Form No. 3382-452 Rev A

TORO®

Count on it.

Operator's Manual

Industrial Workman® HDX-D Utility Vehicle with Bed

Model No. 07379—Serial No. 314000001 and Up

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

3382-452 A

This machine is a utility vehicle intended to be used by professional, hired operators in commercial applications. It is primarily designed for the transport of implements used in such applications. This vehicle allows for the safe transport of an operator and one passenger in the identified seats. The bed of this vehicle is not suitable for any riders.

Introduction

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

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

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

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.

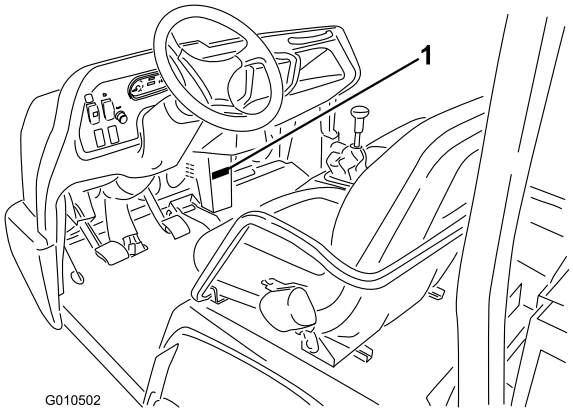


Figure 1

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

1. Safety alert symbol

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

8111 Lyndale Avenue South
Bloomington, MN 55420

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

Contents

Safety

Safe Operating Practices

⚠ WARNING

The Workman is an off–highway vehicle only, and is not designed, equipped, or manufactured for use on public streets, roads, or highways.

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

This is a specialized utility vehicle designed for off–road use only. Its ride and handling will have a different feel than what drivers experience with passenger cars or trucks. So take time to become familiar with this vehicle.

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

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

Supervisor's Responsibilities

- Make sure that all operators are thoroughly trained and familiar with the *Operator's Manual* and all labels on the vehicle.
- Be sure to establish your own special procedures and work rules for unusual operating conditions (e.g., slopes too steep for vehicle operation). Use the 3rd high lockout switch if driving at high speed could endanger you and others or damage the vehicle.

Before Operating

- Operate the machine only after reading and understanding the contents of this manual. A replacement manual is available by sending complete model and serial number to: The Toro Company, 8111 Lyndale Avenue South, Minneapolis, Minnesota 55420.
- **Never** allow children to operate the machine. **Never** allow adults to operate it without proper instructions. Only trained and authorized persons should operate this machine. Make sure that all operators are physically and mentally capable of operating the machine.
- This machine is designed to carry **only you**, the operator, and **1 passenger** in the seat provided by the manufacturer. **Never** carry any other passengers on the vehicle.
- **Never** operate the machine when under the influence of drugs or alcohol.
- Become familiar with the controls and know how to stop the engine quickly.
- Keep all shields, safety devices, and decals in place. If a shield, a safety device, or a decal is malfunctioning, illegible, or damaged, repair or replace it before operating the machine.
- Always wear substantial shoes. Do not operate the machine while wearing sandals, tennis shoes, or sneakers. Do not wear loose fitting clothing or jewelry which could get caught in moving parts and cause personal injury.
- Wearing safety glasses, safety shoes, long pants, and a helmet is advisable and required by some local safety and insurance regulations.
- Keep everyone, especially children and pets, away from the areas of operation.
- Before operating the machine, always check all parts of the vehicle and any attachments. If something is wrong, **stop using the machine**. Make sure that the problem is corrected before operating the machine or the attachment.
- Since diesel fuel is highly flammable, handle it carefully.
  - Use an approved fuel container.
  - Do not remove the cap from the fuel tank when the engine is hot or running.
  - Do not smoke while handling fuel.
  - Fill the fuel tank outdoors and to about 1 inch below the top of tank (bottom of filler neck). **Do not overfill the tank**.
  - Wipe up any spilled fuel.
- Operate the machine only outdoors or in a well-ventilated area.
- Use only an approved nonmetal, portable fuel container. Static electric discharge can ignite fuel vapors in a ungrounded fuel container. Remove the fuel container from the bed of the vehiclee and place it on the ground away from the vehicle before filling. Keep the nozzle in contact with the container while filling. Remove the equipment from vehicle bed before filling the tank.
- Check the safety interlock system daily for proper operation. If a switch malfunctions, replace the switch before operating the machine.

Operation

- The operator and passenger should use seat belts and 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 hand holds provided. Keep you arms and legs within the vehicle body at all times. Never carry passengers in the bed or on attachments. Remember that your passenger

may not be expecting you to brake or turn and may not be ready.

- Never overload your vehicle. The name plate (located under the middle of the dash) shows the load limits for the vehicle. Never overfill attachments or exceed the machine maximum gross vehicle weight (GVW).
- Using the machine demands attention. Failure to operate vehicle safely may result in an accident, tipping 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 speed, 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 vehicle on a steep slope. Normally, travel straight up and down slopes. Reduce speed when making sharp turns or when turning on hillsides. Avoid turning on hillsides whenever possible.
  - Use extra caution when operating the vehicle on wet surfaces, at higher speeds, or with a full load. Stopping time will increase with a full load. Shift into a lower gear before starting up or down a hill.
  - When loading the bed, distribute the load evenly. Use extra caution if the load exceeds the dimensions of the vehicle/bed. Operate the vehicle with extra caution when handling off-center loads that cannot be centered. Keep loads balanced and secure to prevent them from shifting.
  - 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 vehicle control.
  - Do not pass another vehicle traveling in the same direction at intersections, blind spots, or at other dangerous locations.
  - Keep all bystanders away. 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 vehicles. This vehicle is not designed for use on streets or highways. Always signal your turns or stop early enough so that other persons know what you plan to do. Obey all traffic rules and regulations.
  - Never operate the machine in or near an area where there is dust or fumes in the air, which are explosive. The electrical and exhaust systems of the vehicle can produce sparks capable of igniting explosive materials.
  - Always watch out for and avoid low overhangs, such as tree limbs, door jambs, over head walkways, etc. Make sure that there is enough room over head to easily clear the machine and your head.
  - If you are ever unsure about safe operation, **stop work** and ask your supervisor.
- Do not touch the engine, transaxle, radiator, muffler or muffler manifold while the engine is running or soon after it has stopped, because these areas may be hot enough to cause burns.
- If the machine ever vibrates abnormally, stop immediately, turn engine off, wait for all motion to stop and inspect for damage. Repair all damage before resuming operation.
- Lightning can cause severe injury or death. If lightning is seen or thunder is heard in the area, do not operate the machine; seek shelter.

Maintenance

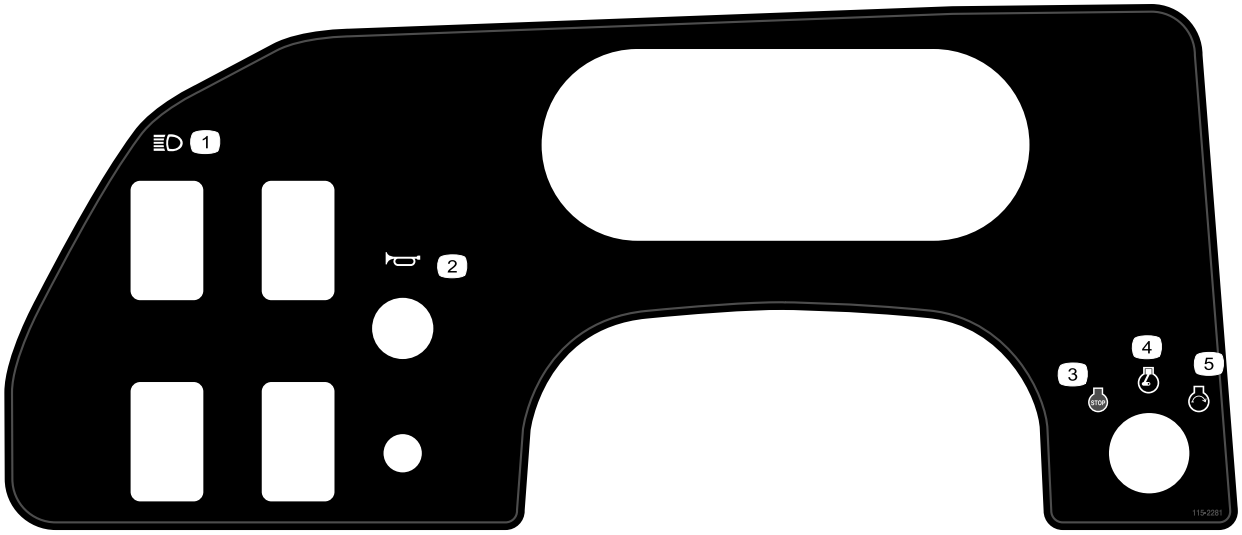
- Before servicing or making adjustments to the machine, stop the engine, set the parking brake, and remove the key from the ignition to prevent accidental starting of the engine.
- Make sure that all hydraulic line connectors are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- Keep your body and hands away from pin-hole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not your hands, to search for leaks. 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.
- To make sure that the entire machine is in good condition, keep all nuts, bolts, and screws properly tightened.
- To reduce the potential fire hazard, keep the engine area free of excessive grease, grass, leaves, and dirt.
- If the engine must be running to perform a maintenance adjustment, keep your hands, feet, clothing, and any parts of your body away from the engine and from any moving parts. Keep everyone away.
- Do not overspeed the engine by changing the governor settings. The maximum engine speed is 3650 rpm. To ensure safety and accuracy, have an Authorized Toro Distributor check the maximum engine speed with a tachometer.
- If major repairs are ever needed or if assistance is required, contact an Authorized Toro Distributor.
- To be sure of 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 vehicle in any manner may affect the vehicle's operation, performance, durability or its use may result in injury or

death. Such use could void the product warranty of The Toro Company.

- This vehicle should not be modified without The Toro Company's authorization. Direct any inquiries to The Toro Company, Commercial Division, Vehicle Engineering Dept., 8111 Lyndale Ave. So., Bloomington, Minnesota 55420–1196 USA

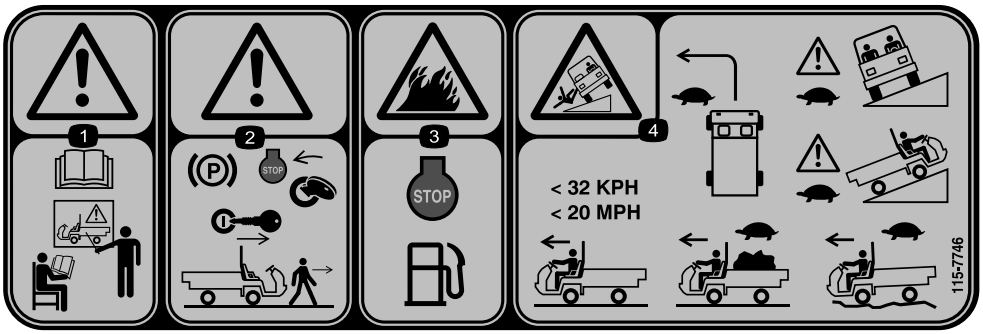
Safety and Instructional Decals

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



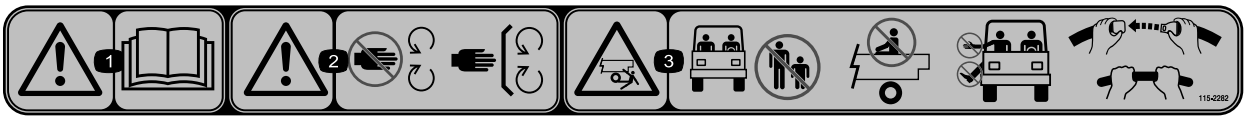
115-2281

1. Headlights
2. Horn
3. Engine—stop
4. Engine—run
5. Engine—start



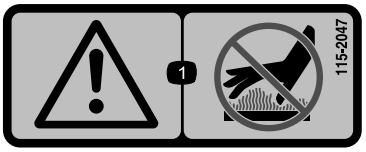
115-7746

1. Warning—do not operate this machine unless you are trained.
2. Warning—lock the parking brake, stop the engine, and remove the ignition key before leaving the machine.
3. Fire hazard—stop the engine before fueling.
4. Tipping hazard—slow down and turn gradually, use caution and drive slowly when driving on slopes, do not exceed 32 kph (20 mph), and drive slowly over rough terrain or when carrying a full or heavy load.



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 from the vehicle, do not carry passengers in the cargo bed, keep arms and legs inside of the vehicle at all times, and use seat belts and handholds.



115-2047

1. Warning—do not touch the hot surface.

121-6286

1. Read the *Operator's Manual* before checking the engine coolant level.
2. Do not add engine coolant to the radiator; add engine coolant to the reservoir,

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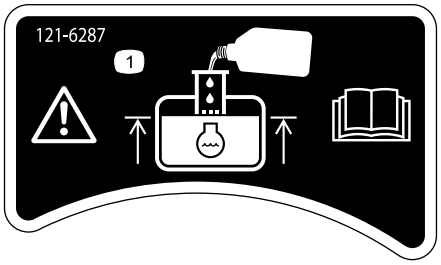
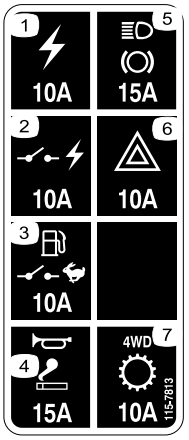


121-6287

1. Fill the reservoir with engine coolant to the bottom of the standpipe.

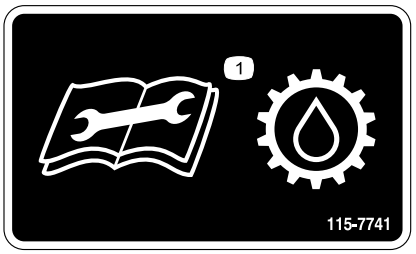
106-6755

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.*



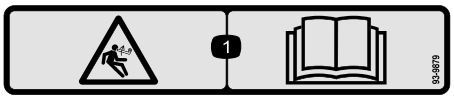
115-7813

1. Power outlet 10A
2. Switched power 10A
3. Fuel pump, supervisor switch 10A
4. Horn, power point 15A
5. Lights, brake 15A
6. Hazard 10A
7. 4WD, Transmission 10A



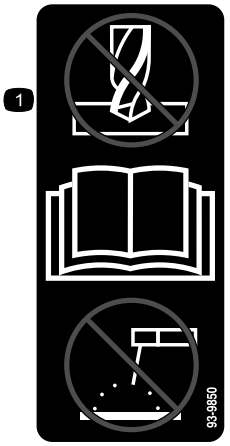
115-7741

1. Read the *Operator's Manual* before servicing transmission fluid.



93-9879

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

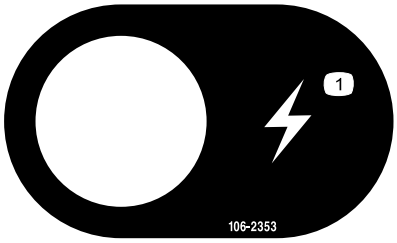


93-9850

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

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.



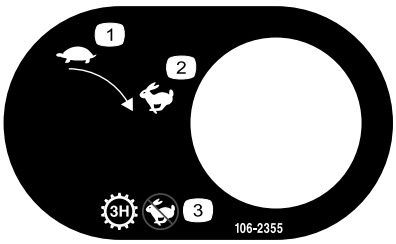
106-2353

1. Electrical power point

Battery Symbols

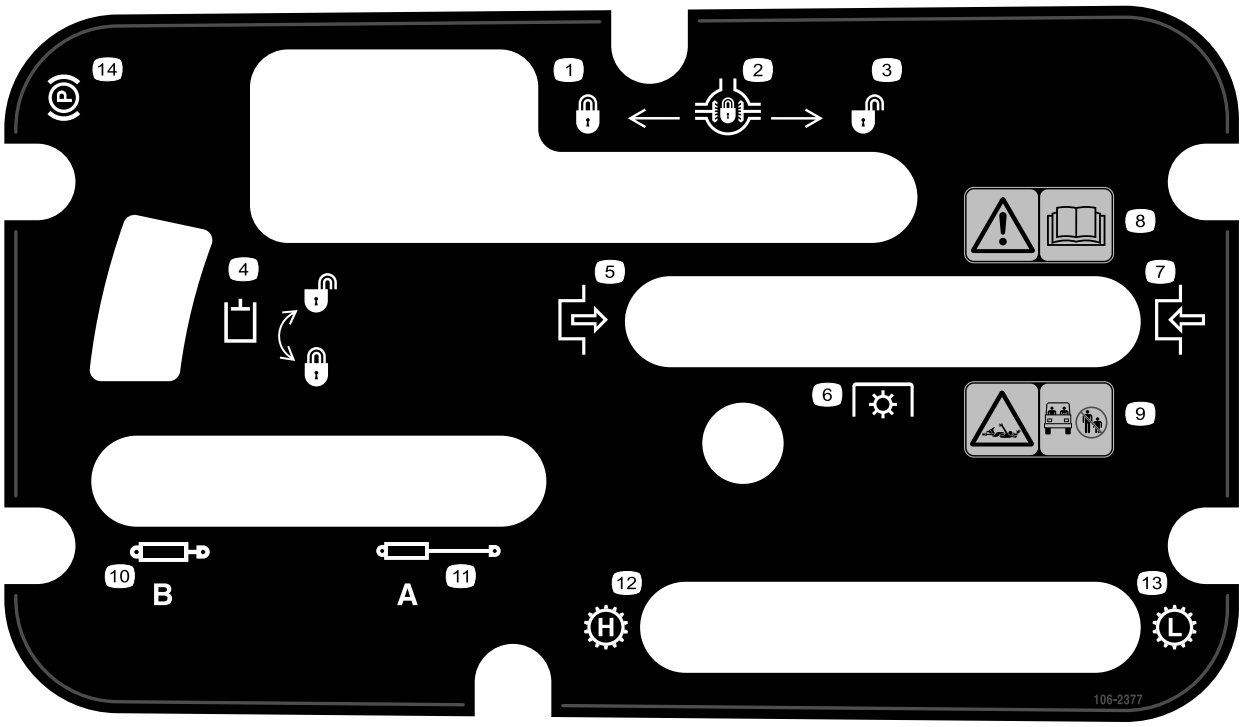
Some or all of these symbols are on your battery

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



106-2355

1. Slow
2. Fast
3. Transmission—third high; no fast speed



106-2377

1. Locked
2. Differential lock
3. Unlocked
4. Hydraulic lock
5. Engage
6. Power take-off (PTO)
7. Disengage
8. Warning—read the *Operator's Manual.*
9. Entanglement hazard, shaft—keep bystander's a safe distance from the vehicle.
10. Retract hydraulics
11. Extend hydraulics
12. Transmission—high speed
13. Transmission—low speed
14. Parking brake

Setup

Loose Parts

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

Description	Qty.	Use
No parts required	–	Check the fluid levels.

Media and Additional Parts

Description	Qty.	Use
Operator's Manual	1	Read the manual before operating the vehicle.
Parts Manual	1	Use the manual to reference the part numbers.
Operator Training Material	1	View the manual before operating themachine.

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

Checking the Fluid Levels

1. Check the engine oil level before and after the engine is first started; refer to Checking the Engine-oil Level (page 15).
2. Check the transaxle/hydraulic fluid level before the engine is first started; refer to Checking the Transaxle/Hydraulic-fluid Level (page 17).
3. Check the brake fluid level before the engine is first started; refer to Checking the Brake-fluid Level (page 18).

Product Overview

Controls

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

Accelerator Pedal

The accelerator pedal (Figure 3) gives you the ability to vary the engine and ground speed of the vehicle when the transmission is in gear. Pressing the pedal increases engine speed and the ground speed. Releasing the pedal decreases the engine speed and the ground speed of the machine.

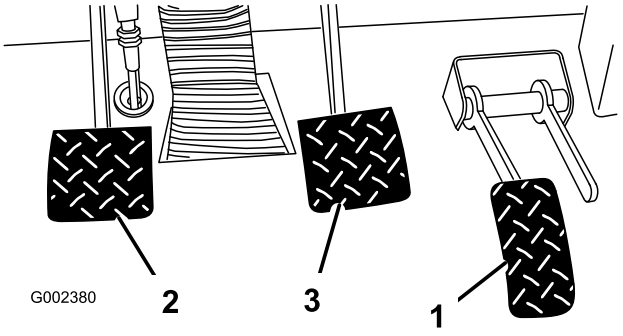


Figure 3

1. Accelerator pedal
2. Clutch pedal
3. Brake pedal

Clutch Pedal

Press the clutch pedal (Figure 3) fully to disengage the clutch when starting the engine or shifting the transmission gears. Release the pedal smoothly when the transmission is in gear to prevent unnecessary wear on the transmission and other related parts.

Important: Do not ride the clutch pedal during operation. The clutch pedal must be fully out or the clutch will slip causing heat and wear. Never hold the vehicle stopped on a hill using the clutch pedal. Damage to the clutch may occur.

Brake Pedal

Use the brake pedal (Figure 3) to apply the service brakes to stop or slow the vehicle.

⚠ CAUTION

Worn or maladjusted brakes may result in personal injury. If the brake pedal travels to within 3.8 cm (1-1/2 inches) of the vehicle floor board, the brakes must be adjusted or repaired.

Gear-shift Lever

Fully press the clutch pedal and move the gear-shift lever (Figure 4) into the desired gear selection. A diagram of the shift pattern is indicated below.

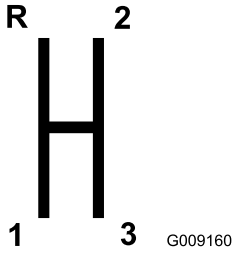


Figure 4

Important: Do not shift the transaxle to the reverse or forward gear unless the vehicle is standing still. Damage to the transaxle may occur.

⚠ CAUTION

Down shifting from too high a speed can cause the rear wheels to skid resulting in loss of vehicle control as well as clutch and/or transmission damage. Shift smoothly to avoid grinding gears.

Parking Brake

Whenever the engine is shut off, the parking brake (Figure 5) must be engaged to prevent accidental movement of the machine. To engage the parking brake, pull back on the lever. To disengage, push the lever forward. Release the parking brake before moving the machine. If you park the machine on a steep grade, apply the parking brake. Also, shift the transmission into first gear on a uphill grade or reverse on a down hill grade. Place chocks at the down hill side of the wheels.

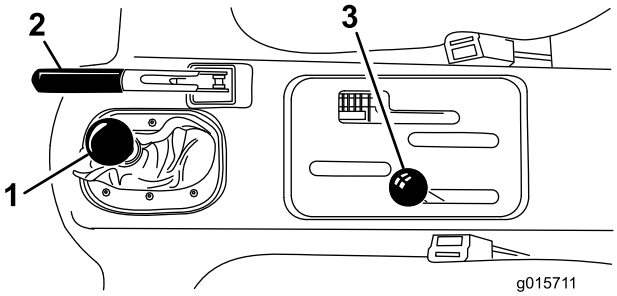


Figure 5

1. Gear shift lever
2. Parking brake
3. High–low range shifter

High–Low Range Shifter

The high–low range shifter adds 3 additional speeds for precise speed control (Figure 5).

- The machine must be completely stopped before shifting between the High and Low range.
- Shift only on level ground.
- Press the clutch pedal fully.
- Move the lever fully forward for High and fully rearward for Low.

High is for higher speed driving on level, dry surfaces with light loads.

Low is for low-speed driving. Use this range when greater than normal power or control is required. For example, steep grades, difficult terrain, heavy loads, slow speed but high-engine speed (spraying).

Important: There is a location between High and Low in which the transaxle is in neither range. Do not use this position as a neutral position because the vehicle could move unexpectedly if the High–Low shifter is bumped and the gear-shift lever is in gear.

Ignition Switch

Use the ignition switch (Figure 6) to start and stop the engine. It has three positions: Off, On/Preheat, and Start. Rotate the key clockwise to the Start position to engage the starter motor. Release the key when the engine starts. The key will move automatically to the On position. To shut the engine off, rotate the key counterclockwise to the Off position.

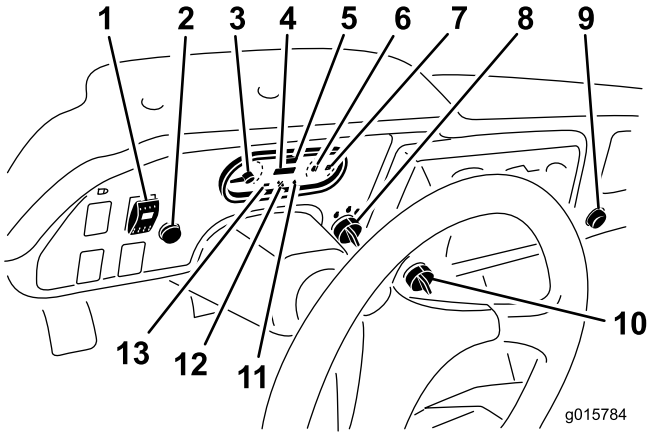


Figure 6

1. High flow hydraulics switch (Optional)
2. Horn
3. Tachometer
4. Hour meter
5. Speedometer
6. Coolant temperature gauge and light
7. Fuel gauge
8. Ignition switch
9. Power point
10. 3rd high lockout switch
11. Oil pressure warning light
12. Glow plug indicator
13. Charge indicator

Hour Meter

The hour meter indicates the total hours of machine operation. The hour meter (Figure 6) starts to function whenever the key switch is rotated to the On position or if the engine is running.

Third-high lockout Switch

Use the 3rd-high lockout switch to prevent the use of third gear when in the High range. Move the 3rd-high lockout switch (Figure 6) to the slow position and remove the key to prevent the use of third gear when in the High range.

Note: The engine will shut off if the shift lever is moved to third gear when in High range.

Note: The key is removable in either position.

Oil-pressure-warning Light

The oil-pressure-warning light glows (Figure 6) if the engine-oil pressure drops below a safe level while the engine is running. If the light flickers or remains on, stop the vehicle, turn 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 restarted, turn the engine off immediately and contact your local Toro distributor for assistance.

Check the operation of warning lights as follows:

1. Apply the parking brake.
2. Turn the ignition key 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.

Low-oil Pressure Shut Down

The low-oil pressure shut down system will shut the engine off if the engine oil pressure drops below a safe level (for more than 10 seconds). Contact your local Toro distributor for assistance.

Glow-plug Indicator

The glow-plug indicator (Figure 6) will glow red when the glow plugs are activated.

Important: The glow plug indicator will turn on, for an additional 15 seconds, when the switch returns to the On position.

Coolant-temperature Gauge and Indicator Light

The coolant-temperature gauge displays the coolant temperature in the engine. The gauge operates only when the ignition switch is in On position (Figure 6). The indicator light will illuminate red and blink if the engine is overheating.

Charge Indicator

The charge indicator illuminates when the battery is being discharged. If the light illuminates during operation, stop the vehicle, turn off the engine and check for possible causes, such as the alternator belt (Figure 6).

Important: If the alternator belt is loose or broken, do not operate the vehicle until adjustment or repair is complete. Failure to observe this precaution may result in damage to the engine.

Check the operation of warning lights as follows:

- Apply the parking brake.
- Turn the ignition key to the On/Preheat position, but do not start the engine. The coolant temperature, charge indicator, and oil pressure lights should glow. If any light does not function, either a bulb is burned out or there is a malfunction in the system which must be repaired.

Fuel Gauge

The fuel gauge shows the amount of fuel in the tank. The fuel gauge operates only when the ignition switch is in the On/Preheat position (Figure 6). A steady-red light in the fuel gauge indicates low fuel level and blinking-red light indicates near empty.

Horn Button

Press the horn button to sound the horn (Figure 6).

Tachometer

The tachometer displays the speed of the engine, and is measured in revolutions per minute (rpm); refer to Figure 6 & Figure 7. The white triangle on the face of the tachometer indicates the desired rpm for PTO operation (Figure 7).

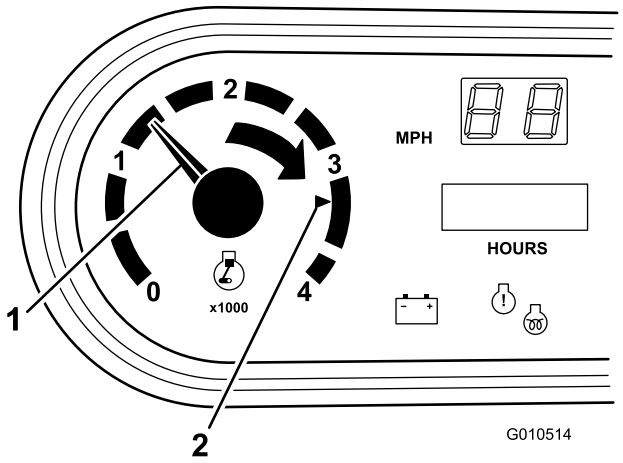


Figure 7

1. Tachometer needle (indicates the engine rpm)
2. PTO operation mark (3300 engine rpm for a PTO output speed of 540 rpm)

Speedometer

The speedometer displays the ground speed of the vehicle (Figure 6). The speedometer display is in mph from the factory, but can easily converted to kph. Refer to Converting the Speedometer (page 41).

Power Point

Use the power point (Figure 6) to power optional 12 volt electrical accessories.

Passenger Hand Hold

The passenger hand hold is located on the dashboard (Figure 8).

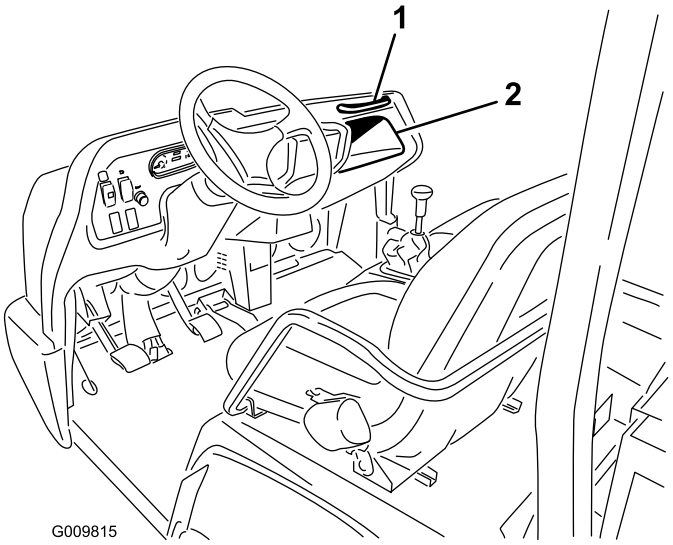


Figure 8

1. Passenger hand hold
2. Storage compartment

Seat-adjusting Lever

Use the seat-adjustment lever to release the seat-position latch so that the seats can be adjusted fore and aft for operator comfort (Figure 9). Releasing the allow the seat-position latch to lock.

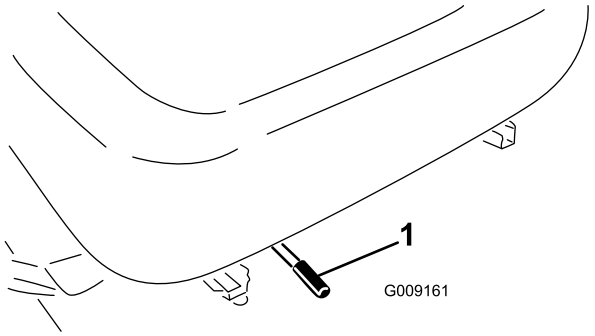


Figure 9

1. Seat adjusting lever

Specifications

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

Dimensions

Overall Width	160 cm (63 inches)
Overall Length	w/o bed: 326 cm (128.25 inches) w/full bed: 331 cm (130.38 inches) w/2/3 bed in rear mounting location: 346 cm (136.38 inches)
Base Weight (Dry)	819 kg (1806 lb)
Rated Capacity (includes 200 lb. operator, 200 lb. passenger and loaded attachment).	1539 kg (3394 lb)
Maximum. Gross Vehicle Weight	2359 kg (5200 lb)
Tow Capacity	Tongue weight 272 kg (600 lb) Maximum trailer weight 1587 kg (3,500 lb)
Ground Clearance	18 cm (7 inches) w/ no load
Wheel Base	118 cm (70 inches)
Wheel Tread (center line to center line)	Front: 117 cm (46 inches) Rear: 121 cm (47.7 inches)
Height	190.5 cm (75 inches) to top of ROPS

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

Before servicing or making adjustments to the machine, stop the engine, set the parking brake, and remove the key from the switch. Remove any load material from the bed or other attachment before working under a raised bed. Never work under a raised bed without positioning the safety support on a fully extended cylinder rod.

Checking the Engine-oil Level

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

Engine-oil type: Detergent diesel engine oil API service CH-4 or higher

Engine-oil viscosity: Choose an oil viscosity according to the table in Figure 10.

USE THESE SAE VISCOSITY OILS

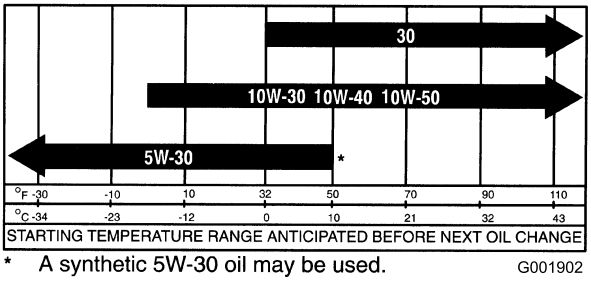


Figure 10

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

1. Position the machine on a level surface.
2. Remove the dipstick and wipe it with a clean rag. Insert the dipstick into the tube and make sure it is seated fully. Remove the dipstick and check the level of the oil (Figure 11).

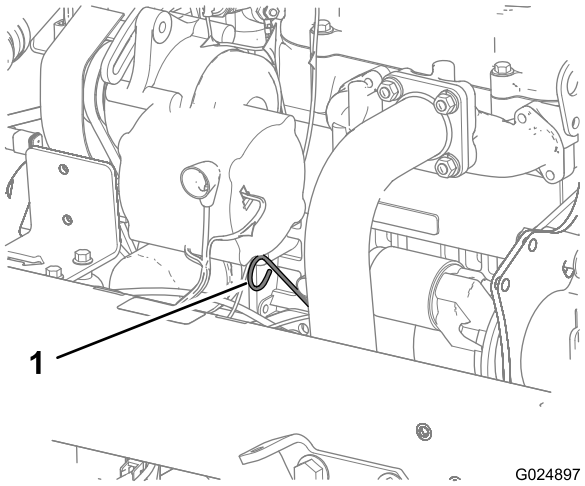


Figure 11

1. Dipstick

3. If the oil level is low, remove the filler cap (Figure 12) and add enough oil to raise the level to the Full mark on the dipstick.

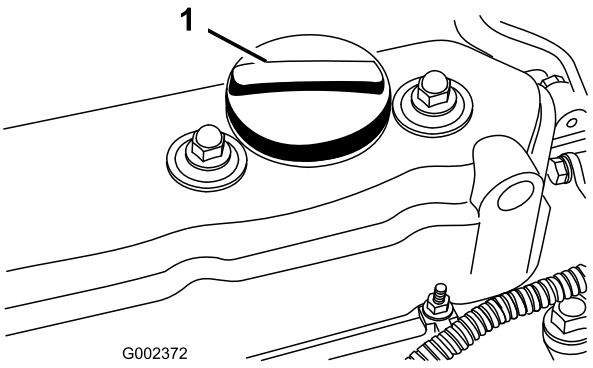


Figure 12

1. Filler cap

4. Install the dipstick firmly in place.

Adding Fuel

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

Fuel tank capacity: 22 l (5.85 gallons).

Fuel type: Use summer grade diesel fuel (No. 2-D) at temperatures above -7° C (20° F) and winter grade (No. 1-D or No. 1-D/2-D blend) below that temperature. Use of winter grade fuel at lower temperatures provides lower flash point and cold flow characteristics which will ease starting and reduce fuel filter plugging.

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

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

⚠ WARNING

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

- **Avoid prolonged breathing of vapors.**
- **Keep your face away from the nozzle and gas tank or conditioner opening.**
- **Keep fuel away from your eyes and skin.**

⚠ DANGER

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

- **Before removing the fuel tank cap, make sure the vehicle is positioned on a level surface. Open the fuel tank cap slowly.**
- **Use a funnel and fill the fuel tank outdoors, in an open area, when the engine is off and is cold. Wipe up any fuel that spills.**
- **Do not fill the fuel tank completely full. Add fuel to the fuel tank until the level is 25 mm (1 inch) below the bottom of the filler neck. This empty space in the tank allows the fuel to expand.**
- **Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.**
- **Store fuel in a clean, safety-approved container and keep the cap in place.**

Biodiesel Ready

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

- The biodiesel portion of the fuel must meet specification ASTM D6751 or EN14214.
- The blended fuel composition should meet ASTM D975 or EN590.
- Painted surfaces may be damaged by biodiesel blends.
- Use B5 (biodiesel content of 5%) or lesser blends in cold weather.
- Monitor seals, hoses, gaskets in contact with fuel as they may be degraded over time.

- Fuel filter plugging may be expected for a time after converting to biodiesel blends.
- Contact your distributor if you wish for more information on biodiesel.

1. Clean the area around the fuel tank cap.
2. Remove the fuel tank cap (Figure 13).

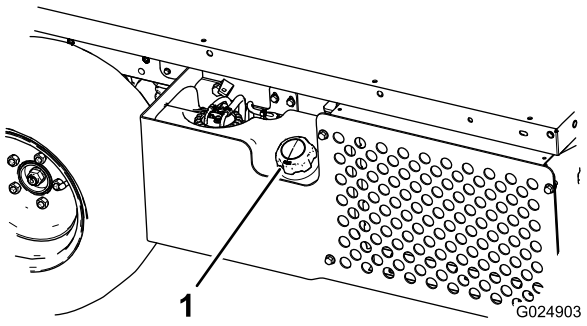


Figure 13

1. Fuel tank cap

3. Fill the tank to about one inch below the top of the tank, (bottom of the filler neck), then install the cap. **Do not overfill.**
4. Wipe up any fuel that may have spilled to prevent a fire hazard.

Checking the Coolant Level

Service Interval: Before each use or daily

Cooling system capacity: 3.7 l (4 qt)

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

⚠ 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; only check the coolant level at the reserve tank.**

1. Park the machine on a level surface, raise the bed with a hoist, and place a safety support to hold up the bed; refer to Removing the Full Bed (page 26).
2. Check the coolant level at the reserve tank (Figure 14). The coolant should be up to the bottom of the stand pipe in the filler neck.

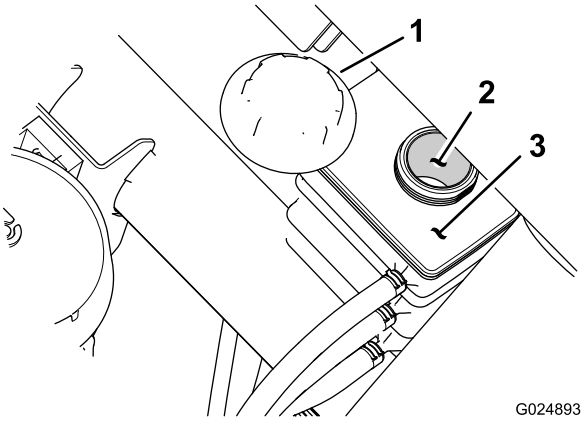


Figure 14

1. Cap
2. Stand pipe (filler neck)
3. Coolant reservoir

3. If the coolant is low, remove the reserve tank cap (Figure 14) and add a 50/50 mixture of water and permanent ethylene glycol antifreeze. **Do not overfill.**
4. Install the reserve tank cap (Figure 14).
5. Lower the bed of the machine.

Checking the Transaxle/Hydraulic-fluid Level

Service Interval: Before each use or daily Check the level before the engine is first started and every 8 hours or daily, thereafter.

Transaxle-fluid type: Dexron III ATF

1. Position the vehicle on a level surface.
2. Clean the area around the dipstick (Figure 15).

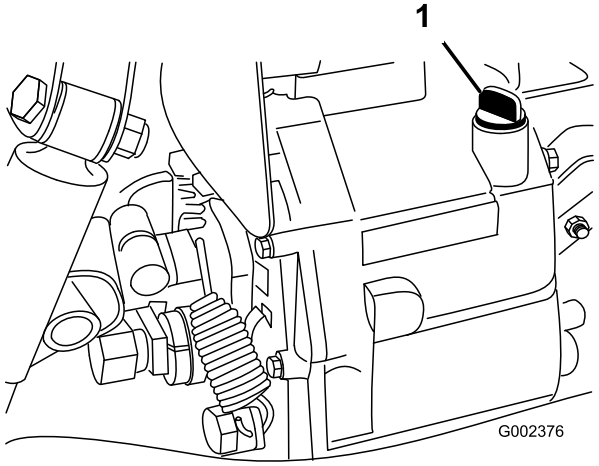


Figure 15

1. Dipstick

3. Unscrew the dipstick from the top of the transaxle and wipe it with a clean rag.

4. Screw the dipstick into the transaxle and ensure that it is fully seated.
5. Unscrew the dipstick and check the fluid level.

   The fluid should be up to top of the flat portion of the dipstick.
6. If the level is low, add enough fluid to achieve the proper level.

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 every 200 hours thereafter.

Checking the Tire Pressure

Service Interval: Before each use or daily

The maximum air pressure in the front tires is 220 kPa (32 psi) and the rear tires is 138 kPa (20 psi).

Check the tire pressure frequently to ensure proper inflation. If the tires are not inflated to the correct pressure, the tires will wear prematurely.

Figure 16 is an example of tire wear caused by under inflation.

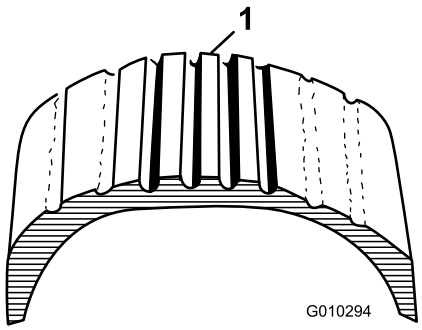


Figure 16

1. Under-inflated tire

Figure 17 is an example of tire wear caused by over inflation.

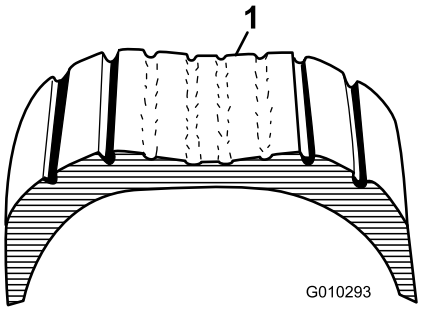


Figure 17

1. Over-inflated tire

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 every 8 hours or daily, thereafter.

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

Brake Fluid Type: DOT 3 brake fluid

1. Park the machine on a level surface.
2. Remove the hood; refer to Removing the Hood (page 28).
3. Check the brake fluid level (Figure 19).

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

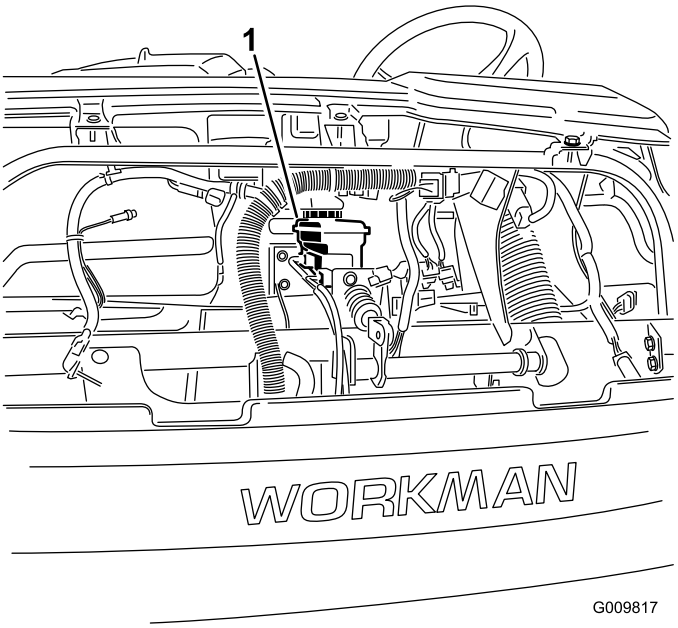


Figure 18

1. Brake fluid reservoir

4. If the fluid level is low, perform the following:
   A. Clean the area around the cap (Figure 19).
   B. Remove the reservoir cap (Figure 19).

C. Fill the reservoir to the Full line on the reservoir with the specified brake fluid (Figure 19).

Important: Do not overfill the brake reservoir.

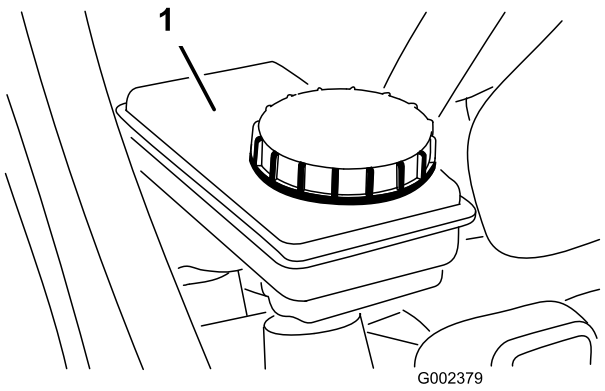


Figure 19

1. Brake fluid reservoir

Pre-starting Checks

Safe operation begins before taking the vehicle out for a day's work. You should check these items each time:

- Check the tire pressure.
- Check all fluid levels and add the appropriate amount of Toro specified fluids, if any are found to be low.
- Check the radiator. Remove any debris and clean the radiator screen.
- Check the brake pedal operation.
- Check to see that the lights and horn are working.
- Turn the steering wheel to the left and right to check the steering response.
- Stop 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 vehicle 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

1. Sit on the operator seat and engage the parking brake.
2. Disengage the PTO and high flow hydraulics (if so equipped) and move the hand throttle lever to the Off position (if so equipped).
3. Move the shift lever to the Neutral position and press the clutch pedal.
4. Keep your foot off of the accelerator pedal.
5. Turn the ignition switch to the On position. When the glow plug indicator light goes off, the engine is ready to start.
6. Rotate the ignition key switch to the Start position. Release the key immediately when the engine starts and allow it to return to the Run position.

Note: The glow plug indicator will turn on for an additional 15 seconds, when the switch returns to the Run position.

Note: Do not run the starter motor more than 10 seconds at a time or premature starter failure may result. If engine fails to start after 10 seconds, turn the key to the Off position. Check the controls and starting procedure, wait 10 additional seconds, and repeat the starting operation.

Driving the Vehicle

1. Release the parking brake.
2. Fully press the clutch pedal.
3. Move the gear shift lever to 1st gear.
4. Release the clutch pedal smoothly while pressing the accelerator pedal.
5. When the vehicle gains enough speed, remove your foot from the accelerator pedal, fully press the clutch pedal, move the gear shift lever to the next gear and release the clutch pedal while pressing the accelerator pedal.
6. Repeat the procedure until the desired speed is attained.

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

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

Note: Avoid long periods of engine idling.

Use the chart below to determine the ground speed of the vehicle.

Gear	Range	Ratio	Mph (3600 rpm)	Kmh (3600 rpm)	Mph (3600 rpm)	Kmh (3600 rpm)
1	L	82.83 : 1	2.9	4.7	1.9	3.0
2	L	54.52 : 1	4.5	7.2	2.9	4.6
3	L	31.56 : 1	7.7	12.4	4.9	7.9
1	H	32.31 : 1	7.6	12.2	4.9	7.8
2	H	21.27 : 1	11.5	18.5	7.3	11.8
3	H	12.31 : 1	19.8	31.9	12.7	20.4
R	L	86.94 : 1	2.8	4.5	1.8	2.9
R	H	33.91 : 1	7.1	11.4	4.5	7.3

Stopping the Vehicle

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

Stopping the Engine

To stop the engine, rotate the ignition key to the Off position and engage the parking brake. Remove the key from the switch to prevent accidental starting.

Breaking-in a New Vehicle

Your Workman is ready for work. To provide proper performance and long vehicle life, follow these guidelines for the first 100 operating hours.

- Check the fluid and engine oil levels regularly and be alert for indications of overheating in any component of the vehicle.
- After starting a cold engine, let it warm up for about 15 seconds before shifting into gear.
- Avoid racing the engine.
- To ensure optimum performance of the brake system, burnish (break–in) the brakes before use. To burnish the brakes, bring the vehicle up to full speed, apply the brakes to rapidly stop the vehicle without locking up the tires. Repeat this 10 times, waiting 1 minute between stops to avoid overheating the brakes. This is most effective if the vehicle is loaded with 454 kg (1000 lb).
- Vary vehicle speeds during operation. Avoid excessive idling. Avoid fast starts and quick stops.
- A break–in oil for the engine is not required. The original engine oil is the same type specified for regular oil changes.
- Refer to the Using the Machine During Heavy-duty Operation (page 26) for any special low-hour checks.

Checking the Interlock System

Service Interval: Before each use or daily

The purpose of the interlock system is to prevent the engine from cranking or starting unless the clutch pedal is pressed.

⚠ CAUTION

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

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

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

Verifying the Clutch Interlock Switch

1. Sit on the operator's seat and engage the parking brake.
2. Without pressing the clutch pedal, rotate the ignition key clockwise to the Start position.

   Note: If the engine cranks or starts, there is a malfunction in the interlock system that must be repaired before operating the machine.

Operating Characteristics

The vehicle is designed with safety in mind. It has 4 wheels for added stability. It uses familiar automotive style controls, including the steering wheel, brake pedal, clutch pedal, accelerator pedal, and gear shifter. It is important to remember, however, that this vehicle is not a passenger car. It is a work vehicle and is designed for off road use only.

⚠ WARNING

The Workman vehicle is an off–highway vehicle only, and is not designed, equipped, or manufactured for use on public streets, roads or highways.

The vehicle has special tires, low gear ratios and other features that give it extra traction. These features add to the versatility of the vehicle but, they can also get you into dangerous situations. You must keep in mind that the vehicle is not a recreation vehicle, it is not an all terrain vehicle, and, it is definitely not meant for stunt driving or horsing around. It is a work vehicle, not a play vehicle. Children should not be allowed to operate the vehicle. Anyone who operates the vehicle should have a motor vehicle license.

The driver and passenger should always use the seat belts.

If you are not experienced at driving the vehicle, practice driving it in a safe area away from other people. Be sure you are familiar with all the controls, particularly those used for braking, steering, and transmission shifting. Learn how your vehicle handles on different surfaces. Your operating skills will improve with experience, but as in operating any vehicle, take it easy as you begin. Be sure you know how to stop quickly in an emergency. If you need help, ask your supervisor for assistance.

Many factors contribute to accidents. You have control over several of the most important. Your actions, such as driving too fast for conditions, braking too fast, turning too sharp, and combinations of these, are frequent cause of accidents.

One of the major causes of accidents is fatigue. Be sure to take occasional breaks. It is very important that you stay alert at all times.

Never operate the vehicle, or any equipment, if you are under the influence of alcohol or other drugs. Even prescription drugs and cold medicines can cause drowsiness. Read the label on the medicine or check with your doctor or pharmacist if you are unsure about a certain medication.

One of the most important rules to follow is to go slower in unfamiliar areas. It is surprising how much damage and injury common things can cause. Tree branches, fences, wires, other vehicles, tree stumps, ditches, sand traps, streams, and other things found in most parks and golf courses can be hazardous to the operator and passenger.

Avoid driving when it is dark, especially in unfamiliar areas. If you must drive when it is dark, be sure to drive cautiously, use the head lights, and even consider adding additional lights.

Ensuring Passenger Safety

Whenever you have a passenger riding in the machine, make sure he or she is wearing the seat belt and holding on securely. Drive slower and turn less sharply because your passenger does not know what you are going to do next and may not be prepared for turning, stopping, accelerating, and bumps.

You and your passenger should remain seated at all times, keeping arms and legs inside the vehicle. The operator should keep both hands on steering wheel, whenever possible, and the passenger should use the hand holds provided (Figure 20 and Figure 21).

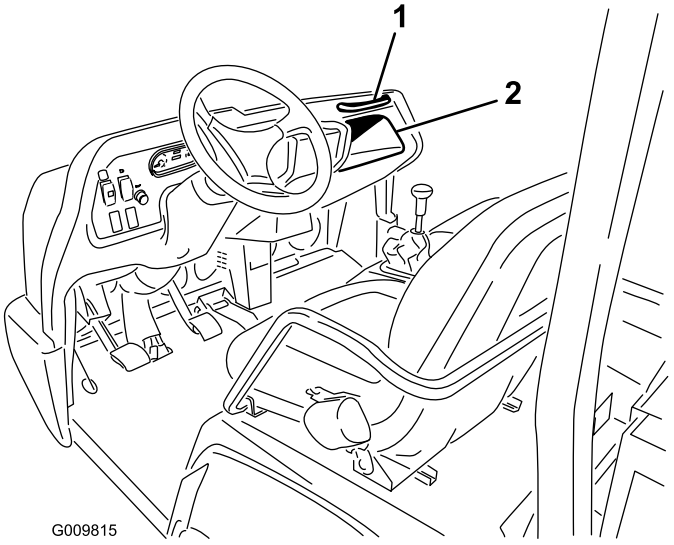


Figure 20

1. Passenger hand hold
2. Storage compartment

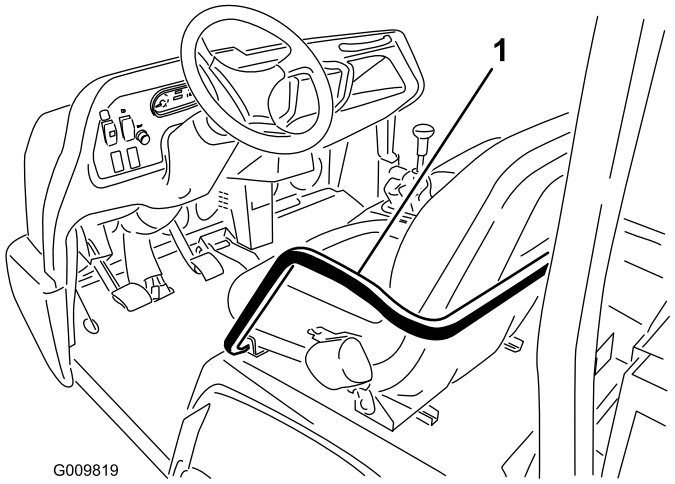


Figure 21

1. Hand hold and hip restraint

Never allow passengers in the bed or on any attachments. The vehicle is meant to have one driver and only one passenger—no more.

Ensuring Proper Speed

Speed is one of the most important variables leading to accidents. Driving too fast for the conditions can cause you to lose control and have an accident. Speed can also make a minor accident worse. Driving head on into a tree at slow speed can cause injury and damage, but, driving into a tree at high speed can destroy the vehicle and kill you and your passenger.

Never drive too fast for the conditions. If there is any doubt about how fast to drive, slow down.

When using heavy attachments, more than 454 kg (1000 lb), such as sprayers, top dressers, or spreaders, etc., restrict your operating speed by moving the 3rd high lockout switch to the slow position.

Ensuring Proper Turning

Turning is another important variable leading to accidents. Turning too sharply for the conditions can cause the vehicle to lose traction and skid, or even tip over.

Wet, sandy, and slippery surfaces make turning more difficult and risky. The faster you are going, the worse this situation becomes so, slow down before turning.

During a sharp turn at higher speeds, the inside rear wheel may lift off of the ground. This is not a flaw in the design, it happens with most four-wheel machine including passenger cars. If this happens, you are turning too sharply for the speed at which you are traveling. **Slow down!**

Ensuring Proper Braking

It is good practice to slow down before you get near an obstacle. This gives you extra time to stop or turn away. Hitting an obstacle can damage the machine and its contents. More important, it can injure you and your passenger. Gross machine weight has a major impact on your ability to stop and/or turn. Heavier loads and heavier attachments make a vehicle harder to stop or turn. The heavier the load, the longer it takes to stop.

The braking characteristics also change with no bed or attachment on the machine. Fast stops may cause the rear wheels to lock up before the front wheels lock up, which may affect the control of the machine. It is a good idea to decrease machine speed with no bed or attachment.

Turf and pavement are much slipperier when they are wet. It can take 2 to 4 times as long to stop on wet surfaces as on dry surfaces.

If you drive through standing water deep enough to get the brakes wet, they will not work well until they are dry. After driving through water, you should test the brakes to make sure they work properly. If they do not, drive slowly in first gear while putting light pressure on the brake pedal. This will dry the brakes out.

Do not downshift for braking on icy or slippery surfaces (wet grass) or while going down a hill because engine braking may cause skidding and loss of control. Shift to a lower gear before starting down a hill.

Preventing Tip Overs

The vehicle is equipped with a roll bar, hip restraints, seat belts, and hand hold. The ROPS system (Rollover Protection System) used on the vehicle will reduce the risk of serious or fatal injury in the unlikely event of a tip over, although the system cannot protect the operator from all possible injuries.

Replace a damaged ROPS, do not repair or revise. Any alteration of the ROPS must be approved by the manufacturer.

The best way to prevent accidents involving utility vehicles is through continuous supervision and training of operators and paying constant attention to the area in which vehicle is being operated.

The best way for operators to prevent serious injury or death to themselves or others, is to familiarize themselves with the proper operation of the utility vehicle, to stay alert and to avoid actions or conditions which could result in a accident. In the event of a tip over, the risk of serious injury or death will be reduced if the operator is using the ROPS system and seat belts and is following the instructions provided.

Operating the Vehicle on Hills

⚠ WARNING

Tipping or rolling the vehicle on a hill will cause serious personal injury.

- **Do not operate the vehicle on steep slopes.**
- **If engine stalls or you lose headway on a hill, never attempt to turn vehicle around.**
- **Always back straight down a hill in reverse gear.**
- **Never back down in neutral or with the clutch depressed, using only the brakes.**
- **Never drive across a steep hill, always drive straight up or down.**
- **Avoid turning on a hill.**
- **Don't "drop the clutch" or slam on the brakes. Sudden speed change can initiate a tip over.**

Use extra care when on hills. Never go on hills that are extremely steep. Stopping while going down a hill will take longer than on level ground. Turning while going up or down a hill is more dangerous than turning on the level. Turns while going down hill, especially with the brakes on, and, turning up hill while traversing a hill are particularly dangerous. Even at a slow speed and without a load, tip overs are more likely if you turn on a hill.

Slow down and shift into a lower gear before starting up or down a hill. If you have to turn while on a hill, do it as slowly and cautiously as possible. Never make sharp or fast turns on a hill.

If you stall or begin to lose headway while climbing a steep hill, quickly apply the brakes, shift to neutral, restart the engine and shift to reverse. At idle speed, the engine and transaxle drag will aid the brakes in controlling the vehicle on the hill and help you back down the hill more safely.

Reduce the weight of the load if it is a steep hill or if the load has high center of gravity. Remember, loads can shift, secure them.

Note: The vehicle has excellent hill climbing ability. Hill climbing traction can also be increased by adding weight to the rear of the vehicle in one of the following ways:

- Adding weight to bed, making sure it is secured.
- Mounting wheel weights to rear wheels.
- Adding liquid ballast (calcium chloride) to rear tires.
- Traction will increase with no passenger in front seat.

Loading onto and Dumping From the Vehicle

The weight and position of the cargo and passenger can change the vehicle center of gravity and vehicle handling. To avoid loss of control resulting in personal injury, follow these guidelines.

Do not carry loads which exceed the load limits described on the vehicle weight label.

The vehicle has several combinations of boxes, platforms, and attachments available. These can be used in various combinations that allow for maximum capacity and versatility. The full sized bed is 140 cm (55 inches) wide by 165 cm (65 inches) long and can hold up to 1381 kg (3044 lb) of evenly distributed cargo.

Loads vary in how they are distributed. Sand spreads out evenly and quite low. Other items, such as bricks, fertilizer or landscape timbers, stack higher in the bed.

The height and weight of the load has a significant influence on tip overs. The higher a load is stacked, the more likely the vehicle is to tip over. You may find that 1381 kg (3044 lb) stacks too high for safe operation. Reducing the total weight is one way to reduce the risk of a tip over. Distributing the load as low as possible is another way to reduce the risk of a tip over.

If the load is positioned toward one of the sides, it will make the vehicle much more likely to tip over on that side. This is especially true when turning if the load is on the outside of the turn.

Never position heavy loads behind the rear axle. If the load is positioned so far to the rear that it is behind the rear axle, it will reduce the weight on the front wheels and this will reduce steering traction. With the load all the way to the back, the front wheels can even come off of the ground when going over bumps or up a hill. This will result in a loss of steering and may lead to the vehicle tipping over.

As a general rule, position the weight of the load evenly from front to rear and evenly from side to side.

If a load is not secured, or you are transporting a liquid in a large container such as a sprayer, it can shift. This shifting happens most often while turning, going up or down hills, suddenly changing speeds, or while driving over rough surfaces. Shifting loads can lead to tip overs. Always secure loads so that they do not shift. Never dump the load while the vehicle is sideways on the hill.

Heavy loads increase 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.

Transporting the Machine

For moving the machine long distances, use a trailer. Make sure that the machine is secured to the trailer. Refer to Figure 22 and Figure 23 for the location of the tie-down points.

Important: Trailers weighing over 680 kg (1500 lb) are required to be equipped with trailer brakes.

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.

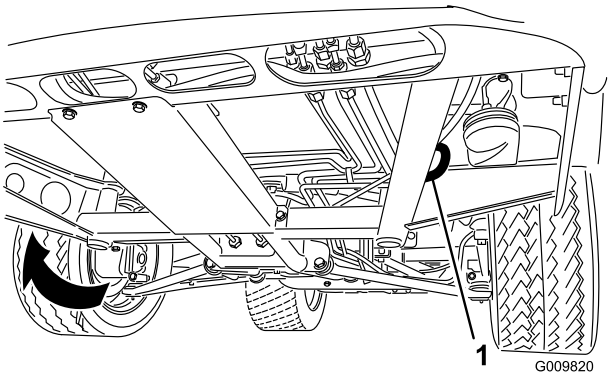


Figure 22

1. Eye hole in frame (each side)

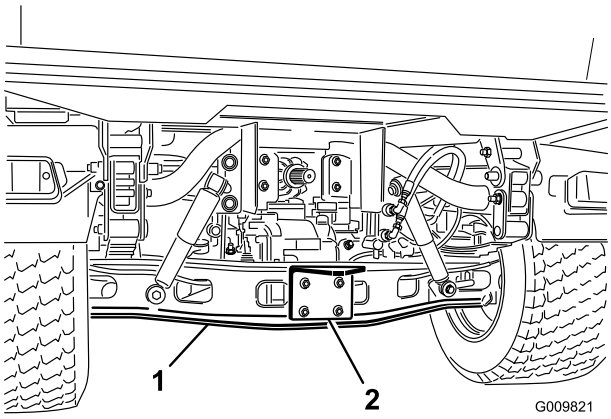


Figure 23

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.

Note: If the machine must be moved a considerable distance, transport it on a truck or trailer.

1. Affix a tow line to holes in the front frame member.
2. Move the gear shifter to the Neutral position.
3. Release the parking brake.

   Note: The power steering will not function, making it difficult (increased effort) 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 (3500 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) max.) of the Gross Trailer Weight (GTW) on the tow hitch of the machine.

Trailer brakes are required whenever you tow a trailer over 680 kg (1500 lb) GTW is towed behind a 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.

Maintenance

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

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 2 hours	• Torque the front and rear wheel nuts.
After the first 8 hours	• Check the condition and tension of the alternator belt.
After the first 10 hours	• Torque the front and rear wheel nuts. • Check the adjustment of the shift cables. • Check the adjustment of the parking brake. • Replace the hydraulic filter.
After the first 50 hours	• Change the engine oil and filter. • Adjust the engine valve clearance.
Before each use or daily	• Check the engine oil level. Check the oil level before and after the engine is first started. • Check the level of the coolant. • Check the transaxle/hydraulic fluid level. Check the level before the engine is first started and every 8 hours or daily, thereafter. • Check the tire pressure. • Check the brake fluid level. Check the level before the engine is first started and every 8 hours or daily, thereafter. • Check the operation of the interlock system. • Check the air filter service indicator. • Drain water or other contaminants from the water separator. • Remove debris from the engine area and radiator. (Clean more frequently in dirty conditions.)
Every 25 hours	• Remove the air cleaner cover, clean out debris, and check the air filter service indicator.
Every 50 hours	• Check the battery condition. (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 engine oil and filter. • Check the condition of the tires.
Every 200 hours	• Torque the front and rear wheel nuts. • Check the adjustment of the shift cables. • Check the adjustment of the high–low cable. • Check the adjustment of the parking brake. • Check the adjustment of the brake pedal. • Check the condition and tension of the alternator belt. • Check the adjustment of the clutch pedal. • Inspect the service and parking brakes.
Every 400 hours	• Check the fuel lines and connections. • Replace the fuel filter canister. • Check the front wheel alignment. • Visually inspect the brakes for worn brake shoes.
Every 600 hours	• Change the safety air filter (more frequently in dusty or dirty conditions). • Adjust the engine valve clearance.

Maintenance Service Interval	Maintenance Procedure
Every 800 hours	• Change the hydraulic fluid and clean the strainer. • Replace the hydraulic filter.
Every 1,000 hours	• Change the brake fluid. • Drain/flush the fuel tank. • Flush/replace the coolant system fluid.

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

⚠ DANGER

Only qualified and authorized personnel shall be permitted to maintain, repair, adjust, or inspect the vehicle.

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

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

Using the Machine During Heavy-duty Operation

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

- Desert operation
- Cold climate operation below 0 degrees C (32 degrees 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 will prevent any abrasive material from causing excessive wear.

Premaintenance Procedures

Removing the Full Bed

1. On each side of the machine, remove the flange head bolt and flange nut securing the bed mounting bracket to the frame bracket (Figure 24).

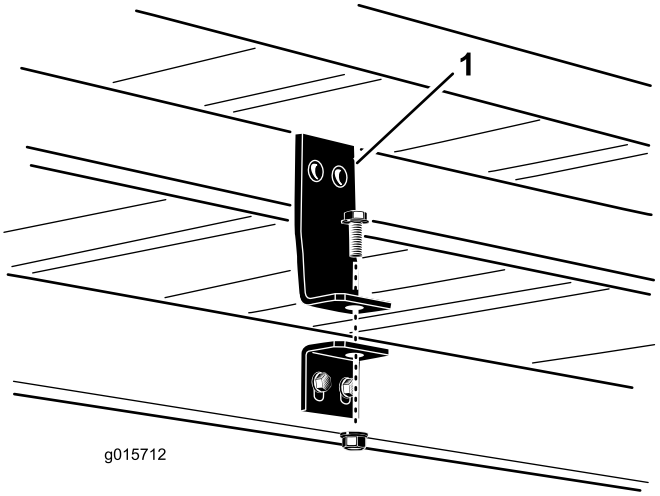


Figure 24

1. Bed mounting bracket

2. Remove the lynch pins and clevis pins securing the pivot brackets to the frame channels (Figure 25).

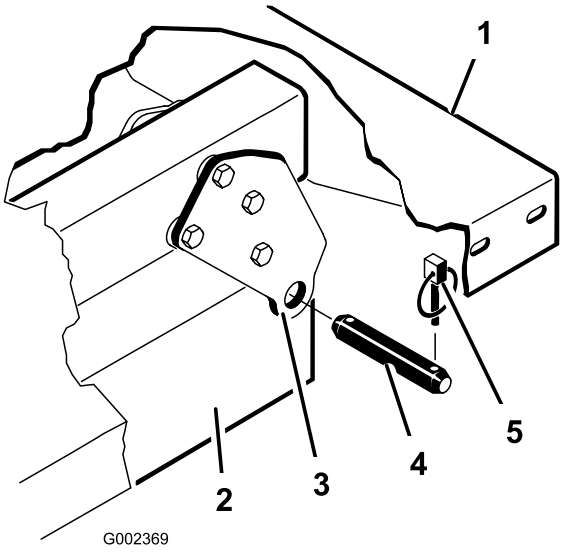


Figure 25

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

3. Lift the bed off the vehicle.

⚠ 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.

Installing the Full Bed

⚠ 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: If the bed sides will be installed on the flat bed, it is easier to install them before installing the bed on the vehicle.

1. Carefully set the bed onto the vehicle 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 25).
2. On each side of the machine, secure the bed mounting bracket to the frame bracket with the flange head bolt and flange nut previously removed (Figure 24)

Raising the Machine

⚠ DANGER

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

- **Do not start the machine while the machine is on a jack.**
- **Always remove the key from the switch before getting off of 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 vehicle, always place a 2 x 4 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 26) and at the rear it is under the axle (Figure 27).

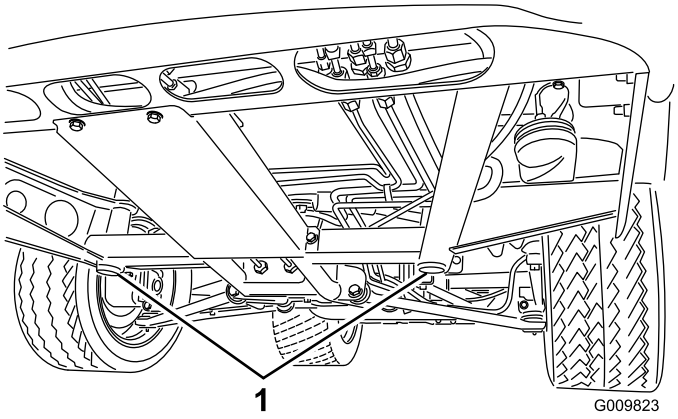


Figure 26

1. Front jacking points

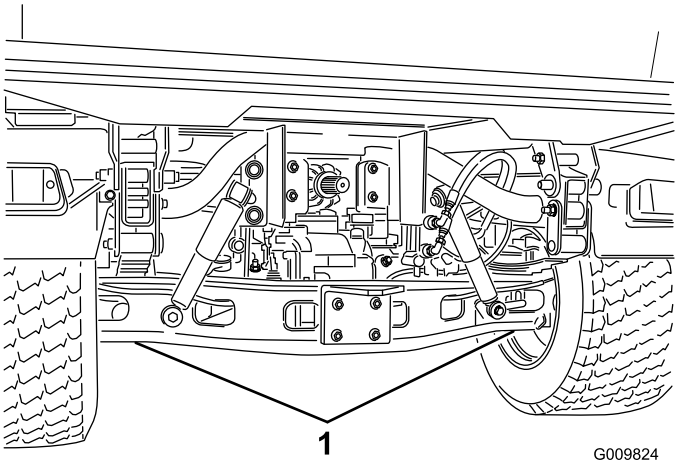


Figure 27

1. Rear jacking points

Removing the Hood

1. While grasping the hood in the headlight openings, lift up on the hood to release the lower mounting tabs from the frame slots (Figure 28).

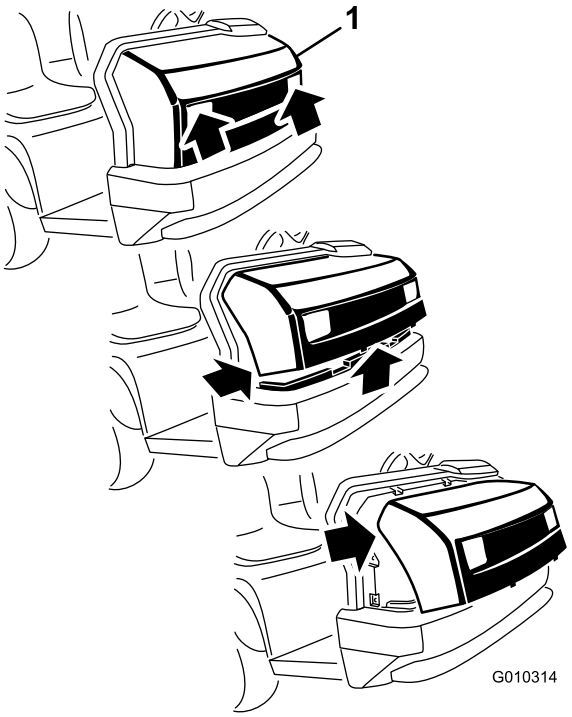


Figure 28

1. Hood

2. Pivot the bottom of the hood upward until the top mounting tabs can be pulled from the frame slots (Figure 28).
3. Pivot the top of the hood forward, and unplug the wire connectors from the head lights (Figure 28).
4. Remove the hood.

Installing the Hood

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

Lubrication

Greasing Bearings and Bushings

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

The vehicle has grease fittings that must be lubricated regularly with No. 2 general-purpose, lithium-base grease.

The grease fitting locations and quantities are as follows:

- Ball joints (4), tie rods (2), pivot mounts (2) and steering cylinder (2) (Figure 29)
- Spring tower (2) (Figure 30)
- Clutch (1), accelerator (1), brake (qty. 1) (Figure 31)
- Accelerator arm (1) (Figure 32)
- U-joint (18) and 4 wheel drive shaft (3) (Figure 33)

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 foreign matter cannot be forced into the bearing or bushing.
2. Pump the grease into each bearing or bushing.
3. Wipe off the excess grease.

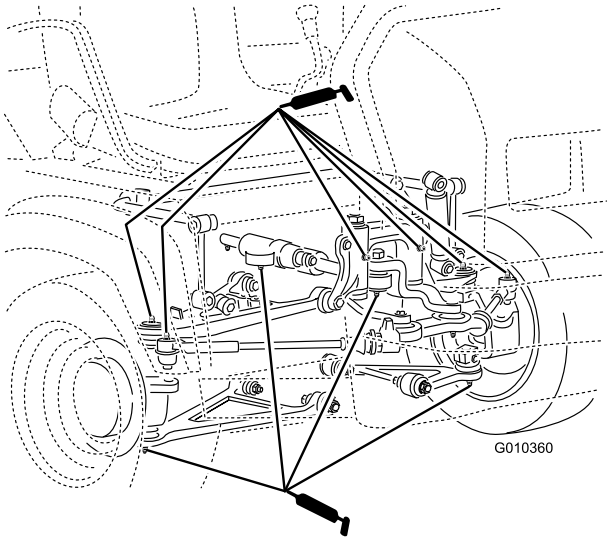


Figure 29

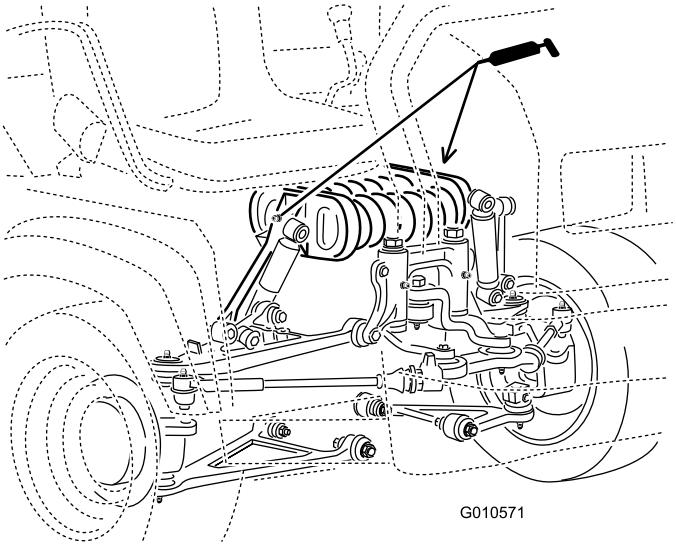


Figure 30

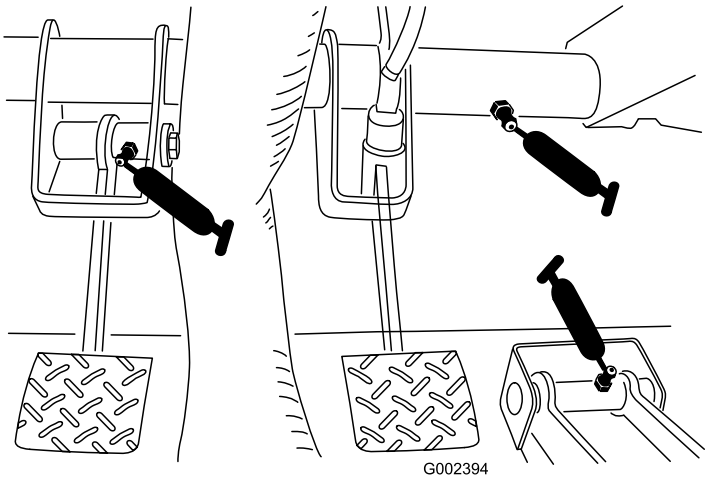


Figure 31

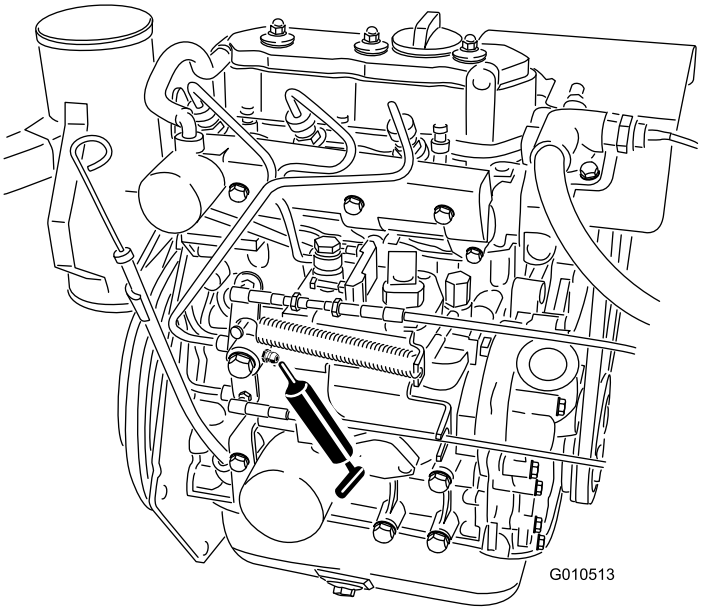


Figure 32

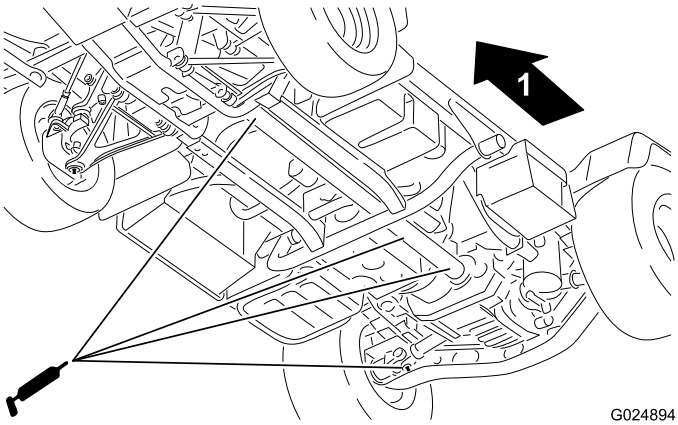


Figure 33

1. Forward

Engine Maintenance

Servicing the Air Cleaner

Service Interval: Before each use or daily—Check the air filter service indicator.

Every 25 hours

Every 600 hours—Change the safety air filter (more frequently in dusty or dirty conditions).

Inspect the air cleaner and hoses periodically to maintain maximum engine protection and to ensure maximum service life. Check the air cleaner body for damage which could possibly cause an air leak. Replace a damaged air cleaner body.

Inspect and change the air cleaner filter as described in the following procedure:

1. Release the latches on the air cleaner and pull the air cleaner cover off the air cleaner body (Figure 34).

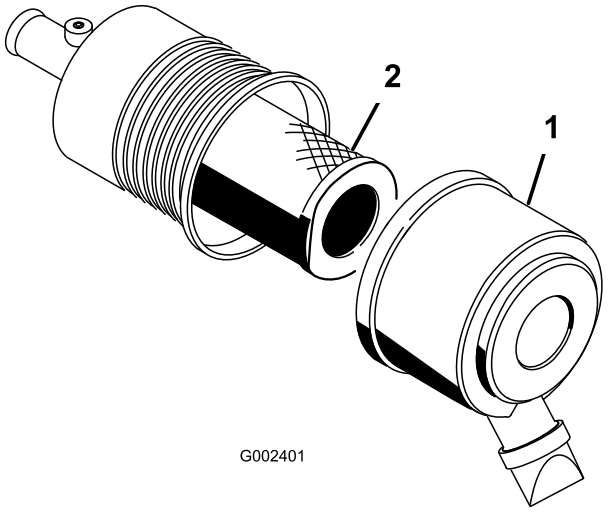


Figure 34

1. Air cleaner cover 2. Filter

2. Squeeze the dust cap sides to open it and knock the dust out.
3. Before removing the filter, use low pressure air (40 psi, clean and dry) to help remove large accumulations of debris packed between the outside of the primary filter and the canister.

   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.
4. Gently slide the primary filter out of the air cleaner body (Figure 34).

   Note: Avoid knocking the filter into the side of the body.

   Note: Do not attempt to clean the primary filter.

5. Remove the safety filter only if you intend to replace it.

   Important: Never attempt to clean the safety filter. If the safety filter is dirty, then the primary filter is damaged and both filters should be replaced.

6. Inspect the new filter(s) for damage by looking into the filter while shining a bright light on the outside of the filter.

   Note: Holes in the filter will appear as bright spots. Inspect the element for tears, an oily film, or damage to the rubber seal. If the filter is damaged, do not use it.

7. If you are replacing the safety filter, carefully slide the new filter into the filter body (Figure 34).

   Note: To prevent engine damage, always operate the engine with both air filters and cover installed.

8. Carefully slide the primary filter over the safety filter (Figure 34).

   Note: Ensure that it is fully seated by pushing on the outer rim of the filter while installing it.

9. Install the air cleaner cover with the side indicated as UP facing up and secure the latches (Figure 34).

Changing the Engine Oil and Filter

Service Interval: After the first 50 hours

Every 100 hours

Oil capacity: Approximately 3.2 L (3.4 US qt) (with a filter)

Engine-oil type: Detergent diesel engine oil API service CH-4 or higher

Engine-oil viscosity: Choose an oil viscosity according to the table in Figure 35.

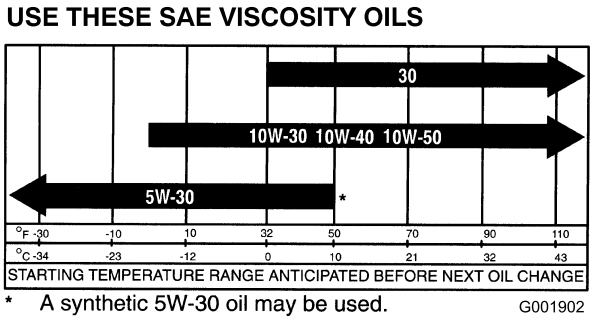


Figure 35

1. Raise the front of the bed with a hoist and place a safety support to hold up the bed; refer to Removing the Full Bed (page 26).
2. Align a drain pan below the drain plug for the engine (Figure 36).

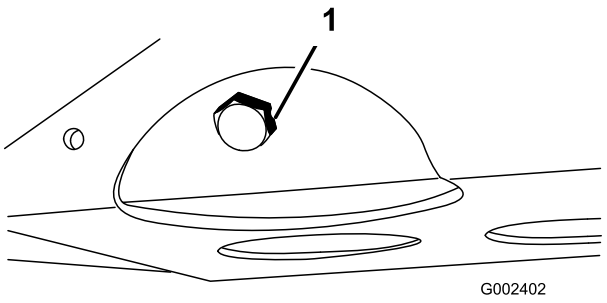


Figure 36

1. Engine-oil drain plug

3. Remove the drain plug from the engine and let the oil flow into a drain pan (Figure 36).
4. When the oil stops draining, install the drain plug (Figure 36).
5. Remove the oil filter (Figure 37).

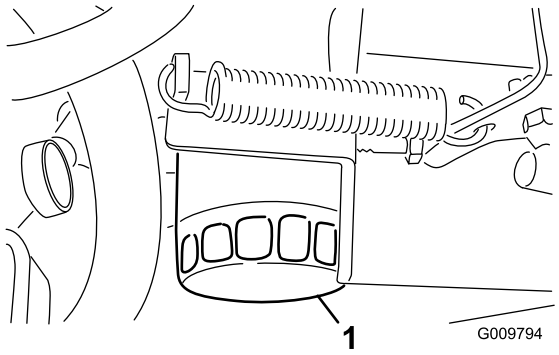


Figure 37

1. Engine-oil filter

6. Apply a light coat of clean engine oil to the seal on the new oil filter.
7. Screw the filter on until the gasket contacts the mounting plate, then tighten the filter and additional 1/2 to 2/3 of a turn.

   Important: Do not overtighten the oil filter.

8. Add the specified oil to the crankcase.

Fuel System Maintenance

Fuel Lines and Connections

Service Interval: Every 400 hours/Yearly (whichever comes first)—Check the fuel lines and connections.

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

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

Servicing the Water Separator/Fuel Filter

Draining the Fuel Filter/Water Separator

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

1. Place a clean container under the fuel filter (Figure 38).
2. Loosen the drain plug on the bottom of the filter canister.

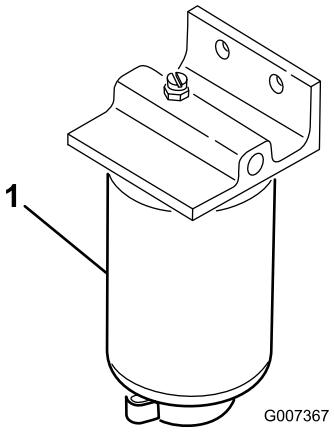


Figure 38

1. Water separator filter canister

3. Tighten the drain plug on the bottom of the filter canister.

Changing the Fuel-filter Canister

Service Interval: Every 400 hours—Replace the fuel filter canister.

1. Drain the water from the water separator; refer to Draining the Fuel Filter/Water Separator (page 32).
2. Clean the area where the filter canister mounts (Figure 38).
3. Remove the filter canister and clean the mounting surface.
4. Lubricate the gasket on the filter canister with clean oil.
5. Install the filter canister by hand until the gasket contacts mounting surface, then rotate it an additional 1/2 turn.
6. Tighten the drain plug on the bottom of the filter canister.

Electrical System Maintenance

Servicing the Battery

Service Interval: Every 50 hours—Check the battery condition. (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 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. Reconnect the cables (positive (+) cable first) and coat the terminals with petroleum jelly.
- If you store the machine in a location where temperatures are extremely high, the battery will run down more rapidly than if the machine is stored in a location where temperatures are cool.

Jump Starting the Vehicle

⚠ WARNING

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

- **Never jump start with a voltage source greater than 15 volts DC This will damage 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 vehicle.**
- **Be sure your vehicle is not touching the jump start vehicle.**
- **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 battery base. Remove the battery cover from the battery base (Figure 39).

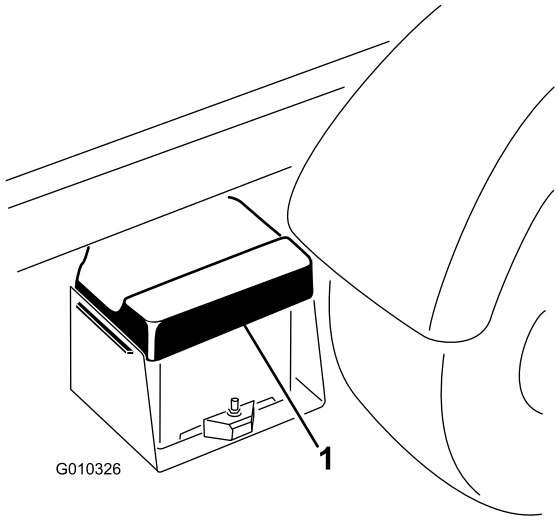


Figure 39

1. Battery cover

2. Connect a jumper cable between the positive posts of the 2 batteries (Figure 40).

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

3. Connect one end of the other jumper cable to the negative terminal of the battery in the other vehicle.

   Note: The negative terminal has NEG on the battery cover. Do not connect the other end of the jumper cable to the negative post of the discharged battery.

Connect it to the engine or frame. Do not connect the jumper cable to the fuel system.

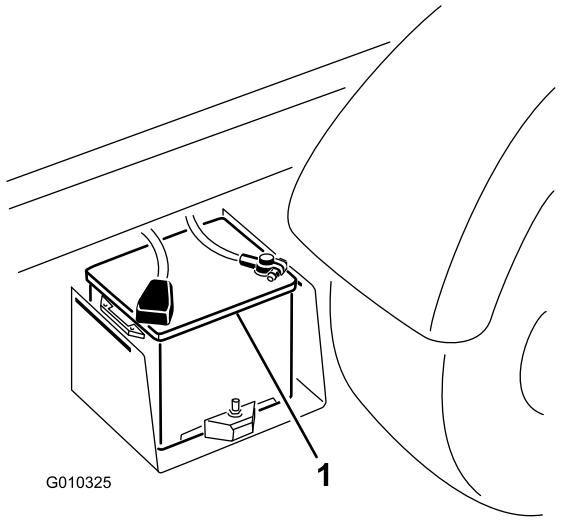


Figure 40

1. Battery

4. Start the engine in the vehicle providing the jump start. Let it run a few minutes, then start your engine.
5. Remove the negative jumper cable first from your engine, then the battery in the other vehicle.
6. Install the battery cover to the battery base.

Fuses

The fuses for the machine's electrical system are located under the center of the dash panel (Figure 41 and Figure 42).

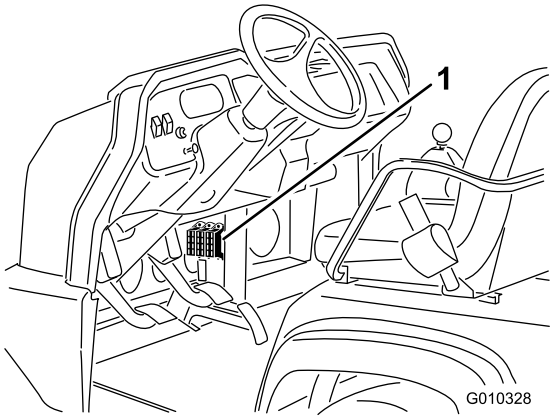


Figure 41

1. Fuses

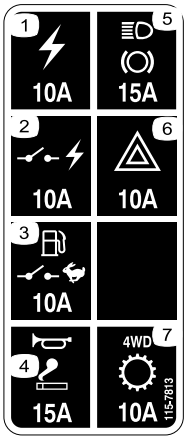


Figure 42

Drive System Maintenance

Adjusting the Shift Cables

Service Interval: After the first 10 hours

Every 200 hours

1. Move the shift lever to the Neutral position.
2. Remove the clevis pins securing the shift cables to the transaxle shift arms (Figure 43).

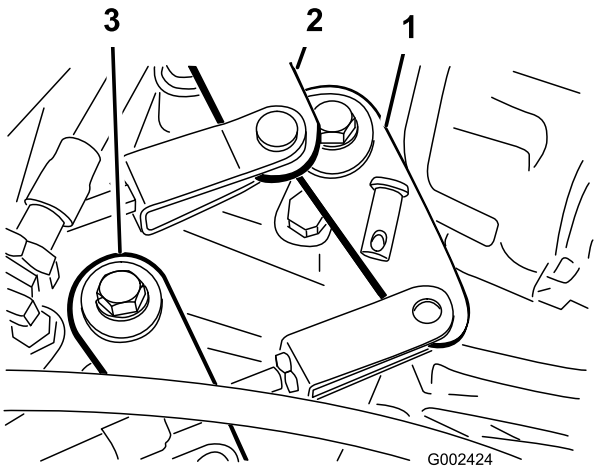


Figure 43

1. Shift arm (1st—Rev.)
2. Shift arm (2nd—3rd)
3. Shift arm (High—low)

3. Loosen the clevis jam nuts and adjust each clevis so cable free play is equal forward and backward relative to the hole in the transaxle shift arm (with the transaxle lever free play taken up in the same direction).
4. Install the clevis pins and tighten the jam nuts when finished.

Adjusting the High–Low Cable

Service Interval: Every 200 hours

1. Remove the clevis pin securing the high–low cable to the transaxle (Figure 43).
2. Loosen the clevis jam nut and adjust the clevis so that the clevis hole aligns with the hole in the transaxle bracket.
3. Install the clevis pin and tighten the jam nut when finished.

Inspecting the Tires

Service Interval: Every 100 hours

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

Check the tire pressure frequently to ensure proper inflation. If the tires are not inflated to the correct pressure, the tires will wear pre maturely.

Figure 44 is an example of tire wear caused by under inflation.

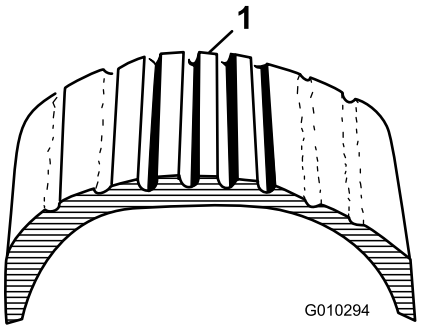


Figure 44

1. Under-inflated tire

Figure 45 is an example of tire wear caused by over inflation.

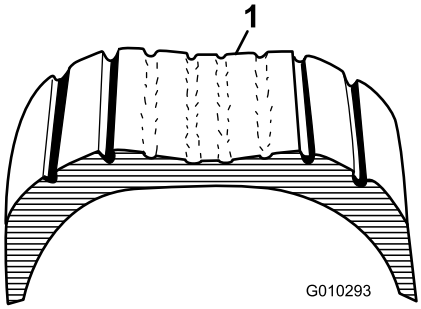


Figure 45

1. Over-inflated tire

Checking the Front Wheel Alignment

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

1. Make sure 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 46). 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. Rotate the tire 90 degrees and recheck the measurement.

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

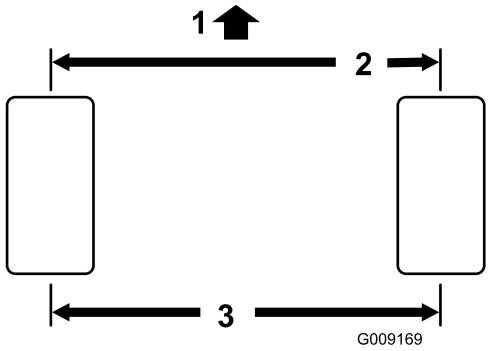


Figure 46

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

3. Adjust the center-to-center distance as follows:

   A. Loosen the jam nut at the center of the tie rod (Figure 47).

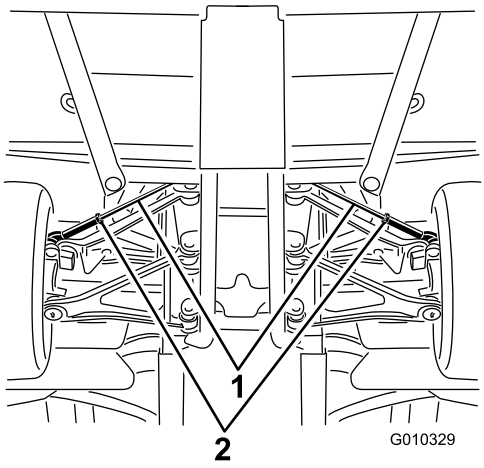


Figure 47

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 Workman service manual for the adjustment procedure.

Cooling System Maintenance

Removing Debris from the Cooling System

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

1. Turn the engine off.
2. Clean the engine area thoroughly of all debris.
3. Remove the 5 bolts securing radiator screen/guard to the radiator (Figure 48).

   Note: The guard is not shown in the figure. (Figure 48).

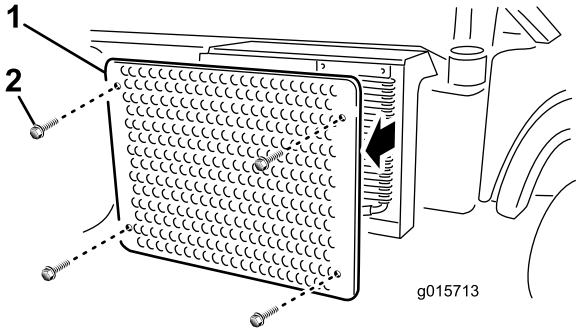


Figure 48

1. Radiator screen
2. Mounting bolts

4. Remove the screen/guard (Figure 48).
5. If equipped with a high flow hydraulic kit, rotate the latches and pivot the oil cooler away from the radiator (Figure 49).

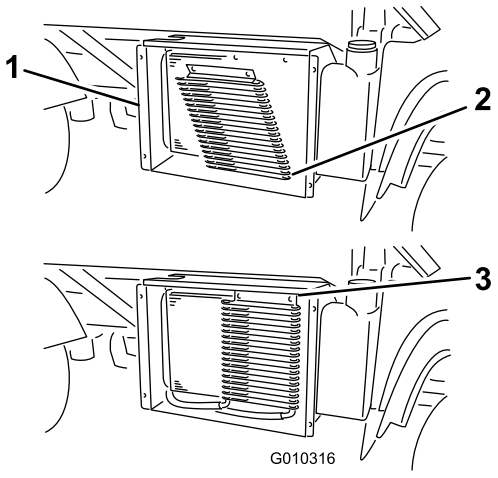


Figure 49

1. Radiator housing
2. Oil cooler
3. Latches

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

   Note: Blow debris away from the radiator.

7. Install the cooler and screen to the radiator.

Changing the Engine Coolant

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

Engine-coolant type: a 50/50 mixture of water and permanent ethylene

⚠ CAUTION

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

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

Drain the engine coolant from the cooling system as follows:

1. Park the machine on a level surface.
2. Remove the radiator cap.

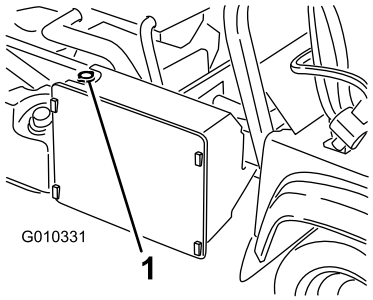


Figure 50

1. Radiator cap

3. Remove the reserve tank cap.

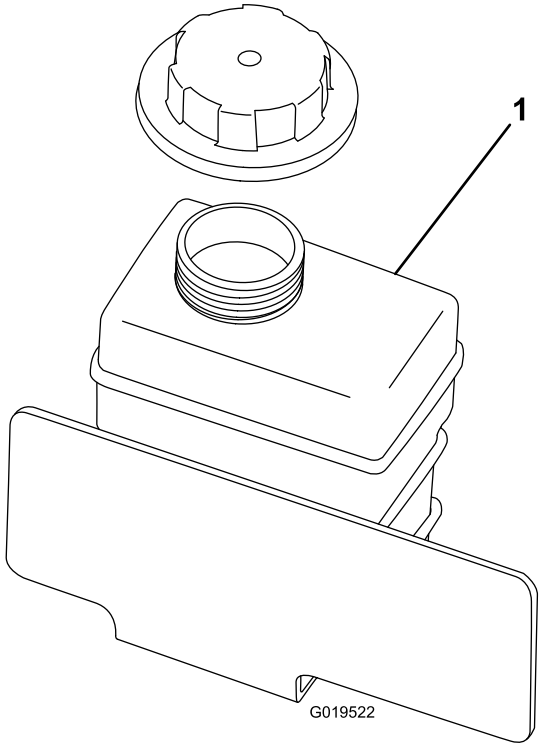


Figure 51

1. Reserve tank cap

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

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

5. Align the drain pan beneath the drain petcock on the engine.
6. Open the coolant drain petcock on the engine and allow the coolant to flow into a drain pan.
7. When the coolant stops draining, close the petcock.

Fill the cooling system with coolant as follows:

1. Slowly fill the radiator with a 50/50 mixture of water and permanent ethylene glycol anti-freeze
2. Top off the radiator and install the cap.
3. Slowly fill the reserve tank until level reaches the bottom of the filler neck (Figure 51). **Do not overfill the reservoir.**
4. As air escapes, fill the reservoir to the bottom of the filler neck.
5. Install the reserve tank cap (Figure 51).
6. Run the machine until it reaches the operating temperature.

   Note: Do not allow the engine to heat up to the full **running** temperature.

7. Turn off the machine and allow it to cool.
8. Check the coolant level again, and replenish it, 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 52).

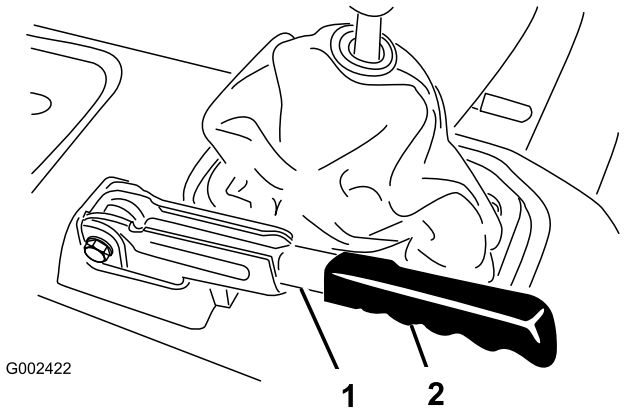


Figure 52

1. Parking-brake lever 2. Grip

2. Loosen the set screw securing the knob to the parking brake lever (Figure 53).
3. Rotate the knob until a force of 20 to 22 kg (45 to 50 lb) is required to actuate the lever.

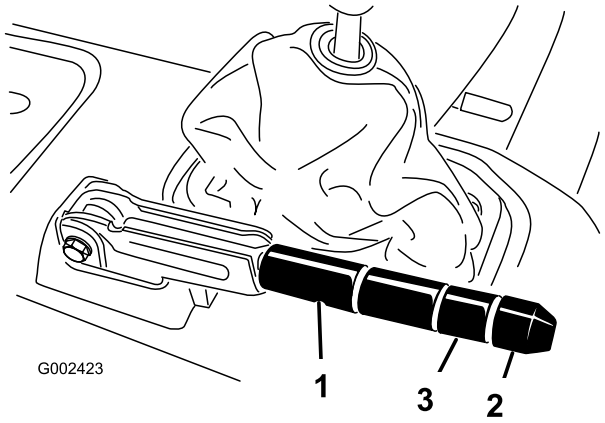


Figure 53

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

4. Tighten the set screw when finished.

   Note: If no adjustment is left at the handle, 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.

Adjusting the Brake Pedal

Service Interval: Every 200 hours

Note: Remove the front hood to ease the adjustment procedure.

1. Remove the cotter pin and clevis pin securing the master cylinder yoke to the brake-pedal pivot (Figure 54).

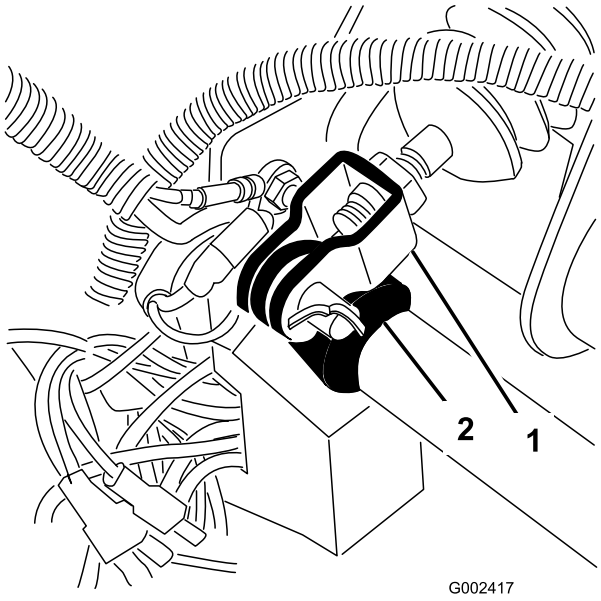


Figure 54

1. Master cylinder yoke 2. Brake-pedal pivot

2. Lift up on the brake pedal (Figure 55) until it contacts the frame.
3. Loosen the jam nuts securing the yoke to the master cylinder shaft (Figure 55).
4. Adjust the yoke until its holes align with the hole in the brake-pedal pivot.
5. Secure the yoke to the pedal pivot with the clevis pin and cotter pin.
6. Tighten the jam nuts securing the yoke to the master cylinder shaft.

   Note: The brake master cylinder must relieve pressure when properly adjusted.

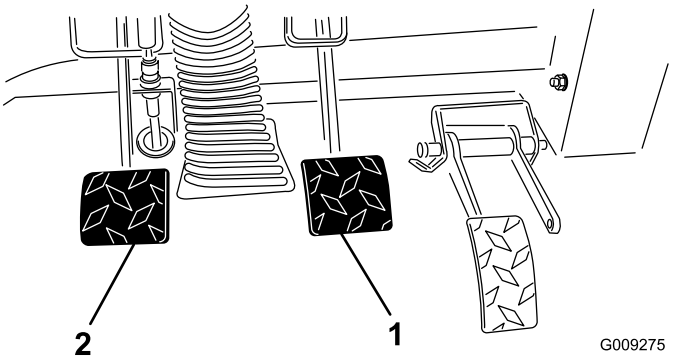


Figure 55

1. Clutch pedal
2. Brake pedal
3. Accelerator pedal

Belt Maintenance

Adjusting the Alternator Belt

Service Interval: After the first 8 hours—Check the condition and tension of the alternator belt.

Every 200 hours—Check the condition and tension of the alternator belt.

1. Raise the bed with a hoist and place a safety support to hold up the bed; refer to Removing the Full Bed (page 26).
2. Check the tension by pressing the belt at mid span between the crankshaft and alternator pulleys with 10 kg (22 lb) of force.

   Note: A new belt should deflect 8 to 12 mm (0.3 to 0.5 inch).

   Note: A used belt should deflect 10 to 14 mm (0.4 to 0.55 inch). If the deflection is incorrect, proceed to the next step. If correct, continue operation.
3. To adjust belt tension, complete the following:

   A. Loosen the 2 alternator-mounting bolts.

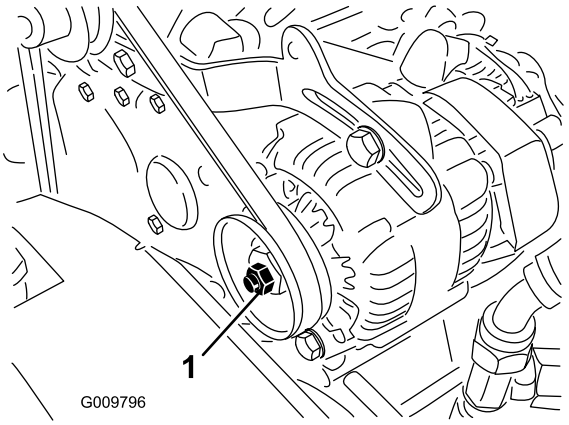


Figure 56

1. Alternator belt
2. Alternator brace

   B. Using a bar, rotate the alternator until the proper belt tension is attained, then tighten the mounting bolts.

Controls System Maintenance

Adjusting the Accelerator Pedal

1. Position the vehicle on a level surface, stop the engine, and engage the parking brake.

   Important: You must have the engine shut off and you must have the throttle-return spring attached before beginning to adjust the accelerator pedal.

2. Adjust the ball joint on the accelerator cable (Figure 57) to allow 2.54 to 6.35 mm (0.100 to 0.250 inch) of clearance between the accelerator pedal arm and the top of the diamond tread floor plate (Figure 58), when a 111 N (25 lb) force is applied to the center of the pedal. Tighten the locknut.

   Important: The maximum high idle speed is 3650 rpm. Do not adjust the high idle stop.

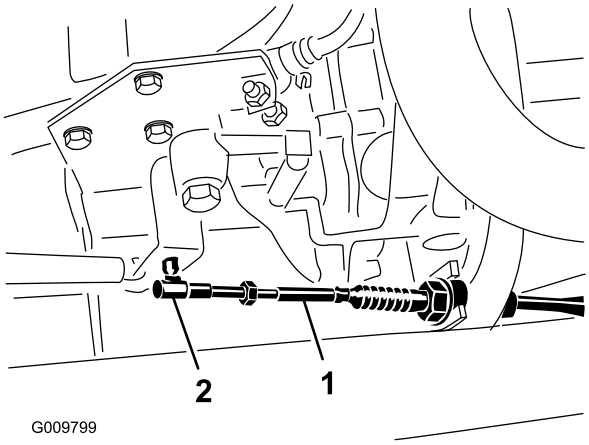


Figure 57

1. Accelerator cable
2. Ball joint

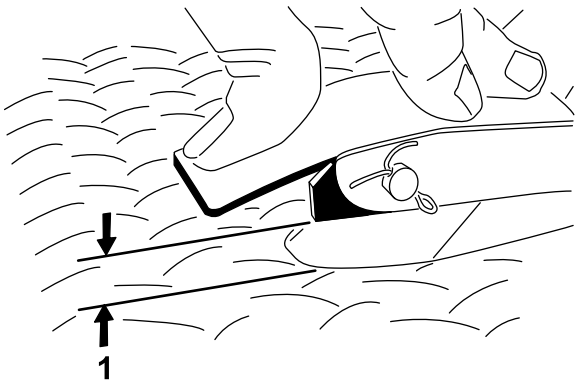


Figure 58

1. 2.54 to 6.35 mm (0.100 to 0.250 inch) clearance

Adjusting the Clutch Pedal

Service Interval: Every 200 hours

Note: You can adjust the clutch-pedal cable at the bell housing or at the clutch-pedal pivot. The front hood can be removed to ease the access to the pedal pivot.

1. Loosen the jam nuts securing the clutch cable to the bracket on the bell housing (Figure 59).

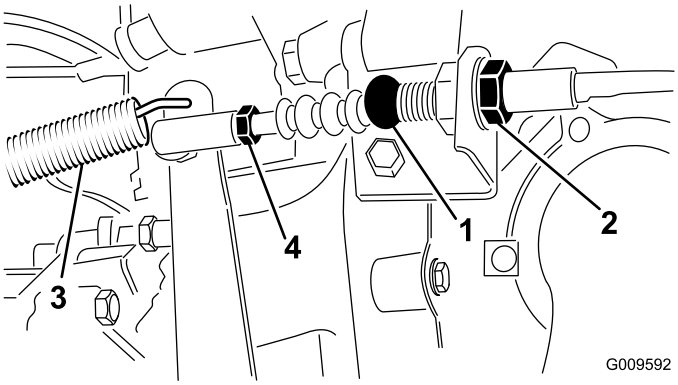


Figure 59

1. Clutch cable
2. Jam nuts
3. Return spring
4. Ball joint

   Note: You may remove and rotate the ball joint, if additional adjustment is required.

2. Disconnect the return spring from the clutch lever.
3. Adjust the jam nuts or ball joint until the back, rear edge of the clutch pedal is 9.5 ± 0.3 cm (3.75 ± 0.12 inch) from the top of the floor plate diamond pattern, when an 1.8 kg (4 lb) force is applied to the pedal (Figure 60).

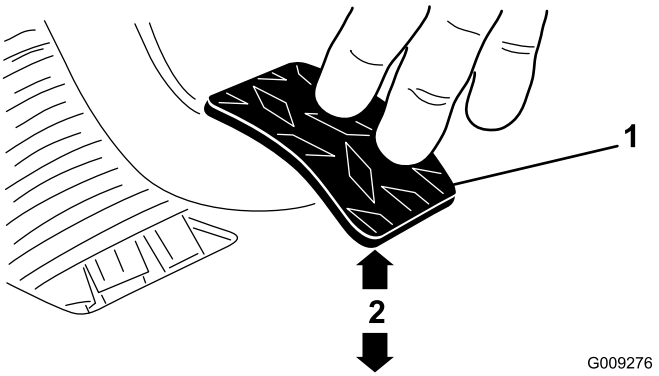


Figure 60

1. Clutch pedal
2. 9.5 ± 0.3 cm (3.75 ± 0.12 inch)

   Note: Force is applied so the clutch release bearing lightly contacts the pressure plate fingers.

4. Tighten the jam nuts after the adjustment has been attained.
5. Check the 9.5 ± 0.3 cm (3.75 ± 0.12 inch) dimension after the jam nuts have been tightened to ensure proper adjustment.

Note: Adjust again if it is necessary.

6. Connect the return spring to the clutch lever.

Important: Ensure that the rod end is positioned squarely on the ball, not twisted, and remains parallel to the clutch pedal after the jam nut is tightened (Figure 61).

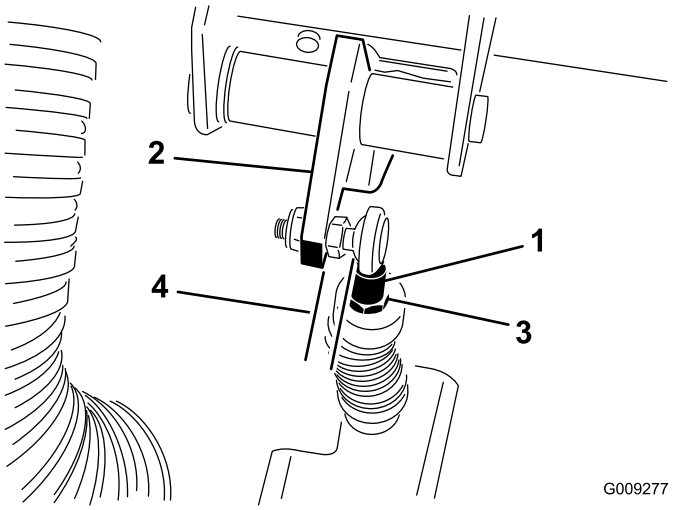


Figure 61

1. Clutch-cable rod end
2. Clutch pedal
3. Rod end jam nut
4. Parallel

Note: The clutch free play should never be less than 19 mm (0.75 inch).

Converting the Speedometer

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

1. Position the vehicle on a level surface, stop the engine, engage the parking brake, and remove the key from the ignition switch.
2. Remove the hood; refer to Removing the Hood (page 28).
3. Locate the 2 loose wires next to the speedometer (Figure 62).

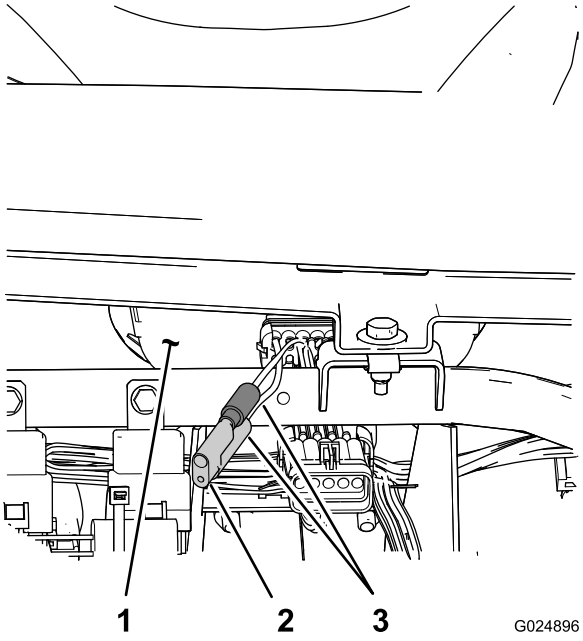


Figure 62

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

4. Remove the connector plug from the harness wire and connect the wires together (Figure 62).

Note: The speedometer will switch 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 28).

Hydraulic System Maintenance

Changing the Hydraulic Fluid and Cleaning the Strainer

Service Interval: Every 800 hours

Hydraulic-fluid capacity: 7 L (7.5 qt)

Hydraulic-fluid type: Dexron III ATF

1. Position the machine on a level surface, stop the engine, engage the parking brake, and remove the key from the ignition switch.
2. Remove the drain plug from the side of the reservoir, and let the hydraulic fluid flow into a drain pan (Figure 63).

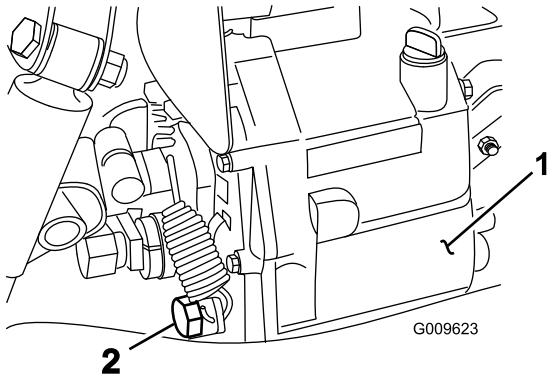


Figure 63

1. Hydraulic reservoir
2. Drain plug

3. Note the orientation of the hydraulic hose and 90° fitting connected to the strainer on the side of the reservoir (Figure 64).
4. Remove the hydraulic hose and 90° fitting.
5. Remove the strainer and clean it by back flushing it with a clean de-greaser.

   Note: Allow it to air dry before installing.

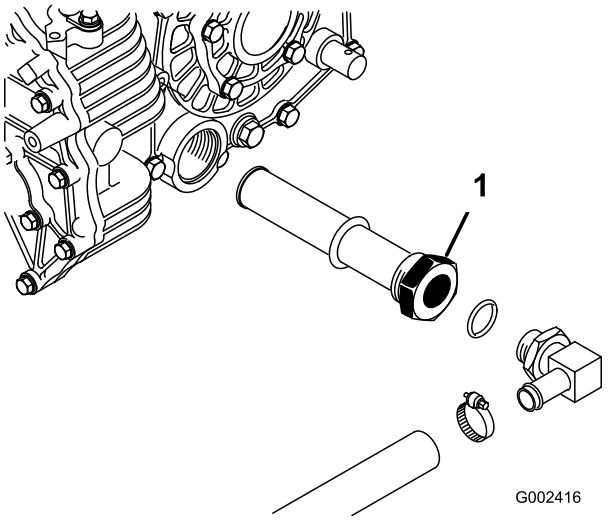


Figure 64

1. Hydraulic strainer

6. Install the strainer.
7. Install the hydraulic hose and 90° fitting to the strainer in the same orientation.
8. Install and tighten the drain plug.
9. Fill the reservoir with approximately 7 L (7.5 US qt) of Dexron III ATF; refer to Checking the Transaxle/Hydraulic-fluid Level (page 17).
10. Start the engine and operate the machine to fill the hydraulic system.
11. Check the hydraulic oil level and replenish it, if required.

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

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, stop the engine, engage the parking brake, and remove the key from ignition switch.
2. Clean the area around filter mounting area.
3. Place a drain pan under the filter and remove the filter (Figure 65).

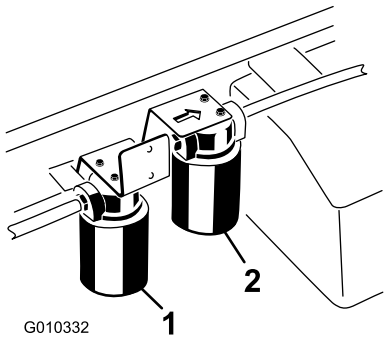


Figure 65

1. Hydraulic filter
2. High-flow hydraulic filter

4. Lubricate the gasket on the new filter.
5. Ensure that the filter mounting area is clean.
6. Screw the filter on until the gasket contacts the mounting plate, and tighten the filter 1/2 turn.
7. Start the engine and let it run for about 2 minutes to purge air from the system.
8. Stop the engine and check the hydraulic-oil level and for leaks.

Cleaning

Washing the Machine

The machine should be washed as needed. Use water alone or with a mild detergent. A rag may be used when washing the machine, however the hood will loose some of its luster.

Important: Do not use power washing equipment to wash the machine. Power washing equipment may damage the electrical system, loosen important decals, or wash away necessary grease at friction points. Avoid excessive use of water near the control panel, engine, and battery.

Storage

1. Position the machine on a level surface, set the parking brake, stop the engine, and remove the ignition key.

   Note: Put it in a safe place out of the reach of children.

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 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 the battery.

3. Inspect the brakes; refer to Checking the Brake-fluid Level (page 18).
4. Service the air cleaner; refer to Servicing the Air Cleaner (page 30).
5. Seal the air cleaner inlet and the exhaust outlet with weatherproof tape.
6. Grease the machine.
7. Change the engine oil; refer to Changing the Engine Oil and Filter (page 31).
8. Flush the fuel tank with fresh, clean diesel fuel.
9. Secure all fuel system fittings.
10. Check the tire pressure; refer to Checking the Tire Pressure (page 18).
11. Check anti freeze protection and add a 50/50 solution of water and anti freeze as needed for expected minimum temperature in your area.
12. Remove the battery from the chassis, check the condition of the battery, and charge it fully; refer to Servicing the Battery (page 33).

    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.

13. Check and tighten all the bolts, nuts, and screws. Repair or replace any part that is damaged.
14. Paint all the scratched or bare metal surfaces.

    Paint is available from your Authorized Service Distributor.

15. Store the machine in a clean, dry garage or storage area.
16. Cover the machine to protect it and keep it clean.

Notes:

Notes:

Notes:

The Toro Total Coverage Guarantee

A 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.