

**TORO**<sup>®</sup>

**Count on it.**

## Operator's Manual

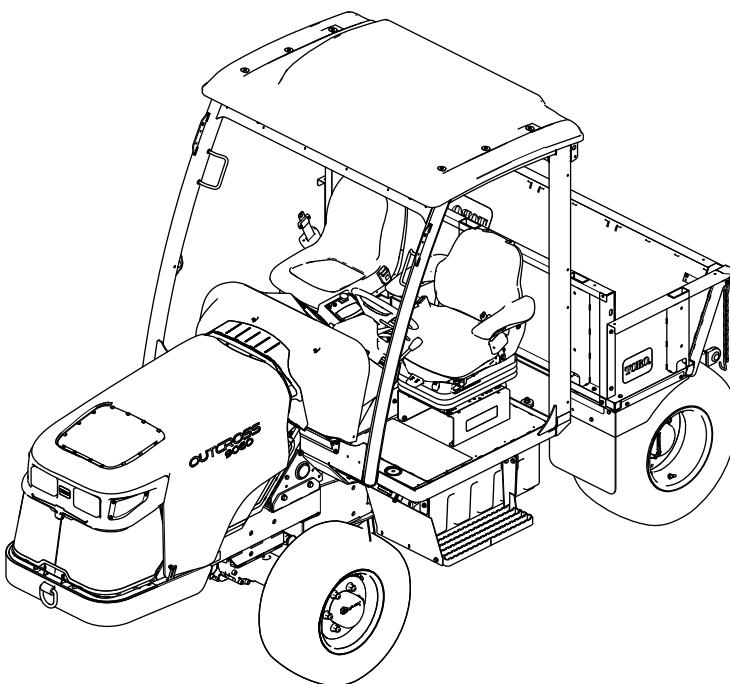
# Outcross<sup>®</sup> 9060 Series Traction Unit

Model No. 07511AA—Serial No. 41500000 and Up

Model No. 07511BA—Serial No. 41500000 and Up

Model No. 07511CA—Serial No. 41500000 and Up

Model No. 07511DA—Serial No. 41500000 and Up



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

It is a violation of California Public Resource Code Section 4442 or 4443 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire.

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.

## ⚠ WARNING

### CALIFORNIA Proposition 65 Warning

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

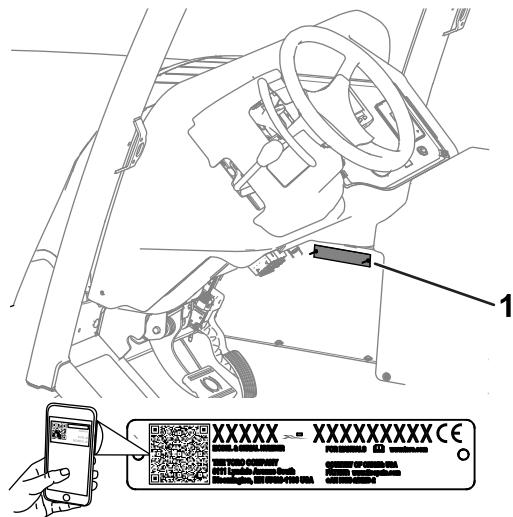
**Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.**

**Use of this product may cause exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.**

Visit [www.Toro.com](http://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 product. Write the numbers in the space provided.

**Important:** With your mobile device, you can scan the QR code on the serial number decal (if equipped) to access warranty, parts, and other product information.



g250007

**Figure 1**

1. Model and serial number location

Model No. \_\_\_\_\_

Serial No. \_\_\_\_\_

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



g000502

**Figure 2**

1. Safety-alert symbol

This manual 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

## ▲ DANGER

There may be buried utility lines or overhead lines in the work area. Contacting them may cause a shock or an explosion.

- Have the property or work area marked for buried lines and do not dig in marked areas. Contact your local marking service or utility company to have the property marked (for example, in the US, call 811 or in Australia, call 1100 for the nationwide marking service).
- Observe your work area for overhead power lines and avoid contact with them.

## General Safety

This product is capable of causing personal injury. Always follow all safety instructions to avoid serious personal injury.

- Read and understand the contents of this *Operator's Manual* and any attachment manuals before starting the engine.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Do not put your hands or feet near moving components of the machine.
- Always keep attachments and loads as low as possible.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.
- Keep children and bystanders out of the operating area. Never allow children and untrained operators to operate the machine.
- Stop the machine, shut off the engine, remove the key, and wait for all moving parts to stop before servicing or fueling 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.

## Cab Classification for Protection from Hazardous Substances

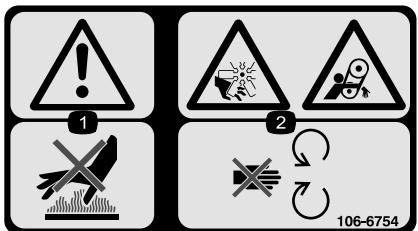
This machine is equipped with a cab defined as Category 1 according to EN 15695-1. A Category 1 cab do not provide any protection against hazardous substances, and the machine should not be used in an environment with hazardous substances unless you do the following:

- Use personal protective equipment (PPE).
- Receive training and education about hazardous substances that you will be exposed to.
- Keep used PPE and plant protection products (PPP) out of the cab.
- Keep used gloves, shoes, and clothes out of the cab.
- Keep the cab interior clean.
- Follow instructions that are provided with PPE and PPP.

# Safety and Instructional Decals



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



106-6754

decal106-6754

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



115-7739

decal115-7739

1. Falling, crushing hazard—do not carry passengers.



117-3276

decal117-3276

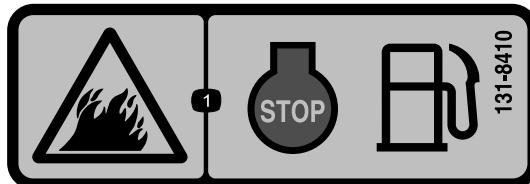
1. Engine coolant under pressure
2. Explosion hazard—read the *Operator's Manual*.
3. Warning—do not touch the hot surface.
4. Warning—read the *Operator's Manual*.



125-6119

decal125-6119

1. Entanglement hazard—stay away from moving objects.



131-8410

decal131-8410

1. Fire hazard—shut off the engine before fueling.

**⚠ WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.  
For more information, please visit [www.ttccAProp65.com](http://www.ttccAProp65.com)

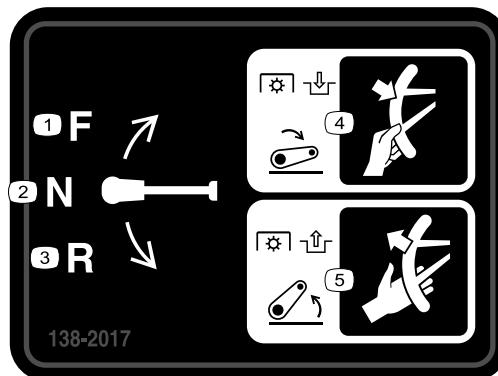
## CALIFORNIA SPARK ARRESTER WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

133-8062

decal133-8062

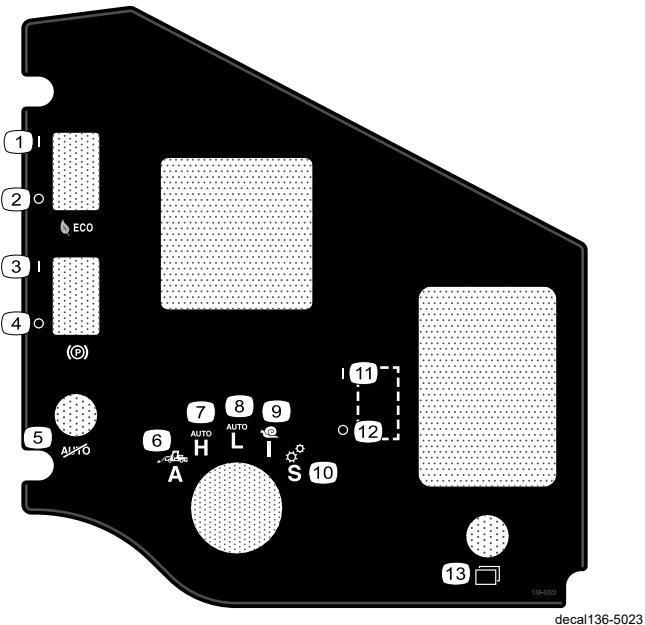
133-8062



136-2017

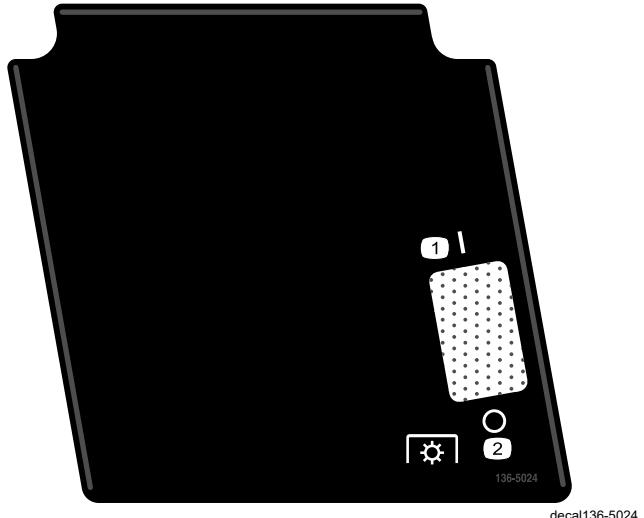
decal136-2017

1. Forward
2. Neutral
3. Reverse
4. Push the paddle to lower the 3-point hitch and engage the PTO (if programmed through the InfoCenter).
5. Pull the paddle to raise the 3-point hitch and disengage the PTO (if programmed through the InfoCenter).



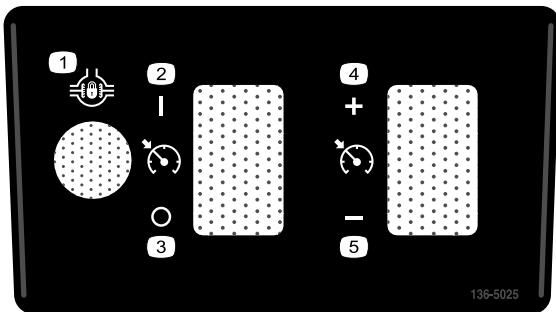
**136-5023**

1. Eco mode—On	8. Auto Low
2. Eco mode—Off	9. InchMode
3. Parking brake—On	10. Setup
4. Parking brake—Off	11. Option—On
5. Automotive mode—On/Off	12. Option—Off
6. Attachment	13. Screen selection
7. Auto High	



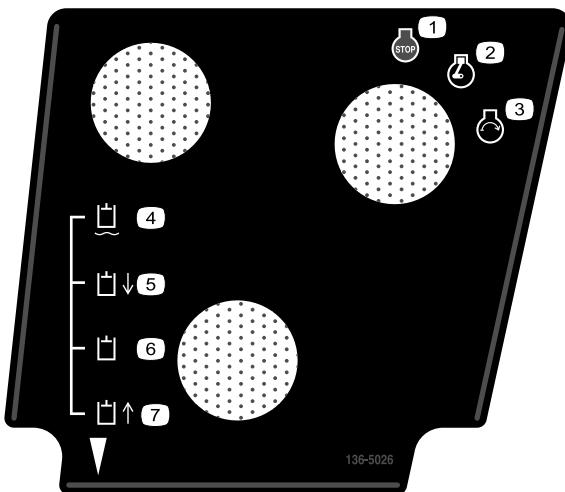
**136-5024**

1. PTO—On                    2. PTO—Off



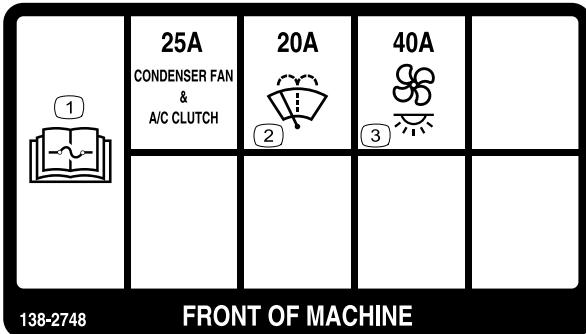
**136-5025**

1. Differential lock	4. Speed—Increase
2. Cruise control—On	5. Speed—Decrease
3. Cruise control—Off	



**136-5026**

1. Engine—Shut off	5. Auxiliary attachment—Retract
2. Engine—Run	6. Auxiliary attachment—Neutral
3. Engine—Start	7. Auxiliary attachment—Extend/continuous run
4. Auxiliary attachment—Float	



138-2748

decal138-2748

1. Refer to the *Operator's Manual* for fuse information.
2. Windshield washer
3. Fan and interior light



decal138-3796

1. Explosion hazard—wear eye protection.
2. Corrosive material hazard—flush with water and seek medical attention.
3. Fire hazard—no fire, open flames, or smoking.
4. Poison hazard—keep children away from the battery.



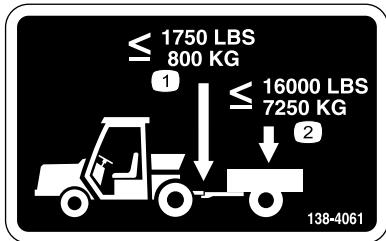
decal138-3797

1. Warning—read the *Operator's Manual*, wear the seatbelt, and avoid tipping the machine.
2. Warning—do not drill or weld.



decal138-3799

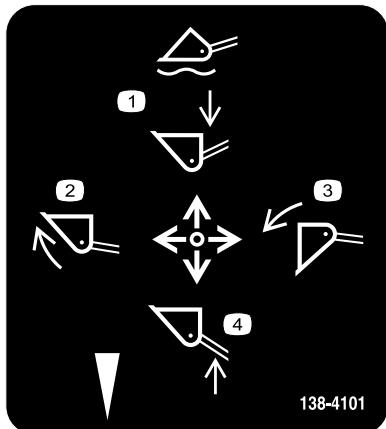
1. Hot surface hazard—wear protective gloves when handling.
2. Warning—stay away from moving parts, keep all guards and shields in place.



**138-4061**

decal138-4061

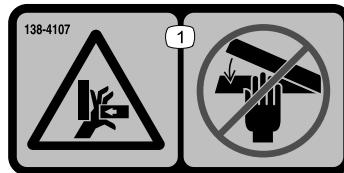
1. Do not exceed a vertical tongue weight of 800 kg (1,750 lb).
2. Do not exceed a transport load of 7,250 kg (16,000 lb).



**138-4101**

decal138-4101

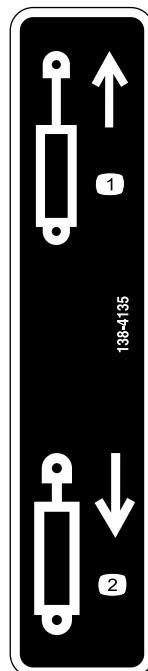
1. Lower/float the attachment.
2. Tilt the attachment rearward.
3. Tilt the attachment forward.
4. Raise the attachment.



**138-4107**

decal138-4107

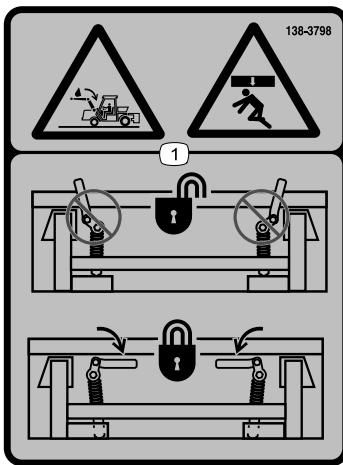
1. Crushing hazard of the hand—keep hands away from the pinch point.



**138-4135**

decal138-4135

1. Extend hydraulic cylinder
2. Retract hydraulic cylinder



**138-3798**

decal138-3798

1. Crushing hazard, falling load—ensure that the quick-attach levers are locked and the pins are fully seated into the attachment.

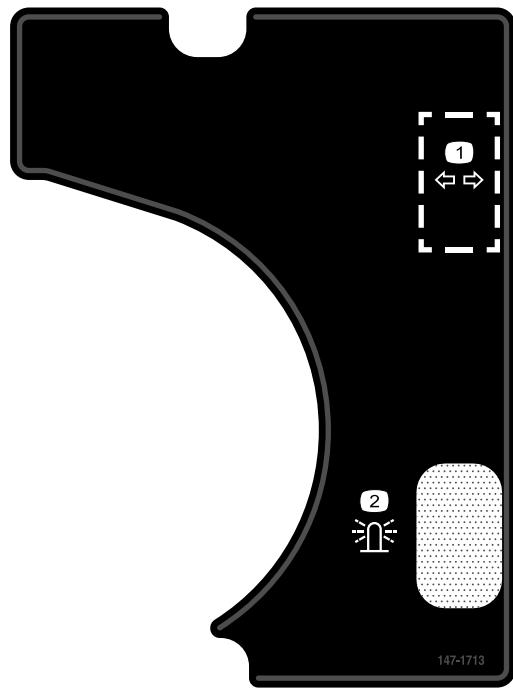


**147-1712**

decal147-1712

1. Horn

2. Hazard warning lights

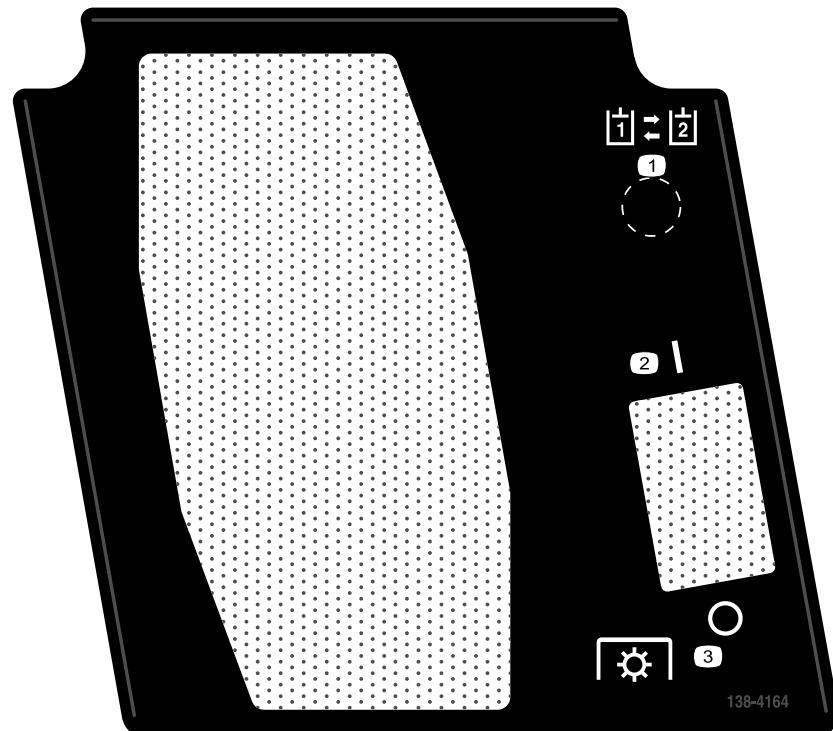


**147-1713**

decal147-1713

1. Turn signals

2. Beacon

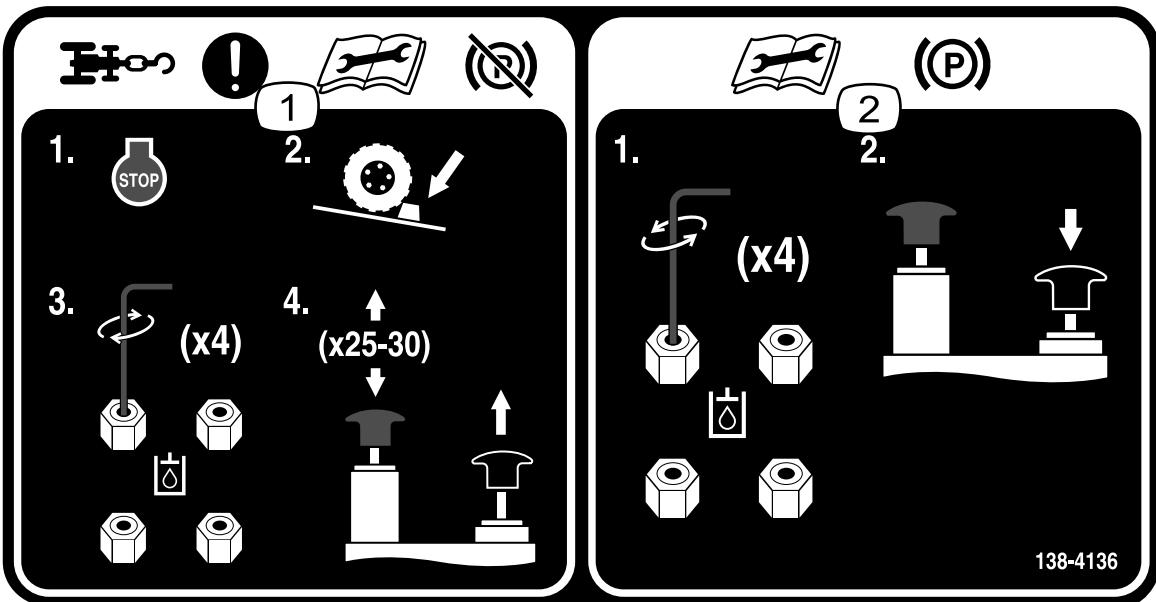


**138-4164**

decal138-4164

1. Valve selector
2. PTO—on

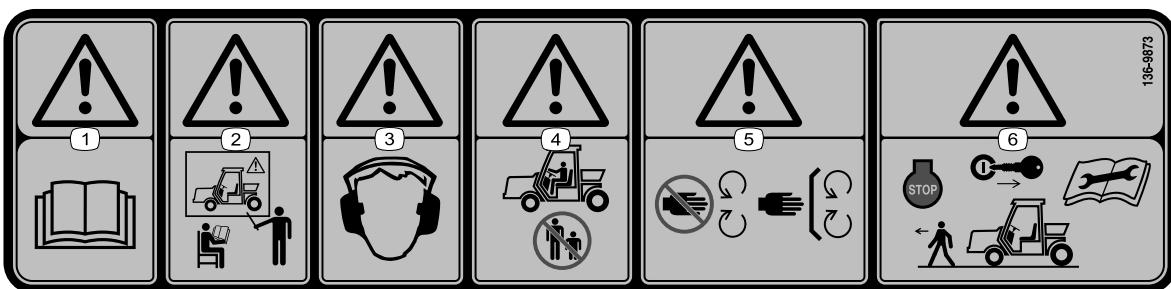
3. PTO—off



138-4136

decal138-4136

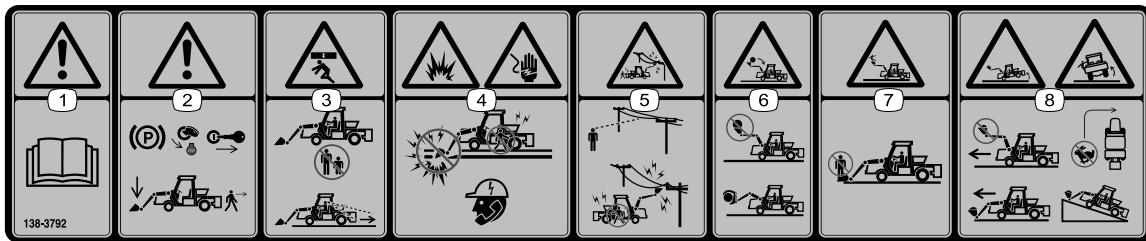
1. Towing attention, read the *Operator's Manual* before removing the parking brake—shut off the engine; chock the wheels; using the included hex wrench, rotate the 4 hydraulic fluid bypass valves clockwise; lift and hold the manual valve while pumping the hand pump 25 to 30 times.
2. Read the *Operator's Manual* before engaging the parking brake—using the included hex wrench, rotate the 4 hydraulic fluid bypass valves counterclockwise; push the manual valve down.



136-9873

decal136-9873

1. Warning—read the *Operator's Manual*.
2. Warning—do not operate this machine unless you are trained.
3. Warning—wear hearing protection.
4. Warning—keep bystanders away.
5. Warning—stay away from moving parts; keep all guards and shields in place.
6. Warning—shut off the engine and remove the key before leaving the machine or performing maintenance.



decal138-3792

## 138-3792

1. Warning—read the *Operator's Manual*.
2. Warning—set the parking brake, shut off the engine, remove the key, and lower the attachment before leaving the machine.
3. Crushing hazard—keep bystanders away from the machine; look behind you when moving in reverse.
4. Explosion and electrical shock hazard—do not leave the operator's seat if any part of the machine contacts electric lines or cables; call your local utility company.
5. Electrical shock hazard, overhead power lines—watch for overhead power lines; do not leave the operator's seat if any part of the machine contacts electric lines or cables.
6. Crushing hazard, falling load—do not carry items that may move around in the loader bucket; use the appropriate attachment for the item.
7. Falling hazard—do not lift or carry a person with the loader or attachments.
8. Tipping hazard—do not drive forward with the load raised; carry the load close to the ground when driving on flat or sloped ground; do not turn at high speeds.

# Setup

## Loose Parts

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

Procedure	Description	Qty.	Use
4	Top link	1	Install the hitch linkage.
	Draft link	2	
	Lift link	2	
	Sway link	2	
	Drawbar	1	
	Hammer strap	1	
	Screw (M18)	2	
	Washer	2	
	Hairpin cotter	7	
	Clevis pin	9	
	Lower pin	2	
	Lynch pin	6	
	Lift-link pin	3	
5	Top-link bushing	1	Install spacers for Category 1 attachments.
	Lift-arm bushing	2	

## Media and Additional Parts

Description	Qty.	Use
Operator's Manual	1	Review before operating the machine.
Engine owner's manual	1	Use to reference engine information.
Declaration of Conformity	1	

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

1

## Checking the Fluid Levels

No Parts Required

### Procedure

Before you start the engine, perform the following fluid-level checks:

- Check the engine-oil level; refer to [Checking the Engine-Oil Level \(page 60\)](#).
- Check the coolant level; refer to [Checking the Cooling System \(page 79\)](#).
- Check the hydraulic-fluid level; refer to [Checking the Hydraulic-Fluid Level \(page 82\)](#).

2

## Checking the Tire Air Pressure

No Parts Required

### Procedure

The tires may be over-inflated or under-inflated for shipping; therefore, you may have to adjust the air pressure in the tires. Refer to [Checking the Tire Air Pressure \(page 22\)](#).

# 3

## Greasing the Machine

No Parts Required

## Procedure

Grease the machine before use; refer to [Greasing the Bearings and Bushings \(page 58\)](#).

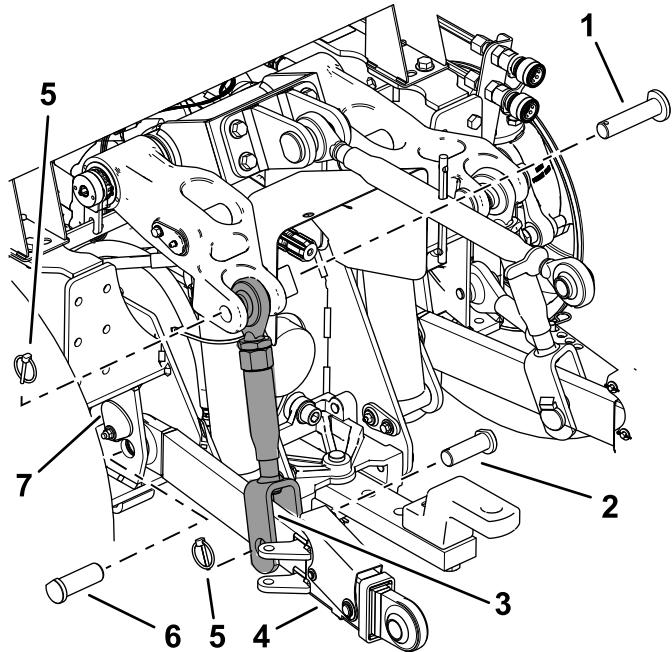
**Important:** Failure to properly grease the machine will result in premature failure of critical parts.

# 4

## Installing the Hitch Linkage

Parts needed for this procedure:

1	Top link
2	Draft link
2	Lift link
2	Sway link
1	Drawbar
1	Hammer strap
2	Screw (M18)
2	Washer
7	Hairpin cotter
9	Clevis pin
2	Lower pin
6	Lynch pin
3	Lift-link pin



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Figure 3

1.	Lift link pin	5.	Lynch pin
2.	Clevis pin	6.	Lower pin
3.	Lift link	7.	Pin plate
4.	Draft link		

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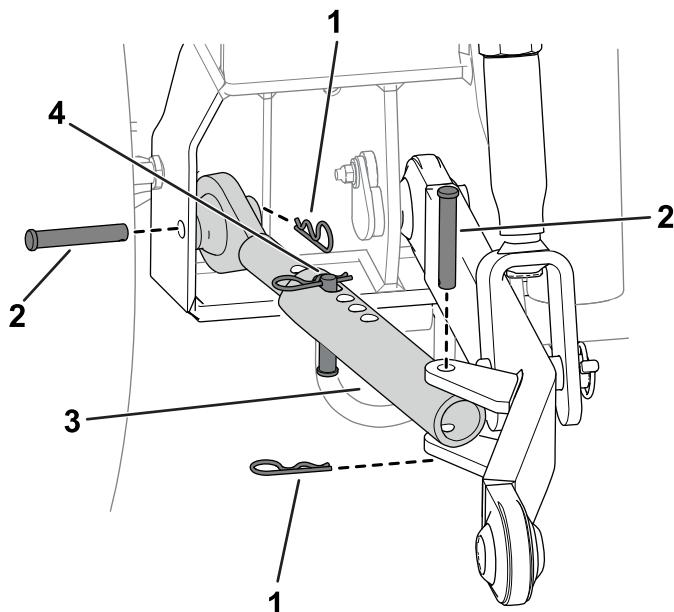
- Install the draft link to the machine as follows:
  - Raise the pin plate (Figure 3), exposing the pin.
  - Remove the lower pin (Figure 3).
  - Position the draft link as shown in Figure 3.
  - Insert the lower pin through the frame and draft-link joint (Figure 3).
  - Lower the pin plate so that it is positioned over the pin.
- Use a clevis pin and a lynch pin to secure the lift link to the draft link (Figure 3).
- Use a clevis pin and a hairpin cotter to secure the sway links to the machine frame (Figure 4).

## Installing the Sway, Draft, and Lift Links

**Note:** Figure 3 and Figure 4 show link installation on the left side of the machine. Repeat this procedure for the right side of the machine.

**Note:** Lift-link adjustment affects the parameter settings for all attachments. Maintain a 1 cm (3/8 inch) length of exposed thread.

- Use a lift-link pin and a lynch pin to secure the lift link to the machine lift arms (Figure 3).



**Figure 4**

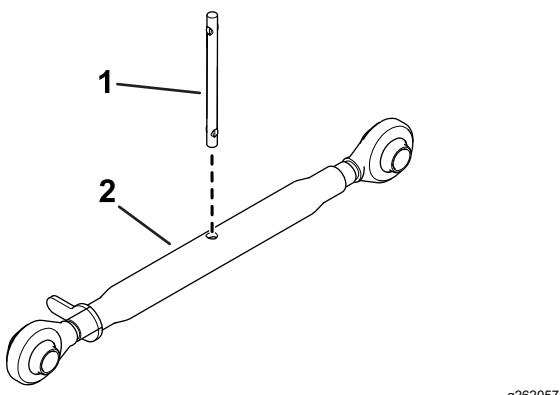
1. Hairpin cotter	3. Sway link
2. Clevis pin	4. Installed clevis pin and hairpin cotter

5. Use a clevis pin and a hairpin cotter to secure the sway link to the draft link ([Figure 4](#)).
6. Install a clevis pin and hairpin cotter to the sway link ([Figure 4](#)).

Use the pin and cotter to adjust the sway as needed for your attachment; refer to [Adjusting the Sway Links \(page 27\)](#).

## Installing the Top Link

1. Install the rod to the top link ([Figure 5](#)).



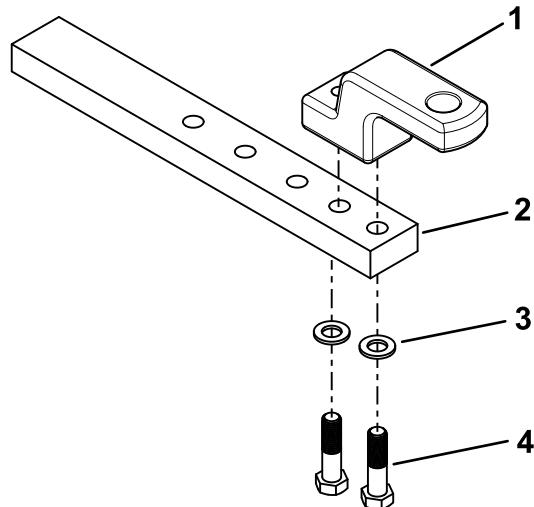
**Figure 5**

1. Rod	2. Top link
--------	-------------

2. Install the top link to the upper-link bracket on the machine; refer to [Installing or Removing the Top Link \(page 26\)](#).

## Installing the Drawbar

1. Use 2 screws (M18) and 2 washers to secure the hammer strap to the drawbar ([Figure 6](#)).



**Figure 6**

1. Hammer strap	3. Washer
2. Drawbar	4. Screw (M18)

2. Torque the screws to 338 to 393 N·m (250 to 290 ft-lb).
3. Install the drawbar to the drawbar support; refer to [Installing the Drawbar Hitch \(page 25\)](#).

# 5

## Installing Spacers for Category 1 Attachments

### Parts needed for this procedure:

1	Top-link bushing
2	Lift-arm bushing

### Procedure

If you install a Category 1 attachment to the 3-point hitch, install spacers to the top link and the lift arms; refer to [Installing Spacers for Category 1 Attachments \(page 28\)](#).

# Product Overview

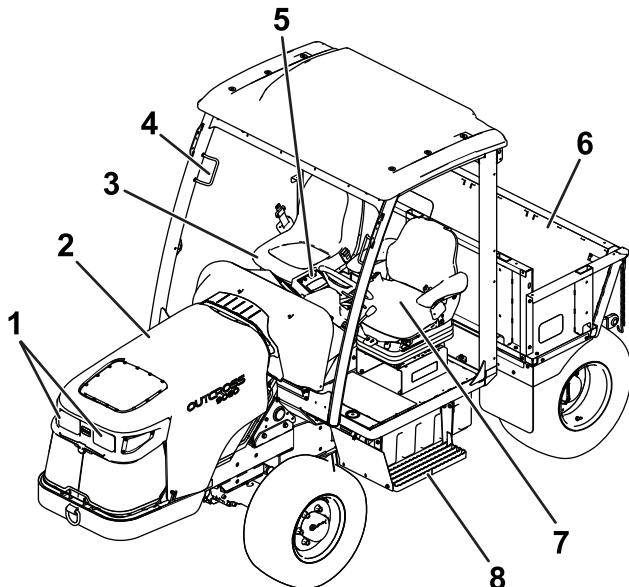


Figure 7

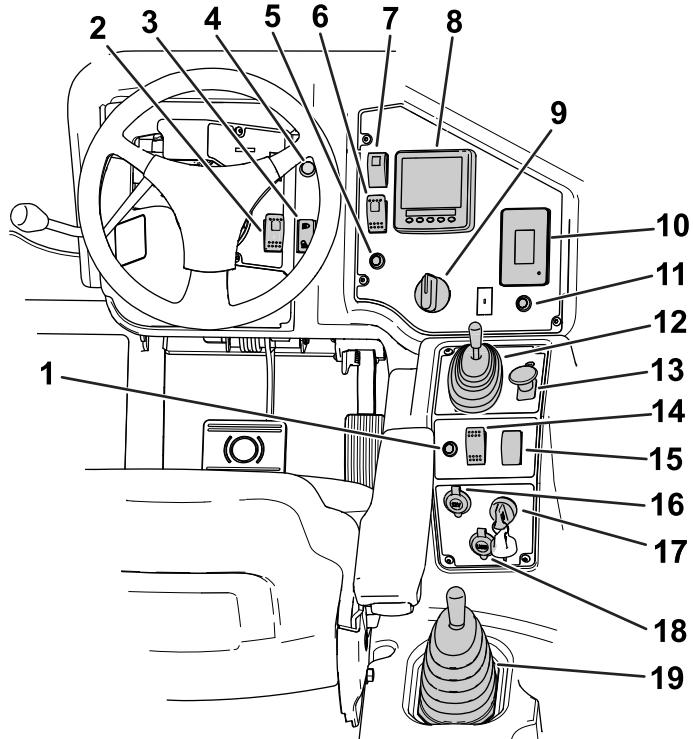


Figure 9

## Controls

Become familiar with all the controls (Figure 8 and Figure 9) before you start the engine and operate the machine.

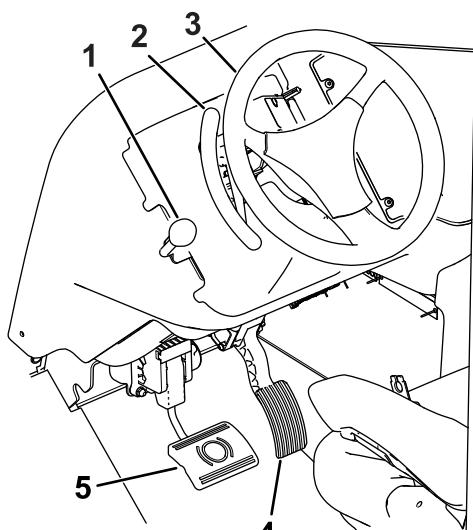


Figure 8

- 1. Shift lever
- 2. Paddle switch
- 3. Steering wheel
- 4. Accelerator pedal
- 5. Brake pedal

## Accelerator Pedal

The accelerator pedal (Figure 9) gives you the ability to vary the engine and/or ground speed of the machine. Pressing the pedal increases the engine speed and ground speed. Releasing the pedal decreases the engine speed and ground speed of the machine.

## Brake Pedal

Use the brake pedal (Figure 9) to stop or slow the machine.

## Shift Lever

The shift lever (Figure 9) has 3 positions: FORWARD, NEUTRAL, and REVERSE (Figure 10).

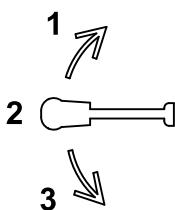


Figure 10

g251057

1. FORWARD  
2. NEUTRAL  
3. REVERSE

You can shift between FORWARD and REVERSE without stopping the machine.

## Paddle Switch

When an attachment is not enabled, the paddle switch (Figure 11) raises and lowers the 3-point hitch.

Additionally, the paddle switch can handle multiple parameters when you have enabled and are using an attachment. The paddle switch can control the 3-point hitch, the 3-point-hitch height, PTO operation, attachment rate, and ground speed. Refer to the *Software Guide* for setting up attachment parameters.

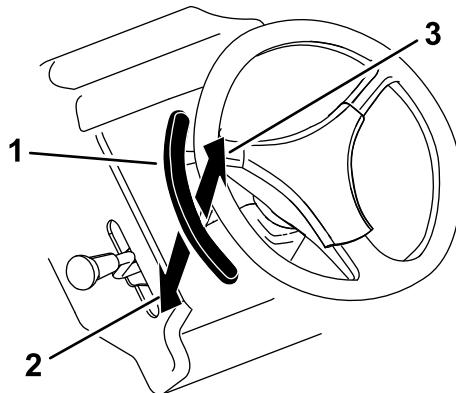


Figure 11

g254643

1. Paddle switch  
2. ENGAGE/LOWER  
3. DISENGAGE/RAISE

## Key Switch

Use the key switch (Figure 9) to start and shut off the engine. It has 3 positions: OFF, ON, and START. Rotate the key clockwise to the START position to engage the starter motor. Release the key when the engine starts. The key moves automatically to the ON position.

To shut off the engine, rotate the key counterclockwise to the OFF position.

## Parking-Brake Switch

Press the parking-brake switch (Figure 9) to engage or disengage the parking brake.

**Note:** The parking brake automatically engages when you shut off the engine.

## InfoCenter

The InfoCenter LCD display (Figure 9) shows information about your machine, such as the operating status, attachment-parameter setup, various diagnostics, and other information about the machine.

When you start the machine, the screen appears and displays the corresponding icons that apply. The screens are dependent on which mode is selected with the operation-mode selector.

Refer to the machine *Software Guide* for more information.

## Status Display

The status display (Figure 9) shows the status of the following machine information:

- Fuel level
- Active faults
- 3-point-attachment height and preset limits
- Engine hours
- Battery voltage
- Engine speed
- Engine coolant and hydraulic fluid temperatures

Press the status display switch (Figure 9) to toggle between data screens.

Refer to the machine *Software Guide* for more information.

## Eco Mode Switch

Eco Mode improves fuel efficiency, decreases the sound level of the machine, and limits the engine speed to 2,300 rpm. Use this mode when in Automotive High or Automotive Low mode. Press the switch (Figure 9) to activate Eco Mode.

## Operation-Mode Selector

Use the operation-mode selector (Figure 9) to select an operation mode. For a description of each mode, refer to [Using the Operation-Mode Selector \(page 36\)](#).

## Light Switch

Use the light switch (Figure 9) to turn on and off the headlights and the work lights.

## Horn Button

Press the horn button (Figure 9) to sound the horn.

## Beacon Switch

Use the beacon switch (Figure 9) to turn on and turn off the beacon.

## Loader Joystick

### If Equipped

Use the loader joystick (Figure 9) to control the front loader and attachment; refer to [Using the Loader Joystick \(page 43\)](#).

## Power-Takeoff (PTO) Switch

Use the power-takeoff (PTO) switch (Figure 9) as follows:

- Pull out the switch (Figure 12) to engage the PTO or enable the attachment (depending on your attachment setup)

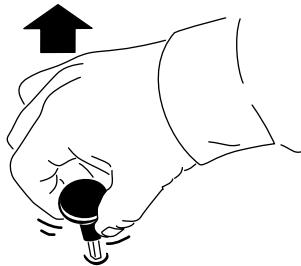


Figure 12

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- Push in the switch (Figure 13) to disengage the PTO or disable the attachment

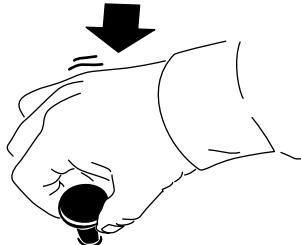


Figure 13

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## Differential-Lock Switch

Press and hold the switch (Figure 9) to engage the differential lock; refer to [Using the Differential Lock \(page 24\)](#).

## Cruise-Control Switch and Speed Increase/Decrease Switch

The cruise-control switch (Figure 9) sets the speed of the machine. Move the cruise-control switch to the center position to turn on the cruise control. Press the switch forward to set the speed. Press the switch rearward or press on the brake pedal to disengage the cruise control.

With the cruise control engaged, you can use the speed increase/decrease switch (Figure 9) to change the speed of the machine. The speed increase/decrease interval can differ depending on your current machine mode and use of attachments.

Refer to the following table for a description of the machine speed increase/decrease interval:

Operating Mode	Speed
Automatic Low	1.6 km/h (1 mph)
Automatic High	1.6 km/h (1 mph)
Attachment Mode (using a rate-controlled attachment)	0.2 km/h (0.1 mph)
Attachment Mode (using a non-rate-controlled attachment)	0.8 km/h (0.5 mph)
Attachment Mode (not performing work with an attachment)	1.6 km/h (1 mph)

## Automotive-Mode-Off Switch

When you press the automotive-mode-off switch (Figure 9) to turn off automotive mode, the engine operates at the maximum allowed speed. When pulling a large weight or approaching a steeper hill, it is best to turn off automotive mode to provide maximum engine power.

## Auxiliary Hydraulic Lever

The auxiliary hydraulic lever (Figure 9) controls the hydraulic flow from the auxiliary ports located in the rear of the machine.

- Moving the lever to the **NEUTRAL** position does not pressurize the top or bottom port.
- Moving the lever to the **RETRACT** position pressurizes the bottom port.
- Moving the lever to the **FLOAT** position locks the auxiliary ports in float mode.
- Moving the lever to the **EXTEND/CONTINUOUS RUN** position pressurizes the top port and continuously runs the hydraulics.

**Important:** Leaving the lever in the **EXTEND/CONTINUOUS RUN** position with no attachment connected to the machine may

cause a significant amount of heat to build up in the hydraulic system and damage the machine.

**Important:** When the cargo bed is installed, hold the lever in the forward position for 1 or 2 seconds after the box contacts the frame to secure it in the lowered position. Do not hold the lever in either the raise or lower position for more than 5 seconds once the cylinders have reached the end of their travel.

## Power Point

Use the power point (Figure 9) to power optional 12 V electrical accessories.

**Note:** The power point does not provide power to your accessory when the key is removed from the switch.

## USB Port

Insert your portable charger into the USB port (Figure 9) to charge a personal device, such as a phone or other electronic device.

**Note:** The USB port does not provide power to your accessory when the key is removed from the switch.

## Adjusting the Operator's Seat

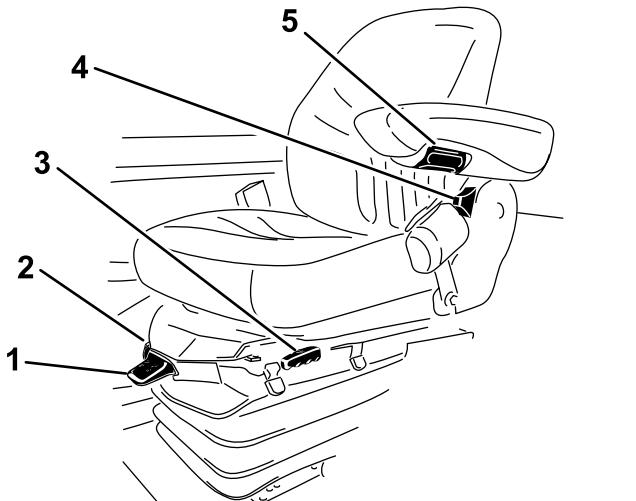


Figure 14

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

desired position, and release the lever to lock the seat into position.

### Armrest Adjustment Knob

Rotate the knob (Figure 14) to adjust the armrest angle.

### Seat-Back Adjustment Lever

Move the lever (Figure 14) to adjust the seat-back angle.

### Weight Gauge

The weight gauge (Figure 14) indicates when the seat is adjusted to your weight. Adjust the height by positioning the suspension within the range of the green region.

### Weight Adjustment Lever

Use this lever (Figure 14) to adjust the seat to your weight. Pull the lever up to increase the air pressure and push the lever down to decrease the air pressure. The proper adjustment is correct when the weight gauge is in the green region.

### Seat-Position Adjustment Lever

Move the seat-position adjustment lever (Figure 14) on the side of the seat outward, slide the seat to the

## Cab Controls

### For Machines with a Cab

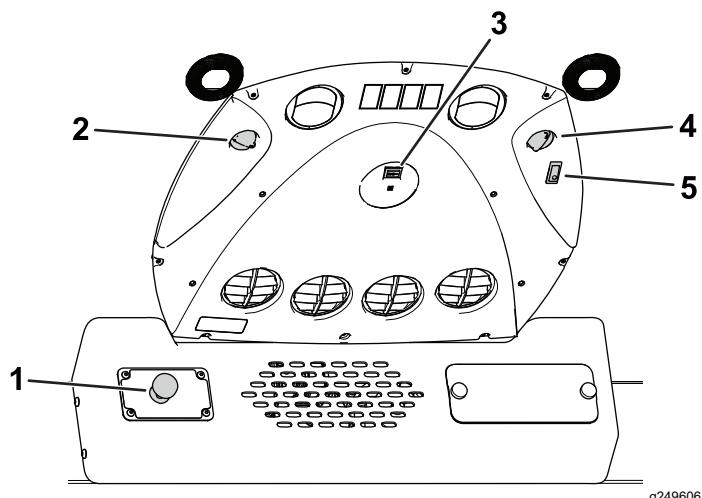


Figure 15

1. Windshield-wiper switch
2. Fan-control knob
3. Light switch
4. Temperature-control knob
5. Air-conditioning switch

#### Windshield-Wiper Switch

Use this switch (Figure 15) to turn the windshield wipers on or off and control the wiper speed.

Press the switch in to spray the windshield with wiper fluid.

#### Fan-Control Knob

Rotate the fan-control knob (Figure 15) to regulate the speed of the fan.

#### Light Switch

Press the switch (Figure 15) to turn the dome light on or off.

#### Temperature-Control Knob

Rotate the temperature-control knob (Figure 15) to regulate the air temperature in the cab.

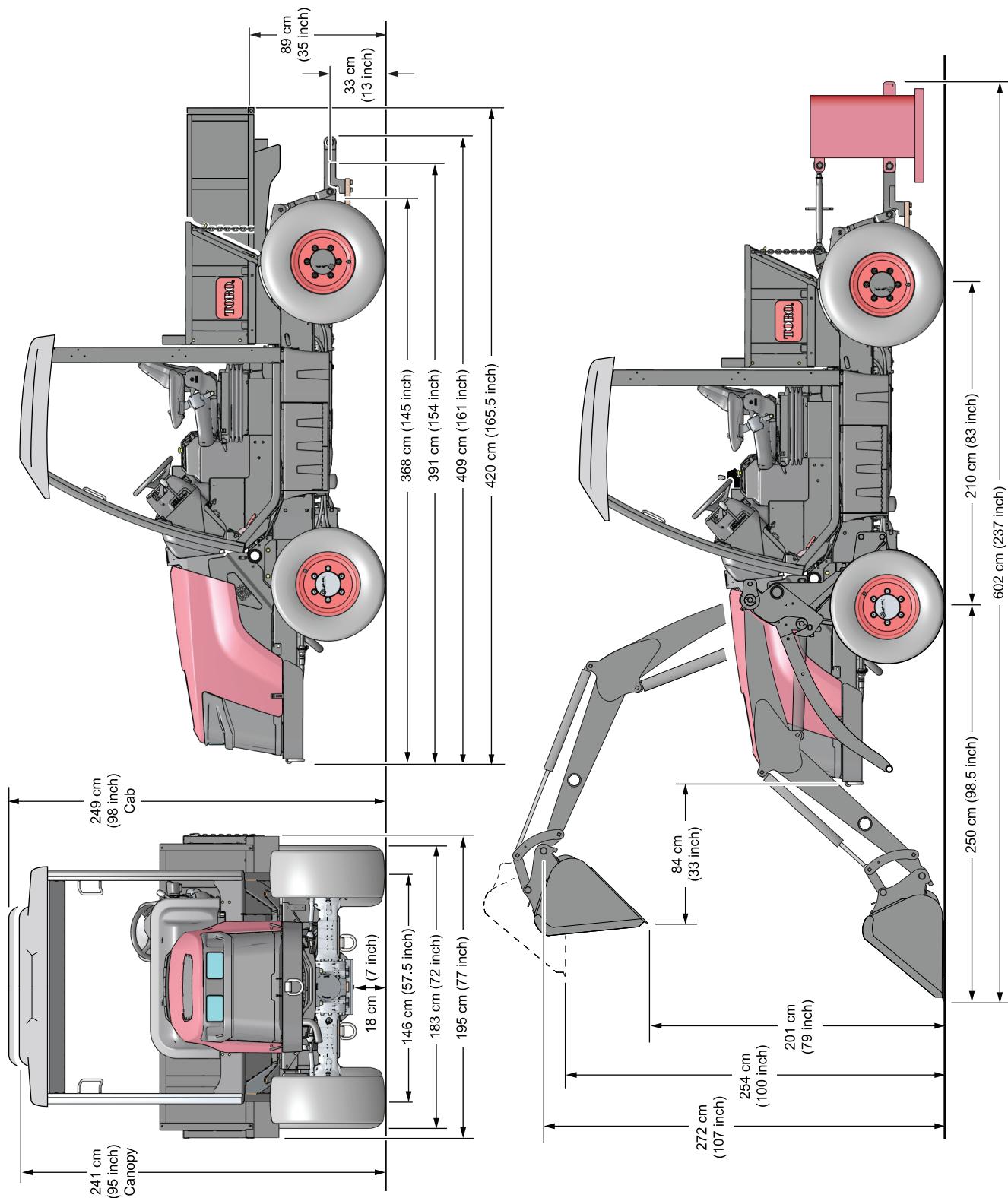
#### Air-Conditioning Switch

Use this switch (Figure 15) to turn the air conditioning on or off. Use the fan-control knob to control the air-conditioning.

**Note:** The engine rpm rises when you turn on the air-conditioning.

## Specifications

- Refer to [Figure 16](#) for the overall dimensions of the machine.
- Refer to the [Traction Unit \(page 21\)](#) table for additional dimensions.



**Figure 16**

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## Traction Unit

Description	Dimension, Weight, or Measurement	
Weight (dry)	<i>Model 07511AA</i>	Base: 2,392 kg (5,275 lb)
	<i>Model 07511BA</i>	Base: 2,492 kg (5,495 lb) With loader and ballast box (mortar added) installed: 3,495 kg (7,705 lb)
	<i>Model 07511CA</i>	Base: 2,633 kg (5,805 lb)
	<i>Model 07511DA</i>	Base: 2,733 kg (6,025 lb) With loader and ballast box (mortar added) installed: 3,735 kg (8,235 lb)
Gross vehicle weight	All models: 5,443 kg (12,000 lb)	
Maximum axle weight	Front axle (with loader): 4,535 kg (10,000 lb) Front axle (without loader): 2,268 kg (5,000 lb) Rear axle: 3,175 kg (7,000 lb)	
Rated capacity	Standard bed: 453 kg (1,000 lb) Cargo bed: 2,041 kg (4,500 lb)	
Maximum ground speed	Forward: 23 km/h (14 mph) Reverse: 11 km/h (7 mph)	

- For loader specifications, refer to [Loader Specifications \(page 38\)](#).
- For 3-point hitch specifications, refer to [3-Point-Hitch Specifications \(page 28\)](#).

## 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 authorized Toro distributor or go to [www.Toro.com](http://www.Toro.com) for a list of all approved accessories.

To ensure optimum performance and continued safety certification of the machine, use only genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

# Operation

## 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 shut off the engine quickly.
- Only the operator and one passenger are allowed on the machine at the same time.
- When entering and exiting the operator platform, use the step and handhold. Use care when mud, snow, or moisture is present.
- Inspect all safety devices and decals. Do not operate the machine until all safety devices are in place and functioning properly and all decals are present and legible.
- Chemical substances used may be hazardous and toxic.

## Fuel Safety

- Use extreme care in handling fuel. It is flammable and its vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Do not remove the fuel cap or fill the fuel tank while the engine is running or hot.
- Do not add or drain fuel in an enclosed space.
- Do not store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or other appliance.
- If you spill fuel, do not attempt to start the engine; avoid creating any source of ignition until the fuel vapors have dissipated.

## Performing Daily Maintenance

Before starting the machine each day, perform the Each Use/Daily procedures listed in [Daily Maintenance Checklist \(page 56\)](#).

## Checking the Tire Air Pressure

**Service Interval:** Before each use or daily

The appropriate tire pressure varies with the use of the loader or aggressive tires; refer to the tire-air-pressure table below:

### Tire Air Pressure

Machine characteristic	Front tire pressure	Rear tire pressure
Loader equipped	448 kPa (65 psi)	152 kPa (22 psi)
Loader removed	152 kPa (22 psi)	152 kPa (22 psi)

### ⚠ DANGER

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

**Do not underinflate the tires.**

**Important:** Maintain the recommended pressure in all tires to ensure proper machine performance. **Do not underinflate the tires.**

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

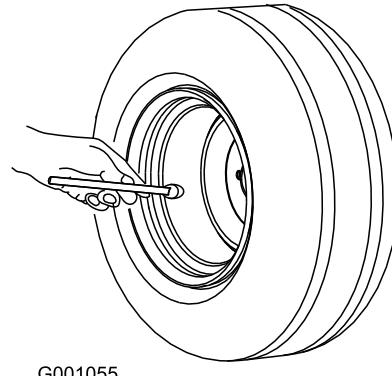


Figure 17

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## Checking the Safety-Interlock System

**Service Interval:** Before each use or daily

The safety-interlock system prevents the engine from starting unless all of the following occurs:

- You are sitting on the seat or the parking brake is engaged.
- The power takeoff (PTO) is disengaged.
- The auxiliary-hydraulic lever is in the center position.
- The shift lever is in the NEUTRAL position
- Your foot is off the accelerator pedal.

The machine is equipped with a warning buzzer that is used to notify you of certain machine conditions.

The buzzer sounds when:

- You leave the seat with the shift lever in the FORWARD or REVERSE positions;
- You leave the seat with the traction pedal out of neutral;
- You leave the seat with the parking brake disengaged and the PTO is engaged;

### ⚠ CAUTION

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

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

# Filling the Fuel Tank

## Fuel Tank Capacity

Fuel tank capacity: 53 L (14 US gallons)

## Fuel Specifications

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

**Failure to observe the following cautions may damage the engine.**

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

### Petroleum Diesel

Cetane rating: 45 or higher

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

### Fuel Table

Diesel fuel specification	Location
ASTM D975	
No. 1-D S15	USA
No. 2-D S15	
EN 590:96	European Union
ISO 8217 DMX	International
BS 2869-A1 or A2	United Kingdom
JIS K2204 Grade No. 2	Japan
KSM-2610	Korea

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

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

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

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

## Using Biodiesel

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

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

**Biodiesel fuel specification:** ASTM D6751 or EN14214

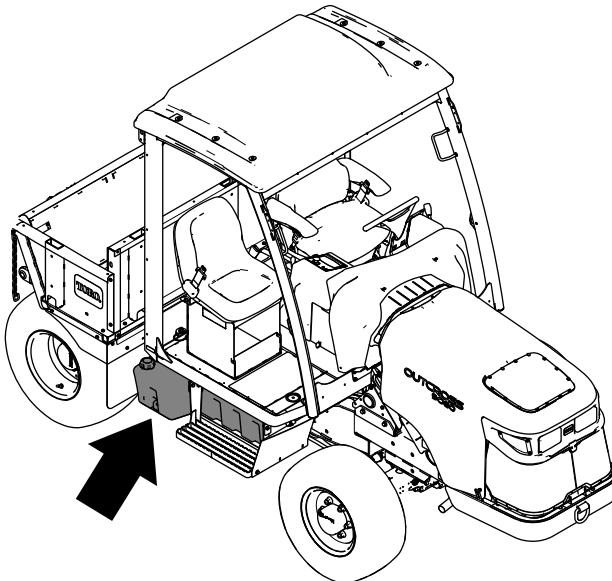
**Blended fuel specification:** ASTM D975, EN590, or JIS K2204

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

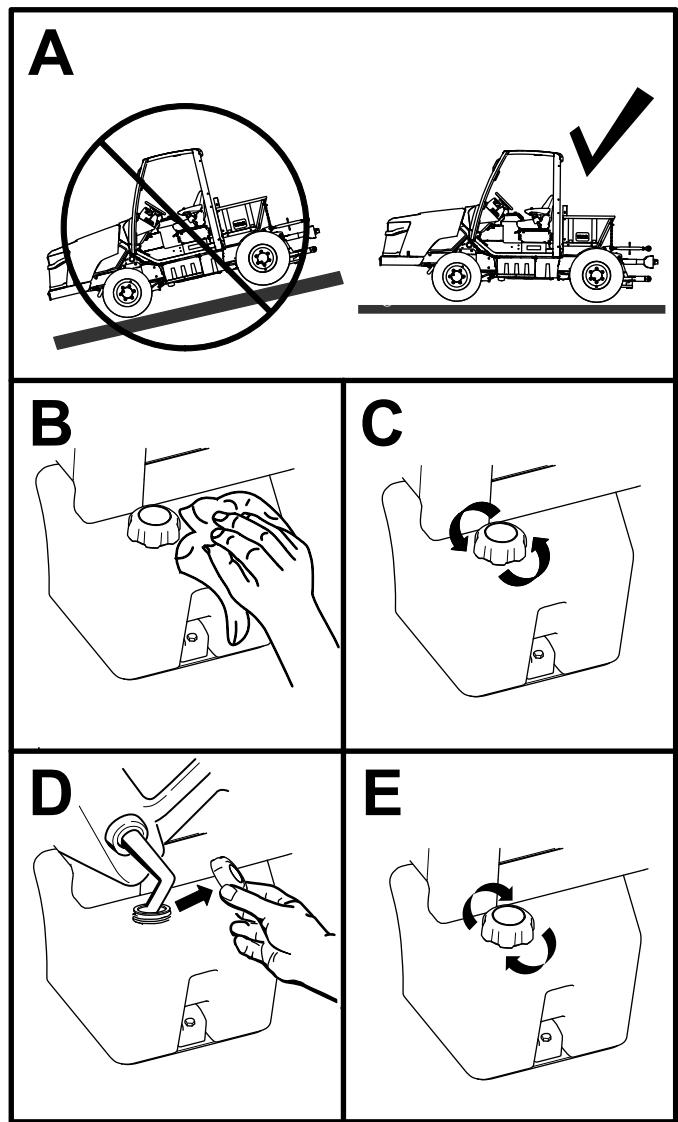
Observe the following precautions:

- Biodiesel blends may damage painted surfaces.
- Use B5 (biodiesel content of 5%) or lesser blends in cold weather.
- Monitor seals, hoses, gaskets in contact with fuel as they may degrade over time.
- Fuel filter plugging may occur for a time after you convert to biodiesel blends.
- For more information on biodiesel, contact your authorized Toro distributor.

## Adding Fuel



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Figure 18

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 the specified fuel as described in [Fuel Specifications \(page 23\)](#).

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

## Adjusting the Seat

Position the seat where you have the best control of the machine and are most comfortable. To adjust the seat, refer to [Adjusting the Operator's Seat \(page 18\)](#).

## Using the Differential Lock

### ⚠ WARNING

Loss of control or damage to the machine or turf can happen if you do not properly use the differential lock.

- Come to a complete stop to engage the differential lock.
- Disengage the differential lock when driving on dry asphalt and concrete.
- Use differential lock only when necessary for improved ground engagement.

## Engaging the Differential Lock

1. Ensure that the machine is completely stopped.
2. Push and hold the differential-lock switch to engage the differential lock.

**Note:** The differential lock is only active when the differential-lock switch is pushed or the parking brake is engaged.



**Note:** The differential-lock icon appears in the InfoCenter when you engage the differential lock.

## Disengaging the Differential Lock

Disengage the differential lock by releasing the differential-lock switch.

**Note:** You can release the differential lock while the machine is in motion. The differential lock may stay engaged while an axle load is present. The differential lock releases once you remove an axle load.

# Adjusting the Hitch Linkage

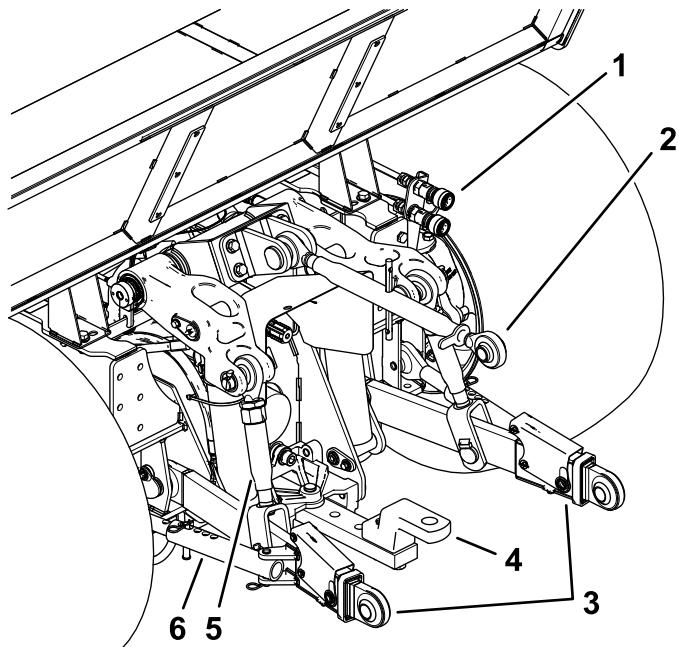


Figure 19  
Rear end of the machine

1. Hydraulic outlets	4. Drawbar
2. Top link	5. Lift link
3. Draft links	6. Sway link

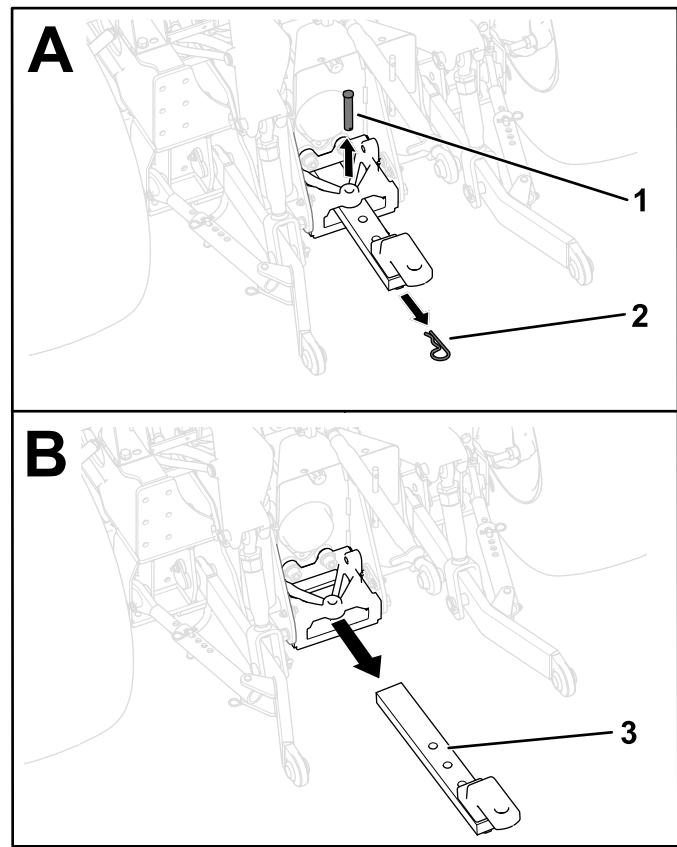


Figure 20

1. Clevis pin	3. Drawbar
2. Hairpin cotter	

2. Remove the drawbar from the support ([Figure 20](#)).

## Using the Drawbar Hitch

### Understanding the Drawbar-Hitch Weight Capacities

Do not exceed the following weight capacities:

- **Maximum allowed transport load:**
  - Attachments **with** brakes: 7,250 kg (16,000 lb)
  - Attachments **without** brakes: 1,497 kg (3,300 lb)
- **Vertical tongue weight:** 800 kg (1,750 lb)

### Removing the Drawbar Hitch

1. Remove the hairpin cotter and the clevis pin that secure the drawbar to the drawbar support ([Figure 20](#)).

### Installing the Drawbar Hitch

You can install the drawbar in a left-side-adjusted, right-side-adjusted, or centered position ([Figure 21](#)). Determine the appropriate drawbar position for your attachment, then install the drawbar as follows:

1. Insert the drawbar into the drawbar support ([Figure 21](#)).

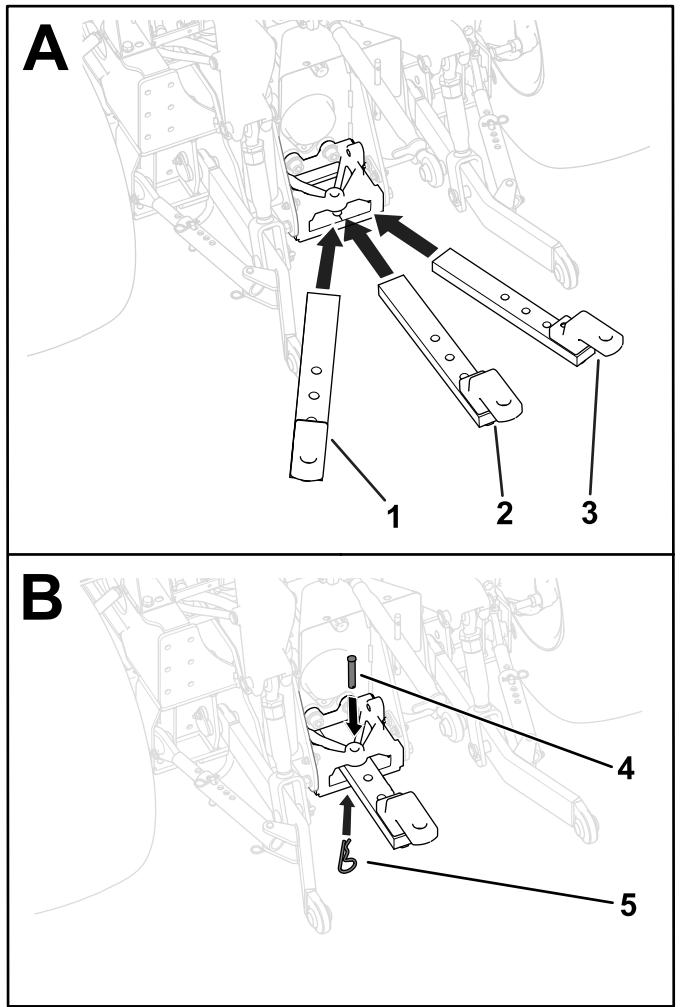


Figure 21

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1. Drawbar—left-side-adjusted
2. Drawbar—centered
3. Drawbar—right-side-adjusted
4. Clevis pin position
5. Hairpin cotter

2. Secure the drawbar to the support by inserting the clevis pin through the one of the three mount hole locations in the drawbar and attaching the hairpin cotter to the pin (Figure 21).

**Note:** Refer to your attachment *Operator's Manual* for the correct drawbar position.

## Using the Pintle Hitch

### Optional

The Pintle Hitch Kit is available for use with your machine; see your authorized Toro distributor.

## Adjusting the Top Link

### Leveling an Attachment Front-to-Back

**Note:** If you are attaching a Category 1 attachment to the machine, use the appropriate spacers and hubs.

1. Loosen the jam nut on the top link (Figure 22).
2. Rotate the center link until the attachment is level to the ground, from front-to-back.

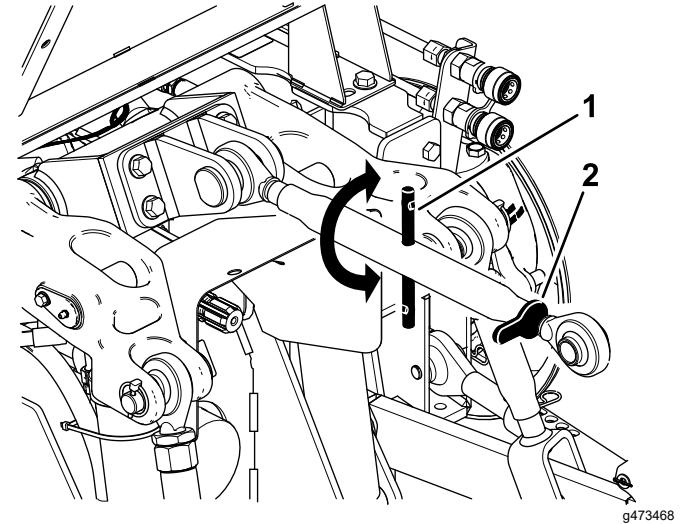


Figure 22

1. Top link

2. Jam nut

3. Tighten the jam nut (Figure 22).

## Installing or Removing the Top Link

**Note:** Refer to Figure 23 for this procedure.

Use the lynch pin and clevis pin to install the top link to the upper-link bracket; remove the pins to remove the top link from the upper-link bracket.

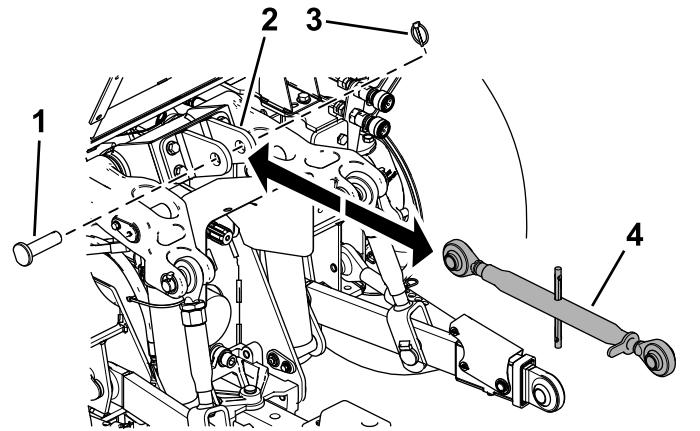


Figure 23

1. Clevis pin

2. Upper-link bracket

3. Lynch pin

4. Top link

# Adjusting the Lift Links

## Leveling the Attachment Side-to-Side

**Note:** Adjusting the lift links affects the parameter settings for all attachments. Maintain a 1 cm (3/8 inch) length of exposed thread.

1. Loosen the jam nut on either lift link (Figure 24).
2. Adjust the lift link in or out until the attachment is level (Figure 24).

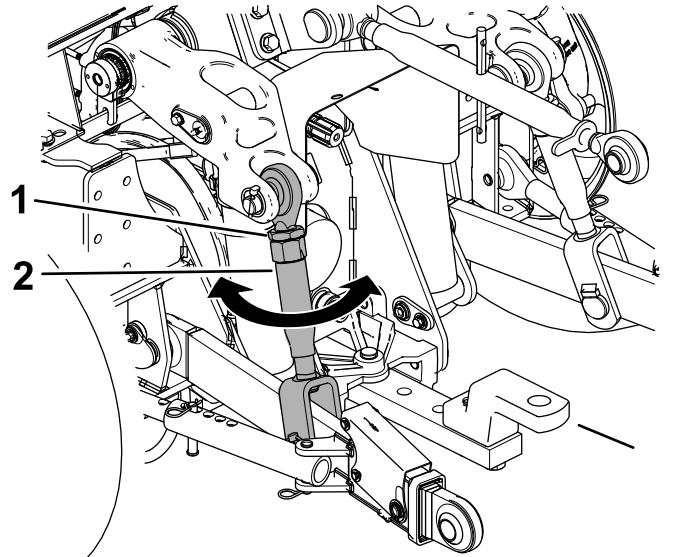


Figure 24

1. Jam nut
2. Lift link

3. Tighten the jam nut (Figure 24).

## Adjusting the Sway Links

**Note:** Check the attachment *Operator's Manual* for adjusting the sway procedure. For most implements, a small amount of sway (13 to 25 mm or 1/2 to 1 inch) is needed.

**Note:** If you are attaching a Category 1 attachment to the machine, use the appropriate spacers and hubs.

1. Remove the hairpin and cotter pin on each sway link (Figure 25).
2. Adjust the sway link in or out until the implement is level (Figure 25).
3. After adjusting, secure the sway link with the cotter pin and hairpin (Figure 25).

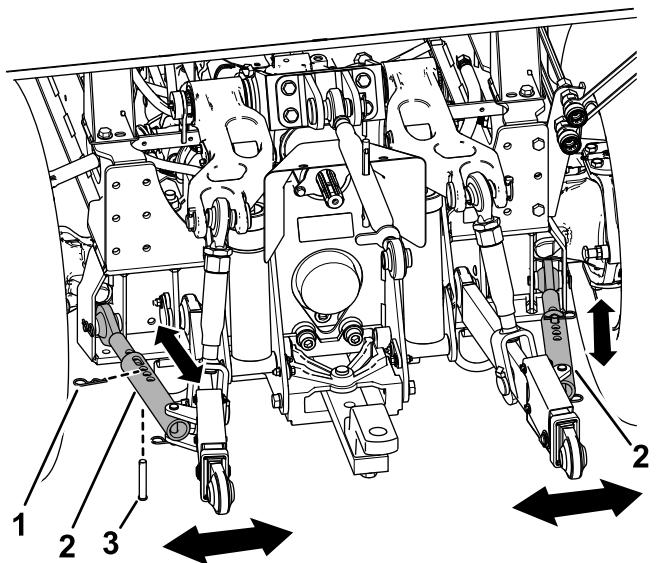


Figure 25

1. Hair pin
2. Sway link
3. Cotter pin

## Connecting the Rear Power-Takeoff (PTO)

1. Park the machine on a level surface, move the shift lever to the NEUTRAL position, engage the parking brake, shut off the engine, and remove the key.
2. Align the quick-connect coupling of the driveshaft with the output shaft of the PTO (Figure 26).

**Note:** You can rotate the rear PTO enough to aid in the spline alignment.

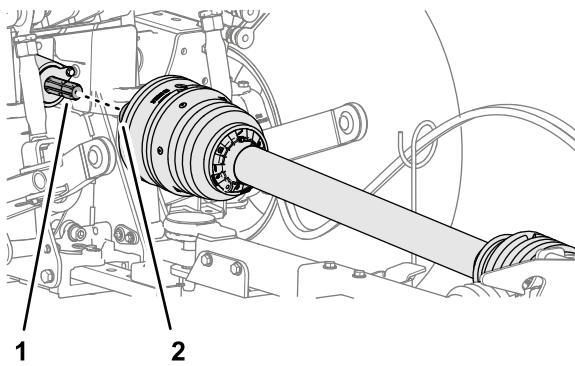


Figure 26

1. PTO output shaft (machine)
2. Quick-connect coupling (driveshaft)
3. Pull back the lock collar of the driveshaft yoke (Figure 27).

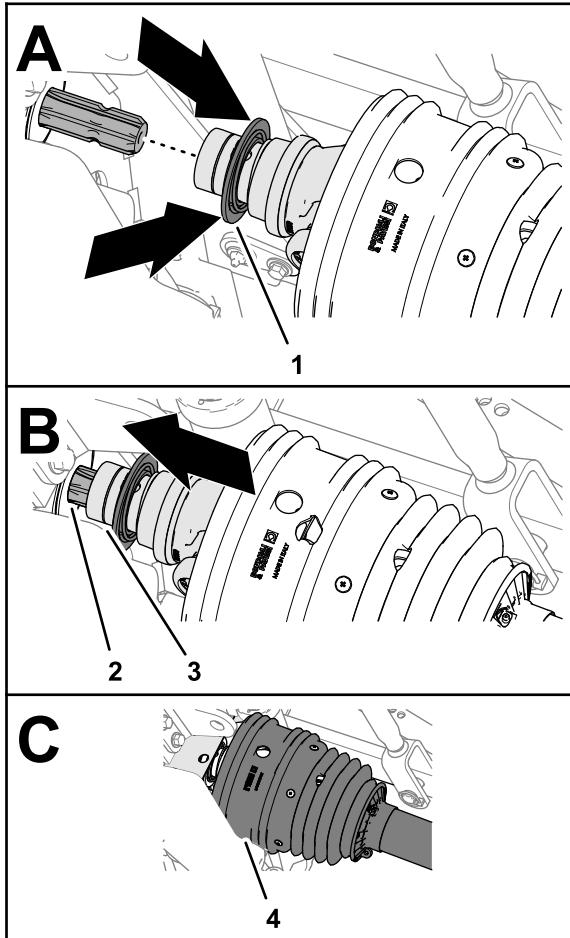


Figure 27

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1. Lock collar (driveshaft yoke)
2. Splines (PTO output shaft)
3. Driveshaft yoke
4. Shield

---

4. While pulling back the lock collar, push the driveshaft yoke forward and slip the socket of the yoke over the splines of the PTO output shaft (Figure 27).
5. Ensure that the lock at the driveshaft yoke snaps into the groove of the PTO output shaft securely.
6. Ensure that the shield is positioned over the driveshaft yoke (Figure 27).

## Using the 3-Point Hitch

### 3-Point-Hitch Specifications

Description	Specification
Category	2
Lift capacity	1,135 kg (2,500 lb)
Lift point	61 cm (24 inches)

## Installing Spacers for Category 1 Attachments

By default, Category 2 attachments can be secured to the 3-point hitch. To secure Category 1 attachments to the 3-point hitch, you must first install spacers (Figure 28) as follows:

- Install the top-link spacer (2.22 cm or 7/8 inch) to the top link.
- Install the lift-arm spacers (1.91 cm or 3/4 inch) to the lift arms.

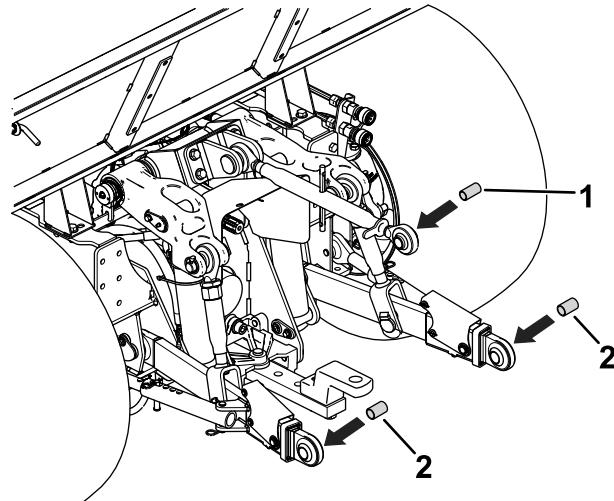


Figure 28

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1. Top-link spacer
2. Lift-arm spacers

**Note:** If you misplace the spacers, refer to your authorized Toro distributor for additional spacers.

## Installing a Rear 3-Point Attachment

**Note:** The InchMode Kit helps with installing a 3-point attachment. Contact your authorized Toro distributor for more information about the InchMode Kit.

1. Slowly back the machine up and align the draft links to the lower connections of the attachment (Figure 29).

You can adjust the draft links outward to help with securing the links to the attachment. To adjust the draft link, press on the latch and move the link out (Figure 30).

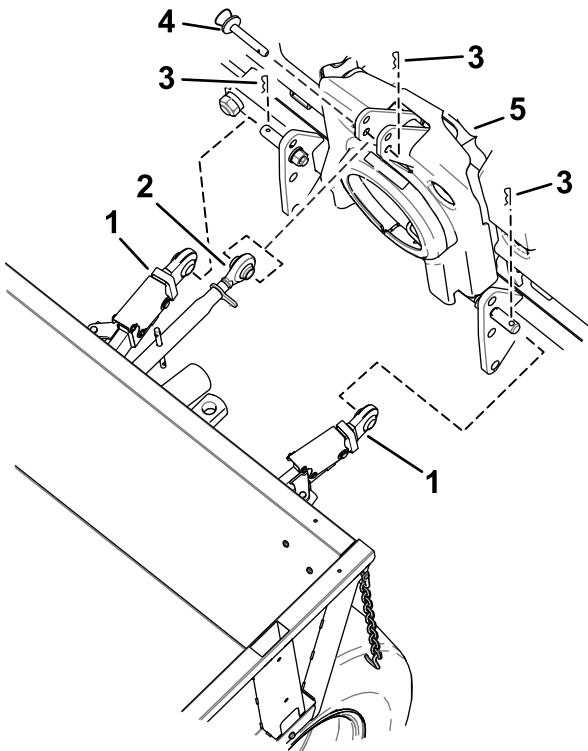


Figure 29

- 1. Draft link
- 2. Top link
- 3. Hairpin cotter
- 4. Top link pin
- 5. 3-point attachment

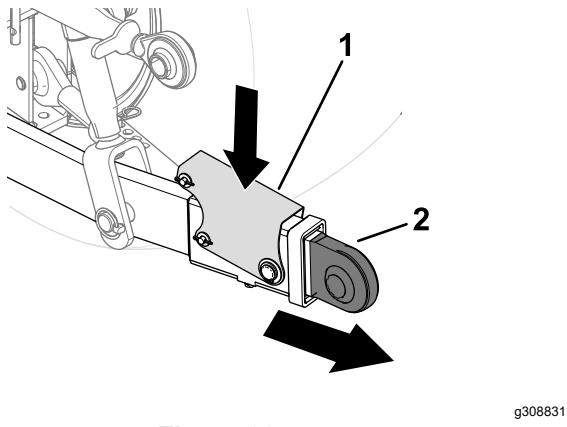


Figure 30

- 1. Latch
- 2. Draft link

2. Secure the draft links to the attachment (Figure 29).
3. Position the top link to the top connection of the attachment (Figure 29).
4. Secure the top link to the attachment (Figure 29).
5. After installing the attachment, perform the following steps:
  - A. **If you adjusted the draft links** (shown in step 2): Start the engine and reverse the machine until the draft links snap into place.

- B. Level the attachment per the instructions in the equipped attachment *Operator's Manual*.

## Removing a Rear 3-Point Attachment

1. Park the machine and attachment on a level surface.
2. Lower the attachment to the level surface.
3. Engage the parking brake and shut off the engine.
4. Remove the top link from the attachment (Figure 29).
5. Remove the draft links from the attachment (Figure 29).
6. Remove the pins from the sway links.
7. Start the engine, disengage the parking brake, and slowly drive the machine away from the attachment.

## Using the Hydraulic Ports

### ⚠ WARNING

Hydraulic fluid escaping under pressure can penetrate skin and cause injury. Seek immediate medical attention if fluid is injected into skin. Injected fluid must be surgically removed within a few hours by a doctor.

- 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; never use your hands.

### ⚠ CAUTION

Hydraulic couplers, hydraulic lines/valves, and hydraulic fluid may be hot. If you contact hot components, you may be burned.

- Wear gloves when operating the hydraulic couplers.
- Allow the machine to cool before touching hydraulic components.
- Do not touch hydraulic fluid spills.

# Connecting the Attachment Hydraulic Hoses

If an attachment requires hydraulic power for operation, connect the attachment hydraulic hoses as follows:

1. Shut off the engine and remove the key.
2. Move the auxiliary-hydraulic lever to the FLOAT position to relieve pressure at the hydraulic couplers.
3. Remove the protective covers from the hydraulic ports on the machine.
4. Ensure that all foreign matter is cleaned from the hydraulic ports.
5. Identify the quick-disconnect fittings for the rear attachment-extend and retract circuits for the tractor.
6. Identify the attachment extend and retract hoses.
7. Connect the quick-disconnect fitting of the attachment extend hose to the quick-disconnect fitting of the extend circuit (Figure 31).

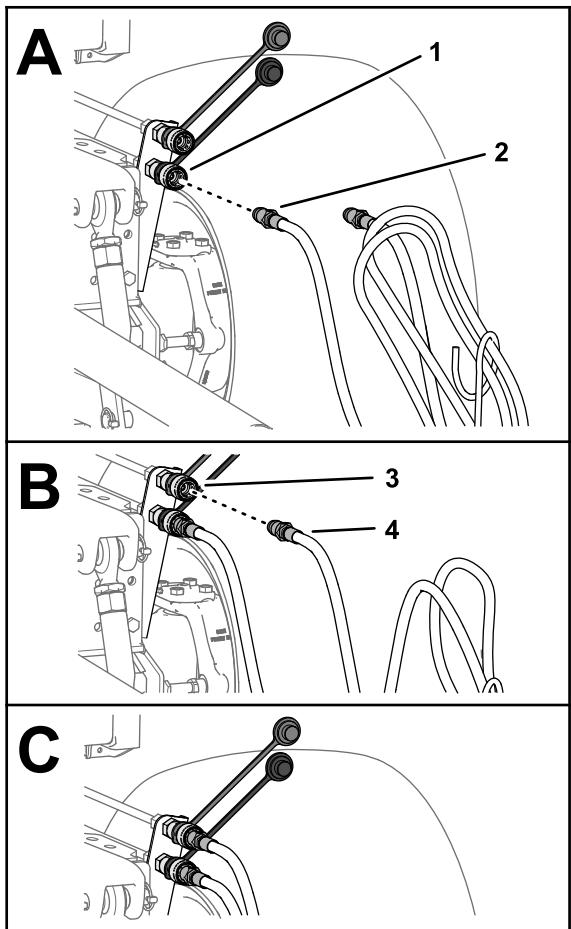


Figure 31

1. Quick-disconnect fitting (rear attachment-extend circuit)
2. Extend hose
3. Quick-disconnect fitting (rear attachment-retract circuit)
4. Retract hose
8. Connect the quick-disconnect fitting of the attachment retract hose to the quick-disconnect fitting of the retract circuit (Figure 31).
9. Confirm that the connections are secure by pulling on the hoses.

# Removing the Attachment Hydraulic Hoses

1. Engage the parking brake, lower any attachments (if equipped), shut off the engine, and remove the key.
2. Move the auxiliary-hydraulic lever to the FLOAT position to relieve pressure at the hydraulic couplers.
3. Pull back on the hydraulic port collars and remove the hoses from the hydraulic ports.

**Note:** A small amount of oil may remain between the port and hose ends. Have a rag available to wipe up any residual oil.

- Clean the hydraulic ports and install the protective covers into the ports.

## Adding Ballast to the Machine

### ▲ DANGER

To prevent personal injury or death from rollover when the machine is equipped with the loader, add the recommended amount of ballast to the machine.

- Add the correct ballast to the hitch.
- Use ballast to prevent the front axle or tractor components from overload during loader operation.
- Always wear your seatbelt.

### Determining the Ballast

Add ballast to the hitch until the rear axle weight on level ground is at least 25% of the gross vehicle weight.

Use the following steps and formulas to determine the ballast:

1. Put a full load in the bucket, lift the bucket to the furthest position forward as shown in [Figure 32](#).
2. At a scale, measure the gross vehicle weight (GVW) at the front and rear axle, with the loader raised so that the bucket pivot pin is as high as the boom pivot pin ([Figure 32](#)).
3. Use the following formulas in the order listed in the table to calculate the amount of rear ballast.

**Note:** If R is **less** than required rear axle weight (RRAW), no ballast is required ([Figure 32](#)).

If R is **greater** than RRAW, ballast is required (RBR).

### Formulas

1	GVW	=	F	+	R
2	RRAW	=	GVW	×	25%
3	RBR	=	RRAW	-	R
4	BR	=	RBR	×	133%

### Abbreviations

### Abbreviations (cont'd.)

GVW	Gross vehicle weight
RRAW	Required rear axle weight
RBR	Rear ballast required
BR	Ballast required

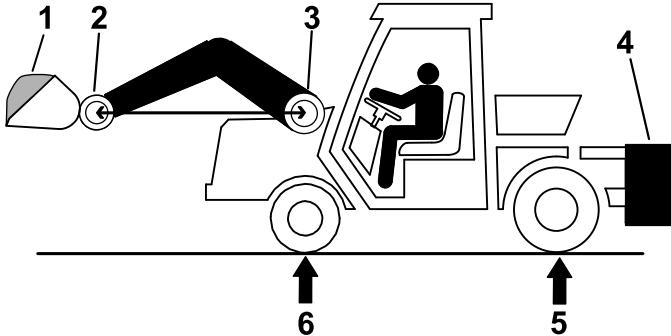


Figure 32

1. Full load	4. 3-point ballast
2. Bucket pivot	5. R
3. Arm pivot	6. F

### Filling the Ballast Box

- Weight can be added to the ballast box by adding 0.3 m<sup>3</sup> (10.4 ft<sup>3</sup>) of mortar.

**Note:** A 36 kg (80 lb) bag of mortar contains about 0.02 m<sup>3</sup> (0.6 ft<sup>3</sup>) of mortar.

- Do not add concrete or gravel to the ballast box.
- If you need more weight, you may use additional weights. Refer to your authorized Toro distributor for weights.

### Installing the Ballast Box

If you mount and operate the loader, you must first install the ballast box to the 3-point hitch. Refer to [Installing a Rear 3-Point Attachment \(page 28\)](#).

### Removing the Ballast Box

1. Remove the loader; refer to [Removing the Loader \(page 38\)](#).
2. Remove the ballast box; refer to [Removing a Rear 3-Point Attachment \(page 29\)](#).

Abbreviations for the formulas	
F	Front axle weight
R	Rear axle weight

# Entering the Machine

## ⚠ WARNING

Improperly entering the machine can cause injury.

**Always use the handle and step to enter the machine. To avoid injury while entering, maintain a 3-point contact: 1 hand on the handle and 2 feet on the step.**

Enter the machine as shown in [Figure 33](#).

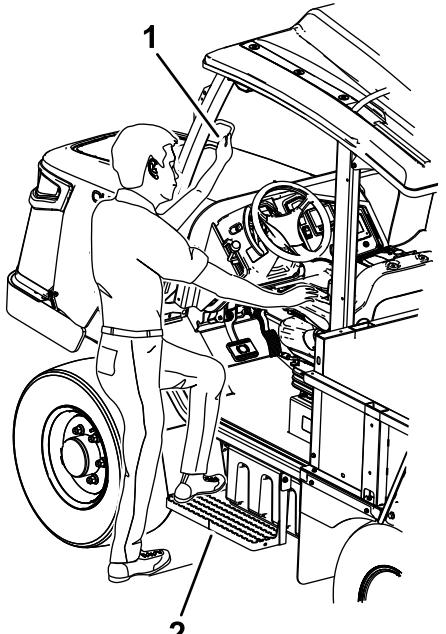


Figure 33

1. Handle

2. Step

- When using chemicals, use appropriate personal protective equipment (PPE). Refer to the instructions from the chemical manufacturer.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Operate the machine outdoors or in a well-ventilated area only.
- Do not exceed the maximum gross vehicle weight (GVW) of the machine.
- Use extra caution when braking or turning the machine with a heavy load in the bed.
- Carrying oversized loads in the bed reduces the stability of the machine. Do not exceed the carrying capacity of the bed.
- Carrying material that cannot be bound to the machine, such as a large tank of liquid, may affect the steering, braking, and stability of the machine. When you carry material that cannot be bound to the machine, use caution when steering or braking.
- Carry a reduced load and reduce the ground speed of the machine when operating on rough, uneven terrain, and near curbs, holes, and other sudden changes in terrain. Loads may shift, causing the machine to become unstable.
- Before you start the engine, ensure that the transmission is in neutral, the parking brake is engaged, and you are in the operating position.
- You and your passenger should remain seated with fastened seatbelts whenever the machine is moving. Keep your hands on the steering wheel; your passenger should use the handholds provided. Keep arms and legs within the machine body at all times.
- Do not mount or dismount a moving machine.
- Operate the machine only in good visibility. Watch for holes, ruts, bumps, rocks, or other hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision.
- Always watch out for and avoid low overhangs such as tree limbs, door jambs, overhead walkways, etc.
- Look behind and down before reversing the machine to be sure of a clear path.
- When using the machine on public roads, follow all traffic regulations and use any additional accessories that may be required by law, such as lights, turn signals, slow-moving vehicle (SMV) signs, and others as required.
- If the machine ever vibrates abnormally, stop the machine immediately, shut off the engine, remove the key, wait for all movement to stop, and inspect

## During Operation

### During Operation Safety

#### General Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Your passenger should sit in the designated seating position only. Do not carry passengers in the bed. Keep bystanders and pets away from the machine during operation.
- Wear appropriate clothing, including eye protection; long pants; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear loose clothing or loose jewelry.

for damage. Repair all damage to the machine before resuming operation.

- It can take longer to stop the machine on wet surfaces than on dry surfaces.
- Do not touch the engine, transmission, axles, exhaust pipe, diesel-particulate filter, or hydraulic components while the engine is running, or soon after you shut off the engine, because these areas may be hot enough to cause burns.
- Use extreme caution when freeing a mired machine.
  - Inspect any chains and cables before using them. Failure of the chains, cables, and the tow bar present a serious hazard.
  - Use the drawbar on the towing machine when freeing a mired machine.
- Do not leave a running machine unattended.
- Before leaving the operating position, do the following:
  - Park the machine on a level surface.
  - Engage the parking brake.
  - Lower the cargo bed, loader, and attachments (if equipped).
  - Return the shift lever to the NEUTRAL position.
  - Shut off the engine and remove the key.
- Do not operate the machine when there is the risk of lightning.
- Keep hands, feet, and clothing away from the rotating attachment driveshaft.
- Use only accessories approved by The Toro® Company.

## Rollover Protection System (ROPS) Safety

- Ensure that the seat belt is attached and that you can release it quickly in an emergency.
- The operator and passenger must always wear their seatbelts.
- **Do not** remove the ROPS from the machine.
- Check carefully for overhead obstructions and do not contact them.
- Keep the ROPS in safe operating condition by thoroughly inspecting it periodically for damage.
- Do not operate the machine with a damaged ROPS. Do not repair or alter the ROPS.
- The ROPS is an integral safety device.

## Slope Safety

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death.

- Survey the site to determine which slopes are safe for operating the machine and establish your own procedures and rules for operating on those slopes. Always use common sense and good judgment when performing this survey.
- If you feel uneasy operating the machine on a slope, do not do it.
- Keep all movement on slopes slow and gradual. Do not suddenly change the speed or direction of the machine.
- Avoid operating the machine on wet terrain. Tires may lose traction. A rollover can occur before the tires lose traction.
- If you begin to lose momentum while climbing a slope, gradually engage the brakes and slowly reverse the machine straight down the slope.
- Turning on a slope can be dangerous. If you must turn on a slope, do it slowly and cautiously.
- Loads and attachments affect stability on a slope.
  - Carry a reduced load and reduce your ground speed when operating on a slope.
  - Secure the load to the machine bed to prevent the load from shifting.
  - Take extra care when hauling loads that shift easily (e.g., liquids, rock, or sand).
- Avoid starting, stopping, or turning the machine on a slope, especially with a load.
  - Stopping while going down a slope takes longer than stopping on level ground.
  - If you must stop the machine, avoid sudden speed changes, which can cause the machine to tip or roll over.
  - Do not engage the brakes suddenly when rolling rearward, as this may cause the machine to overturn.
- Do not drive the machine near drop-offs, ditches, or embankments. The machine could suddenly roll over if a wheel goes over the edge or if the edge gives way.

## Loading and Dumping Safety

- Do not exceed the gross vehicle weight (GVW) of the machine when operating it with a load in the bed and/or towing a trailer; refer to [Specifications \(page 19\)](#).
- Distribute the load in the bed evenly to improve the stability and control of the machine.
- Before dumping the cargo bed (if equipped), ensure that there is no one behind the machine.
- Do not dump a loaded cargo bed while the machine is sideways on a slope. The change in weight distribution may cause the machine to overturn.

# Starting the Engine

**Important:** Do not attempt to push or tow the machine to get it started. Doing this cannot start the machine, and damage to the drive train could result.

1. Sit on the operator's seat and engage the parking brake.
2. Disengage the PTO.
3. Move the shift lever to the NEUTRAL position.
4. Ensure that the auxiliary hydraulic lever is in the center position.
5. Keep your foot off the accelerator pedal.
6. Insert the key into the key switch and rotate it clockwise to start the engine.

**Note:** Release the key when the engine starts.

# Driving the Machine

1. Disengage the parking brake.
2. Move the gear-shift lever to your desired position (FORWARD or REVERSE).
3. Press the accelerator pedal until you attain the desired speed.

**Note:** Avoid long periods of engine idling.

# Stopping the Machine

To stop the machine, remove your foot from the accelerator pedal and press the brake pedal. As you press your foot further down on the pedal, the machine slows down quicker.

# Shutting Off the Engine

**Important:** Allow the engine to idle for 2 minutes before shutting it off after a full-load operation. This allows the turbocharger to cool down before shutting off the engine. Failure to do so may damage the turbocharger.

1. Move the shift lever to the NEUTRAL position.
2. Rotate the key to the OFF position.
3. Engage the parking brake.

**Note:** The parking brake automatically engages when you turn off the engine.

4. Remove the key from the switch.

## ⚠ CAUTION

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

Remove the key from the switch when you leave the traction unit.

# Using the Standard Bed

- When loading the standard bed, distribute the load evenly.
- Use extra caution if the load exceeds the dimensions of the machine/standard bed.
- Operate the machine with extra caution when handling off-center loads that cannot be centered.
- Keep loads balanced and secure to prevent them from shifting.

## Using the Tailgate

To release the tailgate, pull the bed latches towards the center of the bed (Figure 34). You can lower the tailgate so that it rests on the bed or the rockshaft arms. While lowering the tailgate into the bed, you can lock the latches in toward the center of the bed by rotating the latches into their retainer slots.

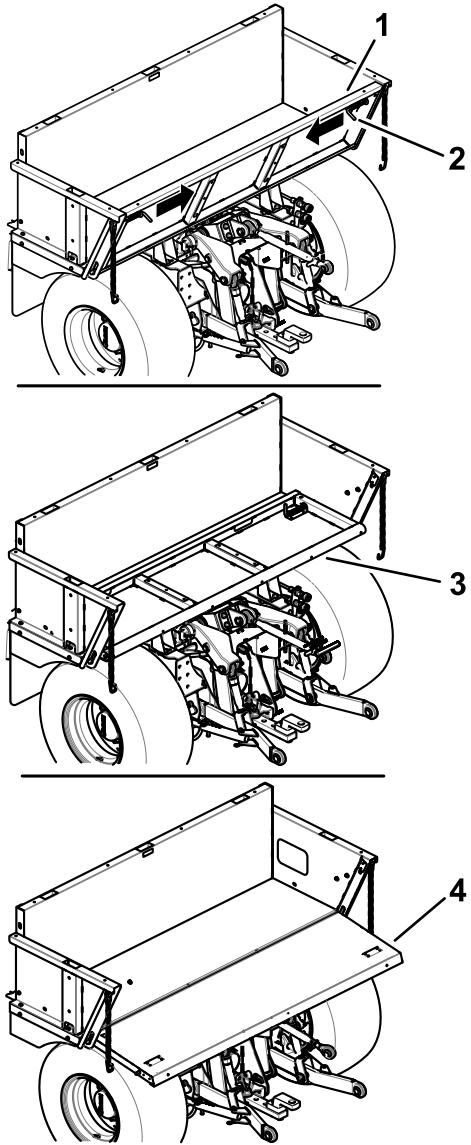


Figure 34

1. Standard bed position	3. Tailgate lowered into the bed
2. Bed latch	4. Tailgate lowered onto the rockshaft arms

## Removing or Installing the Standard Bed

The standard bed is secured to the chassis with bolts and nuts (Figure 35). Remove the hardware to remove the bed; use it to secure the bed to the chassis.

### ⚠ CAUTION

The standard bed is heavy; do not try to hoist it by yourself.

Use lifting equipment (e.g., an overhead hoist) to raise or lower the bed.

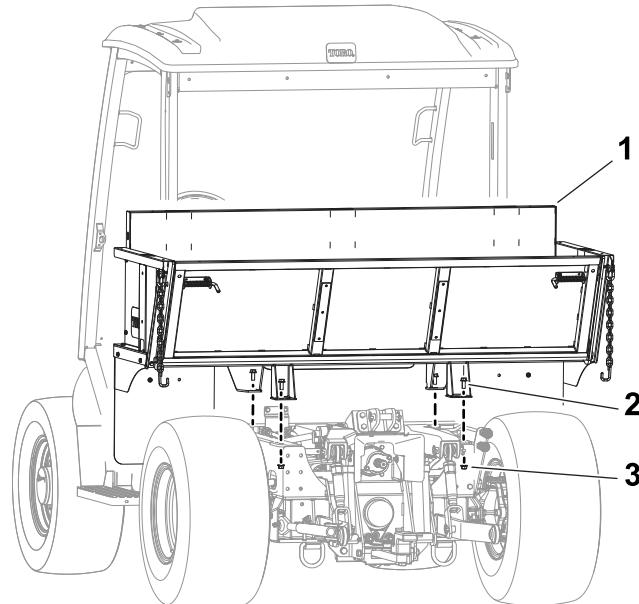


Figure 35

1. Standard bed	3. Nut
2. Bolt	

g246519

g256327

# Using the Operation-Mode Selector

**Note:** The machine must come to a stop before you can change the modes.

**Important:** Leaving the machine in InchMode or Setup Mode disables the normal cleaning process of the diesel-particulate filter (DPF). Leaving the machine in either mode can plug the DPF and initiate a parked regeneration.

Use the mode selector to change the machine operation status or to set up attachments. The modes are as follows:

## Attachment Mode

Use Attachment Mode to select the specific type of attachment or when attachments are installed and being moved to the work site. To access Attachment Mode, turn the operation-mode selector to the **A** position (Figure 36).

**Note:** Changing attachments mounted to the Outcross may require the input of a pin number.

**Note:** Driving the machine in Attachment Mode operates the same as driving in Low Automotive Mode when the PTO switch is in the OFF AND DISABLED position and the auxiliary hydraulic lever is in the NEUTRAL position.

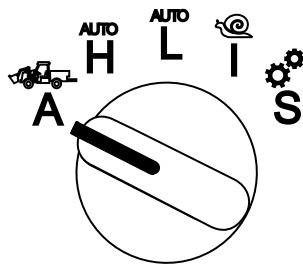


Figure 36

g250707

## High Automotive Mode

Use High Automotive Mode to drive the machine similar to a passenger vehicle with an automatic transmission. This mode provides the capacity for higher speed but lower power to the ground. Use this mode to efficiently transport yourself, a passenger, and a light payload.

To access High Automotive Mode, turn the operation-mode selector to the **H** position (Figure 37).

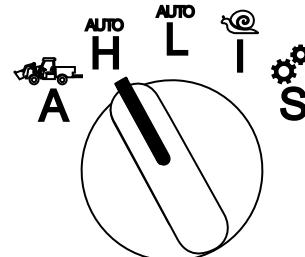


Figure 37

g250708

## Low Automotive Mode

Use Low Automotive Mode to drive the machine similar to a passenger vehicle with an automatic transmission. This mode provides the capacity for higher payloads or steeper hill climbing speed at a lower ground speed. Use this mode to efficiently transport heavier payloads or trailers.

To access Low Automotive Mode, turn the operation-mode selector to the **L** position (Figure 38).

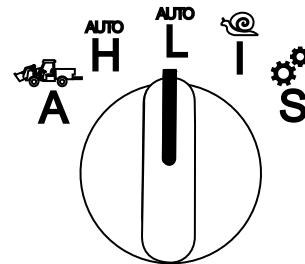


Figure 38

g250712

## InchMode™

### If Equipped

**Note:** The InchMode setting is available through the use of an optional kit; see your authorized Toro distributor for more information.

Use the InchMode setting to aid in the connection of attachments to the machine. To access the InchMode setting, turn the operation-mode selector to the **I** position (Figure 39).

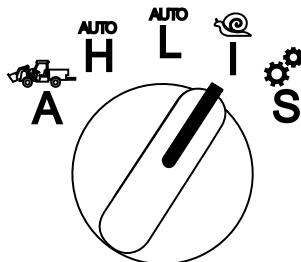


Figure 39

low of an angle. Always read the attachment *Operator's Manual* for instructions on operating the PTO shaft.

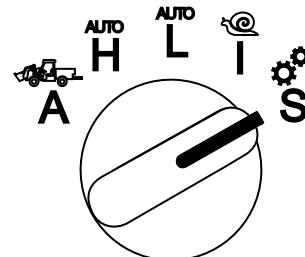


Figure 40

To aid in the connection of attachments, locate and use the tethered remote to direct the machine forward or reverse, and to lift and lower the 3-point hitch. You can also engage the PTO.

## Setup Mode

Use Setup Mode to access machine settings, service details, and basic machine information. You can also add or adjust the operational parameters of an attachment.

You can also use Setup Mode to attach and configure attachments. The engine stays at low idle when pressing the accelerator pedal and slowly moves the machine forward or in reverse. Pulling the PTO switch out engages the PTO (regardless of the current PTO parameter setting) and use the paddle to raise or lower the 3-point hitch.

To access Setup Mode, turn the operation-mode selector to the **S** position (Figure 40).

The following are possible in Setup Mode:

- You can move the vehicle at a very low speed and low engine rpm.
- You can lift and lower the 3-point hitch beyond the settings allowed for the current attachment.

**Important:** Stay within the working angle limits of the PTO shaft; otherwise, damage may occur.

- With the PTO driveline at a safe angle, you can engage the PTO output at a low engine rpm with the PTO switch.

**Important:** You can damage the PTO shaft if you operate attachments at too high or

## Using the Loader If Equipped

Refer to Figure 41 for an overview of the loader.

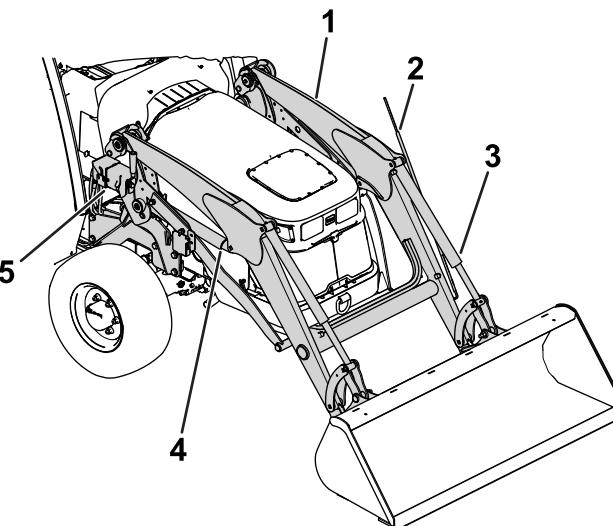


Figure 41

Loader overview

1. Loader arm	4. Lift cylinder
2. Attachment-level indicator	5. Hydraulic couplers
3. Attachment cylinder	

## Loader Safety

- Determine the appropriate attachment for the job.
- Ensure that the attachment is securely attached to the machine.
- Do not use this machine in a forestry operation.
- Use your full attention while operating the loader. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Never jerk the loader joystick; use a steady motion.

- Avoid overhead power lines. Check for overhead clearance (i.e., electrical wires, branches, and doorways) before driving under any objects and do not contact them.
- Before digging, check the location of cables, gas lines, and water lines.

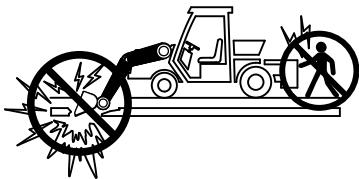


Figure 42

g252565

- While carrying materials, drive slowly. Rougher conditions may cause the material to spill.
- Do not carry items that may move around in the loader bucket or attachment.
- Carry a load as low as possible to the ground.

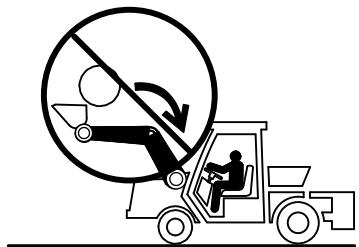


Figure 43

g252563

- Do not lift or carry a person with the loader or any attachments.



Figure 44

g252564

- A raised loader can fall unexpectedly. After operating the loader, lower the loader arms to the ground.
- Relieve hydraulic pressure before you connect or disconnect the hydraulic couplers.
- Detach and store the loader only on a hard, level surface.
- Park the machine on a level surface, lower the loader to the ground, engage the parking brake, and shut off the engine after you operate the loader.
- Do not leave the operator's seat if any part of the machine contacts electric lines or cables.

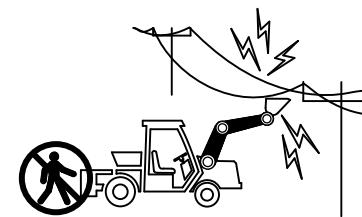


Figure 45

g252566

- Do not allow any bystanders near a raised loader.

## Loader Specifications

Description	Measurement
Lift capacity	998 kg (2,200 lb)
Lift height	272 cm (107 inches)
Reach at max lift height	84 cm (33 inches)
Clearance with attachment in dump position	201 cm (79 inches)
Clearance under level bucket	254 cm (100 inches)
Reach with attachment on ground	250 cm (99 inches)

**Note:** Refer to [Figure 16](#) in [Specifications \(page 19\)](#) for an illustration of the lift height, reach, and clearance dimensions.

## Removing the Loader

### ⚠ DANGER

A detached loader can fall and cause serious injury or death.

- Remove the loader on a hard, level surface.
- Keep children and bystanders away from the detached loader.

1. Start the engine.
2. Relieve pressure on each loader-arm latch by rotating the loader attachment slightly forward and lowering it to the ground ([Figure 46](#)).

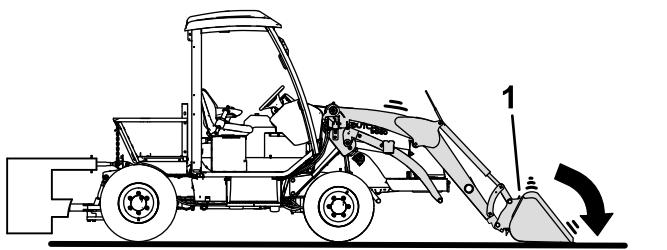
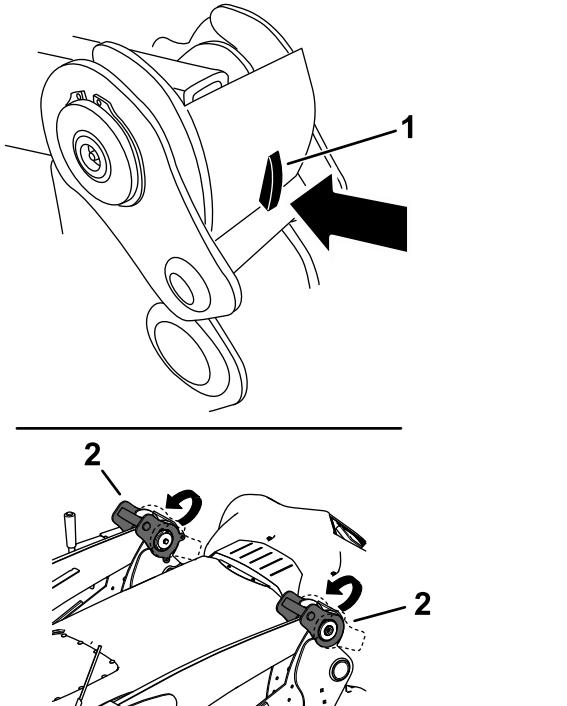


Figure 46

g272121

1. Loader attachment (bucket—if equipped)

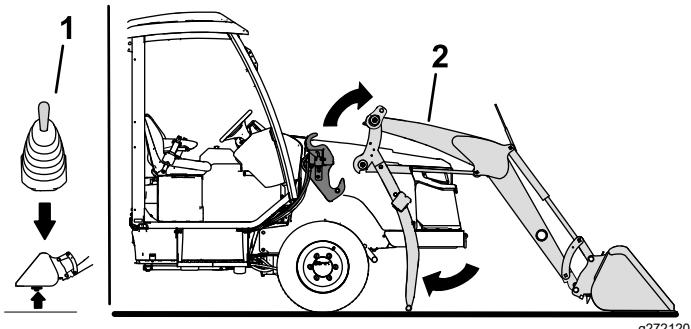
3. Press down on the latch lock on each loader-arm latch and raise the latches to unlock the loader arms from the machine ([Figure 47](#)).



**Figure 47**

1. Latch lock
2. Loader-arm latch

4. Use the loader joystick to raise the loader arms out of the loader-frame mounts (Figure 48).

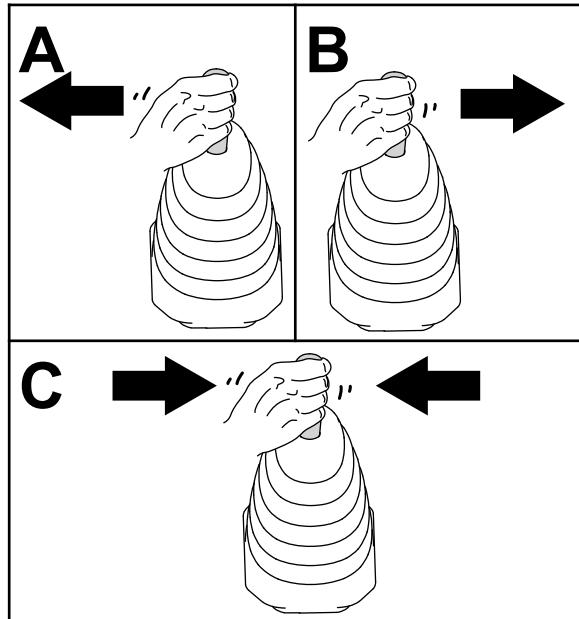


**Figure 48**

1. Move the joystick rearward.
2. Loader arms

---

5. Engage the parking brake and shut off the engine.
6. Move the loader joystick to the left, right, and back to the NEUTRAL position to relieve pressure at the hydraulic couplers (Figure 49).



**Figure 49**

g252836

7. Perform the following steps to disconnect the hydraulic couplers (Figure 50):

- Remove the male hose couplers by pulling back on the bulkhead and pulling out the male hose couplers.
- Remove the female hose couplers by pulling back on the female-hose-coupler sleeves and pulling out the hose couplers from the bulkheads
- Install the dust caps onto each coupler and bulkhead.

**Important:** Remove any dirt or debris from each coupler and bulkhead.

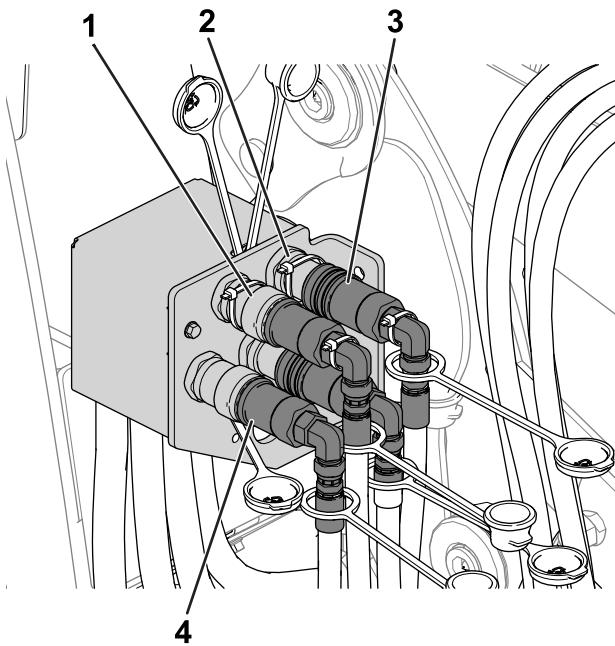


Figure 50

g272113

1. Bulkhead—male hose coupler
2. Bulkhead—female hose coupler
3. Female hose coupler
4. Male hose coupler

---

8. Place the hose bundle onto the hose-storage plate (Figure 51).

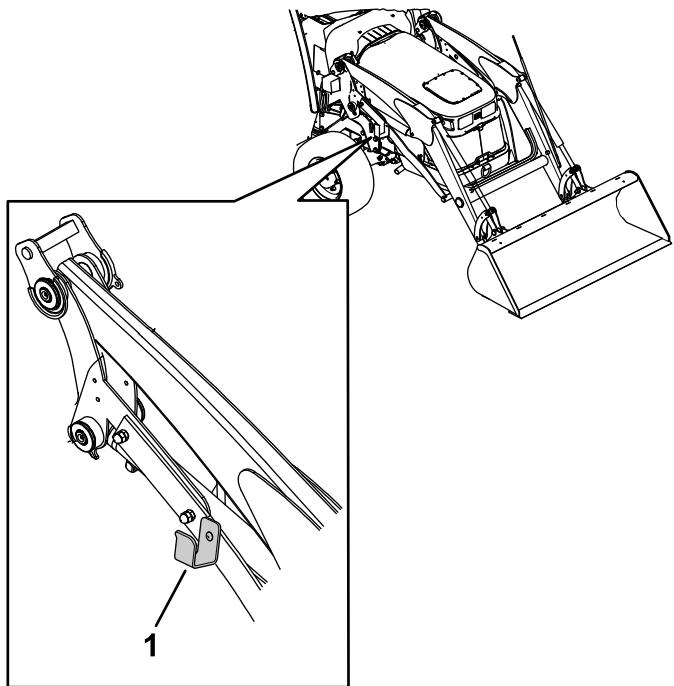


Figure 51

g272290

1. Hose-storage plate

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9. Start the engine, disengage the parking brake, and slowly drive away from the loader arms.

10. Remove the ballast box; refer to [Removing a Rear 3-Point Attachment \(page 29\)](#).

## Installing the Loader

### ⚠ DANGER

A detached loader can fall and cause serious injury or death.

- Remove the loader on a hard, level surface.
- Keep children and bystanders away from the detached loader.

1. Install the ballast box; refer to [Installing a Rear 3-Point Attachment \(page 28\)](#).
2. Start the engine and slowly drive the machine up to the loader arms (Figure 52).

**Note:** Ensure that the machine is centered between both sides of the loader arms.

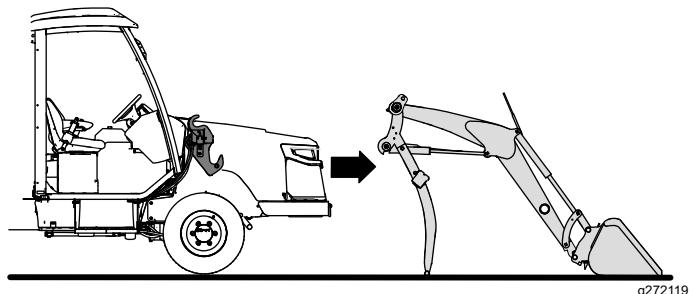


Figure 52

g272119

3. Stop the machine, shut off the engine, and engage the parking brake.
4. Move the loader joystick to the left, right, and back to the NEUTRAL position to relieve pressure at the hydraulic couplers (Figure 53).

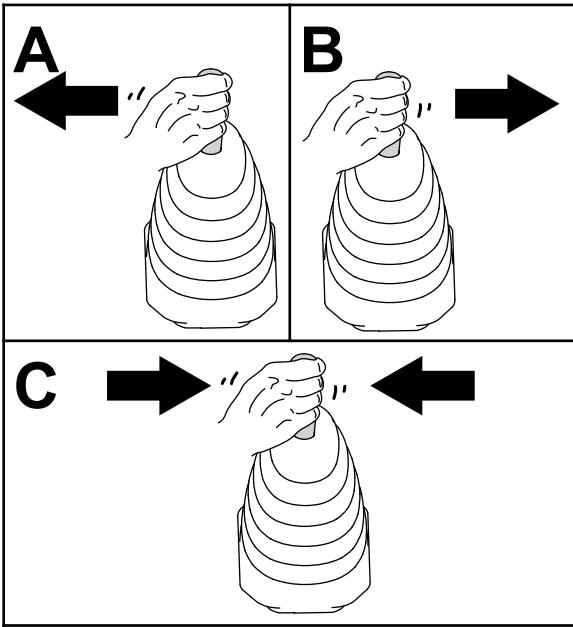


Figure 53

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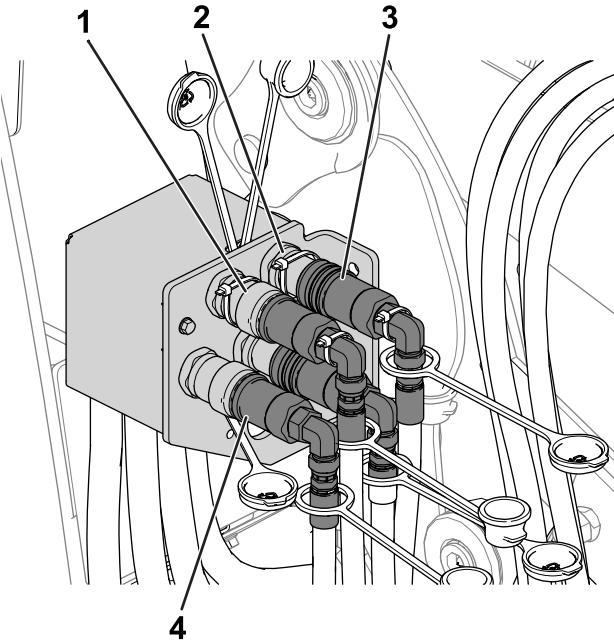


Figure 54

g272113

5. Perform the following steps to connect the hydraulic couplers (Figure 54):
  - A. Remove the dust caps from each coupler and bulkhead.
  - B. Locate the female and male couplers that have a cable tie secured to each coupler and note that these couplers must be installed to the top bulkheads that also have a cable tie secured to them.
  - C. Connect the male hose couplers by pulling back on the bulkhead and pushing in the male hose couplers to the bulkheads.
  - D. Connect the female hose couplers by pulling back on the female-hose-coupler sleeves and pushing in the hose couplers to the bulkheads

**Important:** Remove any dirt or debris from each coupler and bulkhead.

1. Bulkhead—male hose coupler	3. Female hose coupler
2. Bulkhead—female hose coupler	4. Male hose coupler

6. Start the engine and use the loader joystick to lower the loader arms into the loader-frame mounts (Figure 55).

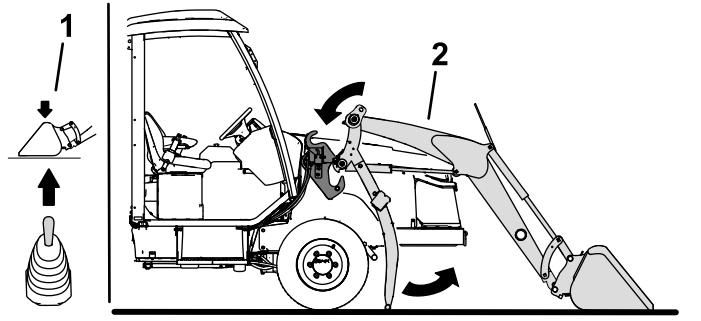


Figure 55

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1. Move the joystick forward. 2. Loader arms
7. Lock the loader arms to the machine by lowering each loader-arm latch so that the latch lock holds the latches in place (Figure 56).

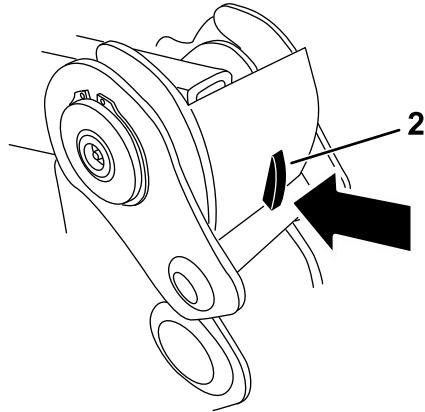
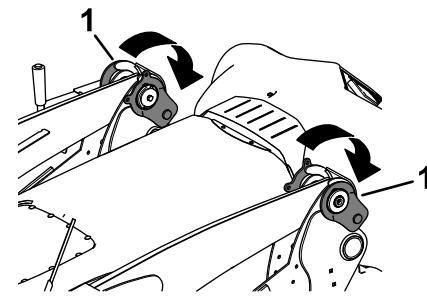


Figure 56

1. Loader-arm latch

2. Latch lock

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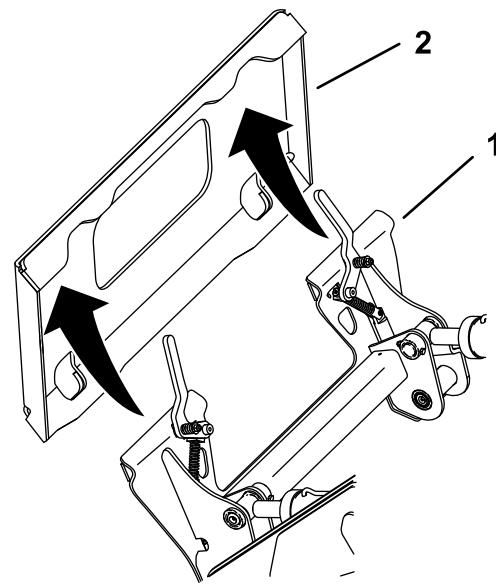


Figure 57

1. Mount plate

2. Receiver plate

6. Raise the loader arms while tilting back the mount plate at the same time.

**Important:** Raise the attachment enough to clear the ground and tilt the mount plate all the way back.

7. Shut off the engine and remove the key.  
8. Rotate the quick-attach levers inward, ensuring that the quick-attach pins are fully seated in through the mount plate ([Figure 58](#)).

## ⚠ WARNING

If you do not fully seat the quick-attach pins through the attachment mount plate, the attachment could fall off the machine, crushing you or bystanders.

Ensure that the quick-attach pins are fully seated in the attachment mount plate.

## Installing a Loader Attachment

**Important:** Attachments can change the stability and the operating characteristics of the machine.

**Important:** Before installing the attachment, ensure that the mount plates are free of any dirt or debris and that the pins rotate freely. If the pins do not rotate freely, grease them.

1. Position the attachment on a level surface with enough space behind it to accommodate the machine.
2. Rotate the quick-attach levers outward to raise the quick-attach pins.
3. Start the engine.
4. Tilt the attachment mount plate forward.
5. Position the mount plate into the upper lip of the attachment receiver plate ([Figure 57](#)).

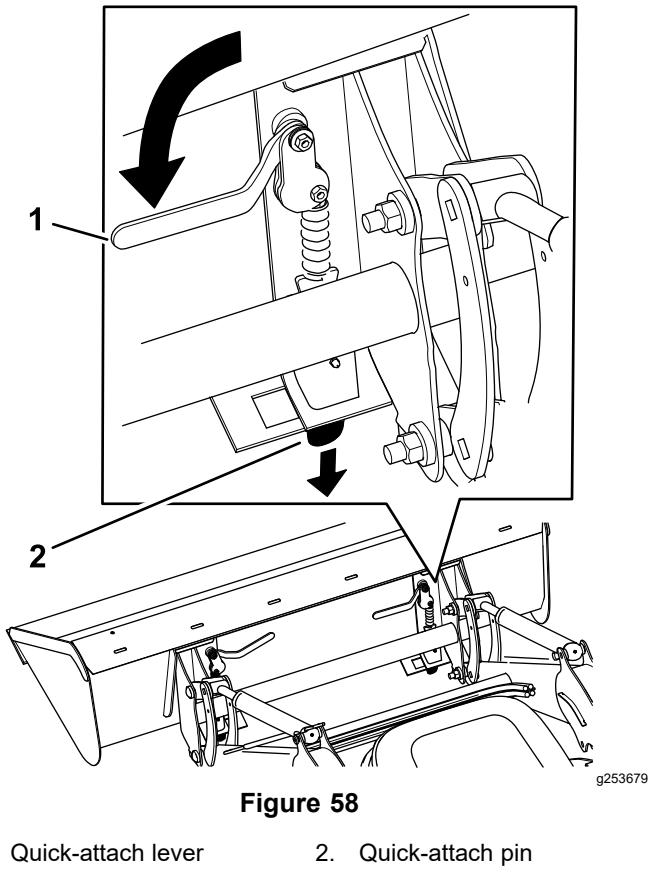


Figure 58

1. Quick-attach lever

2. Quick-attach pin

## Operating the Loader

### Using the Loader Joystick

**Note:** Figure 59 illustrates the use of the joystick from the operator's position.

- To curl the attachment forward, slowly move the joystick to the right.
- To curl the attachment rearward, slowly move the joystick to the left.
- To lower the loader arms, slowly move the joystick forward.
- To raise the loader arms, slowly move the joystick rearward.
- To float the attachment, move the joystick fully forward.

**Note:** The float position raises and lowers the attachment according to the surface contours while you drive the machine.

By moving the joystick to an intermediate position (e.g., forward and left), you can move the loader arms and tilt the attachment at the same time.

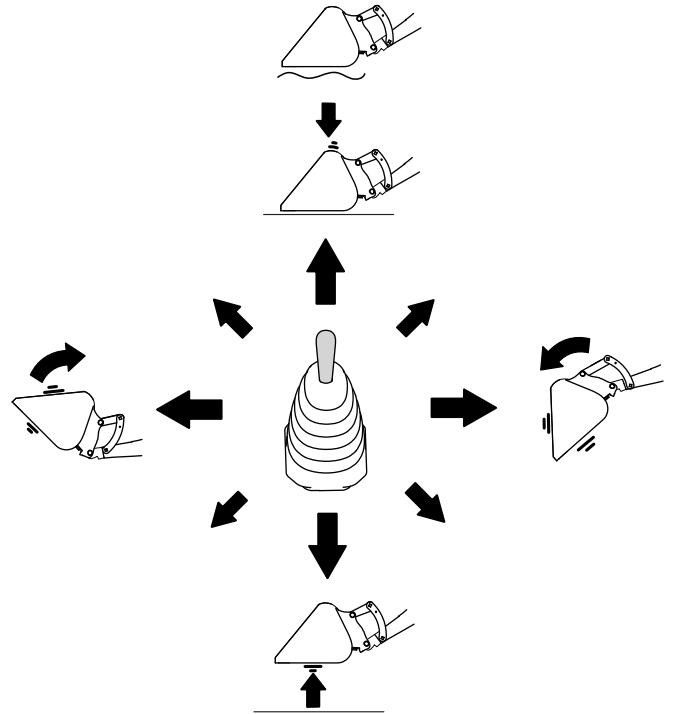


Figure 59

## Removing a Loader Attachment

1. Park the machine on a level surface.
2. Lower the attachment to the ground.
3. Shut off the engine and remove the key.
4. Disengage the quick-attach pins by turning them to the outside.
5. If the attachment uses hydraulics, move the loader joystick forward, backward, and back to the NEUTRAL position to relieve pressure at the hydraulic couplers.
6. If the attachment uses hydraulics, slide the collars back on the hydraulic couplers and disconnect them.

**Important:** Connect the attachment hoses together to prevent hydraulic system contamination during storage.

7. Install the protective covers onto the hydraulic couplers on the machine.
8. Start the engine, tilt the mount plate forward, and back the machine away from the attachment.

## Using the Attachment-Level Indicator

While you operate the loader, use the attachment-level indicator (Figure 60) to note the position of the attachment from the operator's position. You can adjust the indicator for use with different attachments:

1. Position the attachment on level surface.
2. Adjust the attachment-level indicator (Figure 60) so that it is distinguishable from the operator's position.
3. Add a marking (e.g., paint or tape) to the level-indicator rod. The marking helps with distinguishing the attachment-level indicator's position on the rod.

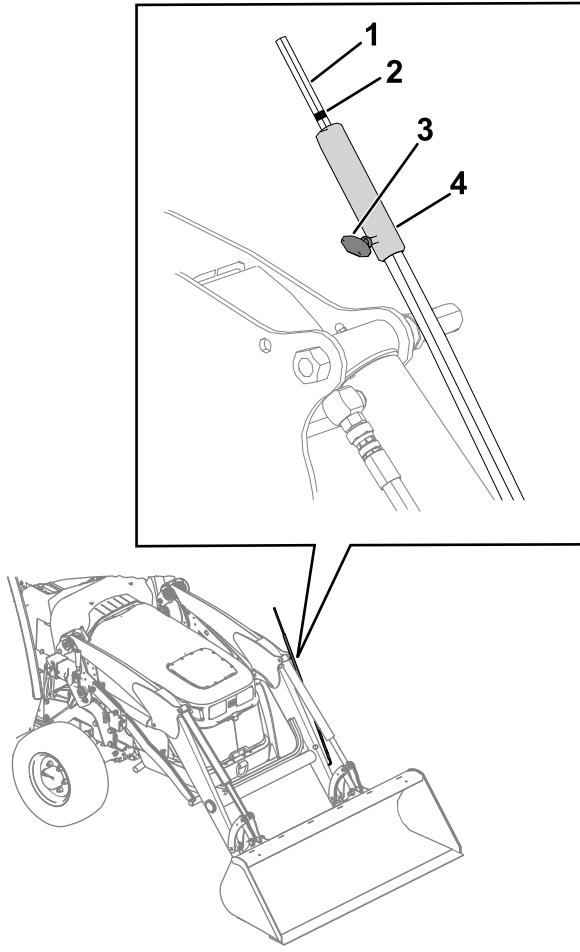


Figure 60

1. Level-Indicator rod	3. Thumbscrew
2. Marking	4. Attachment-level indicator

## Lifting and Carrying a Load

To lift a load, move the loader joystick rearward to raise the loader arms, then move the joystick to the left to raise the bucket.

Always carry loads close to the ground (Figure 61).

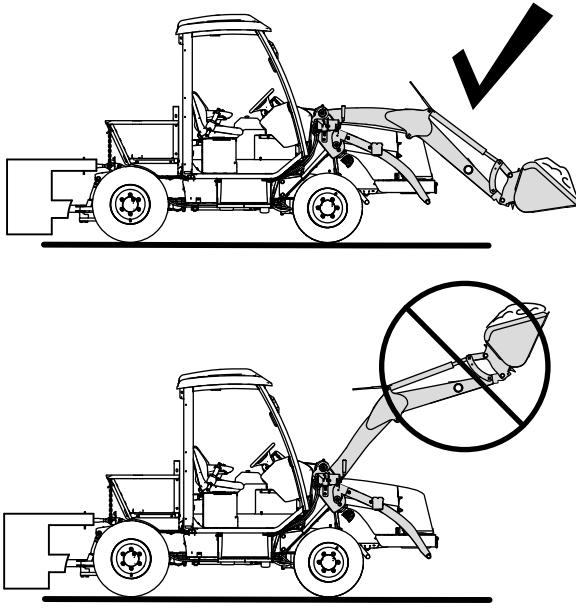


Figure 61

## Filling the Bucket

Refer to Figure 62 for this procedure.

1. Position the bucket level to the ground.
2. Drive forward and insert the bucket into the pile of material.
3. Move the shift lever to the REVERSE position.
4. Drive the machine in reverse while using the joystick to raise the loader arms and curl the bucket.

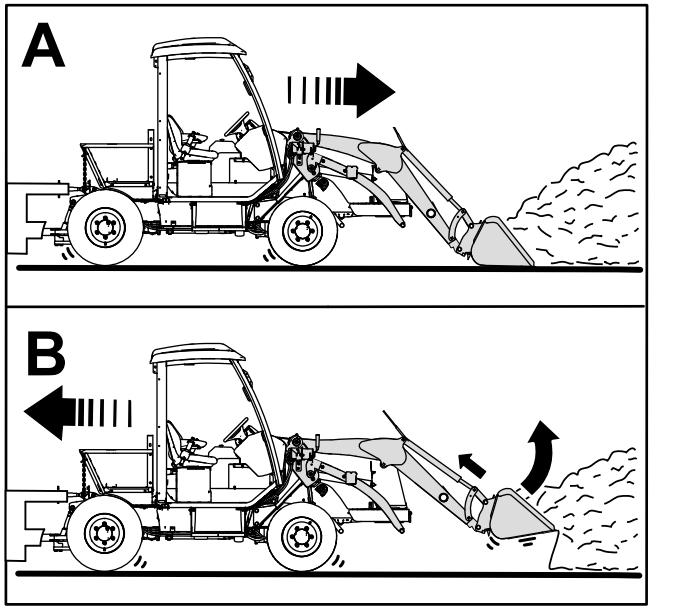


Figure 62

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## Dumping a Load

To dump a load, move the loader joystick to the right.

After dumping the load, back the machine away from the load and move the loader joystick up and to the left to lower and curl back the bucket.

## Using Attachments

**Note:** Refer to the *Software Guide* for instructions on adding and editing attachment parameters.

Toro accepts no liability for machine damage or personal injury that results from the use of other manufacturer attachments. The user accepts the burden of these risks.

- Each time an attachment or implement is mounted, check the 3-point-hitch movement. Ensure that there is no interference with hoses and attachment parts when operating the 3-point hitch.

**Important:** You can damage the PTO shaft if you operate attachments at too high or low of an angle. Always read the attachment *Operator's Manual* for instructions on operating the PTO shaft.

- Attachments can change the stability and the operating characteristics of the machine.
- Keep your hands and feet away from moving attachments.
- Locate the pinch point areas marked on the traction unit and attachments and keep your hands and feet away from these areas.
- Read the attachment *Operator's Manual* before you use the attachment.

**Important:** Incorrect PTO shaft length can cause machine and/or attachment damage and personal injury.

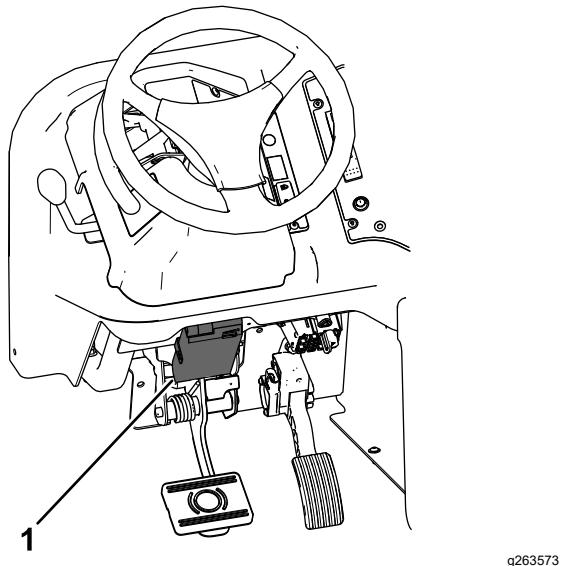
### ⚠ DANGER

Entanglement in the rotating driveshaft can cause serious injury or death.

- Keep hands and feet away from any rotating parts.
- Ensure all guards are installed and all rotating shields rotate freely.
- Before you perform adjustments or maintenance, shut off the engine, remove the key, wait for all moving parts to stop, and ensure that there is no movement in the driveshaft.

## Towing an Attachment with the Machine

- Before you tow an attachment, determine the maximum transport speed for the attachment; refer to the attachment *Operator's Manual*.
- **Attachments without brakes:**
  - Use Low Automotive Mode; refer to [Low Automotive Mode \(page 36\)](#).
  - Do not transport at a speed greater than 13 km/h (8 mph).
  - Ensure that the weight of the attachment or trailer is less than 1-1/2 t (3,300 lb) when fully loaded.
- **Attachments with brakes:**
  - Use Low Automotive Mode; refer to [Low Automotive Mode \(page 36\)](#).
  - Do not transport at a speed greater than 13 km/h (8 mph).
  - Ensure that the weight of the attachment or trailer is less than 7-1/4 t (16,000 lb) when fully loaded.
  - Mount the brake controller to the area above the traction and brake pedals ([Figure 63](#)). Adjust the controller so that the braking ability is maximized for the attachment load size.



**Figure 63**

1. Brake controller

- The machine is capable of pulling attachments of greater weight than the machine itself.
- When hauling cargo or towing an attachment, do not overload your machine or attachment. Overloading can cause poor performance or damage to the brakes, axles, hydrostatic transmission, engine, steering, body structure, or tires.

***Important: To reduce potential for drive line damage, use low range.***

# Understanding the Diesel-Particulate Filter and Regeneration

The diesel-particulate filter (DPF) removes soot from the engine exhaust.

The DPF regeneration process uses heat from the engine exhaust that is increased by the catalyst to reduce accumulated soot into ash.

To keep the DPF clean, remember the following:

- Run the engine at full engine speed when possible to promote DPF self-cleaning.

***Important:*** Leaving the machine in InchMode or Setup Mode (i.e., at a lower engine speed) disables the self-cleaning process of the DPF. Leaving the machine in either mode can plug the DPF and initiate a parked regeneration.

- Use the correct engine oil.
- Minimize the amount of time that you idle the engine.
- Use only ultra low sulfur diesel fuel.

Operate and maintain your machine with the function of the DPF in mind. Engine under load generally produces adequate exhaust temperature for DPF regeneration.

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

## **⚠ CAUTION**

The exhaust temperature is hot (approximately 600°C (1,112°F) during DPF regeneration. Hot exhaust gas can harm you or other people.

- Do not operate the engine in an enclosed area.
- Ensure that there are no flammable materials around the exhaust system.
- Ensure that the hot exhaust gas does not contact surfaces that may be damaged by heat.
- Do not touch a hot exhaust system component.
- Do not stand near or around the exhaust pipe of the machine.

# Understanding the Regeneration Icons

Icon	Icon Definition
	<ul style="list-style-type: none"> <li>Parked or recovery regeneration icon-regeneration is requested.</li> <li>Perform the regeneration immediately.</li> </ul>
 ACK	<ul style="list-style-type: none"> <li>Notes that a regeneration is acknowledged</li> </ul>
	<ul style="list-style-type: none"> <li>Notes that a regeneration is in progress and the exhaust temperature is elevated</li> </ul>
	<ul style="list-style-type: none"> <li>Inhibit regeneration is selected</li> </ul>
	<ul style="list-style-type: none"> <li>NOx control system malfunction; the machine requires service.</li> </ul>

## Types of Diesel Particulate Filter Regeneration

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

Type of Regeneration	Conditions that cause DPF regeneration	DPF description of operation
Reset	<p>Occurs every 100 hours</p> <p>Also occurs if normal engine operation surpasses the allowed soot accumulation amount within the filter</p>	 <ul style="list-style-type: none"> <li>When the high exhaust-temperature icon is displayed in the InfoCenter, a regeneration is in progress.</li> <li>During reset regeneration, the engine computer maintains an elevated engine speed to ensure filter regeneration.</li> <li>Avoid shutting off the engine and avoid using the machine in InchMode or Setup Mode while the reset regeneration is processing.</li> </ul>

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

Type of Regeneration	Conditions that cause DPF regeneration	DPF description of operation
Parked	<p>Occurs because the computer determines that the automatic DPF cleaning has not been sufficient.</p> <p>Also occurs because you initiate a parked regeneration</p> <p>May occur because the inhibit regen has been initiated and has disabled the automatic DPF cleaning from occurring</p> <p>May result from using the incorrect fuel or engine oil</p>	<ul style="list-style-type: none"> <li>When the reset-standby/parked or recovery regeneration icon  or a regeneration is requested.</li> <li>Perform the parked regeneration as soon as possible to avoid needing a recovery regeneration.</li> <li>A parked regeneration requires 30 to 60 minutes to complete.</li> <li>You must have at least a 1/2 tank of fuel in the tank.</li> <li>You must park the machine to perform a parked regeneration.</li> </ul>
Recovery	Occurs because the request for parked recovery has been ignored, allowing the DPF to be critically plugged	<ul style="list-style-type: none"> <li>When the reset-standby/parked or recovery regeneration icon  a recovery regeneration is requested.</li> <li>A recovery regeneration requires up to 3 hours to complete.</li> <li>You must have at least a 1/2 tank of fuel in the machine.</li> <li>You must park the machine to perform a recovery regeneration.</li> </ul>

## Using the DPF Regeneration Menus

### Accessing the DPF Regeneration Menus

1. Select the service menu icon in any mode and scroll to the REGENERATION option.
2. Select the regeneration function you need.

### Time Since Last Regeneration

1. Access the DPF Regeneration menu, and scroll to the LAST REGEN option.
2. Select the LAST REGEN entry.
3. Use the LAST REGEN field to determine how many hours you have run the engine since the last reset, parked, or recovery regeneration.
4. Select the previous screen icon to return to the DPF regeneration screen.

### Setting the Inhibit Regen

#### Reset Regeneration Only

A reset regeneration produces elevated engine exhaust. If you are operating the machine around trees, brush, tall grass, or other temperature-sensitive plants or materials, you can use the INHIBIT REGEN setting to prevent the engine computer from performing a reset regeneration.

**Note:** The INHIBIT REGEN option is always used when maintenance is being performed on the machine in an enclosed area.

**Note:** If you set the InfoCenter to inhibit regeneration, the InfoCenter displays an advisory every 15 minutes while the engine requests a reset regeneration.

**Important:** When you shut off the engine and start it again, the inhibit regen setting defaults to OFF.

1. Access the DPF Regeneration menu, and scroll down to the INHIBIT REGEN option.

2. Select the Inhibit REGEN entry.
3. Change the inhibit regeneration setting from Off to On.

## Preparing to Perform a Parked or Recovery Regeneration

1. Ensure that the machine has fuel in the tank for the type of regeneration you are performing:
  - **Parked Regeneration:** Ensure that you have 1/4 tank of fuel before performing the parked regeneration.
  - **Recovery Regeneration:** Ensure that you have 1/2 tank of fuel before performing the recovery regeneration.
2. Move the machine outside to an area away from combustible materials or items that may be damaged by heat.
3. Park the machine on a level surface.
4. Ensure that the shift lever is in the NEUTRAL position.
5. Disengage the PTO, and lower any attachments (if equipped).
6. Engage the parking brake.
7. Set the throttle to the low IDLE position.
8. Move the operation-mode selector to the H or L position.
9. Ensure that the air-conditioning is off.

## Performing a Parked or Recovery Regeneration

When a parked regeneration is requested by the engine computer, follow the messages on the InfoCenter.

**Important:** The computer of the machine cancels DPF regeneration if you increase the engine speed from low idle or release the parking brake.

1. Access the DPF Regeneration menu, and scroll down to the PARKED REGEN option or the RECOVERY REGEN option.
2. Select the PARKED REGEN entry or the RECOVERY REGEN entry.

**Note:** Initiating a recovery regeneration requires you to enter the correct PIN code.

3. At the VERIFY FUEL LEVEL screen, verify that you have 1/4 tank of fuel if you are performing the parked regeneration or 1/2 tank of fuel if you are performing the recovery regeneration, and press the next screen icon to continue.
4. On the Parked Regen menu or Recovery Regen menu, press the next screen to start the regeneration.
5. At the DPF checklist screen, verify that the parking brake is engaged, that the engine speed is set to low idle, and press the next screen icon to continue.
6. At the INITIATE DPF REGEN screen, select the next screen icon to continue.
7. The InfoCenter displays the INITIATING DPF REGEN message.

**Note:** If needed, press the cancel icon to cancel the regeneration process.

8. The InfoCenter displays the time to complete message.

9. The InfoCenter displays the home screen and the regeneration acknowledge icon appears .

**Note:** While the DPF regeneration runs, the InfoCenter displays the high exhaust-temperature icon .

10. When the engine computer completes a parked or recovery regeneration, the InfoCenter displays an advisory. Press any button to exit to the home screen.

**Note:** If the regeneration fails to complete, follow the advisory and press any button to exit to the home screen.

## Canceling a Parked or Recovery Regeneration

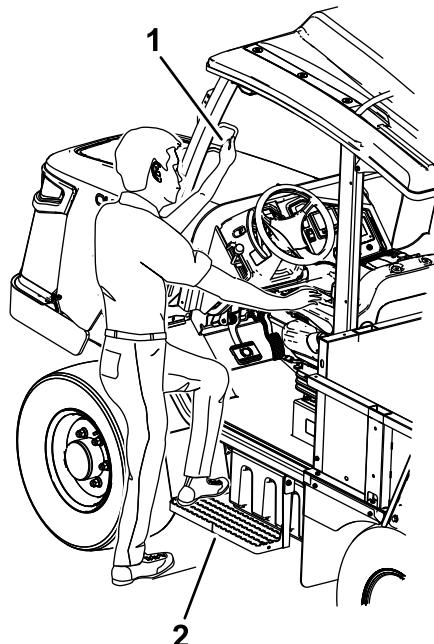
Use the PARKED REGEN CANCEL or RECOVERY REGEN CANCEL setting to cancel a running parked or recovery regeneration process.

1. Access the DPF Regeneration menu, scroll down to the PARKED REGEN option or the RECOVERY REGEN option.
2. Press the next screen to cancel a Parked Regen or cancel a Recovery Regen.

## ***After Operation***

# After Operation Safety

- Before leaving the operating position, do the following:
  - Park the machine on a level surface.
  - Move the shift lever to the NEUTRAL position.
  - Engage the parking brake.
  - Lower all attachments.
  - Shut off the engine and remove the key.
- Allow the engine to cool before storing the machine in any enclosure.
- Do not store the machine where there is an open flame, spark, or pilot light.
- Keep all parts of the machine in good working condition and all hardware tightened.
- Maintain and clean the seat belts as necessary.
- Replace all worn, damaged, or missing decals.



**Figure 64**

## 1. Handle

## 2. Step

# Exiting the Machine

## ⚠️ WARNING

**Improperly exiting the machine can cause injury.**

**Always use the handle and step to exit the machine. To avoid injury while exiting, maintain a 3-point contact: 1 hand on the handle and 2 feet on the step.**

Exit the machine as shown in [Figure 64](#).

# Towing the Machine

**Note:** A hex wrench (6 mm) is provided with the machine and is located next to the hydraulic manifold (Figure 65). Use the wrench to perform this procedure.

If it becomes necessary to tow the machine, you must set the tandem piston (traction) pump to bypass hydraulic fluid and manually pressurize the hydraulic brake circuit to release the brake. Move the machine **a very short distance** at a speed **below 3.2 kph (2 mph)**. If you need to move the machine more than a short distance, transport the machine on a trailer.

**Important:** If towing limits are exceeded, severe damage to the piston (traction) pump may occur.

**Important:** Do not start or run the engine when the plugs are set to the bypass position.

1. Chock the tires to prevent the machine from moving
2. Remove the access panel from the right side of the control console (Figure 65).

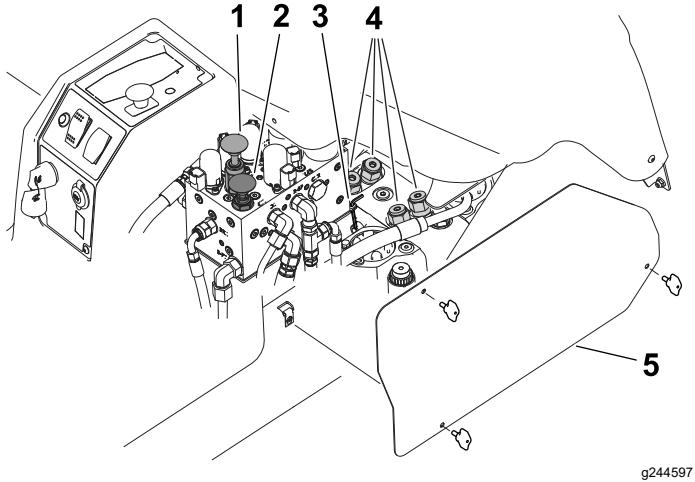


Figure 65

1. Hand pump	4. Bypass valves (4 each)
2. Manual valve	5. Access panel
3. Hex wrench (6 mm)	

3. Set the plungers to the bypass position by inserting a hex wrench (6 mm) through the plug assembly and turning the plunger all the way in clockwise; refer to Figure 66. Repeat this step for each plug assembly (4 total).

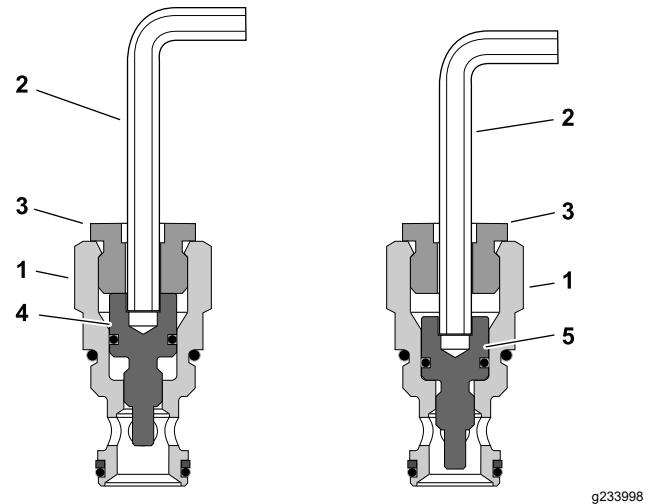


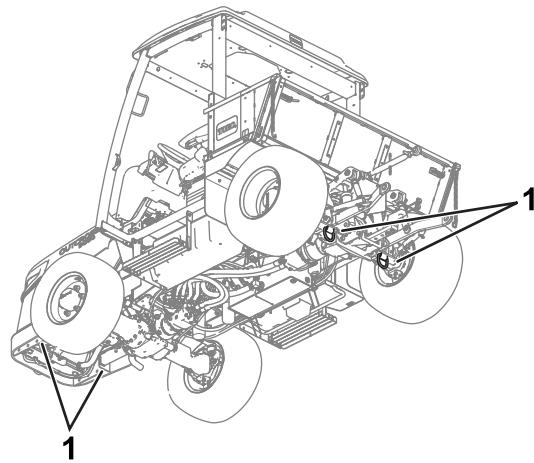
Figure 66

1. Plug assembly
2. Hex wrench (6 mm)
3. Plug
4. To release the brake, lift and hold the manual valve while pumping the hand pump.
5. Pump the hand pump until you feel resistance. When enough pressure has been created, the manual valve will remain in the raised position and the brake will be released.
6. Remove the chocks from the tires and tow the machine.
7. After towing and before starting the engine, insert a hex wrench (6 mm) through the plug assembly and turn the plunger all the way out counterclockwise. Repeat this step for each plug assembly (4 total).
8. Push the manual valve down to engage the parking brake.
9. Install the access panel.

# Hauling the Machine

- Remove the key before storing or transporting the machine.
- Ensure that you have a truck or trailer that is large enough to handle the machine and any attachments.
- 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.
- Use the tie-down loops on the machine (Figure 67) to securely tie the machine down.

**Important:** Do not use the tie-down loops to lift the machine. Refer to [Raising the Machine \(page 57\)](#) for instructions to lift the machine.



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Figure 67

1. Tie-down loops

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- Ensure that the trailer or truck has all the necessary brakes, lighting, and marking as required by law.
- Refer to your local ordinances for trailer and tie-down requirements

## ⚠ WARNING

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

Install and use the correct accessories when driving on a public street or roadway.

# Maintenance

## Maintenance Safety

- Before adjusting, cleaning, repairing, or leaving the machine, do the following:
  - Park the machine on a level surface.
  - Move the shift lever to the NEUTRAL position.
  - Engage the parking brake.
  - Lower all attachments to the ground and move the auxiliary-hydraulic lever to the FLOAT position.
  - Remove the loader (if equipped); refer to [Removing the Loader \(page 38\)](#).

- Ensure that the DPF regeneration is inhibited; refer to [Setting the Inhibit Regen \(page 49\)](#).
- Shut off the engine and remove the key.
- Wait for all moving parts to stop.
- Allow machine components to cool before performing maintenance.
- If possible, do not perform maintenance while the engine is running. Keep away from moving parts.
- Use jack stands to support the machine or components when required.
- Carefully release pressure from components with stored energy.

## Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first hour	<ul style="list-style-type: none"><li>Torque the wheel lug nuts.</li></ul>
After the first 10 hours	<ul style="list-style-type: none"><li>Torque the wheel lug nuts.</li><li>Check the alternator-belt tension.</li><li>Check the compressor-belt tension.</li></ul>
After the first 100 hours	<ul style="list-style-type: none"><li>Check the oil level in the wheel hubs.</li><li>Check the oil level in the front and rear axle.</li><li>Check the oil level in the rear PTO gearbox.</li><li>Check the oil level in the traction gearboxes.</li><li>Check the oil level in the traction gearboxes.</li></ul>
After the first 150 hours	<ul style="list-style-type: none"><li>Change the oil in the wheel hubs.</li><li>Change the oil in the front and rear axle.</li><li>Change the oil in the hydraulic parking brake.</li><li>Change the rear PTO gearbox oil.</li><li>Change the oil in the traction gearboxes.</li><li>Change the oil in the traction gearboxes.</li></ul>
After the first 200 hours	<ul style="list-style-type: none"><li>Clean the axle breather for each axle.</li></ul>
After the first 250 hours	<ul style="list-style-type: none"><li>Change the engine oil and filter.</li></ul>
After the first 1000 hours	<ul style="list-style-type: none"><li>Change the hydraulic fluid and the 2 hydraulic filters.</li></ul>
Before each use or daily	<ul style="list-style-type: none"><li>Check the tire pressure.</li><li>Check the operation of the safety-interlock switches.</li><li>Check the engine-oil level.</li><li>Check the air-cleaner indicator.</li><li>Drain water or other contaminants from the fuel filter/water separator.</li><li>Check the coolant level.</li><li>Remove debris from the radiator/fuel cooler.</li><li>Check the hydraulic-fluid level.</li><li>Wash the machine.</li></ul>
Every 50 hours	<ul style="list-style-type: none"><li>Grease the machine and loader bearings and bushings.</li><li>Inspect the air cleaner.</li><li>Check the battery condition; clean the battery if needed.</li><li>Remove all debris and chaff from the engine compartment, radiator, and oil cooler.</li></ul>

Maintenance Service Interval	Maintenance Procedure
Every 100 hours	<ul style="list-style-type: none"> <li>Inspect the cooling-system hoses and clamps.</li> <li>Check the alternator-belt tension.</li> <li>Check the compressor-belt tension.</li> </ul>
Every 400 hours	<ul style="list-style-type: none"> <li>Service the air cleaner (immediately if the air cleaner indicator shows red, and more frequently in extremely dirty or dusty conditions).</li> <li>Inspect the fuel lines and connections.</li> <li>Replace the fuel-filter canister.</li> <li>Replace the engine fuel filter.</li> <li>Check the oil level in the wheel hubs.</li> <li>Check the oil level in the front and rear axle.</li> <li>Clean the axle breather for each axle.</li> <li>Check the oil level in the rear PTO gearbox.</li> <li>Check the oil level in the traction gearboxes.</li> <li>Check the oil level in the traction gearboxes.</li> <li>Torque the wheel lug nuts.</li> <li>Clean the cab air filters; replace them if they are torn or excessively dirty.</li> </ul>
Every 500 hours	<ul style="list-style-type: none"> <li>Change the engine oil and filter.</li> </ul>
Every 800 hours	<ul style="list-style-type: none"> <li>Drain and clean the fuel tank (also before seasonal storage).</li> </ul>
Every 1,000 hours	<ul style="list-style-type: none"> <li>Change the oil in the wheel hubs.</li> <li>Change the oil in the front and rear axle.</li> <li>Change the oil in the hydraulic parking brake.</li> <li>Change the rear PTO gearbox oil.</li> <li>Change the oil in the traction gearboxes.</li> <li>Change the oil in the traction gearboxes.</li> </ul>
Every 1,500 hours	<ul style="list-style-type: none"> <li>Change the hydraulic fluid and the 2 hydraulic filters.</li> </ul>
Every 2 years	<ul style="list-style-type: none"> <li>Flush the cooling system and replace the fluid.</li> <li>Replace moving hoses.</li> </ul>

**Important:** Refer to the **engine Service Manual** (contained within the **traction unit Service Manual**) for additional maintenance procedures.

# Daily Maintenance Checklist

Duplicate this page for routine use.

Maintenance Check Item	For the week of:						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Check the safety-interlock operation.							
Check the parking 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. <sup>1</sup>							
Check the radiator and hydraulic-oil-cooler screens for debris and blow out with compressed air.							
Check for unusual operating noises.							
Check the hydraulic-system-fluid level.							
Check the hydraulic hoses for damage.							
Check for fluid leaks.							
Check the fuel level.							
Check the tire pressure.							
Check the instrument operation.							
Lubricate all of the grease fittings. <sup>1</sup>							
Touch up any damaged paint.							
Wash the machine.							

<sup>1</sup>Immediately after every washing, regardless of the interval listed.

## Notation for Areas of Concern

Inspection performed by:		
Item	Date	Information

# Pre-Maintenance Procedures

## Raising the Machine

### ▲ DANGER

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

- Use jack stands to support the raised machine.
- Use only mechanical or hydraulic jacks to lift the machine.

## Raising the Front of the Machine

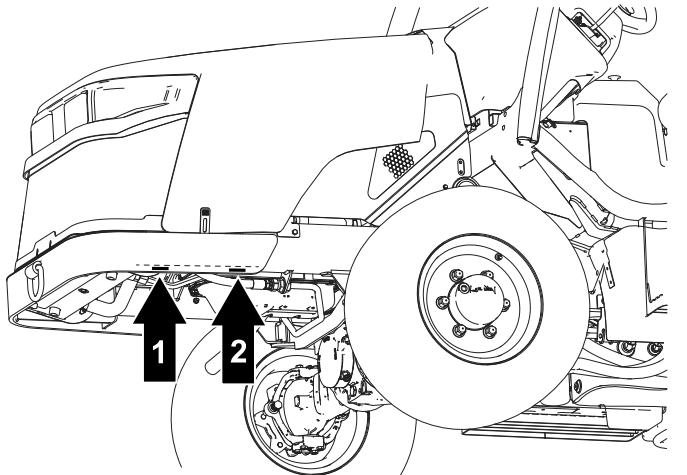


Figure 68

1. Front jack point (frame channel behind side plate)
2. Front jack stand point (frame channel behind side plate)

1. Chock the 2 rear wheels with chocks to prevent the machine from moving.
2. Position the jack securely under the desired front jacking point.
3. After raising the front of the machine, use an appropriate jack stand under the machine frame to support the machine.

## Raising the Rear of the Machine

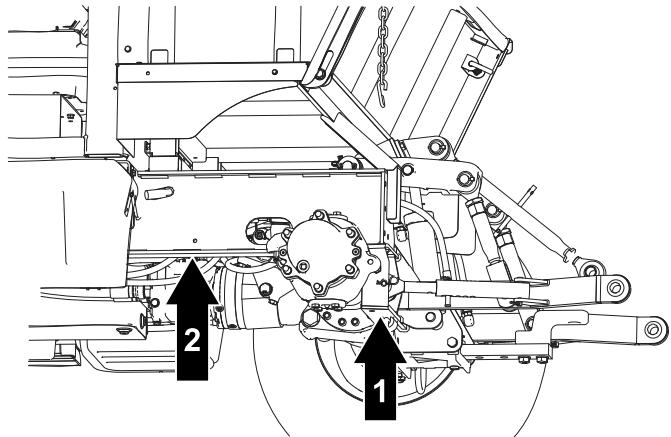


Figure 69

1. Rear jack point
2. Rear jack stand point (frame channel)

1. Chock the 2 front wheels with chocks to prevent the machine from moving.
2. Position the jack securely under the desired rear jacking point.
3. After raising the rear of the machine, use an appropriate jack stand under the machine frame to support the machine.

## Raising the Hood

1. Release the straps from each side of the machine (Figure 70).

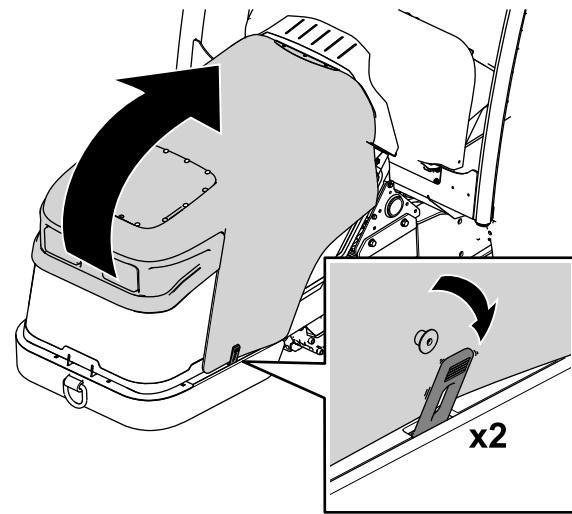


Figure 70

2. Raise the hood (Figure 70).
3. Ensure that the hood-prop bolt is in the prop detent to hold the hood in a raised position (Figure 71).

# Lubrication

## Greasing the Bearings and Bushings

**Service Interval:** Every 50 hours

The machine has grease fittings that you must lubricate regularly with No. 2 lithium grease.

**Important:** Lubricate the machine immediately after every washing.

### Traction Unit

Grease point locations and quantities are as follows:

- Upper and lower kingpin (8)
- Outer tie rod (4)
- Front-axle pivot (2)
- PTO driveshaft (1)
- Rockshaft tube (1)
- 3-point-hitch lift cylinder (2)

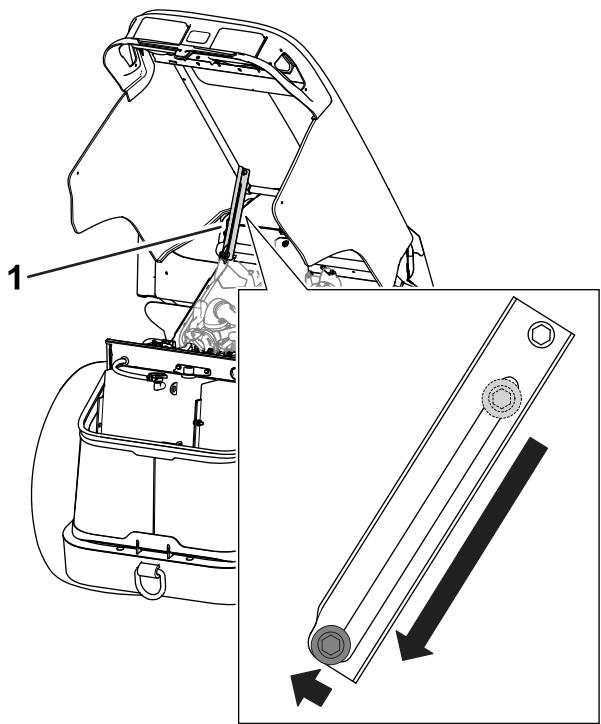


Figure 71

1. Hood prop

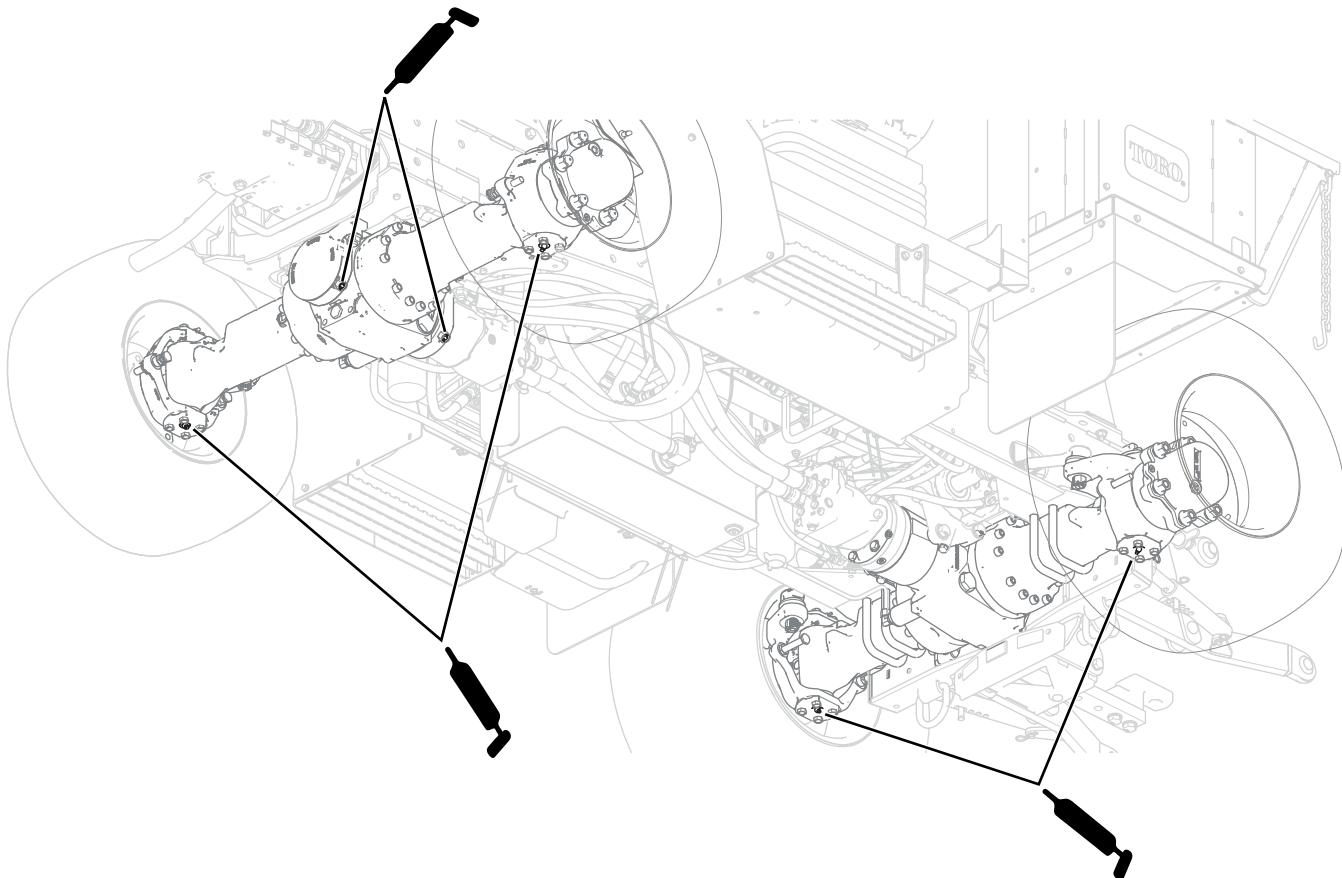
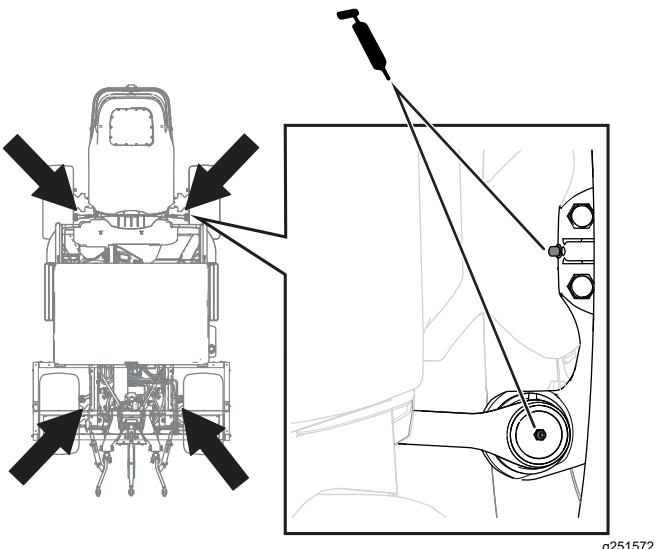
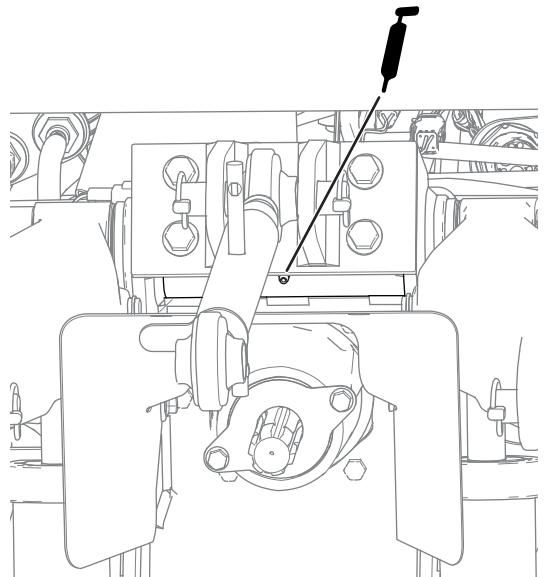


Figure 72  
Lower kingpin and front-axle pivot



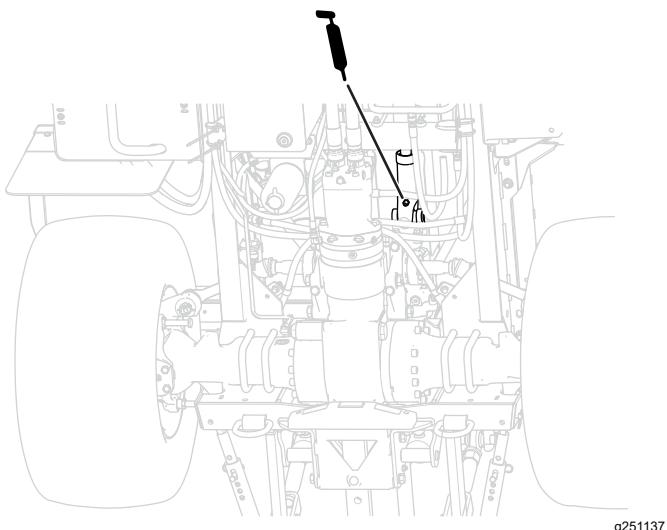
**Figure 73**

Upper kingpin and outer tie rod



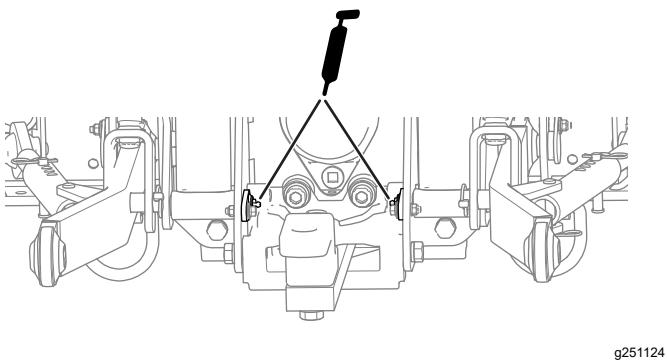
**Figure 76**

Rockshaft tube



**Figure 74**

Driveshaft



**Figure 75**

3-point-hitch lift cylinder

## Loader

Grease point locations and quantities are as follows:

- Lift cylinder (4)
- Attachment cylinder (4)
- Loader arm (2)
- Mount-plate bushings (4)
- Attachment coupler (2)

# Engine Maintenance

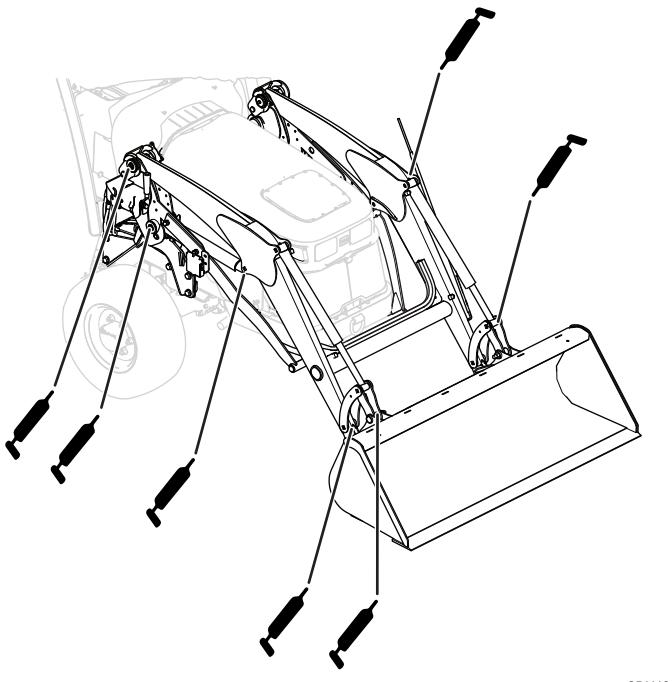


Figure 77

g251113

Loader arms, lift cylinders, attachment cylinders, and mount-plate bushings

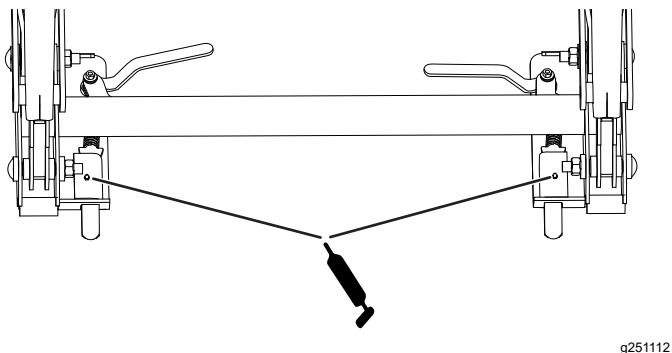


Figure 78

g251112

Loader attachment coupler

## Engine Safety

- Ensure that the DPF regeneration is inhibited; refer to [Setting the Inhibit Regen \(page 49\)](#).
- Shut off the engine and remove the key before checking the oil or adding oil to the crankcase.

## Servicing the Engine Oil

### Understanding the Engine-Oil Specifications

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

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

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

**Crankcase Capacity:** Approximately 5.7 L (6 US qt) with the filter.

**Viscosity:** Use the following engine oil viscosity grade:

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

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

## Checking the Engine-Oil Level

**Service Interval:** Before each use or daily

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

You can check the oil without raising the hood by reaching through the engine shield on the right side of the machine ([Figure 79](#)) and pulling out the dipstick from the engine. If you must add additional engine oil, you must raise the hood; refer to [Raising the Hood \(page 57\)](#).

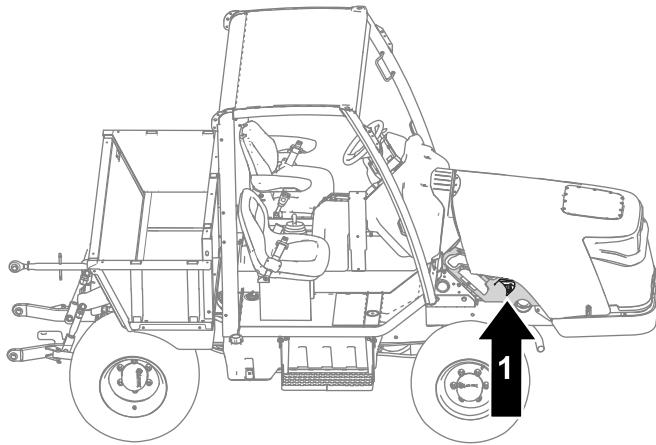


Figure 79

g259486

1. Dipstick location

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

The best time to check the engine oil is when the engine is cool before it has been started for the day. If it has already been run, allow the oil to drain back down to the sump for at least 10 minutes before checking. If the oil level is at or below the Add mark on the dipstick, add oil to bring the oil level to the Full mark. **Do not overfill the engine with oil.**

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

Check the engine-oil level; refer to [Figure 80](#).

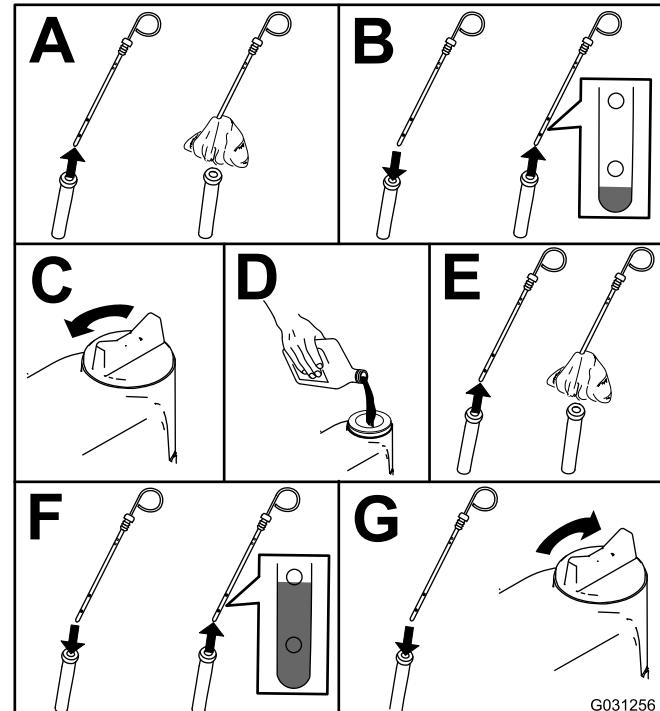


Figure 80

g031256

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

## Changing the Engine Oil and Filter

**Service Interval:** After the first 250 hours

Every 500 hours—Change the engine oil and filter.

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, and wait for all moving parts to stop before leaving the operating position.
3. Replace the engine oil and filter (Figure 81).

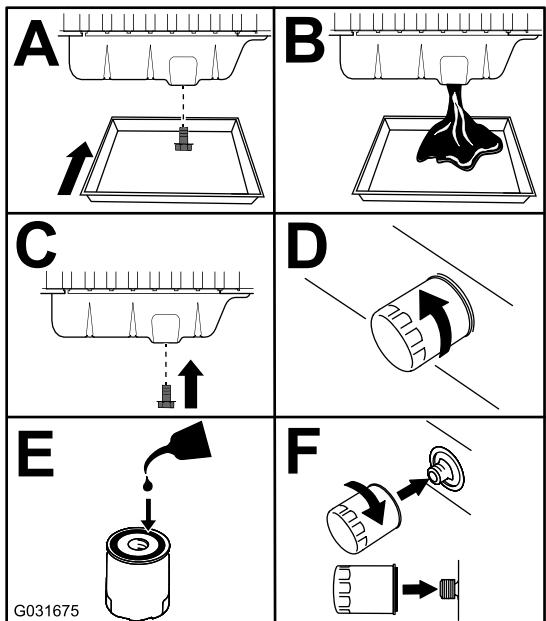


Figure 81

4. Add oil to the crankcase.
5. Reset the service-due indicator in the InfoCenter to the listed service interval in this procedure; refer to the traction unit *Software Guide*.

## Servicing the Air Cleaner

**Service Interval:** Before each use or daily—Check the air-cleaner indicator.

Every 50 hours—Inspect the air cleaner.

Every 400 hours—Service the air cleaner (immediately if the air cleaner indicator shows red, and more frequently in extremely dirty or dusty conditions).

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

Service the air-cleaner filter only when the service indicator (Figure 82) requires it. Changing the air filter before it is necessary increases the chance of dirt entering the engine when you remove the filter.

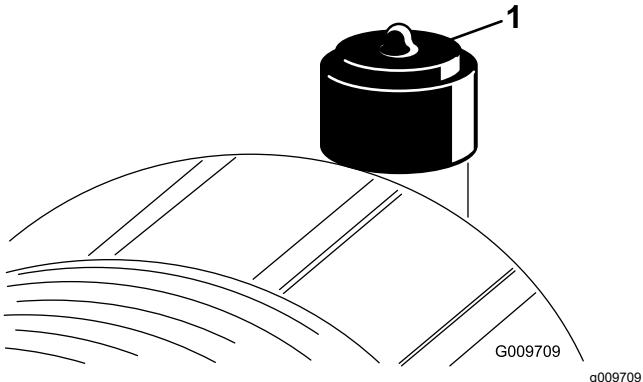


Figure 82

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 83).

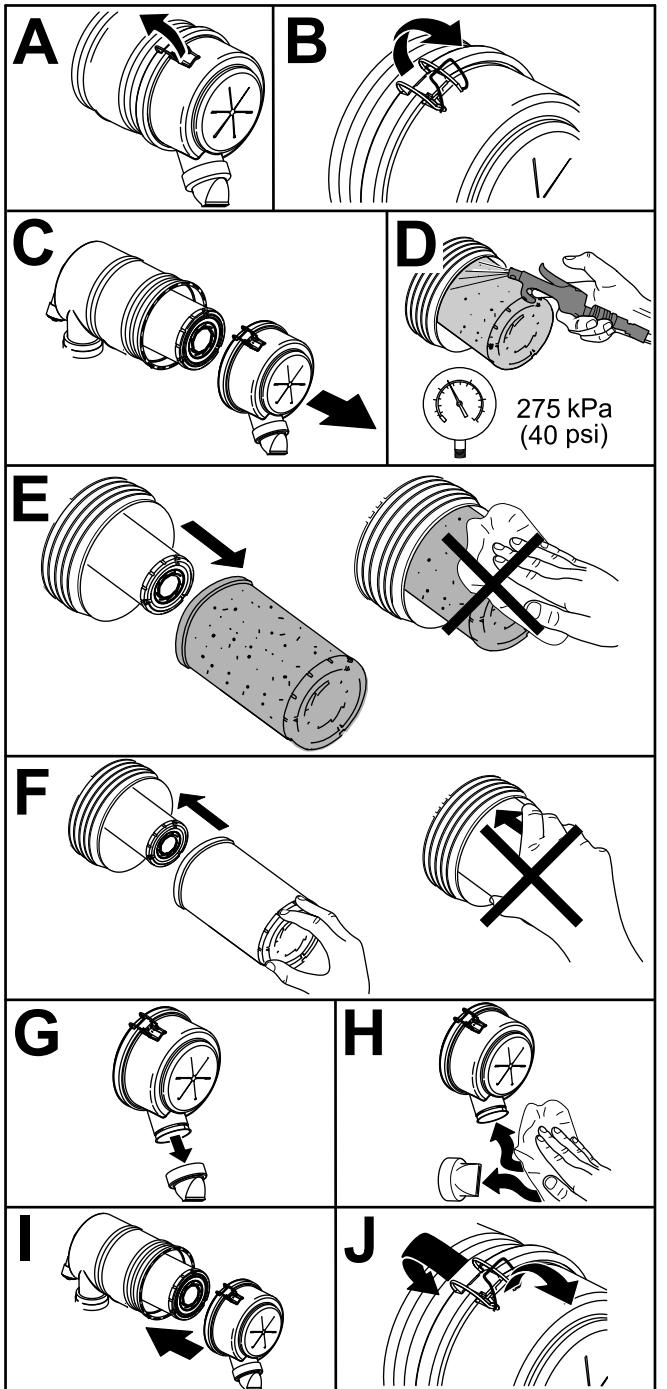


Figure 83

g253706

**Note:** Do not clean a used element; cleaning it can damage the filter media.

**Important:** Never attempt to clean the safety filter (Figure 84). Replace the safety filter after every 3 primary filter services.

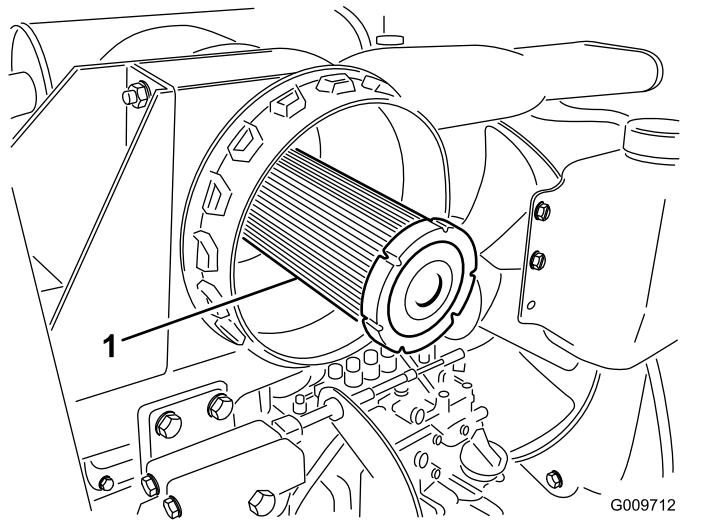


Figure 84

1. Air-cleaner safety filter
2. Reset the indicator (Figure 82) if it shows red.

# Fuel System Maintenance

## Fuel Maintenance

This *Operator's Manual* contains more detailed fuel and fuel system maintenance information than the Yanmar® engine *Owner's Manual*, which is a general-purpose reference relating to fuel and fuel maintenance.

Ensure that you understand that the fuel system maintenance, fuel storage, and fuel quality require your attention to avoid downtime and extensive engine repairs.

The fuel system has extremely tight tolerances due to the emissions and control requirements. Diesel fuel quality and cleanliness is more important for the longevity of today's high-pressure common rail (HPCR) fuel-injection system used on diesel engines.

**Important:** Water or air in the fuel system will damage your engine! Do not assume that new fuel is clean. Ensure that your fuel is from a quality supplier, store your fuel correctly, and use your fuel supply within 180 days.

**Important:** If you do not follow the procedures for fuel filter replacement, fuel system maintenance, and fuel storage, the engine fuel system could fail prematurely. Perform all fuel system maintenance at the specified intervals or whenever the fuel is contaminated or its quality is poor.

## Storing Fuel

Appropriate fuel storage is critical for your engine. Proper maintenance of fuel storage tanks is often overlooked and leads to the contamination of fuel delivered to the machine.

- Acquire only enough fuel that you will consume within 180 days. Do not use fuel that has been stored for more than 180 days. This helps eliminate water and other contaminants in the fuel.
- If you do not remove the water from the storage tank or machine fuel tank, it can lead to rust or contamination in the storage tank and fuel system components. Tank sludge developed by mold, bacteria, or fungus restricts flow and clogs the filter and fuel injectors.
- Inspect your fuel storage tank and machine fuel tank regularly to monitor the fuel quality in the tank.
- Ensure that your fuel comes from a quality supplier.
- If you find water or contaminants in your storage tank or machine fuel tank, work with your fuel

provider to correct the problem and perform all fuel system maintenance.

- Do not store diesel fuel in tanks or canisters made with zinc-plated components.

## Priming the Fuel System

The fuel system needs to be primed before starting the engine for the first time, after running out of fuel, or after fuel system maintenance (e.g., draining the water separator, replacing the fuel filter, or disconnecting a fuel hose).

1. Ensure that the fuel tank has fuel in it.
2. Allow the electric fuel pump to prime the fuel system by turning the key switch to the ON position for 10 to 15 seconds.

**Important:** Do not turn the key switch to the START position to prime the fuel system.

## Servicing the Fuel System

### Emptying the Fuel Tank

**Service Interval:** Every 800 hours—Drain and clean the fuel tank (also before seasonal storage).

Empty 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.

### Inspecting the Fuel Lines and Connections

**Service Interval:** Every 400 hours

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

## 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.

1. Service the water separator (Figure 85) as shown in Figure 86.
2. Prime the fuel system; refer to [Priming the Fuel System \(page 64\)](#).

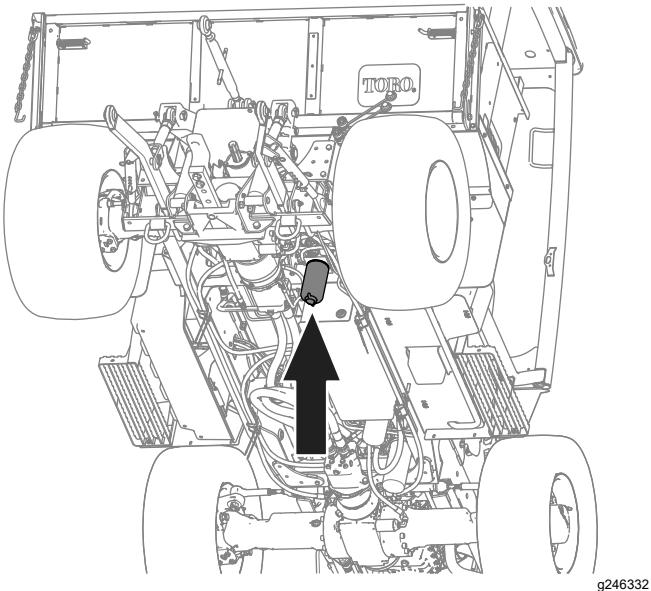


Figure 85

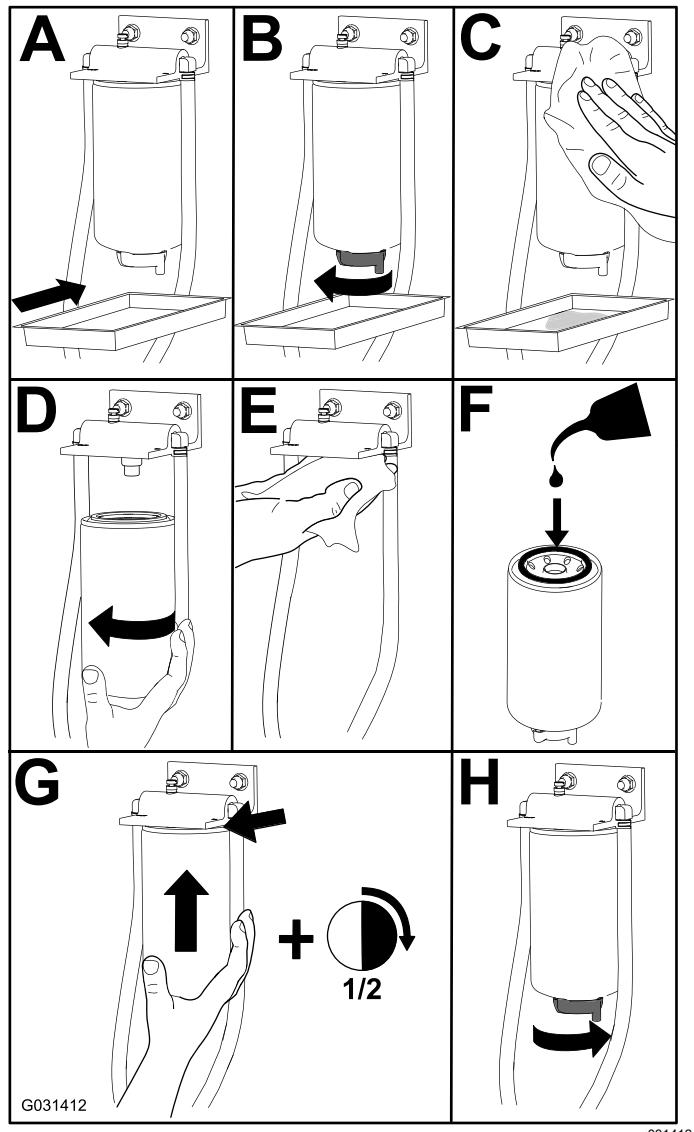


Figure 86

## Servicing the Fuel Filter

**Service Interval:** Every 400 hours

1. Clean the area around the fuel-filter head (Figure 87).

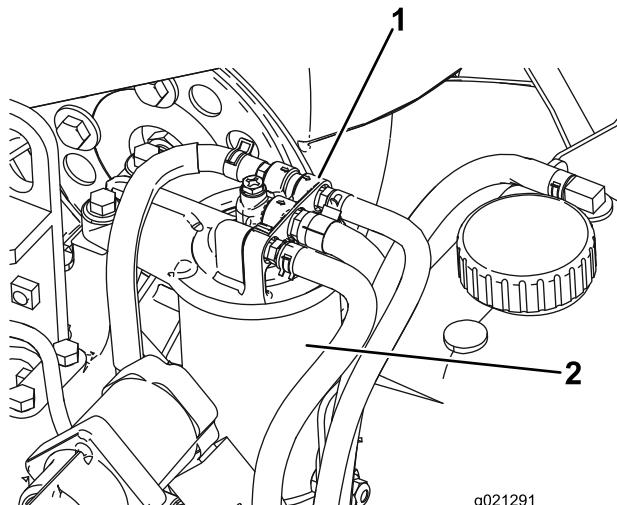


Figure 87

g021291

g021291

1. Fuel-filter head
2. Fuel filter
2. Remove the filter and clean the filter head mounting surface (Figure 87).
3. Lubricate the filter gasket with clean lubricating engine oil; refer to the engine owner's manual for additional information.
4. Install the dry filter canister by hand until the gasket contacts the filter head, then rotate it an additional 1/2 turn.
5. Prime the fuel system; refer to [Priming the Fuel System \(page 64\)](#).
6. Start the engine and check for fuel leaks around the filter head.

# Electrical System Maintenance

## Electrical System Safety

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

## Accessing the Battery

The battery is located underneath the side cover on the left side of the machine. To gain access to the battery, remove the knobs and washers that secure the cover to the machine chassis (Figure 88).

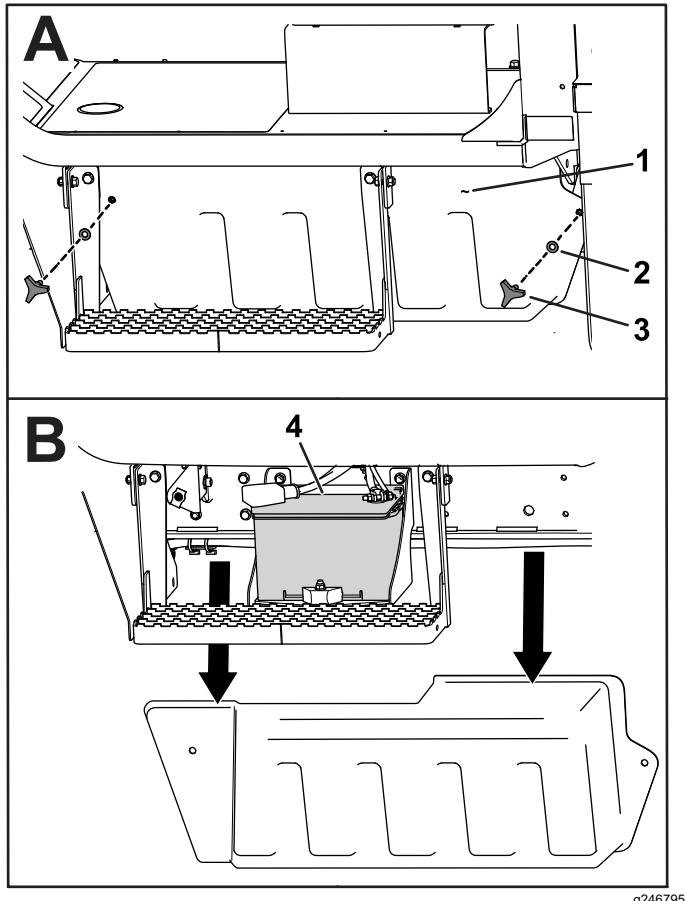


Figure 88

- 1. Side cover
- 2. Washer

- 3. Knob
- 4. Battery

## Disconnecting the Battery

### WARNING

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

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

### WARNING

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

Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.

1. Remove the negative battery cable from the battery post (Figure 89).

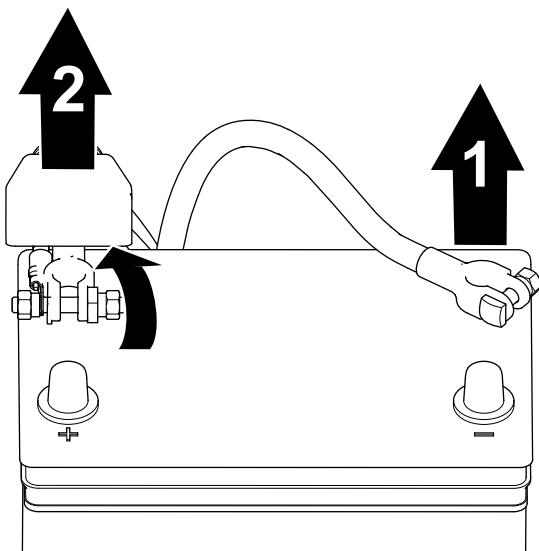


Figure 89

1. Negative battery cable
2. Positive battery cable

2. Lift the insulator and remove the positive battery cable from the battery post (Figure 89).

# Connecting the Battery

## ⚠ WARNING

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

Always connect the positive (red) battery cable before connecting the negative (black) cable.

1. Connect the positive cable to the battery and tighten the battery-clamp nut (Figure 90).

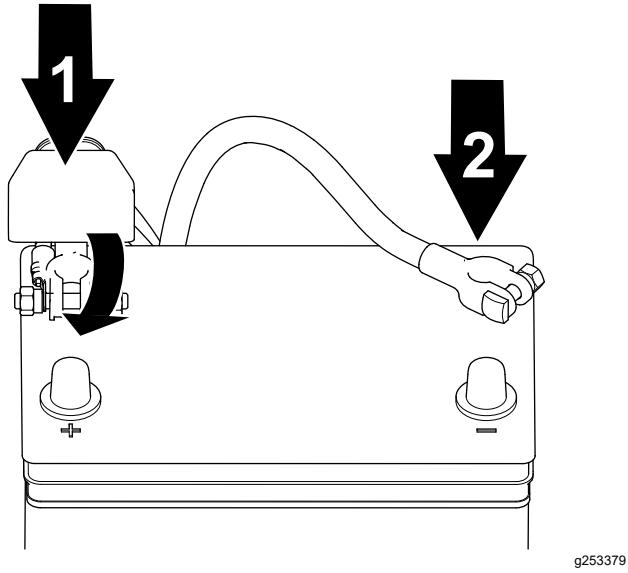


Figure 90

1. Positive battery cable
2. Negative battery cable
2. Connect the negative cable to the battery and tighten the battery-clamp nut (Figure 90).

# Removing and Installing the Battery

A retainer (Figure 91) holds the battery in the tray. Loosen the retainer hardware to remove the battery; tighten it when installing the battery.

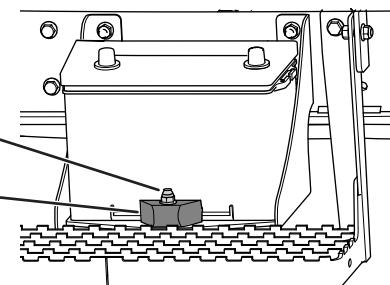


Figure 91

1. Retainer hardware
2. Retainer

# Checking the Battery Condition

**Service Interval:** Every 50 hours

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

Check the battery condition weekly or after every 50 hours of operation. Keep the terminals and the entire battery case clean, as a dirty battery will discharge slowly.

1. Access the battery; refer to [Accessing the Battery \(page 66\)](#).
2. Remove the rubber insulator from the positive terminal and inspect the battery. If the battery is dirty, do the following steps:
  - A. Wash the entire case with a solution of baking soda and water.
  - B. Coat both battery posts and cable connectors with Grafo 112X (skin-over) grease (Toro Part No. 505-47) to prevent corrosion.
  - C. Slide the rubber boot over the positive terminal.
  - D. Close the battery cover.

# Locating the Fuses

## Locating the Traction Unit Fuses

The traction-unit fuses are located under the steering wheel and above the traction and brake pedals (Figure 92).

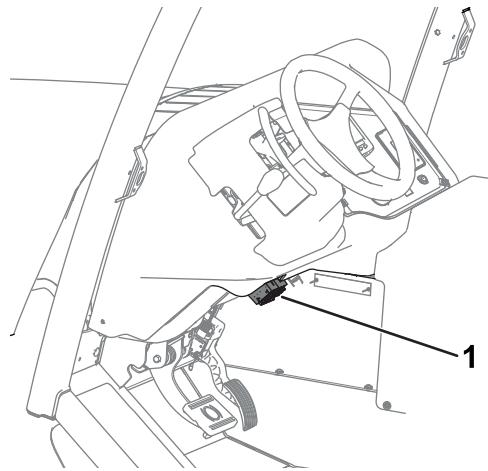


Figure 92

g250068

1. Fuses

Refer to the following table for a description of each fuse on the machine fuse block:

### Machine Fuse Block

	A	B	C	D
1	Primary T1 Power 2 (7.5 A)	Primary T1 Power 3 (7.5 A)	Primary T1 Power 4 (7.5 A)	Primary T1 Power 5 (7.5 A)
2	Engine ECU power (10 A)	Primary T1 (2 A)	Expansion power (10 A)	EU hazard lights (15 A)
3	System power (10 A)	InfoCenter (2 A)	Headlights (15 A)	Power point; Selective control valve (10 A)
4	Status display (2 A)	Hazard lights (10 A)	Horn (10 A)	Beacon (10 A)
5	Air-ride seat (10 A)	Trailer brake control (20 A)	Expansion power (10 A)	Rear auxiliary power (15 A)

## Locating the Cab Fuses

The cab fuses are located above the passenger seat. Access the fuses by removing the fuse box cover (Figure 93).

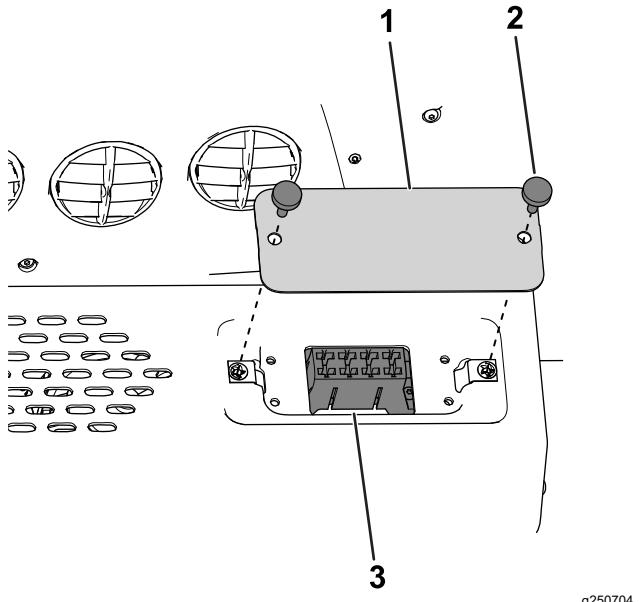


Figure 93

g250704

1. Fuse box cover
2. Thumb screw
3. Fuses

Refer to Figure 94 for a description of each fuse on the cab-fuse-block decal:

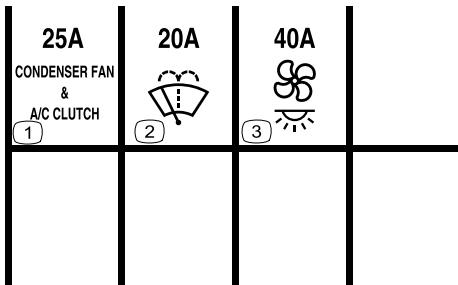


Figure 94

g262470

1. Condenser fan; Air-conditioning clutch (25 A)
2. Windshield washer (20 A)
3. Fan and interior light (40 A)

# Drive System Maintenance

## Servicing the Axles

**Hub-and-axle oil specification:** Toro Premium Tractor Fluid

### Checking the Oil Level in the Wheel Hubs

**Service Interval:** After the first 100 hours

Every 400 hours

**Note:** Have another person help you align the oil plugs in the wheel hubs when you service the axle oil.

1. Ensure that the machine is on a level surface and remove any equipped attachments.
2. Move the machine forward or backward until the plug for the wheel hub is at either the 10 o'clock or 2 o'clock position (Figure 95).

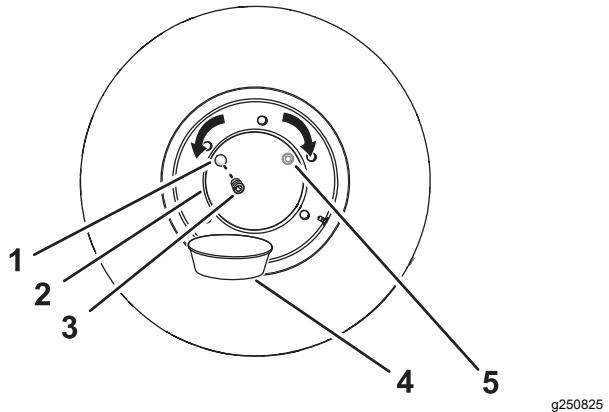


Figure 95

1. Oil port at the 10 o'clock position	4. Drain pan
2. Wheel hub	5. Oil port at the 2 o'clock position (alternative)
3. Plug	

3. Shut off the engine, move the shift lever to the NEUTRAL position, engage the parking brake, and remove the key.
4. Place a drain pan under the drain port in the wheel hub (Figure 95).
5. Remove the plug from the wheel hub (Figure 95).
6. Check that the oil level is at the bottom of the threads of the oil port (Figure 95).

- If the oil level is too high, allow the oil to drain from the oil port.
- If the oil level is too low, add the specified oil to the wheel hub through the oil port; refer to step 8 in [Changing the Oil in the Wheel Hubs \(page 69\)](#).

7. Check the condition of the O-ring on the plug.

**Note:** Replace the plug if the O-ring is worn or damaged.

8. Install the plug in the oil port of the wheel hub (Figure 95).
9. Repeat steps 2 through 8 for the other wheel hubs.

### Changing the Oil in the Wheel Hubs

**Service Interval:** After the first 150 hours

Every 1,000 hours/Yearly (whichever comes first)—Change the oil in the wheel hubs.

**Wheel hub oil capacity:** approximately 0.4 L (0.4 US qt)

**Note:** If possible, change the oil when it is warm.

1. Move the machine forward or backward until the oil plug for the wheel hub is at the 12 o'clock position; refer to Figure 95 in [Checking the Oil Level in the Wheel Hubs \(page 69\)](#).
2. Partially unscrew the oil plug to release any pressure.
3. Move the machine forward or backward until the plug is at the 6 o'clock position (Figure 96).

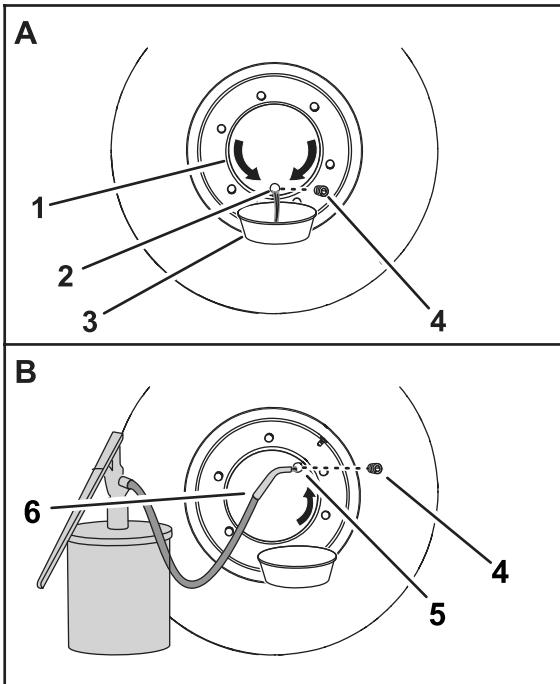


Figure 96

g250824

- 1. Wheel hub
- 2. Oil port at the 6 o'clock position
- 3. Drain pan
- 4. Plug
- 5. Oil port at the 2 o'clock position
- 6. Oil-servicing equipment

4. Place a drain pan under the oil port of the wheel hub (Figure 96).
5. Remove the plug and drain the oil from the planetary (Figure 96).
6. Check the condition of the O-ring for the plug.

**Note:** Replace the plug if the O-ring is worn or damaged.

7. Move the machine forward or backward until the plug is either at the 2 o'clock (Figure 96) or the 10 o'clock position.
8. Add the specified oil to the wheel hub through the oil port until the oil level is at the bottom of the threads of the port.
9. Install the plug in the oil port of the wheel hub.
10. Repeat this procedure for the other wheel hubs.

## Checking the Oil Level in the Axles

**Service Interval:** After the first 100 hours

Every 400 hours

1. Place a drain pan under the differential housing of the axle.
2. Remove the plugs from the sight port in the differential housing of the axle (Figure 97 and Figure 98).

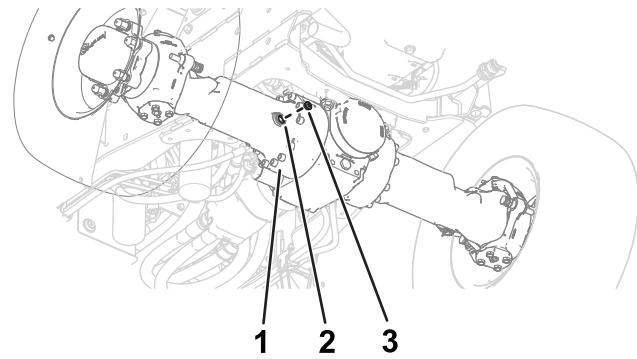


Figure 97

Front Axle

g250850

- 1. Front-axle housing
- 2. Sight and fill port
- 3. Plug

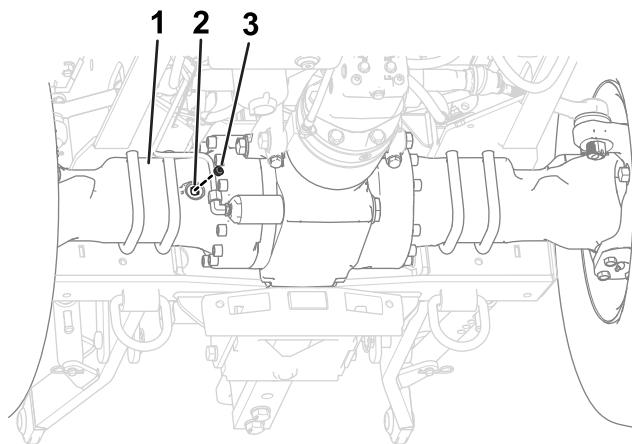


Figure 98

Rear Axle

g250851

- 1. Rear-axle housing
- 2. Sight port
- 3. Plug

3. Look through the sight port and check that the oil level in the axle is level with the bottom of the threads of the port (Figure 97 and Figure 98).

**Note:** Use a flashlight and a mirror to help you see the oil level.

- If the oil level is too high, allow the oil to drain from the sight port.
- If the oil level is too low, add the specified oil to the axle housing sight port; refer to steps 6 and 7 in [Changing the Oil in the Axles \(page 71\)](#).

4. Clean the threads of the sight plug.
5. Apply PTFE thread sealing tape to the threads of the plug.
6. Install the sight plug into the sight port in the differential housing of the axle (Figure 97 and Figure 98).

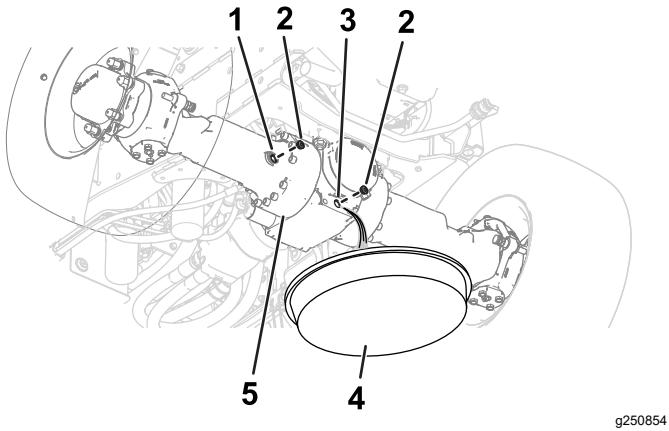
# Changing the Oil in the Axles

**Service Interval:** After the first 150 hours

Every 1,000 hours/Yearly (whichever comes first)—Change the oil in the front and rear axle.

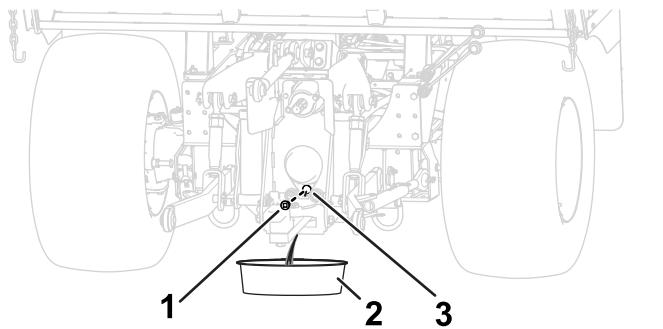
**Axle oil capacity:** approximately 9 L (9.5 US qt)

1. Place a drain pan under the differential housing of the axle (Figure 99 and Figure 100).



**Figure 99**  
Front Axle

1. Sight port	4. Drain pan
2. Plug	5. Front-axle housing
3. Drain port	



**Figure 100**  
Rear Axle

1. Drain plug	3. Drain port
2. Drain pan	

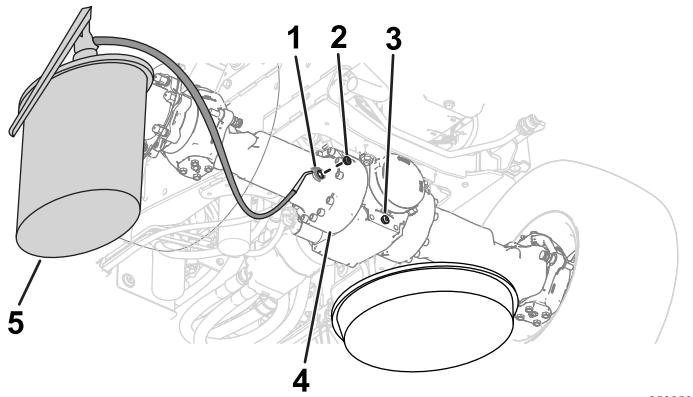
2. Remove the plugs from the sight port and the drain port of the differential housings for the axles (Figure 99 and Figure 100).

**Note:** Allow the oil to drain completely from the differential housing and axle.

**Note:** Refer to Figure 98 for the rear-axle sight port.

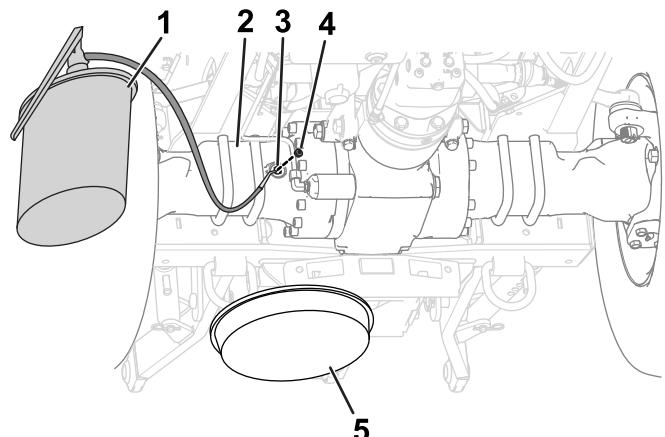
3. Clean the threads of the plugs.

4. Apply PTFE thread sealing tape to the threads of the plugs.
5. Install the drain plugs into the drain ports at the differential housings (Figure 101 and Figure 102).



**Figure 101**  
Front Axle

1. Sight port	4. Front-axle housing
2. Plug	5. Oil-servicing equipment
3. Drain plug/port	



**Figure 102**  
Rear Axle

1. Oil-servicing equipment	4. Plug
2. Rear-axle housing	5. Drain pan
3. Sight port	

6. Fill the axles with the specified oil through the sight port until the oil is level with the threads at the bottom of the port (Figure 101 and Figure 102).
7. Wait a few minutes for the oil to settle, then add more oil as necessary.

**Note:** Continue to add oil until the oil level stabilizes and is at the bottom of the threads of the sight port.

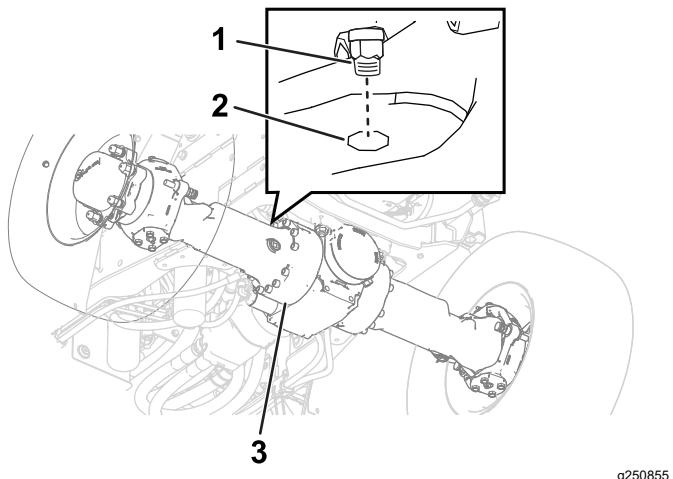
8. Install the fill plugs into the sight ports of the differential housings for the axles (Figure 101 and Figure 102).

## Cleaning the Axle Breathers

**Service Interval:** After the first 200 hours

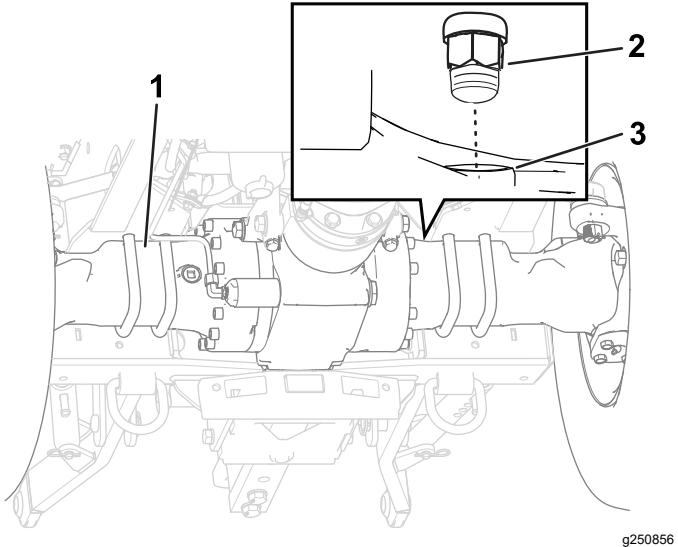
Every 400 hours

1. Clean the area around the breathers with a cleaning solvent (Figure 103 and Figure 104).



**Figure 103**  
Front Axle

1. Breather	3. Front axle
2. Breather fitting	



**Figure 104**  
Rear Axle

1. Rear axle	3. Breather fitting
2. Breather	

2. Remove the breathers from the front axle and rear axles (Figure 103 and Figure 104).

3. Clean the breathers with a cleaning solvent.
4. Use compressed air to dry the breathers.

**Important:** Wear face protection when using compressed air.

5. Install the breathers into the front and rear axles (Figure 103 and Figure 104).

## Servicing the Hydraulic Parking Brake Oil

**Oil specification:** Toro Premium Tractor Fluid

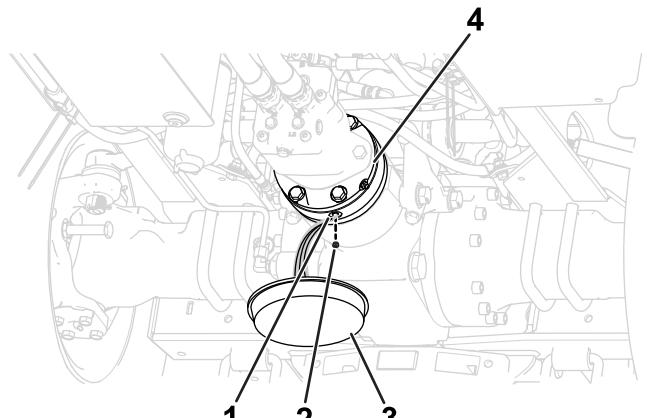
### Changing the Hydraulic Parking Brake Oil

**Service Interval:** After the first 150 hours

Every 1,000 hours/Yearly (whichever comes first)—Change the oil in the hydraulic parking brake.

**Note:** The hydraulic brake is adjacent to the rear axle.

1. Place a drain pan under the hydraulic brake (Figure 105).



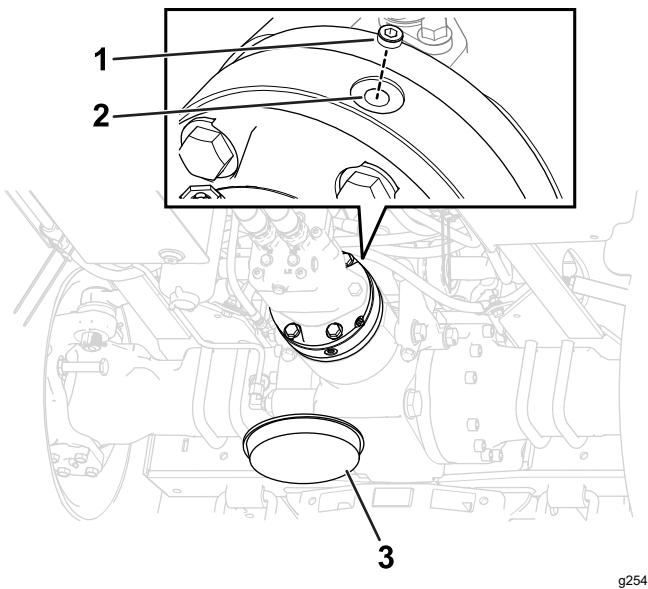
**Figure 105**

1. Drain port	3. Drain pan
2. Drain plug	4. Hydraulic brake

2. Remove the drain plug from the drain port (Figure 105).

**Note:** Allow the oil to drain completely from the brake housing.

3. Clean the threads of the plug.
4. Install the drain plug into the drain port (Figure 105).
5. Remove the fill plug at the top of the brake housing (Figure 106).

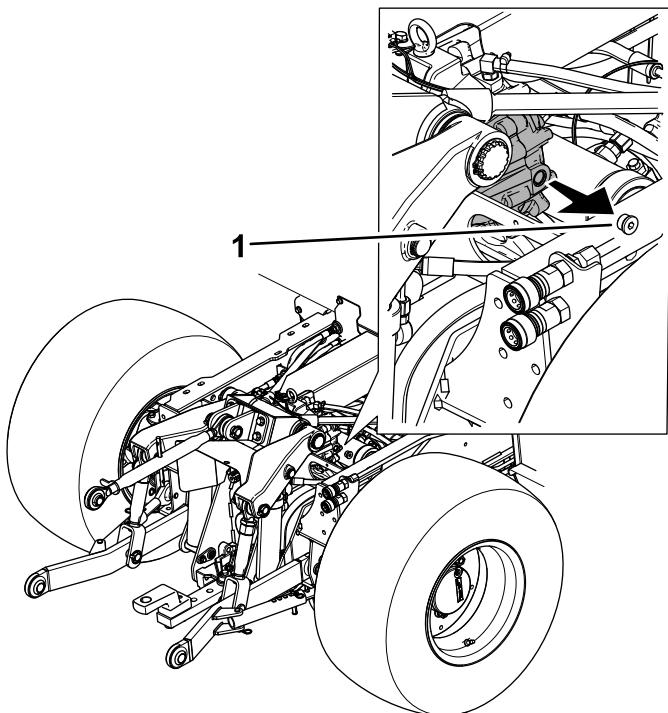


**Figure 106**

g254600

- 1. Fill plug
- 2. Fill port
- 3. Drain pan

- 6. Fill the brake housing with 160 ml (5.4 fl oz) of the specified oil through the fill port.
- 7. Install the fill plug into the fill port (Figure 106).



**Figure 107**

g256626

- 1. Sight-port plug
- 3. Look through the sight port and check that the oil level in the gearbox is level with the bottom of the threads in the port.
  - If the oil level is too high, allow the oil to drain from the sight port.
  - If the oil level is too low, add the specified oil through the sight port.
- 4. Clean the threads of the sight plug.
- 5. Install the sight plug into the sight port.

## Servicing the Rear PTO Gearbox Oil

**Oil specification:** Toro Premium Tractor Fluid

### Checking the Rear PTO Gearbox Oil

**Service Interval:** After the first 100 hours

Every 400 hours

1. Remove the standard bed (if equipped) from the machine; refer to [Removing or Installing the Standard Bed \(page 35\)](#).
2. Remove the plug from the sight port of the rear PTO gearbox (Figure 107).

### Changing the Rear PTO Gearbox Oil

**Service Interval:** After the first 150 hours

Every 1,000 hours/Yearly (whichever comes first)—Change the rear PTO gearbox oil.

1. Remove the standard bed (if equipped) from the machine; refer to [Removing or Installing the Standard Bed \(page 35\)](#).
2. Remove the plug from the sight port of the rear PTO gearbox (Figure 108).

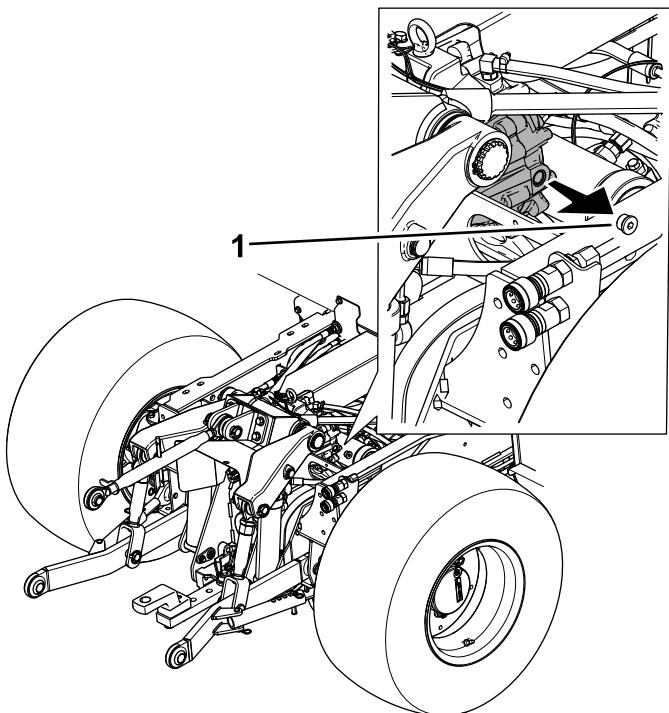


Figure 108

g256626

1. Sight-port plug
3. Remove the plug from the drain port (Figure 109).

**Note:** Allow the oil to drain completely from the gearbox.

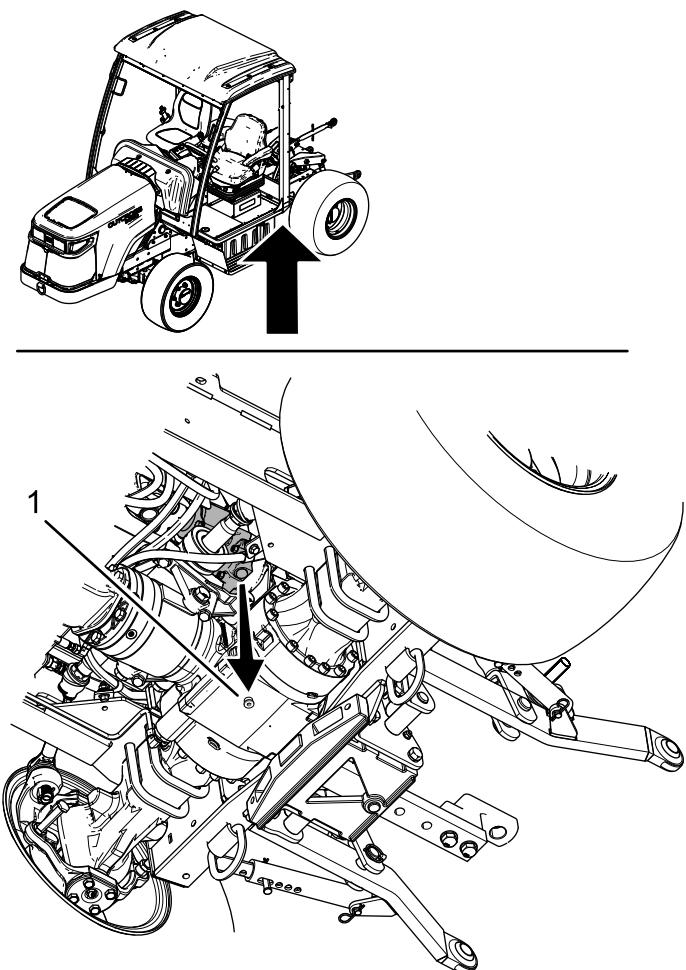


Figure 109

g256625

1. Drain-port plug
4. Clean the threads of the plug.
5. Install the drain plug into the drain port.
6. Fill the gearbox with 1.4 L (48 fl oz) the specified oil through the sight port until the oil is level with the threads at the bottom of the port.
7. Wait a few minutes for the oil to settle, then add more oil as necessary.
8. Install the sight plug into the sight port.

**Note:** Continue to add oil until the oil level stabilizes and is at the bottom of the threads of the sight port.

# Servicing the Front Traction Gearbox

## Gearbox with Bellows Installed

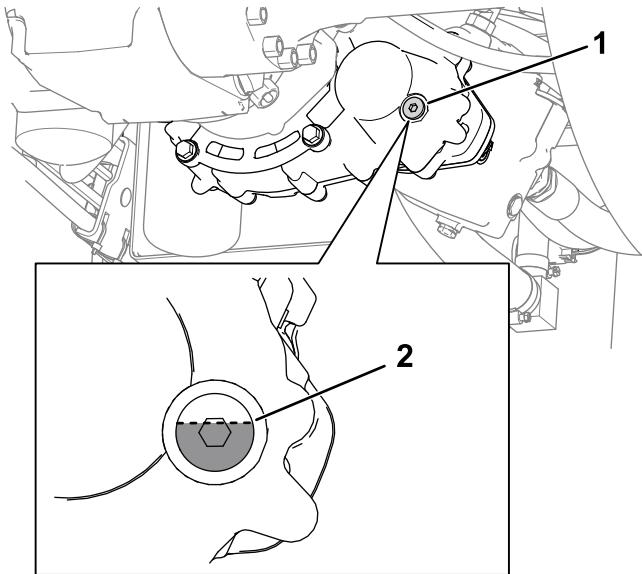
**Oil specification:** Toro Premium Tractor Fluid

## Checking the Front Traction-Gearbox Oil Level

**Service Interval:** After the first 100 hours—Check the oil level in the traction gearboxes.

Every 400 hours—Check the oil level in the traction gearboxes.

1. Check the oil level as viewed through the sight plug; ensure that the oil level is slightly above the midpoint of the sight plug as shown in [Figure 110](#).



**Figure 110**

1. Sight plug
2. Oil level slightly over the sight plug midpoint
2. If the oil level is too high, drain the oil; refer to [Changing the Front Traction-Gearbox Oil \(page 75\)](#).
3. If the oil level is too low, add the specified oil through the 90° fitting; refer to steps 6 and 7 in [Changing the Front Traction-Gearbox Oil \(page 75\)](#).

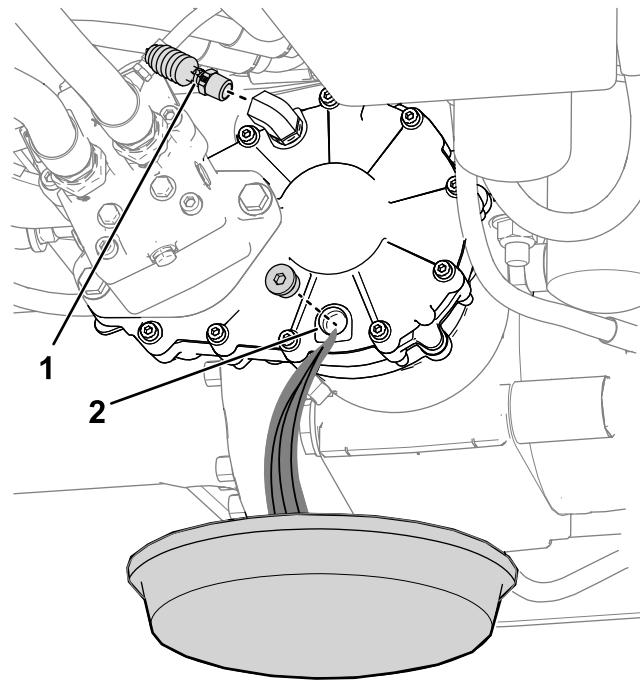
## Changing the Front Traction-Gearbox Oil

**Service Interval:** After the first 150 hours

Every 1,000 hours—Change the oil in the traction gearboxes.

1. Place a drain pan under the gearbox drain port ([Figure 111](#)).
2. Remove the hose barb and bellows from the 90° fitting on the gearbox ([Figure 111](#)).
3. Remove the plug from the drain port ([Figure 111](#)) and allow the oil to drain completely from the gearbox.

**Note:** The drain port and the 90° fitting are located on the same side of the gear box.



**Figure 111**

1. Remove the hose barb
2. Remove the drain plug and bellows.
4. Clean the threads of the drain plug, 90° fitting, and the hose barb.

**Note:** Replace the pipe sealant compound or thread-sealing tape on the threads of the hose barb if necessary.

5. Install the drain plug into the drain port.
6. Fill the gearbox with 0.34 L (11.5 fl oz) of the specified oil through the 90° fitting (Figure 112).

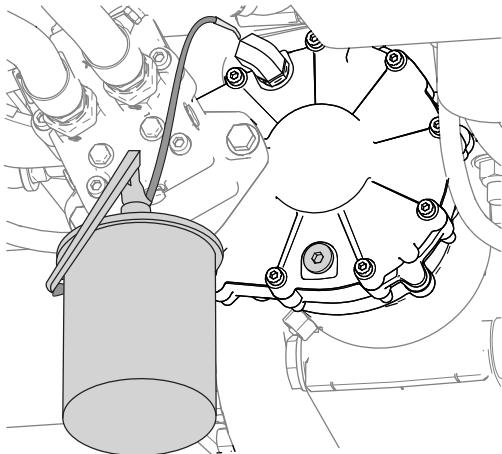


Figure 112

g453850

7. Wait a few minutes for the oil to settle, then add more oil as necessary.

**Note:** Continue to add oil until the oil level stabilizes and is at the correct level as viewed through the sight port.

8. Install the hose barb and bellows to the 90° fitting.

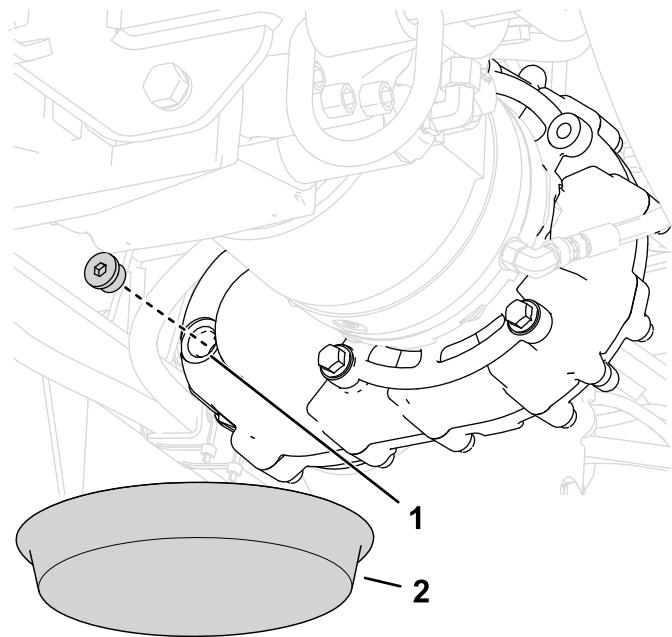


Figure 113

g453844

1. Sight port
2. Pan
2. Remove the plug from the sight port (Figure 113).

## Servicing the Rear Traction Gearbox

### Gearbox with Bellows Installed

**Oil specification:** Toro Premium Tractor Fluid

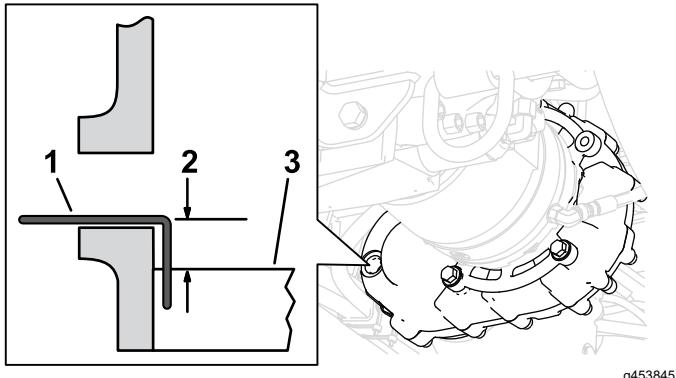
### Checking the Rear Traction-Gearbox Oil Level

**Service Interval:** After the first 100 hours—Check the oil level in the traction gearboxes.

Every 400 hours—Check the oil level in the traction gearboxes.

1. Place a drain pan under the gearbox (Figure 113).

- Check that the oil level in the gearbox is 23 mm (29/32 inch) below the bottom of the sight port; use a bent paperclip inserted into the sight port as shown in [Figure 114](#).



**Figure 114**

g453845

- Bent paperclip in the sight port to measure the oil level relative to port
- Ensure that the oil level is 23 mm (29/32 inch) below the port

- If the oil level is too high, drain the oil; refer to [Changing the Rear Traction-Gearbox Oil \(page 77\)](#).
- If the oil level is too low, add the specified oil through the sight port; refer to steps 6 and 7 in [Changing the Rear Traction-Gearbox Oil \(page 77\)](#).

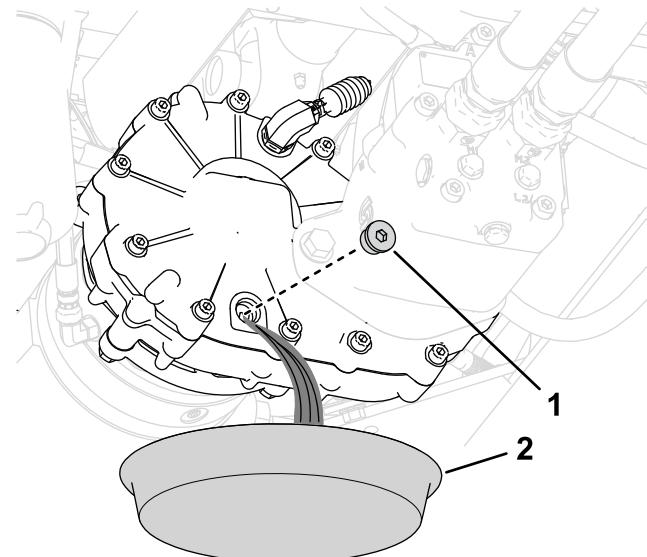
- Clean the threads of the sight plug.
- Install the sight plug into the sight port.

## Changing the Rear Traction-Gearbox Oil

**Service Interval:** After the first 150 hours

Every 1,000 hours—Change the oil in the traction gearboxes.

- Place a drain pan under the gearbox drain port.



**Figure 115**

g453846

- Drain port
- Pan
- Remove the plug from the sight port ([Figure 113](#)).
- Remove the plug from the drain port ([Figure 115](#)) and allow the oil to drain completely from the gearbox.

**Note:** The sight port and drain port are located on opposite sides of the gearbox.

- Clean the threads of both plugs.
- Install the drain plug into the drain port.

6. Fill the gearbox with 0.34 L (11.5 fl oz) of the specified oil through the sight port (Figure 116).

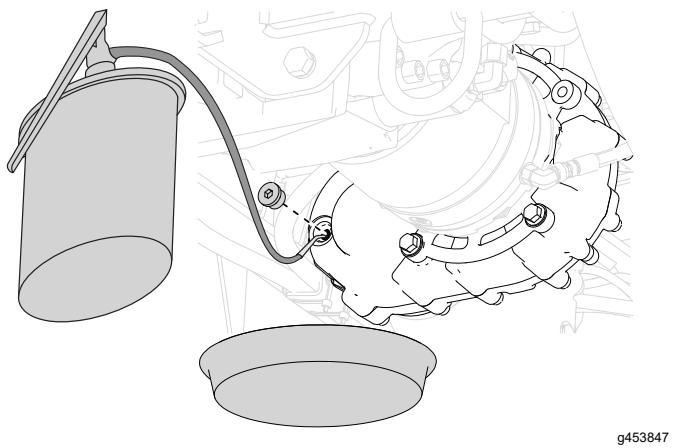


Figure 116

7. Wait a few minutes for the oil to settle, then add more oil as necessary.

**Note:** Continue to add oil until the oil level stabilizes and is 23 mm (29/32 inch) below the bottom of the sight-port threads.

8. Install the sight plug into the sight port.

## Torquing the Wheel Lug Nuts

**Service Interval:** After the first hour

After the first 10 hours

Every 400 hours

**Wheel lug nut torque specification:** 380 to 433 N·m (280 to 320 ft-lb)

Torque the wheel lug nuts in a crossing pattern as shown in Figure 117 to the specified torque.

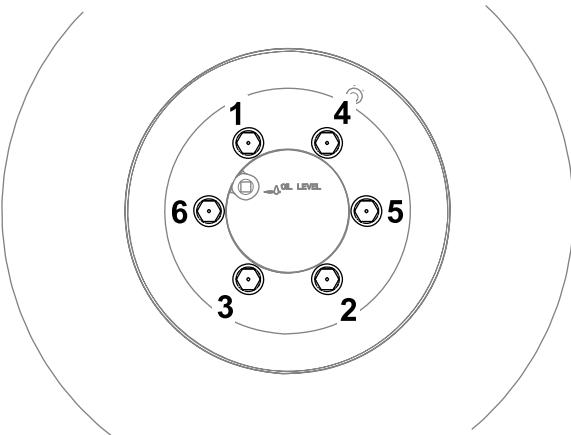


Figure 117

# Cooling System Maintenance

## Cooling System Safety

- Shut off the engine and remove the key before performing maintenance.
- Swallowing engine coolant can cause poisoning; keep out of reach from children and pets.
- Discharge of hot, pressurized coolant or touching a hot radiator and surrounding parts can cause severe burns.
  - Always allow the engine to cool at least 15 minutes before removing the radiator cap.
  - Use a rag when opening the radiator cap, and open the cap slowly to allow steam to escape.
- Do not operate the machine without the covers in place.
- Keep your fingers, hands and clothing clear of rotating fan and drive belt.

## Coolant Specification

The coolant reservoir is filled at the factory with a 50/50 solution of water and ethylene glycol base extended-life coolant.

**Important:** Use only commercially available coolants that meet the specifications listed in the Extended Life Coolant Standards Table.

Do not use conventional (green) inorganic-acid technology (IAT) coolant in your machine. Do not mix conventional coolant with extended-life coolant.

### Coolant Type Table

Ethylene-Glycol Coolant Type	Corrosion Inhibitor Type
Extended-life antifreeze	Organic-acid technology (OAT)

**Important:** Do not rely on the color of the coolant to identify the difference between conventional (green) inorganic-acid technology (IAT) coolant and extended-life coolant. Coolant manufacturers may dye extended-life coolant in one of the following colors: red, pink, orange, yellow, blue, teal, violet, and green. Use coolant that meets the specifications in the Extended Life Coolant Standards Table.

### Extended Life Coolant Standards

ATSM International	SAE International
D3306 and D4985	J1034, J814, and 1941

**Important:** Coolant concentration should be a 50/50 mixture of coolant to water.

- Preferred:** When mixing coolant from a concentrate, mix it with distilled water.
- Preferred option:** If distilled water is not available, use a pre-mix coolant instead of a concentrate.
- Minimum requirement:** If distilled water and pre-mix coolant are not available, mix concentrated coolant with clean drinkable water.

## Checking the Cooling System

**Service Interval:** Before each use or daily

Check the coolant level at the beginning of each day. The capacity of the system is 8.5 L (9 US qt).

1. Raise the hood; refer to [Raising the Hood \(page 57\)](#).
2. Carefully remove the radiator cap and expansion-tank cap ([Figure 118](#)).
3. Check the coolant level in the radiator.

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

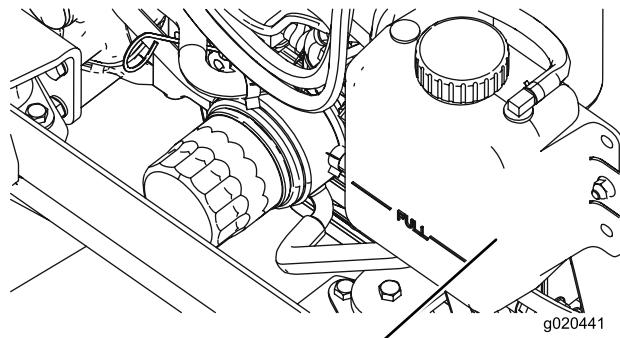


Figure 118

1. Expansion tank
4. If the coolant level is low, remove the expansion-tank cap and replenish the system. **Do not overfill.**
5. Install the radiator cap and expansion-tank cap.

**Important:** Do not use water only or alcohol/methanol-based coolants, as this may cause damage.

# Servicing the Engine-Cooling System

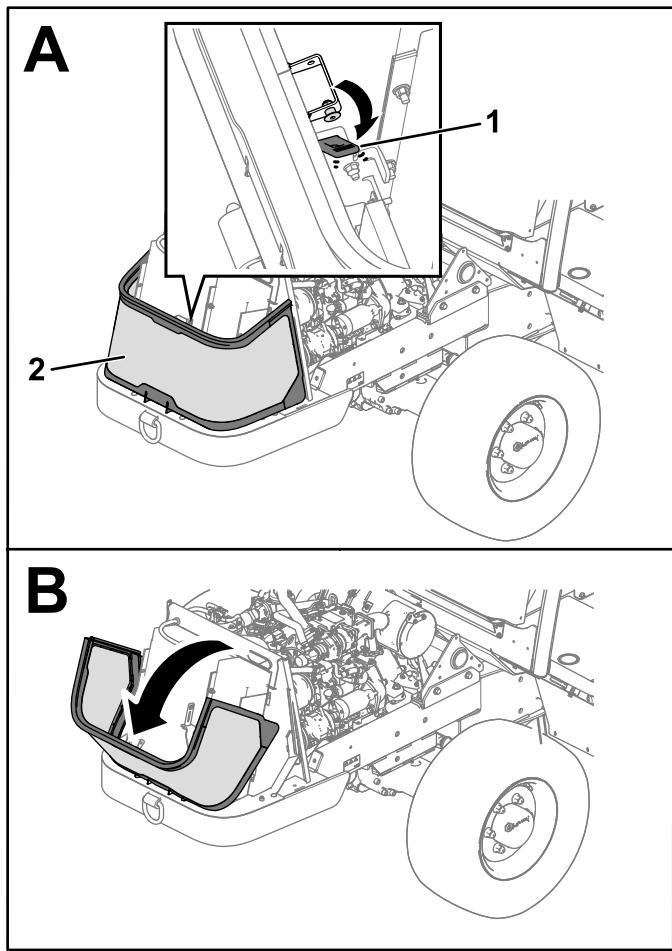
**Service Interval:** Before each use or daily

Every 100 hours

Every 2 years

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

1. Raise the hood; refer to [Raising the Hood \(page 57\)](#).
2. Lower the front screen by releasing the strap that holds it in place ([Figure 119](#)).

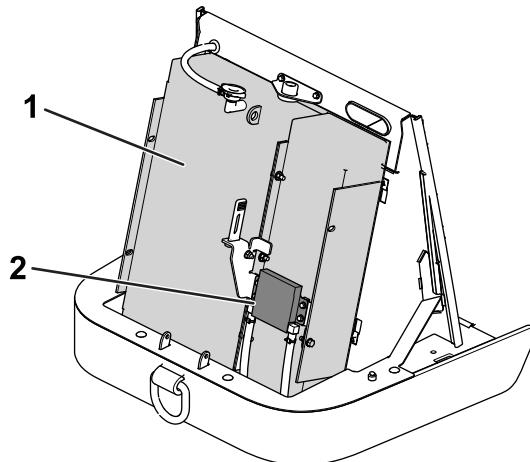


**Figure 119**

1. Strap
2. Front screen
3. Clean the radiator/fuel cooler area thoroughly with compressed air (Figure 120).

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

**Important:** Do not clean the radiator/fuel cooler area with water; doing so can promote a plugged system, premature corrosion, and damage to components.



**Figure 120**

Front screen removed for clarity

1. Radiator
2. Fuel cooler
4. Close the hood.

# Belt Maintenance

## Checking the Alternator-Belt Tension

**Service Interval:** After the first 10 hours

Every 100 hours

For instructions to check the alternator-belt tension, refer to the engine *Service Manual* contained within the traction unit *Service Manual*.

## Checking the Compressor-Belt Tension

**Service Interval:** After the first 10 hours

Every 100 hours

For instructions to check the compressor-belt tension, refer to the traction unit *Service Manual*.

# Hydraulic System Maintenance

## Hydraulic System Safety

- Seek immediate medical attention if fluid is injected into skin. Injected fluid must be surgically removed within a few hours by a doctor.
- 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.

## Hydraulic Fluid Specifications

The reservoir is filled at the factory with approximately 44 L (11.75 US gallons) of high-quality hydraulic fluid. Check the level of the hydraulic fluid before the engine is first started and daily thereafter; refer to [Checking the Hydraulic-Fluid Level \(page 82\)](#).

**Recommended replacement fluid:** Toro Premium Transmission/Hydraulic Tractor Fluid; available in 19 L (5 US gallon) pails or 208 L (55 US gallon) drums.

**Alternative fluids:** If Toro Premium Tractor Fluid is not available, you may use other conventional, petroleum-based Universal Tractor Hydraulic Fluids (UTHF), provided that its specifications fall within the listed range for all the following material properties and that it meets industry standards. We do not recommend the use of synthetic fluid. Consult with your lubricant distributor to identify a satisfactory product.

**Note:** Toro does not assume responsibility for damage caused by improper substitutions, so use products only 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 55 to 62
Viscosity Index ASTM D2270	140 - 152
Pour Point, ASTM D97	-35° F to -46° F
Industry Specifications:	API GL-4, Vickers 35VQ25

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

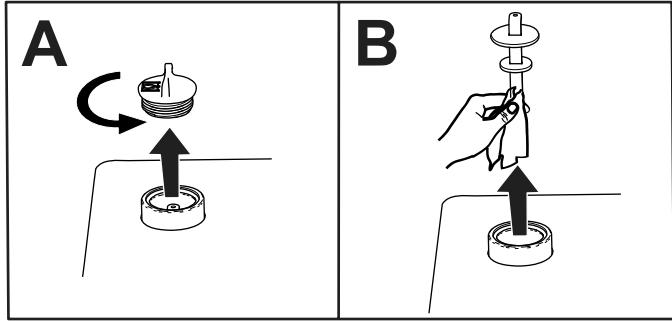
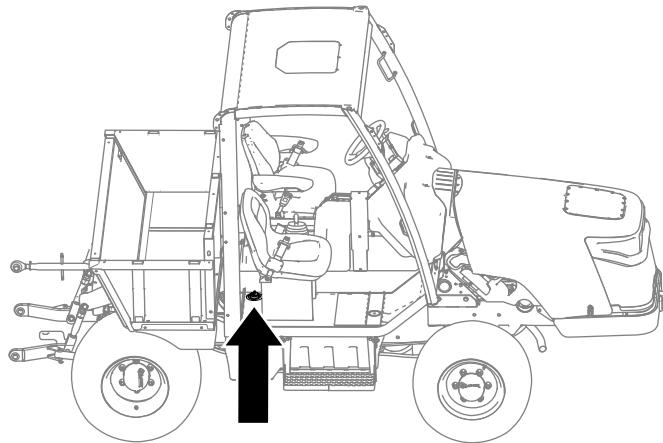
## Checking the Hydraulic-Fluid Level

**Service Interval:** Before each use or daily

1. Park the machine on a level surface.
2. Disengage the PTO, move the shift lever to the NEUTRAL position, lower all attachments (if equipped), engage the parking brake, shut off the engine, and remove the key.
3. Remove the plug from the hydraulic tank ([Figure 121](#)).

**Note:** The hydraulic-tank plug and dipstick are located behind the passenger-side seat.

4. Remove the dipstick from the hydraulic tank and wipe it with a clean cloth ([Figure 121](#)).

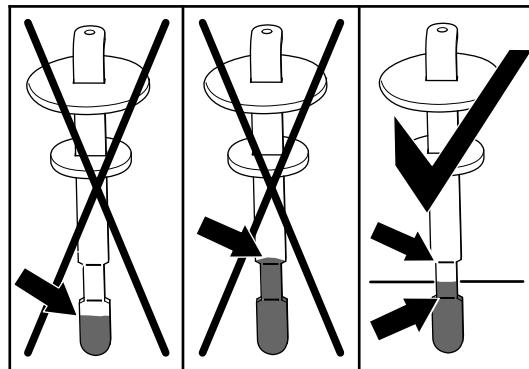


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**Figure 121**

5. Insert the dipstick into the hydraulic tank.
6. Remove the dipstick and check the fluid level ([Figure 122](#)).

The hydraulic-fluid level is at the appropriate level when the fluid appears between the 2 marks on the dipstick.



g246147

**Figure 122**

7. If the fluid level is below the lower mark on the dipstick, add the specified hydraulic fluid into the tank ([Figure 123](#)). Repeat steps 4 through 6 until the fluid level appears between the 2 marks on the dipstick.

**Important:** Do not overfill the hydraulic tank with fluid. The tank is overfilled when the

fluid appears above the upper mark on the dipstick.

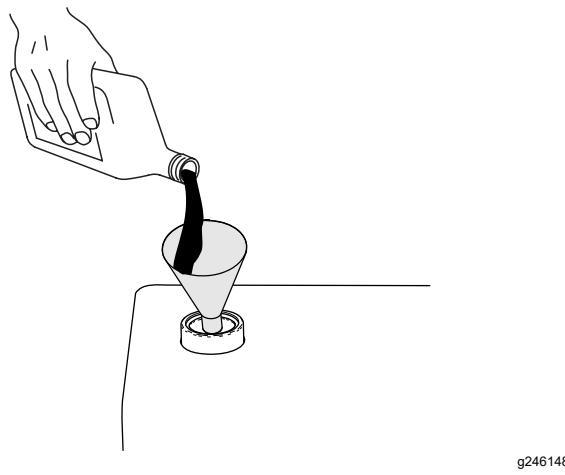


Figure 123

8. Insert the dipstick and plug into the hydraulic tank
9. Check all hydraulic hoses and fittings for leaks.

## Changing the Hydraulic Fluid and Filters

**Service Interval:** After the first 1000 hours

Every 1,500 hours

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

**Important:** Use Toro replacement filters; refer to the machine *Parts Catalog*. Using any other filter may void the warranty on some components.

1. Park the machine on a level surface.
2. Disengage the PTO, move the shift lever to the NEUTRAL position, lower all attachments (if equipped), engage the parking brake, shut off the engine, and remove the key.
3. Place a large drain pan under the hydraulic-fluid tank.
4. Remove the hydraulic-tank cap and dipstick.
5. Remove the drain plug from the bottom of the tank and let the hydraulic fluid flow into the pan (Figure 124).

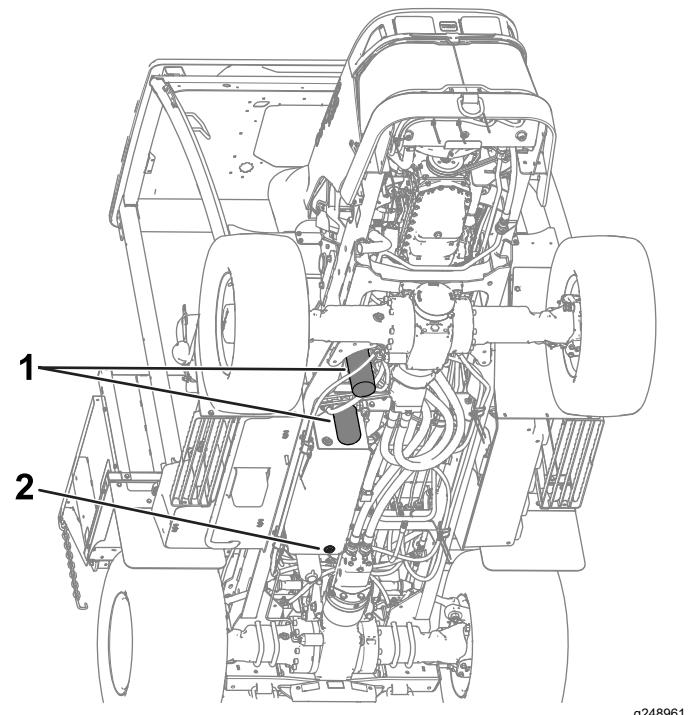


Figure 124

1. Hydraulic filters
2. Drain plug
6. Install the drain plug when the hydraulic fluid stops draining.
7. Clean the area around the filter-mounting areas.
8. Place a drain pan under the filter and remove the filter (Figure 124).
9. Lubricate the new filter gasket and fill the filter with hydraulic fluid.
10. Ensure that each filter-mounting area is clean and screw the filter on until the gasket contacts the mounting plate; then tighten the filter an additional 1/2 turn.
11. Fill the reservoir with hydraulic fluid; refer to [Checking the Hydraulic-Fluid Level \(page 82\)](#).
- Important:** Use only the hydraulic fluids specified. Other fluids could cause system damage.
12. Install the reservoir dipstick and cap.
13. Start the engine and use all of the hydraulic controls to distribute hydraulic fluid throughout the system.
- Note:** Also, check for leaks, then shut off the engine.
14. Check the fluid level and add enough to raise the level to the Full mark on the dipstick.
- Note:** Do not overfill.

# Checking the Hydraulic Lines and Hoses

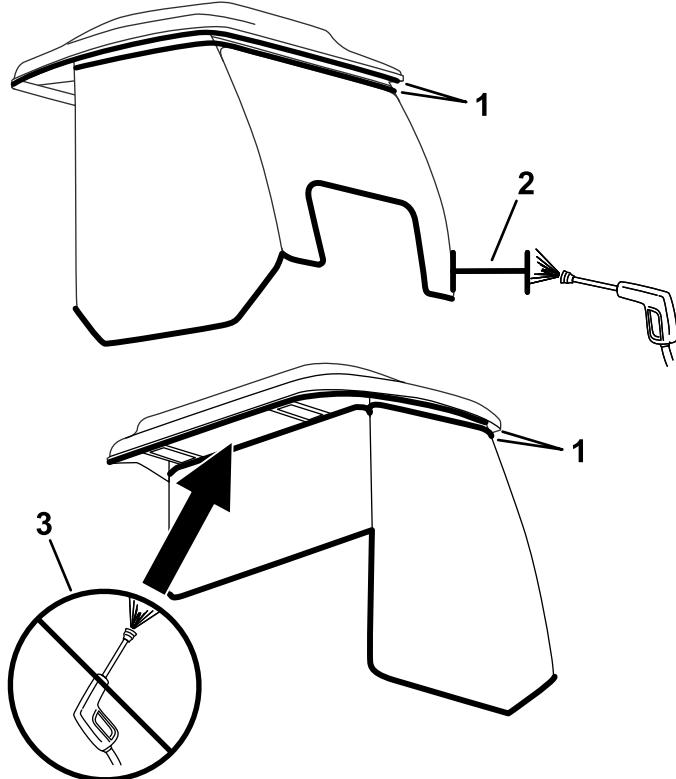
Service Interval: Every 2 years

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

# Cab Maintenance

## Cleaning the Cab

**Important:** Use care around the cab seals (Figure 125). If you are using a pressure washer, keep the washer wand at least 0.6 m (2 ft) away from the machine. Do not use the pressure washer directly on the cab seals or under the rear overhang.



g253433

**Figure 125**

1. Seal
2. Keep wand 0.6 m (2 ft) away.
3. Do not pressure wash under the rear overhang.

# Cleaning the Cab Air Filters

Service Interval: Every 400 hours

1. Remove the knobs and grates from the cab rear overhang (Figure 126).

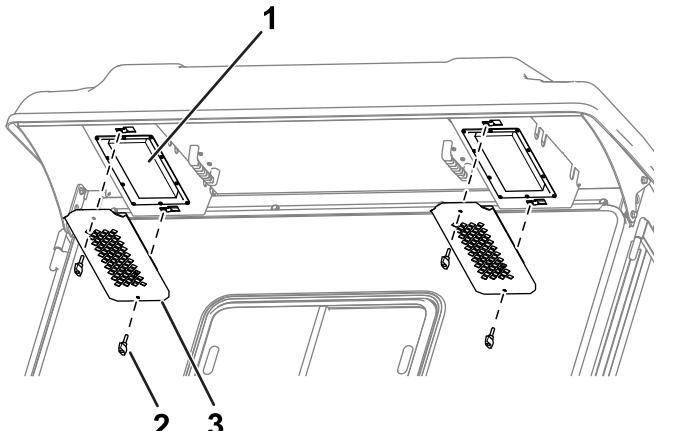


Figure 126

1. Filter  
2. Knob  
3. Grate

2. Remove the air filters from the cab.
3. Clean the filters by blowing clean, oil-free, compressed air through them.

**Important:** If either filter has a hole, tear, or other damage, replace the filter.

4. Use the knobs and grates to install the filters into the cab (Figure 126).

## Cleaning the Cab Condenser Filter

The purpose of the cab condenser filter is to prevent large debris, such as grass and leaves, from entering the cab condenser and condenser fans.

1. Pull the screen cover straight down.
2. Clean the condenser filter with water.

**Note:** Do not use a pressure washer.

**Important:** If the filter has a hole, tear, or other damage, replace the filter.

3. Allow the filter to dry before installing it into the machine.
4. Rotate the filter screen around the tabs until the latch locks into the latch-mount assembly (Figure 127).

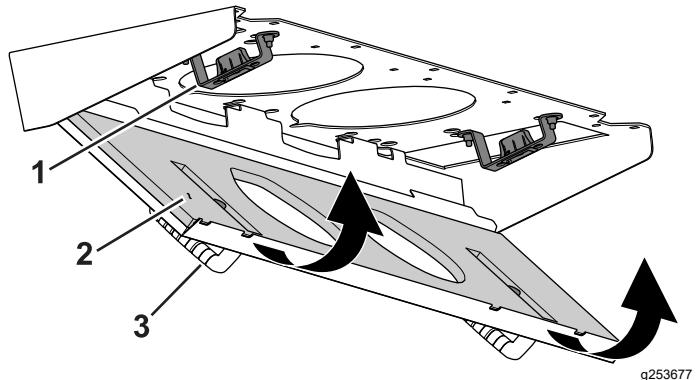


Figure 127

1. Latch-mount assembly  
2. Condenser filter  
3. Screen cover

## Replacing the Dome Light

**Note:** Refer to the *Parts Catalog* for the appropriate bulb part number.

1. Use a screwdriver to remove the light lens from the control panel. (Figure 128)

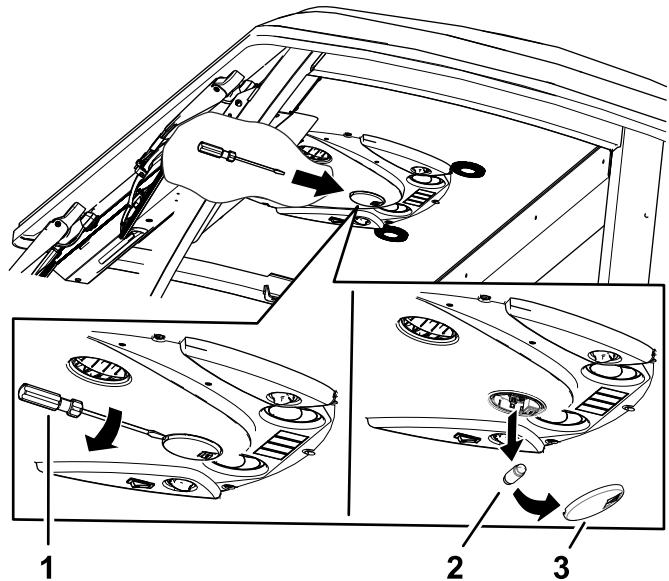


Figure 128

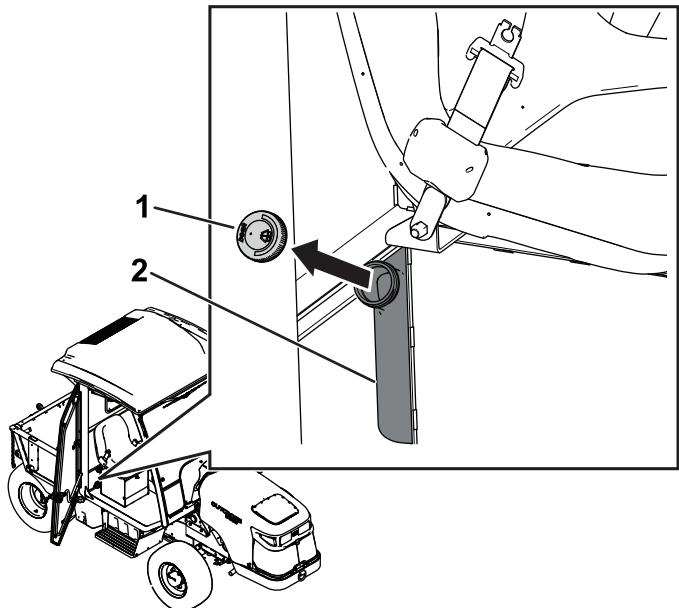
1. Screwdriver  
2. Bulb  
3. Lens

2. Remove the bulb from the light base (Figure 128).
3. Install a new bulb into the light base.
4. Install the lens into the control panel.

# Filling the Windshield-Wiper-Fluid Reservoir

**Note:** The windshield-wiper-fluid reservoir is located behind the passenger seat.

1. Remove the cap on the reservoir (Figure 129).



g251284

**Figure 129**

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1. Reservoir cap
2. Reservoir

2. Fill the reservoir with wiper fluid.
3. Replace the cap on the reservoir.

# Storage

## Preparing the Machine for Storage

### Preparing the Traction Unit

1. Remove any equipped attachments.
2. Move the shift lever to the NEUTRAL position, lower any equipped attachments, shut off the engine, and remove the key. Wait for all movement to stop and allow the machine to cool.
3. Thoroughly clean the traction unit and the engine.

**Important:** Do not use high-pressure water near the dashboard or rubber cab seals, as this may cause damage.

**Important:** Do not use brackish or reclaimed water to clean the machine.

4. Check the tire pressure; refer to [Checking the Tire Air Pressure \(page 22\)](#).
5. Check all fasteners for looseness; tighten as necessary.
6. Grease or oil all grease fittings and pivot points and wipe up any excess lubricant; refer to [Greasing the Bearings and Bushings \(page 58\)](#).
7. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted, and repair any dents in the metal body.
8. Service the battery and cables as follows:
  - A. Remove the battery terminals from the battery posts; refer to [Disconnecting the Battery \(page 66\)](#).
  - 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) to prevent corrosion.
  - D. Slowly charge the battery every 60 days for 24 hours to prevent lead sulfation of the battery.

### Preparing the Engine

1. Drain the engine oil from the oil pan and install the drain plug; refer to [Changing the Engine Oil and Filter \(page 62\)](#).
2. Remove the existing oil filter and install a new oil filter; refer to [Changing the Engine Oil and Filter \(page 62\)](#).

3. Fill engine with oil; refer to [Servicing the Engine Oil \(page 60\)](#).
4. Start the engine and run it at idle speed for approximately 2 minutes.
5. Remove the key and shut off the fuel (if equipped) before storing or transporting the machine.
6. Flush the fuel tank with fresh, clean fuel.
7. Secure all of the fuel-system fittings.
8. Thoroughly clean and service the air-cleaner assembly; refer to [Servicing the Air Cleaner \(page 62\)](#).
9. Seal the air-cleaner inlet and the exhaust outlet with weatherproof tape.
10. Check the anti-freeze protection and add/replenish the system as needed for the expected minimum temperature in your area.

# Notes:

# Notes:

# Notes:



## The Toro Warranty

Two-Year or 1,500 Hours Limited Warranty

### Conditions and Products Covered

The Toro Company warrants your Toro Commercial product ("Product") to be free from defects in materials or workmanship for 2 years or 1,500 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  
8111 Lyndale Avenue South  
Bloomington, MN 55420-1196

952-888-8801 or 800-952-2740  
E-mail: [commercial.warranty@toro.com](mailto:commercial.warranty@toro.com)

### Owner Responsibilities

As the product owner, you are responsible for required maintenance and adjustments stated in your *Operator's Manual*. Repairs for product issues caused by failure to perform required maintenance and adjustments are not covered under this warranty.

### 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.
- Product failures which result from failure to perform recommended maintenance and/or adjustments.
- Product failures which result from operating the Product in an abusive, negligent, or reckless manner.
- Parts consumed through use that are not 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, flow meters, and check valves.
- Failures caused by outside influence, including, but not limited to, weather, storage practices, contamination, use of unapproved fuels, coolants, lubricants, additives, fertilizers, water, or chemicals.
- Failure or performance issues due to the use of fuels (e.g. gasoline, diesel, or biodiesel) that do not conform to their respective industry standards.
- Normal noise, vibration, wear and tear, and deterioration. Normal "wear and tear" includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows.

### 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 your Authorized Toro Service Center.

### 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. Note: (Lithium-Ion battery only): Refer to the battery warranty for additional information.

### Lifetime Crankshaft Warranty (ProStripe 02657 Model Only)

The Prostripe which is fitted with a genuine Toro Friction Disc and Crank-Safe Blade Brake Clutch (integrated Blade Brake Clutch (BBC) + Friction Disc assembly) as original equipment and used by the original purchaser in accordance with recommended operating and maintenance procedures, are covered by a Lifetime Warranty against engine crankshaft bending. Machines fitted with friction washers, Blade Brake Clutch (BBC) units and other such devices are not covered by the Lifetime Crankshaft Warranty.

### 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.

**The Toro Company is not 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 Emissions 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.

# California Proposition 65 Warning Information

## What is this warning?

You may see a product for sale that has a warning label like the following:



## What is Prop 65?

Prop 65 applies to any company operating in California, selling products in California, or manufacturing products that may be sold in or brought into California. It mandates that the Governor of California maintain and publish a list of chemicals known to cause cancer, birth defects, and/or other reproductive harm. The list, which is updated annually, includes hundreds of chemicals found in many everyday items. The purpose of Prop 65 is to inform the public about exposure to these chemicals.

Prop 65 does not ban the sale of products containing these chemicals but instead requires warnings on any product, product packaging, or literature with the product. Moreover, a Prop 65 warning does not mean that a product is in violation of any product safety standards or requirements. In fact, the California government has clarified that a Prop 65 warning "is not the same as a regulatory decision that a product is 'safe' or 'unsafe.'" Many of these chemicals have been used in everyday products for years without documented harm. For more information, go to <https://oag.ca.gov/prop65/faqs-view-all>.

A Prop 65 warning means that a company has either (1) evaluated the exposure and has concluded that it exceeds the "no significant risk level"; or (2) has chosen to provide a warning based on its understanding about the presence of a listed chemical without attempting to evaluate the exposure.

## Does this law apply everywhere?

Prop 65 warnings are required under California law only. These warnings are seen throughout California in a wide range of settings, including but not limited to restaurants, grocery stores, hotels, schools, and hospitals, and on a wide variety of products. Additionally, some online and mail order retailers provide Prop 65 warnings on their websites or in catalogs.

## How do the California warnings compare to federal limits?

Prop 65 standards are often more stringent than federal and international standards. There are various substances that require a Prop 65 warning at levels that are far lower than federal action limits. For example, the Prop 65 standard for warnings for lead is 0.5 µg/day, which is well below the federal and international standards.

## Why don't all similar products carry the warning?

- Products sold in California require Prop 65 labelling while similar products sold elsewhere do not.
- A company involved in a Prop 65 lawsuit reaching a settlement may be required to use Prop 65 warnings for its products, but other companies making similar products may have no such requirement.
- The enforcement of Prop 65 is inconsistent.
- Companies may elect not to provide warnings because they conclude that they are not required to do so under Prop 65; a lack of warnings for a product does not mean that the product is free of listed chemicals at similar levels.

## Why does Toro include this warning?

Toro has chosen to provide consumers with as much information as possible so that they can make informed decisions about the products they buy and use. Toro provides warnings in certain cases based on its knowledge of the presence of one or more listed chemicals without evaluating the level of exposure, as not all the listed chemicals provide exposure limit requirements. While the exposure from Toro products may be negligible or well within the "no significant risk" range, out of an abundance of caution, Toro has elected to provide the Prop 65 warnings. Moreover, if Toro does not provide these warnings, it could be sued by the State of California or by private parties seeking to enforce Prop 65 and subject to substantial penalties.