

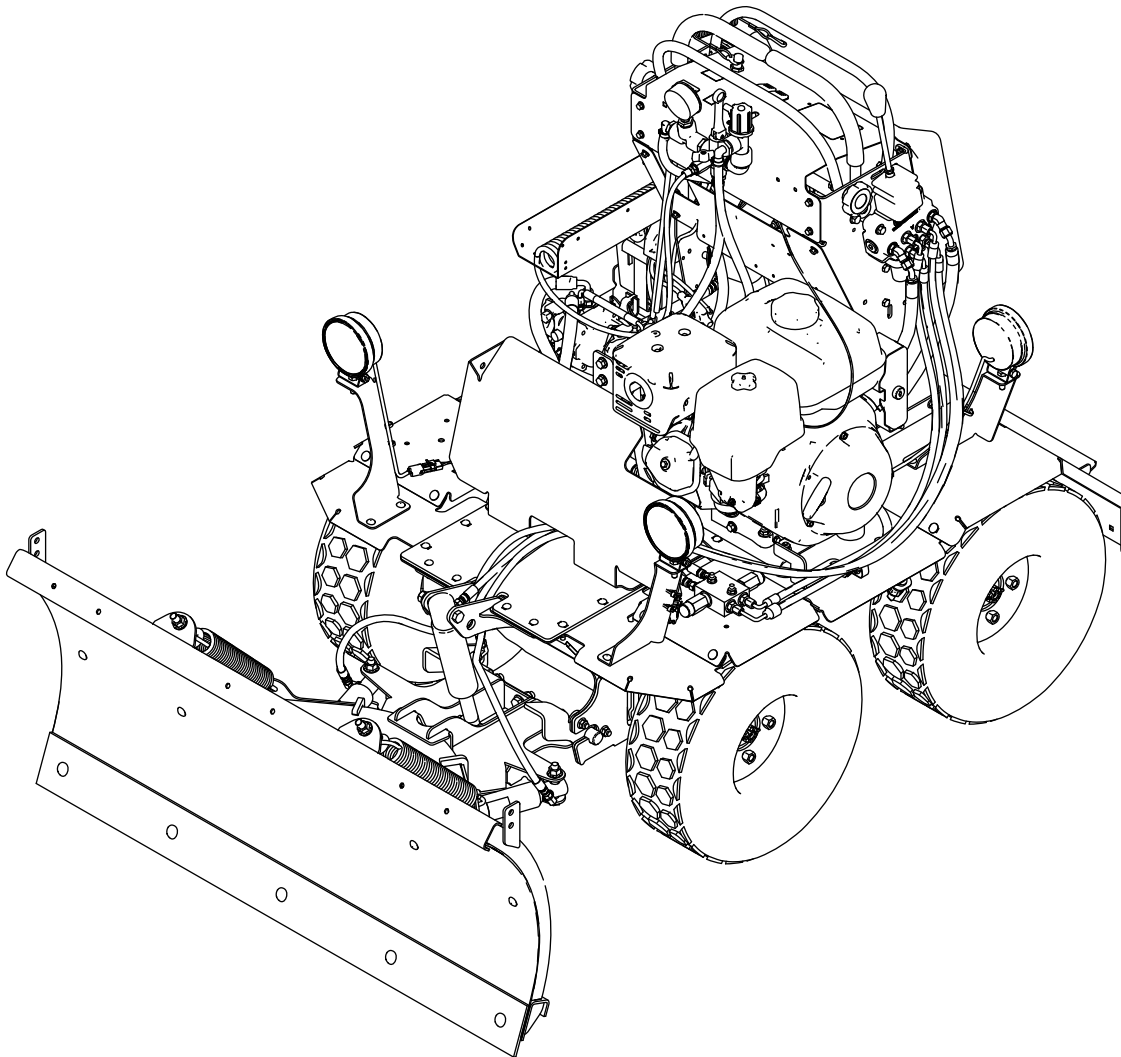


P.O. Box 787  
Iron Mountain, MI 49801  
United States

# Owner's Manual

## Snowrator

Part No. SNR24001—Serial No. 400000000 and Up



Patents pending.

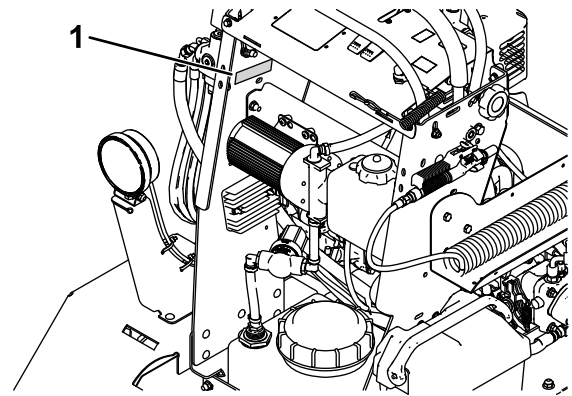
## WARNING

# CALIFORNIA Proposition 65 Warning

**The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or 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.**



### Figure 1

- ## 1. Model and serial number location

Date Purchased	_____
Model No.	_____
Serial No.	_____
Blade Crate Serial No.	_____

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



### Figure 2

Safety-alert symbol

# Introduction

This stand-on vehicle is intended to be used by professional, hired operators. It is designed primarily for plowing snow and spraying ice-control solutions on residential or commercial properties. Using this product for purposes other than its intended use could prove dangerous to you and bystanders.

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

Visit [www.bosspow.com](http://www.bosspow.com) for product safety and operation training materials, accessory information, help finding a dealer, or to register your product.

Whenever you need service, genuine BOSS parts, or additional information, contact an Authorized BOSS Dealer or BOSS Technical Service (1-800-286-4155) 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.

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

# Contents

Safety .....	4	Electrical System Maintenance .....	33
General Safety .....	4	Electrical System Safety .....	33
Safety and Instructional Decals .....	4	Servicing the Battery .....	33
Setup .....	7	Servicing the Fuses .....	35
Installing the Plow Control Joystick .....	7	Drive System Maintenance .....	36
Checking the Tire Pressure.....	7	Checking the Tire Pressure.....	36
Checking the Engine-Oil Level.....	7	Checking the Wheel Fasteners .....	36
Adding Fuel to the Machine .....	7	Hydraulic System Maintenance .....	37
Checking the Hydraulic-Fluid Level.....	7	Hydraulic System Safety.....	37
Connecting the Battery Cables .....	7	Hydraulic System Specifications.....	37
Charging the Battery.....	8	Checking the Hydraulic Fluid .....	37
Product Overview .....	9	Draining the Hydraulic Fluid and Replacing	
Controls .....	10	the Filter .....	37
Engine Controls .....	10	Adding Hydraulic Fluid.....	38
Specifications .....	11	Plow Maintenance.....	39
Attachments/Accessories .....	11	Checking the Cutting Edge .....	39
Before Operation .....	12	Flipping the Urethane Cutting Edge .....	39
Before Operation Safety .....	12	Sprayer Maintenance .....	40
Adding Fuel .....	13	Servicing the Sprayer Screens.....	40
Filling the Sprayer Tank .....	14	Cleaning .....	41
Performing Daily Maintenance.....	14	.....	41
During Operation .....	14	Storage .....	41
General Safety .....	14	Storage Safety.....	41
Slope Safety .....	15	Storing the Machine.....	41
Sprayer Safety.....	15	Removing the Machine from Storage .....	42
Starting the Engine .....	16	Troubleshooting .....	43
Shutting Off the Engine.....	17		
Driving Forward or Backward.....	17		
Operating the Plow .....	18		
Operating the Sprayer .....	18		
Using the Information Display .....	19		
After Operation .....	20		
After Operation Safety .....	20		
Emptying the Sprayer Tank.....	21		
Flushing the Sprayer System.....	21		
Conditioning the Spray System.....	21		
Using the Fuel-Shutoff Valve.....	22		
Pushing the Machine by Hand .....	22		
Transporting the Machine .....	22		
Maintenance .....	25		
Maintenance Safety.....	25		
Recommended Maintenance Schedule(s) .....	25		
Pre-Maintenance Procedures .....	27		
Preparing the Machine for Maintenance.....	27		
Disconnecting the Spark-plug Wire.....	27		
Removing the Cushion for Rear Access .....	27		
Lubrication .....	28		
Greasing the Motion Controls .....	28		
Engine Maintenance .....	28		
Engine Safety .....	28		
Servicing the Air Cleaner .....	28		
Servicing the Engine Oil.....	29		
Servicing the Spark Plug.....	31		
Fuel System Maintenance .....	32		
Cleaning the Fuel Tank Filter.....	32		
Cleaning the Sediment Cup .....	32		

# Safety


## General Safety

Always follow all safety instructions to avoid serious personal injury.

- Read the *Owner's Manual* before operating or servicing the machine.
- Keep your hands, feet, and clothing away from moving parts and mounting points.
- Do not operate the machine without all guards and other safety protective devices in place and functioning properly on the machine.
- Keep bystanders and children out of the operating area.
- Do not allow children to operate the machine. Allow only people who are responsible, trained,

familiar with the instructions, and physically capable to operate the machine.

- Stop the machine, shut off the engine, and remove the key before servicing, fueling, or unclogging the machine.

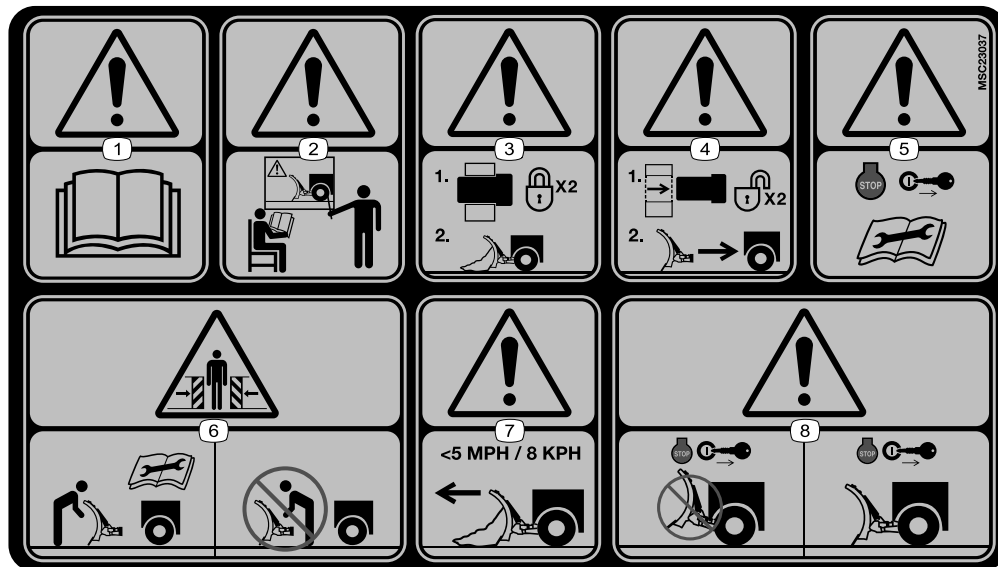
Improperly using or maintaining this machine can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety-alert symbol , which means Caution, Warning, or Danger—personal safety instruction. Failure to comply with these instructions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

Safety data sheets (SDS) are available at [www.bossplov.com](http://www.bossplov.com) on the Tech Support/Technical Information page.

## Safety and Instructional Decals



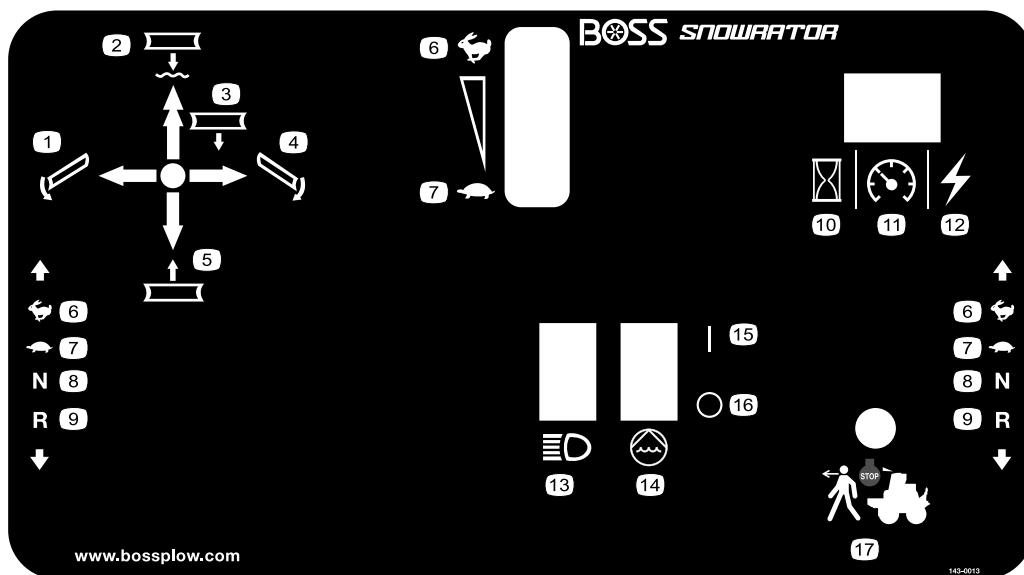
Safety decals and instructions are easily visible and are located near areas of potential danger. Replace every damaged or missing decal.



MSC23037

decalmsc23037

1. Warning—read the *Owner's Manual*.
2. Warning—all operators should be trained before operating the machine.
3. Warning—coupler must be locked before plowing.
4. Warning—coupler must be unlocked to remove the plow.
5. Warning—shut off the engine, remove the key, and read the *Owner's Manual* before performing maintenance.
6. Crushing hazard—do not stand between the plow and vehicle during maintenance.
7. Warning—do not exceed 8 km/h (5 mph) when transporting when plowing.
8. Warning—lower the plow when the vehicle is not in use.



143-0013

decal143-0013

- |                       |                              |
|-----------------------|------------------------------|
| 1. Plow—angle left    | 10. Hour meter               |
| 2. Plow—float         | 11. Speedometer              |
| 3. Plow—lower/D-Force | 12. Voltage                  |
| 4. Plow—angle right   | 13. Lights                   |
| 5. Plow—raise         | 14. Sprayer pump             |
| 6. Fast               | 15. On                       |
| 7. Slow               | 16. Off                      |
| 8. Neutral            | 17. Operator presence sensor |
| 9. Reverse            |                              |

**⚠ WARNING:** Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).  
For more information, please visit [www.ticoCAProp65.com](http://www.ticoCAProp65.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.

decal133-8062

133-8062



143-0674

decal143-0674

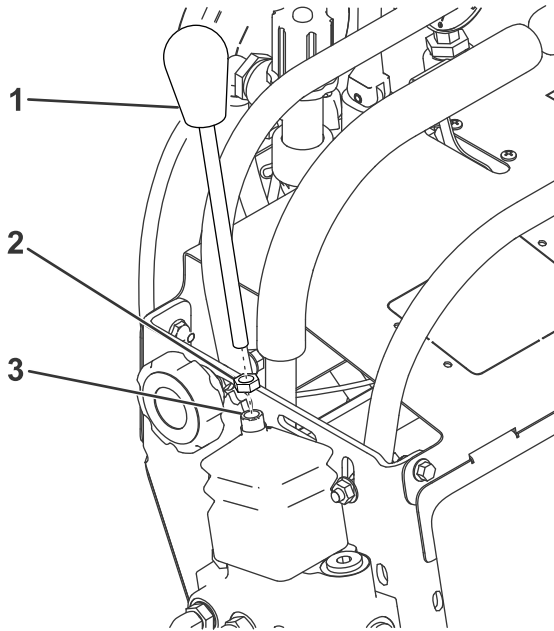
1. Warning—read the *Owner's Manual*.
2. Warning—all operators should be trained before operating the machine.
3. Warning—wear hearing and eye protection.
4. Caustic liquids hazard—wear hand and skin protection.
5. Toxic gas inhalation hazard—wear respiratory protection.
6. Warning—stay away from moving parts; keep all guards and shields in place.
7. Warning—shut off the engine and remove the key before servicing the machine.
8. Warning—shut off the sprayer pump, put the machine in the NEUTRAL position, shut off the engine, and remove the key before leaving the machine; lower the plow when the machine is not in use.
9. Tipping hazard—do not operate the machine on slopes.
10. Thrown object hazard—keep bystanders away.
11. Run-over hazard—do not carry passengers.
12. Run-over hazard—look behind and down when backing up.
13. Warning—use fresh, clean water for first-aid washing and cleaning the sprayer tank.

# Setup

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

## Installing the Plow Control Joystick

Secure the plow control joystick to the handle link ([Figure 3](#)).



**Figure 3**

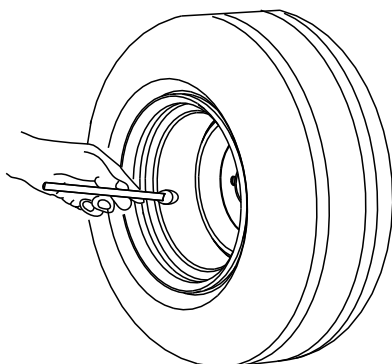
g298628

- 1. Joystick
- 2. Nut (3/8 inch)
- 3. Handle link

## Checking the Tire Pressure

Pressure: 124 kPa (18 psi)

Check the air pressure in the tires.



G001055

**Figure 4**

g001055

## Checking the Engine-Oil Level

Before you start the engine and use the machine, check the oil level in the engine crankcase; refer to [Checking the Engine-Oil Level \(page 29\)](#).

## Adding Fuel to the Machine

Add fuel to the machine before starting it; refer to [Adding Fuel \(page 13\)](#).

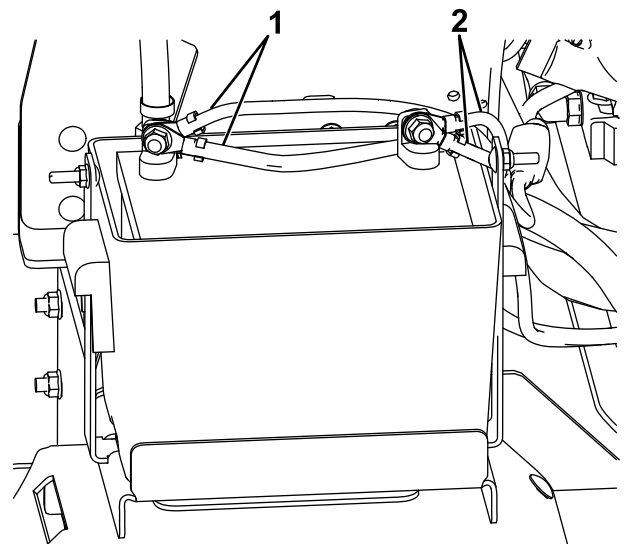
**Note:** Ensure that the fuel-shutoff valve is open before attempting to start the engine.

## Checking the Hydraulic-Fluid Level

Before you start the engine and use the machine, check the hydraulic-fluid level in the tank; refer to [Checking the Hydraulic Fluid \(page 37\)](#).

## Connecting the Battery Cables

Connect the positive terminal first and negative last.



g294507

**Figure 5**

- 1. Negative (black)
- 2. Positive (red)

# Charging the Battery

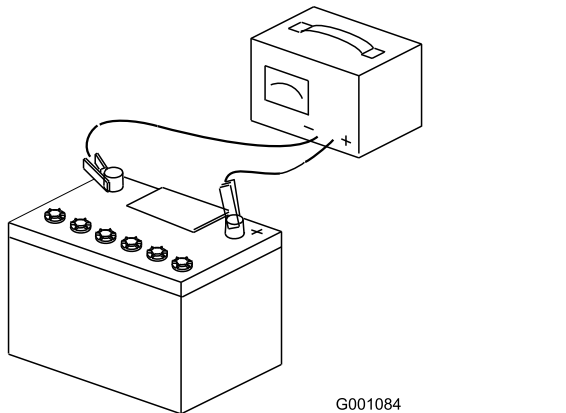
## **⚠ WARNING**

Charging the battery produces gasses that can explode and cause serious injury.

- Keep cigarettes, sparks, and flames away from the battery.
- Make sure that the ignition switch is off.
- Ventilate when charging or using the battery in an enclosed space.

**Important:** Do not run the machine with the battery disconnected; electrical damage may occur to the engine.

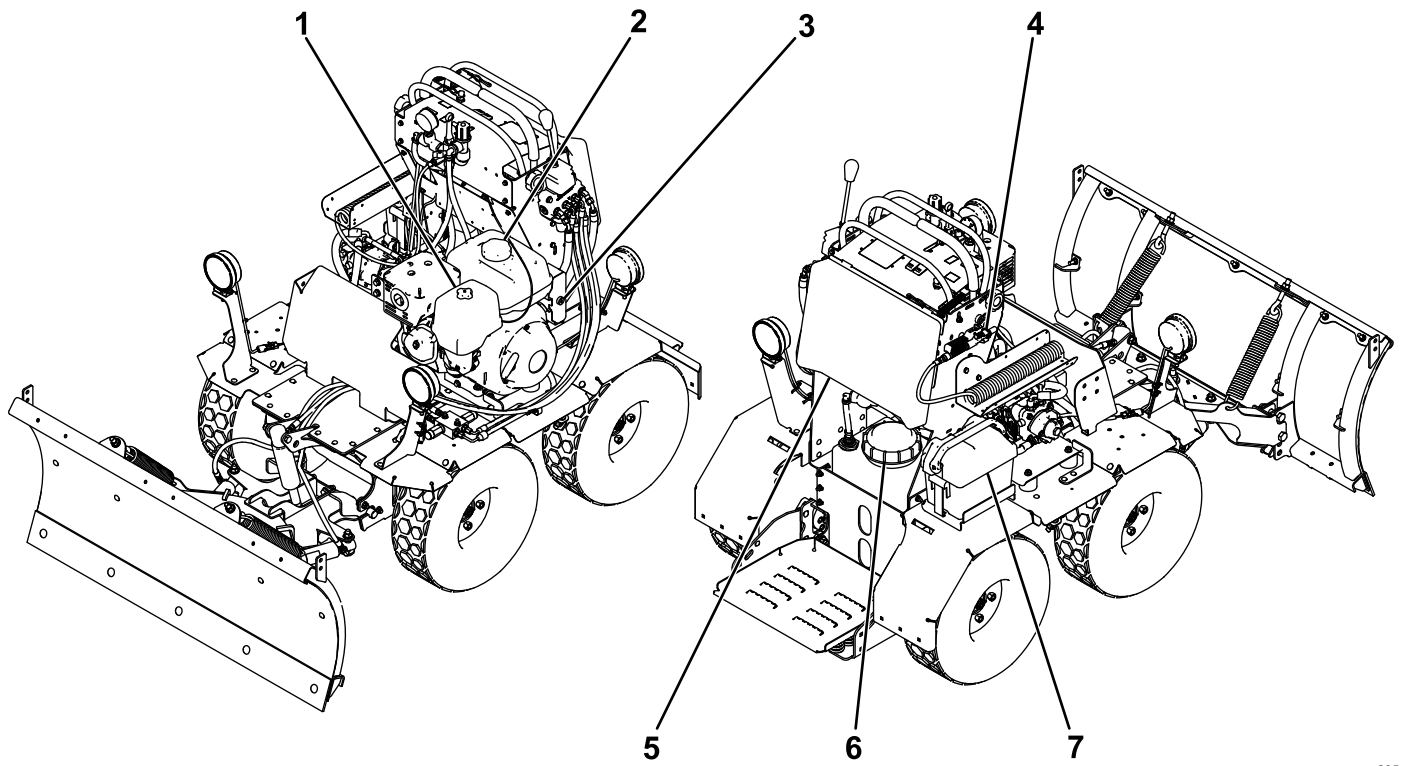
Charge the battery; refer to [Charging the Battery \(page 34\)](#).



**Figure 6**



# Product Overview



**Figure 7**

g295494

- 1. Air filter
- 2. Fuel tank
- 3. Key switch
- 4. Spray gun

- 5. Cushion
- 6. Sprayer tank
- 7. Battery

# Controls

Become familiar with all the controls before you start the engine and operate the machine.

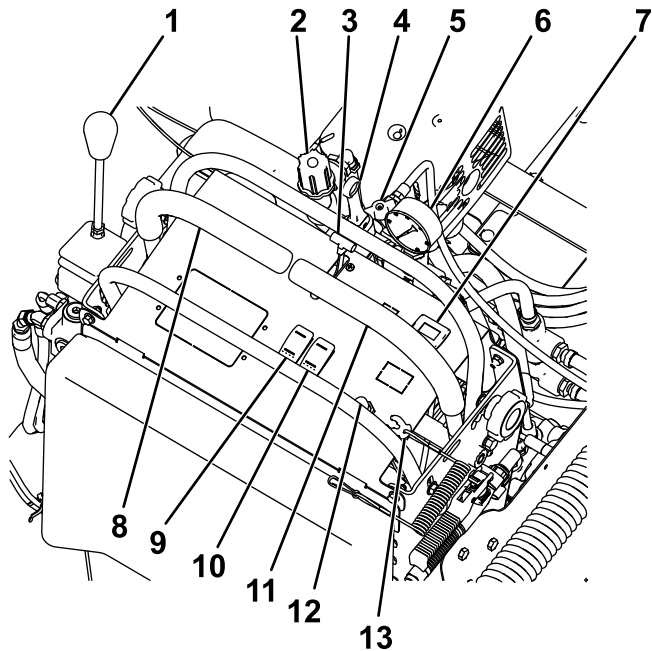


Figure 8

g294508

- |                        |                                |
|------------------------|--------------------------------|
| 1. Plow joystick       | 8. Left motion-control lever   |
| 2. Sprayer throttle    | 9. Light switch                |
| 3. Engine throttle     | 10. Sprayer pump switch        |
| 4. Sprayer valve       | 11. Right motion-control lever |
| 5. Spray gun valve     | 12. Operator presence sensor   |
| 6. Pressure display    | 13. Kill cord                  |
| 7. Information display |                                |

## Light Switch

The light switch turns the lights on or off.

## Sprayer Pump Switch

The sprayer pump switch turns the sprayer pump on or off.

## Kill Cord and Operator Presence Sensor

The kill cord and operator presence sensor ensure that when the operator leaves the platform, the engine shuts off. The engine will not start until the operator presence sensor is engaged.

## Throttle Lever

The throttle lever controls the speed (rpm) of the engine. It has a continuous-variable setting from the SLOW to FAST position.

# Motion-Control Levers

Use the motion-control levers to drive the machine forward, reverse, and turn either direction.

## Plow Joystick

The plow joystick is located on the left side of the machine. It moves the plow up, down, left, and right.

## Engine Controls

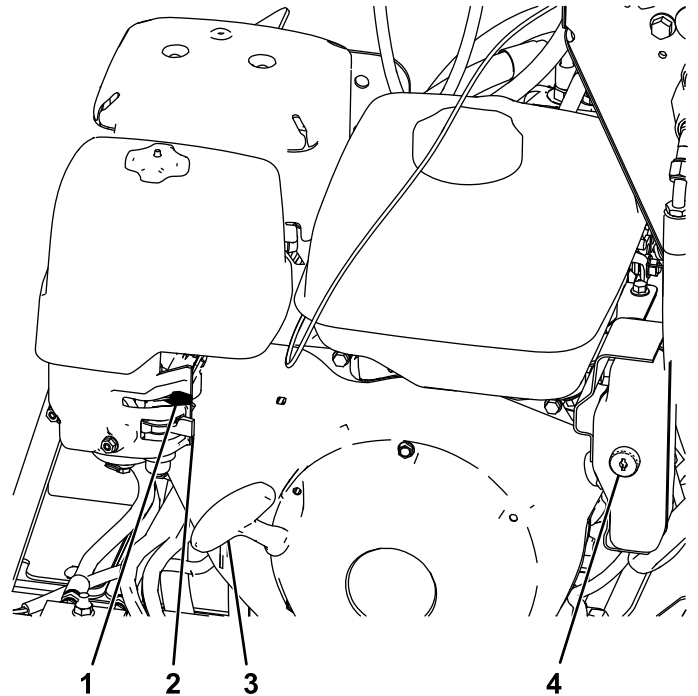


Figure 9

g294509

- |                       |                        |
|-----------------------|------------------------|
| 1. Fuel-shutoff valve | 3. Recoil start handle |
| 2. Choke lever        | 4. Key switch          |

## Fuel-Shutoff Valve

The fuel-shutoff valve is located underneath the choke lever. Move the lever for the fuel-shutoff valve to the OPEN position before attempting to start the engine. When you have finished using the machine, shut off the engine and move the fuel-shutoff valve lever to the CLOSED position. Close the fuel-shutoff valve when transporting or storing the machine.

## Choke Lever

Use the choke lever to start a cold engine. Before starting the engine, move the choke lever to the CLOSED position. Once the engine is running, move the choke lever to the OPEN position. Do not use the choke if the engine is already warmed up or the air temperature is high.

## Key Switch

The key switch starts and stops the engine. This switch is located on the side of the engine. Rotate the key switch to the START position to start the engine. Rotate the key switch to the ON position to allow the engine to run. Rotate the key switch to the OFF position to stop the engine.

## Recoil-start Handle

If the battery is not charged, you can start the engine with the recoil-start handle. To start the engine, rotate the key switch to the ON position, pull the recoil-start handle quickly to turn the engine over. The engine controls described above must all be set correctly for the engine to start.

## Sprayer Valve

The sprayer valve is located next to the sprayer throttle. It directs the flow of the liquid from the sprayer tank.

## Sprayer Throttle

The sprayer throttle is located next to the sprayer valve. It adjusts the pressure of the sprayer system. Turn it clockwise to increase the pressure. Turn it counter clockwise to decrease the pressure.

## Spray Gun Valve

The spray gun valve is located in front of the sprayer valve. It opens or closes the flow of liquids to the spray gun. Turn the valve counterclockwise to open it, and clockwise to close it.

## Spray Gun

The spray gun is located on the right side of the machine. It allows you to precisely apply the liquid in the sprayer tank.

## Information Display

The information display shows the time, operating hours, engine speed, and battery voltage of the machine. You can switch between the screens by pressing the button (Figure 10).

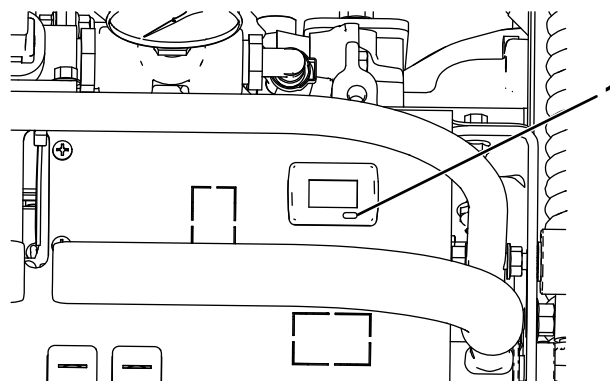


Figure 10

g294496

1. Button

- Clock screen—displays the time
- Hour meter screens—records the number of hours the engine has operated. It operates when the engine is running. Use these times for scheduling regular maintenance. The first hour meter screen displays the total hours. The second hour meter screen displays the trip meter.
- Battery voltage screen—displays the battery voltage
- Engine speed (rpm) screens—displays the engine rpm. The second engine speed screen displays the maximum rpm.

## Specifications

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

Plow width	1.2 m (48 inches)
Plow height	55.8 cm (22 inches)
Machine Width	97.8 cm (38-1/2 inches)
Machine Length	1.8 m (74-3/8 inches)
Machine Height	1.3 m (54 inches)
Weight	385.5 kg (850 lb)

## Attachments/Accessories

A selection of BOSS approved attachments and accessories is available for use with the machine to enhance and expand its capabilities. Contact

your Authorized Service Dealer or authorized BOSS distributor or go to [www.bosspow.com](http://www.bosspow.com) for a list of all approved attachments and accessories.

To ensure optimum performance and continued safety of the machine, use only genuine BOSS 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

- Wear appropriate clothing, including hearing and eye protection, protective gloves, respiratory protection, and substantial, slip-resistant footwear. Tie back long hair, secure loose clothing, and do not wear loose jewelry.
- Never allow children or untrained people to operate 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.
- Check that operator-presence controls, safety switches, and guards are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- Before plowing, always inspect the machine to ensure that the plow blade is in good working condition.
- Ensure that all fluid line connectors are tight and that all hoses are in good condition before applying pressure to the system.
- Become familiar with the area you are plowing; hidden obstructions such as curbs and pipes can damage your plow or machine.

### Fuel Safety

- Fuel is extremely flammable and highly explosive. A fire or explosion from fuel can burn you and others and can damage property.
  - To prevent a static charge from igniting the fuel, place the container and/or machine directly on the ground before filling, not in a vehicle or on an object.
  - Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.
  - Do not handle fuel when smoking or around an open flame or sparks.
  - Do not remove the fuel cap or add fuel to the tank while the engine is running or hot.
  - If you spill fuel, do not attempt to start the engine. Avoid creating a source of ignition until the fuel vapors have dissipated.

- Store fuel in an approved container and keep it out of the reach of children.
- Fuel is harmful or fatal if swallowed. Long-term exposure to vapors can cause serious injury and illness.
  - Avoid prolonged breathing of vapors.
  - Keep your hands and face away from the nozzle and the fuel-tank opening.
  - Keep fuel away from your eyes and skin.
- 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 on other appliances.
- Do not fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground, away from your vehicle before filling.
- Remove the equipment from the truck or trailer and refuel it while it is on the ground. If this is not possible, then refuel from a portable container rather than a fuel-dispenser nozzle.
- Do not operate the machine without the entire exhaust system in place and in proper working condition.
- Keep the fuel-dispenser nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
- If you spill fuel on your clothing, change your clothing immediately. Wipe up any fuel that spills.
- Never overfill the fuel tank. Replace the fuel cap and tighten it securely.

## Adding Fuel

- For best results, use only clean, fresh (less than 30 days old), unleaded gasoline with an octane rating of 86 or higher ((R+M)/2 rating method).
- **Do not** use gasoline containing methanol.
- **Do not** store fuel either in the fuel tank or fuel containers over the summer unless you use a fuel stabilizer.
- **Do not** add oil to gasoline.

## Using Stabilizer/Conditioner

Use fuel stabilizer/conditioner in the machine to keep the fuel fresh longer when used as directed by the fuel-stabilizer manufacturer.

**Important:** Do not use fuel additives containing methanol or ethanol.

Add the amount of fuel stabilizer/conditioner to fresh fuel as directed by the fuel-stabilizer manufacturer.

## Filling the Fuel Tank

**Capacity:** 6.1 L (1.6 US gallons)

1. Park the machine on a level surface, move the motion-control levers to the NEUTRAL position, disconnect the kill cord from the operator presence sensor to shut off the engine, wait for all moving parts to stop, and remove the key.
2. Clean around the fuel-tank cap and remove it.
3. Fill the fuel tank to the top of the filter screen (Figure 11).

**Note:** Do not fill above the top of the filter screen. The empty space in the tank allows the fuel to expand.

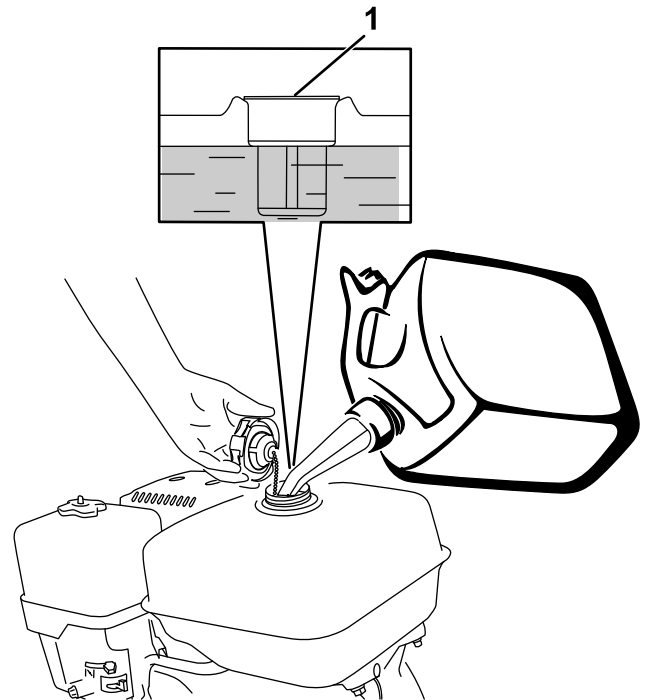


Figure 11

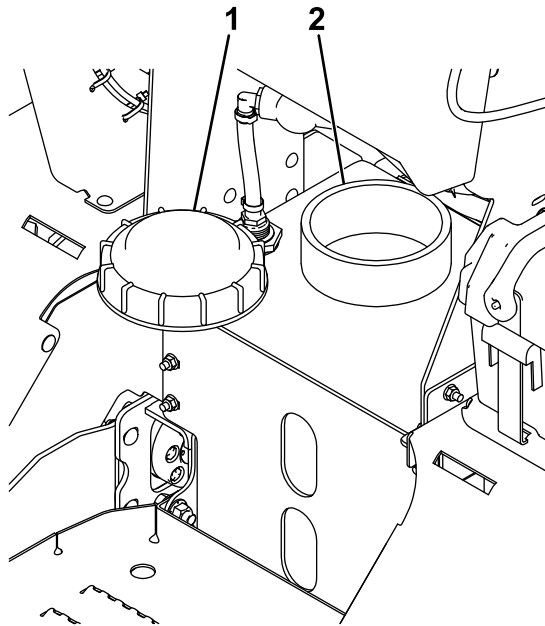
g295391

1. Maximum fuel level
4. Install the fuel-tank cap securely.
5. Wipe up any spilled fuel.

# Filling the Sprayer Tank

**Capacity:** 75 L (20 US gallons)

1. Clean around the tank cap ([Figure 12](#)).



**Figure 12**

g294497

1. Tank cap
2. Sprayer tank

2. Remove the tank cap and fill the tank with your brine solution.

**Important:** Use only pre-mixed brine to prevent dangerous chemical reactions.

3. Wipe any spills and secure the tank cap.

## Performing Daily Maintenance

Before starting the machine each day, perform the Each Use/Daily procedures listed in [Maintenance \(page 25\)](#).

## During Operation

### General Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including hearing and eye protection; protective gloves; respiratory protection; long pants; substantial, slip-resistant footwear; and cold-weather clothing. Tie back long hair, secure loose clothing, and do not wear loose jewelry.
- 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 operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Never carry passengers on the machine and keep bystanders and pets away from the machine during operation.
- Do not climb or ride on the plow.
- Before you start the engine, ensure that all drives are in neutral and you are in the operating position.
- Never put any part of your body between the plow and the vehicle.
- Do not let snow accumulate; always plow with the storm.
- Do not operate the machine without good visibility or light.
- Always operate the machine from the operator platform; do not operate the machine when standing on the ground.
- Look behind and down before backing up to be sure of a clear path.
- Use extreme care when approaching blind corners, shrubs, trees, or other objects that may block your view.
- Always lower the blade when the vehicle is not in use.
- When driving the vehicle without plowing, position the plow so as not to block your vision.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.
- Do not change the blade position when moving.
- Do not drive while spraying with a hand sprayer.
- Never operate the machine at high transport speeds on slippery surfaces.
- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is lethal if inhaled.

- Never leave a running machine unattended.
- Before leaving the operating position, do the following:
  - Park the machine on a level surface.
  - Move the motion-control levers to the NEUTRAL position.
  - Disconnect the kill cord from the operator presence sensor to shut off the engine.
  - Wait for all moving parts to stop.
  - Remove the key.
- Shut off the machine, disconnect the kill cord from the operator presence sensor, and remove the key in the following situations:
  - Before fueling
  - Before clearing blockages
  - Before checking, cleaning, or maintaining the plow or sprayer
  - Before leaving the operating position
- Do not use the machine as a towing vehicle.
- Use only accessories and attachments approved by BOSS Products.
- Do not operate a machine under any conditions where traction, steering, or stability is in question. Be aware that operating the machine across slopes or downhill may cause the machine to lose traction. Loss of traction to the drive wheels may result in sliding and a loss of braking and steering. The machine can slide even if the drive wheels are stopped.
- Remove or mark obstacles such as ditches, holes, ruts, bumps, rocks, or other hidden hazards. Deep snow and snowbanks can hide obstacles. Uneven terrain could overturn the machine.
- Use extra care while operating with accessories or attachments. These can change the stability of the machine and cause a loss of control. Follow the directions on [www.bosspow.com](http://www.bosspow.com) for counterweights.
- If you lose control of the machine, step off and away from the direction of travel of the machine.

## Slope Safety

- Slopes are a major factor related to loss of control and rollover accidents, which can result in severe injury or death. You are responsible for safe slope operation. Operating the machine on any slope requires extra caution. Before using the machine on a slope, do the following:
  - Review and understand the slope instructions in the manual and on the machine.
  - Evaluate the site conditions of the day to determine if the slope is safe for machine operation. Use common sense and good judgment when performing this evaluation. Changes in the terrain, such as moisture, can quickly affect the operation of the machine on a slope.
- Avoid operation on excessively steep slopes.
- Identify hazards at the base of the slope. Do not operate the machine near drop-offs, ditches, embankments, water, or other hazards. The machine could suddenly roll over if a wheel goes over the edge or the edge collapses. Keep a safe distance (twice the width of the machine) between the machine and any hazard. Use a walk-behind machine or a handheld tool to operate in these areas.
- Avoid starting, stopping, or turning the machine on slopes. Avoid making sudden changes in speed or direction; turn slowly and gradually.

## Sprayer Safety

- Do not aim the hand sprayer at any person or animal. Fluids under high pressure can penetrate skin and cause severe injury, possibly resulting in amputation or death. Hot liquids and chemicals can also cause burns or injury. If any part of the body comes in contact with the spray stream, immediately consult a physician familiar with injected fluid injuries.
- Do not place your hand or any other part of your body in front of the spray nozzle.
- Do not leave the equipment under pressure when you are not present.
- Do not use the hand sprayer if the hose, trigger lock, nozzle, or any other part is damaged or missing.
- Do not use the hand sprayer if there are any leaks in any hoses, fittings, or other components.
- Do not spray near power lines; the spray stream could contact the power lines and give you a potentially fatal electrical shock.
- Do not drive while spraying with the spray gun.
- Never spray while people, especially children, or pets are nearby.

# Starting the Engine

**Important:** Do not engage the starter for more than 5 seconds at a time. If the engine fails to start, wait 15 seconds between attempts. Failure to follow these instructions can burn out the starter motor.

**Note:** You may need to repeat the cycle for starting the engine when you start it for the first time after you have filled a completely empty fuel system with fuel.

1. Move the fuel-shutoff valve to the OPEN position (Figure 13).

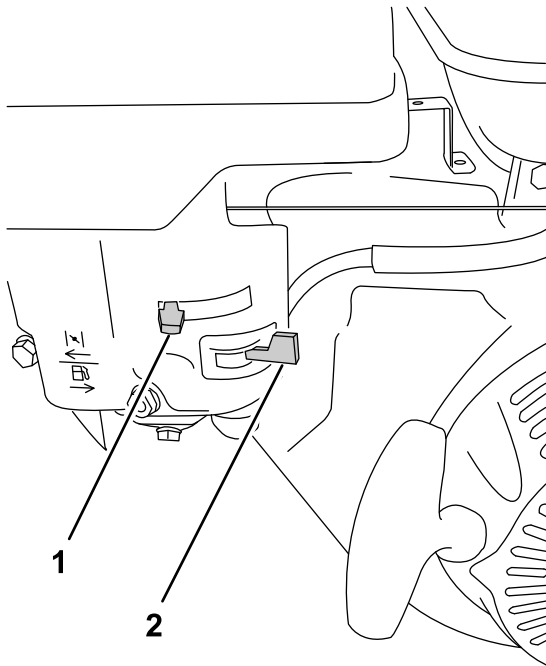


Figure 13

1. Choke lever
2. Fuel-shutoff valve

2. Move the throttle up from the SLOW position, approximately 1/3 of the way (Figure 14).

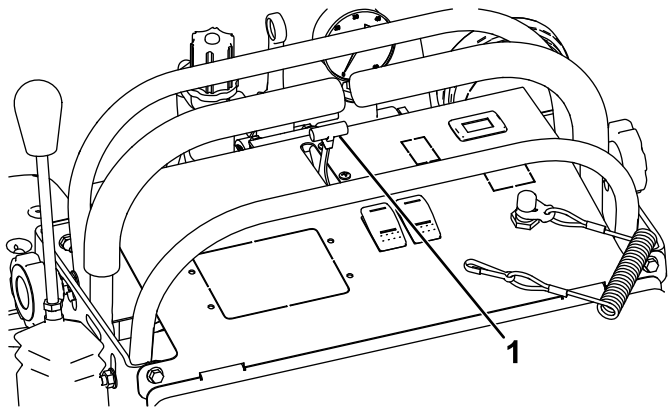


Figure 14

1. Throttle

3. Position the choke lever as follows (Figure 13):

- To start a cold engine, move the choke lever to the CLOSED position.
- To start a warm engine, move the choke lever to the OPEN position.

4. Connect the kill cord to the operator presence sensor (Figure 14).
5. Rotate the key switch to the ON position (Figure 15).

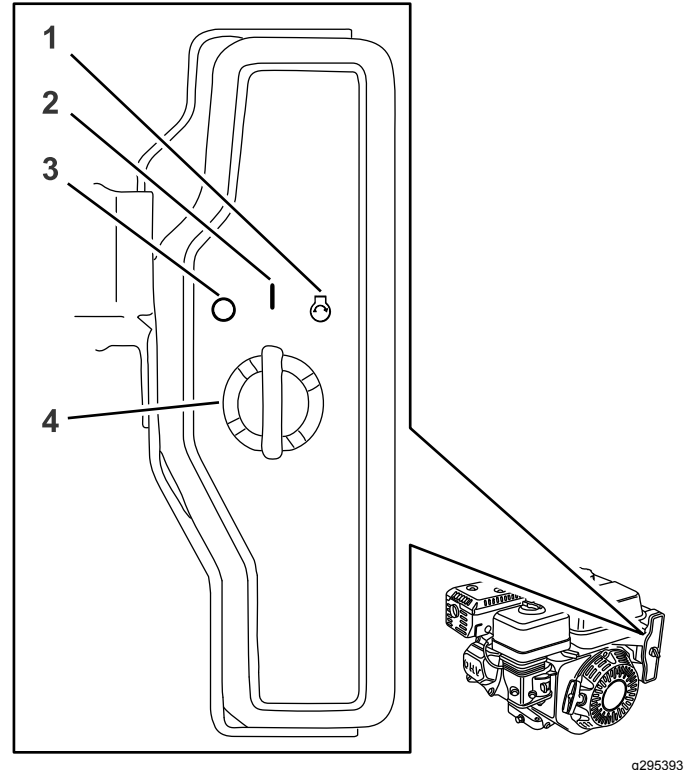


Figure 15

1. Engine—START
2. Engine—ON
3. Engine—SHUT OFF
4. Key switch

6. Turn the key to the START position, and hold it there until the engine starts (Figure 15).

If the engine does not start within 5 seconds, release the key, and wait at least 15 seconds before operating the starter again.

**Note:** Using the electric starter for more than 5 seconds at a time will overheat the starter motor and can damage it.

**Note:** If the choke lever is set to the CLOSED position to start the engine, gradually move it back toward the OPEN position as the engine warms up. If the engine stalls or hesitates, move the choke lever back toward the CLOSED position until the engine runs smooth. Allow the engine to warm up, then move the choke lever to the OPEN position.

7. Wrap the kill cord around your leg and secure the cord to itself.



## ⚠ WARNING

If you are thrown from the machine while not properly wearing the kill cord, the machine can continue moving, which may seriously injure you or other bystanders.

- Wrap the kill cord around your leg and secure the cord to itself.
- Do not attach the kill cord to a piece of clothing or to the machine.

## Shutting Off the Engine

### ⚠ CAUTION

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

**Always remove the key when leaving the machine unattended.**

Let the engine idle at the SLOW throttle position for 60 seconds before turning the key switch to the OFF position.

1. Ensure that the choke lever is in the OFF position.
2. Move the throttle lever to the SLOW position.
3. Remove the kill cord from the operator presence sensor.
4. Rotate the engine switch to the OFF position.

**Important:** Make sure that the fuel-shutoff valve is closed before transporting or storing the machine to prevent a fuel leak. Before storing the machine, disconnect the spark plug(s) to prevent the possibility of accidental starting.

## Driving Forward or Backward

The throttle control regulates the engine speed as measured in rpm. Place the throttle control in the FAST position for best performance.

**Important:** Back the machine over curbs, 1 wheel at a time; driving it forward over curbs could damage the machine.

## ⚠ CAUTION

The machine can spin very rapidly, and you may lose control of the machine, causing personal injury to you and damage to the machine.

Slow down the machine before making sharp turns.

## Driving Forward

Slowly push the motion-control levers forward (Figure 16).

**Note:** The farther you move the motion-control levers in either direction, the faster the machine moves in that direction.

**Note:** To stop, pull the motion-control levers back to the NEUTRAL position.

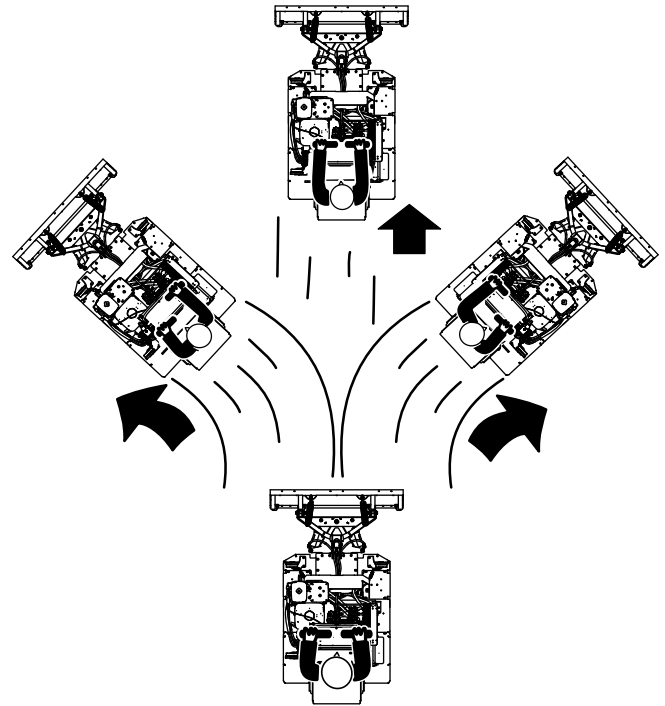


Figure 16

g294499

## Driving Backward

Slowly pull the motion-control levers rearward (Figure 17). Look behind and down while driving backward to ensure you have a clear path.

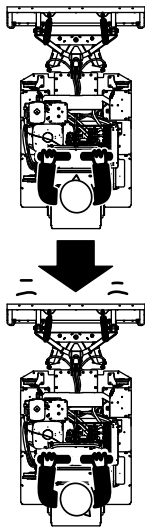


Figure 17

g294500

## Operating the Plow

Use the plow joystick to adjust the position of the plow.

**Important:** Do not change the blade position when the machine is moving.

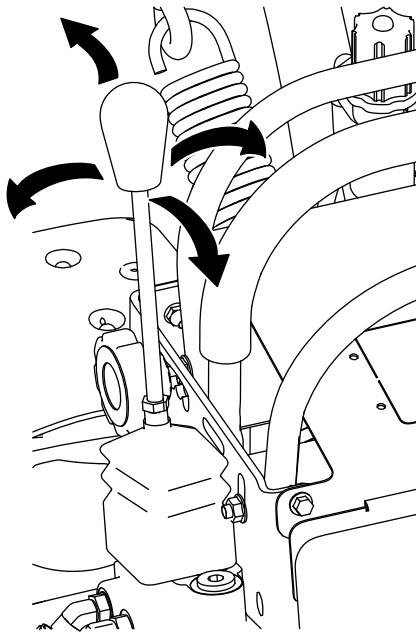


Figure 18

g294501

- To raise the plow blade, pull the joystick back.
- To lower the plow blade, push the joystick forward.
- To angle the plow blade right, push the joystick right.
- To angle the plow blade left, push the joystick left.
- To activate the float feature, push the joystick forward until it clicks into the detent position,

allowing the plow blade to follow the contour of the ground. The joystick stays in the FLOAT position until it is centered again.

## Operating the Sprayer

1. Drive to the location where you will be spraying.
2. Turn the sprayer pump on (Figure 19).

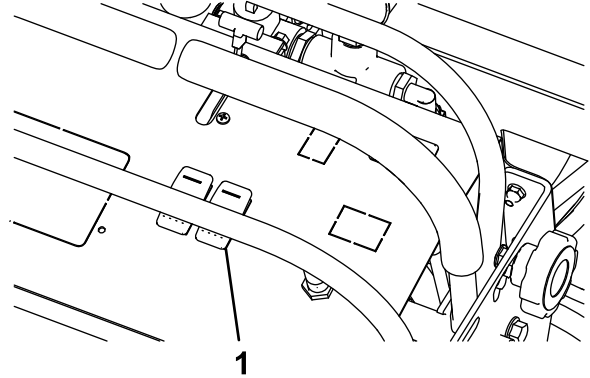


Figure 19

g294502

1. Sprayer pump switch

3. Open the sprayer valve to begin spraying (Figure 20).

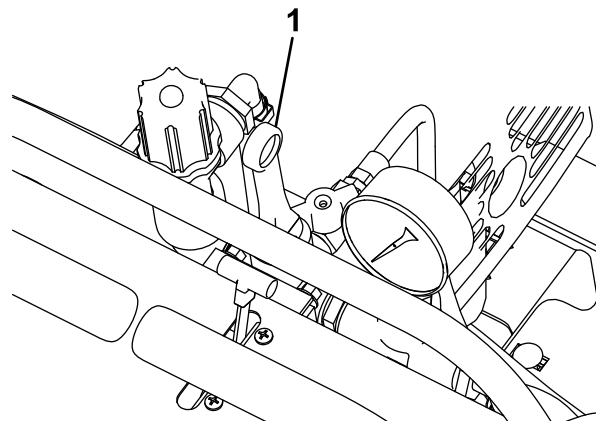


Figure 20

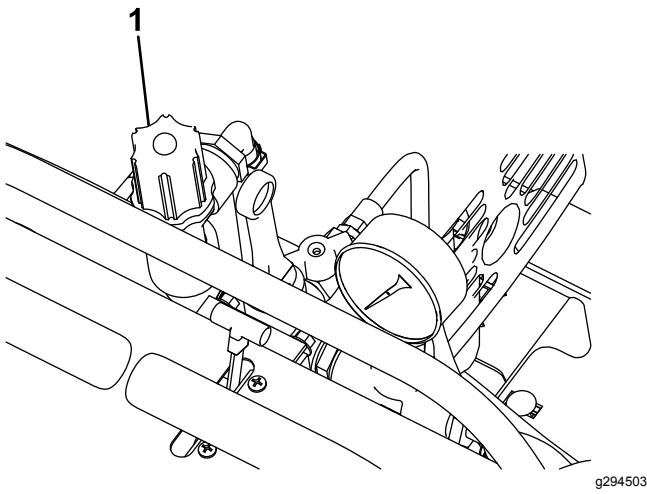
g295496

1. Sprayer valve

4. When you are done spraying, close the sprayer valve and switch the sprayer pump off.

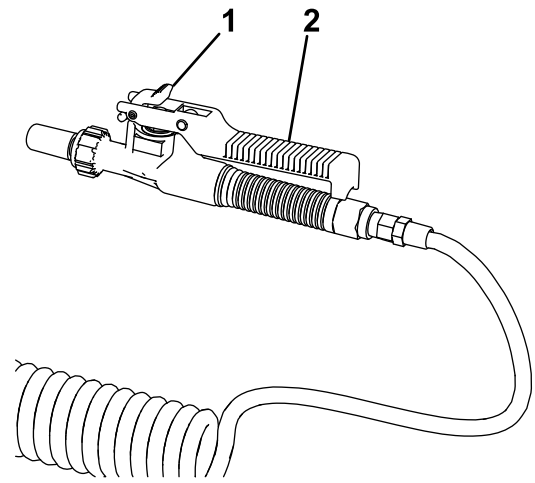
## Adjusting the Sprayer Throttle

If the liquid is spraying faster or slower than desired, adjust the sprayer throttle (Figure 21). Turn the sprayer throttle clockwise to increase the pressure. Turn the sprayer throttle counter clockwise to decrease the pressure.



**Figure 21**

1. Sprayer throttle



**Figure 23**

1. Handle lock
2. Handle

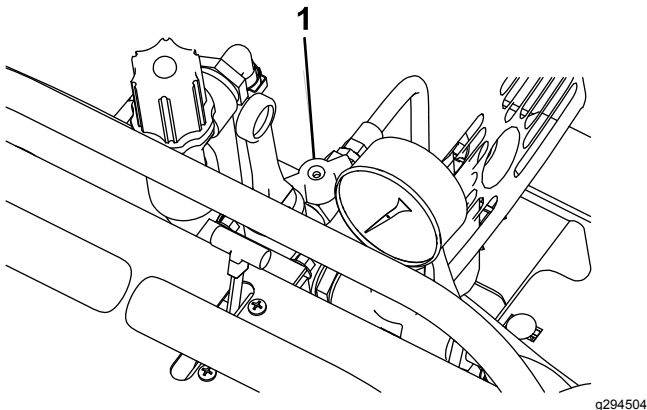
## Spraying Tips

- Do not overlap areas that you have previously sprayed.
- Watch for plugged nozzles. Replace all worn or damaged nozzles.
- You will obtain better results if the machine is moving when you turn the sprayer on.

## Using the Spray gun

**Note:** Do not drive while spraying with the spray gun.

1. Drive to the location where you will be spraying.
2. Switch the sprayer pump on ([Figure 19](#)).
3. Turn the spray gun valve to the OPEN position ([Figure 22](#)).



**Figure 22**

1. Sprayer pump switch

4. Squeeze the handle on the spray gun to begin spraying ([Figure 23](#)).

Rotate the handle lock to continue spraying without squeezing the handle.

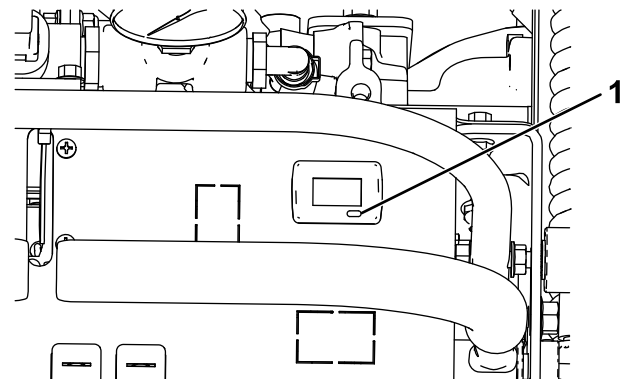
5. When you are done spraying, turn the spray gun valve to the CLOSED position and switch the sprayer pump off.

## Unclogging a Nozzle

If a nozzle becomes clogged while you are spraying, clean the nozzle as follows:

1. Close the sprayer valve and shut off the sprayer pump.
2. Stop the machine on a level surface, shut off the engine, and disconnect the kill cord from the operator presence sensor.
3. Remove the clogged nozzle and clean it using a spray bottle of water and a toothbrush.
4. Install the nozzle.

## Using the Information Display



**Figure 24**

1. Button

## Changing the Clock Display Setting

1. Hold the button for 3 seconds to change the clock settings.
2. Press the button again to switch between the 12-hour and 24-hour displays.
3. Wait for the information display screen to resume showing the clock before pressing the button again.

## Changing the Time

1. Hold the button for 3 seconds to change the clock settings.
2. Wait for the current time to start blinking.
3. Press the button again to increase the time.
4. If you want to decrease the time, wait for the arrow on the bottom of the screen to switch directions, then press the button again to decrease the time.
5. Wait for the information display screen to resume showing the clock before pressing the button again.

## Resetting the Trip Hour Meter

1. Hold the button for 3 seconds to reset the trip meter.
2. Wait for the information display screen to resume showing the hour meter before pressing the button again.

## Changing the Battery Voltage Alert Setting

1. Hold the button for 3 seconds to change the battery voltage alert setting.
2. Press the button again to increase the value at which the low voltage alert triggers.
3. If you want to lower the value, wait for the arrow on the bottom of the screen to switch directions, then press the button again to decrease the value at which the low voltage alert triggers.
4. Wait for the information display screen to resume showing the battery voltage screen before pressing the button again.

## Changing the Pulses Per Revolution Setting

1. Hold the button for 3 seconds to change the pulses per revolution settings.
2. Press the button again to switch between 0.5, 1, 2, or 4.

3. Wait for the information display screen to resume showing the engine speed screen before pressing the button again.

## Resetting the Maximum RPM Tracker

1. Hold the button for 3 seconds to reset the maximum rpm screen.
2. Wait for the information display screen to resume showing the engine speed screen before pressing the button again.

## Changing the Backlight Setting

1. On any screen, hold the button for 3 seconds and wait until the settings screen times out.
2. Before switching back to the previously displayed screen, bL will appear on the screen.
3. Press the button again to switch between On, Off, and Auto.
4. Wait for the information display screen to resume showing the previously displayed screen before pressing the button again.

## After Operation

### After Operation Safety

#### General Safety

- Always shut off the machine, remove the key, wait for all moving parts to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Clean up oil or fuel spills.
- Shut off the fuel and sprayer before storing or transporting the machine.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light, such as on a water heater or on other appliances.
- Use full-width ramps for loading the machine into a trailer or truck.
- Tie the machine down securely using straps, chains, cable, or ropes. Both front and rear straps should be directed down and outward from the machine.
- Do not store material in the sprayer tank.
- Rinse the sprayer tank with fresh water before storing it.
- When storing the machine for more than 30 days, refer to [Storage \(page 41\)](#) for important information.

## Emptying the Sprayer Tank

1. Close the sprayer valve, stop the machine on a level surface, shut off the engine, and disconnect the kill cord from the operator presence sensor.
2. Turn the spray gun valve to the OPEN position.
3. Aim the spray gun into a drain container and squeeze the handle to drain the tank.
4. When the tank has drained completely, turn the spray gun valve to the CLOSED position and shut off the sprayer pump.

**Important:** Dispose of the sprayer tank chemicals according to local codes and the material manufacturer's instructions.

## Flushing the Sprayer System

**Important:** Use only clean water when cleaning the sprayer.

**Important:** You must always drain and flush out the sprayer after each use. Failure to flush and clean the sprayer may allow the chemicals to dry and obstruct in the lines, filters, valves, nozzle bodies, pump, and other components.

Clean the spray system after each spraying session. To properly clean the spray system, perform the following:

- Complete 3 separate rinse cycles.
  - Use the cleaners and neutralizers as recommended by your chemical manufacturers.
  - Use pure, clean water (no cleaners or neutralizers) for the final rinse.
1. Fill the tank with clean water and close the cover.  
**Note:** You can use a cleaning/neutralizing agent in the water as needed. On the final rinse, use only clean, clear water.
  2. Start the engine, turn on the sprayer pump, and open the sprayer valve.
  3. Adjust the sprayer valve to increase the pressure to a high setting.
  4. Check the nozzles to ensure that they are all spraying correctly.
  5. Allow all water in the tank to spray out through the nozzles.
  6. Close the sprayer valve, shut off the sprayer pump, shut off the engine and disconnect the kill cord from the operator presence sensor.
  7. Repeat steps 1 through 6 at least 2 more times to ensure that the spray system is fully cleaned.

**Important:** You must always complete 3 rinse cycles to ensure that the spray system and spray accessories are fully clean, preventing damage to the system.

## Conditioning the Spray System

Condition the spray system after each spraying session.

### Conditioner Specification

**Conditioner specification:** propylene glycol "non-toxic RV antifreeze" with corrosion inhibitor

**Important:** Use only propylene glycol with corrosion inhibitor.

**Do not use recycled propylene glycol. Do not use ethylene glycol base antifreeze.**

**Do not use propylene glycol with soluble alcohols (methanol, ethanol, or isopropanol) or brines added.**

1. Stop the machine on the drain pad area, shut off the engine, and disconnect the kill cord from the operator presence sensor.
2. Add 2 gallons of conditioner to the tank.
3. Start the engine and turn on the sprayer pump.
4. Allow the conditioner to circulate for 3 minutes or longer.
5. Open the sprayer valve and spray gun valve, and spray until the nozzles discharge all of the conditioner.
6. Close the sprayer valve and shut off the sprayer pump when the tank is empty.

**Note:** Most propylene glycol RV antifreeze is colored pink. Use a catch container to sample the sprayer discharge at several of the nozzles.

# Using the Fuel-Shutoff Valve

Close the fuel-shutoff valve for transport, maintenance, and storage (Figure 25).

Ensure that the fuel-shutoff valve is open when starting the engine.

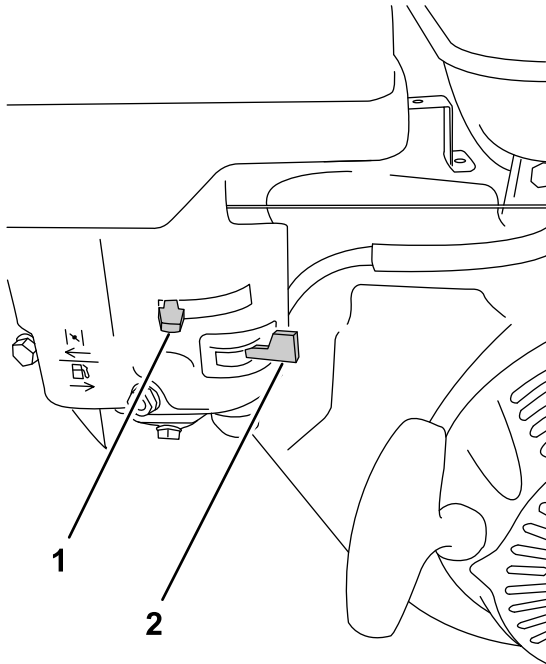


Figure 25

g295392

1. Choke
2. Fuel-shutoff valve

## Pushing the Machine by Hand

The bypass valves allow you to push the machine by hand without the engine running.

**Important:** Always push the machine by hand. Do not tow the machine, because hydraulic damage may occur.

**Important:** Do not start or operate the machine with the bypass valves open. Damage to the system may occur.

1. Open the bypass valves on the hydraulic pump by turning them counterclockwise 1-1/2 turns (Figure 26).

**Note:** Do not turn the valve more than 1-1/2 turns so that the valve comes out of the body, causing fluid to run out.

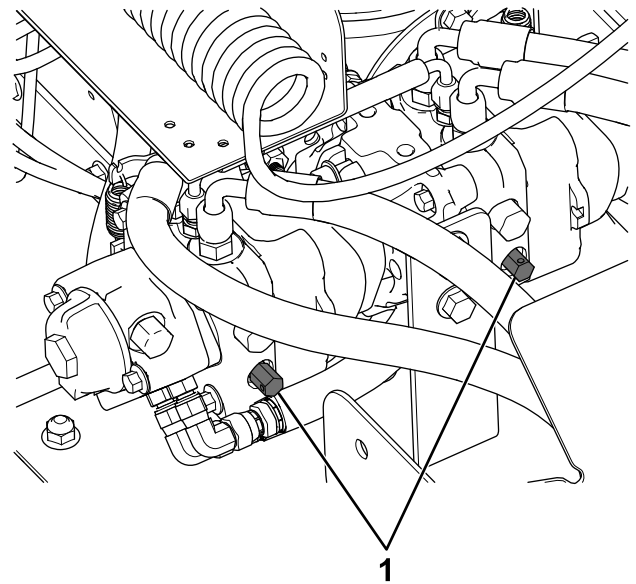


Figure 26

g295618

1. Bypass valves
2. Push the machine to the desired location.
3. Close the bypass valves and torque them to 12 to 14 N·m (110 to 130 in-lb).

## Transporting the Machine

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

**Do not drive the machine on a public street or roadway.**



## Selecting a Trailer

### ⚠ WARNING

Loading a machine onto a trailer or truck increases the possibility of tip-over and could cause serious injury or death (Figure 27).

- Use only a full-width ramp; do not use individual ramps for each side of the machine.
- Ensure that the length of ramp is at least 4 times as long as the height of the trailer or truck bed to the ground.

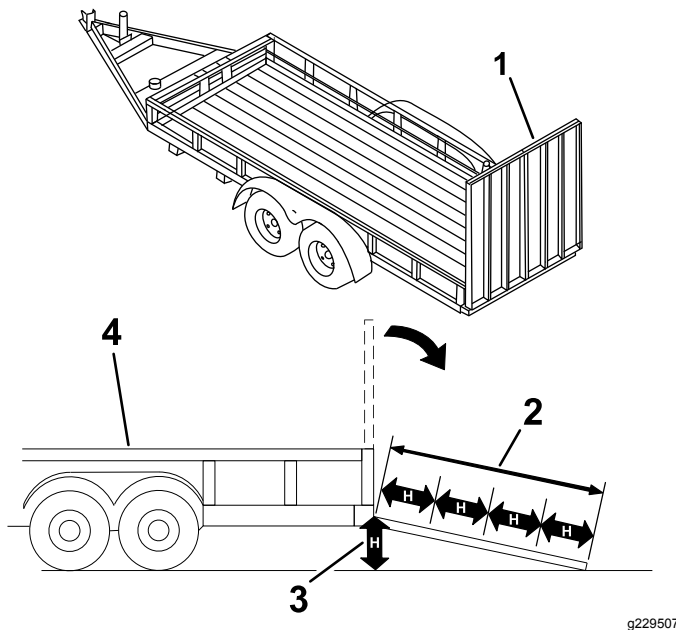


Figure 27

- |   |   |
|---|---|
| 1. Full-width ramp in stowed position   | 3. H=height of the trailer or truck bed to the ground |
| 2. Ramp is at least 4 times as long as the height of the trailer or truck bed to the ground | 4. Trailer  |

## Loading the Machine

### ⚠ WARNING

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

- Use extreme caution when operating a machine on a ramp.
- Back the machine up the ramp and walk it forward down the ramp.
- Avoid sudden acceleration or deceleration while driving the machine on a ramp as this could cause a loss of control or a tip-over situation.

1. If using a trailer, connect it to the towing vehicle and connect the safety chains.
2. If applicable, connect the trailer brakes and lights.
3. Lower the ramp (Figure 27).
4. Back the machine up the ramp (Figure 28).

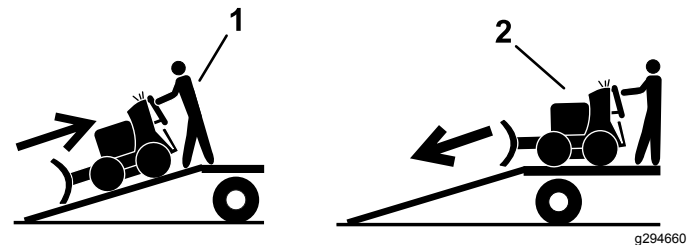
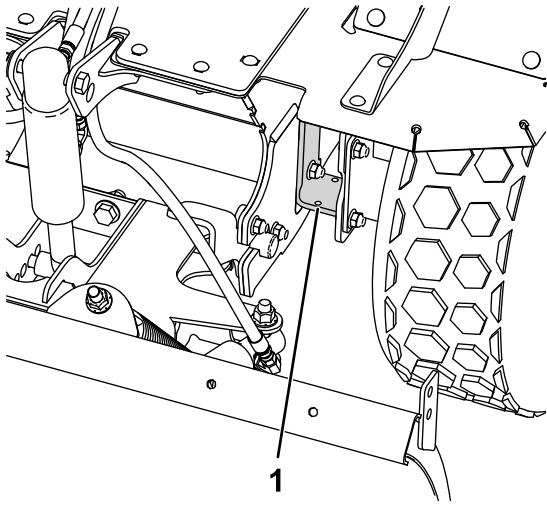
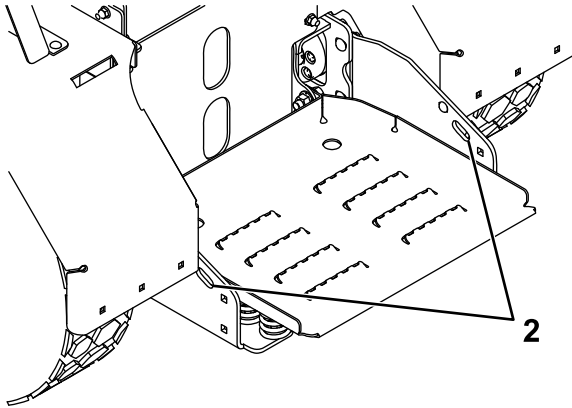


Figure 28

- |                                  |                                    |
|----------------------------------|------------------------------------|
| 1. Back the machine up the ramp. | 2. Walk the machine down the ramp. |
|----------------------------------|------------------------------------|
- 
5. Shut off the engine and remove the key.
  6. Tie down the machine near the front and rear wheels with straps, chains, cable, or ropes (Figure 29). Refer to local regulations for tie-down requirements.



g294661



g294662

**Figure 29**

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



# Maintenance

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

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

## ⚠ WARNING

Failing to properly maintain the machine could result in premature failure of machine systems, causing possible harm to you or bystanders.

Keep the machine well maintained and in good working order as indicated in these instructions.

## ⚠ CAUTION

If you leave the kill cord connected to the operator presence sensor or the key in the switch, someone could accidentally start the engine and seriously injure you or other bystanders.

Disconnect the kill cord from the operator presence sensor and remove the key from the switch before you perform any maintenance.

## Maintenance Safety

- Before adjusting, cleaning, servicing, or leaving the machine, do the following:
  - Park the machine on a level surface.
  - Move the motion-control levers to the NEUTRAL position.
  - Disconnect the kill cord from the operator presence sensor to shut off the engine.
  - Wait for all moving parts to stop.
  - Remove the key.
  - Disconnect the spark-plug wire.
  - Close the fuel-shutoff valve.
  - Allow machine components to cool before performing maintenance.
- Ensure that only trained personnel install and perform maintenance on the equipment and hydraulic components.
- Do not fill, calibrate, or clean the machine while people, especially children, or pets are in the area.
- Keep your hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Carefully release pressure from components with stored energy.
- Check all fasteners at frequent intervals for proper tightness to ensure that the machine is in safe working condition.
- Never tamper with safety devices. Check their proper operation regularly.
- Clean up oil or fuel spills.
- Do not rely on a hydraulic system to support the machine; support the machine with jack stands whenever you raise the machine.
- Keep all parts in good working condition and all hydraulic fittings tight. Replace all worn, damaged, or missing parts and decals. Keep all fasteners tight to ensure that the machine is in safe working condition.
- To ensure optimum performance and continued safety of the machine, use only genuine BOSS replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

## Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 20 hours	<ul style="list-style-type: none"><li>• Change the engine oil.</li></ul>
After the first 50 hours	<ul style="list-style-type: none"><li>• Change the hydraulic filters and hydraulic fluid.</li></ul>

Maintenance Service Interval	Maintenance Procedure
Before each use or daily	<ul style="list-style-type: none"> <li>• Inspect the air-cleaner elements.</li> <li>• Check the engine-oil level.</li> <li>• Check the kill cord and operator presence sensor.</li> <li>• Check the hydraulic-fluid level.</li> <li>• Check the cutting edge for wear.</li> </ul>
After each use	<ul style="list-style-type: none"> <li>• Empty the sprayer tank.</li> <li>• Flush the sprayer system.</li> <li>• Condition the sprayer system.</li> </ul>
Every 40 hours	<ul style="list-style-type: none"> <li>• Check the hydraulic hoses and fittings for leaks.</li> <li>• Check the sprayer hoses and fittings for leaks.</li> <li>• Check the spray gun for leaks or clogging.</li> <li>• Check the in-line filter screen for clogging.</li> <li>• Check the in-line filter rubber seal.</li> <li>• Check the spray nozzle screens for clogging.</li> </ul>
Every 50 hours	<ul style="list-style-type: none"> <li>• Clean the air-cleaner elements.</li> <li>• Check the tire pressure.</li> </ul>
Every 80 hours	<ul style="list-style-type: none"> <li>• Check the spray nozzle tips.</li> </ul>
Every 100 hours	<ul style="list-style-type: none"> <li>• Change the engine oil.</li> <li>• Check the spark plug.</li> <li>• Clean the fuel tank and filter.</li> <li>• Clean the sediment cup.</li> <li>• Check the battery.</li> </ul>
Every 300 hours	<ul style="list-style-type: none"> <li>• Replace the paper air-cleaner element.</li> <li>• Replace the spark plug.</li> </ul>
Every 500 hours	<ul style="list-style-type: none"> <li>• Change the hydraulic filters and hydraulic fluid.</li> </ul>
Before storage	<ul style="list-style-type: none"> <li>• Grease the machine.</li> <li>• Service the air cleaner.</li> <li>• Change the engine oil.</li> <li>• Check the spark plug.</li> <li>• Check the tire pressure.</li> <li>• Check and tighten all fasteners.</li> <li>• Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted.</li> <li>• Loosen the trip-return springs.</li> <li>• Condition the sprayer system.</li> <li>• Close the fuel-shutoff valve.</li> </ul>
Monthly	<ul style="list-style-type: none"> <li>• Check the wheel-lug nuts.</li> <li>• Check the hub castle-nut cotter pin.</li> <li>• Check the sprayer valve.</li> </ul>
Yearly	<ul style="list-style-type: none"> <li>• Grease the motion controls.</li> </ul>
Yearly or before storage	<ul style="list-style-type: none"> <li>• Clean the fuel sediment cup.</li> </ul>

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

# Pre-Maintenance Procedures

## Preparing the Machine for Maintenance

1. Park the machine on a level surface.
2. Move the motion-control levers to the NEUTRAL position.
3. Disconnect the kill cord from the operator presence sensor to shut off the engine.
4. Wait for all moving parts to stop.
5. Remove the key.
6. Disconnect the spark-plug wire.
7. Allow machine components to cool.
8. Chock the tires.

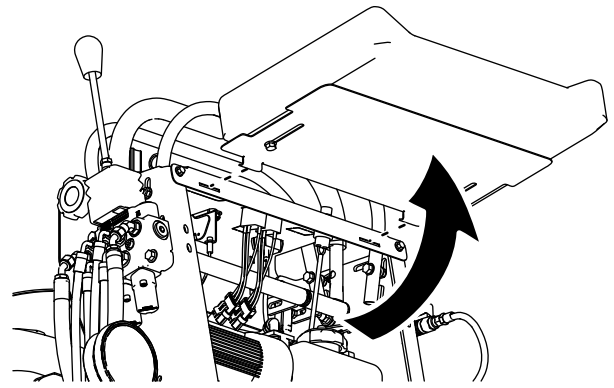


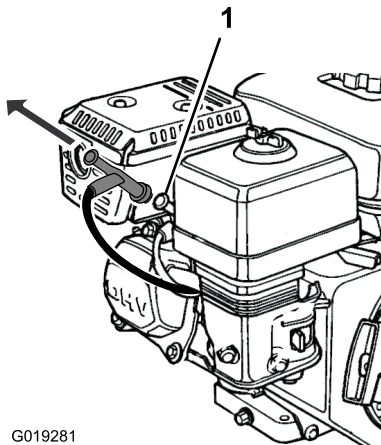
Figure 31

g294664

2. Perform any maintenance or adjustment on the machine.
3. Slot the cushion brackets into the frame and lower the cushion.

## Disconnecting the Spark-plug Wire

Disconnect the spark-plug wire from the terminal of the spark plug.



G019281

g019281

Figure 30

1. Spark plug

## Removing the Cushion for Rear Access

You can release the cushion for rear access to the machine for maintenance or adjustment.

1. Lift up on the bottom of the cushion until you can pull it back and away from the machine ([Figure 31](#)).

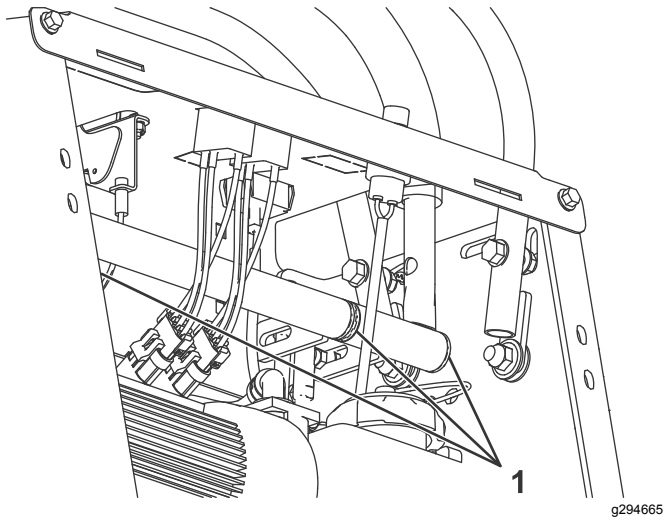
# Lubrication

## Greasing the Motion Controls

**Service Interval:** Yearly—Grease the motion controls.

Grease the motion-control bushing for both levers.

**Note:** Use an oil drip between the lever brackets to grease the bushing, located in the pivot tube.



**Figure 32**

1. Drip oil between the pivot tube and bushing.

# Engine Maintenance

## Engine Safety

- Shut off the engine before checking the oil or adding oil to the crankcase.
- Keep your hands, feet, face, clothing, and other body parts away from the muffler and other hot surfaces.

## Servicing the Air Cleaner

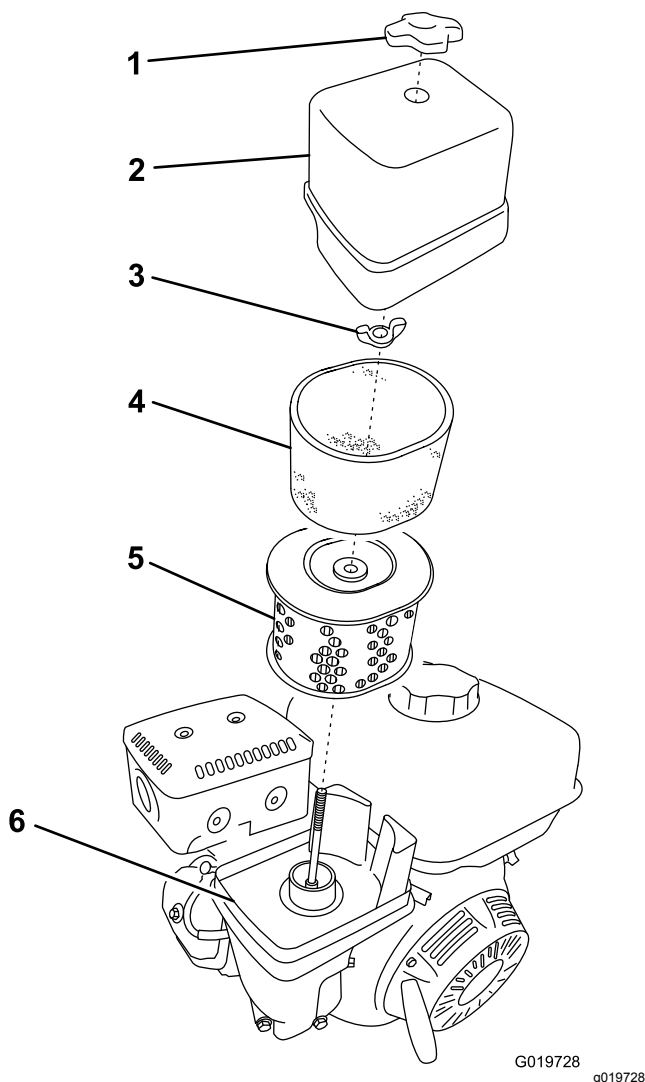
**Service Interval:** Before each use or daily—Inspect the air-cleaner elements.

Every 50 hours/Every 3 months (whichever comes first)—Clean the air-cleaner elements.

Every 300 hours/Yearly (whichever comes first)—Replace the paper air-cleaner element.

**Important:** Do not operate the engine without the air-filter assembly; extreme engine damage will occur.

1. Shut off the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug; refer to [Disconnecting the Spark-plug Wire \(page 27\)](#).
3. Remove the nut that secures the cover ([Figure 33](#)).



**Figure 33**

- |              |                  |
|--------------|------------------|
| 1. Cover nut | 4. Foam element  |
| 2. Cover     | 5. Paper element |
| 3. Wing nut  | 6. Base          |

- Remove the cover.

**Note:** Be careful to prevent dirt and debris from falling into the base.

- Remove the foam and paper elements from the base (Figure 33).
- Remove the foam element from the paper element (Figure 33).
- Inspect the foam and paper elements, and replace them if they are damaged or excessively dirty.
- If the paper element is excessively dirty, replace it.

**Note:** Never try to brush dirt off the paper element; brushing forces the dirt into the fibers.

- Clean the foam element in warm, soapy water or in a **nonflammable** solvent.

**Note:** Do not use fuel to clean the foam element because it could create a risk of fire or explosion.

- Rinse and dry the foam element thoroughly.
- Dip the foam element in clean engine oil, then squeeze out the excess oil.

**Note:** Excess oil in the foam element restricts the air flow through the element and may reach the paper filter and clog it.

- Wipe dirt from the base and the cover with a moist rag.

**Note:** Be careful to prevent dirt and debris from entering the air duct leading to the carburetor.

- Install the air-cleaner elements and ensure that they are properly positioned.
- Securely install the cover with the nut.

## Servicing the Engine Oil

### Engine-Oil Specifications

**Oil Type:** Use 4-cycle motor oil that meets or exceeds the requirements for API service category SJ or higher.

**Engine Oil Capacity:** 1.1 L (1.2 US qt)

**Viscosity:** Use SAE 10W-30 for general use.

### Checking the Engine-Oil Level

**Service Interval:** Before each use or daily—Check the engine-oil level.

**Note:** Check the oil when the engine is cold.

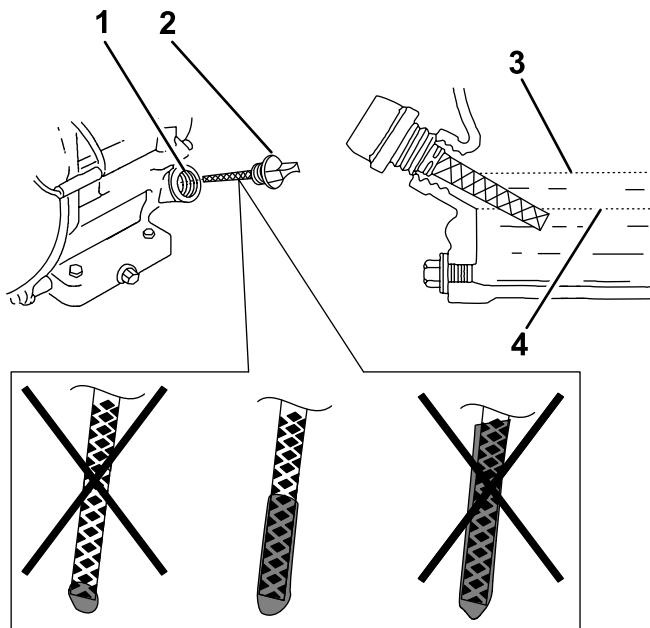
#### **⚠ WARNING**

**Contact with hot surfaces may cause personal injury.**

**Keep your hands, feet, face, clothing and other body parts away the muffler and other hot surfaces.**

**Important:** Do not overfill the crankcase with oil or damage to the engine may result. Do not run the engine with oil below the low mark or the engine may be damaged.

- Clean around the oil dipstick.
- Remove the oil-fill cap/dipstick and wipe the end clean (Figure 34).

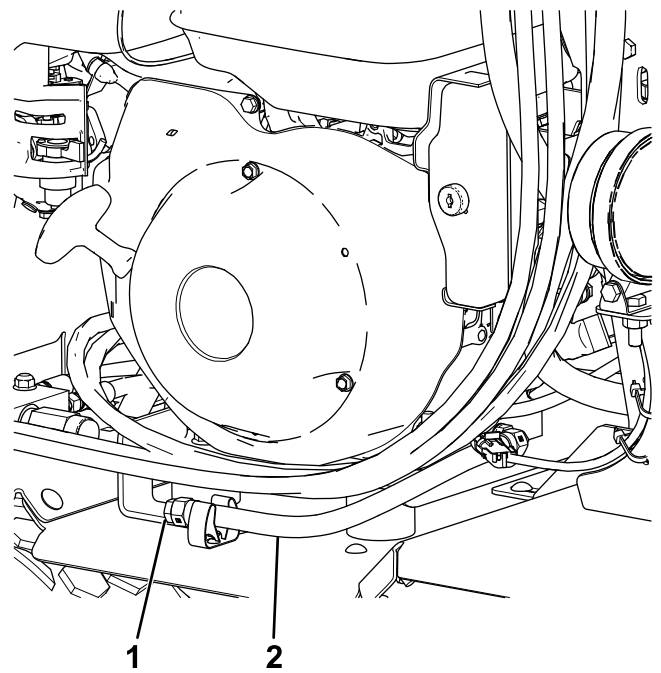


G019746  
g019746

**Figure 34**

- |              |                          |
|--------------|--------------------------|
| 1. Fill port | 3. Oil-level upper limit |
| 2. Dipstick  | 4. Oil-level lower limit |

- Slide the dipstick fully into the fill port without threading it into the port (Figure 34).
- Remove the dipstick and look at the end. If the engine oil level is low (Figure 34) add oil to the engine; refer to [Filling the Engine Crankcase with Oil](#) (page 30).



g295602

**Figure 35**

- |               |                   |
|---------------|-------------------|
| 1. Drain plug | 2. Oil-drain hose |
|---------------|-------------------|

- Remove the drain plug at the end of the hose (Figure 35).
- When the oil has drained completely, install the drain plug (Figure 35).

**Note:** Dispose of the used oil at a certified recycling center.

## Changing the Engine Oil

**Service Interval:** After the first 20 hours—Change the engine oil.

Every 100 hours/Every 6 months (whichever comes first)—Change the engine oil.

### Draining the Engine Oil

#### **⚠ WARNING**

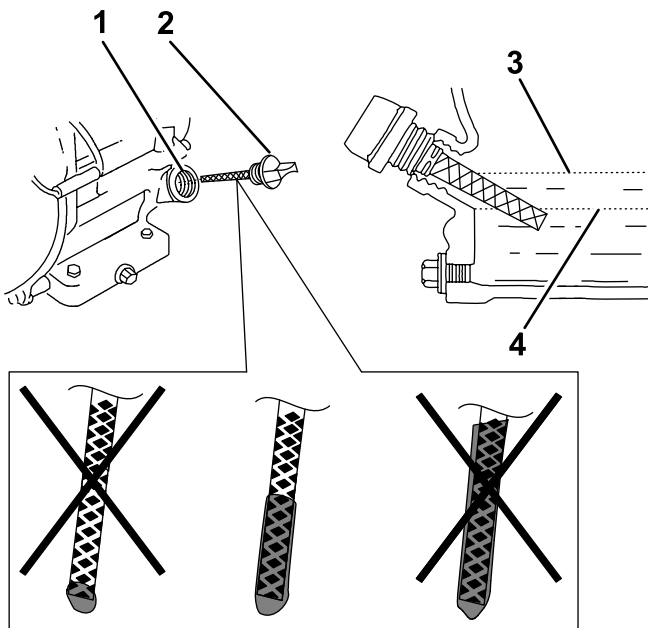
Oil may be hot after the engine has been run, and contact with hot oil can cause severe personal injury.

**Avoid contacting the hot engine oil when you drain it.**

- Stop the engine and wait for all moving parts to stop.
- Disconnect the wire from the spark plug; refer to [Disconnecting the Spark-plug Wire](#) (page 27).
- Aim the oil-drain hose over the side of the machine and place a receptacle under the end (Figure 35).

### Filling the Engine Crankcase with Oil

- Remove the dipstick (Figure 36) and slowly pour oil into the fill hole until the oil reaches the upper-limit mark (bottom edge of the oil-fill hole) on the dipstick.



G019746  
g019746

**Figure 36**

- |                  |                          |
|------------------|--------------------------|
| 1. Oil-fill hole | 3. Oil-level upper limit |
| 2. Dipstick      | 4. Oil-level lower limit |

2. Replace and secure the dipstick.
3. Wipe up any spilled oil.

## Servicing the Spark Plug

**Service Interval:** Every 100 hours/Every 6 months (whichever comes first)—Check the spark plug.

Every 300 hours/Yearly (whichever comes first)—Replace the spark plug.

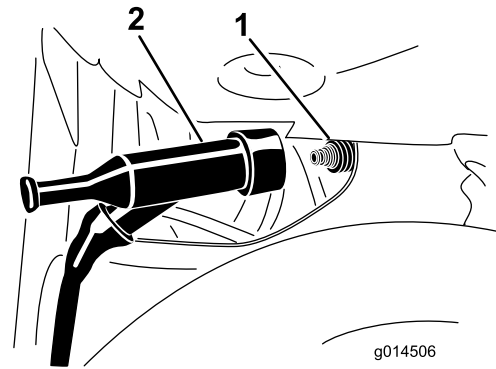
**Type:** NGK BPR6ES or equivalent

**Gap:** 0.7 to 0.8 mm (0.028 to 0.031 inch)

**Note:** Use a 13/16 inch (21 mm) spark-plug wrench for removing and installing the spark plug.

### Removing the Spark Plug

1. Ensure that the machine surfaces are cool.
2. Pull the spark-plug wire off the terminal of the spark plug (Figure 37).

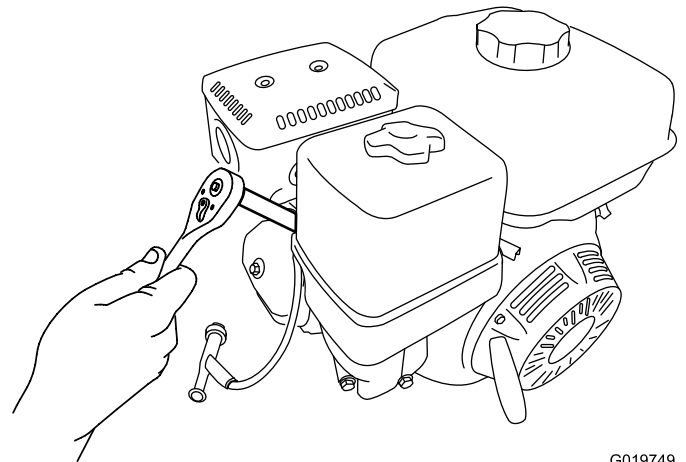


g014506

g014506

**Figure 37**

1. Spark plug
  2. Wire
- 
3. Clean around the spark plug.
  4. Rotate the spark plug counterclockwise using a 13/16 inch (21 mm) spark-plug wrench to remove the plug and the sealing washer (Figure 38).



G019749  
g019749

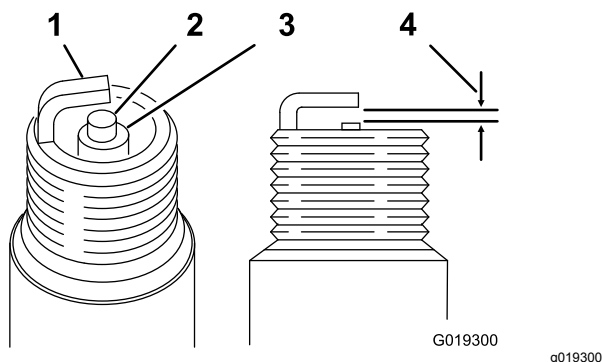
**Figure 38**

### Checking the Spark Plug

**Note:** Use a gapping tool/feeler gauge to check and adjust the gap. Install a new spark plug if necessary.

1. Look at the center of the spark plug (Figure 39). If you see light brown or gray on the insulator, the engine is operating properly.

**Important:** Never clean the spark plug. Always replace the spark plug when it has a black coating, worn electrodes, an oily film, or cracks.



**Figure 39**

1. Side electrode
  2. Center electrode
  3. Insulator
  4. 0.7 to 0.8 mm (0.028 to 0.031 inch) gap
- 
2. Use a gapping tool for spark plugs or a feeler gauge to measure the gap between the side electrode and center electrode (Figure 39).
  3. If the gap is not within the specified range, do the following:
    - A. If the gap is **too small**, carefully bend the side electrode **away** from the center electrode until the gap between the electrodes is 0.7 to 0.8 mm (0.028 to 0.031 inch).
    - B. If the gap is **too large**, carefully bend the side electrode **toward** the center electrode until the gap between the electrodes is 0.7 to 0.8 mm (0.028 to 0.031 inch).

## Installing the Spark Plug

**Important:** Ensure that the gap between the side and center electrodes is correct before installing the spark plug.

1. Thread the spark plug clockwise into the spark-plug hole by hand.
 

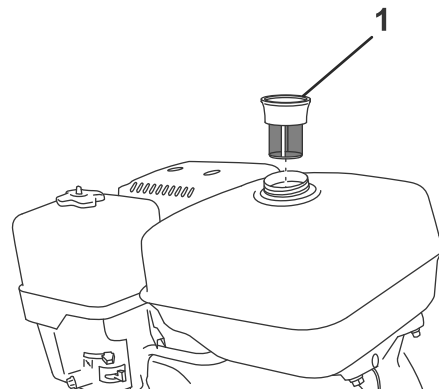
**Note:** Avoid cross-threading the spark plug with the threads of the spark-plug hole.
2. Rotate spark plug clockwise using a 13/16 inch (21 mm) spark-plug wrench until the plug and sealing washer are seated (Figure 38).
3. Tighten the spark plug as follows:
  - When installing an **in-service** spark plug, tighten the plug an additional 1/8 to 1/4 turn.
  - When installing a **new** spark plug, tighten the plug an additional 1/2 turn.
4. Push the spark-plug wire onto the terminal of the spark plug (Figure 37).

# Fuel System Maintenance

## Cleaning the Fuel Tank Filter

**Service Interval:** Every 100 hours/Every 6 months (whichever comes first)—Clean the fuel tank and filter.

Check the fuel tank filter for clogging and clean if necessary.



**Figure 40**

1. Fuel tank filter

## Cleaning the Sediment Cup

**Service Interval:** Every 100 hours/Every 6 months (whichever comes first)—Clean the sediment cup.

Yearly or before storage—Clean the fuel sediment cup.

Underneath the fuel valve is a sediment cup to catch dirt in the fuel.

1. Ensure that the engine and the exhaust system surfaces are cool.
2. Move the fuel-shutoff valve to the CLOSED position (Figure 41).



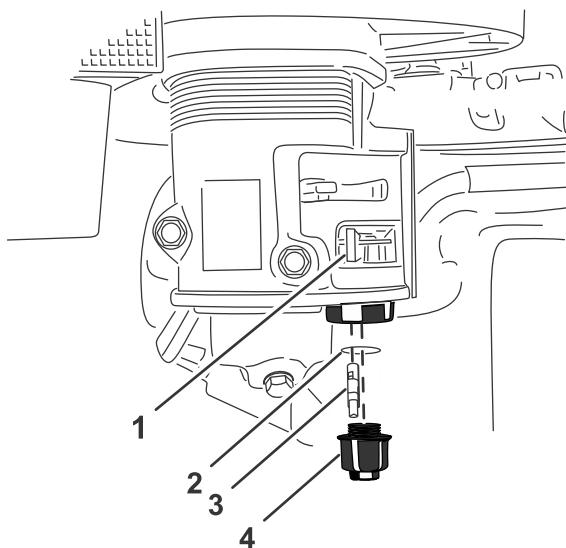


Figure 41

g295395

- |                       |                 |
|-----------------------|-----------------|
| 1. Fuel-shutoff valve | 3. Fuel filter  |
| 2. O-ring             | 4. Sediment cup |

3. Unscrew the sediment cup (Figure 41).
4. Remove the fuel filter and O-ring (Figure 41).  
**Note:** Do not misplace the O-ring.  
**Note:** Do not clean the O-ring in solvent.
5. Clean the fuel filter and sediment cup using a nonflammable solvent, and dry it carefully.
6. Wipe the O-ring with a clean, dry cloth.
7. Install the fuel filter in the bottom of the carburetor (Figure 41).
8. Align the O-ring in to the groove in the sediment cup and install the sediment cup to fuel valve housing.
9. Move the fuel-shutoff valve to the OPEN position and check for leaks. If it leaks, replace the O-ring.

# Electrical System Maintenance

## Electrical System Safety

- Disconnect the battery or remove the spark-plug wire before making any repairs. Disconnect the negative terminal first and the positive terminal last. Connect the positive terminal first and 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.

## Servicing the Battery

**Service Interval:** Every 100 hours—Check the battery.

Always keep the battery clean and fully charged. Use a paper towel to clean the battery case. If the battery terminals are corroded, clean them with a solution of four parts water and 1 part baking soda. Apply a light coating of grease to the battery terminals to prevent corrosion.

Voltage: 12 V

## Removing the Battery

1. Remove the cover of the battery box.

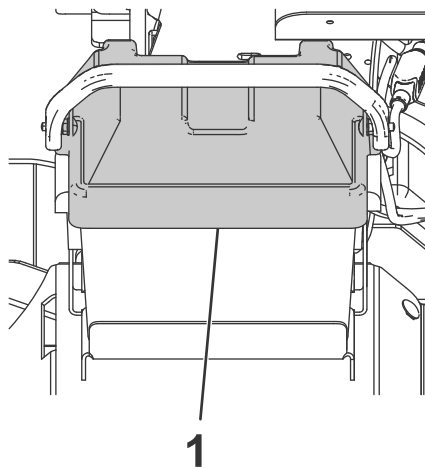


Figure 42

g294666

1. Battery box cover
2. Disconnect the negative (black) ground cable from the battery post.

## ⚠ WARNING

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

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

## ⚠ WARNING

Battery terminals or metal tools could short against metal machine components, causing sparks. Sparks can cause the battery gases 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.

3. Remove the positive (red) battery cable.
4. Remove the battery.

## Charging the Battery

### ⚠ WARNING

Charging the battery produces gasses that can explode.

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

**Important:** Always keep the battery fully charged (1.265 specific gravity) to prevent battery damage when the temperature is below 0°C (32°F).

1. Remove the battery from the chassis; refer to [Removing the Battery \(page 33\)](#).
2. Check the electrolyte level.
3. Ensure that the filler caps are installed on the battery.
4. Charge battery for 10 to 15 minutes at 25 to 30 amps or 30 minutes at 10 amps.

5. When the battery is fully charged, unplug the charger from the electrical outlet, and disconnect the charger leads from the battery posts ([Figure 43](#)).
6. Install the battery onto the machine and connect the battery cables; refer to [Installing the Battery \(page 34\)](#).

**Note:** Do not run the machine with the battery disconnected; electrical damage may occur.

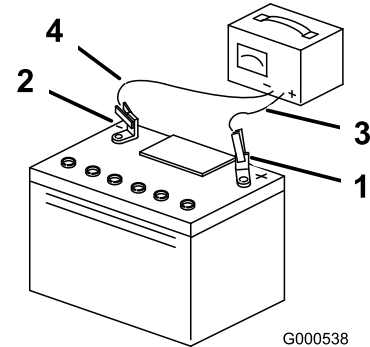


Figure 43

- |                          |                           |
|--------------------------|---------------------------|
| 1. Positive battery post | 3. Red (+) charger lead   |
| 2. Negative battery post | 4. Black (-) charger lead |

## Installing the Battery

### ⚠ WARNING

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

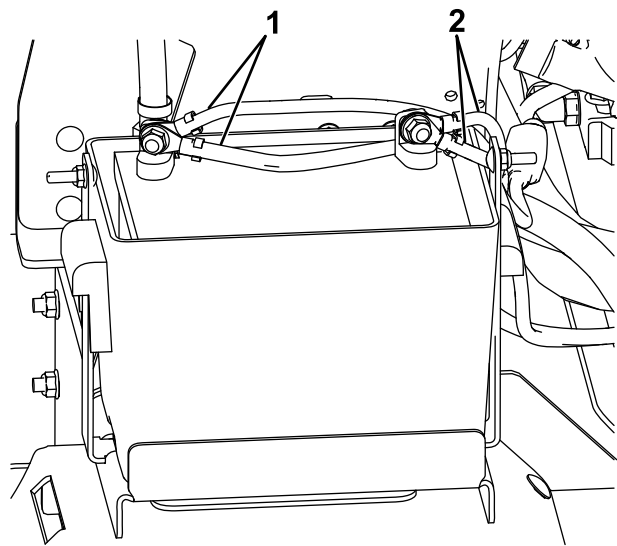
- Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.
- Always connect the positive (red) battery cable before connecting the negative (black) cable.

### ⚠ WARNING

Battery terminals or metal tools could short against metal machine components, causing sparks. Sparks can cause the battery gases 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.

Install the battery as shown in [Figure 44](#).



**Figure 44**

g294507

1. Negative (black)                      2. Positive (red)

1. Place the battery on the machine.
2. Connect the positive (red) battery cable.
3. Connect the negative (black) battery cable.
4. Install the cover of the battery box.

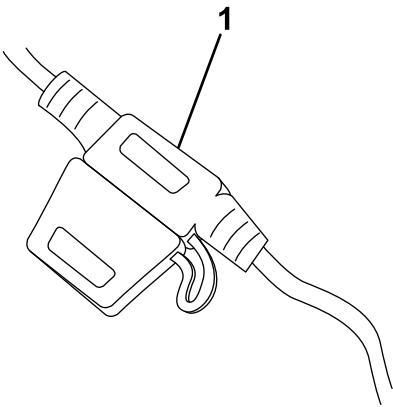
## Servicing the Fuses

The electrical system is protected by fuses. It requires no maintenance. If a fuse blows, check the component or circuit for a malfunction or short.

### Replacing the In-Line Fuses

There are 2 replaceable in-line fuses on the wire harness.

1. Remove the cushion.
2. Find the in-line fuse on the wire harness and remove the fuse cap.



**Figure 45**

g295779

1. In-line fuse

3. Remove and inspect the fuse.

If the fuse is burnt out, discard it and install a new fuse with the same rating; refer to the table below.

**Important:** Do not use a fuse with a rating higher than the original fuse; serious damage to the electrical system or a fire could result.

Light fuse	Accessory fuse
10 A	30 A

4. Install the fuse cap and cushion.

### Replacing the Engine Fuse

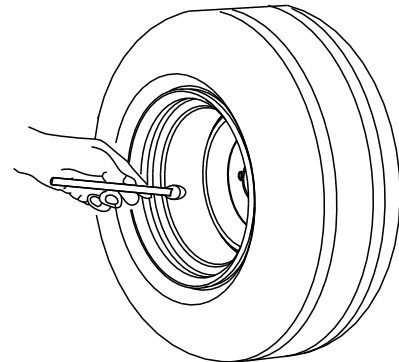
The engine has a fuse ([Figure 46](#)) that protects the key-start relay circuit and the battery-charging circuit. If the fuse burns out, the key starter will not work. You can still start the engine with the recoil-start handle, but the engine will not charge the battery.

# Drive System Maintenance

## Checking the Tire Pressure

**Service Interval:** Every 50 hours/Monthly (whichever comes first)—Check the tire pressure.

Maintain the air pressure in the tires at 124 kPa (18 psi).



G001055

g001055

Figure 47

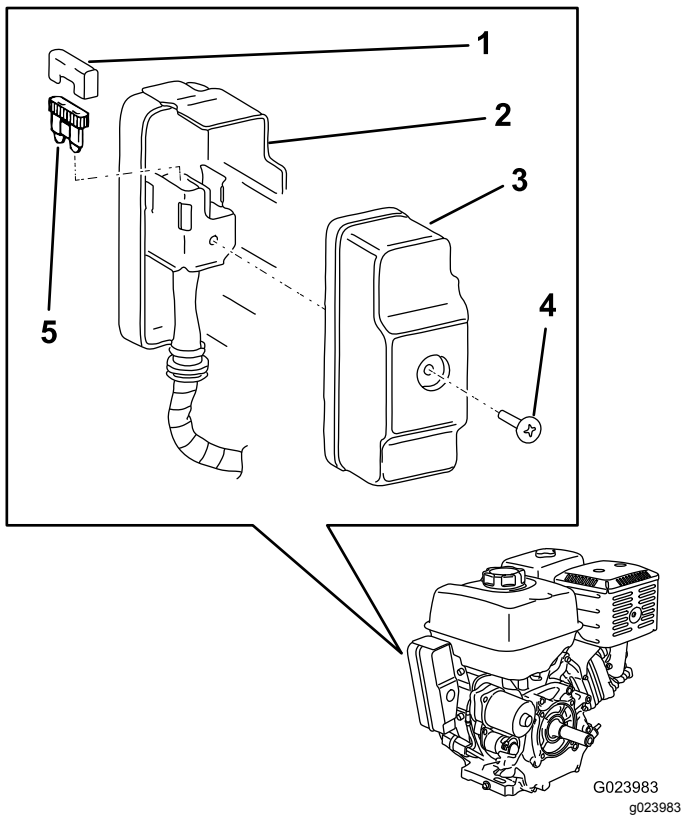


Figure 46

- |                       |          |
|-----------------------|----------|
| 1. Fuse cap           | 4. Screw |
| 2. Key-switch housing | 5. Fuse  |
| 3. Rear cover         |          |

1. Remove the screw from the rear cover of the housing behind the key switch.
2. Remove the rear cover.
3. Remove the fuse cap, then remove and inspect the fuse.

If the fuse is burnt out, discard it and install a new fuse with the same rating; refer to the engine owner's manual.

**Important:** Do not use a fuse with a rating higher than the original fuse; serious damage to the electrical system or a fire could result.

4. Install the rear cover, and secure it with the screw.

## Checking the Wheel Fasteners

**Service Interval:** Monthly—Check the wheel-lug nuts.

Monthly—Check the hub castle-nut cotter pin.

Check and torque the wheel-lug nuts to 115 N·m (85 ft-lb).

Check the condition of the hub castle-nut cotter pin.

# 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 System Specifications

**Hydraulic Fluid Type:** BOSS Premium Hydraulic Fluid

**Hydraulic Tank Fluid Capacity:** 1.89 L (2 US qt)

**Hydraulic System Fluid Capacity:** 4.25 L (4.5 US qt)

**Important:** Use the fluid specified. Other fluids could damage the system.

## Checking the Hydraulic Fluid

**Service Interval:** Before each use or daily—Check the hydraulic-fluid level.

Every 40 hours—Check the hydraulic hoses and fittings for leaks.

**Note:** Check the hydraulic-fluid level when the fluid is cold.

1. Remove the cushion.
2. Clean the area around the cap and the filler neck of the hydraulic tank (Figure 48).

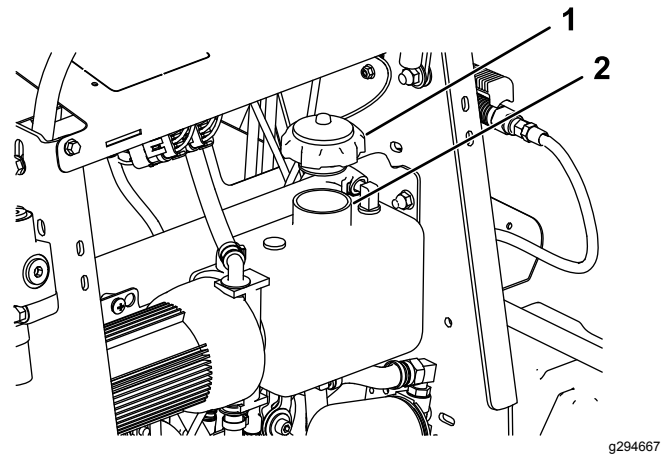


Figure 48

1. Hydraulic tank cap
2. Hydraulic tank filler neck

3. Remove the cap from the filler neck (Figure 48).

**Note:** Look inside to check the fluid level in the reservoir.

4. Add fluid to the reservoir until it is 3/4 full.
5. Install the cap on the filler neck.

## Draining the Hydraulic Fluid and Replacing the Filter

**Service Interval:** After the first 50 hours—Change the hydraulic filters and hydraulic fluid.

Every 500 hours/Yearly (whichever comes first)—Change the hydraulic filters and hydraulic fluid.

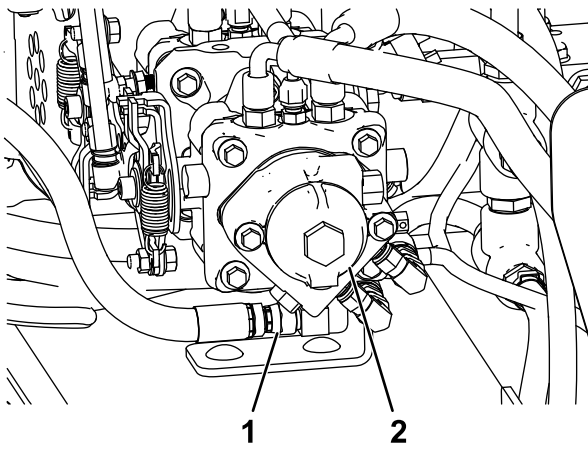
Change the hydraulic fluid more frequently in severe conditions. Contact your Authorized Service Dealer for a hydraulic kit to replace the hydraulic filters.

### ⚠ WARNING

**Hot hydraulic fluid can cause severe burns.**

**Allow the hydraulic fluid to cool before performing any maintenance on the hydraulic system.**

1. Clean the area around the hydraulic-reservoir cap.
2. Remove the hydraulic-reservoir cap.
3. Locate the hose connecting the hydraulic filter and the hydraulic pump and place a drain pan under the hose fitting on the hydraulic pump (Figure 49).

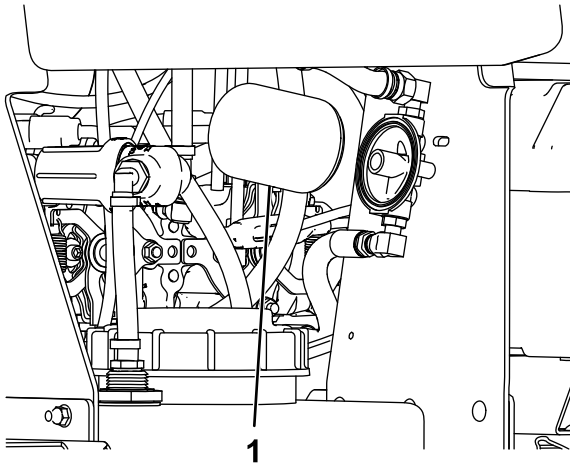


**Figure 49**

g294713

1. Hydraulic filter hose fitting    2. Hydraulic pump

4. Disconnect the hose.
5. Allow the hydraulic fluid to fully drain from the machine.
6. Connect the previously disconnected hose to the hydraulic pump.
7. Remove the hydraulic filter (**Figure 50**).



**Figure 50**

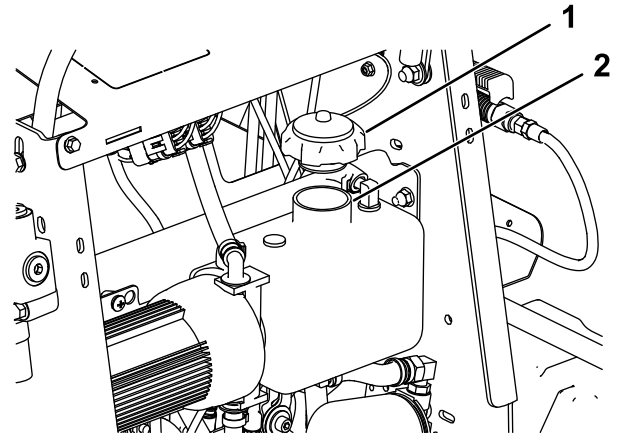
g294714

1. Hydraulic filter

8. Install a new hydraulic filter.

## Adding Hydraulic Fluid

1. Clean the area around the hydraulic-reservoir cap.
2. Remove the hydraulic-tank cap (**Figure 51**).



**Figure 51**

g294667

1. Hydraulic tank cap    2. Hydraulic tank filler neck

3. Slowly add fluid to the hydraulic tank until it is approximately 2/3 full.

**Important:** Use the fluid specified in **Hydraulic System Specifications (page 37)**. Other fluids could cause system damage.

4. Install the hydraulic-tank cap.
5. Raise the machine so all 4 wheels are off of the ground and support the frame with jack stands.
6. Start the engine and run the wheels forward and backward for at least 2 minutes.
7. Shut off the engine and lower the machine to the ground.
8. Start the engine again and operate the plow in its full range of movement.
9. Shut off the engine and check for leaks.

# Plow Maintenance

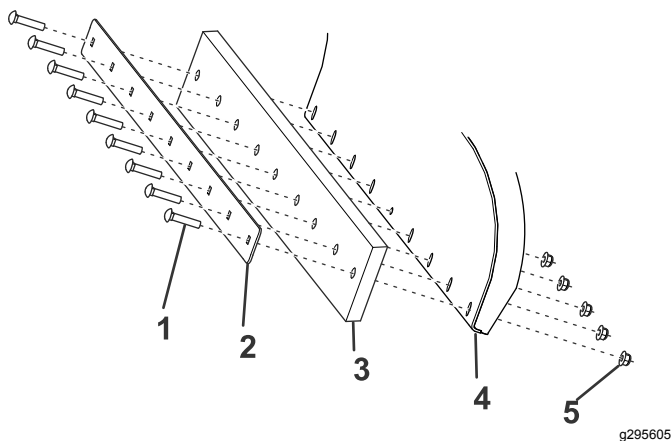
## Checking the Cutting Edge

**Service Interval:** Before each use or daily—Check the cutting edge for wear.

If your plow has a steel cutting edge and it appears worn, purchase a new cutting edge. If your plow has a urethane cutting edge and 1 side is worn, flip the cutting edge; refer to [Flipping the Urethane Cutting Edge \(page 39\)](#). If both sides of the urethane cutting edge are worn, purchase a new cutting edge.

## Flipping the Urethane Cutting Edge

1. Remove and retain the bolts and locknuts securing the cutting edge to the blade ([Figure 52](#)).



**Figure 52**

- |                          |            |
|--------------------------|------------|
| 1. Carriage bolt         | 4. Blade   |
| 2. Metal strap           | 5. Locknut |
| 3. Urethane cutting edge |            |

- 
2. Flip the cutting edge and line it up with the holes in the blade.
  3. Secure the cutting edge with the previously removed bolts, washers, and locknuts.
  4. Torque the fasteners to 76 N·m (56 ft-lb).

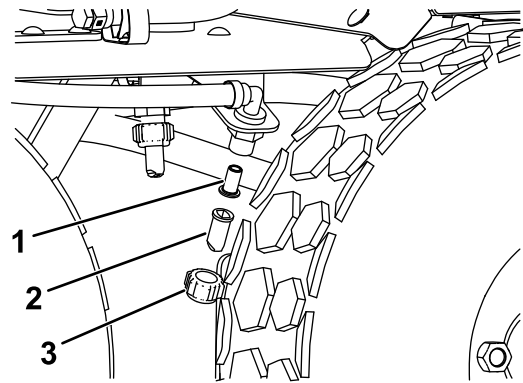


# Sprayer Maintenance

## Servicing the Sprayer Screens

Monthly—Check the sprayer valve.

Every 40 hours—Check the spray gun for leaks or clogging.



g294669

**Figure 54**

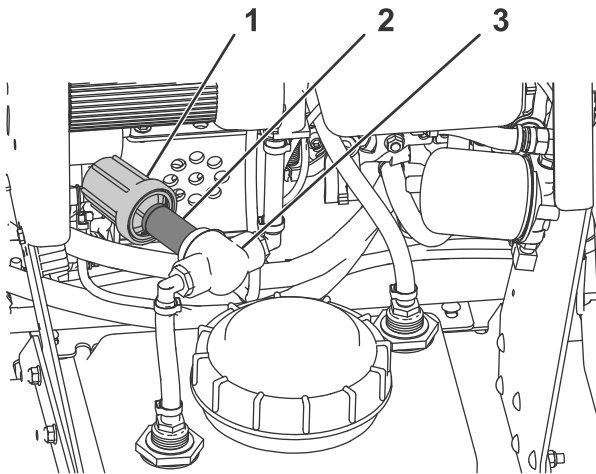
1. Spray nozzle screen
2. Spray nozzle
3. Spray nozzle cap

## Servicing the In-Line Filter Screen

**Service Interval:** Every 40 hours—Check the in-line filter screen for clogging.

Every 40 hours—Check the in-line filter rubber seal.

1. Clean the area around the in-line filter cap (Figure 53).



g294668

**Figure 53**

1. In-line filter cap
2. In-line filter screen
3. In-line filter body

2. Remove the in-line filter cap and check the screen for clogging.
3. If the screen is clogged, clean the screen.
4. Install the in-line filter cap.

## Servicing the Spray Nozzle Screens

**Service Interval:** Every 40 hours—Check the spray nozzle screens for clogging.

Every 80 hours/Every 2 weeks (whichever comes first)—Check the spray nozzle tips.

1. Clean the area around the spray nozzle (Figure 54).



# Cleaning

**Service Interval:** After each use—Empty the sprayer tank.

After each use—Flush the sprayer system.

After each use—Condition the sprayer system.

Refer to [Emptying the Sprayer Tank \(page 21\)](#), [Flushing the Sprayer System \(page 21\)](#), and [Conditioning the Spray System \(page 21\)](#).

# Storage

## Storage Safety

- Let the engine cool before storing the machine.
- Do not store the machine or fuel near flames or drain the fuel indoors.
- Do not store material in the sprayer tank.

## Storing the Machine

1. Drive the machine to your storage location and lower the plow.
2. Remove salt, sand, and grime from the external parts of the entire machine, especially the engine.

**Important:** You can wash the machine with a mild detergent and water. Do not pressure-wash the machine. Avoid excessive use of water, especially near the drive system and engine. Pressure-washing can force dirt and water into critical parts.

3. Service the air cleaner; refer to [Servicing the Air Cleaner \(page 28\)](#)
4. Grease the machine; refer to [Lubrication \(page 28\)](#)
5. Grease any exposed chrome or nitro bar on the hydraulic cylinders.
6. Apply dielectric grease to all of the wire-harness connectors and install the dust caps.
7. Condition the sprayer system; refer to [Conditioning the Spray System \(page 21\)](#).
8. Change the engine oil; refer to [Changing the Engine Oil \(page 30\)](#)
9. Check the tire pressure; refer to [Checking the Tire Pressure \(page 36\)](#)
10. Allow the engine to run until it shuts off. Repeat with the choke engaged (if applicable) until the engine does not start.
11. Close the fuel-shutoff valve.
12. Dispose of extra fuel properly; recycle it according to local regulations.

**Important:** Do not store fuel containing stabilizer/conditioner longer than the duration recommended by the fuel-stabilizer manufacturer.

13. Remove the spark plug and check its condition; refer to [Checking the Spark Plug \(page 31\)](#).
14. With the spark plug removed from the engine, pour 15 ml (2 tablespoons) of engine oil into the spark-plug hole, and use the starter to crank the engine and distribute the oil inside the cylinder.

15. Install the spark plug but do not connect the wire to the spark plug; refer to [Installing the Spark Plug \(page 32\)](#).
16. Check and tighten all fasteners. Repair or replace any part that is damaged or missing.
17. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted.
18. Loosen the trip-return springs.
19. Store the machine in a clean, dry, garage or storage area. Remove the key from the engine key switch and store it in a memorable place. Cover the machine to protect it and keep it clean.

## Removing the Machine from Storage

1. Check the plow for cracked welds.
2. Check the torque of all fasteners; tighten as necessary.
3. Check the hydraulic lines and hoses for cracks or leaks.
4. Replace the hydraulic fluid; refer to [Adding Hydraulic Fluid \(page 38\)](#).
5. Check the plow cutting edge for wear.
6. Tighten the trip-return springs until there is a gap of 0.8 mm (1/32 inch) between the trip spring coils.
7. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted.
8. Apply dielectric grease to all of the wire harness connectors.
9. Connect the spark plug wire.
10. Move the plow through its range of motion to check the hydraulic cylinder rods.

# Troubleshooting

Problem	Possible Cause	Corrective Action
The engine does not start, starts hard, or fails to keep running.	<ol style="list-style-type: none"> <li>1. The fuel tank is empty or the shutoff valve is closed.</li> <li>2. The choke is closed.</li> <li>3. The choke is open.</li> <li>4. The engine oil level is low.</li> <li>5. A spark-plug wire is loose or disconnected.</li> <li>6. A spark plug is pitted, fouled, or the gap is incorrect.</li> <li>7. The air filter is dirty.</li> <li>8. Dirt, water, or stale fuel is in the fuel system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill the fuel tank with fuel and open the valve.</li> <li>2. Open the choke when starting a hot engine.</li> <li>3. Close the choke when starting a cold engine.</li> <li>4. Fill the engine with the recommended oil to the proper level.</li> <li>5. Install the spark-plug wire.</li> <li>6. Install a new, correctly gapped spark plug.</li> <li>7. Service the air filter.</li> <li>8. Contact an Authorized Service Dealer.</li> </ol>
The engine loses power.	<ol style="list-style-type: none"> <li>1. The engine load is excessive.</li> <li>2. The air filter is dirty.</li> <li>3. The oil level in the crankcase is low.</li> <li>4. A spark plug is pitted, fouled, or the gap is incorrect.</li> <li>5. Dirt, water, or stale fuel is in the fuel system.</li> <li>6. The fuel line is restricted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the ground speed.</li> <li>2. Service the air filter.</li> <li>3. Add oil to the crankcase.</li> <li>4. Install a new, correctly gapped spark plug.</li> <li>5. Contact an Authorized Service Dealer.</li> <li>6. Clean the fuel filter and sediment cup.</li> </ol>
The engine overheats.	<ol style="list-style-type: none"> <li>1. The engine load is excessive.</li> <li>2. The oil level in the crankcase is low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce the ground speed.</li> <li>2. Add oil to the crankcase.</li> </ol>
The machine does not drive.	<ol style="list-style-type: none"> <li>1. The hydraulic-fluid reservoir is low.</li> <li>2. Air is in the hydraulic system.</li> <li>3. The pump-bypass valves are open.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add hydraulic fluid to the reservoir.</li> <li>2. Bleed the air out the hydraulic system.</li> <li>3. Tighten the bypass valves. Torque to 12 to 15 N·m (9 to 11 ft-lb).</li> </ol>
The plow does not angle or angles slowly.	<ol style="list-style-type: none"> <li>1. The hydraulic-fluid level is incorrect.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure that the hydraulic-fluid level is within 2/3 of the top of the reservoir when the plow is lowered.</li> </ol>
Fluid leaks from the lift cylinders.	<ol style="list-style-type: none"> <li>1. The fittings are loose or the O-rings are damaged.</li> <li>2. The rods are pitted or rough.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten loose fittings. See your authorized BOSS dealer for a seal kit.</li> <li>2. Polish them with a copus cloth or extra fine steel wool.</li> </ol>
The blade trips too easily.	<ol style="list-style-type: none"> <li>1. The trip springs are loose or damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the springs or replace them if they are damaged.</li> </ol>
The plow does not clean up snow from low areas.	<ol style="list-style-type: none"> <li>1. The controller is not in the FLOAT position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Activate the FLOAT feature on the controller.</li> </ol>
Fluid is running out of the fill cap of the hydraulic-fluid tank.	<ol style="list-style-type: none"> <li>1. The terrain is too steep.</li> <li>2. The tank is overfilled.</li> <li>3. The plow is hitting snowbanks too hard.</li> </ol>	<ol style="list-style-type: none"> <li>1. Avoid steeply sloped areas.</li> <li>2. The hydraulic fluid level should be within 2/3 of the top of the reservoir.</li> <li>3. Do not plow recklessly.</li> </ol>
The pump chatters when raising or angling the plow.	<ol style="list-style-type: none"> <li>1. The hydraulic-fluid level is low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the hydraulic-fluid level; refer to the Checking the Hydraulic Fluid section.</li> </ol>

<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
The sprayer pump does not prime.	<ol style="list-style-type: none"> <li>1. The sprayer valve is closed.</li> <li>2. The sprayer filter is clogged.</li> <li>3. The brine in the hoses is frozen.</li> <li>4. The sprayer filter O-ring is damaged or missing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open the sprayer valve.</li> <li>2. Clean the sprayer filter.</li> <li>3. Bring the machine to a warm area to thaw.</li> <li>4. Replace the O-ring.</li> </ol>
The sprayer pump runs and shuts off repeatedly.	<ol style="list-style-type: none"> <li>1. The spray nozzles are plugged or frozen.</li> <li>2. The brine in the hoses is frozen.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the spray nozzles.</li> <li>2. Bring the machine to a warm area to thaw.</li> </ol>
The sprayer is not spraying.	<ol style="list-style-type: none"> <li>1. The sprayer valve is closed.</li> <li>2. The sprayer filter is clogged.</li> <li>3. The spray nozzles are plugged or frozen.</li> <li>4. The brine in the hoses is frozen.</li> <li>5. The hoses are clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open the sprayer valve.</li> <li>2. Clean the sprayer filter.</li> <li>3. Clean the spray nozzles.</li> <li>4. Bring the machine to a warm area to thaw.</li> <li>5. Clean the hoses.</li> </ol>
Brine is dripping from the spray nozzles when the system is not in use.	<ol style="list-style-type: none"> <li>1. The sprayer valve is open.</li> <li>2. The sprayer in-line filter O-ring is loose, damaged, or missing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Close the sprayer valve.</li> <li>2. Tighten the in-line filter or replace the O-ring.</li> </ol>
Too much brine is being sprayed.	<ol style="list-style-type: none"> <li>1. The sprayer throttle is set too high.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn the sprayer throttle counter clockwise to decrease the flow.</li> </ol>
Too little brine is being sprayed.	<ol style="list-style-type: none"> <li>1. The sprayer throttle is set too low.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn the sprayer throttle clockwise to increase the flow.</li> </ol>

**Notes:**

**Notes:**

# California Proposition 65 Warning Information

## What is this warning?

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



**WARNING:** Cancer and Reproductive Harm—[www.p65Warnings.ca.gov](http://www.p65Warnings.ca.gov).

## 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 BOSS include this warning?

BOSS 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. BOSS 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 BOSS products may be negligible or well within the "no significant risk" range, out of an abundance of caution, BOSS has elected to provide the Prop 65 warnings. Moreover, if BOSS 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.

**BOSS**  
S N O W P L O W