Form No. 3406-489 Rev C

TORO®

Count on it.

Operator's Manual

Workman® HDX-Auto Utility Vehicle

Model No. 07390—Serial No. 316000001 and Up
Model No. 07390H—Serial No. 316000001 and Up
Model No. 07390TC—Serial No. 316000001 and Up

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

CE

3406-489 C

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

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

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

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

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

Introduction

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

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

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

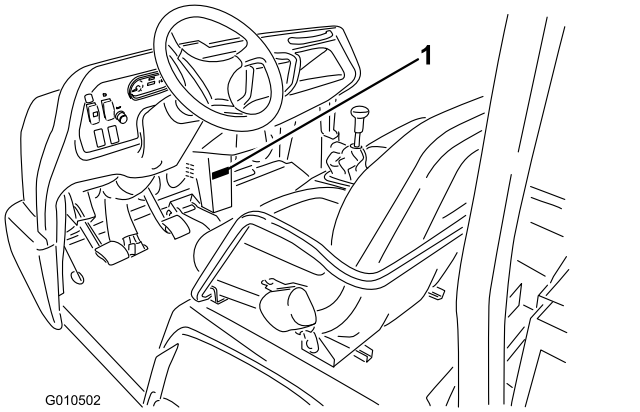

Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

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

Figure 2
Safety-alert symbol

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

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

Contents

Safety

Improper use or maintenance by the operator or owner can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety-alert symbol (Figure 2), which means *Caution*, *Warning*, or *Danger*—personal safety instruction. Failure to comply with the instruction may result in personal injury or death.

The machine meets the requirements of SAE J2258.

Safe Operating Practices

Important: **This machine is designed primarily as an off-road machine and is not intended for extensive use on public roads.**

When using the machine on public roads, follow all traffic regulations and use any additional accessories that may be required by law, such as lights, turn signals, slow-moving vehicle (SMV) signs, and others as required.

This machine was designed and tested to offer safe service when operated and maintained properly. Although hazard control and accident prevention are dependent upon the design and configuration of the machine, these factors are also dependent upon the awareness, concern, and proper training of the operator, maintenance, and storage of the machine. Improper use or maintenance of the machine can result in injury or death.

This machine has a different feel than what drivers experience with passenger cars or trucks. So take time to become familiar with your machine.

Not all the attachments that adapt to the machine are covered in this manual. See the specific *Operator's Manual* provided with each attachment for additional safety instructions.

To reduce the potential for injury or death, comply with the following safety instructions:

Supervisor's Responsibilities

Ensure that the operators are thoroughly trained and familiar with the *Operator's Manual* and all labels on the machine.

Before Operating

- This machine is designed to carry the operator and 1 passenger in the seat provided by the manufacturer. Do not carry any other passengers on the machine.
- Become familiar with the controls and know how to shut off the machine quickly.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Wear appropriate clothing, including eye protection; substantial, slip-resistant footwear; and hearing protection. Tie back long hair and do not wear jewelry.
- Do not allow children to operate the machine. Do not allow adults to operate it without proper instructions. Only trained and authorized persons should operate this machine. Ensure that all operators are physically and mentally capable of operating the machine.
- Keep all bystanders a safe distance away from the machine.
- Keep all shields, safety devices, and decals in place. If a shield, safety device, or decal is malfunctioning, illegible, or damaged, repair or replace it before operating the machine.
- Avoid driving when it is dark, especially in unfamiliar areas. If you must drive when it is dark, drive cautiously and use the headlights.
- Before operating the machine, always check all parts of the machine and any attachments. If something is wrong, stop using the machine. Ensure that you correct the problem before operating the machine or attachment again.
- Only operate the machine outdoors or in a well-ventilated area.

Safe Handling of Fuels

- To avoid personal injury or property damage, use extreme care when handling fuel. Fuel is extremely flammable and the vapors are explosive.
- Do not smoke near the machine.
- Use only an approved non-metal, portable fuel container.
- Do not fill containers inside a machine or on a truck or trailer bed with a plastic liner. Place it on the ground and away from the machine before filling.
- Keep the nozzle in contact with the rim of the fuel tank or container. Remove the equipment from the bed of the machine before fueling it. Do not use a nozzle-lock-open device. If this is not possible, then refuel such equipment with a portable container rather than from a fuel-dispenser nozzle.

- Do not remove the fuel cap or add fuel with the engine running.
- Allow the engine to cool before refueling.
- Do not refuel the machine indoors.
- 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.
- If you spill fuel on your clothing, change your clothing immediately.
- Do not overfill the fuel tank. Replace the fuel cap and tighten it securely.

General Operation

- The operator and passenger should remain seated whenever the machine is in motion. The operator should keep both hands on the steering wheel, whenever possible, and the passenger should use the handholds provided. Keep your arms and legs within the machine body at all times.
- Drive slower and turn less sharply when you are carrying a passenger. Remember that your passenger may not be expecting you to brake or turn, and may not be ready. Do not carry passengers in the cargo bed or on attachments.
- Do not overload the machine. The name plate (located under the seat assembly) shows the load limits for the machine. Do not overfill the attachments or exceed the machine maximum gross vehicle weight (GVW).
- When starting the engine, do the following:
  1. Park the machine on a level surface.
  2. Engage the parking brake.
  3. Disengage the PTO (if equipped) and return the hand-throttle lever to the OFF position (if equipped).
  4. Ensure that the hydraulic-lift lever is in the center position.
  5. Press in the brake pedal.
  6. Keep your foot off the accelerator pedal.
  7. Turn the key switch to the START position.
- Failure to operate the machine safely may result in an accident, tip-over of the machine, and serious injury or death. Drive carefully. To prevent tipping or loss of control, take the following precautions:
  - Use extreme caution, reduce the speed of the machine, and maintain a safe distance around sand traps, ditches, creeks, ramps, any unfamiliar areas, or other hazards.
  - Watch for holes or other hidden hazards.
  - Use caution when operating the machine on a steep slope. Normally, travel straight up and down slopes. Reduce the speed of the machine when making sharp turns or when turning on hillsides. Avoid turning on hillsides whenever possible.
  - Use extra caution when operating the machine on wet surfaces, at higher speeds, or with a full load. Stopping time increases with a full load.
  - Avoid sudden stops and starts. Do not go from reverse to forward or forward to reverse without first coming to a complete stop.
  - Do not attempt sharp turns or abrupt maneuvers or other unsafe driving actions that may cause a loss of control of the machine.
  - When dumping, do not let anyone stand behind the machine and do not dump the load on anyone's feet.
  - Keep all bystanders a safe disaway from the machine. Before backing up, look to the rear and ensure that no one is behind the machine. Back up slowly.
  - Watch out for traffic when near or crossing roads. Always yield the right of way to pedestrians and other machines. Always signal your turns or stop early enough so that other persons know what you plan to do. Obey all traffic rules and regulations.
  - Do not operate the machine in or near an area in which there is dust or fumes in the air that are explosive. The electrical and exhaust systems of the machine can produce sparks capable of igniting explosive materials.
  - Always watch out for and avoid low overhangs such as tree limbs, door jambs, overhead walkways, etc. Ensure that there is enough room overhead to easily clear the machine and your head.
  - If you are ever unsure about the safe operation of the machine, stop your work, and ask your supervisor.
- Before getting off the seat, do the following:
  1. Park the machine on a level surface.
  2. Engage the parking brake.
  3. Lower the cargo bed.
  4. Shut off the engine and remove the key.

  Note: If the machine is on an incline, block the wheels after getting off the machine.
- Do not touch the engine, transmission, muffler, or muffler manifold while the engine is running, or soon after you stop the machine, because these areas may be hot enough to cause burns.
- If the machine ever vibrates abnormally, stop the machine immediately, shut off the engine, wait for all movement to stop, and inspect for damage.

Repair all damage to the machine before you start operation again.

- Lightning can cause severe injury or death. If you see lightning, do not operate the machine; seek shelter.

Braking

- Slow down the machine before you approach an obstacle. This gives you extra time to stop or turn away. Hitting an obstacle can injure you and your passenger. In addition, it can damage the machine and its contents.
- Gross vehicle weight (GVW) has a major impact on your ability to stop and/or turn. Heavy loads and attachments make the machine harder to stop or turn. The heavier the load, the longer it takes to stop.
- Decrease the speed of the machine if the cargo been is removed and there is no attachment installed on the machine. The braking characteristics change and fast stops may cause the rear wheels to lock up, which affects the control of the machine.
- Turf and pavement are much more slippery when they are wet. It can take 2 to 4 times longer to stop the machine on wet surfaces than on dry surfaces. If you drive through deep-standing water and get the brakes wet, they will not work well until they are dry. After driving through water, you should test the brakes to ensure that they work properly. If they do not, drive slowly on level ground while putting light pressure on the brake pedal. This dries out the brakes.

Operating on Hills

⚠ WARNING

Operating the machine on a hill may cause tipping or rolling of the machine, or the engine may stall and you could lose headway on the hill. This could result in personal injury.

- **Do not operate the machine on excessively steep slopes.**
- **Do not accelerate quickly or slam the brakes when backing down a hill, especially with a load.**
- **If the engine stalls or you lose headway on a hill, slowly back straight down the hill. Do not attempt to turn the machine around.**
- **Operate the machine slowly on a hill and use caution.**
- **Avoid turning on a hill.**
- **Reduce your load and the speed of the machine.**
- **Avoid stopping on hills, especially with a load.**

Take these precautions when operating the machine on a hill:

- Slow the machine down before starting up or down a hill.
- If the engine stalls or you begin to lose momentum while climbing a hill, gradually apply the brakes and slowly back the machine straight down the hill.
- Turning while traveling up or down hills can be dangerous. If you have to turn while on a hill, do it slowly and cautiously. Do not make sharp or fast turns.
- Heavy loads affect stability. Reduce the weight of the load and your ground speed when operating on hills or if the load has a high center of gravity. Secure the load to the cargo bed of the machine to prevent the load from shifting. Take extra care when hauling loads that shift easily (liquid, rock, sand, etc.).
- Avoid stopping on hills, especially with a load. Stopping while going down a hill takes longer than stopping on level ground. If you must stop the machine, avoid sudden speed changes, which may initiate tipping or rolling of the machine. Do not slam on the brakes when rolling backward, as this may cause the machine to overturn.

Operating on Rough Terrain

Reduce the ground speed of the machine and the load carried in the machine when operating on rough terrain, uneven ground, and near curbs, holes, and other sudden changes in terrain. Loads may shift, causing the machine to become unstable.

⚠ WARNING

Sudden changes in terrain may cause abrupt steering wheel movement, possibly resulting in hand and arm injuries.

- **Reduce your speed when operating on rough terrain and near curbs.**
- **Grip the steering wheel loosely around the perimeter keeping thumbs up and out of the way of the steering wheel spokes.**

Loading and Dumping

- Do not exceed the rated weight capacity of the machine when operating it with a load in the cargo box, when towing a trailer, or both; refer to Specifications (page 23).
- Use caution when operating the machine on a hillside or on rough terrain, particularly with a load in the cargo box or when towing a trailer or both.
- Be aware that the stability and control of the machine are reduced when the load in the cargo box is poorly distributed.
- Carrying oversized loads in the cargo box changes the stability of the machine.
- The steering, braking, and stability of the machine are affected when carrying a load where the weight of the material cannot be bound to the machine, such as the liquid in a large tank.

⚠ WARNING

The weight of the box may be heavy. Hands or other body parts could be crushed.

- **Keep your hands and other body parts away when lowering the box.**
- **Do not dump materials on bystanders.**

- Do not dump a loaded cargo box while the machine is sideways on a hill. The change in weight distribution may cause the machine to overturn.
- When operating with a heavy load in the cargo box, reduce your speed and allow for sufficient braking distance. Do not suddenly apply the brakes. Use extra caution on slopes.
- Be aware that heavy loads increase your stopping distance and reduce your ability to turn quickly without tipping over.
- The rear cargo space is intended for load carrying purposes only, not for passengers.
- Do not overload your machine. The name plate (located under the middle of the dash) shows the load limits for the machine. Do not overload attachments or exceed the machine maximum gross vehicle weight (GVW).

Hauling the Machine

- Use care when loading or unloading the machine into a trailer or a truck.
- Use full-width ramps for loading the machine into a trailer or a truck.
- Tie the machine down securely.

Maintenance

⚠ WARNING

Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin and do serious damage. If fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this form of injury; otherwise gangrene may result.

Keep your body and hands away from pinhole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not your hands, to search for leaks.

- Before servicing or making any adjustments to the machine, park the machine on a level surface, engage the parking brake, shut off the engine, and remove the key to prevent accidental starting of the machine.
- Do not work under a raised bed without placing the bed safety support on the fully-extended cylinder rod.
- Ensure that all hydraulic-line connectors are tight and that all the hydraulic hoses and lines are in good condition before applying pressure to the system.
- Before disconnecting or performing any work on the hydraulic system, relieve all pressure in the system by shutting off the engine, cycling the dump valve from raise to lower, and/or lowering the box and attachments. Place the remote hydraulics lever in the float position. If the box must be in raised position, secure it with the safety support.
- To ensure that the entire machine is in good condition, keep all the nuts, bolts, and screws properly tightened.

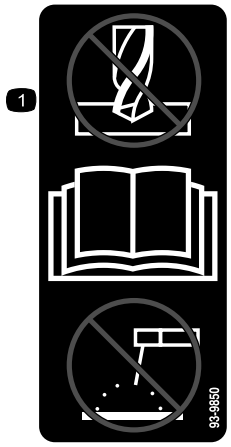
- To reduce the potential fire hazard, keep the engine area free of excessive grease, grass, leaves, and accumulation of dirt.
- If you must run the engine to perform a maintenance adjustment, keep your hands, feet, clothing, and any parts of the body away from the engine and any moving parts. Keep bystanders away from the machine.
- Do not overspeed the engine by changing the governor settings. The maximum engine speed is 3,650 rpm. To ensure safety and accuracy, have an Authorized Toro Distributor to check the maximum engine speed with a tachometer.
- If major repairs are ever necessary or assistance is required, contact an Authorized Toro Distributor.
- To ensure optimum performance and safety, always purchase genuine Toro replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous. Altering this machine in any manner may affect the operation of the machine, performance, durability, or its use may result in injury or death. Such use could void the product warranty of The Toro® Company.

Rollover Protection System (ROPS) Safety

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

Safety and Instructional Decals

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



decal93-9850

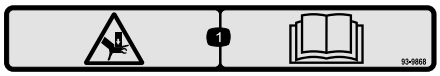
93-9850

1. Do not repair or revise—read the *Operator's Manual.*

decal93-9852

93-9852

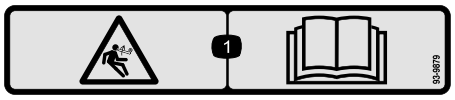
1. Warning—read the *Operator's Manual.*
2. Crushing hazard—install the cylinder lock.



decal93-9868

93–9868

1. Crushing hazard of hand—read the *Operator's Manual*.



decal93-9879

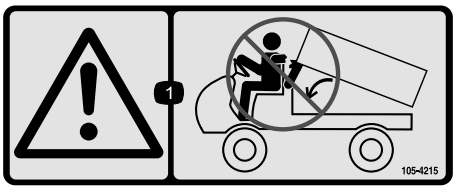
93-9879

1. Stored energy hazard—read the *Operator's Manual.*

decal93-9899

93-9899

1. Crushing hazard—install the cylinder lock.



decal105-4215

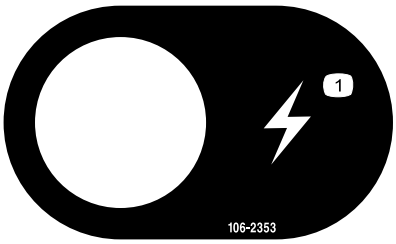
105-4215

1. Warning—avoid pinch points.

decal105-7977

105–7977

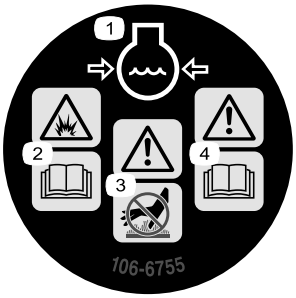
1. Tank
2. Pressure



decal106-2353

106-2353

1. Electrical power point



decal106-6755

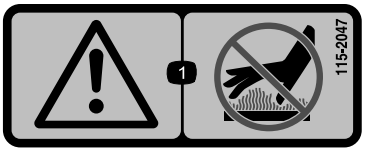
106-6755

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

decal106-7767

106-7767

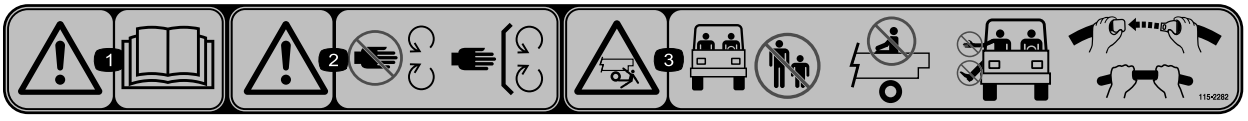
1. Warning—read the *Operator's Manual*; avoid tipping the machine; wear the seat belt; lean away from the direction the machine is tipping.



decal115-2047

115-2047

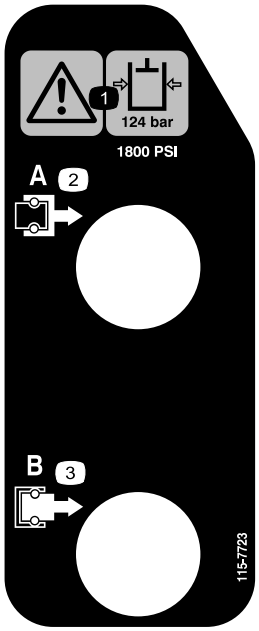
1. Warning—do not touch the hot surface.



decal115-2282

115-2282

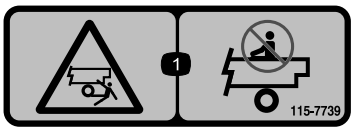
1. Warning—read the *Operator's Manual.*
2. Warning—stay away from moving parts, keep all guards and shields in place.
3. Crushing/dismemberment hazard of bystanders—keep bystanders a safe distance away from the machine, do not carry passengers in the cargo bed, keep arms and legs inside of the machine at all times, and use seat belts and handholds.



decal115-7723

115-7723

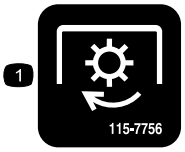
1. Warning—the hydraulic-fluid pressure is 124 bar (1,800 psi).
2. Coupler A
3. Coupler B



decal115-7739

115-7739

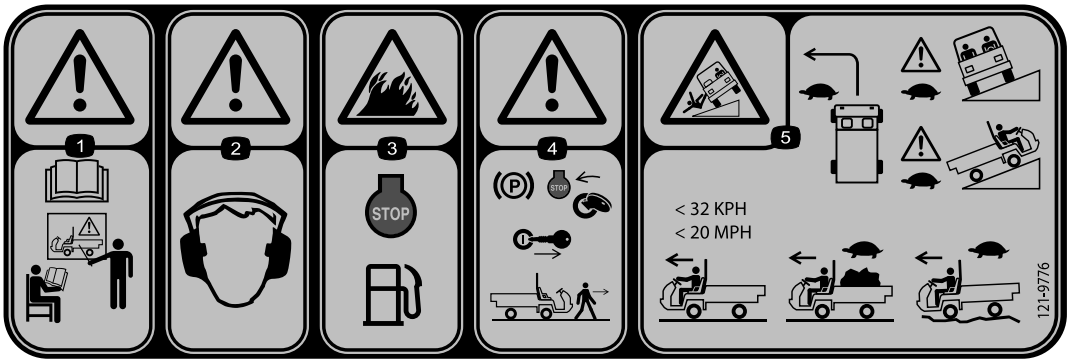
1. Falling, crushing hazard, bystanders—no riders on machine



decal115-7756

115-7756

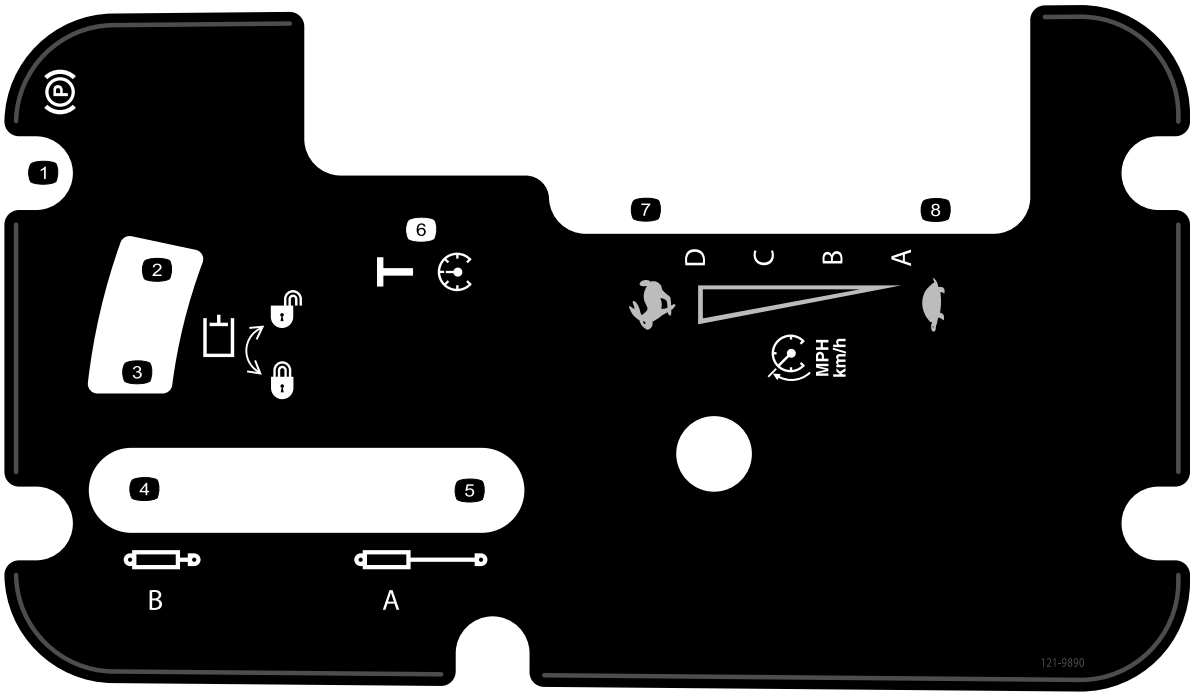
1. High-flow hydraulics—engaged



decal121-9776

121-9776

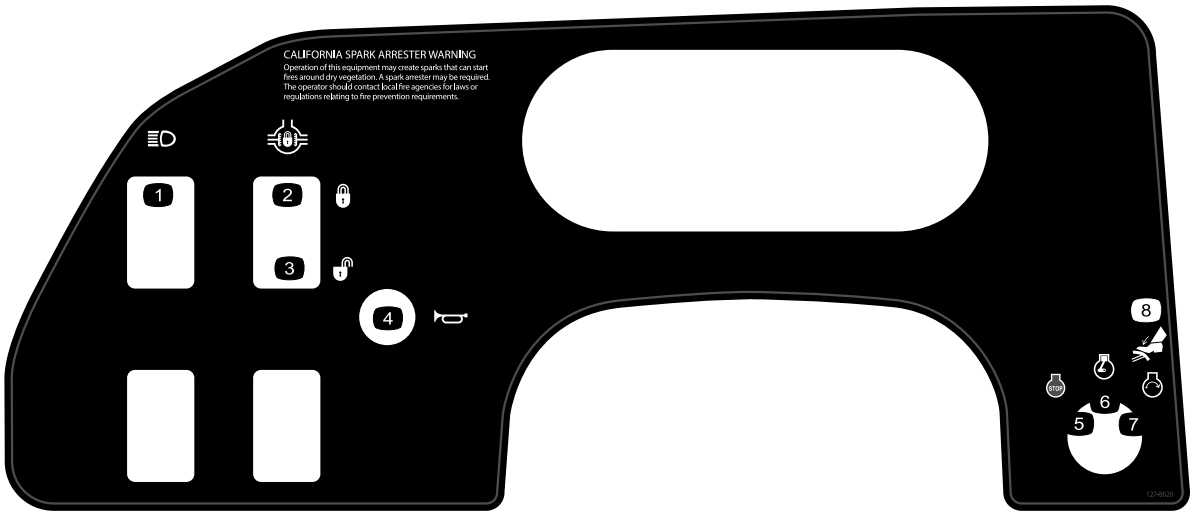
1. Warning—read the *Operator's Manual* and receive proper training before operating the machine.
2. Warning—wear hearing protection.
3. Fire hazard—shut off the engine before refueling the machine.
4. Warning—engage the parking brake, shut off the engine, and remove the key from the key switch before walking away from the machine.
5. Tipping hazard—take turns slowly; drive slowly up and across cliffs; with no load, do not exceed 32 kph (20 mph); while carrying a load or when driving on uneven terrain, drive slowly.



decal121-9890

121-9890

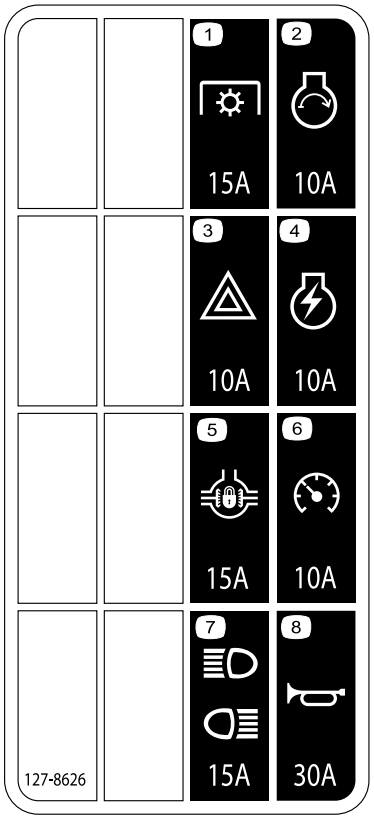
1. Parking brake
2. Hydraulic system—unlock
3. Hydraulic system—lock
4. Cylinder retract
5. Cylinder extend
6. Transport
7. Fast
8. Slow



decal127-8620

127-8620

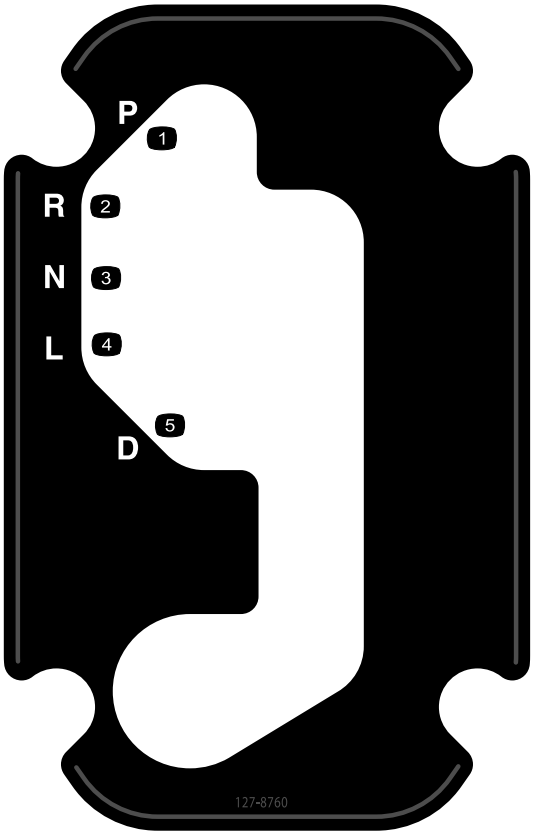
1. Head lights
2. Differential lock—lock
3. Differential lock—unlock
4. Horn
5. Engine—shut off
6. Engine—run
7. Engine—start
8. Brake



decal127-8626a

127-8626

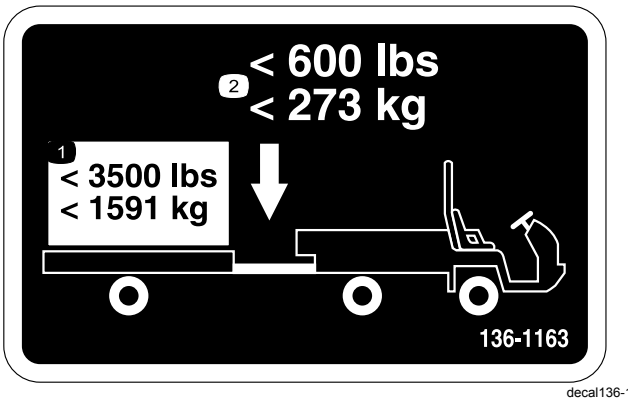
1. Power takeoff (15 A)
2. Start engine (10 A)
3. Hazard lights (10 A)
4. Engine ignition (10 A)
5. Differential lock (15 A)
6. Speedometer (10 A)
7. Headlights and rear lights (15 A)
8. Horn (30 A)



decal127-8760

127–8760

1. Park
2. Reverse
3. Neutral
4. Low gear
5. Drive



decal136-1163

136-1163

1. Do not exceed a transport load of 1591 kg (3,500 lb).
2. Do not exceed a towing weight of 273 kg (600 lb).

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Steering wheel Cover Washer (5/8 inch)	1 1 1	Install the steering wheel (TC and H models only).
2	No parts required	–	Connect the battery (TC and H models only).
3	No parts required	–	Check the fluid levels and tire pressure.
4	ROPS frame Flange-head bolt (1/2 x 1-1/4 inches)	1 6	Mount the Rollover Protection System (ROPS).
5	No parts required	–	Connect the continuously-variable transmission intake duct.
6	No parts required	–	Burnish (break-in) the brakes.

Media and Additional Parts

Description	Qty.	Use
Operator's Manual	1	Read before operating the machine.
Operator Training Material	1	View before operating the machine.
CVT Kit 121-9853	1	Connect the CVT Intake Duct (TC and H Models Only)
CVT Adapter 127-8750	1	Connect the CVT Intake Duct (TC and H Models Only)

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

1

Installing the Steering Wheel

TC and H Models Only

Parts needed for this procedure:

1	Steering wheel
1	Cover
1	Washer (5/8 inch)

Procedure

1. If the cover is installed, remove it from the hub of the steering wheel (Figure 3).
2. Remove the nut from the steering shaft (Figure 3).
3. Slide the steering wheel and washer onto the steering shaft (Figure 3).
4. Secure the steering wheel to the shaft with the nut and tighten it to 27 to 34 N·m (20 to 25 ft-lb).
5. Install the cover on the steering wheel (Figure 3).

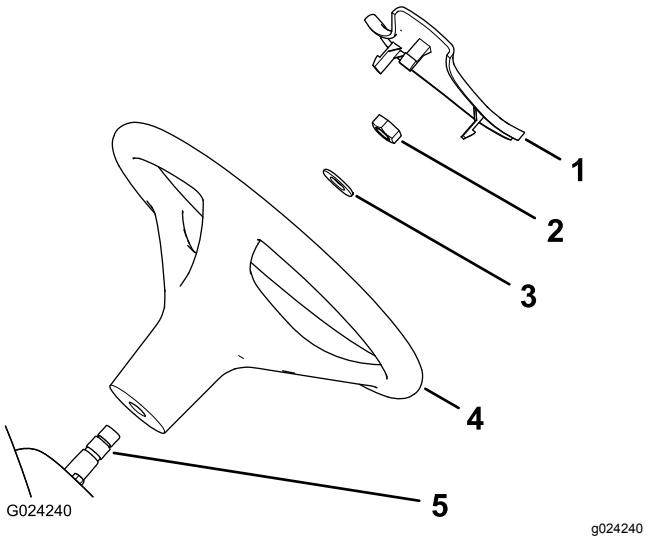


Figure 3

1. Cover
2. Nut
3. Washer (5/8 inch)
4. Steering wheel
5. Steering shaft

2

Connecting the Battery

TC and H Models Only

No Parts Required

Procedure

⚠ WARNING

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

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

1. Squeeze the battery cover to release the tabs from the battery base (Figure 4).

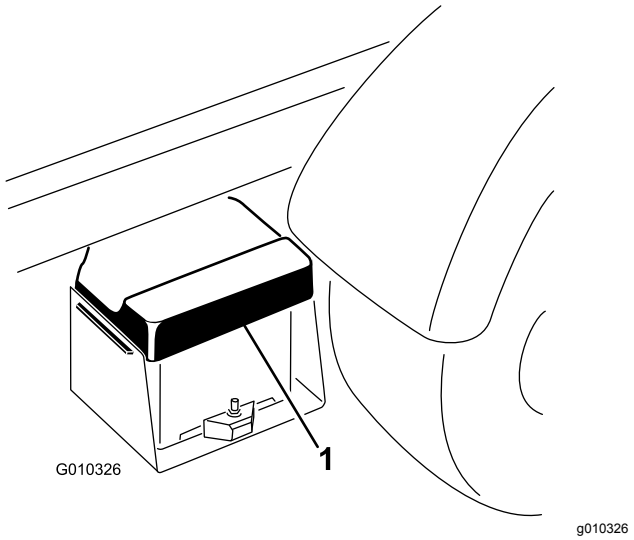


Figure 4

1. Battery cover

2. Remove the battery cover from the battery base (Figure 4).
3. Connect the positive battery cable (red) to the positive (+) terminal of the battery and secure the cable with the bolts and nuts (Figure 5).

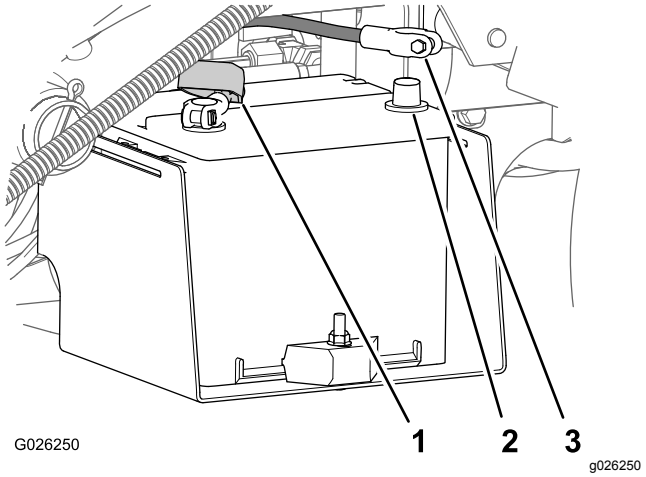


Figure 5

1. Insulator boot (positive battery cable)
2. Negative battery post
3. Negative battery cable (black)

4. Slide the insulator boot over the positive terminal.

   Note: The insulator boot prevents a possible short-to-ground from occurring.
5. Connect the negative battery cable (black) to the negative (–) terminal of the battery and secure the cable with bolts and nuts.
6. Align the battery cover to the battery base (Figure 4).
7. Squeeze the battery cover, align the tabs to the battery base, and release the battery cover (Figure 4).

3

Checking the Fluid Levels and Tire Pressure

No Parts Required

Procedure

1. Check the engine-oil level before and after you first start the engine; refer to Checking the Engine-Oil Level (page 25).
2. Check the transmission-fluid level before you first start the engine; refer to Checking the Transmission-Fluid Level (page 53).
3. Check the engine-coolant level before you first start the engine; refer to Checking the Engine-Coolant Level (page 27).
4. Check the brake-fluid level before you first start the engine; refer to Checking the Brake-Fluid Level (page 28).
5. Check the air pressure in the tires; refer to Checking the Tire Pressure (page 31).

4

Installing the Rollover Protection System (ROPS)

Parts needed for this procedure:

1	ROPS frame
6	Flange-head bolt (1/2 x 1-1/4 inches)

Procedure

1. Apply medium-grade (service-removable) thread-locking compound to the threads of the 6 flange-head bolts (1/2 x 1-1/4 inches).
2. Align each side of the ROPS with the mounting holes on each side of the machine frame (Figure 6).

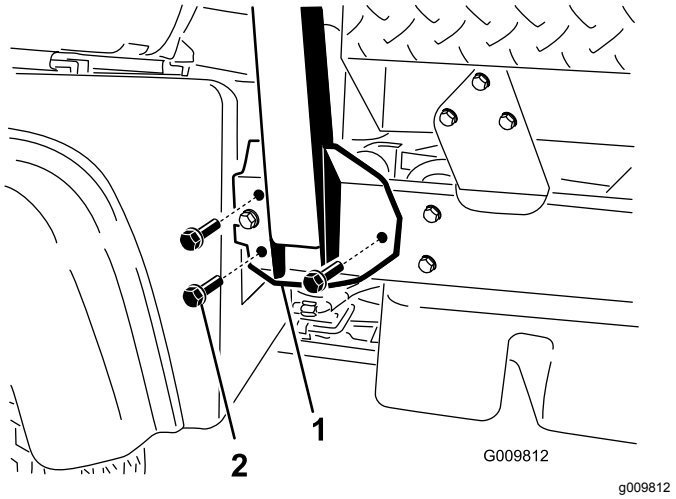


Figure 6

1. ROPS mounting bracket
2. Flange-head bolt (1/2 x 1-1/4 inches)

3. Secure the ROPS mounting bracket to the machine frame using 3 flange-head bolts (1/2 x 1-1/4 inches) on each side (Figure 6).
4. Torque the flange-head bolts (1/2 x 1-1/4 inches) to 115 N·m (85 ft-lb).

5

Connecting the CVT-Intake Duct

No Parts Required

Procedure

Important: **Remove the plastic bag covering the end of the CVT duct before starting the engine.**

The CVT Kit (Part No. 121-9853) and Adapter Kit (Part No. 127-8750) are required for this procedure.

1. Loosen the hose clamp securing the plastic bag at the end of the CVT-intake hose and remove the bag.
2. Raise the cargo bed by performing the following:
   A. Engage the parking brake.
   B. Start the engine.
   C. Move the hydraulic-lift lever rearward to raise the cargo box.
   D. Shut off the engine.
   E. Remove the bed support from the storage brackets on the back of the ROPS panel and install the support onto the cylinder rod of the bed-lift cylinder; refer to Using the Bed Support (page 40).
3. Align the CVT-intake hose onto the intake-tube connector at the back side of the ROPS panel and tighten the hose clamp (Figure 7).

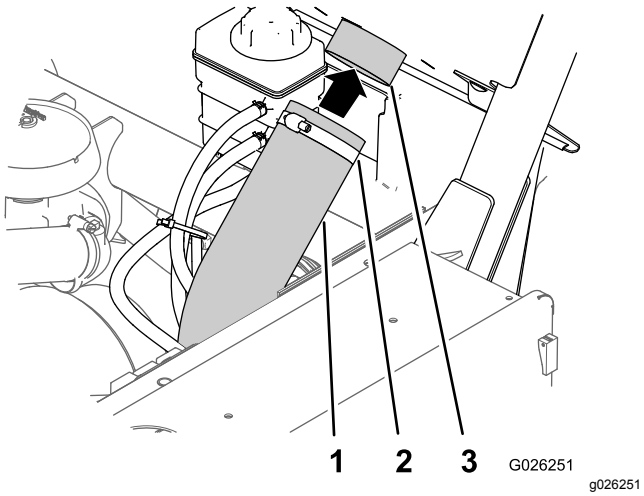


Figure 7

1. CVT-intake hose
2. Hose clamp
3. Intake-tube connector
4. Remove the bed support, lower the bed, shut off the engine, and remove the key.

6

Burnishing the Brakes

No Parts Required

Procedure

To ensure optimum performance of the brake system, burnish (break-in) the brakes before use.

1. Bring the machine up to full speed, apply the brakes to rapidly stop the machine without locking up the tires.
2. Repeat this procedure 10 times, waiting 1 minute between stops, to avoid overheating the brakes.

   Important: **This procedure is most effective if the machine is loaded with 454 kg (1,000 lb).**

Product Overview

Controls

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

Accelerator Pedal

Use the accelerator pedal (Figure 8) to vary the ground speed of the machine when the transmission is in gear. Pressing down the accelerator pedal increases the engine speed and ground speed. Releasing the pedal decreases the engine speed and ground speed.

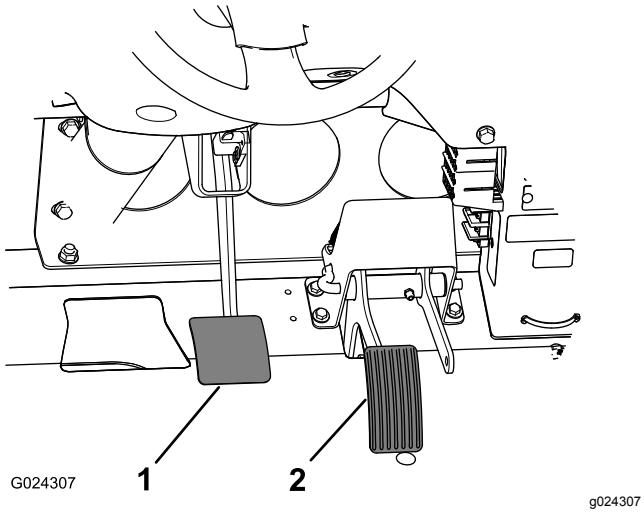


Figure 8

1. Brake pedal
2. Accelerator pedal

Brake Pedal

Use the brake pedal to stop or slow the machine (Figure 8).

⚠ CAUTION

Operating a machine with worn or incorrectly adjusted brakes can may result in personal injury.

If the brake pedal travels to within 25 mm (1 inch) of the machine floor board, adjust or repair the brakes.

Transmission Lever

Use the transmission lever (Figure 9) to shift the transmission between **P** (PARK), **R** (REVERSE), **N** (NEUTRAL), **L** (LOW FORWARD), and **D** (DRIVE) ground operation.

Important: **Do not shift the transmission to the REVERSE, LOW, or DRIVE gear unless the machine is motionless and the engine is at low idle; otherwise, you could damage the transmission.**

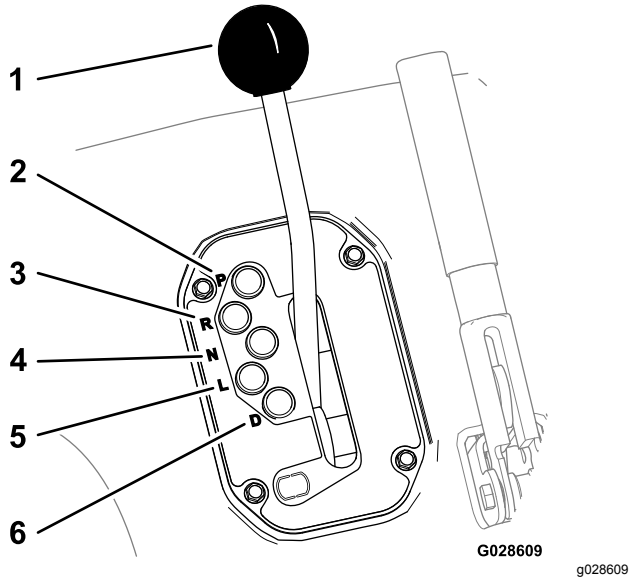


Figure 9

1. Transmission lever
2. **P** (park)
3. **R** (reverse)
4. **N** (neutral)
5. **L** (low forward)
6. **D** (drive)

Parking-Brake Lever

Whenever you shut off the engine, engage the parking brake (Figure 10) to prevent the machine from accidentally moving. If the machine is parked on a steep grade, ensure that you engage the parking brake.

- To engage the parking brake, pull back on the parking-brake lever.
- To disengage the parking brake, push the parking-brake lever forward.

  Note: Disengage the parking brake before moving the machine.
- If you park the machine on a steep uphill or downhill grade, shift the transmission into **P** (PARK) and engage the parking brake. Place chocks at the downhill side of the wheels.

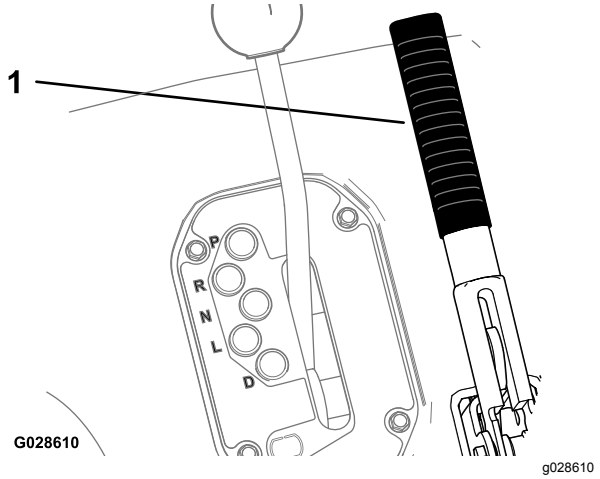


Figure 10

1. Parking-brake lever

Hydraulic-Lift Lever

The hydraulic lift raises and lowers the bed. Move the hydraulic-lift lever rearward to raise the bed, and forward to lower it (Figure 11).

Important: **When lowering the bed, hold the lever in the forward position for 1 to 2 seconds after the bed contacts the frame to secure it in the lowered position. Do not hold the hydraulic lift in the raise or lower position for more than 5 seconds, once the cylinders reach the end of their travel.**

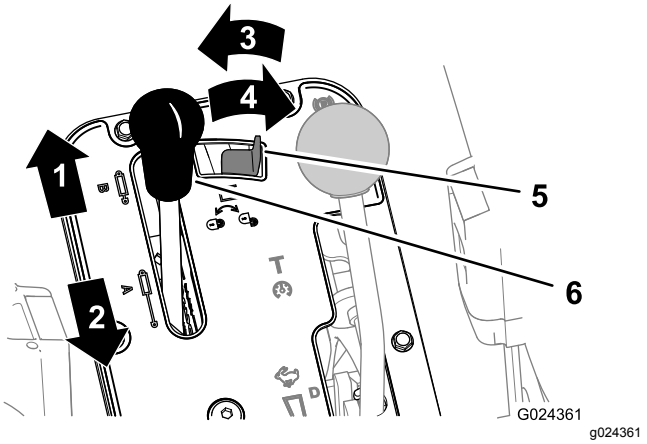


Figure 11

1. Lower the bed
2. Raise the bed
3. Locked
4. Unlocked
5. Hydraulic-lift lock
6. Hydraulic-lift lever

Hydraulic-Lift Lock

The hydraulic-lift lock secures the lift lever, so that the hydraulic cylinders do not operate when the machine is not equipped with a bed (Figure 11). It also locks the lift lever in the ON position when using the hydraulics for attachments.

Speed-Range Lever

Use the speed-range lever (Figure 12) to select 1 of the 4 work-speed ranges for precise control of the maximum ground speed or a transport speed range for moving the machine between job sites.

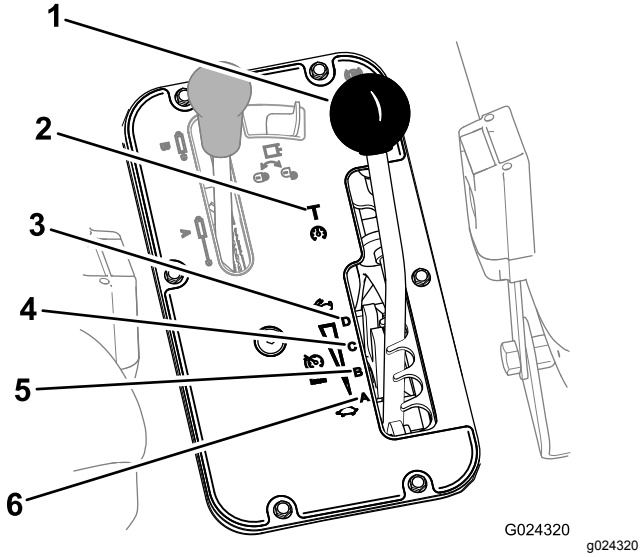


Figure 12

1. Speed-range lever
2. **T** (transport range)
3. **D** (high range)
4. **C** (mid-high range)
5. **B** (mid-low range)
6. **A** (low range)

Control Panel

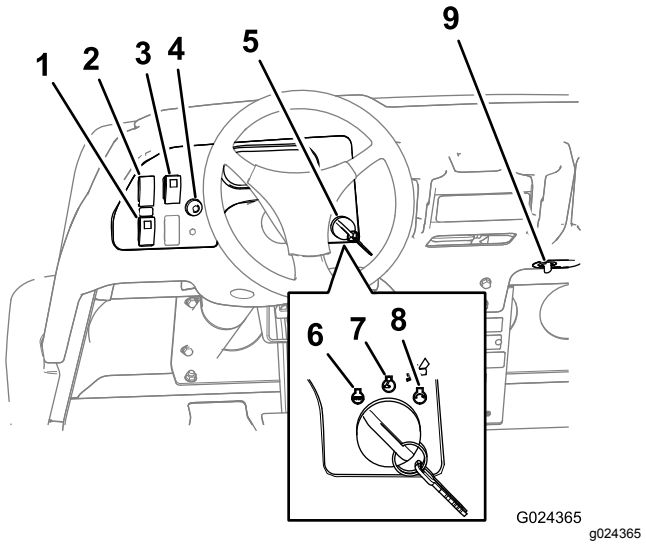


Figure 13

1. High-flow hydraulics switch (TC models only)
2. Light switch
3. Differential switch
4. Horn button (TC models only)
5. Key switch
6. Off
7. On
8. Start
9. Power point

High-Flow Hydraulics Switch

TC Models Only

Push the switch down to start the high-flow hydraulics and push the switch up to shut off the hydraulics (Figure 13).

Note: You must set the high-flow hydraulics switch to the OFF position to start the engine.

Light Switch

Push the light switch (Figure 13) to toggle the headlights on or off.

Differential-Lock Switch

The differential-lock switch allows you to lock the rear axle for increased traction. Push the differential-lock switch (Figure 13) to toggle the differential lock on or off.

Note: You may lock and unlock the differential while the machine is in motion.

Horn Button

International Models Only

The horn button is located on the control panel (Figure 13). Press the horn button to sound the horn.

Key Switch

Use the key switch (Figure 13) to start and shut off the engine. To shut off the engine, rotate the key switch counterclockwise to the OFF position.

The key switch has 3 positions: OFF, RUN, and START. Rotate the key switch clockwise to the START position to engage the starter motor. Release the key switch when the engine starts. The key switch moves automatically to the ON position.

Power Point

Use the power point (Figure 13) to power optional 12 V electrical accessories.

Instrument Cluster

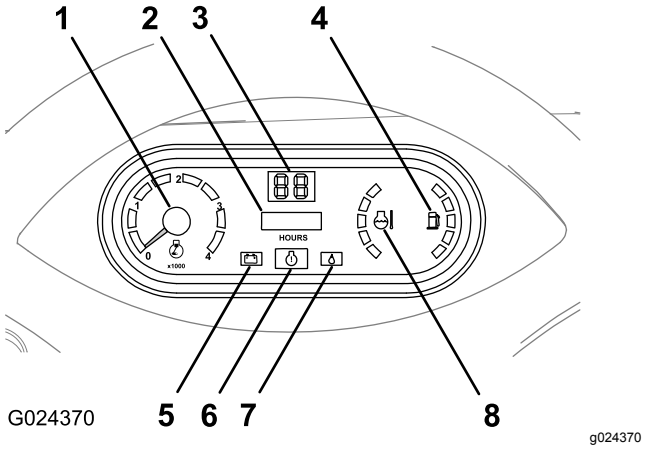


Figure 14

1. Tachometer
2. Hour meter
3. Speedometer
4. Fuel gauge
5. Charge-indicator light
6. Check-engine light
7. Low-oil pressure light
8. Coolant-temperature gauge

Tachometer

The tachometer displays the speed of the engine (Figure 14).

Note: The white triangle indicates the desired engine speed for 540 rpm PTO operation.

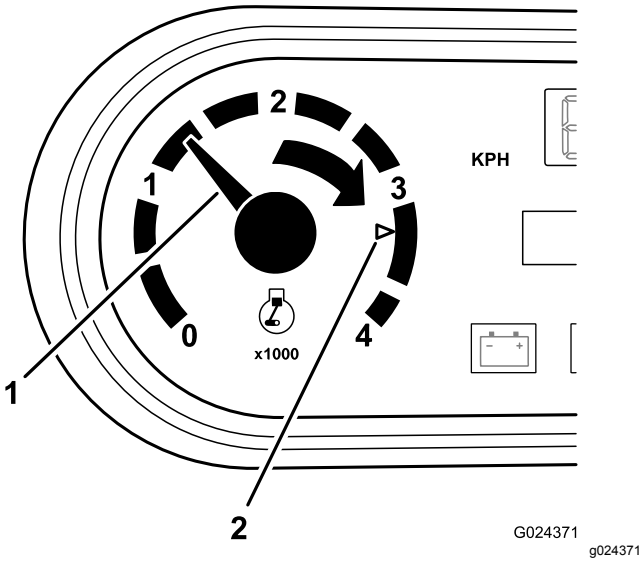


Figure 15

1. Engine speed (rpm)
2. 3,300 rpm for 540 rpm PTO operation

Hour Meter

The hour meter indicates the total hours of machine operation. The hour meter (Figure 14) starts to function whenever you rotate the key switch to the ON position or if the engine is running.

Speedometer

The speedometer registers the ground speed of the machine (Figure 14). The speedometer is in mph, but you can easily convert it to km/h; refer to Converting the Speedometer (page 60).

Check-Engine Light

The check-engine light (Figure 14) illuminates to notify the operator of an engine malfunction.

Contact your authorized Toro distributor.

Oil-Pressure-Warning Light

The oil-pressure-warning light (Figure 14) illuminates if the engine-oil pressure drops below a safe level while the engine is running.

Important: **If the light flickers or remains on, stop the machine, shut off the engine, and check the oil level. If the oil level is low, but adding oil does not cause the light to go out when the engine is started, shut off the engine immediately, and contact your Authorized Toro Service Dealer for assistance.**

Check the operation of the warning lights as follows:

1. Engage the parking brake.
2. Turn the key switch to the ON/PREHEAT position, but do not start the engine.

Note: The oil-pressure light should glow red. If the light does not function, either a bulb is burned out or there is a malfunction in the system which must be repaired.

Note: If engine was just turned off, it may take 1 to 2 minutes for the light to come on.

Coolant-Temperature Gauge and Light

The coolant-temperature gauge and light registers the coolant temperature in the engine and operates only when the key switch is in ON position (Figure 14). The indicator light blinks red if the engine overheats.

Fuel Gauge

The fuel gauge shows the amount of fuel in the tank. It displays only when key switch is in the ON position (Figure 14). The red segment of the display indicates a low-fuel level and the flashing red light indicates that the fuel in the tank is near empty.

Passenger Handhold

The passenger handhold is located on the dashboard (Figure 16).

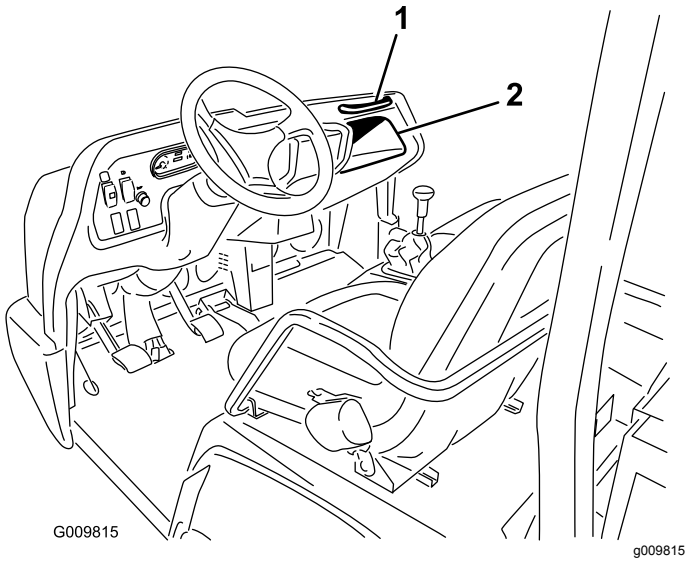


Figure 16

1. Passenger handhold
2. Storage compartment

Seat-Adjustment Lever

You can adjust the seat forward and rearward for your comfort (Figure 17).

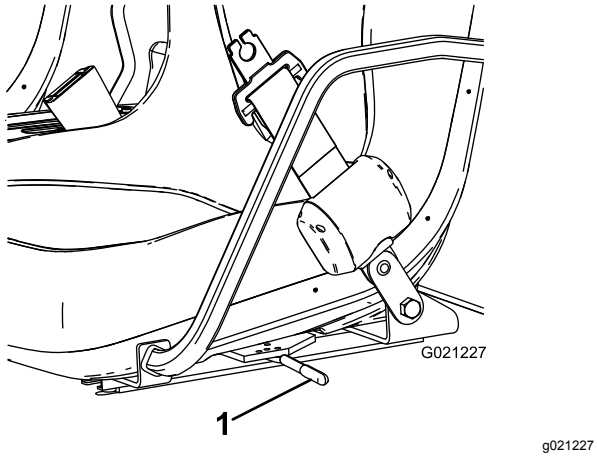


Figure 17

1. Seat-adjustment lever

Specifications

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

Overall width	160 cm (63 inches)
Overall length	Without bed: 326 cm (128 inches) With full bed: 331 cm (130 inches) With 2/3 bed in rear-mounting location: 346 cm (136 inches)
Base weight (dry)	Model 07385: 887 kg (1,956 lb) Model 07385H: 887 kg (1,956 lb) Model 07385TC: 924 kg (2,037 lb) Model 07387: 914 kg (2,015 lb) Model 07387H: 914 kg (2,015 lb) Model 07387TC: 951 kg (2,096 lb)
Rated capacity (includes 91 kg (200 lb) operator, 91 kg (200 lb) passenger, and loaded attachment)	Model 07385: 1471 kg (3,244 lb) Model 07385TC: 1435 kg (3,163 lb) Model 07387: 1445 kg (3,185 lb) Model 07387TC: 1408 kg (3,104 lb)
Maximum gross vehicle weight (GVW)	2359 kg (5,200 lb)
Tow capacity	Tongue weight: 272 kg (600 lb) Maximum trailer weight: 1587 kg (3,500 lb)
Ground clearance	18 cm (7 inches) with no load
Wheel base	118 cm (70 inches)
Wheel tread (center line to center line)	Front: 117 cm (46 inches) Rear: 121 cm (48 inches)
Height	191 cm (75 inches) to the top of the roll bar

Attachments/Accessories

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

Operation

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

⚠ CAUTION

A raised bed full of material without the proper safety support may lower unexpectedly. Working under an unsupported raised bed may cause injury to you or others.

- **Before servicing or making adjustments to the machine, shut off the engine, engage the parking brake, and remove the key from the key switch.**
- **Remove any load material from the bed or other attachment and insert the safety support on a fully extended cylinder rod before working under a raised bed.**

Operating the Cargo Box

Note: If possible, center loads in the cargo box.

Note: Remove all cargo from the box before lifting the box up to service the machine.

Raising the Cargo Box

⚠ WARNING

Driving the machine with the cargo box raised may cause the machine to tip or roll easier. The box structure may become damaged if you operate the machine with the box raised.

- **Operate the machine only when the cargo box is down.**
- **After emptying the cargo box, lower it.**

Move the lever rearward to raise the cargo box (Figure 18).

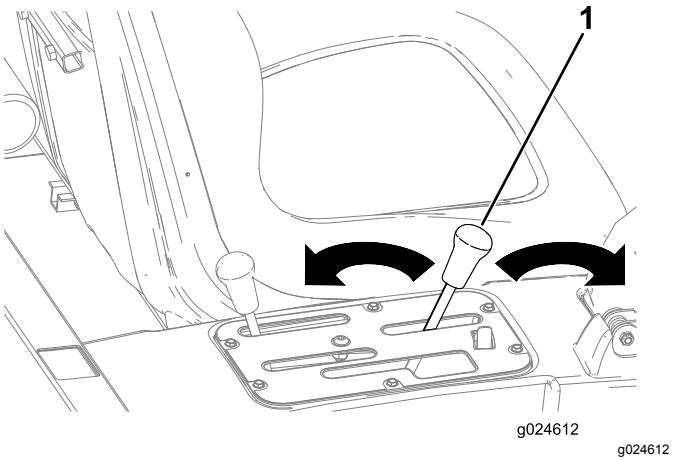


Figure 18

1. Cargo-box lever

Lowering the Cargo Box

⚠ WARNING

The weight of the box may be heavy. Hands or other body parts could be crushed.

Keep your hands and other body parts away when lowering the box.

Move the lever forward to lower the cargo box (Figure 18).

Opening the Tailgate

1. Ensure that the cargo box is lowered completely.
2. Open the latches on the left and right side of the cargo box and lower the tailgate (Figure 19).

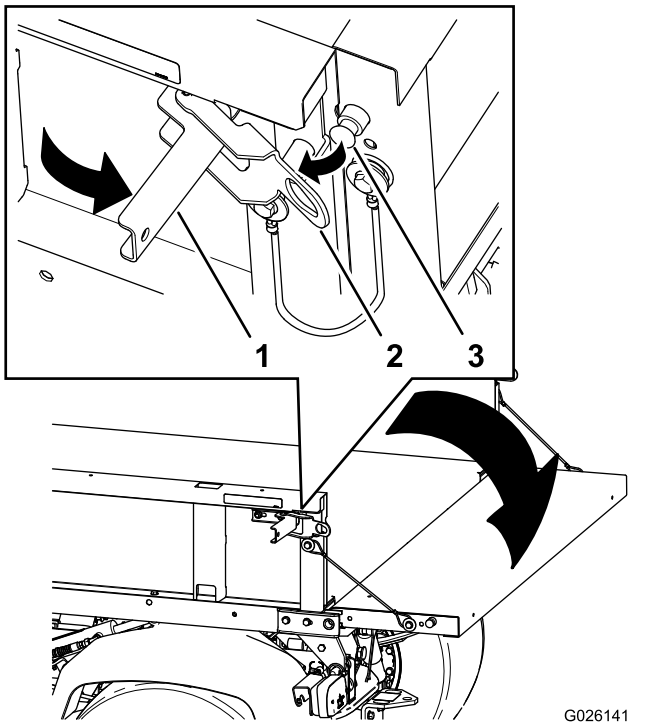


Figure 19

1. Latch handle
2. Latch gate
3. Latch pin

Checking the Fluid Levels

Preparing to Check the Fluid Levels

1. Move the machine to a level surface.
2. Shift the transmission to the PARK position, shut off the engine, engage the parking brake, and remove the key from the key switch.
3. Allow the machine to cool before you check the fluid levels of the machine.
4. Check the following:
   - Checking the Engine-Oil Level (page 25)
   - Checking the Hydraulic-Fluid Level (page 26)
   - Checking the Engine-Coolant Level (page 27)
   - Checking the Brake-Fluid Level (page 28)

Checking the Engine-Oil Level

Service Interval: Before each use or daily—Check the engine-oil level. (Check the oil level before and after the engine is first started and daily thereafter.)

Oil Type: 10W-30 API SJ or higher.

Refer to the table in Figure 20 for oil viscosity according to ambient-air temperature.

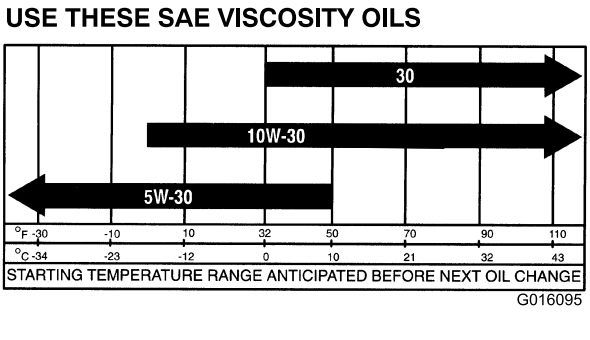


Figure 20

Note: The engine is shipped with approximately 2.0 L (2.1 US qt) of oil in the crankcase (including the oil filter).

Note: The best time to check the engine oil is when the engine is cool before it has been started for the day. If the engine has already ran, shut it off and wait for at least 10 minutes before checking the oil level.

1. Remove the dipstick and wipe it with a clean rag (Figure 21).

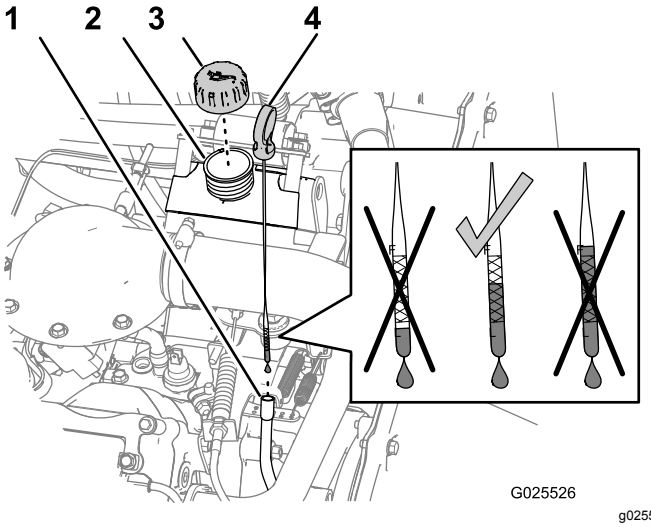


Figure 21

1. Dipstick tube
2. Filler neck
3. Filler cap
4. Dipstick

2. Insert the dipstick into the tube and make sure that it is seated fully.

3. Remove dipstick and check the level of the oil (Figure 21).
4. If the oil level is low, remove the filler cap (Figure 21) and add enough oil to raise the level to the Full mark on the dipstick.

   Note: When adding oil, remove dipstick to allow proper venting. Slowly pour the oil into the filler neck, and check the level often during this process. **Do not overfill the engine with oil.**

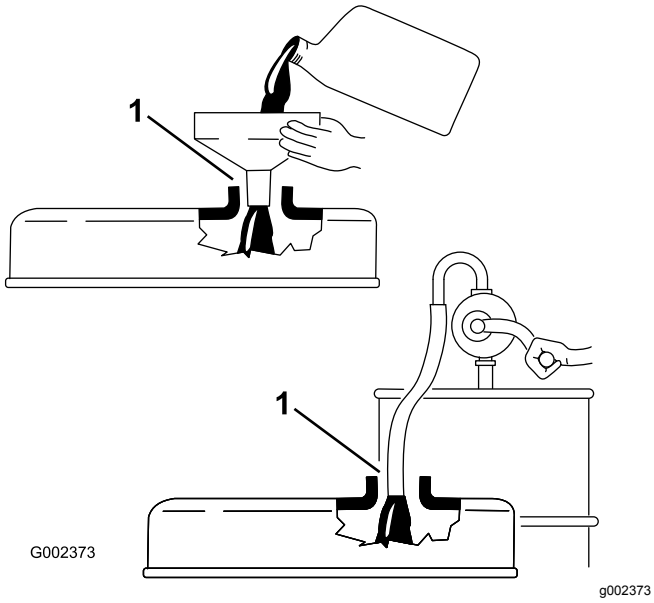


Figure 22

1. Note the clearance between the fill device and the oil-fill neck.

Important: **When adding engine oil or filling oil, there must be clearance between the oil fill device and the oil fill neck in the valve cover as shown in Figure 22. This clearance is necessary to permit venting when adding oil.**

5. Install the filler cap onto the filler neck (Figure 21).
6. Firmly install the dipstick into the dipstick tube (Figure 21).

Checking the Hydraulic-Fluid Level

Service Interval: Before each use or daily (Check the level of hydraulic fluid before the engine is first started and daily thereafter.)

Hydraulic-Fluid Type: Mobil M15

Hydraulic-Fluid Capacity: (Non-TC model): 7.5 L (2 US gallons)

Hydraulic-Fluid Capacity: (Non-TC model with the High-Flow-Hydraulic Kit (option) or TC Model): 15.1 L (4 US gallons)

⚠ WARNING

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

- **Make sure that all hydraulic fluid hoses and lines are in good condition and all hydraulic connections and fittings are tight before applying pressure to the hydraulic system.**
- **Keep your body and hands away from pinhole leaks or nozzles that eject high-pressure hydraulic fluid.**
- **Use cardboard or paper to find hydraulic leaks.**
- **Safely relieve all pressure in the hydraulic system before performing any work on the hydraulic system.**
- **Seek immediate medical attention if fluid is injected into your skin.**

1. Clean the area around the filler neck and the cap of the hydraulic reservoir (Figure 23 and Figure 24).

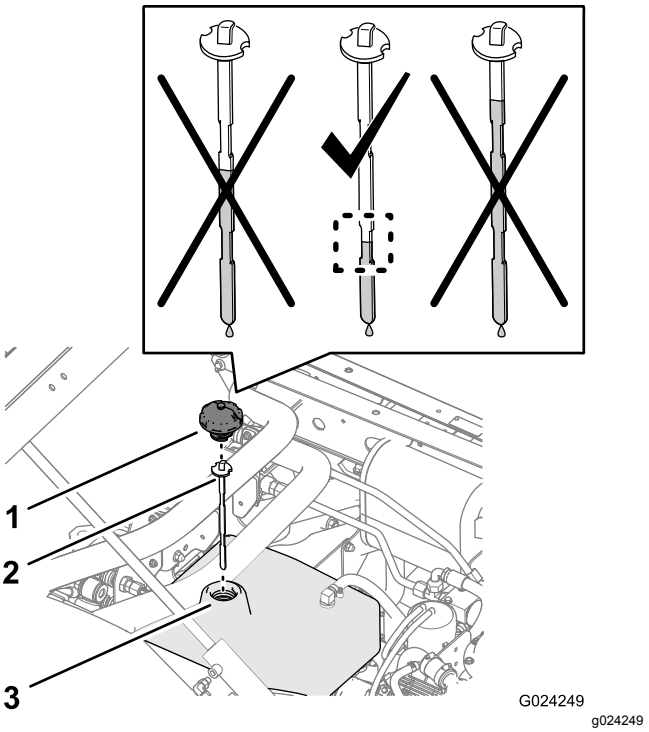


Figure 23

Hydraulic Fluid Level (Non-TC models)

1. Cap
2. Dipstick
3. Filler neck

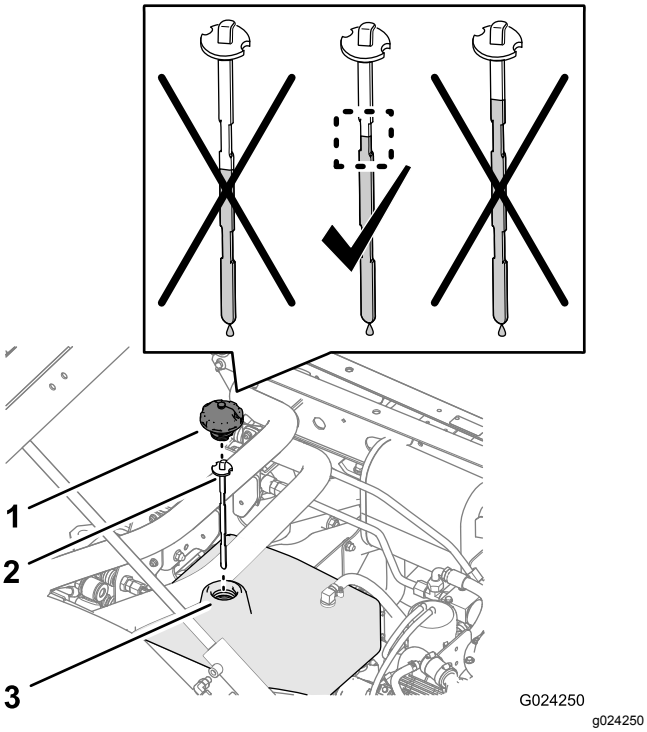


Figure 24

Hydraulic-Fluid Level (Non-TC Model with the High-Flow-Hydraulic Kit (option) or TC Model)

1. Cap 2. Dipstick 3. Filler neck

2. Remove the cap and dipstick from the filler neck of the reservoir and wipe the dipstick clean with a rag (Figure 23 and Figure 24).
3. Insert the dipstick into the filler neck; then remove it and check the fluid level (Figure 23 and Figure 24).
   - **Non-TC model:** the fluid level should be between the lower indented area on the dipstick.
   - **Non-TC model with the High-Flow-Hydraulic Kit (option) or TC model:** the fluid level should be between the upper indented area on the dipstick.
4. If the level is low, add the specified hydraulic fluid into the reservoir to raise the level to the middle of the indented area on the dipstick (Figure 23 and Figure 24).
5. Install the dipstick and cap to the filler neck of the reservoir (Figure 23 and Figure 24).

Checking the Engine-Coolant Level

Service Interval: Before each use or daily Check the Coolant level at the overflow reservoir only. Do not remove the radiator cap. (Check the coolant level before the engine is first started and daily thereafter.)

Coolant type: a 50/50 solution of water and permanent ethylene-glycol antifreeze

1. Park the machine on a level surface.

⚠ CAUTION

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

- **Do not open the radiator cap.**
- **Allow the engine to cool at least 15 minutes or until the radiator cap is cool enough to touch without burning your hand.**
- **Use a rag when opening the reserve tank cap, and open the cap slowly to allow steam to escape.**
- **Do not check the coolant level at the radiator; check the coolant level only at the reserve tank.**

2. Check the coolant level at the reserve tank (Figure 25).

   Note: The coolant should be up to the bottom of the filler neck.

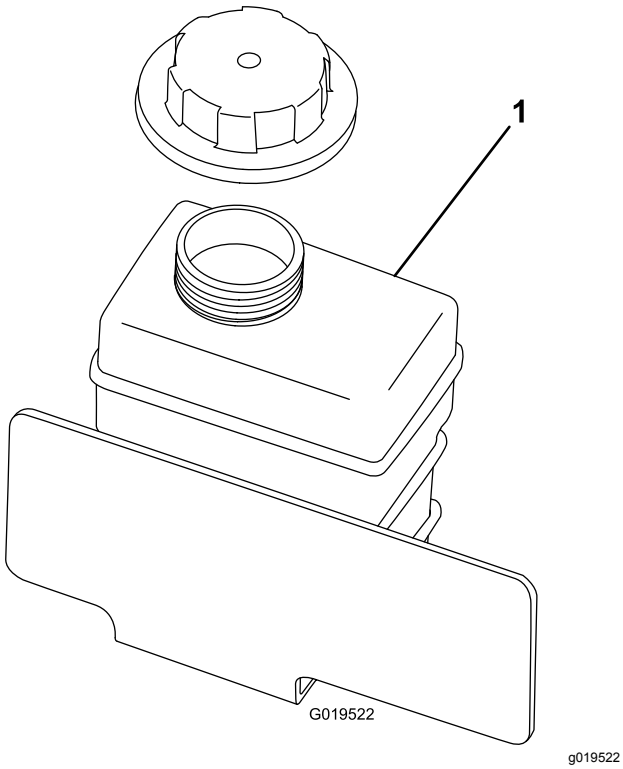


Figure 25

1. Coolant-reserve tank

3. If coolant is low, remove the reserve tank cap and add a 50/50 mixture of water and permanent ethylene-glycol antifreeze.

   Note: Do not overfill.

4. Install the reserve-tank cap.

Checking the Brake-Fluid Level

Service Interval: Before each use or daily—Check the brake-fluid level. (Check the level before the engine is first started and daily thereafter.)

Every 1,000 hours/Every 2 years (whichever comes first)—Change the brake fluid.

Brake-fluid type: DOT 3 brake fluid

Note: The brake-fluid reservoir is shipped from the factory filled with DOT 3 brake fluid.

The brake-fluid reservoir is located under the hood and below the dash.

1. Park the machine on a level surface.
2. Remove the hood.
3. Check the fluid level in the brake-fluid reservoir (Figure 26 and Figure 27).

   Note: The fluid level should be up to the Full line on the reservoir.

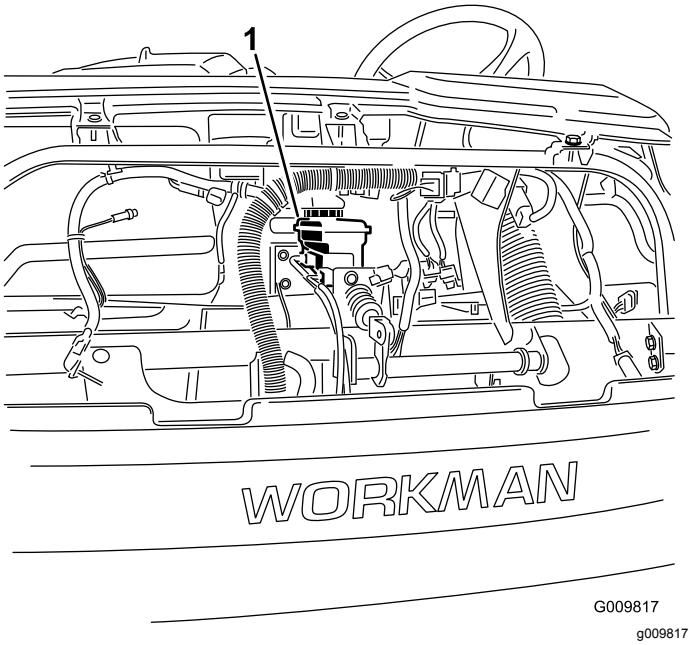


Figure 26

1. Brake-fluid reservoir

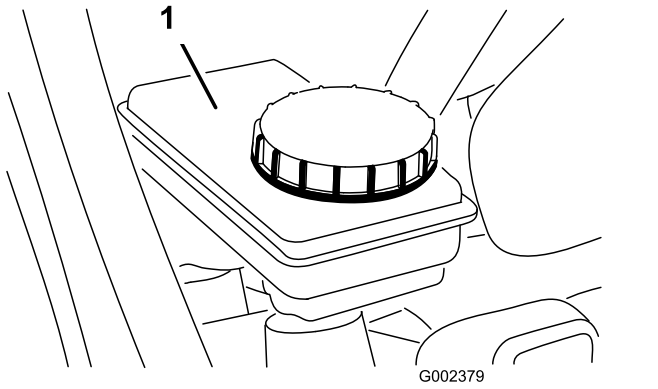


Figure 27

1. Brake-fluid reservoir

4. If the fluid level is low, perform the following:
   A. Clean the area around the cap for the reservoir (Figure 27).
   B. Remove the reservoir cap (Figure 27).
   C. Add the specified brake fluid to the Full line on the reservoir (Figure 27).

      Note: Do not overfill the brake-fluid reservoir.

   D. Install the cap (Figure 27).
5. Install the hood.

Checking the Oil-Pressure-Warning Light

Service Interval: Before each use or daily

Note: If you just shut off the engine, it may take 1 to 2 minutes for the light to come on.

1. Engage the parking brake.
2. Turn the key switch to the ON position, but do not start the engine.

   Note: The oil-pressure light should glow red.

   Note: If the light does not function, either a bulb is burned out, or there is a malfunction in the system that you must repair.

Adding Fuel

Fuel-tank capacity: 25 L (6.5 US gallons).

- For best results, use only clean, fresh (less than 30 days old), unleaded gasoline with an octane rating of 87 or higher ((R+M)/2 rating method).
- **Ethanol**: Gasoline with up to 10% ethanol (gasohol) or 15% MTBE (methyl tertiary butyl ether) by volume is acceptable. Ethanol and MTBE are not the same. Gasoline with 15% ethanol (E15) by volume is not approved for use. **Never use gasoline that contains more than 10% ethanol by volume**, such as E15 (contains 15% ethanol), E20 (contains 20% ethanol), or E85 (contains up to 85% ethanol). Using unapproved gasoline may cause performance problems and/or engine damage which may not be covered under warranty.
- **Do not** use gasoline containing methanol.
- **Do not** store fuel either in the fuel tank or fuel containers over the winter unless a fuel stabilizer is used.
- **Do not** add oil to gasoline.

⚠ DANGER

In certain conditions, fuel is extremely flammable and highly explosive. A fire or explosion from fuel can burn you and others and can damage property.

- **Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.**
- **Never fill the fuel tank inside an enclosed trailer.**
- **Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 6 to 13 mm (1/4 to 1/2 inch) below the bottom of the filler neck. This empty space in the tank allows fuel to expand.**
- **Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.**
- **Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 30-day supply of fuel.**
- **Do not operate without entire exhaust system in place and in proper working condition.**

⚠ DANGER

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

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

⚠ WARNING

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

- **Avoid prolonged breathing of vapors.**
- **Keep face away from nozzle and fuel tank or conditioner bottle opening.**
- **Avoid contact with skin; wash off any spills with soap and water.**

1. Clean the area around the fuel-tank cap (Figure 28).
2. Remove the fuel-tank cap (Figure 28).

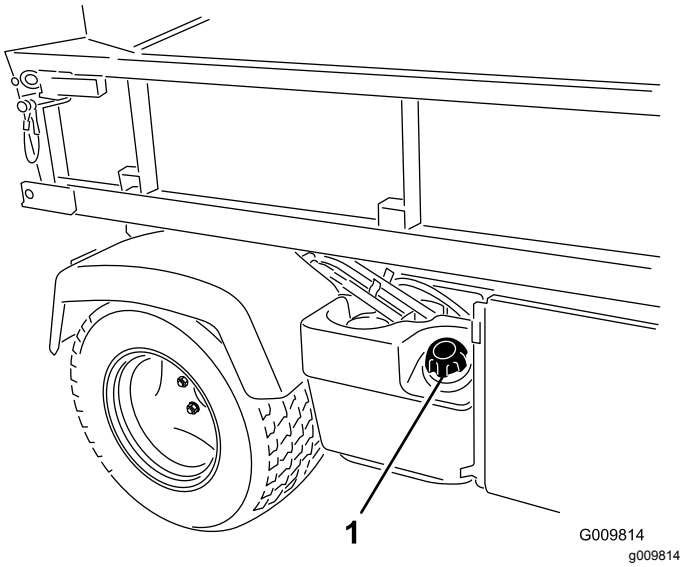


Figure 28

1. Fuel-tank cap

3. Fill the tank to about 2.54 cm (1 inch) below the top of the tank, (bottom of the filler neck), then install the cap.

   Note: Do not overfill the fuel tank with fuel.

4. Wipe up any fuel that may have spilled to prevent a fire hazard.

Checking the Tire Pressure

Service Interval: Before each use or daily

The air pressure in the front tires should be 220 kPa (32 psi) and the rear tires should be 124 kPa (18 psi).

Important: **Check the tire pressure frequently to ensure proper inflation. If the tires are not inflated to the correct pressure, the tires will wear prematurely and may cause 4-wheel drive to bind.**

Figure 29 shows an example of tire wear caused by under-inflation.

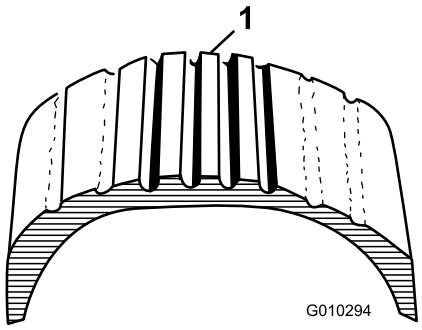


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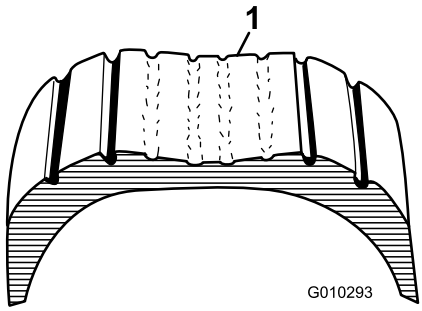
Figure 29

1. Under-inflated tire

Figure 30 shows an example of tire wear caused by over-inflation.



g010293

Figure 30

1. Over-inflated tire

Removing Debris from the Cooling System

Service Interval: Before each use or daily (Clean it more frequently in dirty conditions.)

1. Shut off the engine.
2. Clean the engine area thoroughly of all debris.
3. Unlatch and remove the radiator screen from the front of the radiator (Figure 31).

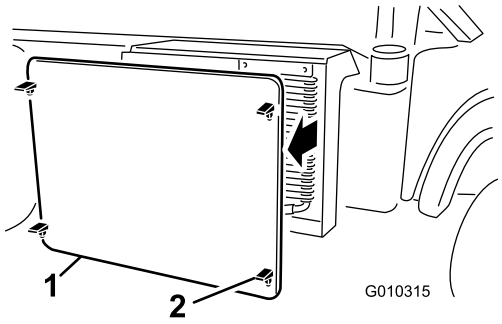


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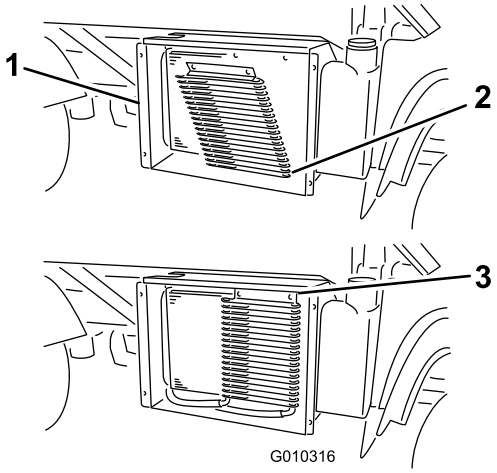
Figure 31

1. Radiator screen
2. Latch

4. If so equipped, rotate the latches and pivot the oil cooler away from the radiator (Figure 32).



g010316

Figure 32

1. Radiator housing
2. Oil cooler
3. Latches

5. Clean the radiator, oil cooler, and screen thoroughly with compressed air.

   Note: Blow debris away from the radiator.

6. Install the cooler and screen to the radiator.

Performing Pre-Start Checks

You should check these items each time before using your machine:

- Check the tire pressure.

  Note: These tires are different than car tires; they require less pressure to minimize turf compaction and damage.
- Check all fluid levels and add the appropriate amount of Toro-specified fluids, if any are found to be low.
- Check the front of the radiator. Remove any debris and clean the radiator screen.
- Check the brake-pedal operation.
- Check the oil-pressure-warning light.
- Ensure that the lights are operating properly.
- Turn the steering wheel to the left and right to check the steering response.
- Shut off the engine and wait for moving parts to stop, then check for oil leaks, loose parts, and any other noticeable malfunctions.

If any of the above items are not correct, notify your mechanic or check with your supervisor before taking the machine out for the day. Your supervisor may want you to check other items on a daily basis, so ask what your responsibilities are.

Starting the Engine

Important: **Do not attempt to push or tow the machine to get it started. Damage to the drive train could result.**

1. Sit on the operator seat and engage the parking brake.
2. Disengage the PTO and the high-flow hydraulics (if equipped) and move the hand-throttle lever to the OFF position (if equipped).
3. Move the transmission lever to the **P** (PARK) position.
4. Ensure that the hydraulic-lift lever is in the OFF position (center).
5. Press the brake pedal.

   Note: Keep your foot off the accelerator pedal.
6. Insert the key into the key switch and rotate it clockwise to start the engine.

   Note: Release the key switch when the engine starts.

   Note: The oil-pressure-warning light should turn off.

   Important: **To prevent overheating of the starter motor, do not engage starter longer than 15 seconds. After 15 seconds of continuous cranking, wait 60 seconds before engaging starter motor again.**

Driving the Machine

1. Press the brake pedal.
2. Disengage the parking brake.
3. Move the transmission lever to the desired gear.
4. Release the service brake and gradually press in the accelerator pedal.

   Important: **Always stop the machine before shifting to reverse a forward gear or to a forward gear from reverse.**

   Use the chart below to determine the ground speed of each gear when operating the machine with the speed-range control in the **T** (TRANSPORT) position.

Gear	Speed (km/h)	Speed (mph)
R (REVERSE)	0 to 21	0 to 13
L (LOW FORWARD)	0 to 18	0 to 11
D (DRIVE)	0 to 32	0 to 20

   Note: Avoid idling the engine for long periods of time.

   Note: Leaving the key switch in the ON position for long periods of time without starting the engine discharges the battery.

Stopping the Machine

To stop the machine, remove your foot from the accelerator pedal, then press the brake pedal.

Shutting Off the Engine

1. Stop the machine.
2. Move the transmission lever to the **P** (PARK) position.
3. Engage the parking brake.
4. Rotate the key switch to the OFF position and remove the key from the key switch.

Using the Speed-Range Control

Use the lever of the speed-range control to limit the maximum ground speed of the machine for operations that require a constant speed like spraying and top dressing. The speed-range lever (Figure 33) is used to select 1 of the 4 work-speed ranges that are used to limit maximum ground speed or a transport-speed range that is used when you move the machine between job sites.

Note: You must release the accelerator pedal in order to shift between speed ranges, but you do not need to stop the machine in order to shift.

- Move the speed-range lever into the detent for speed ranges A, B, C, and D when precise control of maximum-ground speed is desired.
- Move the speed-range lever to the T (TRANSPORT) position by moving the speed-range lever out of the detent for range A, B, C, or D, then forward to the T (TRANSPORT) position.

Note: Use the speed-range control to limit the maximum ground speed in each range by 4 to 18 km/h (2.5 to 11 mph) with the transmission lever in the **L** (LOW FORWARD) position or 8 to 32 km/h (5 to 20 mph) with the transmission lever in the in the **D** (DRIVE) position.

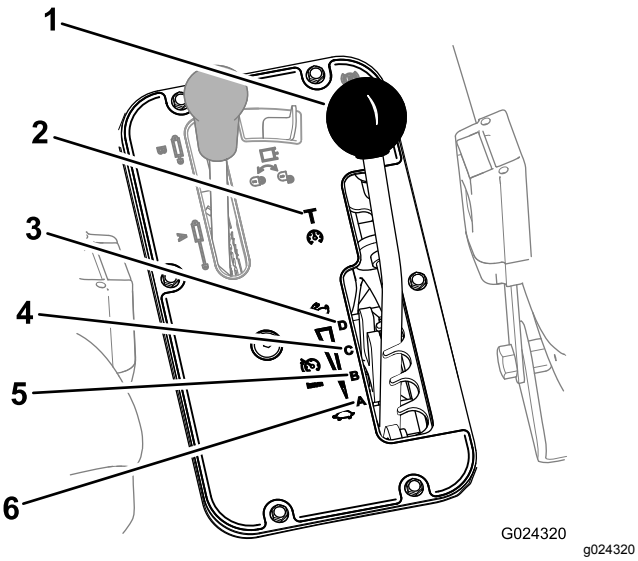


Figure 33

1. Speed-range lever
2. **T** (transport range)
3. **D** (high range)
4. **C** (mid-high range)
5. **B** (mid-low range)
6. **A** (low range)

Using the Differential Lock

⚠ WARNING

Tipping or rolling the machine on a hill can cause a serious injury.

- **The extra traction available with the differential lock can be enough to get you into dangerous situations such as climbing slopes that are too steep to turn around. Be extra careful when operating with the differential lock on, especially on steeper slopes.**
- **If the differential lock is on when making a sharp turn at a higher speed and the inside rear wheel lifts off the ground, there may be a loss of control, which could cause the machine to skid. Use the differential lock only at slower speeds.**

⚠ CAUTION

Turning with the differential lock on can result in loss of machine control. Do not operate with differential lock on when making sharp turns or at high speeds.

The differential lock increases the traction of the machine by locking the rear wheels so that a wheel does not spin out. This can help when you have heavy loads to haul, on wet turf or slippery areas, going up hills, and on sandy surfaces. It is important to remember that this extra traction is only for temporary, limited use. Its use does not replace the safe operation already discussed concerning steep hills and heavy loads.

The differential lock causes the rear wheels to spin at the same speed. When using the differential lock, your ability to make sharp turns is somewhat restricted and may scuff the turf. Use the differential lock only when needed and at slower speeds.

Note: Machine motion plus a slight turn is required to engage or disengage differential lock.

- Press the differential-lock switch up to lock the differential (Figure 34).

  Note: The light in the differential-lock switch illuminates when the switch is in the lock position.
- Press the differential-lock switch up to unlock the differential (Figure 34).

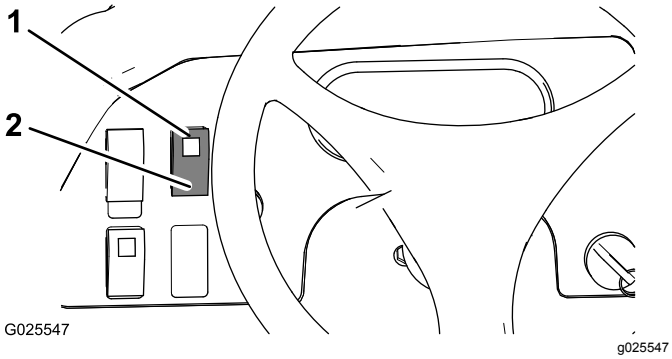


Figure 34

1. Lock position (differential-lock switch)
2. Unlock position (differential-lock switch)

Breaking in a New Machine

- Ensure that the brakes are burnished; refer to 6 Burnishing the Brakes (page 17).
- Check the fluid and engine-oil levels regularly and be alert for indications of overheating in any component of the machine.
- After starting a cold engine, let it warm up for about 15 seconds before shifting into gear.

  Note: Allow more time to warm up the engine when operating in cold temperatures.
- Avoid racing the engine.
- Vary machine speeds during operation. Avoid excessive idling. Avoid fast starts and quick stops.
- Refer to Maintenance (page 38) for any special, low-hour checks.

Checking the Safety-Interlock System

Service Interval: Before each use or daily

The purpose of the safety-interlock system is to prevent the engine from cranking or starting unless the brake pedal is pressed and the hydraulic-lift lever is in the NEUTRAL position.

⚠ CAUTION

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

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

Note: Refer to the *Attachment Operator's Manual* for procedures on checking the attachment-interlock system.

Verifying the Hydraulic-Lift Lever Safety-Interlock Switch

1. Sit on the operator's seat and engage the parking brake.
2. Move the shift lever to the NEUTRAL position and ensure that the hydraulic-lift lever is in the center position.
3. If you have a non-TC model with the High-Flow-Hydraulic Kit (option) or TC model, set the high-flow-hydraulic switch to the OFF position.
4. Press brake pedal.
5. Move the hydraulic-lift lever forward and rotate the key switch clockwise to the START position.

   Note: If the engine cranks or starts, there is a malfunction in the safety-interlock system that you must repair before operating the machine.

Verifying the Brake Pedal Safety-Interlock Switch

1. Sit on the operator's seat and engage the parking brake.
2. Move the shift lever to the NEUTRAL position and ensure that the hydraulic-lift lever is in the center position.
3. If you have a non-TC model with the High-Flow Hydraulic Kit (option) or TC model, set the high-flow-hydraulic switch to the OFF position.

4. Rotate the key switch clockwise to the START position.

   Note: Do not press the brake pedal.

   Note: If the engine cranks or starts, there is a malfunction in the safety-interlock system that you must repair before operating the machine.

Verifying the High-Flow-Hydraulic Safety-Interlock Switch

Note: This procedure is for a non-TC model with the High-Flow-Hydraulic Kit (option) or a TC model

1. Sit on the operator's seat and engage the parking brake.
2. Move the shift lever to the NEUTRAL position and ensure that the hydraulic-lift lever is in the center position.
3. Set the high-flow-hydraulic switch to the ON position.
4. Press brake pedal.
5. Rotate the key switch clockwise to the START position.

   Note: If the engine cranks or starts, there is a malfunction in the safety-interlock system that you must repair before operating the machine.

Transporting the Machine

Use a trailer with full-width ramps to move the machine a long distance. Make sure that the machine is securely bound to the trailer. Refer to Figure 35 and Figure 36 for the location of the tie-down points.

Note: Load the machine on the trailer with the front of the machine facing forward. If that is not possible, secure the machine hood to the frame with a strap, or remove the hood and transport and secure it separately or the hood may blow off during transport.

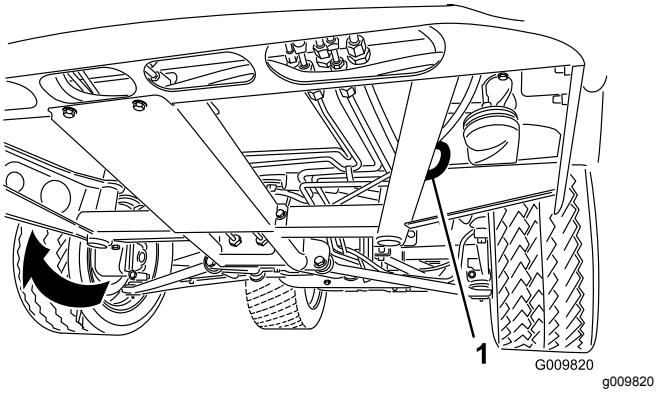


Figure 35

1. Eye hole in the frame (each side)

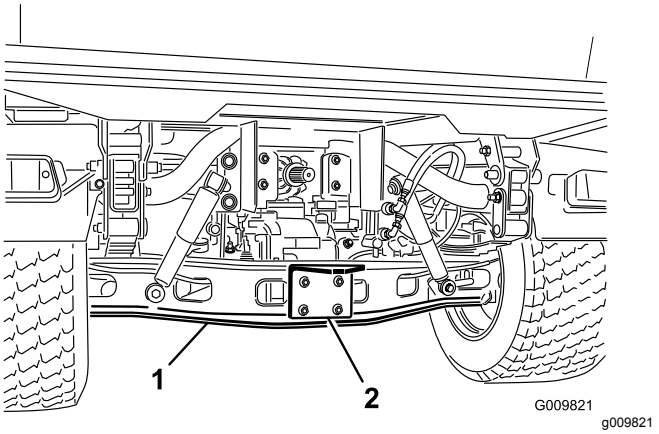


Figure 36

1. Axle
2. Hitch plate

Towing the Machine

In case of an emergency, the machine can be towed for a short distance. However, Toro does not recommend this as a standard procedure.

⚠ WARNING

Towing at excessive speeds could cause the machine to lose steering control. Never tow the machine at faster than 8 kph (5 mph).

Towing the machine is a 2-person job. Affix a tow line to holes in the front frame member. Move the shift lever to the NEUTRAL position and disengage the parking brake. If the machine must be moved a considerable distance, transport it on a truck or trailer.

Note: The power steering does not function, making it difficult to steer.

Towing a Trailer with the Machine

The machine is capable of pulling trailers and attachments of greater weight than the machine itself.

Several types of tow hitches are available for the machine, depending on your application. Contact your Authorized Toro Distributor for details.

When equipped with a tow hitch bolted onto the rear axle tube, your machine can tow trailers or attachments with a gross trailer weight (GTW) up to 1587 kg (3,500 lb). Always load a trailer with 60% of the cargo weight in the front of the trailer. This places approximately 10% (272 kg (600 lb) maximum) of the gross trailer weight (GTW) on the tow hitch of the machine.

When hauling cargo or towing a trailer (attachment), do not overload your machine or trailer. Overloading

can cause poor performance or damage to the brakes, axle, engine, transaxle, steering, suspension, body structure, or tires.

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

When towing fifth-wheel attachments, like a fairway aerator, always install the wheel bar (included with the fifth wheel kit) to prevent the front wheels from lifting off the ground if the towed attachments movement is suddenly impaired.

Using the Hydraulic Control

The hydraulic control supplies hydraulic power from the machine pump whenever the engine runs. The power can be used through the quick couplers at the rear of the machine.

⚠ CAUTION

Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin and do serious damage.

Use care when connecting or disconnecting hydraulic quick couplers. Shut off the engine, engage the parking brake, lower the attachment, and place the remote hydraulic valve in the float detent position to relieve hydraulic pressure before connecting or disconnecting the quick couplers.

Important: **If multiple machines use the same attachment, cross contamination of the transmission fluid may occur. Change the transmission fluid more frequently**

Using the Hydraulic-Bed-Lift Lever to Control Hydraulic Attachments

- OFF Position

  This is the normal position for the control valve when it is not being used. In this position the work ports of the control valve are blocked and any load is held by the check valves in both directions.

- RAISE (Quick Coupler “A” Position)

  This is the position which lifts the bed, rear hitch attachment or apply pressure to quick coupler A. This also allows hydraulic fluid to return from quick coupler B to flow back into the valve and then out to the reservoir. This is a momentary position and when the lever is released it spring returns to the center, OFF position.

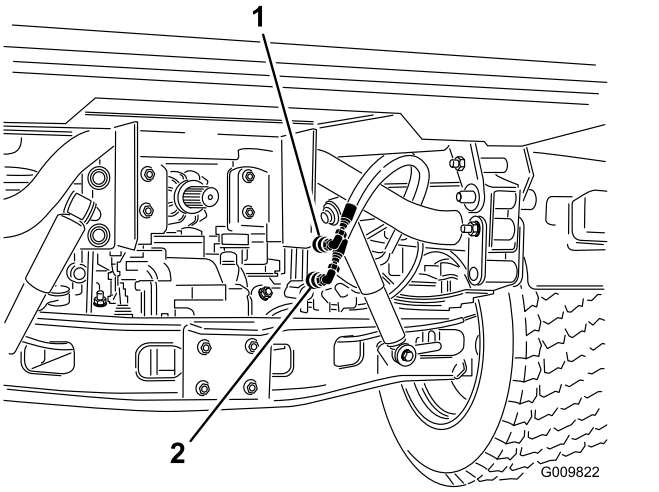


Figure 37

1. Quick coupler A position
2. Quick coupler B position

- LOWER (Quick Coupler B Position)

  This position lowers the bed, rear hitch attachment, or apply pressure to quick coupler B. This also allows hydraulic fluid to return from quick coupler A to flow back into the valve and then out to the reservoir. This is a momentary position and when the lever is released it spring returns to the center, off position. Momentarily holding and then releasing the control lever in this position provides hydraulic-fluid flow to quick coupler B, which provides power down on the rear hitch. When released, it holds the down pressure on the hitch.

  Important: **If used with a hydraulic cylinder, holding the control lever in the lower position causes the hydraulic-fluid flow to go over a relief valve which can damage the hydraulic system.**

- ON Position

  This position is similar to Lower (quick coupler B position). It also directs hydraulic fluid to quick coupler B except that the lever is held in this position by a detent lever in the control panel. This allows hydraulic fluid to flow continuously to equipment that uses a hydraulic motor. **This position must only be used on attachments with a hydraulic motor attached.**

  Important: **If used with a hydraulic cylinder or no attachment, the ON position causes the hydraulic-fluid flow to go over a relief valve which can damage the hydraulic system. Use this position only momentarily or with a motor attached.**

  Important: **Check the hydraulic-fluid level after installation of an attachment. Check the operation of the attachment by cycling the attachment several times to purge air from**

the system, then check hydraulic-fluid level again. The attachment cylinder slightly affects the fluid level in the transaxle. Operating the machine with a low hydraulic-fluid level can damage the pump, remote hydraulics, power steering, and the machine transaxle.

Connecting the Quick Couplers

Important: **Clean dirt from quick couplers before connecting. Dirty couplers can introduce contamination into the hydraulic system**

1. Pull back the locking ring on the coupler.
2. Insert the hose nipple into the coupler until it snaps into position.

Note: When attaching remote equipment to the quick couplers, determine which side requires pressure, then attach that hose to quick coupler B, which will have pressure when you push the control lever forward or lock it in the On position.

Disconnecting the Quick Couplers

Note: With both the machine and attachment turned off, move the lift lever back and forth to remove the system pressure and ease the disconnection of the quick couplers.

1. Pull back the locking ring on the coupler.
2. Pull the hose firmly from the coupler.

   Important: **Clean and install the dust plug and dust covers to the quick coupler ends when not in use.**

Troubleshooting the Hydraulic Control

- Difficulty in connecting or disconnecting quick couplers.

  The pressure not relieved (the quick coupler is under pressure).
- The power steering is turning with great difficulty or it is not turning at all.
  - The hydraulic-fluid level is low.
  - The hydraulic-fluid temperature is hot.
  - The pump is not operating.
- There are hydraulic leaks.
  - The fittings are loose.
  - The fitting is missing the o-ring.
- An attachment does not function.
  - The quick couplers are not fully engaged.
  - The quick couplers are interchanged.
- There is a squealing noise.
  - Remove the valve left in the On detent position causing hydraulic fluid to flow over the relief valve.
  - The belt is loose.
- The engine does not start.

  The hydraulic lever is locked in the forward position

Maintenance

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

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

⚠ CAUTION

Only qualified and authorized personnel should maintain, repair, adjust, or inspect the machine.

Avoid fire hazards and have fire protection equipment present in the work area. Do not use an open flame to check level or leakage of fuel, battery electrolyte, or coolant. Do not use open pans of fuel or flammable cleaning fluids for cleaning parts.

⚠ CAUTION

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

Remove the key from the key switch before you do any maintenance.

⚠ CAUTION

Not properly maintaining the machine could damage the machine and/or cause injury to you or bystanders.

Allow only qualified and authorized personnel to maintain, repair, adjust, and inspect the machine.

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 2 hours	• Torque the front and rear wheel nuts.
After the first 10 hours	• Torque the front and rear wheel nuts. • Check the adjustment of the parking brake. • Replace the hydraulic filter.
After the first 50 hours	• Change the engine oil and filter. • Inspect the opening on the filter. • Check the transmission-fluid level.
Before each use or daily	• Check the engine-oil level. (Check the oil level before and after the engine is first started and daily thereafter.) • Check the hydraulic-fluid level. (Check the level of hydraulic fluid before the engine is first started and daily thereafter.) • Check the level of the coolant. Check the Coolant level at the overflow reservoir only. Do not remove the radiator cap. (Check the coolant level before the engine is first started and daily thereafter.) • Check the brake-fluid level. (Check the level before the engine is first started and daily thereafter.) • Check the oil-pressure-warning light. • Check the tire pressure. • Remove debris from the engine area and radiator. (Clean it more frequently in dirty conditions.) • Check the operation of the safety-interlock system.
Every 25 hours	• Remove the air-cleaner cover and clean out the debris.

Maintenance Service Interval	Maintenance Procedure
Every 50 hours	• Check the battery-fluid level (every 30 days if in storage). • Check the battery-cable connections.
Every 100 hours	• Grease all bearings and bushings (lubricate more frequently in heavy duty applications). • Change the air-cleaner filter (more frequently in dusty or dirty conditions). • Check the condition of the tires. • Check the constant-velocity boots for damage and leaking lubricant.
Every 200 hours	• Change the engine oil and filter. • Change the carbon canister air filter. • Torque the front and rear wheel nuts • Check the fluid level in the reservoir for the speed-control cylinder. • Check the adjustment of the parking brake. • Check the adjustment of the brake pedal. • Inspect the service and parking brakes.
Every 400 hours	• Inspect or replace the spark plug. • Replace the fuel filter. • Check the fuel lines and connections. • Check the front-wheel alignment. • Check the transmission-fluid level. • Check the condition of the drive belt. • Clean the clutches. • Visually inspect the brakes for worn brake shoes.
Every 800 hours	• Replace the hydraulic filter. • Change the hydraulic fluid and clean the strainer.
Every 1,000 hours	• Change the brake fluid. • Drain/flush the fuel tank. • Flush/replace the coolant system fluid.
Yearly	• Complete all of the yearly maintenance procedures specified in the engine owner's manual.

Operating in Adverse Conditions

Important: **If the machine is subjected to any of the conditions listed below, perform maintenance twice as frequently:**

- Desert operation
- Cold-climate operation below 0°C (32°F)
- Trailer towing
- Frequent operation on dusty roads
- Construction work
- After extended operation in mud, sand, water, or similar dirty conditions, have your brakes inspected and cleaned as soon as possible. This prevents any abrasive material from causing excessive wear.

Pre-Maintenance Procedures

Many of the subjects covered in this maintenance section require raising and lowering the bed. To prevent serious injury or death, take the following precautions.

⚠ WARNING

A raised bed full of material without the proper safety support may lower unexpectedly. Working under an unsupported raised bed may cause injury to you or others.

- **Before servicing or making adjustments to the machine, shut off the engine, engage the parking brake, and remove the key from the key switch.**
- **Remove any load material from the bed or other attachment and insert the safety support on a fully extended cylinder rod before working under a raised bed.**

Using the Bed Support

Important: **Always install or remove the bed support from the outside of the bed.**

1. Raise the bed until the lift cylinders are fully extended.
2. Remove the bed support from the storage brackets on the back of the ROPS panel (Figure 38).

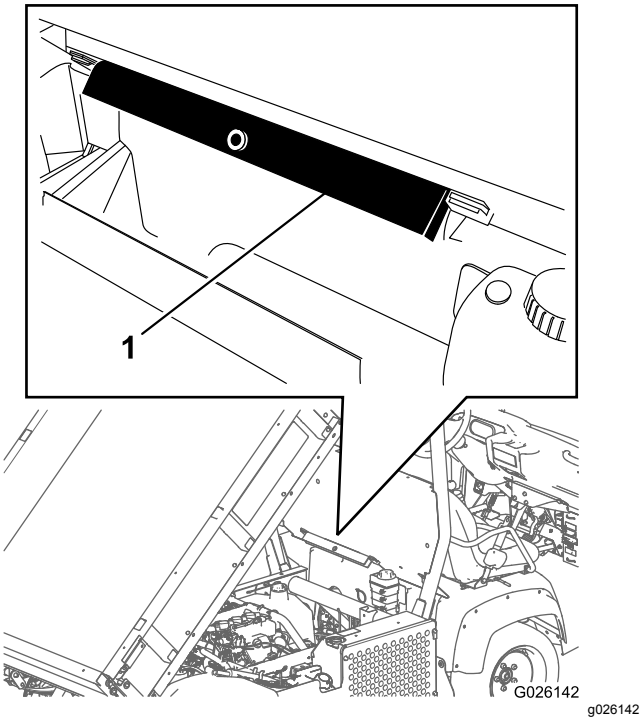


Figure 38

1. Bed support

3. Push the bed support onto the cylinder rod, ensuring that the support end tabs rest on the end of cylinder barrel, and on the cylinder rod end (Figure 39).

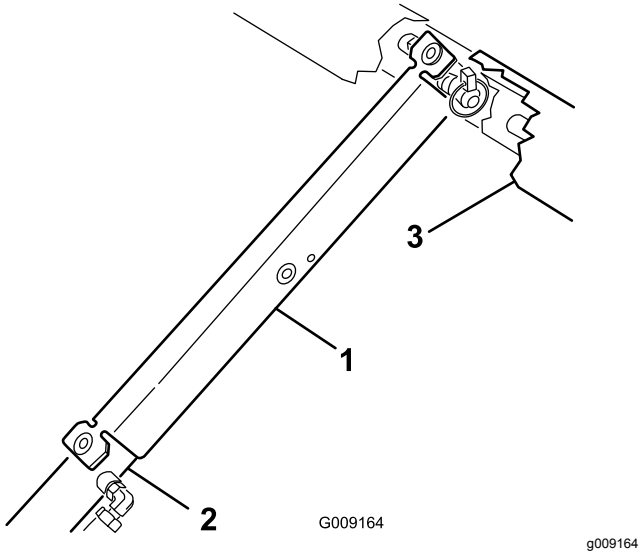


Figure 39

1. Bed support
2. Cylinder barrel
3. Bed

4. Remove the bed support from the cylinder and insert it into the brackets on the back of the ROPS panel.

   Important: **Do not try to lower the bed with the bed-safety support on the cylinder.**

Removing the Full Bed

1. Start the engine, engage the hydraulic-lift lever, and lower the bed until the cylinders are loose in the slots.
2. Release the lift lever and turn off the engine.
3. Remove the lynch pins from the outer ends of the clevis pins (Figure 40).

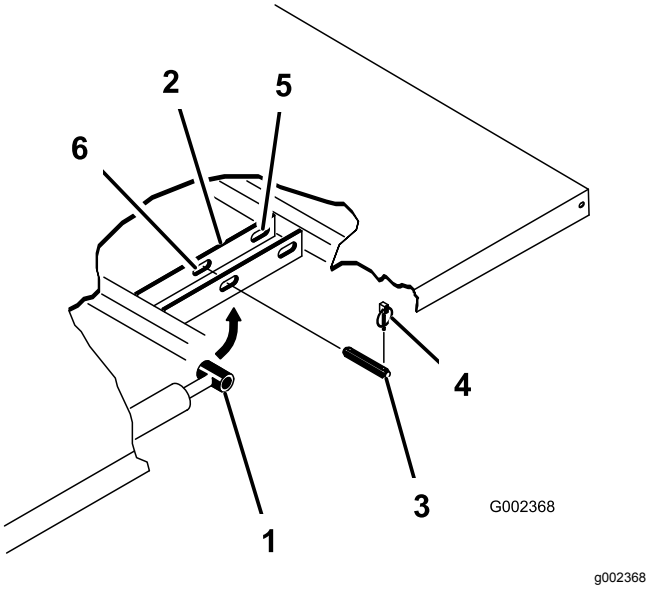


Figure 40

1. Cylinder-rod end
2. Bed-mounting plate
3. Clevis pin
4. Lynch pin
5. Rear slots (full bed)
6. Front slots (2/3 bed)

4. Remove the clevis pins securing the cylinder-rod ends to the bed-mounting plates by pushing the pins toward the inside (Figure 40).
5. Remove the lynch pins and clevis pins securing the pivot brackets to the frame channels (Figure 40).
6. Lift the bed off the machine.

⚠ CAUTION

The full bed weighs approximately 148 kg (325 lb), so do not try to install or remove it by yourself.

Use an overhead hoist or get the help of 2 or 3 other people.

7. Store the cylinders in the storage clips.
8. Engage the hydraulic-lift-lock lever on the machine to prevent accidental extension of the lift cylinders.

Installing the Full Bed

Note: If you are installing the bed sides on the flat bed, it is easier to install them before installing the bed on the machine.

Note: Ensure that the rear pivot plates are bolted to the bed frame/channel so that the lower end angles to the rear (Figure 41).

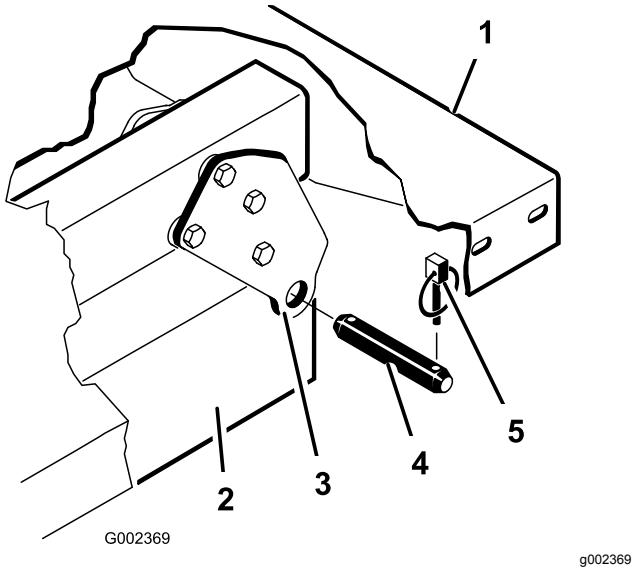


Figure 41

1. Left, rear corner of bed
2. Machine frame channel
3. Pivot plate
4. Clevis pin
5. Lynch pin

⚠ CAUTION

The full bed weighs approximately 148 kg (325 lb), so do not try to install or remove it by yourself.

Use an overhead hoist or get the help of 2 or 3 other people.

Note: Ensure that the spacer brackets and wear blocks (Figure 42) are installed with the carriage-bolt heads positioned inside the machine.

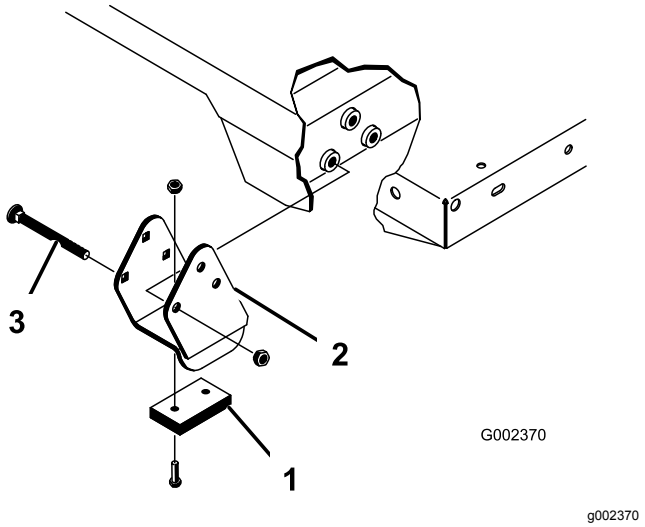


Figure 42

1. Wear block
2. Spacer bracket
3. Carriage bolt

1. Ensure that the lift cylinders are fully retracted.
2. Carefully set the bed onto the machine frame, aligning the rear bed pivot-plate holes with the holes in the rear frame channel and install 2 clevis pins and lynch pins (Figure 42).
3. With the bed lowered, secure each cylinder rod end, to the appropriate slots in the bed-mounting plates with a clevis pin and lynch pin.
4. Insert the clevis pin from outside of the bed with the lynch pin toward the outside (Figure 42).

   Note: The rear slots are for a full bed installation and front slots are for a 2/3 bed installation.

   Note: The engine may need to be started to extend or retract the cylinders for alignment with the holes.

   Note: The unused slot can be plugged with a bolt and nut to prevent assembly errors.
5. Start the engine and engage the hydraulic-lift lever to raise the bed.
6. Release the lift lever and turn off the engine.
7. Install the bed-safety support to prevent accidental lowering of the bed; refer to Using the Bed Support (page 40).
8. Install the lynch pins to the inside ends of the clevis pins.

   Note: If the automatic-tailgate release has been installed on the bed, ensure that the front dump link rod has been placed on the inside of the left side clevis pin before the lynch pin is installed.

Raising the Machine

⚠ DANGER

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

- **Do not start the machine while the machine is on a jack.**
- **Always remove the key from the key switch before getting off the machine.**
- **Block the tires when the machine is on a jack.**

- Do not start the engine while the machine is on a jack, because the engine vibration or wheel movement could cause the machine to slip off the jack.
- Do not work under the machine without jack stands supporting it. The machine could slip off a jack, injuring anyone beneath it.
- When jacking up the front of the machine, always place a wooden block (or similar material) between the jack and the machine frame.
- The jacking point at the front of the machine is under the front center frame support (Figure 43) and at the rear it is under the axle (Figure 44).

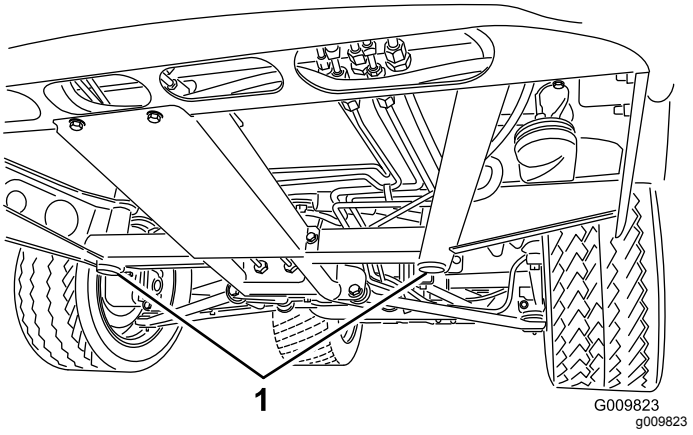


Figure 43

1. Front jacking points

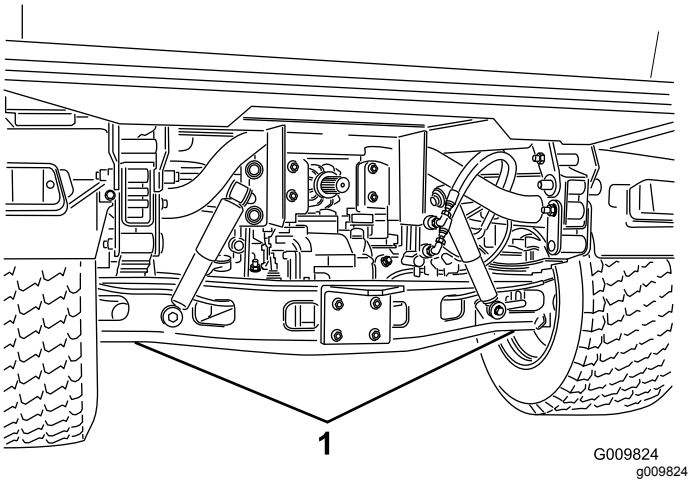


Figure 44

1. Rear jacking points

Removing and Installing the Hood

Removing the Hood

1. While grasping the hood in the headlight openings, lift up the hood to release the lower mounting tabs from the frame slots (Figure 45).

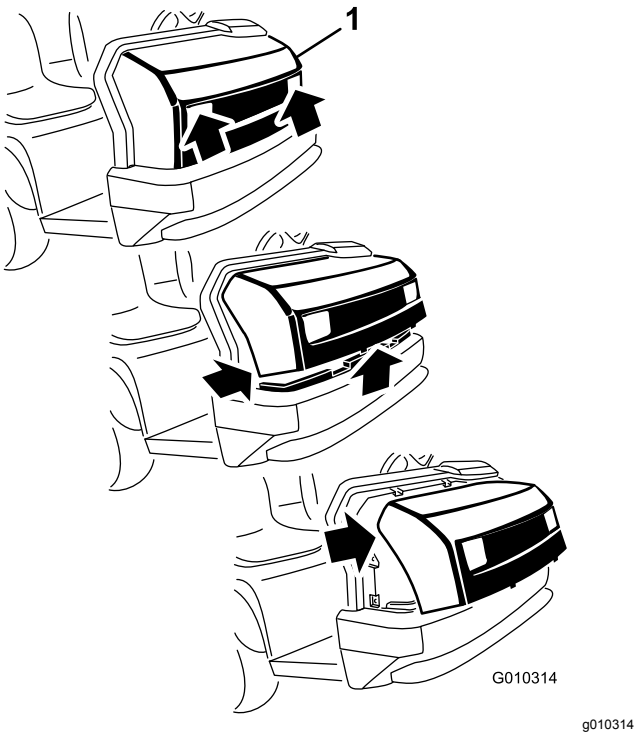


Figure 45

1. Hood

2. Pivot the bottom of the hood upward until you can pull the top mounting tabs from the frame slots (Figure 45).
3. Pivot the top of hood forward and unplug the wire connectors from the headlights (Figure 45).
4. Remove the hood.

Installing the Hood

1. Connect the lights.
2. Insert the top mounting tabs into the frame slots (Figure 45).
3. Insert the lower mounting tabs into the frame slots (Figure 45).
4. Ensure that the hood is fully engaged in the top, sides, and bottom grooves.

Greasing the Bearings and the Bushings

Service Interval: Every 100 hours (lubricate more frequently in heavy duty applications).

Lubrication type: No. 2 lithium grease

Important: **When greasing the drive shaft universal shaft bearing crosses, pump grease until it comes out of all 4 cups at each cross.**

1. Wipe each grease fitting clean so that foreign matter cannot be forced into the bearing or bushing.
2. Connect the grease gun to the grease fitting.
3. Pump grease into each bearing or bushing.
4. Wipe off any excess grease.

The grease fitting locations and quantities are as follows:

- **Ball joints** (4); refer to Figure 46
- **Pivot mounts** (2); refer to Figure 46
- **Steering cylinder** (2); refer to Figure 46
- **Tie rods** (2); refer to Figure 46

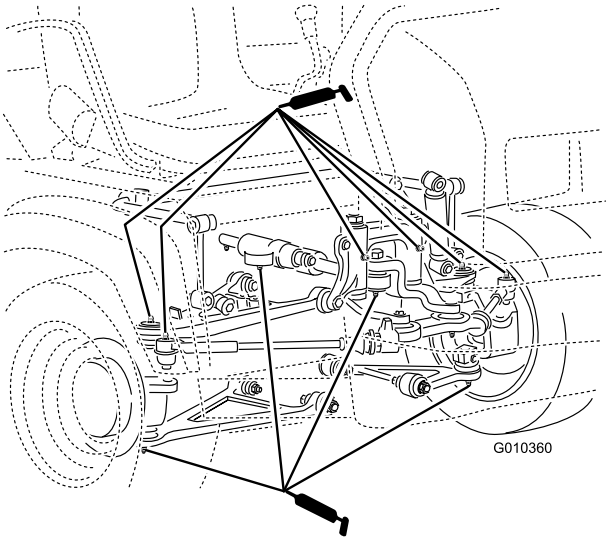


Figure 46

- **Spring tower** (2); refer to Figure 47

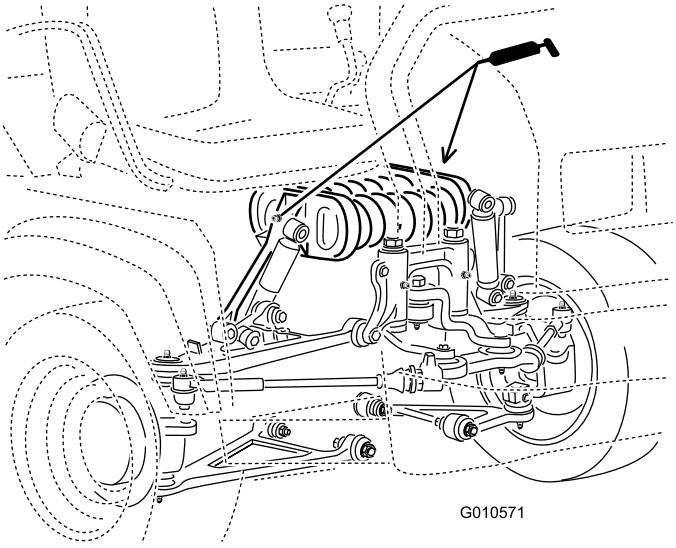


Figure 47

- **Brake** (1); refer to Figure 48
- **Throttle** (1); refer to Figure 48

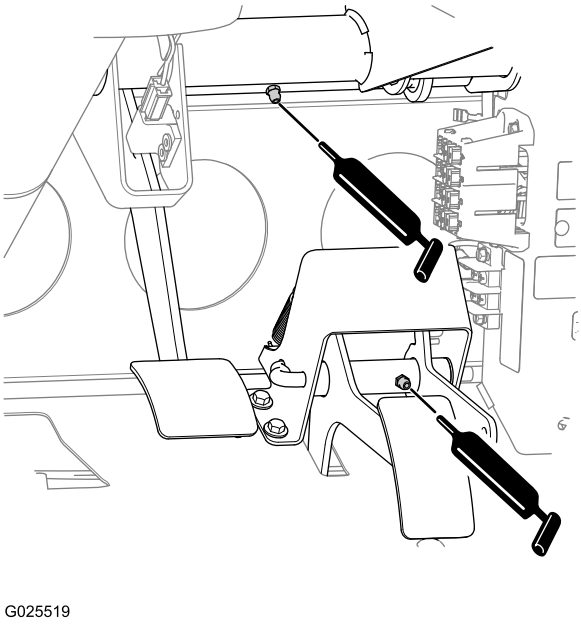


Figure 48

- **Drive shaft U-joints** (2); refer to Figure 49
- **Sliding yolk** (1); refer to Figure 49

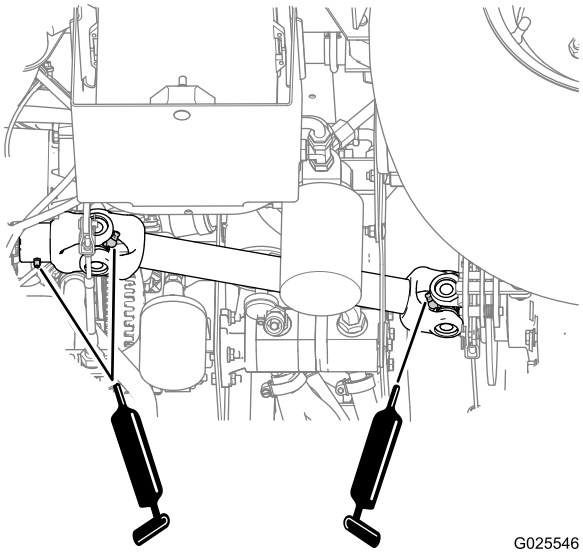


Figure 49

Engine Maintenance

Servicing the Air Filter

Service Interval: Every 25 hours—Remove the air-cleaner cover and clean out the debris.

Every 100 hours—Change the air-cleaner filter (more frequently in dusty or dirty conditions).

Inspect the air filter and hoses periodically to maintain maximum engine protection and to ensure maximum service life. Check the air-filter cover and housing for damage, which could cause an air leak. Replace any damaged air-filter components.

1. Pull the latch outward and rotate the air-filter cover counterclockwise (Figure 50).

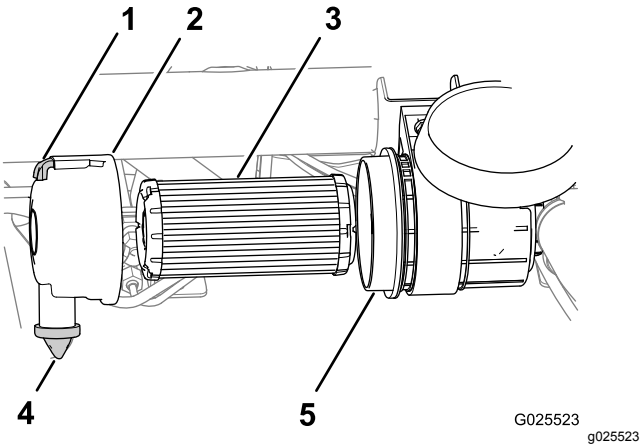


Figure 50

1. Latch
2. Air-filter cover
3. Air filter
4. Dust valve
5. Air-filter housing

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

   Important: **Avoid using high-pressure air, which could force dirt through the filter into the intake tract. This cleaning process prevents debris from migrating into the intake when the primary filter is removed.**

3. Remove the air filter from the housing (Figure 50).

   Note: Do not clean a used filter element because you may damage the filter media.

4. Wipe clean the interior of the air-filter cover and housing (Figure 50).
5. Remove the rubber dust valve from the cover (Figure 50).

6. Clean the dirt-ejection port located in the air-cleaner cover, the dust-valve cavity, and replace the dust valve (Figure 50).
7. Inspect the new air filter for shipping damage, checking the sealing end of the filter and the body.

   Important: **Do not use a damaged element.**
8. Insert the new air filter by applying light pressure to the outer rim of the filter to seat it in the air-filter housing (Figure 50).
9. Align the air-filter cover with the dust valve at the 6 o'clock position when viewed from the left end of the cover (Figure 50).
10. Secure the latch of the air-filter cover (Figure 50).

    Note: Reset the indicator if it shows red (if equipped).

Changing the Engine Oil and Filter

Service Interval: After the first 50 hours

Every 200 hours

Engine-oil capacity: 2.0 L (2.1 US qt) of oil in the crankcase (including the oil filter)

Oil Type: 10W-30 API SJ or higher

Choose a viscosity according to the table in Figure 51.

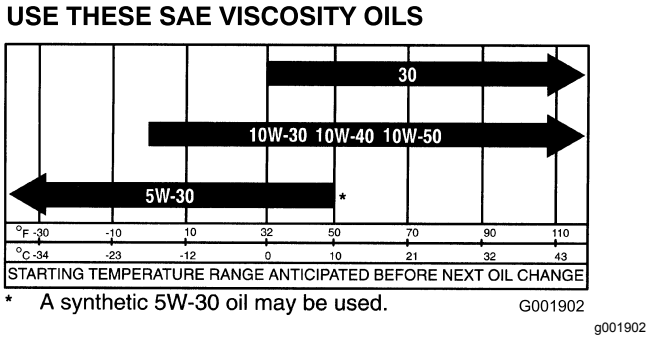


Figure 51

1. Raise the bed (if equipped) and place the bed safety support on the extended lift cylinder to hold up the bed.
2. Align a large drain pan under the oil-drain plug for the engine (Figure 52).

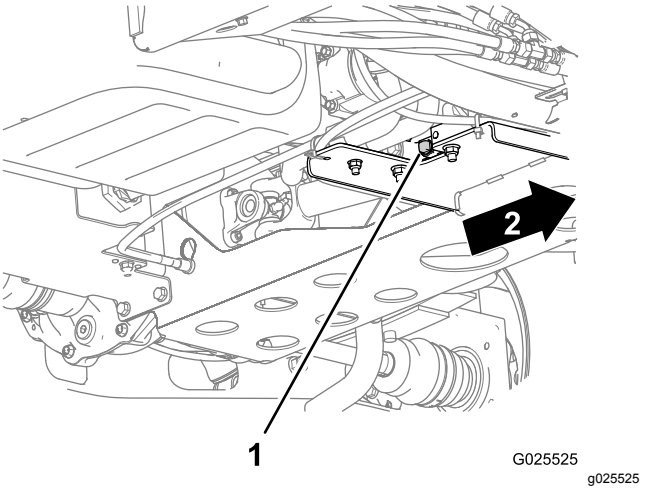


Figure 52

1. Engine-oil-drain plug
2. Forward

3. Remove the drain plug and let oil flow into a drain pan (Figure 52).

   Note: When the oil stops draining, install the drain plug.
4. Remove the oil filter from the filter adapter (Figure 53).

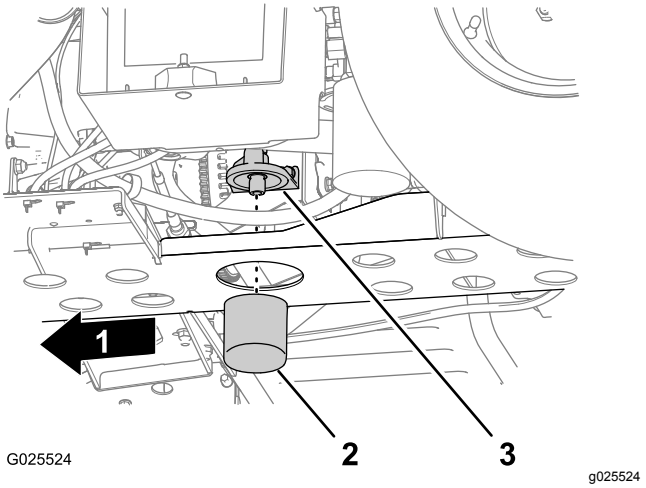


Figure 53

1. Forward
2. Oil filter
3. Filter adapter

5. Wipe clean the sealing base of the of the filter adapter (Figure 53).
6. Apply a light coat of clean oil to the seal of the new filter.
7. Install the filter until the gasket contacts the sealing base of the filter adapter, then tighten the filter clockwise and additional 1/2 to 2/3 of a turn (Figure 53).

   Note: **Do not overtighten the engine oil filter.**

8. Add the specified oil to the crankcase of the engine; refer to Checking the Engine-Oil Level (page 25).
9. Lower the bed.

Replacing the Spark Plug

Service Interval: Every 400 hours

Spark plug type: Champion RC14YC

Air gap: 0.76 mm (0.030 inch)

1. Clean the area around the spark plug so foreign matter cannot fall into the cylinder when you remove the spark plug.
2. Pull the wires off the spark plug and remove the plugs from the cylinder head.
3. Check the condition of the side electrode, center electrode, and center electrode insulator to ensure that there is no damage (Figure 54).

   Important: **A cracked, fouled, dirty, or otherwise malfunctioning spark plug must be replaced. Do not sand blast, scrape, or clean electrodes by using a wire brush because grit may eventually release from the plug and fall into the cylinder and damaged the engine.**

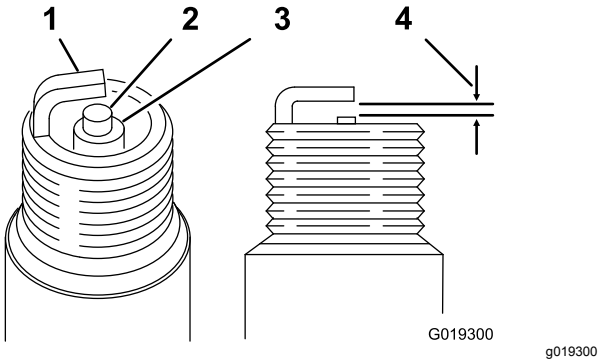


Figure 54

1. Side electrode
2. Center electrode
3. Insulator
4. Air gap at 0.76 mm (0.03 inch)

4. Set the air gap (Figure 54) between the center and side electrodes at 0.81 mm (0.032 inch).
5. Install the correctly gapped spark plug and tighten them to 24.5 to 29 N·m (18 to 22 ft-lb).

   Note: If you cannot use a torque wrench, tighten the plug firmly.
6. Install the spark-plug wire.

Fuel System Maintenance

Inspecting the Carbon Canister Air Filter

Service Interval: After the first 50 hours—Inspect the opening on the filter.

Every 200 hours—Change the carbon canister air filter.

1. Locate the air filter on the bottom of the carbon canister (Figure 55).

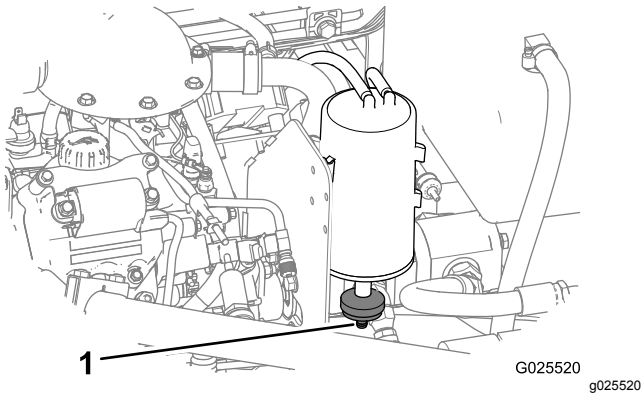


Figure 55

1. Filter opening

2. Ensure that the opening on the bottom of the filter is clear and open.
3. Remove and install the new filter (if necessary).

Replacing the Fuel Filter

Service Interval: Every 400 hours

1. Raise the bed (if equipped), and place the safety support on the extended-lift cylinder to hold up the bed.
2. Unplug the wire-harness connectors from the fuel pump (Figure 56).
3. Loosen the hose clamp and disconnect the fuel line from the fuel-pump cap (Figure 56).

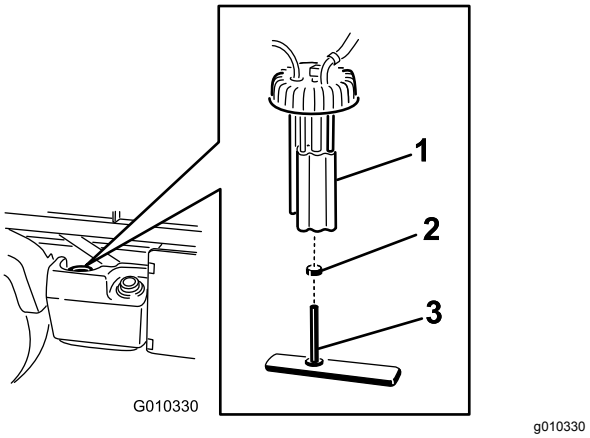


Figure 56

1. Fuel pump
2. Hose clamp
3. Fuel line/fuel filter

4. Remove the fuel-pump cap from the top of the fuel tank (Figure 56).

   Note: Do not allow the fuel-pump assembly to rotate in the tank while removing the fuel pump. Damage to the float assembly can occur if the fuel pump rotates inside the fuel tank.

5. Remove the fuel-pump assembly and the fuel filter from the tank (Figure 56).
6. Remove the clamp securing the fuel filter hose to the fuel-pump fitting.
7. Remove the hose from the fitting (Figure 56).
8. Insert the new hose clamp onto the new fuel-filter hose.
9. Insert the hose onto the fuel pump and secure the clamp.
10. Insert the assembly into the fuel tank, and tighten the cap to 20 to 22 N·m (175 to 200 in-lb).
11. Connect the wires and secure the hose with the hose clamp.

Inspecting the Fuel Lines and Connections

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

Every 1,000 hours/Every 2 years (whichever comes first)

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

Electrical System Maintenance

Servicing the Fuses

The fuses for the electrical system are located under the center of the dash panel (Figure 57 and Figure 58).

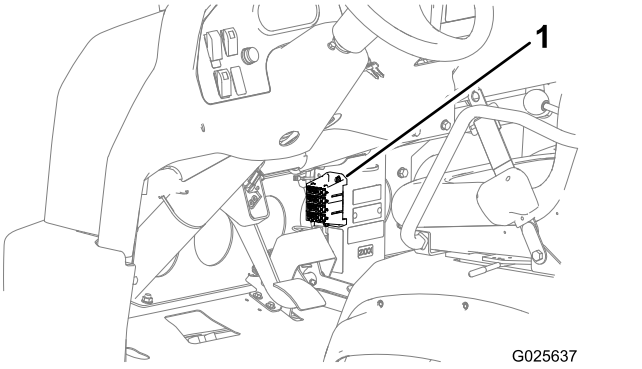


Figure 57

1. Fuses

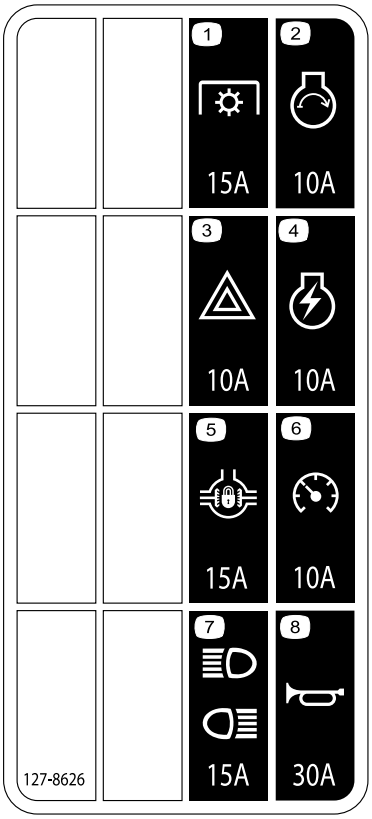


Figure 58

1. Power takeoff—15 A
2. Engine start—10 A
3. Hazards—10 A
4. Engine ignition—10 A
5. Differential lock—15 A
6. Speedometer—10 A
7. Headlights and rear lights—15 A
8. Horn—30 A

Jump-Starting the Machine

⚠ WARNING

Jump-starting can be dangerous. To avoid personal injury or damage to electrical components in machine, observe the following warnings:

- **Never jump-start with a voltage source greater than 15 VDC; this damages the electrical system.**
- **Never attempt to jump-start a discharged battery that is frozen. It could rupture or explode during jump-starting.**
- **Observe all battery warnings while jump-starting your machine.**
- **Be sure your machine is not touching the jump-start machine.**
- **Connecting cables to the wrong post could result in personal injury and/or damage to the electrical system.**

1. Squeeze the battery cover to release the tabs from the battery base, and remove the battery cover from the battery base (Figure 59).

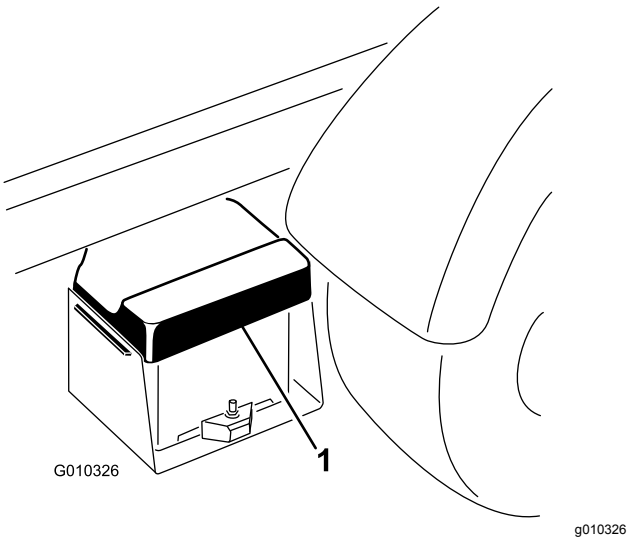


Figure 59

1. Battery cover

2. Connect a jumper cable between the positive posts of the 2 batteries (Figure 60).

   Note: The positive post may be identified by a + sign on top of the battery cover.

3. Connect 1 end of the other jumper cable to the negative terminal of the battery in the other machine.

Note: The negative terminal has “NEG” on the battery cover.

Note: Do not connect the other end of the jumper cable to the negative post of the discharged battery. Connect the jumper cable to the engine or frame. Do not connect the jumper cable to the fuel system.

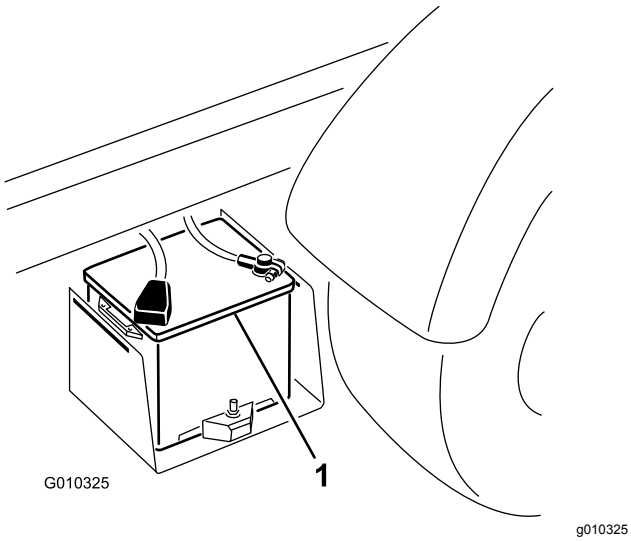


Figure 60

1. Battery

4. Start the engine in the machine providing the jump-start.

   Note: Let it run for a few minutes, then start your engine.

5. Remove the negative jumper cable first from your engine, then the battery in the other machine.
6. Install the battery cover to the battery base.

Servicing the Battery

Service Interval: Every 50 hours—Check the battery-fluid level (every 30 days if in storage).

Every 50 hours—Check the battery-cable connections.

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

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

⚠ DANGER

Battery electrolyte contains sulfuric acid which is a deadly poison and causes severe burns.

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

- Keep the battery-electrolyte level properly maintained.
- Keep the top of the battery clean by washing it periodically with a brush dipped in ammonia or bicarbonate of soda solution. Flush the top surface with water after cleaning. Do not remove the fill cap while cleaning.
- Ensure that the battery cables are kept tight on the terminals to provide good electrical contact.
- If corrosion occurs at terminals, remove the battery cover, disconnect the cables (negative (–) cable first), and scrape the clamps and terminals separately. Connect the cables (positive (+) cable first) and coat the terminals with petroleum jelly.
- Maintain cell electrolyte level with distilled or demineralized water. Do not fill the cells above the bottom of the fill ring inside each cell.
- If you store the machine in a location where temperatures are extremely high, the battery runs down more rapidly than if the machine is stored in a location where temperatures are cool.

Drive System Maintenance

Maintaining the Tires, Wheels, and Suspension

Inspecting the Tires

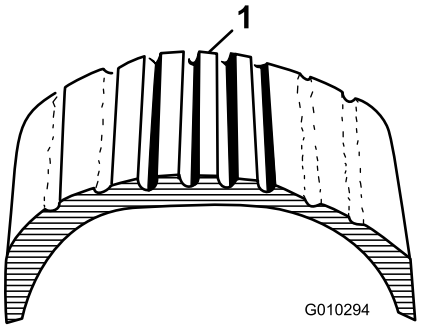
Service Interval: Every 100 hours

The air pressure in the front tires should be 220 kPa (32 psi) and the rear tires should be 124 kPa (18 psi).

Operating accidents, such as hitting curbs, can damage a tire or rim and also disrupt wheel alignment, so inspect tire condition after an accident.

Important: **Check the tire pressure frequently to ensure proper inflation. If the tires are not inflated to the correct pressure, the tires will wear prematurely and may cause 4-wheel drive to bind.**

Figure 61 shows an example of tire wear caused by under-inflation.

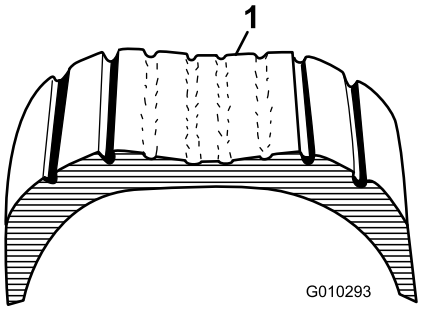


g010294

Figure 61

1. Under-inflated tire

Figure 62 shows an example of tire wear caused by over-inflation.



g010293

Figure 62

1. Over-inflated tire

Checking the Torque of the Wheel Nuts

Service Interval: After the first 2 hours

After the first 10 hours

Every 200 hours

⚠ WARNING

Failure to maintain proper torque of the wheel nuts could result in failure or loss of a wheel and may result in personal injury.

Torque the front and rear wheel nuts to 109 to 122 N·m (80 to 90 ft-lb) after 1 to 4 hours of operation and again after 10 hours of operation. Torque the wheel nuts every 200 hours thereafter.

Checking the Front-Wheel Alignment

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

1. Make sure that the tires are facing straight ahead.
2. Measure the center-to-center distance (at axle height) at the front and rear of the steering tires (Figure 63).

   Note: The measurement must be within 0 ± 3 mm (0 ± 0.12 inch) at the front of the tire then at the rear of the tire.

   Important: **Check the measurements at consistent locations on the tire. The machine should be on a flat surface with the tires facing straight ahead.**

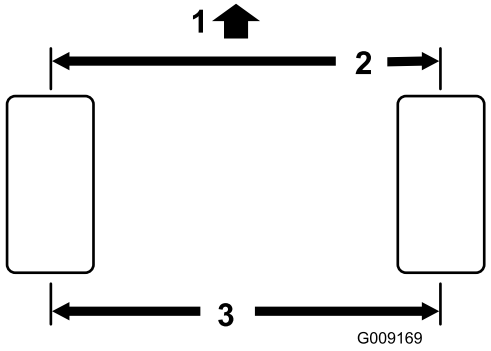


Figure 63

1. Front of the machine
2. 0 ± 3 mm (0 ± 0.12 inch) front to rear of tire
3. Center to center distance

3. Rotate the tire 90° and check the measurements again.

   Note: The measurement must be within 0 ± 3 mm (0 ± 0.12 inch) at the front of the tire then at the rear of the tire.

4. Adjust the center-to-center distance as follows:
   A. Loosen the jam nut at the center of the tie rod (Figure 64).

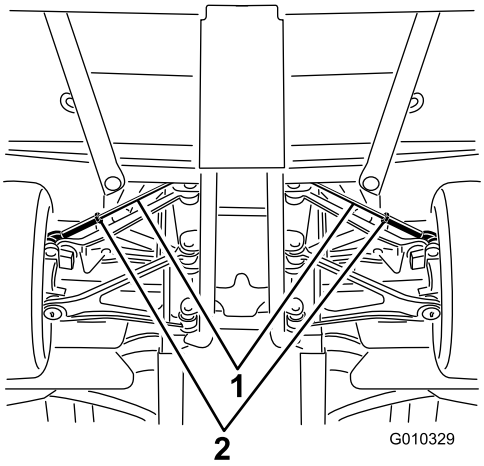


Figure 64

1. Tie rods
2. Jam nuts

   B. Rotate the tie rod to move the front of the tire inward or outward to achieve the center to center distances from front to back.
   C. Tighten the tie rod jam nut when the adjustment is correct.
   D. Check to ensure that the tires turn an equal amount to the right and to the left.

      Note: If the tires do not turn equally, refer to the *Service Manual* for the adjustment procedure.

Maintaining the Transmission

Checking the Transmission-Fluid Level

Service Interval: After the first 50 hours

Every 400 hours

Transmission Fluid Type: Dexron VI

1. Locate the fill plug at the at the lower-inboard area at the back of the transmission (Figure 65).

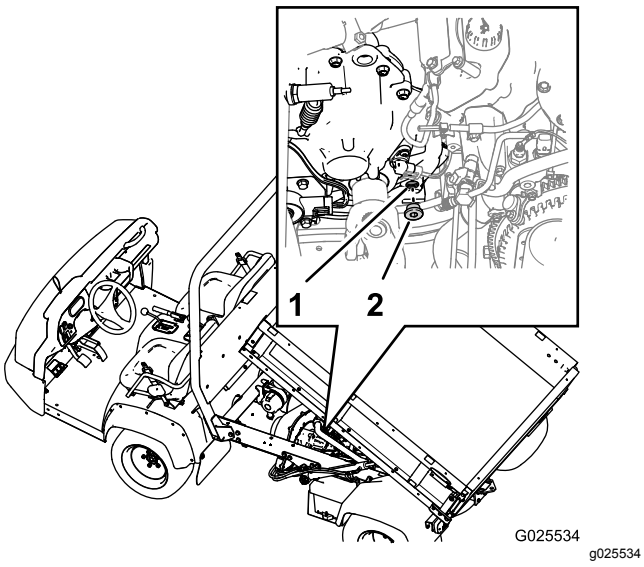


Figure 65

1. Fill port (transmission)
2. Fill plug

2. Align a drain pan below the fill plug.
3. Rotate the plug counterclockwise and remove the plug from the fill port in the transmission (Figure 65).

   Note: When the transmission fluid level is correct, the fluid should be level with the bottom of the threads in the fill port.
4. If the transmission-fluid level is low, add transmission fluid of the specified type into the transmission through the fill port until the fluid level is flush with the bottom of the threads in the port (Figure 65).

   Note: Use a funnel with a flexible hose when filling the transmission.
5. Check the condition of the O-ring at the fill plug.

   Note: Replace the O-ring if it is warn or damaged.
6. Install the fill plug into the transmission and tighten it by hand (Figure 65).

Changing the Transmission Fluid

Transmission Fluid Type: Dexron VI

Transmission Fluid Capacity: 700 ml (23.7 oz)

1. Move the machine to a level surface.
2. Locate the fill plug at the back inboard area of the transmission case and the locate the drain plug at the front outboard side of the transmission (Figure 66 and Figure 67).

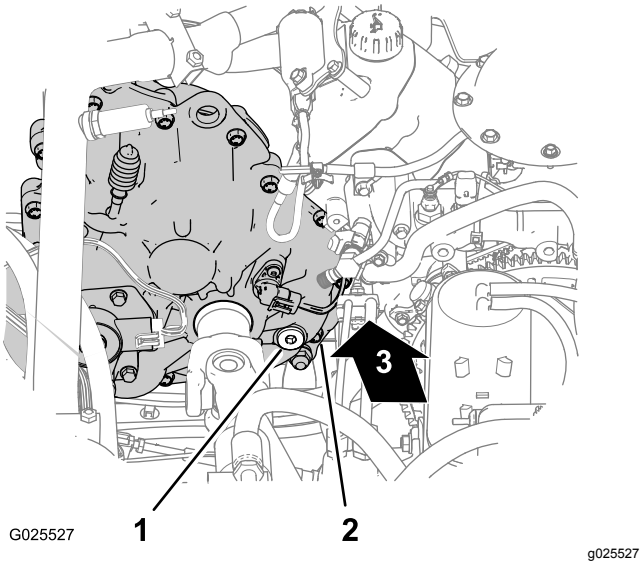


Figure 66

1. Fill plug
2. Transmission case (back inboard location)
3. Forward

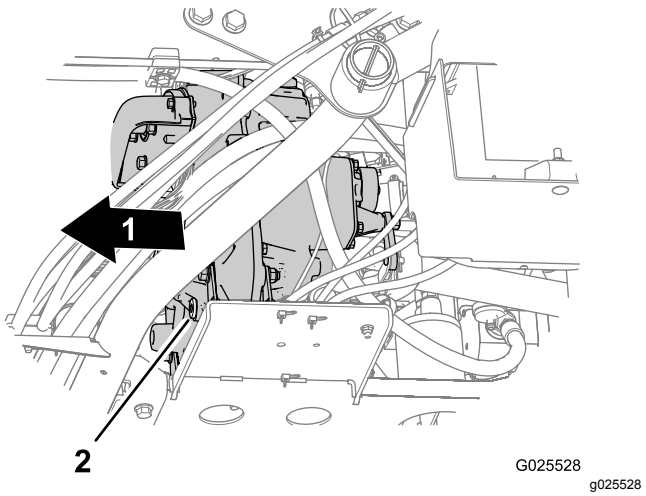


Figure 67

1. Forward
2. Drain plug

3. Remove the fill plug from the fill port by rotating the plug counterclockwise and removing it from the transmission (Figure 66).
4. Align a drain pan below the drain plug (Figure 67).

5. Remove the drain plug from the drain port by rotating the plug counterclockwise and removing it from the transmission (Figure 67).

   Note: Allow the transmission fluid to drain completely.

6. Install the drain plug (Figure 67).
7. Add 700 ml (23.7 oz) of Dexron VI transmission fluid into the transmission through the fill port (Figure 66).

   Note: Use a funnel with a flexible hose when filling the transmission.

   Note: When the transmission fluid level is correct, the fluid should be level with the bottom of the threads in the fill port.

8. Install the fill plug (Figure 66).

Servicing the Reservoir of the Speed-Control Cylinder

Service Interval: Every 200 hours

Reservoir Fluid Type: DOT 3 brake fluid

1. Remove the knobs from the hydraulic-lift lever and the speed-range lever (Figure 68).

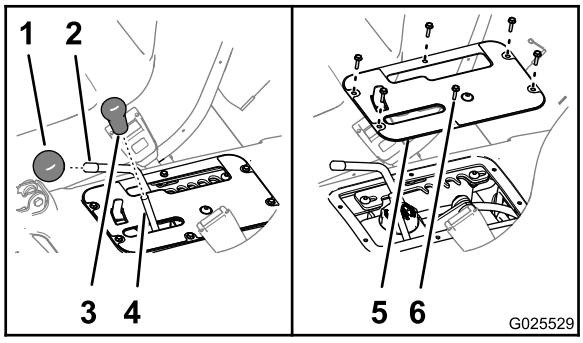


Figure 68

1. Knob (speed-range lever)
2. Rod (speed-range lever)
3. Knob (hydraulic-lift lever)
4. Rod (hydraulic-lift lever)
5. Control-cover plate
6. Hex-washer screws (#10 x 3/4 inch)

2. Remove the 6 hex-washer screws (#10 x 3/4 inch) that secure the control-cover plate to the seat base, and remove the cover plate (Figure 68).
3. Move the speed-range lever to the transport position; refer to Using the Speed-Range Control (page 33).
4. Check the fluid level in the reservoir for the speed control cylinder (Figure 69).

   Note: The normal fluid level is between the Min and Max marks on the side of the reservoir.

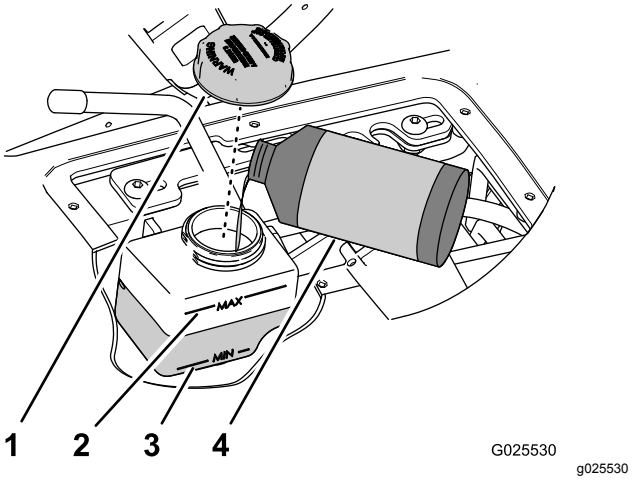


Figure 69

1. Cap
2. Max mark (reservoir)
3. Min mark (reservoir)
4. DOT 3 brake fluid

5. If the fluid level is low, perform the following:
   A. Wipe clean the area around the cap for the reservoir (Figure 69).
   B. Remove the cap from the reservoir (Figure 69).
   C. Add the specified fluid to raise the level midway between the Min and Max marks on the side of the reservoir (Figure 69).
   D. Install the cap hand tight (Figure 69).
6. Align the holes in the control-cover plate to the holes in the seat base (Figure 68).
7. Secure the plate to the base with the 6 hex-washer screws (Figure 68) that you removed in step 2.
8. Thread the knobs onto the rods for the hydraulic-lift lever and the speed-range lever (Figure 68).

Adjusting the Speed Control

Important: **The minimum controlled speed for the machine is 4.0 kph (2.5 mph) at full engine speed. Controlling the machine speed slower that 4.0 kph (2.5 mph) results in excessive belt and clutch wear.**

1. Drive the machine in speed range A (low range), B (mid-low range), C (mid-high range), or D (high range) in order to determine which speed range includes the maximum-ground speed that you want to set; refer to .

   Note: Use the speedometer to determine the speed that the machine is traveling.

2. Remove the knobs from the hydraulic-lift lever and the speed-range lever (Figure 68).

3. Remove the 6 hex-washer screws (#10 x 3/4 inch) that secure the control-cover plate to the seat base, and remove the cover plate (Figure 68).
4. Move the speed-range lever to the **T** (TRANSPORT) position (Figure 70).
5. Loosen the 2 hex-socket screws (5/16 x 3/4 inch) that secure the detent plate to the lever-support bracket (Figure 70).

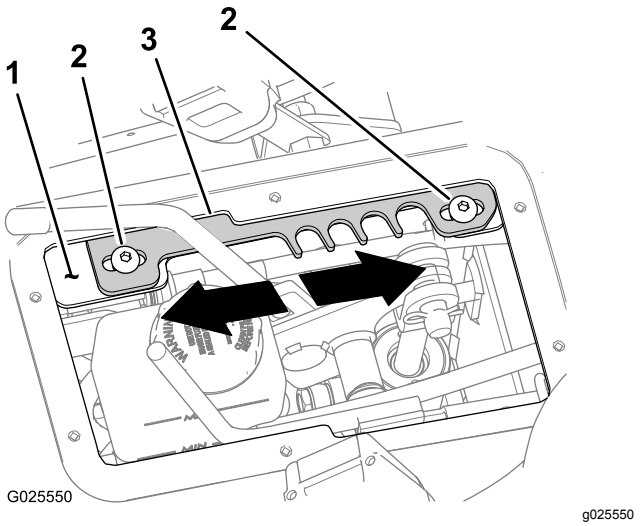


Figure 70

1. Lever-support bracket
2. Hex-socket screws
3. Detent plate

6. Move the detent plate in one of the following directions:
   - Move the detent plate **forward** to increase the maximum ground speed limit (Figure 70).
   - Move the detent plate **rearward** to decrease the maximum ground speed limit (Figure 70).
7. Tighten the 2 hex-socket screws (5/16 x 3/4 inch) to 19.8 to 25.4 N·m (14.6 to 18.7 ft-lb).
8. Drive the machine with the speed control set to speed range for which you are setting the maximum ground speed limit. If the maximum ground speed limit is too fast or too slow, repeat steps 1 through 8 until the correct maximum ground speed limit is attained.
9. Align the holes in the control-cover plate to the holes in the seat base (Figure 68).
10. Secure the plate to the base with the 6 hex-washer screws (Figure 68) that you removed in step 3.
11. Thread the knobs onto the rods for the hydraulic-lift lever and the speed-range lever (Figure 68).

Checking the Drive Belt

Service Interval: Every 400 hours

1. Remove the 9 hex-washer bolts (1/4 x 1 inch) that secure the transmission cover to the mounting plate of the transmission (Figure 71).

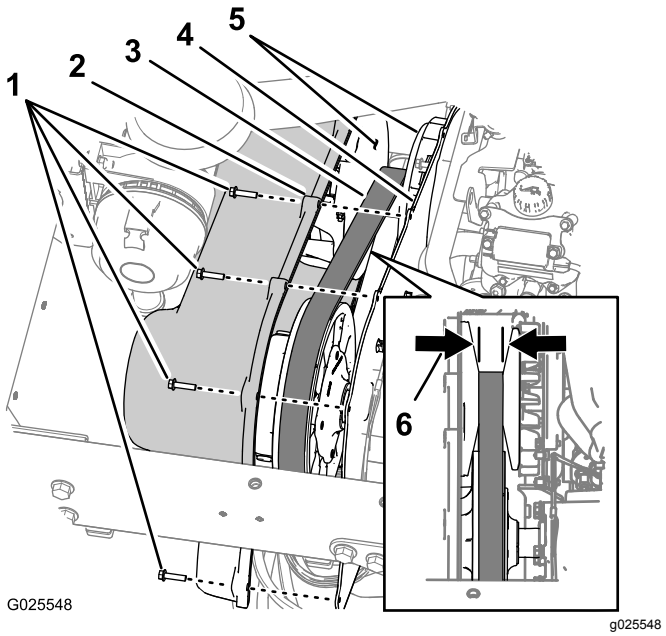


Figure 71

1. Hex-washer bolts (1/4 x 1 inch)
2. Transmission cover
3. Drive belt
4. Mounting plate
5. Tapered faces (primary clutch)
6. Belt width—replace at 29.5 mm (1.16 inches) or less

2. Move the cover forward until you can see the drive belt (Figure 71).
3. Check the tapered faces of the primary clutch for signs if damage (Figure 71).

   Note: If the faces of the primary clutch are damaged, replace the primary clutch; contact your Authorized Service Dealer or Authorized Distributor.
4. Check the drive belt for missing or damaged cogs (Figure 71).

   Note: If the cogs of the drive belt are missing or damaged, replace the drive belt.
5. Measure across the belt and record the belt width (Figure 71).

   Note: If the width of the belt is 29.5 mm (1.16 inches) or less, replace the belt (Figure 71).
6. Align the holes in the transmission cover with the holes in the mounting plate (Figure 71).
7. Secure the cover to the mounting plate (Figure 71) with the 9 hex-washer bolts (1/4 x 1 inch)

that you removed in step 1, and torque the bolts to 10.2 to 12.4 N·m (90 to 110 in-lb).

Cleaning the Clutches

Service Interval: Every 400 hours

1. Remove the 9 hex-washer bolts (1/4 x 1 inch) that secure the transmission cover to the mounting plate of the transmission (Figure 72).

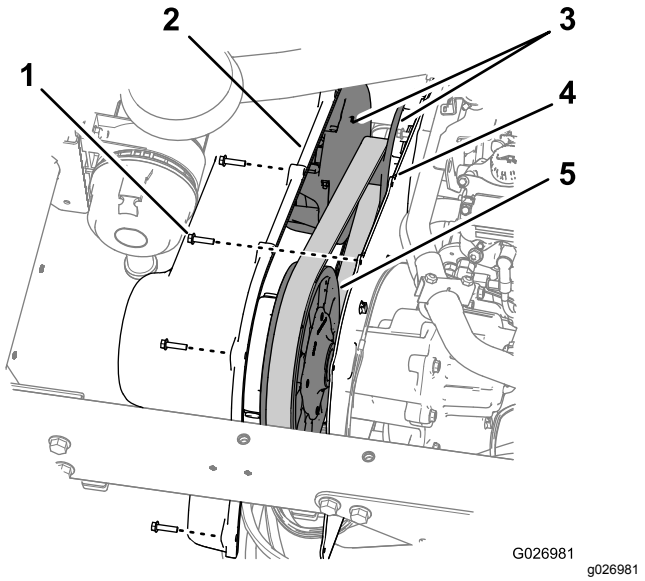


Figure 72

1. Hex-washer bolts (1/4 x 1 inch)
2. Transmission cover
3. Primary clutch
4. Mounting plate
5. Secondary clutch

2. At the primary and secondary clutches, Remove dirt and mud buildup with water and dry immediately with compressed air to remove excess water and debris.
3. Remove any remaining debris using a fast-drying contact cleaner or brake cleaner.

   Note: Note: Remove the debris in and around moving parts.
4. If debris or buildup exists around the belt or along the clutch shaft, use a fine abrasive pad or a similar product to remove it.
5. Align the holes in the transmission cover with the holes in the mounting plate (Figure 72).
6. Secure the cover to the mounting plate (Figure 72) with the 9 hex-washer bolts (1/4 x 1 inch) that you removed in step 1, and torque the bolts to 10.2 to 12.4 N·m (90 to 110 in-lb).

Maintaining the Differential and Axles

Changing the Differential Oil

Oil type: 80W90 API GL-5

Oil capacity: 550 ml (18.6 oz)

1. Align a drain pan under the drain plug (Figure 73).

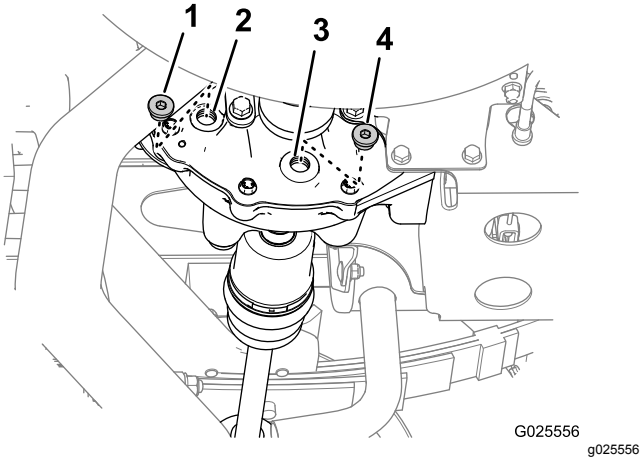


Figure 73

1. Fill plug
2. Fill port
3. Drain port
4. Drain plug

2. Remove the fill plug from the fill port and the drain plug from the drain port of the differential (Figure 73).

   Note: Allow the differential to completely drain.
3. Check the condition of the O-rings on the plugs.

   Note: Replace damaged or worn O-rings.
4. Install the drain plug into the drain port (Figure 73), and tight the plug to 14 to 19 N·m (10 to 14 ft-lb).

   Note: The drain plug is magnetic. It is normal to see small amounts of ferrous-metal particles around magnet—expect more particles around the magnet after the initial break-in.
5. Add 550 ml (18.6 oz) of the specified oil into the fill port of the differential (Figure 73).

   Note: Use a funnel with a flexible hose to add oil to the differential.
6. Install the fill plug into the fill port (Figure 73), and tighten the plug to 14 to 19 N·m (10 to 14 ft-lb).

Checking the Constant-Velocity Boots

Service Interval: Every 100 hours

1. Jack up the back end of the machine and support it with jack stands; refer to Raising the Machine (page 42).
2. Check the CV (constant velocity) boots at the rear axles for damage and leaking lubricant (Figure 74).

   Note: Replace any damaged or leaking CV boot before operating the machine.

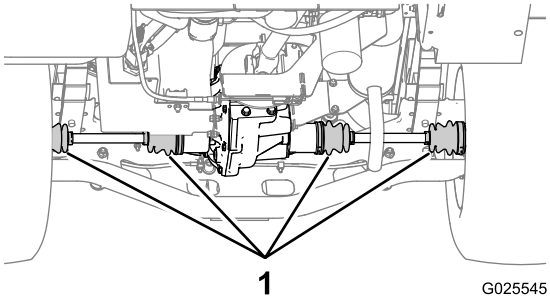


Figure 74

3. Remove the jack stands and lower the machine to the ground.

Cooling System Maintenance

Changing the Engine Coolant

Service Interval: Every 1,000 hours/Every 2 years (whichever comes first)

Cooling system capacity: 3.7 L (4 US qt)

Coolant type: a 50/50 solution of water and permanent ethylene-glycol antifreeze

1. Park the machine on a level surface.
2. Raise the bed (if so equipped) and install the bed safety support on the extended lift cylinder to hold up the bed.

⚠ CAUTION

If the engine has been running, the cooling system pressurizes with hot coolant that can escape and cause burns.

- **Do not open the radiator cap when the engine is running.**
- **Allow the engine to cool for at least 15 minutes or until the radiator cap is cool enough to touch without burning your hand.**
- **Use a rag to open the radiator cap. Open the cap slowly to allow the steam to escape.**

3. Remove the radiator cap (Figure 75).

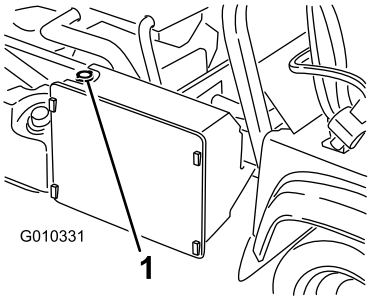


Figure 75

1. Radiator cap

4. Remove the cap from the coolant-reserve tank (Figure 75).

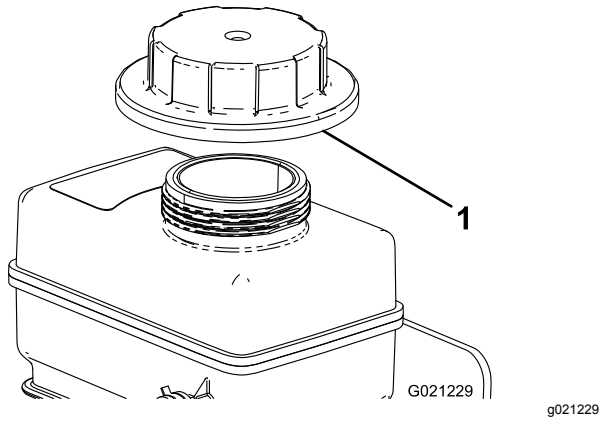


Figure 76

1. Cap (coolant-reserve tank)

5. Disconnect the lower radiator hose and allow the coolant to flow into a drain pan.

   Note: When the coolant stops flowing, connect the lower radiator hose.

6. Slowly fill the radiator with a 50/50 mixture of water and permanent ethylene-glycol antifreeze
7. Top off the radiator and install the cap (Figure 75).
8. Slowly fill the coolant-reserve tank until level reaches the bottom of the filler neck (Figure 76).
9. Install the cap on the coolant-reserve tank (Figure 76).
10. Start the engine and operate it until it is warm.
11. Shut off the engine, check the coolant level, and replenish the coolant, if required.

Brake Maintenance

Adjusting the Parking Brake

Service Interval: After the first 10 hours
Every 200 hours

1. Remove the rubber grip from the parking-brake lever (Figure 77).

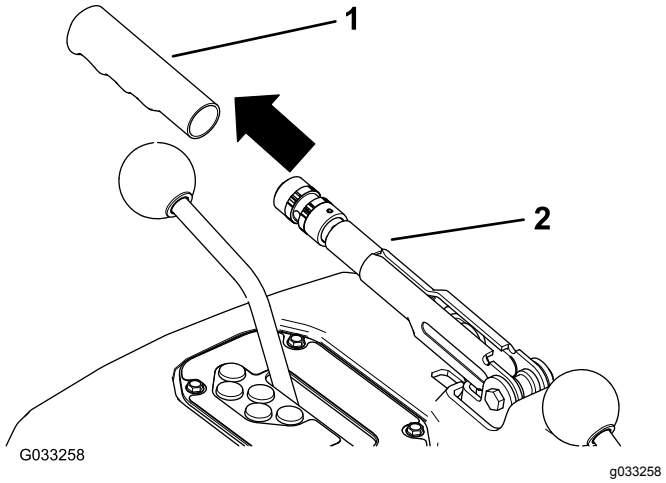


Figure 77

1. Grip
2. Parking-brake lever

2. Loosen the set screw securing the knob to the parking-brake lever (Figure 78).

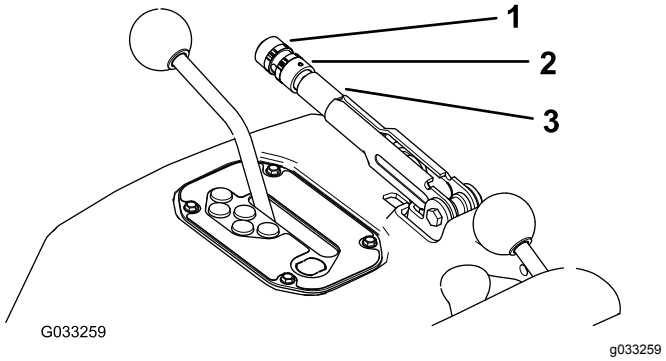


Figure 78

1. Knob
2. Set screw
3. Parking-brake lever

3. Rotate the knob (Figure 78) until a force of 20 to 22 kg (45 to 50 lb) is required to actuate the lever.
4. Tighten the set screw when finished (Figure 78).

   Note: If you can no longer make a parking-brake adjustment by adjusting the parking-brake lever, loosen the handle to the middle of the adjustment and adjust the cable at the rear, then repeat step 3.

5. Install the rubber grip onto the parking-brake lever (Figure 77).

Adjusting the Brake Pedal

Service Interval: Every 200 hours

1. Remove the hood.
2. Remove the cotter pin and clevis pin securing the master-cylinder yoke to the brake-pedal pivot (Figure 79).

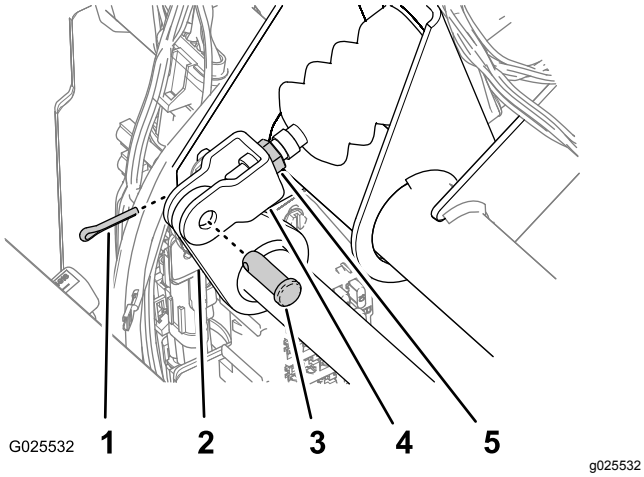


Figure 79

1. Cotter pin
2. Brake-pedal pivot
3. Clevis pin
4. Master-cylinder yoke
5. Jam nut

3. Lift up on the brake pedal (Figure 80) until it contacts the frame.

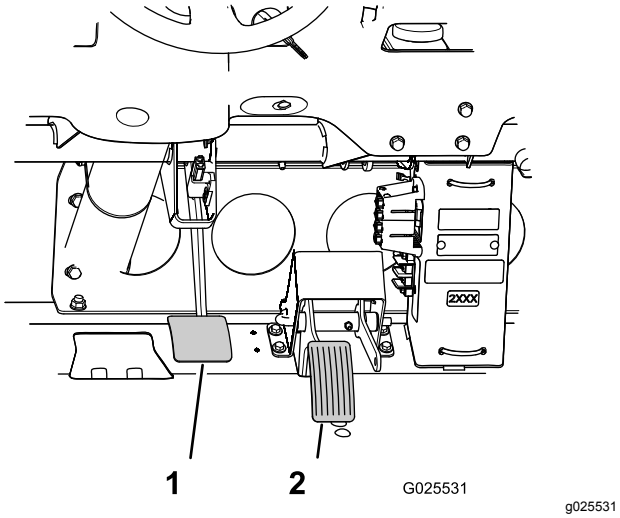


Figure 80

1. Brake pedal
2. Accelerator pedal

4. Loosen the jam nuts securing the yoke to the master-cylinder shaft (Figure 79).
5. Adjust the yoke until its holes align with the hole in the brake-pedal pivot (Figure 79).
6. Secure the yoke to the pedal pivot with the clevis pin and cotter pin (Figure 79).
7. Tighten the jam nut securing the yoke to the master-cylinder shaft (Figure 79).

   Note: The brake-master cylinder must relieve the pressure from the service brake when it is properly adjusted.
8. Install the hood; refer to Installing the Hood (page 43).

Controls System Maintenance

Converting the Speedometer

You can convert the speedometer from mph to kpm or kph to mph.

1. Position the machine on a level surface, shut off the engine, engage the parking brake, and remove the key from the key switch.
2. Remove the hood.
3. Locate the 2 loose wires next to the meter (Figure 81).

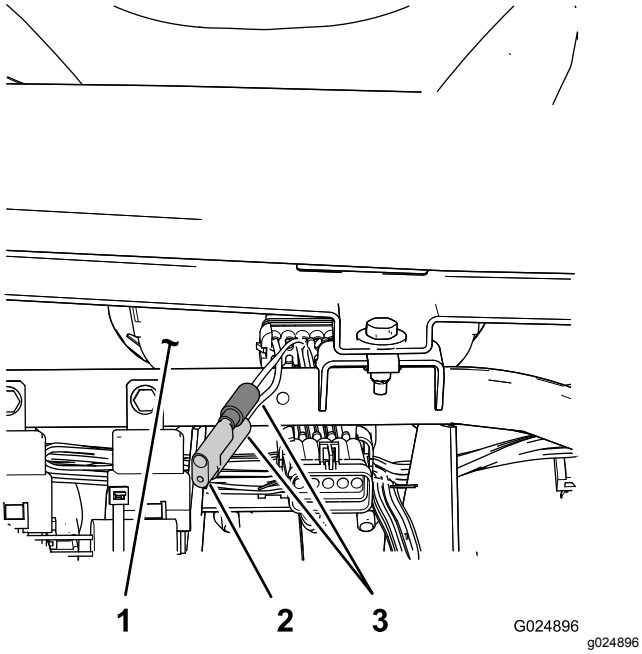


Figure 81

1. meter (forward face)
2. Plug
3. Speedometer wires

4. Remove the connector plug from the harness wire and connect the wires together (Figure 81).

   Note: The meter switches from mph to kph. Retain the plug in order to convert the speedometer to mph.

5. Install the hood; refer to Installing the Hood (page 43).

Hydraulic System Maintenance

Replacing the Hydraulic Filter

Service Interval: After the first 10 hours

Every 800 hours

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

1. Position the machine on a level surface, shut off the engine, engage the parking brake, and remove the key from the key switch.
2. Clean the area around filter-mounting area (Figure 82).

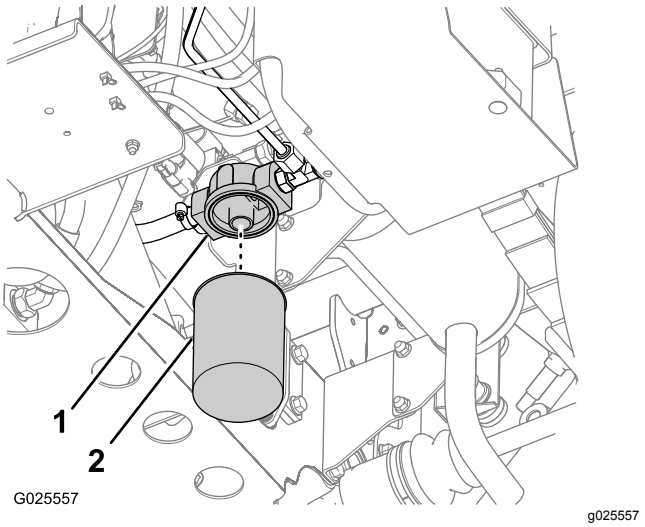


Figure 82

1. Filter adapter
2. Hydraulic filter

3. Place a drain pan under the filter (Figure 82).
4. Remove the filter by rotating it counterclockwise (Figure 82).
5. Clean the filter-seating surface of the filter adapter (Figure 82).
6. Lubricate the gasket on the new filter with the specified Mobil M15 hydraulic fluid.
7. Thread the filter onto the filter adapter until the gasket of the filter contacts the seating surface of the adapter (Figure 82), and then tighten the filter an additional 1/2 turn (Figure 82).
8. Start the engine and let it run for about 2 minutes to purge air from the system.
9. Shut off the engine and check the hydraulic-fluid level in the reservoir and the filter area for leaks.

Changing the Hydraulic Fluid

Service Interval: Every 800 hours

Hydraulic Fluid Type: Mobil M15

Hydraulic Fluid Capacity: (Non-TC model): 7.5 L (2 US gallons)

Hydraulic Fluid Capacity: (Non-TC model with the High Flow Hydraulic Kit (option) or TC model): 15.1 L (4 US gallons)

1. Position the machine on a level surface, shut off the engine, engage the parking brake, and remove the key from the key switch.
2. Raise the cargo box.
3. Remove the cap and dipstick from the filler neck of the reservoir (Figure 83).

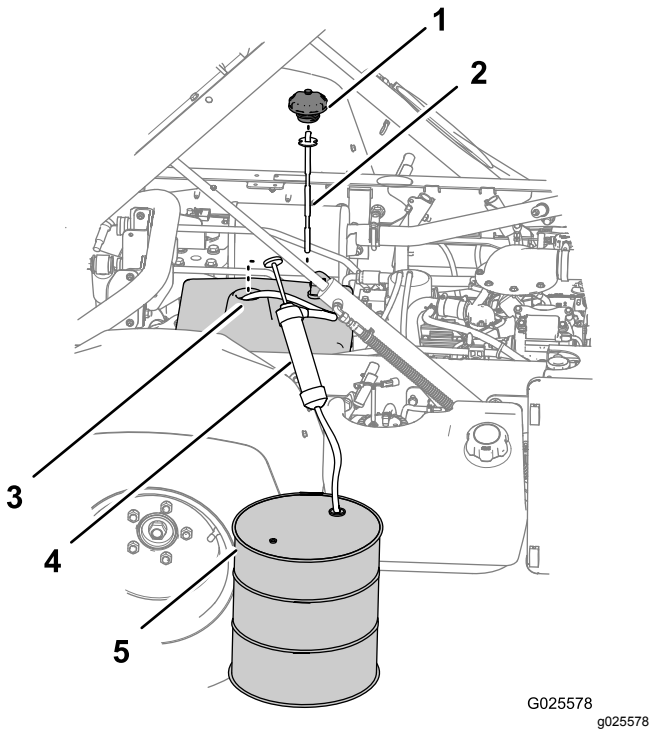


Figure 83

1. Cap
2. Dipstick
3. Filler neck (hydraulic reservoir)
4. Siphon equipment
5. Collection container

4. Route the intake hose of the siphoning equipment through the filler neck of the hydraulic reservoir and to the bottom of the reservoir (Figure 83).
5. Direct the discharge hose of the siphoning equipment into a collection container (Figure 83) with a 11.4 L (3 US gallon) capacity—Non-TC model or 18.9 L (5 US gallon) capacity—Non-TC model with the High Flow Hydraulic Kit (option) or TC model.
6. Siphon the hydraulic fluid from the reservoir.
7. Remove the siphoning equipment from the reservoir (Figure 83).
8. Add 7.5 L (2 US gallons)—Non-TC model or 15.1 L (4 US gallons)—Non-TC model with the High Flow Hydraulic Kit (option) or TC model of the specified hydraulic fluid into the hydraulic reservoir (Figure 83).

   Important: **Use only the hydraulic fluids specified. Other fluids could cause system damage.**
9. Install the dipstick and cap to the filler neck of the hydraulic reservoir (Figure 83).
10. Start the engine and operate the machine to fill the hydraulic system.
11. Check the hydraulic-fluid level and replenish it, if required.

Raising the Box in an Emergency

You can raise the box in an emergency without starting the engine by cranking starter or by jumping the hydraulic system.

Raising the Box Using the Starter

Note: If the engine does not start, you must remove the load and box (attachment) in order to service the engine.

1. Ensure that the transmission lever is in the **P** (PARK) position.
2. Crank the starter while holding the lift lever in the RAISE position.

   Note: Run the starter for 15 seconds then wait 60 seconds before engaging the starter again.

Raising the Box by Jumping the Hydraulic System

Note: This procedure requires 2 hydraulic hoses, each with a male and a female quick coupler, that fits the couplers on the machine.

1. Back another vehicle up to the rear of the disabled machine.

   Important: **The hydraulic system uses Mobil M15. To avoid system contamination, make sure that the vehicle you use to jump the hydraulic system uses an equivalent fluid.**

2. On both vehicles, disconnect the 2 quick coupler hoses from the hoses secured to the coupler bracket (Figure 84).

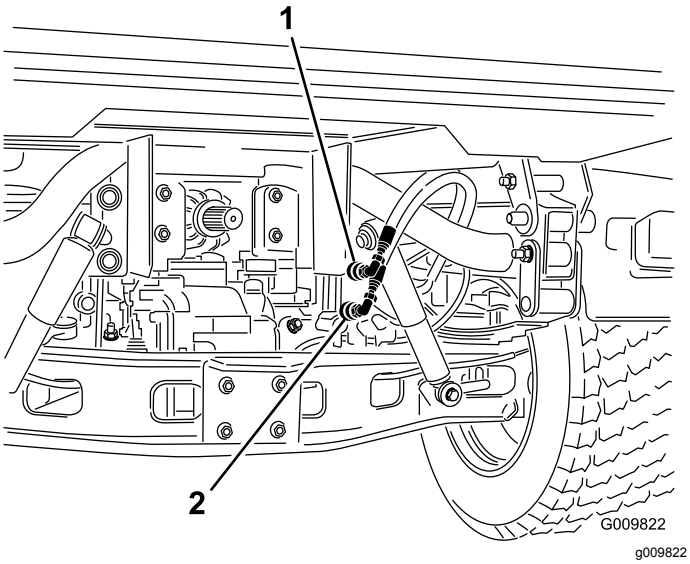


Figure 84

1. Quick coupler hose A
2. Quick coupler hose B

3. On the disabled vehicle, connect the 2 jumper hoses to the hoses that were disconnected (Figure 85).

   Note: Cap the unused fittings.

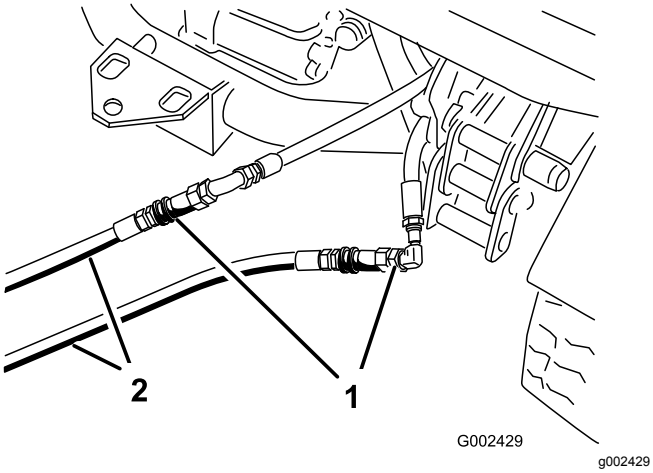


Figure 85

1. Disconnected hoses
2. Jumper hoses

4. On the other vehicle, connect the 2 hoses to the coupler still in the coupler bracket (connect the top hose to the top coupler and the bottom hose to the bottom coupler) as shown inFigure 86.

   Note: Cap the unused fittings.

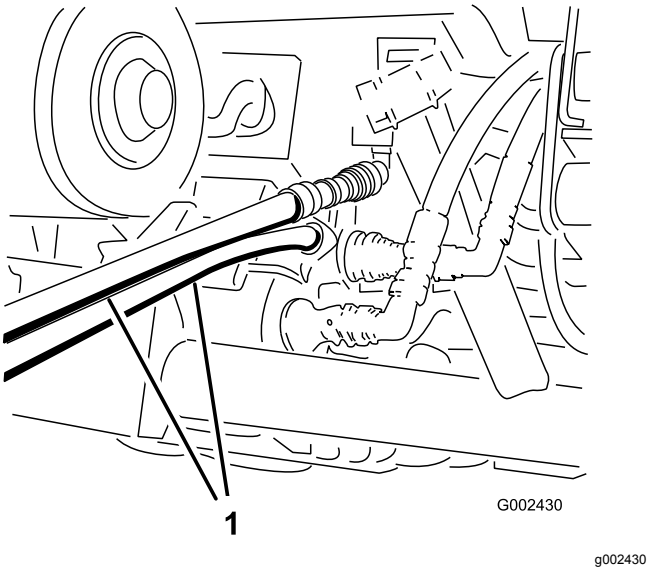


Figure 86

1. Jumper hoses

5. Keep all bystanders away from the vehicles.
6. Start the second vehicle and move the lift lever to the raise position, which raises the disabled box.
7. Move the hydraulic-lift lever to the NEUTRAL position and set the hydraulic-lift lock.
8. Install the bed support onto the extended-lift cylinder; refer to Using the Bed Support (page 40).

   Note: With both the vehicles turned off, move the lift lever back and forth to remove the system pressure and ease the disconnection of the quick couplers.
9. After completing the operation, remove the jumper hoses and connect the hydraulic hoses to both vehicles.

   Important: **Check the hydraulic-fluid levels in both vehicles before resuming operation.**

Storage

1. Position the machine on a level surface, engage the parking brake, shut off the engine, and remove the key from the key switch.
2. Clean dirt and grime from the entire machine, including the outside of the engine cylinder head fins and blower housing.

   Important: **You can wash the machine with mild detergent and water. Do not use high-pressure water to wash the machine. Pressure washing the machine may damage the electrical system or wash away necessary grease at friction points. Avoid excessive use of water, especially near the control panel, lights, engine, and battery.**
3. Inspect the brakes; refer to Adjusting the Brake Pedal (page 59).
4. Service the air cleaner; refer to Servicing the Air Filter (page 45).
5. Grease the machine; refer to Greasing the Bearings and the Bushings (page 44).
6. Change the engine oil and filter; refer to Changing the Engine Oil and Filter (page 46).
7. Check the tire pressure; refer to Checking the Tire Pressure (page 31).
8. For storage over 30 days, prepare the fuel system as follows:

   A. Add a petroleum based stabilizer/conditioner to the fuel in the tank.

      Follow mixing instructions from the stabilizer manufacturer. Do not use an alcohol-based stabilizer (ethanol or methanol).

      Note: A fuel stabilizer/conditioner is most effective when mixed with fresh gasoline and the stabilizer/conditioner is used at all times.

   B. Run the engine to distribute conditioned fuel through the fuel system for 5 minutes.

   C. Shut off the engine, allow it to cool, and drain the fuel tank.

   D. Start the engine and run it until it stops.

   E. Start and run the engine again until it does not start again.

   F. Dispose of drained fuel properly. Recycle as per local codes.

      Important: **Do not store stabilizer/conditioned gasoline for over 90 days.**
9. Remove the spark plugs and check their condition; refer to Replacing the Spark Plug (page 47).
10. With the spark plugs removed from the engine, pour 2 tablespoons of engine oil into the spark-plug hole.
11. Use the starter to crank the engine and distribute the oil inside the cylinder.
12. Install the spark plugs and tighten each one to the recommended torque; refer to Replacing the Spark Plug (page 47).

    Note: Do not install the spark-plug wires on the spark plugs.
13. Check the anti freeze protection and add a 50/50 solution of water and anti freeze as needed for expected minimum temperature in your area.
14. Remove the battery from the chassis, and charge it fully; refer to Servicing the Battery (page 51).

    Note: Do not connect the battery cables to the battery posts during storage.

    Important: **The battery must be fully charged to prevent it from freezing and being damaged at temperatures below 0°C (32°F). A fully charged battery maintains its charge for about 50 days at temperatures lower than 4°C (40°F). If the temperatures will be above 4°C (40°F), check the water level in the battery and charge it every 30 days.**
15. Check and tighten all the bolts, nuts, and screws. Repair or replace any part that is damaged.
16. Paint all the scratched or bare metal surfaces.

    Note: Paint is available from your Authorized Service Distributor.
17. Store the machine in a clean, dry garage or storage area.
18. Remove the key from the key switch and put it in a safe place that is out of the reach of children.
19. Cover the machine to protect it and keep it clean.

Troubleshooting

Problem	Possible Cause	Corrective Action
The quick couplers are difficult to connector disconnect.	1. The hydraulic pressure not relieved (the quick coupler is under pressure).	1. Shut off the engine, move the hydraulic-lift lever forward and backward several times, and connect the quick couplers for the fittings in the auxiliary hydraulic panel.
The power steering moves hard.	1. The hydraulic-fluid level is low. 2. The hydraulic fluid is hot. 3. The hydraulic pump not operating.	1. Service the hydraulic reservoir. 2. Check the hydraulic-fluid level and service if it is low. Contact you Authorized Service Dealer. 3. Contact you Authorized Service Dealer.
The hydraulic fitting leaks.	1. The fitting is loose. 2. The hydraulic fitting is missing an O-ring.	1. Tighten the fitting. 2. Install the missing O-ring.
An attachment does not function.	1. The quick couplers are not fully connected. 2. The quick couplers are interchanged.	1. Disconnect the quick couplings, remove and debris from the couplings, connect the couplings. Replace any damaged couplings. 2. Disconnect the quick couplings, align the couplings to the correct ports on the auxiliary hydraulic panel, connect the couplings.
A squealing noise is heard.	1. The Hydraulic-lift lever is locked in the ON position (causing hydraulic fluid to flow over the relief valve).	1. Set the hydraulic-lift lock to the UNLOCK position and move the hydraulic-lift lever to NEUTRAL.
The engine does not start.	1. The hydraulic-lift lever is locked in the ON position.	1. Set the hydraulic-lift lock to the UNLOCK position, move the hydraulic-lift lever to NEUTRAL, and start the engine.
The transmission is hard to shift.	1. The engine-idle rpm is set too fast. 2. The clutches are dirty.	1. Adjust the engine low idle to 1,250 to 1,350 rpm. 2. Clean the clutches.
The clutch engagement is abrupt.	1. The engine idle is too slow. 2. The belt is new. 3. The accelerator pedal free play is too large. 4. The clutched are dirty.	1. Adjust the engine low idle to 1,250 to 1,350 rpm. 2. Allow 10 hours of normal operation for the belt break-in period. 3. Adjust the accelerator pedal. 4. Clean the clutches.

Notes:

Notes:

European Privacy Notice

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

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

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

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

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

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

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

Australian Consumer Law

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

The Toro Warranty

A Two-Year Limited Warranty

Conditions and Products Covered

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrant your Toro Commercial product ("Product") to be free from defects in materials or workmanship for two years or 1500 operational hours*, whichever occurs first. This warranty is applicable to all products with the exception of Aerators (refer to separate warranty statements for these products). Where a warrantable condition exists, we will repair the Product at no cost to you including diagnostics, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.
* Product equipped with an hour meter.

Instructions for Obtaining Warranty Service

You are responsible for notifying the Commercial Products Distributor or Authorized Commercial Products Dealer from whom you purchased the Product as soon as you believe a warrantable condition exists. If you need help locating a Commercial Products Distributor or Authorized Dealer, or if you have questions regarding your warranty rights or responsibilities, you may contact us at:

Toro Commercial Products Service Department
Toro Warranty Company
8111 Lyndale Avenue South
Bloomington, MN 55420-1196

952–888–8801 or 800–952–2740
E-mail: commercial.warranty@toro.com

Owner Responsibilities

As the Product owner, you are responsible for required maintenance and adjustments stated in your *Operator's Manual*. Failure to perform required maintenance and adjustments can be grounds for disallowing a warranty claim.

Items and Conditions Not Covered

Not all product failures or malfunctions that occur during the warranty period are defects in materials or workmanship. This warranty does not cover the following:

- Product failures which result from the use of non-Toro replacement parts, or from installation and use of add-on, or modified non-Toro branded accessories and products. A separate warranty may be provided by the manufacturer of these items.
- Product failures which result from failure to perform recommended maintenance and/or adjustments. Failure to properly maintain your Toro product per the Recommended Maintenance listed in the *Operator's Manual* can result in claims for warranty being denied.
- Product failures which result from operating the Product in an abusive, negligent, or reckless manner.
- Parts subject to consumption through use unless found to be defective. Examples of parts which are consumed, or used up, during normal Product operation include, but are not limited to, brake pads and linings, clutch linings, blades, reels, rollers and bearings (sealed or greasable), bed knives, spark plugs, castor wheels and bearings, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, and check valves, etc.
- Failures caused by outside influence. Conditions considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved fuels, coolants, lubricants, additives, fertilizers, water, or chemicals, etc.
- Failure or performance issues due to the use of fuels (e.g. gasoline, diesel, or biodiesel) that do not conform to their respective industry standards.
- Normal noise, vibration, wear and tear, and deterioration.
- Normal "wear and tear" includes, but is not limited to, damage to seats due to wear or abrasion, worn painted surfaces, scratched decals or windows, etc.

Parts

Parts scheduled for replacement as required maintenance are warranted for the period of time up to the scheduled replacement time for that part. Parts replaced under this warranty are covered for the duration of the original product warranty and become the property of Toro. Toro will make the final decision whether to repair any existing part or assembly or replace it. Toro may use remanufactured parts for warranty repairs.

Deep Cycle and Lithium-Ion Battery Warranty:

Deep cycle and Lithium-Ion batteries have a specified total number of kilowatt-hours they can deliver during their lifetime. Operating, recharging, and maintenance techniques can extend or reduce total battery life. As the batteries in this product are consumed, the amount of useful work between charging intervals will slowly decrease until the battery is completely worn out. Replacement of worn out batteries, due to normal consumption, is the responsibility of the product owner. Battery replacement may be required during the normal product warranty period at owner's expense. Note: (Lithium-Ion battery only): A Lithium-Ion battery has a part only prorated warranty beginning year 3 through year 5 based on the time in service and kilowatt hours used. Refer to the *Operator's Manual* for additional information.

Maintenance is at Owner's Expense

Engine tune-up, lubrication, cleaning and polishing, replacement of filters, coolant, and completing recommended maintenance are some of the normal services Toro products require that are at the owner's expense.

General Conditions

Repair by an Authorized Toro Distributor or Dealer is your sole remedy under this warranty.

Neither The Toro Company nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of the Toro Products covered by this warranty, including any cost or expense of providing substitute equipment or service during reasonable periods of malfunction or non-use pending completion of repairs under this warranty. Except for the Emissions warranty referenced below, if applicable, there is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of this express warranty.

Some states do not allow exclusions of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Note regarding engine warranty:

The Emissions Control System on your Product may be covered by a separate warranty meeting requirements established by the U.S. Environmental Protection Agency (EPA) and/or the California Air Resources Board (CARB). The hour limitations set forth above do not apply to the Emissions Control System Warranty. Refer to the Engine Emission Control Warranty Statement supplied with your product or contained in the engine manufacturer's documentation for details

Countries Other than the United States or Canada

Customers who have purchased Toro products exported from the United States or Canada should contact their Toro Distributor (Dealer) to obtain guarantee policies for your country, province, or state. If for any reason you are dissatisfied with your Distributor's service or have difficulty obtaining guarantee information, contact the Toro importer.

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