cooler
2. Oil-cooler latch

7. Working from the fan side of the radiator, blow out debris with low pressure 344 kPa (50 psi) compressed air (do not use water).

   Note: Repeat this step from the front of the radiator and again from the fan side.

8. Thoroughly clean both sides of the oil cooler. After the radiator and oil coolers are thoroughly cleaned, clean out any debris that may have collected on other parts of the machine (Figure 43) with compressed air.

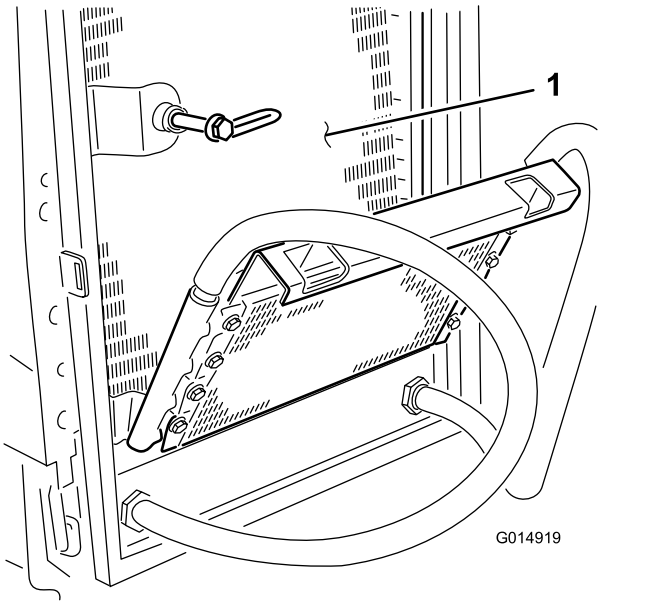

Figure 43

1. Radiator

9. Pivot the oil cooler back into position and secure the latch.
10. Close the engine cover and secure the latch.

Brake Maintenance

Towing the Mower

Ensure that the towing vehicle specification is suited to braking the combined vehicle weight and able to remain in complete control at all times. Ensure that you engage the parking brake on the towing vehicle. Chock the mower front wheels to prevent the mower from rolling away.

1. Connect a rigid tow bar between the front towing eye on the mower and a suitable towing vehicle.
2. Identify the right, front disc brake assembly and remove the hex plug (Figure 44).
3. Locate the M12 x 40 set screw stored underneath the operator platform, 1 in each of the platform support rails.
4. Install a M12 x 40 mm long set screw with washer into the hole in the center of the motor end plate.
5. Tighten the set screw into the threaded hole in the brake piston until the brake is released (Figure 45).

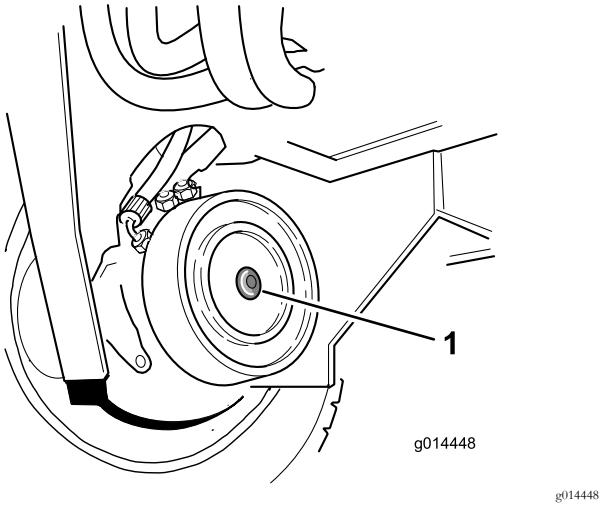

Figure 44

1. Hex plug

6. Identify the left, front disc-brake assembly and repeat the previous procedure (Figure 45).

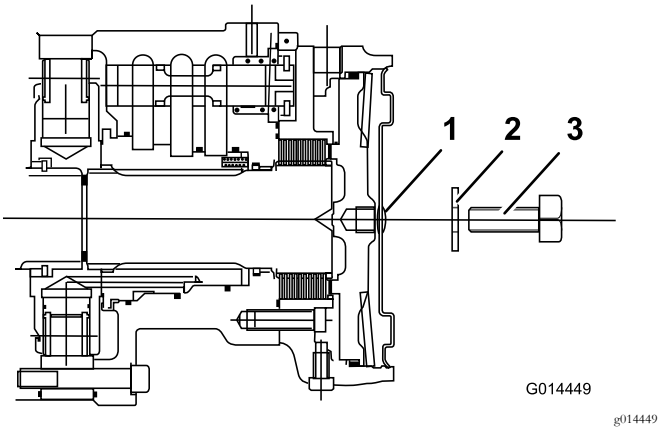

Figure 45

1. Hex plug
2. Washer (M12)
3. Set screw (M12 x 40)

7. Release the hydraulic-braking system by turning the bypass valve, located under the transmission pump, counter-clockwise, a maximum of 3 turns (Figure 46).

   Note: You must operate the steering manually when the mower is being towed. The steering will feel heavy as there is no hydraulic assistance when you shut off the engine.

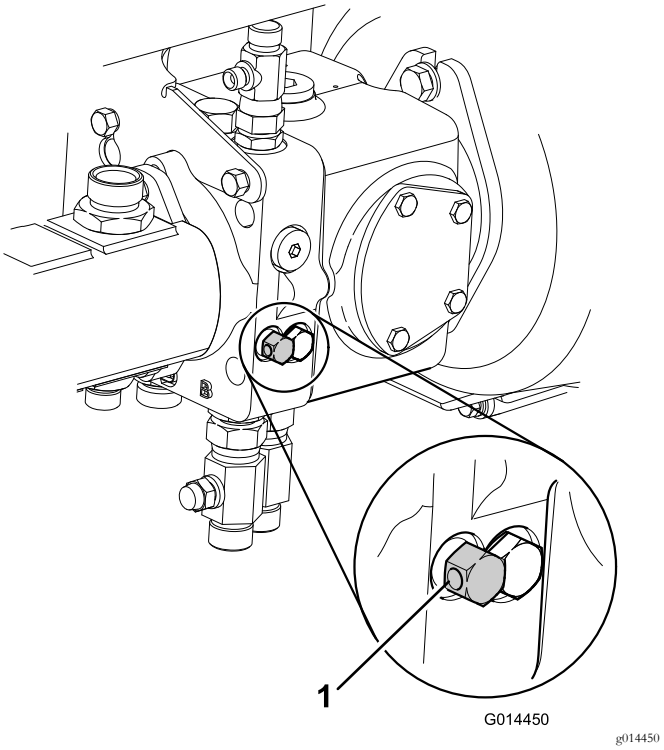

Figure 46

1. Transmission-bypass valves

8. The mower is now in a free-wheel condition and can be towed for a short distance at slow speed.

   Note: Remove the wheel chocks before towing.

9. After towing the mower, return the mower to its normal working condition by performing the following procedure:
   A. Chock the front wheels.
   B. Close the bypass valve on the transmission pump by turning it clockwise.
10. **Engage the front wheel brakes as follows:**

Note: Ensure that the M12 x 40 set screws are removed and stored underneath the operator platform.

   A. Identify the right, front wheel brake assembly.
   B. Rotate the set screw counter-clockwise and remove with washer.
   C. Assemble the hex plug into the motor end plate (Figure 47).

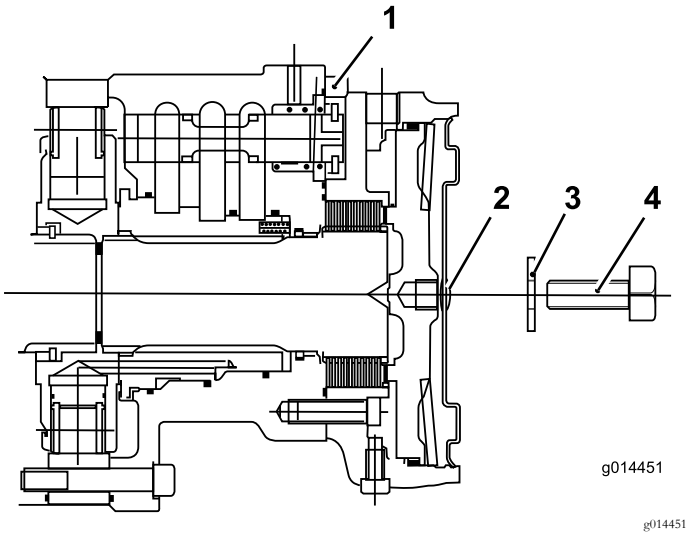

Figure 47

1. Front wheel motor
2. Hex plug
3. Washer (M12)
4. Set screw (M12 x 40)

   D. Identify the left front wheel-brake assembly and repeat the previous procedure.
   E. Remove the wheel chocks.
   F. Disconnect the tow bar. The mower braking system will now operate in the normal way.

⚠ WARNING

Operating the machine without the brakes functioning properly can cause personal injury or death to you and others and damage to the machine and property.

Before using the mower, ensure that the braking system is operating properly.

- **Check the machine after servicing the brakes initially at a slow speed.**
- **Do not operate the machine if the brakes are damaged or removed.**

Belt Maintenance

Check the condition and tension of the alternator belt after the first day of operation and every 100 operating hours thereafter.

Tensioning the Alternator Belt

Service Interval: After the first 8 hours

Every 100 hours

1. Open the hood.
2. Check the tension of the alternator belt by depressing it (Figure 48) midway between the alternator and the crankshaft pulleys with 10 kg (22 lb) of force.

Figure 48

1. Brace
2. Alternator belt
3. Pivot bolt

   The belt should deflect 11 mm (7/16 inch). If the deflection is incorrect, proceed to step 3 If correct, continue operation.
3. Loosen the bolt securing the brace to the engine (Figure 48), the bolt securing the alternator to the brace, and the pivot bolt.
4. Insert a pry bar between the alternator and the engine and pry out on the alternator.
5. When you achieve the proper tension, tighten the alternator, brace, and pivot bolts to secure the adjustment.

Controls System Maintenance

Checking the Forward and Reverse Pedal Action

With the engine switched off, operate the forward and reverse travel pedals through the full range of articulation and ensure that the mechanism returns freely to the NEUTRAL position.

Operating the Presence Seat Switch

Service Interval: Before each use or daily

1. Sit on the seat and start the engine.
2. Lower the cutting unit to the ground.
3. Engage the cutting-unit-drive switch.
4. Rise from the seat and check that the cutting unit comes to a stop after an initial 0.5- to 1-second delay.

Using the Cutting Unit Interlock Switch

1. Shut off the engine.
2. Operate the cutting unit drive switch to the OFF position and turn the ignition key to position **I**. The cutting unit drive switch indicator light should not illuminate. Refer to Understanding the Operator-Presence Control (page 21).
3. Operate the switch to the on position. The indicator light should illuminate and the engine should not start when you turn the ignition key.

Using the Parking-Brake Interlock Switch

1. Shut off the engine.
2. Engage the parking brake.
3. Turn the ignition key to position the ON position (**I**).

   Note: The parking brake indicator light should illuminate.
4. Disengage the parking brake.

   Note: The indicator light should go out and the engine should not start when the ignition key is turned.
5. Set the parking brake, sit on the seat, and start the engine.
6. Release the parking brake.
7. Rise from the seat and check that the engine shuts off.

Inspecting the Transmission Control Cable and Operating Mechanism

Service Interval: Every 250 hours

Check the condition and security of the cable and operating mechanism at the speed control pedals and transmission pump ends.

- Remove any buildup of dirt, grit, and other deposits.
- Ensure that the ball joints are securely anchored and check that mounting brackets and cable anchors are tight and free from cracks.
- Inspect end fittings for wear, corrosion, broken springs, and replace if necessary.
- Ensure that the rubber seals are correctly located and are in good condition.
- Ensure that the articulating sleeves supporting the inner cable are in good condition and firmly attached to the outer cable assembly at the crimped connections. If there are any signs of cracking or detachment, install a new cable immediately.
- Check that sleeves, rods, and inner cable are free from bends, kinks, or other damage. If they are not, install a new cable immediately.
- With the engine switched off, operate the pedal controls through the entire range and ensure that the mechanism moves smoothly and freely to the NEUTRAL position without sticking or hanging up.

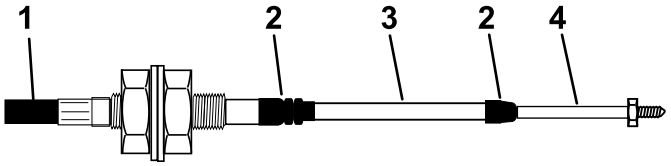

Figure 49

1. Outer cover
2. Rubber seal
3. Sleeve
4. Rod end

Transmission Neutral Interlock Switch

1. Shut off the engine.
2. Remove your foot from the forward/reverse travel pedals.
3. Turn the ignition key to the ON position (**I**) and the transmission neutral indicator light should illuminate.
4. Apply light pressure to the travel pedals in a forward and reverse direction to check that the indicator light turns off.

Note: Take extreme care to ensure that the area around the mower is clear before checking that the engine does not start under this condition.

Hydraulic System Maintenance

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.**

Service the Hydraulic System

Service Interval: Every 500 hours

Note: Keep water away from electrical components. Use a dry cloth or brush to clean such areas.

This procedure is best carried out when the hydraulic fluid is warm (not hot). Lower the cutting unit to the ground and drain the hydraulic system.

1. Remove the oil tank filler flange to gain access to the suction strainer.
2. Unscrew and remove the strainer and clean with paraffin or petrol before installing.
3. Install the return-line-oil-filter element.
4. Install the transmission-oil-filter element.
5. Refill the hydraulic tank with fresh clean hydraulic fluid of the recommended grade, refer to Checking the Hydraulic Fluid (page 19).
6. Run the machine and operate all hydraulic systems until the hydraulic fluid is warm.
7. Check the oil level and top it up as necessary to the upper mark on the sight-level gauge.

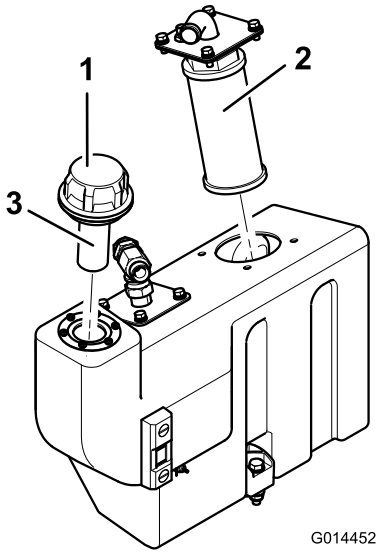

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Figure 50

1. Tank-filler cap
2. Suction strainer
3. Filler strainer

Checking the Hydraulic-Fluid Overheat Warning System

Service Interval: Every 500 hours

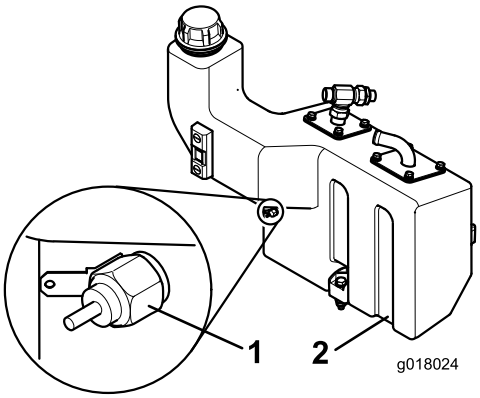

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Figure 51

1. Temperature switch
2. Hydraulic-oil tank

1. Turn the ignition key to the ON position (**I**).
2. Disconnect the red/yellow wire terminal from the hydraulic tank temperature switch.
3. Touch the metal terminal of the wire onto a suitable earth point, ensuring that the metal surfaces make good contact.

The horn will sound and the hydraulic-fluid-temperature-warning light will illuminate to confirm correct operation. If necessary, make repairs before operating the mower.

Checking the Hydraulic Lines and Hoses

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

Miscellaneous Maintenance

Waste Disposal

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

When disposing of hazardous waste products, take them to an authorized disposal site. Waste products must not be allowed to contaminate surface water, drains or sewage systems.

⚠ CAUTION

Dispose of hazardous substances correctly.

- **Do not dispose of batteries with a separate collection mark into general waste.**
- **When disposing of hazardous waste products, take them to an authorized disposal site.**

Storage

Preparing the Traction Unit

1. Thoroughly clean the traction unit, cutting unit, and engine.
2. Check the tire pressure.
3. Check all fasteners for looseness and tighten them as necessary.
4. Grease all grease fittings and pivot points. Wipe up any excess lubricant.
5. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted.
6. 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 charge the battery every 60 days for 24 hours to prevent lead sulfation of the battery.

Preparing the Engine

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

Troubleshooting

Problem	Possible Cause	Corrective Action
The engine does not start with the ignition key.	1. The transmission neutral-interlock switch is not energized.	1. Remove your foot from the forward/reverse pedals or check the setting of the transmission neutral-interlock switch.
	2. The parking-brake interlock switch is not energized.	2. Operate the parking brake lever to the ON position.
	3. The cutting-unit drive interlock switch is not energized.	3. Check the setting of parking-brake interlock switch.
	4. There is a faulty electrical connection.	4. Trace and correct the fault.
The battery is flat.	1. The terminal connection is loose or corroded.	1. Clean and tighten the terminal connections. Charge the battery.
	2. The alternator belt is a loose or damaged.	2. Adjust the tension or replace the drive belt.
	3. The battery is not charged.	3. Charge the battery or check and replace the battery.
	4. There is an electrical circuit short.	4. Trace the short in the circuit and fix it.
The hydraulic system is overheating.	1. The radiator is full of debris.	1. Clean the screen.
	2. The oil-cooler fins are plugged.	2. Clean the fins.
	3. The engine-radiator matrix is plugged.	3. Clean the matrix.
	4. The relief-valve setting is low.	4. Contact an Authorized Service Dealer.
	5. The hydraulic fluid is low.	5. Fill the reservoir to the correct level.
	6. The brakes are engaged.	6. Disengage the brakes.
	7. The fan or fan drive is damaged.	7. Check the fan operation and service the fan as needed.
The brakes operate incorrectly.	1. The wheel-motor brake assembly is faulty.	1. Contact an Authorized Service Dealer.
	2. The brake discs are worn.	2. Contact an Authorized Service Dealer.
The steering does not operate correctly.	1. The steering valve is damaged.	1. Service or replace the steering valve.
	2. The hydraulic cylinder is damaged.	2. Service or replace the hydraulic cylinder.
	3. The steering hose is damaged.	3. Replace the damaged hose.
The machine does not move forward or reverse.	1. The parking brake is engaged.	1. Release the parking brake.
	2. The hydraulic-fluid level is low.	2. Fill the reservoir to the correct level.
	3. Incorrect hydraulic fluid was used.	3. Drain the reservoir and refill with the correct fluid.
	4. The drive-pedal linkage is damaged.	4. Check the linkage and replace damaged parts.
	5. The transmission pump is damaged.	5. Have the transmission pump overhauled by your authorized dealer.
	6. The transmission-relief valve is open.	6. Close the relief valve.
	7. The drive coupling is broken.	7. Replace the drive coupling.
	8. The transmission filter is blocked.	8. Replace the transmission filter.
The machine creeps forward or backward in neutral.	1. The transmission-neutral adjustment is incorrectly set.	1. Adjust the transmission-neutral linkage setting.

Problem	Possible Cause	Corrective Action
There is excessive noise in the hydraulic system.	1. There is a faulty pump.	1. Identify the noisy pump and service or replace.
	2. There is a faulty motor.	2. Identify the noisy motor and service or replace.
	3. There is air leaking into the system.	3. Tighten or replace hydraulic fittings, particularly in suction lines.
	4. The suction strainer is blocked or damaged.	4. Clean and replace the suction strainer.
	5. There is excessive oil viscosity due to cold conditions.	5. Allow the system to warm up.
	6. The relief-valve setting is low.	6. Have the relief valve cleaned and pressure checked. Contact an Authorized Service Dealer.
	7. The hydraulic-fluid level is low.	7. Fill the hydraulic-fliud reservoir to the correct level.
After initial operation, the machine loses power.	1. There is a worn pump or motor.	1. Replace as the pump or motor.
	2. The hydraulic-oil level is low.	2. Fill the hydraulic-fluid reservoir to the correct level.
	3. The hydraulic-oil viscosity is incorrect.	3. Replace the oil in hydraulic tank with correct viscosity of oil.
	4. The oil-filter element is blocked.	4. Change the filter element.
	5. The pressure relief valve does not function.	5. Have the relief valve cleaned and pressure checked. Consult your authorized dealer.
	6. There is overheating.	6. Reduce the work rate by increasing the height of cut or reducing your forward speed.
	7. There are leaks in the suction hose.	7. Check and tighten fittings. Replace hose if necessary.
Cutting unit fails to lift out of work.	1. Lift cylinder seal failure.	1. Replace seals.
	2. Pressure-relief valve is jammed open or wrongly set.	2. Have relief valve cleaned and pressure checked. Consult your authorized dealer.
	3. The control valve is not functioning.	3. Overhaul the control valve.
	4. There is a mechanical blockage.	4. Remove the blockage.
Cutting unit does not follow ground contours.	1. There is tightness in the pivots.	1. Release and grease the pivots as needed.
	2. Mower operated in the Hold position.	2. Move position-control switch to the Down/Float position.
	3. The weight transfer set too high.	3. Reduce the weight transfer.

Problem	Possible Cause	Corrective Action
A cutting unit fails to start up.	1. The seat-sensor switch is not functioning.	1. Check the mechanical and electrical operation of the switch.
	2. The hydraulic-fluid level is low.	2. Fill the hydraulic-fluid reservoir to the correct level.
	3. The drive shaft is sheared.	3. Check the motor and drive shafts and replace them if necessary.
	4. The pressure-relief valve is jammed open or wrongly set.	4. Have the relief valve cleaned and pressure checked. Consult your authorized dealer.
	5. The cutting-unit blade(s) is jammed.	5. Clear the jam as needed.
	6. The cutting-unit control valve is in the Off position caused by a non-functioning control valve.	6. Overhaul the control valve.
	7. The cutting-unit control valve is in the Off position caused by an electrical fault.	7. Have the electrical system checked.
The blades are rotating in wrong direction.	1. The hoses are incorrectly connected	1. Check the hydraulic circuit and connect as needed.

Notes:

Notes:

European Privacy Notice

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

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

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

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

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

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

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

Australian Consumer Law

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

The Toro 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.

374-0253 Rev D