



Count on it.

Operator's Manual

**Groundsmaster® 4500-D and
4700-D Traction Unit**

Model No. 30873—Serial No. 316000001 and Up

Model No. 30874—Serial No. 316000001 and Up



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

⚠ WARNING

**CALIFORNIA
Proposition 65 Warning**

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

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

The enclosed *Engine Owner's Manual* is supplied for information regarding the US Environmental Protection Agency (EPA) and the California Emission Control Regulation of emission systems, maintenance, and warranty. Replacements may be ordered through the engine manufacturer.

Introduction

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

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

You may contact Toro directly at www.Toro.com for product safety and operation training materials, accessory information, help finding a dealer, or to register your product.

Whenever you need service, genuine Toro parts, or additional information, contact an Authorized Service Dealer or Toro Customer Service and have the model and serial numbers of your product ready. [Figure 1](#) identifies the location of the model and serial numbers on the right front frame of the product. Write the numbers in the space provided.

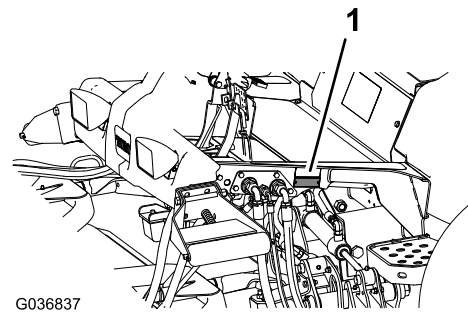


Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

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



Figure 2

1. Safety-alert symbol

This manual uses 2 words to highlight information.

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

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Safety

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

Improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert symbol, which means Caution, Warning, or Danger—personal safety instruction. Failure to comply with the instruction may result in personal injury or death.

General Safety

This product is capable of amputating hands and feet and is capable 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 you start the engine. Ensure that everyone using this product knows how to use it and understands the warnings.
- 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 a safe distance 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 items of safety information in their respective sections throughout this manual.

Sound Power Level

Model 30873

This unit has a guaranteed sound power level of 104 dBA, which includes an Uncertainty Value (K) of 0.7 dBA.

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

Model 30874

This unit has a guaranteed sound power level of 105 dBA, which includes an Uncertainty Value (K) of 0.7 dBA.

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

Sound Pressure Level

Model 30873

This unit has a sound pressure level at the operator's ear of 88 dBA, which includes an Uncertainty Value (K) of 0.7 dBA.

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

Model 30874

This unit has a sound pressure level at the operator's ear of 89 dBA, which includes an Uncertainty Value (K) of 0.7 dBA.

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

▲ CAUTION

Long-term exposure to noise while operating the machine may cause some hearing loss.

Wear adequate hearing protection whenever you operate the machine for an extended period of time.

Vibration Level

Hand-Arm

Model 30873

Measured vibration level for right hand = 0.8 m/s²

Measured vibration level for left hand = 0.8 m/s²

Uncertainty Value (K) = 0.4 m/s²

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

Model 30874

Measured vibration level for right hand = 0.4 m/s²

Measured vibration level for left hand = 0.4 m/s²

Uncertainty Value (K) = 0.2 m/s²

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

Whole Body

Models 30873 and 30874

Measured vibration level = 0.2 m/s²

Uncertainty Value (K) = 0.1 m/s²

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

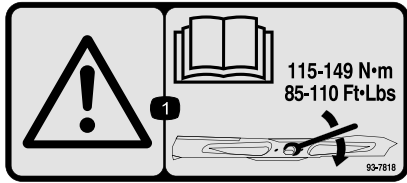
Engine Emission Certification

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

Safety and Instructional Decals



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



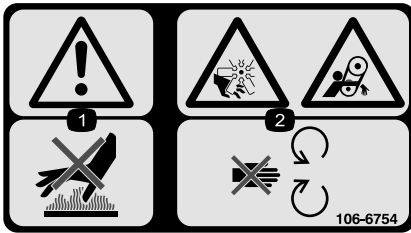
93-7818

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



98-4387

1. Warning—wear hearing protection.



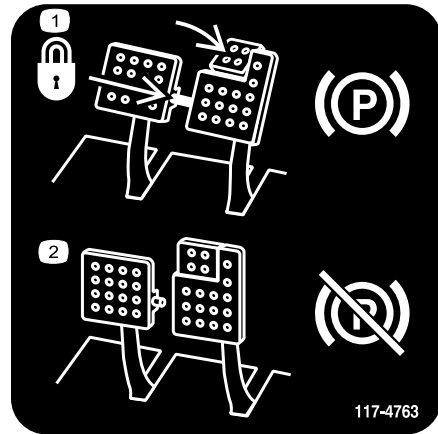
106-6754

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



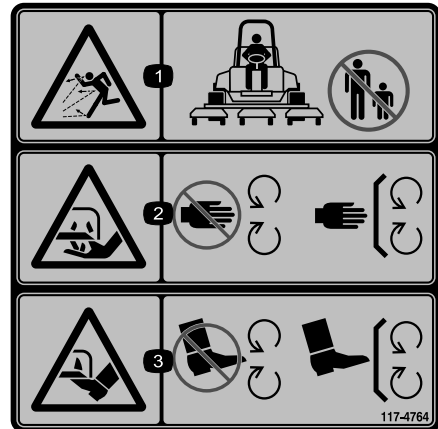
106-6755

- | | |
|---|--|
| 1. Engine coolant under pressure. | 3. Warning—do not touch the hot surface. |
| 2. Explosion hazard—read the <i>Operator's Manual</i> . | 4. Warning—read the <i>Operator's Manual</i> . |



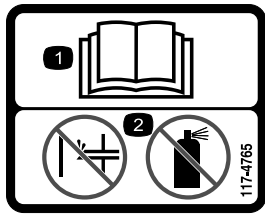
117-4763

1. To engage the parking brake, secure the brake pedals with the locking pin, press the parking-brake pedals and engage the toe pedal.
2. To disengage the parking brake, disengage the locking pin and release the pedals.



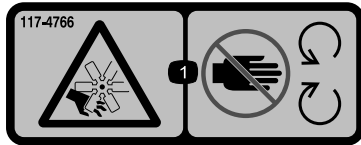
117-4764

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



117-4765

1. Read the *Operator's Manual*.
2. Do not use starting aids.



117-4766

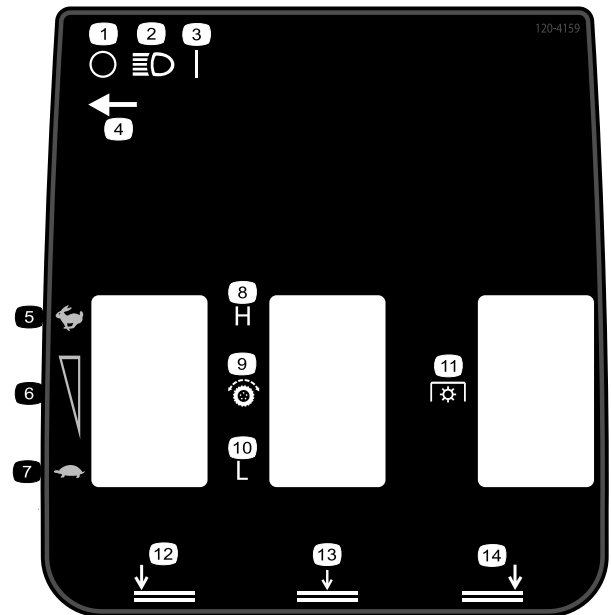
1. Cutting/dismemberment hazard; fan—stay away from moving parts, keep all guards and shields in place.



Battery Symbols

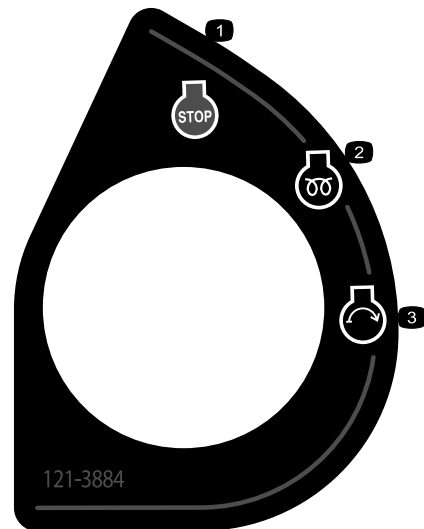
Some or all of these symbols are on your battery.

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



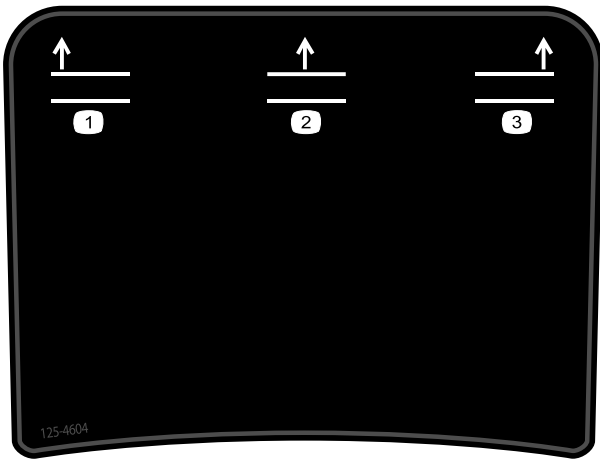
120-4159

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



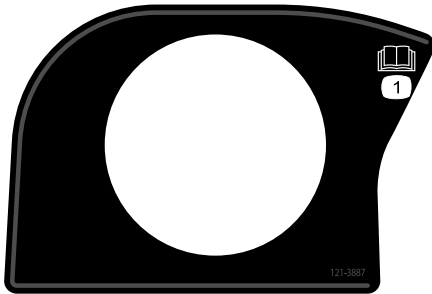
121-3884

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



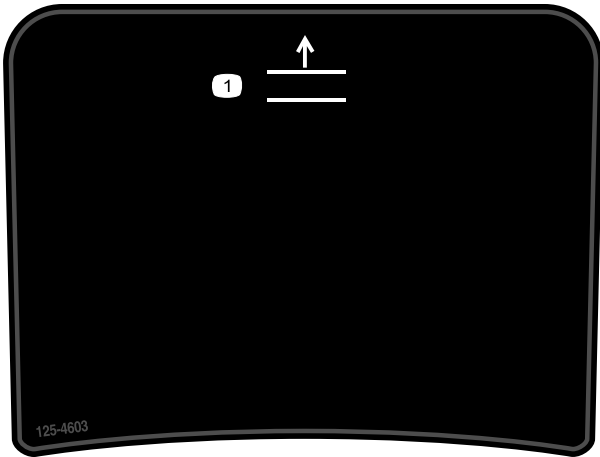
125-4604
For Model 30874

1. Raise the left deck.
2. Raise the center deck.
3. Raise the right deck.



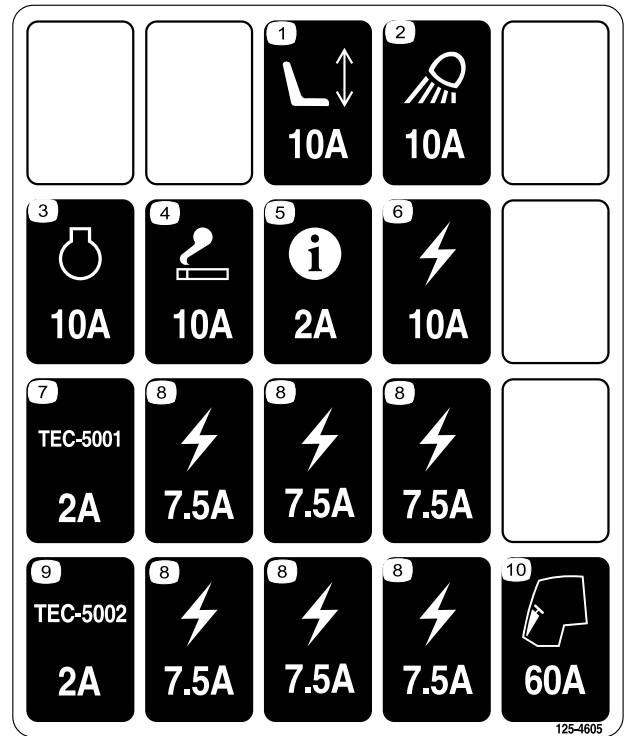
121-3887

1. Read the *Operator's Manual*.



125-4603
For Model 30873

1. Raise the decks.



125-4605

- | | |
|--------------------|--------------------------|
| 1. Power seat—10 A | 6. Power supplied—10 A |
| 2. Work light—10 A | 7. GM4700 controller—2 A |
| 3. Engine—10 A | 8. Power supplied—7.5 A |
| 4. Power port—10 A | 9. GM4500 controller—2 A |
| 5. Infocenter—2 A | 10. Engine preheat—60 A |

GROUNDMASTER 4500/4700

QUICK REFERENCE AID

CHECK/SERVICE (DAILY)

1. ENGINE OIL LEVEL
2. HYDRAULIC OIL FLUID LEVEL
3. ENGINE COOLANT LEVEL
4. FUEL - DIESEL ONLY
5. FUEL/WATER SEPARATOR
6. RADIATOR SCREEN
7. AIR CLEANER
8. BRAKE FUNCTION
9. TIRE PRESSURE: 20 PSI/1.40 BAR
WHEEL NUT TORQUE: 93 FT/LB (127 Nm)

CHECK/SERVICE (SEE OPERATOR'S MANUAL)

10. BATTERY
11. BELTS (FAN, ALT.)
12. PLANETARY GEAR DRIVE
13. INTERLOCK SYSTEM
14. REAR AXLE
15. ENGINE OIL DRAIN
16. GREASING (SEE OPERATOR'S MANUAL)

SPECIFICATIONS/CHANGE INTERVALS

SEE OPERATOR'S MANUAL FOR INITIAL CHANGES	FLUID TYPE	CAPACITY	CHANGE INTERVAL		FILTER PART NO.
			FLUID	FILTER	
① ENGINE OIL	15W-40 CH-4 30873	6 QUARTS	250 HOURS	250 HOURS	125-7025
	15W-40 CH-4 30881				
② HYDRAULIC FLUID	ISO VG 46/68	8.25 GALLONS	800 HOURS	800 HOURS	75-1310
③ HYDRAULIC FILTER				800 HOURS	94-2621
④ HYDRAULIC BREATHER				800 HRS/YRLY	115-2793
⑤ FUEL SYSTEM	> 32 F	22 GALLONS	800 HOURS DRAIN & FLUSH	400 HOURS/ YEARLY	110-5049 30814
	< 32 F				NO. 1 DIESEL
⑥ ENGINE COOLANT	50% WATER 50% ETAW, GLYCOL	9 QUARTS	DRAIN & FLUSH EVERY 2 YRS.		108-3814
⑦ PRIMARY AIR FILTER				SEE SERVICE MANUAL	108-3814
⑧ SAFETY AIR FILTER				SEE OPERATOR'S MANUAL	108-3816
⑨ REAR AXLE	85W-140	80 OUNCES	800 HOURS		110-4812 10811
⑩ PLANETARY DRIVE	85W-140	16 OUNCES	800 HOURS		

125-4606

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

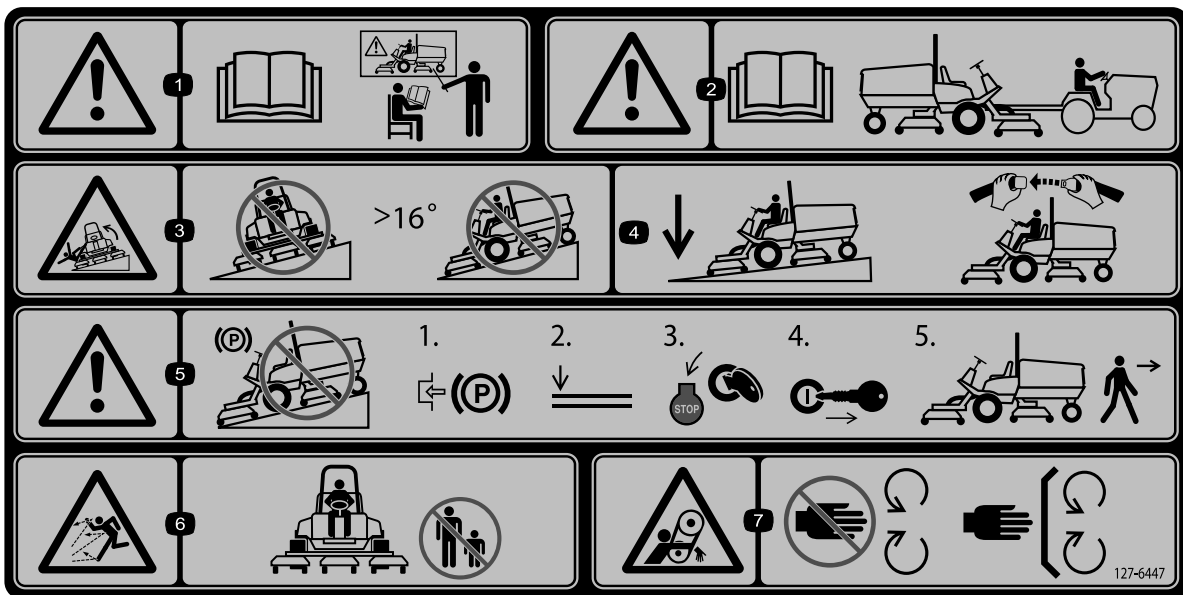
3/4" 19mm	1" 25mm	1 1/4" 32mm	1 1/2" 38mm	1 3/4" 44mm	2" 51mm	2 1/4" 57mm
2 1/2" 64mm	2 3/4" 70mm	3" 76mm	3 1/4" 83mm	3 1/2" 89mm	3 3/4" 95mm	4" 102mm

41 N·m
(30 ft·lb)

121-3627

121-3627

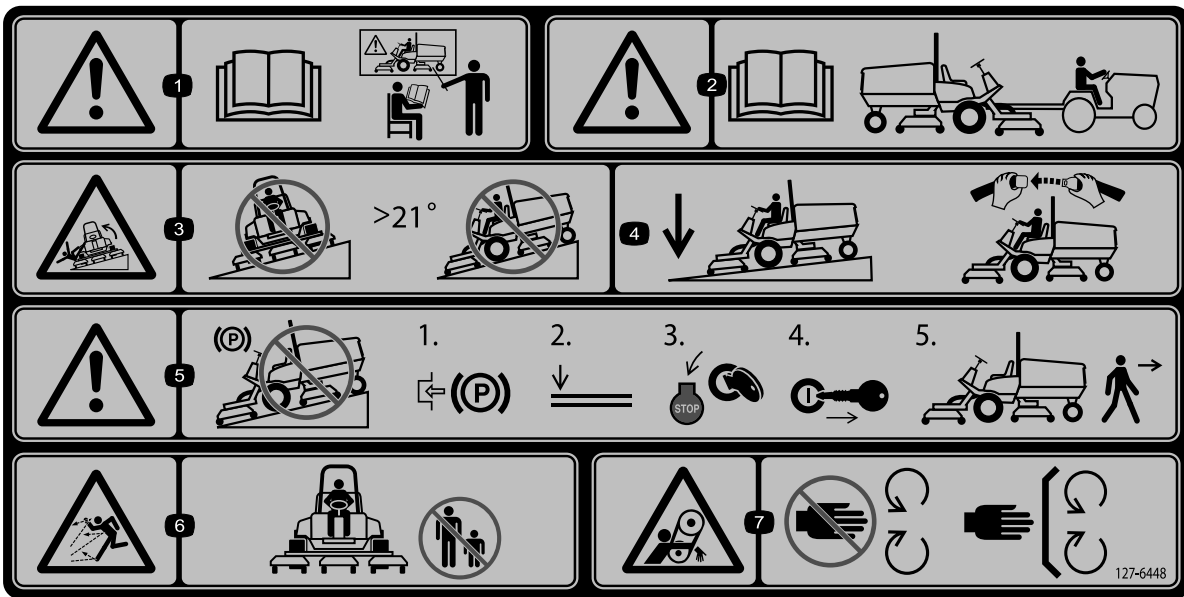
1. Height-of-cut settings



127-6447

For Model 30873

1. Warning—read the *Operator's Manual*; do not operate the machine unless you have received training.
2. Warning—read the *Operator's Manual* for information on towing.
3. Tipping hazard—do not drive on slopes greater than 16 degrees.
4. Keep the decks lowered while driving down slopes; always wear a seat belt when operating the machine.
5. Warning—do not park on slopes; 1) Engage the parking brake, 2) Lower the decks, 3) Turn off the engine. 4) Remove the key from the ignition, 5) Leave the machine.
6. Thrown object hazard—keep bystanders away from the machine.
7. Entanglement hazard, belt—keep away from moving parts; keep all guards and shields in place.



127-6448

For Model 30874

- | | | | |
|--|---|--|--|
| <p>1. Warning—read the <i>Operator's Manual</i>; do not operate the machine unless you have received training.</p> | <p>3. Tipping hazard—do not drive on slopes greater than 21 degrees.</p> | <p>5. Warning—do not park on slopes; 1) Engage the parking brake, 2) Lower the decks, 3) Turn off the engine. 4) Remove the key from the ignition, 5) Leave the machine.</p> | <p>7. Entanglement hazard, belt—keep away from moving parts; keep all guards and shields in place.</p> |
| <p>2. Warning—read the <i>Operator's Manual</i> for information on towing.</p> | <p>4. Keep the decks lowered while driving down slopes; always wear a seat belt when operating the machine.</p> | <p>6. Thrown object hazard—keep bystanders away from the machine.</p> | |

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	No parts required	–	Prepare the machine.
2	Lock bracket Rivet Washer Screw (1/4 x 2 inches) Locknut (1/4 inch)	1 2 1 1 1	Install the hood latch (CE).

Media and Additional Parts

Description	Qty.	Use
Operator's Manual	1	Read this before operating the machine.
Engine Operator's Manual	1	Read this before operating the engine.
Parts Catalog	1	Use this to reference part numbers.
Operator training materials	1	Review before operating machine
Declaration of Conformity	1	

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

1

Preparing the Machine

No Parts Required

Checking the Fluid Levels

1. Check the rear-axle lubricant level before the engine is first started, refer to [Checking the Rear-Axle Lubricant \(page 50\)](#).
2. Check the engine-oil level before starting the engine; refer to [Checking the Engine-Oil Level \(page 43\)](#).
3. Check the hydraulic-fluid level before starting the engine; refer to [Checking the Hydraulic-Fluid Level \(page 55\)](#).
4. Check the cooling system before starting the engine; refer to [Checking the Cooling System \(page 52\)](#).

Greasing the Machine

Grease the machine before use; refer to [Greasing the Bearings and Bushings \(page 41\)](#).

Important: Failure to properly grease the machine may result in premature failure of critical parts.

Checking the Air Pressure in the Tires

Check the air pressure in tires before use; refer to [Checking the Air Pressure in the Tires \(page 23\)](#).

Important: Maintain the specified air pressure in all tires to ensure a good quality-of-cut and proper machine performance. *Do not underinflate the tires.*

2

Installing the Hood Latch

Parts needed for this procedure:

1	Lock bracket
2	Rivet
1	Washer
1	Screw (1/4 x 2 inches)
1	Locknut (1/4 inch)

Procedure

1. Lift up the handle for the hood latch and rotate it away from the hood-latch bracket.

2. Remove the 2 rivets securing the hood-latch bracket to the hood ([Figure 3](#)).

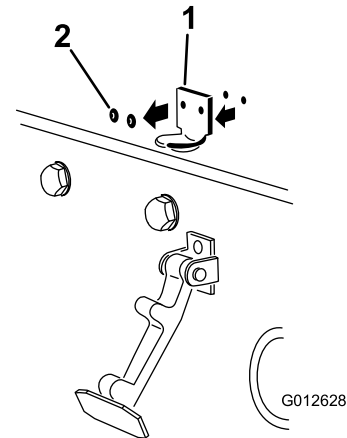


Figure 3

1. Hood-latch bracket
2. Rivets

3. Remove the hood-latch bracket from the hood.

Note: Retain the hood-latch bracket and the 2 washers (from the inside of the hood at the rivet locations) for installation.

4. Align the holes of the hood-latch bracket, CE-lock bracket, and hood as shown in [Figure 4](#).

Note: Align the CE-lock bracket against the hood ([Figure 4](#)). Do not remove the bolt and nut from the arms of the CE-lock bracket.

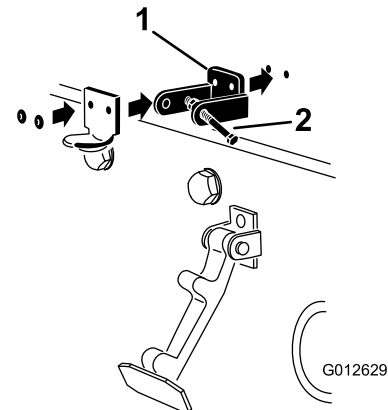


Figure 4

1. CE-lock bracket
2. Bolt-and-nut assembly

5. Align the washers with the holes at the inside of the hood.
6. Rivet the brackets and the washers onto the hood ([Figure 4](#)).
7. Remove the washer and nut from the arms of the CE-lock bracket.
8. Hook the latch onto the hood-latch bracket ([Figure 5](#)).

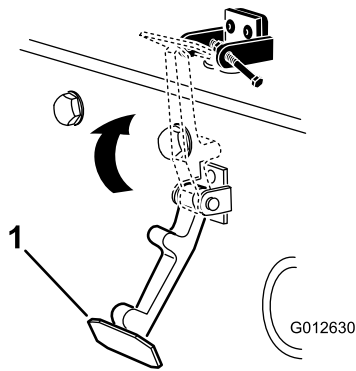


Figure 5

1. Hood latch

1. Loosen the grease fitting and the mounting screw (Figure 7).

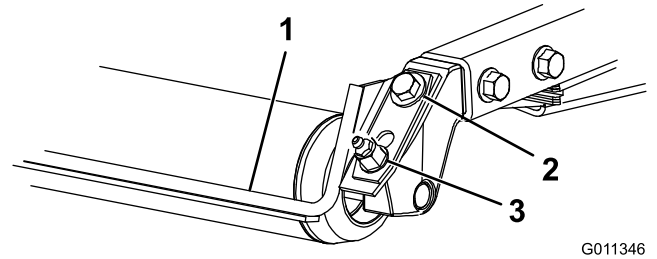


Figure 7

1. Roller scraper
2. Mounting screw
3. Grease fitting

9. Assemble the bolt through the other arm of CE-lock bracket and secure the bolt with the locknut and washer (Figure 6).

Note: Tighten the bolt securely but do not tighten the nut. Tightening the locknut too much will result in damage to the bracket.

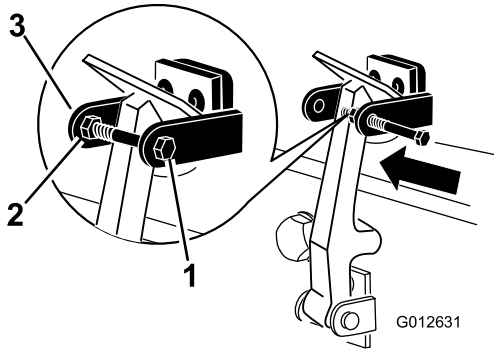


Figure 6

1. Bolt
2. Locknut
3. Arm of hood-lock bracket

10. If necessary, thread the locknut until 6 mm (1/4 inch) of the treads of the bolt protrude beyond the end of the locknut

3

Adjusting the Roller Scraper

Parts needed for this procedure:

5 or 7	Roller scraper—optional Toro part
--------	-----------------------------------

Procedure

The optional rear roller scraper is designed to work best when there is an even gap of 0.5 to 1 mm (0.020 to 0.040 inch) between the scraper and roller.

4

Installing the Mulching Baffle

Parts needed for this procedure:

5 or 7	Mulching baffle—optional Toro part
--------	------------------------------------

Procedure

▲ DANGER

Using the high-lift blade with the mulching baffle could cause the blade to break, resulting in personal injury or death.

Do not use the high-lift blade with the mulching baffle.

1. Thoroughly clean debris from the mounting holes on the rear wall and left side wall of the chamber.
2. Install the mulching baffle in the rear opening and secure it with 5 flange-head bolts (Figure 8).

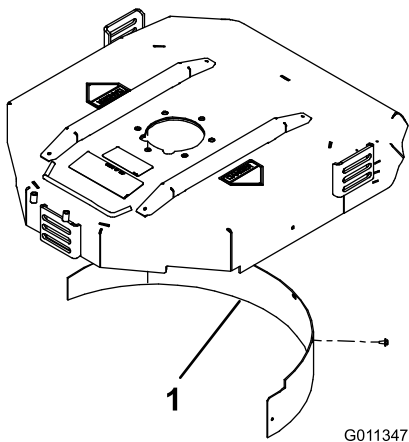


Figure 8

1. Mulching baffle

-
3. Verify that mulching baffle does not interfere with the tip of the blade and does not protrude inside the surface of the rear chamber wall.

Product Overview

Controls

Brake Pedals

Use the 2 foot pedals (Figure 9) to individually control the wheel brakes to assist you when turning the machine and to help control traction when operating the machine on the side of a hill.

Pedal-Locking Latch

The pedal-locking latch (Figure 9) connects the brake pedals. Use the latch to connect the pedals to engage the parking brake and while operating the machine in transport mode.

Parking-Brake Pedal

To set the parking brake, (Figure 9) connect the pedals together with the pedal-locking latch, push down on the right brake pedal while setting the toe pedal for the parking brake.

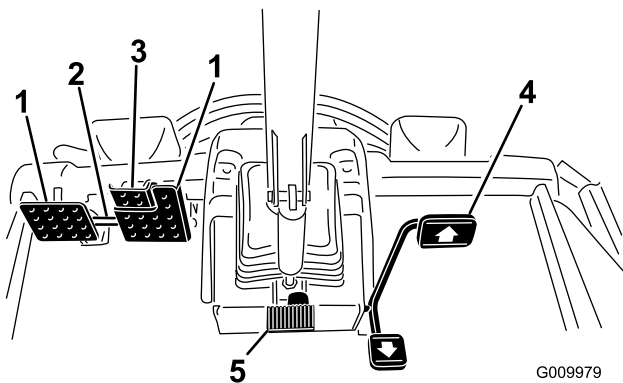


Figure 9

- | | |
|------------------------|------------------------|
| 1. Brake pedal | 4. Traction pedal |
| 2. Pedal-locking latch | 5. Tilt-steering pedal |
| 3. Parking-brake pedal | |

To release the parking brake, press in the right brake pedal until the parking-brake latch retracts.

Traction Pedal

The traction pedal (Figure 9) controls forward and reverse operation. Press the top of the pedal to move forward and the bottom to move backward.

To stop the machine, use one of the following procedures:

- Reduce your foot pressure on the traction pedal and allow it to return to the center position. The machine will dynamically brake to a smooth stop.
- Tap or hold the reverse pedal briefly. This stops the machine faster than dynamic braking.

Note: In emergency braking situations, press the service brake pedals in addition to using the reverse pedal as stated above. This is the quickest method to stop the machine.

Tilt-Steering Pedal

To adjust the tilt the steering wheel, press down the tilt-steering pedal (Figure 9), and adjust the steering wheel and column to a comfortable operating position, and then release the pedal.

Lift Switches

Use the lift switches (Figure 10) raise and lower the mower decks. Press the switches forward to lower the mower decks and backward to raise the mower decks. When starting the machine, with the mower decks in the down position, press the lift switch down to allow the mower decks to float and mow.

Note: The decks do not lower while in the high-speed range, and they do not raise or lower if the operator is out of the seat while the engine is running.

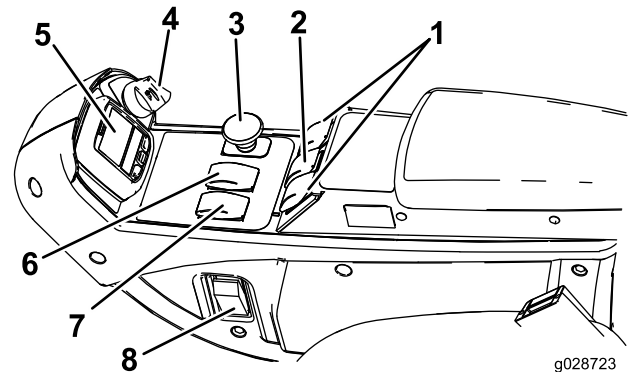


Figure 10

- | | |
|--|---------------------------|
| 1. Lift switches (Model 30874) | 5. InfoCenter |
| 2. Lift switch (Model 30873 and Model 30874) | 6. High/low speed control |
| 3. PTO switch | 7. Engine-speed switch |
| 4. Key switch | 8. Light switch |

PTO Switch

The PTO switch (Figure 10) has 2 positions: OUT (start) and IN (stop). Pull out the PTO button out to run the mower-deck blades. Push in the PTO button to stop the mower-deck blades.

Key Switch

The key switch (Figure 10) has 3 positions: OFF, ON/PREHEAT, and START.

High/Low-Speed Control

The switch (Figure 10) allows the speed range to increase for transport of the machine. The mower decks do not operate in the high-speed range. Also, you cannot lower the decks from the transport position when the switch is in the high range.

Engine-Speed Switch

The engine-speed switch (Figure 10) has 2 modes to change the engine speed. By momentarily tapping the switch, you can increase or decrease the engine speed in 100 rpm increments. By holding the switch down, the engine automatically moves to High or Low idle, depending on which of the switches you press.

Light Switch

Press the lower edge of the switch (Figure 10) to turn on the lights. Press the upper edge of the switch to turn off the lights.

Power Point

Use the power point (Figure 11) to power optional 12 V electrical accessories.

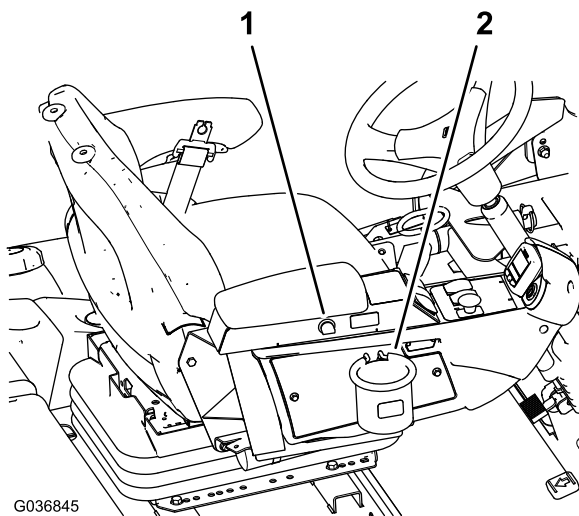


Figure 11

1. Power point
2. Bag holder

Bag Holder

Use the bag holder (Figure 11) for storage.

Hour Meter

The hour meter (Figure 11) shows the total hours that the machine has been operated.

Fuel-Level Gauge

The fuel-level gauge (Figure 12) indicates the level of fuel in the tank.

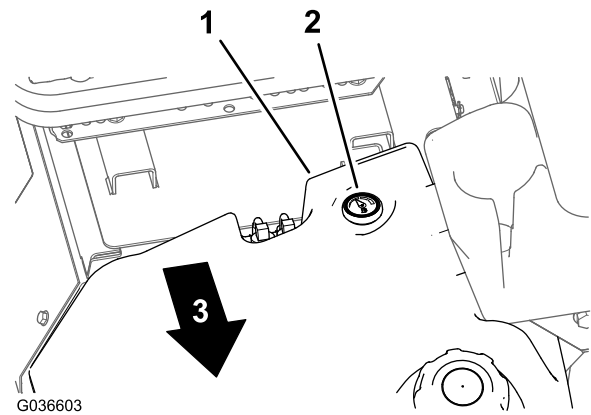


Figure 12

1. Fuel tank
2. Fuel gauge
3. Left side of the machine

Seat Adjustments

Seat Adjusting Lever

Pull out on the lever to slide the seat forward or rearward (Figure 13).

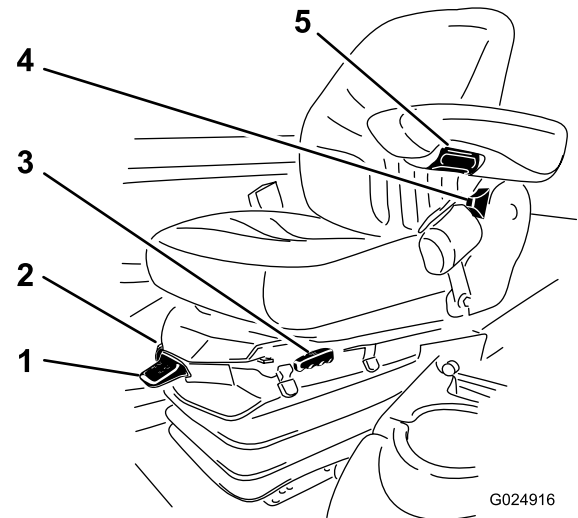


Figure 13

1. Weight-adjusting lever
2. Weight gauge
3. Seat-adjusting lever
4. Seat-back-adjusting lever
5. Armrest-adjusting knob

Seat Armrest-Adjusting Knob

Rotate the knob to adjust the seat-armrest angle (Figure 13).

Seat-Back-Adjusting Lever

Move the lever to adjust the seat-back angle (Figure 13).

Weight Gauge

Indicates when the seat is adjusted to your weight ([Figure 13](#)). You can make height adjustments by positioning the suspension within the range of the green region.

Weight-Adjusting Lever

Adjust for your weight ([Figure 13](#)). Pull up the lever to increase the air pressure, and push down the lever to decrease the air pressure. You attain the proper adjustment when the weight gauge is in the green region.

Specifications

Model 30873 ■
Model 30874 ■+■

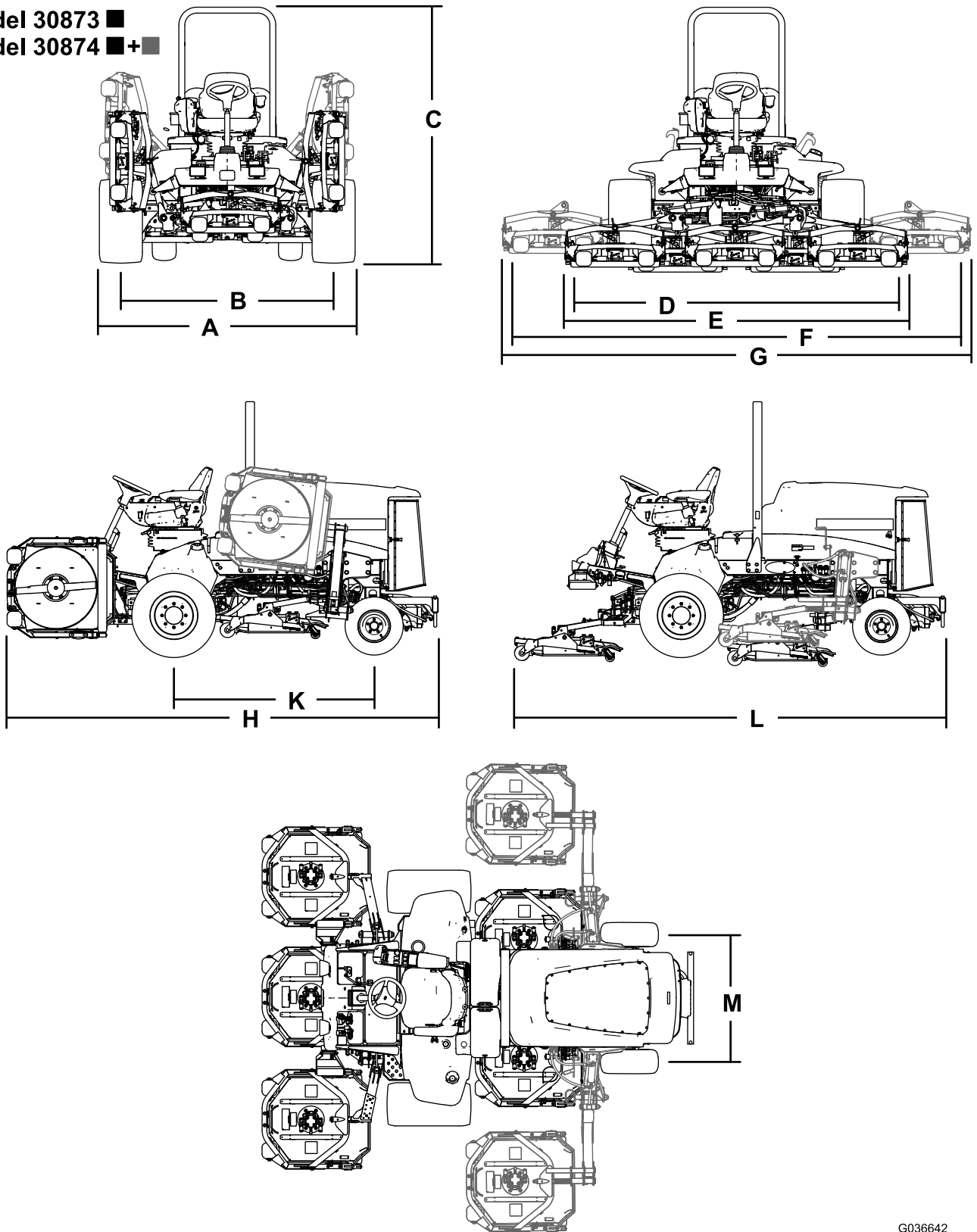


Figure 14

G036642

Machine Specifications

Description	Model 30873	Figure 14 reference	Model 30874	Figure 14 reference
Width of cut	280 cm (110 inches)	D	380 cm (150 inches)	F
Overall width				
Mower decks down	294 cm (116 inches)	E	402 cm (158 inches)	G
Mower decks up (transport)	213 cm (105 inches)	A	213 cm (105 inches)	A
Track width				
Front	224 cm (88 inches)	B	224 cm (88 inches)	B
Rear	141 cm (56 inches)	M	141 cm (56 inches)	M
Height with ROPS	216 cm (85 inches)	C	216 cm (85 inches)	C
Overall length				
Mower decks down	370 cm (146 inches)	H	370 cm (146 inches)	H
Mower decks up (transport)	370 cm (146 inches)	L	370 cm (146 inches)	L
Ground clearance	15 cm (6 inches)		15 cm (6 inches)	
Wheel base	171 cm (68 inches)	K	171 cm (68 inches)	K
Net weight (with mower decks and no fuel)	1,894 kg (4,175 lb)		2,234 kg (4,925 lb)	

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

Mower Deck Specifications

Length	86.4 cm (34 inches)
Width	86.4 cm (34 inches)
Height	24.4 cm (9.6 inches) to carrier mount 26.7 cm (10-1/2 inches) at 3/4 inch height-of-cut 34.9 cm (13-3/4 inches) at 4 inch height-of-cut
Weight	88 kg (195 lb)

Attachments/Accessories

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

To best protect your investment and maintain optimal performance of your Toro equipment, count on Toro genuine parts. When it comes to reliability, Toro delivers replacement parts designed to the exact engineering specification of our equipment. For peace of mind, insist on Toro genuine parts.

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 all safety devices are attached and functioning properly. This includes, but is not limited to, operator-presence controls; safety switches and shields; the rollover protection system (ROPS); attachments; and brakes. Do not operate the machine unless all safety devices are in position and functioning as intended by the manufacturer.
- Always inspect the machine to ensure that the blades, blade bolts, and cutting assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.
- Inspect the area where you will use the machine and remove all objects that the machine could potentially throw.
- Evaluate the terrain to determine the appropriate equipment and any attachments or accessories required to operate the machine properly and safely.

Fuel Safety

⚠ 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.
- Do not operate the machine without the entire exhaust system in place and in proper working condition.

⚠ 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 your hands and face away from the nozzle and the fuel-tank opening.
- Keep fuel away from your eyes and skin.
- Use only an approved fuel container.
- Never remove the fuel cap or add fuel to the fuel tank while the engine is running.
- Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground and away from your vehicle before filling.
- Remove the equipment from the truck or trailer and add fuel to it while it is on the ground. If this is not possible, then add fuel using a portable container rather than from a fuel-dispenser nozzle.
- Keep the fuel-dispenser nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- If you spill fuel on your clothing, change your clothing immediately.
- Fill the fuel tank until the fuel level is 25 mm (1 inch) below the bottom of the filler neck. Do not overfill the fuel tank. Replace the fuel-tank cap and tighten it securely.

Checking the Engine-Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to [Checking the Engine-Oil Level \(page 43\)](#).

Checking the Cooling System

Before you start the engine and use the machine, check the cooling system; refer to [Checking the Cooling System \(page 52\)](#).

Checking the Hydraulic System

Before you start the engine and use the machine, check the hydraulic system; refer to [Checking the Hydraulic-Fluid Level \(page 55\)](#).

Draining the Water Separator

Drain water or other contaminants from the water separator; refer to [Servicing the Water Separator \(page 45\)](#).

Checking the Rear Axle and Gearbox for Leaks

Check the rear axle and rear-axle gearbox for leaks; refer to [Checking the Rear Axle and Gearbox for Leaks \(page 50\)](#).

Filling the Fuel Tank

Recommended Fuel

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

Fuel tank capacity: 83 L (22 US gallons)

Use summer-grade diesel fuel (Number 2-D) at temperatures above -7°C (20°F) and winter-grade diesel fuel (Number 1-D or Number 1-D/2-D blend) below -7°C (20°F). Using winter-grade fuel at lower temperatures provides a lower flash point and cold-flow characteristics, which will ease starting and reduce fuel-filter plugging.

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

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

Biodiesel Ready

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

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

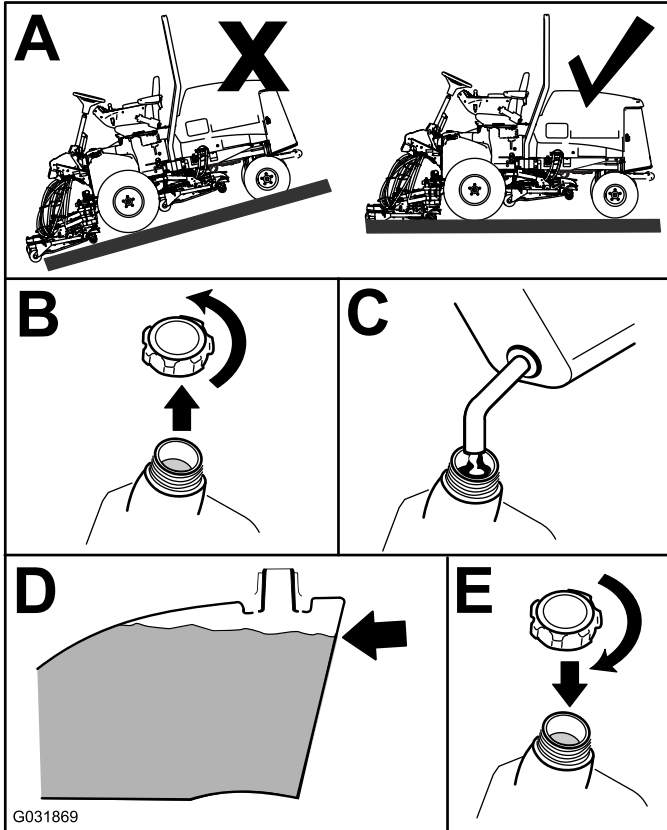
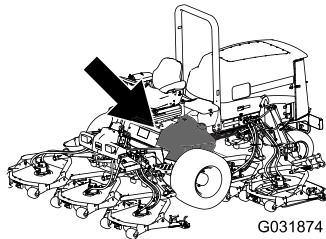


Figure 15

Fill the tank to about 6 to 13 mm (1/4 to 1/2 inch) below the top of the tank, not the filler neck, with Number 2-D diesel fuel.

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

Checking the Air Pressure in the Tires

Service Interval: Before each use or daily

⚠ DANGER

Low tire pressure decreases machine side-hill stability. This could cause a rollover, which may result in personal injury or death.

Do not under-inflate the tires.

The correct air pressure in the tires is 138 kPa (20 psi).

Important: Maintain the recommended pressure in all tires to ensure a good quality of cut and proper machine performance. Do not under-inflate the tires.

Check the air pressure in all the tires before operating the machine.

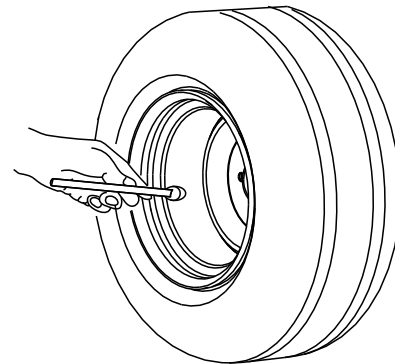


Figure 16

Checking the Torque of the Wheel-Lug Nuts

Service Interval: After the first 8 hours

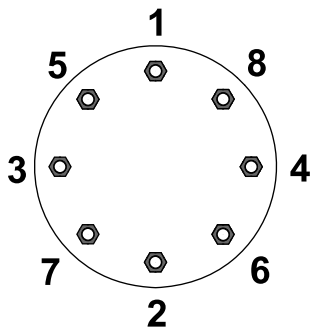
Every 200 hours

⚠ WARNING

Failing to maintain proper torque of the wheel-lug nuts could result in personal injury.

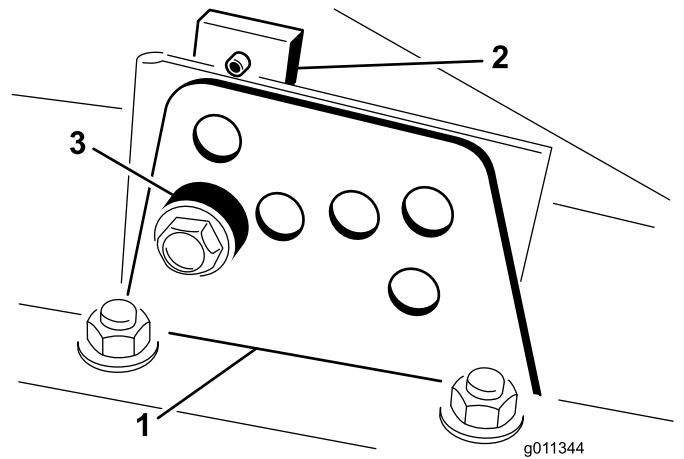
Torque the wheel-lug nuts to the proper torque value.

Torque the wheel-lug nuts to 115 to 136 N·m (85 to 100 ft·lb) in the order shown in [Figure 17](#) and [Figure 18](#).



G033358

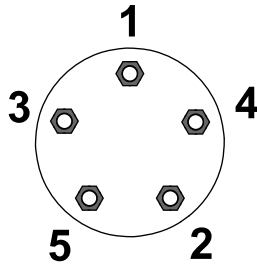
Figure 17
Front Wheels



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Figure 19

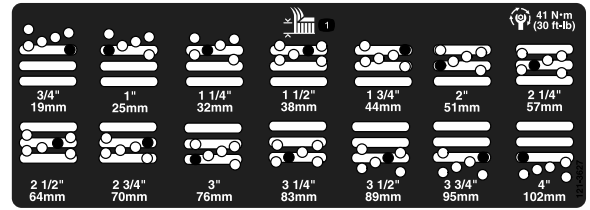
1. Height-of-cut bracket
2. Height-of-cut plate
3. Spacer



G033359

Figure 18
Rear Wheels

4. While supporting the chamber, remove the spacer (Figure 19).
5. Move the chamber to the desired height of cut and install a spacer into the designated height-of-cut hole and slot (Figure 20).



G036867

Figure 20

Adjusting the Height-of-Cut

Important: This cutting deck often cuts approximately 6 mm (1/4 inch) lower than a reel cutting unit with the same bench setting. It may be necessary to have these rotary cutting deck's bench set 6 mm (1/4 inch) above that of reels cutting in the same area.

Important: Access to the rear mower deck(s) is greatly improved by removing the mower deck(s) from the tractor.

1. Lower the mower decks to the ground, shut off the engine, and remove the key from the ignition switch.
2. Loosen the bolt securing each height-of-cut bracket to the height-of-cut plate (front and each side); refer to Figure 19.
3. Beginning with front adjustment, remove the bolt.

6. Position the tapped plate in-line with the spacer.
7. Install the bolt finger-tight.
8. Repeat steps 4 through 7 for each side adjustment.
9. Torque all 3 bolts to 41 N·m (30 ft-lb).

Important: Always tighten the front bolt first.

Note: Adjustments of more than 3.8 cm (1-1/2 inches) may require temporary assembly to an intermediate height to prevent binding (e.g., changing from 3.1 to 7 cm (1-1/4 to 2-3/4 inches) height of cut).

Checking the Interlock Switches

Service Interval: Before each use or daily

⚠ CAUTION

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

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

The interlock switches are designed to stop the machine when the operator gets off the seat when the traction pedal is depressed. However, the operator may get off the seat while the engine is running and the traction pedal is in the NEUTRAL position. Although the engine continues to run if the PTO switch is disengaged and the traction pedal is released, it is strongly recommended that the engine be stopped before rising from the seat.

1. Park the machine on a level surface, lower the mower decks, turn the key in the ignition switch to the OFF position, and engage the parking brake.
2. Press the traction pedal. Turn the key in the ignition switch to the ON position.

Note: If the engine cranks, there is a malfunction in the interlock system. Correct this malfunction before operating the machine.

3. Turn the key in the ignition switch to the ON position, rise from the seat, and move the PTO switch to ON.

Note: The PTO should not engage. If the PTO engages, there is a malfunction in the interlock system. Correct this malfunction before operating the machine.

4. Engage the parking brake, turn the key in the ignition switch to the ON position, and move the traction pedal out of NEUTRAL.

Note: The InfoCenter displays "traction denied" and the machine should not move. If the machine does move, there is a malfunction in the interlock system. Correct this malfunction before operating the machine.

Using the InfoCenter LCD Display

The InfoCenter LCD display shows information about your machine such as the operating status, various diagnostics and other information about the machine (Figure 21). There is a splash screen and main information screen of the InfoCenter. Press any of the InfoCenter buttons and then select the appropriate directional arrow to switch between the splash screen and the main information screen.

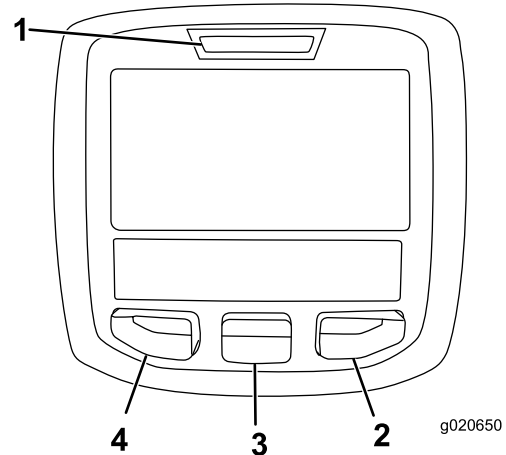





















Figure 21

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














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

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

InfoCenter Icon Description

SERVICE DUE	Indicates when scheduled service should be performed
	Engine rpm/status—indicates the engine speed in rpm
	Info icon
	Sets the maximum traction speed
	Fast
	Slow
	The fan is reversed.
	Stationary regeneration is required.
	The air intake heater is active.
	Raise the left deck.
	Raise the center deck.
	Raise the right deck.
	Sit in the seat.
	The parking brake is on.
H	The range is high.
N	Neutral
L	The range is low.
	Coolant Temperature (°C or °F)
	Temperature (hot)
	Traction or Traction Pedal
	Not allowed
	Start the engine.
	The PTO is on.

InfoCenter Icon Description (cont'd.)

	The engine is shut off.
	Engine
	Key switch
	Mower decks are lowering.
	Mower decks are raising.
	PIN passcode
	Hydraulic fluid temperature
CAN	CAN bus
	InfoCenter
Bad	Bad or failed
Ctr	Center
Rht	Right
Left	Left
	Bulb
OUT	Output of TEC controller or control wire in harness
HI	High: over allowed range
LO	Low: under allowed range
HI , LO	Out of range
	Switch
	Release the switch.
	Change to indicated state.
Symbols are often combined to form sentences. Some examples are shown below	
	Put the machine into neutral.

InfoCenter Icon Description (cont'd.)

	Engine start is denied.
	Engine shutdown
	Engine coolant is too hot.
	Hydraulic fluid is too hot.
	DPF ash accumulation notification. Refer to Servicing the Diesel Particulate Filter (DPF) in the maintenance section for details.
	Sit down or set the parking brake.

Using the Menus

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

Main Menu

Menu Item	Description
Faults	The Faults menu contains a list of the recent machine faults. Refer to the <i>Service Manual</i> or your Toro Distributor for more information on the Faults menu and the information contained there.
Service	The Service menu contains information on the machine such as hours of use and other similar numbers.
Diagnostics	The Diagnostics menu lists various states that the machine currently has. You can use this to troubleshoot certain issues as it quickly tells you which machine controls are on and which are off.
Settings	The Settings menu allows you to customize and modify configuration variables on the InfoCenter display.
About	The About menu lists the model number, serial number, and software version of your machine.

Service

Menu Item	Description
Hours	Lists the total number of hours that the machine, engine and fan have been on, as well as the number of hours the machine has been transported and overheated.
Counts	Lists the number of starts, deck PTO cycles and fan reversals the machine has experienced.

Diagnostics

Menu Item	Description
Left Deck Center Deck Right Deck Traction Pedal Traction HI/LO Range PTO Engine Run	Refer to the <i>Service Manual</i> or your Toro Distributor for more information on the Engine Run menu and the information contained there.

Settings

Menu Item	Description
Units	Controls the units used on the InfoCenter. The menu choices are English or Metric.
Language	Controls the language used on the InfoCenter*.
LCD Backlight	Controls the brightness of the LCD display.
LCD Contrast	Controls the contrast of the LCD display.
Protected Menu	Allows the maintenance director to access protected menus by inputting a passcode.
Protect Settings	Allows the ability to change the settings in the protected settings.
Auto Idle	Controls the amount of time allowed before idling the engine when the machine is not in use.
Mow Speed	Controls the maximum speed while in mow (low range).
Trans. Speed	Controls the maximum speed while in transport (high range).
Counterbalance	Controls the amount of counterbalance applied by the decks.

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

About

Menu Item	Description
Model	Lists the model number of the machine.
SN	Lists the serial number of the machine.
S/W Rev	Lists the software revision of the master controller.

Protected Menus

There are 5 operating configuration settings that are adjustable within the Settings Menu of the InfoCenter: auto idle, maximum mowing ground speed, maximum transport ground speed, Smart Power, and deck counter balance. These settings are in the Protected Menu.

Accessing the Protected Menu Settings

1. From the Main Menu, scroll down to the Settings Menu and press the right button.
2. In the Settings Menu, scroll down to the Protected Menu and press the right button.
3. To enter the passcode, use the center button to set the first digit then press the right button to move on to the next digit.
4. Use the center button to set the second digit then press the right button to move on to the next digit.
5. Use the center button to set the third digit then press the right button to move on to the next digit.
6. Use the center button to set the fourth digit then press the right button.
7. Press the middle button to enter the code.

Viewing and Changing the Protected Menu Settings

1. In the Protected Menu, scroll down to Protect Settings.
2. To view and change the settings without entering a passcode, use the right button to change the Protect Settings to OFF.
3. To view and change the settings with a passcode, use the left button to change the Protect Settings to ON, set the passcode, and turn the key in the ignition switch to the OFF position and then to the ON position.

Setting the Auto Idle

1. In the Settings Menu, scroll down to Auto Idle.
2. Press the right button to change the auto idle time between OFF, 8S, 10S, 15S, 20S, and 30S.

Setting the Maximum Allowed Mow Speed

1. In the Settings Menu, scroll down to Mow Speed and press the right button.
2. Set the maximum allowed mow speed.

Note: Press the right button to increase the max full mow speed (50%, 75%, or 100%). Press the center button to decrease the max full mow speed (50%, 75%, or 100%).

3. Press the left button to exit.

Setting the Maximum Allowed Transport Speed

1. In the Settings Menu, scroll down to Transport Speed and press the right button.
2. Set the maximum allowed transport speed.

Note: Press the right button to increase the max transport speed (50%, 75%, or 100%). Press the center button to decrease the max transport speed (50%, 75%, or 100%).

3. Press the left button to exit.

Turning the Smart Power ON/OFF

1. In the settings menu, scroll down to Smart Power.
2. Press the right button to switch between ON and OFF.
3. Press the left button to exit.

Setting the Counterbalance

1. In the Settings Menu, scroll down to Counterbalance.
2. Press the right button to select counterbalance and change between the low, medium, and high settings.
3. When finished with the Protected Menu, press the left button to exit to the Main Menu, then press the left button to exit to the Run Menu.

Stationary Regeneration

If the Stationary Regeneration icon appears on the InfoCenter, refer to the *Service Manual* or contact your Toro Distributor for the maintenance procedure.

DPF Ash Level

The DPF ash level may be checked by entering the PIN as described in [Accessing the Protected Menu Settings \(page 28\)](#) and navigating to the service section.

Selecting a Blade

Standard Combination Sail

This blade was designed to provide excellent lift and dispersion in almost any condition. If more or less lift and discharge velocity is required, consider a different blade.

Attributes: Excellent lift and dispersion in most conditions.

Angled Sail

The blade generally performs best in lower heights of cut—1.9 to 6.4 cm (3/4 to 2-1/2 inches).

Attributes:

- Discharge remains more even at lower heights of cut.
- Discharge has less tendency to throw left and thus a cleaner look around bunkers and fairways.
- Lower power requirement at lower heights and dense turf.

High-Lift, Parallel Sail

⚠ DANGER

Using the high-lift blade with the mulching baffle could cause the blade to break, resulting in personal injury or death.

Do not use the high-lift blade with the mulching baffle.

The blade generally performs better at the higher heights of cut settings such as 7 to 10 cm (2 to 4 inches).

Attributes:

- More lift and higher discharge velocity.
- Sparse or limp turf is picked up significantly at higher heights of cut.
- Wet or sticky clippings are discharged more efficiently reducing congestion in the deck.
- Requires more horsepower to run.
- Tends to discharge further left and can tend to windrow at lower heights of cut.

Atomic Blade

This blade was designed to provide excellent leaf mulching.

Attributes: Excellent leaf mulching

Choosing Accessories

Optional Equipment Configurations

	Angle Sail Blade	High-Lift, Parallel Sail Blade (<i>Do not use with the mulching baffle</i>)	Mulching Baffle	Roller Scraper
Grass Cutting: 1.9 to 4.4 cm (3/4 to 1-3/4 inches) height-of-cut	Recommended in most applications	May work well in light or sparse turf	Has been shown to improve dispersion and after cut performance on northern grasses that are cut at least 3 times per week and less than 1/3 of the grass blade is removed. Do not use with the high-lift, parallel-sail blade	Use the scraper any time that rollers buildup with grass or large flat grass clumps of grass are seen.
Grass Cutting: 5 to 6.4 cm (2 to 2-1/2 inches) height-of-cut	Recommended for thick or lush turf	Recommended for light or sparse turf		The scrapers may actually increase clumping in certain applications.
Grass Cutting: 7 to 10 cm (2-3/4 to 4 inches) height-of-cut	May work well in lush turf	Recommended in most applications		
Leaf Mulching	Recommended for use with the mulching baffle	Not Allowed	Use with combination sail or angle sail blade only	
Pros	Even discharge at lower height-of-cut	More lift and higher discharge velocity Sparse or limp turf is picked up at high height-of-cut Wet or sticky clippings are discharged efficiently	May improve dispersion and appearance in certain grass cutting applications	Reduces roller buildup in certain applications
	Cleaner look around bunkers and fairways		Very good for leaf mulching	
	Lower power requirements			
Cons	Does not lift the grass well in high height-of-cut applications Wet or sticky grass has a tendency to build up in the chamber, leading to poor quality of cut and higher power requirements	Requires more power to run in some applications	Grass will build up in the chamber if you attempt to remove too much grass with the baffle in place	
		Tends to windrow at lower height-of-cut in lush grass		
		Do not use with the mulching baffle		

During Operation

During Operation Safety

General Safety

- The owner/user can prevent and is responsible for accidents that may cause injuries to people, or damage to property.
- Wear appropriate clothing, including eye protection; substantial, slip-resistant footwear; and hearing protection. Tie back long hair. Do not wear jewelry.
- Ensure that all drives are in the NEUTRAL position, the parking brake is engaged, and you are in the operating position before you start the engine.
- Keep all body parts, including hands and feet, away from all moving parts.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Keep the direction of the mower discharge away from people and pets.
- Do not mow in reverse unless it is absolutely necessary. If you must mow in reverse, look behind and down for small children before and while moving the machine in reverse. Stay alert and stop the machine if a child enters the area.
- Use extreme care when approaching blind corners, shrubs, trees, or other objects that may block your view.
- Do not mow near drop-offs, ditches, or embankments. The machine could suddenly rollover if a wheel goes over the edge or if the edge caves in.
- Never carry passengers on the machine.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.
- Do not mow on wet grass. Reduced traction could cause the machine to slide.

- 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.
- Stop the blades whenever you are not mowing, especially while crossing loose terrain such as gravel.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.
- Turn on the flashing warning lights on the machine whenever you travel on a public road, except where such use is prohibited by law.
- Disengage the drive to the attachment and shut off the engine before adding fuel and adjusting the height-of-cut.
- Reduce the throttle setting before shutting off the engine and, if the engine has a fuel-shutoff valve, shut off the fuel when you store the machine.
- Never run an engine in an area where exhaust gases are enclosed.
- Never leave a running engine unattended.
- Before leaving the operating position, do the following:
 - Stop the machine on level ground.
 - Disengage the power take-off and lower the attachments.
 - Set the parking brake.
 - Shut off the engine and remove the key.
 - Wait for all moving parts to stop.
- Do not change the governor settings on or overspeed the engine. Operating the engine at excessive speed may increase the potential for personal injury.
- Do not use the machine as a towing vehicle.
- Use accessories and attachments 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 the event of an emergency.
- Always wear your seat belt.
- Check carefully for overhead clearances, such as branches, doorways, and electrical wires, before driving the machine under them. 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 revise it.
- Any alterations to a ROPS must be approved by The Toro® Company.

Slope Safety

- Slow down the machine and use extra care on hillsides. Travel in the recommended direction on hillsides. Turf conditions can affect the stability of the machine.
- Avoid starting, stopping, or turning the machine on a slope. If the tires lose traction, disengage the blade(s) and proceed slowly straight down the slope.
- Do not turn the machine sharply. Use care when reversing the machine.
- When operating the machine on a slope, always keep all mower decks lowered.
- Avoid turning the machine on slopes. If you must turn, turn slowly and gradually downhill, if possible.
- Use extra care while operating the machine with attachments; they can affect the stability of the machine. Follow the recommendations for using the machine on a slope in this *Operator's Manual*.

Starting and Shutting Off the Engine

Starting the Engine

Important: Prime the fuel system if any of the following situations have occurred:

Refer to [Priming the Fuel System \(page 46\)](#)

- The engine has stopped running due to lack of fuel.
- Maintenance has been performed upon the fuel system components.
 1. Remove your foot from the traction pedal and ensure that it is in neutral. Ensure that the parking brake is set.
 2. Turn the ignition key to the RUN position.

Note: The glow indicator will light.
 3. When the glow indicator dims, turn the ignition key to the START position.

Important: Do not run the starter motor more than 15 seconds at a time or premature starter failure may result. If the engine fails to start after 15 seconds, turn the key to the OFF position, check the controls and procedures, wait 15 additional seconds, and repeat the starting procedure.

4. Release the key immediately when the engine starts and allow the key to return to the RUN position.
5. Move the throttle control to the desired position.

Note: When the temperature is less than -7°C (20°F), the starter motor can be run for 30 seconds on then 60 seconds off for 2 attempts.

⚠ CAUTION

Checking the machine for oil leaks, loose parts, and other malfunctions while the engine is running may bring you in close contact with hot or moving parts of the machine, causing injury.

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

Shutting Off the Engine

Important: Allow the engine to idle for 5 minutes before shutting it off after a full load operation. This allows the turbo charger to cool down before shutting the engine off.

Note: Lower the cutting units to the ground whenever machine is parked. This relieves the hydraulic load from the system, prevents wear on system parts and also prevents accidental lowering of the cutting units.

1. Move the PTO switch to the OFF position.
2. Set the parking brake.
3. Return the engine low idle.
4. Turn the key in the ignition switch to the OFF position and remove the key.

Understanding the Operating Characteristics of the Machine

Practice driving the machine because it has a hydrostatic transmission and its characteristics are different than many turf maintenance machines. Some points to consider when operating the machine and mower decks are the transmission, engine speed, load on the cutting blades and the importance of the brakes.

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

Another characteristic to consider is the operation of the pedals that are connected to the brakes. The brakes can be used to assist in turning the machine. However, use them carefully, especially on soft or wet grass because the turf may be torn accidentally. Another benefit of the brakes is to maintain traction. For example, in some slope conditions, the uphill wheel slips and loses traction. If this situation occurs, depress the uphill turn pedal gradually and intermittently until the uphill wheel stops slipping, thus, increasing traction on the downhill wheel.

Use extra care when operating the machine on slopes. Make sure that the seat latch is properly secured and the seat belt

is buckled. Drive slowly and avoid sharp turns on slopes to prevent rollovers. For steering control, the mower decks it must be lowered when going downhill.

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

Before stopping the engine, disengage all controls and set the engine speed to Slow. Setting the engine speed to Slow reduces high engine rpm, noise, and vibration. Turn the key in the ignition switch to the OFF position to shut off the engine.

Operating the Engine-Cooling Fan

The engine cooling fan is normally controlled by the machine. The machine has the ability to reverse the fan to blow debris off the rear screen. Under normal operating conditions the machine controls the fan speed and direction based on coolant and hydraulic-fluid temperature, and the fan automatically reverses direction to blow debris off the rear screen. A reverse cycle is automatically initiated when either the coolant or hydraulic-fluid temperature reaches a specific temperature.

You can manually reverse the fan by pressing the 2 outer buttons of the InfoCenter for 2 seconds—the fan completes a manually initiated reverse cycle. Reverse the fan when the rear screen is clogged or prior to moving the machine into the shop or a storage area.

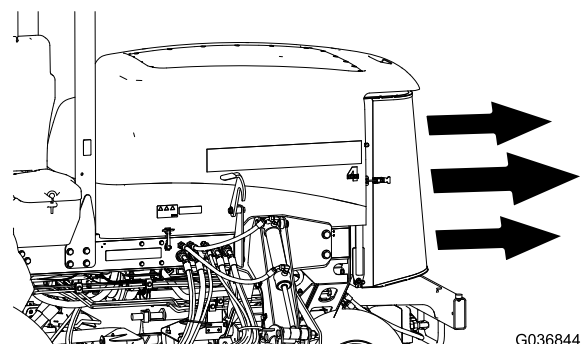
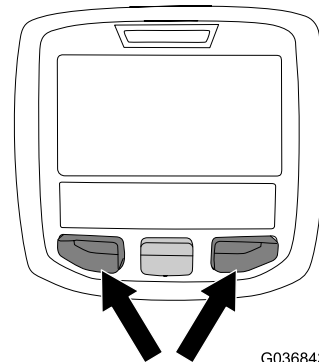


Figure 22

Operating Tips

Mowing When Grass Is Dry

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

Selecting the Proper Height-of-Cut

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

Mowing at Proper Intervals

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

Mowing with Sharp Blades

A sharp blade cuts cleanly and without tearing or shredding the grass blades like a dull blade. Tearing and shredding causes the grass to turn brown at the edges, which impairs growth and increases susceptibility to diseases.

Changing Mowing Patterns

Change mowing patterns often to minimize after-cut appearance issues induced by repetitive operation in only 1 direction.

Adjusting the Counterbalance

The counterbalance system maintains hydraulic back pressure on the deck lift cylinders. This counterbalance pressure transfers mower deck weight to the mower's drive wheels to improve traction. The counterbalance pressure has been factory set to an optimal balance of after-cut appearance and traction capability in most turf conditions. Decreasing the counterbalance setting can produce a more stable mower deck, but can decrease the traction capability. Choose a higher counterbalance setting to increase the traction capability, but may result in after-cut appearance issues. Reference the *Service Manual* for your machine for instructions to adjust counterbalance pressure.

Resolving Aftercut Appearance

Reference the Aftercut Appearance Troubleshooting Guide available at www.Toro.com.

Transporting the Machine

Lock the brake pedals together with the pedal-locking latch while transporting the machine.

Using the Transport Latches

Model No. 30874

Use the 2 rear-transport latches for the No. 6 and 7 mower decks when moving the machine over long distances, rough terrain, when transporting, or storing the machine.

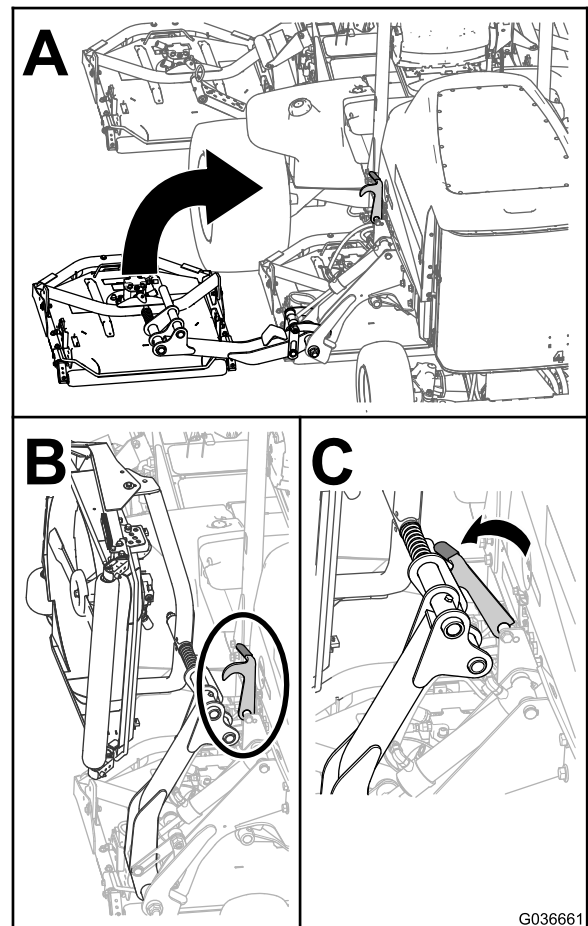


Figure 23

Cleaning and Parking the Machine after Each Use

To ensure optimum performance, clean the underside of the mower housings after each use. If residue is allowed to buildup in the mower housing, cutting performance will decline.

Note: Lower the mower decks to the ground whenever the machine is parked. This relieves the hydraulic load from the

system, prevents wear on system parts, and also prevents accidental lowering of the mower decks.

After Operation

After Operation Safety

General Safety

- Clean grass and debris from the mower decks, drives, muffler, and engine to help prevent fires. Clean up oil or fuel spills.
- Ensure that the PTO is shut off before you are transporting or not using the machine.
- Allow the engine to cool before storing the machine in any enclosure.
- 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.

Towing and Hauling the Machine

Towing Safety

- Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
- Follow the manufacturer's recommendation for weight limits for towed equipment and towing on slopes. On slopes, the weight of the towed equipment may cause loss of traction and loss of control.
- Never allow children or others in or on towed equipment.
- Travel slowly and allow extra distance to stop when towing.

Identifying the Tie-Down Points

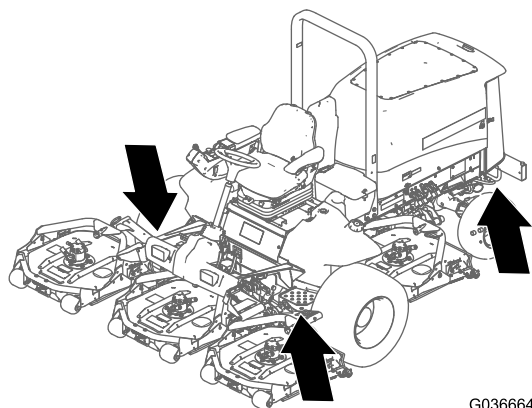


Figure 24

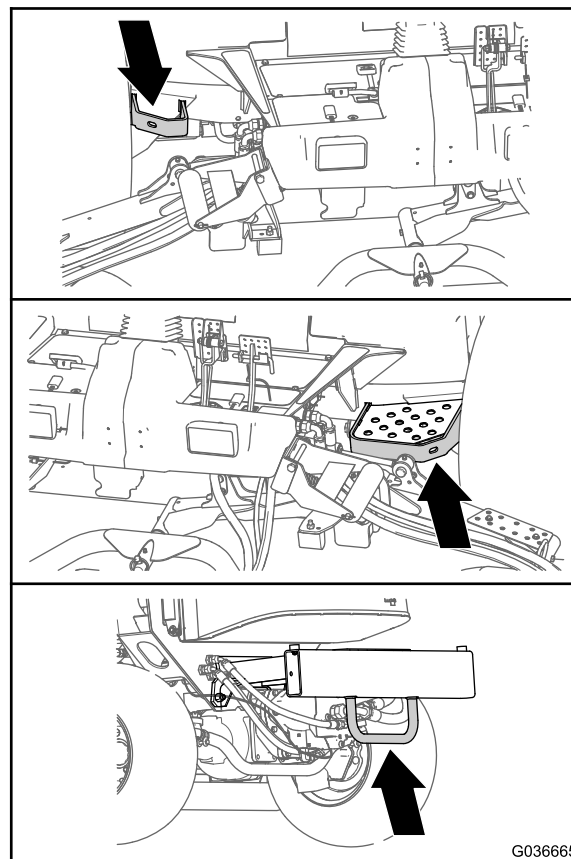


Figure 25

Pushing or Towing the Machine

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

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

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

1. Open the hood and locate the bypass valves (Figure 26) on the top of pump, behind the battery/storage boxes.
2. Rotate each valve 3 turns counter-clockwise to open and allow oil to bypass internally. **Do not open more than 3 turns.** Because fluid is bypassed, the machine can be slowly moved without damaging the transmission.

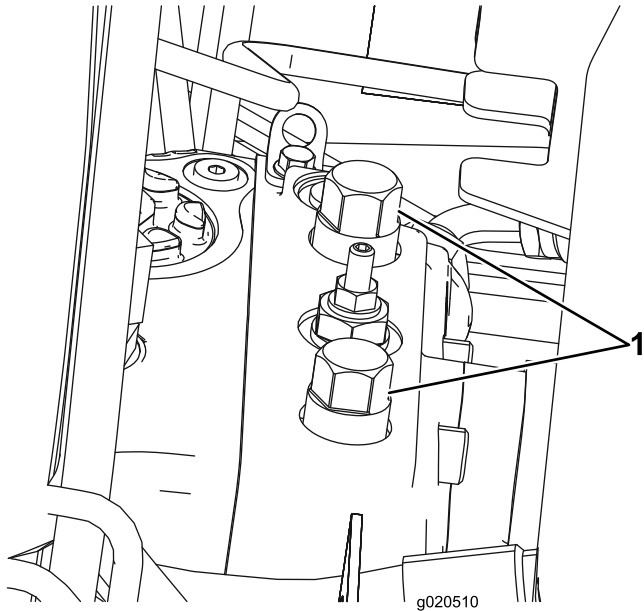
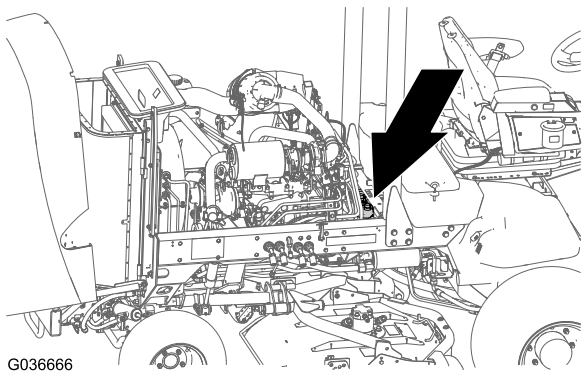


Figure 26

1. Bypass valve (2)

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

Hauling the Machine

- Use care when loading or unloading the machine into a trailer or a truck.
- Use full-width ramps for loading the machine into a trailer or a truck.
- Tie the machine down securely using straps, chains, cable, or ropes. Both front and rear straps should be directed down and outward from the machine.

Maintenance

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

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 8 hours	<ul style="list-style-type: none"> • Torque the wheel-lug nuts.
After the first 200 hours	<ul style="list-style-type: none"> • Change the gear lubricant of the planetary-gear-drives. • Change the rear-axle lubricant. • Change the hydraulic filters.
Before each use or daily	<ul style="list-style-type: none"> • Check the tire pressure. • Check the interlock switches. • Check the engine-oil level. • Drain water or other contaminants from the fuel filter/water separator. • Drain water or other contaminants from the water separator. • Check the rear axle and rear-axle gearbox for leaks. • Check level of coolant at the beginning of each day. • Remove debris from the engine area, oil cooler, and radiator. • Check the hydraulic-fluid level. • Inspect the hydraulic lines and hoses for leaks, kinked lines, loose mounting supports, wear, loose fittings, weather deterioration, and chemical deterioration.
Every 50 hours	<ul style="list-style-type: none"> • Grease the bearings and bushings. (And after every washing). • Check the battery condition.
Every 100 hours	<ul style="list-style-type: none"> • Check the condition and tension of the alternator belt.
Every 200 hours	<ul style="list-style-type: none"> • Torque the wheel-lug nuts.
Every 250 hours	<ul style="list-style-type: none"> • Change the engine oil and filter.
Every 400 hours	<ul style="list-style-type: none"> • Service the air cleaner (earlier if the air cleaner indicator shows red, and more frequently in extremely dirty or dusty conditions). • Replace the fuel-filter canister. • Inspect the fuel lines and connections. • Check for end-play in the planetary drives. • Check the lubricant level of the planetary-gear-drives (also check if you observe external leakage). • Check the rear-axle lubricant level. • Check the rear-axle gearbox lubricant. Check the lubricant level before the engine is first started and every 400 hours thereafter.
Every 800 hours	<ul style="list-style-type: none"> • Drain and clean the fuel tank. • Change the gear lubricant of the planetary-gear-drives. • Change the rear-axle lubricant. • Check the rear wheel toe-in. • Change the hydraulic fluid. • Change the hydraulic filters.
Before storage	<ul style="list-style-type: none"> • Drain and clean the fuel tank. • Check the tire pressure. • Check all fasteners. • Grease or oil all grease fittings and pivot points. • Paint chipped surfaces.
Yearly	<ul style="list-style-type: none"> • Inspect the fuel lines and connections.

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

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

Duplicate this page for routine use.

Daily Maintenance Checklist

Maintenance Check Item	For the week of:						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Check the safety-interlock operation.							
Check the brake operation.							
Check the engine-oil level.							
Check the cooling-system-fluid level.							
Drain the water/fuel separator.							
Check the air filter, dust cup, and burp valve.							
Check for unusual engine noises. ²							
Check the radiator and screen for debris							
Check for unusual operating noises.							
Check the hydraulic-system-oil level.							
Check the hydraulic hoses for damage.							
Check for fluid leaks.							
Check the fuel level.							
Check the tire pressure.							
Check the instrument operation.							
Check the height-of-cut adjustment.							
Lubricate all of the grease fittings. ²							
Touch up any damaged paint.							
¹ Check the glow plug and injector nozzles if the engine is hard to start, there is excess smoke in the exhaust, or the engine is running rough. ² Immediately after every washing, regardless of the interval listed.							

Service Interval Chart

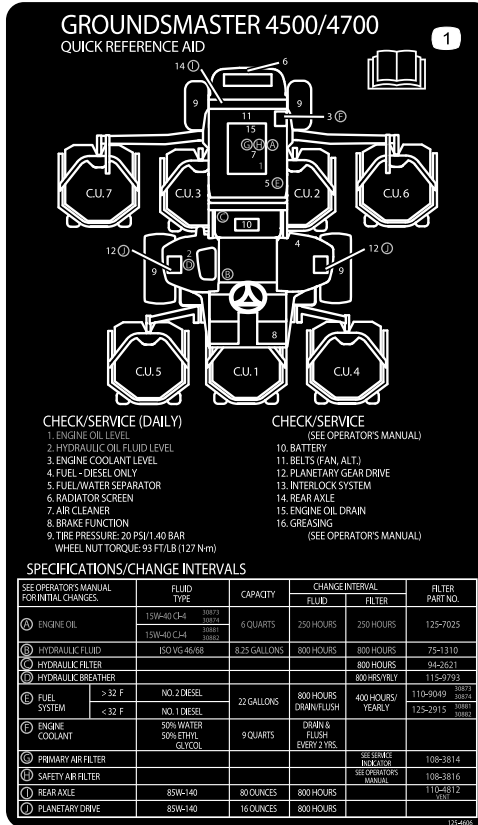


Figure 27

⚠ CAUTION

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

Remove the key from the ignition switch before you perform any maintenance.

Premaintenance Procedures

Pre-Maintenance Safety

- Keep all parts of the machine in good working condition and all hardware tightened, especially blade-attachment hardware. Replace all worn or damaged decals.
- Never allow untrained personnel to service the machine.
- Before adjusting, cleaning, or repairing the machine, do the following:
 1. Move the machine to level ground.
 2. Disengage the drives.
 3. Lower the mower decks.
 4. Move the traction pedal to the NEUTRAL position.
 5. Engage the parking brake.
 6. Move the throttle switch to the LOW-IDLE position.
 7. Shut off the engine and remove the key.
 8. Wait for all moving parts to stop.
- Whenever you park or store the machine, or leave it unattended, lower the mower decks unless you use a positive mechanical lock.
- If possible, do not perform maintenance on the machine while the engine is running. If you must run the engine to perform maintenance on the machine, keep your hands, feet, other body parts, and clothing away from all moving parts, the mower-discharge area, and the underside of the mowers.
- Do not touch parts of the machine or an attachment that may be hot from operation. Allow the parts to cool before attempting to maintain, adjust, or service them.
- Use jack stands to support the machine and/or its components when required.
- Carefully release pressure from components with stored energy.
- If your machine requires major repairs or if you desire assistance, contact your Toro Distributor.
- Use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

Preparing the Machine for Maintenance

1. Ensure that the PTO is disengaged.
2. Park the machine on a level surface.
3. Set the parking brake.
4. Lower the mower deck(s) if necessary.
5. Shut off the engine and wait for all moving parts to stop.
6. Turn the ignition key to the STOP position and remove it.
7. Allow machine components to cool before performing maintenance.

Lifting the Machine

Lift equipment specification:

- **Model 30873**—1,894 kg (4,175 lb)
- **Model 30874**—2,234 kg (4,925 lb)

Use the following as points to lift the machine:

Front of the machine—at the frame of the machine, forward of the wheel-drive motors ([Figure 28](#))

Important: Do not support the machine at the wheel-drive motors. Keep the lifting equipment clear of hydraulic tubing and hoses.

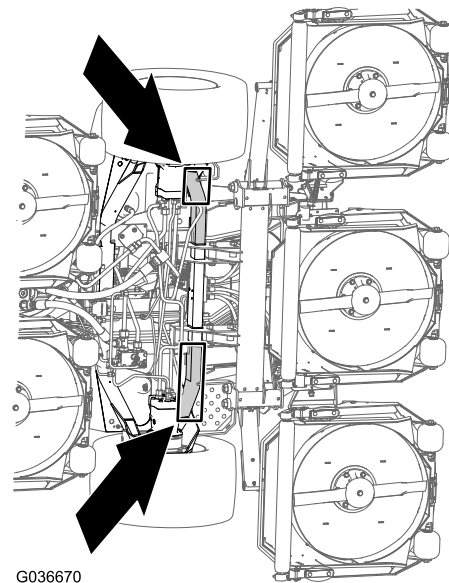


Figure 28

Rear of the machine—at the center of the axle ([Figure 29](#))

Locate the jackstands of the specified capacity at both sides of the gear case and under the axle.

Important: Do not support the machine at the tie rod.

Accessing the Hydraulic Lift Compartment

Tilt the seat to access the hydraulic lift compartment as shown in Figure 31.

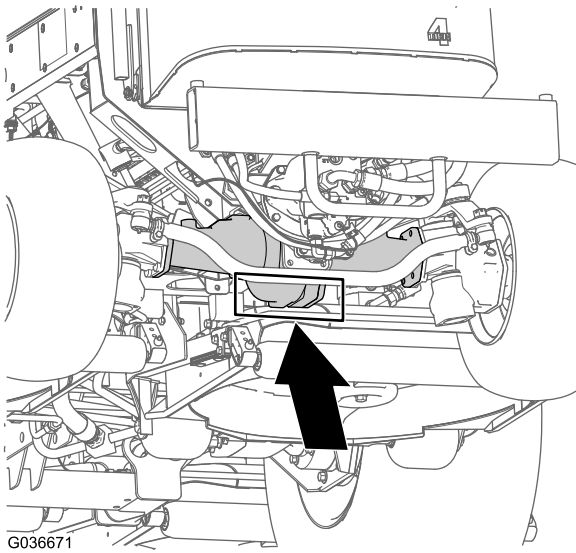


Figure 29

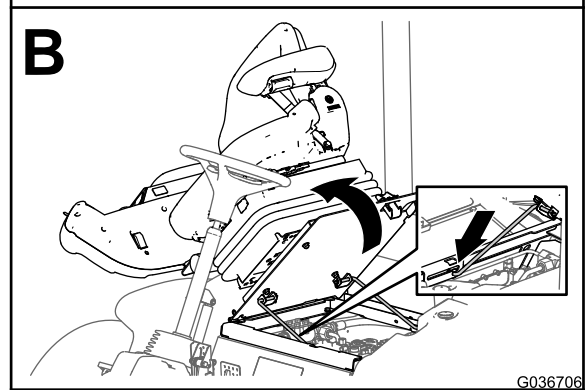
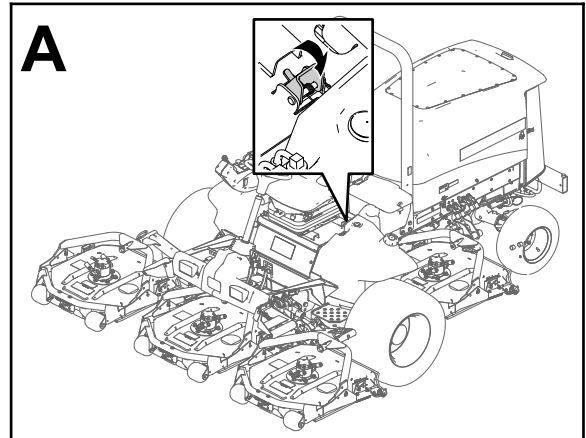


Figure 31

Opening the Hood

Tilt the hood to access the chassis as shown in Figure 30.

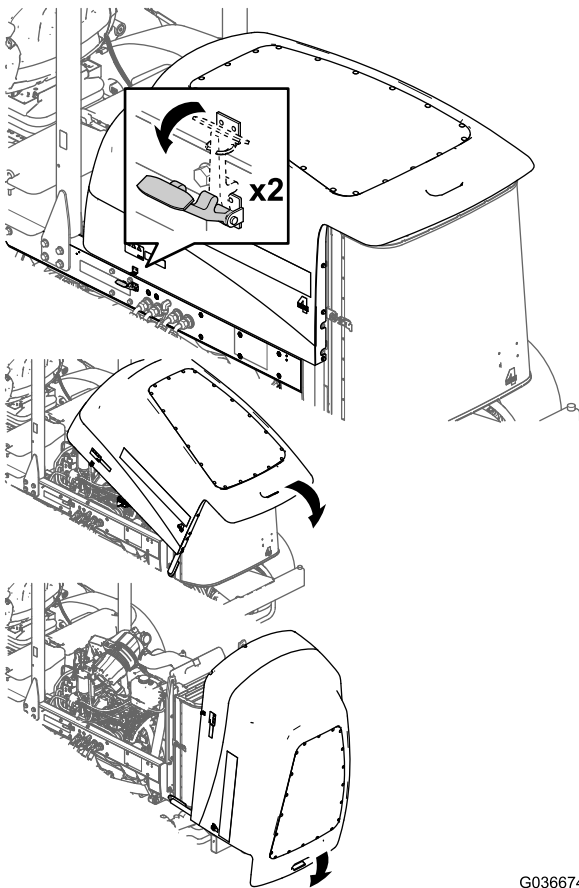


Figure 30

Lubrication

Greasing the Bearings and Bushings

Service Interval: Every 50 hours (And after every washing).

Grease specification: No. 2 lithium grease

The grease fitting locations and quantities are as follows:

- Brake-shaft pivot bearings (5) as shown in [Figure 32](#)

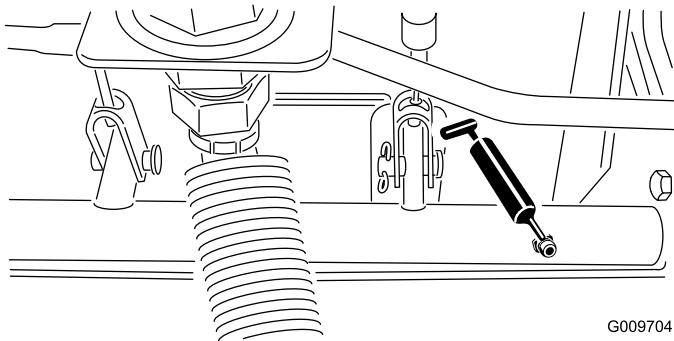


Figure 32

- Rear-axle-pivot bushings (2) as shown in [Figure 33](#)

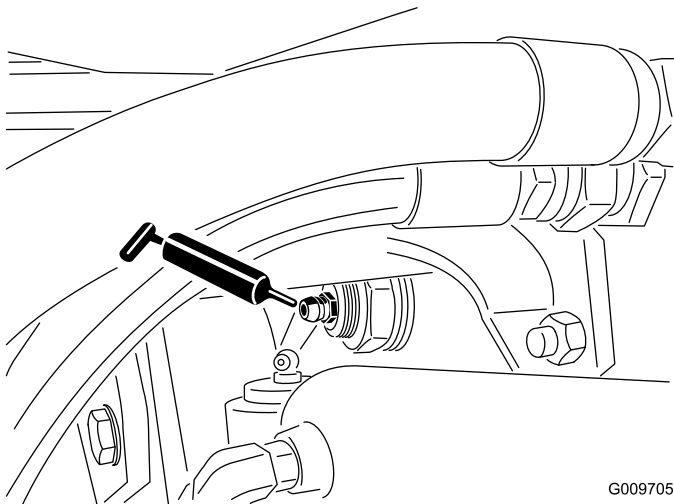


Figure 33

- Steering-cylinder ball joints (2) as shown in [Figure 34](#)

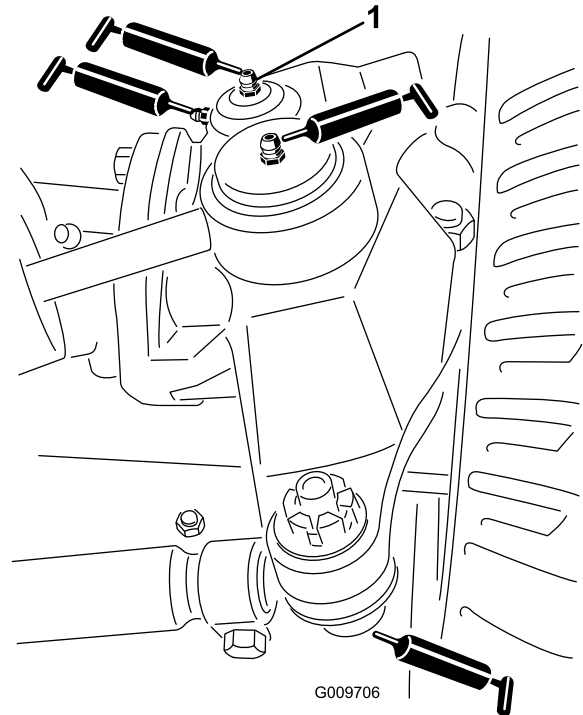


Figure 34

1. Top fitting on kingpin

- Tie-rod ball joints (2) as shown in [Figure 34](#)
- Kingpin bushings (2) as shown in [Figure 34](#)

Important: The top fitting on the kingpin should only be lubricated annually (2 pumps).

- Lift-arm bushings (1 per deck) as shown in [Figure 35](#)

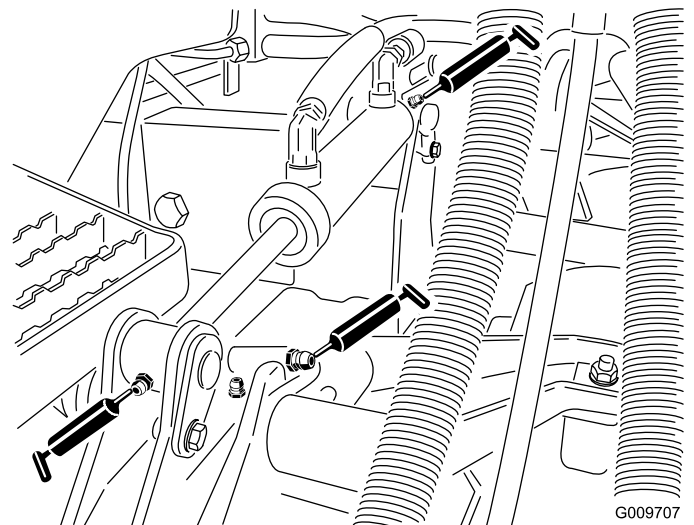


Figure 35

- Lift-cylinder bushings (2 per deck) as shown in [Figure 35](#)

Engine Maintenance

Engine Safety

Shut off the engine before checking the oil or adding oil to the crankcase.

Servicing the Air Cleaner

Service Interval: Every 400 hours

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

Service the air-cleaner filter only when the service indicator (Figure 38) requires it. Changing the air filter before it is necessary only increases the chance of dirt entering the engine when you remove the filter.

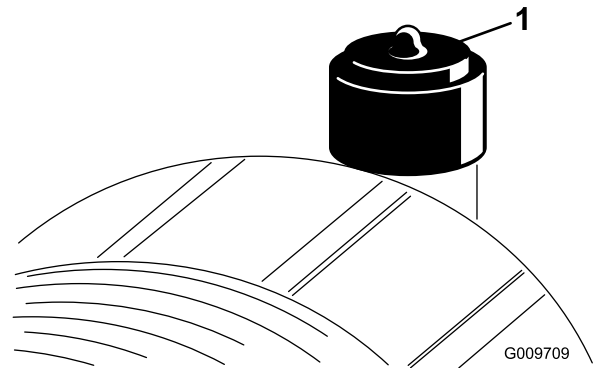


Figure 38

1. Air-cleaner indicator

Important: Ensure that the cover is seated correctly and seals with the air-cleaner body.

1. Replace the air cleaner (Figure 39).

- Cutting-unit spindle-shaft bearings (2 per mower deck) as shown in Figure 36

Note: You can use either fitting, whichever is more accessible. Pump grease into the fitting until a small amount appears at bottom of the spindle housing (under the deck).

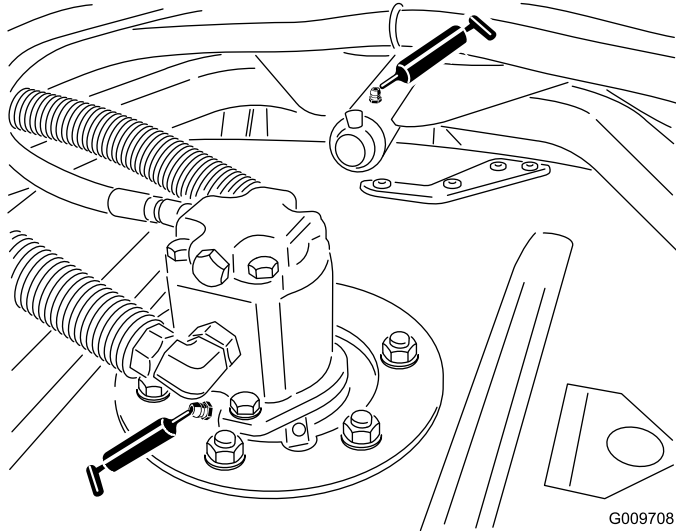


Figure 36

- Cutting-unit carrier-arm bushings (1 per mower deck) as shown in Figure 36
- Rear roller bearings (2 per mower deck) as shown in Figure 37

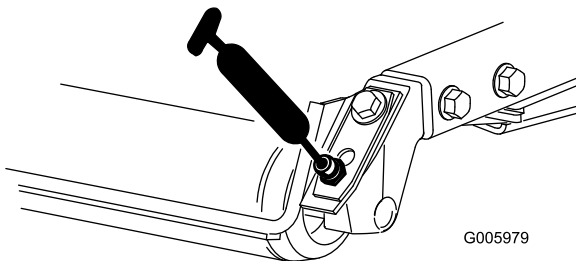


Figure 37

Important: Make sure that the grease groove in each roller mount aligns with the grease hole in each end of the roller shaft. To help align the groove and the hole, there is also an alignment mark on 1 end of the roller shaft.

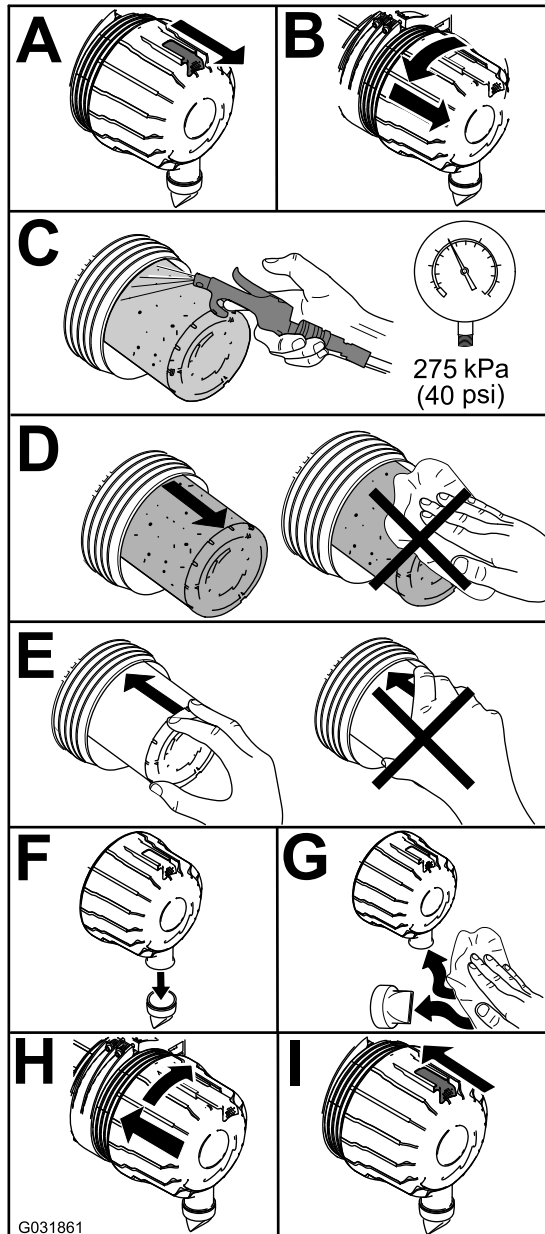
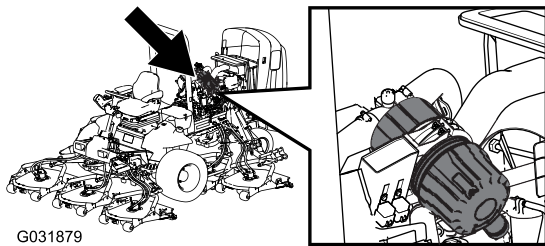


Figure 39

Note: Cleaning the used element is not recommended due to the possibility of damage to the filter media.

Important: Never attempt to clean the safety filter (Figure 40). Replace the safety filter after every 3 primary filter services.

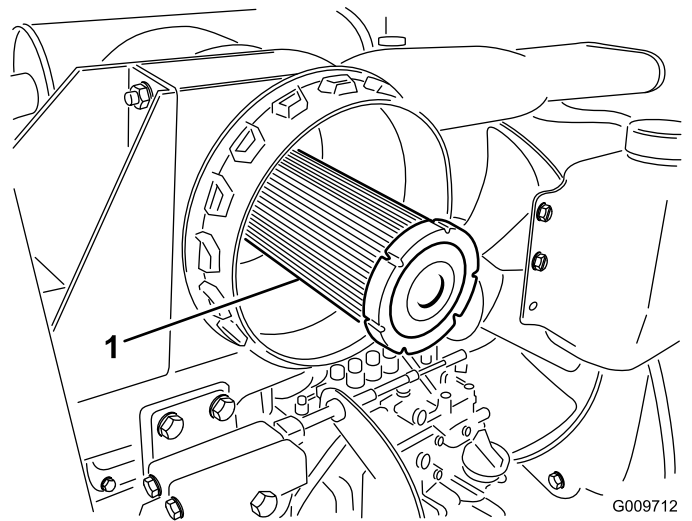


Figure 40

1. Air-cleaner safety filter
2. Reset the indicator (Figure 38) if it shows red.

Servicing the Engine Oil

Checking the Engine-Oil Level

Service Interval: Before each use or daily

Crankcase oil capacity: approximately 9.5 L (10 US qt) with the filter.

Oil specification: API classification CH-4, CI-4, or higher.

Oil viscosity specification:

- **Preferred oil:** SAE 15W-40 (above -18°C [0°F])
- **Alternate oil:** SAE 10W-30 or 5W-30 (all temperatures)

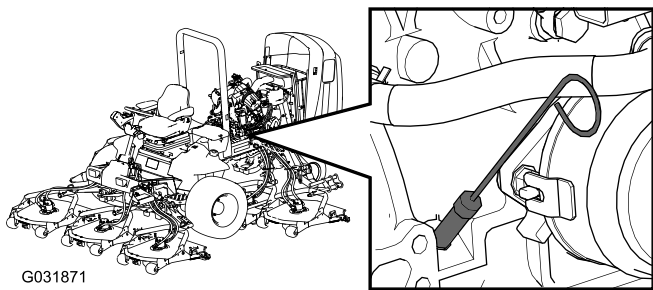
Note: The engine is shipped with oil in the crankcase; however, the oil level must be checked before and after the engine is first started.

Use only high-quality engine oil.

Note: Toro Premium Engine oil is available from your distributor in either 15W-40 or 10W-30 viscosity. See the *Parts Catalog* for part numbers.

Note: Check the engine oil level is before the engine is run for the day and the engine is cool. If the engine has already been run: shut off the engine, wait least 10 minutes to allow the oil to drain back down to the sump, and check the engine oil level. 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.
2. Check the engine-oil level (Figure 41).



Changing the Engine Oil and Filter

Service Interval: Every 250 hours

1. Start the engine and let it run 5 minutes to allow the oil to warm up.
2. With the machine parked on a level surface, shut off the engine, remove the key from the key switch, and wait for all moving parts to stop before leaving the operating position.
3. Replace the engine oil and filter ([Figure 42](#)).

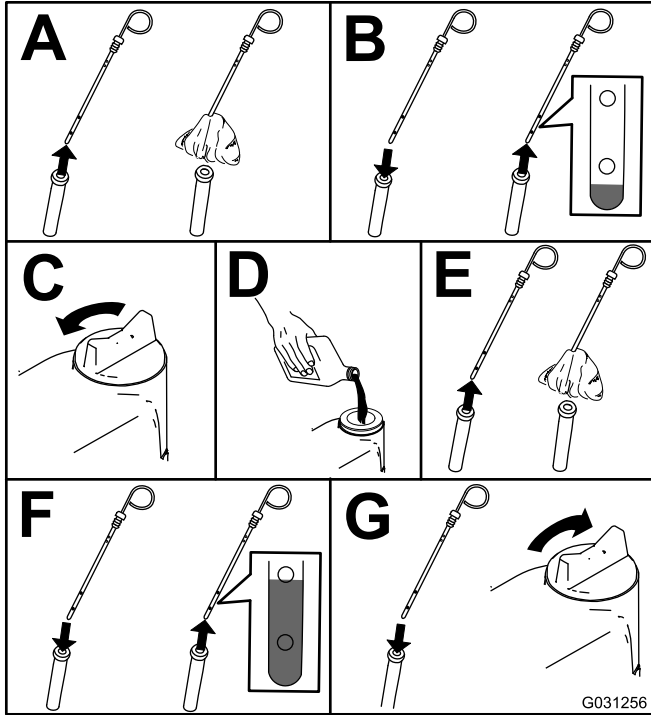


Figure 41

Note: When using different oil, drain all old oil from the crankcase before adding new oil.

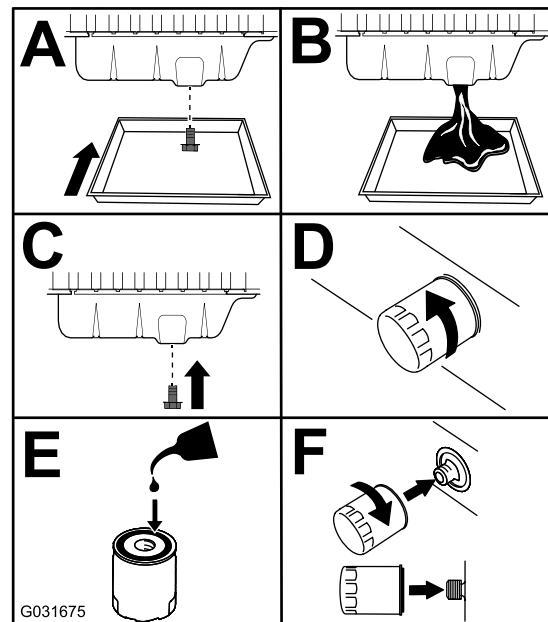
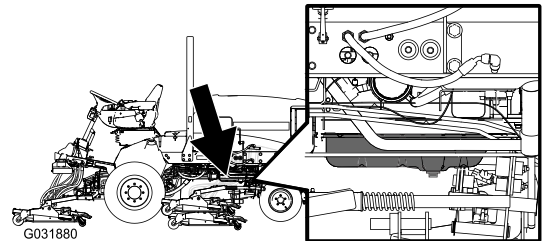


Figure 42

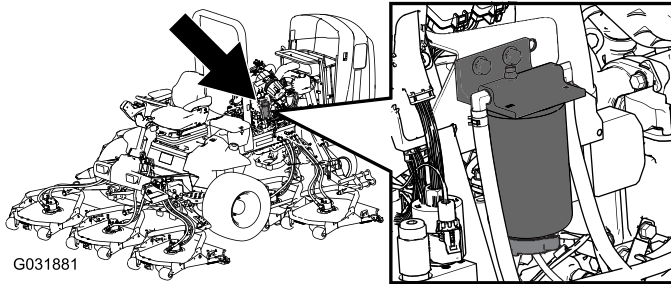
4. Add oil to the crankcase; refer to [Checking the Engine-Oil Level](#) (page 43).

Fuel System Maintenance

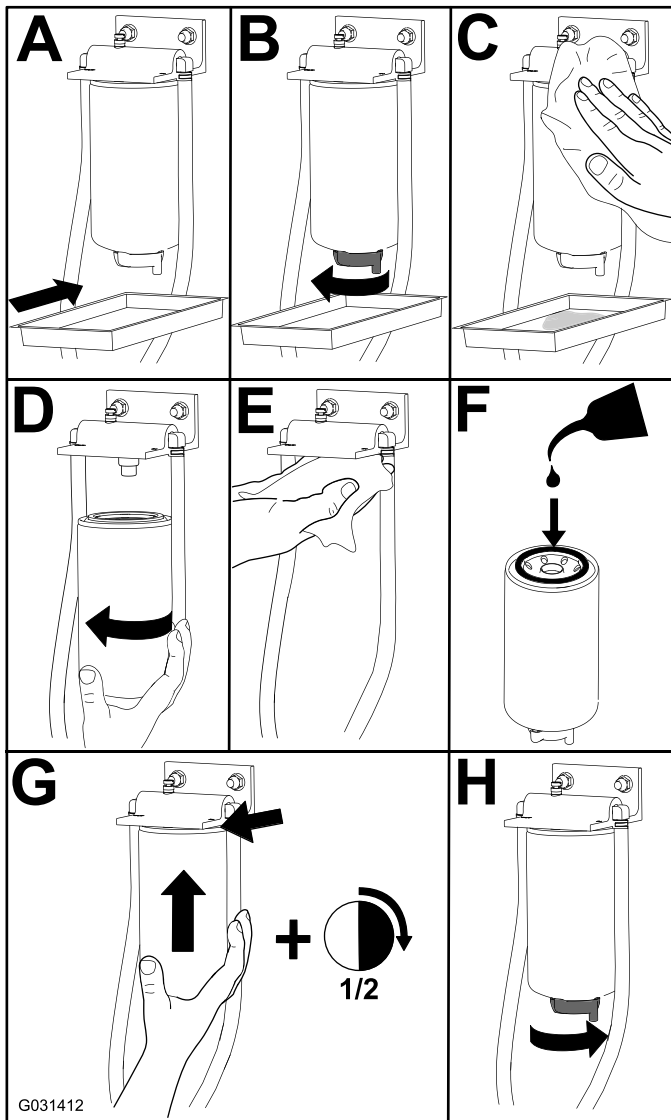
Servicing the Water Separator

Service Interval: Before each use or daily—Drain water or other contaminants from the fuel filter/water separator.

Every 400 hours—Replace the fuel-filter canister.



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G031412

Figure 43

Inspecting the Fuel Lines and Connections

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

Yearly—Inspect the fuel lines and connections.

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

Draining the Fuel Tank

Every 800 hours—Drain and clean the fuel tank.

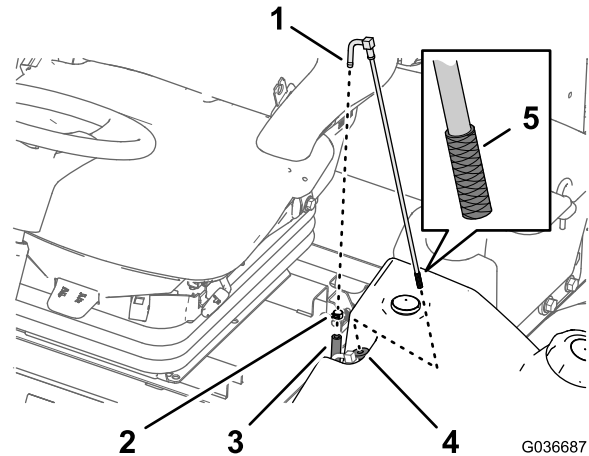
Before storage—Drain and clean the fuel tank.

Drain and clean the tank also if the fuel system becomes contaminated or if you are storing the machine for an extended period of time. Use clean fuel to flush out the tank.

Cleaning the Fuel-Pickup Tube Screen

The fuel-pickup tube, located inside the fuel tank, is equipped with a screen to help prevent debris from entering the fuel system. Remove the fuel-pickup tube and clean the screen as required.

1. Remove the hose clamp that secures the fuel supply hose to the fitting of the fuel-pickup tube (Figure 44).



G036687

Figure 44

1. Fitting (fuel-pickup tube)
2. Hose clamp
3. Fuel supply hose
4. Rubber bushing
5. Screen

2. Separate the hose from the fitting (Figure 44).
3. Lift the fuel-pickup tube from the fuel tank (Figure 44).

Note: Lift the tube straight from the busing in the tank.

4. Clean any debris from the screen at the end of the fuel-pickup tube (Figure 44).

5. Insert the fuel-pickup tube through the rubber bushing and into the tank (Figure 44).

Note: Ensure that the fuel-pickup tube is fully seated into the rubber bushing.

6. Install the supply hose onto the fitting of the fuel-pickup tube, and secure the hose with the hose clamp that you removed in step 1.

Priming the Fuel System

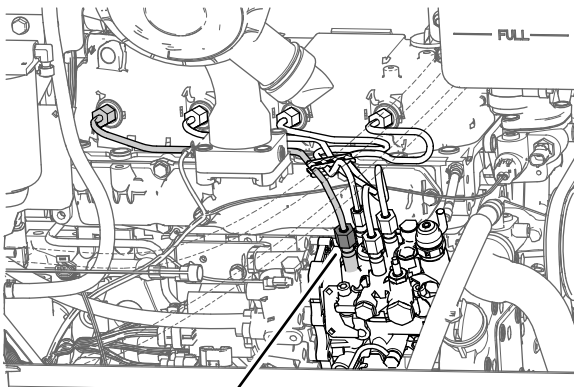
Prime the fuel system before starting the engine for the first time, after running out of fuel, or after fuel system maintenance (e.g. draining the filter/water separator, replacing a fuel hose). To prime the fuel system, make sure that the fuel tank has fuel in it. Then, turn the ignition key to the ON position for 10 to 15 seconds which allows the fuel pump to prime the fuel system.

Important: Do not use the engine starter motor to crank the engine in order to prime the fuel system.

Bleeding Air from the Injectors

Note: Use this procedure only if the fuel system has been purged of air through normal priming procedures and the engine does not start.

1. Loosen the tube nut for the cylinder #1 fuel-injector at the injection pump (Figure 45).



1

Figure 45

G036693

1. Tube nut (cylinder #1 fuel injector)

2. Move the throttle to the FAST position.
3. Turn the key in the ignition switch to the START position and watch the fuel flow around the connector.
4. Turn the key to the OFF position when you observe solid flow.
5. Tighten the pipe connector securely.
6. Clean all residual fuel from the engine.
7. Repeat the procedure for the remaining fuel-injector tubes.

Electrical System Maintenance

Electrical System Safety

- Disconnect the battery before repairing the machine. Disconnect the negative terminal first and the positive last. Connect the positive terminal first and the negative last.
- Battery acid is poisonous and can cause burns. Avoid contact with your skin, eyes, and clothing. Protect your face, eyes, and clothing when working with a battery.
- Battery gases can explode. Keep cigarettes, sparks, and flames away from the battery.
- Charge the batteries 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.
- Do not use a pressure washer near any electronic components.

WARNING

CALIFORNIA Proposition 65 Warning

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

Drive System Maintenance

Checking for End-Play in the Planetary Drives

Service Interval: Every 400 hours

There should be no end-play in the planetary drives/drive wheels (i.e., the wheels should not move when you pull or push them in a direction parallel to the axle).

1. Check the rear wheels and raise the front of machine, supporting the front axle/frame on jack stands.

⚠ DANGER

A machine on a jack may be unstable and slip off the jack, injuring anyone beneath it.

- Do not start the engine while the machine is on a jack.
 - Always remove the key from the ignition before getting off the machine.
 - Block the tires when you are raising the machine with a jack.
 - Support the machine with jack stands.
2. Grasp 1 of the front drive wheels and push/pull it toward and away from the machine, noting any movement.

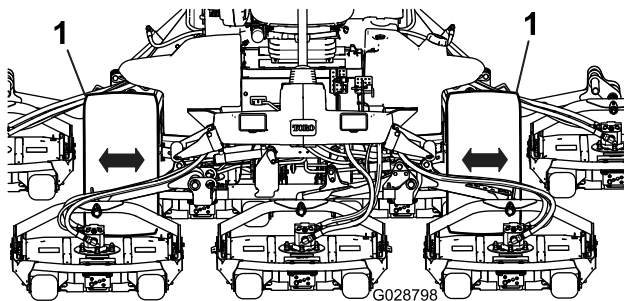


Figure 51

1. Front drive wheels

3. Repeat step 2 for the other drive wheel.
4. If either wheel moves, contact your Toro Distributor to have the planetary drive rebuilt.

Checking the Planetary-Gear-Drive Lubricant

Service Interval: Every 400 hours—Check the lubricant level of the planetary-gear-drives (also check if you observe external leakage).

Lubricant specification: high-quality SAE 85W-140 gear lubricant

1. With the machine on level surface, position the wheel so that 1 check plug (Figure 52) is at the 12 o'clock position and the other is at the 3 o'clock position.

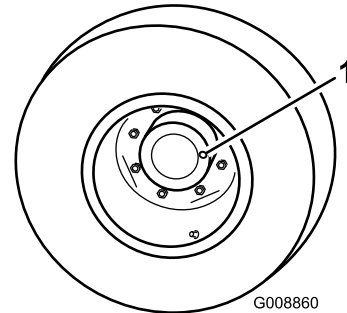


Figure 52

1. Check/drain plug (2)

2. Remove the plug at the 3 o'clock position (Figure 52).

Note: The gear lubricant level should be at the bottom of the check-plug hole.

3. If the gear lubricant level is low, remove the plug at the 12 o'clock position and add gear lubricant until it begins to flow out of the hole at the 3 o'clock position.
4. Install both plugs.
5. Repeat steps 1 through 4 on the opposite planetary gear assembly.

Changing the Planetary-Gear-Drive Lubricant.

Service Interval: After the first 200 hours

Every 800 hours/Yearly (whichever comes first)

Lubricant specification: high-quality SAE 85W-140 gear lubricant

1. With the machine on a level surface, position a wheel so that 1 of the check plugs is at the lowest (6 o'clock) position (Figure 53).

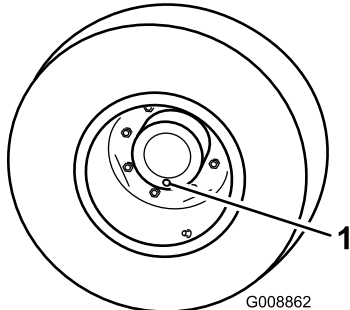


Figure 53

1. Check/drain plug

2. Place a drain pan under the planetary hub, remove the plug, and allow the gear lubricant to drain.
3. Place a drain pan under the brake housing, remove the drain plug, and allow the gear lubricant to drain (Figure 54).

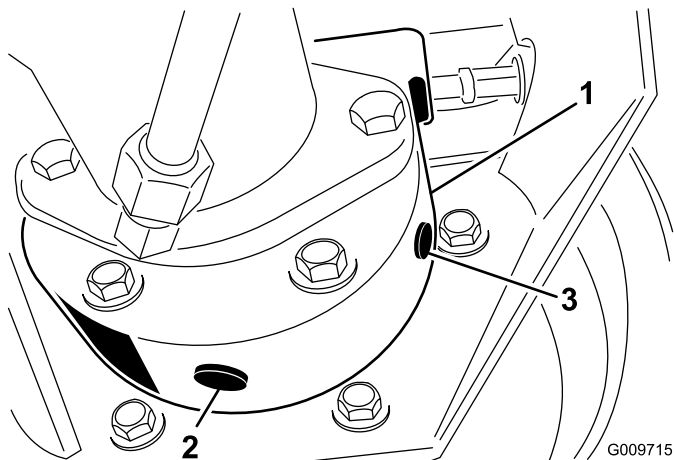


Figure 54

- | | |
|------------------|------------------|
| 1. Brake housing | 3. Planetary hub |
| 2. Drain plug | |

4. When all of the oil has drained from both locations, install the plug in the brake housing.
5. Rotate the wheel until the open plug hole in the planetary is at the 12 o'clock position.

6. Through the open hole, slowly fill the planetary with 0.65 L (22 oz) of high-quality SAE 85W-140 gear lube.

Important: If the planetary fills before the 0.65 L (22 oz) of oil is added, wait 1 hour or install the plug and move the machine approximately 3 m (10 ft) to distribute the gear lubricant through the brake system. Then, remove the plug and add the remaining gear lubricant.

7. Install the plug.
8. Repeat the procedure on the opposite planetary/brake assembly.

Checking the Rear Axle and Gearbox for Leaks

Service Interval: Before each use or daily

Visually inspect the rear axle and rear-axle gearbox for leaks.

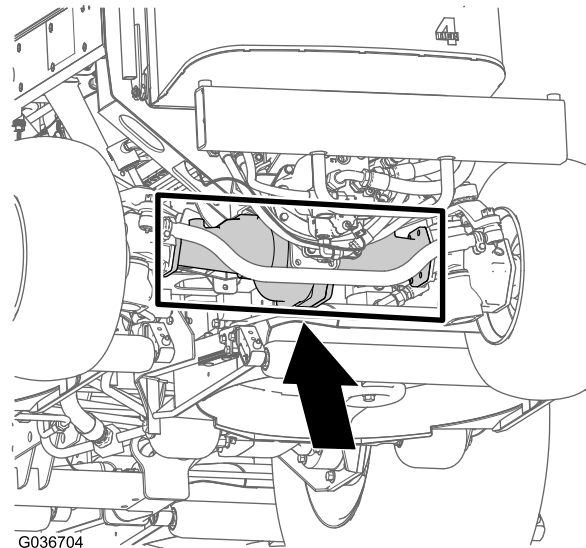


Figure 55

Checking the Rear-Axle Lubricant

Service Interval: Every 400 hours

Lubricant specification: high-quality SAE 85W-140 gear lubricant

1. Position the machine on a level surface.
2. Remove a check plug from 1 end of the axle (Figure 56) and make sure that the lubricant is up to the bottom of the hole.

Note: If the level is low, remove the fill plug (Figure 56) and add enough lubricant to bring the level up to the bottom of the check plug holes.

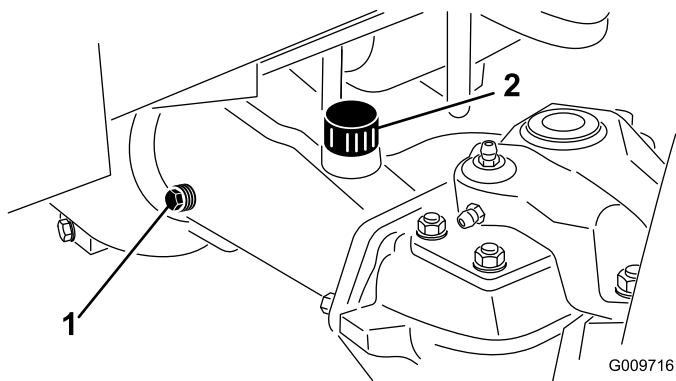


Figure 56

1. Check plug
2. Fill plug

Changing the Rear-Axle Lubricant

Service Interval: After the first 200 hours
Every 800 hours

Lubricant specification: high-quality SAE 85W-140 gear lubricant

Axle capacity: 2.4 L (80 oz).

1. Position the machine on a level surface.
2. Clean the area around the 3 drain plugs—1 on each end and 1 in the center (Figure 57).

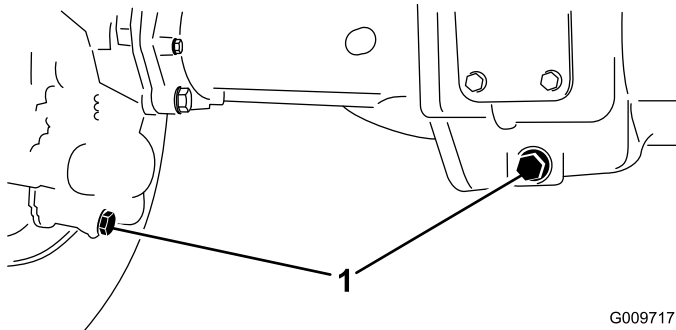


Figure 57

1. Drain-plug location
3. Remove the oil-level check plugs and the main-axle-vent cap to ease draining the gear lubricant.
4. Remove the drain plugs and allow the gear lubricant to drain into the pans.
5. Install the plugs.
6. Remove a check plug and fill the axle with approximately 2.4 L (80 oz) of 85W-140 gear lube or until the lubricant is up to the bottom of the hole.
7. Install the check plug.

Checking the Rear Axle-Gearbox Lubricant

Service Interval: Every 400 hours Check the lubricant level before the engine is first started and every 400 hours thereafter.

Lubricant specification: high-quality SAE 85W-140 gear lubricant

Axle capacity: 0.5 L (16 oz)

1. Position the machine on a level surface.
2. Remove the check/fill plug from the left side of the gearbox (Figure 52) and make sure that lubricant is up to the bottom of the hole. If the level is low, add enough lubricant to bring the level up to the bottom of the hole.

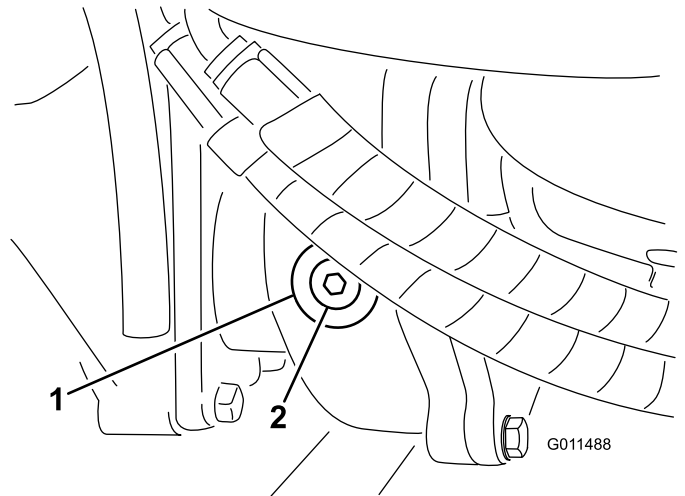


Figure 58

1. Gearbox
2. Check/fill plug

Checking the Rear Wheel Toe-in

Service Interval: Every 800 hours/Yearly (whichever comes first)

1. Measure the center-to-center distance (at axle height) at the front and rear of the steering tires (Figure 59).

Note: The front measurement must be 3 mm (1/8 inch) less than the rear measurement.

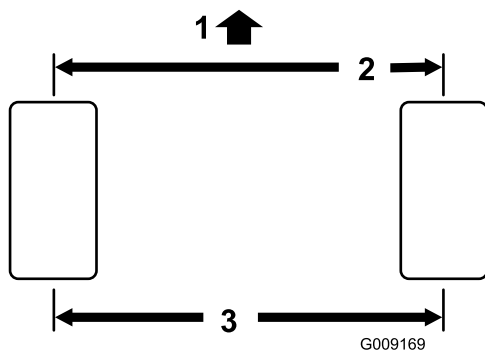


Figure 59

1. Front of machine
2. 3 mm (1/8 inch) less than rear of tire
3. Center-to-center distance

2. To adjust, remove the cotter pin and nut from either tie-rod ball joint (Figure 60).

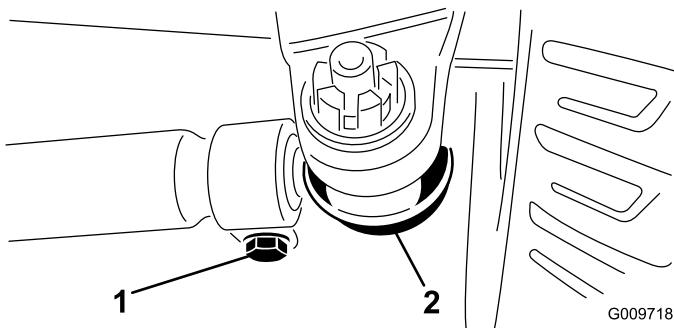


Figure 60

1. Tie-rod clamp
2. Tie-rod ball joint

3. Remove the tie-rod ball joint from the axle-case support.
4. Loosen the clamps at both ends of the tie rods (Figure 60).
5. Rotate the detached ball joint inward or outward 1 complete revolution.
6. Tighten the clamp at the loose end of tie rod.
7. Rotate the entire tie rod assembly the same direction (inward or outward) 1 complete revolution.

Note: Tighten the clamp at connected end of the tie rod.

8. Install the ball joint in the axle-case support and tighten the nut finger-tight.
9. Measure the toe-in.
10. Repeat this procedure if necessary.
11. Tighten the nut and install a new cotter pin when the adjustment is correct.

Cooling System Maintenance

Cooling System Safety

⚠ CAUTION

Discharge of hot, pressurized coolant or touching a hot radiator and surrounding parts can cause severe burns.

- Do not remove the radiator cap when the engine is hot. Always allow the engine to cool at least 15 minutes or until the radiator cap is cool enough to touch without burning your hand before removing the radiator cap.
- Do not touch the radiator and surrounding parts that are hot.

⚠ DANGER

Swallowing engine coolant can cause poisoning.

- Do not swallow engine coolant.
- Keep out of reach from children and pets.

Checking the Cooling System

Service Interval: Before each use or daily

Coolant specification: 50/50 mixture of water and ethylene glycol antifreeze

Cooling system capacity: 8.5 L (9 US qt).

1. Carefully remove the radiator cap.

⚠ 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.

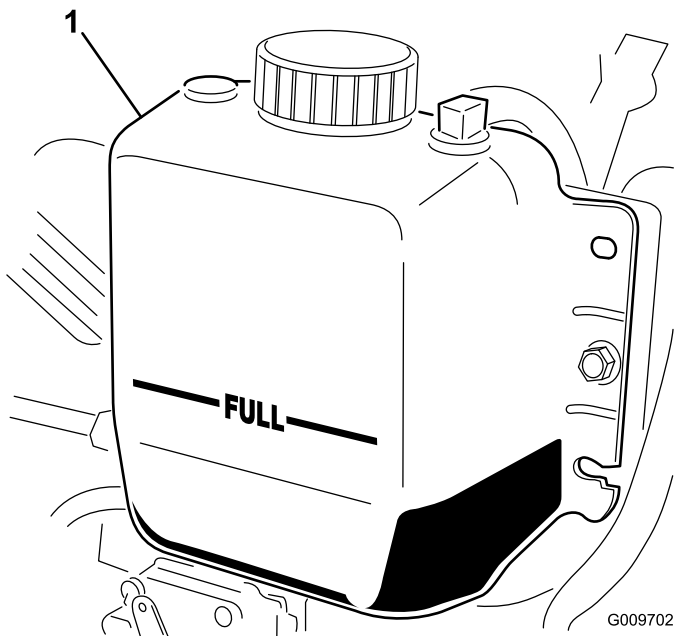


Figure 61

1. Expansion tank

-
2. Check the coolant level in the radiator. The radiator should be filled to the top of the filler neck and the expansion tank filled to the FULL mark (Figure 61).
 3. If the coolant is low, add a 50/50 mixture of water and ethylene glycol anti freeze. Do not use water only or alcohol/methanol base coolants.
 4. Install the radiator cap and expansion-tank cap.

Cleaning the Cooling System

Service Interval: Before each use or daily—Remove debris from the engine area, oil cooler, and radiator.

Clean them more frequently in dirty conditions.

This machine is equipped with a hydraulically driven fan drive system that automatically (or manually) reverses to reduce oil cooler/radiator and screen debris build-up. While this feature can help reduce the time required to clean oil cooler/radiator, it does not eliminate the need for routine cleaning. Periodic cleaning and inspection of the radiator/cooler is still required.

1. Unlatch and swing open the rear screen (Figure 62).

Note: To remove the screen, lift off the hinge pins.

2. Clean the screen thoroughly of all debris.

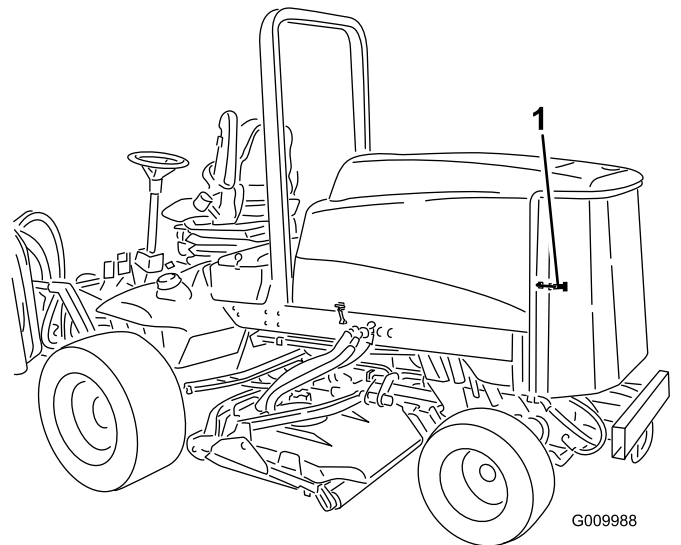


Figure 62

1. Rear-screen latch

-
3. Thoroughly clean both sides of the oil cooler and the radiator (Figure 63) with compressed air. Start from the front and blow the debris out toward the back. Then clean from the back side and blow toward the front. Repeat procedure several times until you remove all chaff and debris.

Brake Maintenance

Adjusting the Service Brakes

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

1. Release the locking latch from the brake pedals so that both pedals work independently of each other.
2. To reduce free travel of the brake pedals, tighten the brakes:
 - A. Loosen the front nut on the threaded end of the brake cable (Figure 64).

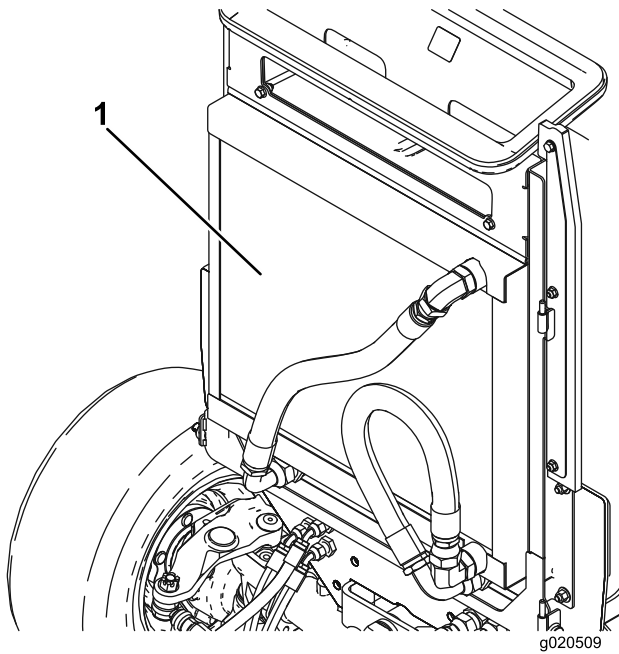


Figure 63

1. Oil cooler/radiator

Important: Cleaning the oil cooler/radiator with water promotes premature corrosion damage to components and compacts debris.

4. Close the rear screen and secure it with the latch.

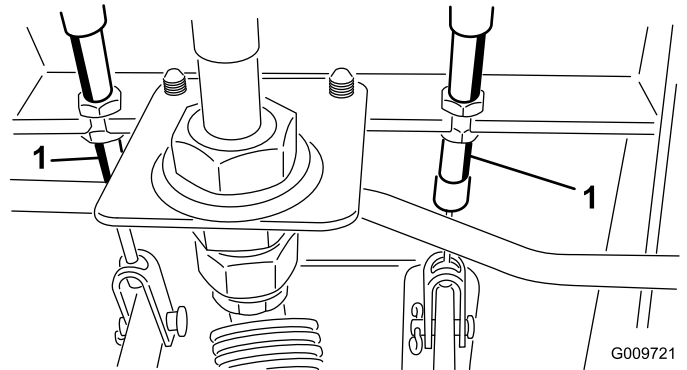


Figure 64

1. Brake cable

- B. Tighten the rear nut to move the cable backward until the brake pedals have 13 to 25 mm (1/2 to 1 inch) of free travel.
- C. Tighten the front nuts after the brakes are adjusted correctly.

Belt Maintenance

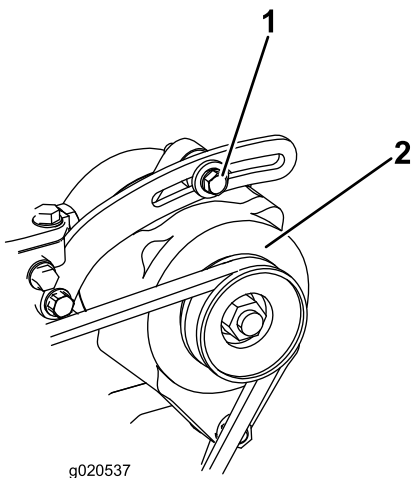
Servicing the Alternator Belt

Service Interval: Every 100 hours

1. Check the tension of the alternator belt by depressing it midway between the alternator and the crankshaft pulleys with 4.5 kg (10 lb) of force.

Note: The belt should deflect 10mm (3/8 inch). If the deflection is incorrect, proceed to step 2. If correct, continue operation.

2. Loosen the alternator-mounting bolts (Figure 65).
3. Increase or decrease the alternator belt tension and tighten the bolts. Check the deflection of the belt again to ensure that the tension is correct.



g020537

Figure 65

1. Mounting bolt
2. Alternator

Hydraulic System Maintenance

Hydraulic System Safety

⚠ WARNING

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

- 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.

Checking the Hydraulic-Fluid Level

Service Interval: Before each use or daily

The reservoir is filled at the factory with approximately 28.4 L (7.50 US gallons) of high-quality hydraulic fluid. Check the level of the hydraulic fluid before the engine is first started and daily thereafter. The recommended replacement fluid is as follows:

Toro Premium All Season Hydraulic Fluid (Available in 19 L (5 US gallon) pails or 208 L (55 US gallon) drums. See the *Parts Catalog* or your 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.

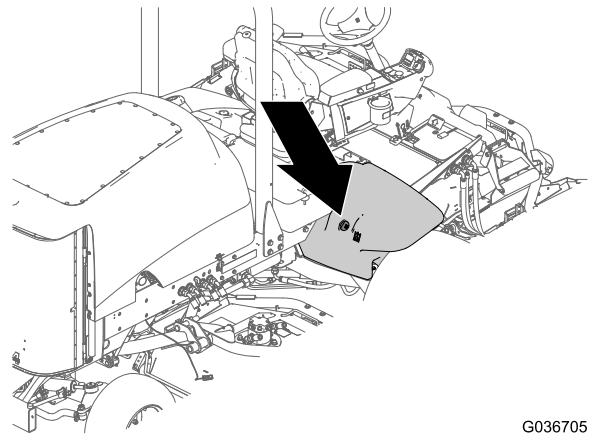
High Viscosity Index/Low Pour Point Anti-wear Hydraulic Fluid, ISO VG 46

Material Properties:

Viscosity, ASTM D445	cSt @ 40°C (104°F) 44 to 48
	cSt @ 100°C (212°F) 7.9 to 9.1
Viscosity Index ASTM D2270	140 to 160
Pour Point, ASTM D97	-37°C to -45°C (-34°F to -49°F)

Industry Specifications:

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



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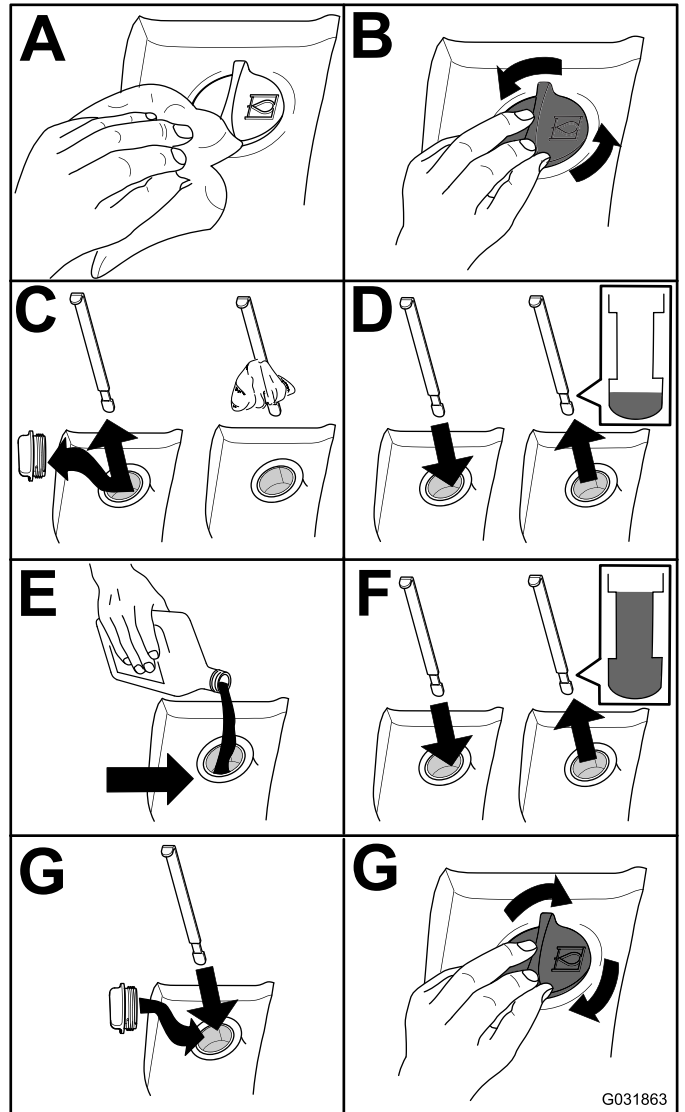
Important: The ISO VG 46 Multigrade fluid has been found to offer optimal performance in a wide range of temperature conditions. For operation in consistently high ambient temperatures, 65°F (18°C) to 120°F (49°C), ISO VG 68 hydraulic fluid may offer improved performance.

Premium Biodegradable Hydraulic Fluid-Mobil EAL EnviroSyn 46H

Important: Mobil EAL EnviroSyn 46H 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. The fluid is available in 19 L (5 US gallon) containers or 208 L (55 US gallon) drums from your Mobil Distributor.

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

Check the hydraulic-fluid level as shown in [Figure 66](#).



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Figure 66

Changing the Hydraulic Fluid

Service Interval: Every 800 hours

If the fluid becomes contaminated, contact your Toro Distributor because the system must be flushed. Contaminated fluid looks milky or black when compared to clean hydraulic fluid.

1. Turn the key in the ignition switch to the OFF position and raise the hood.
2. Disconnect the case return line from the bottom of the reservoir and let the hydraulic fluid flow into a large drain pan.
3. Install the hose when the hydraulic fluid stops draining.
4. Fill the reservoir with approximately 28.4 L (7.50 US gallons) of hydraulic fluid; refer to [Checking the Hydraulic-Fluid Level \(page 55\)](#).

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

5. Install the reservoir cap.
6. Turn the key in the ignition switch to the ON position to start the engine, use all of the hydraulic controls to distribute hydraulic fluid throughout the system, and check for leaks.
7. Turn the key in the ignition switch to the OFF position.
8. Check the fluid level and add enough to raise level the level to the FULL mark on the dipstick. **Do not overfill.**

Replacing the Hydraulic Filters

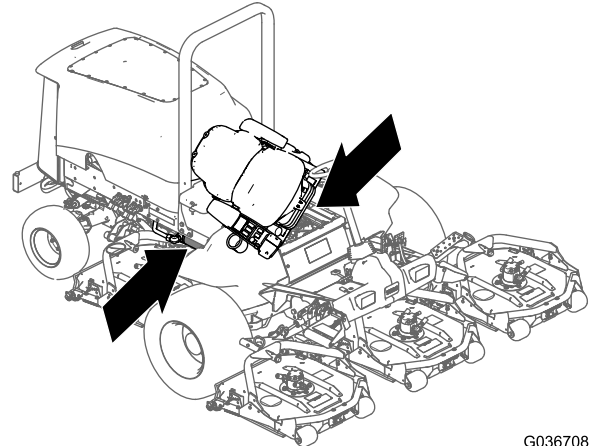
Service Interval: After the first 200 hours

Every 800 hours

Use Toro replacement filters Part No. 94-2621 for the rear (mower decks) of the machine and Part No. 75-1310 for the front (charge) of the machine.

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

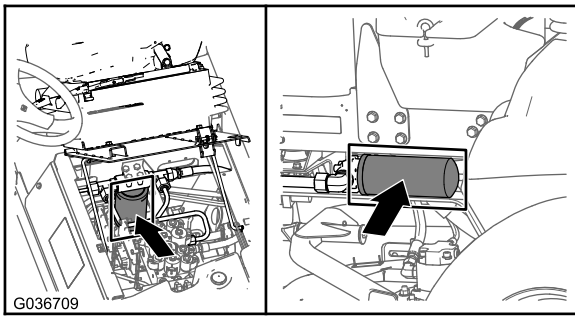
1. Tilt the operators seat to access the mower pressure filter; refer to [Accessing the Hydraulic Lift Compartment \(page 40\)](#)



G036708

Figure 67

2. Replace the charge hydraulic filter at the hydraulic lift compartment as shown in [Figure 68](#).



Checking the Hydraulic Lines and Hoses

Service Interval: Before each use or daily

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

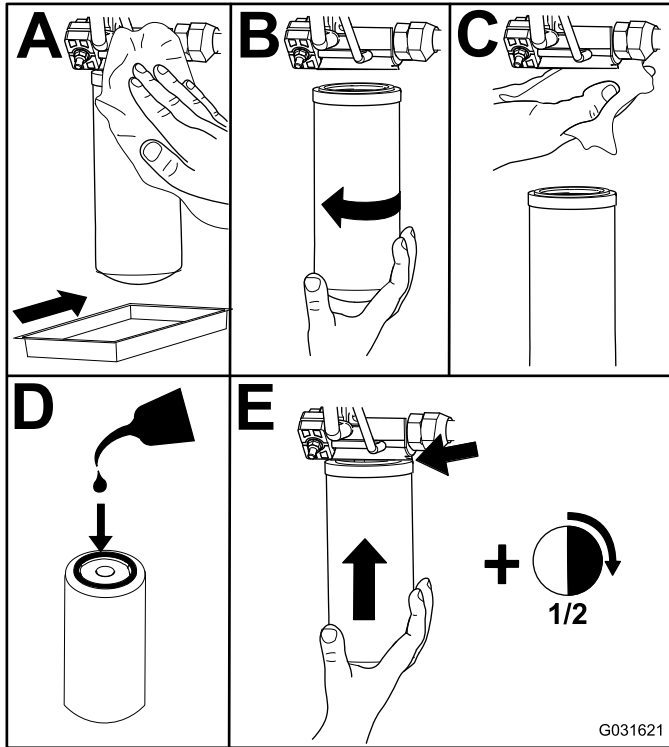


Figure 68

3. Lower and secure the operator's seat.
4. Replace the return filter at the right side of the machine (Figure 68).
5. Start the engine and let it run for about 2 minutes to purge air from the system. Shut off the engine and check for leaks.

Mower Deck Maintenance

Separating the Mower Decks from the Machine

1. Disconnect and remove the hydraulic motor from the deck (Figure 69). Cover the top of the spindle to prevent contamination.

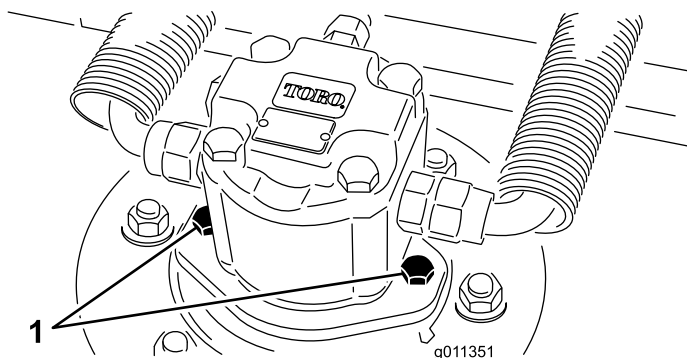


Figure 69

1. Motor mounting screws

2. Remove the lynch pin (or retaining nut—model 30874) securing the deck carrier frame to the lift-arm-pivot pin (Figure 70).

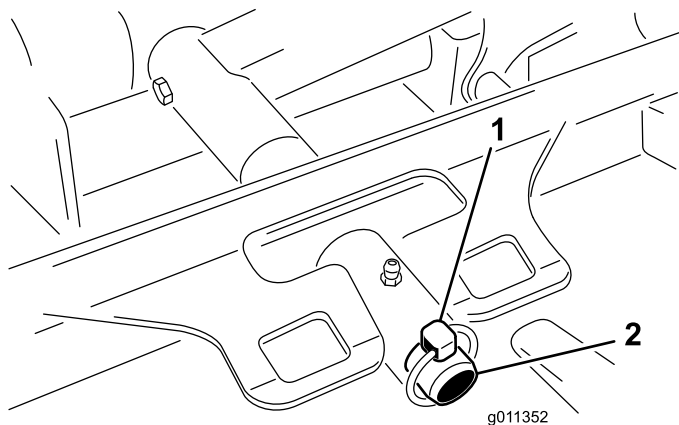


Figure 70

1. Lynch pin
2. Lift-arm-pivot pin

3. Roll the mower deck away from the machine.

Assembling the Mower Decks to the Machine

1. Move the mower deck into position in front of the machine.
2. Slide the deck carrier frame onto the lift-arm-pivot pin (Figure 70). Secure the deck to the pin with the lynch pin (or retaining nut—model 30874).
3. Install the hydraulic motor to the deck (Figure 69). Make sure that the O-ring is in position and not damaged.
4. Grease the spindle.

Servicing the Front Roller

Inspect the front roller for wear, excess wobble, or binding. Service or replace the roller or components if any of these conditions exist.

Disassembling the Front Roller

1. Remove the roller-mounting bolt (Figure 71).
2. Insert a punch through the end of the roller housing and drive the opposite bearing out by alternating taps to the opposite side of inner bearing race.

Note: You should see a 1.5 mm (0.060 inch) lip of inner race exposed.

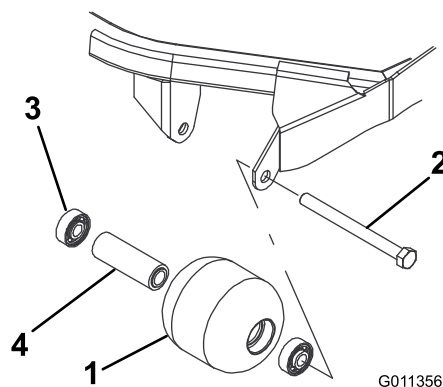


Figure 71

1. Front roller
2. Mounting bolt
3. Bearing
4. Bearing spacer

3. Push the second bearing out with a press.
4. Inspect the roller housing, bearings, and bearing spacer for damage (Figure 71). Replace damaged components and assemble.

Assembling the Front Roller

1. Press the first bearing into the roller housing (Figure 71). Press on the outer race only or equally on the inner and outer race.
2. Insert the spacer (Figure 71).
3. Press the second bearing into the roller housing (Figure 71). Pressing equally on the inner and outer race until the inner race comes in contact with the spacer.
4. Install the roller assembly into the deck frame.
5. Verify that there is no more than a 1.5 mm (0.060 inch) gap between roller assembly and the roller-mount brackets of the deck frame. If there is a gap over 1.5 mm (0.060 inch), install enough 5/8-inch diameter washers to reduce the gap to the thickness of 1 washer or less.

Note: Ensure that the roller rotates freely.

Important: Securing the roller assembly with a gap larger than 1.5 mm (0.060 inch) creates a side load on the bearing and can lead to premature bearing failure

6. Torque the mounting bolt to 108 N·m (80 ft·lb).

Blade Maintenance

Blade Safety

⚠ DANGER

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

- Inspect the blade periodically for wear or damage.
- Never try to straighten a blade that is bent or weld a broken or cracked blade.
- Replace a worn or damaged blade.
- Use care when checking the blades. Wrap the blades or wear gloves, and use caution when servicing the blades. Only replace the blades; never straighten or weld them.
- On multi-bladed machines, take care as rotating 1 blade can cause other blades to rotate.

Servicing the Blade Plane

The rotary deck comes from the factory preset at 5 cm (2 inches) height of cut and blade rake of 7.9 mm (0.310 inch). The left and right heights are also preset to within ± 0.7 mm (0.030 inch) of the other.

The mower deck is designed to withstand blade impacts without deformation of the chamber. If a solid object is struck, inspect the blade for damage and the blade plane for accuracy.

Inspecting the Blade Plane

1. Remove the hydraulic motor from the mower deck and remove the mower deck from the tractor.
2. Use a hoist (or minimum of 2 people) and place the mower deck on a flat table
3. Mark 1 end of the blade with a paint pen or marker. Use this end of the blade to check all heights.
4. Position the cutting edge of the marked end of the blade at 12 o'clock (straight ahead in the direction of mowing) (Figure 72) and measure height from table to cutting edge of blade.

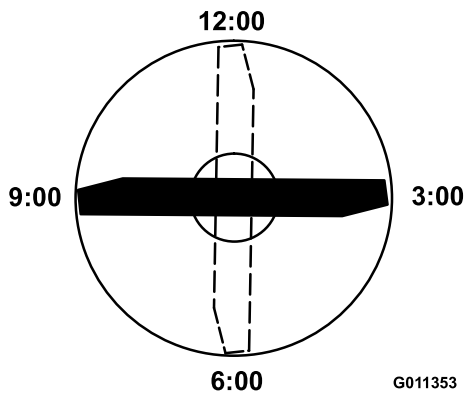


Figure 72

5. Rotate the marked end of the blade to the 3 and 9 o'clock positions (Figure 72) and measure the heights.
6. Compare the 12 o'clock measured height to the height-of-cut setting. It should be within 0.7 mm (0.030 inch). The 3 and 9 o'clock heights should be 3.8 ± 2.2 mm (0.150 ± 0.090 inch) higher than the 12 o'clock setting and within 2.2 mm (0.090 inch) of each other.

If any of these measurements are not within specification, proceed to [Adjusting the Blade Plane](#) (page 61).

Adjusting the Blade Plane

Start with the front adjustment (change 1 bracket at a time).

1. Remove the height-of-cut bracket, (front, left, or right) from the deck frame (Figure 73).
2. Adjust 1.5 mm (0.060 inch) shims and/or 0.7 mm (0.030 inch) shim between the deck frame and bracket to achieve the desired height setting (Figure 73).

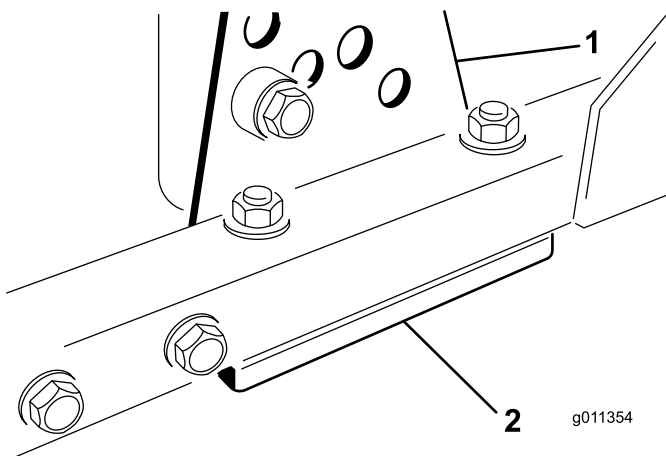


Figure 73

1. Height-of-cut bracket
2. Shims

3. Install the height-of-cut bracket to the deck frame with the remaining shims assembled below the height-of-cut bracket.
4. Secure the socket-head bolt/spacer and flange nut.

Note: Socket-head bolt/spacer are held together with thread-locking adhesive to prevent the spacer from falling inside the deck frame.

5. Verify the 12 o'clock height and adjust if needed.
6. Determine if only 1 or both (right and left) height-of-cut brackets need to be adjusted.

Note: If the 3 or 9 o'clock side is 3.8 ± 2.2 mm (0.150 ± 0.090 inch) higher than the new front height then no adjustment is needed for that side. Adjust the other side to within ± 2.2 mm (0.090 inch) of the correct side.

7. Adjust the right and/or left height-of-cut brackets by repeating steps 1 through 3.
8. Secure the carriage bolts and flange nuts.
9. Again, verify the 12, 3, and 9 o'clock heights.

Servicing the Cutter Blade

Removing the Cutter Blade

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

1. Raise the mower deck to the highest position, turn the key in the ignition switch to the OFF position, and engage the parking brake. Block the mower deck to prevent it from falling accidentally.
2. Grasp the end of the blade using a rag or thickly padded glove. Remove the blade bolt, anti-scalp cup, and blade from the spindle shaft (Figure 74).

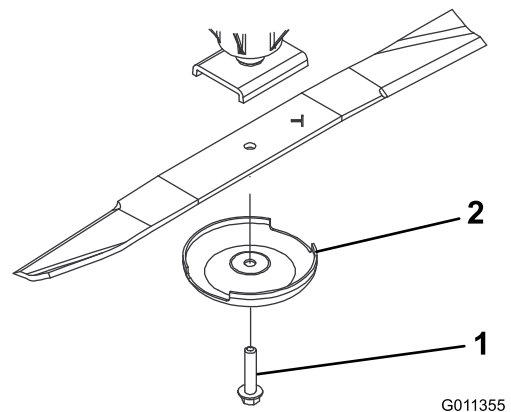


Figure 74

1. Blade bolt
2. Anti-scalp cup

3. Install the blade, sail facing toward the mower deck, with the anti-scalp cup and blade bolt (Figure 74).
4. Torque the blade bolt to 115 to 149 N·m (85 to 110 ft-lb).

⚠ DANGER

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

- Inspect the blade periodically for wear or damage.
- Never weld a broken or cracked blade.
- Always replace a worn or damaged blade.

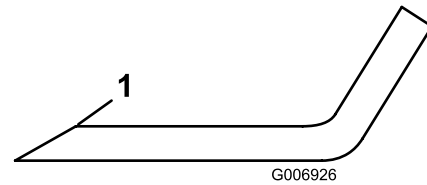


Figure 76

1. Sharpen at this angle only

Inspecting and Sharpening the Blade

1. Raise the mower deck to the highest position, turn the key in the ignition switch to the OFF position, and engage the parking brake.
2. Block the mower deck to prevent it from falling accidentally.
3. Examine the cutting ends of the blade carefully, especially where the flat and curved parts of the blade meet (Figure 75). If wear is noticed (Figure 75), replace the blade; refer to [Removing the Cutter Blade](#) (page 61).

Note: Since sand and abrasive material can wear away the metal that connects the flat and curved parts of the blade, check the blade before using the machine.

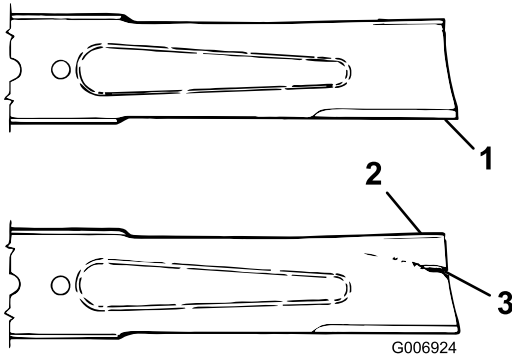


Figure 75

1. Cutting edge
2. Sail
3. Wear/slot/crack

4. Inspect the cutting edges of all blades. If they are dull or nicked, sharpen the top of the cutting edge and maintain the original cutting angle to ensure sharpness (Figure 76).

Note: The blade will remain balanced if the same amount of metal is removed from both cutting edges.

5. To check the blade for being straight and parallel, lay the blade on a level surface and check its ends. The ends of the blade must be slightly lower than the center, and the cutting edge must be lower than the heel of the blade.

Note: This blade will produce good quality of cut and require minimal power from the engine. By contrast, a blade that is higher at the ends than the center, or if cutting edge is higher than the heel, the blade is bent or warped and must be replaced.

6. Install the blade, sail facing toward mower deck, with the anti-scalp cup and blade bolt.
7. Torque the blade bolt to 115 to 149 N·m (85 to 110 ft-lb).

Storage

Preparing the Machine

1. Thoroughly clean the chassis of the machine, mower decks, and the engine.
2. Check the tire pressure; refer to [Checking the Air Pressure in the Tires](#) (page 23).
3. Check all fasteners for looseness; tighten as necessary.
4. Grease or oil 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. Repair any dents in the metal body.
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.
7. Secure the No. 6 and 7 mower decks with the transport latches (Model 30874).

Preparing the Engine

1. Drain the engine oil from the oil pan and install the drain plug.
2. Remove and discard the oil filter. Install a new oil filter.
3. Fill the oil pan with 5.7 L (6 US qt) of SAE 15W-40 CH-4, CI-4, or higher engine oil.
4. Start the engine and run it at idle speed for approximately 2 minutes.
5. Shut off the engine.
6. Flush the fuel tank with fresh, clean diesel fuel.
7. Secure all of the fuel-system fittings.
8. Thoroughly clean and service the air-cleaner assembly.
9. Seal the air-cleaner inlet and the exhaust outlet with weatherproof tape.
10. Check the antifreeze protection and add a 50/50 solution of water and ethylene glycol antifreeze as needed for the expected minimum temperature in your area.

Preparing the Mower Deck

If the mower deck is removed from the machine for any length of time, install a spindle plug into the top of the spindle housing to protect the spindle socket from dust and water.

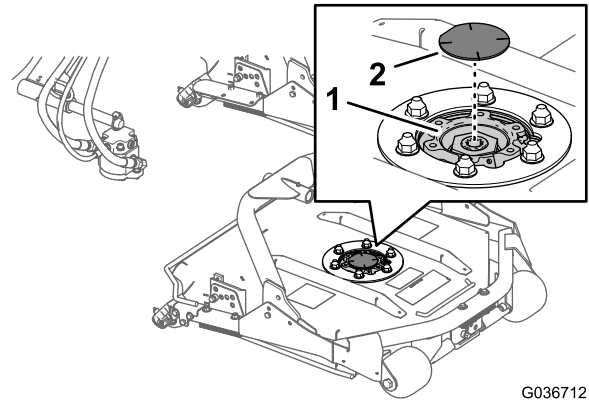


Figure 77

1. Spindle plug

2. Spindle socket

Notes:

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.

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.

- 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